

Chapter 4.0 Background Conditions

The designation of a roadway as a State of Delaware Byway or a National Scenic Byway should not impede the intended purpose of that roadway to safely and efficiently move goods and people. Therefore, as part of this Corridor Management Plan (CMP), it is important to evaluate the current/existing and future conditions of the roadway being designated. Displaying, summarizing and analyzing existing data pertaining to roadway physical characteristics, traffic volumes, levels of service, accident locations and other significant data will assist with and provide awareness of the various operational and physical characteristics that should be considered during designation and implementation of the Scenic Byway. This collection of data also familiarizes the reader of this CMP with the Harriet Tubman Underground Railroad Byway roadway characteristics. These characteristics should be considered in corridor planning efforts and future decision-making. In addition, the data serves as a baseline for any future analysis on the impacts of Scenic Byway designation and implementation of projects.

4.1 Roadway Characteristics

The corridor generally travels northeast from southern Delaware at the Maryland/Delaware border, picking up where the Maryland Harriet Tubman Underground Railroad Byway terminates, through Dover and Wilmington before heading northwest and terminating at the Delaware/Pennsylvania border. The total length of the Harriet Tubman Underground Railroad Byway is approximately 98 miles. This Corridor Management Plan (CMP) has divided the Harriet Tubman Underground Railroad Byway into four (4) segments to assist with the review and graphical representation of the corridor analysis. The corridor segment maps are shown in Figures 2 through 5. The Harriet Tubman Underground Railroad Byway traverses two (2) Delaware counties: Kent County and New Castle County. See Figure 1 for a detailed map of the corridor limits.

4.2 General Design Characteristics

The general design characteristics of a roadway or corridor are important to understand before assessing a scenic corridor as it provides the baseline of comparison and evaluation. The design characteristics of a roadway include such factors as lane width, number of driving lanes and median types. Table 4-1 below presents the design characteristics of the corridor.

Table 4-1: General Roadway Design Characteristics

Segment	Route	Total Roadway Width	Driving Lanes	Median
Segment 1	Delaware State Border (Sandtown) to Cheswold	21 to 74 feet	Varies from 2 to 4	None or raised/grass, 8 to 25 feet
Segment 2	Cheswold to Odessa	18 to 50 feet	Varies from 2 to 4	None or raised/grass, 8 to 16 feet
Segment 3	Odessa to Wilmington	22 to 71 feet	Varies from 2 to 4	None or raised/grass, 3 to 16 feet
Segment 4	Wilmington to Delaware State Border	22 to 68 feet	Varies from 2 to 6	None or raised/grass, 2 to 99 feet

Table 4-1 depicts that the corridor generally ranges from two (2) to six (6) lanes with total roadway widths of 18 to 74 feet and has limited medians throughout the corridor limits. Most of the corridor is rural/suburban in nature with occasional urban sections through communities, such as Dover, New Castle and Wilmington. Figures 11 through 15 highlight the roadway lane totals (# of lanes) along the corridor.

4.3 Speed Limits

The speed limits along the corridor are depicted in Figures 16 through 20 and were confirmed using the DelDOT speed limit database, field review and high-definition video review of the corridor. The average speed limit of the entire corridor (when averaged as a whole) is 40 miles per hour (mph). Within town/city limits (transitioning suburban to urban areas) the speed limit generally drops below 40 mph to 35 mph and 25 mph. Speed limits are enforced by the Delaware State Police and the local (city or county) police force.

The Delaware Code, Title 21, Chapter 41 references all speed restrictions along roadways. The following speed limit requirements are currently presented in the Delaware Code: 1) 25 mph in any business district; 2) 25 mph in any residential district; 3) 50 mph on 2-lane roadways; and 4) 55 mph on 4-lane roadways and on divided roadways. Scenic Byway designation (State or National) will have no effect on the speed limits assigned to the roadway.





HARRIET TUBMAN UNDERGROUND RAILROAD BYWAY

Delaware

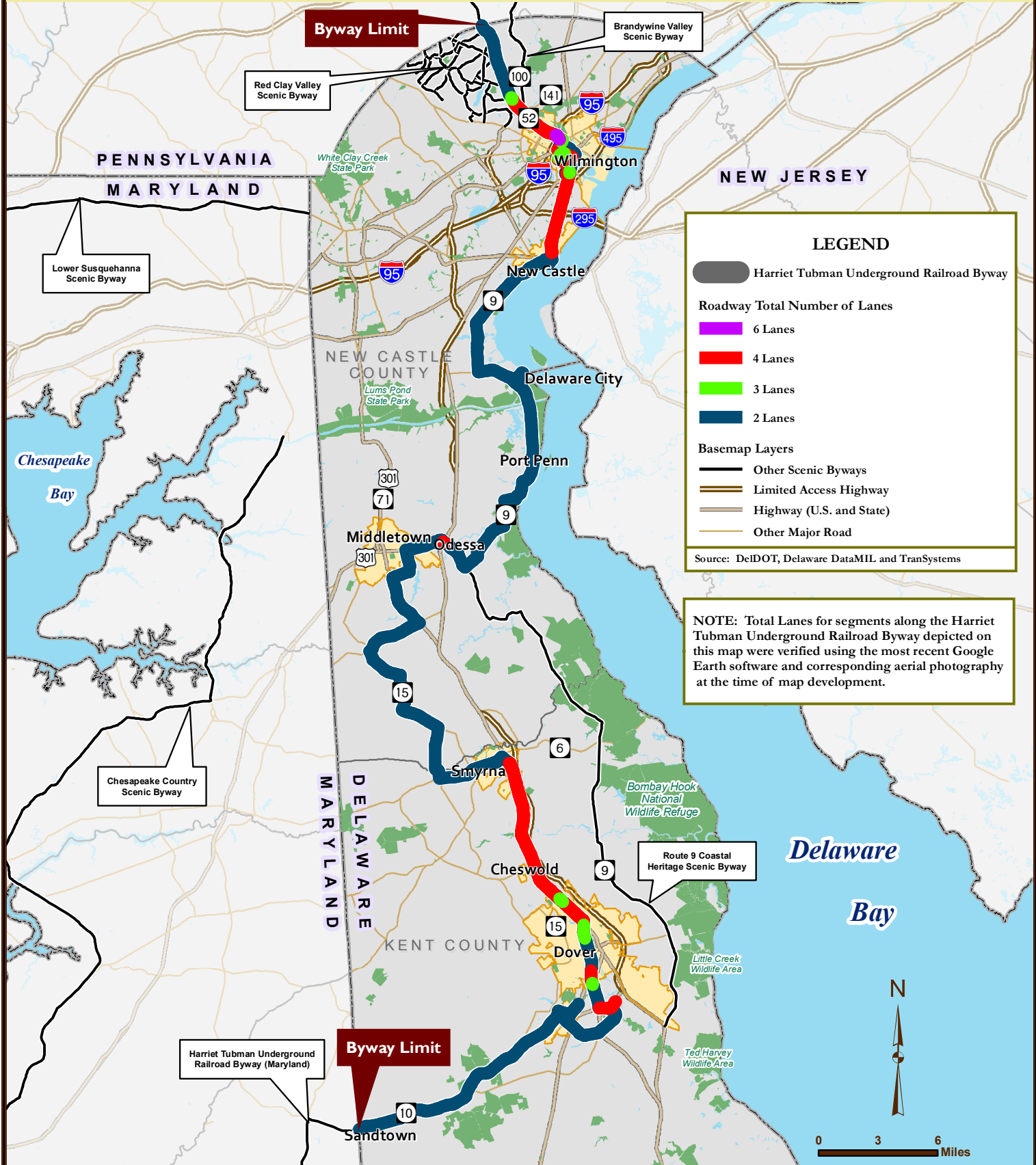
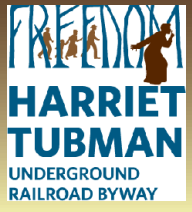


Figure 11: Total Roadway Lanes (Project Study Area)



HARRIET TUBMAN UNDERGROUND RAILROAD BYWAY

Delaware

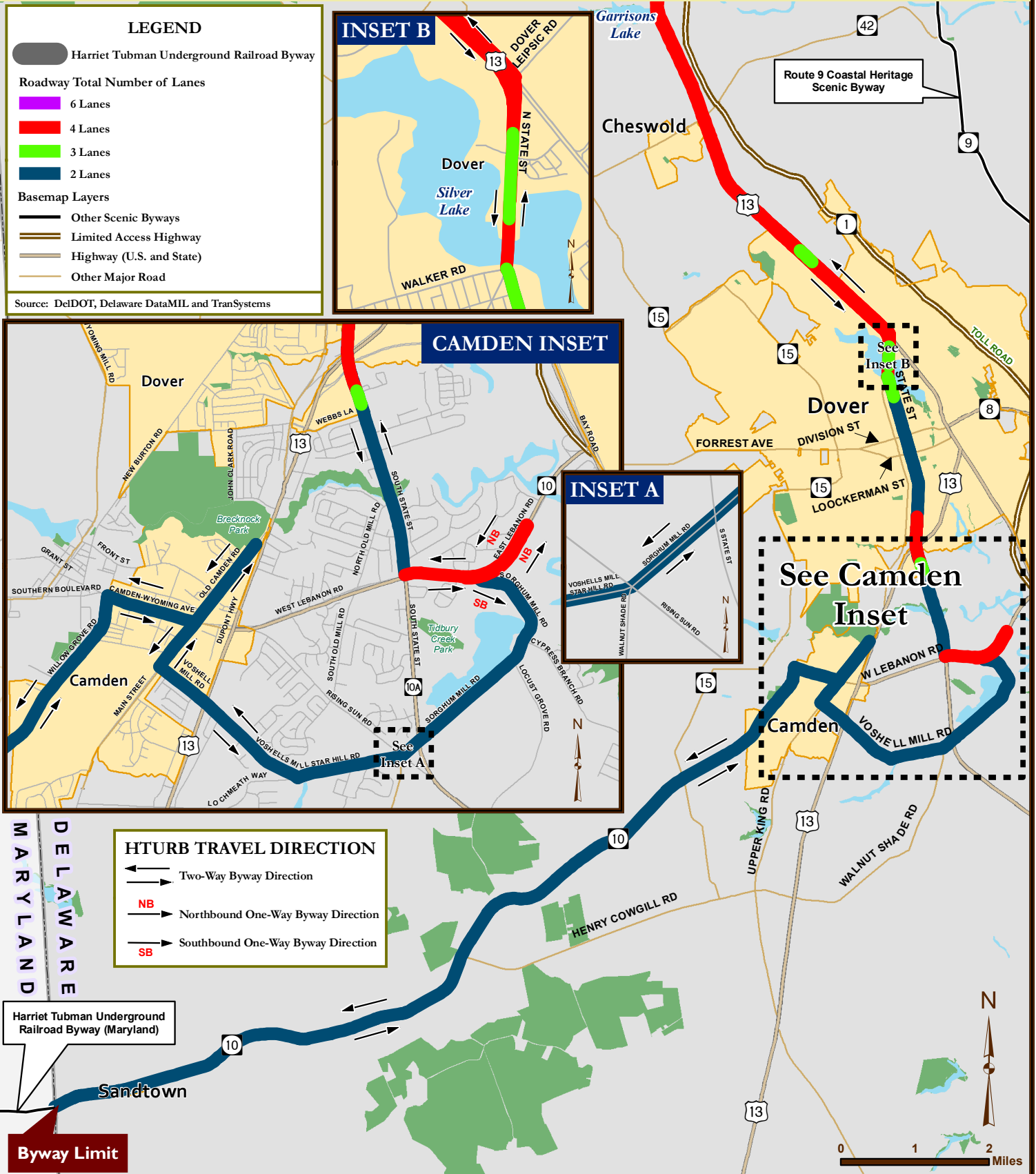
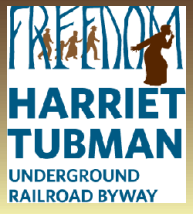


Figure 12: Total Roadway Lanes (Segment 1)



HARRIET TUBMAN UNDERGROUND RAILROAD BYWAY

Delaware

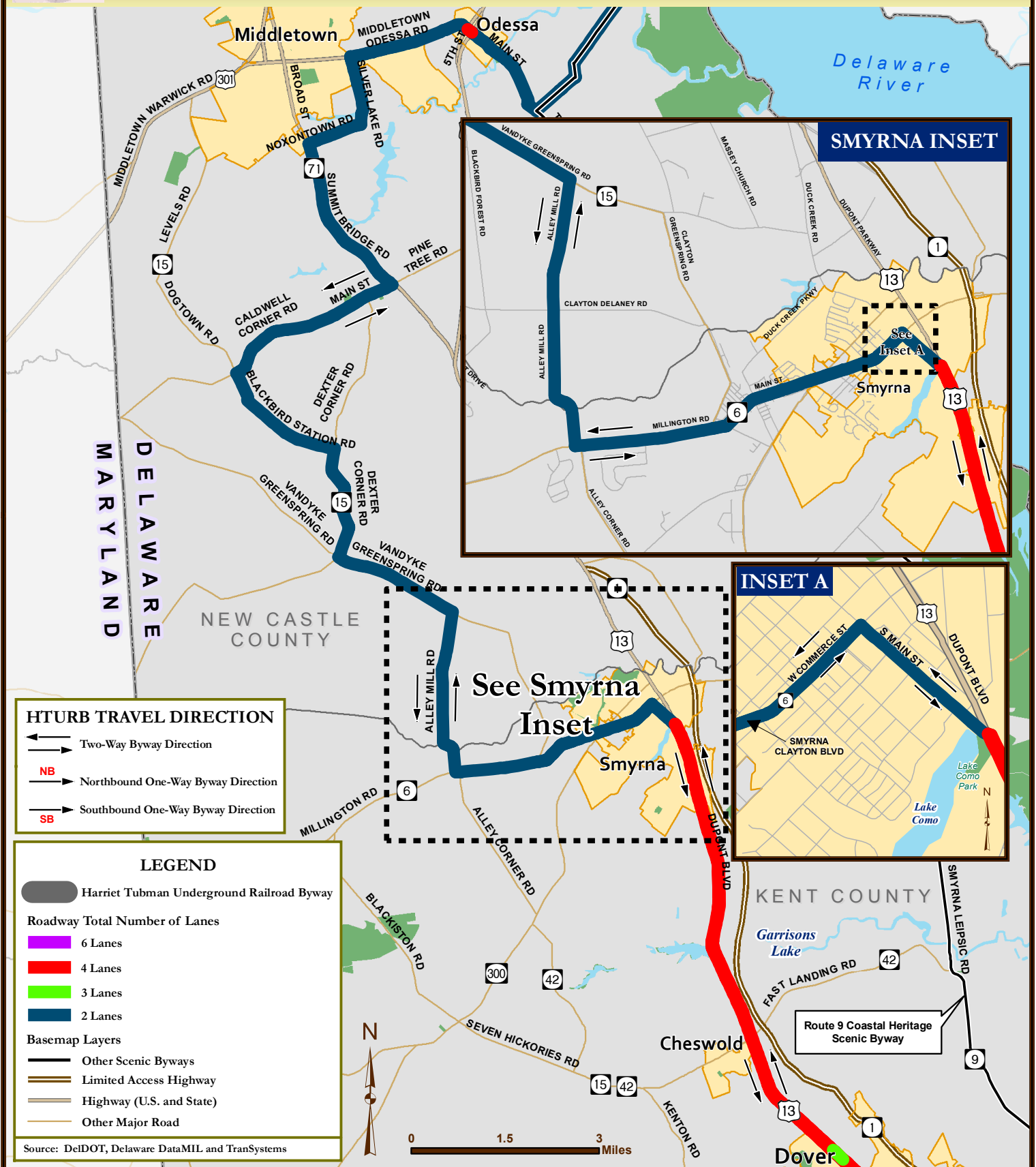
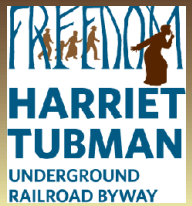


Figure 13: Total Roadway Lanes (Segment 2)



HARRIET TUBMAN UNDERGROUND RAILROAD BYWAY

Delaware

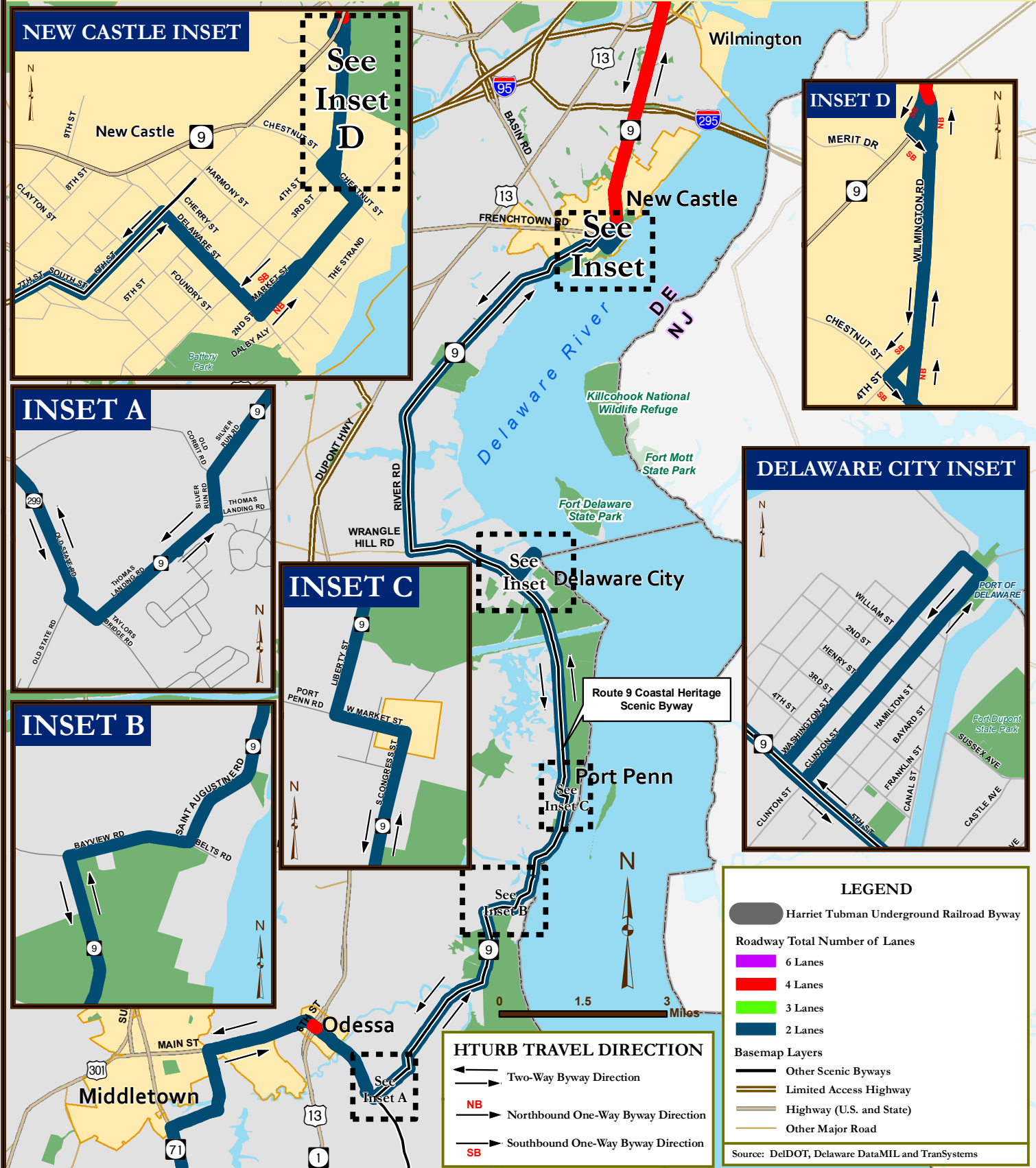
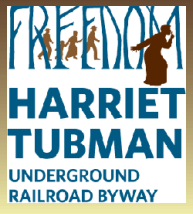


Figure 14: Total Roadway Lanes (Segment 3)



HARRIET TUBMAN UNDERGROUND RAILROAD BYWAY Delaware

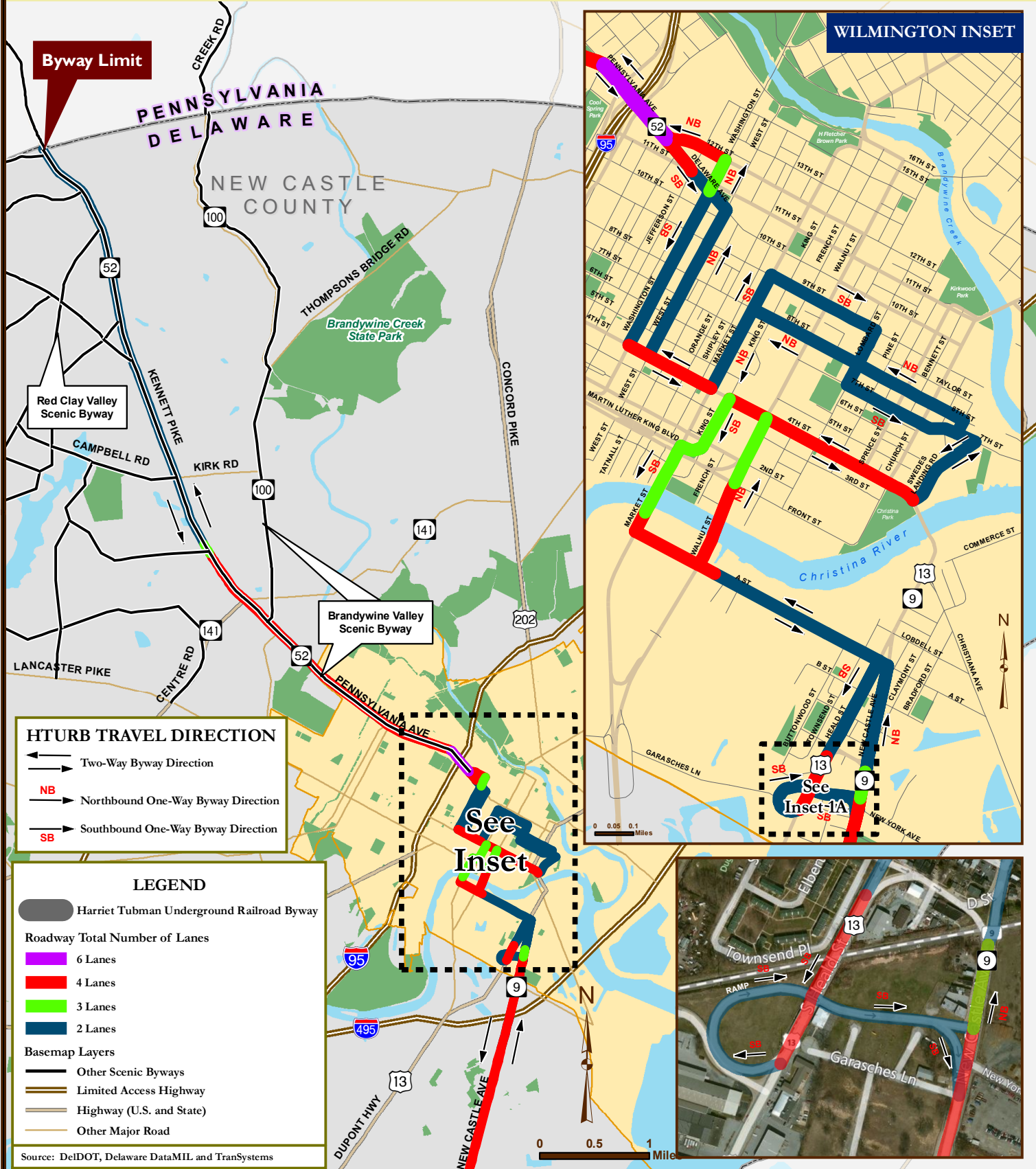
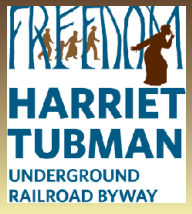


Figure 15: Total Roadway Lanes (Segment 4)



HARRIET TUBMAN UNDERGROUND RAILROAD BYWAY

Delaware

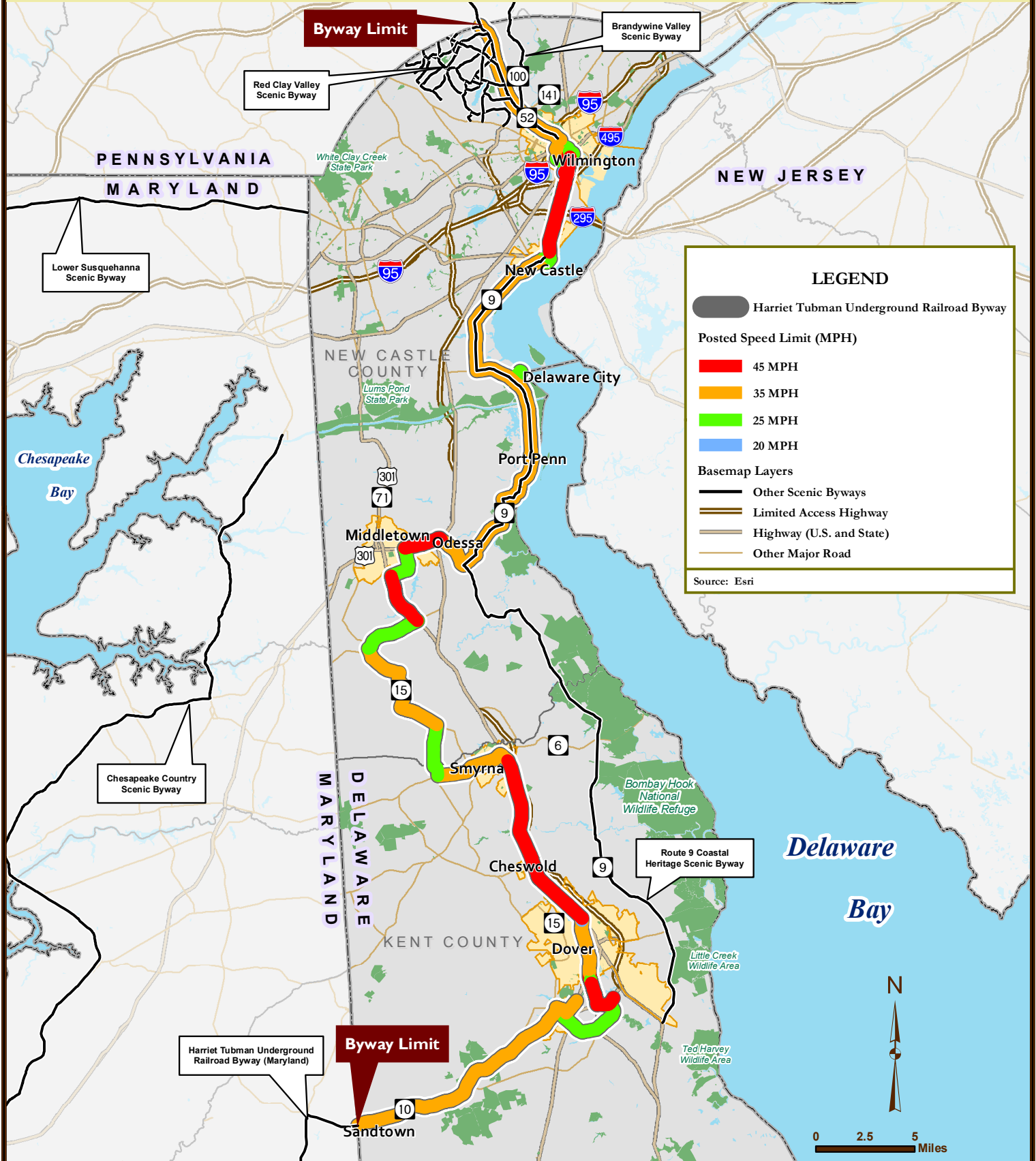
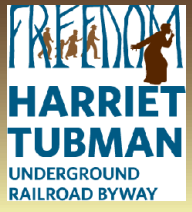


Figure 16: Posted Speed Limit (Project Study Area)



HARRIET TUBMAN UNDERGROUND RAILROAD BYWAY

Delaware

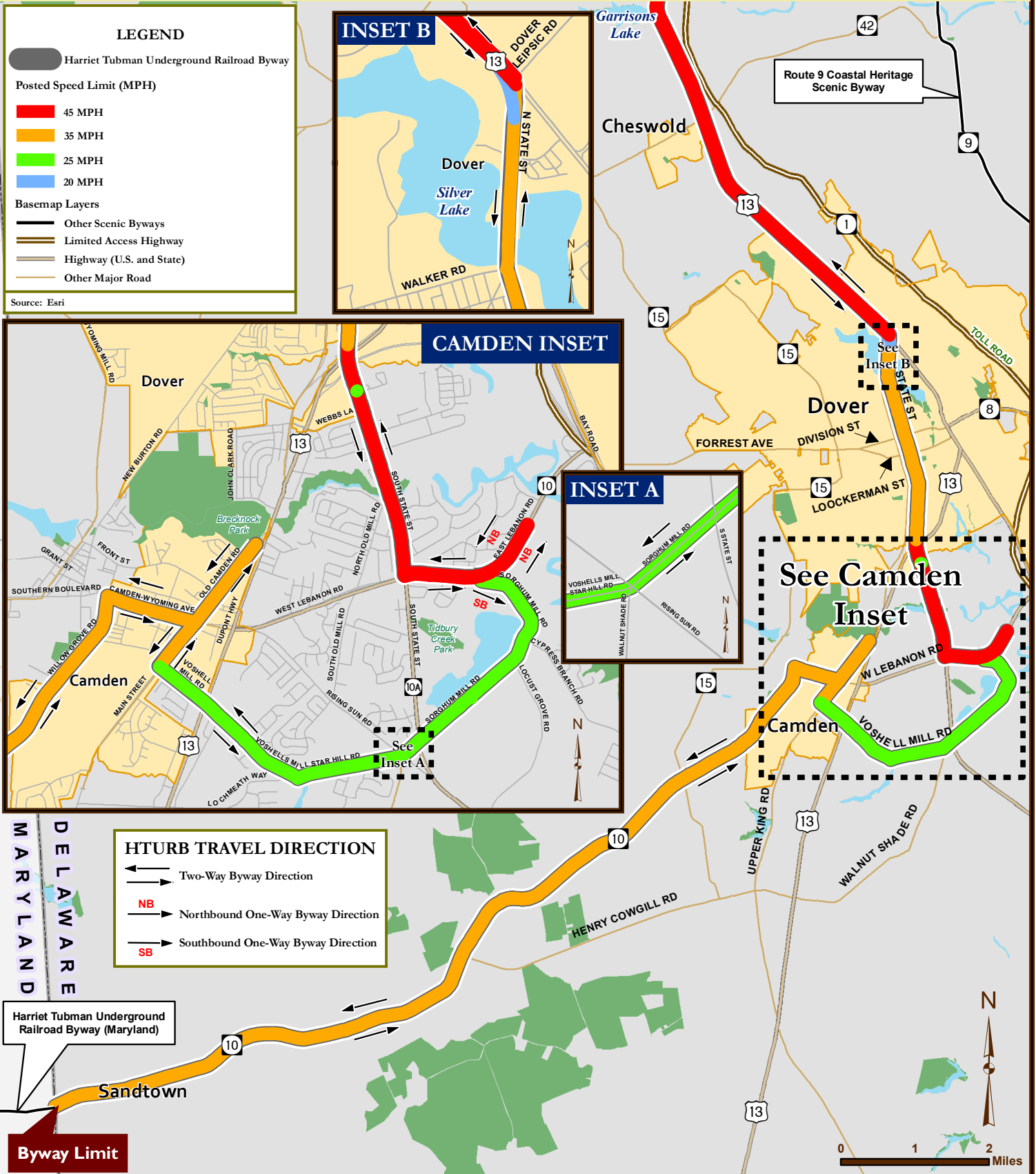
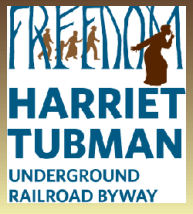


Figure 17: Posted Speed Limit (Segment 1)



HARRIET TUBMAN UNDERGROUND RAILROAD BYWAY

Delaware

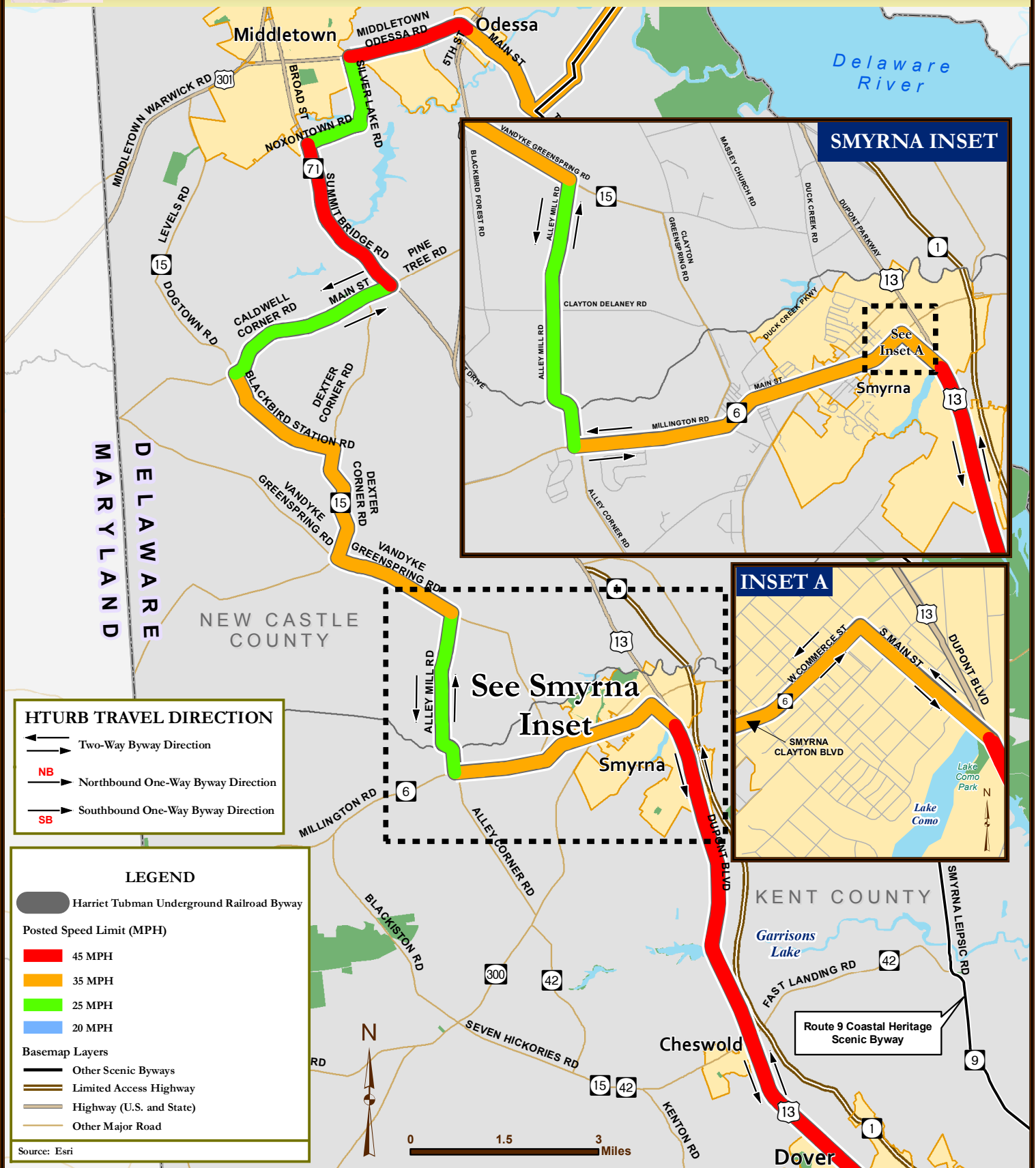
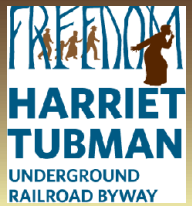


Figure 18: Posted Speed Limit (Segment 2)





HARRIET TUBMAN UNDERGROUND RAILROAD BYWAY

Delaware

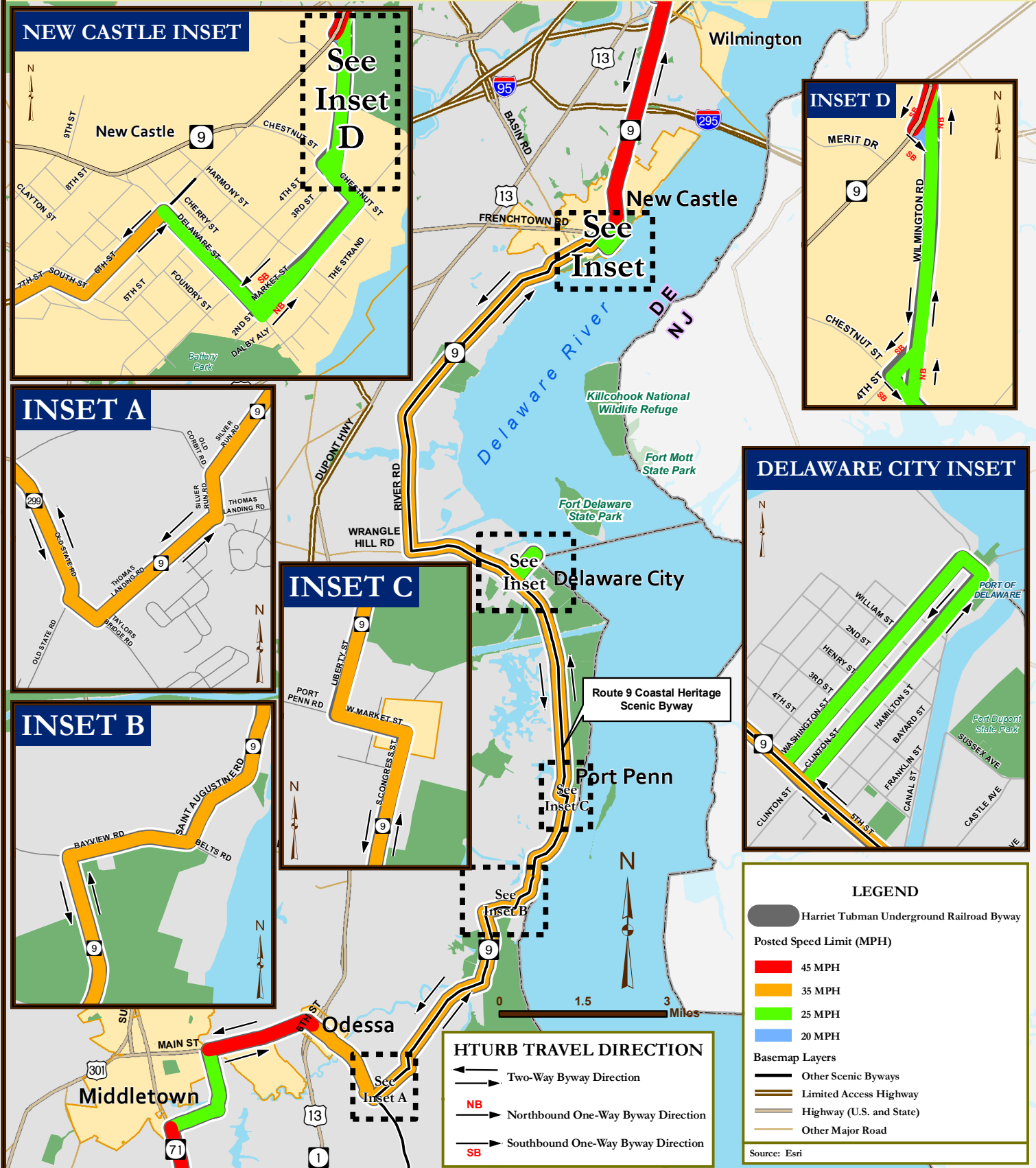
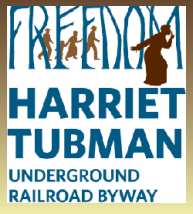


Figure 19: Posted Speed Limit (Segment 3)



HARRIET TUBMAN UNDERGROUND RAILROAD BYWAY Delaware

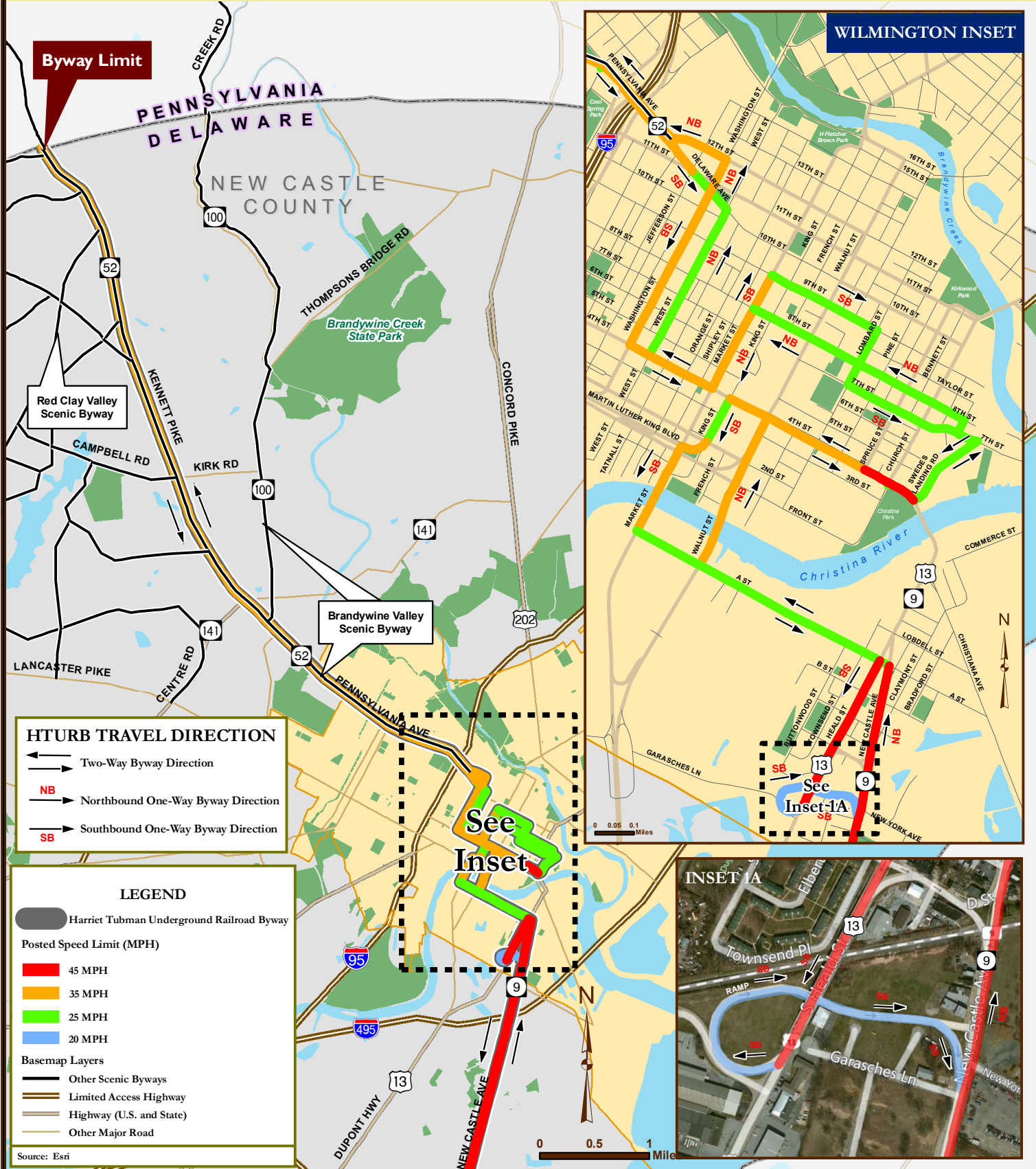
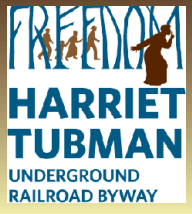


Figure 20: Posted Speed Limit (Segment 4)

4.4 Functional Classification

Functional Classification is the process by which roadways are grouped into classes according to the character of traffic service that they are intended to provide. There are three (3) main functional classifications that will be used in this analysis: arterial, collector, and local roads. The Harriet Tubman Underground Railroad Byway is considered to be arterial for a majority of the corridor, such as US 13, Delaware State Route 9, and Delaware State Route 52. The corridor has some sections classified as collector and local roadways, mainly located around towns and communities. The varying functional classifications along the corridor are depicted in Figure 21.

4.5 Designated Truck Routes

Designated truck routes, depicted on Figure 22, are only located along or intersect with the Harriet Tubman Underground Railroad Byway in four (4) areas. A designated truck route is located along a stretch of SR 15 in Dover/Camden and along US 301 in Middletown. Designated truck routes cross the Byway in Odessa and in a number of places around Wilmington. Smyrna also has an ordinance stating that all state roads are designated truck routes in Smyrna. Along the Byway the designated truck routes are located mainly along major highways and should have no impact on the movement and quality of the traveler or commuter along the corridor; however, the HTURB management entity is urged to monitor the traffic volumes and truck traffic along these corridors in an effort to ensure minimal impacts to the HTURB. The corridor's Scenic Byway designation will have no anticipated impact on the movement of truck traffic. The HTURB Steering Committee and DelDOT will coordinate with the freight and trucking industry consistently to ensure that any planned improvements related to the Scenic Byway do not affect the trucking operations and travel throughout the region.



4.6 Annual Average Daily Traffic (AADT) and Level of Service (LOS)

Average Annual Daily Traffic (AADT)

Annual Average Daily Traffic (AADT) is the total volume of vehicular traffic on a roadway throughout the entire year divided by 365 days ($\text{Annual Volume} / 365 = \text{AADT}$). The AADT of a corridor or roadway provides a snapshot of how many vehicles utilize a roadway on an average daily basis. The AADT for the four (4) segments of the Harriet Tubman Underground Railroad Byway are displayed on Figures 23 through 27.

As depicted in Figures 23 through 27, traffic volumes along the rural sections of the corridor are lower than the suburban and urban sections of the corridor – a common trend throughout Delaware and nationwide. There is a higher concentration of vehicular traffic just south of New Castle, likely due to the large industrial uses and connections to other highly traveled roadways found along that section of the corridor. Traffic volumes also increase in and within close proximity to the larger communities of Dover, Middletown, and Wilmington. These traffic trends are consistent with national trends.



HARRIET TUBMAN UNDERGROUND RAILROAD BYWAY

Delaware

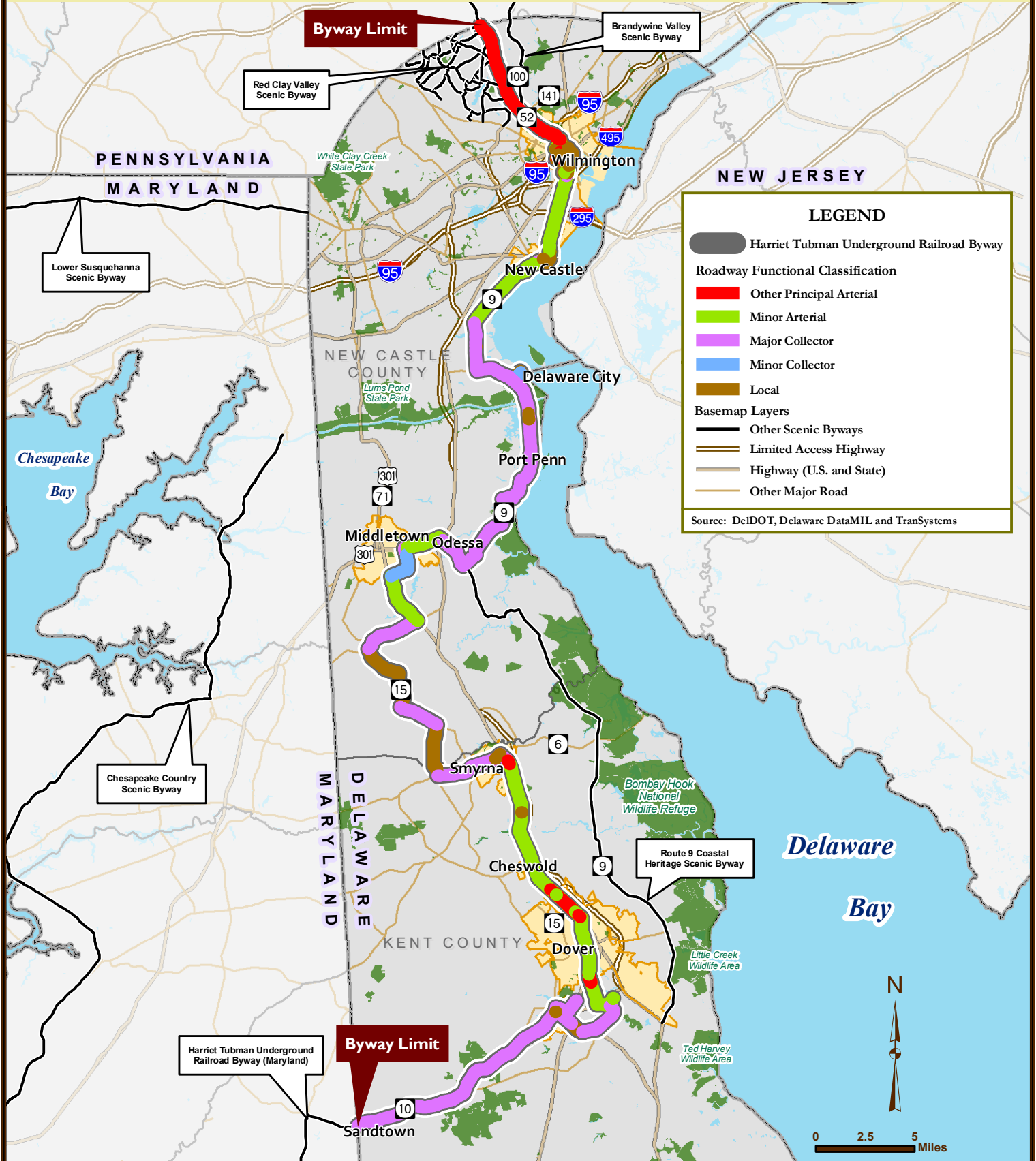
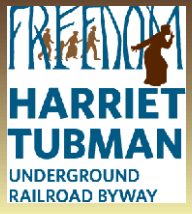


Figure 21: Roadway Functional Classification



HARRIET TUBMAN UNDERGROUND RAILROAD BYWAY

Delaware

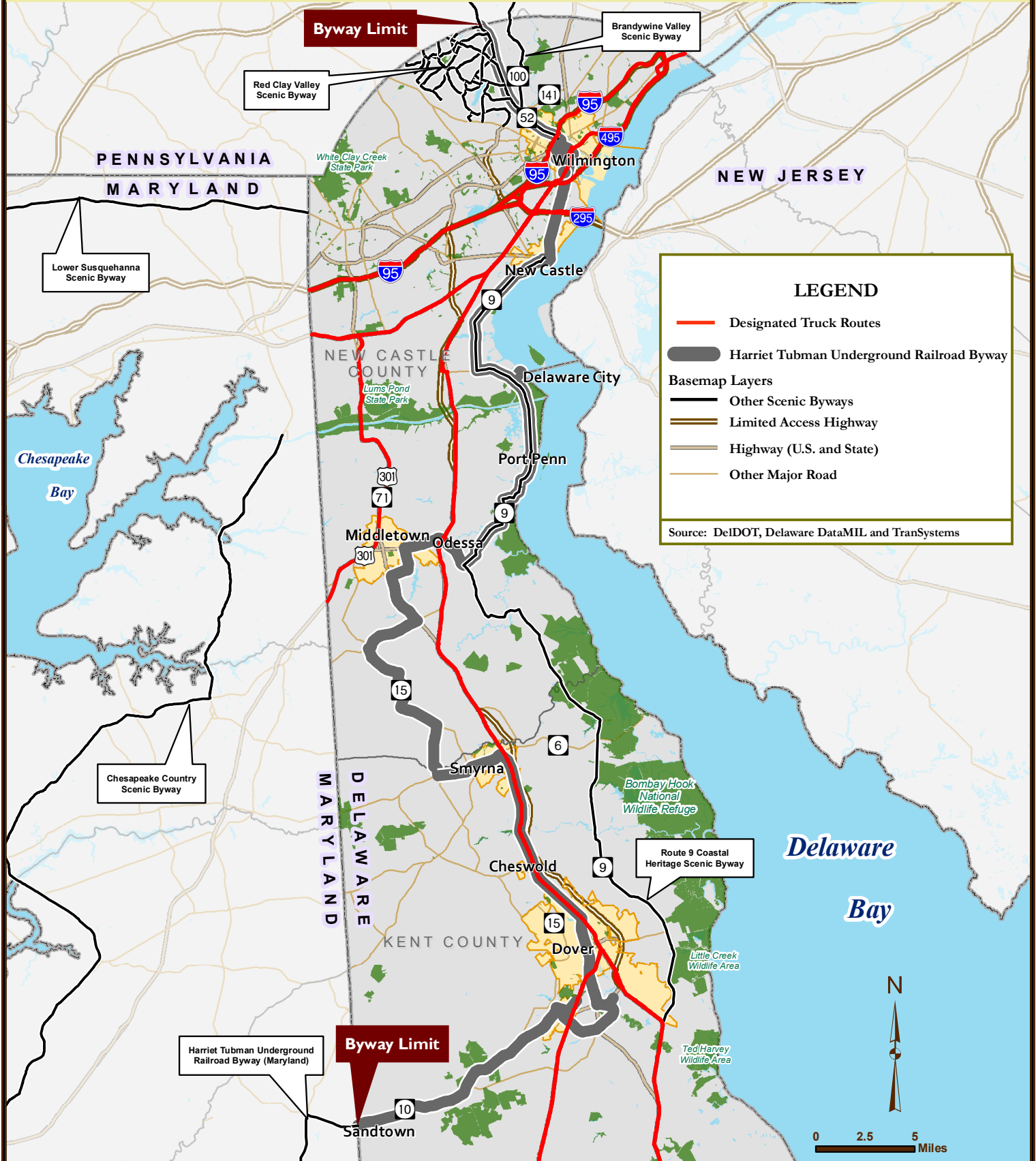
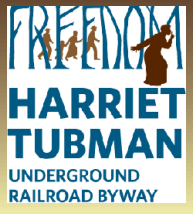


Figure 22: Designated Truck Routes





HARRIET TUBMAN UNDERGROUND RAILROAD BYWAY

Delaware

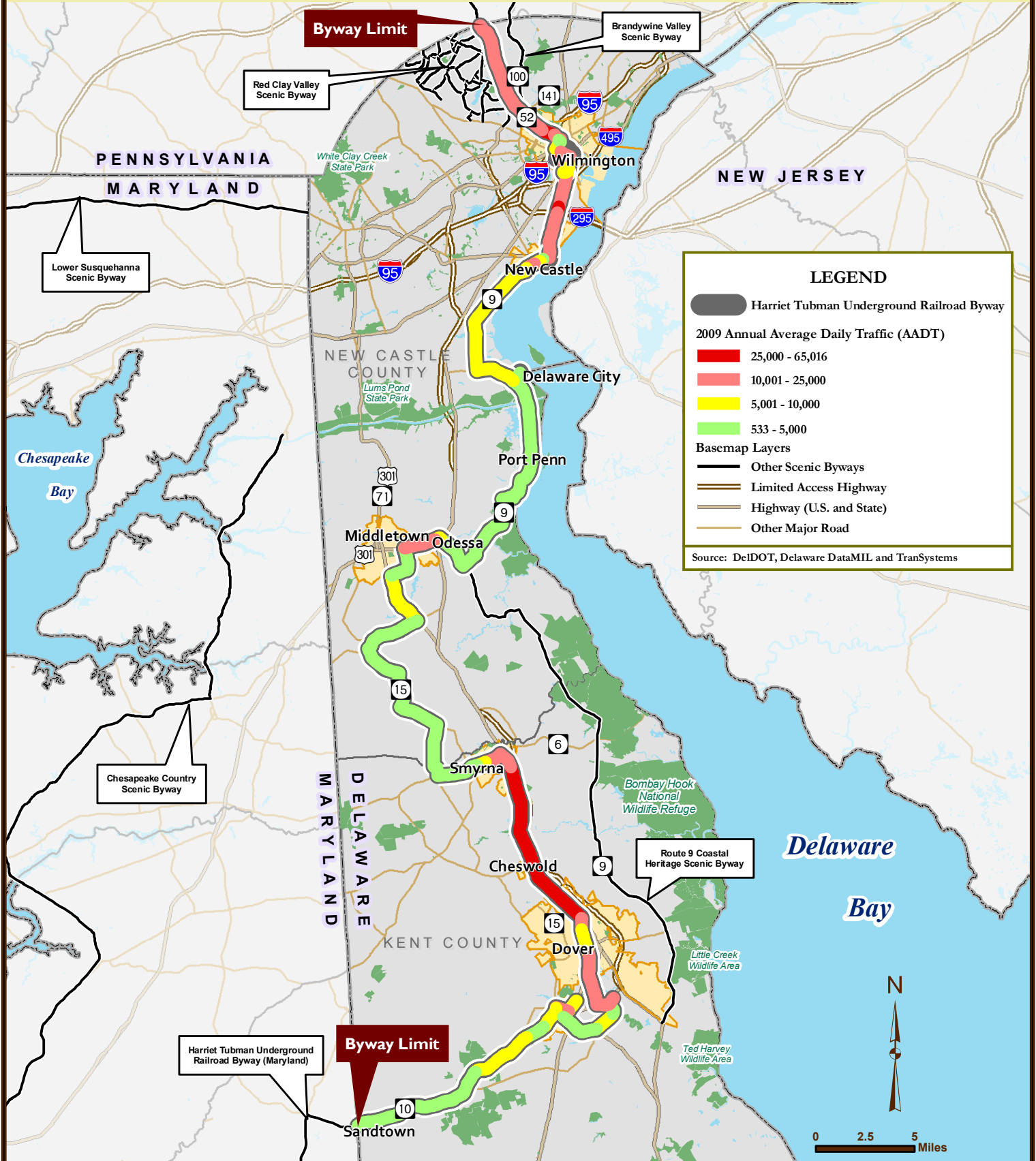
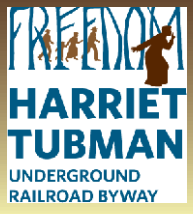


Figure 23: 2009 Roadway AADT (Project Study Area)



HARRIET TUBMAN UNDERGROUND RAILROAD BYWAY Delaware

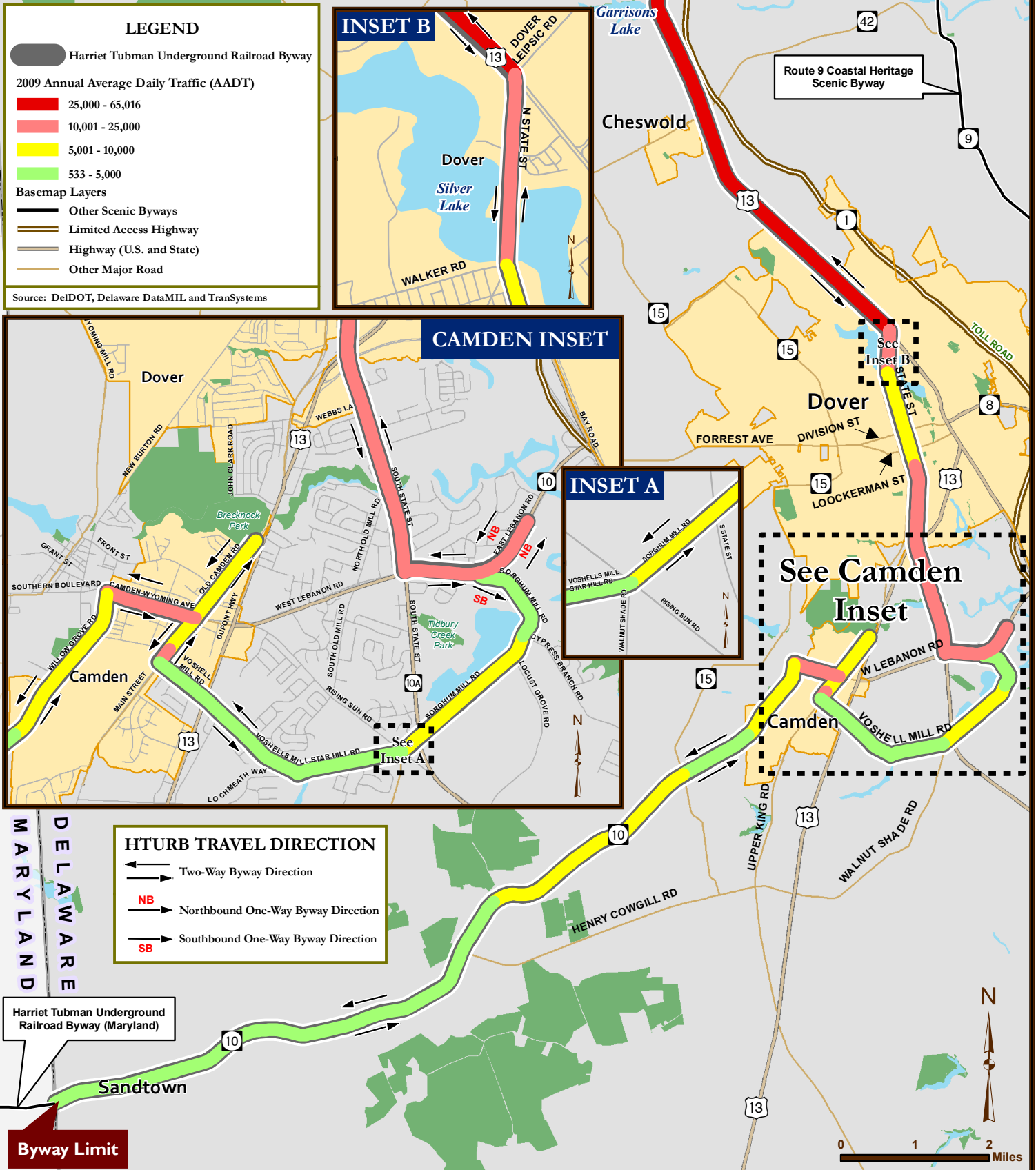
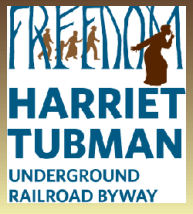


Figure 24: 2009 Roadway AADT (Segment 1)

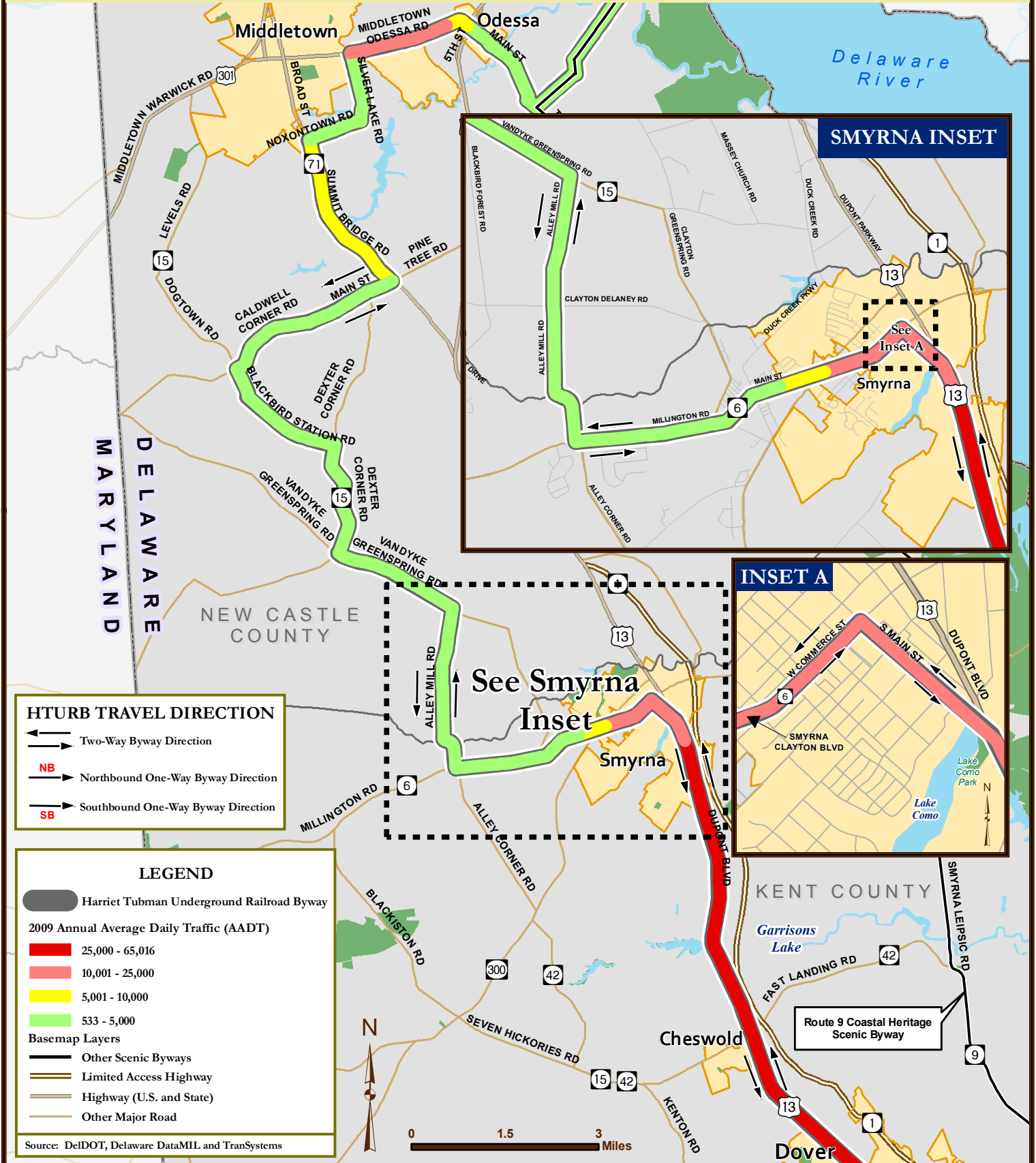


Figure 25: 2009 Roadway AADT (Segment 2)



HARRIET TUBMAN UNDERGROUND RAILROAD BYWAY Delaware

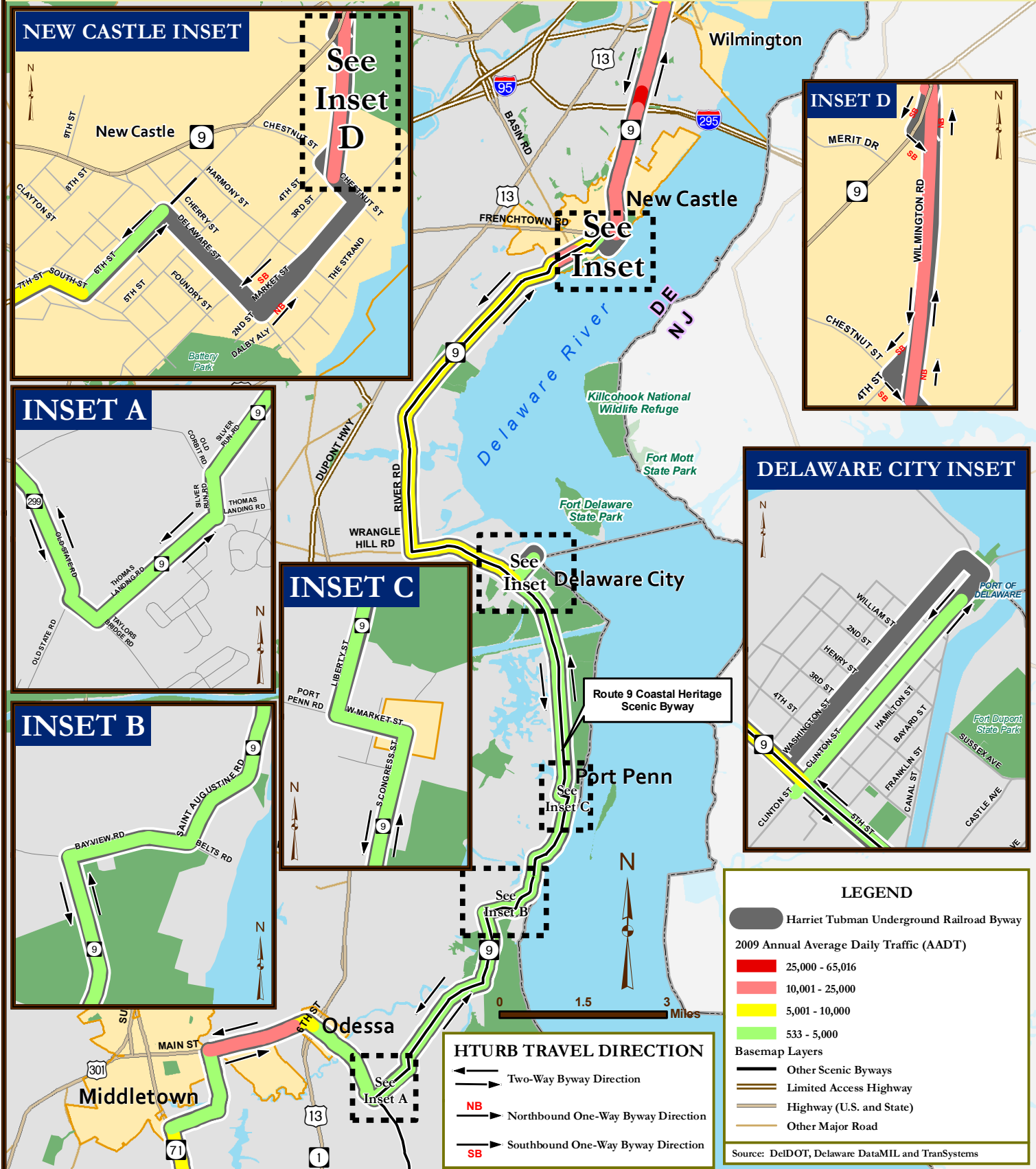
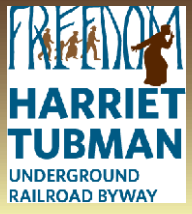


Figure 26: 2009 Roadway AADT (Segment 3)



HARRIET TUBMAN UNDERGROUND RAILROAD BYWAY Delaware

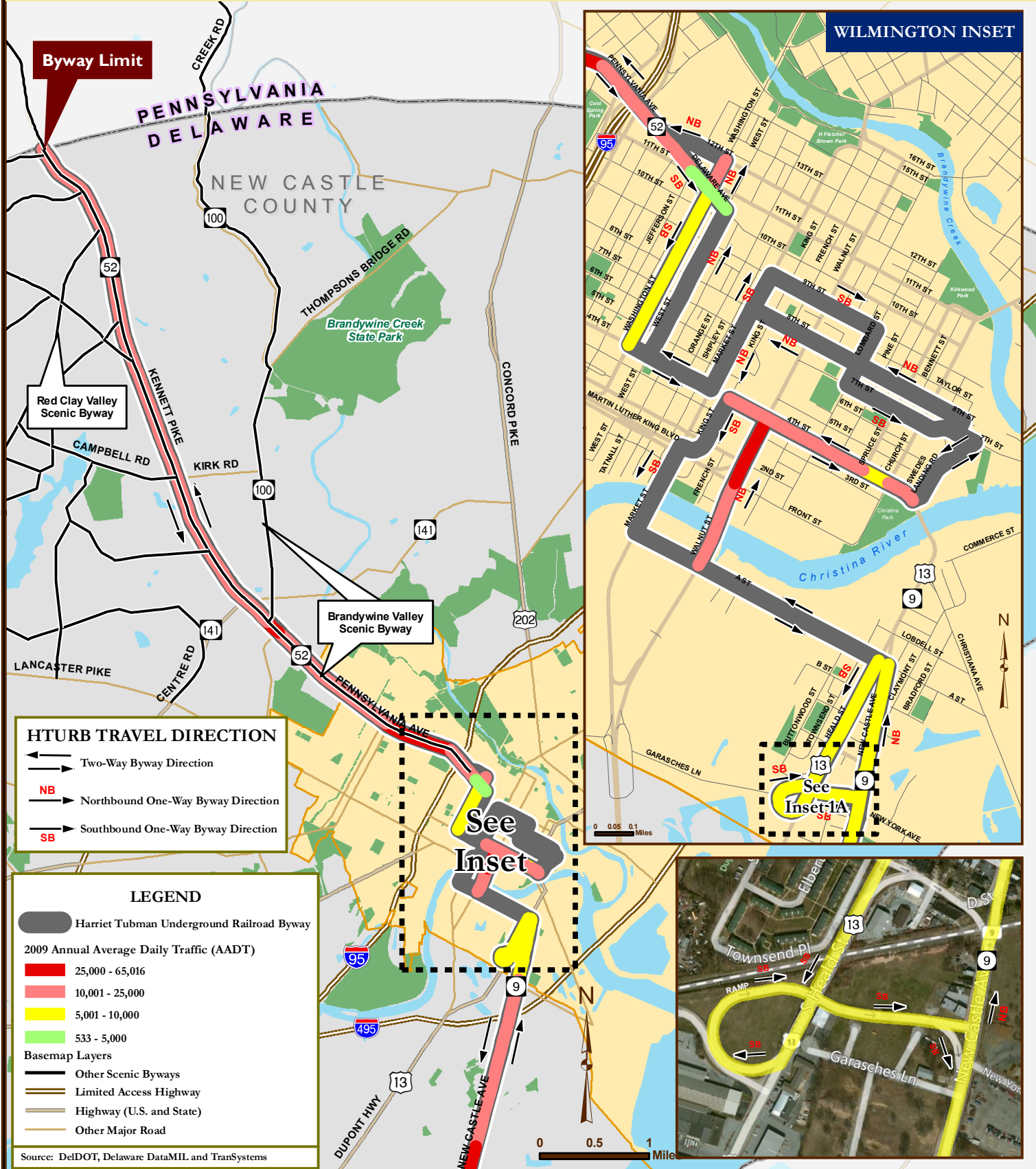
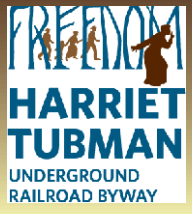


Figure 27: 2009 Roadway AADT (Segment 4)



Level of Service (LOS)

Level of Service (LOS) is classified as a measure-of-effectiveness by which traffic engineers determine the quality-of-service of transportation infrastructure. The transportation/roadway LOS system is classified using the letters A through F, with A being the best and F being the worst. The LOS for the Harriet Tubman Underground Railroad Byway is generally LOS A to B. The LOS along the Byway transitions from B to C in the larger cities and towns along the corridor, which is a standard or typical trend nationwide. LOS C is prevalent in and around Dover, Cheswold, Smryna, Middletown, New Castle, and Wilmington. LOS transitions from C to D, E, and F in two (2) locations along the Byway corridor. In the area of the US 40 and State Route 9 interchange located outside of Wilmington, the LOS ranges from C to F. In addition, the following local streets in the Wilmington area range from LOS C to F: Washington; West; King; and Ninth.

The HTURB corridor generally operates at an acceptable LOS, reflecting the consistent flow of traffic along the corridor. Peak periods of travel, such as seasonal traffic and event related traffic, may cause temporary congestion and poor operation (LOS) along the corridor. These events are usually brief and do not alter the annually averaged LOS in a significant manner. The current LOS along the corridor represents the corridor's ability to handle any increase in traffic as a result of Scenic Byway designation (either state or national). An increase in traffic as a result of Scenic Byway designation has not been quantified, nor is it part of this CMP to do so. However; it has been observed that Scenic Byway designation in the United States does not generally create a noticeable increase on traffic volumes.

The LOS for the Harriet Tubman Underground Railroad Byway is displayed in Figures 28 through 32. The data was derived from DelDOT.



HARRIET TUBMAN UNDERGROUND RAILROAD BYWAY

Delaware

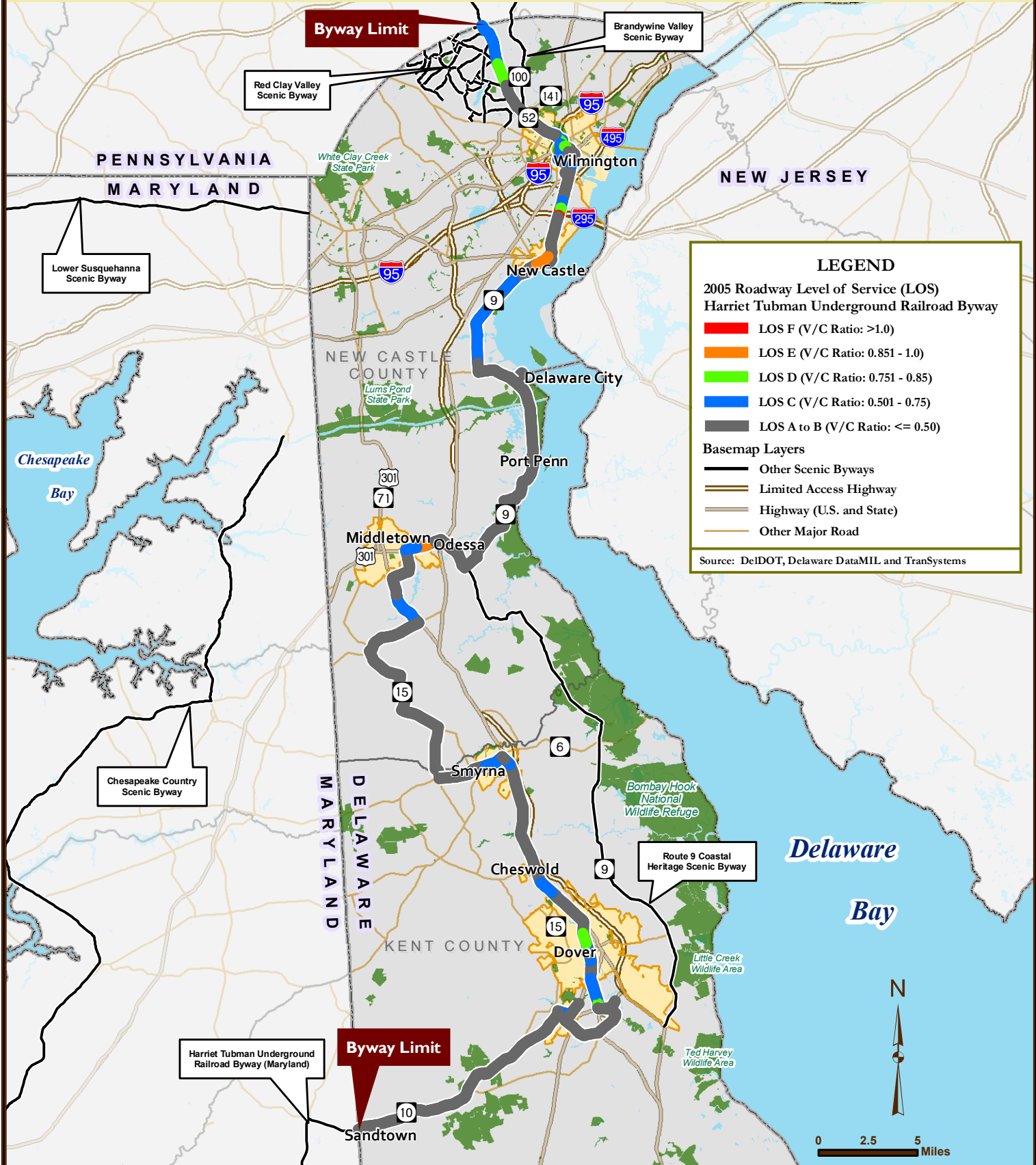
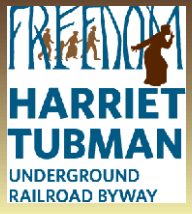
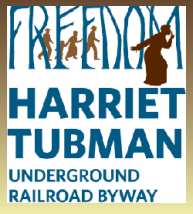


Figure 28: 2005 Roadway LOS (Project Study Area)





HARRIET TUBMAN UNDERGROUND RAILROAD BYWAY Delaware



LEGEND

2005 Roadway Level of Service (LOS)

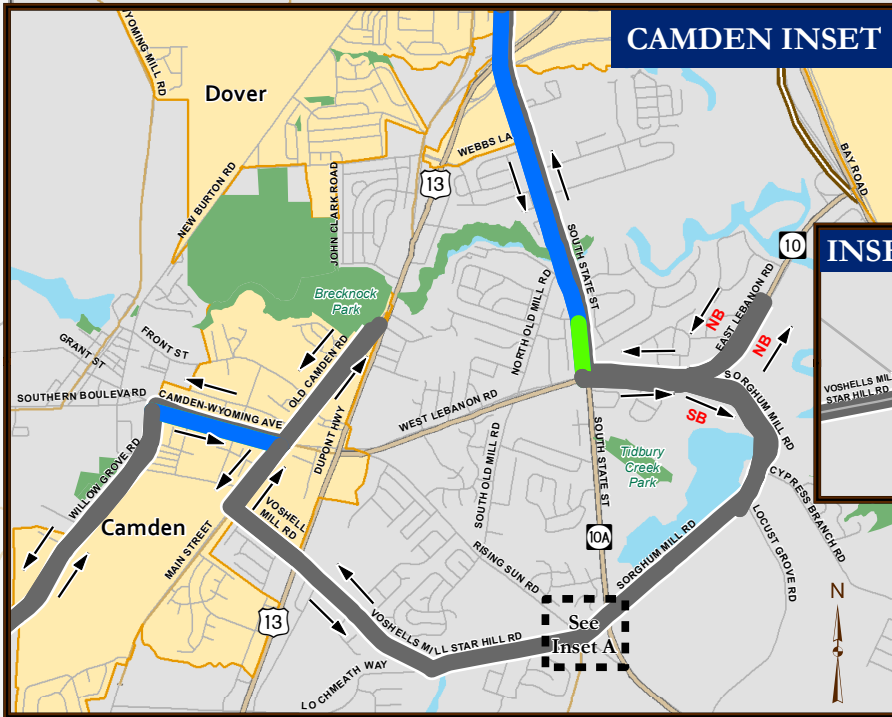
Harriet Tubman Underground Railroad Byway

- LOS F (V/C Ratio: >1.0)
- LOS E (V/C Ratio: 0.851 - 1.0)
- LOS D (V/C Ratio: 0.751 - 0.85)
- LOS C (V/C Ratio: 0.501 - 0.75)
- LOS A to B (V/C Ratio: <= 0.50)

Basemap Layers

- Other Scenic Byways
- Limited Access Highway
- Highway (U.S. and State)
- Other Major Road

Source: DelDOT, Delaware DataMIL and TranSystems



HTURB TRAVEL DIRECTION

- Two-Way Byway Direction
- NB Northbound One-Way Byway Direction
- SB Southbound One-Way Byway Direction

DELAWARE
MARYLAND

Harriet Tubman Underground Railroad Byway (Maryland)

Sandtown

Byway Limit

Figure 29: 2005 Roadway LOS (Segment 1)





HARRIET TUBMAN UNDERGROUND RAILROAD BYWAY

Delaware

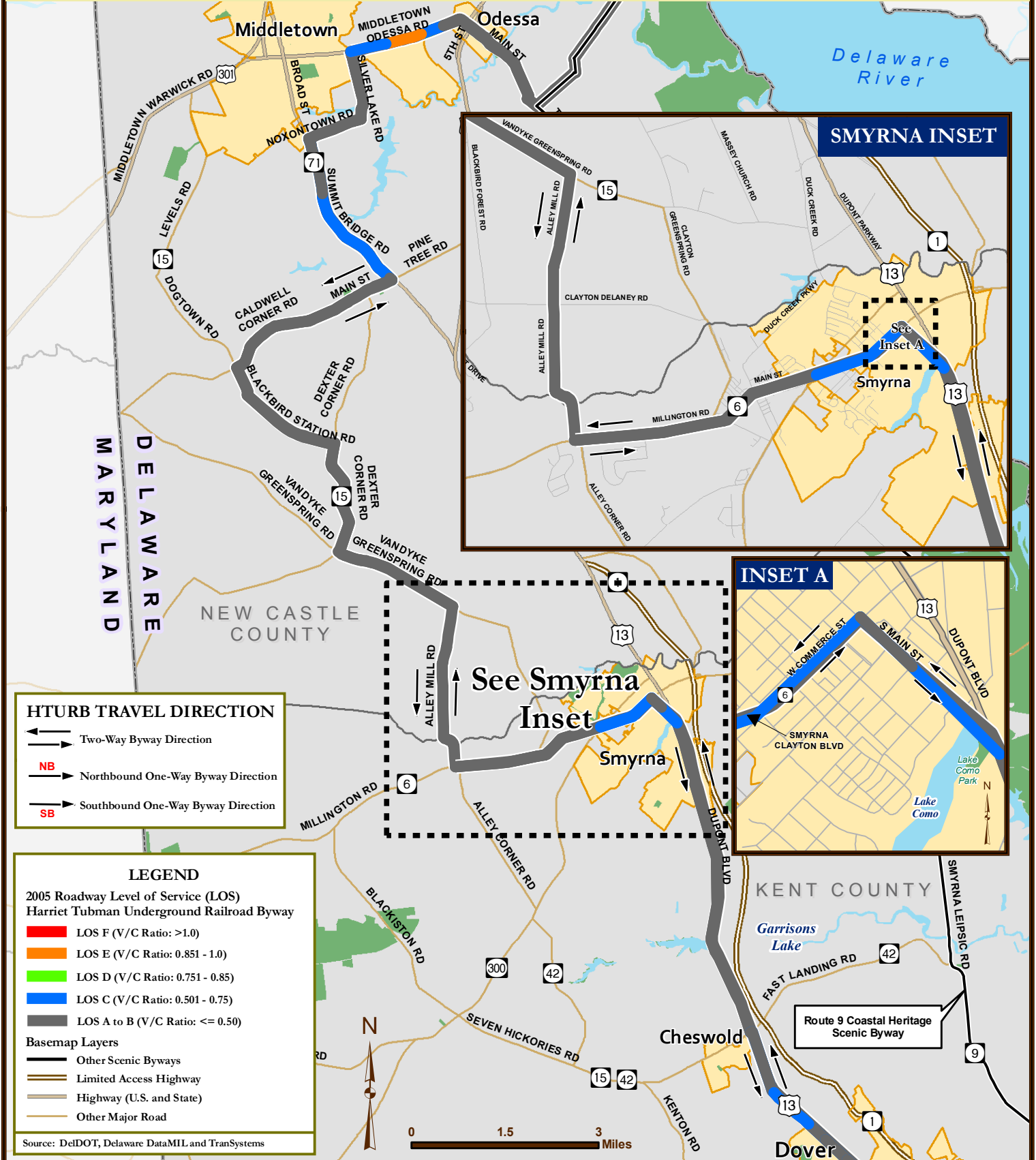
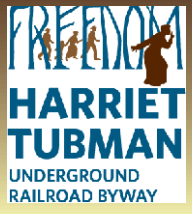


Figure 30: 2005 Roadway LOS (Segment 2)



HARRIET TUBMAN UNDERGROUND RAILROAD BYWAY

Delaware

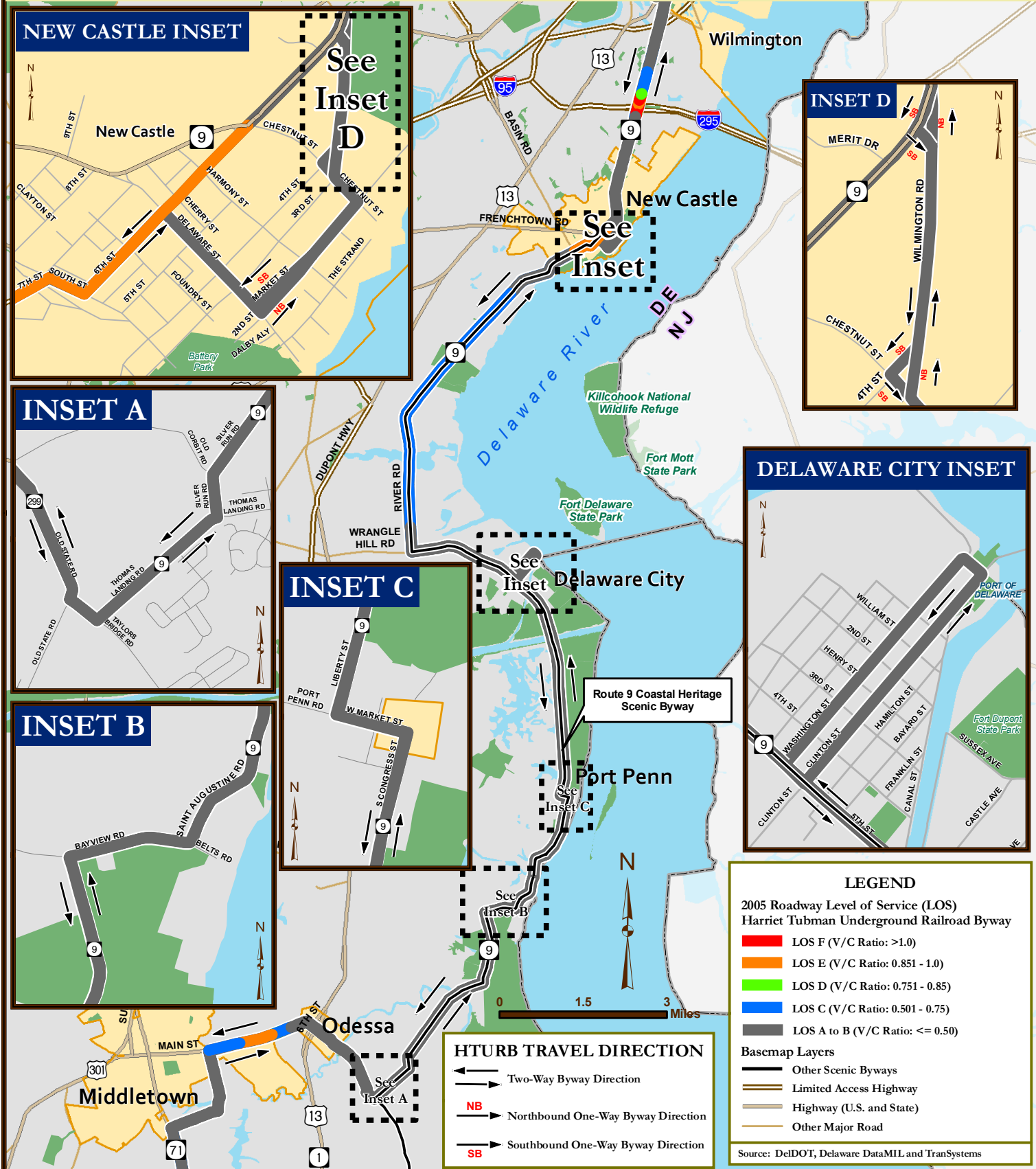
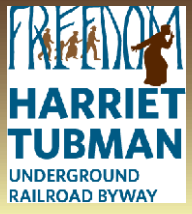


Figure 31: 2005 Roadway LOS (Segment 3)



HARRIET TUBMAN UNDERGROUND RAILROAD BYWAY Delaware

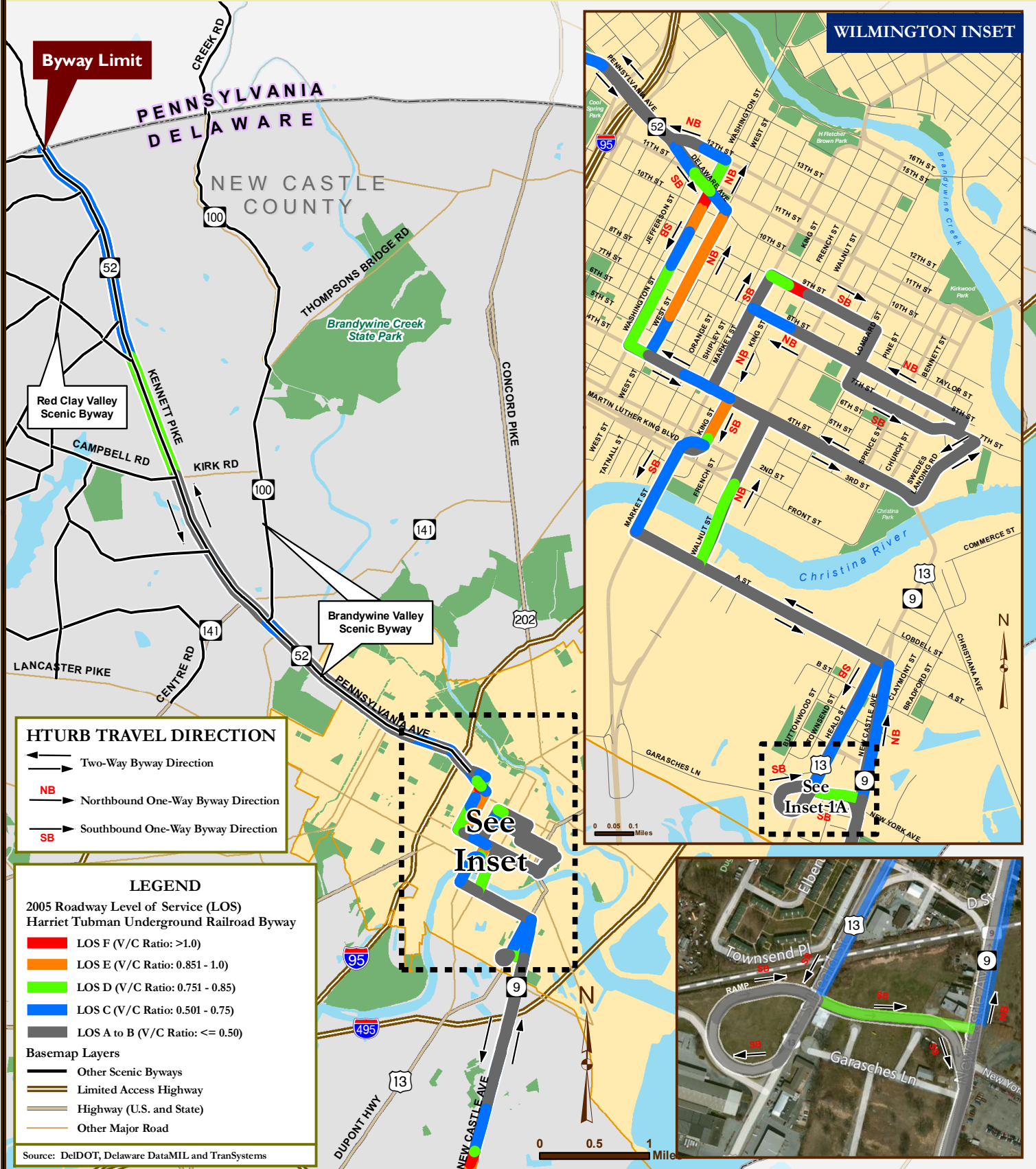
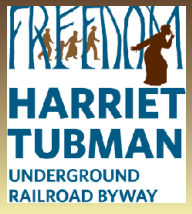


Figure 32: 2005 Roadway LOS (Segment 4)

4.7 Shoulder Type and Width

A road shoulder is a reserved area at the edge of the traveling lanes that can be used in the event of an emergency or breakdown. It acts as a buffer between the main thoroughfare and the edge of the road. The shoulder type along a roadway is very important when viewing safety and planning for future projects. The Harriet Tubman Underground Railroad Byway has a variety of shoulder types. A review of the shoulder types along the corridor shows that a majority of the corridor has either a soil surface or an asphalt/concrete mix. Due to the possible increase in tour bus and RV traffic it is critical to have shoulders that provide enough roadway width and solid surfaces on the shoulder of the travel lanes. When the corridor enters developed areas the shoulder type tends to transition to curb, gutter and sidewalk. This provides increased safety for cyclists and pedestrians and meets universal standards for roadway design. The total roadway widths are shown in Figure 33.



When examining shoulder widths, the corridor is found to generally have widths of that range from 10 to 12 feet. However, there are some areas along the corridor where the shoulder width is two (2) feet or less, which is not accommodating to bicyclists, tractors (for allowing vehicles to pass), RVs, tour buses and pedestrians. This reduced shoulder width may be a result of sidewalk infrastructure located in these areas, though this assumption can't be confirmed without closer investigation, which is not required for this level of analysis. Bicycle and pedestrian safety and improvements are discussed in other sections of this Corridor Management Plan (CMP).

4.8 Seasonal Temperatures and Traveler Seasons

The Harriet Tubman Underground Railroad Byway and the State of Delaware in general, experience peak travel seasons in May through October. As Table 4-2 shows the average temperatures and precipitation during this time of year are moderate and ideal for travel activities.

Table 4-2: Annual Weather Averages for the Corridor

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Avg. High	44°	45°	54°	65°	75°	83°	83°	85°	79°	68°	57°	46°
Avg. Low	27°	27°	34°	43°	53°	62°	67°	65°	59°	48°	38°	29°
Mean	35°	36°	44°	54°	64°	72°	77°	75°	69°	58°	47°	37°
Avg. Precipitation	3.4 in	3.2 in	4.0 in	3.5 in	3.8 in	3.5 in	4.6 in	5.1 in	3.7 in	3.0 in	3.3 in	3.3 in

(Source: www.weatherbase.com)



HARRIET TUBMAN UNDERGROUND RAILROAD BYWAY

Delaware

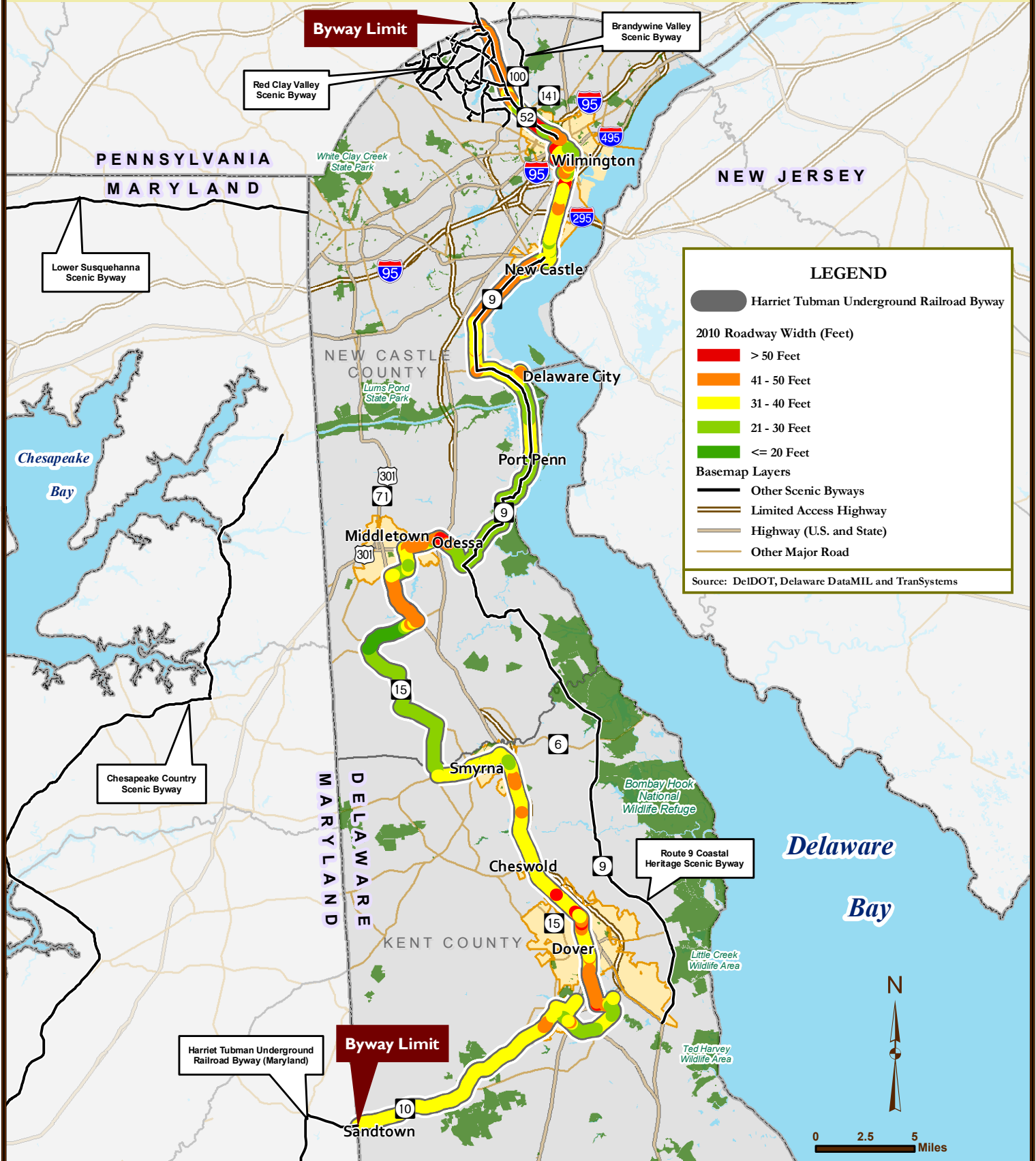
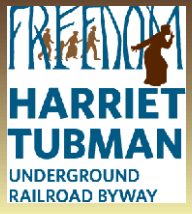


Figure 33: Roadway Width (Project Study Area)

According to the Visit Delaware tourism agency, in northern Delaware, spring and fall bring many dimensions of color to the large natural properties and it is a great time of year to experience outdoor recreation and activities. Central



Delaware is best to visit in the summer months when travelers can enjoy a walking tour of the capital city of Dover, watching horse racing or other entertainment at Dover Downs, and engaging in outdoor recreation. The fall season also experiences an influx of travelers seeking views of fall color as the leaves change and seasonal activities are in abundance. These added benefits, in addition to the historical and cultural offerings along the Byway, offer travelers a unique and exceptional experience along the HTURB.

4.9 Bridges and Structures and Standing Water (Sea Level Rise)

Bridges and other structures are important to assess as part of the Backgrounds Conditions section as these vital pieces of infrastructure are not only significant for travelling along the corridor, but they can also be used for scenic views, hobbyists, and are sometimes used as key landmarks along the corridor. The HTURB corridor has a small number of bridges and many of these are small river-crossing/rail crossing bridges.

Standing Water - Sea Level Rise along the Corridor

It was observed during corridor field reviews that many sections of the corridor experience standing water on the road. It appeared to be most prevalent along the corridor between Dover and New Castle. This issue of sea level rise has recently been addressed in a presentation by Michael Kirkpatrick of DelDOT. Some key points presented within this presentation were:

- Climate change and sea level rise are emerging issues and will become more prominent in FHWA planning and programs and regulations (2013+)
- Scientific method and models are constantly being refined and improved
- Better to approach these study predictions as cautionary: *advocate low/no cost adaptation measures first.*
- *Sea level rise (SLR)* adaptive improvements will reduce storm vulnerability in short term.
- Think about service life of assets in relation to SLR timeframes (20-50-100 years) when making decisions.
- Real Estate decisions should be couched in the modeled vulnerability of the location.
- Climate Change and SLR must be considered with the mix of factors that make up our future planning scenarios – i.e., DE will see an increase in older residents, more beach-area residents, longer commutes, and a heavy reliance on tourism and service industries.
- Be wary of ‘quick fix’ policies that focus on a small part of the picture rather than the whole and may be counter-productive.
- Conversely, each of these elements (GHG, climate change, SLR) can be addressed on its own *as an element of the greater solution.*

There is one historic bridge along the corridor crossing Silver Lake along North State Street in Dover. As shown in Table 4-3 below, the North State Street Bridge at Silver Lake has been designated as historically significant for its high artistic value and design. The Harriet Tubman

Underground Railroad Steering Committee and other key stakeholders will acknowledge and assist in the continued preservation and recognition that this historic bridge deserves.

Some statistics regarding this bridge are included below:

- General Summary - Concrete arch bridge over Silver Lake on North State Street in Dover, DE
- Location – Dover, DE (Kent County)
- Status - Open to traffic
- Built 1937
- Dimensions - Length of largest span is 28.5 feet
- Total length: 110.6 feet
- Deck width: 45.9 feet



Table 4-3: Historic Bridge(s) Along the HTURB

Bridge Name	County	Type	Status	Year Built
North State Street Bridge at Silver Lake	Kent	An architectonic three (3) span reinforced concrete deck arch bridge with brick veneer	Significant for the high artistic value of its design	1937

(Source: DelDOT, 2012)

4.10 Intrinsic Resource Accessibility

This section of the CMP will assess the accessibility of the intrinsic resources located along the HTURB corridor. Accessibility will be viewed and assessed pertaining to the general ease of access from the corridor to the intrinsic resource site, generally in terms of distance. This may also include signage, entry roadways or walking trails, parking, distance from the HTURB corridor, and other similar factors. Ease of access is the critical theme pertaining to the accessibility assessment.

The Harriet Tubman Underground Railroad Byway's resources are assessed for their accessibility in Table 4-4. All of the intrinsic resources have been reviewed and assessed for accessibility during the development of this CMP (2010-2011). All of the resources are accessible by two (2) wheel drive vehicles, recreational vehicles (RVs) and tour buses as required by the National Scenic Byway Program.

Table 4-4 lists all of the intrinsic resources along the corridor and their accessibility rating from 1 (low accessibility) to 5 (high accessibility). Some of the resources were given a lower score due to the fact that they were more than one (1) mile off of the Harriet Tubman Underground Railroad Byway and/or they were difficult to access for other reasons as stated in the notes column of the table. For a detailed map of all of the resources see Figures 6-10.

A future study that may be of interest could include an assessment or evaluation of the universal design of the resources along the Byway. Universal design is the design of environments, products, information and services so that they are usable by all people regardless of age, size or ability. We have found that by designing for people with disabilities and older adults in mind creates a better design for anyone. (*America's Byways Resource Center, 2011*).

Table 4-4: Accessibility Rating of Intrinsic Resources

Intrinsic Resource ID	Resource Name	Accessibility Rating	Miscellaneous Notes
Segment 1			
1	Sandtown	5	Directly adjacent to the corridor
2	State Route 10 Agricultural Landscape	5	Directly adjacent to the corridor
3	Star Hill AME Church, Cemetery and Museum	5	Directly adjacent to the corridor
4	Henry Cowgill Farm Site	5	Directly adjacent to the corridor
5	Willow Grove	5	Directly adjacent to the corridor
6	Free Black Settlement Between Camden and Wyoming	5	Directly adjacent to the corridor
7	Zion AME Church	4	Less than 1 mile from the corridor
8	Camden Historic District	5	Directly adjacent to the corridor
9	Camden Friends Meeting House	5	Directly adjacent to the corridor
10	Whatcoat Methodist Episcopal Church (Morningstar Inst.)	5	Directly adjacent to the corridor
11	Brinkley Hill	4	Less than 1 mile from the corridor
12	Brecknock Park	4	Less than 1 mile from the corridor
13	Great Geneva	5	Directly adjacent to the corridor
14	Wildcat Manor	4	Less than 1 mile from the corridor
15	Happy Valley	4	Less than 1 mile from the corridor
16	Dover Green	5	Directly adjacent to the corridor
17	Old State House	5	Directly adjacent to the corridor
18	Delaware National Estuarine Research Reserve	3	Less than 5 miles from the corridor
19	John Dickinson Plantation	3	Less than 5 miles from the corridor
20	First State Heritage Park and Welcome Center & Galleries	4	Less than 1 mile from the corridor
Segment 2			
21	Bombay Hook National Wildlife Refuge	2	Less than 10 miles from the corridor
22	Hawkins Route to the Hunn Farm	5	Directly Adjacent to Corridor
23	Landscape of Blackbird State Forest	5	Directly Adjacent to Corridor
24	Ebenezer Church	3	Less than 5 miles off Corridor
25	Site of the Farm of John Hunn, now Middletown High School	4	Less than 1 mile off Corridor
26	Old St. Anne's Episcopal Church	3	Less than 5 miles off Corridor
27	Appoquinimink Friends Meeting House	5	Directly Adjacent to Corridor
28	Corbit-Sharp House	5	Directly Adjacent to Corridor
29	Odessa Historic District	5	Directly Adjacent to Corridor

Segment 3			
30	Stewart Street in Port Penn (Free Black Settlement)	5	Directly Adjacent to Corridor
31	Port Penn Interpretive Center	5	Directly Adjacent to Corridor
32	Augustine Wildlife Area	4	Less than 1 mile off Corridor
33	Fort Delaware	3	Less than 5 miles off Corridor. Access is by water only.
34	Delaware State Route 9 (SR 9) Landscape	5	Directly Adjacent to Corridor
35	Polktown near Delaware City (Free Black Settlement)	5	Directly Adjacent to Corridor
36	Fort DuPont State Park	4	Less than 1 mile off Corridor
37	New Castle Court House and Museum	4	Less than 1 mile off Corridor
38	New Castle Historic District	4	Less than 1 mile off Corridor
Segment 4			
39	The Rocks-Fort Christina State Park	4	Less than 1 mile off Corridor
40	Severn Johnson Home Site	5	Directly Adjacent to Corridor
41	George Wilmer Home Site	5	Directly Adjacent to Corridor
42	Comegys Munson Home Site	4	Less than 1 mile off Corridor
43	Peter Spencer Plaza	4	Less than 1 mile off Corridor
44	Tubman-Garrett Riverfront Park and Market Street Bridge	4	Less than 1 mile off Corridor
45	Wilmington Old Town Hall	5	Directly Adjacent to Corridor
46	Thomas Garrett Home Site	5	Directly Adjacent to Corridor
47	Quaker Hill Historic District	5	Directly Adjacent to Corridor
48	Wilmington Friends Meeting House and Cemetery	5	Directly Adjacent to Corridor
49	Elwood Garrett Home Site	5	Directly Adjacent to Corridor
50	Joseph Walker Home Site	4	Less than 1 mile off Corridor
51	Henry Craige Home Site	4	Less than 1 mile off Corridor
52	Centreville	5	Directly Adjacent to Corridor
53	Thomas Garrett Route to Longwood	5	Directly Adjacent to Corridor

4.11 Existing Land Use

Existing land uses along the corridor are generally categorized as agricultural, forest, and residential (see Figures 34 through 38). There are a few locations within close proximity to activity centers or communities (Dover and Wilmington) that have significant clusters of residential, commercial, mixed-urban or industrial land uses. There are two (2) significant locations of industrial land use along the corridor located along SR 9 located between Port Penn and New Castle and on SR 9 immediately outside of Wilmington. Commercial and residential land uses are most prevalent in close proximity to the larger communities, however; these locations represent a small percentage of total land use / land area of the overall corridor.

The land uses along the corridor do not present any significant obstacles to the implementation of the HTURB CMP and the associated Action Plan/Goals and Objectives. In addition, the Action Plans/Goals and Objectives presented in this CMP should not pose any negative impacts to the land uses. This symbiotic relationship will provide for efficient and coordinated implementation and achievement of both the HTURB CMP mission and the mission of the local communities and land use entities.



HARRIET TUBMAN UNDERGROUND RAILROAD BYWAY

Delaware

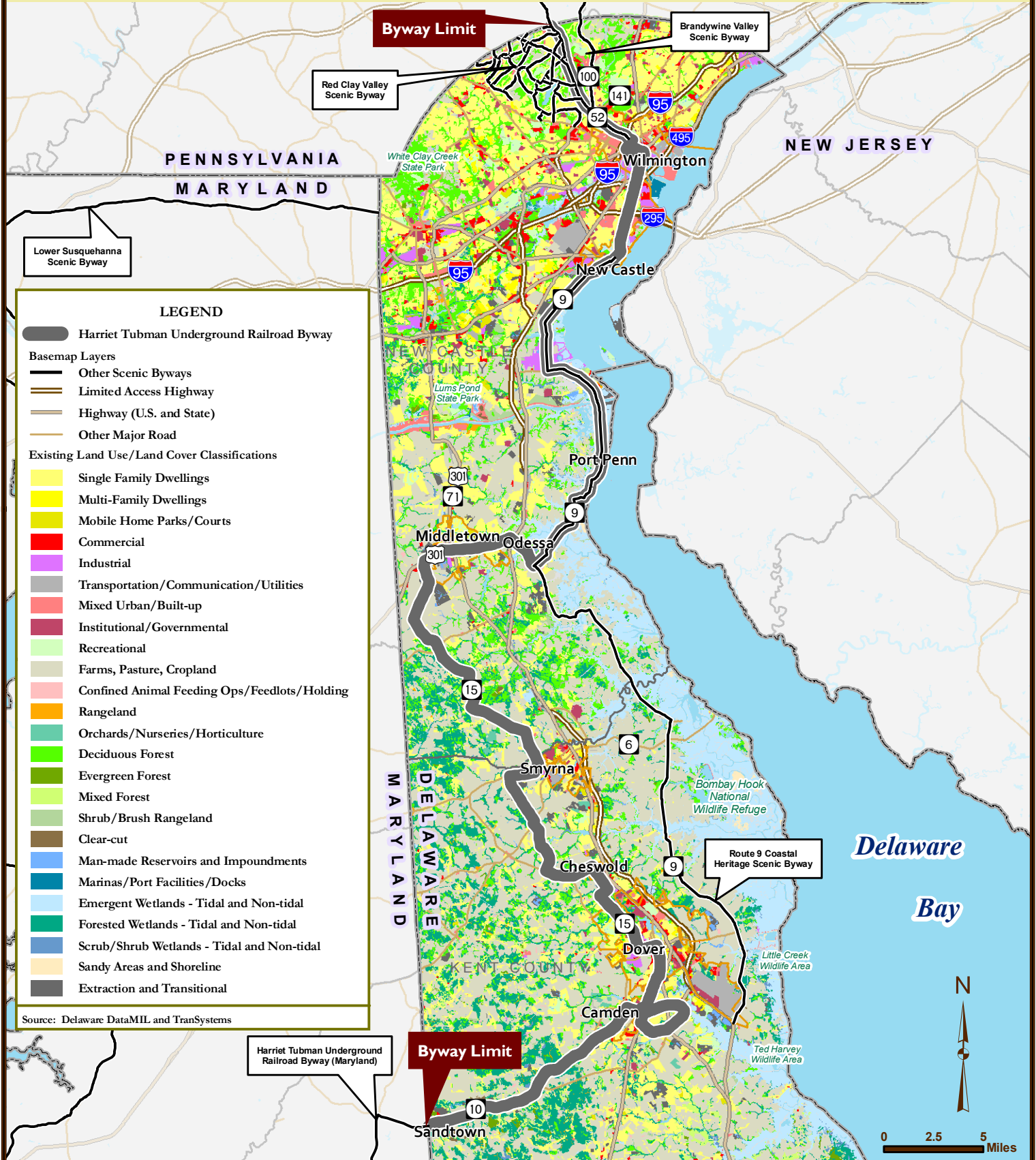
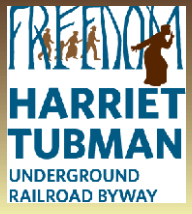


Figure 34: Existing Land Use (Project Study Area)



HARRIET TUBMAN UNDERGROUND RAILROAD BYWAY

Delaware

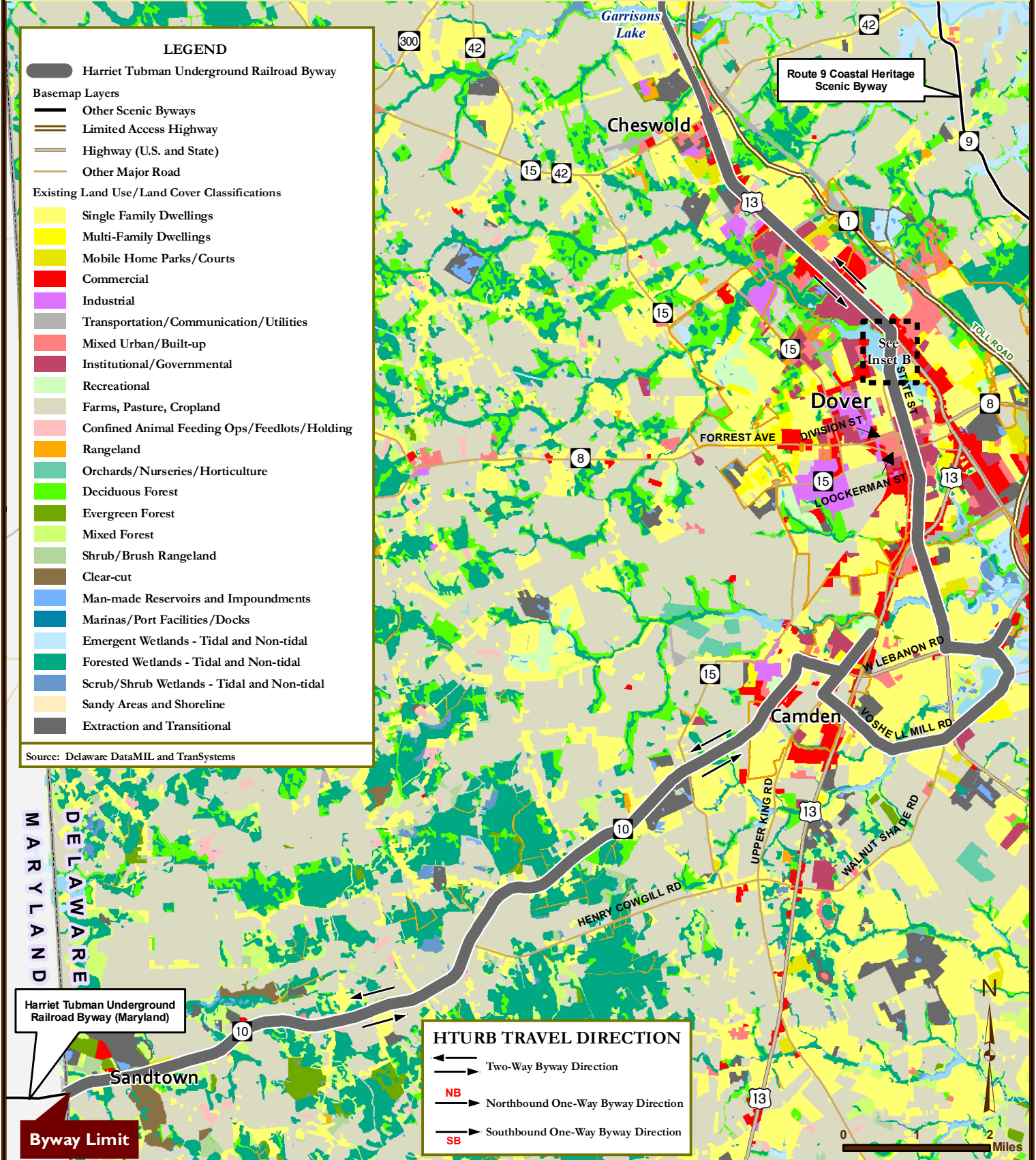
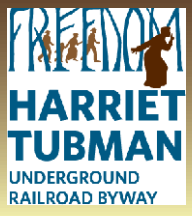


Figure 35: Existing Land Use (Segment 1)



HARRIET TUBMAN UNDERGROUND RAILROAD BYWAY

Delaware

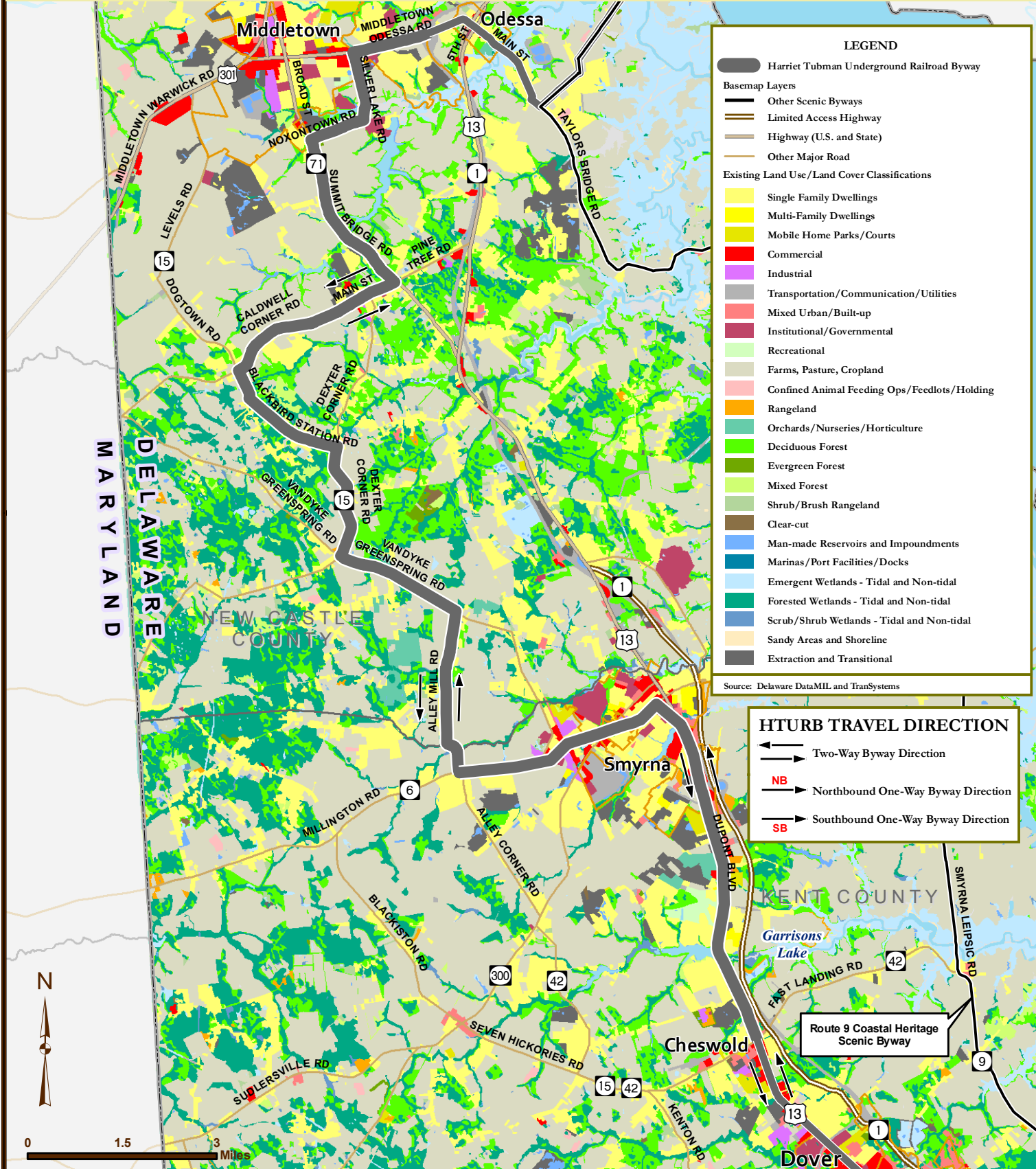
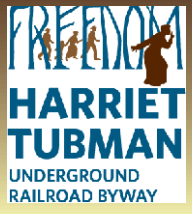


Figure 36: Existing Land Use (Segment 2)



HARRIET TUBMAN UNDERGROUND RAILROAD BYWAY Delaware

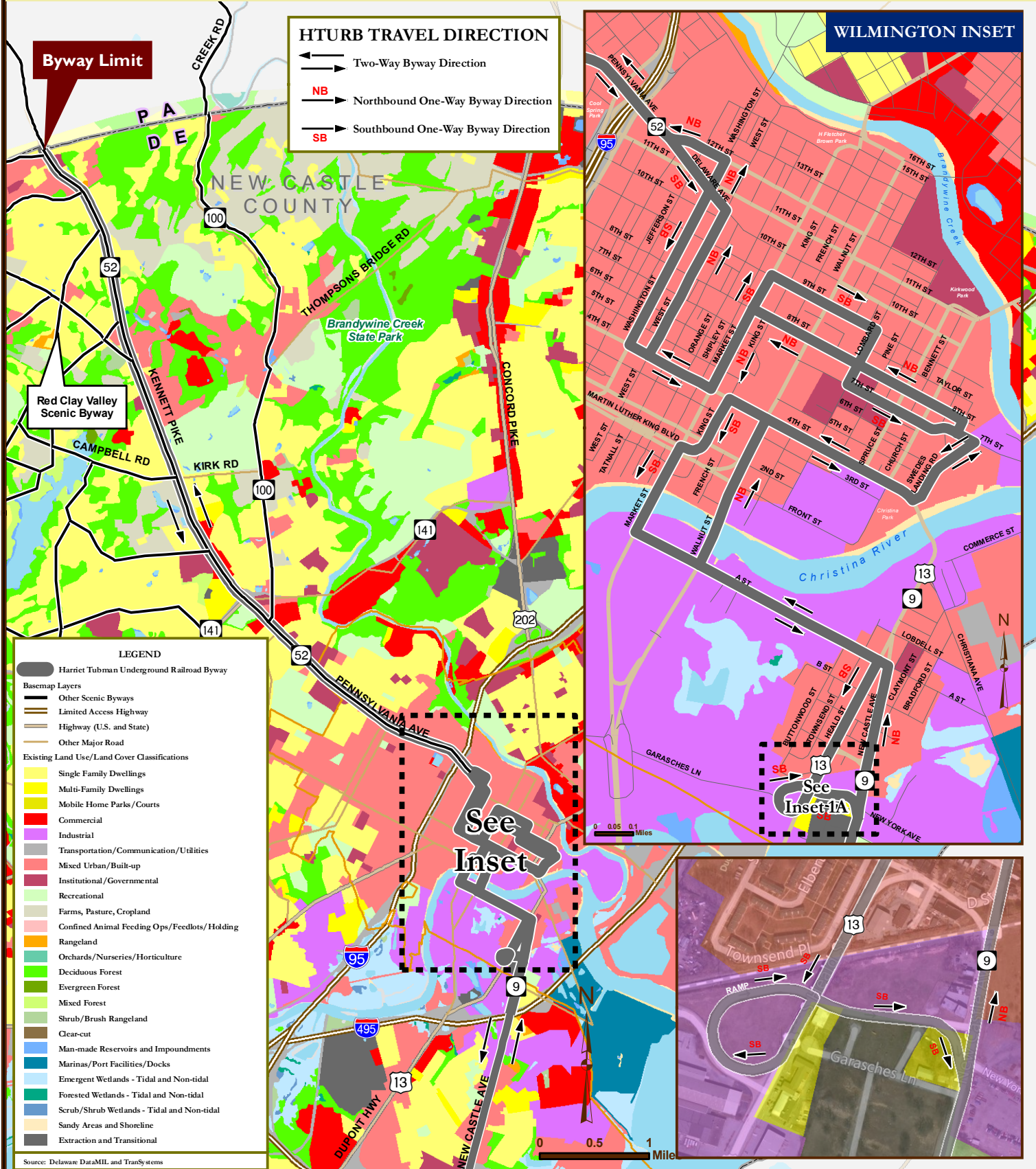
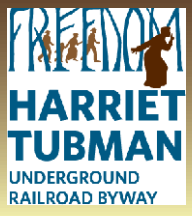


Figure 38: Existing Land Use (Segment 4)

4.12 Existing Corridor Signage

The signs that will be addressed in this section are those that are located directly along the corridor right-of-way and are regulatory (speed limit, passing lane, stop, etc.) and advertising (billboards) in nature. This section will not discuss wayfinding (guide/directional signs) or interpretive signage as these sign-types are discussed in the Wayfinding, Interpretation, Gateways and Signage chapter (Chapter 10) of this CMP.

National Scenic Byway CMP Point #10

Documentation of compliance with all existing local, state, and federal laws about the control of outdoor advertising.

4.12.1 Regulatory Signs

The term “regulatory sign” describes a range of signs that are used to indicate or reinforce traffic laws, regulations or requirements which apply either at all times or at specified times or places upon a street or highway, the disregard of which may constitute a violation, or signs in general that regulate public behavior in places open to the public (FHWA, 2011). These regulatory signs are designed and installed by local, state, and federal government entities and the HTURB CMP and its associated stakeholder groups (Steering Committee, Grant Committee, etc.) will not interfere with, or attempt to alter, any regulatory signage along the corridor unless necessary and approved by the proper regulatory entities.



This CMP is not intended to conduct a signage inventory or assess all regulatory signage along the corridor. The level of assessment found in a CMP is generally a summary of the signage from a traveler’s perspective and to note any obvious revisions or modifications to existing regulatory signage found along the corridor.

In summary, the regulatory signage found along the HTURB is adequate and efficient. There are areas along the corridor that appear to have “sign clutter” or an inefficient or unintended clustering of signs that may create confusion or difficulty by the travelling public. These areas are infrequent and do not create a significant difficulty to the traveler. It is recommended that the HTURB Steering Committee undertake a signage inventory in the future to better assess enhancement opportunities for signage along the corridor.

4.12.2 Outdoor Advertising

Outdoor advertising, as stated by National Scenic Byways criteria {23 U.S.C. 131(s)}, prohibits the erection of new billboards along a State or Nationally Designated Scenic Byway/Highway not in conformance with 23 U.S.C. 131(c), which addresses outdoor advertising (see Appendix B). The specific U.S. Code is as follows:

As provided at 23 U.S.C. 131(s), if a State has a State scenic Byway program, the State may not allow the erection of new signs not in conformance with 23 U.S.C. 131(c) along any highway on the Interstate System or Federal-aid primary system which before, on, or after December 18, 1991, has been designated as a scenic Byway under the State's scenic Byway program. This prohibition would also apply to Interstate System and Federal-aid primary system highways that are designated scenic Byways under the National Scenic Byways Program and All-American Roads Program, whether or not they are designated as State scenic Byways. (Source: National Scenic Byways Guide, September 2005)

The Delaware Outdoor Advertising code (Title 17, Chapter 11) describes the specific factors associated to advertising along scenic Byways designated within the state. In accordance with federal statutes, the code states that any existing signs will not be changed if a highway is designated as scenic, but no new signs may be erected after designation. The specific Delaware Code states: "It is, consequently, the intention of this chapter, among other things, to provide a statutory basis for regulation of outdoor advertising consistent with the public policy relating to areas adjacent to federal-aid interstate and primary systems declared by the Congress of the United States in Title 23, United States Code."

4.12.3 Historic Markers

The Delaware Historic Markers Program is operated by the Delaware Public Archives, as part of its mandate. Historic markers are usually placed at important historical locations and sites across the state. These markers offer historical facts, stories and interpretation regarding the sites.



Table 4-5 lists all of the historical markers located along and within close vicinity to the Harriet Tubman Underground Railroad Byway as of January 2011. The corridor has a large variety of historical markers and there are more sites that may have the potential or need for historical markers in the future. For more information, one can contact the Delaware Public Archives or <http://www.archives.delaware.gov/markers/markers-search.shtml>.

Table 4-5: Historical Markers Located Along the HTURB

Historic Resource / Site	County	General Marker Location
Cow Marsh Primitive Baptist Church	Kent	Sandtown, Route 10
Town of Wyoming	Kent	Wyoming, Railroad Avenue
Coming of the Railroad	Kent	Railroad Avenue, Wyoming
Camden Friends Meeting House	Kent	122 E. Camden-Wyoming Avenue, Camden
Site of First Whatcoat Church	Kent	Main Street, Camden
Morning Star Institutional Church of God in Christ, Inc.	Kent	255 E. Camden-Wyoming Avenue, Camden
Camden	Kent	Camden-Wyoming Avenue, Camden
Brecknock	Kent	Intersection of Route 13 and Main Street, Camden
East Dover Hundred	Kent	US 13, south of Rodney Village, South Dover
Dover	Kent	North State Street, north of Silver Lake, Dover
Nicholas Ridgely	Kent	S. State Street and E. Water Street, Dover
Site of King George's Tavern	Kent	Southeast side of The Green, Dover
The Old State House	Kent	East side of The Green, Dover
The Golden Fleece Tavern	Kent	Northeast corner of The Green and State Street, Dover
Ridgely House built 1728	Kent	Northeast side of The Green, Dover
The Capitol Theater (now called the Swartz Center for Performing Arts)	Kent	226 S. State Street, Dover
Wesley United Methodist Church	Kent	209 S. State Street, Dover
Site of Kent County's First Presbyterian Church	Kent	In cemetery, on South Governor's Avenue, Dover
Site of Dover's First Methodist Church	Kent	Intersection of South Queen and West North Streets, Dover
Bishop Richard Allen	Kent	Loockerman Street, Dover
Delaware Public Archives	Kent	Hall of Records entrance in the Delaware Public Archives, Dover
Booker T. Washington School	Kent	901 Forest Street, Dover
Former Site of ILC Dover Makers of the Apollo Moonsuit	Kent	350 Pear Street, Dover
Wesley College	Kent	Southwest corner at State and Fulton Streets Intersection, Dover
Delaware State College High School	Kent	West side of US 13, North Dover
Lockerman Hall	Kent	West side of US 13, Delaware State University Campus, Dover
Delaware State College	Kent	Route 13 at entrance to college, Dover
Cheswold Volunteer Fire Company	Kent	Route 42 Main Street, Cheswold
Little Creek Hundred	Kent	Route 42 Main Street, Cheswold
Kenton Hundred	Kent	Route 42 Main Street, Cheswold
Smyrna Opera House	Kent	Corner of South Main Street and West South Street, Smyrna
Town of Clayton	Kent	Intersection of Main Street and North Bassett Street
Sgt. William Lloyd Nelson	New Castle	504 S. Broad Street, Middletown
Middletown	New Castle	Cochran Square, Middletown
Middletown Academy	New Castle	North Broad Street, Middletown
Appoquinimink Friends Meeting House	New Castle	West of intersection of Route 1 and Route 299, Odessa
Old St. Paul's Methodist Church	New Castle	506 High Street, Odessa

Odessa	New Castle	Main Street, between US 13 N and US 13 S, Odessa
Duncan Beard	New Castle	Southeast of US 13 Intersection on Delaware 299, Odessa
Port Penn Front Range Light	New Castle	Southwest of mouth of St. Augustine Creek, Port Penn
Christ Episcopal Church, Delaware City	New Castle	Corner of 3 rd and Clinton Streets, Delaware City
Delaware City School No. 118C	New Castle	End of Dragon Run Park Road, Delaware City
Booker T. Washington School	New Castle	400 South Street, New Castle
The River Road	New Castle	Southeast Corner of 5 th and South Streets, New Castle
New Castle United Methodist Church	New Castle	510 Delaware Street, New Castle
Historic Museum	New Castle	Intersection of Delaware Street and E. 4 th Street, New Castle
Van Dyke House	New Castle	Delaware Street, between E 3 rd and E 4 th Streets, New Castle
The Green or Market Plaine	New Castle	Corner of The Green at 3 rd and Delaware Streets, New Castle
New Castle and Frenchtown Railroad	New Castle	River Road and Washington Avenue, New Castle
Landing Place of William Penn	New Castle	NE Corner of Strand and Delaware Streets, New Castle
Gunning Bedford House	New Castle	Intersection of The Strand and Delaware Street, New Castle
Packet Alley	New Castle	Corner Strand and Packet Alley, New Castle
Site of Home of George Read	New Castle	The Strand, New Castle
Presbyterian Church	New Castle	East side of 2 nd Street, between Delaware and Harmony Streets, New Castle
New Castle Common	New Castle	East 2 nd Street, New Castle
Site of Fort Casimir	New Castle	Southeast Corner of Second and Chestnut Streets, New Castle
Broad Dyke	New Castle	Chestnut Street, New Castle
St. Johns Lodge No. 2	New Castle	New Castle Avenue and Balton Road, New Castle
South Wilmington	New Castle	New Castle Avenue, south of Claymont Street Intersection, Wilmington
Anthony – Delaware's 1 st Known Black Settler	New Castle	Fort Christina Park, Wilmington
Holy Trinity Church	New Castle	Intersection of E 7 th Street and N Church Street, Wilmington
Scott A.M.E. Zion Church	New Castle	7 th and Spruce Streets, Wilmington
Bethel A.M.E. Church	New Castle	Corner of 6 th and Walnut Streets, Wilmington
Freedom Lost – The Reverse Underground Railroad	New Castle	South Market Street, Wilmington
Delaware's Jewish Community	New Castle	N. King Street, between W. 2 nd and E 3 rd Streets, Wilmington
Old Farmers Bank	New Castle	301 Market Street, Wilmington
Thomas Garrett	New Castle	Corner of 4 th and Shipley Streets, Wilmington
Brown v. Board of Education	New Castle	Hockessin, at Millcreek Road, Wilmington
Old Town Hall	New Castle	512 N. Market Street, Wilmington
Meeting House	New Castle	4 th and West Streets, Wilmington
Wilmington Friends Meeting House	New Castle	4 th and West Streets, Wilmington
Ezion-Mount Carmel United Methodist Church	New Castle	800 North Walnut Street, Wilmington
Gravesite of Bishop Peter Spencer	New Castle	French Street in Plaza, Wilmington

St. Joseph Church	New Castle	East side of French Street, near intersection with 11 th Street, Wilmington
Knotty Pine Restaurant	New Castle	308 E. 11 th Street, Wilmington
Howard High School First Secondary School for Blacks in Delaware	New Castle	North Poplar and West 13 th Streets, in front of Howard High School, Wilmington
Site of Old Cathedral Cemetery	New Castle	West 12 th Street, Wilmington
Cool Spring Park	New Castle	Corner of 10 th and Van Buren Streets, Wilmington
Gibraltar	New Castle	Northwest corner of Pennsylvania and Greenhill Avenue, Wilmington
Mount Salem United Methodist Church	New Castle	2629 W. 19 th Street, Rockford Park, Wilmington
Rockford Tower	New Castle	Brandywine State Park, Wilmington
Camp Brandywine	New Castle	South of Greenville on Route 52 at Route 141 conjunction

Source: State of Delaware Archives (2011) <http://archives.delaware.gov/markers/markers-search.shtml>

4.13 Corridor Safety

The safety of the travelling public is and always will be a key concern of the National Scenic Byways Program, the State of Delaware and the Harriet Tubman Underground Railroad Byway. The HTURB corridor consists mostly of State Roads, and therefore, has achieved and met a high-level of safety standards established by the Delaware Department of Transportation (DelDOT). There may be sections or areas along the corridor that have safety improvement opportunities; however, this chapter (Background Conditions) is not intended to assess these opportunities. Any possible opportunities may be found in the Goals, Objectives and Strategies chapter, as well as the Action Plan chapter.

National Scenic Byway CMP Point #7

A general review of the road's safety record to locate hazards and poor design, and identify possible corrections.

4.13.1 Lighting

In general, the street lighting along the corridor is adequate and has not, and should not, present any concerns or safety issues. The rural sections of the corridor have reduced or no artificial lighting and these sections of the corridor will require safe driving techniques such as high-beam or fog lamp use. In addition, the lighting (as reviewed during field collection) at intrinsic resources is also adequate and allows visitors to experience a safe and secure location/resource. There were no lighting concerns noted when conducting on-site field reviews in 2010 and 2011.



4.13.2 Weather Related Conditions

Weather related safety concerns may be an issue along the corridor during the winter months of December to February. Delaware usually has mild winter weather and has an efficient and readily available road maintenance (plowing, etc.) crew to address snowfall and/or roadway icing.

4.13.3 Crash Data Analysis

Assessing crash data along the Harriet Tubman Underground Railroad Byway corridor provides for an understanding of the overall safety of the corridor. Crashes are broken up into three (3) different categories and displayed in the following pages. The categories were broken up based on corridor specific data, not comparisons to other roadways or other Byways. Figure 39 shows total vehicle crash locations/frequency for the entire corridor from 2009-2011, Figure 40 shows bicycle related crashes from 2009-2011, and Figure 41 shows pedestrian related crashes from 2009-2011.

As the data below represents there are five (5) areas along the corridor that are classified as high crash frequency roadway segments. These locations are primarily concentrated in the more highly populated areas within city limits. This may be due to a number of reasons including heavy general traffic and truck traffic, limited passing zones, and other roadway characteristics. Two (2) of the locations are in rural sections of the corridor, and crashes here could be attributed to narrow roadway sections, dangerous curves, and limited passing zones. Fatalities along the corridor were (35) in the three (3) year time span. The Steering Committee and other vested interests in corridor safety will continue to monitor crash data at these locations, and the corridor as a whole.

DelDOT maintains crash data that can be used for future analysis in a program called Highway Safety Improvement Program (HSIP). This is updated annually and can be referred to for locations of high-frequency crashes.

Bicycle crashes (Figure 40) follows the same pattern as vehicle crashes, in that they are concentrated within city limits along the corridor. From 2009-2011 there were only 40 bicycle related crashes, in the cities of Camden, Dover, Middletown, Odessa, Port Penn, New Castle, and Wilmington. The highest concentration was in Wilmington, which makes sense because it is the most highly populated area along the corridor.

Pedestrian related crashes (Figure 41) are almost an exact replica of bicycle crashes, as they are concentrated within city limits too, with five (5) along the scenic Byway. There were 108 total pedestrian related crashes along the corridor from 2009-2011, with five fatalities. The Steering Committee and other vested interests will also continue to monitor bicycle and pedestrian related crashes within cities and along the corridor to see if safety in these areas can be improved upon.



HARRIET TUBMAN UNDERGROUND RAILROAD BYWAY

Delaware

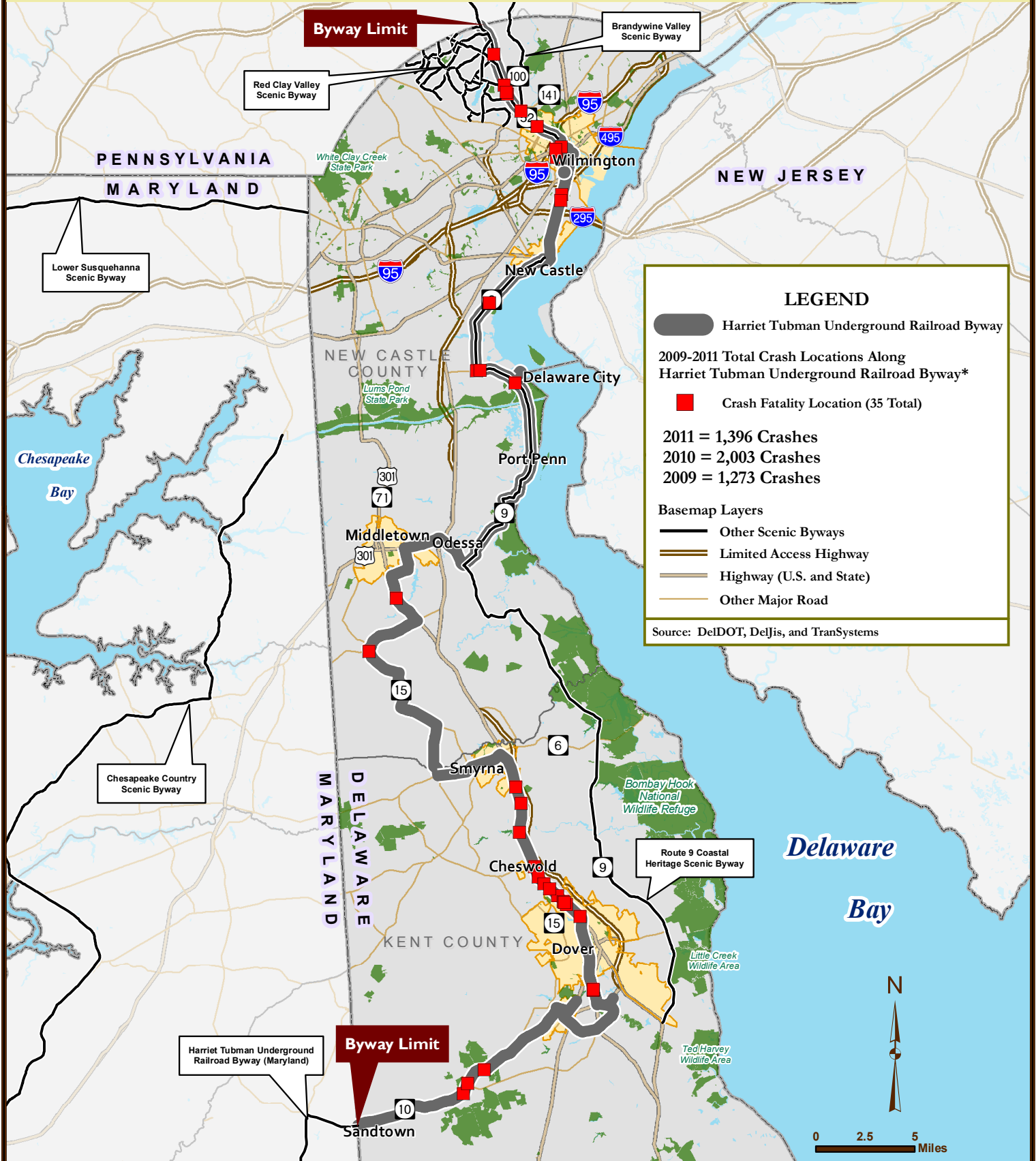
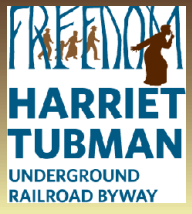


Figure 39: 2009-2011 Crash Frequency



HARRIET TUBMAN UNDERGROUND RAILROAD BYWAY

Delaware

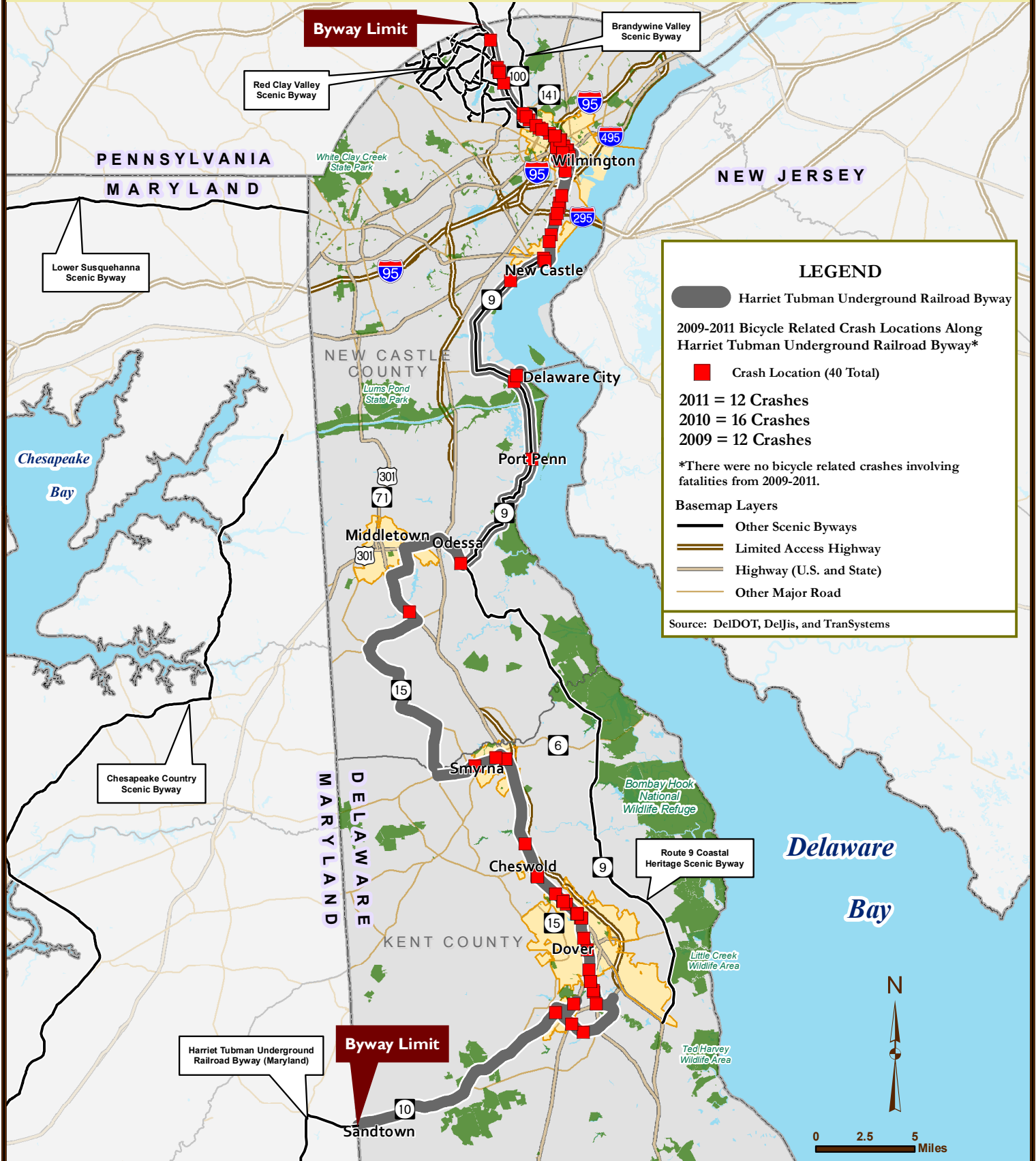
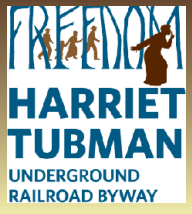


Figure 40: 2009-2011 Bicycle Related Crashes



HARRIET TUBMAN UNDERGROUND RAILROAD BYWAY

Delaware

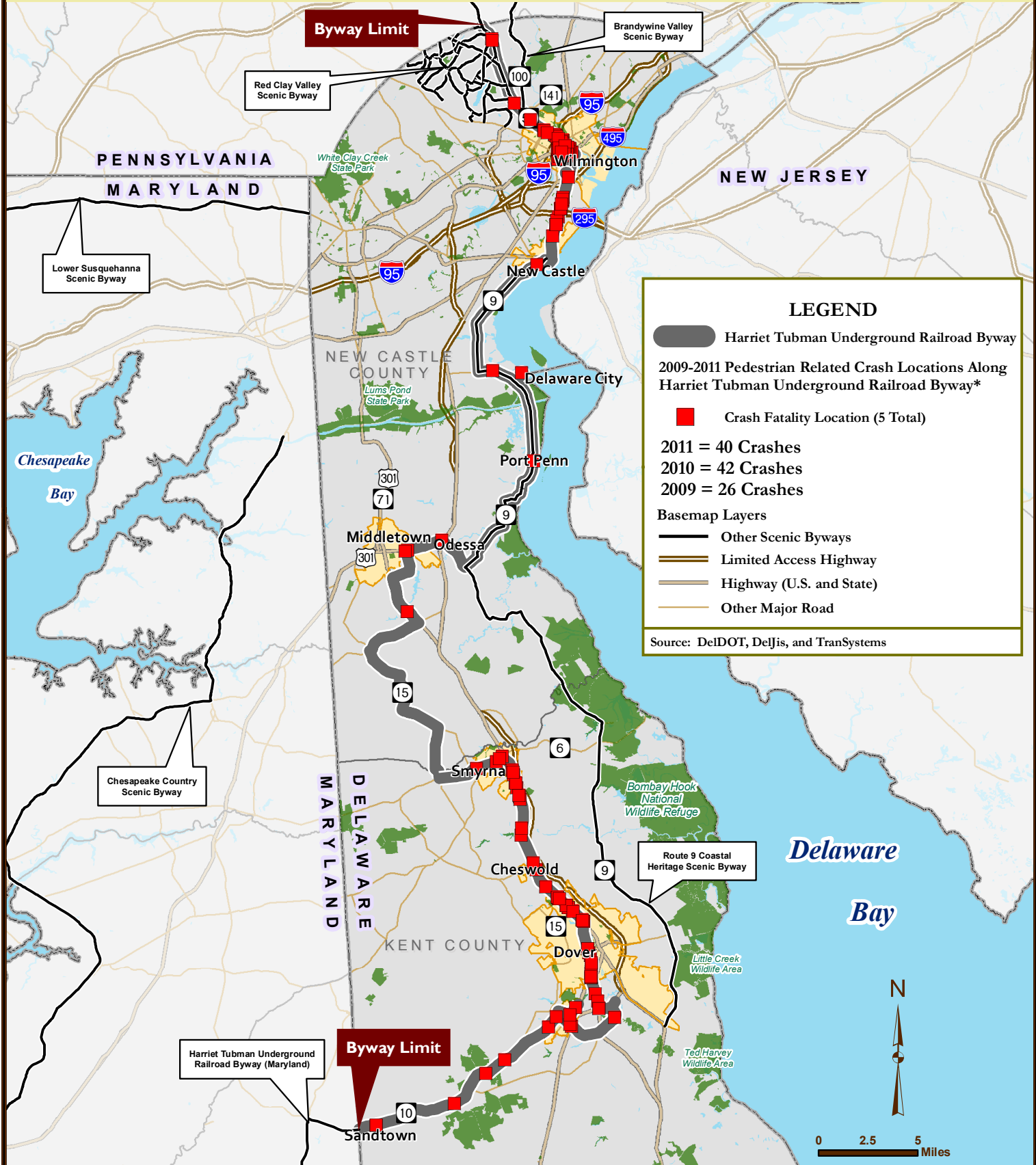
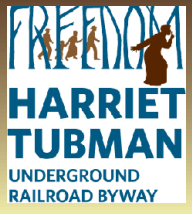


Figure 41: 2009-2011 Pedestrian Related Crashes

4.14 Transportation Planning and Proposed Roadway Modifications/Plans

This section will provide an assessment of the transportation planning activities that may have an effect on the HTURB corridor. DelDOT maintains a five (5) year Capital Transportation Program (CTP) that identifies planned and potential improvements. There are currently (as of October 2011 when this section of the CMP was produced) two (2) CTP's in use by DelDOT, for Fiscal Year's 2009-2014 and 2011-2016. There were three (3) roadway projects along the corridor located in the 2009-2014 CTP, some of which were slated for construction in FY2009 and FY2010. Other projects from the FY2009-2014 CTP are shown in Table 4-6 below and Table 4-7 represents planned roadway projects from the FY2011-2016 CTP.

Table 4-6: Planned Roadway Projects, FY2009-2014 CTP

County	Route	Description	Fund-Scheduling Information
Statewide	N/A	Creation of new or improvement of existing recreational trails throughout the state	Construction planned 2009-2014 - \$1,067,500 yearly
New Castle	Traffic Study, City of New Castle	Project will possibly realign the current intersection of SR 9 and Delaware Street	Study planned from 2009-2012 - \$2,250,000
New Castle	SR 9, New Castle Ave., 3 rd St. to Heald St.	Reconstruction of existing concrete pavement, minor operational and safety improvements	Construction planned for 2012 - \$95,000,000

(Source: DelDOT FY2009-2014 CTP)

Table 4-7: Planned Roadway Projects, FY2011-2016 CTP

County	Route	Description	Fund-Scheduling Information
Statewide	N/A	Develop or maintain recreational trails and trail-related facilities throughout the state	Construction planned 2011-2016 - \$884,800 yearly
New Castle	SR 9 Wilmington Road, 3 rd & 6 th St. Intersection Improvements	Project will realign the current intersection of SR 9 and 6 th Street to promote thru-traffic on SR 9. If needed, the 3 rd Street intersection will be upgraded.	Construction planned for 2011-2016 - \$1,400,000
New Castle	SR 9, Delaware Street in New Castle	Project will reconfigure the intersection of Delaware Street and SR 9 to eliminate the existing traffic signal. The project will also extend Harmony Street to SR 9.	Construction planned for 2011-2016 - \$3,075,000
New Castle	SR 9, New Castle Ave., 3 rd Street to Herald St.	Project involves the reconstruction of the existing concrete pavement. There will also be some minor operational and safety improvements.	Construction planned for 2012-2014 - \$95,000,000
Kent	South State Street & Sorghum Mill Road Intersection Improvements	The improvements currently involve roadway widening on Sorghum Mill Road with intersection geometry and signal upgrades at the intersection with South State Street.	Construction planned for 2011-2013 - \$1,050,000

(Source: DelDOT FY2011-2016 CTP)

National Scenic Byway CMP Point #13

Any proposals for modifying the roadway, including an evaluation about design standards and how proposed changes may affect the Byway's intrinsic qualities.

The planned projects listed in the DelDOT CTPs should have little impact on the HTURB corridor other than temporary disruption of travel patterns. These improvements are seen as enhancements to the Byway corridor and should aid in traveler safety and quality. In addition, the statewide development of recreational trails and facilities will significantly benefit the recreational offerings along the HTURB corridor.

4.15 Multi-Modal Options

The term “multi-modal” is used to identify various modes of travel including automobile, pedestrian, cycling, public transportation, and others. The HTURB corridor offers a wide variety of multi-modal options for the traveler. Most of the corridor is best accessed by automobile due to its suburban nature and limited alternative transportation options, especially outside of the urban areas where public transportation is readily available and there is a concentration of jobs, sites of interest, and housing. Public transportation is generally limited to the larger concentrated cities of Dover and Wilmington; however, there is a variety of off-road use trails, services, and attractions consistently located throughout the corridor.

**4.15.1 Bicycle and Pedestrian**

Figure 42 highlights the bicycle transportation corridor and/or facilities in the HTURB region. It is a goal of the Harriet Tubman Underground Railroad Byway Steering Committee that bicycle and pedestrian concerns and issues are addressed in detail in future efforts and planning. This will provide potential economic development opportunities by allowing the Harriet Tubman Underground Railroad Byway corridor and its communities to harness these users and this potential market.



HARRIET TUBMAN UNDERGROUND RAILROAD BYWAY

Delaware

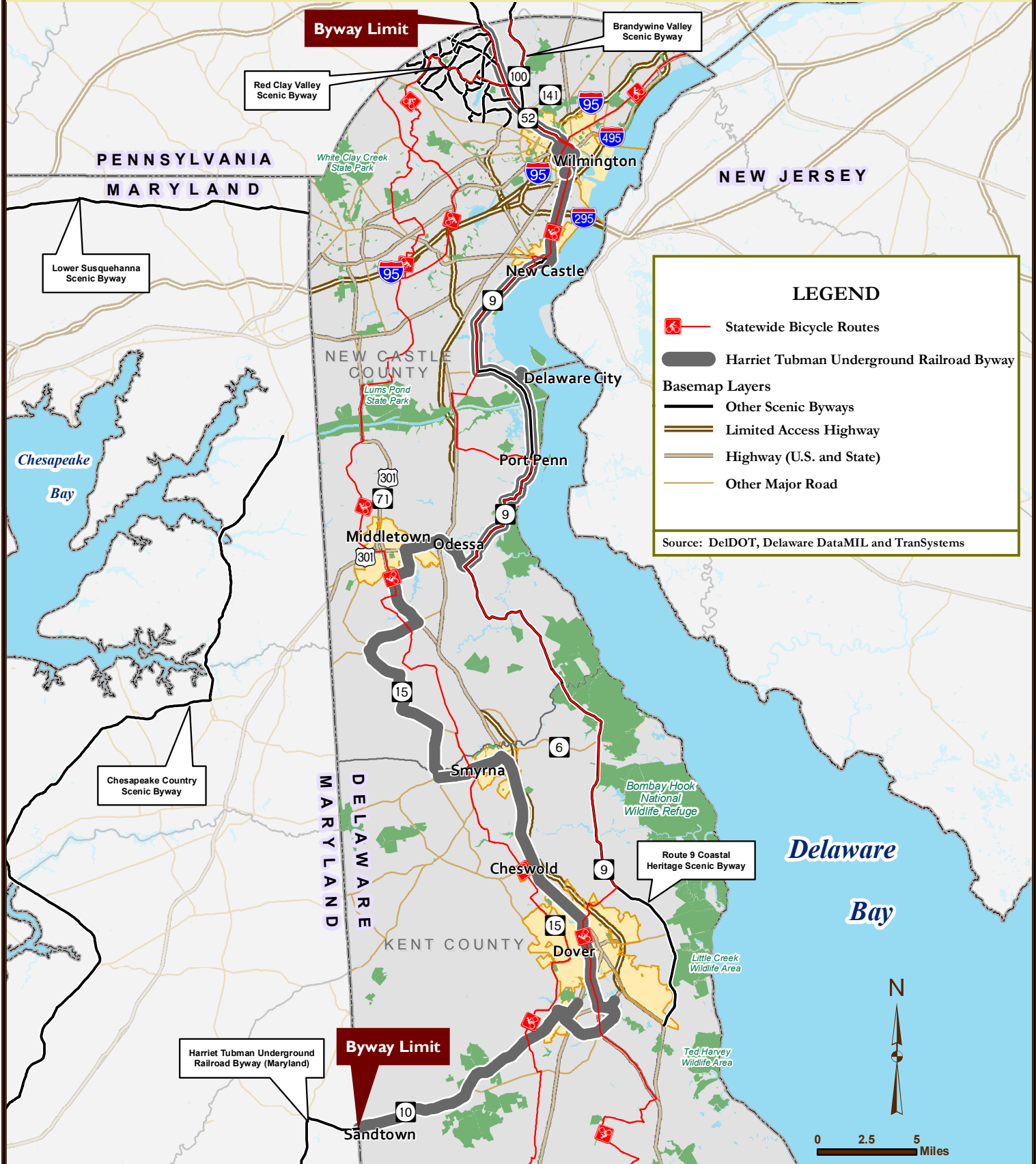
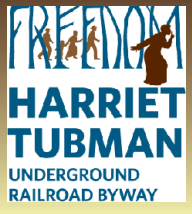


Figure 42: Statewide Bicycle Routes



National Scenic Byway CMP Point #8

A plan to accommodate commercial traffic while ensuring the safety of sightseers in smaller vehicles, as well as bicyclists, joggers and pedestrians.

Bicycle use is currently not safe along the entire corridor due to shoulder widths, lack of bike lanes, and other factors. A future analysis of the corridor in relation to bicycle safety and accessibility should be considered and should address locations of current bicycle use, conflicts, and potential areas for enhanced bicycle use. Pedestrian access along the corridor should also be assessed. A sidewalk inventory and assessment should be conducted and a gap analysis performed to determine areas of need.



An effective tool in assessing the corridor from a bicycle and pedestrian's viewpoint is through a Corridor Impressions Survey (CIS). This tool should include a group of local and non-local attendees spending some time on the corridor in different areas as a pedestrian and/or bicyclist. The participants will then provide their feedback on their experience and make recommendations for enhancement. This has proven to be one of the most engaging and effective tools used in assessing a corridor for pedestrian and bicycle access and safety.

In addition, DelDOT will be conducting a pedestrian study for the Delaware State University campus in Dover and the adjacent Route 13 corridor in the spring of 2012. Delaware State University has expressed an interest in multiple options to increase pedestrian safety and access along this potentially urbanizing corridor. The anticipated first step in this process would be a pedestrian study assessing pedestrian traffic, movements, locations of pedestrian amenities, and other critical information. The study is planned to be complete by the summer of 2012.

The New Castle Industrial Trail and the C&D Canal Recreation Trail intersect with the HTURB in and are good examples of trail development and should be reviewed for applicability elsewhere along the Byway corridor.

Any sought after bicycle related improvements along the Byway should be coordinated with the statewide trails and pathways plan titled the *First State Trails and Pathways Plan*. Refer to <http://trails.delaware.gov/> for more information.

4.15.2 Public Transportation

Delaware Transit Corporation (DART) provides public transportation services for the state. An excerpt from the DART website states:



In 1994 the Delaware State Legislature created the Delaware Transit Corporation to manage and operate DART along with the Delaware Administration for Specialized Transport, Delaware Railroad Administration, and Commuter Services Administration. From this merger arose the name change to DART First State to take advantage of the well-known DART name and to recognize that this service was now a statewide operation.



Today DART First State provides transportation services statewide with over 400 buses and 57 year-round bus routes plus its eight (8) bus route Sussex County Resort Summer Service and paratransit service. Today DART First State also serves New Castle County with commuter rail service to and from Philadelphia. DART First State brought forth by business, community and governmental visionaries over the last 13 decades, looks to the future to provide Delawareans with the highest quality of transportation in the next century.

The use of DART by tourists accessing or experiencing the HTURB may not be prominent today, however; future efforts should include coordinating with DART to advertise seasonal tours or services targeted at tourists.

Future plans include the upgrading of all bus stops and passenger shelters, providing even more new hybrid electric buses to its fleet, continuing efforts to go greener and protect our environment while cutting operating costs and maintaining a safe system for riders, and increasing mobility options for all users. Also underway is a five-year business plan to greatly improve all services and recognize the potential for increased partnerships with community, business, and governmental groups and officials to respond to the state's growth and development. (www.dartfirststate.com, 2012)



In addition to DART, the Southeast Pennsylvania Transportation Authority (SEPTA) provides service to the Wilmington area via the Wilmington/Newark line commuter train. The SEPTA commuter train is a heavily-traveled (high ridership) train that can be utilized to effectively access the HTURB corridor from many areas in the Northeast United States.

Figure 43 displays the public transportation routes and services that are offered to travelers of the HTUBR corridor. DART generally serves much of the corridor and would allow Byway travelers many options for travel.





HARRIET TUBMAN UNDERGROUND RAILROAD BYWAY

Delaware

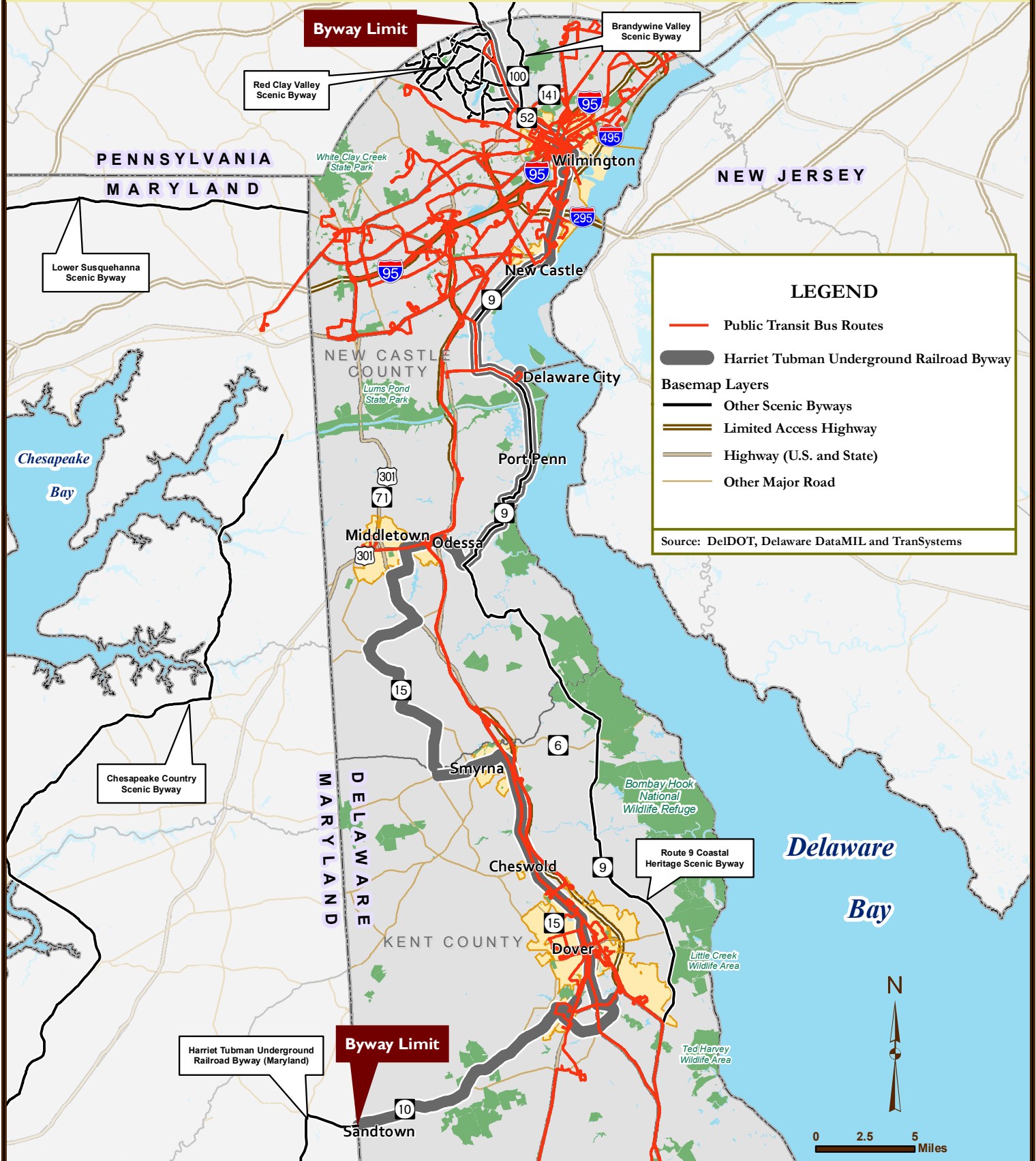
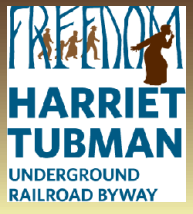


Figure 43: Public Transit Routes