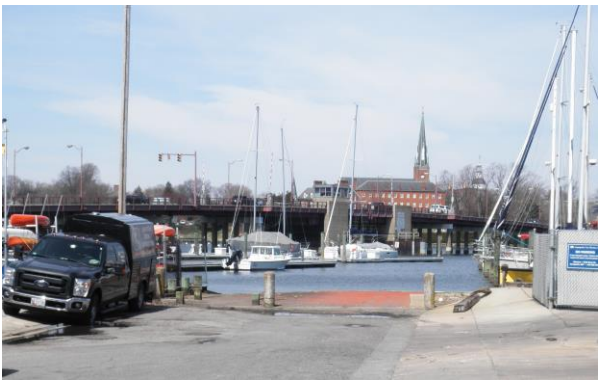
City of Annapolis

Eastport Transportation Study

Existing Conditions Report

February 18, 2016



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NELSON NYGAARD

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I. Introduction

A. Purpose and Goals

The City of Annapolis is conducting a multimodal transportation study for its Eastport neighborhood. This study will audit and evaluate existing conditions including roadway geometry, crash experience, land use, right-of-way, traffic volumes and traffic operations, public parking supply and demand, pedestrian and bicycle networks, and transit services; engage local citizens, businesses and key stakeholders such as Eastport Civic Association and Eastport Business Association for input; and develop holistic short-term and long-term transportation management recommendations.

The objective of this study is to document and quantitatively assess baseline traffic and safety conditions, as well as the impact of future land use changes in order to develop a plan for improved traffic management, and multi-modal circulation and safety throughout the Eastport neighborhood. Recommendations will be developed that:

- Facilitate enhanced multi-modal mobility,
- Improve the effectiveness of traffic and transit operations in, out and within the neighborhood, and
- Identify specific strategies for event traffic and parking management.

This report documents the existing conditions as they relate to parking utilization, traffic, transit infrastructure and usage, walking conditions, biking conditions, and safety in general. A subsequent report will examine the impacts of future development to all modes of transportation and parking in both the short and long terms.

B. Study Area

The study area, shown in Figure 1, is about 1 square mile and generally extends from Spa Creek in the north, to Back Creek in the South; and from Truxton Park in the West to the Severn River in the East. Two private, gated townhome communities were not included in this survey: Chesapeake Landing (Chesapeake and Horn Point) and Horn Point Courts (Chester and Horn Point). Both developments feature higher levels of density but prohibit public pedestrian, bicycle, or vehicle access. The study area has limited roadway access to and from downtown Annapolis and points north (US 50, West Street), and points south and west (Outer Neck, Forest Drive and Harness Creek); as well as limited opportunities for additional roadway capacity. To complement the study area map, traffic and pedestrian generators are highlighted in Figure 2.

The Eastport neighborhood is an historic, residential neighborhood in proximity to Annapolis' downtown waterfront, the Maryland State House, and the United States Naval Academy. The grid street network of the historic downtown was created by the peninsula's first settlers in the mid-19th century with a focus of providing access to the waters. This downtown area, concentrated to the east of 6th Street, consists of three avenues stretching lengthwise across the study area and six streets two to three block long connecting Spa Creek and Back Creek. This area of Eastport draws residents and visitors to its numerous marinas as well as other recreational boating institutions, restaurants, and historical homes situated on narrow lots. Eastport Elementary school is located in the approximate center of the neighborhood. The area west of 6th Street was developed more recently with a less connected gridded street network, larger residential lots. Chesapeake Avenue serves at the spine of the street network connecting the tip of the Eastport peninsula to the study area's west most boundary, Tyler Avenue, and connections north of Annapolis. Sixth Street, the north-south spine of the network, provides access to downtown Annapolis via a two lane bridge.

Travel between Eastport and Annapolis is primarily achieved through private vehicle trips, which facilitates the need for both on-and off-street residential parking. On-street parking is allowed on most residential streets, but parking in private residential driveways is also common, although the driveway spacing varies widely per block. Eastport's basic street grid, short block faces, and narrow street widths maximize connectivity within the neighborhood and encourage alternative modes of transportation. The topography of Eastport is generally flat, making biking and walking and ideal alternative to driving for many trips.

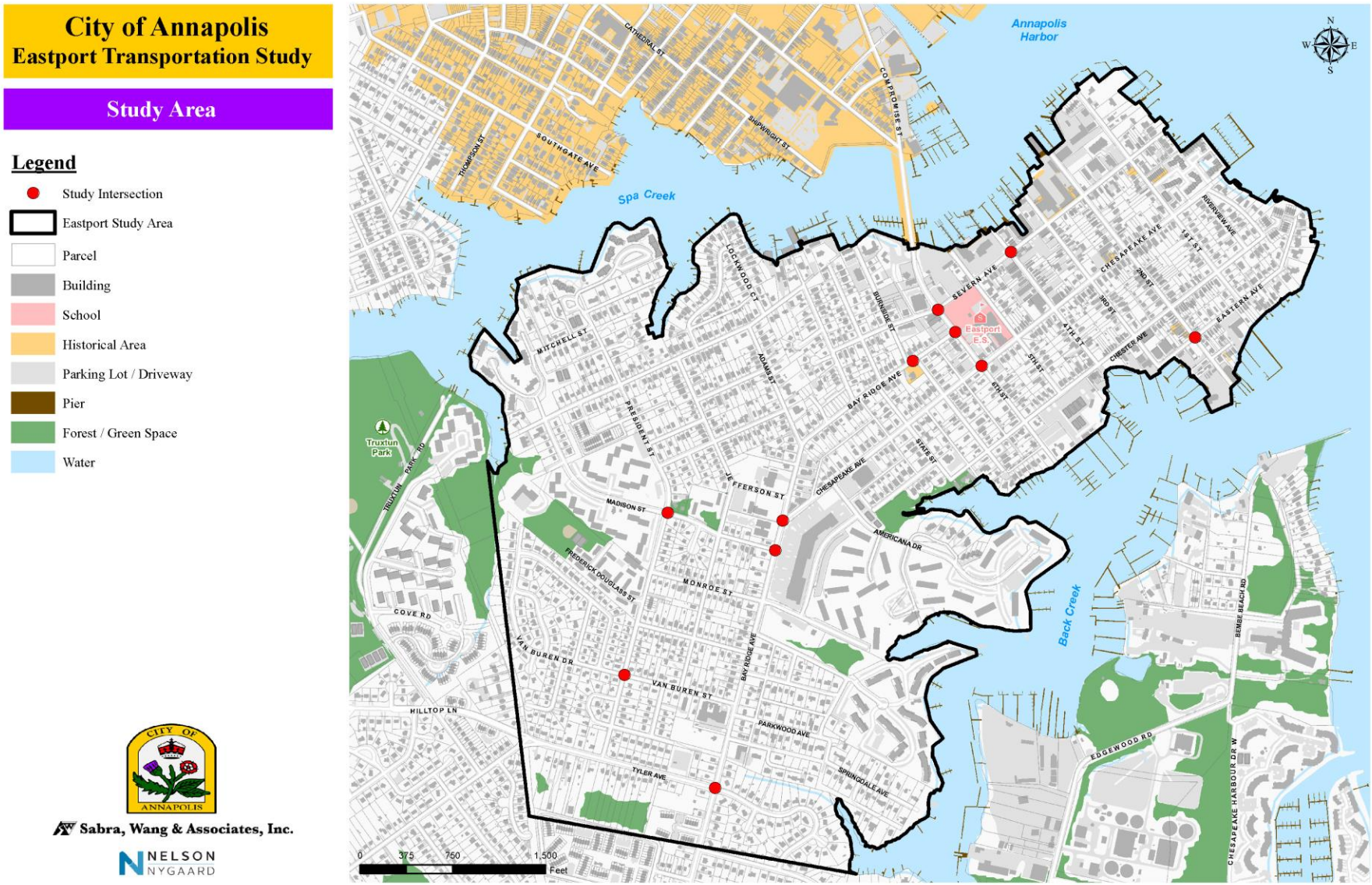

Figure 1: Eastport Transportation Study Area

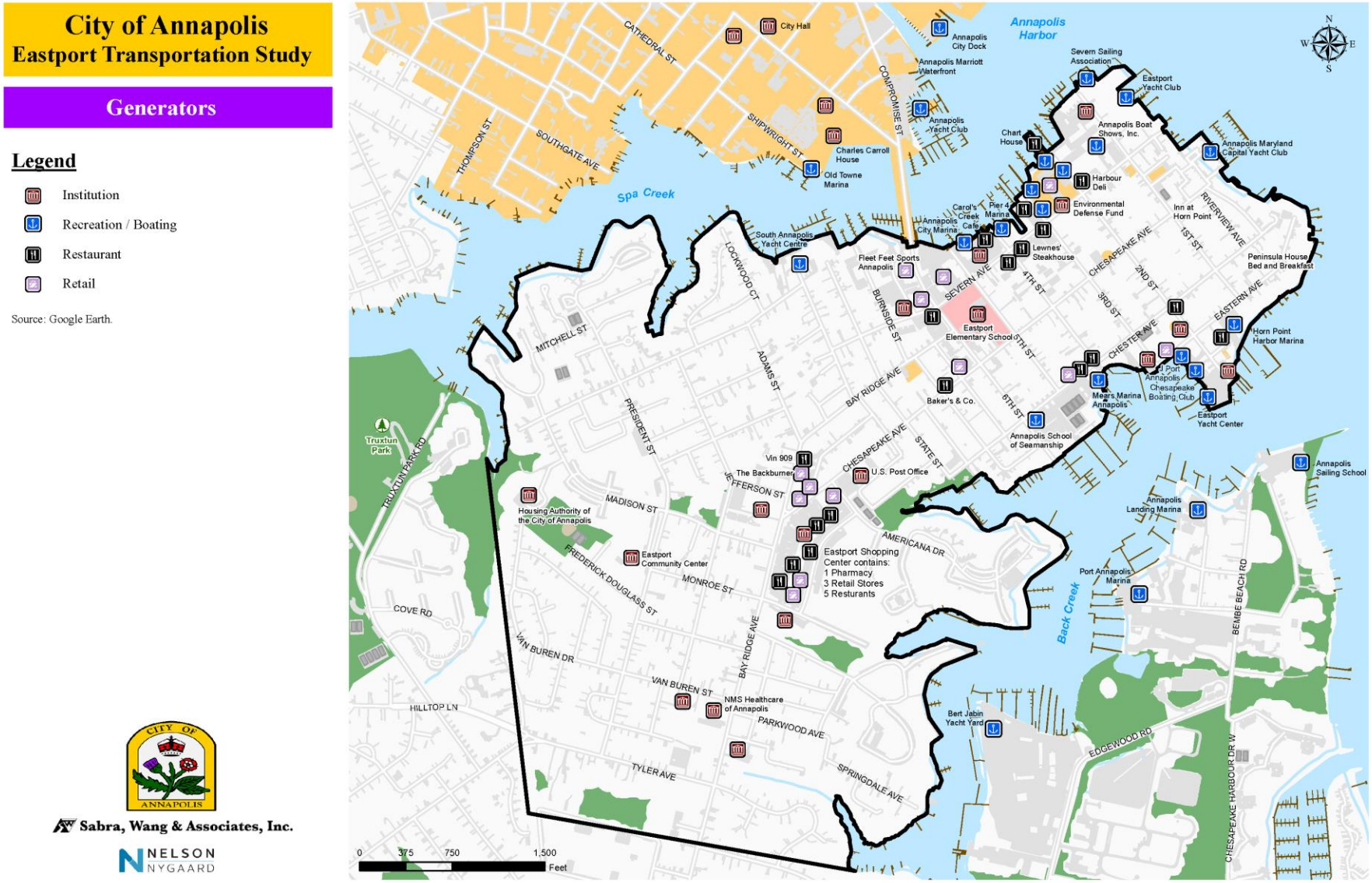

Figure 2: Traffic/Pedestrian Generators

II. Existing Conditions

A. Roadways

The roadway classification and annual average daily traffic (AADT) are shown in Figure 3 and Figure 4, respectively. Almost all roads within the study area are classified as local roads. Sixth Street and Bay Ridge Avenue are the highest classified roadways, as a minor arterial, and serve as the primary roads in and out of the neighborhood. Tyler Avenue, which is the west most study boundary, is a major collector road connecting Eastport to mainland area north of Annapolis. Within the historic area of Eastport, Severn and Chesapeake Avenue are minor collectors.

As described in the Study Area section, Eastport has limited vehicle access; one access via 6th Street from Annapolis, and the other at the intersection of Tyler and Bay Ridge Avenue. Of the two main access points, the majority of vehicle traffic enters and exits Eastport via 6th Street. Based on counts taken in 2015, 6th Street has an annual average daily traffic volume of 21,000 vehicles per day, compared to 12,500 vehicles at Tyler Avenue. Bay Ridge Avenue, the east-west spine of the network, carries 16,500 vehicles per day between Tyler Avenue and Madison Street. The reduction in AADT on Chesapeake Avenue between Madison and 6th Street is due to the parallel route of the one way section of Bay Ridge Avenue.

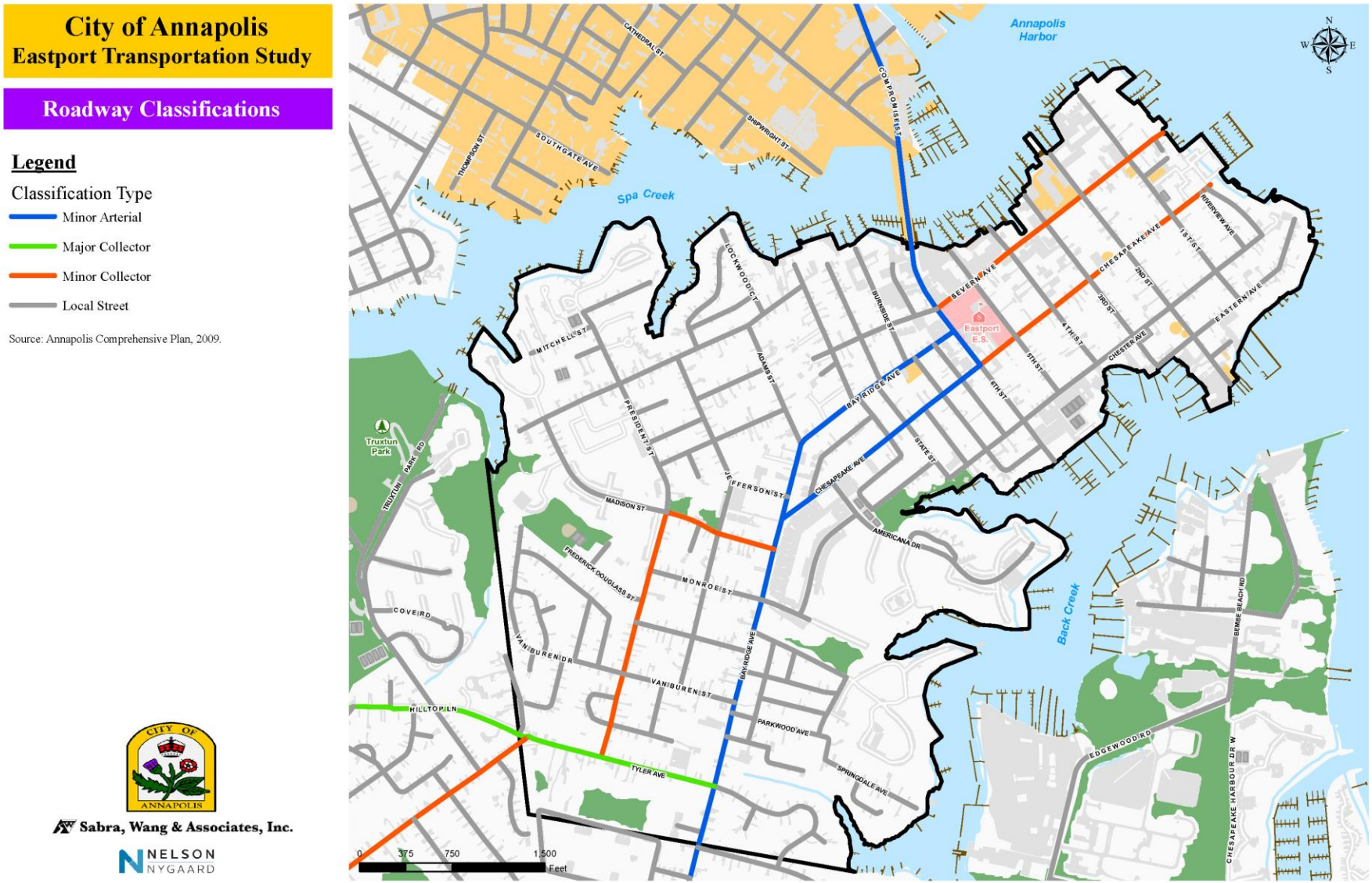

Figure 3: Roadway Classification

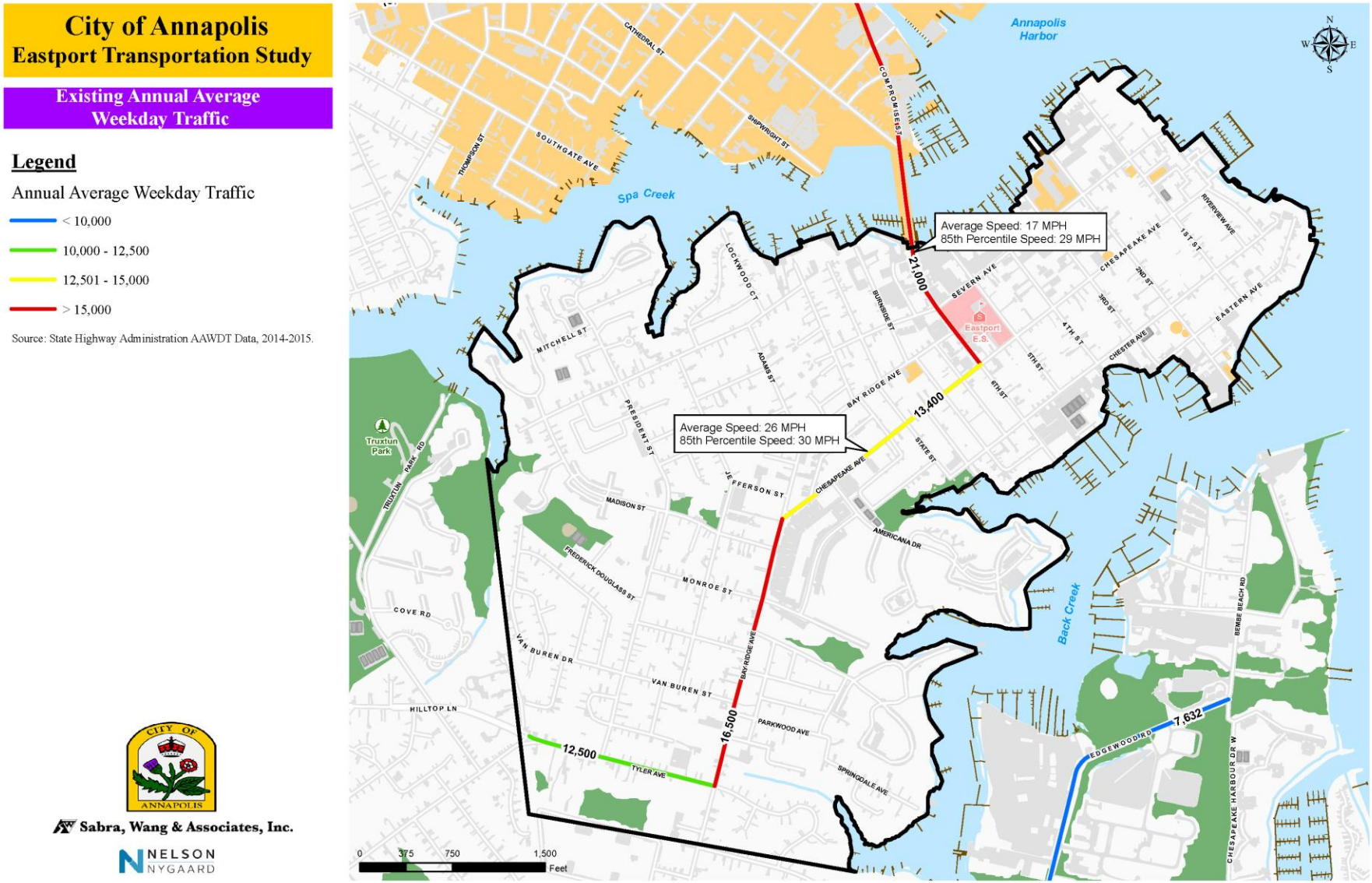

Figure 4: Average Annual Weekday Traffic

B. Existing Non-Event Traffic Volumes

Intersection turning movement counts were conducted at eleven intersections within the study area in the late Summer and early Fall of 2015 after Anne Arundel Public Schools and the Naval Academy were back in session. Counts were conducted on typical, non-event weekdays (Tuesday, Wednesday, or Thursday) during the study time frames:

- AM Commuting peak period (7:00-9:00 AM);
- PM Commuting peak period (14:00-16:00 PM) peak times; and
- Non-event Saturday (11:00AM - 3:00 PM).

The AM and PM peak periods were chosen based on hourly volume along 6th Street for a typical weekday, as shown in Figure 5. Peak morning volume occurs during the 7 to 9 AM timeframe, with peak evening volume occurring between 5 and 6 PM.

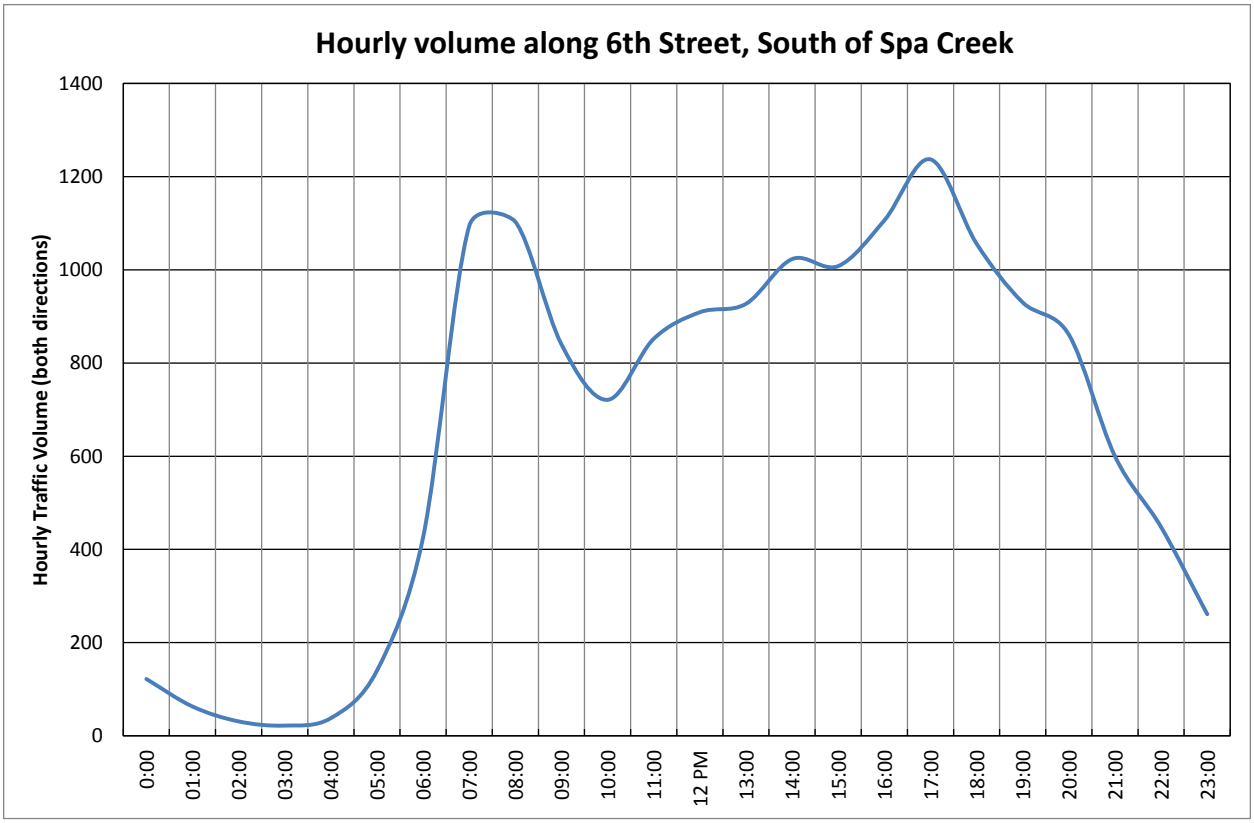

Figure 5: Hourly traffic volume along 6th Street

The eleven study intersections, shown in Figure 1, are:

1. Second Street at Eastern Avenue
2. Severn Avenue at Fourth Street

3. Severn Avenue at Sixth Street
4. Bay Ridge Avenue at Sixth Street
5. Chesapeake Avenue at Sixth Street
6. Bay Ridge Avenue at Burnside Street
7. Bay Ridge Avenue at Chesapeake Avenue
8. Bay Ridge Avenue at Madison Street
9. President Street at Madison Street
10. President Street at Van Buren Drive
11. Bay Ridge Avenue at Tyler Avenue

The intersection traffic control (signalized versus stop-controlled) for each intersection is shown in Figure 6.

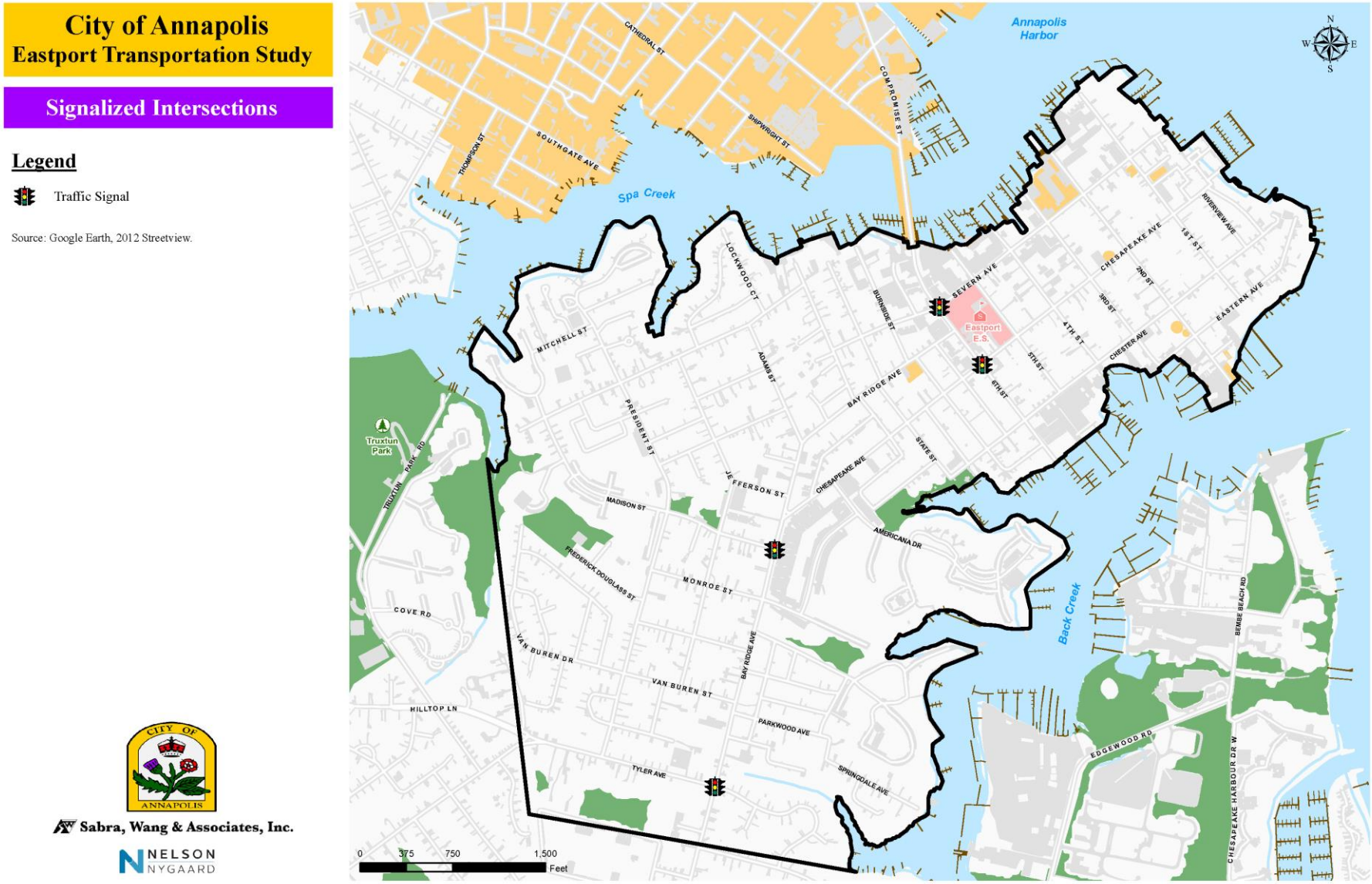

Figure 6: Traffic Control for each study area Intersection

The volumes in the single peak hour for each of the three study periods are show in Figure 7, Figure 8, and Figure 9 and key findings are summarized below.

Morning Peak Hour

- A larger volume of traffic travels eastbound on Bay Ridge/Chesapeake Avenue than westbound with a majority of the traffic turning left at 6th Street. Bay Ridge/Chesapeake Avenue carries an average of 700 vehicles in the eastbound coming into town from Tyler Avenue and about 20% of that traffic continues east on Chesapeake, past 6th Street.
- The volume on Chesapeake/Bay Ridge Avenue in the morning peak hour in the westbound direction is at 300 vehicles at 6th Street and increases to 590 vehicles at Tyler Avenue.
- About 650 vehicles enter Eastport in the morning peak hour via 6th Street from Annapolis with a third turning left at Severn Avenue, a third turning right at Bay Ridge Avenue, and the remaining third turning right at Chesapeake Avenue.
- About 150 vehicles enter/exit Eastport via President Street at Tyler Avenue.

Evening Peak Hour

- On average, 600 vehicles travel eastbound and 650 vehicles travel westbound on Bay Ridge/Chesapeake Avenue in the evening peak hour.
- A quarter of the vehicles that enter Eastport via 6th Street from Annapolis turn left at Severn Avenue, a little more than a third of the vehicles turn right at Bay Ridge Avenue and another third turn right at Chesapeake Avenue.
- At Tyler and Bay Ridge Avenue, equal amounts of traffic enter/exit from/to the west and south of Eastport.

Saturday Peak Period

- On average, a slightly higher proportion of vehicles travel eastbound than westbound on a Saturday afternoon along Bay Ridge Avenue; 600 eastbound vehicles vs. 500 westbound vehicles.
- However, the eastbound vehicle volume drops from 600 vehicles at Bay Ridge & Chesapeake Avenue to 450 vehicles at 6th Street & Chesapeake Avenue as vehicles turn off of Chesapeake Avenue into the residential areas.
- The volume of vehicles entering Eastport via 6th Street account for roughly 57% of total entering volumes when compared to the volume entering at south/eastbound Tyler Avenue at Bay Ridge Avenue and eastbound vehicles along President Streets at Van Buren Street.
- On average, 1,000 vehicles enter Eastport from Annapolis via 6th Street with a majority of those vehicles turning off of 6th Street prior to arriving at the intersection with

Chesapeake Avenue. The southbound approach along 6th Street at Chesapeake shows 300 vehicles.

- Fewer vehicles are exiting Eastport than entering Eastport during this study period as about 400 vehicles were counted traveling northbound on 6th Street, compared to the 1,000 traveling southbound.

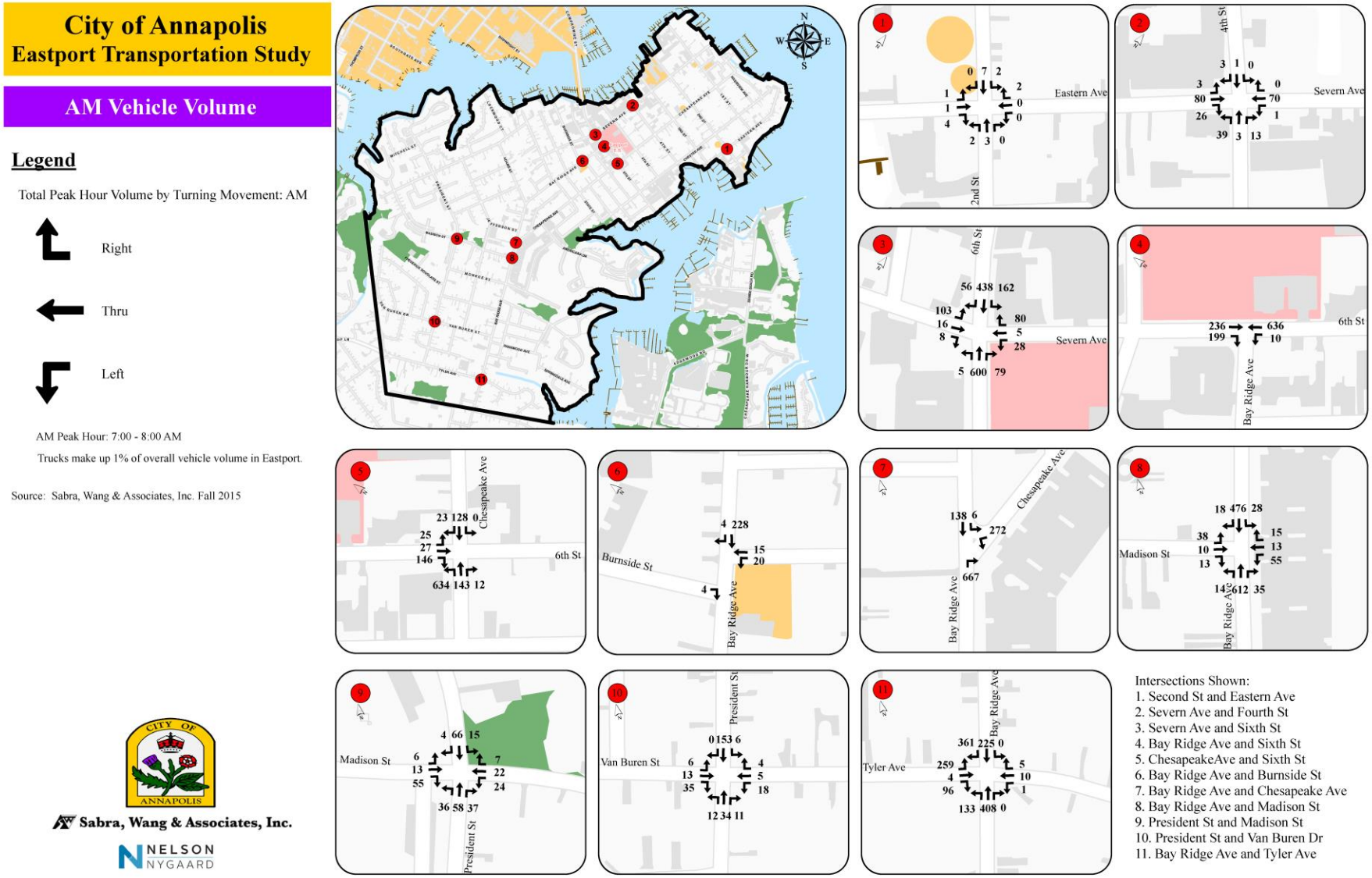

Figure 7: Intersection Vehicle Volumes - Morning

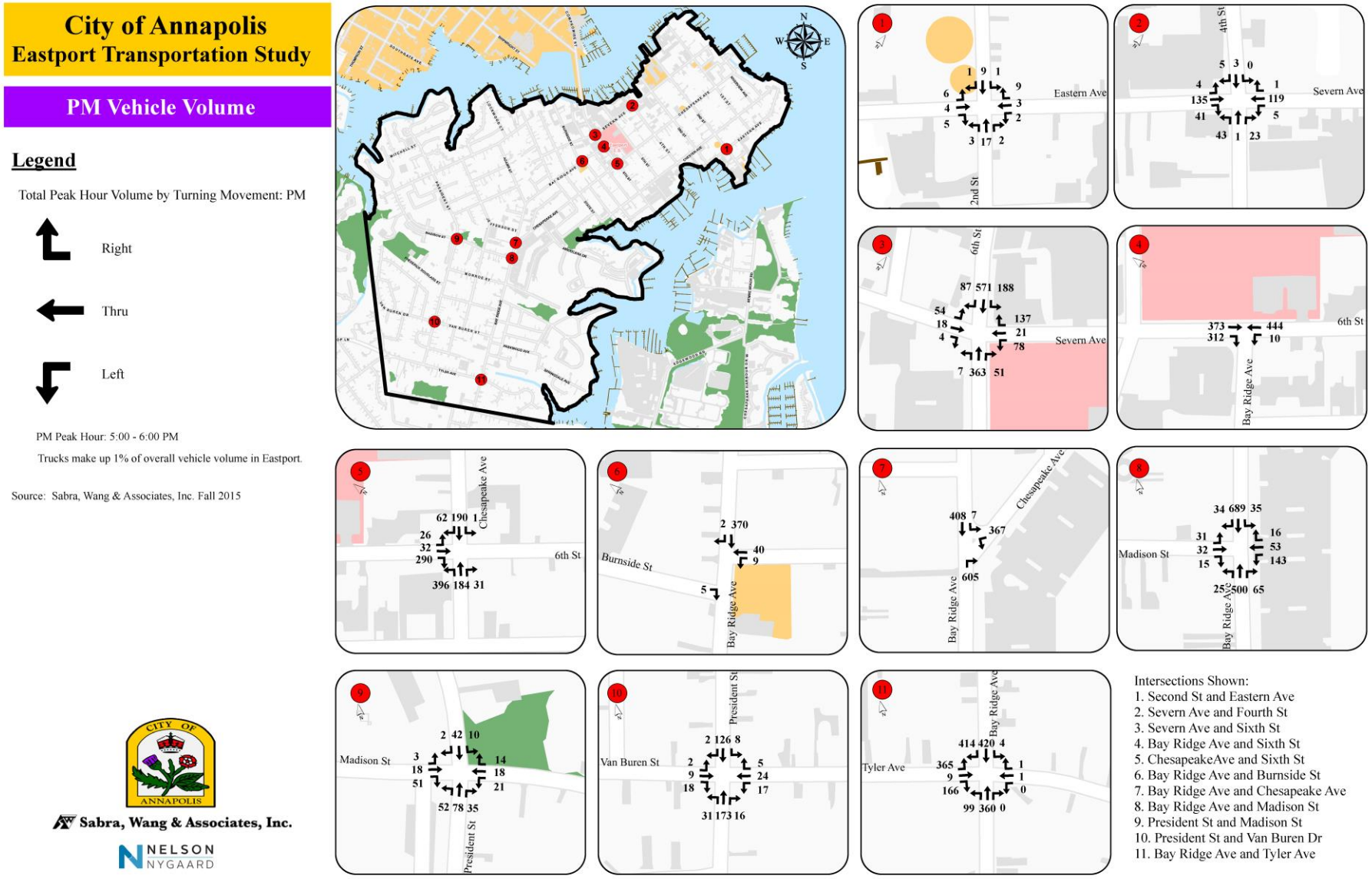

Figure 8: Intersection Vehicle Volumes - Evening

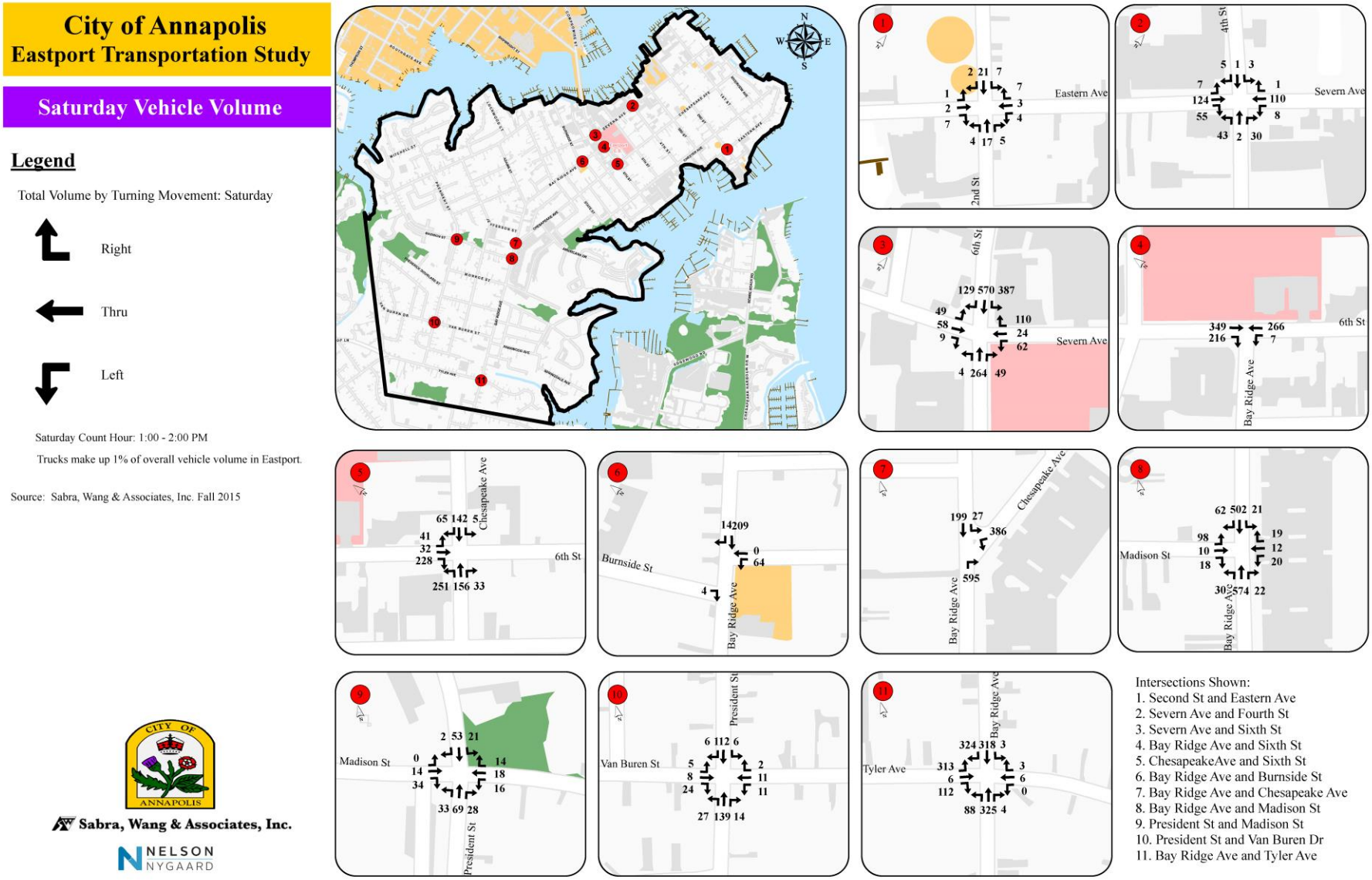

Figure 9: Intersection Vehicle Volumes - Saturday

C. Pedestrian & Bicycle Facilities

Pedestrian and bicycle networks were evaluated for deficiencies, and counts for both modes were conducted in Fall of 2015 at the study area intersections.

C.1 Pedestrian & Bicycle Volumes

Weekday pedestrian counts reflect the pedestrian crossing volume over the two peak periods for a total of four hours. The Saturday counts also reflect volumes over four hours, however during a single peak period in the afternoon. The Pedestrian counts are shown in Figure 10 for weekday counts and Figure 11 for Saturday counts. The highest pedestrian volumes during the week are experienced along 6th Street crossing Severn Street, at Bay Ridge Avenue crossing 6th Street, and at Severn and 4th, with over 100 pedestrians in the peak periods at these intersections.

During a Saturday afternoon, high pedestrian volumes are seen along 6th Street. Pedestrian activity on a Saturday is greater than during the week at select intersections including at 6th Street at Severn Avenue and 2nd Street at Eastern Avenue. This is could be a result of the restaurant and boating facilities near these intersections. While volumes at the remaining study intersections are lower, they still reflect moderate pedestrian activity.

Four-hour bicycle counts were conducted and are shown in Figure 12 (weekday AM and PM peak period) and Figure 13 (Saturday mid-day peak period). Throughout the day, cycling was observed through Eastport along 6th Street, Bay Ridge Avenue, and Chesapeake Avenue. Cycling is greater along Bay Ridge Avenue west of Madison Street than east. Due to the marked bike lane on Bay Ridge Avenue between 6th Street and Chesapeake Avenue, there is higher eastbound cycling on Bay Ridge than Chesapeake Avenue. The opposite trend exists for westbound bicycle activity where there is a greater volume of bikes along Chesapeake and Bay Ridge Avenue. Cycling is slightly higher during the Saturday peak period than the weekday. Saturday also experiences a greater concentration of bikes along the roadways with the highest activity along Chesapeake Avenue, and Bay Ridge Avenue west of Madison Street.

C.2 Bicycle and Pedestrian Network

The flat topography of Eastport and relatively low-volume roads makes biking a viable alternative to driving. As shown in Figure 14, the only existing bicycle facilities in Eastport are a bicycle lane along the one way section of Bay Ridge Avenue and a signed route along the two way section of Bay Ridge Avenue. This is largely due the narrow road widths in much of Eastport. As shown in the figure, additional routes and lanes are planned in the City's Bike Master plan. The pedestrian network is discussed in greater detail in the following section.

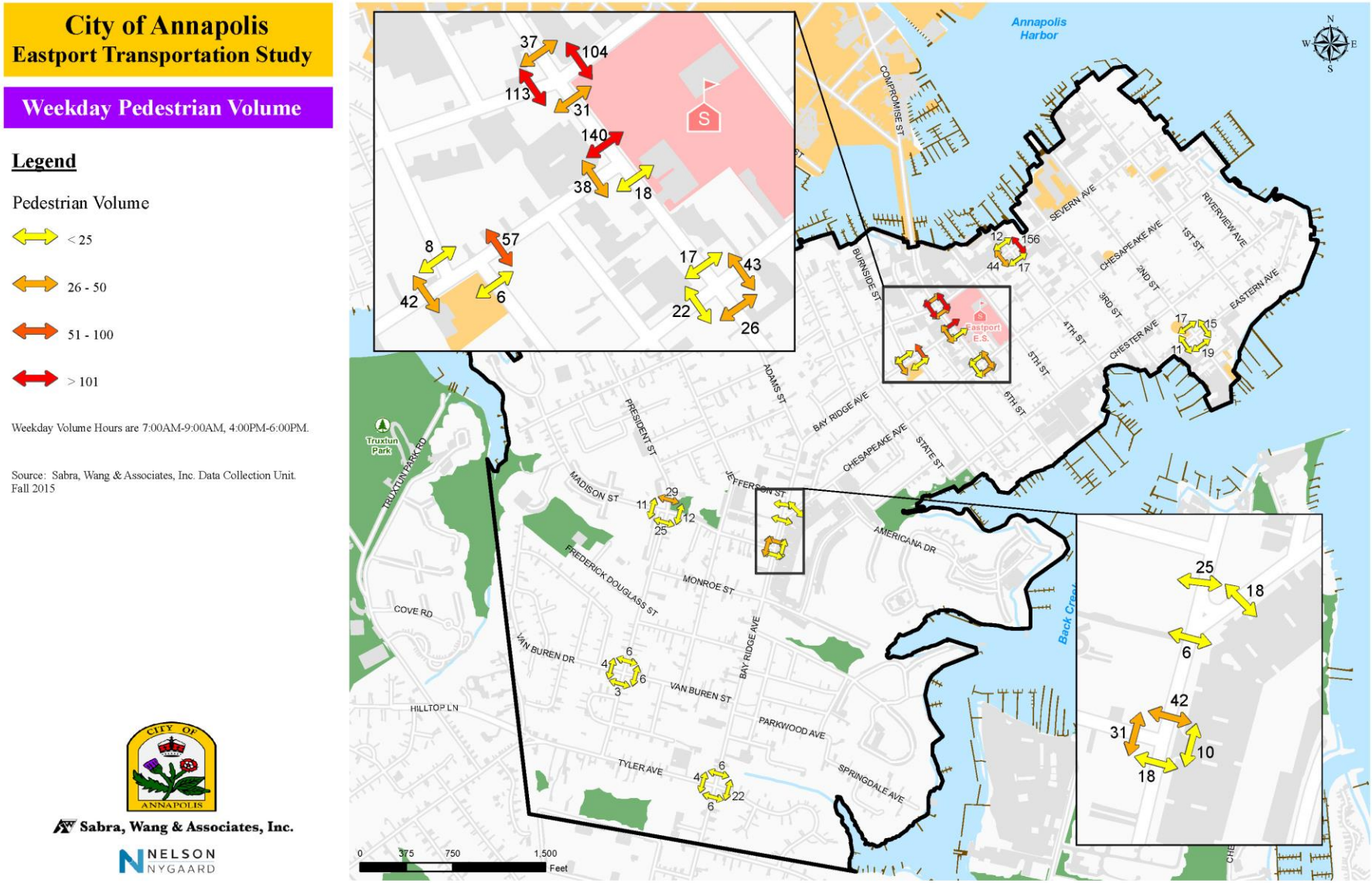

Figure 10: Intersection Pedestrian Volumes – Weekday

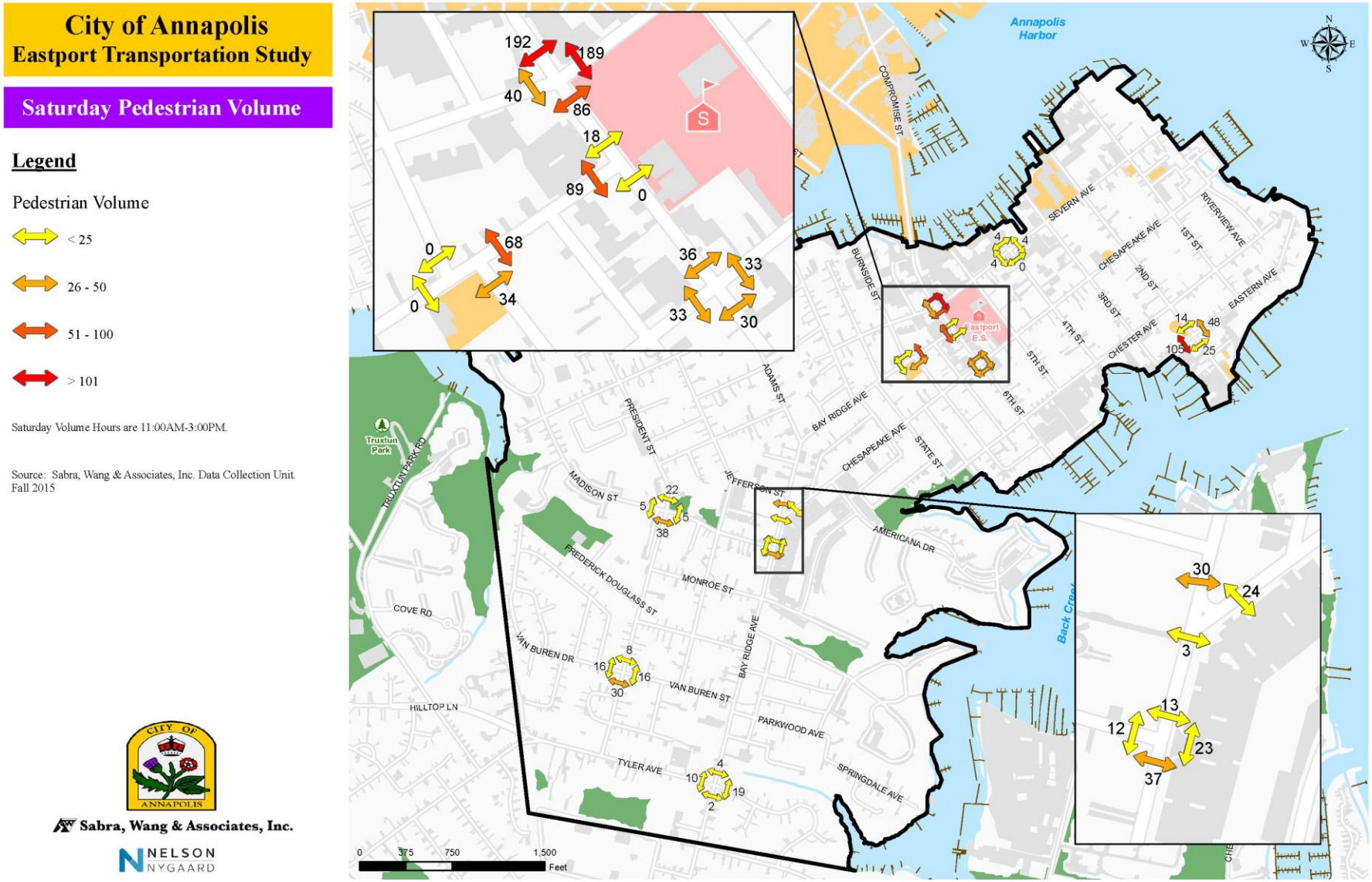

Figure 11: Intersection Pedestrian Volumes – Saturday

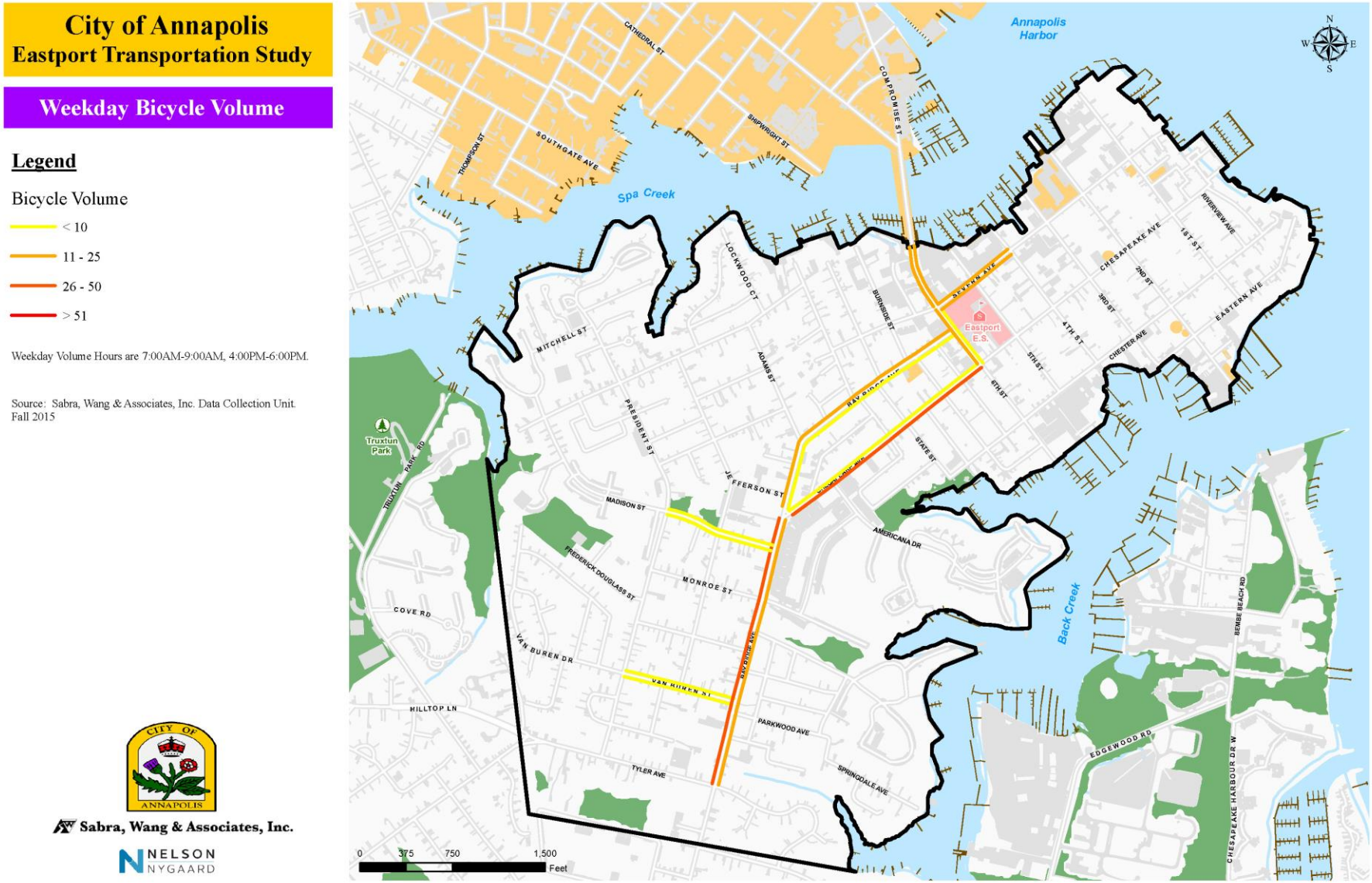

Figure 12: Roadway Bicycle Volumes – Weekday

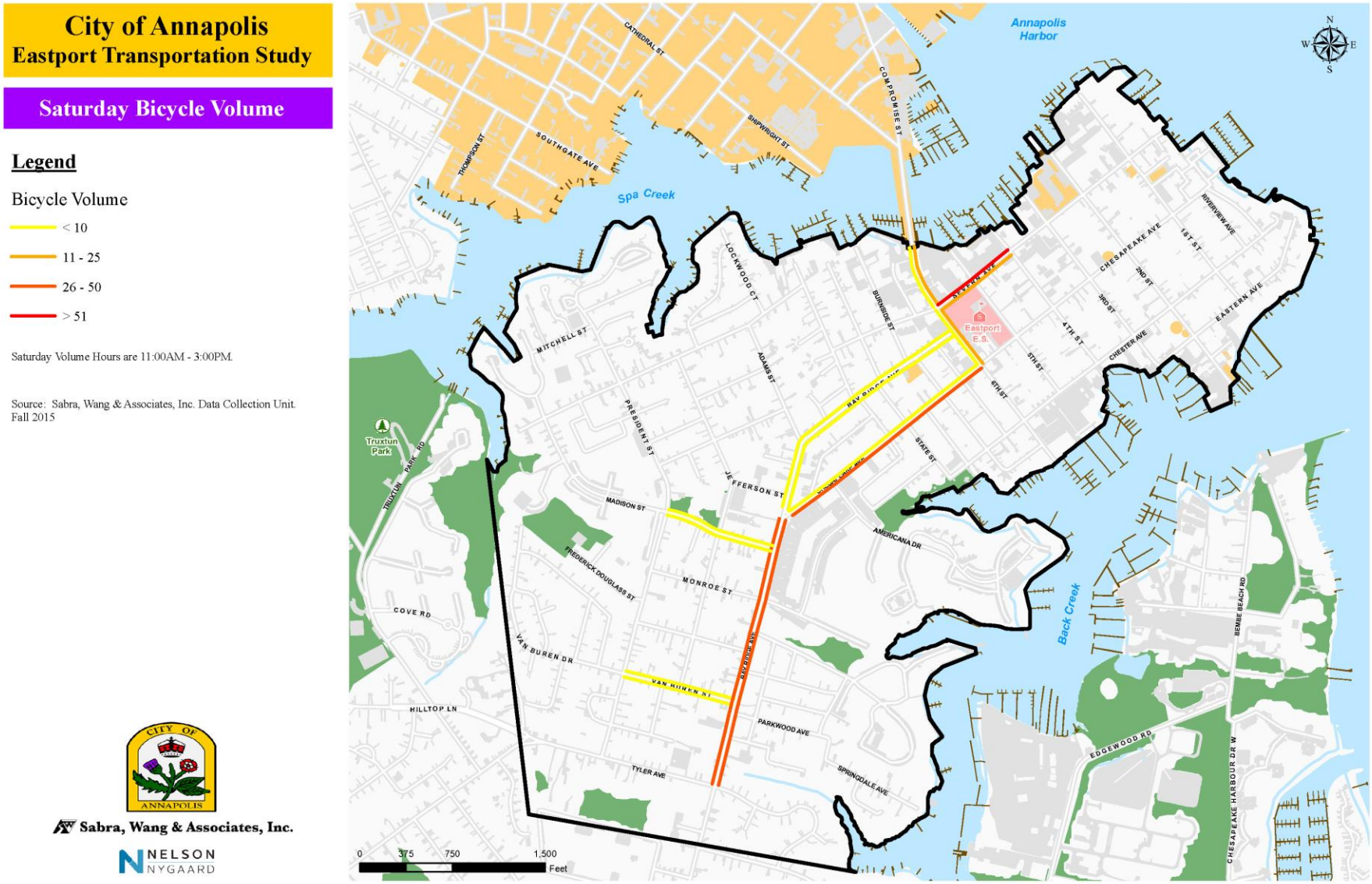

Figure 13: Roadway Bicycle Volumes – Saturday

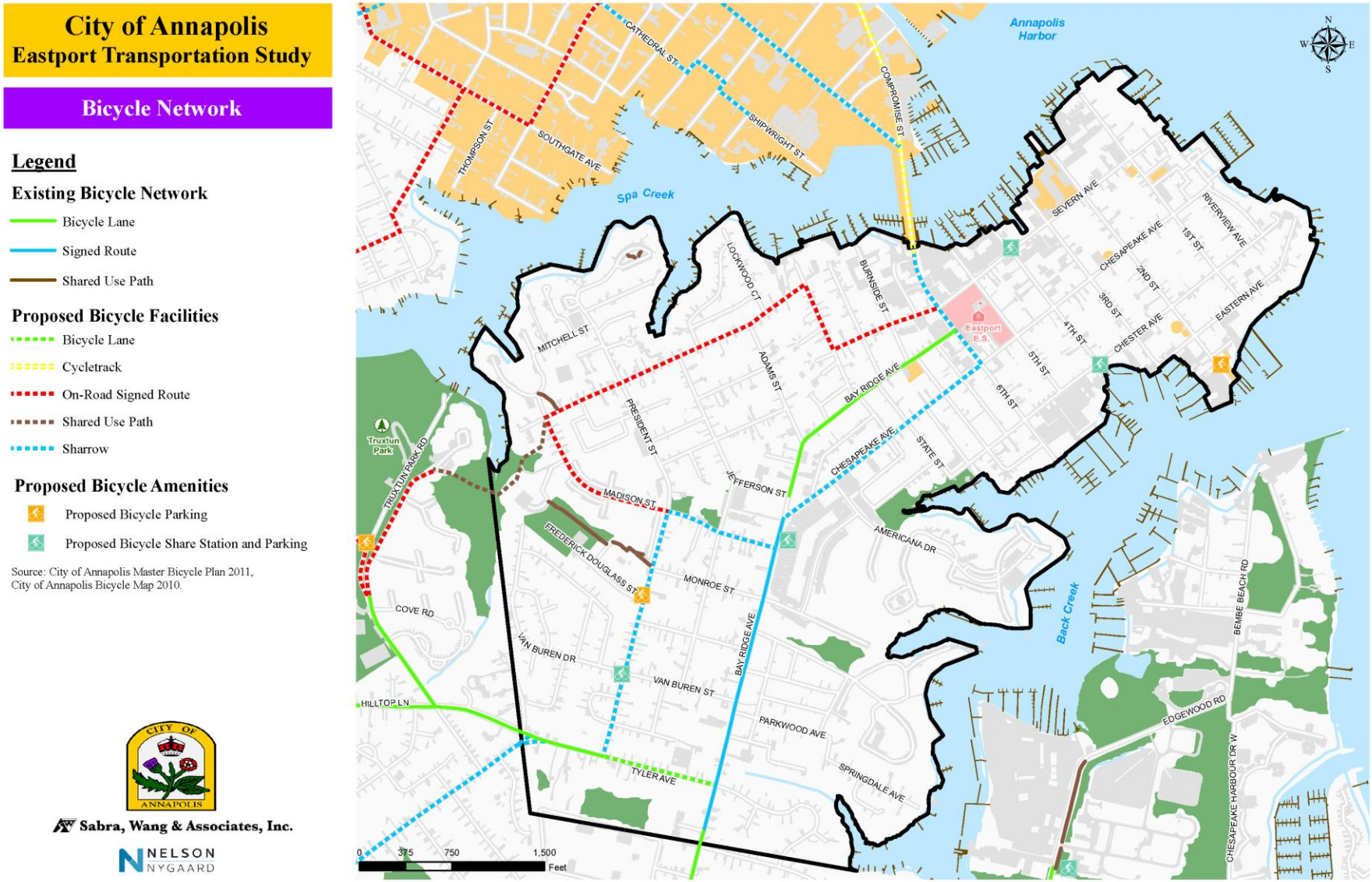

Figure 14: Bicycle Network

C.3 Pedestrian Network and Deficiencies

All street block faces and intersections within the study area were surveyed on Thursday, September 17, 2015. The survey involved manual inventories of multiple features on each block face and intersection. For each individual block the sidewalk presence, sidewalk continuity, sidewalk surface condition, sidewalk width, tree coverage, number of curb cuts, and street pavement condition were catalogued. Each intersection was similarly surveyed, with the following features recorded: intersection type (e.g. four-way, two-way, or "T"), traffic control signal type, wayfinding signage, presence of pedestrian crosswalks and curb ramps, and ADA compliant features (curb ramps, detectable warning strips). Additional irregularities, such as utility pole placements on sidewalks and curb ramps, were also catalogued.

The most typical condition which negatively compromises sidewalk quality is the presence of utility poles that narrow the passable sidewalk width. As sidewalks in Eastport are often only three-to-four feet at their widest point, this can make passage virtually impossible for the disabled, people with strollers, or even two people heading in opposite directions. Sidewalk buffers such as the one along Chesapeake Avenue between Fifth and Sixth Streets between the sidewalk and curb are generally lacking, or are very narrow, within the Study Area. While only one foot wide and generally too small to support tree growth, this green buffer accommodates both utility poles and street signs, allowing for one of the few uninterrupted sidewalks in the study area. Curb ramps are also frequently disrupted by utility poles: overall, 33% of intersections feature at least one disrupted curb ramp, from either utility poles, street signs, fire hydrants, overgrown plants, or some combination of these obstructions. While 82% of block face segments in the study area have sidewalks, 15% of these feature curb ramps or sidewalk segments that are partially obstructed by utility poles.

Sidewalk material condition is generally quite good throughout Eastport. Where deterioration is seen, it is often the result of tree roots undermining the grade, as shown in Figure 15 and Figure 16.

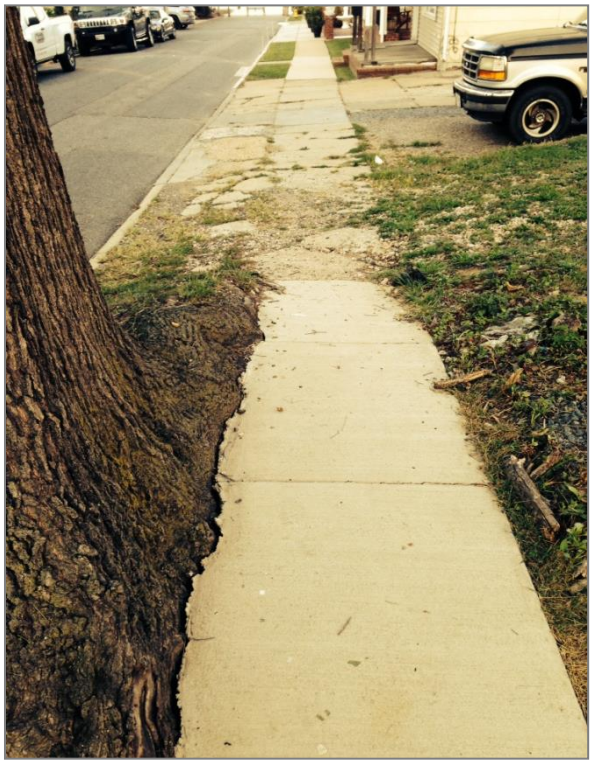

Figure 15: Deteriorating Sidewalk on Severn Ave

Figure 16: Poor Sidewalk Condition along Americana Drive

C.4 Missing, Incomplete, Deteriorating, and Compromised Sidewalks

The following Table 1 outlines deficiencies for individual block faces by cross-streets and the most recurring issues, including incomplete sidewalk segments, obstructed sidewalk segments, and deteriorating sidewalk segments. Issues correspond with the streetscape conditions map shown in Figure 17, while Figure 18 shows where utility poles obstruct walking paths.

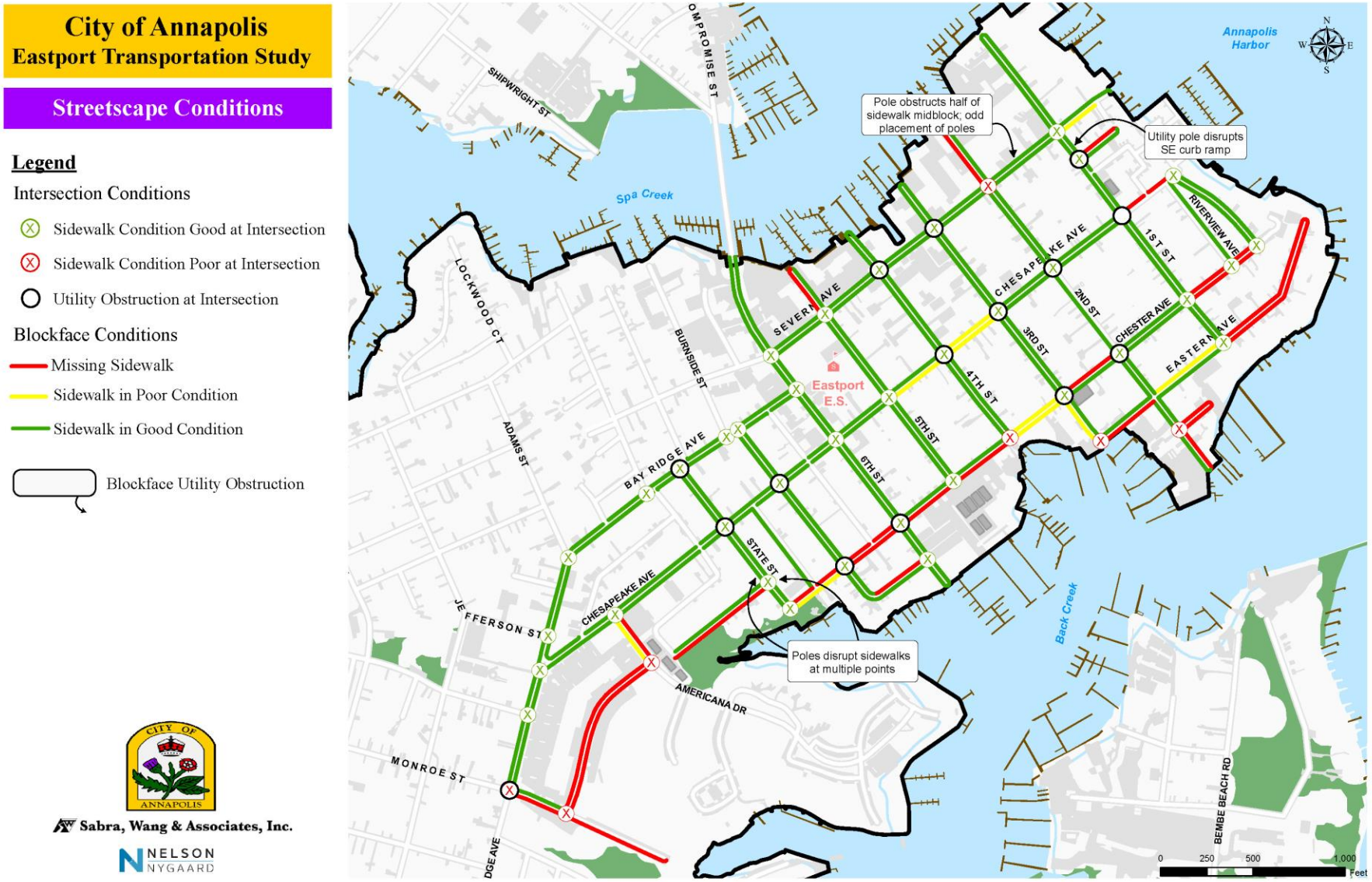

Figure 17: Streetscape Conditions Map

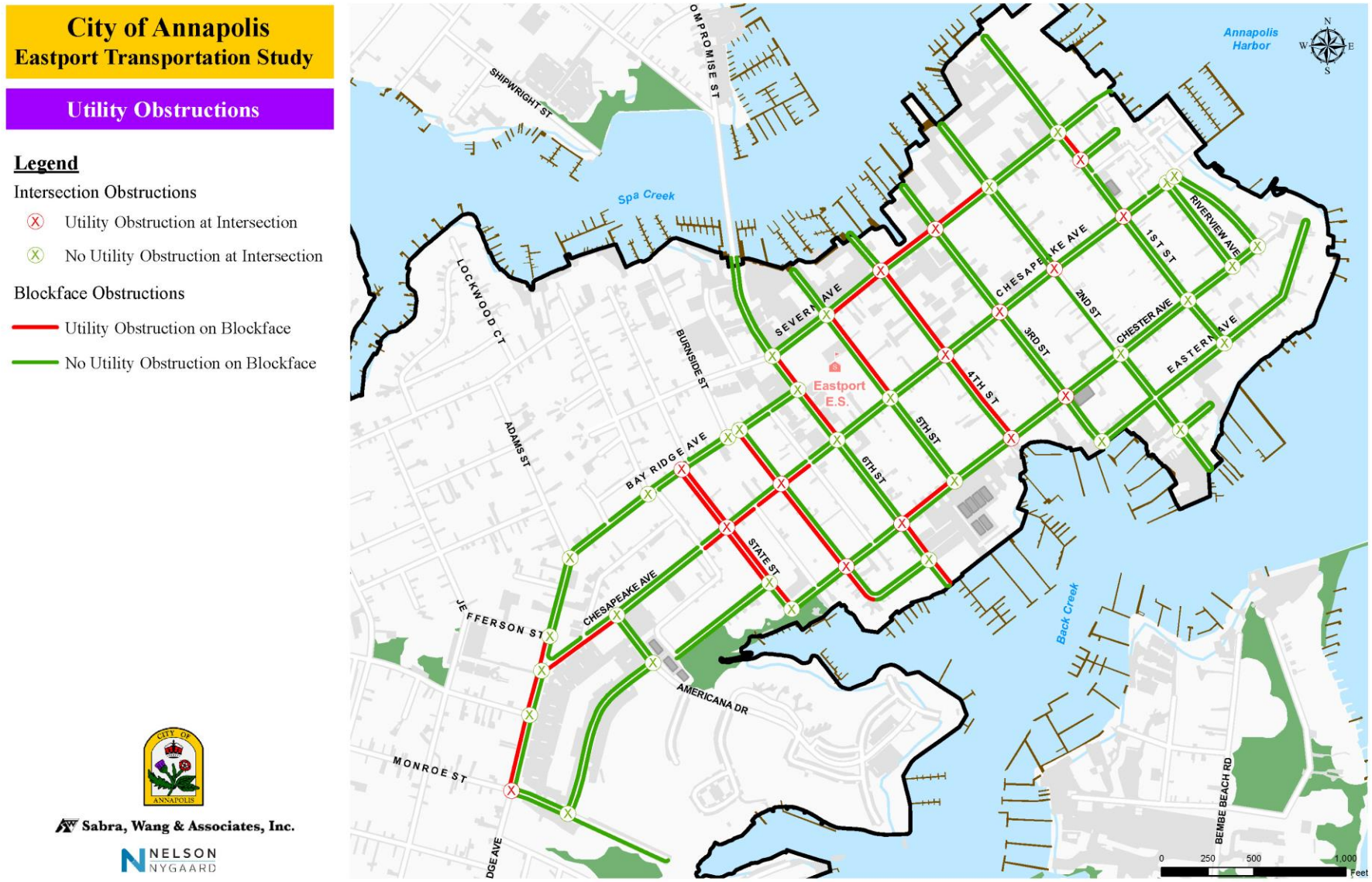

Figure 18: Utility Pole Obstructions Map

Table 1: Deficiencies by Block Face

Street	From	To	Issue
Burnside Street	Chesapeake Avenue	Chester Avenue	West sidewalk obstructed by 2 utility poles
Bay Ridge Avenue	Sailors Way	Adams Street	South sidewalk obstructed by utility pole
State Street	Bay Ridge Avenue	Chesapeake Avenue	East and west sidewalks obstructed by utility poles
State Street	Chesapeake Avenue	Chester Avenue	East and west sidewalks obstructed by utility poles
Chester Avenue	State Street	Burnside Street	No sidewalk on north side, south sidewalk in fair-to-poor condition
Fifth Street	Severn Avenue	Spa Creek	Sidewalk incomplete on west side
Severn Avenue	Fifth Street	Fourth Street	South sidewalk obstructed by 2 utility poles
Fifth Street	Severn Avenue	Chesapeake Avenue	East sidewalk obstructed by 4 utility poles
Chesapeake Avenue	Fifth Street	Fourth Street	Sidewalks in fair-to-poor condition
Chester Avenue	Fifth Street	Fourth Street	North sidewalk obstructed by 5 utility poles, sidewalk incomplete on south side
Burnside Street	Chesapeake Avenue	Bay Ridge Avenue	West sidewalk obstructed by 2 utility poles
Creekview Avenue	Sixth Street	Burnside Street	No sidewalk on north side, no curb on south side
Fourth Street	Chester Avenue	Chesapeake Avenue	East sidewalk obstructed by 3 utility poles
Fourth Street	Chesapeake Avenue	Severn Avenue	East sidewalk obstructed by 5 utility poles and 7 street signs
Chester Avenue	Sixth Street	Fifth Street	No sidewalk on south side, north sidewalk obstructed by a utility pole and street sign
Sixth Street	Chester Avenue	Back Creek	East sidewalk obstructed by 2 Utility Poles

Street	From	To	Issue
Chesapeake Avenue	State Street	Burnside Street	South sidewalk obstructed by 2 utility poles
Chester Avenue	State Street	Dead End	No sidewalk on south side
Chesapeake Avenue	Americana Drive	State Street	South sidewalk obstructed by 4 utility poles and 1 fire hydrant
Chesapeake Avenue	Americana Drive	Bay Ridge Avenue	South sidewalk obstructed by 2 utility poles
Americana Drive	Chesapeake Avenue	Norman Drive	Sidewalk incomplete on east side; west sidewalk in poor condition
Norman Drive	Monroe Street	Americana Drive	No sidewalks
Monroe Street	Bay Ridge Avenue	Norman Drive	No sidewalk on south side
Bay Ridge Avenue	Madison Street	Monroe Street	West sidewalk obstructed by 3 utility poles and 2 street signs
Bay Ridge Avenue	Chesapeake Avenue	Madison Street	West sidewalk obstructed by 2 utility poles
Chester Avenue	Burnside Street	Sixth Street	No sidewalks on multiple sections of west block face
Burnside Street	Chester Avenue	Creekview Avenue	West sidewalk obstructed by utility pole
Chesapeake Avenue	Sixth Street	Burnside Street	South sidewalk obstructed by 3 utility poles
Sixth Street	Chesapeake Avenue	Bay Ridge Avenue	East sidewalk obstructed by utility poles
Severn Avenue	Fourth Street	Third Street	West sidewalk obstructed by multiple utility poles
Severn Avenue	Third Street	Second Street	West sidewalk obstructed by utility pole; oddly placed parking space abuts public sidewalk
Severn Avenue	First Street	Severn River	East sidewalk is severely deteriorating in multiple sections
Second Street	Severn Avenue	Spa Creek	No sidewalk on western side
Chesapeake Avenue	Fourth Street	Third Street	East sidewalk condition is poor
Chesapeake	First Street	Riverview Avenue	No sidewalk on western side

Street	From	To	Issue
Avenue			
Fifth Street	Chesapeake Avenue	Chester Avenue	No sidewalk in multiple sections on the north side of the block, including the NW half
Chester Avenue	Sixth Street	Fifth Street	No sidewalk along eastern side
Bay Shore Avenue	Second Street	Dead End	No sidewalk on either block face
Second Street	Bay Shore Avenue	Dead End	No sidewalk on eastern side; sidewalk not continuous on western side
Chester Avenue	Third Street	Second Street	Sidewalk not continuous on southeastern side
Eastern Avenue	First Street	Dead End	No sidewalk on either block face for half of the street segment
Chester Avenue	First Street	Riverview Avenue	No sidewalk on either block face
Chester Avenue	Riverview Avenue	Horn Point Drive	No sidewalk on either block face

C.5 Intersection Deficiencies

In addition to the lack of tactile warning strips, another common deficiency encountered at Eastport intersections was the lack of crosswalk markings at intersections. Another prevalent issue is pedestrian curb ramps that are narrow and difficult to traverse. Additional common inadequacies include ramps not usable by all desired crossing paths (sometimes forced due to obstruction) and no ramps at all to facilitate certain crossings at offset intersections. The latter is most often seen along Bay Ridge Avenue and higher traffic volume sections of Chesapeake Avenue. An example of ramp encroachment is shown in Figure 19.

Figure 19: Pedestrian Ramp Encroachment

C.6 Non-ADA Compliant and Compromised Pedestrian Facilities at Intersections

The following Table 2 outlines individual intersection conditions by cross-streets and the most recurring issues, including unmarked crosswalks, obstructed ramps, missing pedestrian ramps, steep ramps, narrow ramps, misaligned crosswalks, and missing tactile warning strips. Issues correspond with the streetscape inventory map (Figure 20).

Table 2: Existing Pedestrian Conditions at Intersections

Cross Street 1	Cross Street 2	Issue(s)
Jefferson Street	Bay Ridge Avenue	Narrow pedestrian ramps, crosswalks unmarked, missing ADA compliant tactile warning strips
Burnside Street	Chesapeake Avenue	Narrow pedestrian ramps, ramp obstructed (SW), ramps not at corner, crosswalks unmarked, missing ADA compliant tactile warning strips
Bay Ridge Avenue	Adams Street	No pedestrian ramps on SE side of Bay Ridge, crosswalks unmarked, missing ADA compliant tactile

Cross Street 1	Cross Street 2	Issue(s)
		warning strips
Bay Ridge Avenue	Adams Street	No pedestrian ramps on SE side of Bay Ridge, crosswalks unmarked, missing ADA compliant tactile warning strips
Bay Ridge Avenue	Sailors Way	No pedestrian ramps on SE side of Bay Ridge, crosswalks unmarked, missing ADA compliant tactile warning strips
Bay Ridge Avenue	Washington Street	Narrow pedestrian ramps, steep ramps, ramp obstructed (NW), no ramps on SE side of Bay Ridge, crosswalks unmarked, missing ADA compliant tactile warning strips
Bay Ridge Avenue	State Street	Narrow pedestrian ramps, ramps not aligned, ramps obstructed (SW, SE), crosswalks unmarked, missing ADA compliant tactile warning strips
State Street	Chesapeake Avenue	Pedestrian ramp obstructed (SW), crosswalks unmarked, missing ADA compliant tactile warning strips
State Street	Chester Avenue	No ramps on east side of State, crosswalks unmarked, missing ADA compliant tactile warning strips
Burnside Street	Chester Avenue	Narrow pedestrian ramps, ramp obstructed (NW), ramp not at corner (NW), crosswalks unmarked, missing ADA compliant tactile warning strips
Sixth Street	Bay Ridge Avenue	Pedestrian ramp not aligned (south leg only), crosswalk unmarked (south leg only), missing ADA compliant tactile warning strips
Sixth Street	Severn Avenue	Narrow pedestrian ramp (NW), steep ramp (NW), crosswalk not aligned with sidewalk (west leg), missing ADA compliant tactile warning strips on three curb ramps,
Fifth Street	Severn Avenue	Narrow pedestrian ramps, ramp obstructed (SE), ramp not at corner (SE), crosswalks unmarked (except west leg), missing ADA compliant tactile warning strips
Fifth Street	Chesapeake Avenue	Ramp not at corner (NE, SE), crosswalks unmarked, missing ADA compliant tactile warning strips
Fifth Street	Chester Avenue	No pedestrian ramps on south side of Chester (no sidewalk), crosswalks unmarked, missing ADA compliant tactile warning strips
Burnside Street	Bay Ridge Avenue	No pedestrian ramps to access Bay Ridge sidewalks

Cross Street 1	Cross Street 2	Issue(s)
		opposite Burnside (offset four-way intersection), crosswalks unmarked, missing ADA compliant tactile warning strips
Chester Avenue	Fourth Street	Narrow pedestrian ramp (NW), ramp obstructed (NE), crosswalks unmarked, missing ADA compliant tactile warning strips
Fourth Street	Chesapeake Avenue	Pedestrian ramps not at corner (NE, SE), crosswalk unmarked (east leg only), missing ADA compliant tactile warning strips
Fourth Street	Severn Avenue	Pedestrian ramp obstructed (NW), crosswalks unmarked (north and south legs), missing ADA compliant tactile warning strips
Sixth Street	Creekview Avenue	No pedestrian ramps, crosswalks unmarked, missing ADA compliant tactile warning strips
Americana Drive	Chesapeake Avenue	No ramps on north side of Chesapeake, crosswalks unmarked (except south leg), missing ADA compliant tactile warning strips
Americana Drive	Norman Drive	No pedestrian ramps on east side of Americana (no sidewalk), ramp not at corner (SW), crosswalks unmarked, missing ADA compliant tactile warning strips
Monroe Street	Norman Drive	No pedestrian ramps on south side of Norman (no sidewalk), crosswalks unmarked, missing ADA compliant tactile warning strips
Bay Ridge Avenue	Monroe Street	Pedestrian ramps obstructed (NW, SW), crosswalks unmarked
Bay Ridge Avenue	Madison Street	Pedestrian ramps obstructed (NW, SW), crosswalk unmarked (East Leg Only)
Bay Ridge Avenue	Chesapeake Avenue	Complex intersection, no ramps or crosswalks to cross Chesapeake
Chester Avenue	Sixth Street	Pedestrian ramp obstructed (NE), crosswalks unmarked, missing ADA compliant tactile warning strips
First Street	Jeremy's Way	Pedestrian curb ramp obstructed (SE) by utility pole, missing ADA compliant tactile warning strips, missing ADA compliant tactile warning strips
Third Street	Severn Avenue	Pedestrian ramp obstructed (NW) by utility pole, crosswalks unmarked, missing ADA compliant tactile

Cross Street 1	Cross Street 2	Issue(s)
		warning strips
Second Street	Severn Avenue	Pedestrian ramp obstructed (NE) by overgrown weeds, missing ADA compliant tactile warning strips
First Street	Severn Avenue	Crosswalks unmarked, missing ADA compliant tactile warning strips
Third Street	Chesapeake Avenue	Pedestrian ramp obstructed (SW) by utility pole, crosswalks unmarked, missing ADA compliant tactile warning strips
Second Street	Chesapeake Avenue	Pedestrian ramp obstructed (SW) by utility pole, crosswalks unmarked, missing ADA compliant tactile warning strips
First Street	Chesapeake Avenue	Pedestrian ramp obstructed (SE) by utility pole, crosswalks unmarked, missing ADA compliant tactile warning strips
Chesapeake Avenue	Horn Point Drive	Pedestrian ramps missing on north block of Chesapeake, crosswalks unmarked, missing ADA compliant tactile warning strips
Chester Avenue	Third Street	Pedestrian ramp obstructed (NW) by utility pole, crosswalks unmarked, missing ADA compliant tactile warning strips
Chester Avenue	Second Street	Crosswalks unmarked, missing ADA compliant tactile warning strips
Chester Avenue	First Street	Crosswalks unmarked, missing ADA compliant tactile warning strips
Chester Avenue	Riverview Avenue	Crosswalks unmarked; missing sloped curb ramps and ADA compliant tactile warning strips
Chester Avenue	Horn Point Drive	Crosswalks unmarked; missing sloped curb ramps and ADA compliant tactile warning strips
Eastern Avenue	Third Street	Sidewalk and pedestrian curb ramps missing; crosswalks unmarked
Eastern Avenue	Second Street	Crosswalks unmarked, missing ADA compliant tactile warning strips
Second Street	Bay Shore Avenue	Sidewalk and pedestrian curb ramps missing; crosswalks unmarked
Eastern Avenue	First Street	Crosswalks unmarked, missing ADA compliant tactile warning strips

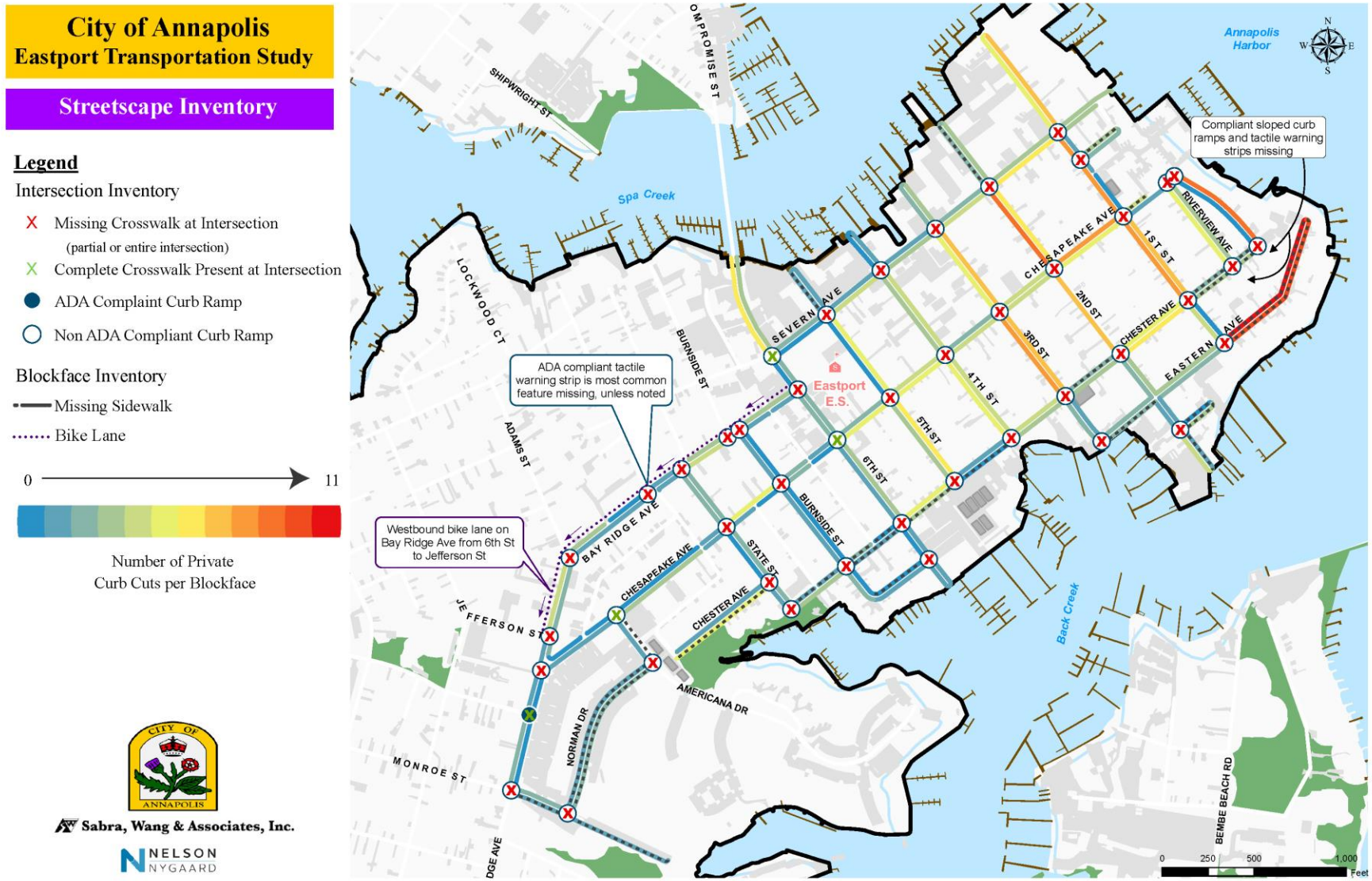

Figure 20: Streetscape Inventory Map

C.7 Summary of Findings on Streetscape Deficiencies

This comprehensive survey of Eastport's streetscape, intersections, and pedestrian and bicycle infrastructure indicates that the neighborhood's existing sidewalk coverage is moderately inclusive, but the majority of intersections are not compliant with ADA standards and can be enhanced by addressing several critical accessibility elements. The city can achieve a more inclusive and functional street network by completing missing sidewalk gaps, repairing deteriorated sidewalk segments (more prevalent in the neighborhood's residential sections), and reconfiguring the placement of utility poles that disrupt pedestrian flow on sidewalks and limit accessibility on curb ramps at intersections.

D. Transit Service

Fixed-Route Service Overview

Routes

Annapolis Transit provides Eastport with local fixed-route bus service seven days a week which operate routes from Eastport Shopping Center to Westfield Mall. These routes include:

- Red Route: operates via Hilltop Lane and Admiral Drive
- Green Route: operates via West Street and downtown.
- Brown Route: operates via Forest Drive.
- Purple Route: North and South lines

Purple Route North follows a path similar to that of the Green Route while Purple Route South serves predominantly along the Brown Route corridor. Annapolis Transit utilizes a fleet of 30-ft Gillig hybrid-diesel vehicles with trolley vehicles providing the Circulator services within the central business district. Figure 21 highlights the routes serving the study area as well as monthly ridership data.

Service Levels

Weekday service span and frequency is detailed in **Table 3**. Weekend service span and frequency is detailed in **Table 4** and **Table 5**.

Table 3: Weekday Service Span and Frequency

Route	Service Type	Span	Frequency (minutes)				
			AM Period 5:30AM-9AM	Midday 9AM-3PM	PM Period 3PM-7PM	Evening 7PM-10:30PM	Night 10:30PM-2AM
Red	Local	5:30a – 6:55p	30	30	30	-	-
Green	Local	5:30a – 6:54p	30	30	30	-	-
Brown	Local	5:30a – 6:53p	45	45	45	-	-
Purple North	Local	7:00p – 10:36p	-	-	-	75	-
Purple South	Local	6:57p – 10:39p	-	-	-	75	-

Table 4: Saturday Service Span and Frequency

Route	Service Type	Span	Frequency (minutes)				
			AM Period 5:30AM-9AM	Midday 9AM-3PM	PM Period 3PM-7PM	Evening 7PM-10:30PM	Night 10:30PM-5:30AM
Red	Local	5:30a – 6:55p	30	30	30	-	-
Green	Local	5:30a – 6:54p	30	30	30	-	-
Brown	Local	7:15a – 7:08p	45	45	45	-	-
Purple North	Local	7:00p – 10:36p	-	-	-	75	-
Purple South	Local	6:57p – 10:39p	-	-	-	75	-

Table 5: Sunday Service Span and Frequency

Route	Service Type	Span	Frequency (minutes)
Purple North	Local	7:05a – 8:06p	75
Purple South	Local	7:00a – 8:09p	75

Ridership Trends

Of the four Annapolis Transit bus routes that operate in Eastport, monthly ridership is highest on the Brown Route (8,683 average passengers), and the Green Route (8,203 average passengers), as shown in Table 6.

To determine transit demand within the study area ridership counts were conducted on all inbound and outbound Green Route and Red Route trips during the peak morning (6:30-9:00 AM) and evening (4:30-6:00 PM) commuting periods on September 17, 2015. Analyzed by individual stop, ridership is highest at Monroe Street/Eastport Shopping Center; as shown in Figure 22, the 136 boardings and alightings are nearly twice as many as all other stops. Ten or more combined boardings and alightings were also recorded at the following stops: Madison Street and President Street (14), Bay Ridge Avenue and 6th Street (10), and Chesapeake Avenue at Eastport Shopping Center (10).

Table 6: Average Monthly Ridership

Route	Service Type	Average Monthly Ridership (2015)
Brown	Local	8,683
Green	Local	8,203
Purple North*	Local	3,301
Purple South*	Local	3,301
Red	Local	6,254

*Purple line has to routes, north and south, but is only one bus line.

City of Annapolis
Eastport Transportation Study

Existing Transit Network

Legend

Watermark Water Taxi Service

Watermark Dock

Water Taxi Service Area

Note: There is no set route for the water taxi.
Water taxi can be called from several locations.
All stops are serviced on demand only.

Annapolis Transit Bus Service

Bus Stop

Brown Route

Green Route

Purple-North Route

Purple-South Route

Red Route

A.T. Bus Route	Ridership	Frequency	
	Avg. Monthly Ridership (2015)	AM Peak Hr Buses/Hour	PM Peak Hr Buses/Hour
Brown	8,683	3	3
Green	8,203	4	4
Purple - N	3,301	0	0
Purple - S	3,301	0	0
Red	6,254	5	5

Ridership
Source: Unlinked Passenger Trips, Fiscal Year 2015.

Frequency
Includes both directions of travel.
Peak Periods - AM: M-F 7:00-9:00am & PM: M-F 4:00-6:00pm
Source: City of Annapolis /Transportation / Bus Routes and Schedules

Sabra, Wang & Associates, Inc.

NELSON NYGAARD

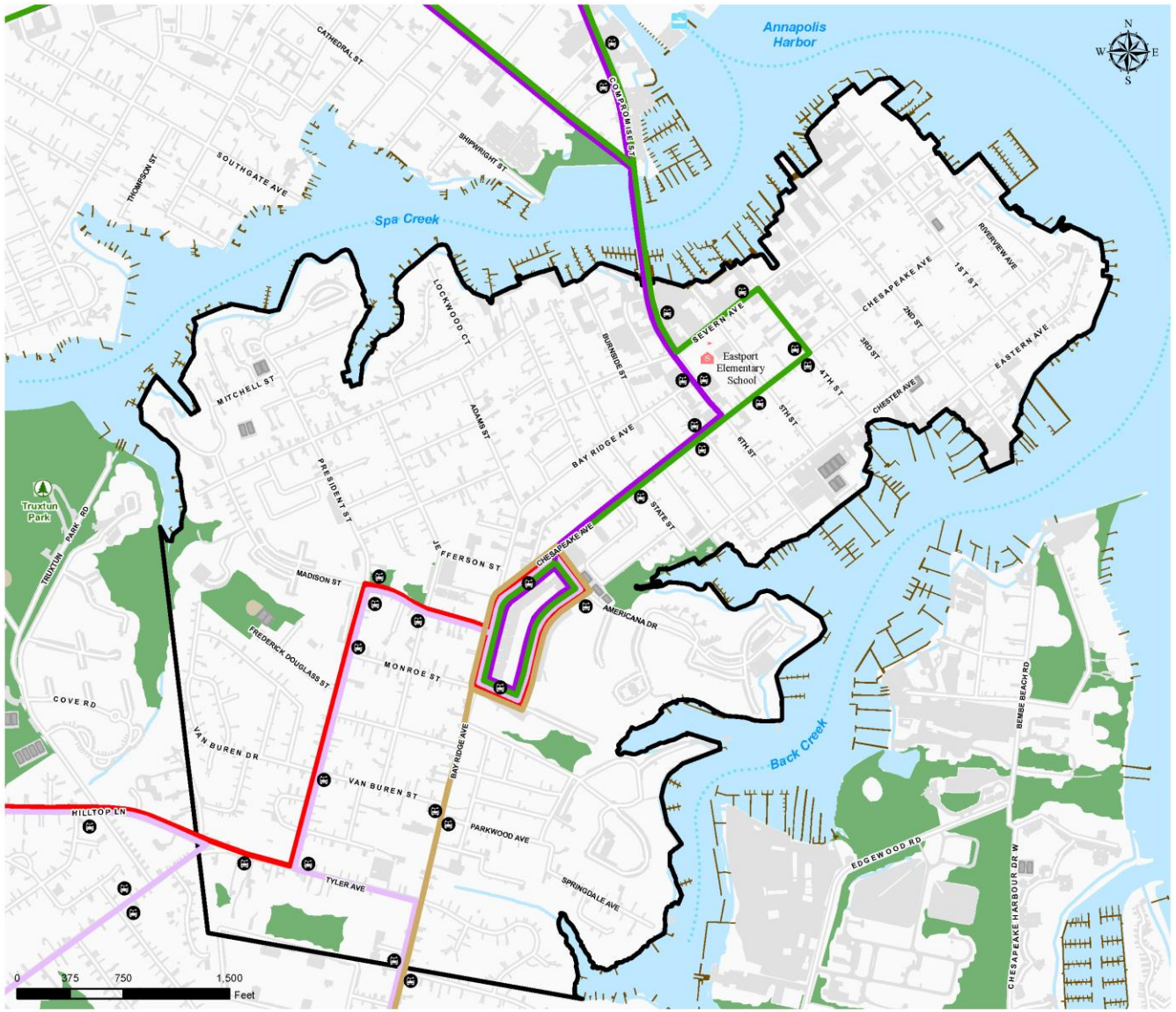

Figure 21: Existing Transit Network

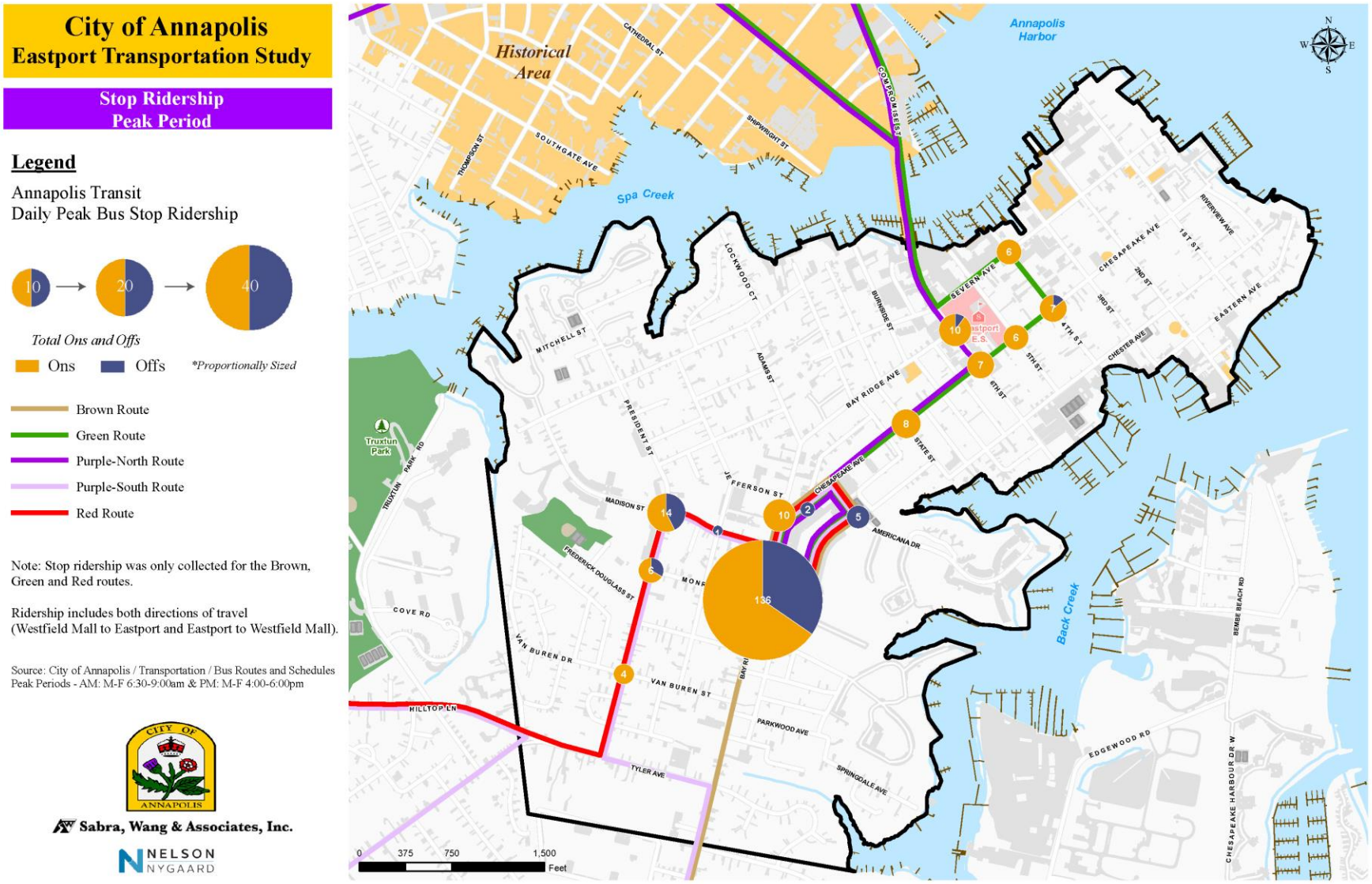

Figure 22: Stop Ridership by Peak Period

Transfer Centers/Transit Stops

In Eastport, the major transit stop is located to the south of Eastport Shopping Center on Monroe Street and serves as the primary transfer stop between routes. Passenger facilities consist of covered bus shelters and benches.

The remaining 13 bus stops within in the study area consist of typical bus stop signs mounted to various street sign poles. Route information is rarely included on these signs. Bus turnouts, which create a designated area for passenger boarding and alighting while minimizing the disruption of traffic flow, are not present at any bus stop locations in Eastport.

Fare Structure

The base fare for local bus service is $2.00 per one-way trip. Seniors, disabled passengers, and students may ride for a reduced cash fare of $1.00 on local bus service; the downtown Circulator service utilizes a flat rate of $1.00. Up to three children under the age of five may ride for free with a fare-paying adult. Annapolis Transit has a reduced-fare program for seniors, people with disabilities and students at a 50% discount, with a valid identification. The reduced-fare program is applicable to both the base fare and passes, but not to ADA par transit service. Fares are described in Table 7.

Table 7: Fare Structure

Fixed-Route Service Fares		
Single Rides	Fare	Notes
Base cash fare	$2.00	
Circulator (shuttle service)	$1.00	Services Central Business District. Participating garages include Park Place, Knighton & Gotts garages
Children (5 years old and under)	Free	Up to 3 children ride for free with a paying adult.
Student/Medicare Card Holders	$0.50 (Circulator) $1.00 (all other routes)	With valid photo ID; public/private schools, colleges, Naval Academy in the service area.
Seniors and disabled	$0.50 (Circulator) $1.00 (all other routes)	With valid photo ID; includes senior age 60 and over.
ADA Service cash fare	$4.00	For curb-to-curb service
Tokens in Bulk (per 100)	$150.00	For community promotions, non-profit organizations by prior agreement.
Unlimited Ride Passes	Fare	Notes
Day Pass Fare	$4.00	
Day Pass (Senior/Disabled/Student)	$2.00	
Weekly Pass	$20.00	
Monthly Pass	$80.00	
Quarterly Pass	$200.00	
Annual Pass	$500.00	
Summer Youth Pass	$35.00	Requires valid school-issued ID; June 16 to Labor Day

Historical Trends

Annual trends for system-wide boardings, revenue hours, revenue miles, operating costs, and farebox revenue between 2012 and 2014 are shown in Table 8. Data shown here represents all Annapolis Transit fixed-route service and was retrieved from the National Transit Database.

Overall ridership increased significantly from 2012 to 2014. This was due in part to the restructuring of the system including the elimination of the free transfer policy as well as the introduction of the free Circulator service. As operating costs increased modestly, the farebox recovery ratio improved almost negligibly despite the ridership increase as a result of the free Circulator service. As such, the average revenue per passenger trip was significantly less in 2014 than 2012.

Table 8: System Wide Operating Trends

	2012	2013	2014	2012-2014
Operating Data				
Ridership	604,827	723,045	748,205	+23.7%
Revenue Hours	58,859	75,776	74,828	+27.1%
Revenue Miles	704,994	841,724	806,508	+14.4%
Operating Costs	$4.2M	$3.8M	$4.3M	+2.9%
Farebox Revenue	$747K	$755K	$779K	+4.3%
Performance Indicators				
Cost Efficiency				
Operating Cost per Revenue Hour	$71.68	$50.61	$58.00	-19.1%
Operating Cost per Revenue Mile	$5.98	$4.56	$5.38	-10.0%
Cost Effectiveness				
Operating Cost per Passenger	$6.98	$5.30	$5.80	-16.9%
Farebox Recovery Ratio	17.7%	19.7%	17.9%	+1.1%
Average Revenue per Passenger	$1.24	$1.04	$1.04	-16.1%
Average Subsidy per Passenger	$5.74	$4.26	$5.76	+0.3%
Service Productivity				
Passengers per Revenue Hour	10.3	9.5	10.0	-2.9%
Passengers per Revenue Mile	0.86	0.86	0.93	+8.1%

Demand-Response Overview

ADA and Paratransit services operated by the City of Annapolis are an origin to destination service for people with disabilities who are not able to ride fixed-route public transportation, including lift-equipped buses. The service is usually curb-to-curb but door-to-door service may be requested at the time of trip reservation.

Service Levels

Paratransit service is provided during the hours and days of the week that Annapolis Transit fixed route service operates. The paratransit service area consists of any location within three-quarters of a mile of any fixed-route service. According to the National Transit Database, the City of Annapolis operates a single demand-response vehicle which made 5,462 trips in 2013 and 4,715 trips in 2014.

Eligibility

To participate in the paratransit program, an individual must complete an application from Annapolis Transit and submit it to Annapolis Transit Paratransit Service. Service eligibility is dependent upon the individual's inability to use the regular fixed-route buses as determined by the individual's physician. All riders must complete an application for certification for paratransit eligibility. Some individuals may be eligible for paratransit services on a conditional basis and will ride both fixed-route and paratransit on a trip-by-trip basis.

Fare Structure

The one-way cash fare for paratransit service is $4.00; the reduced-fare program is not applicable to this service.

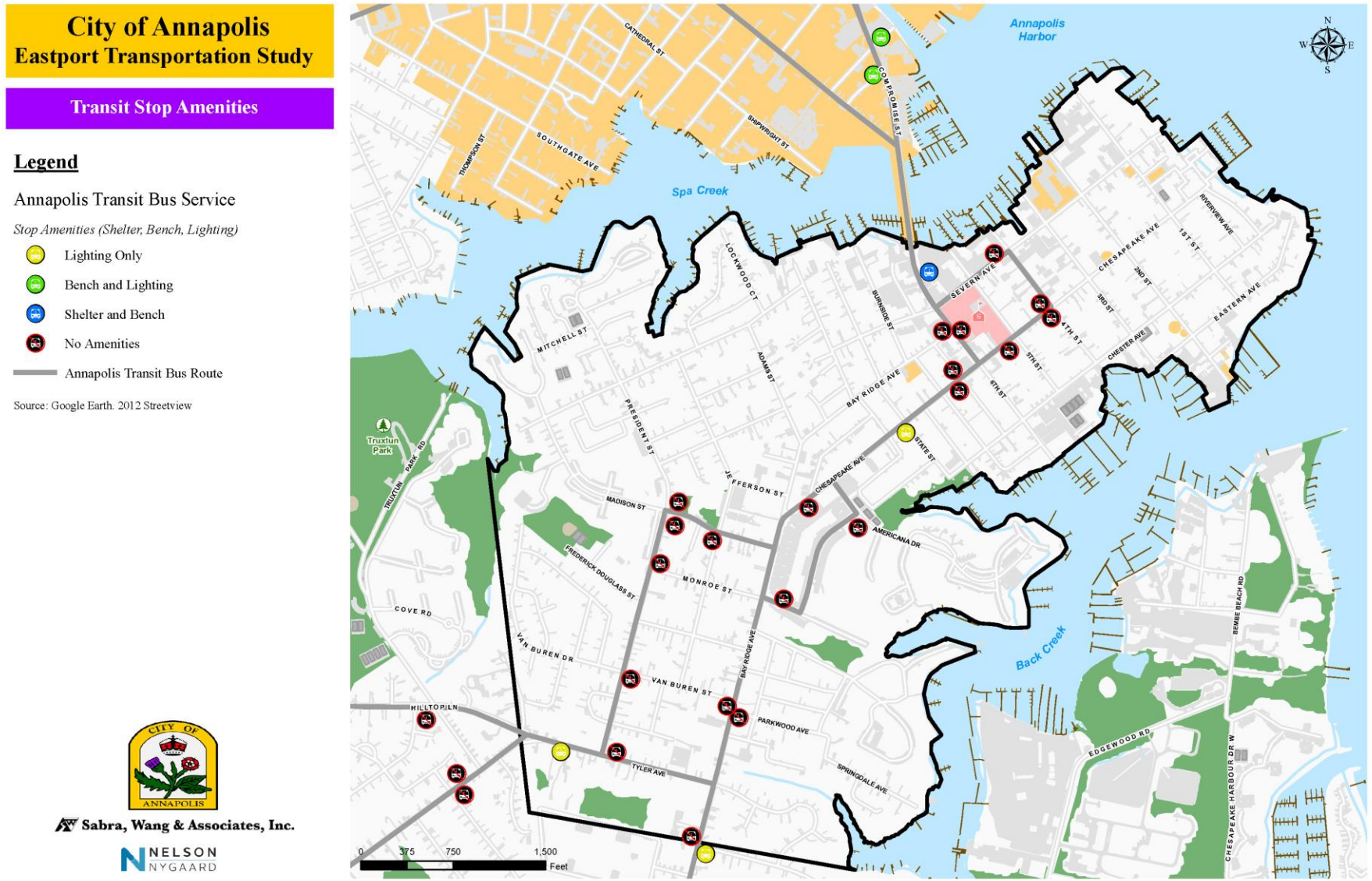

Figure 23: Transit Stop Amenities

E. Existing Non-Event Intersection Capacity and Level of Service

Intersection capacity analyses were performed using the Highway Capacity Manual (HCM) methodology for all study intersections. The performance measure of effectiveness used was the Level of Service (LOS). LOS is a qualitative measure describing operational conditions based on the amount of delay experienced at an intersection. LOS ranges from A to F, where LOS A represents optimal conditions, and LOS F represents saturated or failing conditions. Table 9 shows the letter grades and their corresponding average vehicle delay values for different Levels of Service for both signalized and unsignalized intersections. The difference in delay times for each is due to the fact that drivers are more likely to tolerate delay at signalized intersections than stop-controlled ones. Level of services A through D are considered acceptable in most jurisdictions indicating the intersection operates satisfactorily and is not in need of improvement.

Table 9: Intersection Level of Service Delay Ranges

Signalized Intersections		Unsignalized Intersections	
Level of Service	Delay Range (sec)	Level of Service	Delay Range (sec)
A	≤10	A	≤10
B	>10 and ≤20	B	>10 and ≤ 15
C	>20 and ≤35	C	>15 and ≤ 25
D	>35 and ≤55	D	>25 and ≤ 35
E	>55 and ≤80	E	>35 and ≤ 50
F	>80	F	>50

The capacity analysis was used to identify existing traffic operational deficiencies within the study area during 3 peak periods:

- weekday morning;
- weekday evening; and
- Saturday mid-day.

The traffic analysis shows that all study area intersections currently operate at an acceptable level of service for all three study periods. Figure 25 and Figure 24 show the intersection level of service for each study area intersection for AM/PM and Saturday mid-day, respectively. Additional individual intersection *approaches* were evaluated; and none were shown to be operating an LOS lower than D, as shown in Table 10, which shows the comprehensive LOS, V/C and queuing for each study area intersection and approach.

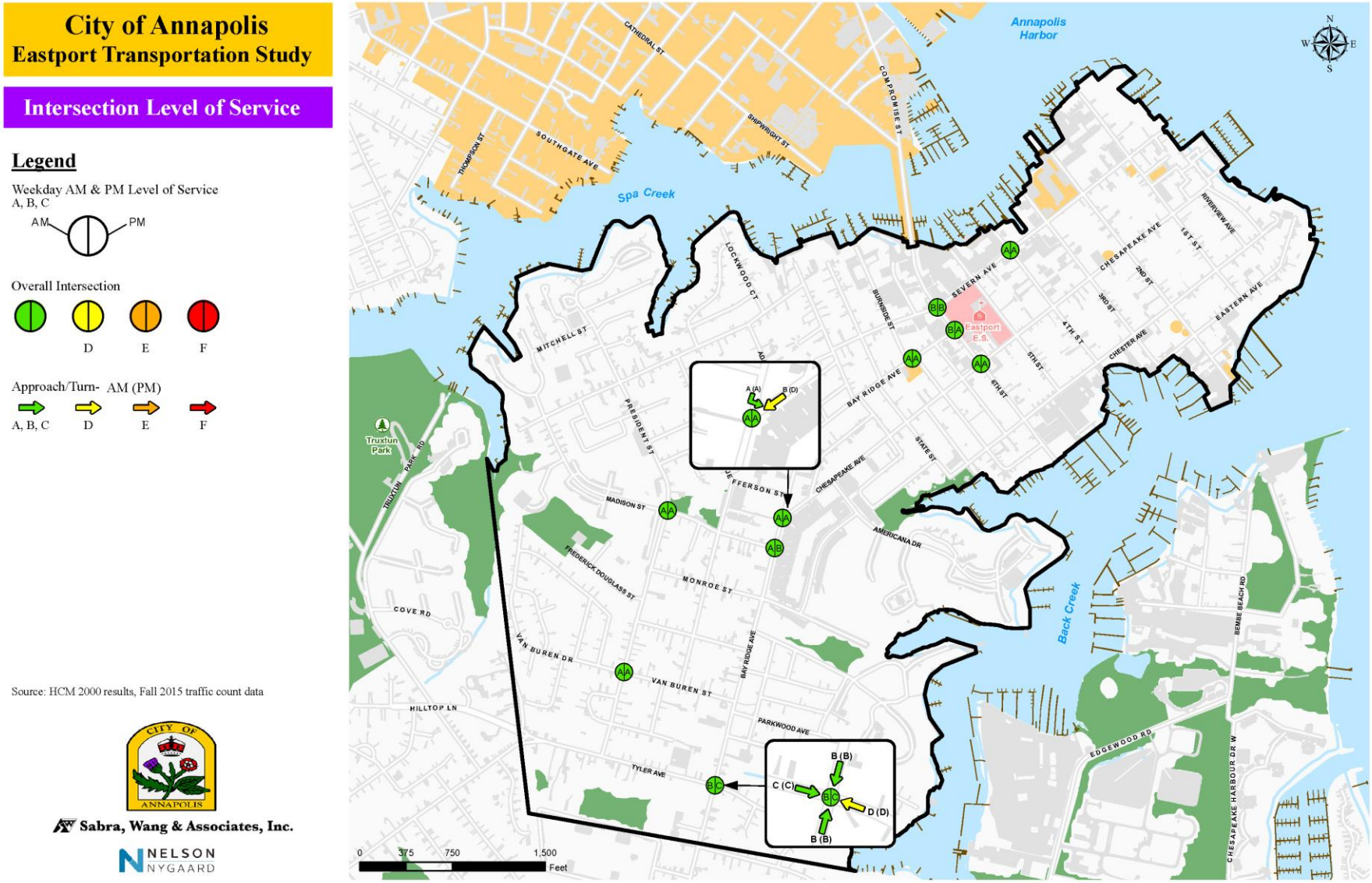

Figure 24: Intersection Level of Service - Weekday

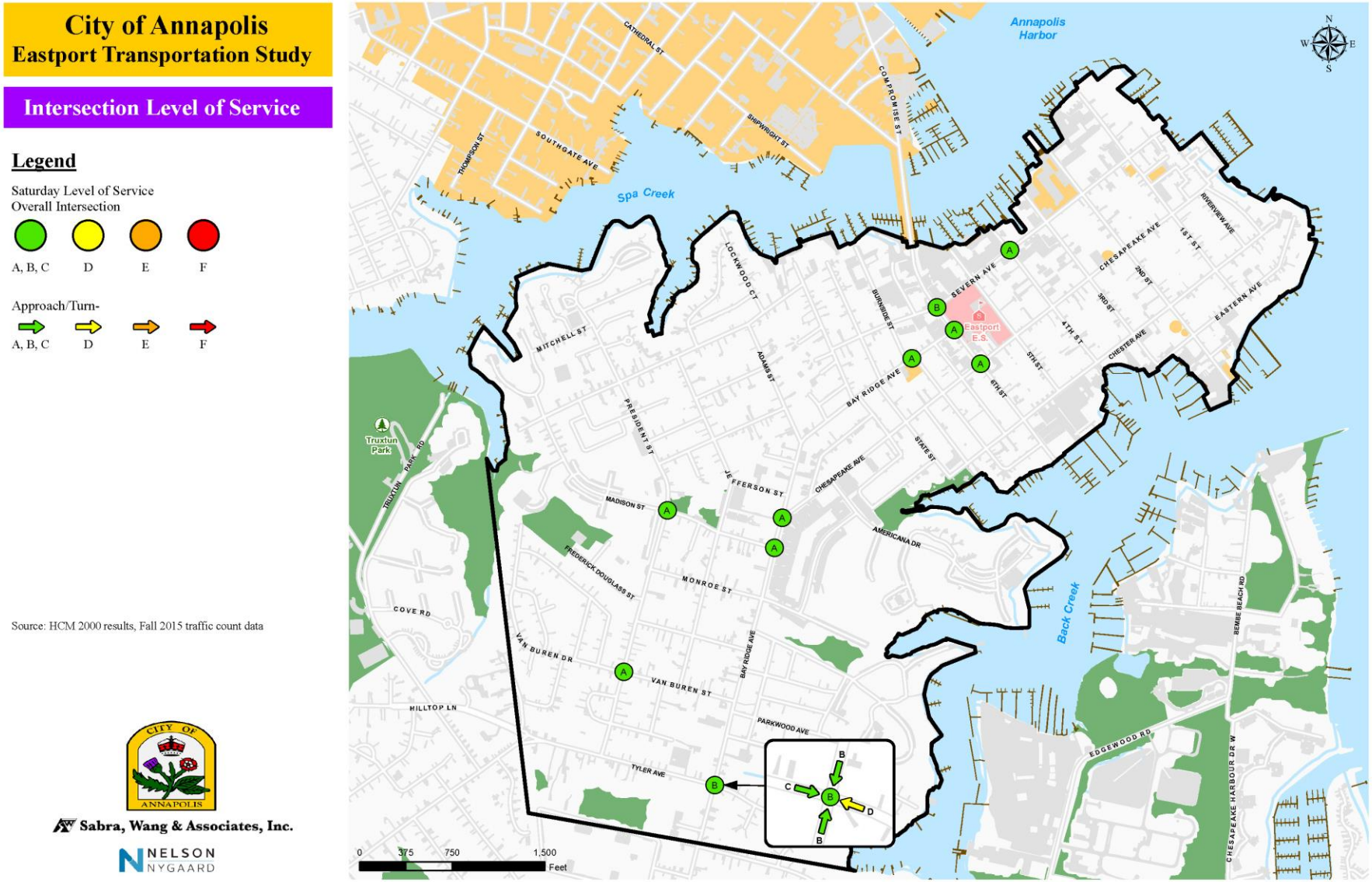

Figure 25: Intersection Level of Service - Saturday

Table 10: Intersection Level of Service and Queuing

	Study Intersection	Approach	Movement	LOS AM (PM) [SAT]	v/c AM (PM) [SAT]	Delay (s) AM (PM) [SAT]	95% Queue (ft) AM (PM) [SAT]
1	Second St at Eastern Ave	**Overall**	-	A (A) [A]	-	6.9 (7.0) [7.1]	-
		EB	Overall	A (A) [A]	0.00 (0.01) [0.01]	6.6 (7.1) [6.8]	13 (12) [15]
		WB	Overall	A (A) [A]	0.07 (0.09) [0.10]	6.4 (6.7) [6.9]	11 (14) [15]
		NB	Overall	A (A) [A]	0.13 (0.23) [0.23]	7.0 (7.1) [7.1]	16 (20) [18]
		SB	Overall	A (A) [A]	0.09 (0.16) [0.16]	7.0 (7.0) [7.3]	18 (11) [14]
2	Severn Ave at 4th St	**Overall**	-	A (A) [A]	-	7.6 (8.2) [8.2]	-
		EB	Overall	A (A) [A]	0.00 (0.01) [0.01]	7.0 (7.4) [7.6]	63 (64) [55]
		WB	Overall	A (A) [A]	0.07 (0.09) [0.10]	7.7 (8.1) [8.1]	61 (64) [56]
		NB	Overall	A (A) [A]	0.13 (0.23) [0.23]	7.6 (8.3) [8.4]	56 (48) [48]
		SB	Overall	A (A) [A]	0.09 (0.16) [0.16]	7.6 (8.2) [8.2]	28 (31) [24]
3	Severn Ave at 6th St	**Overall**	-	B (B) [B]	0.61 (0.61) [0.72]	14.6 (13.1) [15.1]	-
		EB	Overall	C (C) [C]	0.43 (0.25) [0.31]	33.6 (24.0) [25.1]	129 (77) [109]
		WB	Overall	C (C) [C]	0.15 (0.51) [0.41]	28.1 (28.7) [26.6]	119 (165) [152]
		NB	Overall	B (A) [A]	0.64 (0.42) [0.31]	13.5 (9.1) [9.1]	221 (197) [154]
		SB	Overall	A (A) [B]	0.52 (0.60) [0.79]	9.7 (9.7) [14.0]	462 (428) [373]
4	Bay Ridge Ave at 6th St	**Overall**	-	B (A) [A]	-	0.2 (0.2) [0.1]	-
		NB	Overall	A (A) [A]	0.01 (0.01) [0.01]	0.3 (0.4) [0.3]	193 (103) [37]
		SB	Overall	-	-	-	20 (21) [20]
			Through	-	0.15 (0.24) [0.22]	0.0 (0.0) [0.0]	-
			Right	-	0.13 (0.20) [0.14]	0.0 (0.0) [0.0]	-
5	Chesapeake Ave at 6th St	**Overall**	-	A (A) [A]	0.64 (0.51) [0.41]	8.1 (8.8) [9.3]	-
		EB	Overall	A (A) [A]	-	3.9 (3.6) [3.3]	274 (170) [115]
			Left	A (A) [A]	0.62 (0.48) [0.30]	4.4 (4.3) [3.8]	-
			Through/Right	A (A) [A]	0.12 (0.17) [0.16]	2.0 (2.3) [2.6]	-
		WB	Overall	C (B) [B]	0.47 (0.45) [0.52]	24.7 (15.1) [18.2]	112 (182) [143]
		SB	Overall	B (B) [B]	-	12.1 (13.2) [11.8]	88 (157) [107]
			Left/Through	C (C) [C]	0.42 (0.41) [0.46]	30.2 (25.7) [23.8]	-
			Right	A (B) [A]	0.10 (0.20) [0.16]	5.8 (10.8) [7.9]	-
6	Bay Ridge Ave at Burnside St	**Overall**	-	A (A) [A]	-	1.5 (1.5) [2.5]	-
		WB	Overall	-	0.15 (0.24) [0.14]	0.0 (0.0) [0.0]	0 (3) [0]
		NB	Overall	B (B) [B]	0.06 (0.10) [0.10]	10.6 (12.4) [10.9]	46 (57) [20]
		SB	Overall	A (B) [A]	0.01 (0.01) [0.00]	9.6 (10.6) [9.5]	22 (23) [46]
7	Bay Ridge Ave at Chesapeake Ave	**Overall**	-	A (A) [A]	-	3.1 (7.2) [6.0]	-
		WB	Overall	B (D) [C]	0.37 (0.73) [0.61]	12.1 (27.2) [18.1]	119 (282) [183]
		NB	Overall	-	0.43 (0.39) [0.38]	0.0 (0.0) [0.0]	73 (51) [22]
		SB	Overall	-	-	0.4 (0.2) [1.1]	21 (63) [46]
			Left	A (A) [A]	0.01 (0.01) [0.03]	9.2 (8.9) [9.0]	-
			Through	-	0.09 (0.26) [0.13]	0.0 (0.0) [0.0]	-
8	Bay Ridge Ave at Madison Ave	**Overall**	-	A (B) [A]	0.56 (0.74) [0.58]	7.5 (13.9) [9.5]	-
		EB	Overall	C (B) [C]	0.42 (0.25) [0.57]	24.1 (18.5) [24.2]	64 (77) [103]
		WB	Overall	C (C) [B]	-	24.3 (25.6)[18.8]	62 (132)[43]
			Left/Through	C (C) [B]	0.48 (0.68) [0.43]	25.1 (26.3)[19.1]	-
			Right	C (C) [B]	0.01 (0.01) [0.01]	20.7 (17.0) [18.4]	-
		NB	Overall	A (A) [A]	-	6.0 (9.8) [7.7]	263 (273) [254]
			Left	A (A) [A]	0.03 (0.12) [0.08]	3.2 (6.6) [4.7]	-
			Through/Right	A (A) [A]	0.58 (0.60) [0.58]	6.1 (10.0) [7.9]	-
		SB	Overall	A (B) [A]	-	4.8 (13.3) [7.4]	157 (215) [177]
			Left	A (A) [A]	0.07 (0.11) [0.06]	3.4 (6.3) [4.6]	-
			Through/Right	A (B) [A]	0.44 (0.76) [0.55]	4.9 (13.6) [7.5]	-
9	President St at Madison Ave	**Overall**	-	A (A) [A]	-	7.9 (8.0) [7.8]	-
		EB	Overall	A (A) [A]	0.09 (0.09) [0.06]	7.5 (7.5) [7.3]	52 (47) [49]
		WB	Overall	A (A) [A]	0.07 (0.07) [0.06]	7.9 (7.8) [7.7]	46 (45) [45]
		NB	Overall	A (A) [A]	0.17 (0.21)[0.16]	8.1 (8.4)[8.0]	56 (67)[61]
		SB	Overall	A (A) [A]	0.11 (0.07) [0.10]	8.0 (7.8) [7.8]	53 (51) [54]
7	President St at Van Buren St	**Overall**	-	A (A) [A]	-	8.3 (8.6) [8.2]	-
		EB	Overall	A (A) [A]	0.21 (0.18) [0.05]	8.5 (8.4) [7.5]	61 (58) [45]
		WB	Overall	A (A) [A]	0.20 (0.28) [0.03]	8.4 (9.0) [7.9]	59 (67) [42]
		NB	Overall	A (A) [A]	0.07 (0.04) [0.23]	7.7 (7.7) [8.5]	52 (43) [71]
		SB	Overall	A (A) [A]	0.04 (0.07) [0.16]	8.0 (8.2) [8.1]	43 (45) [55]
6	Bay Ridge Ave at Tyler Ave	**Overall**	-	B (C) [B]	0.55 (0.68) [0.57]	16.7 (20.6) [17.5]	-
		EB	Overall	C (C) [C]	-	27.4 (30.9) [24.9]	189 (290) [191]
			Left	C (C) [C]	0.63 (0.76) [0.63]	28.8 (33.7) [26.3]	-
			Through/Right	C (C) [C]	0.27 (0.41) [0.27]	23.8 (24.9) [21.3]	-
		WB	Overall	D (D) [D]	0.29 (0.09) [0.37]	40.0 (43.9) [48.5]	124 (102) [31]
		NB	Overall	B (B) [B]	-	12.9 (14.2) [13.9]	213 (189) [180]
			Left	B (B) [B]	0.26 (0.29) [0.23]	10.9 (13.6) [12.5]	-
			Through/Right	B (B) [B]	0.47 (0.42) [0.40]	13.5 (14.3) [14.3]	-
		SB	Overall	B (B) [B]	-	13.1 (17.5) [14.5]	157 (271) [188]
			Left/Through	C (C) [C]	0.39 (0.69) [0.54]	21.2 (28.3) [23.2]	-
			Right	A (A) [A]	0.25 (0.29) [0.23]	8.0 (6.4) [5.8]	-

F. Crash Analysis

Reported vehicles and pedestrian crashes that occurred within the study area from 2012 through 2014 are shown in Figure 26. A summary of the crash history is provided below.

- A total of 27 vehicle crashes occurred over a period of three years
- About half (15) of the crashes resulted in property damage with the remaining (11) resulting in injury, but none of the crashes resulted in a fatality
- A majority of the crashes (23) occurred at an intersection
- 6th at Chesapeake Avenue and Bay Ridge Avenue at Madison Street experienced the highest number of crashes at seven crashes each
- The most frequent (for 11 crashes) reason for the crash was cited as *failure to give full attention*
- Half of the crashes occurred during the day and half occurred at night
- A majority of the crashes (19) occurred under dry roadway conditions
- The breakdown of types of crashes is as follows from the most to least frequent:
    - rear-end (6),
    - left turn (6),
    - angle (5),
    - fixed object (4),
    - pedestrian (3),
    - sideswipe (1),
    - other (2)
- Three pedestrian related crashes occurred:
    - 6th Street at Severn Avenue
    - 6th Street at Bay Ridge Avenue
    - Bay Ridge at Tyler

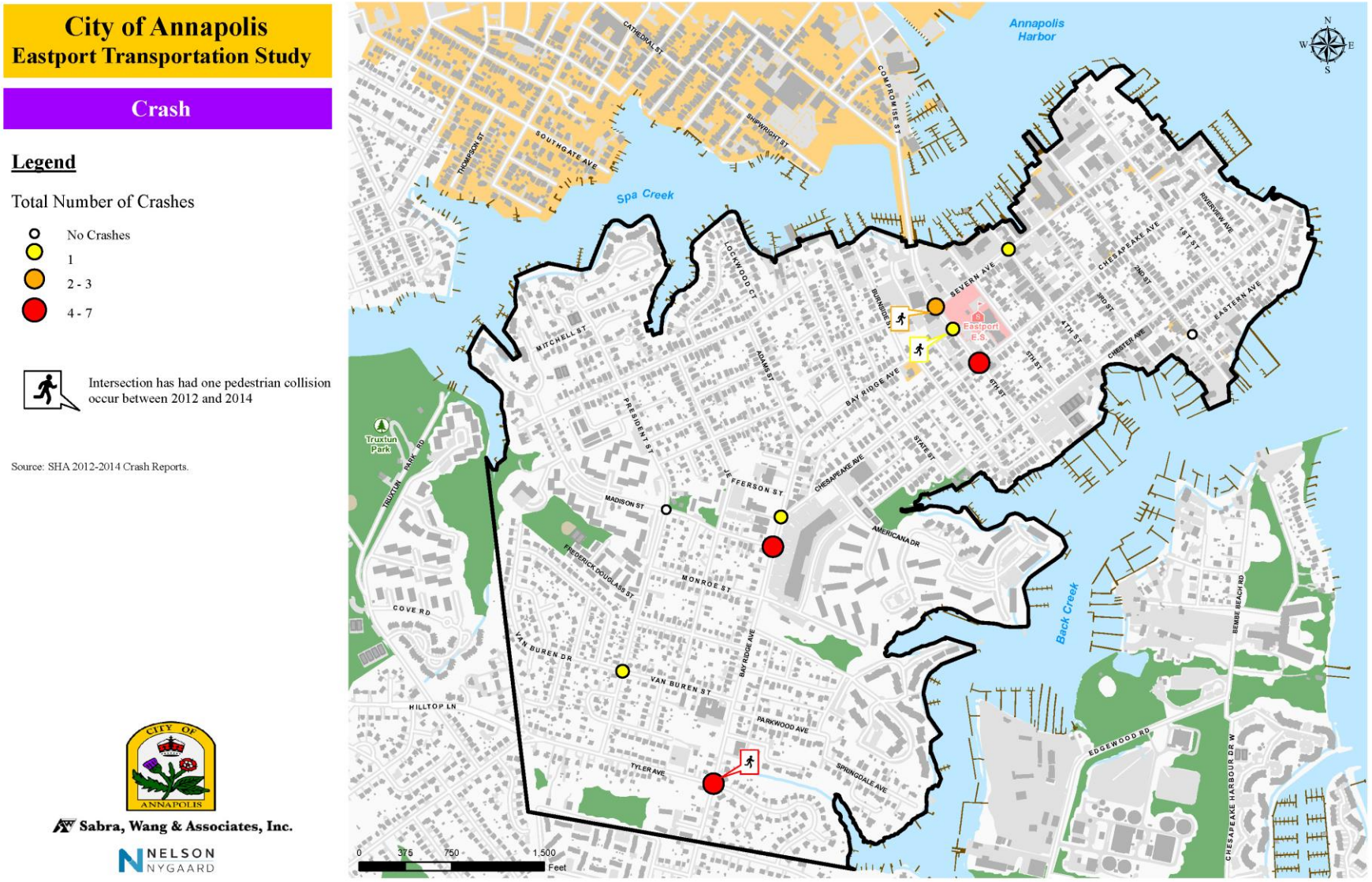

Figure 26: Crash Locations

G. Speeding

Speeding as examined at two locations: 1) 6th Street just north of Severn Ave; and 2) Chesapeake Ave, near the post office. The analysis looked at the percent speeders by time-of-day. Figure 27 shows the percent of drivers who are speeding entering into Eastport along 6th Street from Downtown Annapolis. The speed limit for this location is 25 mph. The graph shows that speeding in excess of 10 mph more than the speed limit is relatively rare, spiking up to 5% around midnight. The percent of motorist exceeding the speed limit by 5 mph ranges from 5% around 7:00 PM to over 30% in the early morning hours, where overall volumes are substantially lower. There is, however, a large percentage of motorists exceeding 30 mph in the morning when volumes are heavy and children are walking to school.

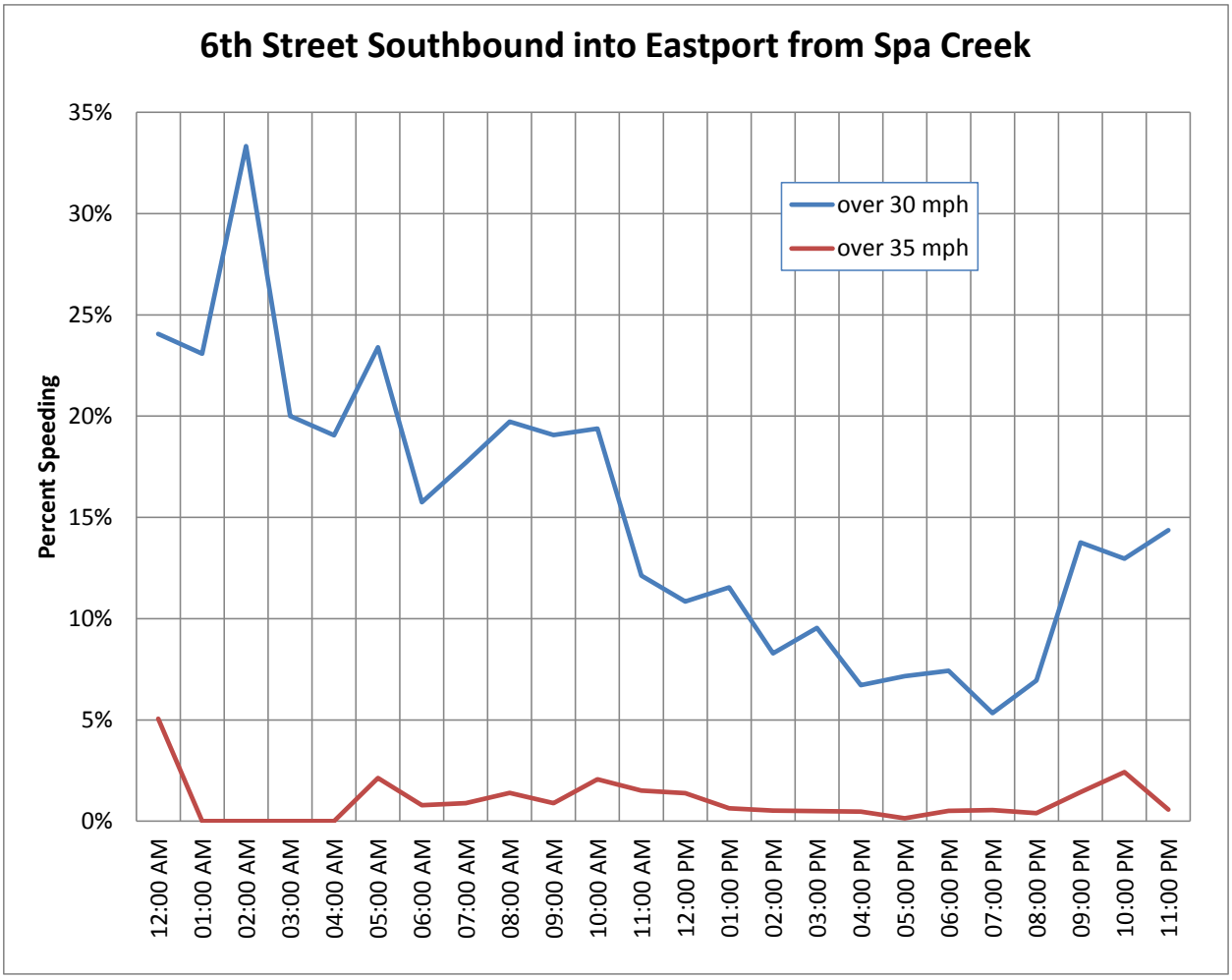

Figure 27: Percent of 6th Street drivers speeding, by time of day

As shown in Figure 28, a similar pattern emerges along Chesapeake Ave, near the post office. The speed limit at this location is also 25 mph. The graph shows that speeding in excess of 5mph

and in excess of 10 mph more than the speed limit occurs mostly from midnight to about 5 AM, when overall volumes are substantially lower.

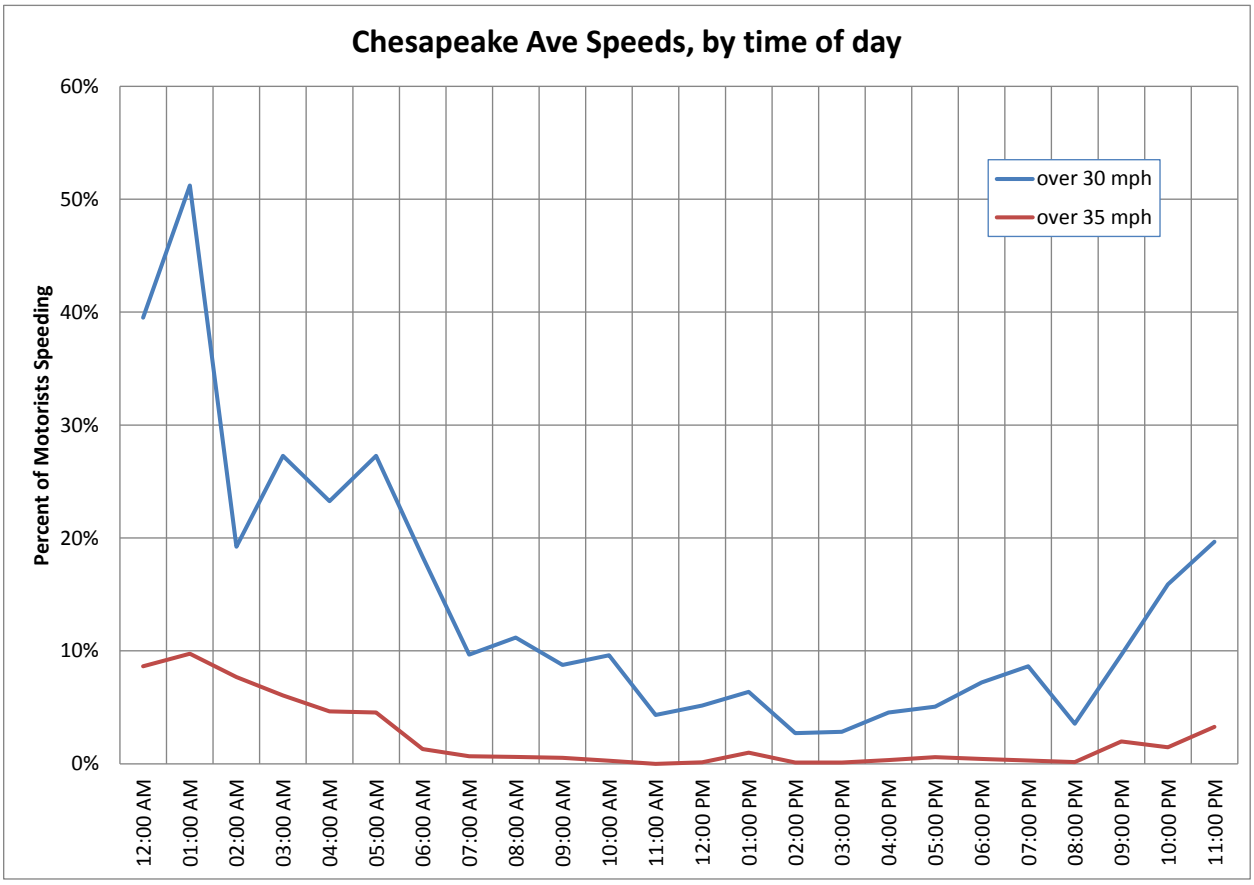

Figure 28: Percent of Chesapeake Ave drivers speeding, by time of day

H. Curbside Parking Supply & Demand

The curbside parking analysis assessed the number of parking spaces in the study area and their utilization rate. Figure 29 shows the number of on-street parking spaces and type of on-street parking spaces throughout the study area. The focus of the parking inventory and utilization study was along the primary arterial and commercial streets across Eastport – where personal driveways were scarce. In this area, defined in Figure 29, there are about 1,650 designated on-street parking spaces, of which the majority were unrestricted.

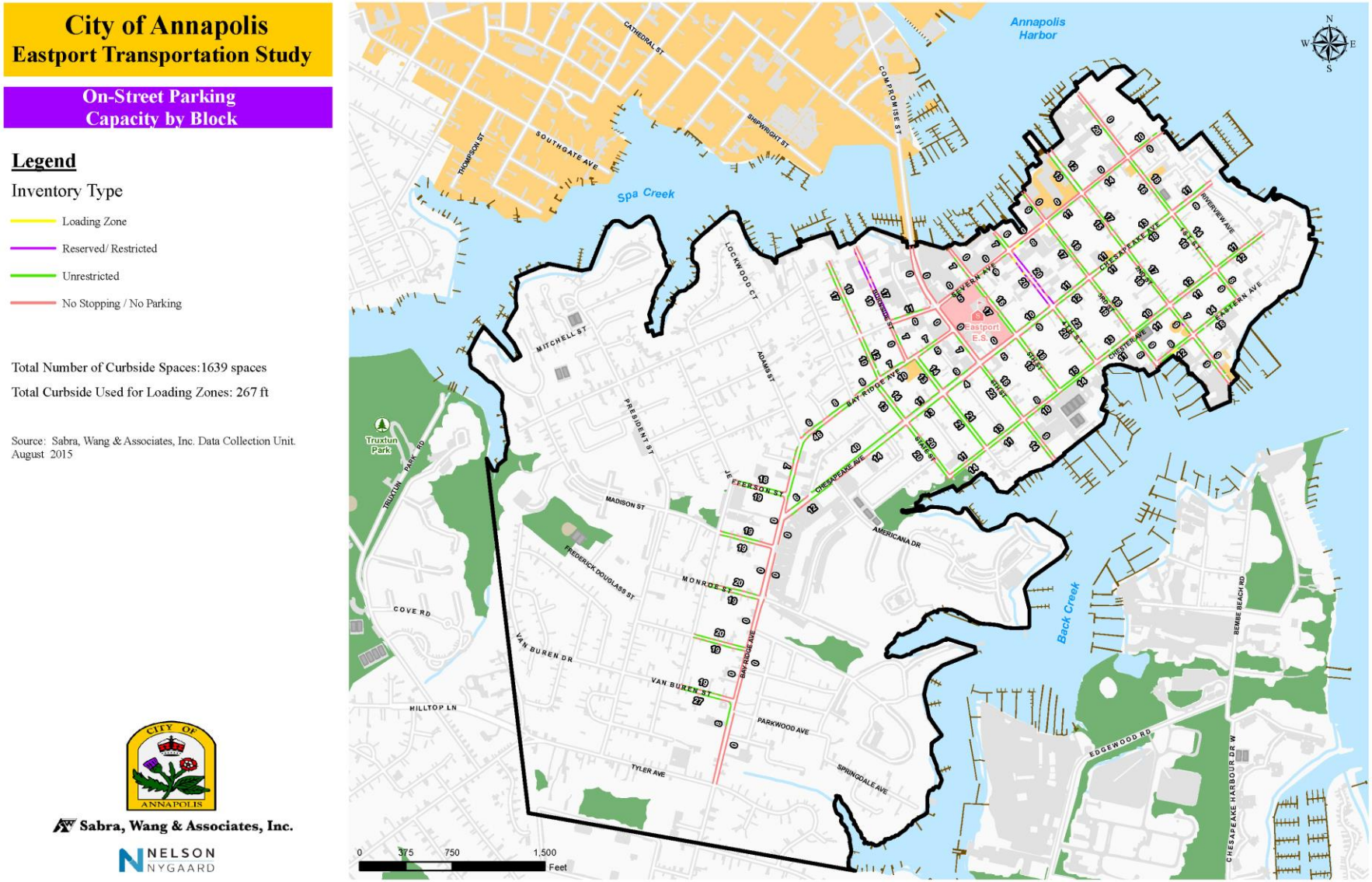

Figure 29: On Street Parking Inventory and Capacity By Block

Parking Utilization

Curbside parking utilization in Eastport was assessed for three study periods:
1) A typical weekday evening;
2) A typical, non-event Saturday afternoon; and
3) During a Saturday afternoon event, in this case the 2nd weekend of the Fall Boat Show.

The parking utilization for each of these three periods is shown in Figure 30, Figure 31, and Figure 32, respectively. During each study period, a similar amount of blocks are not utilized (22%). The weekday evening study period shows the lowest parking utilization rate, with a majority of the blocks (57%) having a utilization under 50%. The Saturday event period illustrates the opposite trend, where 70% of the blocks have a utilization rate greater than 75%. The Saturday non-event period shows about half of the blocks (50%) having a utilization rate greater than 75%. However, there are more blocks that have utilization rate between 10% and 50% on a non-event Saturday than during a Saturday event. This implies that parking is less available on a Saturday than during the weekday evening, but parking is less concentrated during a non-event Saturday than on an event Saturday.

Also, the maps show that higher parking utilization rates are concentrated to the blocks east of Sixth Street where there is a combination of commercial and residential land uses and marinas.

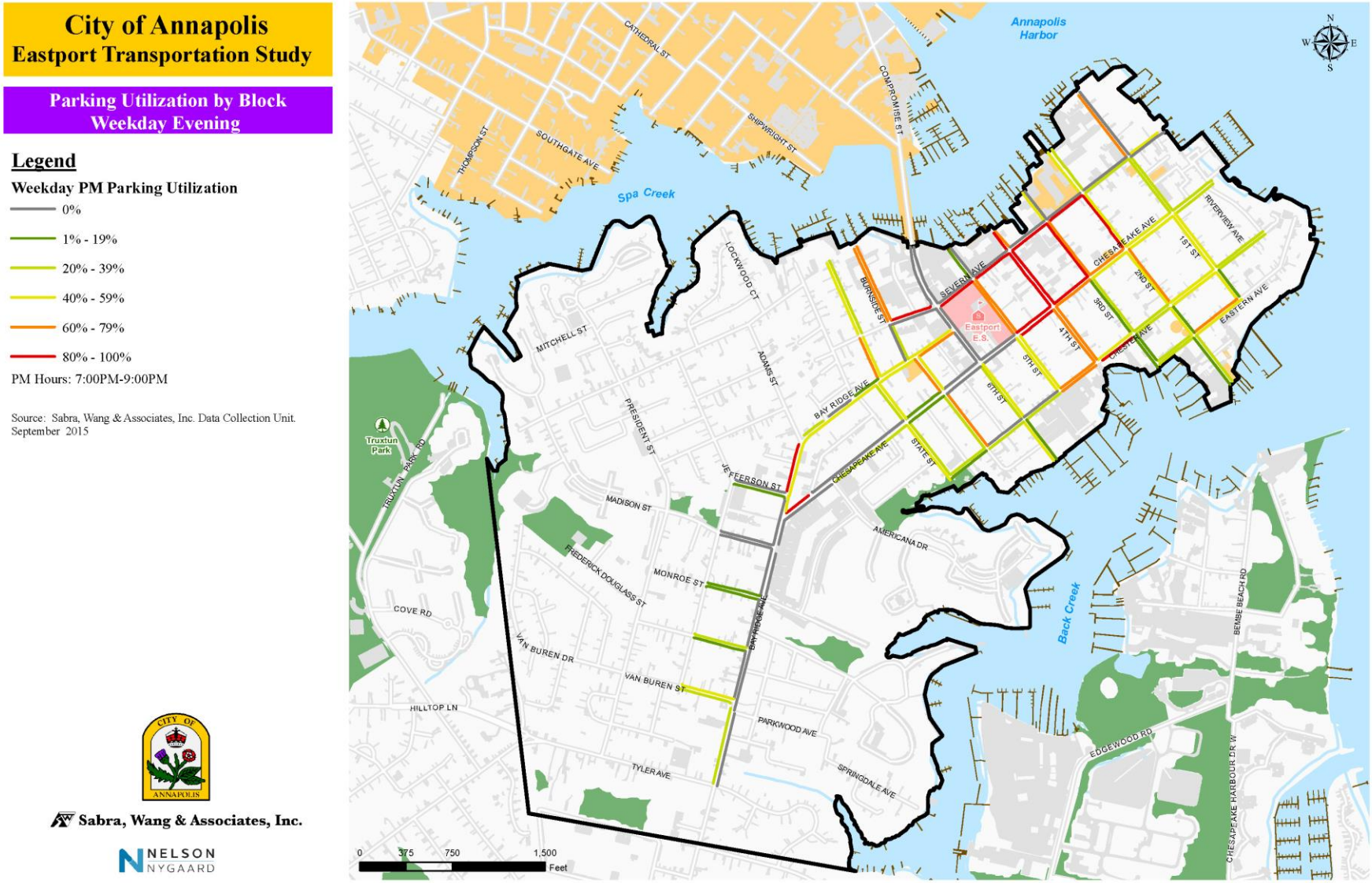

Figure 30: Parking Utilization by Block - Weekday Evening

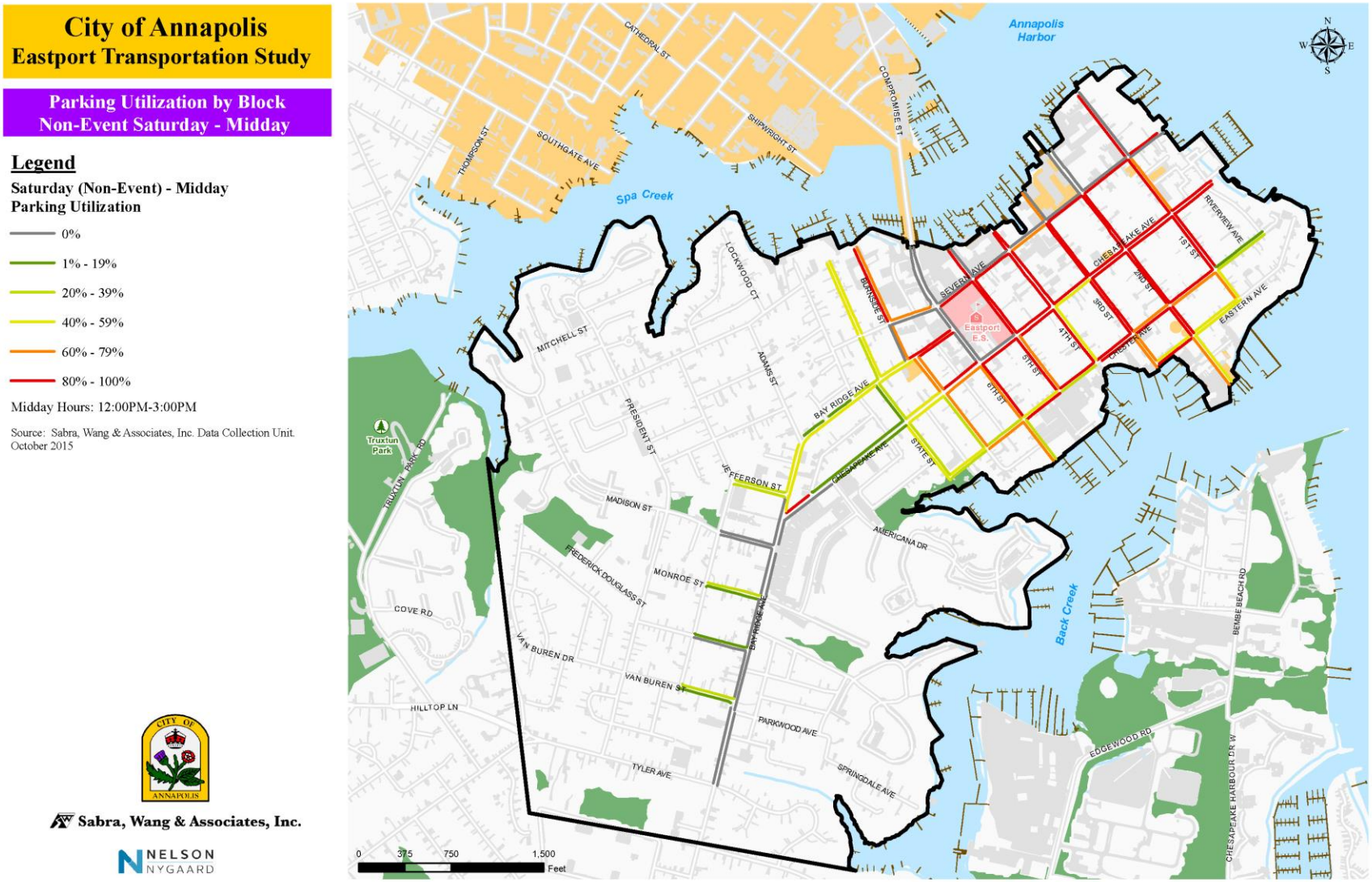

Figure 31: Parking Utilization by Block - Non Event Saturday

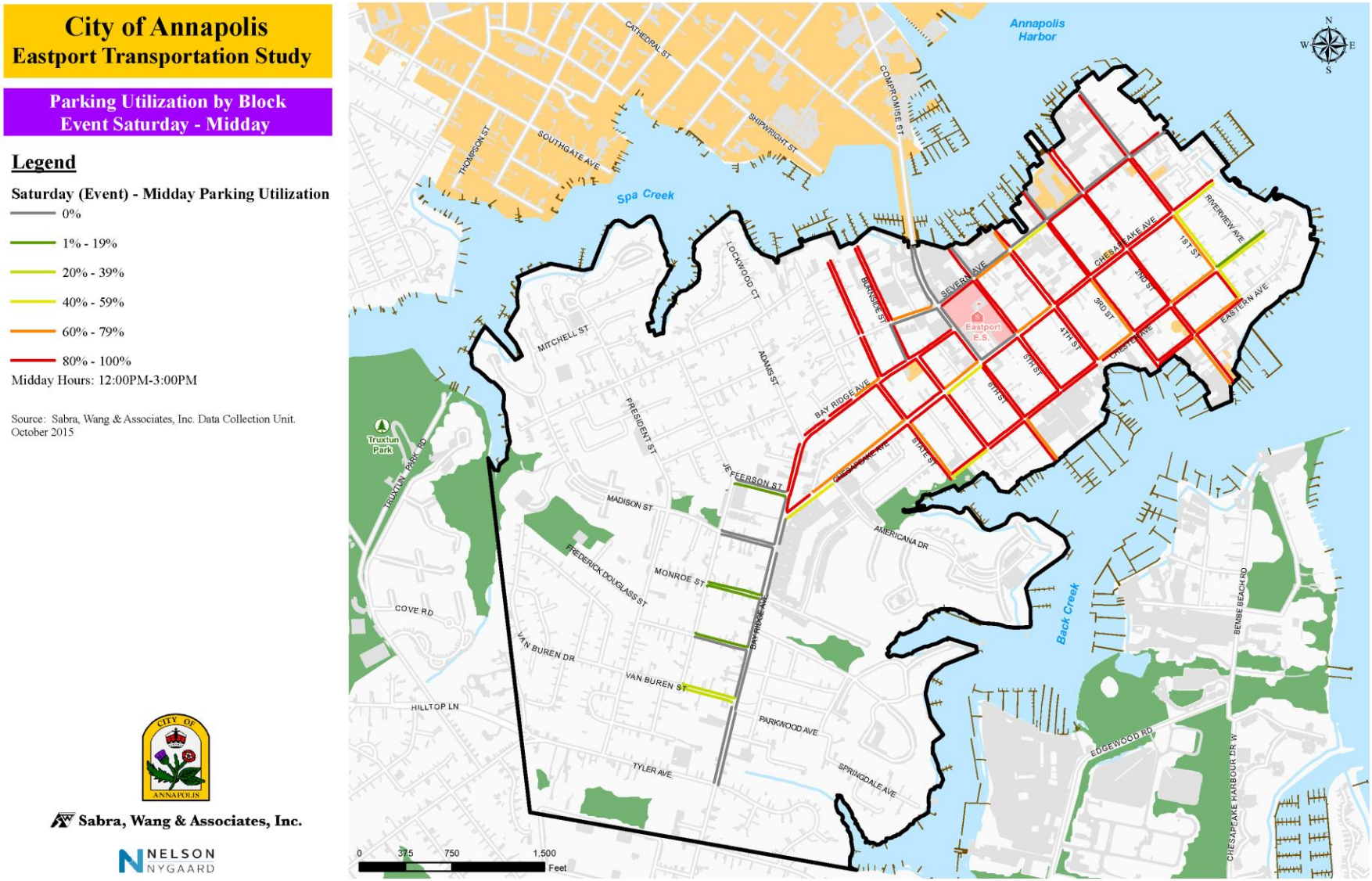

Figure 32: Parking Utilization - Event Saturday

I. Land Use

The predominant land use and zoning for the neighborhood is residential at a density of 2 to 8 dwelling units per acre. A large concentration of high density residential (greater than 8 dwelling units per acre) is located off of Americana Drive; however, there are pockets of high density residential throughout the neighborhood. Commercial type land use has two pockets of concentration within Eastport: 1) located in and around Severn Avenue; and 2) along Bay Ridge Avenue. Severn Avenue area commercial development consists of office space and a variety of restaurants and maritime establishments, while Bay Ridge commercial developments is a neighborhood-serving shopping center.

Additionally, there are several planned redevelopments within Eastport, as well as some speculative developments, where no application has been submitted. Figure 33, Figure 34, and Figure 35 show the existing land use; existing zoning; and proposed and speculative developments, respectively.

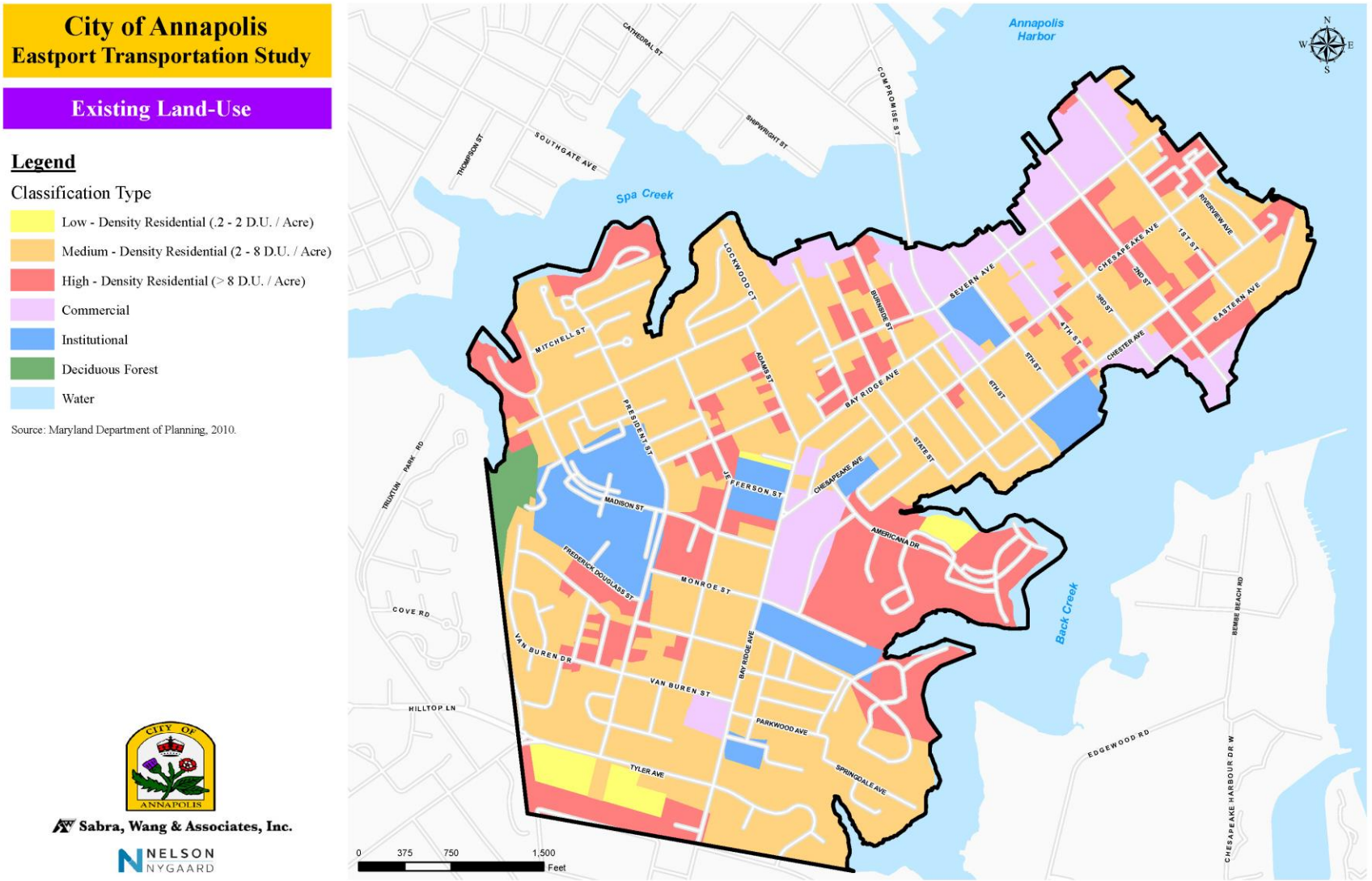

Figure 33: Existing Land Use

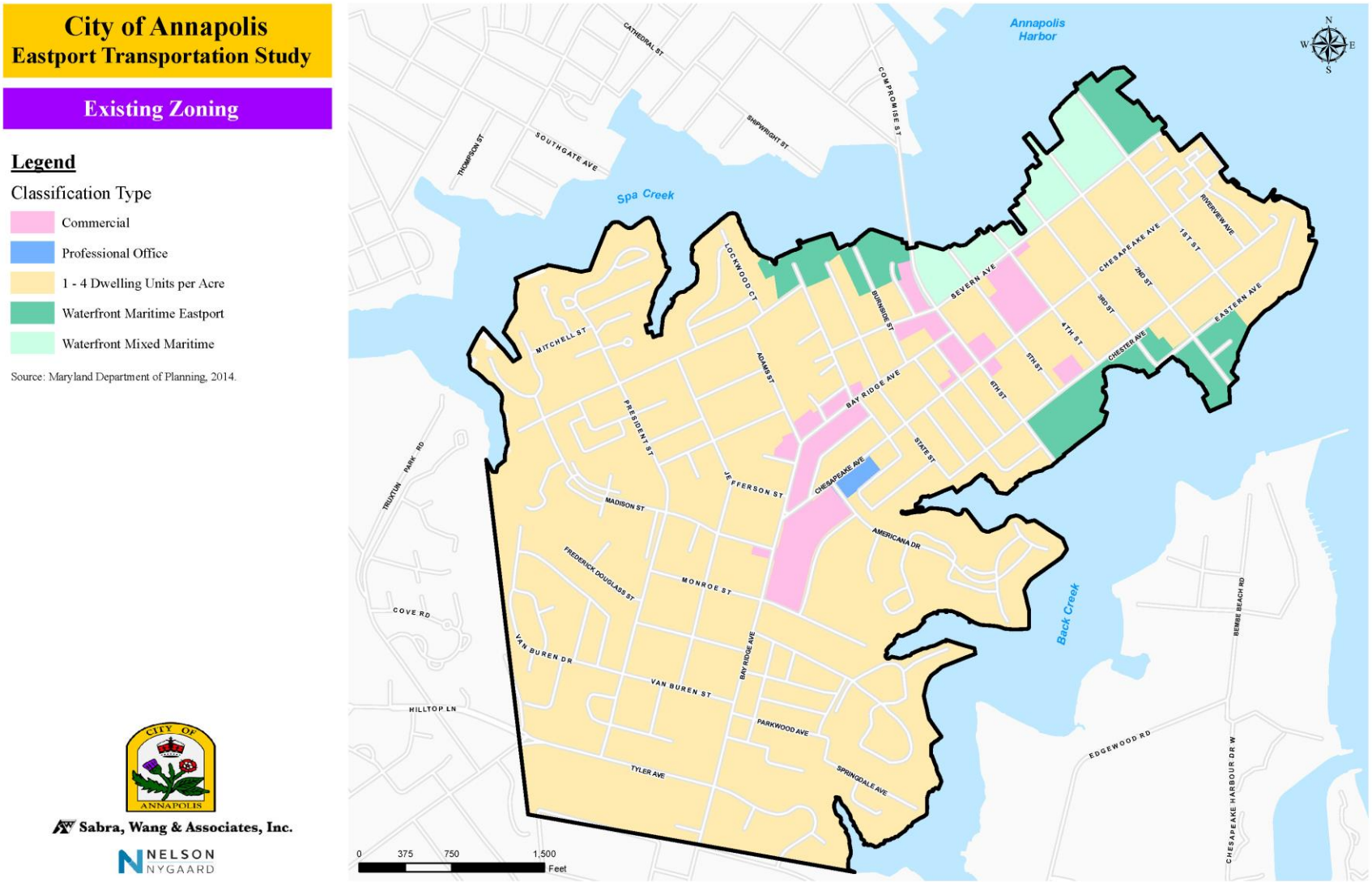

Figure 34: Existing Zoning

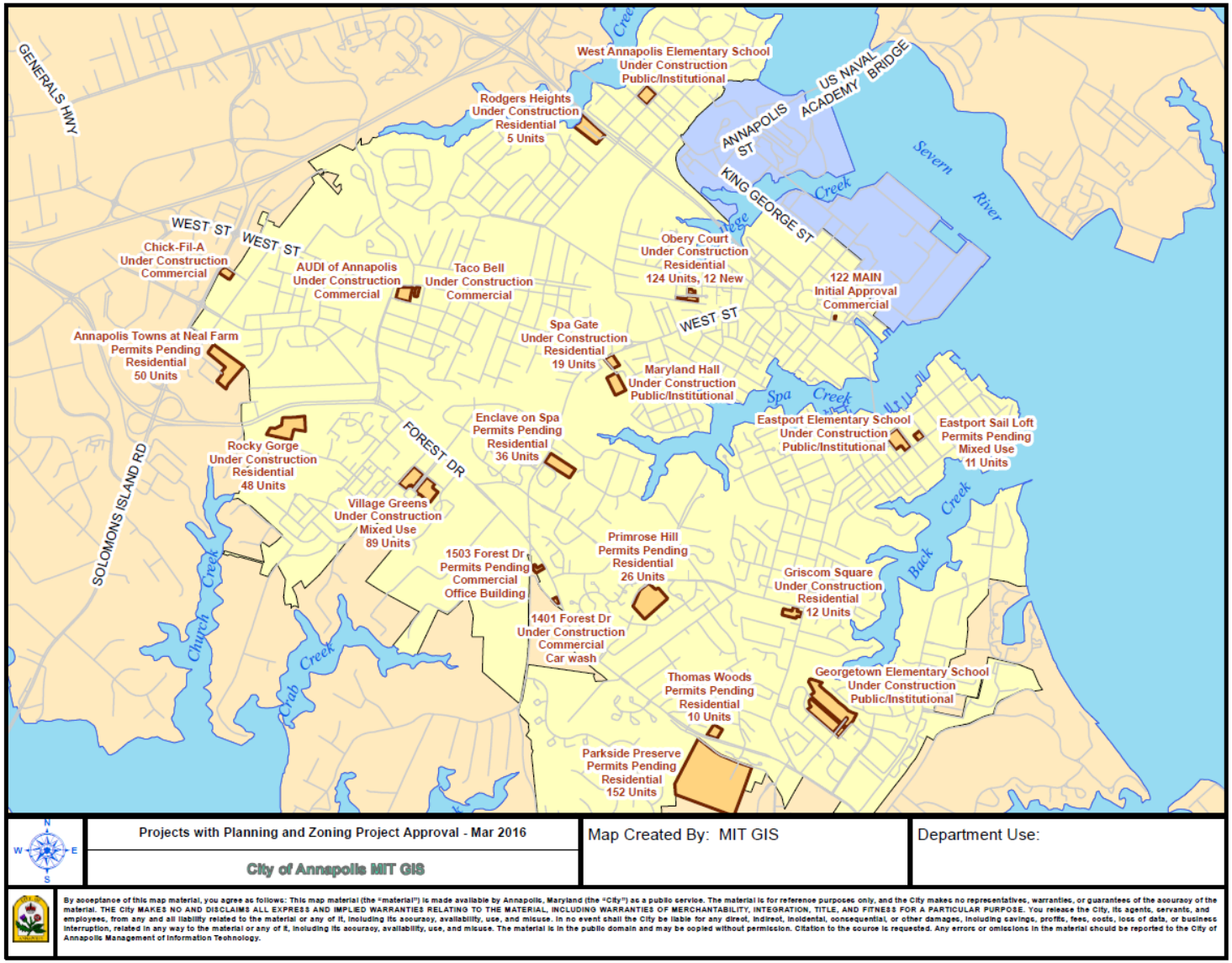

Figure 35: Planned and Speculative Developments

IV. Additional Background Information

A. Previous Planning Studies and Recommendations

Four previous plans spanning from 1990 to 2007 have analyzed various planning, transportation, parking, and streetscape improvements in Eastport. The studies include:

1. Eastport Views: A Sector Plan for the Eastport Community, 1990
2. Eastport Parking Study, 1993
3. Eastport Streetscape Plan: Conceptual Designs for Fourth & Sixth Streets, 2005
4. Eastport Plaza Shopping Center Parking Analysis, 2007
5. Annapolis Bicycle Master Plan, 2011

The1990 **Eastport Views Sector Plan** is a study of traffic circulation, parking availability, and present and prospective parking demand. Recommendations include expanding water transportation options, extending bus routes, upgrading paving and other streetscape, limiting commercial trucking, and modifying one-way street dynamics. A perceived parking shortfall would be addressed by protecting the residential parking supply, assisting local businesses in providing parking to customers and employees, and ensuring that community goals and objectives are respected. Select streetscape recommendations from this plan have been implemented along 6th Street, including updates to pavement, curbs, drainage, crosswalks, and landscaping.

The 1993 **Eastport Parking Study** is a comprehensive parking analysis, including on- and off-street inventory and occupancy figures for both weekday and weekend conditions. The conclusion reached was that there did not appear to be an area-wide or subarea specific parking problem, but that either an angle parking strategy should be adopted or land acquired for a municipal lot. This study also calls for an expansion of transit service routes to cross the Spa Creek Drawbridge. No recommendations from this study have been implemented in Eastport.

The 2005 **Eastport Streetscape Plan** is a conceptual plan for streetscape improvements on Fourth Street and Sixth Street in Eastport to improve the appearance and pedestrian amenities on these two streets. The first portion of this plan consists of an available materials review. This is followed by proposals to enhance specific blocks by: burying utilities, standardizing curb cuts, textural pavement at intersections, crosswalk upgrades, adjusting roadway width, installation of lighting and street trees, and ornamental fencing. The three primary recommendations implemented from this study are the improvement to the street end park at 4th Street and Spa Creek, the addition of a center turn lane on 6th Street exiting the Spa Creek Bridge, and the installation of street trees along 6th Street.

The 2007 **Eastport Plaza Shopping Center Parking Analysis** is a study of the expected number of on-site parking spots that would be needed for a proposed redevelopment of the Eastport Plaza Shopping Center to include a grocer. City code requires 5 spaces for every 1000 square feet of retail, while observations for peak parking use showed about 3 spaces filled, per every 1000 square feet. Accordingly, the study concluded that the existing 428 spaces were sufficient to accommodate redevelopment and not the 643 spaces required by code, which requires individual stores within in a mixed retail center to *each* meet parking minimums, even if their expected peak usage times for each store do not overlap.

The **Annapolis Bicycle Master Plan (2011)** proposes a network concept of four core bicycle routes, with three connecting through Eastport: Poplar Trail, Spa Creek Trail, and West Annapolis/Hilltop/Bay Ridge Loop. The Bicycle Master Plan proposed a total of 36.1 miles of bicycle facilities, at a cost of $3.6 million. Recommended facility upgrades include: shared lane markings (15 miles), signed routes (9.1 miles), road and lane diets (2.9 miles), bicycle lane striping (1.5 miles), paving existing shoulders (1.4 miles), and widening shoulders (0.1 miles). The study identified desire travel lines between Eastport and Parole Town Center, and Eastport and the West Street Arts District. Specific recommendations included formalizing the dirt trail connecting Truxton Park at the end of Primrose Road to Eastport (at Windsor Avenue), connecting City Dock to Eastport, and connecting Eastport to the Spa Creek Trail, Poplar Trail, and routes and destinations on the west side. The master plan's recommended actions for Eastport are: shared lane markings along Bay Ridge Avenue, Chesapeake Street, and 6th Street (one-two year timeframe), a cycle-track along the east side of Compromise Street between City Dock and Eastport (to Severn Avenue and 6th Street), and the provision of additional bicycle parking at the Annapolis Maritime Museum. Additionally, the plan recommends that "the city should continue to explore partnerships to create a bike share program that would make bikes available at all hours and at stations located throughout the city." Bike share stations are recommended for three locations in Eastport: Eastport Shopping Center; the intersection of Severn Avenue and 4th Street; and the intersection of Chester Avenue and 4th Street.

V. Stakeholder and Public Input

Comments from the public were solicited at a public meeting held on December 8th, 2015 at the Eastport Fire Department. Attendees had the option of providing comments via a comment sheet, post-it notes to place on the information boards/maps presented at the meeting, or via e-mail directed to the City of Annapolis. A total of 64 comments were shared: 25 of which were related to traffic; 17 comments were pedestrian-related; 11 comments were parking-related; 8 comments were cycling-related; and 3 comments were related to transit service. Common items mentioned in public comments included:

- Deficiencies in pedestrian and bicycle facilities,

- Parking issues,
- Lack of clarity behind the non-contiguous one-way street network,
- The speed and driver behavior throughout the study area.

An issue voiced multiple times was the speed of cars along Chesapeake Avenue, referencing a general lack of safety for cyclists, pedestrians, drivers merging on the road. Another traffic issue that was commented on was the additional traffic that will be caused by the expansion and redevelopment of certain commercial properties. The main concern for pedestrians was the lack of consistency in sidewalks and crosswalks, as well as obstructions in the sidewalks along multiple roadways in the study area. Figure 35 shows the distribution of comments among the categories.

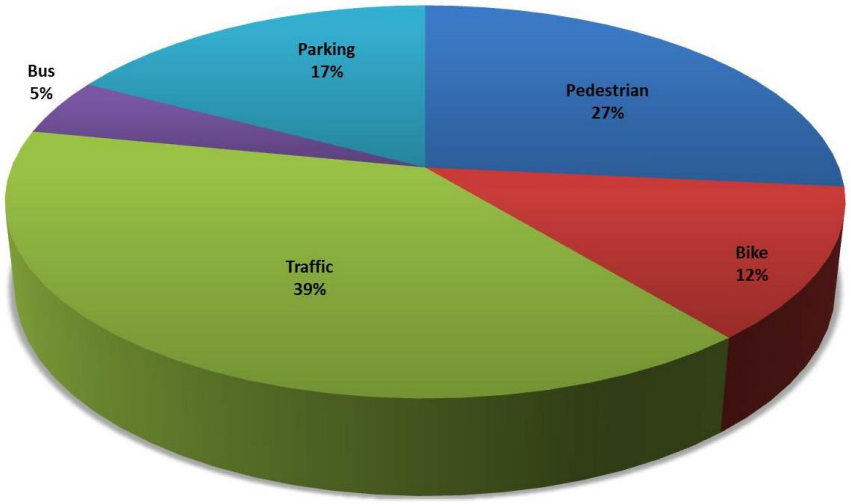

Figure 36 : Distribution of Public Comments by Topic

All public comments are summarized in **Appendix A.**

VI. Next Steps

The next steps undertaken for this study include a report detailing short term and long-term recommendations. The short term recommendations will be based on analysis of the existing conditions presented herein as well at the impacts from planned developments already in the pipeline. The long term recommendations will be based upon existing conditions, short term developments, and an assumed ultimate build-out of the Eastport peninsula that includes potential (and currently speculative) development of new homes, office and retail.

Both the short and long-term recommendations will focus on traffic, parking needs, pedestrian and cycling improvements, and transit. Short and long-term recommendations will be presented for public comment.

Appendix A: Public Comments

		Typology				
Comment	**Source**	**Pedestrian**	**Bike**	**Traffic**	**Bus**	**Parking**
Add a crosswalk across Chesapeake Ave from PNC Bank to Shopping Center	map/poster	1				
Narrow vehicle lanes or add bike lanes on Chesapeake Ave to slow cars down	map/poster		1	1		
Need another crosswalk along Bay Ridge between Shopping Center and 6th Street	map/poster	1				
Lots of speeding along Chesapeake Ave	map/poster			1		
Power line poles block sidewalk along 6th Street between Bay Ridge and Chester Ave	map/poster	1				
A new development (existing Marina) at the end of Washington will add traffic to Washington and State Streets	map/poster			1		
Sidewalk is missing on portions of Eastern Ave	map/poster	1				
Include curbside data collection for: State Street north of Bay Ridge, Washington Street, North of Bay Ridge, All of Severn West of 6th.	map/poster	1		1		
No parking between 5th and 6th on either side of Severn Ave	map/poster					1
Convert Chester Ave and Severn Ave to One-way Westbound, Chesapeake one-way eastbound, 2nd and 4th streets one-way northbound and 5th, 3rd, and 1st streets one-way southbound	map/poster			1		
Move the bus stop at Chesapeake Ave & 4th Street to 4th Street in front of the Church. Will prevent traffic backups and dangerous maneuvers as drivers try to pass the stopped bus.	map/poster				1	

		Typology				
Comment	**Source**	**Pedestrian**	**Bike**	**Traffic**	**Bus**	**Parking**
Consider changing "sharrows" to separate bike and travel lanes. Will slow cars down and increase bicycle safety.	Comment Sheet		1	1		
What is the rational for the one way streets?	Comment Sheet			1		
What is the stop sign pattern?	Comment Sheet			1		
Get rid of the "jog of death" in the bike lane on Bay Ridge	Comment Sheet	1	1			
Look at times of loading zones	Comment Sheet					1
Concerned about the scale and additional traffic of the South Annapolis Yacht Center. Also concerned about the development of Crystal Spring, must be stopped.	Comment Sheet			1		
People leave pick-up trucks in front of their house on Severn Ave for weeks at a time.	Comment Sheet					1
Add a 4-way stop at the intersection of 5th and Chesapeake.	Comment Sheet			1		
Bus line should extend deeper into Peninsula to 1st or 2nd streets.	Comment Sheet				1	
Against increase of one side only parking. It will disadvantage residents without driveways, increase speed of cars. Residential parking zones should be explored with emphasis on weekend and evening.	Comment Sheet					1
How was bridge opening/closing handled in the study?	Comment Sheet			1		
Sidewalks need repair particularly on Severn by the Elementary School because it is a high foot traffic area.	Comment Sheet	1				
Crosswalks need to be repaired/painted, especially at the intersection of 6th and Severn	Comment Sheet	1				

		Typology				
Comment	**Source**	**Pedestrian**	**Bike**	**Traffic**	**Bus**	**Parking**
Do not support zoned parking (permits for residents) in Eastport	Comment Sheet					1
Study is being conducted in the fall/winter/early spring, is there a plan to capture summer traffic counts or attach a factor to current counts to adjust for the increase?	Comment Sheet			1		
Will the study be used to inform Proposed development projects in Eastport?	Comment Sheet			1		
We see more and more cars run the stop sign at 4th and Chesapeake Ave daily. Anyway to better enforce the stop?	Comment Sheet			1		
The bus stop at 4th and Chesapeake should be moved to 4th St in front of the church due to major traffic issues at this intersection.	Comment Sheet			1	1	
One way streets allow for more parking because cars don't need to dip in to pass.	Comment Sheet					1
City needs to re-look at each business to determine if they still meet their required parking. It has been a long time since anyone checked. I.e. North Sails, Maritime Museum, businesses on Severn	Comment Sheet					1
Enforce parking illegally on red corners, wrong way parking. Parking counts seem very low, traffic can be bad at any time, dependent on other factors. Need lines on road indicating intersection.	Comment Sheet			1		1
Every street (numbered) from 6th St to 1st St should be one way. Severn, Chesapeake, and Chester should be one-way	Comment Sheet			1		
Living in Eastport we have figured out how to pull over and wait and wave at a neighbor.	Comment Sheet	1		1		

		Typology				
Comment	**Source**	**Pedestrian**	**Bike**	**Traffic**	**Bus**	**Parking**
Do you even know there is a signed walking route through lower Eastport? And that the Annapolis Maritime museum is planning a walking trail?	Comment Sheet	1				
Fix jog in bike lane/shoulder on Bay Ridge near St. Luke's	Comment Sheet	1	1			
Increased bike infrastructure is great. Really easy to get out of Eastport, hard to get in. Crosswalks to Eastport S. C. across Chesapeake	Comment Sheet	1	1			
Curb parking makes streets narrow, stagger parking?	Comment Sheet					1
Please add more crosswalks and bike infrastructure	Comment Sheet	1	1			
Please do not make Severn one-way East nor 4th St one-way north of intersection of the two. Blocks people living or parking on northern end (dead end) of 4th street from directly leaving Eastport going west on Severn or north of 4th Street. Forces all traffic to go East.	Comment Sheet			1		
Sarles/Petrini project building A would block 2/3 of the view from my deck. I would like to see the building lowered and moved back away from the water.	Comment Sheet			1		
Speed on Chesapeake Ave is an issue, traffic calming is needed.	email			1		
Hard to get out on Burnside St since the bakery opened up, and it is hard to see from Burnside turning onto Chesapeake either way.	email			1		
Intersection at 6th St and Severn Ave is dangerous for bicyclists and pedestrians, signs should be installed that say "WATCH FOR PEDESTRIANS" there and at other intersections where there is a lot of vehicle and pedestrian traffic.	email	1	1			

		Typology				
Comment	**Source**	**Pedestrian**	**Bike**	**Traffic**	**Bus**	**Parking**
6th Street in particular is quite narrow for parking on both sides, mirrors are regularly knocked off of cars. Parking should be eliminated on one side of the street and residents should be encouraged to use their alleys if they have them.	email					1
The light at Chesapeake and 6th is slow in the evening, people cut through the neighborhood streets to get around it.	email			1		
The selection of individual one-way streets (like 6th, or a portion of Chester) seems nonsensical. The number of cars going the wrong way on these streets is ridiculous. They either need to be marked or eliminated, or part of a sensible system.	email			1		
The crosswalks at Severn and 6th aren't safe because of the large volume of cars that turn onto Severn across the crosswalk, and there are no pedestrian request button boxes.	email	1				
Lack of residential parking zones leads to cars being left here for long term parking. This leads to residential vigilantes who either report them to be tagged or vandalize the cars.	email					1
Missing a section of sidewalk on Bay Ridge Ave between Warren and Timbercreek on the East side.	email	1				
Crosswalks at Bay Ridge & 6th and Chesapeake & Eastport ES could use Active Warning or Active Control type signage for Pedestrian Safety	email	1				
Bike lane ends at Fairview and Bay Ridge, area and the way the road bends is also dangerous for cars.	email		1	1		