US 301 / Rte 207 Arterial Management Plan Kick-off Meeting

January 17, 2017

L.E. Smoot Memorial Library, Meeting Room A

King George, VA

Agenda

1. Introductions / goal of today's meeting
2. Purpose of Study
3. Project Study Area
4. Study Scope
5. Identify Stakeholders
6. Study Schedule
7. Next Steps

1. Introductions

Today's meeting includes representation from:

- Caroline County
- King George County
- Fredericksburg Area MPO
- Department of Defense
- VDOT Fredericksburg District
- VDOT Central Office
- Michael Baker International (consultant)

Goal of today's meeting is to:

- Kick-off the study process and provide introductions
- Discuss and agree on
  - Study area, scope of work & end products
  - Project stakeholders
  - Roles and responsibilities
  - Schedule of events

2. Purpose of Study

VDOT Statewide Program Perspective

To ensure safety while preserving and improving the capacity of the Commonwealth's arterial highway network without wide scale road widenings while also accommodating economic development

- **Result in a safer arterial highway system**
- **Preserve and improve corridor capacity and efficiency**
- **Maintain Commonwealth's mobility & thus economic competitiveness**
- **Lower long-term infrastructure capital and maintenance costs**

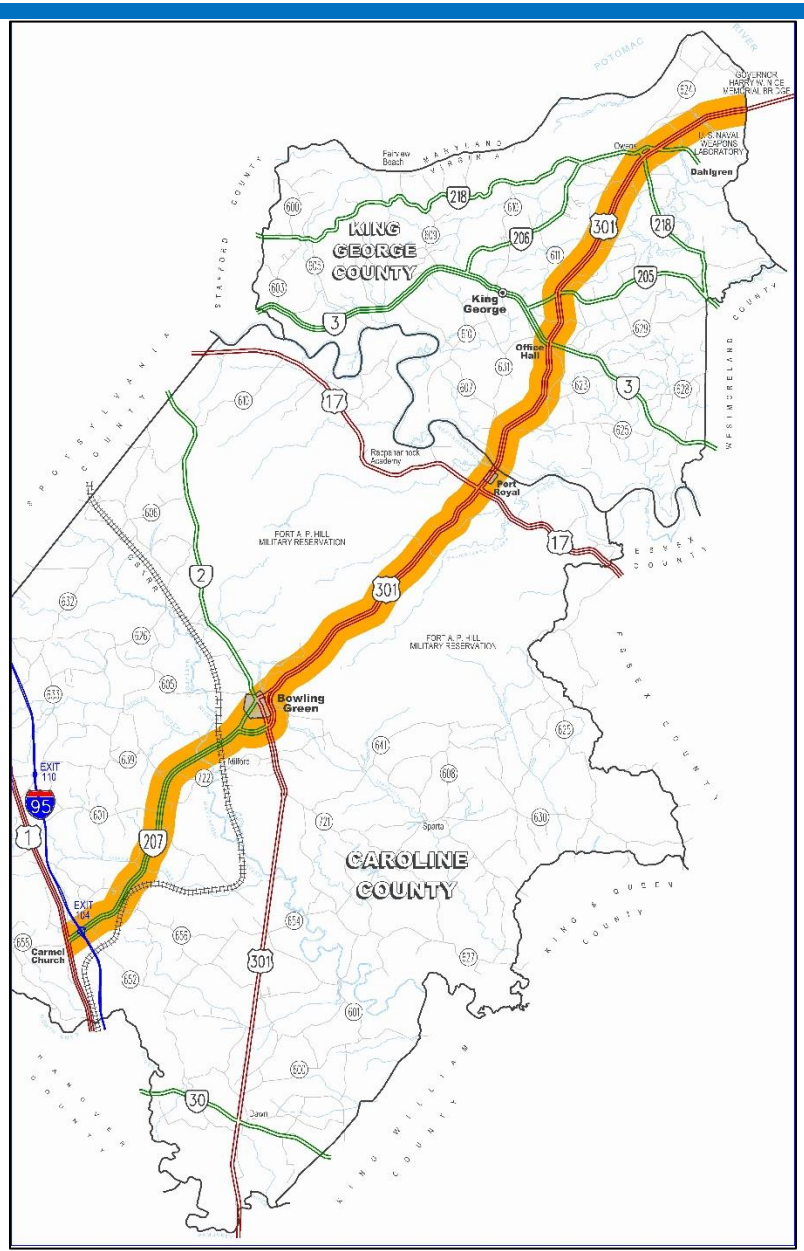
2. Purpose of Study

US 301 / Route 207 Corridor

- Preserve & improve the study corridor such that it can serve as a viable short- and long-term alternative to the Interstate system during times of congestion & incidents
- Design safety & efficiency into long term roadway development
- Maintain corridors economic development potential by having a cohesive plan for a safe and efficient roadway travel
- Aid in the land development process by defining County / VDOT expectations prior to plans being created by developers
- Promote funding of transportation projects that are part of an approved/adopted plan
- Save dollars by reducing the need to retrofit improvements in the future

3. Project Study Area

US 301 / Route 207 through Caroline & King George Counties



3. Project Study Area

Regional Perspective

Using Interstate System

126 - 140 miles total travel

2.0 - 2.2 hours uncongested

Using Arterial System

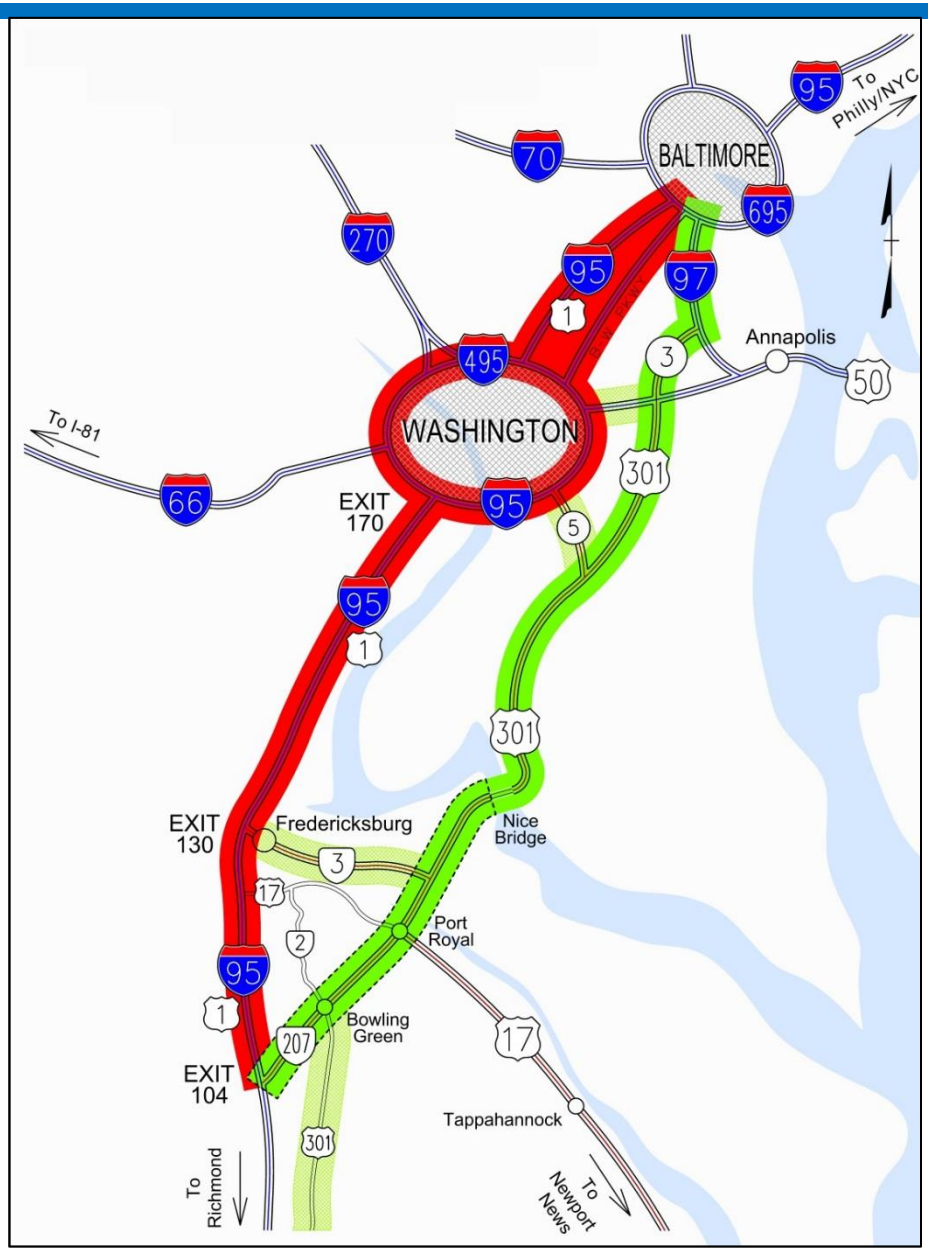
124 - 129 miles total travel

2.2 - 2.3 hours uncongested

3. Project Study Area

Regional Perspective

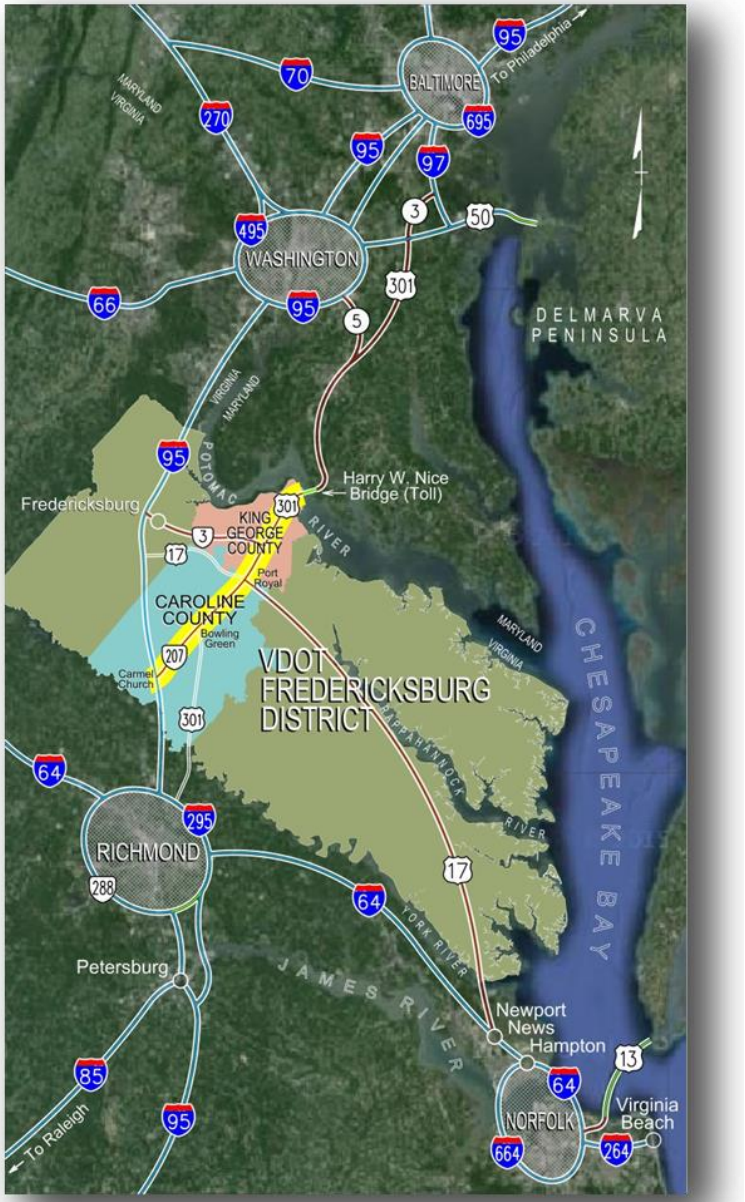
US 301 / Route 207 can be a viable alternative when constraints exist along Interstate system shown in red



3. Project Study Area

Super-Regional Perspective

The study corridor is also part of a significant **super-regional** roadway network that serves short, medium and long trips



3. Project Study Area

Super-Regional Perspective

US 301 / Route 207 can work with US 17 to serve as a viable alternative when constraints exist along Interstate system shown in red

Study team needs to decide how to document / address this southeast portion of the Commonwealth as it relates to the US 301 / Route 207 corridor study

4. Study Scope
Overview

Ultimate goal of Study

Adoption into County Comprehensive Plans to allow for follow-on project development, funding support and good planning

The study will take on two phases of activity. The first and most detailed level of study will be focused on the section of US 301 in King George County due to development pressures expected as a result of plans to widen the Governor Nice Bridge

Typical elements of similar corridor studies

Chapter 1: Introduction
1.1 Study Purpose
1.2 Study Area
1.3 Review of Existing Studies and Documents
1.4 Public Involvement Process

Chapter 2: Existing Conditions
2.1 Land Use
2.2 Infrastructure
2.3 Access Points
2.4 Crash Analysis
2.4 Traffic Volumes
2.5 Traffic Operations

Chapter 3: 2040 Future Conditions
3.1 Future Land Use
3.2 Future Traffic Volumes
3.3 Transportation Operations and Deficiencies

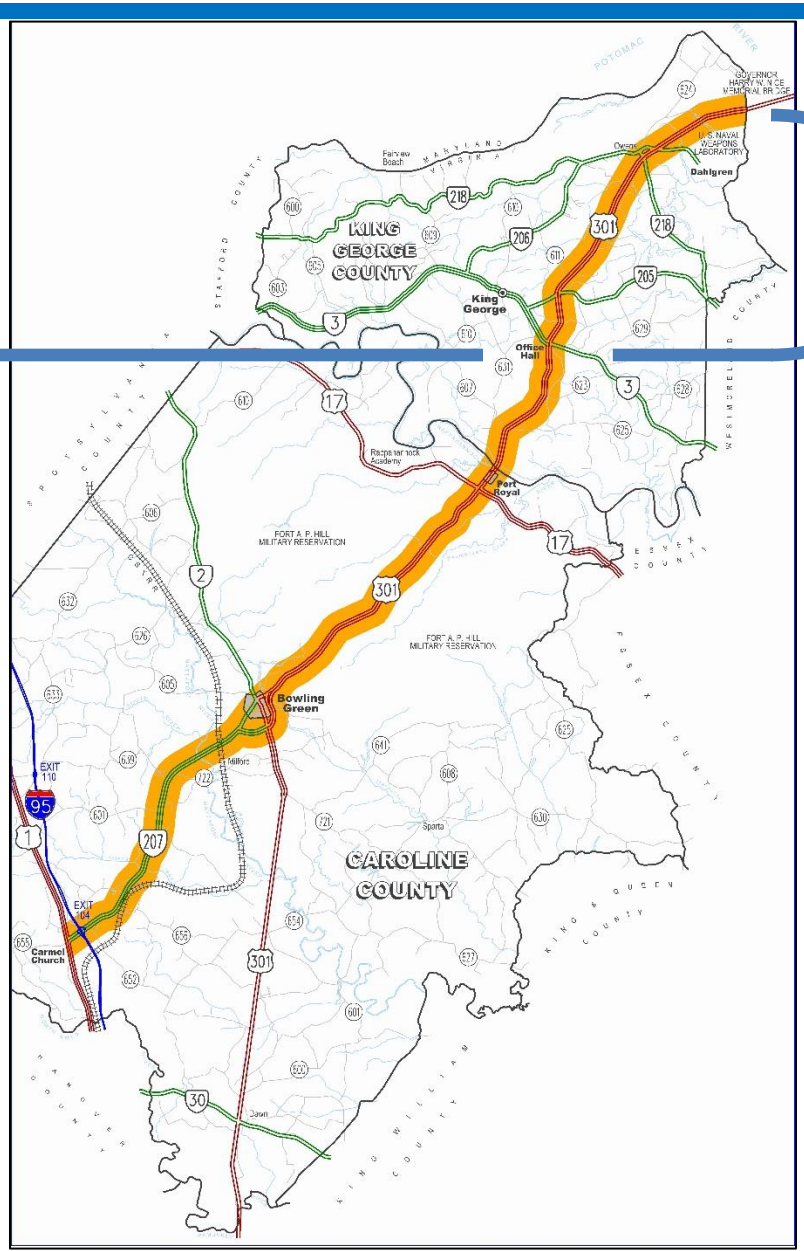
Chapter 4: Recommendations
4.1 Toolbox of Recommendations
4.2 Specific Study Corridor Recommendations
4.3 Opinion of Costs
4.4 Conclusion and Next Steps

4. Study Scope

Two Geographic Phases

An overall safety and access study will be performed in this area following the more detailed study north of Route 3

PHASE 2 AREA (29-miles)



An early and more detailed access management study will be performed in this area due to MdSHA plans to widen the Gov. Nice bridge

PHASE 1 AREA (12-miles)

4. Study Scope

Existing Conditions

Crash Analysis

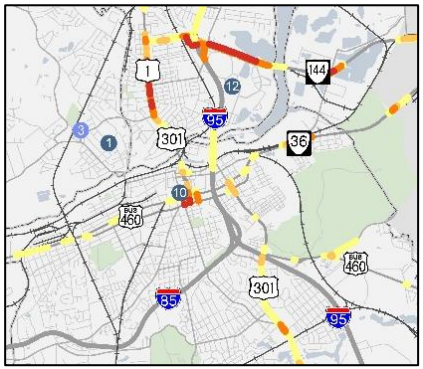
Phase 1 Geographic area

Full 12-miles

Phase 2 Geographic area

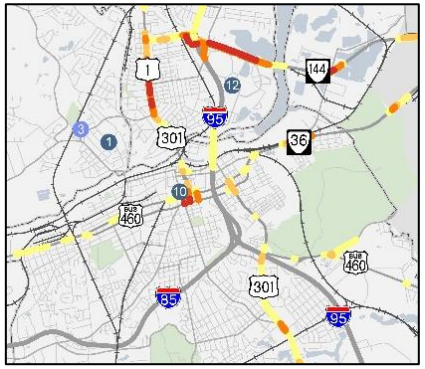
Hotspots only in 29-mile section

Existing Traffic Operations



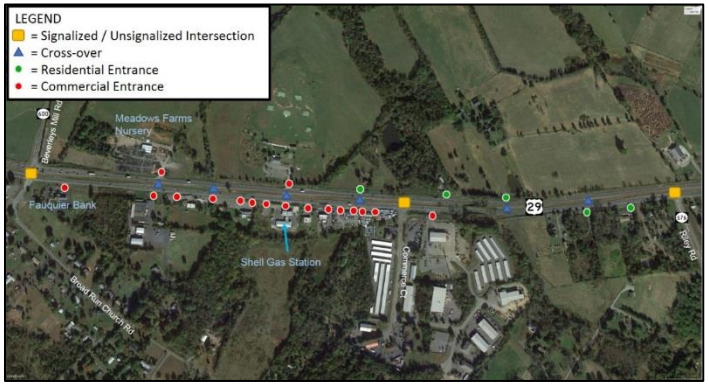
AND Manual Traffic Counts

Peak Hour Congestion vs. Free Flow (TomTom data)



Peak Hour Congestion vs. Free Flow (TomTom data)

Existing Access Locations



Mapped for full 12-miles of Phase 1 area

Signalized Intersection or Crossover (starting from West) Node	Intersecting Roadway	Signalized?	Sheet # West of Study Area	Distance from previous crossover (ft)	Criteria Feet	Criteria Func. Class (mph)	OK
NA	Crossover	No					
1	Crossover	No	1	2146	1320	Principal Arterial (55 mph)	YES
2	INT # 1-Constitution Highway and Route 3	Yes	1	887	1320	Principal Arterial (55 mph)	NO
3	Crossover	No	2	2594	1320	Principal Arterial (55 mph)	YES
4	INT # 2-Fox Gate Dr. and Route 3	No	3	1447	1320	Principal Arterial (55 mph)	YES
5	INT # 3-Brock Road and Route 3	Yes	3	1579	1320	Principal Arterial (55 mph)	YES
6	Crossover	No	4	2619	1320	Principal Arterial (55 mph)	YES
7	INT # 4-Black Meadow Road and Route 3	No	5	1096	1320	Principal Arterial (55 mph)	NO
8	Crossover	No	6	3161	1320	Principal Arterial (55 mph)	YES
9	Crossover	No	7	2181	1320	Principal Arterial (55 mph)	YES
10	INT # 5-Orange Plank Road and Route 3	Yes	8	2660	1320	Principal Arterial (55 mph)	YES
11	Crossover	No	9	1628	1320	Principal Arterial (55 mph)	YES
12	Crossover	No	10	1784	1320	Principal Arterial (55 mph)	YES
13	INT # 6-Wilderness Road and Route 3	No	11	1692	1320	Principal Arterial (55 mph)	YES
14	INT # 7-Stuart Bullock Drive and Route 3	No	12	1019	1320	Principal Arterial (55 mph)	NO
15	Crossover	No	12	897	1320	Principal Arterial (55 mph)	NO
16	INT # 8-Old Plank Road and Route 3	Yes	13	4107	1320	Principal Arterial (55 mph)	YES
17	INT # 9-River Road and Route 3	No	13	544	1320	Principal Arterial (55 mph)	NO
18	Crossover	No	14	1790	1320	Principal Arterial (55 mph)	YES
19	INT # 10-Nine Mile Run Drive and Route 3	No	14	911	1320	Principal Arterial (55 mph)	NO
20	Crossover - Rensselaer Ct.	No	15	1494	1320	Principal Arterial (55 mph)	YES
21	Crossover - Wesley Dr.	No	15	1272	1320	Principal Arterial (55 mph)	NO
22	INT # 11-McLaws Drive and Route 3	No	15	631	1320	Principal Arterial (55 mph)	NO
23	Crossover - Glade Dr.	No	16	999	1320	Principal Arterial (55 mph)	NO
24	Crossover	No	16	1054	1320	Principal Arterial (55 mph)	NO
25	Crossover	No	16	519	1320	Principal Arterial (55 mph)	NO
26	Crossover	No	17	1428	1320	Principal Arterial (55 mph)	YES
27	Crossover	No	17	852	1320	Principal Arterial (55 mph)	NO
28	Crossover	No	18	897	1320	Principal Arterial (55 mph)	NO

Tabulated Distances for Signalized Intersections and Full Crossovers

4. Study Scope

Future Land Use development

Assumptions about future land use and through travel will drive the traffic volumes and are critical to the accuracy and value of the corridor study and its recommendations

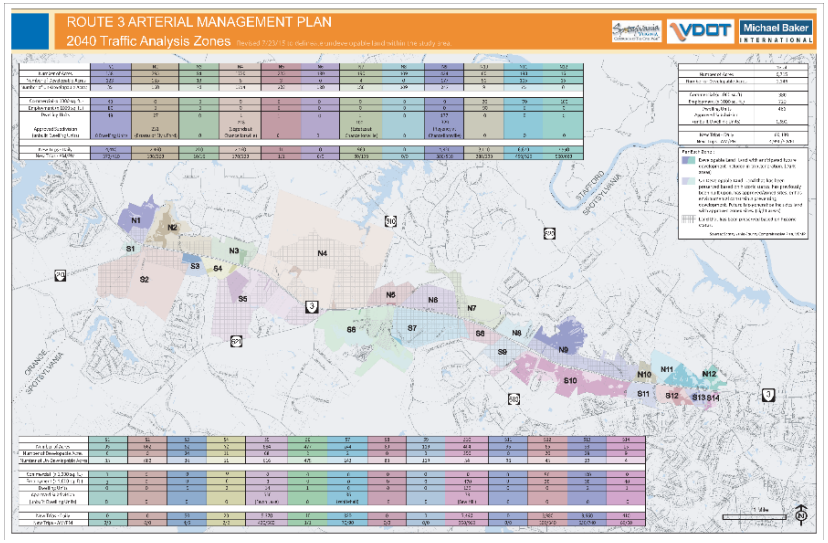
Study team proposes a **micro**scopic approach to land use analysis for Phase 1 area and **macro**scopic approach for Phase 2 area

4. Study Scope

Future Land Use development

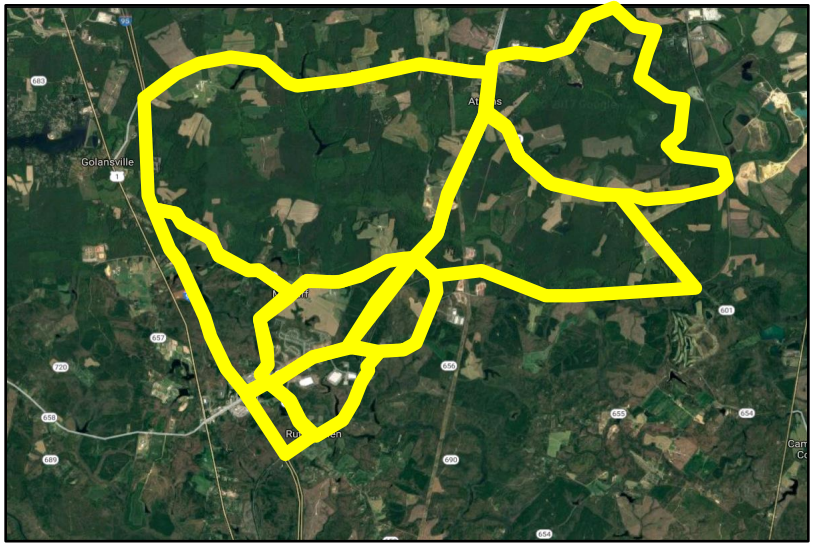
Future Land Use and Access

Phase 1 Geographic area



Microscopic Analysis
With County Assistance

Phase 2 Geographic area



Macroscopic Analysis
at TAZ Level

4. Study Scope

Future Land Use development process – Phase 1 area

ROUTE 3 ARTERIAL MANAGEMENT PLAN

2040 Traffic Analysis Zones Revised 7/23/15 to delineate undevelopable land within the study area.

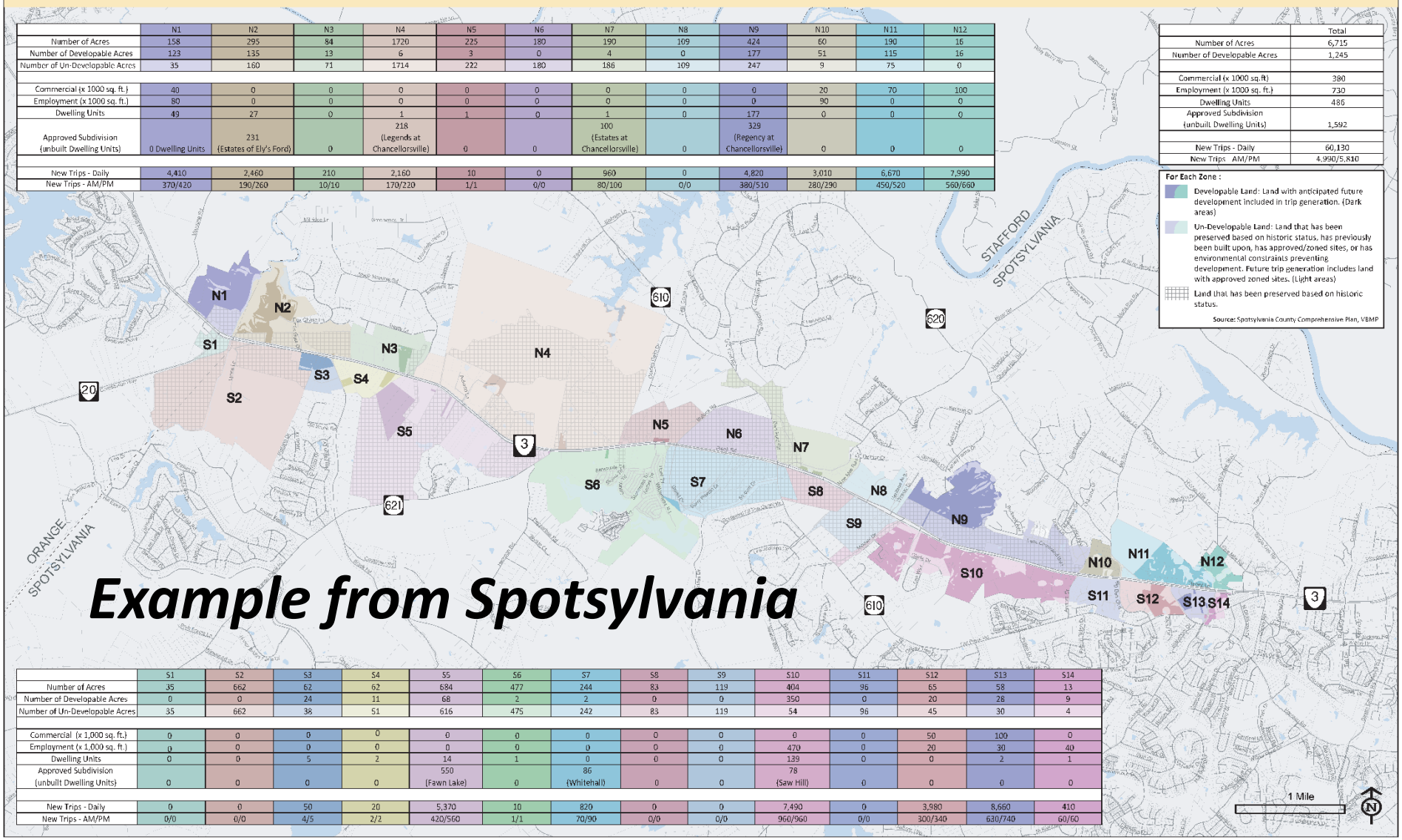
	N1	N2	N3	N4	N5	N6	N7	N8	N9	N10	N11	N12
Number of Acres	158	295	84	1720	225	180	190	109	424	60	190	16
Number of Developable Acres	123	135	13	6	3	0	4	0	177	51	115	16
Number of Un-Developable Acres	35	160	71	1714	222	180	186	109	247	9	75	0
Commercial (x 1000 sq. ft.)	40	0	0	0	0	0	0	0	0	20	70	100
Employment (x 1000 sq. ft.)	80	0	0	0	0	0	0	0	0	90	0	0
Dwelling Units	49	27	0	1	1	0	1	0	177	0	0	0
Approved Subdivision (unbuilt Dwelling Units)	0 Dwelling Units	231 (Estates of Ely's Ford)	0	218 (Legends at Chancellorsville)	0	0	100 (Estates at Chancellorsville)	0	329 (Regency at Chancellorsville)	0	0	0
New Trips - Daily	4,410	2,460	210	2,160	10	0	960	0	4,820	3,010	6,670	7,990
New Trips - AM/PM	370/420	190/260	10/10	170/220	1/1	0/0	80/100	0/0	380/510	280/290	450/520	560/660

	Total
Number of Acres	6,715
Number of Developable Acres	1,245
Commercial (x 1000 sq.ft)	380
Employment (x 1000 sq. ft.)	730
Dwelling Units	486
Approved Subdivision (unbuilt Dwelling Units)	1,592
New Trips - Daily	60,130
New Trips AM/PM	4,990/5,810

For Each Zone :

- Developable Land: Land with anticipated future development included in trip generation. (Dark areas)
- Un-Developable Land: Land that has been preserved based on historic status, has previously been built upon, has approved/zoned sites, or has environmental constraints preventing development. Future trip generation includes land with approved zoned sites. (Light areas)
- Land that has been preserved based on historic status.

Source: Spotsylvania County Comprehensive Plan, VBMP



Example from Spotsylvania

	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13	S14
Number of Acres	35	662	62	62	684	477	244	83	119	404	96	65	58	13
Number of Developable Acres	0	0	24	11	68	2	2	0	0	350	0	20	28	9
Number of Un-Developable Acres	35	662	38	51	616	475	242	83	119	54	96	45	30	4
Commercial (x 1,000 sq. ft.)	0	0	0	0	0	0	0	0	0	0	0	50	100	0
Employment (x 1,000 sq. ft.)	0	0	0	0	0	0	0	0	0	470	0	20	30	40
Dwelling Units	0	0	5	2	14	1	0	0	0	139	0	0	2	1
Approved Subdivision (unbuilt Dwelling Units)	0	0	0	0	550 (Fawn Lake)	0	86 (Whitehall)	0	0	78 (Saw Hill)	0	0	0	0
New Trips - Daily	0	0	50	20	5,370	10	820	0	0	7,490	0	3,980	8,660	410
New Trips - AM/PM	0/0	0/0	4/5	2/2	420/560	1/1	70/90	0/0	0/0	960/960	0/0	300/340	630/740	60/60

4. Study Scope

Future Land Use development process – Phase 1 area

Step 1: Group Similar Land Uses to Develop Total Densities

Spotsylvania County Existing Land Use		Density			Assumed Land Use	Assumed Density
		Residential		Non-Residential		
Existing Land Use Code	Existing Designation	Density w/Public Utilities (Dwelling Unit per Acre)	Density w/o Public Utilities (Dwelling Unit per Acre)	FAR		
A2	Agricultural 2	0.20	0.20	0.10	Rural Residential Land use	0.20
A3	Agricultural 3	0.10	0.10	0.10	Agricultural and Forestal Land Use	0.10
RA	Resort Agricultural District	0.50	0.50	0.20	Rural Residential Land use	0.20
R1	Residential 1	0.50	0.50	0.20	Low Density Residential	0.50
R2	Residential 2	0.20	0.50	0.20	Low Density Residential	0.50
R3	Residential 3	1.00	0.50	0.20	Low Density Residential	0.50
R8	Residential 8 (Max)	8.00	None	None	High Density Residential	8.00
R12	Residential 12 (Max)	12.00	None	None	High Density Residential	8.00
RR	Residential Resort	0.50	None	0.2	Rural Residential Land use	0.20
PDH8	Planned Development Housing District	8.00	8.00	None	High Density Residential	8.00
RMHP	Residential Manufactured Home Park	6.00	0.33	None	Low Density Residential	0.50
O1	Offices 1 (Max)	None	None	0.70	Employment Centers	0.20
O2	Offices 2 (Max)	None	None	1.00	Employment Centers	0.20
C1	Commercial 1 District (Max)	None	None	0.50	Commercial Land Use	0.20
C2	Commercial 2 District	None	None	0.70	Commercial Land Use	0.20
C3	Commercial C3 Highway District (Max)	None	None	1.00	Commercial Land Use	0.20
RC	Resort Commercial	None	None	0.50	Commercial Land Use	0.20
I1	Industrial 1 District (Max)	None	None	1.00	Employment Centers	0.20
I2	Industrial 2 District (Max)	None	None	1.50	Employment Centers	0.20
PDC	Planned Development Commercial District (Max)	None	None	1.50	Commercial Land Use	0.20
RU	Rural	0.33	0.33	0.10	Rural Residential Land use	0.20
V	Village District	6.00	None	1.00	Mixed Land Use	FLAG
PRR	Planned Residential Rural	Unique, depending on the district.	Unique, depending on the district.	Unique, depending on the district.	Rural Residential Land use	0.20
MU	Mixed Use	Unique, depending on the district.	Unique, depending on the district.	Unique, depending on the district.	Mixed Land Use	FLAG
Unknown	Unknown	NA	NA	NA		

Step 2: Enter Developable Acres to Determine Developable Units

ZONE	Zone Summary			
		Developable Acres	**Density**	**Developable Units**
	Total Developable Acres	**50**		
	Agriculture	0	1	0
	Open Space	20	0	20.0
	Total	**20**		20 Acres
	Commercial	30	0.15	196.0
S1	Employment Centers	0	0.2	0
	Institutional	0	0.2	0
	Total	**30**		196 KSF
	High Density Residential	0	8	0
	Low Density	0	0.5	0
	Rural Residential	0	0.20	0
	Total	**0**		0 DU

4. Study Scope

Future Land Use development process – Phase 1 area

Step 3A: Let the Spreadsheet do the Work for You

ZONE	Zone Summary				Proposed Land use			Percent	KSF/DU/AC
		Developable Acres	Density	Developable Units					
S1	**Total Developable Acres**	**50**			**Acres**	Agriculture	**Total**	100%	0
						Open Space	**Total**	0%	0
	Agriculture	0	1	0					
	Open Space	20	0	20.0	**Square Feet**	Employment Centers	Industrial	50%	0
	Total	**20**		20 Acres			Office	50%	0
							Total	100%	0
	Commercial	30	0.15	196.0					
	Employment Centers	0	0.2	0		Commercial	High-Turnover	5%	9.8
	Institutional	0	0.2	0			Medium-Turnover	20%	39.2
	Total	**30**		196 KSF			Low-Turnover	75%	147.0
							Internal Capture	10%	
	High Density Residential	0	8	0			**Total**	100%	196.0
	Low Density	0	0.5	0					
	Rural Residential	0	0.20	0		Institutional	Elementary School	0.00%	0
	Total	**0**		0 DU			High School	0.00%	0
							Church	100.00%	0
							Total	100%	0
					Dwelling Units	High Density Residential	**Total**	100%	0
						Rural & Low Density Residential	**Total**	100%	0
					Total Trips				

From Previous Slide

Step 3B: Let the Spreadsheet do the Work for You

Proposed Land Use			Percent	KSF/DU/AC	Daily Trips			AM Peak Hour Trips			PM Peak Hour Trips		
					Daily Total	Ingress	Egress	AM Total	Ingress	Egress	PM Total	Ingress	Egress
Acres	Agriculture	**Total**	100%	0	0	0	0	-	-	-	-	-	-
	Open Space	**Total**	0%	0	0	0	0	0	0	0	0	0	0
Square Feet	Employment Centers	Industrial	50%	0	0	0	0	0	0	0	0	0	0
		Office	50%	0	0	0	0	0	0	0	0	0	0
		Total	100%	0	0	0	0	0	0	0	0	0	0
	Commercial	High-Turnover	5%	9.8	7,591	3,796	3,796	659	333	326	541	274	267
		Medium-Turnover	20%	39.2	4,264	2,132	2,132	231	130	101	96	49	47
		Low-Turnover	75%	147.0	5,301	2,651	2,651	300	209	91	131	66	65
		Internal Capture	10%		-1,716	-858	-858	-119	-67	-52	-77	-39	-38
		Total	100%	196.0	15,442	7,721	7,721	1,071	605	466	691	350	341
	Institutional	Elementary School	0.00%	0	0	0	0	0	0	0	0	0	0
		High School	0.00%	0	0	0	0	0	0	0	0	0	0
		Church	100.00%	0	0	0	0	0	0	0	0	0	0
		Total	100%	0	0	0	0	0	0	0	0	0	0
Dwelling Units	High Density Residential	**Total**	100%	0	0	0	0	0	0	0	0	0	0
	Rural & Low Density Residential	**Total**	100%	0	0	0	0	0	0	0	0	0	0
Total Trips					15,442	7,721	7,721	1,071	605	466	691	350	341

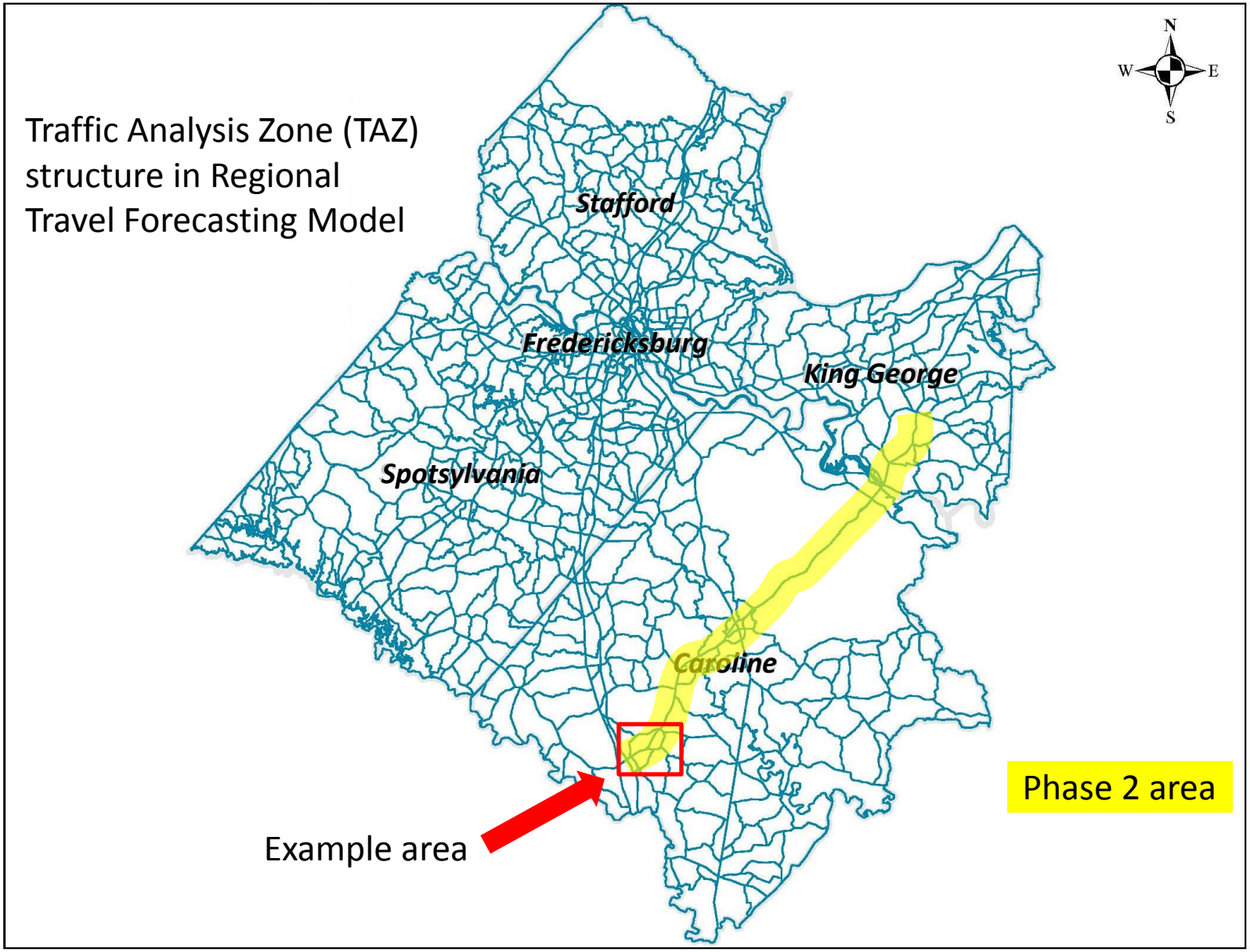
4. Study Scope

Future Land Use development process – Phase 2 area

Land use assumptions for Phase 2 area will be based on FAMPO 2040 Constrained Long Range Plan land use and the Traffic Analysis Zone (TAZ) structure utilized in model

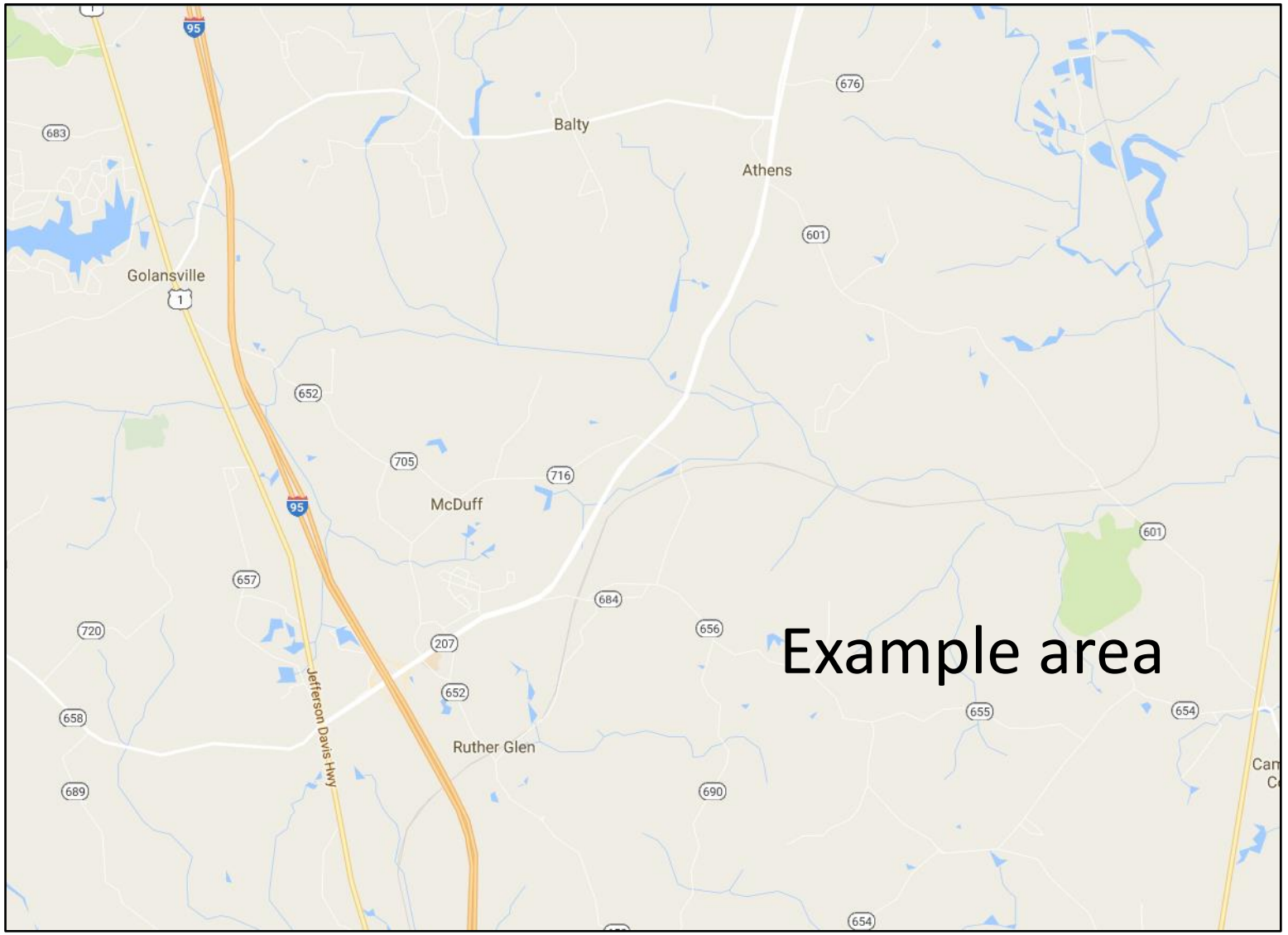
4. Study Scope

Future Land Use development process – Phase 2 area



4. Study Scope

Future Land Use development process – Phase 2 area

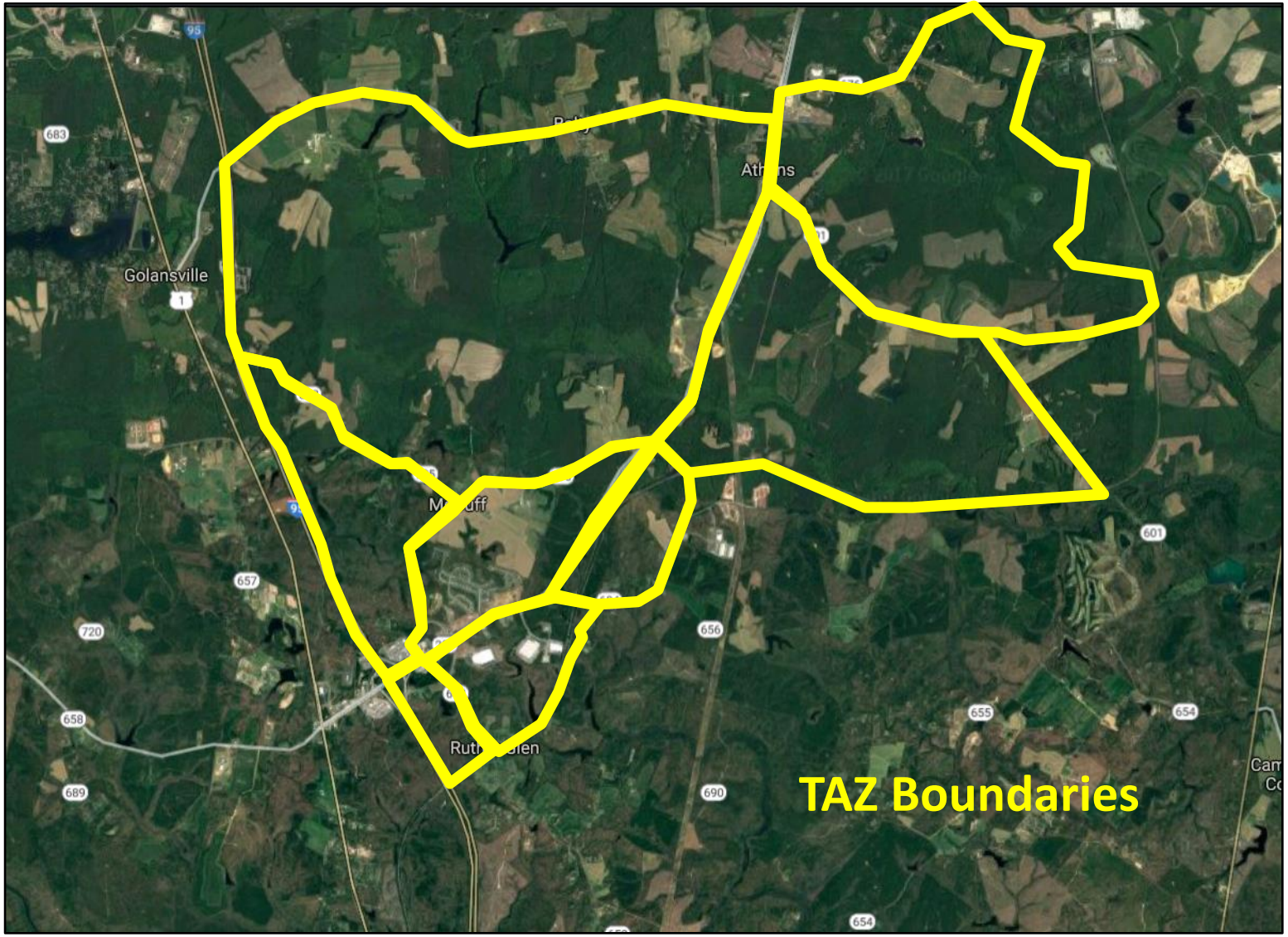


4. Study Scope

Future Land Use development process – Phase 2 area

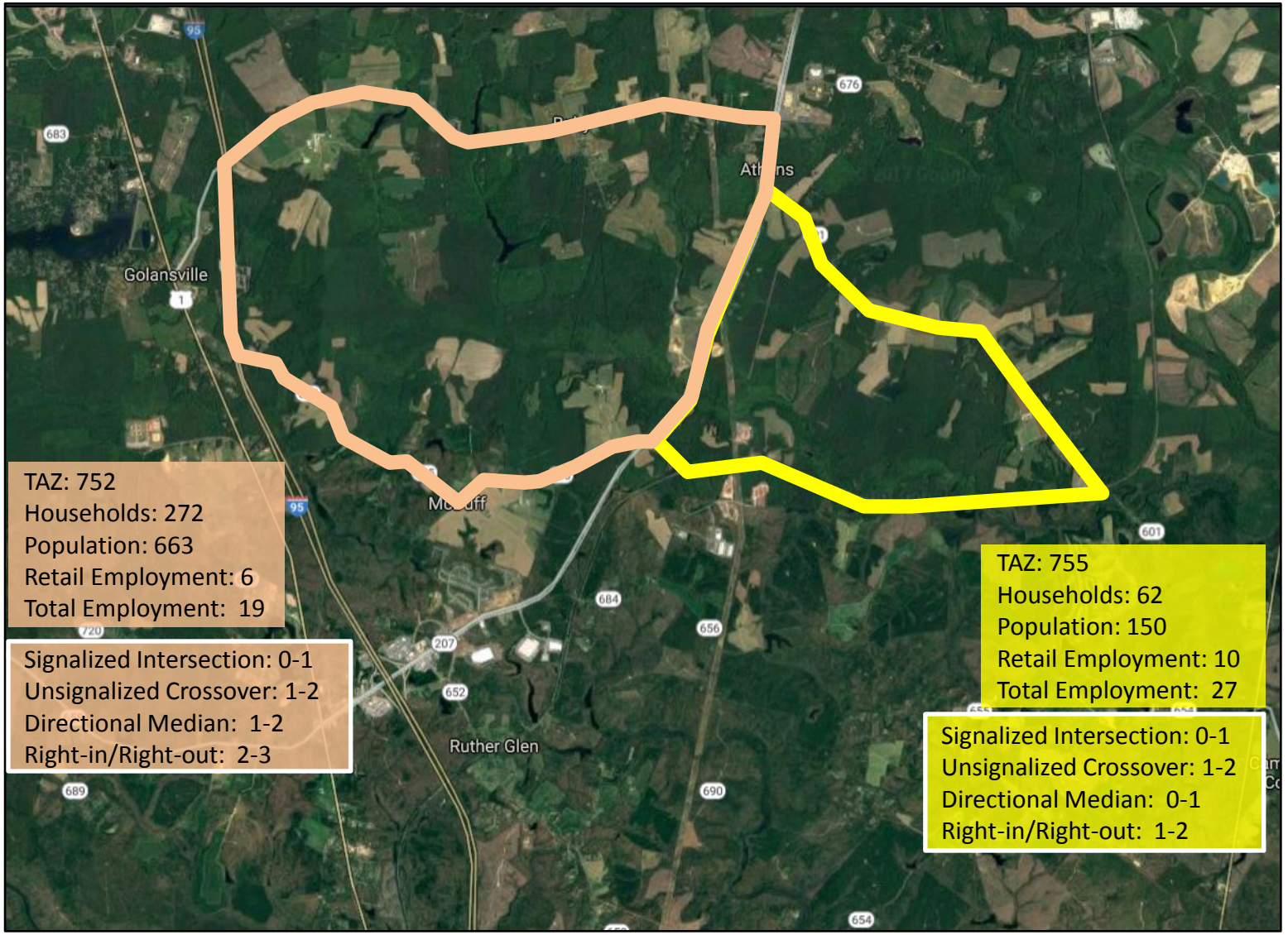
4. Study Scope

Future Land Use development process – Phase 2 area



4. Study Scope

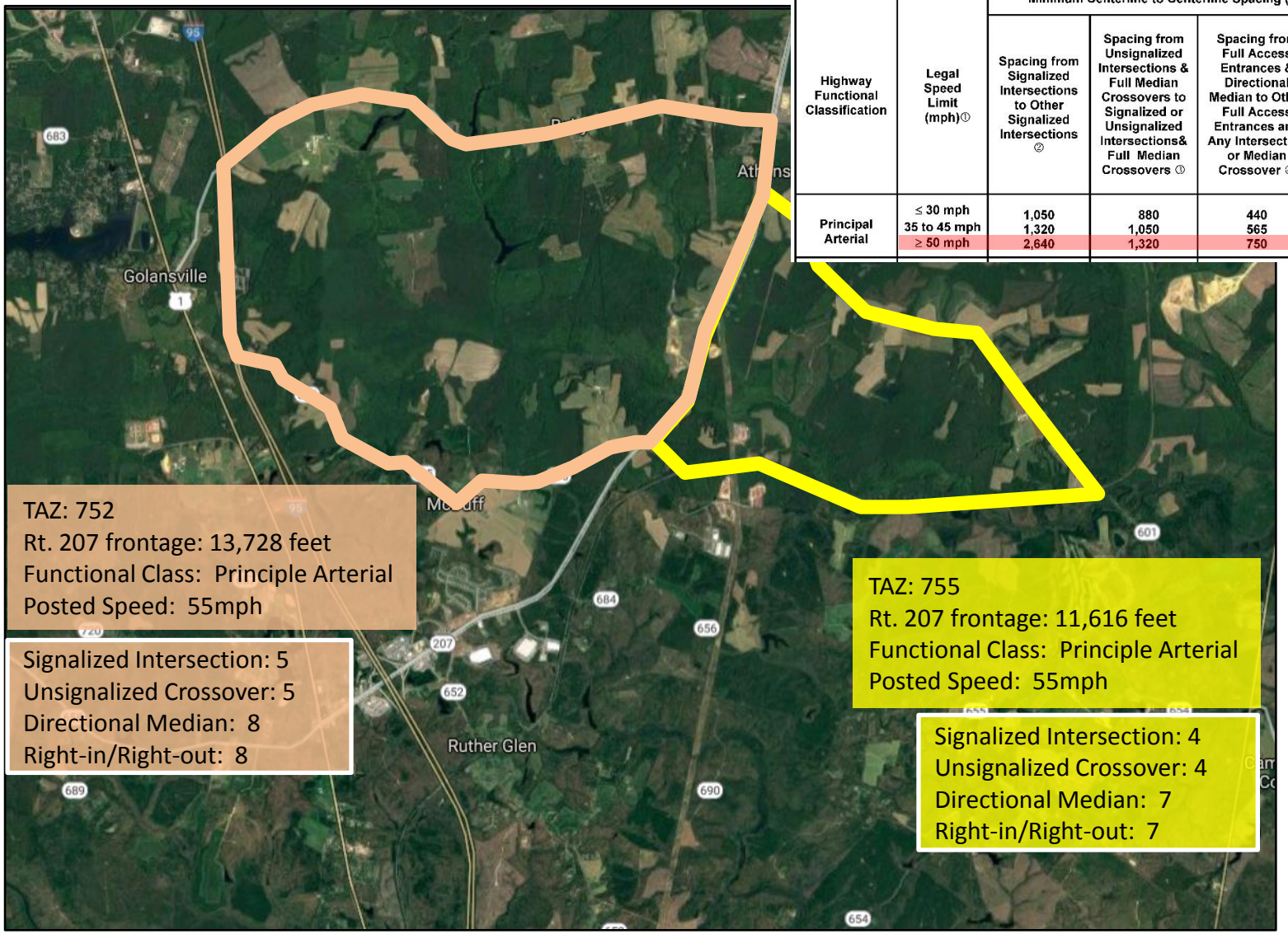
Future Access per TAZ Land Use



4. Study Scope

Future Access per Minimum VDOT Spacing

Highway Functional Classification	Legal Speed Limit (mph)	Minimum Centerline to Centerline Spacing (Distance) in Feet			
		Spacing from Signalized Intersections to Other Signalized Intersections	Spacing from Unsignalized Intersections & Full Median Crossovers to Signalized or Unsignalized Intersections& Full Median Crossovers	Spacing from Full Access Entrances & Directional Median to Other Full Access Entrances and Any Intersection or Median Crossover	Spacing from Partial Access One or Two Way Entrances to Any Type of Entrance, Intersection or Median Crossover
Principal Arterial	≤ 30 mph	1,050	880	440	250
	35 to 45 mph	1,320	1,050	565	305
	≥ 50 mph	2,640	1,320	750	495



TAZ: 752
Rt. 207 frontage: 13,728 feet
Functional Class: Principle Arterial
Posted Speed: 55mph

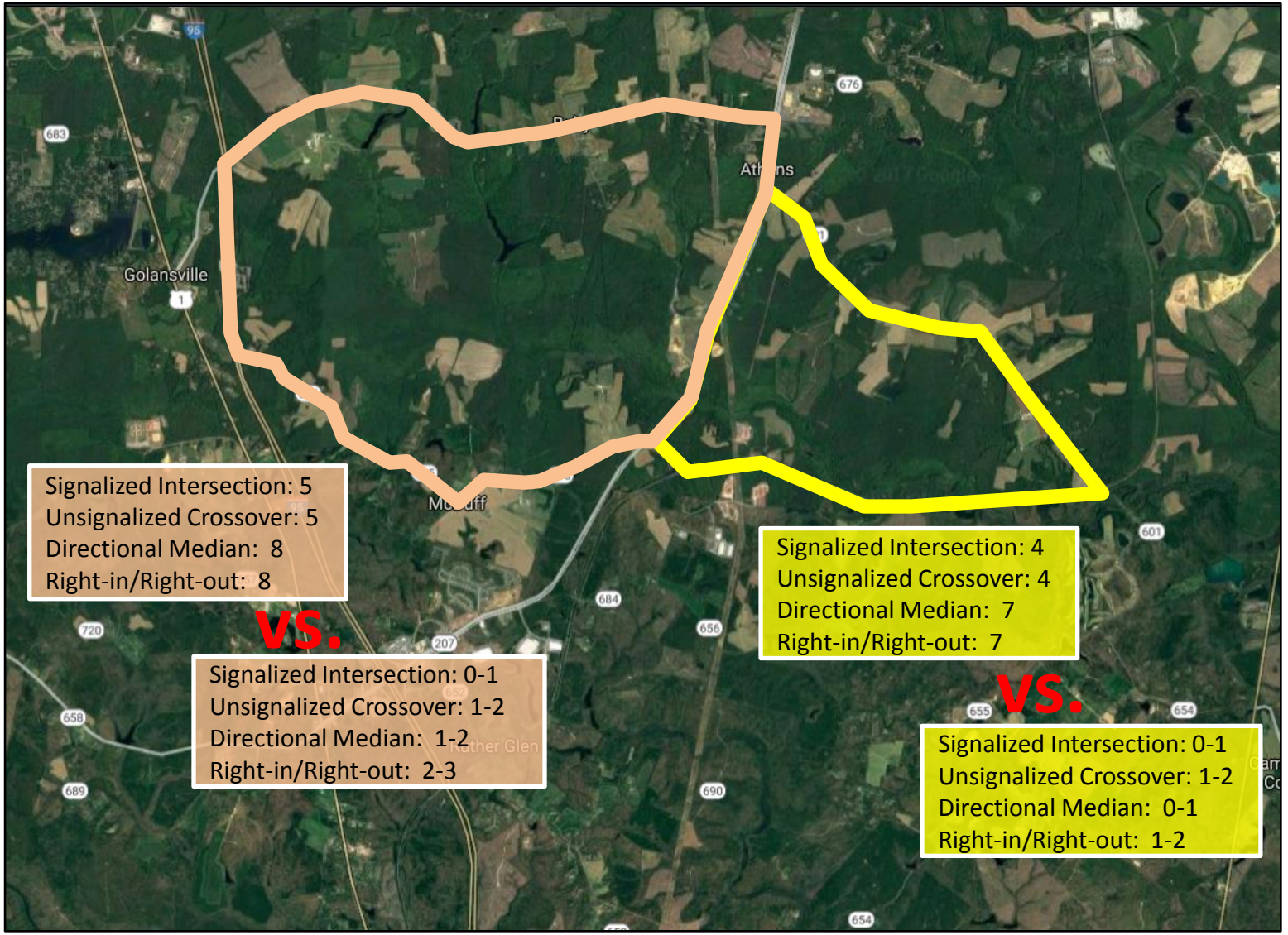
Signalized Intersection: 5
Unsignalized Crossover: 5
Directional Median: 8
Right-in/Right-out: 8

TAZ: 755
Rt. 207 frontage: 11,616 feet
Functional Class: Principle Arterial
Posted Speed: 55mph

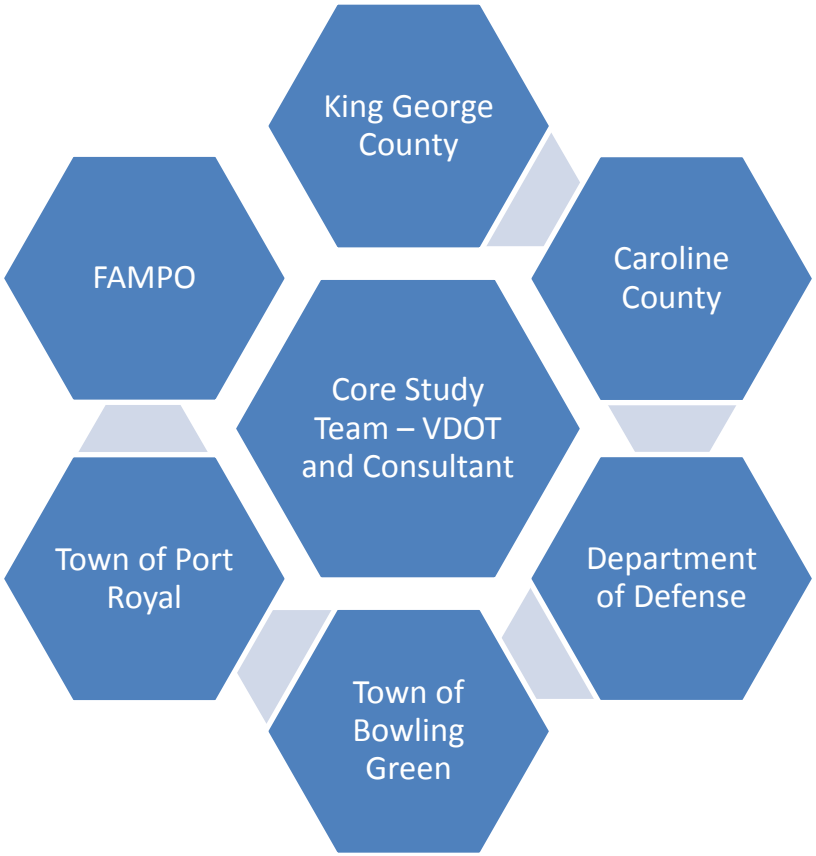
Signalized Intersection: 4
Unsignalized Crossover: 4
Directional Median: 7
Right-in/Right-out: 7

4. Study Scope

Future Access Comparison



5. Stakeholder Identification



Other potential stakeholders:

- Citizens' groups / HOAs?
- Trucking industry ?
- Land Owners / Developers ?
- Adjacent jurisdictions ?
- Parks or other protected lands?
- Other?

It is recommended that the study team communicate and coordinate with Maryland to fully understand their plans for the bridge and the future land use on the Maryland side

6. Study Schedule

The overall study will take approximately 12-months with Phase 1 being a priority in the first half of 2017. A detailed schedule will be prepared once the scope of services is finalized

This corridor study will be coordinated with the concurrent I-95 Phase 2 study

7. Next Steps

- Develop project scope of work based on Today's Meeting
- Get to Work