Maryland Historical Trust

Maryland Inventory of Historic Properties number: WA-IV-263

Name: #21045/MD 66 OVER BEAVER CREEK

The bridge referenced herein was inventoried by the Maryland State Highway Administration as part of the Historic Bridge Inventory, and SHA provided the Trust with eligibility determinations in February 2001. The Trust accepted the Historic Bridge Inventory on April 3, 2001. The bridge received the following determination of eligibility.

MARYLAND HISTORICAL TRUST

Eligibility Recommended _____ Eligibility Not Recommended __X____

Criteria: ____A ____B ____C ____D Considerations: ___A ___B ___C ___D ___E ___F ___G __None

Comments:_____

_____

_____

Reviewer, OPS:_Anne E. Bruder_____ Date:__3 April 2001____

Reviewer, NR Program:__Peter E. Kurtze_____ Date:__3 April 2001____

JMB

MARYLAND INVENTORY OF HISTORIC BRIDGES **MHT No.** WA-IV-263
HISTORIC BRIDGE INVENTORY
MARYLAND STATE HIGHWAY ADMINISTRATION/
MARYLAND HISTORICAL TRUST

SHA Bridge No. 21045 **Bridge name** MD 66 over Beaver Creek

LOCATION:
Street/Road name and number [facility carried] MD 66 (Mapleville Road)

City/town Smithsburg **Vicinity** X

County Washington

This bridge projects over: Road____ **Railway**_____ **Water** X **Land** ____

Ownership: State X **County** _____ **Municipal** _____ **Other** _____

HISTORIC STATUS:
Is the bridge located within a designated historic district? Yes _____ **No** X
National Register-listed district ____ **National Register-determined-eligible district** __
Locally-designated district _____ **Other** _____

Name of district _____

BRIDGE TYPE:
Timber Bridge _____:
Beam Bridge _____ **Truss -Covered** ___ **Trestle** ___ **Timber-And-Concrete** ___

Stone Arch Bridge _____

Metal Truss Bridge _____

Movable Bridge ____:
Swing _____ **Bascule Single Leaf** __ **Bascule Multiple Leaf** _____
Vertical Lift _____ **Retractile**_____ **Pontoon** _____

Metal Girder_____:
Rolled Girder _____ **Rolled Girder Concrete Encased** _____
Plate Girder _____ **Plate Girder Concrete Encased** _____

Metal Suspension _____

Metal Arch _____

Metal Cantilever _____

Concrete X:
Concrete Arch_____ **Concrete Slab** ____ **Concrete Beam** X **Rigid Frame** _____
Other _____ **Type Name** _____

DESCRIPTION:

Setting: Urban _____ **Small town** ___X___ **Rural** _____

Describe Setting:

Bridge No. 21045 carries MD 66 (Mapleville Road) over Beaver Creek in Washington County. MD 66 Road runs north-south and Beaver Creek flows east-west. The bridge is located in the vicinity of Smithsburg and is surrounded by single family dwellings.

Describe Superstructure and Substructure:

Bridge No. 21045 is a 1-span, 2-lane, concrete beam bridge. The bridge was originally built circa 1900, and the concrete beam superstructure was constructed in 1923. The structure is 25 feet long and has a clear roadway width of 24 feet; there are no sidewalks. The out-to-out width is 26 feet, 6 inches. The superstructure consists of five (5) T-beams which support a concrete deck and solid panel concrete parapets. The beams measure 12 inches x 24 inches and are spaced 4 feet, 10 inches apart. The concrete deck, an integral part of the T-beams, is 9 inches thick and it has a bituminous wearing surface. The roadway approaches have narrow shoulders and steel guard rails that are secured to the concrete parapet. The substructure consists of two (2) concrete abutments built in 1923. A portion of the original stone abutments remains in the center of the rebuilt abutments. There are flared stone wing walls with concrete caps. The bridge is not posted, and has a sufficiency rating of 65.4.

According to the 1996 inspection report, this structure was in fair condition with some areas of scaling and spalling. The asphalt wearing surface is in good condition with some cracking on the approaches. The concrete is spalling in places, and the southwest wing wall has cracked and the top part of the wall has moved. Also, the concrete parapet is spalling in some areas.

Discuss Major Alterations:

The concrete beam superstructure was constructed in 1923 and part of the existing stone abutments were rebuilt with concrete. The inspection report from 1996 recommends the repair of the cracked southwest wing wall.

HISTORY:

WHEN was the bridge built: circa 1900, rehabilitated 1923
This date is: Actual _____ **Estimated** ___X___
Source of date: Plaque _____ **Design plans** ____ **County bridge files/inspection form** __
Other (specify): State Highway Administration bridge files/inspection form

WHY was the bridge built?

The bridge was constructed in response to the need for a more efficient transportation network and increased load capacity.

WHO was the designer?

Unknown

WHO was the builder?

Unknown

WHY was the bridge altered?

The bridge was altered to ensure its structural integrity.

Was this bridge built as part of an organized bridge-building campaign?

Unknown

SURVEYOR/HISTORIAN ANALYSIS:

This bridge may have National Register significance for its association with:
A - Events _____ B- Person _____
C- Engineering/architectural character _____

The bridge does not have National Register significance.

Was the bridge constructed in response to significant events in Maryland or local history?

The earliest concrete beam bridges in the nation were deck girder spans that featured concrete slabs supported by a series of longitudinal concrete beams. This method of construction was conceptually quite similar to the traditional timber beam bridge which had found such widespread use both in Europe and in America. Developed early in the twentieth century, deck girder spans continued to be widely used in 1920 when noted bridge engineer Milo Ketchum wrote *The Design of Highway Bridges of Steel, Timber and Concrete* (Ketchum 1920).

Although visually similar to deck girder bridges, the T-beam span features a series of reinforced concrete beams that are integrated into the concrete slab, forming a monolithic mass appearing in cross section like a series of upper-case "T"s connected at the top. Thaddeus Hyatt is believed to have been the first to come upon the idea of the T-beam when he was studying reinforced concrete in the 1850s, but the first useful T-beam was developed by the Belgian Francois Hennebique at the turn of the present century (Lay 1992:293). The earliest references to T-beam bridges refer to the type as concrete slab and beam construction, a description that does not distinguish the T-beam design from the concrete deck girder. Henry G. Tyrrell was perhaps the first American bridge engineer to use the now standard term "T-beam" in his treatise *Concrete Bridges and Culverts*, published in 1909. Tyrrell commented that "it is permissible and good practice in designing small concrete beams which are united by slabs, to consider the effect of a portion of the floor slab and to proportion the beams as T-beams" (Tyrrell 1909:186).

By 1920, reinforced concrete, T-beam construction had found broad application in standardized bridge design across the United States. In his text, *The Design of Highway Bridges of Steel, Timber and Concrete*, Milo S. Ketchum included drawings of standard T-beam spans recommended by the U.S. Bureau of Public Roads as well as drawings of T-beam bridges built by state highway departments in Ohio, Michigan, Illinois, and Massachusetts (Ketchum 1920). By the 1930s the T-beam bridge was widely built in Maryland and Virginia.

Maryland's roads and bridge improvement programs mirrored economic cycles. The first road improvement of the State Roads Commission was a 7 year program, starting with the Commission's

establishment in 1908 and ending in 1915. Due to World War I, the period from 1916-1920 was one of relative inactivity; only roads of first priority were built. Truck traffic resulting from war related factories and military installations generated new, heavy traffic unanticipated by the builders of the early road system. From 1920-1929, numerous highway improvements occurred in response to the increase in Maryland motor vehicles from 103,000 in 1920 to 320,000 in 1929, with emphasis on the secondary system of feeder roads which moved traffic from the primary roads built before World War I. After World War I, Maryland's bridge system also was appraised as too narrow and structurally inadequate for the increasing traffic , with plans for an expanded bridge program to be handled by the Bridge Division, set up in 1920. In 1920 under Chapter 508 of the Acts of 1920 the State issued a bond of $3,000,000.00 for road construction; the primary purpose of these monies was to meet the state obligations involving the construction of rural post roads. The secondary purpose of these monies was to fund (with an equal sum from the counties) the building of lateral roads. The number of hard surfaced roads on the state system grew from 2000 in 1920 to 3200 in 1930. By 1930, Maryland's primary system had been inadequate to the huge freight trucks and volume of passenger cars in use, with major improvements occurring in the late 1930's. Most improvements to local roads waited until the years after World War I.

In the early years, there was a need to replace the numerous single lane timber bridges. Walter Wilson Crosby, Chief Engineer, stated in 1906, "the general plan has been to replace these [wood bridges] with pipe culverts or concrete bridges and thus forever do away with the further expense of the maintenance of expensive and dangerous wooden structures." Within a few years, readily constructed standardized bridges of concrete were being built throughout the state.

In 1930, the roadway width for all standard plan bridges was increased to 27 feet in order to accommodate the increasing demands of automobile and truck traffic (State Roads Commission 1930). The range of span lengths remained the same, but there were some changes designed to increase the load bearing capacities. The reinforcing bars increased in thickness. Visually, the 1930 design can be distinguished from its predecessors by the pierced concrete railing that was introduced at this time.

In 1933, a new set of standard plans were introduced by the State Roads Commission. This time their preparation was not announced in the Report; new standard plans were by this time nothing special - they had indeed become standard. Once again accommodating the ever-increasing demands of traffic, the roadway was increased, this time to 30 feet. The slab span's reinforcing bars remained the same diameter but were placed closer together to achieve still more load capacity.

When the bridge was built and/or given a major alteration, did it have a significant impact on the growth and development of the area?

There is no evidence that the construction of this bridge had a significant impact on the growth and development of this area.

Is the bridge located in an area which may be eligible for historic designation and would the bridge add to or detract from the historic/visual character of the potential district?

The bridge is located in an area which does not appear to be eligible for historic designation.

Is the bridge a significant example of its type?

A significant example of a concrete beam bridge should possess character-defining elements of its type, and be readily recognizable as an historic structure from the perspective of the traveler. The integrity of distinctive features visible from the roadway approach, including parapet walls or railings, is important in structures which are common examples of their type. In addition, the structure must be in excellent condition. Despite the retention of such features as the parapets, this bridge has general deterioration and is an undistinguished example of a concrete beam bridge.

Does the bridge retain integrity of important elements described in Context Addendum?

The bridge retains the character-defining elements of its type, as defined by the Statewide Historic Bridge Context, including part of the original 1900 abutments, and the 1923 deck, beams, parapets, wing walls and rebuilt abutments; however, some deterioration is evident.

Is the bridge a significant example of the work of a manufacturer, designer, and/or engineer?

This bridge is not a significant example of the work of a manufacturer, designer, and/or engineer.

Should the bridge be given further study before an evaluation of its significance is made?

No further study of this bridge is required to evaluate its significance.

BIBLIOGRAPHY:

County inspection/bridge files _____ **SHA inspection/bridge files** ___X___
Other (list):

Ketchum, Milo S.
1908 *The Design of Highway Bridges and the Calculation of Stresses in Bridge Trusses.* The Engineering News Publishing Co., New York.

1920 *The Design of Highway Bridges of Steel, Timber and Concrete.* Second edition. McGraw-Hill Book Company, New York.

Lay, Maxwell Gordon
1992 *Ways of the World: A History of the World's Roads and of the Vehicles That Used Them.* Rutgers University Press, New Brunswick, New Jersey.

Luten, Daniel B.
1912 Concrete Bridges. *American Concrete Institute Proceedings* 8:631-640.

1917 *Reinforced Concrete Bridges.* National Bridge Company, Indianapolis, Indiana.

Maryland State Roads Commission
1930a *Report of the State Roads Commission for the Years 1927, 1928, 1929 and 1930.* State of Maryland, State Roads Commission, Baltimore.

1930b *Standard Plans.* State of Maryland, State Roads Commission, Baltimore.

WA-IV-263

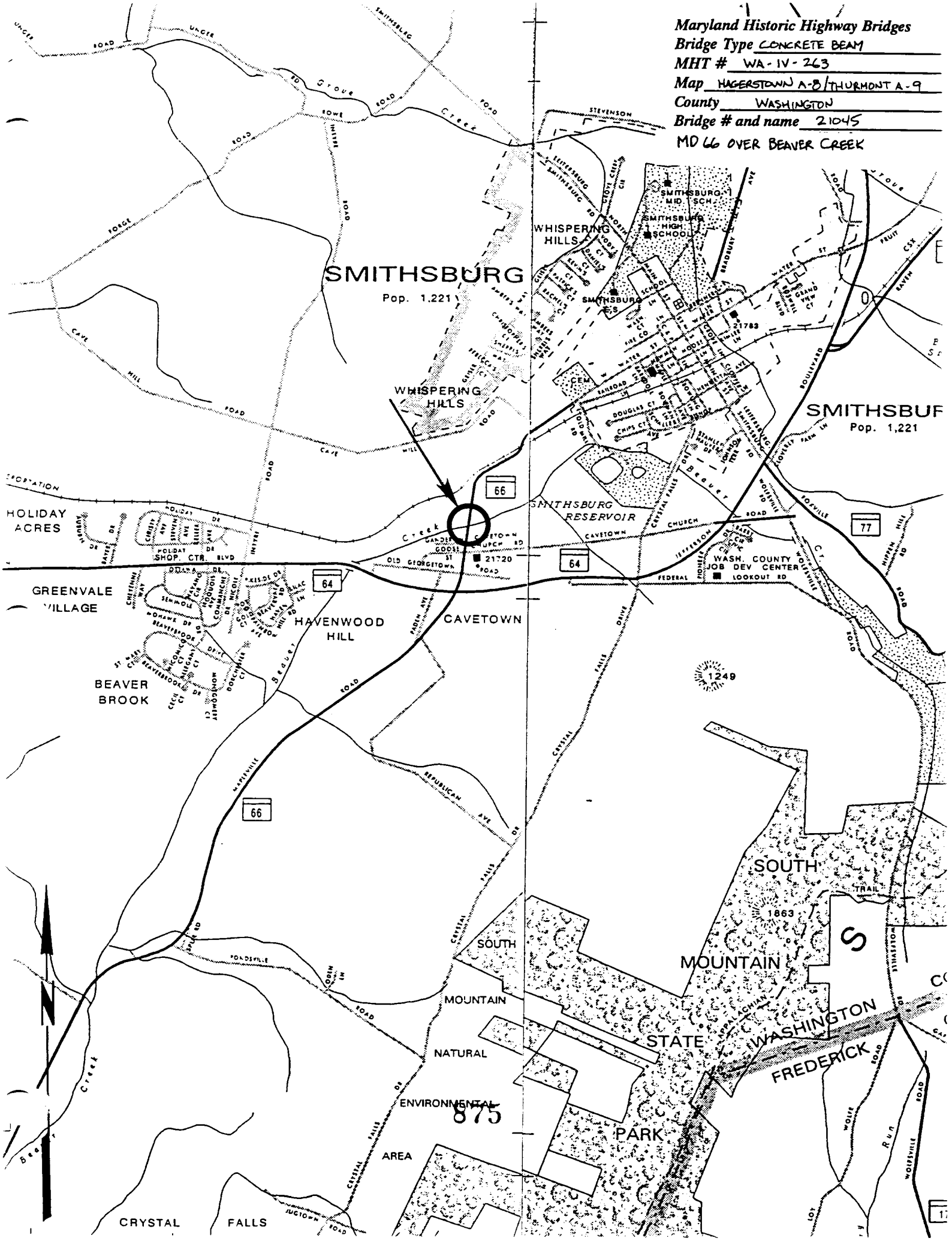
Taylor, Frederick W., Sanford E. Thompson, and Edward Smulski
1939 *Reinforced-Concrete Bridges with Formulas Applicable to Structural Steel and Concrete*. John Wiley & Sons, Inc., New York.

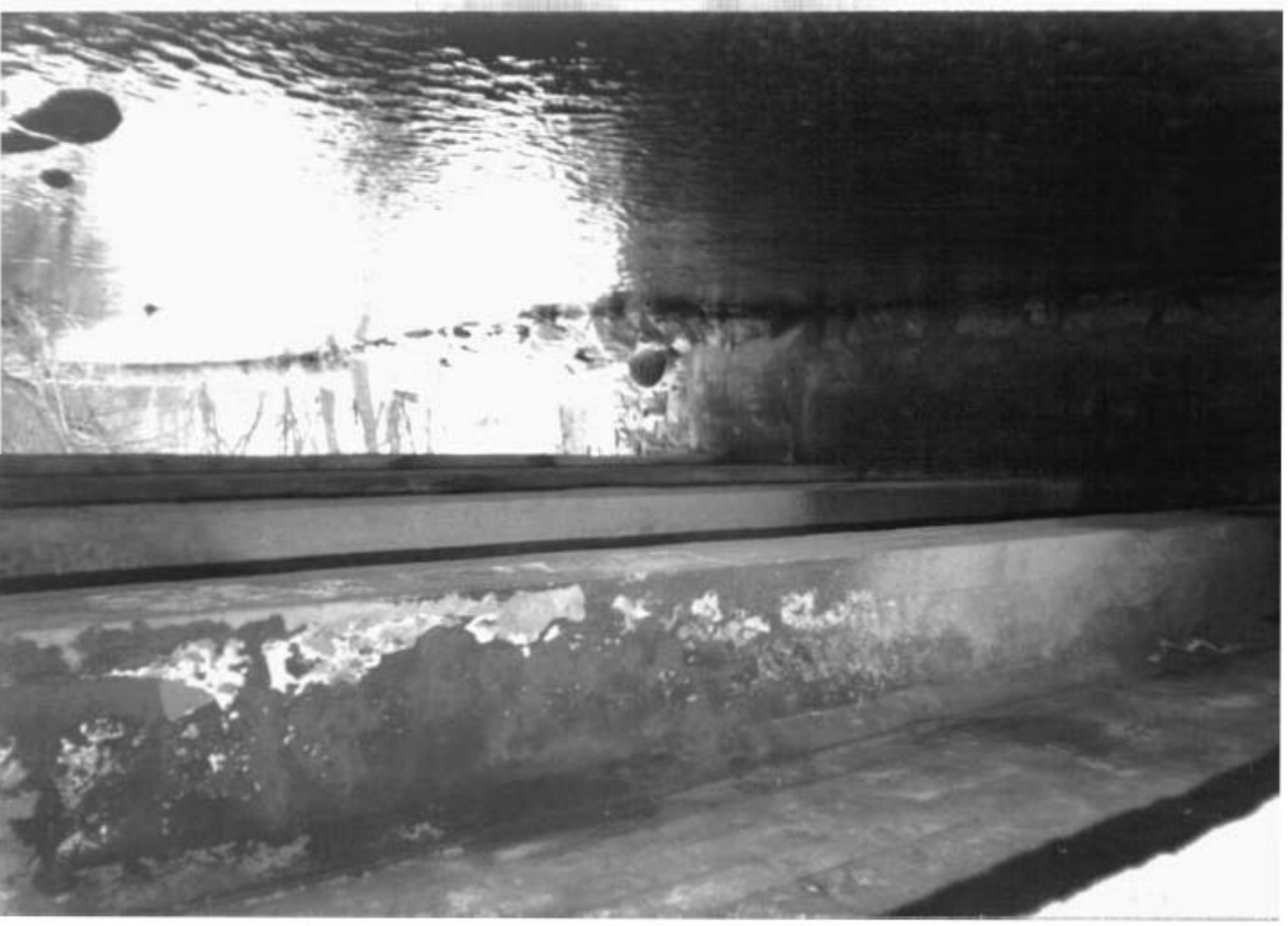
Tyrrell, H. Grattan
1909 *Concrete Bridges and Culverts for Both Railroads and Highways*. The Myron C. Clark Publishing Company, Chicago and New York.

SURVEYOR:

Date bridge recorded 2/27/97
Name of surveyor Caroline Hall/Ryan McKay
Organization/Address P.A.C. Spero & Co., 40 W. Chesapeake Avenue, Baltimore, MD 21204
Phone number (410) 296-1685 **FAX number** (410) 296-1670

Maryland Historic Highway Bridges
Bridge Type CONCRETE BEAM
MHT # WA-IV-263
Map HAGERSTOWN A-8/THURMONT A-9
County WASHINGTON
Bridge # and name 21045
MD 66 OVER BEAVER CREEK





[illegible] - 1 - 263

[illegible]

[illegible] Washington Co MO

[illegible]

[illegible]

[illegible]

Detail of Beans

1 of 6

[illegible] IV - M 3

2. M 66 over Brown rock

3. Washington

4. Ryan McKay -

5. 3 97

6. MD APD

7. [illegible] on parapet

8. [illegible]

1. WA-IV-263

[illegible] Green

Ryan McKay

5-3-97

MD SHPO

[illegible] Team Paraper

3 of 3

30

1 W N - I V - 263
2 M 66 over Beaver Creek
3 WV Johnston Co. MD
4 Ryan McKay
5 3-97
6 MD SHPO
7. South approach
8 No 6

9300148

INDIVIDUAL PROPERTY/DISTRICT
MARYLAND HISTORICAL TRUST
INTERNAL NR-ELIGIBILITY REVIEW FORM

Property/District Name: Bridge #21045 Survey Number: WA-IV-263

Project: MD 66 over Beaver Creek, Washington County Agency: SHA

Site visit by MHT Staff: X no ___ yes Name _____ Date _____

Eligibility recommended _____ Eligibility not recommended X

Criteria: ___A ___B X C ___D Considerations: ___A ___B ___C ___D ___E ___F ___G ___None

Justification for decision: (Use continuation sheet if necessary and attach map)

According to information provided by SHA, Bridge #21045 does not meet the criteria for individual listing. It is a concrete girder structure of a standard design constructed in 1924. 75 similar structures which were constructed prior to Bridge #21045 are extant in the state. The bridge has no engineering or historical significance. In addition, the bridge is just outside Cavetown and is not located in any known historic district.

Documentation on the property/district is presented in: Project File

Preparedby: RitaSuffness

Elizabeth Hannold — March 2, 1993
Reviewer, Office of Preservation Services — Date

NR program concurrence: X yes ___ no ___ not applicable

R Andrews — 3.1.93
Reviewer, NR program — Date

Survey No. WA-IV-263

MARYLAND COMPREHENSIVE HISTORIC PRESERVATION PLAN DATA - HISTORIC CONTEXT

I. Geographic Region:

____	Eastern Shore	(all Eastern Shore counties, and Cecil)
____	Western Shore	(Anne Arundel, Calvert, Charles, Prince George's and St. Mary's)
____	Piedmont	(Baltimore City, Baltimore, Carroll, Frederick, Harford, Howard, Montgomery)
X	Western Maryland	(Allegany, Garrett and Washington)

II. Chronological/Developmental Periods:

____	Paleo-Indian	10000-7500 B.C.
____	Early Archaic	7500-6000 B.C.
____	Middle Archaic	6000-4000 B.C.
____	Late Archaic	4000-2000 B.C.
____	Early Woodland	2000-500 B.C.
____	Middle Woodland	500 B.C. - A.D. 900
____	Late Woodland/Archaic	A.D. 900-1600
____	Contact and Settlement	A.D. 1570-1750
____	Rural Agrarian Intensification	A.D. 1680-1815
____	Agricultural-Industrial Transition	A.D. 1815-1870
X	Industrial/Urban Dominance	A.D. 1870-1930
____	Modern Period	A.D. 1930-Present
____	Unknown Period (___ prehistoric	___ historic)

III. Prehistoric Period Themes:

____	Subsistence
____	Settlement
____	Political
____	Demographic
____	Religion
____	Technology
____	Environmental Adaption

IV. Historic Period Themes:

____	Agriculture
X	Architecture, Landscape Architecture, and Community Planning
____	Economic (Commercial and Industrial)
____	Government/Law
____	Military
____	Religion
____	Social/Educational/Cultural
____	Transportation

V. Resource Type:

Category: Structure

Historic Environment: Village

Historic Function(s) and Use(s): Transportation

Known Design Source: Unknown

Br. 21045

MD66 over Beaver Creek

WA-IU-263

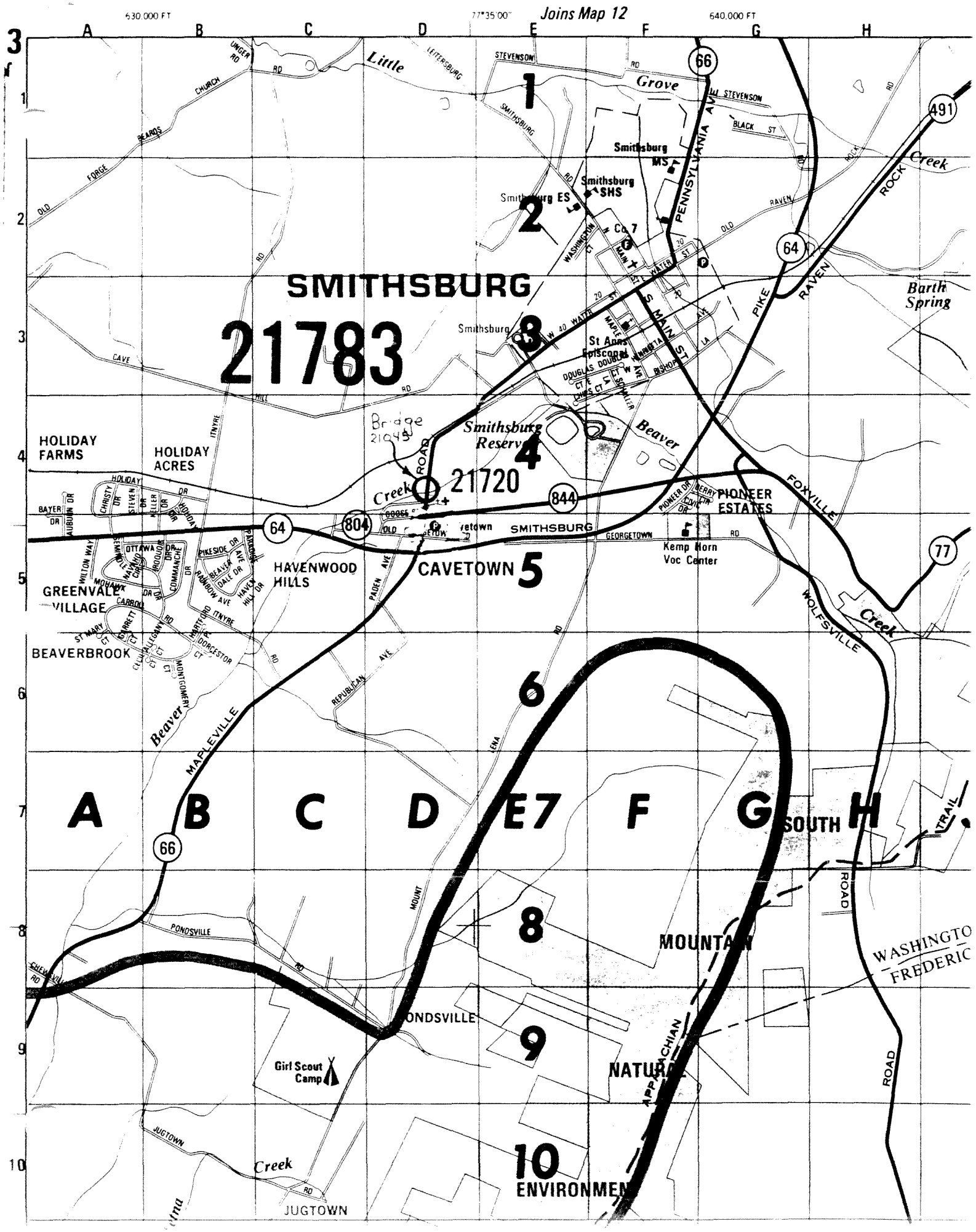
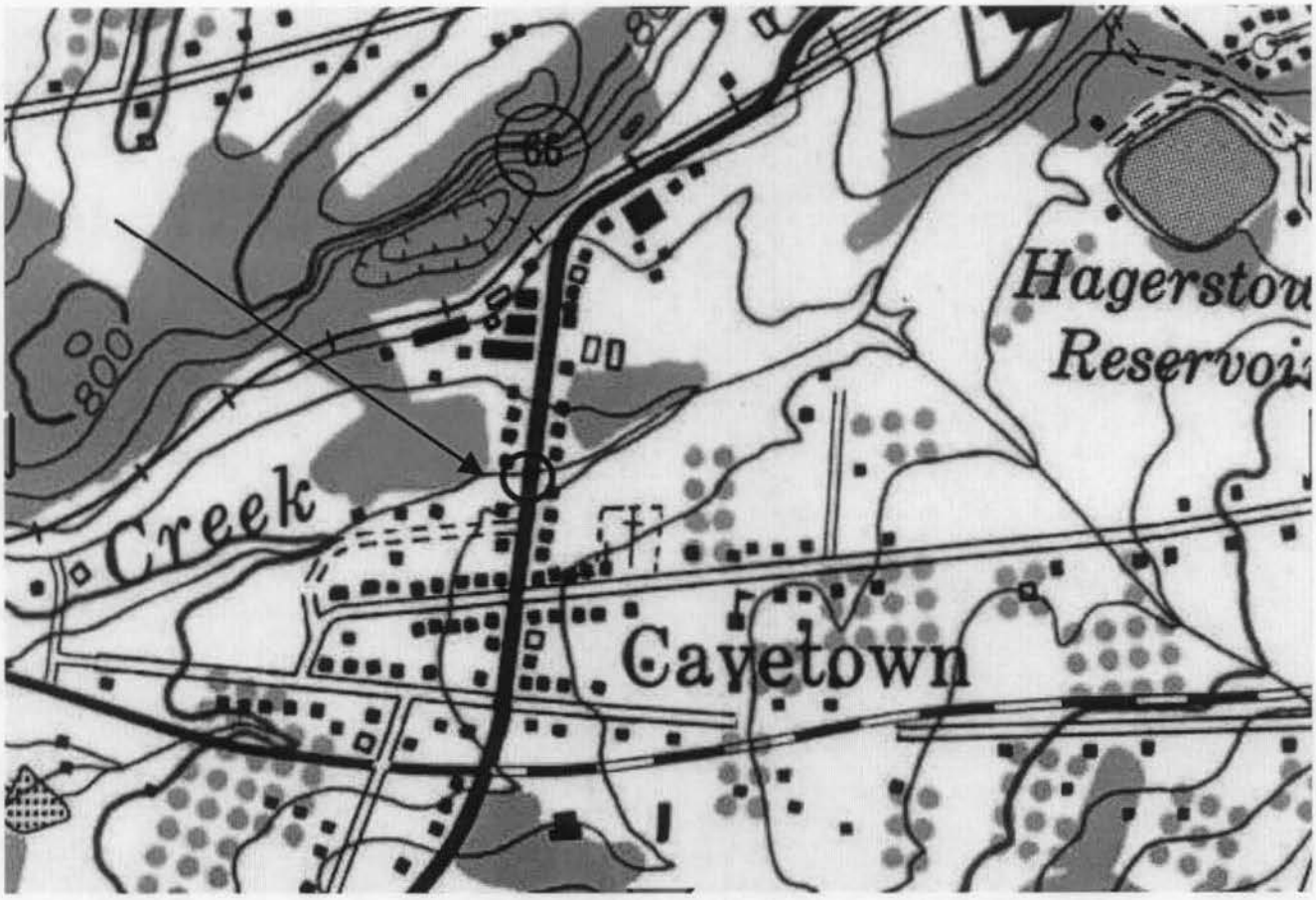
Downstream

Upstream

WA-IV-263

Cavetown WA IV-014
Survey form 1978 Paula Stoner
"typical small Rural village which serves the nearby agricultural area"

WA-IU-263


630,000 FT
77°35'00"
Joins Map 12
640,000 FT
SMITHSBURG
21783
21720
Smithsburg MS
Smithsburg SHS
Smithsburg ES
St Anns Episcopal
Smithsburg Reservoir
Bridge 21045
HOLIDAY FARMS
HOLIDAY ACRES
GREENVALE VILLAGE
BEAVERBROOK
HAVENWOOD HILLS
CAVETOWN
PIONEER ESTATES
Kemp Horn Voc Center
Girl Scout Camp
MOUNTAIN
NATURAL
ENVIRONMENT
SOUTH
JUGTOWN
Little Grove Creek
Beaver Creek
Barth Spring
Creek
PENNSYLVANIA AVE
MAIN ST
PIKE
RAVEN ROCK
FOXVILLE
WOLFSVILLE
MAPLEVILLE
PONDSVILLE
APPALACHIAN TRAIL
WASHINGTON
FREDERICK
A B C D E7 F G H
1 2 3 4 5 6 8 9 10

WA-IV- 263
Bridge #21045
MD 66 over Beaver Creek
Washington County
Smithsburg Quad