ARTERIAL MANAGEMENT PLANS

VDOT Virginia Department of Transportation

2014 Coordinating Transportation Planning & Land Use Forum

Capacity as a Limited Resource

- Public road network is critical to the economy and to the mobility of people and goods
- Need to start thinking of the system's capacity as a limited resource that should be preserved to the greatest extent possible
- Must also recognize the importance of land development to the economy and jobs
- These two things are not mutually exclusive nor are they necessarily conflicting

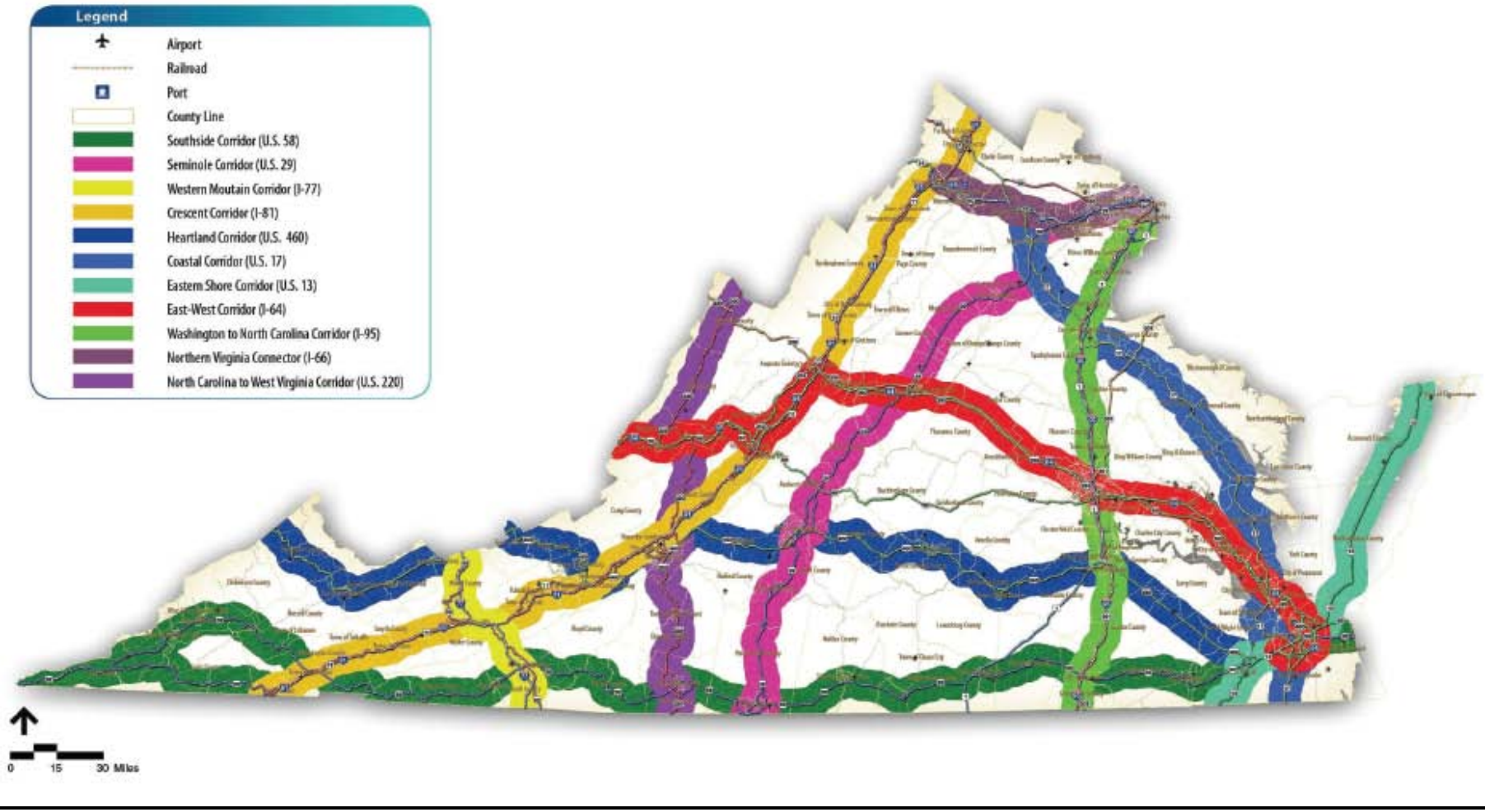
Predicting Land Development

- For last 5 years, VDOT has been partnering with UVA's Center for Risk Management to develop and refine methods to predict the likelihood of land development along major corridor in VA.

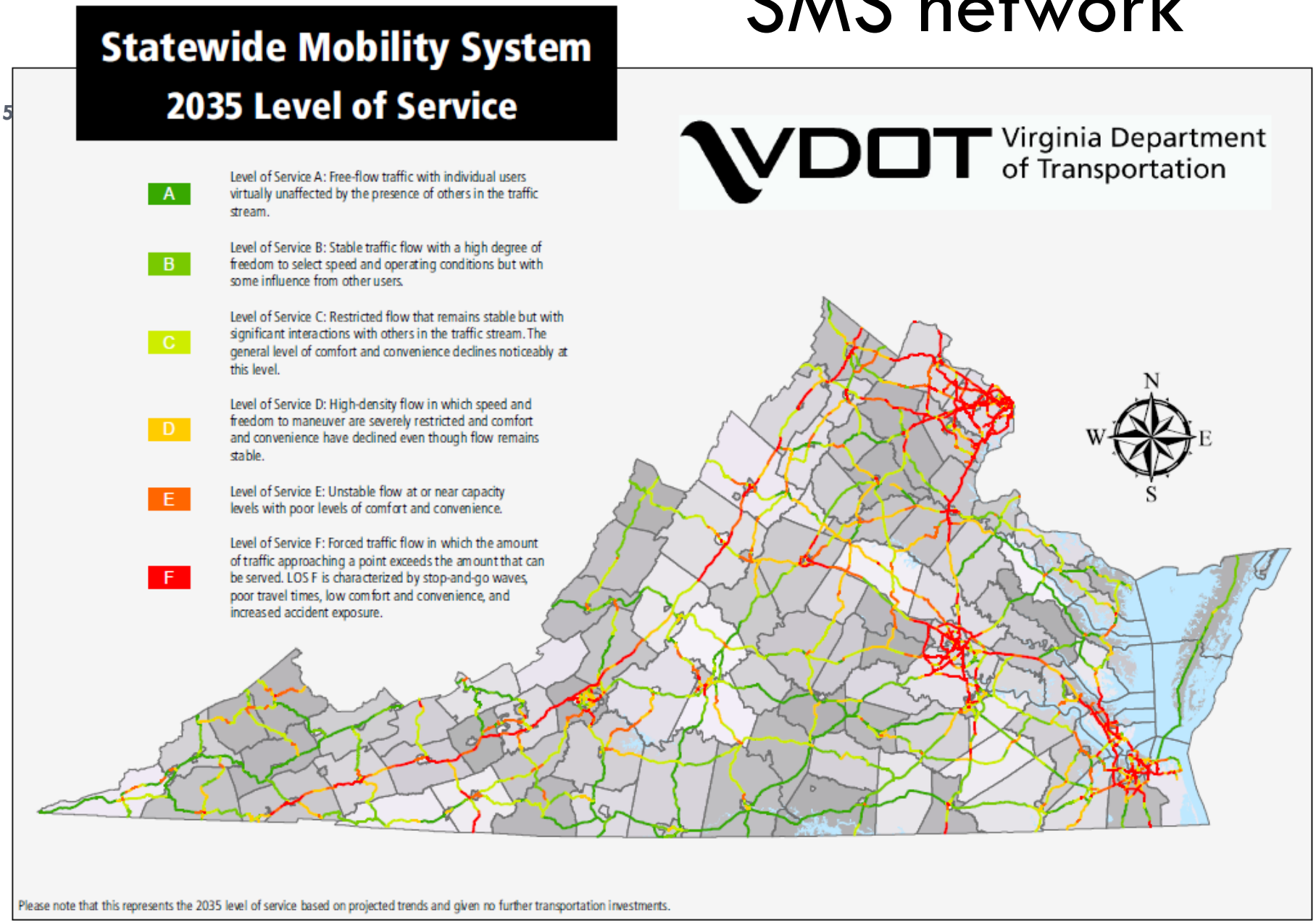
Motivation

- Increasing vulnerability to development activity
- Escalating land values affects right of way acquisition
- Desire to avoid unnecessary congestion and costly retrofits
- Department needed way to anticipate future development in corridors and take timely action: *Corridor Management*
  - Partner with localities to establish a joint plan
  - Preserve right-of-way/set backs
  - Facilitate easements/developer proffers
  - Optimize access to road network

Corridors of Statewide Significance

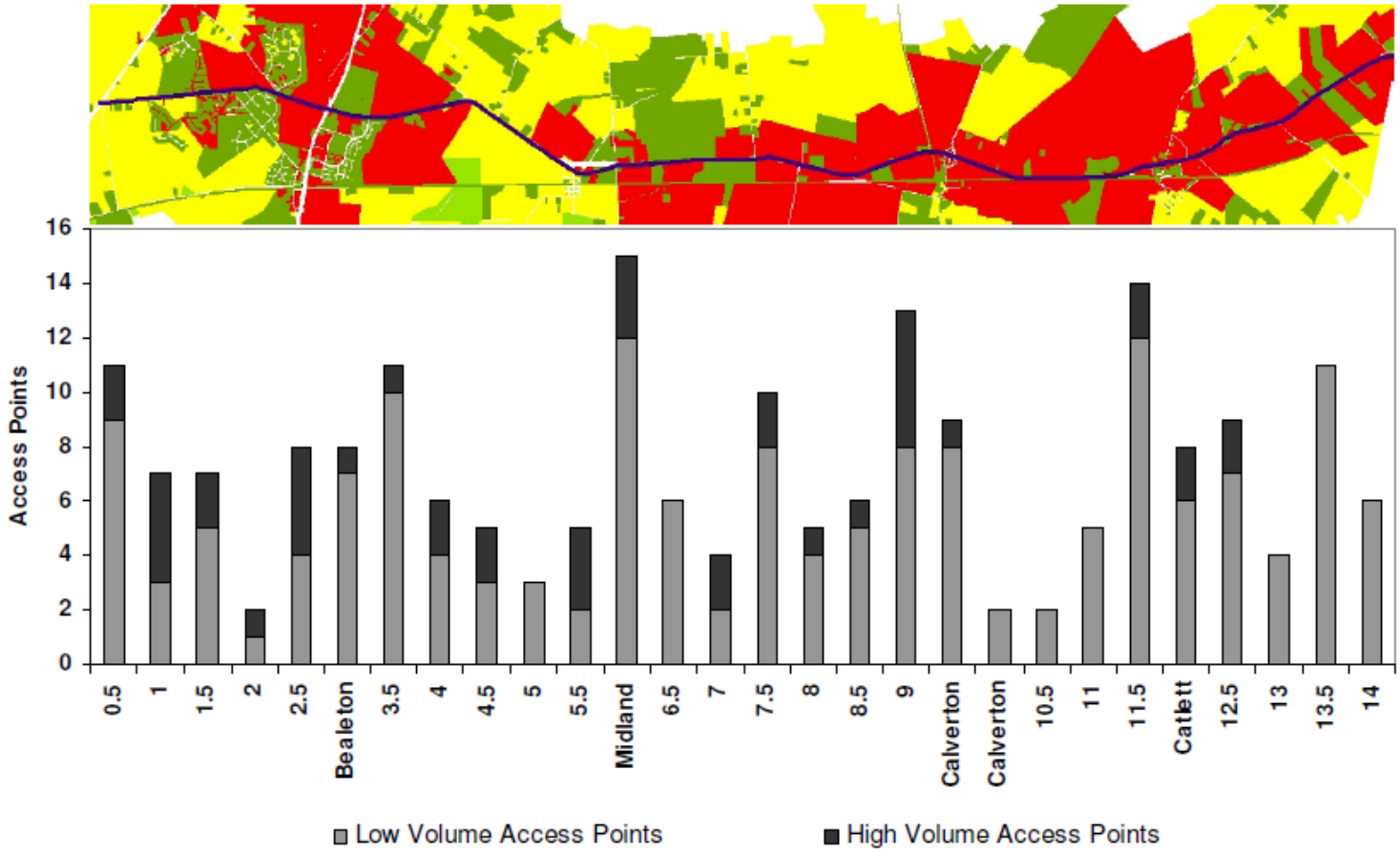


SMS network


Statewide Mobility System
2035 Level of Service
VDOT Virginia Department of Transportation
A
Level of Service A: Free-flow traffic with individual users virtually unaffected by the presence of others in the traffic stream.
B
Level of Service B: Stable traffic flow with a high degree of freedom to select speed and operating conditions but with some influence from other users.
C
Level of Service C: Restricted flow that remains stable but with significant interactions with others in the traffic stream. The general level of comfort and convenience declines noticeably at this level.
D
Level of Service D: High-density flow in which speed and freedom to maneuver are severely restricted and comfort and convenience have declined even though flow remains stable.
E
Level of Service E: Unstable flow at or near capacity levels with poor levels of comfort and convenience.
F
Level of Service F: Forced traffic flow in which the amount of traffic approaching a point exceeds the amount that can be served. LOS F is characterized by stop-and-go waves, poor travel times, low comfort and convenience, and increased accident exposure.
N
W
E
S
Please note that this represents the 2035 level of service based on projected trends and given no further transportation investments.

Inventory of Access Points

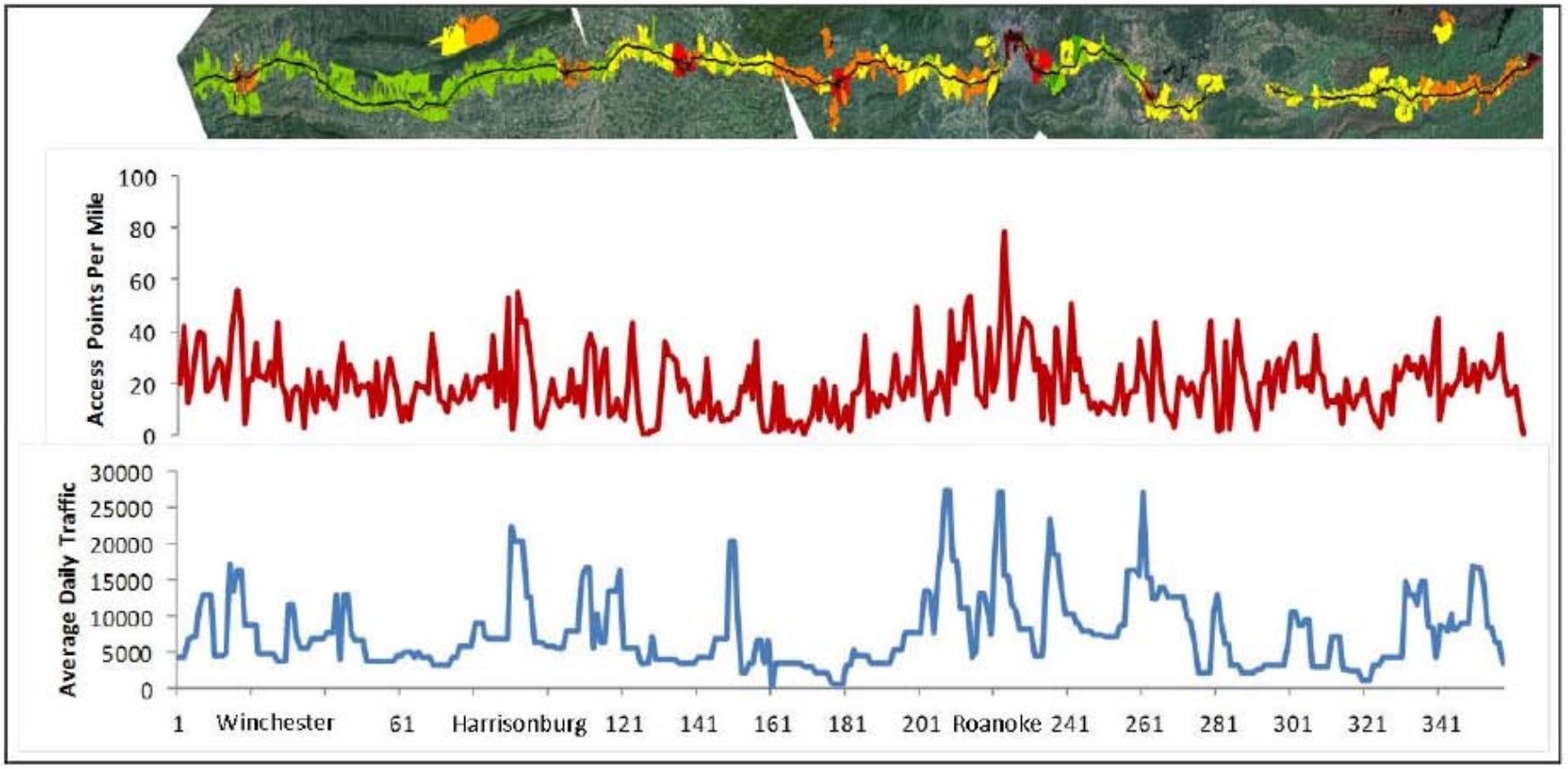
Completed for Statewide Mobility System (SMS) network



14 miles of US 28

Assessment of Land Development Risk

Crescent Corridor
(US 11)



Looking Back to Move Forward

- Functional Plans – Corridor studies that included conceptual engineering to establish footprints and horizontal alignments – more than line on map
- Very common 20+ years ago
- Developed jointed between planners, designers and field staff at the state and local level
- Included information such as:
  - Design and operational features
    - Typical section
    - Channelization
    - Turn lanes
    - Grading profiles
  - Construction phasing
  - Traffic Analysis
  - Cost estimates

OFFICE COPY

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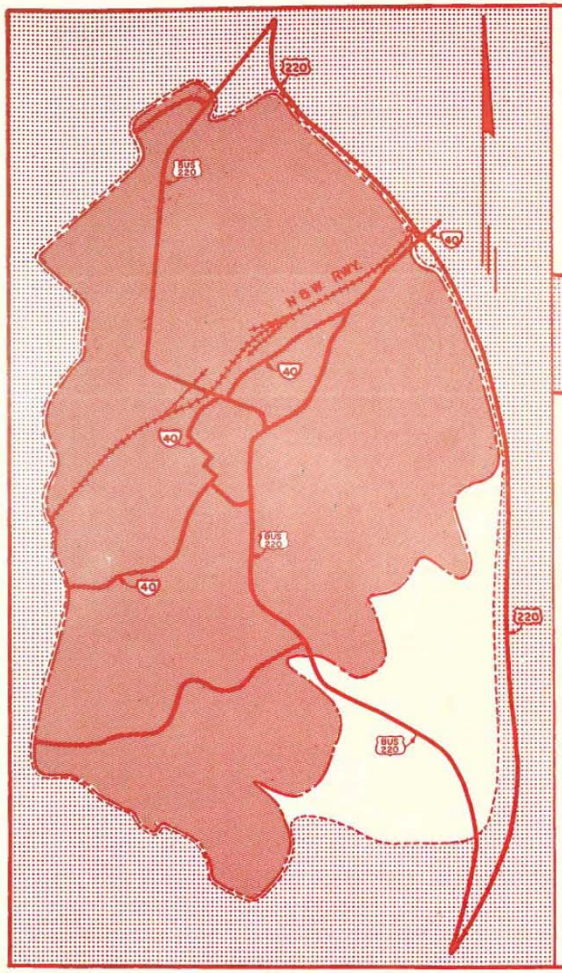
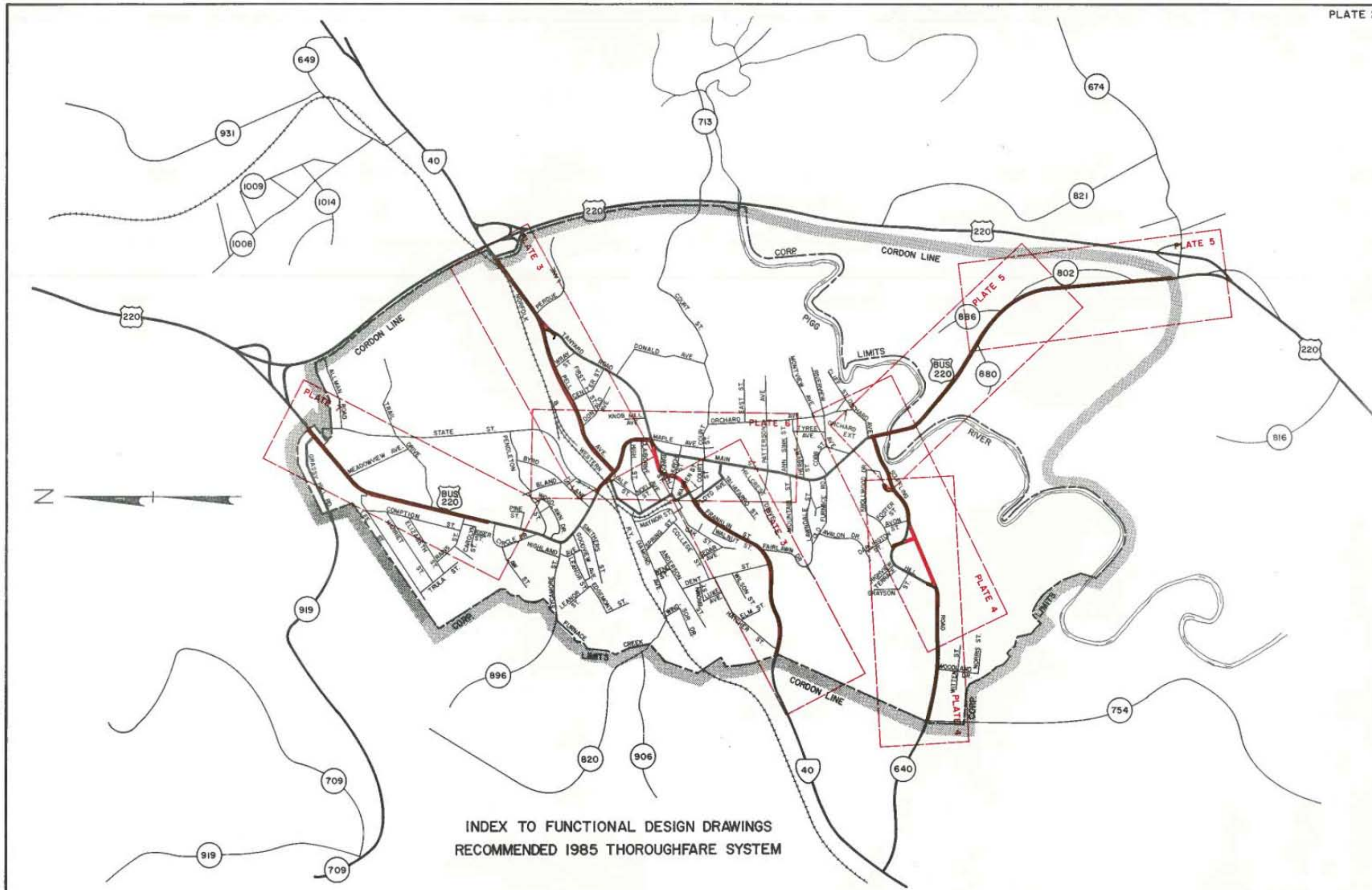


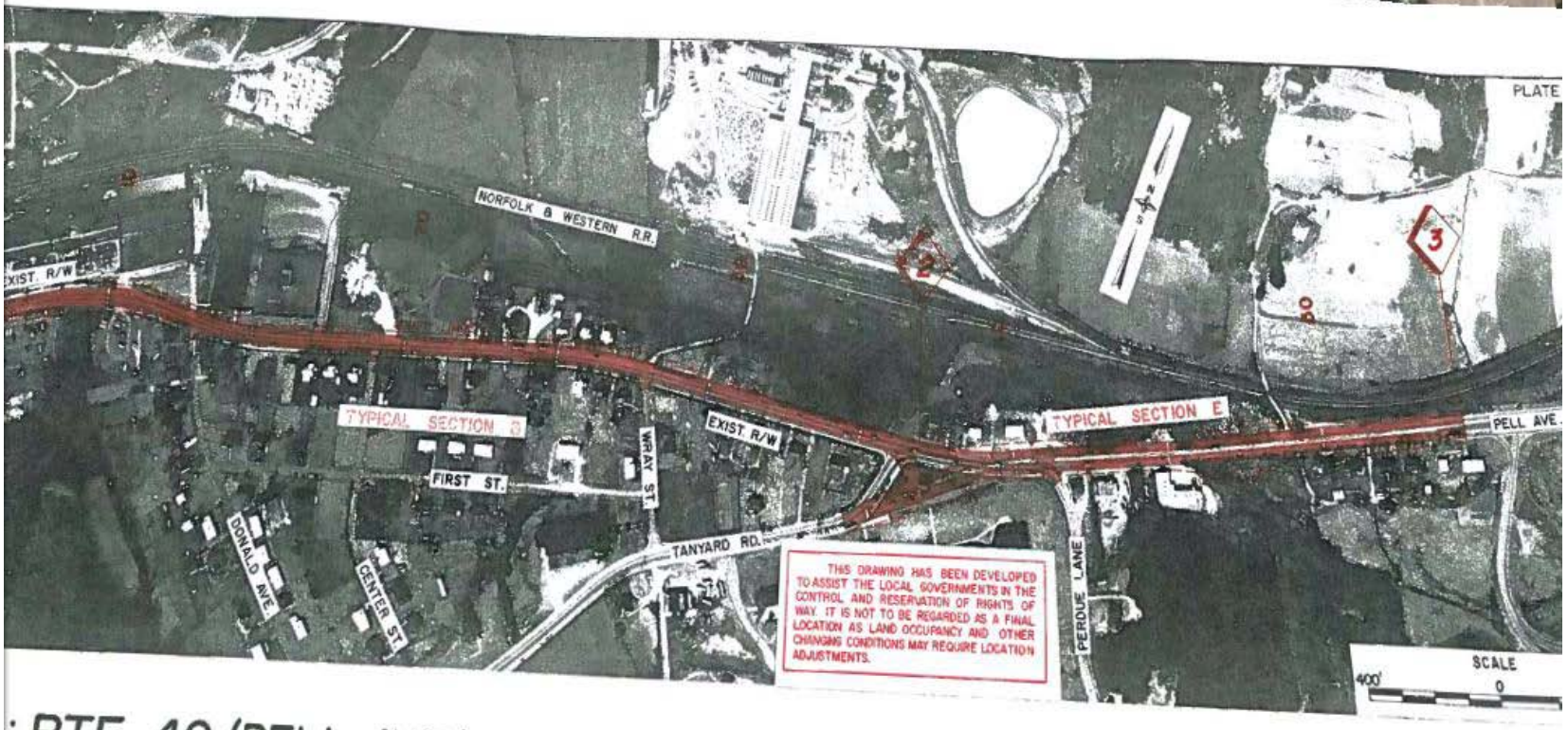
ROCKY MOUNT AREA

FUNCTIONAL PLANS



INDEX TO FUNCTIONAL DESIGN DRAWINGS
RECOMMENDED 1985 THOROUGHFARE SYSTEM


Google earth
1995
Imagery Date: 10/24/2011 37°00'23.17" N 79°52'53.94" W elev 1120 ft eye alt 5457 ft



: RTE. 40 (PELL AVE.)

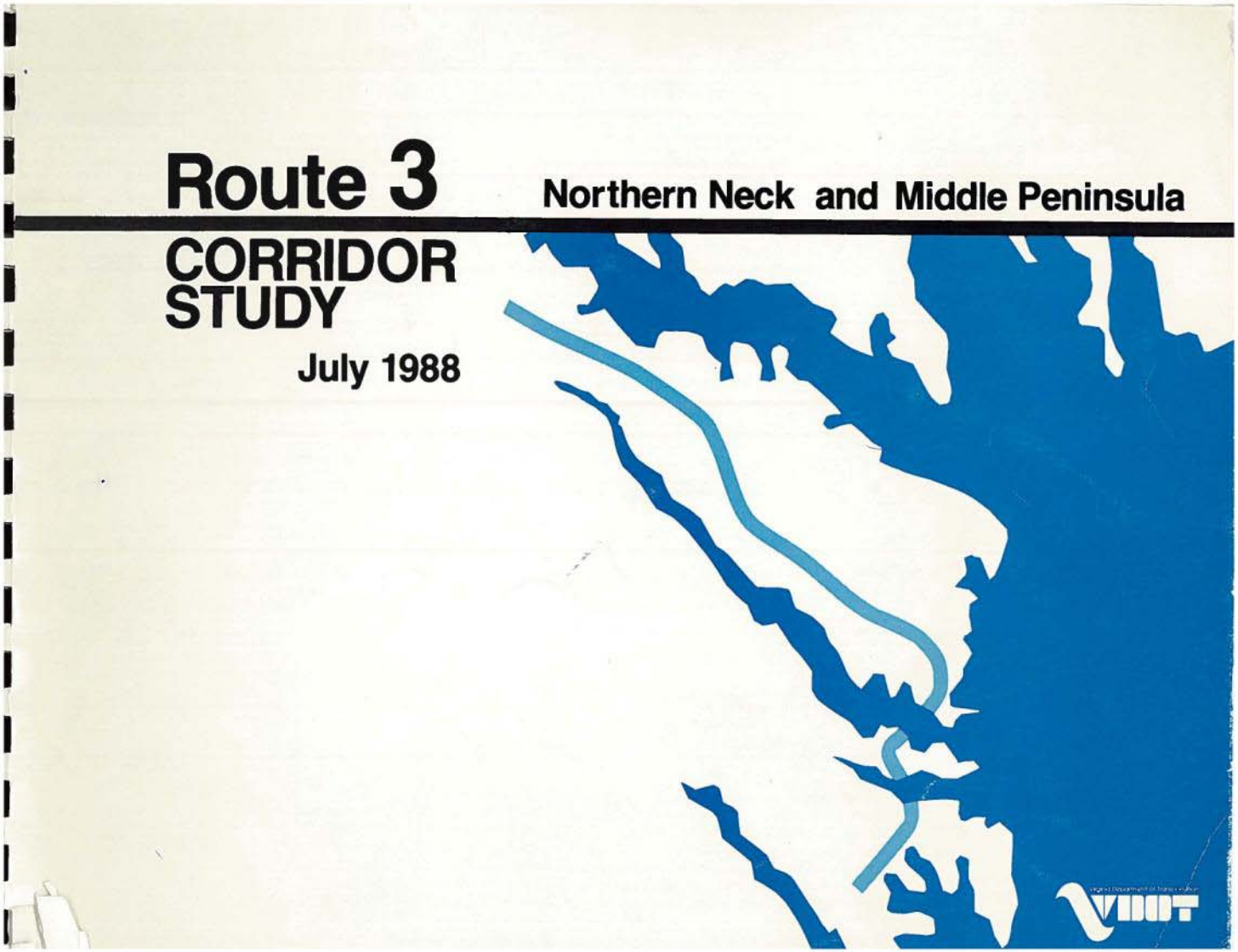
BELOW : RTE. 40 (FRANKLIN ST.)

PLATE 8

COST AND CONSTRUCTION STAGE OF RECOMMENDED THOROUGHFARE IMPROVEMENTS AND ADDITIONS

TOWN	COUNTY	STREET OR ROUTE	SECTION FROM	SECTION TO	ESTIMATE BREAK	PLATE NUMBER	LENGTH (MILES)	TYPICAL SECTION	R/W WIDTH	COST R/W	COST ROADWAY	COST MAJOR STRUCTURES	COST TOTAL	CONSTRUCTION STAGE
X		Route 40 (Pell Ave.)	0.05 Mi. W. of ECL Rocky Mount	Tanyard Rd.	2-3	3	0.33	E	90	152,200	176,900		329,100	III
X		Route 40 (Pell Ave.)	Tanyard Rd.	S. Int. Business Route 220 (Main Street)	1-2	3	0.69	B	70	187,100	94,700		281,800	IV
X		Route 40 (Franklin St.)	Floyd Ave.	WCL Rocky Mount	4-5	3	0.80	B	70	38,800	262,500	80,300	381,600	III
X		Business Route 220 (Main St.)	NCL Rocky Mount	Circle Dr. (N. Int.)	13-14	7	0.92	B	70	85,300	228,700		314,000	III
X		Business Route 220 (Main St.)	State St.	Tanyard Rd. & Maple Ave.	10-11	6	0.36	B	70	245,500	132,300	182,500	560,300	II
X		Business Route 220 (Main St.)	Scuffling Hill Rd.	SCL Rocky Mount	8A-9	5	0.09	B	Exist. 80	5,000	13,300	255,700	274,000	IV
	X	Bus. Route 220	SCL Rocky Mount	0.07 Mi. N. Route 674	8-8A	5	1.49	B	Exist. 80	47,800	379,000		426,800	IV
X		Scuffling Hill Road	WCL Rocky Mount	Business Route 220 (Main Street)	6-7	4,4A	1.30	A	70	81,700	201,000		282,700	IV
X		Prop. New Road and Main St.	Tanyard Rd. & Maple Ave.	Int. of Franklin and Warren Streets	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1/ X		Business Route 220 (Main St.)	Circle Dr. (N. Int.)	State St.	-	-	0.64	48 Ft. Curb to Curb	63	74,000	250,000		324,000	I
2/ X		Business Route 220 (Main St.)	Hillcrest Dr.	Scuffling Hill Road	-	-	0.51	B	80	35,000	250,000		285,000	I
1/		Committed Project - 7220-157-101, C501												
2/		Committed Project - 7220-157-102, C501												

Route 3 Example



Route 3 Example

Route 3 CORRIDOR STUDY

Northern Neck and Middle Peninsula

Counties of King George, Westmoreland, Richmond, Lancaster, Middlesex and Mathews

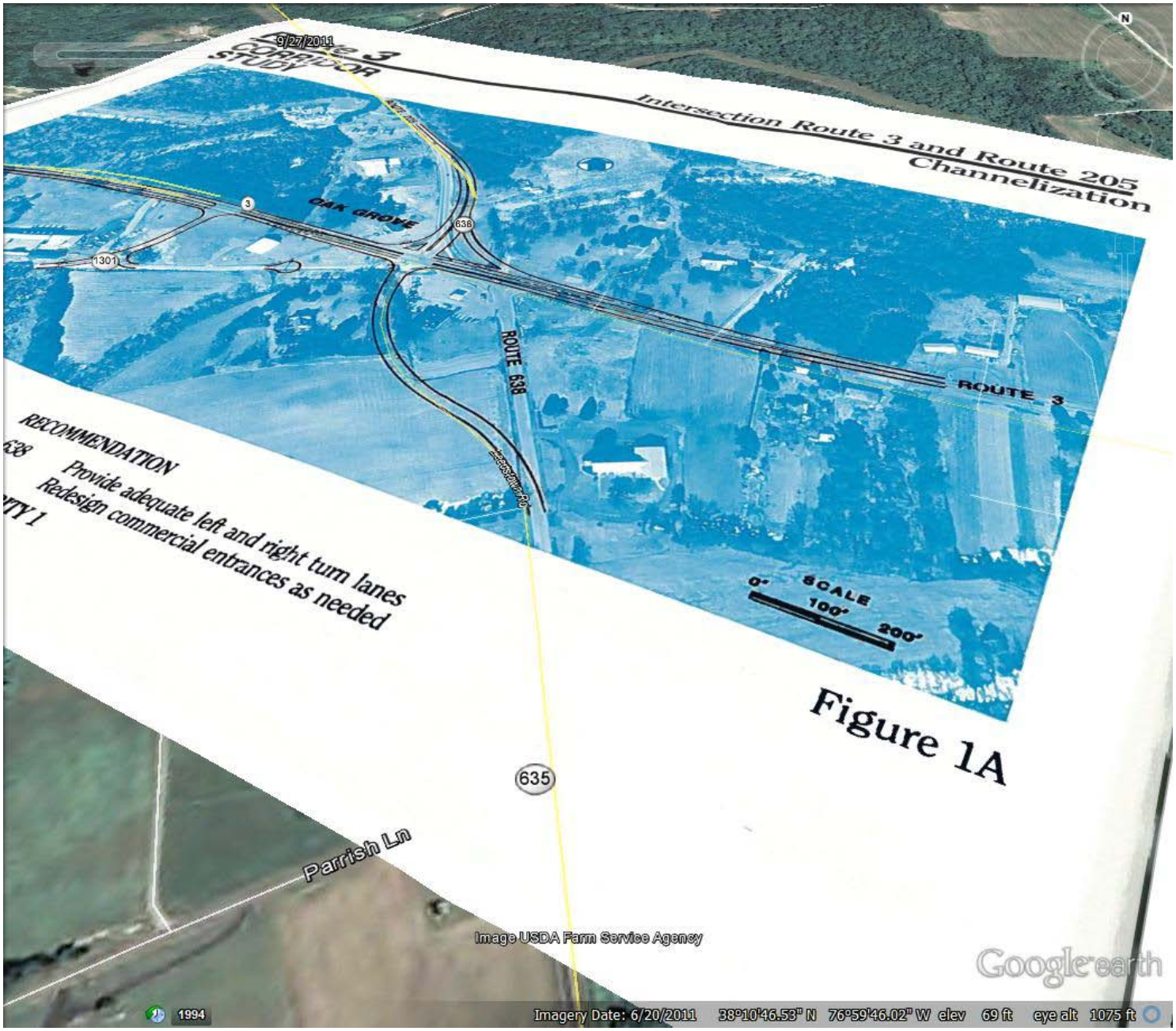
From: Route 301 (King George County)
To: Route 14 (Mathews County)
Length 88.5 Miles

July 1988

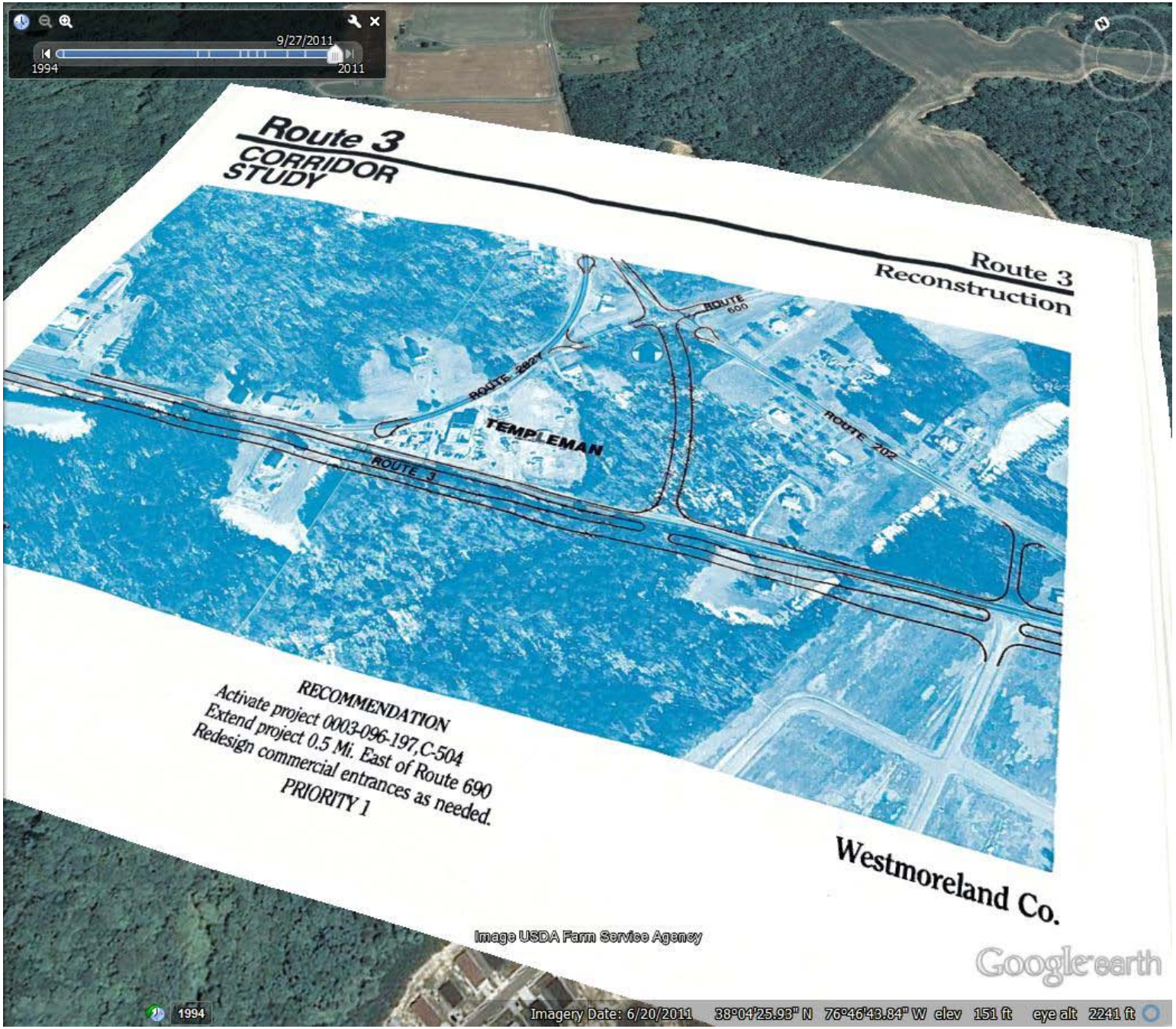
Prepared by
Transportation Planning Division

With assistance from
Fredericksburg District Traffic Engineer
Warsaw Resident Engineer
and
Saluda Resident Engineer

In cooperation with the
U.S. Department of Transportation


9/27/2011
Route 3
CORRIDOR
STUDY
Intersection Route 3 and Route 205
Channelization
OAK GROVE
3
638
1301
ROUTE 638
ROUTE 3
SCALE
0'
100'
200'
RECOMMENDATION
638
Provide adequate left and right turn lanes
Redesign commercial entrances as needed
TY 1
Figure 1A
635
Parrish Ln
Image USDA Farm Service Agency
Google earth
1994
Imagery Date: 6/20/2011 38°10'46.53" N 76°59'46.02" W elev 69 ft eye alt 1075 ft


9/27/2011
N
3
636
1301
635
Parrish Ln
Image USDA Farm Service Agency
Google earth
1994
Imagery Date: 6/20/2011 38°10'46.53" N 76°59'46.02" W elev 69 ft eye alt 1075 ft


9/27/2011
1994
2011
Route 3
CORRIDOR
STUDY
Route 3
Reconstruction
ROUTE 600
ROUTE 202Y
TEMPLEMAN
ROUTE 202
ROUTE 3
RECOMMENDATION
Activate project 0003-096-197,C-504
Extend project 0.5 Mi. East of Route 690
Redesign commercial entrances as needed.
PRIORITY 1
Westmoreland Co.
Image USDA Farm Service Agency
Google earth
1994
Imagery Date: 6/20/2011 38°04'25.93" N 76°46'43.84" W elev 151 ft eye alt 2241 ft


9/27/2011
N
Image USDA Farm Service Agency
Google earth
1994
Imagery Date: 6/20/2011 38°04'25.93" N 76°46'43.84" W elev 151 ft eye alt 2241 ft

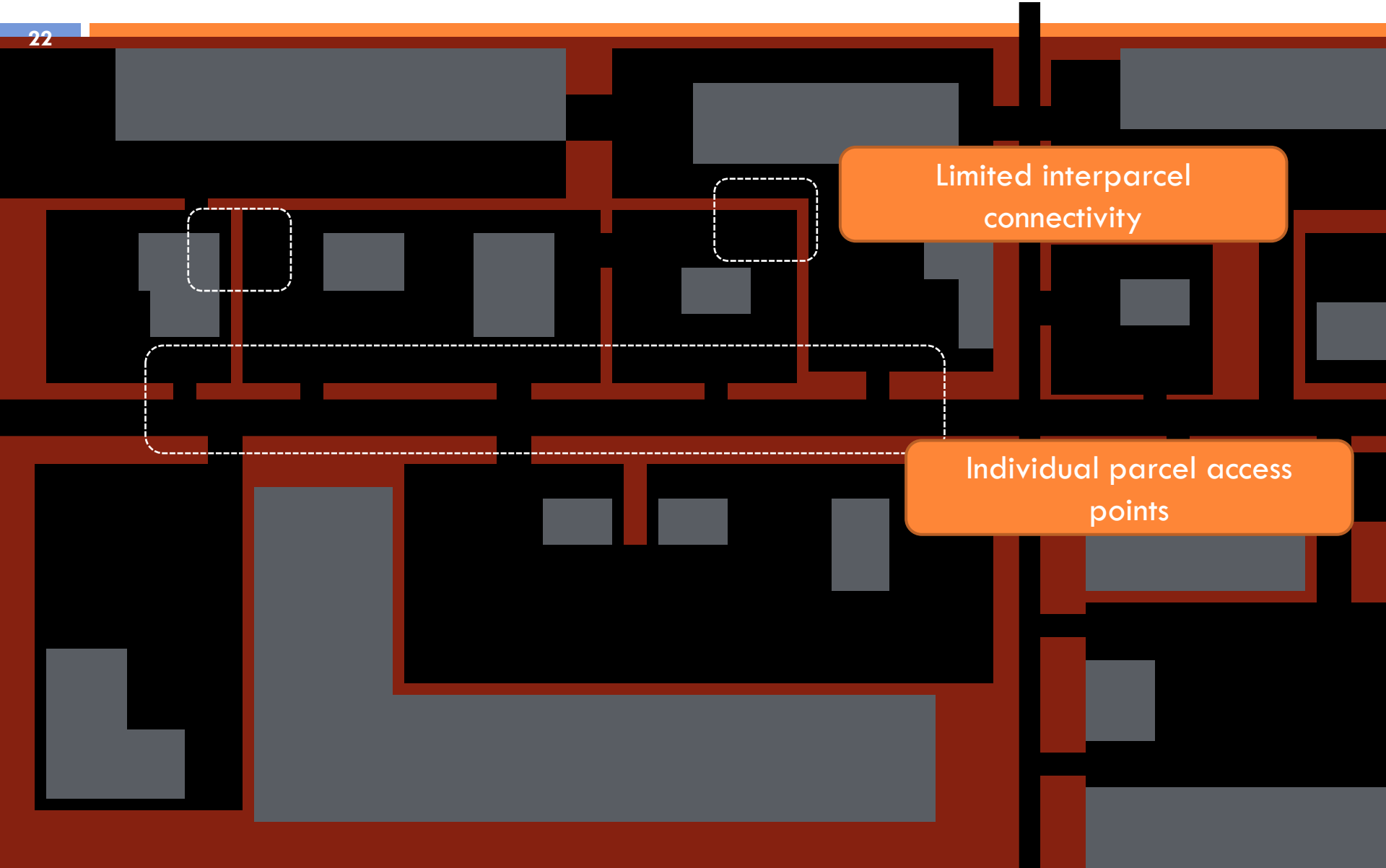
Benefits of Functional Plans

- Provided a plan localities could use to establish set-back requirements and preserve ROW – minimizing unnecessary public expenditures
- Provided developers will clear plan for future improvements that they could build development proposals and site plans around
- Facilitated the implementation of planned improvements during land development activities

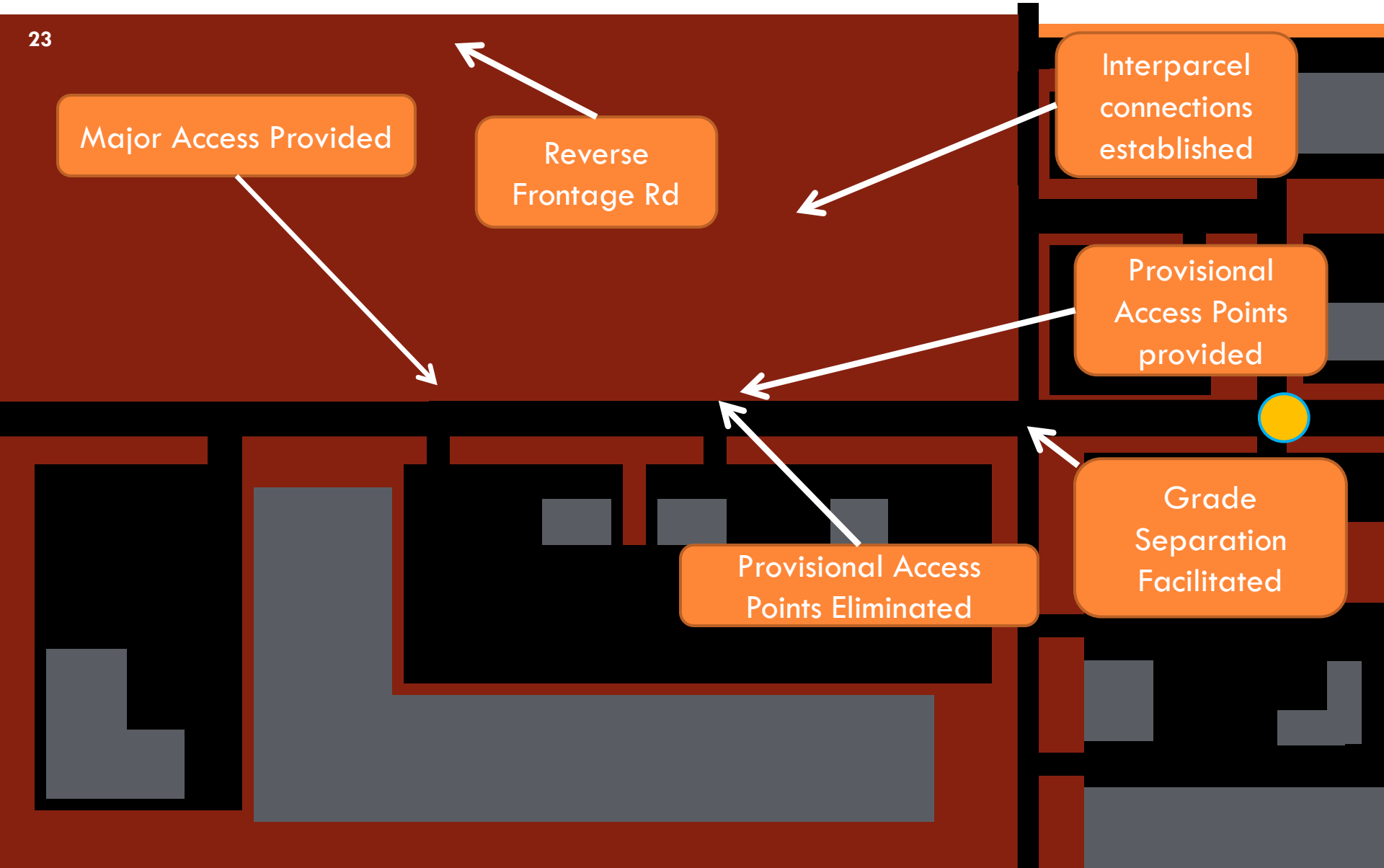
Arterial Management Plans

- What is an Arterial Management Plan?
  - Focus on corridor where considerable development is likely within 10 years
  - Similar to functional plans of past, work with localities to develop corridor management plans that address:
    - thoroughfare improvements
    - intersection/interchange improvements
    - access points and median treatments
    - operational improvements – signal optimization, triggers for provision/improvement
    - interparcel access and connections
    - set back requirements, ROW preservation
    - Transportation Demand Management (TDM) strategies

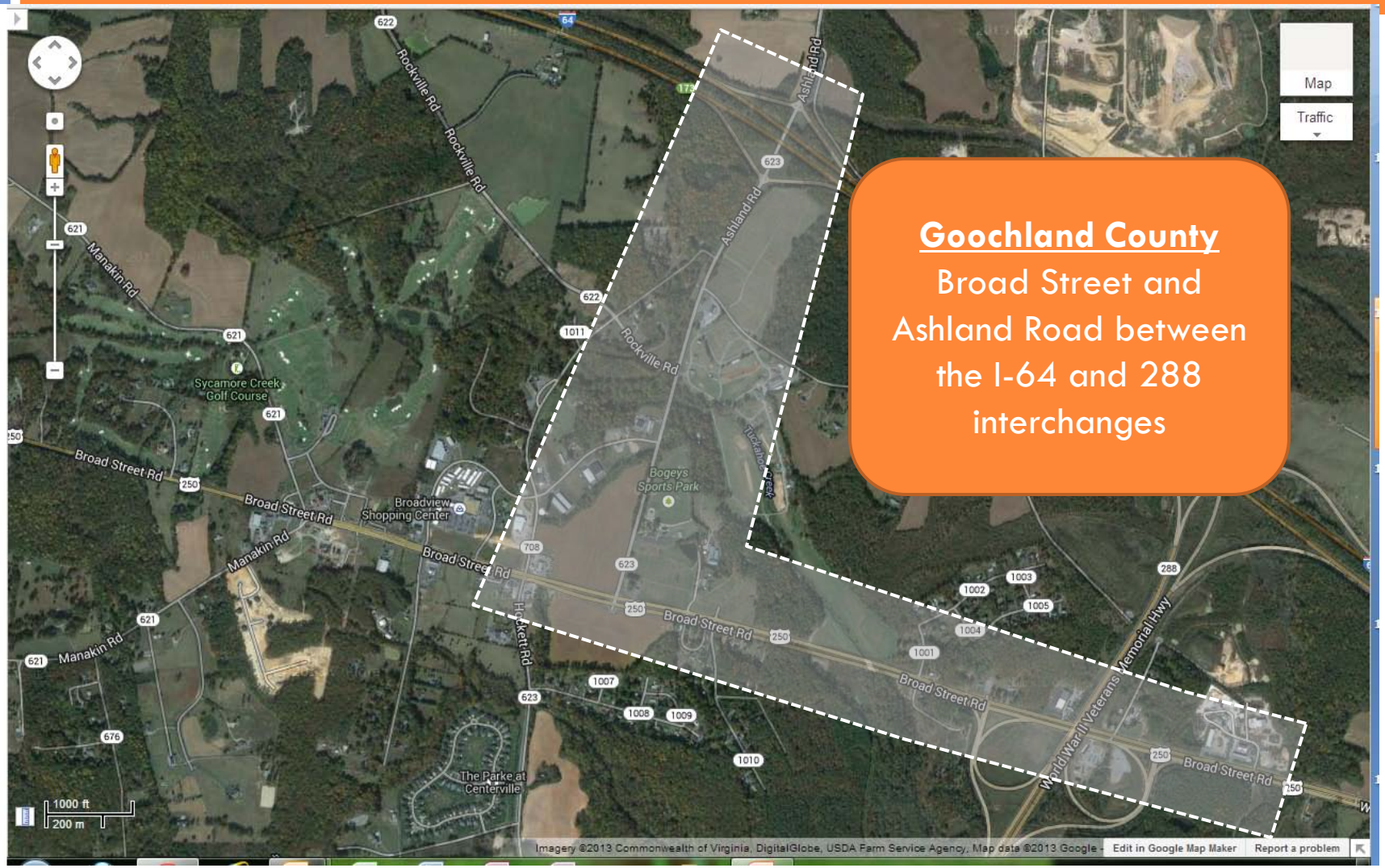
Minimally managed illustration



Optimally managed illustration

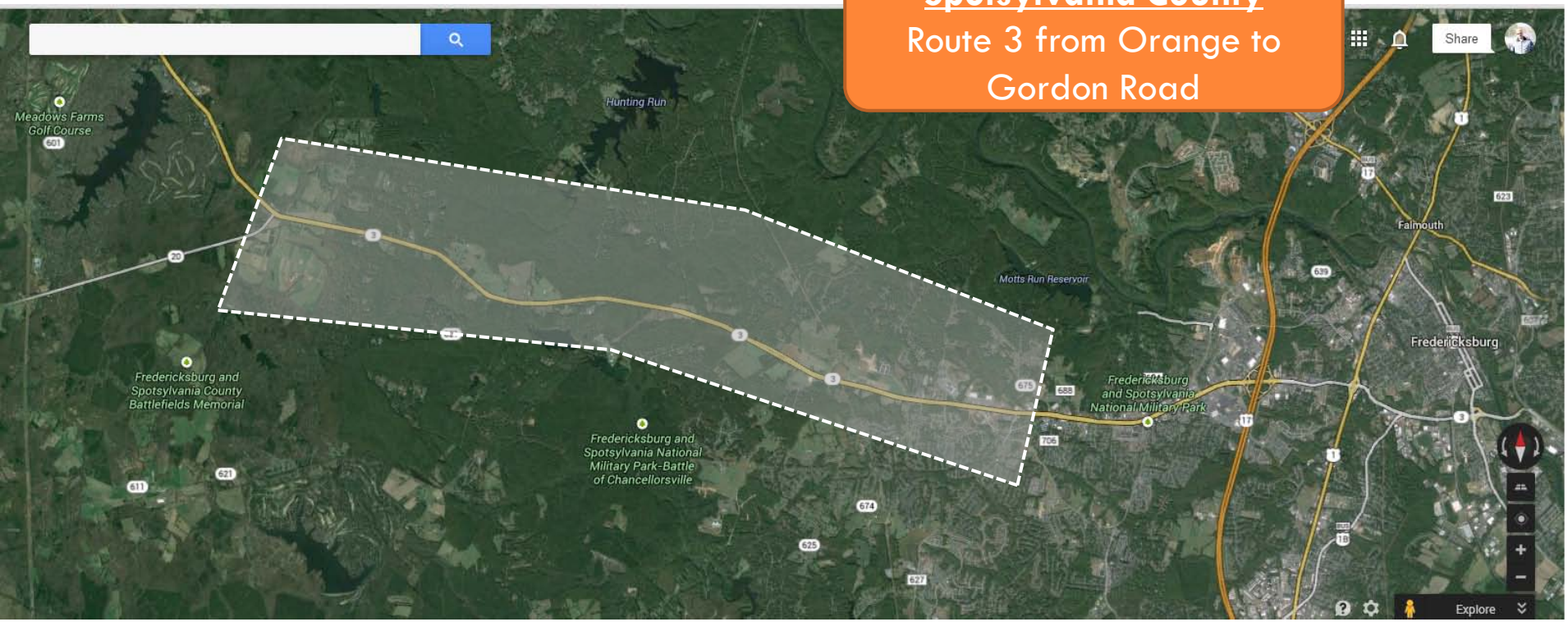


Pilot Locations



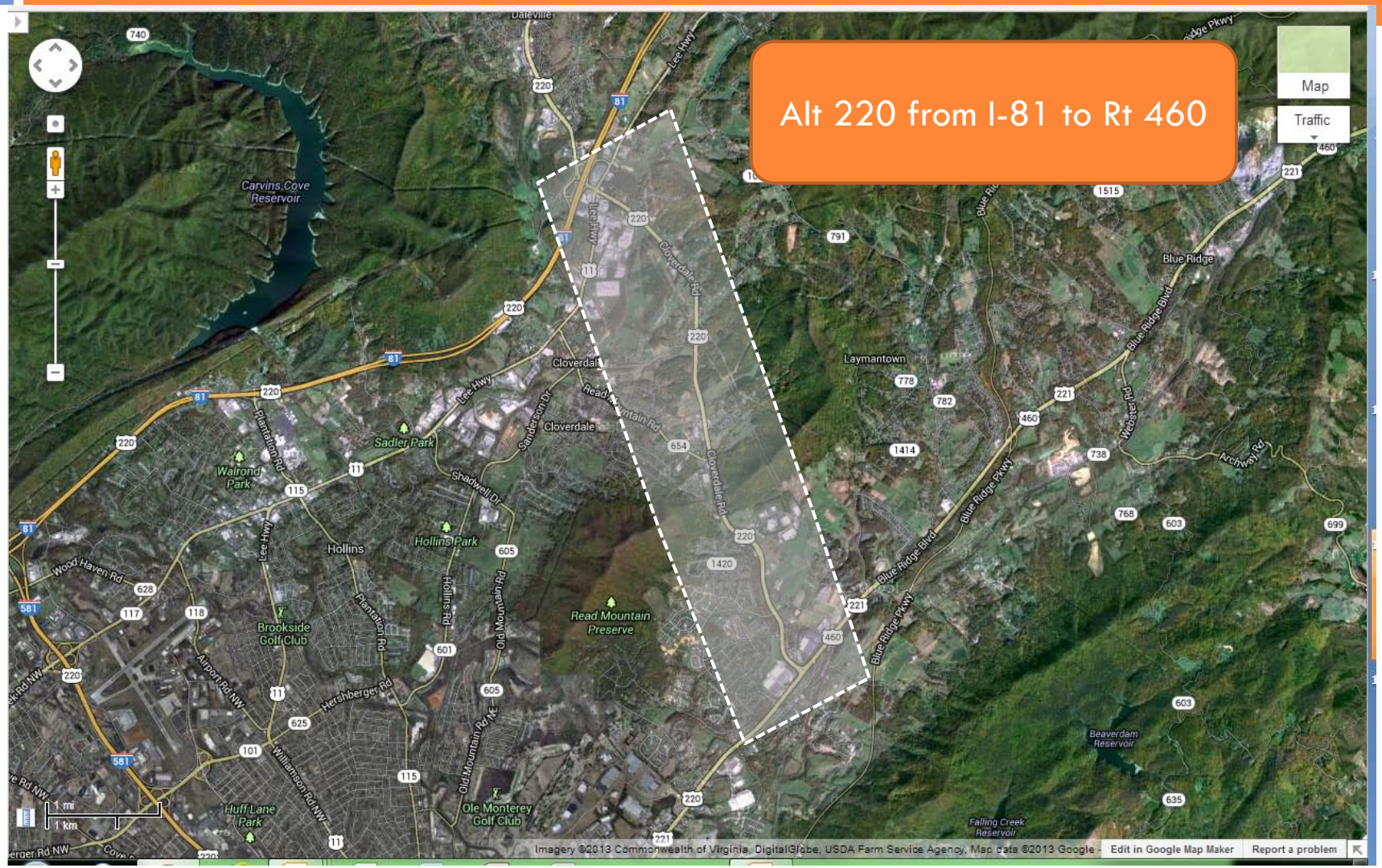
Pilot Locations

Spotsylvania County
Route 3 from Orange to Gordon Road



Future Corridors?

Future Corridors?



Project Approach

Task 1.0 – Project Management and Coordination

- *Task 1.1 – Internal Project Management/Coordination*
- *Task 1.2 –VDOT*
  - *1.2.1 - Project management and expectations session with implementation staff.*
  - *1.2.2 - Implementation staff meetings with consultant at completion of each task to review Task results.*
  - *1.2.3 - Steering Committee Meetings to review project progress and Task results (every two months)*
- *Task 1.3 Consultant to consultant coordination*

Task 2.0 – Document Research and Draft Methodology

- *Task 2.1 – Background literature review/industry standard review*
- *Task 2.2 – Review of existing studies and plans*
- *Task 2.3 – Develop Draft Methodology (flow chart, decision making matrix, etc.) (coordination between consultants)*

Task 3.0 – Locality/Stakeholder Initial Outreach

- *Task 3.1 – Review of project objectives with Goochland County and RAMPO*
- *Task 3.2 – Visioning and goal setting session with Goochland County and RAMPO*
- *Task 3.3 – Identify study area stakeholders (business and property owners) and conduct meeting(S) to review study purposes.*

Project Approach

Task 4.0 – Traffic Data Collection

- *Task 4.1 – Intersection and mainline traffic data collection (minimum counts include: turn movements at major crossings, a few mainline volume, speed & classification counts)*
- *Task 4.2 Historic Traffic data*

Task 5.0 – Mapping

- *Task 5.1 – Existing conditions (aerial, parcel information, property boundaries, access; crashes, site constraints)*
- *Task 5.2 – Future conditions (proposed land use/property boundaries, proposed access)*

Task 6.0 – Existing Land Use/Zoning Analysis

- *Task 6.1 – Existing land use trip generation potential (pending or planned)*

Task 7.0 – Crash Analysis

- *Task 7.1 – Intersection crash analysis (latest 5 years available)*
- *Task 7.2 – Corridor crash analysis (latest 5 years available)*

Project Approach

Task 8.0 – Site Field Review

- *Task 8.1 – Safety review*
- *Task 8.2 – Access review (identify challenges of locating access points)*
- *Task 8.3 – Traffic operations*
- *Task 8.4 – Geometric review*

Task 9.0 – Existing Conditions and Level of Service

- *Task 9.1 –Existing conditions from site review*
- *Task 9.2 –Existing level of service analysis*
- *Task 9.3 – Existing crossover location and spacing*
- *(Compare with VDOT Access Management Regulations and Road Design Manual Appendix F standards)*

Task 10.0 – Future Land Use/Zoning

- *Task 10.1 – Proposed Land Use, Proposed Parcel Boundaries, Proposed Interparcel Connections*

Task 11.0 – Traffic Volume Forecasting / Projections

- *Task 11.1 – Future land use trip generation potential*
- *Task 11.2 – Background traffic growth*
- This information is to be taken from the County's Comprehensive Plan with confirmation of the County's Planning Department.

Challenge: Not to anticipate the specific developments, but the type and intensity of development that is likely to occur

Project Approach

Task 12.0 – Future Traffic Conditions Analysis – (2030 or an Appropriate Future Year)

- *Task 12.1 – Potential Unmanaged Access Layout (assume every parcel gets an access point and large parcels adhere to VDOT access management regulations and spacing standards)*
- *Task 12.2 – Future Unmanaged Conditions Analyses*

Task 13.0 – Development of Arterial Management Strategies

- *Task 13.1 – Toolbox of Alternatives (coordinate between consultants) Short, Mid, Long-Range*

Task 14.0 – Develop Alternatives and Recommendations

- *Task 14.1 – Identify Alternatives and Recommendations this will include recommendations for traffic safety and operations such as changes to median "crossover"s, turn lanes and traffic control features. (Recommendations must consider the County's future land use plan, zoning, ordinance and subdivision ordinance changes that may be required for implementation)*
- *Task 14.2 – Future Analyses of Alternatives and Recommendations*
- *Task 14.3 – Identify Probable Construction Cost for the Alternatives and Recommendations and responsible/leading parties.*

Project Approach

Task 15.0 – Report

- *Task 15.1 – Refine/Revise Arterial Management Plan Development Methodology, coordinated between consultants (Developed in Task 2.0)*
- *Task 15.2 – Pilot Arterial Management Plan for the Study area*
- *Task 15.3 – Meet with implementation staff and Steering Committee on the application of the plan recommendations..*

Task 16.0 –Agency Coordination and Public Outreach

- *Task 16.1 – Teleconferences and Meetings with locality*
- *Task 16.2 – Presentations [Goochland Planning Commission and Board of Supervisors (up to 3), RAMPO (1 meeting), CTB (1 meeting)]*
- *Task 16.3 – Review with Stakeholder*
- *Task 16.4 – Public Meeting (up to 2: one between Tasks 9-11 and one during Task 13)*

Goal – AMP Program

- Facilitate and support local land development goals
- Preserve mobility and safety
- Use pilot studies in Goochland and Spotsylvania to build a streamlined methodology and approach
- Institute annual work plan to identify and develop plans throughout the state for corridors with high risk of land development within next 10 years

Questions

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