

*FINAL ENVIRONMENTAL  
IMPACT STATEMENT*

*SECTION 4(f) EVALUATION*

**U. S. ROUTE 1**



**FROM SILVER SPRING ROAD TO  
MARYLAND ROUTE 152  
CONTRACT NO. B 813-101-471  
BALTIMORE COUNTY AND HARFORD COUNTY, MD**

**PREPARED BY:  
U.S. DEPARTMENT OF TRANSPORTATION  
FEDERAL HIGHWAY ADMINISTRATION**

**AND:  
MARYLAND DEPARTMENT OF TRANSPORTATION  
STATE HIGHWAY ADMINISTRATION**

REGION III FHWA-MD-EIS-88-01-F

U.S. ROUTE 1

From Silver Spring Road in Baltimore County, MD to  
Maryland Route 152 in Harford County, MD

FINAL ENVIRONMENTAL IMPACT STATEMENT

SECTION 4(F) EVALUATION

Submitted Pursuant to 42 U.S.C. 4332(2) (c)  
and 49 U.S.C. 303(c)

U.S. DEPARTMENT OF TRANSPORTATION

FEDERAL HIGHWAY ADMINISTRATION

AND

MARYLAND DEPARTMENT OF TRANSPORTATION

STATE HIGHWAY ADMINISTRATION

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The purpose of this project is to study proposed alternates for the improvement of U.S. Route 1 from Silver Spring Road in Baltimore County to MD Route 152 in Harford County, a distance of approximately nine miles. The proposed alternates are designed to alleviate safety deficiencies and provide adequate capacity for traffic through the project design year of 2015.

Some of the unavoidable impacts associated with this project include residential and business relocations and acquisition of parkland.

## SUMMARY

### 1. Administrative Action

Environmental Impact Statement

( ) Draft (x) Final

(x) Section 4 (f) Evaluation

### 2. Description of Proposed Action

This project involves reconstruction of U.S. Route 1 (Belair Road) from Silver Spring Road in Baltimore County to Maryland Route 152 in Harford County.

The purpose of the Project Planning study is to develop and analyze improvement alternates for U.S. Route 1 to alleviate safety deficiencies and provide adequate capacity for vehicular traffic through the project Design Year 2015.

U.S. Route 1 crosses Gunpowder Falls State Park at two locations within the study limits.

### 3. Alternatives Considered

During Stage I of this project, two build alternates and the no-build alternate were studied. Subsequent to the Alternates Public Meeting, held in April of 1987, a modified version of the build alternates, in addition to the no build alternate, were studied in detail.

#### No-Build Alternate

No major improvements would be made to the existing roadway. Normal maintenance would continue and spot safety improvements would be undertaken where feasible. The No Build

Alternate will not require any major construction or right-of-way costs. In addition, no residential or commercial displacements would be required. The No Build Alternate, however, would not provide any improvement in traffic safety or capacity. This will result in increased congestion and accidents as traffic volumes increase.

### Build Alternates

Two basic build alternates, a Six-Lane Alternate and a Four-Lane Alternate, were developed for Stage I of the U.S. Route 1 Project. The proposed build alternates generally follow the existing horizontal alignment, with widening on one or both sides depending upon physical constraints and environmental impacts. Where possible, consideration was given to modifying the rolling nature and steep grades on the existing road.

### Six-Lane Modified Alternate (Selected)

The Six-Lane Modified Alternate would provide a minimum of 6 through lanes from Silver Spring Road to Maryland Route 152. The typical cross section will vary from segment to segment depending upon safety requirements and adjacent land use. The typical sections considered vary with respect to the treatment of the center lane area. Throughout most of the corridor, the center area will consist of a 16-foot, raised, grass median. Urbanized areas will be provided with frequent median crossovers and/or center left turn lanes. In less developed areas, median crossovers will be restricted to major crossroads.

### Four-Lane Alternate

The Four-Lane Alternate was developed to reduce the number of residential and business relocations associated with the Six-Lane Alternate. Similar to the Six-Lane Alternate, the typical cross section of the Four-Lane Alternate will vary from segment to segment depending upon the capacity requirements and adjacent land use. This alternate was eliminated from consideration, however, because it failed to adequately satisfy project needs.

### Kingsville Options (Selected Alternate Option F)

A number of options were studied for the Kingsville Community in an attempt to minimize community impacts and to avoid impacts to historic sites. Three designs were selected for detailed studies (Options B, E Modified and F). These options are discussed in the Alternatives section of this document.

#### 4. Areas of Controversy/Unresolved Issues

There are two on-going citizen groups that are providing continuing input for the U.S. Route 1 project. The Citizen's Advisory Committee for the Widening of Belair Road, Phase II (The "CAC") has held several meetings with the project planning team. The committee also developed a detailed version of the Four-Lane Alternate. This alternate was reviewed by SHA and found to have some merit. Many of the features of the "CAC Alternate" have been incorporated in the Six-Lane Alternate presented in this document, including alignment shifts to avoid the Grandstand Restaurant (a community meeting place), median openings for busy commercial areas in Perry Hall and the elimination of a seventh lane between Silver Spring Road and Joppa Road East.

The project planning team has also met with the Greater Kingsville Civic Association. Their interest led directly to the development of several optional designs for the Kingsville area. The selected Kingsville option (Option 'F') minimizes impacts to homes, businesses and pedestrian movements and has been endorsed by the Kingsville Community Association. Both groups will also continue to provide input throughout the study process.

## 5. Permits Required

Construction of this project would require review and approval for the following permits:

- U.S. Army Corps of Engineers -- Section 404 Permit
- Maryland Department of the Environment -- Approved Sediment Control Plan
- Maryland Department of the Environment -- Approved Stormwater Management Plan
- Maryland Department of Natural Resources -- Waterway Construction Permit
- Maryland Department of the Environment - Water Quality Certificate

## 6. Summary of Impacts

Table S-1 compares the major areas of concern associated with each alternate.

**SUMMARY OF IMPACTS**

**TABLE S-1**

	NO	4-LANE	6-LANE (SELECTED ALTERNATE)		
			BUILD	B*	E*
<b><u>SOCIOECONOMIC</u></b>					
Residential Units Taken	0	20	22	21	21
Families Displaced	0	21	22	21	21
Businesses Displaced	0	45	60	57	52
Consistent with Master Plan	No	No	Yes	Yes	Yes
<b><u>NATURAL ENVIRONMENT</u></b>					
Parkland (Ac.)	0	10.8	19.4	19.4	19.4
Prime Farmland (Ac.)	0	+10.1	+11.4	+11.4	+11.4
Stream Realignment (L.F.)	0	0	0	0	0
New Stream Crossings	0	0	0	0	0
Wetlands (Ac.)	0	1.4	1.4	1.4	1.5
Floodplain (Ac.)	0	1.2	1.5	1.5	1.5
<b><u>MAN-MADE ENVIRONMENT</u></b>					
Historic Sites Affected (Ac.)	0	0	0	0	0
Archaeological Sites Affected (Ac.)	0	0	0	0	0
Air Impact (Sites exceed. std's.)	0	0	0	0	0
Noise Impact (Sites exceed. evaluation criteria)	4	5	6	6	6
<b><u>COST (in millions \$)</u></b>					
Right-of-Way/Engineering	0	--	32.3	34.6	29.7
Construction	0	--	71.2	71.1	68.1
Total	0	58.8	103.5	105.7	97.8

\* Kingsville Options including mainline

The following Environmental Assessment Form is a requirement of the Maryland Environmental Policy Act and the Maryland Department of Transportation Order 11.01.06.02. Its use is in keeping with provisions of 1500.4 (k) and 1506.2 and .6 of the Council of Environmental Quality Regulations, effective July 31, 1979, which recommend that duplication of Federal, State, and Local procedures be integrated into a single process.

The checklist identifies specific areas of the natural and social-economic environment which have been considered while preparing this environmental assessment. The reviewer can refer to the appropriate sections of the document, as indicated in the "Comment" column of the form, for a description of specific characteristics of the natural or social-economic environment within the proposed project area. It will also highlight any potential impacts, beneficial or adverse, that the action may incur. The "No" column indicates that during the scoping and early coordination processes, that specific area of the environment was not identified to be within the project area or would not be impacted by the proposed action.

**ENVIRONMENTAL ASSESSMENT FORM (EAF)**

	<u>YES</u>	<u>NO</u>	<u>COMMENTS ATTACHED</u>
<b>A. Land Use Considerations</b>			
1. Will the action be within the 100 year floodplain?	<u>X</u>	_____	<u>IV.C.6</u>
2. Will the action require a permit for construction or alteration within the 50 year floodplain?	<u>X</u>	_____	_____
3. Will the action require a permit for dredging, filling, draining, or alternation of a wetland?	<u>X</u>	_____	<u>IV.C.5</u>
4. Will the action require a permit for the construction or operation of facilities for solid waste disposal including dredge and excavation spoil?	_____	<u>X</u>	_____
5. Will the action occur on slopes exceeding 15%?	<u>X</u>	_____	<u>III.B.1</u>
6. Will the action require a grading plan or a sediment control permit?	<u>X</u>	_____	<u>IV.C.1</u>
7. Will the action require a mining permit for deep or surface mining?	_____	<u>X</u>	_____
8. Will the action require a permit for drilling a gas or oil well?	_____	<u>X</u>	_____
9. Will the action require a permit for airport construction?	_____	<u>X</u>	_____
10. Will the action require a permit for the crossing of the Potomac River by conduits, cables or other like devices?	_____	<u>X</u>	_____
11. Will the action affect the use of a public recreation area, park, forest, wildlife management area, scenic river or wildland?	<u>X</u>	_____	Access will be enhanced <u>Section V</u>

	YES	NO	COMMENTS ATTACHED
12. Will the action affect the use of any natural or man-made features that are unique to the County, State, or Nation?	_____	<u>X</u>	_____
13. Will the action affect the use of an archaeological or historical site or structure?	_____	<u>X</u>	_____
B. Water Use Considerations			
14. Will the action require a permit for the change of the course, current, or cross-section of a stream or other body of water?	<u>X</u>	_____	<u>IV.C.6</u>
15. Will the action require the construction, alteration, or removal of a dam, reservoir, or waterway obstruction?	_____	<u>X</u>	_____
16. Will the action change the over-land flow of stormwater or reduce the absorption capacity of the ground?	_____	<u>X</u>	_____
17. Will the action require a permit for the drilling of a water well?	_____	<u>X</u>	_____
18. Will the action require a permit for water appropriation?	_____	<u>X</u>	_____
19. Will the action require a permit for the construction and operation of facilities for treatment or distribution of water?	_____	<u>X</u>	_____
20. Will the project require a permit for the construction and operation of facilities for sewage treatment and/or land disposal of liquid waste derivatives?	_____	<u>X</u>	_____
21. Will the action result in any discharge into surface or sub-surface water?	_____	<u>X</u>	_____



	YES	NO	COMMENTS ATTACHED
32. Will the action cause relocation of activities, structures, or result in a change in the population density of distribution?	<u>X</u>	<u>      </u>	<u>IV.A</u>
33. Will the action alter land values?	<u>      </u>	<u>X</u>	<u>      </u>
34. Will the action affect traffic flow and volume?	<u>X</u>	<u>      </u>	<u>I.C</u>
35. Will the action affect the production, extraction, harvest or potential use of a scarce or economically important resource?	<u>      </u>	<u>X</u>	<u>      </u>
36. Will the action require a license to construct a sawmill or other plant for the manufacture of forest products?	<u>      </u>	<u>X</u>	<u>      </u>
37. Is the action in accord with federal, state, regional and local comprehensive or functional plans - including zoning?	<u>X</u>	<u>      </u>	<u>III.A.5</u>
38. Will the action affect the employment opportunities for persons in the area?	<u>      </u>	<u>X</u>	<u>      </u>
39. Will the action affect the ability of the area to attract new sources of tax revenue?	<u>      </u>	<u>X</u>	<u>      </u>
40. Will the action discourage present sources of tax revenue from remaining in the area, or affirmatively encourage them to relocate elsewhere?	<u>      </u>	<u>X</u>	<u>      </u>
41. Will the action affect the ability of the area to attract tourism?	<u>      </u>	<u>X</u>	<u>      </u>
F. Other Considerations			
42. Could the action endanger the public health, safety, or welfare?	<u>      </u>	<u>X</u>	<u>      </u>

	YES	NO	COMMENTS ATTACHED
43. Could the action be eliminated without deleterious affects to the public health, safety, welfare, or the natural environment?	_____	<u>  X  </u>	_____
44. Will the action be of statewide significance?	_____	<u>  X  </u>	_____
45. Are there any other plans or actions (Federal, State, County or private) that, in conjunction with the subject action, could result in a cumulative or synergistic impact on the public health, safety, welfare, or environment?	_____	<u>  X  </u>	_____
46. Will the action require additional power generation or transmission capacity?	_____	<u>  X  </u>	_____
47. This agency will develop a complete environmental effects report on the proposed action.	_____	<u>  X  </u>	<u>  This EIS satisfies the requirements of the National Environmental Policy Act and the MD Environmental Policy Act.  </u>

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I. PURPOSE AND NEED

## I. PURPOSE AND NEED

### A. PROJECT LOCATION AND DESCRIPTION

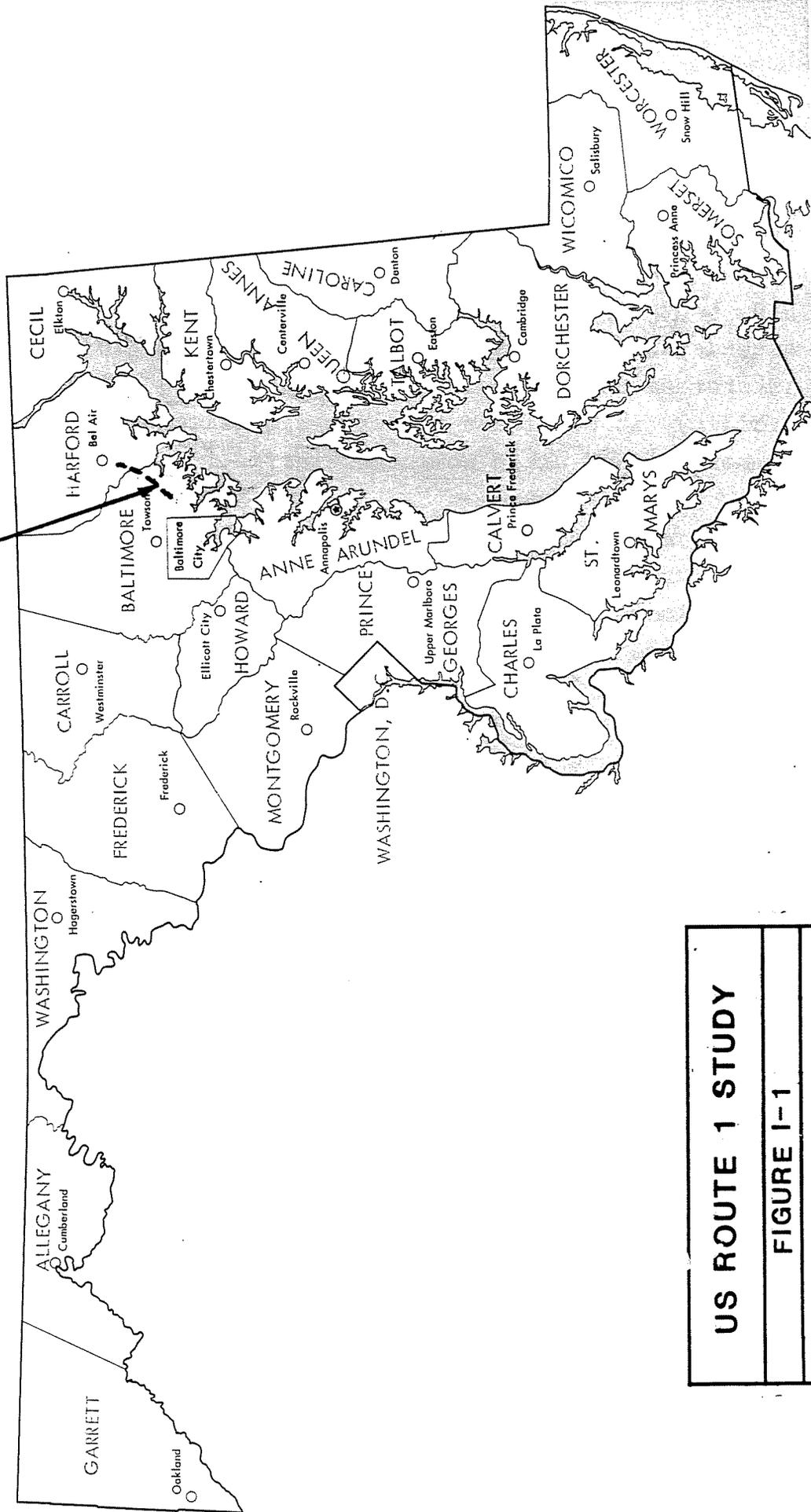
U.S. Route 1, one of the nation's oldest federal highways, extends along the east coast from Maine to Florida. Although Interstate 95 has replaced U.S. Route 1 as a major interstate facility, it continues to serve significant intrastate commercial and urban commuter traffic.

Located northeast of Baltimore (See Figure I-1), the U.S. Route 1 reconstruction project begins at Silver Spring Road in Baltimore County and ends at Maryland Route 152 in Harford County (See Figure I-2).

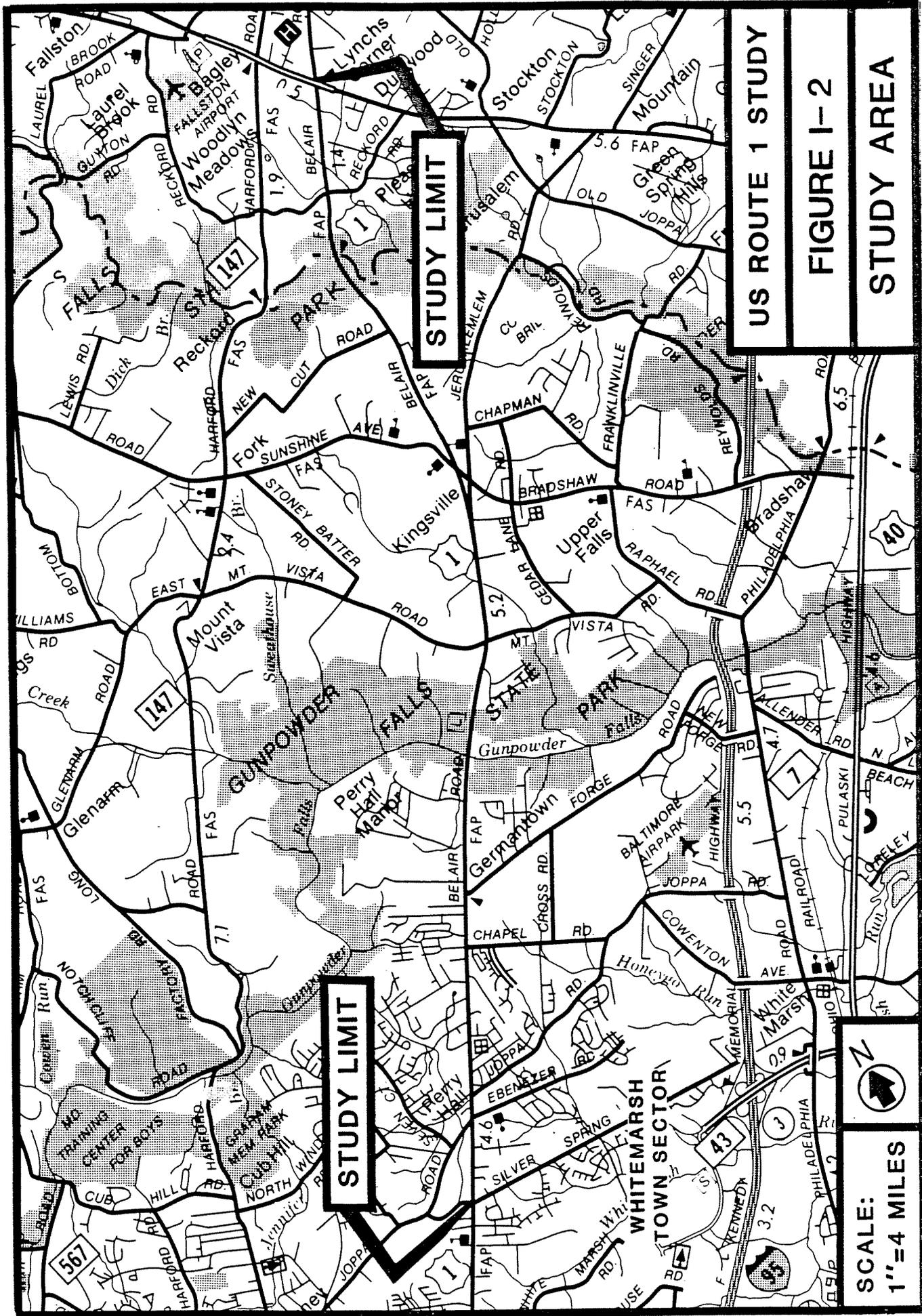
The existing facility consists of a four-lane, 44-foot roadway with 0 to 5 foot shoulders contained within an average 60-feet of right-of-way. There are signalized intersections at Silver Spring Road, Joppa Road/Ebenezer Road, the Joppa "T" intersection, Chapel Road/Baker Lane, Forge Road, Mount Vista Road, Sunshine Avenue/Bradshaw Road/Jerusalem Road and Mountain Road (MD Route 152). Several of these intersections are approaching capacity. U.S. Route 1 also suffers from inadequate geometrics at several locations; most notably at the Gunpowder Falls ("Big Gunpowder") and Little Gunpowder Falls ("Little Gunpowder") crossings.

Silver Spring Road and Maryland Route 152 represent logical termini for this project since those major crossroads are the only connections from U.S. Route 1 to I-95 for approximately seven (7) miles. Silver Spring Road also provides access to Whitmarsh Mall - a regional shopping center located east of U.S. Route 1.

**PROJECT LOCATION**



<b>US ROUTE 1 STUDY</b>
<b>FIGURE I-1</b>
<b>LOCATION MAP</b>



**US ROUTE 1 STUDY**

**FIGURE I-2**

**STUDY AREA**



**SCALE:**  
1" = 4 MILES

Other portions of U.S. Route 1, outside the project area, are being improved or studied. The portion from the Baltimore Beltway (I-695) to Silver Spring Road is currently in final design. The typical section of this project (i.e., 6-lane urban section with turn lanes) is entirely compatible with the selected alternative. The U.S. Route 1 Business Study (MD Route 152 to MD Route 24), the U.S. Route 1/Hickory Study and the MD Route 152 Study (U.S. Route 1 to I-95) are currently in the project planning phase.

U.S. Route 1 is a busy four-lane, undivided highway that traces its origins back to the late 1700's. Back then, it was a turnpike known as Jerusalem Pike, a narrow dirt road through forests and farmlands that ended at Jerusalem Mills in Harford County. Carriage stops and taverns dotted the route. A toll house once sat near the intersection with Joppa Road. When the connection from Kingsville to Belair was made, the name was changed to Belair Road. As the automobile grew in popularity, improvements were made to provide for all weather use. A concrete pavement was constructed and modern bridges were built over the Big Gunpowder and Little Gunpowder Falls. In 1934, the roadway was widened to 4 lanes. That roadway, with few exceptions, is that over which up to 31,000 motorists now travel daily. By the year 2015, that number is expected to increase to between 39,000 and 60,000.

The reason for nearly 100% projected increase in traffic over the next twenty years is two-fold. First, Baltimore County has designated the Whitemarsh Town Sector (located just east of the study corridor) as one of three major growth areas within the County. The area is already growing at a rapid rate. The 7 year old, 150 acre Whitemarsh Mall, which is the focal point of the development, enjoyed almost immediate success. When completed, the new town center will have added over forty thousand residences, as well as over 200 acres of light industrial development. The trip generation rates and the impact on the area roads will be enormous.

The second reason for the dramatic increase is that Belair Road provides a direct link to the communities of Kingsville, Fork, Benson, Fallston, Bel Air, Forest Hill, Hickory, and Churchville. This area of Harford County is also growing at an increased rate. Since the extension of Perring Parkway to Harford County was dropped and since Harford Road (a parallel facility) is a narrow, winding two lane road, the logical choice for many motorists is Belair Road, especially for those bound for Towson.

Further compounding the problem today is that there are no parallel routes in the Whitemarsh/Perry Hall area to accommodate local trips. Walther Boulevard no longer is planned to connect to the existing portion inside of the Beltway. Perry Hall Boulevard north of Ebenezer has been dropped by Baltimore County, while Honeygo Boulevard and Proctor Lane are currently just a few short pieces of roadway built by area developers (See Section III.A.6).

#### **B. THE CORRIDOR TODAY**

From Silver Spring Road to just north of Forge Road, the corridor can be described as a rapidly growing, urbanized area. Townhouses, single family homes, shopping centers, and small office buildings are being built everywhere. Developers cannot keep up with the demand. This development will eventually envelop the older communities along the route. The portion of Belair Road between Joppa Road and Chapel Lane is relatively picturesque in nature with large canopied red oak trees over the roadway. These trees have become a Perry Hall landmark. Also in the same general area is the newly constructed Perry Hall Fire Station and C&P's regional telephone exchange.

The Joppa Road/Ebenezer Road intersection has been improved several times in the past decade. Lane configurations have

been revised, existing channelization has been removed, and new signalization has been installed. Numerous changes have been made to the signal timing. Each change resulted in a certain level of improvement, but the demand continues to outstrip the capacity of the intersection. Any further improvement will result in substantial impacts to the area businesses.

The Baker Lane/Chapel Road intersection generally appears to operate at an acceptable level of service. However, the sharp radius in the southeast quadrant makes it most difficult for public transit buses turning onto Chapel Road, and during P.M. rush hour this can create substantial delays.

North of Forge Road, the nature of the corridor changes. The planned Gunpowder Sanitary Sewer Outfall, designed to serve the northern portion of Perry Hall, is at least five years off and public water and sewer is not planned to cross the Big Gunpowder Falls. The Baltimore County Growth Management Plan designates that development north of the Big Gunpowder Falls be low density - minimum of 2 acres per dwelling unit. Much of it is set aside as rural conservation districts with a minimum of 5 acres per dwelling unit.

The corridor crosses the Gunpowder Falls State Park, a linear park system that runs from the Chesapeake Bay to northwestern Baltimore County. This portion of the park is set aside for passive recreational uses. There are many hiking and equestrian trails and the U.S. Route 1 bridge is used by many as the starting point for canoeing and rafting trips. The terminus of these water trips is the Philadelphia Road bridge, approximately 3 miles downstream.

The segment from Perry Hall to Mt. Vista Road has received much attention in recent years because of its high incidence of severe and often times fatal accidents. This portion of

the roadway is winding and as a result has less than desirable horizontal sight distances and substandard super-elevation. There are no shoulders and the segment is characterized by steep slopes on the east side and a stream bed tight against the west side. The roadway width is substandard and drainage is a problem. Several years ago, the State Highway Administration undertook a major effort to improve safety in this area. A left turn lane was installed at Perry Hall Road, the pavement was roughened to reduce skidding, long mast lighting was installed, and reflectors were placed along the centerline. These improvements have helped substantially, but still there remains the potential for head-on collisions, a situation that calls for realignment of the roadway to improve the horizontal geometry and construction of a center median. Finally, at the Mt. Vista Road intersection, the vertical sight distance on U.S. Route 1 is sub-standard and flashing overhead lights have been installed to warn northbound motorists of the signal.

Perhaps the biggest concern in the improvement of U.S. Route 1 may be the Sunshine Avenue/Bradshaw Road intersection at Kingsville. This community dates back to the early 1800's. Saint John's Parish Church, which was constructed in 1817, lies immediately adjacent to both U.S. Route 1 and Bradshaw Road. Many of the residential and commercial structures in Kingsville lie close to the roadway. The Bradshaw Road/Sunshine Avenue/U.S. Route 1 intersection is extremely skewed and the northern approach of U.S. Route 1 has been roughened to improve skid resistance of the downhill grade.

Another concern in the Kingsville area is the "Y" connection of U.S. Route 1 and Jerusalem Road. This connection is used by many to avoid the signal delay and the skewed intersection of Bradshaw Road with U.S. Route 1. There is a high potential for head-on collisions with vehicles northbound on

U.S. Route 1, as well as for side swipe accidents with southbound vehicles.

North of Kingsville, the geometrics of U.S. Route 1 are reasonably good until it begins to approach the Little Gunpowder Falls. New Cut Road, as the name implies, lies in a deep cut and as a consequence has less than desirable sight distance from U.S. Route 1. North of New Cut Road, the combination of the steep grade, deteriorating pavement, and substandard superelevation create a major safety problem. This situation is further exacerbated by a popular tavern where parking is immediately adjacent to and perpendicular to U.S. Route 1.

The crossing of the Little Gunpowder denotes the change from Baltimore County to Harford County. This river and adjacent land is also part of the Gunpowder Falls State Park and is also used for passive recreation activities. Just north of the river, U.S. Route 1 rises and curves sharply to the east. The roadway has been cut back into the rock, and rock catch nets have been constructed. From Reckord Road to MD Route 152 (Mountain Road), the area is generally characterized by scattered commercial development - restaurants, motels, used car lots, auto repair, etc. The roadway geometrics are generally good in this area.

The northern terminus of the project is MD Route 152. (See discussion on logical termini on p. I-1.) This intersection has service stations on two of the corners and a shopping center on the third. The last quadrant is residential, but is zoned commercial.

The entire route, from Silver Spring Road to MD Route 152 has large utility poles which carry high voltage electric lines serving the Belair Road corridor. There are two electric substations, one in Perry Hall across from Forge Road, and

another in Kingsville, adjacent to the Lassahn funeral home. In addition, a major overhead AT&T trunk line runs the length of the corridor. Since this line is part of the Washington/Moscow Hotline land link, it cannot be interrupted during relocation.

The roadway has two major structures, one over the Big Gunpowder Falls and one over the Little Gunpowder Falls. These structures are both showing signs of age, having originally been two lane structures that were widened to four lanes over 50 years ago. The bridge over the Big Gunpowder was topped by floodwaters of Hurricane Agnes (1972) and both approach embankments were washed away. The parapets of the Big Gunpowder structure have also been severely damaged by age as well as vehicular accidents. Inadequate sight distance and lack of separation of opposing traffic has contributed to a high accident rate at this location. As a result, SHA is considering advancing the bridge replacement at the Big Gunpowder as a separate project.

#### C. TRAFFIC AND SAFETY CONSIDERATIONS

Traffic volumes will continue to increase along U.S. Route 1 (Belair Road), more than doubling along some sections of U.S. Route 1 by the design year of 2015. Table I-1 summarizes the volume forecasts.

TABLE I-1

2015 Volume Forecasts U.S. Route 1 (Belair Road)

Location	Average Daily Traffic 1986	Average Daily Traffic 2015
I-695 to Silver Spring Road	29,000	65,000
Silver Spring Road to Ebenezer Road	26,000	53,000
Ebenezer Road to Joppa Road	31,000	60,000
Joppa Road to Chapel Road	28,000	52,000
Chapel Road to Forge Road	25,000	45,000
Forge Road to Mt. Vista Road	21,000	43,000
Mt. Vista Road to Reckord Road	17,000	39,000
Reckord Road to MD 152	17,000	30,000
North of MD 152	26,000	58,000

Such volume increases will cause the operating characteristics of the corridor to rapidly deteriorate. Two key factors were analyzed to quantify the impacts of the traffic growth - accident history and roadway capacity.

The accident history within the study area indicates roadway improvements are needed. Table I-2 summarizes the accident experience within the corridor for the years 1985 through 1987.

TABLE I-2

Accident Summary U.S. Route 1  
from Silver Spring Road to MD 152

<u>Accident Type</u>	<u>3 Year Total (1985-1987)</u>
Fatal Accident	7
Number of Fatalities	7
Injury Accident	394
Number Injured	714
Property Damage Only Accident	278
Total Number of Accidents	679

New York Transportation Safety Numbers (NYTSN) are used to quantify the costs to the public of traffic accidents. The NYTSN assign dollar unit costs to the three types of accidents as follows:

- Fatal Accidents (per fatality): urban \$301,391  
rural \$391,462
- Injury Accident (per injury): urban \$ 11,255  
rural \$ 8,151
- Property Damage Only (each): urban \$ 2,199  
rural \$ 1,290

Based on these figures, the average annual accident cost (AAAC) within the corridor is approximately \$3.6 million per year.

The average accident rate per 100 MVM on U.S. Route 1 between Silver Spring Road and MD 152, for the three year study period, was 271 accidents per 100 MVM versus the Statewide average of 390 accidents per 100 MVM. Based on this comparison, the accident experience in the corridor might not

seem severe. However, a substantial portion of the study area is in an open section with few conflict points; therefore, the overall accident rate is low. However, examination of the individual intersection and mid-block accident rates confirms the fact that the accident experience along some sections of U.S. Route 1 is worse than the macroscopic view indicates. Table I-3 lists the five intersections which have been identified as high accident intersections.

TABLE I-3

High Accident Locations  
Intersection Accidents

Intersection U.S. Route 1 @	1985 # Accidents	Year 1986 # Accidents	1987 # Accidents
Silver Spring Road	13	N/A	17
Joppa Road/Ebenezer	12	16	12
Chapel Road/Baker Lane	11	11	N/A
Bradshaw Rd./Sunshine Ave.	11	N/A	11
MD Rte. 152	37	30	15

Two high accident sections were identified within the corridor and are summarized in Table I-4.

**TABLE I-4**  
**High Accident Locations**  
**Mid-Block Accidents**

Location U.S. Route 1 Between	1985 # Accidents	Year 1986 # Accidents	1987 # Accidents
Perry View Road & Forge Road	N/A	37	N/A
Wilgis Road & Nilles Road	37	40	29

In addition to the two high accident sections, two other roadway segments are experiencing an average annual accident rate substantially higher than the statewide average.

The first section is from Silver Spring Road to Joppa Road. This section experienced an average annual accident rate of 504 accidents per 100 MVM, substantially higher than the statewide average of 377 accidents per 100 MVM for roadways of similar character. Intersections accounted for 61% of the accidents in this section.

The second section is from the Baltimore/Harford County Line to MD Route 152. The average accident rate in this section is 588 accidents per 100 MVM, well above the statewide average of 360 accidents per 100 MVM for similar roadways. Angle, Rear end, fixed object, left turn, and nighttime accidents were substantially above statewide averages.

The existing conditions of the section of U.S. Route 1 from Miller Road to Sheradale Drive (which includes the bridge at Big Gunpowder Falls) has a higher accident rate than the statewide average.

The opposite direction rate in this section was 60% higher (29.1 versus 17.96 per 100 million vehicle miles - 100/mvm) than the statewide rate from 1985 through 1987.

In addition, the rate for nighttime accidents was one-third higher than the statewide rate for this type of accident from 1985 through 1987 (47 versus 35.68 per 100 mvm). Also, the wet surface accidents rate was 26% higher than the statewide rate (35 versus 26.39 100/mvm).

Over the past few years, the State Highway Administration has attempted to improve the traffic safety in this area with maintenance projects, such as reflector lights in the pavement, guard rail, pavement roughening and overhead lighting. These projects have helped somewhat to improve traffic safety; however, improved horizontal and vertical alignments in addition to opposing traffic separation will be required to reduce the severe accident rate at the Big Gunpowder location.

Increased traffic congestion will only aggravate the accident problem within the corridor.

Level of Service computations were performed based on projected year 2015 peak hour volumes; the volumes are summarized in Table I-5.

TABLE I-5

2015 Projected Traffic Volumes - Peak Direction

Location	Volume
South of Silver Spring Road	3500
North of Silver Spring Road	3500
South of Joppa Road/Ebenezer Road	2725
North of Joppa Road/Ebenezer Road	3375
South of Joppa "T"	3300
North of Joppa "T"	3175
South of Chapel Road/Baker Lane	2125
North of Chapel Road/Baker Lane	2100
South of Forge Road	2175
North of Forge Road	2100
South of Honeygo Boulevard/Gunview Road	2150
North of Honeygo Boulevard/Gunview Road	2500
South of Mt. Vista Road	1800
North of Mt. Vista Road	1725
South of Sunshine Avenue/Bradshaw Road	1825
North of Sunshine Avenue/Bradshaw Road	1725
South of MD 152	2300
North of MD 152	3525

The traffic volume data from Table I-5 was used along with the proposed roadway cross-sections and geometrics to determine the level of service along U.S. Route 1. The Level of Service concept provides a means by which the operating characteristics of a roadway or an intersection can be quantified. Letter grades of 'A' through 'F' are assigned to the location under analysis based on the anticipated traffic volumes versus the maximum number of vehicles the facility could accommodate. Level of Service 'A' indicates that a facility is operating quite well with minimal delays, Level

of Service 'D' indicates that delays and congestion are at the maximum acceptable level. A Level of Service below 'D' indicates that operating conditions are unacceptable and that improvements to increase capacity are warranted.

The mid-block Levels of Service for the No Build and Six-Lane Build Alternates are summarized in Table I-6.

**TABLE I-6**

**Mid-Block Level of Service  
Summary**

<u>Section</u>		<u>No Build L.O.S. AM/PM</u>	<u>4-Lane L.O.S. AM/PM</u>	<u>6-Lane L.O.S. AM/PM</u>
Joppa 'T' to Perry Hall Road	NB SB	C/F F/D	C/F F/C	B/D D/B
Perry Hall Road to Sheradale Drive	NB SB	D/F F/E	C/E E/D	B/C C/B
Sheradale Drive to New Cut Road	NB SB	B/E D/B	B/D C/B	A/B B/A
New Cut Road to Reckord Road	NB SB	B/F E/E	B/E D/D	A/C B/B
Reckord Road to MD 152	NB SB	B/F C/E	B/E C/C	A/D B/B

Examination of Table I-6 reveals that all roadway segments would function at an unacceptable Level of Service, L.O.S. 'E' or below, in the design year with the No Build Alternate.

The high traffic volumes projected for the developed portions of the study area require a six-lane section to provide sufficient capacity. Although projected traffic volumes are lower through the Big and Little Gunpowder State Park areas, the steep grades of over five percent reduce the available capacity and justify a six-lane section.

Several key intersections were also analyzed based on a No Build and Build Alternate. The intersections analyzed and the corresponding levels of service are summarized in Table I-7.

**TABLE I-7**  
**Intersection Level of Service Summary**

U.S. Route 1 @	No Build L.O.S. AM/PM	4-Lane L.O.S. AM/PM	6-Lane L.O.S. AM/PM
Silver Spring Road	F/F	F/F	F/F
Joppa Road/Ebenezer Road	F/F	F/F	E/F
Joppa "T"	F/F	F/F	C/D
(1) Joppa Road/India Ave.	NA/NA	NA	C/D
Chapel Road/Baker Lane	F/F	D/E	C/D
Forge Road	C/E	C/C	A/B
Honeygo Blvd./Gunview Blvd.	NA/NA	E/E	C/D
Mt. Vista Road	B/C	A/B	A/A
Sunshine Ave./Bradshaw Road	F/F	E/E	C/D
MD Route 152	F/F	D/F	C/F

- (1) Assumes realignment of offset T's to provide one four-legged intersection.

The data presented in Table I-7 indicates that some intersections would still be operating at an unacceptable level of service with the Six-Lane Alternate; however, such factors as excessive residential and business relocation and community opposition prohibit any additional roadway widening in those areas. Only the Mt. Vista Road intersection would function at an acceptable level of service in the design year with no improvements, thus indicating intersection improvements are warranted within the corridor.