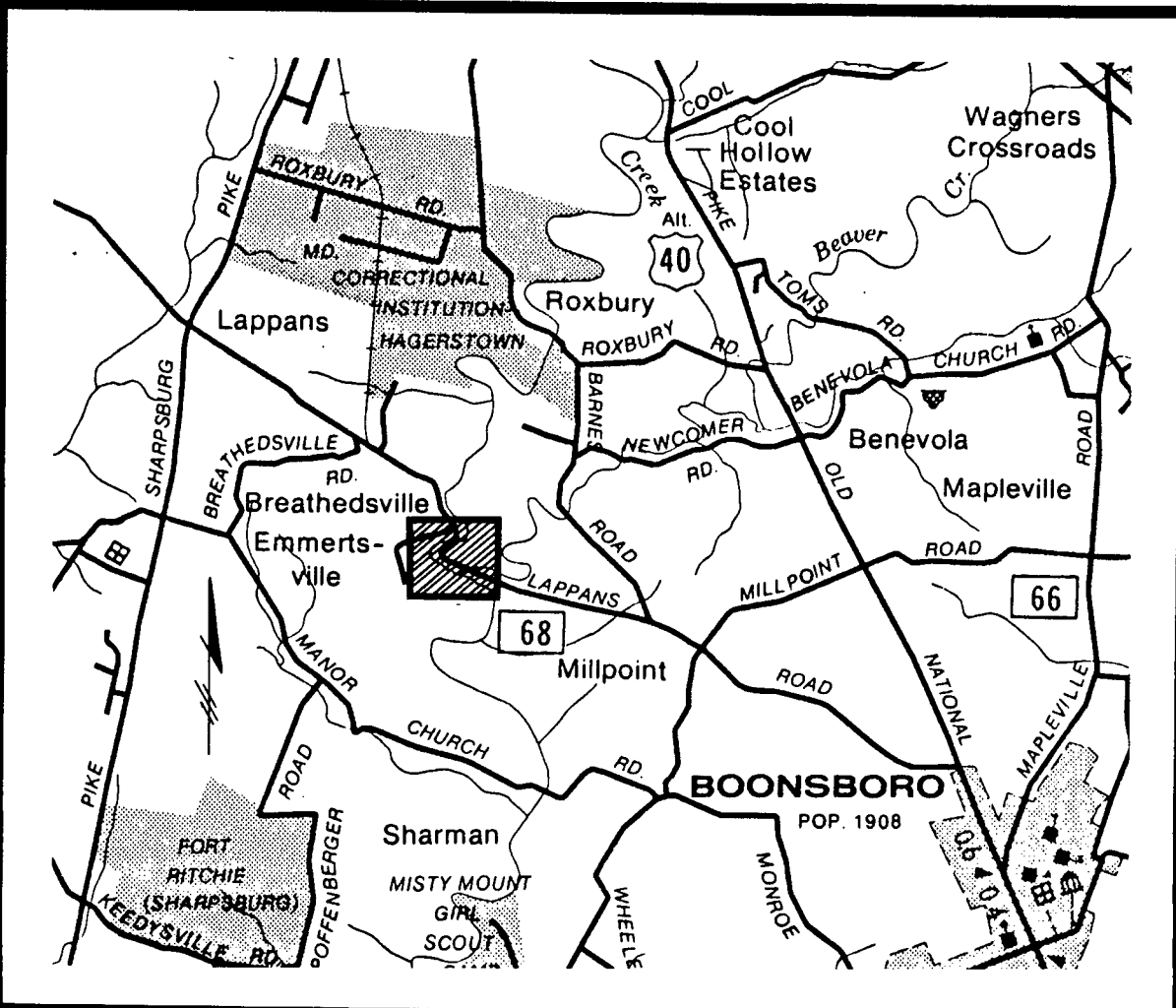


ENVIRONMENTAL ASSESSMENT/ SECTION 4(f) EVALUATION

CONTRACT NO. W 818-101-671

MARYLAND ROUTE 68 BRIDGES
AT ANTIETAM AND BEAVER CREEKS
WASHINGTON COUNTY, MARYLAND



prepared by
U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

and
MARYLAND DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION

REPORT NUMBER: FHWA MD-EA-88-03-D

FEDERAL HIGHWAY ADMINISTRATION

MARYLAND ROUTE 68
BRIDGES AT ANTIETAM AND
BEAVER CREEKS IN
WASHINGTON COUNTY, MARYLAND

Administrative Action

ENVIRONMENTAL ASSESSMENT
and
Section 4(F) Evaluation

U.S. Department of Transportation
Federal Highway Administration

and

State of Maryland
Department of Transportation
State Highway Administration

Submitted pursuant to 42 U.S. C. 4332 (2), (C) 23 C.F.R. 771, CEQ Regulations (40 CFR Et seq.), 16 U.S.C. 470 (f) and 49 U.S.C. 303.

HAL KASSOFF
ADMINISTRATOR

6/29/88
Date

By: Neil J. Pedersen
Neil J. Pedersen, Director
Office of Planning and
Preliminary Engineering

6/30/88
Date

By: Heuman Rodrigo
FOR Federal Highway Administration
Division Administrator

SUMMARY

SUMMARY

1. Administrative Action

- Environmental Impact Statement
- Environmental Assessment
- Finding of No Significant Impact
- Section 4(f) Evaluation

2. Additional Information

Additional information concerning this project may be obtained by contacting:

Mr. Louis H. Ege, Jr.
 Deputy Director
 Project Development Division
 State Highway Administration
 Room 310
 707 North Calvert Street
 Baltimore, Maryland 21202
 PHONE: (301) 333-1130
 HOURS: 8:15 a.m. - 4:15 p.m.

Mr. Ronald W. Carmichael
 District Engineer
 Federal Highway Administration
 The Rotunda - Suite 220
 711 West 40th Street
 Baltimore, Maryland 21211
 PHONE: (301) 962-4010
 HOURS: 7:45 a.m. - 4:15 p.m.

3. Description of Proposed Action

This project consists of improvements to the Maryland Route 68 crossings at Antietam and Beaver Creeks, in Washington County, Maryland. The bridge over Antietam Creek (Booth's Mill Bridge) is in poor condition and the Beaver Creek (Devil's Backbone) bridge is in fair condition with a posted weight restriction. In addition, the existing alignment is narrow with poor vertical and horizontal geometry.

4. Description of Alternates

Alternate 1 (No-Build Alternate)

Under the No-Build Alternate, the Maryland Route 68 bridges over Antietam and Beaver Creeks would remain basically as they are today. Normal maintenance and safety improvements would continue for both the bridges and roadways. However, this is not expected to extend appreciably the limited life expectancies of the existing structures. At some point in the future additional weight limitations could be applied, and ultimately, one or both of the bridges could be closed to all traffic.

The State Highway Administration does not regard the No-Build Alternate as a feasible solution. This alternate would not offer any improvement in traffic operation or safety. The age and condition of

the existing bridges are expected to require more frequent and extensive repairs.

Alternate 2

This alternate proposes the major rehabilitation of the bridge carrying Maryland Route 68 over Antietam Creek (Booth's Mill Bridge). Minor roadway improvements involving retaining walls would be made at the eastern approach. Additionally, the small Maryland Route 68 bridge immediately west of the Antietam Creek crossing would be removed and replaced with a graded roadway. The bridge over Beaver Creek (Devil's Backbone Bridge) would be removed and replaced with a new two-lane structure. This alternate would require a detour of traffic during construction.

Alternate 3-Option B

This alternate proposes the construction of a new two-lane bridge over Antietam Creek, relocating Maryland Route 68 traffic immediately downstream from the existing structure. The bridge over the filled-in stream bed would remain and the bridge over Antietam Creek (Booth's Mill Bridge) would remain if the County decides to assume maintenance responsibility. The bridge over Beaver Creek (Devil's Backbone Bridge) would be removed and replaced with a new two-lane structure. This alternate would require a detour of traffic during construction.

Alternate 3-Option C

This alternate is similar to Alternate 3-Option B with the exception of the curvature of the horizontal alignment of the new bridge over Antietam Creek. The bridge over Beaver Creek (Devil's Backbone Bridge) would be removed and replaced with a new two-lane structure. This alternate would require a detour of traffic during construction.

Alternate 6

This alternate proposes a major relocation to the south of the existing Maryland Route 68 alignment. It begins approximately 1000 feet west of Breathedsville Road and ends approximately 1400 feet west of Barnes Road, including the construction of a new bridge across Antietam Creek. The existing bridge at Antietam Creek (Booth's Mill) would be closed and fenced off. The existing bridge at Beaver Creek (Devil's Backbone) would be removed and replaced with a new 2-lane structure plus

6

associated approach roadways. This would permit access to be maintained to residences between the two existing bridges. Another option to maintain access to the residences is under consideration. It involves major rehabilitation to the bridge over Antietam Creek (Booth's Mill). It proposes the removal of the existing road bed, and hand-tool removal of the existing fill while photographing the walls, then numbering and removing the stone walls, layer by layer. Drains would then be installed, arch walls sealed, and the interior refilled with new granular material while replacing the stone walls in order, layer by layer. For this option, the existing bridge over Beaver Creek (Devil's Backbone) would be closed and fenced off.

Assuming construction of the relocated roadway and bridge first, no detour of traffic during construction would be necessary for this alternate.

5. Summary of Impacts

An evaluation of the study area was conducted to identify environmentally sensitive areas. The proposed alternates have been evaluated to determine their potential environmental effects. A summary of these potential environmental impacts has been divided into two major categories: socioeconomic and natural environmental.

Socioeconomic

The existing land use in the study area consists of residential and agricultural/farmland areas. The majority of the open space and undeveloped land is used for agriculture.

The Devil's Backbone County Park is the only public recreational facility in the project area and will not be affected by the proposed build alternates. The right-of-way acquisition required for the proposed alternates is presented in Section IV of this report. No known elderly, handicapped, or minority communities would be affected by the project.

The Maryland Historical Trust and State Archeologist have been consulted to identify any historic or archeological resources which may be affected by the project. No archeological resources would be affected by any of the alternates studied. Determinations of effect have been received for all of the alternates. Only Alternate 6 would

affect historic sites. Alternate 6 impacts four sites on or eligible for the National Register. Determination of effect for Alternate 3, Options B and C, and Alternates 2 and 6 are discussed in a letter from the State Historic Preservation Officer(s).

A Section 4(f) Evaluation for Booth's Mill Bridge and Devil's Backbone Bridge is included as part of this report.

Natural Environment

There are no known populations of threatened or endangered species in the study area. Floodplain impacts will be minor. In addition, Alternate 2 impacts .08 acres of wetlands, Alternate 3-B impacts .13 acres and Alternate 3-C impacts .16 acres. No natural woodland habitat would be lost.

Alternates 3-B and 3-C each impact .50 acres of prime or unique farmland. Air and noise quality will not be affected by the proposed build alternates. Four sensitive receptors were selected for monitoring and analysis. Impacts to air and noise quality are discussed in Section IV.

TABLE 1
SUMMARY OF IMPACTS

	No Build Alternate	Alter. 2	Alter. 3-B	Alter. 3-C	Alter. 6
<u>SOCIO-ECONOMIC IMPACTS</u>					
1. Residential Displacements	0	0	0	0	1
2. Number of Families Relocated	0	0	0	0	1
3. Minority Families Relocated	0	0	0	0	0
4. Business Displacements	0	0	0	0	0
5. Farm Displacements	0	0	0	0	0
6. Affected Historic and Archeological Sites	0	0	0	0	5
7. Public Parks or Recreational Lands Affected	0	0	0	0	0
8. Effect on Residential Access	0	0	0	0	0
9. Consistent with Land Use Plans	No	Yes	Yes	Yes	No
<u>NATURAL ENVIRONMENT IMPACTS</u>					
1. Loss of Natural Habitat (Woodlands Acres)	0	0	0	0	.78
2. Effect on Wildlife Populations	None	None	None	None	Minor
3. Effect on Threatened or Endangered Species	None	None	None	None	None
4. Stream Crossings	0	2	2	2	1
5. Wetland Areas Affected (acreage)	0	.08	.13	.16	0.010
6. 100-year Floodplain Areas Affected (acreage)	0	.10	.16	.20	0.015
7. Prime Farmland Soils Affected	0	0	.50	.50	*
8. Air Quality Impacts (Sites exceeding S/NAAQS)	0	0	0	0	0
9. Noise Sensitive Areas (NSA's) exceeding Federal Noise Abatement Criteria or experiencing a 10 dBA increase	0	0	0	0	0
<u>Construction Cost</u>					
(1987 dollars in thousands)	0	3,300	3,400	4,000	6,000

*Prime farmland soils coordination has been initiated for Alternate 6. Preliminary estimates show approximately 75% of the acreage within the Alternate 6 alignment is classified as a prime soil by the Washington County Agriculture Lands Inventory.

The following Environmental Assessment Form is a requirement of the Maryland Environmental Policy Act and Maryland Department of Transportation Order 11.01.06.02. Its use is in keeping with the 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. 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

	<u>Yes</u>	<u>No</u>	<u>Comments</u>
A. <u>Land Use Considerations</u>			
1. Will the action be within the 100-year floodplain?	<u>X</u>	<u> </u>	<u>Section IV.E.2a</u>
2. Will the action require a permit for construction or alteration within the 50-year floodplain?	<u> </u>	<u>X</u>	<u> </u>
3. Will the action require a permit for dredging, filling, draining or alteration of a wetland?	<u>X</u>	<u> </u>	<u>Section IV.E.3b</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> </u>	<u>X</u>	<u> </u>
5. Will the action occur on slopes exceeding 15 percent?	<u> </u>	<u>X</u>	<u> </u>
6. Will the action require a grading plan or a sediment control permit?	<u>X</u>	<u> </u>	<u>Section IV.E.2b</u>
7. Will the action require a mining permit for deep or surface mining?	<u> </u>	<u>X</u>	<u> </u>
8. Will the action require a permit for drilling a gas or an oil well?	<u> </u>	<u>X</u>	<u> </u>
9. Will the action require a permit for airport construction?	<u> </u>	<u>X</u>	<u> </u>
10. Will the action require a permit for the crossing of the Potomac River by conduits, cables or other like devices?	<u> </u>	<u>X</u>	<u> </u>
11. Will the action affect the use of a public recreation area, park, forest, wildlife management area, scenic river, or wildland?	<u> </u>	<u>X</u>	<u> </u>
12. Will the action affect the use of natural or man-made features that are unique to the county, state or nation?	<u> </u>	<u>X</u>	<u> </u>

	<u>Yes</u>	<u>No</u>	<u>Comments</u>
13. Will the action affect the use of an archeological or historical site or structure?	<u>X</u>	<u> </u>	<u>Section IV.D</u>
B. <u>Water Use Considerations</u>			
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> </u>	<u>X</u>	<u> </u>
15. Will the action require the construction, alteration, or removal of a dam, reservoir, or waterway obstruction?	<u> </u>	<u>X</u>	<u> </u>
16. Will the action change the overland flow of stormwater or reduce the absorption capacity of the ground?	<u> </u>	<u>X</u>	<u> </u>
17. Will the action require a permit for the drilling of a water well?	<u> </u>	<u>X</u>	<u> </u>
18. Will the action require a permit for water appropriation?	<u> </u>	<u>X</u>	<u> </u>
19. Will the action require a permit for the construction and operation of facilities for treatment or distribution of water?	<u> </u>	<u>X</u>	<u> </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> </u>	<u>X</u>	<u> </u>
21. Will the action result in any discharge into surface or sub-surface water?	<u>X</u>	<u> </u>	<u>Section IV.E.2</u>
22. If so, will the discharge affect ambient water quality parameters and/or require a discharge permit?	<u> </u>	<u>X</u>	<u> </u>
C. <u>Air Use Considerations</u>			
23. Will the action result in any discharge into the air?	<u>X</u>	<u> </u>	<u>Section IV.G</u>

	<u>Yes</u>	<u>No</u>	<u>Comments</u>
24. If so, will the discharge affect ambient air quality parameters or produce a disagreeable odor?	_____	<u>X</u>	_____
25. Will the action generate additional noise which differs in character or level from present conditions?	<u>X</u>	_____	<u>Section IV.F</u>
26. Will the action preclude future use of related air space?	_____	<u>X</u>	_____
27. Will the action generate any radiological, electrical, magnetic, or light influences?	_____	<u>X</u>	_____
<u>D. Plants and Animals</u>			
28. Will the action cause the disturbance, reduction, or loss of any rare, unique or valuable plant or animal?	_____	<u>X</u>	_____
29. Will the action result in the significant reduction or loss of any fish or wildlife habitats?	_____	<u>X</u>	_____
30. Will the action require a permit for the use of pesticides, herbicides or other biological, chemical or radiological control agents?	_____	<u>X</u>	_____
<u>E. Socio-economic</u>			
31. Will the action result in a pre-emption or division of properties or impair their economic use?	_____	<u>X</u>	_____
32. Will the action cause relocation of activities, structures, or result in a change in the population density or distribution?	<u>X</u>	_____	<u>Section IV.A.1</u>
33. Will the action alter land values?	_____	<u>X</u>	_____
34. Will the action affect traffic flow and volume?	<u>X</u>	_____	<u>Section IV.A.3</u>

	<u>Yes</u>	<u>No</u>	<u>Comments</u>
35. Will the action affect the production, extraction, harvest or potential use of a scarce or economically important resource?	_____	<u>X</u>	_____
36. Will the action require a license to construct a sawmill or other plant for the manufacture of forest products?	_____	<u>X</u>	_____
37. Is the action in accord with federal, state, regional and local comprehensive or functional plans, including zoning?	<u>X</u>	_____	<u>Section IV.C</u>
38. Will the action affect the employment opportunities for persons in the area?	_____	<u>X</u>	_____
39. Will the action affect the ability of the area to attract new sources of tax revenue?	_____	<u>X</u>	_____
40. Will the action discourage present sources of tax revenue from remaining in the area, or affirmatively encourage them to relocate elsewhere?	_____	<u>X</u>	_____
41. Will the action affect the ability of the area to attract tourism?	_____	<u>X</u>	_____
<u>F. Other Considerations</u>			
42. Could the action endanger the public health, safety or welfare?	_____	<u>X</u>	_____
43. Could the action be eliminated without deleterious effects 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>	_____

	<u>Yes</u>	<u>No</u>	<u>Comments</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>	_____	_____

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I DESCRIPTION
OF PROPOSED ACTION

I. DESCRIPTION OF PROPOSED ACTION

A. Project Location (Figure 1)

This portion of existing Maryland Route 68 is located in the eastern portion of Washington County, south of Hagerstown in the vicinity of Breathedsville. There are two other existing state roadways in the project area: Maryland Route 65 and Maryland Route 66. Maryland Route 68 begins northeast of Big Spring and runs in a southeasterly direction to its terminus at Alternate U.S. Route 40 near Boonsboro.

B. Project Description

The proposed Build Alternate improvements to existing Maryland Route 68 consists of the rehabilitation or relocation of the bridge over Antietam Creek (Booth's Mill Bridge) and the replacement of the bridge over Beaver Creek (Devil's Backbone Bridge) (see Figure 2).

C. Description of Existing Environment

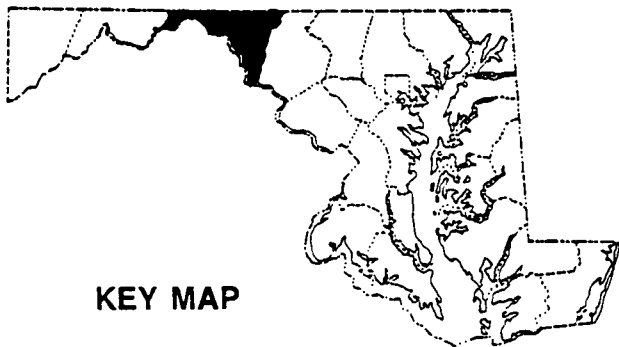
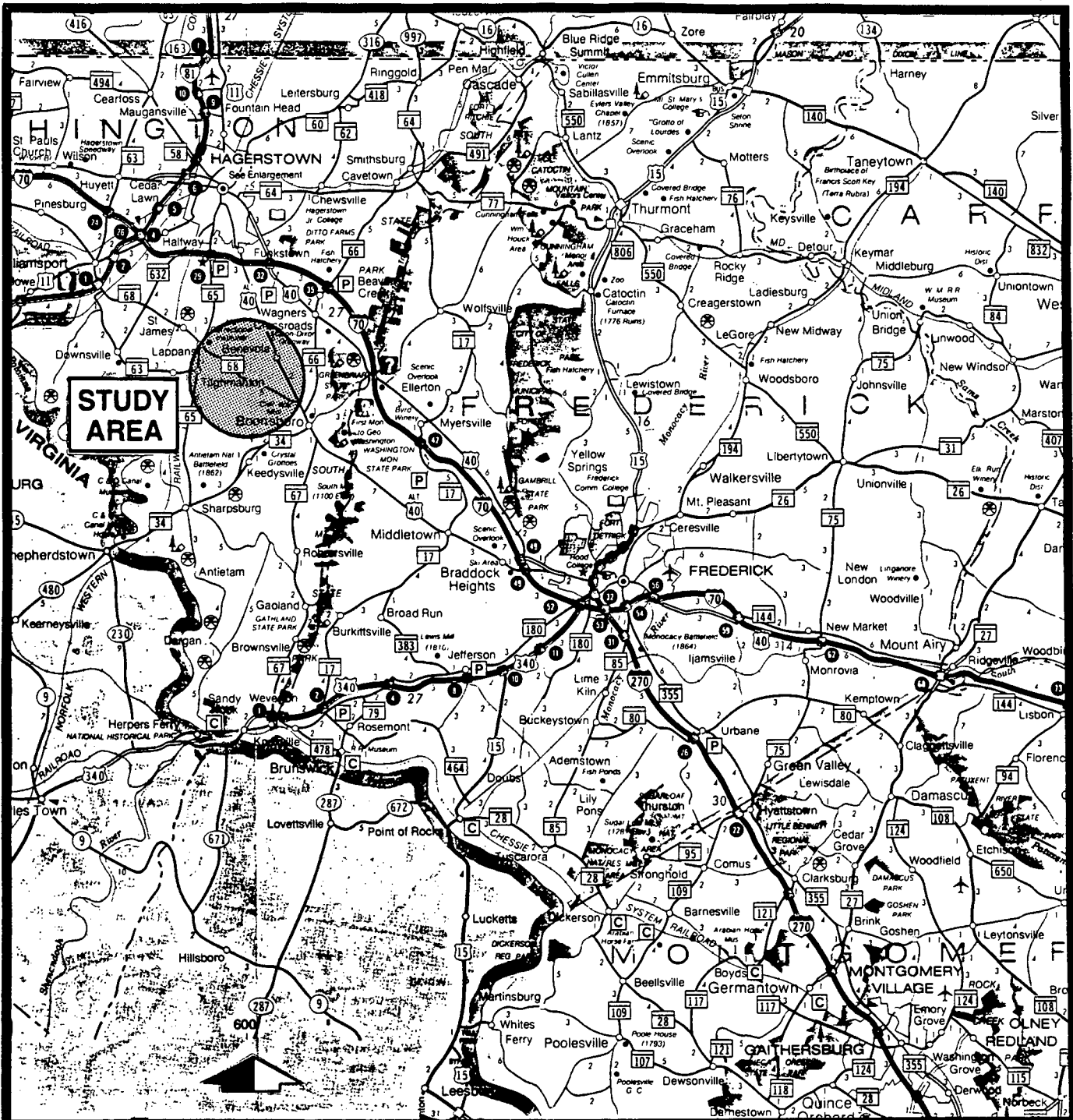
1. Social Environment

a. Population Characteristics

The study area is located in central Washington County. Washington County's population has been steadily increasing since the 1930s although the percentage of population change has slowed since 1950. In the decade from 1970 to 1980, the population increased 8.9 percent (103,829 to 113,086) with Washington County becoming Maryland's eighth most populous jurisdiction. It also has the largest population among the three western Maryland counties. The Maryland Department of State Planning estimated the 1985 county population to have been 115,300, and projects its growth by over 7 percent to 123,000 people by the year 2005.

The study area includes portions of Election Districts 6 (Boonsboro) and 12 (Fairplay), south of Hagerstown (see Figure 3). The population of these election districts comprises over 6 percent of the total county population. Between 1970 and 1980, the population in Election District 6 increased 16 percent (3384 to 3927), while Election District 12 experienced a net 9 percent decline (3393 to 3089).

An analysis of 1980 census data indicates that 90.1 percent of the population in these two election districts was white, 9.7 percent was black, and 0.2 percent was other minority (American Indian, Oriental origin, etc.). The largest proportion of minorities (22.2 percent) resides in Election



KEY MAP

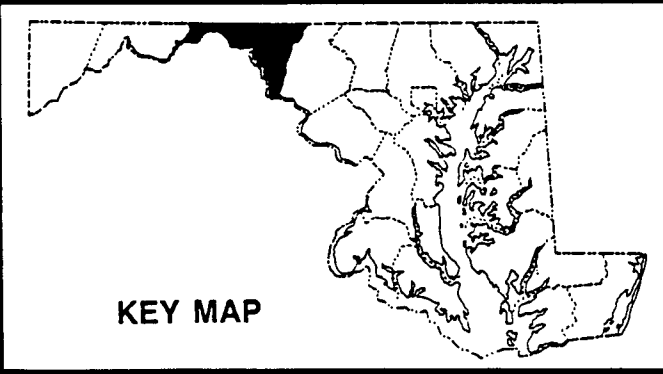
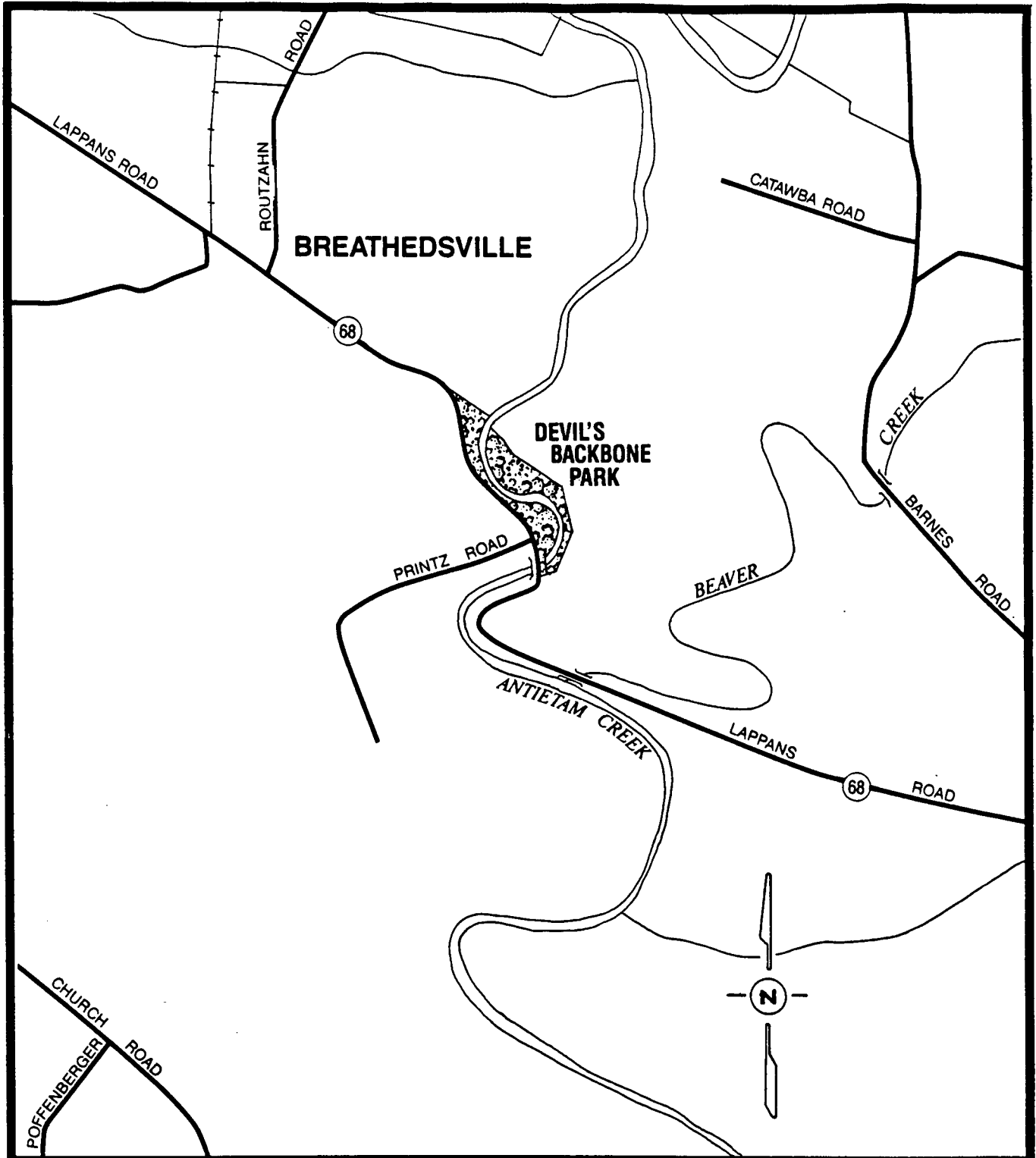
MARYLAND ROUTE 68 BRIDGES
Washington County

LOCATION MAP

Figure 1

SCALE



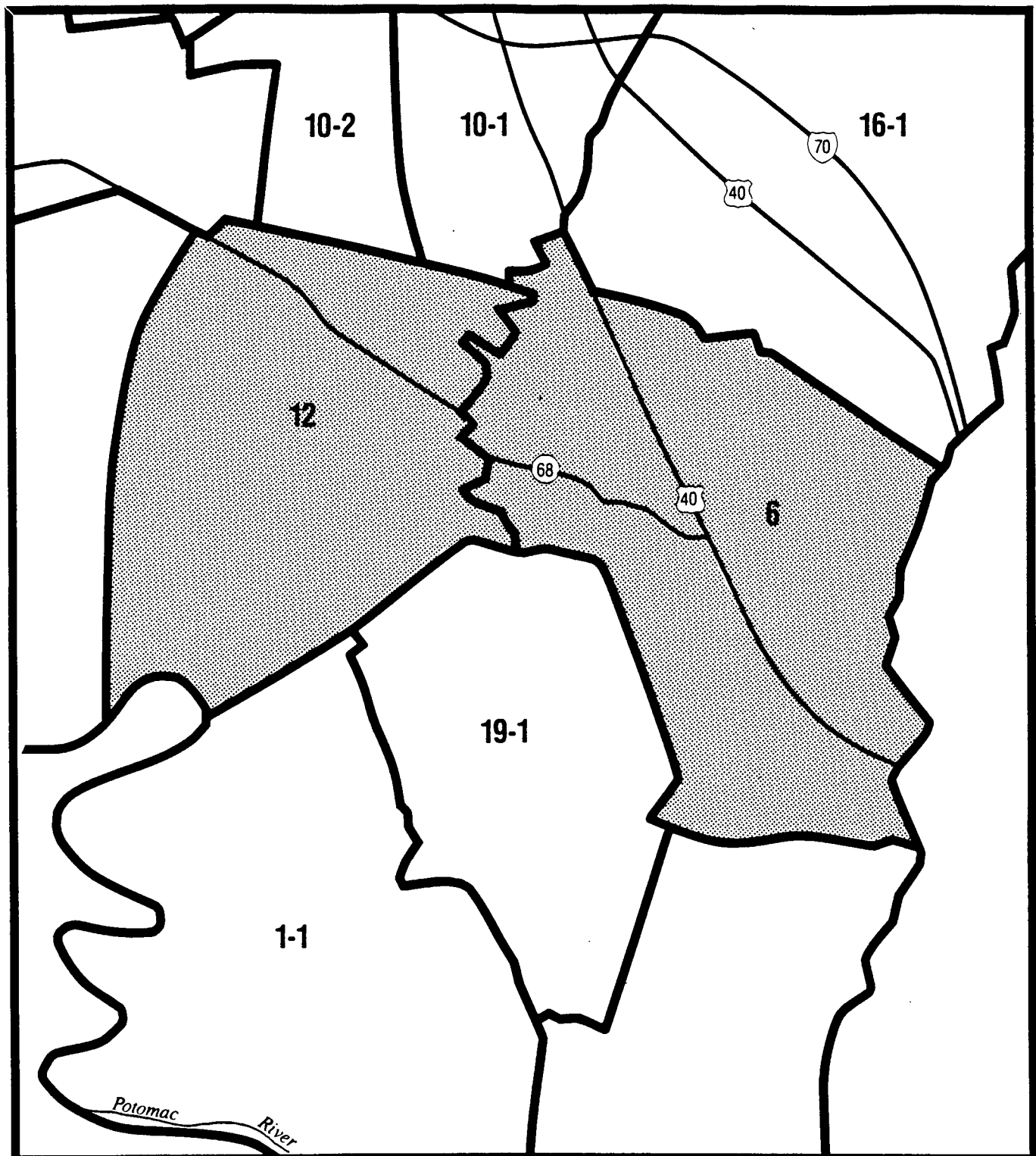


MARYLAND ROUTE 68 BRIDGES
Over Antietam and Beaver Creeks

STUDY AREA



Figure 2



MARYLAND ROUTE 68 BRIDGES
Over Antietam and Beaver Creeks

ELECTION DISTRICTS

SCALE: 1:100,000

Figure 3

District 6. No concentrations of elderly, minority, or handicapped individuals have been identified in the study area.

b. Community Facilities and Services

With the exception of Devil's Backbone County Park on Maryland Route 68, no other recreation facilities are located in the study area. The closest schools are in Boonsboro and Hagerstown. Churches are scattered throughout the area surrounding the project site. Police protection is provided by the Washington County Sheriff's Department and Maryland State Police, both barracked in Hagerstown. Fire and ambulance service is provided out of the Fairplay Volunteer Fire Company, No. 12, Boonsboro Volunteer Fire Department, No. 6, and Boonsboro Volunteer Ambulance and Rescue Service, No. 69. The closest hospital is Washington County Hospital in Hagerstown. Other municipal services (libraries, post offices, governmental) are situated in Boonsboro and Hagerstown. This rural area utilizes well water and septic systems.

2. Economic Environment

a. Employment Characteristics

Washington County, especially in the area of Hagerstown, is a major industrial, employment, and transportation center in western Maryland. The county's growth and healthy economy are closely tied to the transportation industry because of being located at the hub of several major transportation corridors. This has resulted in a healthy economy and has attracted numerous major employers. Healthy economic growth is projected to be maintained as the population continues to increase.

An analysis of 1980 Census data reveals that a majority of the work force living in Election Districts 6 and 12 (Figure 3) were employed in manufacturing, wholesale and retail trade, health services, construction, and public administration. Although agriculture is the dominant land use in the study area, it does not employ many people.

The commuting patterns of the study area work force reflect the County's stance as a major employment center. Over 75 percent of the county's work force are employed in Washington County. The remainder work principally in Frederick County, Pennsylvania, and West Virginia.

The 1979 median household income averaged for the two election districts was \$19,863, which was higher than the 1979 county-wide median of \$16,623.

The Department of Economic Development revised the county median household income in 1985 to \$23,124.

b. Commercial and Industrial Facilities

Located south of the Hagerstown economic area, the study area has minor amounts of economic activity and employment. Agriculture is the primary activity, with several commercial uses (oriented toward agricultural products) scattered in and around the area. The Maryland Correctional Institute, Maryland Correctional Training Center and Early Industrial Park are located just to the north of the proposed project location. Areas along Maryland Route 68 east of the study area have also been identified as sites for potential mineral mining operations. Large areas of employment and commercial activity are situated in the Hagerstown area as well as in Boonsboro and Keedysville.

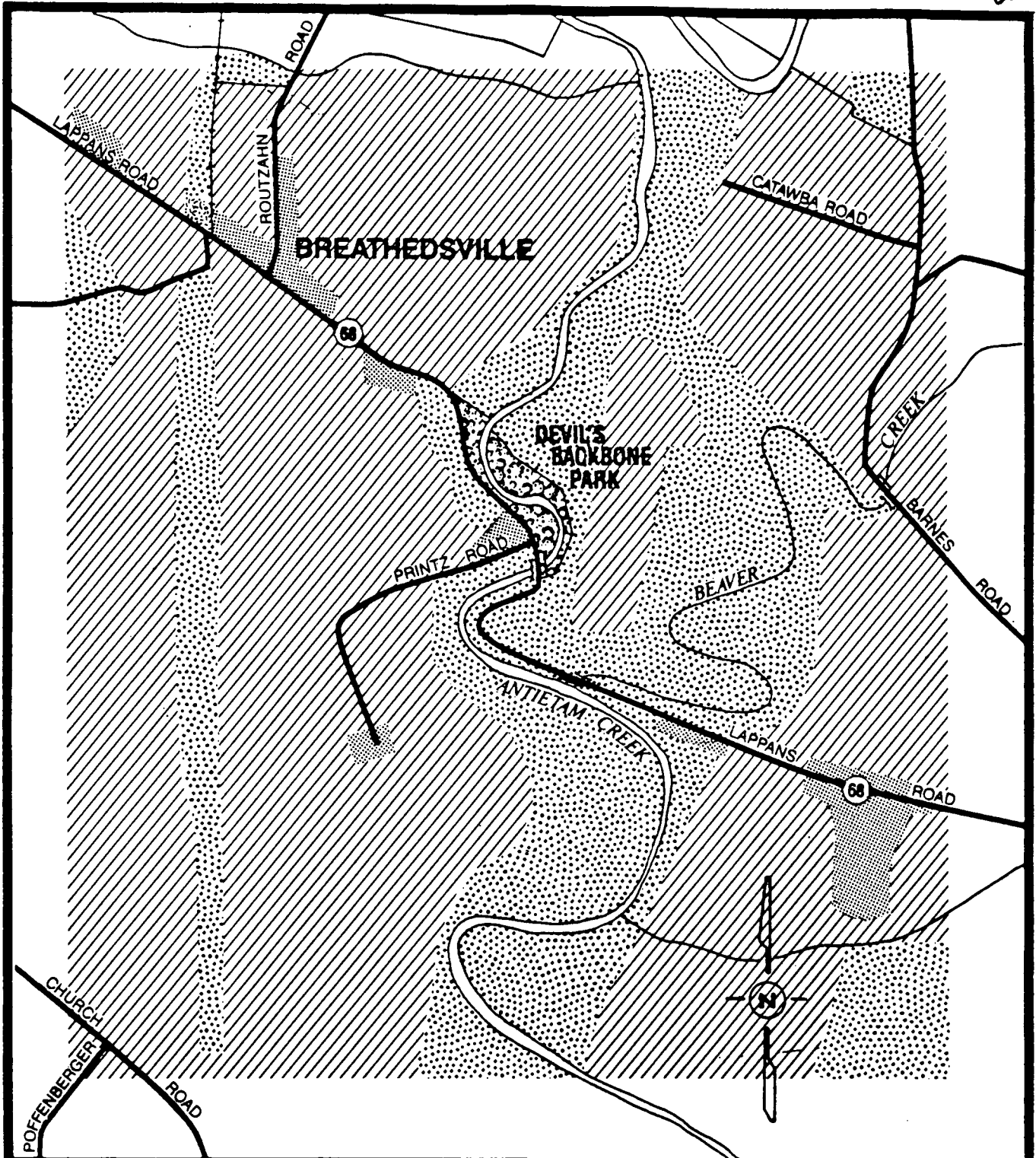
3. Land Use

a. Existing (Figure 4)



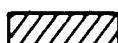


Land use in the study area is primarily characterized by agriculture (crop and pasture) and wooded/scrub brush areas (especially at higher elevations). Residential uses at rural densities and in clusters are located along Maryland Route 68 and at several intersecting roads in the study area. A county park is also located along Maryland Route 68 near its crossing of Antietam Creek. Several commercial uses are scattered along Maryland Route 68, and the Maryland Department of Corrections operates a large penal facility just to the north of the study area.

b. Future (Figure 4)

The Comprehensive Plan for Washington County, approved and adopted by the Board of County Commissioners in 1981, indicates that the study area is to retain its rural character and has been designated a Rural-Agricultural Area in that plan. Significant changes are not anticipated. High priorities in this area are the preservation of agricultural land and conservation of open space, water sources, mountain and woodland areas, and other natural and scenic resources. Any development within this designated area must be in keeping with the rural character of the area, not result in increased growth pressures, and not divert priorities from designated Growth Areas (i.e., Boonsboro, Hagerstown). Development is already concentrated in these growth areas and public services and facilities either exist or are planned over the



LEGEND

-  Parks and Recreation
-  Rural Residential
-  Agricultural
-  Woodland/Shrubland
-  Commercial

**MARYLAND ROUTE 68 BRIDGES
Over Antietam and Beaver Creeks**

**EXISTING AND FUTURE
LAND USE**



Figure 4

next 20 years. As such, little growth is anticipated to occur in the study area with most new residential and commercial development to be contiguous to established urbanized areas.

4. Historic and Archeological Resources

There are Nine (9) historic sites on or eligible for the National Register of Historic Places that are located in the vicinity of the study area (see Alternates Mapping).

Historic Sites

1. Booth's Mill Bridge, National Register Eligible (MD RT 68 Bridge over Antietam Creek).
2. Devil's Backbone Bridge, National Register Eligible, (MD RT 68 Bridge over Beaver Creek).
3. Dellemere Heights, National Register Eligible (North side of Maryland Route 68 West of Beaver Creek)
4. Dellemere, National Register Eligible (southwest side of Maryland Route 68).
5. Keedy House, on the National Register (Northeast of Maryland Route 68 on Barnes Road).
6. Barnes Road Bridge, on the National Register (included within the Boundary of the Keedy site).
7. Jericho Farm, National Register Eligible (located on the south side of Maryland Route 68).
8. Stone Tenant House, National Register Eligible (part of the Jericho Farm).
9. Lakin House, National Register Eligible (located at Maryland Route 68 and Mill Point Road).

Confirmation of the eligibility of these sites was received in a letter dated March 26, 1986, from the Maryland Historical Trust (See Section VI).

The Maryland Geological Survey has identified approximately twelve (12) archeological sites near the study area. A site known as "Booth's Mill" or "Dellemere Mill" is the only archeological site in the project area, and was identified as a result of the Phase I Archeological Reconnaissance of the study area. However, Phase II field testing revealed the Mill site was not significant. Four prehistoric archeological sites which are potentially eligible for the National Register were identified along Alternate 6.

5. Natural Environment

a. Topography and Geology

The study area is within the Valley and Ridge physiographic province of western Maryland. This physiographic province contains strongly folded and faulted metamorphic and sedimentary rocks. A wide, open valley called the

Great Valley, or in Maryland, the Hagerstown Valley, is located within Cambrian and Ordovician limestone and dolomite. The Hagerstown Valley is in a broad synclinal structure 500-600 feet high known as the Massanutten synclinorium. It includes the area between South Mountain and Elk Ridge on the east and Fairview Mountain on the west.

The rocks in the valley are highly contorted and contain numerous minor folds and faults. Also, the Hagerstown Valley is composed of the Antietam quartzite, a very hard, durable, fine to medium-graded sandstone and quartzite.

For many years the limestone formations have been used as local sources of agricultural lime and building stone. Today uses include crushed stone for aggregate and cement, with some glass manufacturing.

Topography significantly influences flora and faunal distribution in and along rivers and streams. Where the vegetative root mat is disturbed, steeper slopes tend to suffer from faster runoff, more overt erosion and thus tend to produce flooding and higher rates of sediment influx into natural waters.

b. Soils

The Soil Survey of Washington County published by the U.S. Department of Agriculture, Soil Conservation Service provides the following general information.

The soils of the study area belong to the Hagerstown-Duffield-Frankstown Association, being soils characteristically found in limestone valleys.

The Hagerstown Series are very rocky soils with 45-55 percent slopes. These steep soils have little, if any, erosion because most areas have remained as woodlands with little or no disturbance. The soils are deep, well-drained, reddish in color, and have developed in materials weathered from hard, fairly pure limestone. The soil contains scattered to numerous outcropping ledges of limestone. These soils are severely limited to urbanization because of rockiness. Special foundation investigations should be conducted in the project area to check for possible sinkholes in the limestone. The Hagerstown Series are rated as good for woodland wildlife, but are not suitable for wetland wildlife.

The Rocky Eroded Limited Series consist of severely eroded remnants of

the Hagerstown Series. Cultivation is impossible and grazing is also impracticable. The best use of this land is for watershed protection.

No "prime" farmland under the Farmland Protection Policy Act (FPPA) or farmland of statewide importance is located in the study area.

c. Surface Water

Surface waters of the study area are part of the Upper Potomac River watershed. Antietam Creek watershed drains an area of 281 square miles and has an average discharge flow of 278 feet³/second. Antietam Creek is classified as Class IV - Recreational Trout Waters. Recreational Trout Waters are cold or warm waters with the potential for or are:

- (i) capable of holding or supporting adult trout for put-and-take fishing; and
- (ii) managed as a special fishery by periodic stocking and seasonal catching.

According to the Maryland Department of Natural Resources (DNR), Tidewater Administration data, Antietam Creek was stocked with Salmonidae species on March 23, 1986 and April 20, 1986 with a total of 1750 fish. On April 15, 1986, Antietam Creek was field surveyed for sportfishing activities. Although it was raining that day, 12 fisherman were fishing the creek.

Beaver Creek is a large limestone stream located in eastern Washington County, Maryland. This creek, which confluences with Antietam Creek, is a Class III - Natural Trout Waters. Natural Trout Waters are cold waters with the potential for or are:

- (i) suitable for the growth and propagation of trout; and
- (ii) capable of supporting natural trout populations and their aquatic food organisms.

According to DNR data, Beaver Creek was stocked with Salmonidae species on March 9, April 6, and April 27, 1986 with a total of 6,500 fish.

Beaver Creek drains an area of approximately 34 square miles in the Hagerstown Valley. According to the Survey and Inventory of Natural Trout Waters (Hughes, Stinefelt, and Rivers, 1980), the Beaver Creek watershed temperature averages 52° F yearly, and precipitation averages 36 inches a year. This creek is one of the most heavily fished trout streams in the State. Water temperature averages 54-70°F throughout the year.

d. Groundwater

Groundwater in the study area is located in the Hagerstown Valley water province which lies entirely within the Valley and Ridge physiographic region. This area typically has groundwater occurring in joints, fractures, and solution channels of the folded limestone-dolomite aquifers.

The hydrology of the Hagerstown Valley water province is complex because limestone in the area has been broken and folded. This deformation of the rocks is the reason for the intricate system of solution channels and caves which, over time, have developed in the Cambrian and Ordovician limestone and dolomite rock units.

Recharge to the groundwater in the study area comes mainly through precipitation which infiltrates through the well-drained soils and becomes part of the groundwater system. Some smaller amounts of seepage from streams may also occur.

Storage capacity of the limestone and dolomite (Carbonate) rocks ranges widely from location to location. This is due to the water's ability to dissolve the rock, or how weak the rock may be.

Generally, the groundwater in the carbonate rocks is stored in solution channels and crevices. Sinkholes are common in terrain such as this. Carbonate rocks may dissolve in cold water, resulting in the collapse of the earth and soil over the water-bearing channel ways and cavities.

The groundwater from the carbonate rocks in the study area is slightly alkaline and hard water is common. Since there are very little or no filtering properties, the groundwater has a likelihood of being polluted, typically, by organic sources which is indicated by a high concentration of nitrate in the water. Other substances that occur in high concentrations are iron, chloride, dissolved solids and calcium carbonate.

In summary, the limestone and dolomite that underlie the study area supply large amounts of groundwater, and also have the potential to support an increase in water demand in the future.

In the industrial area around Hagerstown, just north of the study area, wells yield approximately 400 gpm (Water Resources of Allegany and Washington Counties, Bulletin 24, 1962) in the Conococheague and Stonehenge limestones.

e. Floodplains

The Federal Emergency Management Agency (FEMA), designated 100-year base floodplain area is shown on Figures 7, through 10b. The proposed project will not exceed the maximum one-foot increase in the base floodway elevation, being in compliance with Executive Order 11988.

f. Ecology

1. Terrestrial Habitat

The occurrence and distribution of the flora and fauna of Devil's Backbone Valley are greatly influenced by an extensive variety of available niches that result from the slope, altitude, wind, and other interrelated climatic factors.

In the study area, there is a break in the typical flora. The pH of the soil often reads as high as 8 and is conducive to certain plants. The high pH is caused by the limestone outcroppings.

On April 15, 1986, the study area was field investigated and the following woody species were observed: red cedar (Juniperus virginiana), yellow oak (Quercus muhlenbergii), redbud (Cercis canadensis), black walnut (Juglans nigra), smooth sumac (Rhus glabra), eastern hemlock (Tsuga canadensis), white pine (Pinus strobus), dogwood (Cornus florida), and choke cherry (Prunus virginiana). Along the floodplain banks, the dominant species are: sycamore (Platanus occidentalis), black willow (Salix nigra), and green ash (Fraxinus pennsylvanica var. subintegrifolia).

Herbaceous species occupying this area include: dandelion (Taraxacum officinale), henbit (Lamium amplexicaule), common violet (Viola papilionacea), wild radish (Raphanus raphanistrum), cut-leaved toothwort (Dentaria laciniata), common strawberry (Fragaria virginiana), common mullein (Verbascum thapsus), and star of Bethlehem (Ornithogalum nutans).

Lichens (Parmelia flaventior) and (Lecanora spp.) were very abundant and are excellent air quality indicators. Also, there was a lush population of fungi such as the shelf fungi (Lenzites betulina). Many fern species are known to exist in the study area including walking fern (Camptosorus rhizophyllus), and cut-leaved grape fern (Botrychium dissectum).

Animal species distribution is similarly influenced by topography. The fauna of the study area is quite diverse with the greatest diversity being associated with the edges of the riverine bottomlands.

There are many interesting amphibian and reptile habitats in the study area. Representatives of this watershed are: Jefferson salamander (Ambystoma jeffersonianum), marbled salamander (Ambystoma opacum), long-tailed salamander (Eurycea longicauda), slimy salamander (Plethodon glutinosus), Northern spring salamander (Gyrinophilus porphyriticus), and Northern leopard frog (Rana pipiens).

Reptiles of the area are: Northern ringneck snake (Diadophis punctatus), Eastern smooth green snake (Opheodrys vernalis), timber rattlesnake (Crotalus horridus), wood turtle (Clemmys insculpta), and Eastern painted turtle (Chrysemys picta).

Field surveys in the study area revealed numerous wildlife species. Herbivorous species include mice, chipmunks (Tamias striatus), beavers (Castor canadensis-lodges), rabbits (Sylvilagus floridanus), deer (Odocoileus virginianus), ruffed grouse (Bonasa umbellus), and wild turkey (Meleagris gallopavo).

Carnivorous species include weasels, minks, skunks, opossums, raccoons, gray and red foxes, bobcats, hawks, and owls.

Bottomlands, riverine forest and floodplains, support a diverse fauna community of furbearers such as muskrats, beavers, mink, as well as shrews, moles, bats, kingfishers, waterfowl (nesting mallards), and passerine songbirds.

2. Aquatic Habitat

Streams occurring in limestone areas are characteristically of a higher pH and usually support richer populations of invertebrates, and vertebrates than do freestone streams. Representatives of fish species found in Antietam and Beaver Creek are: brook trout (Salvelinus fontinalis), brown trout (Salmo trutta), rainbow trout (Salmo gairdneri), greenside darter (Etheostoma blennioides), white sucker (Catostomus commersoni), northern hogsucker (Hypentelium nigricans), mottled sculpin (Cottus bairdi), bluegill (Lepomis macrochirus), rockbass (Ambloplites rupestris), longnose dace (Rhinichthys cataractae), river chub (Nocomis micropogon), and spotfin shiner (Notropis spilopterus).

The primary macroinvertebrates encountered were: stoneflies, mayflies, beetles, and craneflies. A detailed list of species present in each stream can be found in Appendix B.

The aquatic vegetation of the riverine ecosystem and floodplain banks consist of: curly pondweed (Potamogeton crispus), little duckweed (Lemna spp.), algae (Cladophora and Hydrodictyon spp.), forget-me-not (Myosotis scorpioides), marsh-purslane (Ludwigia palustris), common elodea (Elodea canadensis), duck potato (Sagittaria latifolia).

3. Wetlands

The study area is influenced by two riparian wetlands. The following wetland classification scheme follows the U.S. Fish and Wildlife Service system of Cowardin et al. (1979). It is based on substrate material, flooding regime and vegetative life form. The study area wetlands are: Riverine - upper perennial, permanently flooded; consisting of high gradients with fast flowing water. The substrate consists of rock, cobbles, and patches of sand. The dissolved oxygen (DO) concentration is near saturation, but planktonic forms of life are few.

Three wetland systems that would be impacted by the two bridge replacements were identified by field surveys.

Wetland site 1 (see Alternates Mapping) is located at Bridge No. 21039 on Maryland Route 68 (Devil's Backbone Bridge). The bridge crosses Beaver Creek and its adjacent wetlands. The soils consist of Huntington silt loam which is characteristic of floodplains and streams in Washington County. Within the stream floodplain, the dominant vegetation includes: box elder, red elm, sycamore, and black walnut. This is a high value wetland associated with this Class III-Natural Trout Waters. Several functions of the wetland contribute to the stream's good water quality including long-term sediment and nutrient trapping, groundwater discharge, food chain export, and flood desynchronization. The Beaver Creek stream is high quality habitat for cold water fin-fish and benthic organisms. This riparian stream valley is excellent habitat for upland wildlife species as well.

Wetland site 2 (see Alternates Mapping) is located at Bridge No. 21038 over Antietam Creek (Booth's Mill Bridge) on Maryland Route 68. Antietam Creek is a Class IV - Recreational Trout Waters that is stocked periodically. According to the U.S. Fish and Wildlife Service classification, the Antietam

Creek stream is a riverine, upper perennial wetland with a permanently flooded water regime. The stream is approximately 100 feet wide. Along the floodplain of the stream are palustrine deciduous forested wetlands with Huntington hydric soil. The dominant vegetation consists of: sycamore, black walnut, box elder, black willow, and jewelweed.

Alternate 6 would cross Antietam Creek at wetland site 3. The creek at this site is 100 feet wide and has an average depth of 16 inches. This wetland is a riverine-upper perennial fast water wetland with permanent water flow. Along the floodplain, palustrine-deciduous forested wetlands buffer the stream. The dominant vegetation at this site is: box elder, silver maple, jewelweed, black willow, and sycamore. This wetland has several functions including natural heritage value, flood desynchronization, food chain support, groundwater discharge and long-term sediment and nutrient trapping.

g. Threatened or Endangered Species

Coordination with the Maryland Department of Natural Resources and the U.S. Fish and Wildlife Service indicates there are no known populations of threatened or endangered species in the study area. However, the study area may support Mock Bishop's-weed (Ptilimnium fluviatile) a rare plant of Washington County. Field visits to the study area did not reveal any mock Bishop's-weed.

6. Existing Noise Conditions

Five noise sensitive areas (NSAs) have been identified in the Maryland Route 68 Bridges study area. Descriptions of these noise sensitive areas are provided in Table 2. In addition, the locations of the NSAs are shown on the Alternates Mapping.

Highway traffic noise is usually measured on the "A" weighted decibel scale, "dBA", which is the scale that has a frequency range closest to that of the human ear. In order to give a sense of perspective, a quiet rural night would register about 25 dBA, a quiet suburban night would register about 60 dBA, and a very noise urban daytime about 80 dBA. Under typical field conditions, noise level changes of 2-3 dBA can barely be detected, with a 5-dBA change readily noticeable. A 10-dBA increase is judged by most people to be a doubling of sound loudness. (This information is presented in

the "Fundamentals and Abatement of Highway Traffic Noise," by Bolt, Beranek & Newman, Inc., for FHWA, 1980).

The Federal Highway Administration has established, through 23 CFR 771, noise abatement criteria for various land uses. These criteria, along with the associated activity category, are presented in Table 3.

TABLE 2

SENSITIVE RECEPTORS

<u>Site No.</u>	<u>Distance from Centerline of Alternate (in feet)</u>	<u>Description/Location</u>
1	75 (Alt.3)	Residence - Maryland Route 68
2	25 (Alt.3)	Edge of Right-of-Way Receptor: Devil's Backbone Park
3	500 (Alt.3)	Historical Residence-Dellemere
4	25 (Alt.3)	Residence - Maryland Route 68
5	100 (Alt.6)	Residence - Maryland Route 68

TABLE 3

FHWA NOISE ABATEMENT CRITERIA
HOURLY A-WEIGHTED SOUND LEVEL - DECIBELS (dBA)

<u>Activity Category</u>	<u>Leq(h)</u>	<u>Description of Activity Category</u>
A	57 (Exterior)	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of these qualities is essential if the area is to continue to serve its intended purpose.
B	67 (Exterior)	Picnic areas, recreation areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals.
C	72 (Exterior)	Developed lands, properties, or activities not included in Categories A or B above.
D	--	Undeveloped land.
E	52 (Interior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums.

The noise levels in this analysis are expressed in terms of an L_{eq} noise level, which is the energy-averaged noise level for a given time period. All ambient and predicted noise levels in this report are L_{eq} exterior noise levels unless otherwise noted.

In an acoustical analysis, measurement of ambient noise levels is intended to establish the basis for impact analysis. The ambient noise levels as recorded represent a generalized view of present noise levels. Variations in total traffic volume, truck traffic volumes, speed, etc., may cause fluctuations in ambient noise levels of several decibels. However, for the purposes of impact assessment, these fluctuations are usually not sufficient to significantly affect the assessment.

It was determined that for most of the noise sensitive areas, the most typical noise conditions occur during the non-rush hour period (9:00 a.m. - 4:00 p.m.). During this time, the highest noise levels are experienced for the greatest length of time.

An on-site monitoring program was conducted in February, 1988 and June, 1988. Measurements were made for 20-minute intervals at each of the five NSAs. Ambient noise levels ranged from 44 dBA to 59 dBA for these sites.

7. Ambient Noise Survey

Four noise sensitive sites in the project area were analyzed. The location of these sites is shown in the Alternate Mapping. A description of these sites is presented in Table 2 in Section I. Measurements were made at each of these sites using a B&K 2230 sound level meter, which is a Type I instrument. The ambient noise levels at the five receptors as recorded in the field monitoring program are presented in Table 4 in Section IV. As shown in this table, the current ambient noise level at all receptors is below the applicable L_{eq} (h) noise abatement criteria at 67 dBA.

8. Existing Air Quality

The Maryland Route 68 Bridges project is within the Western Maryland Intrastate Air Quality Control Region. The Environmental Protection Agency attainment status designation for carbon monoxide (CO) for this region is "cannot be classified or better than national standards."

A detailed microscale air quality analysis has been performed to determine the CO impact of the proposed project, which is described in further detail in Section IV-G.

II NEED FOR THE PROJECT

II. NEED FOR THE PROJECT

A. Purpose

The purpose of the study is to develop feasible solutions to correct substandard conditions at the Maryland Route 68 crossings of Antietam and Beaver Creeks. The existing stone arch bridges were constructed in the nineteenth century. Stone bridges were a major architectural trend between 1820 and 1850. Both bridges have been determined by Maryland Historical Trust to be significant examples of the 19th Century Stone Arch Bridge, and are National Register Eligible. They are two of six remaining historic stone bridges in Washington County (two of thirty stone bridges left in Maryland).

Both the Booth's Mill bridge over Antietam Creek and the Devil's Backbone bridge over Beaver Creek are important, course cut limestone and earthen fill structures whose arches are limited with carefully cut stone. The parapets are topped with a concrete coping. The Beaver Creek bridge (Devil's Backbone Bridge) was built in 1824, while the Antietam Creek bridge was built in 1833.

The bridge over Antietam Creek (Booth's Mill) is a three-span stone arch bridge in poor condition. It has a sufficiency rating of only 10.0 on a scale of 0 to 100 and is posted for a weight limitation of 28,000 pounds. There are several large bulges in the stone spandrel walls and wingwalls. Mortar joints throughout the structure are deteriorated and numerous stones are missing below the waterline. The bridge is sinking and on the verge of collapse under its own weight, not due to any traffic loads. Some temporary stabilization has been performed by the placement of gabions against the worst wall bulge. Immediate major rehabilitation is necessary to avoid collapse. It is striped for two lanes with a roadway width of only nineteen (19) feet.

The bridge over Beaver Creek (Devil's Backbone Bridge) is in fair condition, but is posted for a weight limitation of only 27,000 pounds. It provides a single lane with poor vertical geometry and a roadway width of seventeen (17) feet. Supports for the sidewalls to make the bridge more stable were constructed in 1979.

Speed constraints at the bridges include their narrow width; the abrupt turn at the east end of the Antietam Creek (Booth's Mill) bridge which is posted at 15 MPH; the curve between the two bridges which is posted at 25

MPH; and the vertical geometry at the Beaver Creek bridge (Devil's Backbone). There also is no existing or proposed access control.

Design speeds for the connecting roadway are consistent with posted speeds: 15 MPH at the sharp curve at the east end of the Antietam Creek (Booth's Mill) bridge and 25 MPH for the curve that carries the roadway around the end of the "Devil's Backbone", a steeply rising, often exposed and unique bedrock formation. Existing Maryland Route 68, particularly the segment from west of Maryland Route 632 to Alternate U.S. Route 40, is a narrow two-lane roadway with little or no shoulders, and numerous sharp curves and steep grades. Outside of the worst alignment areas, with even lower suggested speeds, the speed limits vary from 30 to 40 miles per hour.

B. Project Background

This project is identified in the Secondary Development and Evaluation Program of the Maryland Department of Transportation's Consolidated Transportation Program (CTP) for FY 1988-1993. No phase of activity beyond the current project planning phase is identified in the program period. The results of this study could make the project a candidate for addition to future Secondary Construction Programs for the remaining phases: project engineering (final design), right-of-way acquisition, and construction. No other segment of Maryland Route 68 is identified in the CTP. In fact, only one other segment of Maryland Route 68 is identified in the Highway Needs Inventory, a partially urban segment west of Williamsport.

C. Accident Experience

In the four-year study period (1984-1987) there have been two property damage only accidents at the Antietam Creek (Booth's Mill) bridge and no accidents at the Beaver Creek (Devil's Backbone) bridge. Between the bridges there have been fifteen accidents, composed of five injury accidents and ten property damage only accidents. Of the total accidents, eight were opposite direction type collisions. Vehicles running off the roadway and striking a fixed object accounted for six of the accidents. Twelve of the fifteen accidents occurred on a wet roadway surface. This area has qualified as a high accident section for three of the four years studied (1984, 1985 and 1987). However, because of the low volumes of traffic, the relatively high accident rates (6 1/2 times greater than average) should not be considered statistically significant.

Previous data received for the period 1982-1984 identified a higher accident experience west of the Antietam Creek bridge (Booth's Mill), in the residential area between Printz and Routzahn Roads, than was experienced between the two bridges: ten accidents (six fixed object, four opposite direction) versus two (both opposite direction).

D. Traffic Operations

The current average daily traffic on Maryland Route 68-bridges at Antietam and Beaver Creeks is 1,400 vehicles. Traffic forecasts predict that the average daily traffic volumes for 1995 is 1,800 and for design year 2015 is 2,500. The roadway will not reach capacity until well beyond the design year.

The roadway operates at well above the level of service (LOS) C. This LOS is expected to be maintained through design year 2015. The design hourly volume is 8 percent of the average daily traffic. The directional distribution is 53 percent of the design hourly volume. Trucks are 8 percent of average daily traffic and 6 percent of the daily hourly volume.

III ALTERNATES CONSIDERED

III. ALTERNATES CONSIDERED

The proposed alternates to correct substandard bridge conditions at the Maryland Route 68 crossings of Antietam and Beaver Creeks were presented to the public at an Alternates Public Meeting. Of a total number of nine (9) alternates proposed, four (4), including No-Build, were retained for detailed study.

A. Alternates Dropped from Consideration (Figure 5)

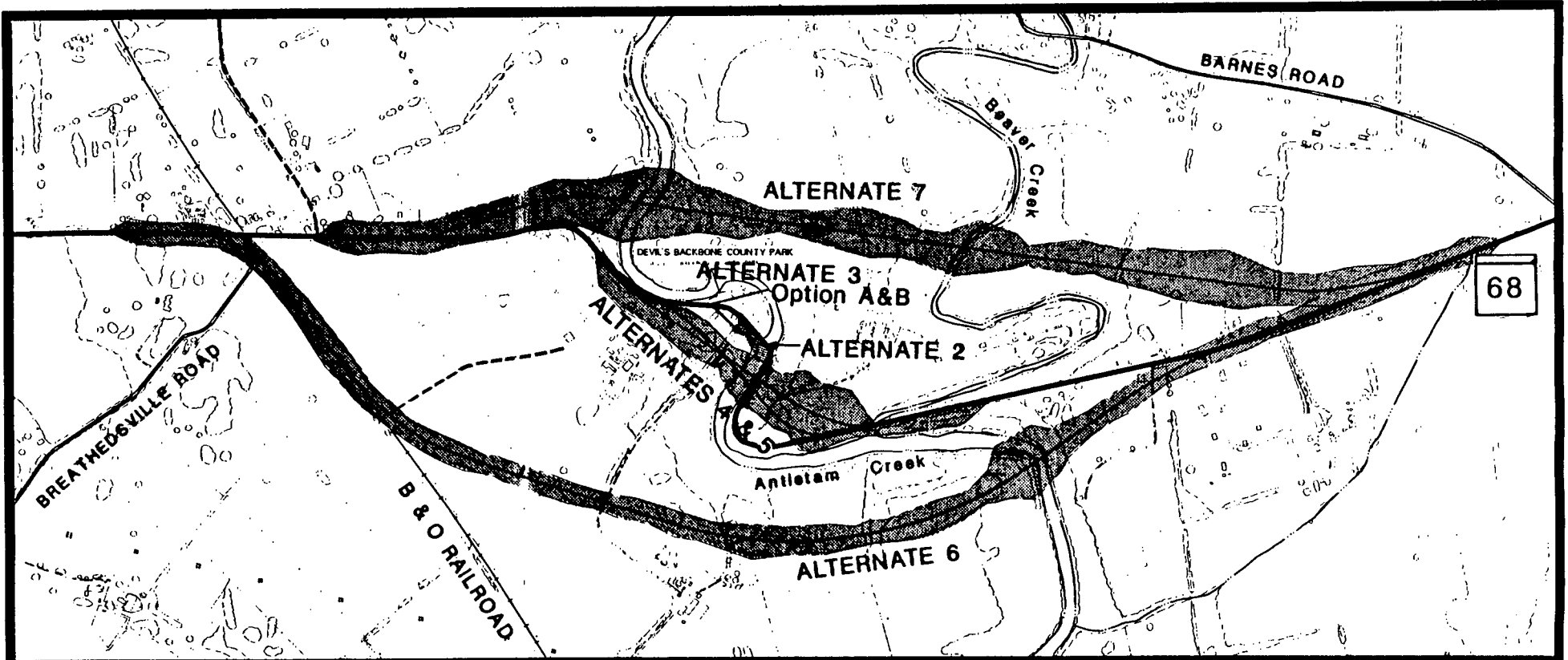
1. Alternate 3-Option A

This alternate proposed the rehabilitation of the bridge over Antietam Creek to carry westbound Maryland Route 68 traffic. A new one-lane bridge would be constructed immediately downstream to carry eastbound Maryland Route 68 traffic over Antietam Creek. The bridge over Beaver Creek would be removed and replaced with a new two-lane structure. The small slab bridge immediately west along Maryland Route 68 would be removed and replaced with a graded roadway. This alternative would require a detour of traffic during construction.

It is believed the rehabilitation proposed for the Antietam Creek bridge would result in a conditional no adverse effect (CNAE). Only slight improvement in the 15 mph design could be made to the approach roadway curvature at the east end of the Antietam Creek bridge because of "Devil's Backbone". This alternate was dropped, based upon a comparison of costs determined at the time of the Alternates Public Meeting, and because of the visibility of the new eastbound bridge from the Antietam Creek (Booth's Mill) bridge.

2. Alternate 4

This alternate proposed the relocation of Maryland Route 68 from approximately 1,400 feet west of the Antietam Creek bridge to approximately 900 feet east of the Beaver Creek bridge (Devil's Backbone Bridge), a distance of 0.61 miles, requiring new structures at the relocated crossings of Antietam and Beaver Creeks. The existing bridge over the filled-in stream bed and the bridge over Antietam Creek (Booth's Mill Bridge) would not be removed as proposed for Alternate 3-Option B. The bridge over Beaver Creek (Devil's Backbone) would be removed, and a detour of traffic would be necessary during construction.



MARYLAND ROUTE 68 BRIDGES
Over Antietam and Beaver Creeks

STUDY ALTERNATES

NOT TO SCALE

Figure 5

45

Service roads would be constructed to access existing properties and the county park. Alternate 4 was developed for a 40 MPH design speed. This alternate was dropped from further consideration because of its high cost, based upon a comparison of costs determined at the time of the Alternates Public Meeting, as well as its impact to five (5) residences.

3. Alternate 5

This alternate was very similar to the Alternate 4 alignment with a distance of 0.57 miles. It was developed for a slightly lesser design speed (35 MPH) in an attempt to reduce property impacts. Again, the Antietam Creek would not be rehabilitated unless the county requires rehabilitation as a condition of acceptance of the bridge. This alternate was dropped for the same reasons as Alternate 4.

4. Alternate 7

This alternate proposed a major relocation to the north of the existing Maryland Route 68 alignment. It began approximately 1,000 feet east of Breathedsville Road and ended approximately 700 feet west of Barnes Road, a distance of 1.7 miles. It was developed for a 50 MPH design speed with no access control. The alternate required new structures over Antietam and Beaver Creeks. Existing Maryland Route 68 west and east of Antietam Creek (including the Beaver Creek bridge) would remain open to traffic to maintain access to existing properties. However, only normal maintenance and safety improvements would be considered for these segments of roadway, and future traffic could be further restricted as determined by continued inspections. No detour of traffic during construction would be necessary for this alternate.

Major rehabilitation would be performed on the Antietam Creek (Booth's Mill) bridge to permit it to remain open to local traffic. Alternate 7 was dropped because of cost comparisons for the Alternates Public Meeting, and because of its impacts to prime and productive farmland soils.

B. No-Build (Alternate 1)

Under the No-Build alternate, the Maryland Route 68 bridges over Antietam (Booth's Mill) and Beaver Creek (Devil's Backbone) would remain basically as they are today. Normal maintenance and safety improvements would continue for both the bridges and roadways. However, this is not expected to extend appreciably the limited life expectancies of the existing

structures. The bridge over Antietam Creek (Booth's Mill) is in poor condition and the Beaver Creek (Devil's Backbone) bridge is in fair condition with a posted weight limit. Also, the existing alignment is narrow with poor vertical and horizontal geometry. The bridges are settling due to their own weight, not the vehicular traffic. At some point in the future additional weight limitations could be applied, and ultimately, one or both bridges could be closed to all traffic. This alternate was retained for detailed study.

C. Alternates for Detailed Study

Three build alternates were studied in detail. The Typical section for these alternates is shown in Figure 6. There is no preferred alternate.

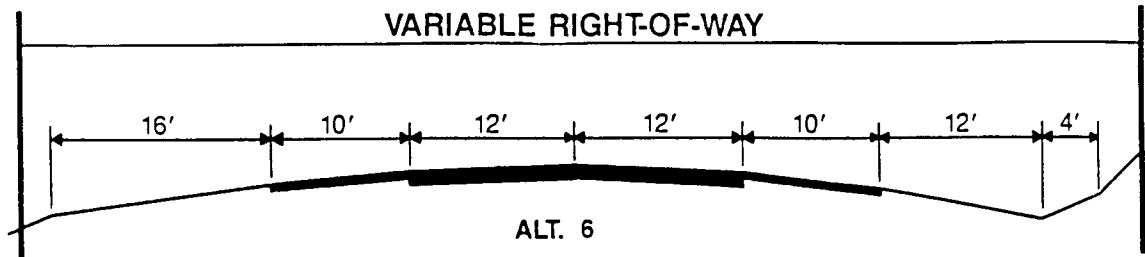
1. Alternate 2 (Figure 7)

This alternate proposes the major rehabilitation of the bridge carrying Maryland Route 68 over Antietam Creek (Booth's Mill Bridge). Additionally, the bridge carrying Maryland Route 68 over a previous branch of Antietam Creek would be removed and replaced with a graded roadway. The stream bed is already filled in. The bridge rehabilitation will be labor intensive, costly, and require a detour of traffic during construction. The rehabilitation involves removing the road bed, hand-tool removal of the existing fill, as well as removing and numbering the stone wall, layer by layer. The rehabilitation also would install drains, seal and rebuild with new granular material, and then replace the existing stone walls, layer by layer.

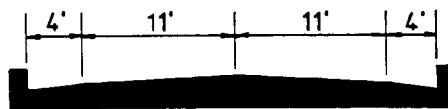
The bridge would retain its existing appearance and dimensions. It is noted that the bridge rail and bridge width would not meet current design standards. Minor adjustments (increased radius) to the bridge approach roadway curvature would be made at the east end of the Antietam Creek (Booth's Mill) bridge. However, this results in no appreciable improvement in the 15 mph design speed. The closeness and steep slope of the "Devil's Backbone" precludes further improvements.

The one-lane bridge over Beaver Creek would also be removed and replaced with a new two-lane structure. The existing ground and horizontal alignment precludes relocating a new structure and roadway along side the existing bridge. The new bridge and roadway construction at Beaver Creek would meet a

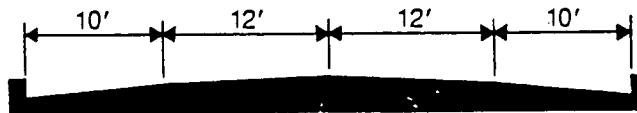
ROADWAY TYPICAL SECTIONS MARYLAND ROUTE 68



BRIDGE TYPICAL SECTION MARYLAND ROUTE 68



**ALTERNATE 2 - BEAVER CREEK
ALTERNATE 3 OPTIONS B AND C
ANTIETAM AND BEAVER CREEKS**



**BRIDGE
ALT. 6**

NOTE: The dimensions shown are for the purpose of determining cost estimates and environmental impacts, and are subject to change during the final design phase.

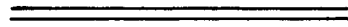





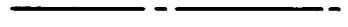

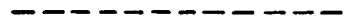
MARYLAND 68 BRIDGES
Washington County

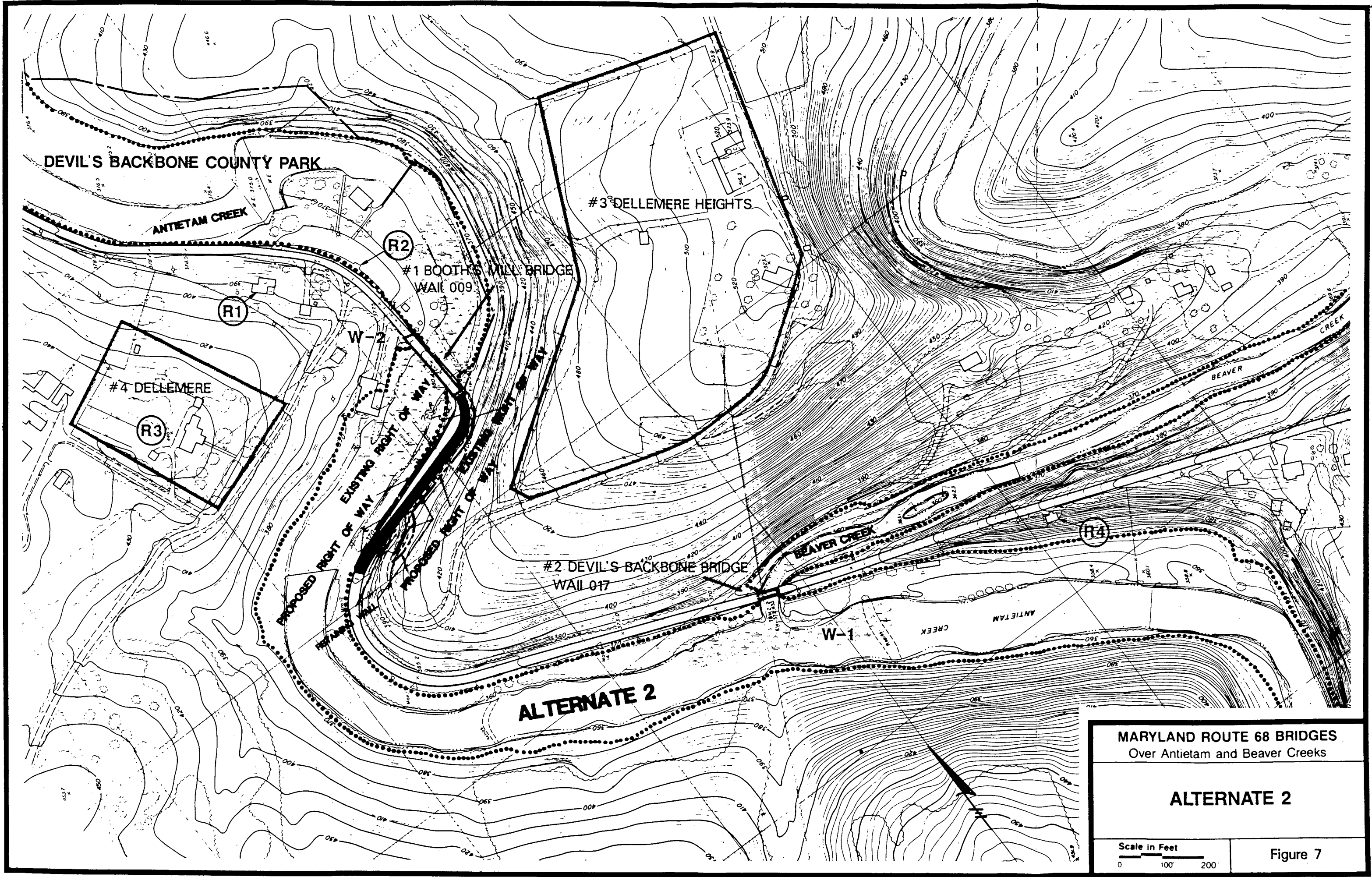
TYPICAL SECTIONS

NOT TO SCALE

Figure 6

Legend for Alternate Mapping

-  Existing Roadway
-  Proposed Roadway
-  Existing R-O-W
-  Proposed R-O-W
-  Wetlands
-  Floodplain
-  Park Boundary
-  Air and Noise Sensitive Receptors
-  #9 Dellemere — Historic Sites



MARYLAND ROUTE 68 BRIDGES
Over Antietam and Beaver Creeks

ALTERNATE 2

Scale in Feet
0 100' 200'

Figure 7

50 MPH design speed. Approach roadway slope protection would be necessary to minimize intrusions into the Antietam and Beaver Creek's floodplain.

Alternate 2, as studied for this document, differs slightly from the Alternate 2 presented at the Alternates Public Meeting. The primary distinction is the disposition of the Beaver Creek (Devil's Backbone) bridge. The original alternate proposed rehabilitating both bridges while the new Alternate 2 proposes rehabilitating the Antietam Creek (Booth's Mill) bridge and removing the Beaver Creek (Devil's Backbone) bridge. Beaver Creek bridge is a narrow two-lane bridge. It is being demolished because of its poor site distance and poor vertical geometry. Also, replacing it would destroy its historical integrity.

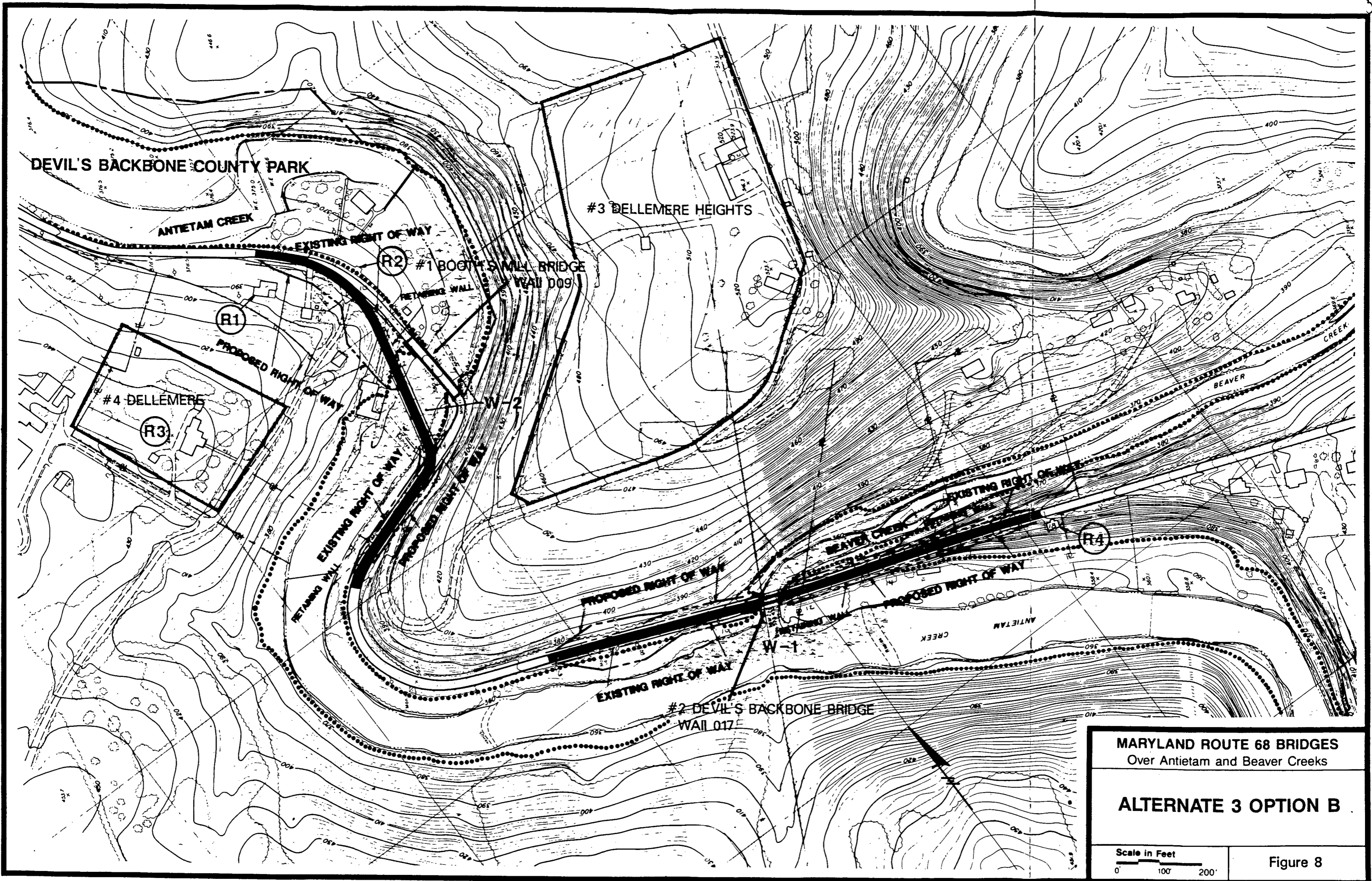
2. Alternate 3-Option B (Figure 8)

This alternate proposes the construction of a new two-lane bridge over Antietam Creek, relocating Maryland Route 68 traffic immediately downstream from the existing structure. Only slight improvement to the east end roadway radius would result, (compared to the existing bridge) with no noticeable improvement to existing design speed (15 MPH). The existing bridge over the filled-in stream bed and the existing bridge over Antietam Creek would not be touched, however it will be closed to traffic and fenced off. The bridge over Beaver Creek (Devil's Backbone Bridge) would be removed and replaced with a new two-lane structure, as in Alternate 2. This alternate would require a detour of traffic during construction. Approach roadway slope protection would be necessary to minimize intrusions into the Antietam and Beaver Creek's floodplain.

Coordination with Washington County Parks and Recreation Department has been initiated to determine if they would accept the Booth's Mill Bridge as a donation for possible inclusion in "Devil's Backbone Park."

3. Alternate 3-Option C (Figure 9)

This alternate is similar to Alternate 3-Option B with the exception of the curvature of the horizontal alignment of the new bridge over Antietam Creek (30 MPH). The bridge over Beaver Creek (Devil's Backbone Bridge) would be removed and replaced with a new two-lane structure, as in Alternate 2. This alternate would require a detour of traffic during construction. This alternate was developed subsequent to the Alternates Public Meeting.

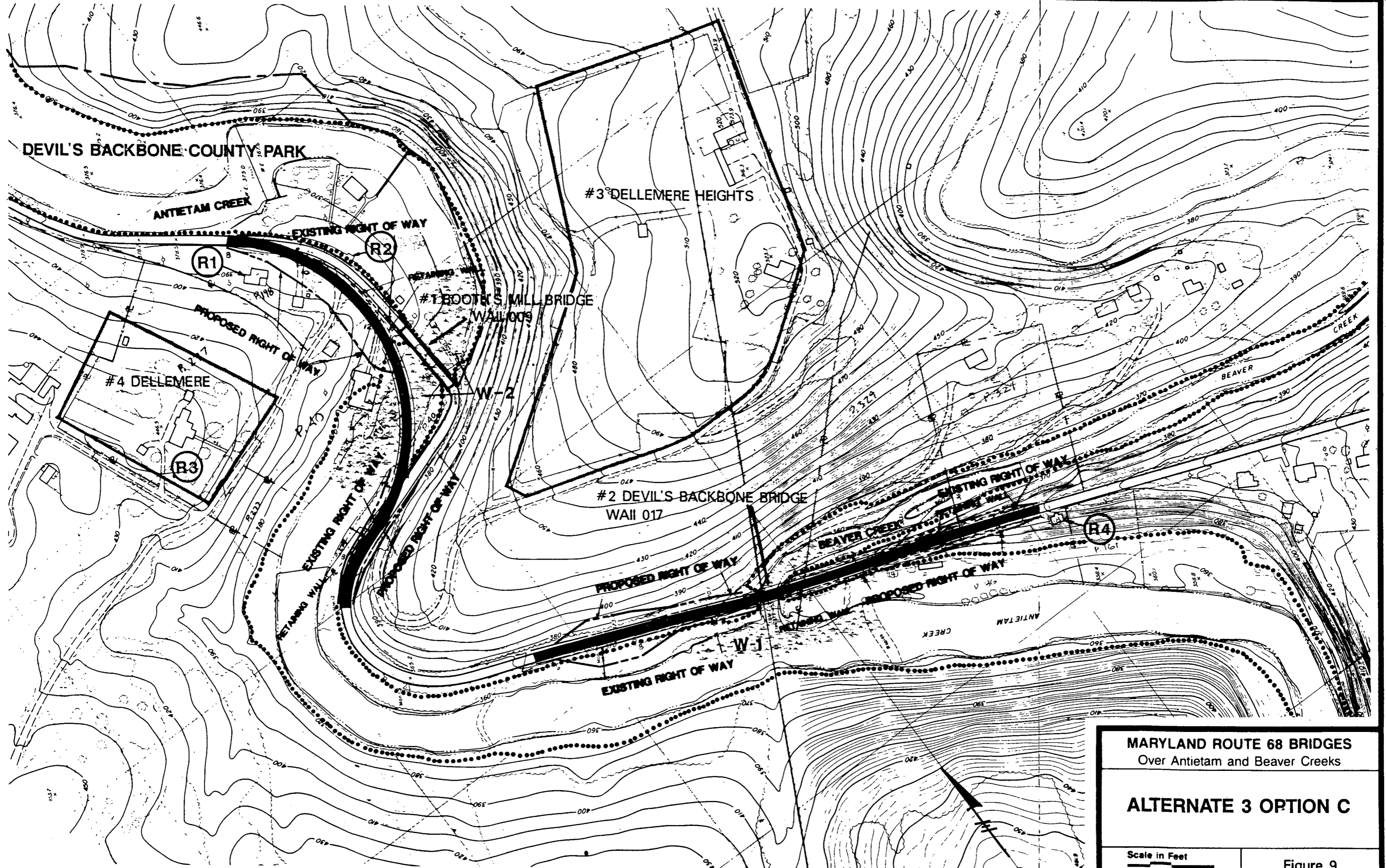


MARYLAND ROUTE 68 BRIDGES
Over Antietam and Beaver Creeks

ALTERNATE 3 OPTION B

Scale in Feet
0' 100' 200'

Figure 8

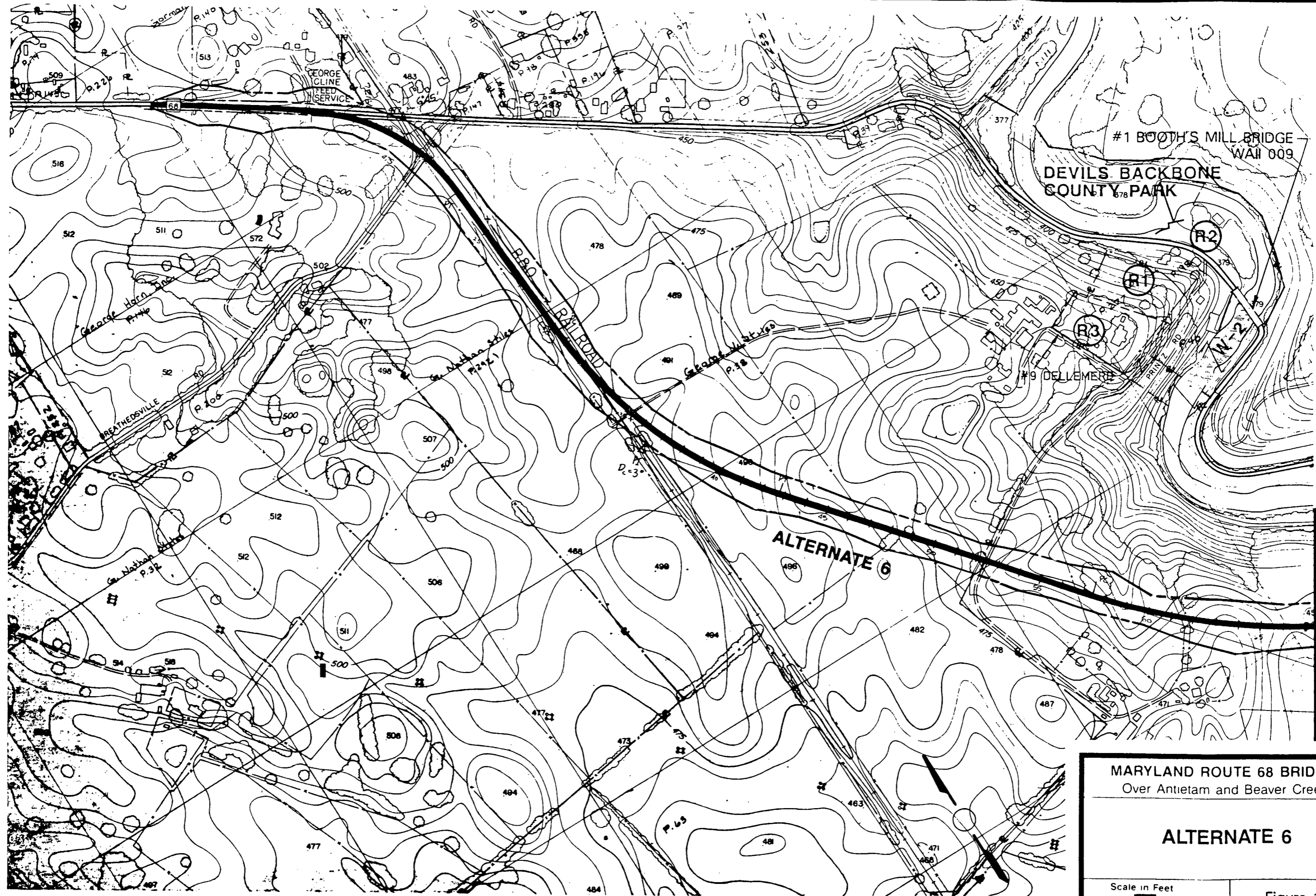


MARYLAND ROUTE 68 BRIDGES
Over Antietam and Beaver Creeks

ALTERNATE 3 OPTION C

Scale in Feet
0 100 200

Figure 9



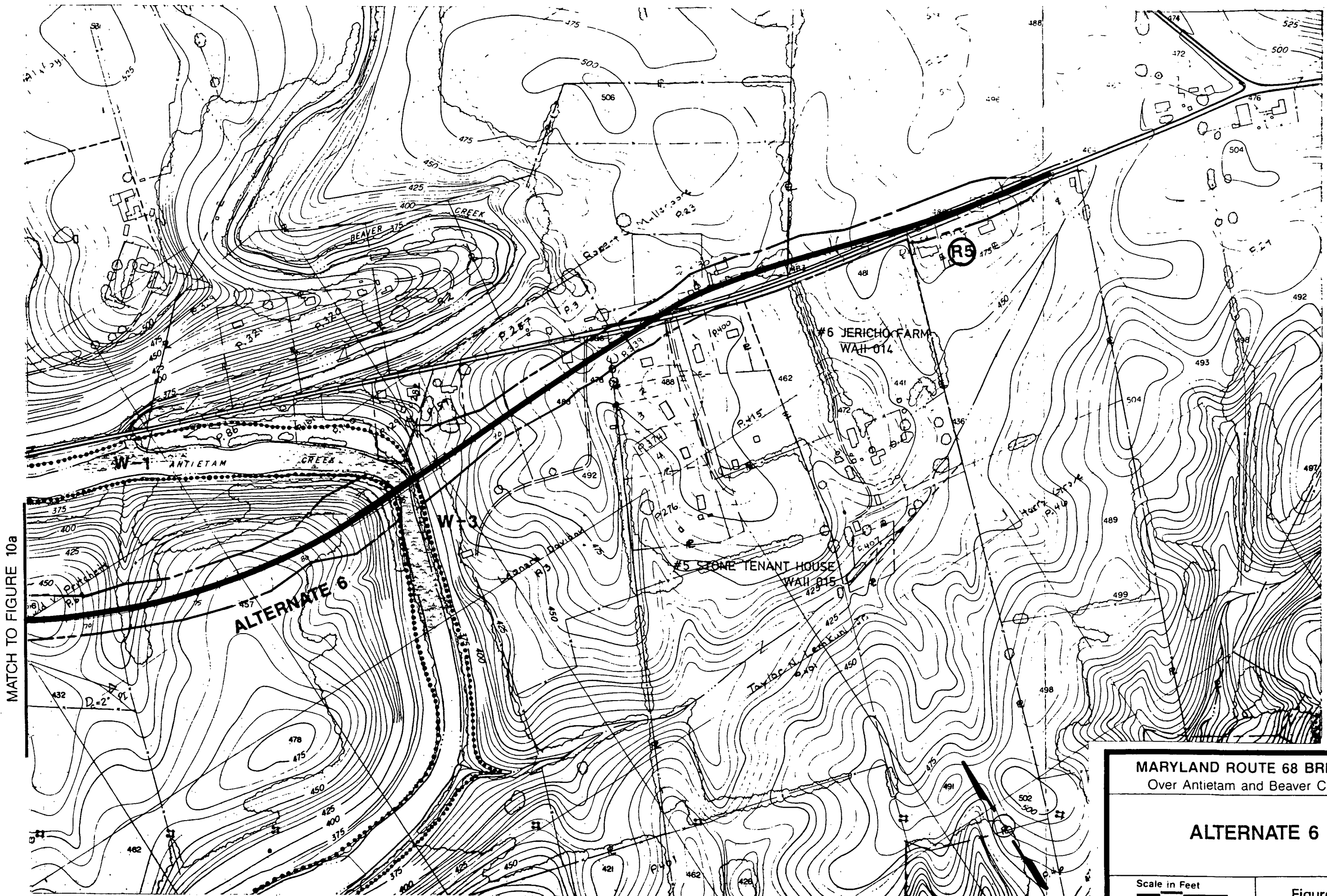
MATCH TO FIGURE 10b

MARYLAND ROUTE 68 BRIDGES
Over Antietam and Beaver Creeks

ALTERNATE 6

Scale in Feet
0 200 400

Figure 10a



MATCH TO FIGURE 10a

ALTERNATE 6

MARYLAND ROUTE 68 BRIDGES
Over Antietam and Beaver Creeks

ALTERNATE 6

Scale in Feet
0 200 400

Figure 10b

Coordination with Washington County Parks and Recreation Department has been initiated to determine if they would accept the Booth's Mill Bridge as a donation for possible inclusion in "Devil's Backbone Park."

4. Alternate 6 (Figure 10)

This alternate proposes a major relocation of the existing Maryland Route 68 alignment to the south. It begins approximately 1,000 feet west of Breathesdsville Road and ends approximately 1,400 feet west of Barnes Road, a distance of 2.1 miles. It was developed for a 50 MPH design speed with no access control. Two options are under consideration for providing local access.

Alternate 6, Option 1

Option 1 proposes that the existing bridge at Antietam Creek would be closed and fenced off. The existing bridge at Beaver Creek would be removed and replaced with a new two-lane structure plus associated approach roadways. This would permit access to be maintained to residences whose entrances are located between the two existing bridges. Beaver Creek bridge is a narrow two-lane bridge. It is being demolished because of its poor site distance and poor vertical geometry. Also, replacing it would destroy its historical integrity.

Alternate 6, Option 2

Option 2 would maintain access to the residences by maintaining the existing bridge over Antietam Creek after major rehabilitation. It proposes the removal of the existing road bed and the hand-tooled removal of the fill while photographing the walls, then numbering and removing the stone walls layer by layer. Drains would then be installed, arch walls sealed and the interior filled with new granular material while replacing the stone of the walls layer by layer. For this option the existing bridge over Beaver Creek would be closed and fenced off. No detour of traffic during construction would be necessary for this alternate.

IV ENVIRONMENTAL IMPACTS

IV. ENVIRONMENTAL IMPACTS

A. Social

1. Residential and Commercial Relocations

Alternate 2 and Alternate 3 - Options B and C, as well as Alternate 1 (No-Build) would not result in the displacement of any residences or businesses. Alternate 6, however, would require the acquisition of one (1) residential dwelling. No farm relocations would be required, although right-of-way from one (1) farm would be purchased.

The area affected by the proposed improvements includes agricultural and residential land uses. Income levels of residents are believed to be in the middle income range.

No significant change in population density or distribution is expected to occur as a result of any of the alternates and property values are expected to approximate current levels.

In addition to the relocations for Alternate 6, approximately forty five (45) acres of right-of-way would be required from other properties to accommodate the new alignment. Much of this acreage is woodland and farmland. Under Alternate 3 - Options B and C, only minimal amounts of additional right-of-way would be required for the proposed shifting of the bridge over Antietam Creek (Booth's Mill Bridge). Alternates 1 and 2 would not result in any property acquisition.

TITLE VI STATEMENT

It is the policy of the Maryland State Highway Administration to ensure compliance with the provisions of Title VI of the Civil Rights Act of 1964, and related civil rights laws and regulations which prohibit discrimination on the grounds of race, color, sex, national origin, age, religion, physical or mental handicap in all State Highway Administration program projects funded in whole or in part by the Federal Highway Administration. The State Highway Administration will not discriminate in highway planning, highway design, highway construction, the acquisition of right-of-way, or the provision of relocation advisory assistance. This policy has been incorporated into all levels of the highway planning process in order that proper consideration may be given to the social, economic, and environmental effects of all highway projects. Alleged discriminatory actions should be addressed to the Equal Opportunity Section of the Maryland State Highway Administration for investigation.

2. Effects on Minority, Elderly and Handicapped Individuals

No minority, elderly, or handicapped individuals would be affected by the proposed action.

3. Disruptions of Neighborhoods and Communities

Residential development in the study area is evidenced by rural densities and small clusters. None of the proposed alternates would disrupt the integrity and cohesion of existing communities or residential clusters or cause changes to patterns of social interaction and behavior.

4. Access to Community Facilities and Services

Under the No-Build option (Alternate 1), the structural condition of the bridges over Antietam and Beaver Creeks will continue to deteriorate. This could lead to the imposition of additional weight restrictions and ultimately one or both bridges could be closed to all traffic. Maryland Route 68 is one of the few east-west State highways in the region south of Hagerstown.

Additional weight restrictions would interfere with the passage of most truck traffic and many large farm vehicles which utilize this road. Vehicles serving community facilities and services (i.e., supply trucks) and vehicles used by community facilities and services (i.e., fire trucks) would be prohibited from utilizing this portion of Maryland Route 68. They would have to utilize more lengthy alternative routes along narrow, winding, country roads to reach their destinations. Emergency vehicles could have several minutes added to their response times.

The closure of one or both of these bridges would restrict all access on Maryland Route 68 at these points. This would result in changes in circulation habits and travel patterns of all motorists, time delays, increased travel costs, impeded access to and from community facilities and services (i.e., Devil's Backbone County Park), and increased response times for police, fire, and rescue vehicles. Detour routes would be utilized on Maryland Route 34, Alternate U.S. Route 40, and county roads. If located at or near a dead ended road, the county park may also experience visibility, security, and dumping problems. These problems may also be experienced by adjacent property owners.

Implementation of Alternate 2 and Alternate 3 - Options B and C would require temporary detours of Maryland Route 68 traffic during construction activities on both bridges. These temporary closures would have short-term

effects on access to facilities and services, travel times and costs, emergency vehicle response times, and travel patterns. Maryland Route 68 does not carry heavy volumes of traffic and does not serve heavily populated areas; however, detours during construction may be viewed as a temporary hardship on local residents and the traveling public.

Replacement of these bridges will also ensure that fire equipment can safely use these stream crossings.

Alternate 6 will not result in any significant detours although some minor temporary disruptions in traffic may occur during construction of the new alignment's tie-in with existing Maryland Route 68 and at its intersection with several local access roadways. Devil's Backbone Park may experience some loss of visibility and security problems if through access is relocated away from the park. Adequate signage and additional police patrols may be necessary in the event a new alignment to the south is built.

B. Economic Impacts

None of the proposed alternates would result in any business or farm relocations although Alternate 6 does bisect several farming areas currently under cultivation, requiring thirty six (36) acres for right-of-way purposes. This required acreage is from larger farming operations. Purchase of this right-of-way would not preclude further successful operation of these farms. Farmers would continue to have access to parcels on both sides of the new alignment.

Alternate 2 and Alternate 3 - Options B and C do not directly affect any farmland. Temporary detours during bridge construction may have short-term effects on the distribution of farm equipment, goods, and services; however, other local roads are available in the area.

Several other businesses served by Maryland Route 68 would likewise not be adversely affected by either construction of a new alignment or temporary detours during bridge construction. No businesses are located along Maryland Route 68 that would be bypassed by construction of a new alignment. Replacement of these bridges would also allow heavier trucks that serve towns and facilities in the area to safely use Maryland Route 68.

C. Land Use Impacts

Alternate 2 and Alternate 3 - Options B and C are consistent with the Comprehensive Plan for Washington County (1981), which identifies Maryland

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Route 68 as a minor arterial highway, essentially along its existing alignment. Thus, neither Alternates 1 or 6 appear to be in conformance with this master plan. The Comprehensive Plan also indicates that the study area will retain its existing character as a rural-residential/agricultural area. Any additional growth will be minor in nature consistent with existing uses. Alternate 2 and Alternate 3 - Options B and C are compatible with these goals and objectives and would not result in additional growth pressure in the study area.

D. Historic and Cultural Impacts

The State Historic Preservation Officer (SHPO), in correspondence dated October 19, 1987, has determined that the Dellemere property will be adversely impacted by Alternate 3, Options B and C. Maryland Historical Trust believes the new Antietam Creek (Booth's Mill) bridge proposed under these alternates would be visible from the Dellemere site and would compromise the historic setting. These alternates also impact, although not adversely, Dellemere Heights. The removal of Devil's Backbone bridge under Alternate 3, Options B and C would adversely impact the bridge. Booth's Mill bridge would not be adversely impacted by these alternates provided a rehabilitation of this bridge is performed in accordance with "Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings," (Revised 1983).

Determination of effects for Alternates 2 and 6 have been received. See letter dated June 27, 1988 in Correspondence Section. Alternate 2 will have an adverse effect on the Devil's Backbone bridge and a conditional no adverse effect on the Booth's Mill bridge. Alternate 6-Option 1 will have no effect on the Booth's Mill bridge and an adverse effect on the Devil's Backbone bridge. Alternate 6-Option 2 will have a conditional no adverse effect on the Booth's Mill bridge and no effect on Devil's Backbone bridge. Alternate 6 has been determined to have no adverse impact to Jericho Farm.

Prehistoric archeological sites, 18WA426, 18WA427, 18WA428, 18AW429 would be impacted by Alternate 6. Concurrence with these findings will be requested from SHPO.

E. Natural Environment

1. Geology, Topography and Soils

The proposed build alternates 3b and 3c and Alternate 6 will affect prime farmland or unique farmland soils. The project is being coordinated with the U.S. Soil Conservation Service in accordance with the national Farmland Policy Protection Act.

2. Water Resources

a. Floodplains

Alternate 6 will encroach on the 100-year floodplain associated with Antietam Creek. Approximately 0.015 acres of floodplain will be required to be filled.

In accordance with the requirements of FHPM 6-7-3-2, and Executive Order 11988, each encroachment was evaluated to determine its significance. A significant encroachment would involve one of the following:

- a significant potential for interruption or termination of a transportation facility needed for emergency vehicles or which provides a community's only evacuation route;
- a significant risk; or
- a significant adverse impact on natural and beneficial floodplain values.

None of the proposed floodplain encroachments would significantly affect upstream water-surface elevations or storage capacity.

The use of standard hydraulic design techniques for all waterway openings would incorporate structures to limit upstream flood level increases and approximate existing downstream flow rates. Use of state-of-the-art sediment and erosion control techniques and stormwater management controls will ensure that none of the encroachments would result in risks or impacts to the beneficial floodplain values or provide direct or indirect support to further development within the floodplain.

Detailed studies are being conducted to determine if the encroachments are significant and if a floodplain finding would be required.

b. Surface Water

The proposed build alternate for the relocation of Maryland Route 68 will require the crossing of Antietam Creek. Detailed studies are being conducted for the feasibility of a bridge structure across the entire creek.

The increase of impervious surfaces resulting from the proposed improvements would produce a proportionate increase in the amount of roadway

runoff carrying vehicle generated pollutants (i.e., oil, coolants, brake lining, rubber, etc.). Stormwater runoff would be managed under the DNR Stormwater Management Regulations. These regulations will require stormwater management practices in the following order of preference:

- on-site infiltration;
- flow attenuation by open vegetated swales and natural depressions;
- stormwater retention structures; and
- stormwater detention structures.

It has been demonstrated that these measures can significantly reduce pollutant loads and control runoff.

Final design for the proposed improvements will include plans for grading, sediment and erosion control, and stormwater management, in accordance with State and Federal laws and regulations. They will require review and approval by the Maryland DNR, Water Resources Administration and the Department of the Environment.

3. Ecology

a. Terrestrial Habitat

Alternate 6 would require approximately .78 acres of woodland. There should be no significant adverse impact to the vegetation or wildlife of the terrestrial ecosystem from the proposed construction.

There will be no loss of woodlands from Alternate 3 Options B and C, therefore, no significant adverse impact to the vegetation or wildlife of the terrestrial ecosystem should result from the proposed project.

b. Aquatic Habitat

All of the build alternates will impact wetlands. Alternate 2 impacts .01 acres of wetland Site 1 and .07 acres of wetland Site 2. Alternate 3-Option B will not impact wetland Site 1 on Beaver Creek, but will impact .13 acres of Site 2 at Antietam Creek (see Alternates Mapping). Alternate 3-Option C will not impact wetland Site 1 on Beaver Creek, but will impact .16 acres of Site 2 on Antietam Creek. Alternate 6 affects approximately 0.010 acres of wetlands at Site 3 (see Alternate Mapping). Avoidance of all non-tidal wetlands was not feasible because of the drainage pattern of the watershed. The DNR Fisheries Administration favors Alternate 6 because it does not adversely impact Beaver Creek which is Natural Trout Waters.

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A U.S. Army Corps of Engineers Permit and a Department of Natural Resources Water Resources Administration Waterway Construction Permit will be required for the improvements to Maryland Route 68.

c. Rare, Threatened or Endangered Species

There will be no effects to any federally listed threatened or endangered plant or animal species from the proposed construction.

F. Noise Quality Impacts

1. Noise Abatement Criteria

The Federal Highway Administration (FHWA) has recommended noise abatement criteria for Federal-aid highway projects. These criteria are expressed in terms of the equivalent steady-state sound level, which in an hour contains the same acoustic energy as the time-varying sound level during the same period [$L_{eq}(h)$]; the sound level is A-weighted and measured in decibels (dBA). For most common land uses such as schools, residences, churches, libraries, hospitals, and parks, the exterior $L_{eq}(h)$ criteria is 67 dBA.

The determination of environmental noise impacts is based on the relationship between the predicted noise levels, the established noise abatement criteria, and the ambient noise levels in the project area. The applicable standard is the Federal Highway Administration's noise abatement criteria/activity relationship (see Table 3 in Section I) published in 23 CFR, 771.

The evaluation was completed in accordance with the State Highway Administration's ~~Type I noise program. The Type I program provides~~ evaluation of noise mitigation for major construction or reconstruction highway projects. The activity category utilized for the project analysis is Category B which includes the sensitive land use activities throughout the corridor, i.e., residences, schools, parks, etc.

The factors considered under the Type I program when determining whether mitigation is required and whether the mitigation is reasonable and feasible are:

- Whether Federal Highway Administration Noise Abatement Criteria are approached or exceeded - 67 dBA for residential areas
- Whether a substantial (10 dBA or more) increase over ambient levels would occur

- Whether a substantial noise increase would result from the highway project - minimum of 5-dBA increase - of Build over No-Build levels in the design year of the project
- Whether a feasible method is available to reduce the noise
- Whether the noise mitigation is cost effective for those receptors that are impacted - approximately \$40,000 per residence
- Whether the mitigation is acceptable to affected property owners
- Whether funds are available

When design year L_{eq} noise levels are projected to exceed the abatement criteria (Table 3) or increase ambient conditions by 10 dBA or more, noise abatement measures (in general, noise barriers) are considered to minimize impacts. Consideration is based on the size of the impacted area (number of structures, spatial distribution of structures, etc.), the predominant activities carried on within the area, the visual impact of the control measure, practicality of construction, feasibility, and reasonableness. A reasonableness determination includes the effects on noise levels of the project when comparing the build alternate to the no-build alternate.

2. Predicted Noise Levels

Prediction Methodology. Noise levels are predicted for all five receptors using the computerized version of the FHWA Highway Traffic Noise Prediction Model, STAMINA 2.0 (with OPTIMA). The FHWA model utilizes experimentally and statistically determined, speed-dependent, reference noise emission levels for three classes of vehicles (auto, medium duty trucks, and heavy duty trucks) and applies a series of adjustments to each reference level to arrive at the composite predicted A-weighted sound level from all three vehicle classes. The adjustments account for variations in traffic flow, for varying distances from the roadway, for finite length roadways, and for barriers between the roadway and the receptors.

Traffic Data. The traffic data utilized in this analysis were provided by the Bureau of Highway Statistics (June 1986) of the Maryland SHA. This analysis assumed a Level of Service of "C" which is a conservative assumption.

Prediction Results. Table 4 presents the results of the noise prediction modeling for each receptor. The predicted $L_{eq}(h)$ noise levels shown are for the design year (2015). Also shown in the land use category at

each receptor, the existing $L_{eq}(h)$ noise level, and the applicable FHWA noise abatement criteria.

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TABLE 4

PREDICTED NOISE LEVELS AT IDENTIFIED NOISE SENSITIVE AREAS
(In dBA, $L_{eq}(h)$)

<u>Site No.</u>	<u>Land Use</u>	<u>Ambient Level</u>	<u>Predicted Design Year (2015)</u>		
			<u>No-Build</u>	<u>Alt. 3 (B&C)</u>	<u>Alt. 6</u>
1	Residential	54	59	59	59
2	Residential	59	65	65	65
3	Residential	44	46	47	46
4	Residential	59	65	65	65
5	Residential	53	58	58	61

Note: FHWA $L_{eq}(h)$ noise abatement criteria of 67 dBA applies to all receptors.

3. Noise Impact Assessment

Determination of Impact. The determination of environmental impact is based upon the relationship between the predicted noise levels, the established noise abatement criteria, and the ambient noise levels at each receptor. The amount of change in predicted noise levels over ambient noise levels is also evaluated to determine if a substantial increase (greater than 10 dBA) is predicted to take place.

No-Build Alternate. Under the No-Build Alternate, no major improvements will be made to existing roadways other than those expected to be programmed by the design year. As shown in Table 4, no sites are predicted to exceed 67 dBA under this alternate.

Alternate 3 (Options B and C). As shown in Table 4, no sites are predicted to exceed 67 dBA under this alternate and no sites are expected to experience a substantial increase in noise levels over the ambient levels or over the no-build alternate levels.

Alternate 6. As shown in Table 4, no sites are predicted to exceed 67 dBA under this alternate and no sites are expected to experience a substantial increase in noise levels over ambient levels or over the no-build alternate levels.

4. Noise Mitigation Measures

Since no sites will exceed the noise level abatement criteria of 67 dBA and no sites will experience a substantial increase in noise levels, noise mitigation measures will not be required for this project.

5. Construction Impacts

As with all major construction projects, areas around the construction site are likely to experience varied periods and degrees of impact from noise. This type of project will probably employ the following pieces of equipment that will likely be sources of construction noise:

- Bulldozers and earthmovers
- Graders
- Front-end loaders
- Dump and other heavy trucks
- Compressors

In order to minimize construction noise impacts, construction activity will not occur after 7:00 p.m. or before 7:00 a.m. on weekdays, and will be

limited to weekdays only. Therefore, the critical time during which evening outdoor recreation and nocturnal rest periods occur, construction noise will not be present. Limiting construction activity to non-critical time periods will minimize noise impact on surrounding areas. Maintenance of construction equipment should be regular and thorough to minimize noise emissions because of inefficiently tuned equipment, poorly lubricated moving parts, poor or ineffective muffling systems, etc.

G. Air Quality Impacts

1. Analysis Objectives, Methodology, and Results

The objective of the air quality analysis is to compare the carbon monoxide (CO) concentration estimated to result from traffic and configurations and volumes of each alternate with the S/NAAQS. The NAAQS and SAAQS are identical for CO: 35 PPM (parts per million) for the maximum 1-hour period and 9 ppm for the maximum consecutive 8-hour period.

A microscale CO pollution diffusion analysis was conducted using the third generation California Line Source Dispersion Model, CALINE 3. This microscale analysis consisted of projections of 1-hour and 8-hour CO concentrations at sensitive receptor sites under worst case meteorological conditions for the No-Build and Build Alternates for the design year (2015) and the estimated year of completion (1995).

a. Analysis Inputs

A summary of analysis inputs is given below.

Background CO Concentrations

In order to calculate the total concentration of CO that occurs at a particular receptor site during worst-case meteorological conditions, the background CO concentrations are considered in addition to the levels directly attributable to the facility under consideration. The background concentration resulting from area-wide emissions from both mobile and stationary sources was assumed to be the following:

	<u>CO, ppm</u>	
	<u>1-hour</u>	<u>8-hour</u>
1995	2.0	1.0
2015	2.0	1.0

Traffic Data, Emission Factors, and Speeds

The appropriate traffic data, as supplied by the Bureau of Highway Statistics (June 1986) of the Maryland SHA, were utilized.

The composite emission factors used in the analysis were derived from the EPA's Mobile Source Emission Factor, and were calculated using the EPA MOBILE 3 computer program. An ambient air temperature of 20 degrees Fahrenheit was assumed in calculating the emission factors for the 1-hour and 35 degrees Fahrenheit was used for the 8-hour analysis in order to approximate worst-case results for each analysis case.

Average vehicle operating speeds used in calculating emission factors were based on the capacity of each roadway link considered, the applicable speed limit, and external influences on speed through the link from immediately adjacent links. Average operating speeds ranged from 25 MPH to 35 MPH depending upon the roadways and alternate under consideration.

Meteorological Data

Worst-case meteorological conditions of 1 meter/second for wind speed and atmospheric stability Class F were assumed for the 1-hour calculations. For the 8-hour calculations, a combination of Class D and Class F stability classes and 1 meter/second and 2 meters/second wind speeds were used as appropriate.

The wind directions utilized as part of the analysis were rotated to maximize CO concentrations at each receptor location. Wind directions varied for each receptor and were selected through a systematic scan of CO concentrations associated with different wind angles.

b. Sensitive Receptors

Site selection of sensitive receptors were made on the basis of proximity to the roadway, type of adjacent land use, and changes in traffic patterns on the roadway network. Five residential receptor sites were chosen for this analysis. The receptor site locations were verified during study area visits by the analysis team. The receptor sites are shown on the Alternate Mapping and listed in Table 2 in Section I.

c. Results of Microscale Analysis

The results of the calculations of CO concentrations at each of the sensitive receptor sites for the No-Build, Alternate 3 (Option B and Option C), and Alternate 6 are shown on Table 5. The values shown consist of the

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predicted CO concentrations attributable to traffic on various roadway links plus projected background levels. The projected CO concentrations vary between alternates depending on receptor locations as a function of the roadway locations and traffic patterns associated with each alternate. A comparison of the values in Table 5 with the S/NAAQS shows that no violations will occur for the No-Build or Build Alternates 3 and 6 in 1995 or 2015 for the 1-hour or 8-hour concentrations of CO.

The maximum 1-hour concentration associated with Alternates 3 and 6 is 9 percent of the 1-hour S/NAAQS, while the maximum 8-hour concentration is 13 percent of the 8-hour S/NAAQS. The concentrations remain well below the S/NAAQS for all alternates under consideration.

In conclusion, the No-Build Alternate and Build Alternates 3 and 6 will not result in violations of the 1-hour or 8-hour S/NAAQS in 1995 or 2015.

2. Construction Impacts

The construction phase of the proposed project has the potential to impact the ambient air quality through such means as fugitive dust from grading operations and materials handling. The SHA has addressed this possibility by establishing Standard Specifications for Construction and Materials, which specifies procedures to be followed by contractors involved in state work.

The Maryland Air Management Administration was consulted to determine the adequacy of the specifications in terms of satisfying the requirements of the Regulations Governing the Control of Air Pollution in the State of Maryland. The Maryland Air Management Administration found that the specifications are consistent with the requirements of these regulations. Therefore, during the construction period, all appropriate measures (Code of Maryland Regulations 10.18.06.03D) will be taken to minimize the impact on the air quality of the area.

3. Conformity with Regional Air Quality Planning

The project is in an area where the State Implementation Plan does not contain any transportation control measures. Therefore, with the exception of the construction procedures, the conformity requirements of 23 CFR 770 do not apply to this project.

TABLE 5

CO CONCENTRATIONS * AT EACH RECEPTOR SITE, PPM

REC. #	1995				2015			
	NO-BUILD		BUILD**		NO-BUILD		BUILD**	
	1-HR	8-HR	1-HR	8-HR	1-HR	8-HR	1-HR	8-HR
1	2.2	1.1	2.2	1.1	2.6	1.1	2.6	1.1
2	2.4	1.1	2.4	1.1	3.3	1.2	3.3	1.2
3	2.0	1.0	2.0	1.0	2.0	1.0	2.0	1.0
4	2.4	1.1	2.4	1.1	3.3	1.2	3.3	1.2
5	2.2	1.1	2.2	1.1	2.6	1.1	2.6	1.1

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*Including Background Concentrations

SAAQA/NAAQS = 35 PPM (1-HR)

** Results are the same for both Options B and C of Alternate 3 and for Alternate 6

SAAQS/NAAQS = 9 PPM (8-HR)

Background Concentrations (1995-2015):

1-HR = 2.0 PPM

8-HR = 1.0 PPM

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4. Agency Coordination

Copies of the Technical Reports are being distributed to U.S. Environmental Protection Agency and the Maryland Air Management Administration.

V SECTION 4(f) EVALUATION

V. SECTION 4(f) EVALUATION

A. Introduction

Section 4(f) of the Department of Transportation Act states that land from a significant publicly owned park, recreation area, or wildlife and waterfowl refuge, or any significant historic site, will not be used for a federally funded transportation project unless two conditions are met:

- There is no feasible and prudent alternative to the use of the land from the property; and
- The proposed action includes all possible planning to minimize harm to the property.

Devil's Backbone Bridge over Beaver Creek

B. Description of 4(f) Property

The bridge at Beaver Creek, known as Devil's Backbone bridge, is owned and maintained by the State Highway Administration (SHA). The bridge carries traffic over Maryland Route 68 between the communities of Breathedsville and Boonsboro. (See Figure 1 - location map, and Figure 2 - study area map). The highway is connected to the east with Maryland Route 40A (Old National Pike) and to the west at Lappans, Maryland with Maryland Route 65 (Sharpsburg Pike). The bridge has been determined by the Maryland Historical Trust (MHT) to be a significant architectural example of the 19th century stone arch bridge construction particular to the Cumberland Valley region. While stone bridges were fairly common to the region, they were less frequent elsewhere.

Historically, their commercial and transportation values are attributable to the fact that they were constructed near grist mills, which were themselves important centers of trade and social gatherings in the area at that time. Stone bridges were a major architectural trend in the area between 1820-1850, and Devil's Backbone bridge was built in 1824, at the early stages of this era. An additional aspect of the significance of stone bridges is their durability over the past 150 years. This trait led the state to require stone bridges for the construction of the National Pike. The Devil's Backbone bridge presently accommodates greater traffic volumes and heavier weights than its design intended.

Devil's Backbone bridge crosses Beaver Creek at its confluence with Antietam Creek, approximately one-quarter mile east of Booth's Mill bridge, another stone structure of the same era, along Maryland Route 68. The

setting for the bridge is a scenic stream valley highlighted by freshwater marshes and woodlands along the creek beds. A steeply rising, often exposed and unique bedrock formation, "Devil's Backbone," is present. A number of historic homes and accompanying 19-century buildings are also scattered throughout the area.

The bridge has been reviewed numerous times by MHT and SHA regarding its eligibility as a National Register Historic Site. Although the structure no longer reasonably resembles the original span, MHT indicates that while the bridge has been altered more than 50 percent, this work has been maintenance related and is not considered sufficient to detract from its historical significance. Devil's Backbone bridge is one of six remaining historic stone bridges in Washington County, and one of approximately thirty historic stone bridges left in Maryland.

The Devil's Backbone bridge is a single arch stone structure, approximately 160 feet long from wingwall to wingwall. It is constructed of mortared, coarse cut limestone and earth (see Photo 1). The bridge has a high center, and the walls which rise to a peak over the arch are lined with carefully cut stone. Its parapets are topped with a concreted ledge or coping (see Photo 2). The height of the bridge is approximately 20 to 23 feet above the creek bed. Roadway width on the bridge is 17 feet, thereby restricting modern traffic to one lane (see Photo 3).

The bridge has undergone some structural support and maintenance repairs by SHA. For stability, in 1979 a girder support, along with a 6-8" PVC drainage pipe, was added to the northeast sidewall (see photo 2). The maintenance work has included extensive cement plastering of the sidewall caps, wingwalls, undersides of the span and outside portions of the arches. Repointing of the remaining areas of exposed cut stone is also extensive.

Maryland Route 68 is designed for 40 ton vehicular traffic. The present condition of the bridge requires the highway in this area be restricted to 13.5 tons for weight-bearing safety reasons. Thus, the weight carrying capacity of the roadway is reduced by nearly two-thirds because of the present condition of the bridge. It is not known how much truck traffic is rerouted due to this restriction. The second substandard condition is the poor vertical and horizontal geometry of the bridge (See photo 4).

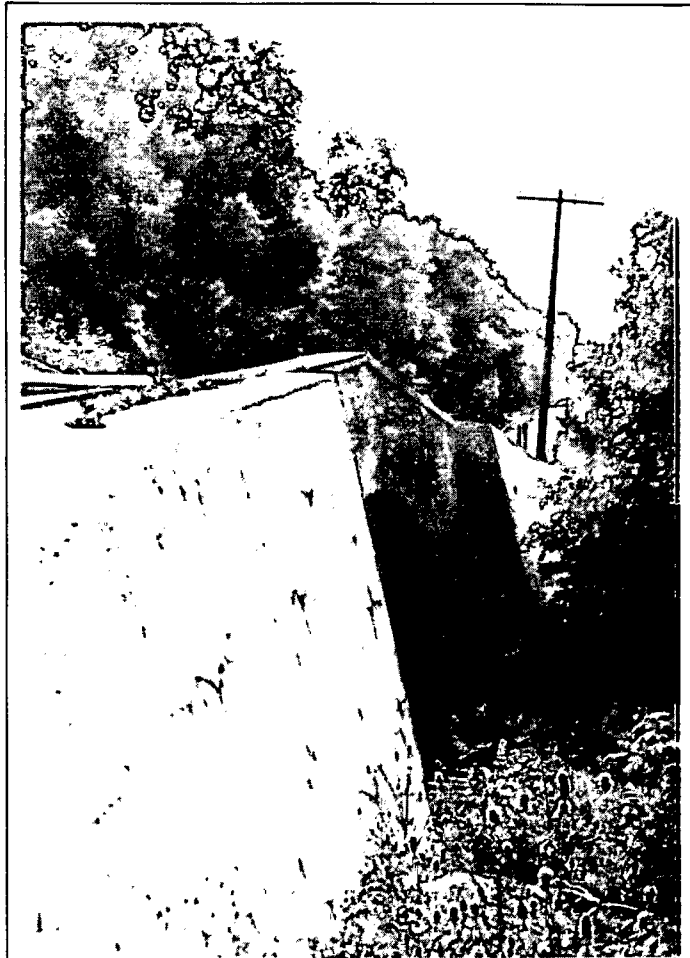


PHOTO 1—Devil's Backbone Bridge at Beaver Creek: A single arch stone structure made of mortared limestone and earth.



PHOTO 2—Devil's Backbone Bridge: Built of carefully cut stone; concreted coping. Note girder support at left.

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C. Description of Impacts

The historic integrity of Devil's Backbone bridge has been somewhat impaired through maintenance and repairs, primarily by extensive use of cement plastering over much of the structure's sidewall and under-the-arch surface. Four build alternates are being studied for Devil's Backbone bridge (MD RT 68 bridge over Beaver Creek). These alternates are described in Section III of this report. Their impacts to this historic structure are summarized below.

Summary of Impacts to Devil's Backbone Bridge by Build Alternates

- Alternate 2 - Remove and replace: Adverse Effect.
- Alternate 3, Options B and C - Remove and replace: Adverse Effect.
- Alternate 6-Option 1 - Remove: Adverse Effect.
- Alternate 6-Option 2 (avoidance alternate) - Closed to traffic: No Effect.

D. Avoidance Alternates

Alternate 1

Under the "No-Build" avoidance alternate the bridge would continue to receive normal maintenance and emergency safety repair work. This alternate would provide for no appreciable extension of the life of the bridge, and the current hazardous traffic conditions on and around it would not be addressed, e.g., the restricted weight load and one-lane traffic, and the reduced speed limit due to impaired vertical and horizontal geometry.

It is possible that future accidents would not only be injurious to human life but that environmental contamination could also occur from accidents involving substances hazardous to flora and fauna in the Beaver Creek and Antietam Creek watersheds.

Although the capacity is not expected to be exceeded through the year 2015, continued deterioration of the bridge can be expected until it will have to be closed to vehicular traffic and replaced, or traffic permanently rerouted. It is uncertain how long the bridge can continue to be an integral part of this highway system. The existing ground and horizontal alignment precludes locating a new structure and roadway alongside the existing bridge.

Alternate 6-Option 2 (see Figure 10)

Beaver Creek would not be affected at all and much of the construction would take place out of the valley floodplain. No traffic

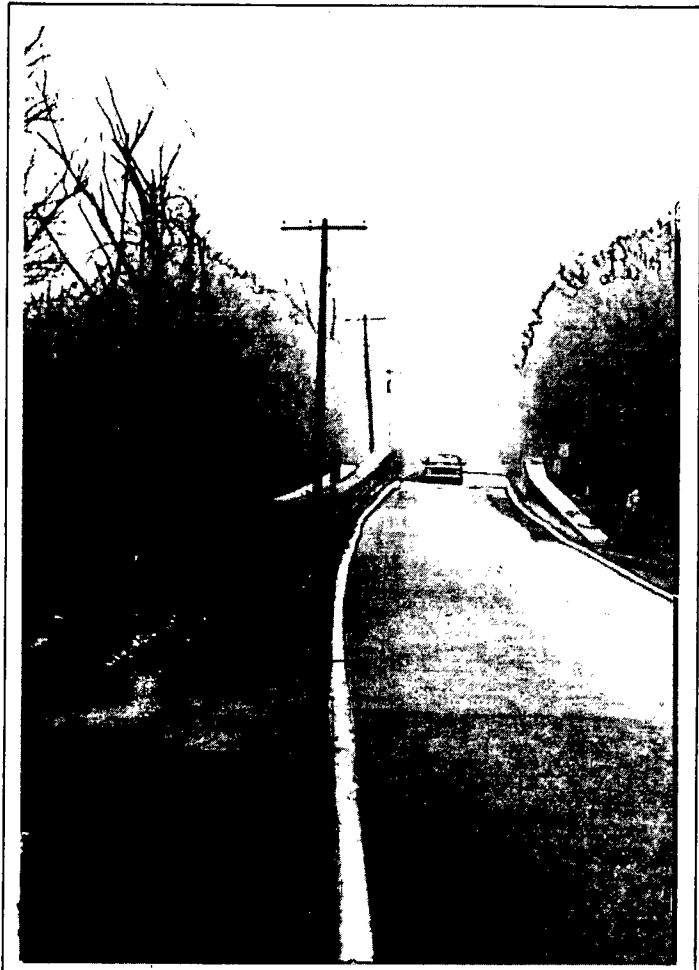


PHOTO 3—Devil's Backbone Bridge: One-lane traffic (17' width).



PHOTO 4—Devil's Backbone Bridge: Poor road width couple with poor visual sighting.

detours in the vicinity of the bridge would be necessary during construction of this alternate.

However, the \$6 million estimated construction cost makes Alternate 6 the most expensive alternate being considered. Also, existing Maryland Route 68 has poor vertical and horizontal geometry for its entire roadway length. Implementation of Alternate 6 would correct only the design deficiencies in the study corridor and would therefore be inconsistent with the remaining portions of the roadway. Alternate 6 would stand out from the rest of Maryland Route 68 as the only improvement to the severe design deficiencies located throughout the corridor. Its implementation could mislead motorists as to the type of highway to expect beyond its brief limits.

E. Mitigation

Under Alternate 2, Alternate 3, Options B and C, and Alternate 6, Option 1, the bridge would be demolished and replaced by a new span at the same location. The mitigation procedure in each case would be to prepare a record of the bridge in accordance with HAER standards and with the participation of the MHT prior to dismantling the bridge.

The Maryland Historical Trust considers Alternate 6-Option 2, to be a viable mitigation alternate. In a letter to SHA dated June 27, 1988, the SHPO takes the position that this option best preserves the historic structures and scenic values of this portion of Antietam Creek.

F. Coordination

SHA has coordinated with the Maryland Historical Trust regarding the proposed action.

This 4(f) Evaluation will be circulated to all appropriate agencies.

Booth's Mill Bridge over Antietam Creek

A. Description of 4(f) Property

The bridge at Antietam Creek, known as Booth's Mill bridge, is owned and maintained by the State Highway Administration (SHA). Its historic boundary extends only to the limits of the structure. It carries traffic over Maryland Route 68, also known as Lappans Road, between the communities of Breathedsville and Boonsboro. (See Figures 1 - location map and Figure 2 - study area map). The highway is connected to the east with Maryland Route 40A (Old National Pike) and to the west at Lappans, Maryland with Maryland

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Route 65 (Sharpsburg Pike). The bridge was determined by the Maryland Historical Trust (MHT) to be a significant architectural example of the 19th century stone arch bridge construction particular to the Cumberland Valley region. While stone bridges were fairly common to the region, they were less frequent elsewhere.

Historically, their commercial and transportation values are attributable to the fact that they were constructed near grist mills, which were themselves important centers of trade and social gatherings in the area at that time. Stone bridges were a major architectural trend in this area between 1820-1850, and Booth's Mill bridge was built in 1833. An additional aspect of the significance of the stone bridge is its durability over the past 150 years. This durability led the State to require stone bridges for the construction of the National Pike. The bridge now accommodates greater traffic volumes and weights than it was designed for.

Booth's Mill bridge spans Antietam Creek at the site of Washington County's Devil's Backbone County Park. The location is also marked by two small runs of rapids occurring upstream and downstream a short distance from the bridge. The setting for the bridge is a scenic stream valley highlighted by freshwater marshes and woodlands along the creek bed. A steeply rising, and unique geological formation is present, the "Devil's Backbone." A second stone bridge of the same era, Devil's Backbone bridge, crosses Beaver Creek at its confluence with Antietam Creek, several hundred yards to the south and was discussed previously in this document. A number of historic, 19-century homes and outbuildings also dot the area.

Booth's Mill bridge is National Register Eligible. It is one of six remaining historic stone bridges in Washington County, and one of approximately thirty historic stone bridges left in Maryland.

The Booth's Mill bridge is a mortared, course cut limestone and earthen structure approximately 215 feet long from east wingwall to west wingwall (See Photo 1). The large arches are lined with carefully cut stone. The width of the bridge allows for a 19 foot, two-lane paved roadway (See Photo 2). This is significantly less than a desirable width. The bridge consists of three spans with its walls rising to a peak over the center arch. The parapets are topped with a concrete coping. The estimated height of the

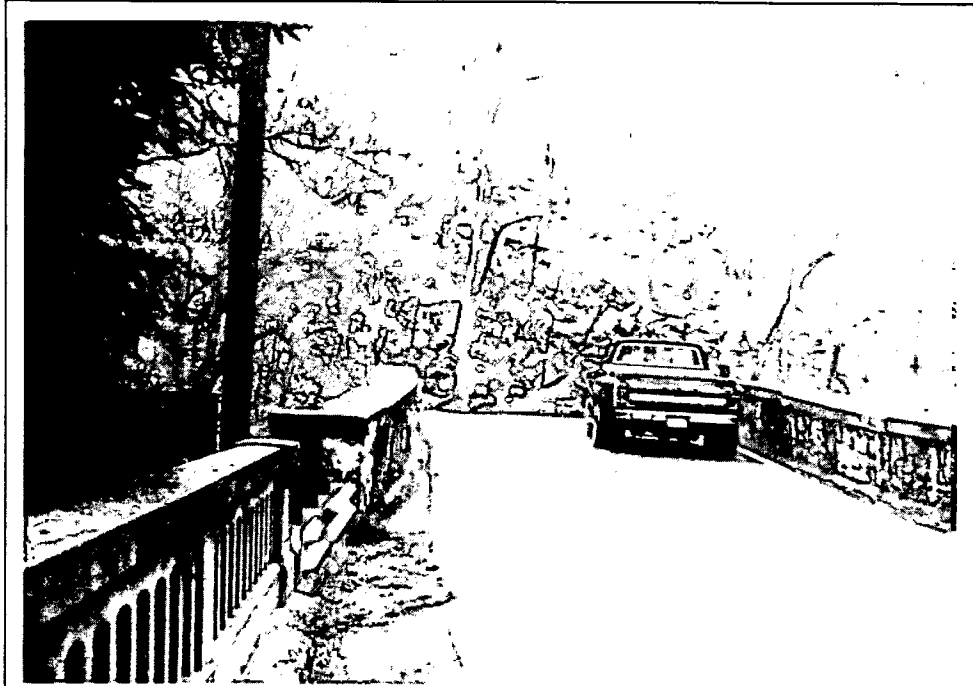


PHOTO 1—Booth's Mill Bridge: 3 arch span with sharp curve at right (15 mph).

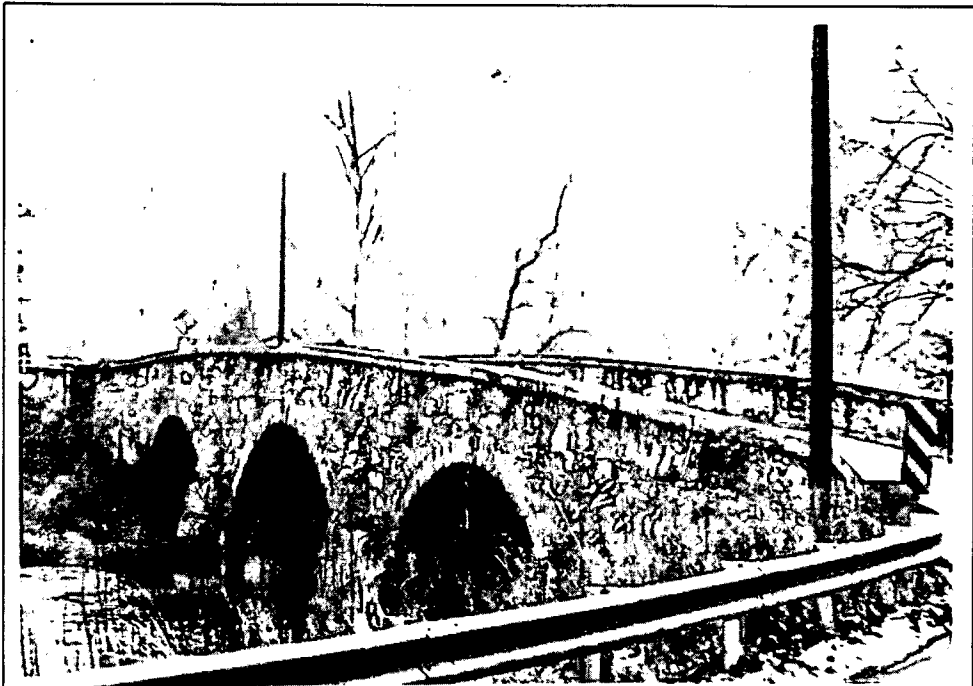


PHOTO 2—Booth's Mill Bridge: 19' roadway width accomodates 2 lanes.

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bridge measured from the top of the center span coping to creek bed is 30 to 35 feet (See Photo 3).

For some years the bridge has been in poor condition. Several large bulges in the stone sidewalls and wingwalls are present; two on the south side of the bridge and one on the north (See Photo 4). The southeast wingwall of the bridge was repaired with stone buttress work some years ago. Within the past year the SHA has placed three-tiers of wire and rock gabions to fortify the southwest bridge wingwall. This has temporarily stabilized the weakening wall. Much of the wingwalls, the sidewall caps and the entire underside of the spans are cement plastered. Evidence of repointing of the bridge's mortar work is extensive wherever the cut stone remains exposed.

B. Description of Impacts

Booth's Mill bridge has been maintained thus far without significantly impairing the historic integrity of the structure. There are no plans to demolish Booth's Mill bridge. Three build alternates are being studied to address the substandard conditions of Booth's Mill bridge. These alternates were described in Section III of this report. Their impacts to Booth's Mill bridge are summarized in the table below.

Summary of Impacts to Booth's Mill Bridge by Build Alternates

- Alternate 2 - Major Rehabilitation; continued use: Conditional No Adverse Effect if rehabilitated in accordance with "Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings," (Revised 1983).
- Alternate 3, Options B and C - Closed to highway traffic; transfer ownership, rehabilitate, transfer maintenance responsibility to another agency, e.g., to Washington County Park Commission: Conditional No Adverse Effect if County accepts ownership and maintenance responsibility.
- Alternate 6-Option 1 - Closed to traffic: No Effect.
- Alternate 6-Option 2 - Rehabilitation: Conditional No Adverse Effect.
(avoidance alternate)

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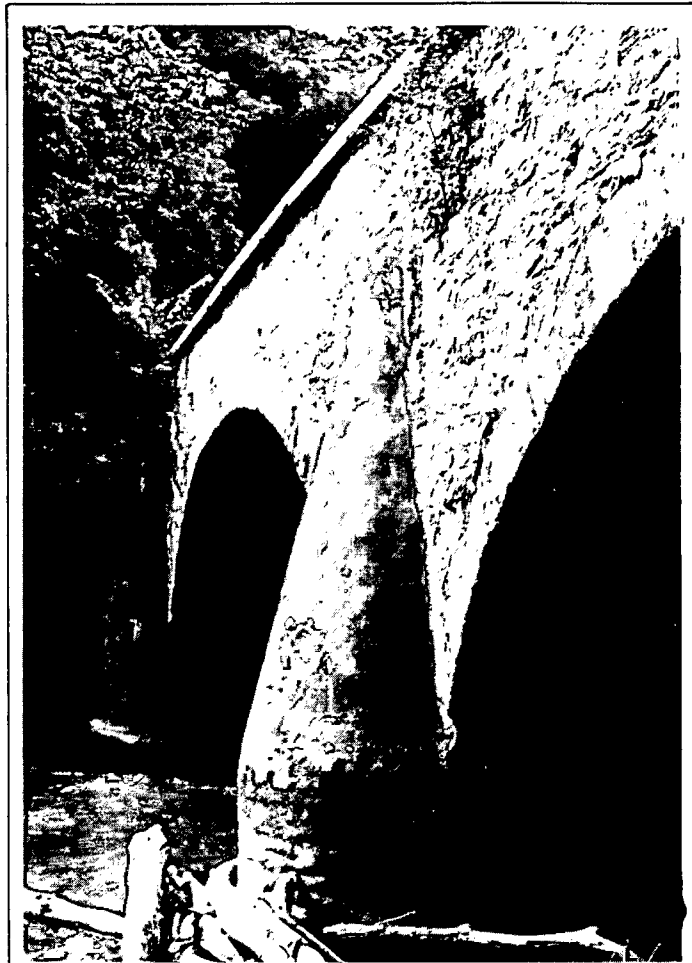


PHOTO 3—Booth's Mill Bridge: Detail of center arch and buttress.



PHOTO 4—Booth's Mill Run: Bulging sidewalls along northeast wingwall.

C. Avoidance Alternates

Consideration for the adverse impacts of the project on the Booth's Mill bridge and other historic sites led to the development of avoidance alternates including bridge rehabilitation, highway realignments through the Devil's Backbone, and relocation of Maryland Route 68 outside the Devil's Backbone Valley.

Alternate 1

Under the "No-Build" avoidance alternate the bridge would continue to receive normal maintenance and emergency safety repair work. This alternate would provide for no appreciable extension of the life of the bridge, and the current hazardous traffic conditions on and around it would not be addressed, e.g., the restricted weight load and narrow lanes, and the reduced speed limit due to impaired vertical and horizontal geometry.

Although the capacity is not expected to be exceeded through the year 2015, continued deterioration of the bridge can be expected until it will have to be closed to vehicular traffic and replaced, or traffic permanently rerouted. It is uncertain how long the bridge can continue to be an integral part of this highway system.

Alternate 3, Options B and C

These options provide for the construction of a new, two-lane bridge situated immediately downstream from the existing structure. The existing bridge would be left intact, restricted to pedestrian traffic, or closed off to public access. The difference between options B and C is that Option C provides a curved bridge with improved horizontal geometry.

Construction of a new bridge next to the Booth's Mill bridge would negatively impact the scenic nature of the bridge setting because it would be visible from the historic structure. Preliminary coordination with the Washington County Parks and Recreation Department indicates that they would accept the Booth's Mill bridge as a donation for possible inclusion in "Devil's Backbone Park" if the State Highway Administration rehabilitates it to standards.

A detour of traffic would be required during construction. Two detour routes using state highways could be considered. The first is to the south: From Maryland Route 68 at Maryland Route 65, travel south on Maryland Route 65 to Maryland Route 34, then east on Maryland Route 34 to Alternate U.S.

De

Route 40 then north on Alternate U.S. Route 40 to Maryland Route 68. This route would add approximately nine miles to the distance between Maryland Route 68 and Alternate U.S. Route 40 via Maryland Route 68. The second detour would also add approximately nine miles to the through trip along Maryland Route 68. This route goes north along Maryland Route 65 to I-70, east on I-70 to U.S. Route 40, east on U.S. Route 40 to Maryland Route 66, west on Maryland Route 66 to Alternate U.S. Route 40, then north on Alternate U.S. Route 40 to Maryland Route 68.

For the worst case, if one wanted to travel from just west of the Antietam Creek (Booth's Mill) bridge to just east of the Beaver Creek (Devil's Backbone) bridge, the detour routes would involve a distance of approximately 19 miles.

Alternate 6-Option 2 (See Figure 10)

See page III-5 for a detailed description of this alternate.

Alternate 6 is estimated to cost \$6 million, making it the most expensive of the alternates studied. Existing Maryland Route 68 has poor vertical and horizontal geometry for its entire roadway length. Implementation of Alternate 6 would correct only the design deficiencies in the study corridor and would stand out from the rest of Maryland Route 68 as the only improvement to the severe design deficiencies located throughout the corridor. Its implementation could mislead motorists as to the type of highway to expect beyond its brief limits. This improvement is far more extensive than is required to replace the geometrically deficient bridges.

D. Mitigation

Under Alternate 2 the bridge would undergo complete rehabilitation. However, rehabilitation cannot resolve the horizontal geometry problem nor reduce the safety hazards associated with the existing structure, including the problems with the curve at the east end of the structure. MHT would approve rehabilitation conditional on the work being conducted in accordance with NHPA Standards.

Alternate 3, Options B and C proposes a new structure on new location. SHA could turn ownership of the structure over to the County Park Commission or another agency, if acceptable. MHT has indicated a conditional no adverse effect for these alternates if the county will take ownership and accept responsibility for both the preservation and maintenance of the bridge.

The Maryland Historical Trust considers Alternate 6-Option 1 to be a viable mitigating alternate. In a letter to SHA dated June 27, 1988, the State Historic Preservation Officer (SHPO) takes the position that this option best preserves the historic structures and scenic values of this portion of Antietam Creek.

E. Coordination

The State Historic Preservation Officer has determined that all of the build alternates being studied, will have no adverse impacts on Booth's Mill bridge, if all conditions are met.

Assumption of title and responsibility for maintaining Booth's Mill bridge by Washington County has been discussed preliminarily by SHA and the County Parks Administration. The county is willing to take ownership of the structure providing the bridge is in a good state of repair upon transfer of the title.

This 4(f) Evaluation will be circulated to all appropriate agencies.

VICOMMENTS & COORDINATION

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TORREY C. BROWN, M.D.
SECRETARY

JOHN R. GRIFFIN
DEPUTY SECRETARY

STATE OF MARYLAND
DEPARTMENT OF NATURAL RESOURCES
TIDEWATER ADMINISTRATION
TAWES STATE OFFICE BUILDING
ANNAPOLIS 21401

April 1, 1986

MEMORANDUM

RECEIVED
APR 2 1986

WASHINGTON COUNTY DEPT. OF NATURAL RESOURCES
WATER RESOURCES ADMINISTRATION
WATERSHED PERMITS

TO: Kirk Cover, Watershed Permits,
Water Resources Administration

FROM: Nick Carter,
Fisheries Division

SUBJECT: Proposed replacement of the Rt. 68 over Beaver
and Antietam Creeks in Washington County.

The proposed bridge replacements on Rt. 68 involves two streams that are currently managed trout fishing areas. Beaver Creek is a Class III Natural Trout Water, and is stocked in the vicinity of the bridge due for replacement. The other area is Antietam Creek, a Class IV Recreational Trout Water, that is stocked near Devils Backbone Park (not every year) and downstream at the Antietam Battlefield.

I have been aware for some time that Rt. 68 between these two bridges is quite hazardous. Both bridges have blind approaches that contribute to accidents and make recreational usage of the area difficult. Keeping this in mind, please consider my comments regarding the alternatives detailed in your notes.

Alternative 1: No build. While this alternative always presents an appealing option, in this case it may not be practical. The current road is used by farm and commercial, as well as, private vehicles. The potential for an accident that could result in a fuel or chemical spill that could reach the Antietam or Beaver Creek causes me to reject this alternative.

Alternatives 2 and 3: Rehabilitation. This option may not be practical. The Beaver Creek bridge has been rehabilitated within the last four years, but it remains a hazard due to having one lane and a blind approach caused by the high arch in the bridge. The Antietam Creek bridge may not be restorable due to poor condition. (Is restoration possible if the bridge is placed on the Historic Register?) In any event, any bridge rehabilitation would leave the existing poor road alignment as a continuing hazard.

Alternatives 4 and 5: Realignment. The difference between the alignments is primarily in the design speeds of each option. Since the Beaver Creek bridge is so close to the Antietam Creek, the impact to Beaver Creek would not be great. There would, however, be major impact on the Antietam at the site of both bridge replacements. With the Beaver Creek bridge being so close to the Antietam, sediment control would be difficult. In addition, deep cuts on the slopes surrounding each of these alignments would create additional sediment and erosion problems. These cuts to allow the realignment of the road appear to fall within the 100 year flood plain. The impact of any of these realignments on the flood plain needs to be considered. The close proximity of alternatives 4 and 5 to the Antietam would create additional erosion problems if flooding occurs during the road realignment. In any event, the potential for damage to existing and stocked fish populations by sediment remains high with options 4 and 5.

Alternative 6: Southern Relocation. (I tend to favor this alternative.) The southern relocation offers several advantages. First, a majority of the work would be out of the 100 year flood plain. Second, a greater area exists to accomplish sediment control. Third, it would result in no immediate impact on Beaver Creek and only one impact on Antietam Creek. A disadvantage to this alternate is that additional impervious surface would be added to the watershed.

Alternate 7: Northern Relocation. The northern relocation would impact both Antietam Creek and Beaver Creek. This route would disturb a particularly scenic and productive section of Beaver Creek. The stream possesses good trout habitat and food, and has been very productive with fingerlings stocked on a put-grow-and take basis. The area is also stocked with adult trout in the spring. No reproduction has been observed in this section, due to a lack of suitable spawning substrate, but it is still

capable of supporting a fishable trout resource. The northern relocation would create additional impervious surfaces in the watershed. If the runoff from the new road were to flow into Beaver Creek, then degradation of the stream could occur.

This alternate would impact the Antietam above Devils Backbone Park. Fish are sometimes stocked in the park when the County requests them. The Devils Backbone Park experiences flooding during heavy rains, and I would be concerned about the impact of a new bridge above the park on the flood intensity downstream. Also, runoff of road chemicals into the Antietam would be possible from both bridges. Any impact on Beaver Creek will, ultimately, impact the Antietam as well. In accepting the southern relocation over the northern route, I am choosing the option that I believe would have the least overall impact on both streams.

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TORREY C. BROWN, M.D.
SECRETARY
JOHN R. GRIFFIN
DEPUTY SECRETARY



JAMES W. PECK
DIRECTOR

STATE OF MARYLAND
DEPARTMENT OF NATURAL RESOURCES
WATER RESOURCES ADMINISTRATION
TAWES STATE OFFICE BUILDING
ANNAPOLIS, MARYLAND 21401

May 5, 1986

PROJECT
DEVELOPMENT
DIVISION
MAY 6 3 13 PM '86

Ms. Cynthia Simpson
Project Planning Section
State Highway Administration
707 N. Calvert Street
Baltimore, MD 21202

Re: WRA No. 86-PP-0923
SHA No. W-818-101-671
MD 68 Bridges at Antietam
and Beaver Creeks

Dear Ms. Simpson:

Please find attached a copy of comments provided by the Tidewater Administration's Fisheries Division regarding the proposed project referenced above. Should you have any questions regarding this information, please contact me at (301) 269-2265.

Sincerely,

M. Q. Taherian, Project Engineer
Waterway Permits Division

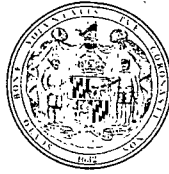
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Attachment

cc: Nick Carter, Tidewater Administration

VI-4

Telephone: (301) 269-2265



STATE OF MARYLAND
DEPARTMENT OF NATURAL RESOURCES
TIDEWATER ADMINISTRATION
TAWES STATE OFFICE BUILDING
ANNAPOLIS 21401

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PROJECT
DEVELOPMENT
DIVISION
APR 16 7 31 AM '86

April 10, 1986

MEMO TO: Cynthia Simpson
Jeff Mosley

Environmental Management Division, State Highway
Administration

FROM: Susan Rivers
Biologist, Inland Fisheries

SUBJECT: Rt 68 Relocation - Request for fish and macroinvertebrate
data.

As per your request, I am providing you with copies of fish
and macroinvertebrate data collected from Antiétam Creek and
Beaver Creek. The sample station data I am enclosing corresponds
as closely as possible to the area that may be impacted by the
relocation of Rt 68.

If you have any further questions, please contact me at the
number below.

(301) 791-4736
MARCOM 8-228-4736

VI-5

Antietam Creek Fish Species List

Sample Area - Devil's Backbone Park on Rt 68

Bluntnose minnow Pimephales Notatus (Rafinesque)
 Golden redhorse sucker Moxostoma erythrurum (Rafinesque)
 White sucker Catostomus commersoni (Lacepede)
 Common carp Cyprinus Carpio Linnaeus
 Northern hogsucker Hypentelium nigricans (Lesueur)
 Rainbow trout Salmo Gairdneri Richardson
 Yellow bullhead Rhinichthys cataractae (Lesueur)
 Longnose dace Rhinichthys cataractae (Valenciennes)
 Fallfish Semotilus corporalis (Mitchill)
 Goldfish Carassius auratus (Linnaeus)
 Common shiner Notropis Cornutus (Mitchill)
 Redbreast sunfish Lepomis auritus (Linnaeus)
 Pumpkinseed sunfish Lepomis gibbosus (Linnaeus)
 Blacknose dace Rhinichthys arratulus (Hermann)
 Shield darter Percina peltata (Stauffer)
 Greenside darter Etheostoma blennioides Rafinesque
 Satinfish shiner Notropis Analostanus (Girard)
 Spotfin shiner Notropis spilopterus (Cope)

Sample Area - Rt 34 in vicinity of Antietam Battlefield

Smallmouth bass Micropterus dolomieu Lacepede
 Rainbow trout Salmo Gairdneri Richardson
 Goldfish Carassius Auratus (Linnaeus)
 Rock bass Ambloplites Rupestris (Rafinesque)
 Redbreast sunfish Lepomis Auritus (Linnaeus)
 Northern hogsucker Hypentelium nigricans (Lesueur)
 White sucker Catostomus commersoni (Lacepede)
 Longnose dace Rhinichthys cataractae (Valenciennes)
 Greenside darter Etheostoma blennioides Rafinesque
 Spotfin shiner Notropis spilopterus (Cope)
 Blacknose dace Rhinichthys atratulus (Hermann)
 Stoneroller Campostoma anomalum (Rafinesque)
 Bluntnose minnow Pimephales notatus (Rafinesque)
 Spottail shiner Notropis hudsonius (Clinton)
 Tessellated darter Etheostoma olmstedii Storer
 Golden redhorse sucker Moxostoma erythrurum (Rafinesque)
 American eel Anquilla rostrata (Lesueur)

Beaver Creek Fish Species List
Mainstem Stations

Salmonidae	<u>Salvelinus fontinalis</u> (Mitchill) <u>Salmo trutta</u> Linnaeus <u>Salmo gairdneri</u> Richardson	Brook trout Brown trout Rainbow trout
Percidae	<u>Etheostoma blennioides</u> Rafinesque <u>Percina peltata</u> (Stauffer) <u>Etheostoma olmstedi</u> Rafinesque <u>Etheostoma flabellare</u> Rafinesque	Greenside darter Shield darter Tessellated darter Fantain darter
Catostomidae	<u>Catostomus commersoni</u> (Lacepede) <u>Hypentelium nigricans</u> (Lesueur) <u>Moxostoma macrolepidotum</u> (Lesueur)	White sucker Northern hogsucker Shorthead redhorse
Cottidae	<u>Cottus bairdi</u> Girard	Mottled sculpin
Centrarchidae	<u>Lepomis macrochirus</u> Rafinesque <u>Lepomis gibbosus</u> (Linnaeus) <u>Ambloplites rupestris</u> (Rafinesque) <u>Micropterus dolomieu</u> Lacepede	Bluegill Pumpkinseed Rock bass Smallmouth bass
Cyprinidae	<u>Campostoma anaomalum</u> Rafinesque <u>Rhinichthys atratulus</u> (Hermann) <u>Rhinichthys cataractae</u> (Valenciennes) <u>Exoglossum maxillingua</u> (Lesueur) <u>Semotilus atromaculatus</u> (Mitchill) <u>Nocomis micropogon</u> (Cope) <u>Semotilus corporalis</u> (Mitchill) <u>Clinostomis funduloides</u> Girard <u>Notropis cornutus</u> (Mitchill) <u>Pimephales notatus</u> (Rafinesque) <u>Cyprinus carpio</u> Linnaeus <u>Semotilus margarita</u> (Cope) <u>Notropis hudsonius</u> (Clinton) <u>Notropis spilopterus</u> (Cope)	Stoneroller Blacknose dace Longnose dace Cutlips minnow Creek chub River chub Fallfish Rosyside dace Common shiner Bluntnose minnow Carp Pearl dace Spottail shiner Spotfin shiner



Maryland Historical Trust

March 26, 1986

Ms. Cynthia Simpson
Manager, Environmental Management
Maryland Department of Transportation
State Highway Administration
PO Box 717
707 N. Calvert Street
Baltimore, Maryland 21203-0717

RE: Contract W818-101-671
MD RT. 68
At Antietam and Beaver Creeks
Bridges 21038 and 21039
P.D.M.S. No. 213108

Dear Ms. Simpson:

In response to your letters of August 20, 1985 and October 22, 1985 concerning the above-referenced project, our office concurs with SHA concerning the significance of the following properties:

Table with 3 columns: Property Name, ID Number, and Status. Rows include Keedy House, Barnes Rd. Bridge, Jerico Farm, Booths Mill Br., Stone Tenant House, Log House, Reeder Farm, Brick Residence, Chaney-Bowers House, Sided Log House, Printz Farm, and Concrete.

Our office disagrees, however, with the SHA's opinion concerning the eligibility of the following properties:

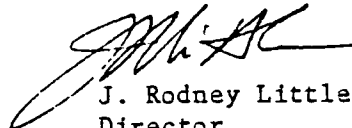
Ms. Cynthia Simpson
March 26, 1986
Page Two

1. Lakin House WA II 011 - is possibly NRE as an unusually well preserved example of a regional farmhouse type of the late 19th - early 20th century with several contemporaneous outbuildings.
2. Bridge MD 68 over Beaver Creek WA II 017 - is probably NR eligible as an 1824 stone arch bridge.
3. Delamere Heights - is possibly NR eligible as a well-preserved late Victorian rural building.
4. Delamere - is possibly NR eligible as a large Colonial Revival house unusual for a rural Maryland setting.

*Delamere Heights
3/25/86*

Please call Al Luckenbach at 269-2438 if you have any questions or comments.

Sincerely,



J. Rodney Little
Director
State Historic Preservation
Office

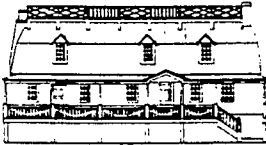
JRL/AHL/hec

cc: Mr. Douglass C. Reed
Mr. David T. Cottingham

*Project - Wisconsin
Preservation Study
Delamere, Delamere Hsts*

Handwritten: 96

MARYLAND HISTORICAL



TRUST

William Donald Schaefer
Governor

Jacqueline H. Rogers
Secretary, DHCD

October 19, 1987

PROJECT DEVELOPMENT DIVISION
OCT 28 2 10 PM '87

Ms. Cynthia Simpson, Chief
Environmental Management
Maryland Department of Transportation
State Highway Administration
P. O. Box 717
707 North Calvert Street
Baltimore, Maryland 21203-0717

RE: Contract No. W 818-101-671
Maryland Route 68 Bridges
over Antietam and Beaver
Creeks
PDMS No. 21302

Dear Ms. Simpson:

Thank you for your letters of April 21, September 18, and September 30, 1987 concerning the above-referenced project. Our office concurs with the historic boundaries proposed for the eligible properties involved in this project.

In terms of determinations of effect, our office considers the following to be appropriate:

	<u>Alt 2</u>	<u>Alt 3B/C</u>	<u>Alt 6</u>
Dellemere	NE	ADV*	NE
Dellemere Heights	NE	NAE*	NE
Booth's Mill Bridge	CNAE*	CNAE*	NE
Devil's B.B. Bridge	NE	ADV	NE
Jerico Farm	NE	NE	NAE

Those determinations marked with an asterisk represent disagreements with those proposed by SHA, those without represent concurrences.

In terms of Both's Mill Bridge our office considers the effect of Alternate 2 not to be adverse if conditioned on a rehabilitation done to Standards, and Alternate 3 not to be adverse if conditioned on assurances that the County will accept responsibility for the preservation and proper maintenance of the structure upon assuming title.

VI-10

Maryland

Vertical stamp: OCT 28 1987

99

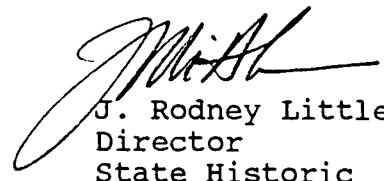
Ms. Cynthia Simpson, Chief
October 19, 1987
Page 2

Our office further considers that Alternate 3 would affect the environment of Dellemere Heights, but not adversely, and that it would so compromise the setting of Dellemere as to constitute an adverse effect. A new bridge would be clearly visible from this structure.

Finally, our office would like to strongly urge the adoption of Alternate 6. This alternate would preserve not only the historic structures, but also the pristine setting of this section of Antietam Creek. Your consideration in this matter would be deeply appreciated.

If you have any further questions or comments please contact Al Luckenbach at 974-4450.

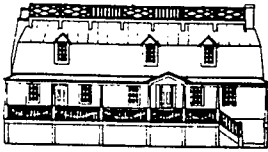
Sincerely,



J. Rodney Little
Director
State Historic
Preservation Officer

JRL/AHL/mmc
cc: Ms. Rita Suffness
Mr. Paul Wettlaufer
Mr. Douglass Reed
Mr. David Cottingham

MARYLAND HISTORICAL



TRUST

William Donald Schaefer
Governor

Jacqueline H. Rogers
Secretary, DHCD

June 27, 1988

Ms. Cynthia Simpson, Chief
Environmental Management
Maryland Department of Transportation
State Highway Administration
P.O. Box 717
707 North Calvert Street
Baltimore, Maryland 21203-0717

RE: Contract W818-101-671
MD 68 Bridges Over Antietam & Beaver Creek
PDMS No. 213108

Dear Ms. Simpson:

Thank you for your letter of June 15, 1988 concerning refined Alternates 2 and 6 for the subject project. Our office concurs with the following determination of effect:

(REFINED ALTERNATES)

	<u>2</u>	<u>6 op1</u>	<u>6 op2</u>
1) Lakin House -	NE	NE	NE
4) Keedy House -	NE	NE	NE
Barnes Road Bridge -	NE	NE	NE
6) Jerico Farm -	NE	NAE	NAE
9) Dellemere Heights -	NE	NE	NE
11) Dellemere -	NE	NE	NE
10) Booths Mill Bridge -	CNA	NE	CNA
8) Devils Backbone Bridge - *		*	NE

In the case of Devils Backbone bridge, we consider demolition as constituting an adverse effect. We strongly urge your adoption of Alternate 6 option 2 which avoids the need to destroy this early stone bridge. Your consideration would be greatly appreciated.

Sincerely,

William J. Little
W. Rodney Little
Director - State Historic
Preservation Officer
Maryland VI-12

JRL/lm

cc: Ms. Rita Suffness
Mr. Paul Wettlaufer
Mr. Douglas Peeples
Mr. David Cottingham
Department of Housing and Community Development
Shaw House, 21 State Circle, Annapolis, Maryland 21401 (301) 974-4450, 757-9000
Temporary Address: Arnold Village Professional Center, 1517 Ritchie Highway, Arnold, Maryland 21012



United States
Department of
Agriculture

Soil
Conservation
Service

101

April 8, 1988

Janet Parker
Environmental Scientist
Greenhorne & O'Mana, Inc.
9001 Edmonston Road
Greenbelt, MD 20770

Dear Ms. Parker:

Enclosed is the Farmland Conversion Impact Rating For Maryland
Route 68 Bridge replacement.

If I can be of further assistance, feel free to call me at
(301) 797-6820.

Cordially,

Randy L. Bachtel

RLB/mb

VI-13



The Soil Conservation Service
is an agency of the
United States Department of Agriculture



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U.S. Department of Agriculture

FARMLAND CONVERSION IMPACT RATING

PART I (To be completed by Federal Agency)		Date Of Land Evaluation Request March 21, 1988	
Name Of Project Maryland Route 68 Bridges		Federal Agency Involved Federal Highway Administration	
Proposed Land Use Replacement & Relocation of Bridges		County And State Washington, Maryland	
PART II (To be completed by SCS)		Date Request Received By SCS 3/25/88	

Does the site contain prime, unique, statewide or local important farmland? (If no, the FPPA does not apply - do not complete additional parts of this form).		Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Acres Irrigated None	Average Farm Size 152
Major Crop(s) corn, small grain, alfalfa	Farmable Land In Govt. Jurisdiction Acres: 179,000 % 61.9		Amount Of Farmland As Defined in FPPA Acres: 153,400 % 52.8		
Name Of Land Evaluation System Used Wash. Cty. Land Evaluation	Name Of Local Site Assessment System None		Date Land Evaluation Returned By SCS 4/8/88		

PART III (To be completed by Federal Agency)		Alternative Site Rating			
		Site A2	Site B3B	Site C3C	Site D
A. Total Acres To Be Converted Directly					
B. Total Acres To Be Converted Indirectly					
C. Total Acres In Site		-0-	4.44	4.59	

PART IV (To be completed by SCS) Land Evaluation Information				
A. Total Acres Prime And Unique Farmland			0.50	0.50
B. Total Acres Statewide And Local Important Farmland			--	--
C. Percentage Of Farmland In County Or Local Govt. Unit To Be Converted			.00000033	.00000033
D. Percentage Of Farmland In Govt. Jurisdiction With Same Or Higher Relative Value			83	83

PART V (To be completed by SCS) Land Evaluation Criterion Relative Value Of Farmland To Be Converted (Scale of 0 to 100 Points)			61	61
--	--	--	----	----

PART VI (To be completed by Federal Agency)		Maximum Points		
Site Assessment Criteria (These criteria are explained in 7 CFR 658.5(b))				
1. Area In Nonurban Use				
2. Perimeter In Nonurban Use				
3. Percent Of Site Being Farmed				
4. Protection Provided By State And Local Government				
5. Distance From Urban Builtup Area				
6. Distance To Urban Support Services				
7. Size Of Present Farm Unit Compared To Average				
8. Creation Of Nonfarmable Farmland				
9. Availability Of Farm Support Services				
10. On-Farm Investments				
11. Effects Of Conversion On Farm Support Services				
12. Compatibility With Existing Agricultural Use				
TOTAL SITE ASSESSMENT POINTS		160		

PART VII (To be completed by Federal Agency)				
Relative Value Of Farmland (From Part V)		100		
Total Site Assessment (From Part VI above or a local site assessment)		160		
TOTAL POINTS (Total of above 2 lines)		260		

Site Selected:	Date Of Selection:	Was A Local Site Assessment Used? Yes <input type="checkbox"/> No <input type="checkbox"/>
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Reason For Selection:

FARMLAND CONVERSION IMPACT RATING

PART I (To be completed by Federal Agency)		Date Of Land Evaluation Request June 20, 1988	
Name Of Project Maryland Route 68 Bridges		Federal Agency Involved Federal Highway Administration	
Proposed Land Use Replacement & relocation of bridges & roadway		County And State Washington, Maryland	
PART II (To be completed by SCS)		Date Request Received By SCS	

Does the site contain prime, unique, statewide or local important farmland? <i>(If no, the FPPA does not apply - do not complete additional parts of this form).</i>		Yes <input type="checkbox"/>	No <input type="checkbox"/>	Acres Irrigated	Average Farm Size
Major Crop(s)	Farmable Land In Govt. Jurisdiction Acres: _____ %			Amount Of Farmland As Defined in FPPA Acres: _____ %	
Name Of Land Evaluation System Used	Name Of Local Site Assessment System			Date Land Evaluation Returned By SCS	

PART III (To be completed by Federal Agency)		Alternative Site Rating			
		Site A	Site B	Site C	Site D
A. Total Acres To Be Converted Directly					
B. Total Acres To Be Converted Indirectly					
C. Total Acres In Site		37.62ac.			

PART IV (To be completed by SCS) Land Evaluation Information					
A. Total Acres Prime And Unique Farmland					
B. Total Acres Statewide And Local Important Farmland					
C. Percentage Of Farmland In County Or Local Govt. Unit To Be Converted					
D. Percentage Of Farmland In Govt. Jurisdiction With Same Or Higher Relative Value					

PART V (To be completed by SCS) Land Evaluation Criterion					
Relative Value Of Farmland To Be Converted (Scale of 0 to 100 Points)					

PART VI (To be completed by Federal Agency)		Maximum Points			
Site Assessment Criteria (These criteria are explained in 7 CFR 658.5(b))					
1. Area In Nonurban Use					
2. Perimeter In Nonurban Use					
3. Percent Of Site Being Farmed					
4. Protection Provided By State And Local Government					
5. Distance From Urban Builtup Area					
6. Distance To Urban Support Services					
7. Size Of Present Farm Unit Compared To Average					
8. Creation Of Nonfarmable Farmland					
9. Availability Of Farm Support Services					
10. On-Farm Investments					
11. Effects Of Conversion On Farm Support Services					
12. Compatibility With Existing Agricultural Use					
TOTAL SITE ASSESSMENT POINTS		160			

PART VII (To be completed by Federal Agency)					
Relative Value Of Farmland (From Part V)		100			
Total Site Assessment (From Part VI above or a local site assessment)		160			
TOTAL POINTS (Total of above 2 lines)		260			

Site Selected:	Date Of Selection	Was A Local Site Assessment Used? Yes <input type="checkbox"/> No <input type="checkbox"/>
Reason For Selection:		

VII APPENDICES

APPENDIX A

APPENDIX A

"SUMMARY OF THE RELOCATION ASSISTANCE PROGRAM OF THE
STATE HIGHWAY ADMINISTRATION OF MARYLAND"

All State Highway Administration projects must comply with the provisions of the "Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970" (Public Law 91-646 and amendments as published in CFR Vol. 51, No. 39 on February 27, 1986) and/or the Annotated Code of Maryland, Real Property, Title 12, Subtitle 2, Sections 12-201 thru 12-212. The Maryland Department of Transportation, State Highway Administration, Bureau of Relocation Assistance, administers the Relocation Assistance Program in the State of Maryland.

The provisions of the Federal and State Law require the State Highway Administration to provide payments and services to persons displaced by a public project. The payments that are provided include replacement housing payments and/or moving costs. The maximum limits of the replacement housing payments are \$15,000 for owner-occupants and \$4,000 for tenant-occupants. Certain payments may also be made for increased mortgage interest costs and/or incidental expenses, provided that the total of all housing benefits does not exceed the above mentioned limits. In order to receive these payments, the displaced person must occupy decent, safe and sanitary replacement housing. In addition to the replacement housing payments described above, there are also moving cost payments to persons, businesses, farms and non-profit organizations. Actual moving costs for residences include actual moving costs up to 50 miles or a schedule moving cost payment, including a dislocation allowance, up to \$500.

The moving cost payments to businesses are broken down into several categories, which include actual moving expenses and payments" in lieu of" actual moving expenses. The owner of a displaced business

is entitled to receive a payment for actual reasonable moving and related expenses in moving his business, or personal property; actual direct losses of tangible personal property; and actual reasonable expenses for searching for a replacement site.

The actual reasonable moving expenses may be paid for a move by a commercial mover or for a self-move. Generally, payments for the actual reasonable expenses are limited to a 50 mile radius. The expenses claimed for actual cost commercial moves must be supported by receipted bills. An inventory of the items to be moved must be prepared in all cases. In self-moves, the State will negotiate an amount for payment, not to exceed the lowest acceptable bid obtained. The allowable expenses of a self-move may include amounts paid for equipment hired, the cost of using the business' own vehicles or equipment, wages paid to persons who physically participate in the move, the cost of actual supervision of the move, replacement insurance for the personal property moved, costs of licenses or permits required, and other related expenses.

In addition to the actual moving expenses mentioned above, the displaced business is entitled to receive a payment for the actual direct losses of tangible personal property that the business is entitled to relocate but elects not to move. These payments may only be made after an effort by the owner to sell the personal property involved. The costs of the sale are also reimbursable moving expenses. If the business is to be reestablished, and the personal property is not moved but is replaced at the new location, the payment would be the lesser of the replacement cost minus the net proceeds of sale (or trade-in-value) or the estimated cost of moving the item. If the business is being discontinued or the item is not to be replaced in the reestablished business, the payment will be the lesser of the difference between the value of the item for continued use in place and the net proceeds of the sale or the estimated cost of moving the item. When personal property is abandoned without an effort by the owner to dispose of the property

for sale, unless permitted by the State, the owner will not be entitled to moving expenses, or losses for the item involved.

The owner of a displaced business may be reimbursed for the actual reasonable expenses in searching for a replacement business up to \$1,000. All expenses must be supported by receipted bills. Time spent in the actual search may be reimbursed on an hourly basis, within the maximum limit.

In lieu of the payments described above, the business may elect to receive a payment equal to the average annual net earnings of the business. Such payment shall not be less than \$2,500 or more than \$10,000. In order to be entitled to this payment, the State must determine that the business cannot be relocated without a substantial loss of its existing patronage, the business is not part of a commercial enterprise having at least one other establishment in the same or similar business that is not being acquired, and the business contributes materially to the income of a displaced owner during the two taxable years prior to displacement.

Considerations in the State's determination of loss of existing patronage are the type of business conducted by the displaced business and the nature of the clientele. The relative importance of the present and proposed locations to the displaced business, and the availability of suitable replacement sites are also factors.

In order to determine the amount of the "in lieu of" moving expenses payment, the average annual net earnings of the business is considered to be one-half of the net earnings, before taxes, during the two taxable years immediately preceding the taxable year in which the business is relocated. If the two taxable years are not representative, the State may use another two-year period that would be more representative. Average annual net earnings include

any compensation paid by the business to the owner, his spouse, or his dependents during the period. Should a business be in operation less than two years, the owner of the business may still be eligible to receive the "in lieu of" payment. In all cases, the owner of the business must provide information to support its net earnings, such as income tax returns, for the tax years in question.

For displaced farms and non-profit organizations, the actual reasonable moving costs generally up to 50 miles, actual direct losses of tangible personal property, and searching costs are paid. The "in lieu of" actual moving cost payments provide that the State may determine that a displaced farm may be paid from a minimum of \$2,500 to a maximum of \$10,000, based upon the net income of the farm, provided that the farm has been discontinued or relocated. In some cases, payments "in lieu of" actual moving costs may be made to farm operations that are affected by a partial acquisition. A non-profit organization is eligible to receive "in lieu of" actual moving cost payments, in the amount of \$2,500.

A more detailed explanation of the benefits and payments available to displaced persons, businesses, farms, and nonprofit organizations is available in Relocation Brochures that will be distributed at the public hearings for this project and will also be given to displaced persons individually in the future along with required preliminary notice of possible displacement.

In the event comparable replacement housing is not available to rehouse persons displaced by public projects or that available replacement housing is beyond their financial means, replacement "housing as a last resort" will be utilized to accomplish the rehousing. Detailed studies must be completed by the State Highway Administration before "housing as a last resort" can be utilized.

The "Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970" requires that the State Highway Administration shall not proceed with any phase of any project which will cause the relocation of any persons, or proceed with any construction project, until it has furnished satisfactory assurances that the above payments will be provided and that all displaced persons will be satisfactorily relocated to comparable decent, safe, and sanitary housing within their financial means or that such housing is in place and has been made available to the displaced person.