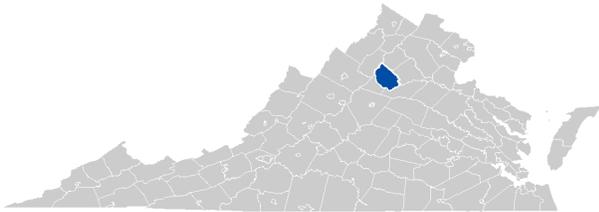


FLOOD INSURANCE STUDY

FEDERAL EMERGENCY MANAGEMENT AGENCY



MADISON COUNTY, VIRGINIA

AND INCORPORATED AREAS

COMMUNITY NAME	COMMUNITY NUMBER
MADISON COUNTY, UNINCORPORATED AREAS	510094
MADISON, TOWN OF *	510031

*No Special Flood Hazard Areas identified



FEMA

REVISED:

SEPTEMBER 18, 2020

FLOOD INSURANCE STUDY NUMBER

51113CV000B

Version Number 2.4.3.5

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Exhibits

Flood Profiles	<u>Panel</u>
Hughes River	01-03 P
Rose River	03-07 P
Robinson River Lower Reach	08 P
Robinson River Upper Reach	09-15 P

Published Separately

Flood Insurance Rate Map (FIRM)

FLOOD INSURANCE STUDY REPORT MADISON COUNTY, VIRGINIA AND INCORPORATED AREAS

SECTION 1.0 – INTRODUCTION

1.1 The National Flood Insurance Program

The National Flood Insurance Program (NFIP) is a voluntary Federal program that enables property owners in participating communities to purchase insurance protection against losses from flooding. This insurance is designed to provide an alternative to disaster assistance to meet the escalating costs of repairing damage to buildings and their contents caused by floods.

For decades, the national response to flood disasters was generally limited to constructing flood-control works such as dams, levees, sea-walls, and the like, and providing disaster relief to flood victims. This approach did not reduce losses nor did it discourage unwise development. In some instances, it may have actually encouraged additional development. To compound the problem, the public generally could not buy flood coverage from insurance companies, and building techniques to reduce flood damage were often overlooked.

In the face of mounting flood losses and escalating costs of disaster relief to the general taxpayers, the U.S. Congress created the NFIP. The intent was to reduce future flood damage through community floodplain management ordinances, and provide protection for property owners against potential losses through an insurance mechanism that requires a premium to be paid for the protection.

The U.S. Congress established the NFIP on August 1, 1968, with the passage of the National Flood Insurance Act of 1968. The NFIP was broadened and modified with the passage of the Flood Disaster Protection Act of 1973 and other legislative measures. It was further modified by the National Flood Insurance Reform Act of 1994 and the Flood Insurance Reform Act of 2004. The NFIP is administered by the Federal Emergency Management Agency (FEMA), which is a component of the Department of Homeland Security (DHS).

Participation in the NFIP is based on an agreement between local communities and the Federal Government. If a community adopts and enforces floodplain management regulations to reduce future flood risks to new construction and substantially improved structures in Special Flood Hazard Areas (SFHAs), the Federal Government will make flood insurance available within the community as a financial protection against flood losses. The community's floodplain management regulations must meet or exceed criteria established in accordance with Title 44 Code of Federal Regulations (CFR) Part 60, *Criteria for Land Management and Use*.

SFHAs are delineated on the community's Flood Insurance Rate Maps (FIRMs). Under the NFIP, buildings that were built before the flood hazard was identified on the community's FIRMs are generally referred to as "Pre-FIRM" buildings. When the NFIP was created, the U.S. Congress recognized that insurance for Pre-FIRM buildings would be prohibitively expensive if the premiums were not subsidized by the Federal

Government. Congress also recognized that most of these floodprone buildings were built by individuals who did not have sufficient knowledge of the flood hazard to make informed decisions. The NFIP requires that full actuarial rates reflecting the complete flood risk be charged on all buildings constructed or substantially improved on or after the effective date of the initial FIRM for the community or after December 31, 1974, whichever is later. These buildings are generally referred to as “Post-FIRM” buildings.

1.2 Purpose of this Flood Insurance Study Report

This Flood Insurance Study (FIS) Report updates information on the existence and severity of flood hazards for the study area. The studies described in this report developed flood hazard data that will be used to establish actuarial flood insurance rates and to assist communities in efforts to implement sound floodplain management.

In some states or communities, floodplain management criteria or regulations may exist that are more restrictive than the minimum Federal requirements. Contact your State NFIP Coordinator to ensure that any higher State standards are included in the community’s regulations.

1.3 Jurisdictions Included in the Flood Insurance Study Project

This FIS Report covers the entire geographic area of Madison County, Virginia.

The jurisdictions that are included in this project area, along with the Community Identification Number (CID) for each community and the United States Geological Survey (USGS) 8-digit Hydrologic Unit Code (HUC-8) sub-basins affecting each, are shown in Table 1. The FIRM panel numbers that affect each community are listed. If the flood hazard data for the community is not included in this FIS Report, the location of that data is identified.

The location of flood hazard data for participating communities in multiple jurisdictions is also indicated in the table.

Jurisdictions that have no identified SFHAs as of the effective date of this study are indicated in the table. Changed conditions in these communities (such as urbanization or annexation) or the availability of new scientific or technical data about flood hazards could make it necessary to determine SFHAs in these jurisdictions in the future.

Table 1: Listing of NFIP Jurisdictions

Community	CID	HUC-8 Sub-Basin(s)	Located on FIRM Panels	If Not Included, Location of Flood Hazard Data
Madison County, Unincorporated Areas	510094	02080103	51113C0025D ² 51113C0050D 51113C0055D 51113C0060D 51113C0065D 51113C0070D 51113C0090D 51113C0125D 51113C0130D 51113C0135D 51113C0140D 51113C0145D 51113C0175D 51113C0200D 51113C0210D 51113C0235D 51113C0250D 51113C0275D 51113C0280D 51113C0290D 51113C0307D 51113C0330D	
Madison, Town of ¹	510031	02080103	51113C0145D 51113C0235D	

¹ No Special Flood Hazard Areas Identified

² Panel not printed

1.4 Considerations for using this Flood Insurance Study Report

The NFIP encourages State and local governments to implement sound floodplain management programs. To assist in this endeavor, each FIS Report provides floodplain data, which may include a combination of the following: 10-, 4-, 2-, 1-, and 0.2-percent annual chance flood elevations (the 1% annual chance flood elevation is also referred to as the Base Flood Elevation (BFE)); delineations of the 1% annual chance and 0.2% annual chance floodplains; and 1% annual chance floodway. This information is presented on the FIRM and/or in many components of the FIS Report, including Flood Profiles, Floodway Data tables, Summary of Non-Coastal Stillwater Elevations tables, and Coastal Transect Parameters tables (not all components may be provided for a specific FIS).

This section presents important considerations for using the information contained in this FIS Report and the FIRM, including changes in format and content. Figures 1, 2, and 3 present information that applies to using the FIRM with the FIS Report.

- Part or all of this FIS Report may be revised and republished at any time. In addition, part of this FIS Report may be revised by a Letter of Map Revision (LOMR), which does not involve republication or redistribution of the FIS Report.

Refer to Section 6.5 of this FIS Report for information about the process to revise the FIS Report and/or FIRM.

It is, therefore, the responsibility of the user to consult with community officials by contacting the community repository to obtain the most current FIS Report components. Communities participating in the NFIP have established repositories of flood hazard data for floodplain management and flood insurance purposes. Community map repository addresses are provided in Table 31, "Map Repositories," within this FIS Report.

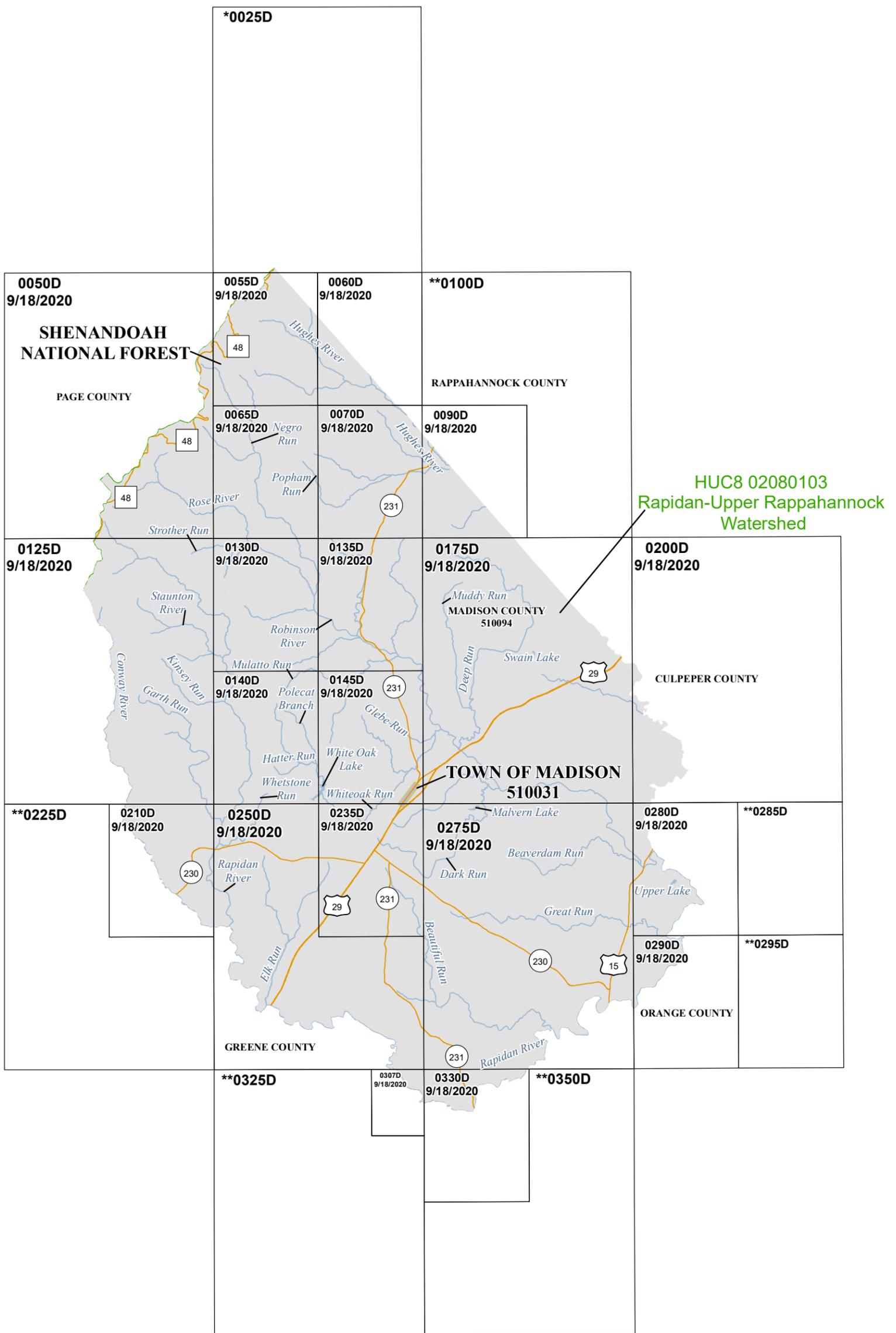
- New FIS Reports are frequently developed for multiple communities, such as entire counties. A countywide FIS Report incorporates previous FIS Reports for individual communities and the unincorporated area of the county (if not jurisdictional) into a single document and supersedes those documents for the purposes of the NFIP.

The initial Countywide FIS Report for Madison County became effective on January 5, 2007. Refer to Table 28 for information about subsequent revisions to the FIRMs.

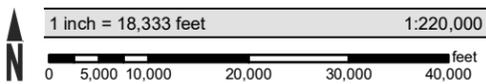
- FEMA has developed a *Guide to Flood Maps* (FEMA 258) and online tutorials to assist users in accessing the information contained on the FIRM. These include how to read panels and step-by-step instructions to obtain specific information. To obtain this guide and other assistance in using the FIRM, visit the FEMA Web site at <https://www.fema.gov/online-tutorials>.

The FIRM Index in Figure 1 shows the overall FIRM panel layout within Madison County, and also displays the panel number and effective date for each FIRM panel in the county.

Figure 1: FIRM Index



ATTENTION: The corporate limits shown on this FIRM Index are based on the best information available at the time of publication. As such, they may be more current than those shown on FIRM panels issued before September 18, 2020.



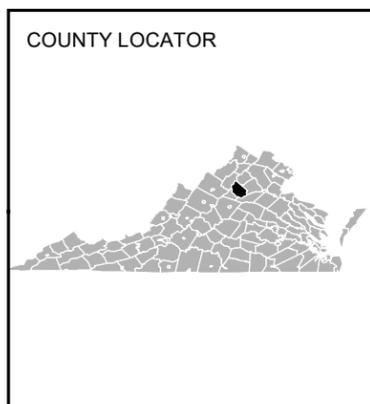
Map Projection:
State Plane Virginia North FIPS 4501;
North American Datum 1983

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT

[HTTPS://MSC.FEMA.GOV](https://MSC.FEMA.GOV)

SEE FLOOD INSURANCE STUDY FOR ADDITIONAL INFORMATION

* PANEL NOT PRINTED - NO SPECIAL FLOOD HAZARD AREAS
** PANEL NOT PRINTED - AREA OUTSIDE COUNTY BOUNDARY



NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP INDEX

MADISON COUNTY, VIRGINIA and Incorporated Areas

PANELS PRINTED:

0050, 0055, 0060, 0065, 0070, 0090, 0125, 0130, 0135, 0140, 0145, 0175, 0200, 0210, 0235, 0250, 0275, 0280, 0290, 0307, 0330



FEMA

MAP NUMBER
51113CIND08

MAP REVISED

SEPTEMBER 18, 2020

Each FIRM panel may contain specific notes to the user that provide additional information regarding the flood hazard data shown on that map. However, the FIRM panel does not contain enough space to show all the notes that may be relevant in helping to better understand the information on the panel. Figure 2 contains the full list of these notes.

Figure 2: FIRM Notes to Users

NOTES TO USERS

For information and questions about this map, available products associated with this FIRM including historic versions of this FIRM, how to order products, or the National Flood Insurance Program in general, please call the FEMA Mapping and Insurance eXchange at 1-877-FEMA-MAP (1- 877-336-2627) or visit the FEMA Flood Map Service Center website at <https://msc.fema.gov>. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website. Users may determine the current map date for each FIRM panel by visiting the FEMA Flood Map Service Center website or by calling the FEMA Mapping and Insurance eXchange.

Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index. These may be ordered directly from the Flood Map Service Center at the number listed above.

For community and countywide map dates, refer to Table 28 in this FIS Report.

To determine if flood insurance is available in the community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

PRELIMINARY FIS REPORT: FEMA maintains information about map features, such as street locations and names, in or near designated flood hazard areas. Requests to revise information in or near designated flood hazard areas may be provided to FEMA during the community review period, at the final Consultation Coordination Officer's meeting, or during the statutory 90-day appeal period. Approved requests for changes will be shown on the final printed FIRM.

The map is for use in administering the NFIP. It may not identify all areas subject to flooding, particularly from local drainage sources of small size. Consult the community map repository to find updated or additional flood hazard information.

BASE FLOOD ELEVATIONS: For more detailed information in areas where Base Flood Elevations (BFEs) and/or floodways have been determined, consult the Flood Profiles and Floodway Data and/or Summary of Non-Coastal Stillwater Elevations tables within this FIS Report. Use the flood elevation data within the FIS Report in conjunction with the FIRM for construction and/or floodplain management.

FLOODWAY INFORMATION: Boundaries of the floodways were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the FIS Report for this jurisdiction.

Figure 2. FIRM Notes to Users (continued)

FLOOD CONTROL STRUCTURE INFORMATION: Certain areas not in Special Flood Hazard Areas may be protected by flood control structures. Refer to Section 4.3 "Non-Levee Flood Protection Measures" of this FIS Report for information on flood control structures for this jurisdiction.

PROJECTION INFORMATION: The projection used in the preparation of the map was State Plane Virginia North FIPS 4501. The horizontal datum was the North American Datum of 1983 (NAD83), GRS1980 spheroid. Differences in datum, spheroid, projection or State Plane zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of the FIRM.

ELEVATION DATUM: Flood elevations on the FIRM are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at <https://www.ngs.noaa.gov>.

Local vertical monuments may have been used to create the map. To obtain current monument information, please contact the appropriate local community listed in Table 31 of this FIS Report.

BASE MAP INFORMATION: Base map information shown on the FIRM was derived from USDA Aerial Photography Field Office Imagery, dated 2016, and digital data provided by Virginia Geographic Information Network (VGIN), dated 2017. For more information about the base maps, refer to section 6.2 "Base Map" in this FIS Report.

The map reflects more detailed and up-to-date stream channel configurations than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables may reflect stream channel distances that differ from what is shown on the map.

Corporate limits shown on the map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after the map was published, map users should contact appropriate community officials to verify current corporate limit locations.

NOTES FOR FIRM INDEX

REVISIONS TO INDEX: As new studies are performed and FIRM panels are updated within Madison County, VA, corresponding revisions to the FIRM Index will be incorporated within the FIS Report to reflect the effective dates of those panels. Please refer to Table 28 of this FIS Report to determine the most recent FIRM revision date for each community. The most recent FIRM panel effective date will correspond to the most recent index date.

SPECIAL NOTES FOR SPECIFIC FIRM PANELS

This Notes to Users section was created specifically for Madison County, VA, effective September 18, 2020.

Figure 2. FIRM Notes to Users (continued)

FLOOD RISK REPORT: A Flood Risk Report (FRR) may be available for many of the flooding sources and communities referenced in this FIS Report. The FRR is provided to increase public awareness of flood risk by helping communities identify the areas within their jurisdictions that have the greatest risks. Although non-regulatory, the information provided within the FRR can assist communities in assessing and evaluating mitigation opportunities to reduce these risks. It can also be used by communities developing or updating flood risk mitigation plans. These plans allow communities to identify and evaluate opportunities to reduce potential loss of life and property. However, the FRR is not intended to be the final authoritative source of all flood risk data for a project area; rather, it should be used with other data sources to paint a comprehensive picture of flood risk.

Each FIRM panel contains an abbreviated legend for the features shown on the maps. However, the FIRM panel does not contain enough space to show the legend for all map features. Figure 3 shows the full legend of all map features. Note that not all of these features may appear on the FIRM panels in Madison County.

Figure 3: Map Legend for FIRM

SPECIAL FLOOD HAZARD AREAS: <i>The 1% annual chance flood, also known as the base flood or 100-year flood, has a 1% chance of happening or being exceeded each year. Special Flood Hazard Areas are subject to flooding by the 1% annual chance flood. The Base Flood Elevation is the water surface elevation of the 1% annual chance flood. The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights. See note for specific types. If the floodway is too narrow to be shown, a note is shown.</i>	
	Special Flood Hazard Areas subject to inundation by the 1% annual chance flood (Zones A, AE, AH, AO, AR, A99, V and VE)
Zone A	The flood insurance rate zone that corresponds to the 1% annual chance floodplains. No base (1% annual chance) flood elevations (BFEs) or depths are shown within this zone.
Zone AE	The flood insurance rate zone that corresponds to the 1% annual chance floodplains. Base flood elevations derived from the hydraulic analyses are shown within this zone.
Zone AH	The flood insurance rate zone that corresponds to the areas of 1% annual chance shallow flooding (usually areas of ponding) where average depths are between 1 and 3 feet. Whole-foot BFEs derived from the hydraulic analyses are shown at selected intervals within this zone.
Zone AO	The flood insurance rate zone that corresponds to the areas of 1% annual chance shallow flooding (usually sheet flow on sloping terrain) where average depths are between 1 and 3 feet. Average whole-foot depths derived from the hydraulic analyses are shown within this zone.
Zone AR	The flood insurance rate zone that corresponds to areas that were formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
Zone A99	The flood insurance rate zone that corresponds to areas of the 1% annual chance floodplain that will be protected by a Federal flood protection system where construction has reached specified statutory milestones. No base flood elevations or flood depths are shown within this zone.
Zone V	The flood insurance rate zone that corresponds to the 1% annual chance coastal floodplains that have additional hazards associated with storm waves. Base flood elevations are not shown within this zone.
Zone VE	Zone VE is the flood insurance rate zone that corresponds to the 1% annual chance coastal floodplains that have additional hazards associated with storm waves. Base flood elevations derived from the coastal analyses are shown within this zone as static whole-foot elevations that apply throughout the zone.

Figure 3: Map Legend for FIRM (continued)

	<p>Regulatory Floodway determined in Zone AE.</p>
<p>OTHER AREAS OF FLOOD HAZARD</p>	
	<p>Shaded Zone X: Areas of 0.2% annual chance flood hazards and areas of 1% annual chance flood hazards with average depths of less than 1 foot or with drainage areas less than 1 square mile.</p>
	<p>Future Conditions 1% Annual Chance Flood Hazard – Zone X: The flood insurance rate zone that corresponds to the 1% annual chance floodplains that are determined based on future-conditions hydrology. No base flood elevations or flood depths are shown within this zone.</p>
	<p>Area with Reduced Flood Risk due to Levee: Areas where an accredited levee, dike, or other flood control structure has reduced the flood risk from the 1% annual chance flood.</p>
	<p>Area with Flood Risk due to Levee: Areas where a non-accredited levee, dike, or other flood control structure is shown as providing protection to less than the 1% annual chance flood.</p>
<p>OTHER AREAS</p>	
	<p>Zone D (Areas of Undetermined Flood Hazard): The flood insurance rate zone that corresponds to unstudied areas where flood hazards are undetermined, but possible.</p>
	<p>Unshaded Zone X: Areas of minimal flood hazard.</p>
<p>FLOOD HAZARD AND OTHER BOUNDARY LINES</p>	
	<p>Flood Zone Boundary (white line on ortho-photography-based mapping; gray line on vector-based mapping)</p>
	<p>Limit of Study</p>
	<p>Jurisdiction Boundary</p>
	<p>Limit of Moderate Wave Action (LiMWA): Indicates the inland limit of the area affected by waves greater than 1.5 feet</p>
<p>GENERAL STRUCTURES</p>	
 <p><i>Aqueduct Channel Culvert Storm Sewer</i></p>	<p>Channel, Culvert, Aqueduct, or Storm Sewer</p>
 <p><i>Dam Jetty Weir</i></p>	<p>Dam, Jetty, Weir</p>

Figure 3: Map Legend for FIRM (continued)

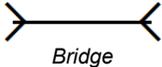
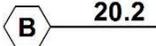
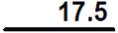
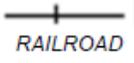
	Levee, Dike, or Floodwall
 <i>Bridge</i>	Bridge
REFERENCE MARKERS	
	River mile Markers
CROSS SECTION & TRANSECT INFORMATION	
	Lettered Cross Section with Regulatory Water Surface Elevation (BFE)
	Numbered Cross Section with Regulatory Water Surface Elevation (BFE)
	Unlettered Cross Section with Regulatory Water Surface Elevation (BFE)
	Coastal Transect
	Profile Baseline: Indicates the modeled flow path of a stream and is shown on FIRM panels for all valid studies with profiles or otherwise established base flood elevation.
	Coastal Transect Baseline: Used in the coastal flood hazard model to represent the 0.0-foot elevation contour and the starting point for the transect and the measuring point for the coastal mapping.
	Base Flood Elevation Line
ZONE AE (EL 16)	Static Base Flood Elevation value (shown under zone label)
ZONE AO (DEPTH 2)	Zone designation with Depth
ZONE AO (DEPTH 2) (VEL 15 FPS)	Zone designation with Depth and Velocity

Figure 3: Map Legend for FIRM (continued)

BASE MAP FEATURES	
 <i>Missouri Creek</i>	River, Stream or Other Hydrographic Feature
	Interstate Highway
	U.S. Highway
	State Highway
	County Highway
	Street, Road, Avenue Name, or Private Drive if shown on Flood Profile
	Railroad
	Horizontal Reference Grid Line
	Horizontal Reference Grid Ticks
	Secondary Grid Crosshairs
Land Grant	Name of Land Grant
7	Section Number
R. 43 W. T. 22 N.	Range, Township Number
4276^{000m}E	Horizontal Reference Grid Coordinates (UTM)
365000 FT	Horizontal Reference Grid Coordinates (State Plane)
80° 16' 52.5"	Corner Coordinates (Latitude, Longitude)

SECTION 2.0 – FLOODPLAIN MANAGEMENT APPLICATIONS

2.1 Floodplain Boundaries

To provide a national standard without regional discrimination, the 1% annual chance (100-year) flood has been adopted by FEMA as the base flood for floodplain management purposes. The 0.2% annual chance (500-year) flood is employed to indicate additional areas of flood hazard in the community.

Each flooding source included in the project scope has been studied and mapped using professional engineering and mapping methodologies that were agreed upon by FEMA and Madison County as appropriate to the risk level. Flood risk is evaluated based on factors such as known flood hazards and projected impact on the built environment. Engineering analyses were performed for each studied flooding source to calculate its 1% annual chance flood elevations; elevations corresponding to other floods (e.g. 10-, 4-, 2-, 0.2-percent annual chance, etc.) may have also been computed for certain flooding sources. Engineering models and methods are described in detail in Section 5.0 of this FIS Report. The modeled elevations at cross sections were used to delineate the floodplain boundaries on the FIRM; between cross sections, the boundaries were interpolated using elevation data from various sources. More information on specific mapping methods is provided in Section 6.0 of this FIS Report.

Depending on the accuracy of available topographic data (Table 23), study methodologies employed (Section 5.0), and flood risk, certain flooding sources may be mapped to show both the 1% and 0.2% annual chance floodplain boundaries, regulatory water surface elevations (BFEs), and/or a regulatory floodway. Similarly, other flooding sources may be mapped to show only the 1% annual chance floodplain boundary on the FIRM, without published water surface elevations. In cases where the 1% and 0.2% annual chance floodplain boundaries are close together, only the 1% annual chance floodplain boundary is shown on the FIRM. Each FIRM panel contains an abbreviated legend for the features shown on the maps. However, the FIRM panel does not contain enough space to show the legend for all map features. Figure 3 shows the full legend of all map features. Note that not all of these features may appear on the FIRM panels in Madison County. Figure 3, “Map Legend for FIRM”, describes the flood zones that are used on the FIRMs to account for the varying levels of flood risk that exist along flooding sources within the project area and Table 3 indicates the flood zone designations for each flooding source and each community within Madison County, respectively.

Table 2, “Flooding Sources Included in this FIS Report,” lists each flooding source, including its study limits, affected communities, mapped zone on the FIRM, and the completion date of its engineering analysis from which the flood elevations on the FIRM and in the FIS Report were derived. Descriptions and dates for the latest hydrologic and hydraulic analyses of the flooding sources are shown in Table 13. Floodplain boundaries for these flooding sources are shown on the FIRM (published separately) using the symbology described in Figure 3. Each FIRM panel contains an abbreviated legend for the features shown on the maps. However, the FIRM panel does not contain enough space to show the legend for all map features. Figure 3 shows the full legend of all map features. Note that not all of these features may appear on the FIRM panels in Madison County.

On the map, the 1% annual chance floodplain corresponds to the SFHAs. The 0.2% annual chance floodplain shows areas that, although out of the regulatory floodplain, are still subject to flood hazards.

Small areas within the floodplain boundaries may lie above the flood elevations but cannot be shown due to limitations of the map scale and/or lack of detailed topographic data. The procedures to remove these areas from the SFHA are described in Section 6.5 of this FIS Report.

Table 2: Flooding Sources Included in this FIS Report

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi ²) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Beautiful Run	Madison County	At Confluence with Rapidan River	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	11.4	*	N	A	2018
Beautiful Run Tributary 1	Madison County	At Confluence with Beautiful Run	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	2.9	*	N	A	2018
Beautiful Run Tributary 1.1	Madison County	At Confluence with Beautiful Run Tributary 1	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	0.2	*	N	A	2018
Beautiful Run Tributary 2	Madison County	At Confluence with Beautiful Run	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	1.0	*	N	A	2018
Beautiful Run Tributary 3	Madison County	At Confluence with Beautiful Run	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	1.2	*	N	A	2018
Beautiful Run Tributary 4	Madison County	At Confluence with Beautiful Run	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	2.9	*	N	A	2018
Beaver Run	Madison County	At Confluence with Whiteoak Run	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	3.0	*	N	A	2018
Beaverdam Run	Madison County	At Confluence with Robinson River	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	4.0	*	N	A	2018

*Data not available for this Flood Risk Study

Table 2: Flooding Sources Included in this FIS Report (continued)

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi ²) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Beaverdam Run Tributary 1	Madison County	At Confluence with Beaverdam Run	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	1.3	*	N	A	2018
Bootens Run	Madison County	At Confluence with Conway River	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	0.8	*	N	A	2018
Brokenback Run	Madison County	At Confluence with Hughes River US	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	3.2	*	N	A	2018
Brokenback Run Tributary 1	Madison County	At Confluence with Brokenback Run	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	0.8	*	N	A	2018
Cedar Run	Madison County	At Confluence with Robinson River	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	1.6	*	N	A	2018
Conway River	Madison County	At Confluence with Rapidan River	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	13.5	*	N	A	2018
Conway River Tributary 5	Madison County	At Confluence with Conway River	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	1.7	*	N	A	2018

*Data not available for this Flood Risk Study

Table 2: Flooding Sources Included in this FIS Report (continued)

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi ²) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Crooked Run	Madison County	At Confluence with Robinson River	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	13.5	*	N	A	2018
Crooked Run Tributary 4	Madison County	At Confluence with Crooked Run	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	1.9	*	N	A	2018
Dark Run	Madison County	At Confluence with Robinson River	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	7.9	*	N	A	2018
Dark Run Tributary 1	Madison County	At Confluence with Dark Run	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	1.4	*	N	A	2018
Dark Run Tributary 2	Madison County	At Confluence with Dark Run	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	1.1	*	N	A	2018
Dark Run Tributary 3	Madison County	At Confluence with Dark Run	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	0.6	*	N	A	2018
Deep Run	Madison County	At Confluence with Robinson River	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	11.7	*	N	A	2018
Deep Run Tributary 1	Madison County	At Confluence with Deep Run	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	2.4	*	N	A	2018

*Data not available for this Flood Risk Study

Table 2: Flooding Sources Included in this FIS Report (continued)

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi ²) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Deep Run Tributary 1.1	Madison County	At Confluence with Deep Run Tributary 1	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	0.9	*	N	A	2018
Deep Run Tributary 2	Madison County	At Confluence with Deep Run	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	1.1	*	N	A	2018
Deep Run Tributary 3	Madison County	At Confluence with Deep Run	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	0.4	*	N	A	2018
Deep Run Tributary 4	Madison County	At Confluence with Deep Run	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	0.6	*	N	A	2018
Deep Run Tributary 5	Madison County	At Confluence with Deep Run	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	1.8	*	N	A	2018
Deep Run Tributary 6	Madison County	At Confluence with Deep Run	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	0.5	*	N	A	2018
Elk Run	Madison County	At Confluence with Rapidan River	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	4.9	*	N	A	2018

*Data not available for this Flood Risk Study

Table 2: Flooding Sources Included in this FIS Report (continued)

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi ²) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Elk Run Tributary 1	Madison County	At Confluence with Elk Run	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	1.3	*	N	A	2018
Elk Run Tributary 2	Madison County	At Confluence with Elk Run	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	2.9	*	N	A	2018
Finks Run	Madison County	At Confluence with Robinson River	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	2.7	*	N	A	2018
Finks Run Tributary 1	Madison County	At Confluence with Finks Run	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	1.0	*	N	A	2018
Garth Run	Madison County	At Confluence with Rapidan River	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	6.5	*	N	A	2018
Garth Run Tributary 1	Madison County	At Confluence with Garth Run	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	0.3	*	N	A	2018
Gilmore Run	Madison County	At Confluence with Elk Run	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	2.9	*	N	A	2018
Glebe Run	Madison County	At Confluence with Whiteoak Run	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	1.8	*	N	A	2018

*Data not available for this Flood Risk Study

Table 2: Flooding Sources Included in this FIS Report (continued)

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi ²) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Great Run	Madison County	At Confluence with Robinson River	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	8.6	*	N	A	2018
Great Run Tributary 1	Madison County	At Confluence with Great Run	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	0.7	*	N	A	2018
Great Run Tributary 2	Madison County	At Confluence with Great Run	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	0.6	*	N	A	2018
Great Run Tributary 3	Madison County	At Confluence with Great Run	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	1.2	*	N	A	2018
Great Run Tributary 4	Madison County	At Confluence with Great Run	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	0.4	*	N	A	2018
Hannah Run	Madison County	At Confluence with Hughes River Tributary 4	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	1.4	*	N	A	2018
Hogcamp Branch	Madison County	At Confluence with Rose River	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	1.2	*	N	A	2018
Hughes River	Madison County	At Confluence with Hazel River	Zone Break to AE	02080103	6.0	*	N	A	2018

*Data not available for this Flood Risk Study

Table 2: Flooding Sources Included in this FIS Report (continued)

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi ²) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Hughes River	Madison County	At Zone Break to AE	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	5.0	*	N	A	2018
Hughes River	Madison County	At State Route 231	About 150 feet upstream of State Route 707	02080103	2.2	*	N	AE	1987
Hughes River Tributary 3	Madison County	At Confluence with Hughes River DS	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	2.2	*	N	A	2018
Hughes River Tributary 4	Madison County	At Confluence with Hughes River US	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	0.9	*	N	A	2018
Hughes River Tributary 5	Madison County	At Confluence with Hughes River US	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	1.6	*	N	A	2018
Kinsey Run	Madison County	At Confluence with Rapidan River	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	2.1	*	N	A	2018
Kinsey Run Tributary 1	Madison County	At Confluence with Kinsey Run	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	0.8	*	N	A	2018
Leathers Run	Madison County	At Confluence with Robinson River	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	3.8	*	N	A	2018

*Data not available for this Flood Risk Study

Table 2: Flooding Sources Included in this FIS Report (continued)

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi ²) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Leathers Run Tributary 1	Madison County	At Confluence with Leathers Run	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	1.0	*	N	A	2018
Leathers Run Tributary 2	Madison County	At Confluence with Leathers Run	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	1.8	*	N	A	2018
Little Crooked Run	Madison County	At Confluence with Crooked Run	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	3.1	*	N	A	2018
Little Crooked Run Tributary 1	Madison County	At Confluence with Little Crooked Run	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	1.0	*	N	A	2018
Little Dark Run	Madison County	At Confluence with Dark Run	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	3.3	*	N	A	2018
Mill Prong	Madison County	At Confluence with Rapidan River	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	1.0	*	N	A	2018
Muddy Run	Madison County	At Confluence with Deep Run 309	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	5.0	*	N	A	2018
Mulatto Run	Madison County	At Confluence with Robinson River	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	3.2	*	N	A	2018

*Data not available for this Flood Risk Study

Table 2: Flooding Sources Included in this FIS Report (continued)

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi ²) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Negro Run	Madison County	At Confluence with Robinson River	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	1.9	*	N	A	2018
Popham Run	Madison County	At Confluence with Hughes River DS	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	5.4	*	N	A	2018
Popham Run Tributary 1	Madison County	At Confluence with Popham Run	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	2.2	*	N	A	2018
Poplar Run	Madison County	At Confluence with Rapidan River	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	0.0	*	N	A	2018
Quaker Run	Madison County	At Confluence with Robinson River	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	1.8	*	N	A	2018
Ragged Run	Madison County	At Confluence with Popham Run	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	3.1	*	N	A	2018
Rapidan River	Madison County	At Madison County Boundary	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	87.9	*	N	A	2018
Rapidan River Tributary 1	Madison County	At Confluence with Rapidan River	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	1.6	*	N	A	2018

*Data not available for this Flood Risk Study

Table 2: Flooding Sources Included in this FIS Report (continued)

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi ²) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Rapidan River Tributary 3	Madison County	At Confluence with Rapidan River	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	0.8	*	N	A	2018
Rapidan River Tributary 4	Madison County	At Confluence with Rapidan River	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	1.2	*	N	A	2018
Rapidan River Tributary 5	Madison County	At Confluence with Rapidan River	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	1.3	*	N	A	2018
Rapidan River Tributary 7	Madison County	At Confluence with Rapidan River	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	1.0	*	N	A	2018
Rapidan River Tributary 8	Madison County	At Confluence with Rapidan River	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	3.8	*	N	A	2018
Rapidan River Tributary 8.1	Madison County	At Confluence with Rapidan Tributary 8	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	2.8	*	N	A	2018
Rapidan River Tributary 8.1.1	Madison County	At Confluence with Rapidan Tributary 8.1	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	1.5	*	N	A	2018
Rapidan River Tributary 11	Madison County	At Confluence with Rapidan River	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	0.8	*	N	A	2018

*Data not available for this Flood Risk Study

Table 2: Flooding Sources Included in this FIS Report (continued)

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi ²) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Rapidan River Tributary 12	Madison County	At Confluence with Rapidan River	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	0.5	*	N	A	2018
Rapidan River Tributary 13	Madison County	At Confluence with Rapidan River	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	0.3	*	N	A	2018
Robinson River	Madison County	At Confluence with Rapidan River	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	22.5	*	N	A	2018
Robinson River Lower Reach	Madison County	About 150 feet upstream of USGS Gauge No. 01666500	About 9,600 feet upstream of USGS Gauge No. 01666500	02080103	1.8	*	N	AE	1987
Robinson River Tributary 2	Madison County	At Confluence with Robinson River	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	0.8	*	N	A	2018
Robinson River Tributary 3	Madison County	At Confluence with Robinson River	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	1.3	*	N	A	2018
Robinson River Tributary 3.1	Madison County	At Confluence with Robinson River Tributary 3	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	0.8	*	N	A	2018
Robinson River Tributary 4	Madison County	At Confluence with Robinson River	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	3.0	*	N	A	2018

*Data not available for this Flood Risk Study

Table 2: Flooding Sources Included in this FIS Report (continued)

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi ²) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Robinson River Tributary 4.1	Madison County	At Confluence with Robinson River Tributary 4	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	2.9	*	N	A	2018
Robinson River Tributary 4.2	Madison County	At Confluence with Robinson River Tributary 4	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	1.7	*	N	A	2018
Robinson River Tributary 5	Madison County	At Confluence with Robinson River	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	0.7	*	N	A	2018
Robinson River Tributary 6	Madison County	At Confluence with Robinson River	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	1.4	*	N	A	2018
Robinson River Tributary 7	Madison County	At Confluence with Robinson River	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	2.1	*	N	A	2018
Robinson River Tributary 8	Madison County	At Confluence with Robinson River	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	2.1	*	N	A	2018
Robinson River Tributary 9	Madison County	At Confluence with Robinson River	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	0.6	*	N	A	2018
Robinson River Upper Reach	Madison County	About 1,100 feet upstream of Confluence of Leathers Run	At Confluence of Robinson River Tributary 9	02080103	9.7	*	N	AE	1987

*Data not available for this Flood Risk Study

Table 2: Flooding Sources Included in this FIS Report (continued)

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi ²) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Rocky Run 1	Madison County	At Confluence with Hughes River DS	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	1.9	*	N	A	2018
Rocky Run 2	Madison County	At Confluence with Hughes River US	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	1.3	*	N	A	2018
Rose River	Madison County	At Zone Break to AE	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	3.9	*	N	A	2018
Rose River	Madison County	At Confluence with Robinson River	About 8,900 feet upstream of State Route 648	02080103	4.6	*	N	AE	1987
Rose River Tributary 1	Madison County	At Confluence with Rose River	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	1.1	*	N	A	2018
Rosson Hollow Run	Madison County	At Confluence with Popham Run	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	2.3	*	N	A	2018
Rosson Hollow Run Tributary 1.1	Madison County	At Confluence with Rosson Hollow Tributary 1	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	0.2	*	N	A	2018
Rosson Hollow Tributary 1	Madison County	At Confluence with Rosson Hollow Rn	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	1.3	*	N	A	2018

*Data not available for this Flood Risk Study

Table 2: Flooding Sources Included in this FIS Report (continued)

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi ²) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Shotwell Run	Madison County	At Confluence with Robinson River	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	4.6	*	N	A	2018
Shotwell Run Tributary 1	Madison County	At Confluence with Shotwell Run	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	0.7	*	N	A	2018
Staunton River	Madison County	At Confluence with Rapidan River	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	4.0	*	N	A	2018
Strother Run	Madison County	At Confluence with Rose River	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	1.2	*	N	A	2018
Whetstone Run	Madison County	At Confluence with Rapidan River	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	2.0	*	N	A	2018
White Walnut Run	Madison County	At Confluence with Mulatto Run	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	2.1	*	N	A	2018
Whiteoak Run	Madison County	At Confluence with Robinson River	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	10.6	*	N	A	2018
Whiteoak Run Tributary 2	Madison County	At Confluence with Whiteoak Run	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	0.6	*	N	A	2018

*Data not available for this Flood Risk Study

Table 2: Flooding Sources Included in this FIS Report (continued)

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi ²) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Whiteoak Run Tributary 3	Madison County	At Confluence with Whiteoak Run	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	1.1	*	N	A	2018
Whiteoak Run Tributary 4	Madison County	At Confluence with Whiteoak Run	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	0.9	*	N	A	2018
Whiteoak Run Tributary 5	Madison County	At Confluence with Whiteoak Run	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	1.7	*	N	A	2018
Whiteoak Run Tributary 6	Madison County	At Confluence with Whiteoak Run	Upstream Limit of Study, 1 sq mile Drainage Area	02080103	1.2	*	N	A	2018

*Data not available for this Flood Risk Study

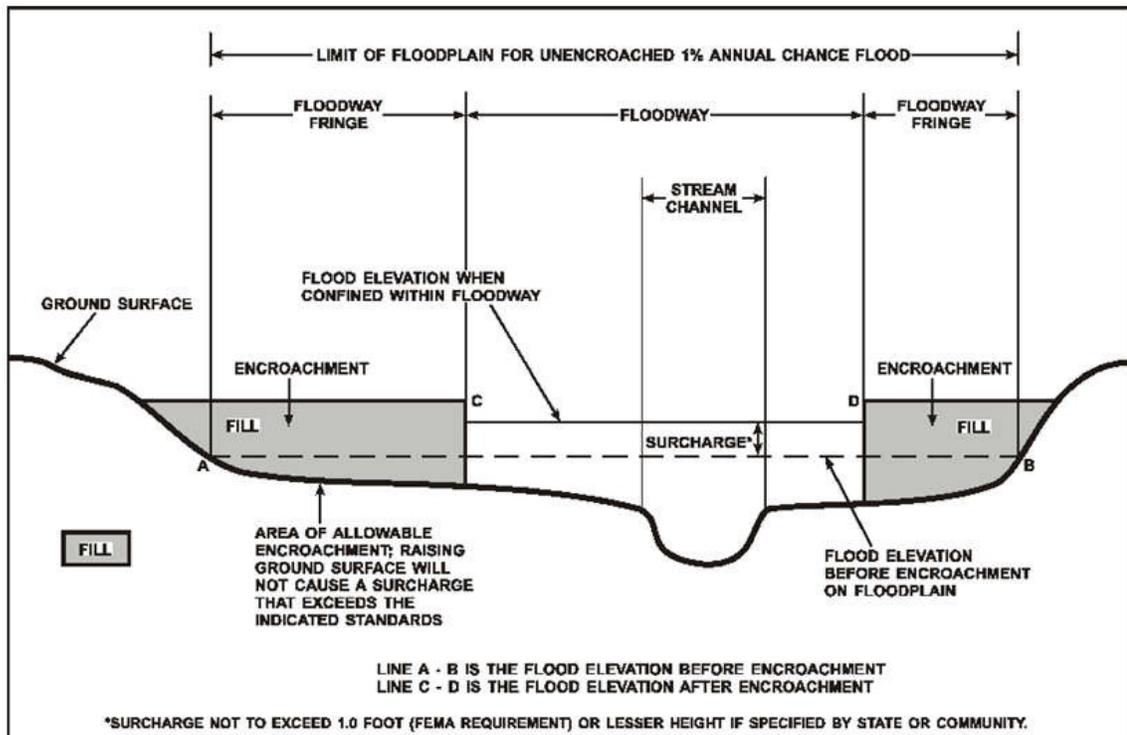
2.2 Floodways

Encroachment on floodplains, such as structures and fill, reduces flood-carrying capacity, increases flood heights and velocities, and increases flood hazards in areas beyond the encroachment itself. One aspect of floodplain management involves balancing the economic gain from floodplain development against the resulting increase in flood hazard.

For purposes of the NFIP, a floodway is used as a tool to assist local communities in balancing floodplain development against increasing flood hazard. With this approach, the area of the 1% annual chance floodplain on a river is divided into a floodway and a floodway fringe based on hydraulic modeling. The floodway is the channel of a stream, plus any adjacent floodplain areas, that must be kept free of encroachment in order to carry the 1% annual chance flood. The floodway fringe is the area between the floodway and the 1% annual chance floodplain boundaries where encroachment is permitted. The floodway must be wide enough so that the floodway fringe could be completely obstructed without increasing the water surface elevation of the 1% annual chance flood more than 1 foot at any point. Typical relationships between the floodway and the floodway fringe and their significance to floodplain development are shown in Figure 4.

To participate in the NFIP, Federal regulations require communities to limit increases caused by encroachment to 1.0 foot, provided that hazardous velocities are not produced. The floodways in this project are presented to local agencies as minimum standards that can be adopted directly or that can be used as a basis for additional floodway projects.

Figure 4: Floodway Schematic



2.3 Base Flood Elevations

The hydraulic characteristics of flooding sources were analyzed to provide estimates of the elevations of floods of the selected recurrence intervals. The Base Flood Elevation (BFE) is the elevation of the 1% annual chance flood. These BFEs are most commonly rounded to the whole foot, as shown on the FIRM, but in certain circumstances or locations they may be rounded to 0.1 foot. Cross section lines shown on the FIRM may also be labeled with the BFE rounded to 0.1 foot. Whole-foot BFEs derived from engineering analyses that apply to coastal areas, areas of ponding, or other static areas with little elevation change may also be shown at selected intervals on the FIRM.

Cross sections with BFEs shown on the FIRM correspond to the cross sections shown in the Floodway Data table and Flood Profiles in this FIS Report. BFEs are primarily intended for flood insurance rating purposes. For construction and/or floodplain management purposes, users are cautioned to use the flood elevation data presented in this FIS Report in conjunction with the data shown on the FIRM.

2.4 Non-Encroachment Zones

This section is not applicable to this Flood Risk Project.

2.5 Coastal Flood Hazard Areas

This section is not applicable to this Flood Risk Project.

2.5.1 Water Elevations and the Effects of Waves

This section is not applicable to this Flood Risk Project.

Figure 5: Wave Runup Transect Schematic

Not applicable to this Flood Risk Project.

2.5.2 Floodplain Boundaries and BFEs for Coastal Areas

This section is not applicable to this Flood Risk Project.

2.5.3 Coastal High Hazard Areas

This section is not applicable to this Flood Risk Project.

Figure 6: Coastal Transect Schematic

Not applicable to this Flood Risk Project.

2.5.4 Limit of Moderate Wave Action

This section is not applicable to this Flood Risk Project.

SECTION 3.0 – INSURANCE APPLICATIONS

3.1 National Flood Insurance Program Insurance Zones

For flood insurance applications, the FIRM designates flood insurance rate zones as described in Figure 3. Each FIRM panel contains an abbreviated legend of the features shown of the maps. However, the FIRM panel does not contain enough space to show the legend for all map features. Figure 3 shows the full legend of all map features. Flood insurance zone designations are assigned to flooding sources based on the results of the hydraulic or coastal analyses. Insurance agents use the zones shown on the FIRM and depths and base flood elevations in this FIS Report in conjunction with information on structures and their contents to assign premium rates for flood insurance policies.

The 1% annual chance floodplain boundary corresponds to the boundary of the areas of special flood hazards (e.g. Zones A, AE, V, VE, etc.), and the 0.2% annual chance floodplain boundary corresponds to the boundary of areas of additional flood hazards.

Table 3 lists the flood insurance zones in Madison County.

Table 3: Flood Zone Designations by Community

Community	Flood Zone(s)
Madison County, Unincorporated Areas	A, AE, X
Madison, Town of	X

3.2 Coastal Barrier Resources System

This section is not applicable to this Flood Risk Project.

Table 4: Coastal Barrier Resources System Information

Not applicable to this Flood Risk Project.

SECTION 4.0 – AREA STUDIED

4.1 Basin Description

Table 5 contains a description of the characteristics of the HUC-8 sub-basins within which each community falls. The table includes the main flooding sources within each basin, a brief description of the basin, and its drainage area.

Table 5: Basin Characteristics

HUC-8 Sub-Basin Name	HUC-8 Sub-Basin Number	Primary Flooding Source	Description of Affected Area	Drainage Area (square miles)
Rapidan-Upper Rappahannock	02080103	Mountain Run, Rapidan River, Rappahannock River	Encompassing all of Culpeper, Madison and Rappahannock Counties, as well as portions of Albemarle, Fauquier, Greene, Orange, Spotsylvania, and Stafford Counties; this watershed extends easterly from the Blue Ridge region through the Piedmont region of north-central Virginia	1,530

4.2 Principal Flood Problems

Table 6 contains a description of the principal flood problems that have been noted for Madison County by flooding source.

Table 6: Principal Flood Problems

Flooding Source	Description of Flood Problems
Hughes River	The Hughes River flooding problems are primarily due to overflow caused by drainage of the eastern slopes of the Blue Ridge Mountains
Robinson River	The flooding on the Robinson River is typically caused by drainage from the eastern slopes of the Blue Ridge Mountains. The flood of record for Madison County occurred October 15, 1942 on the Robinson River near Locust Dale. More recent floods on the Robinson River have occurred in June 1972 and November 1985. Other significant floods have occurred in June 1995 and September 1996.

Table 7 contains information about historic flood elevations in the communities within Madison County.

Table 7: Historic Flooding Elevations

Flooding Source	Location	Historic Peak (Feet NAVD88)	Event Date	Approximate Recurrence Interval (years)	Source of Data
Rapidan River	Near Ruckersville	470.1	1995	n/a	USGS gage
Robinson River	Near Locust Dale	807.6	1942	100	USGS gage

4.3 Non-Levee Flood Protection Measures

Table 8 contains information about non-levee flood protection measures within Madison County such as dams, jetties, and or dikes. Levees are addressed in Section 4.4 of this FIS Report.

Table 8: Non-Levee Flood Protection Measures

Not applicable to this Flood Risk Project.

4.4 Levees

This section is not applicable to this Flood Risk Project.

Table 9: Levees

Not applicable to this Flood Risk Project.

SECTION 5.0 – ENGINEERING METHODS

For the flooding sources in the community, standard hydrologic and hydraulic study methods were used to determine the flood hazard data required for this study. Flood events of a magnitude that are expected to be equaled or exceeded at least once on the average during any 10-, 25-, 50-, 100-, or 500-year period (recurrence interval) have been selected as having special significance for floodplain management and for flood insurance rates. These events, commonly termed the 10-, 25-, 50-, 100-, and 500-year floods, have a 10-, 4-, 2-, 1-, and 0.2% annual chance, respectively, of being equaled or exceeded during any year.

Although the recurrence interval represents the long-term, average period between floods of a specific magnitude, rare floods could occur at short intervals or even within the same year. The risk of experiencing a rare flood increases when periods greater than 1 year are considered. For example, the risk of having a flood that equals or exceeds the 100-year flood (1-percent chance of annual exceedance) during the term of a 30-year mortgage is approximately 26 percent (about 3 in 10); for any 90-year period, the risk increases to approximately 60 percent (6 in 10). The analyses reported herein reflect flooding potentials based on conditions existing in the community at the time of completion of this study. Maps and flood elevations will be amended periodically to reflect future changes.

5.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish the peak elevation-frequency relationships for floods of the selected recurrence intervals for each flooding source studied. Hydrologic analyses are typically performed at the watershed level. Depending on factors such as watershed size and shape, land use and urbanization, and natural or man-made storage, various models or methodologies may be applied. A summary of the hydrologic methods applied to develop the discharges used in the hydraulic analyses for each stream is provided in Table 13. Greater detail (including assumptions, analysis, and results) is available in the archived project documentation.

A summary of the discharges is provided in Table 10. Frequency Discharge-Drainage Area Curves used to develop the hydrologic models may also be shown in Figure 7 for selected flooding sources. A summary of stillwater elevations developed for non-coastal flooding sources is provided in Table 11. Stream gage information is provided in Table 12.

Discharges for flooding sources designated as Zone A on the FIRM are not shown in Table 10 of this FIS report, however, discharge values are included in the FIRM database in the S_Nodes and L_SUMMARY_DISCHARGES feature classes.

Table 10: Summary of Discharges

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)					
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance Existing	1% Annual Chance Future	0.2% Annual Chance
Hughes River	Near Peola Mills (State Route 231 bridge)	19.60	*	*	*	8,320	*	*
	At Nethers (State Route 681 bridge)	17.10	*	*	*	7,820	*	*
Robinson River Lower Reach	Near Locust Dale (gaging station No. 01666500)	179.0	*	*	*	42,200	*	*
Robinson River Upper Reach	At Banco (gaging station No. 01665850)	46.70	*	*	*	16,100	*	*
	Below Rose River near Criglersville	33.10	*	*	*	12,600	*	*
	Above Rose River near Criglersville	17.30	*	*	*	7,760	*	*
	Below Cedar Run near Syria (gaging station No. 01665740)	9.77	*	*	*	5,240	*	*
Rose River	At mouth near Criglersville	15.80	*	*	*	7,140	*	*
	At State Route 648 near Syria	13.50	*	*	*	6,500	*	*

*Not calculated for this Flood Risk Project

Figure 7: Frequency Discharge-Drainage Area Curves

Not applicable to this Flood Risk Project.

Table 11: Summary of Non-Coastal Stillwater Elevations

Not applicable to this Flood Risk Project.

Table 12: Stream Gage Information used to Determine Discharges

Not applicable to this Flood Risk Project.

5.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of flooding from the sources studied were carried out to provide estimates of the elevations of floods of the selected recurrence intervals. Base flood elevations on the FIRM represent the elevations shown on the Flood Profiles and in the Floodway Data tables in the FIS Report. Rounded whole-foot elevations may be shown on the FIRM in coastal areas, areas of ponding, and other areas with static base flood elevations. These whole-foot elevations may not exactly reflect the elevations derived from the hydraulic analyses. Flood elevations shown on the FIRM are primarily intended for flood insurance rating purposes. For construction and/or floodplain management purposes, users are cautioned to use the flood elevation data presented in this FIS Report in conjunction with the data shown on the FIRM. The hydraulic analyses for this FIS were based on unobstructed flow. The flood elevations shown on the profiles are thus considered valid only if hydraulic structures remain unobstructed, operate properly, and do not fail.

For streams for which hydraulic analyses were based on cross sections, locations of selected cross sections are shown on the Flood Profiles (Exhibit 1). For stream segments for which a floodway was computed (Section 6.3), selected cross sections are also listed in Table 24, "Floodway Data."

A summary of the methods used in hydraulic analyses performed for this project is provided in Table 13. Roughness coefficients are provided in Table 14. Roughness coefficients are values representing the frictional resistance water experiences when passing overland or through a channel. They are used in the calculations to determine water surface elevations. Greater detail (including assumptions, analysis, and results) is available in the archived project documentation.

Table 13: Summary of Hydrologic and Hydraulic Analyses

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Hughes River	State Route 231	Approximately 250 feet upstream of Pine Hill Road (State Route 707)	1977 and 1978 USGS Regression Equations	WSPRO	1987	AE	Discharges were computed using both 1977 and 1978 methods and weighted by equivalent years of record to determine values used in this study.
Robinson River Lower Reach	Approximately 150 feet upstream of USGS Gauge No. 01666500	Approximately 9,600 feet upstream of USGS Gauge No. 01666500	1977 and 1978 USGS Regression Equations	WSPRO	1987	AE	Discharges were computed using both 1977 and 1978 methods and weighted by equivalent years of record to determine values used in this study. Floodplain boundaries have been redelineated using 2017 LiDAR.
Robinson River Upper Reach	Approximately 1,100 feet upstream of the confluence of Leathers Run	At confluence of Robinson River Tributary 9	1977 and 1978 USGS Regression Equations	WSPRO	1987	AE	Discharges were computed using both 1977 and 1978 methods and weighted by equivalent years of record to determine values used in this study.
Rose River	Confluence with Robinson River	Approximately 8,900 feet upstream of State Route 648	1977 and 1978 USGS Regression Equations	WSPRO	1987	AE	Discharges were computed using both 1977 and 1978 methods and weighted by equivalent years of record to determine values used in this study.
All Zone A Areas within HUC 02080103	At downstream limits of study	At upstream limits of study	SIR 2011-5144 and SIR 2014-5090	HEC-RAS 3.1.1 and up	2018	A	Effects of hydraulic structures were not considered in the models.

Table 14: Roughness Coefficients

Flooding Source	Channel "n"	Overbank "n"
Hughes River	0.030-0.075	0.030-0.075
Rose River	0.030-0.075	0.030-0.075
Robinson River Lower Reach	0.030-0.075	0.030-0.075
Robinson River Upper Reach	0.030-0.075	0.030-0.075
All Streams Studied by Approximate Methods	0.045-0.055	0.045-0.120

5.3 Coastal Analyses

This section is not applicable to this Flood Risk Project.

Table 15: Summary of Coastal Analyses

Not applicable to this Flood Risk Project.

5.3.1 Total Stillwater Elevations

This section is not applicable to this Flood Risk Project.

Figure 8: 1% Annual Chance Total Stillwater Elevations for Coastal Areas

Not applicable to this Flood Risk Project.

Table 16: Tide Gage Analysis Specifics

Not applicable to this Flood Risk Project.

5.3.2 Waves

This section is not applicable to this Flood Risk Project.

5.3.3 Coastal Erosion

This section is not applicable to this Flood Risk Project.

5.3.4 Wave Hazard Analyses

This section is not applicable to this Flood Risk Project.

Table 17: Coastal Transect Parameters

Not applicable to this Flood Risk Project.

Figure 9: Transect Location Map

Not applicable to this Flood Risk Project

5.4 Alluvial Fan Analyses

This section is not applicable to this Flood Risk Project.

Table 18: Summary of Alluvial Fan Analyses

Not applicable to this Flood Risk Project.

Table 19: Results of Alluvial Fan Analyses

Not applicable to this Flood Risk Project.

SECTION 6.0 – MAPPING METHODS

6.1 Vertical and Horizontal Control

All FIS Reports and FIRMs are referenced to a specific vertical datum. The vertical datum provides a starting point against which flood, ground, and structure elevations can be referenced and compared. Until recently, the standard vertical datum used for newly created or revised FIS Reports and FIRMs was the National Geodetic Vertical Datum of 1929 (NGVD29). With the completion of the North American Vertical Datum of 1988 (NAVD88), many FIS Reports and FIRMs are now prepared using NAVD88 as the referenced vertical datum.

Flood elevations shown in this FIS Report and on the FIRMs are referenced to NAVD88. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding conversion between NGVD29 and NAVD88 or other datum conversion, visit the National Geodetic Survey website at <https://www.ngs.noaa.gov>.

Temporary vertical monuments are often established during the preparation of a flood hazard analysis for the purpose of establishing local vertical control. Although these monuments are not shown on the FIRM, they may be found in the archived project documentation associated with the FIS Report and the FIRMs for this community. Interested individuals may contact FEMA to access these data.

To obtain current elevation, description, and/or location information for benchmarks in the area, please visit the NGS website at <https://www.ngs.noaa.gov>.

The datum conversion locations and values that were calculated for Madison County are provided in Table 20.

Table 20: Countywide Vertical Datum Conversion

Quadrangle Name	Quadrangle Corner	Latitude	Longitude	Conversion from NGVD29 to NAVD88 (feet)
Barboursville	NE	38.250	-78.250	-0.721
Big Meadows	NE	38.625	-78.375	-0.519
Earlsville	NE	38.250	-78.375	-0.660
Fletcher	NE	38.500	-78.375	-0.561
Gordonsville	NE	38.250	-78.125	-0.776
Madison	NE	38.500	-78.250	-0.703
Madison Mills	NE	38.375	-78.125	-0.769
Rochelle	NE	38.375	-78.250	-0.731
Stanardsville	NE	38.375	-78.375	-0.655
Average Conversion from NGVD29 to NAVD88 = -0.677 feet				

Table 21: Stream-Based Vertical Datum Conversion

Not applicable to this Flood Risk Project.

6.2 Base Map

The FIRMs and FIS Report for this project have been produced in a digital format. The flood hazard information was converted to a Geographic Information System (GIS) format that meets FEMA’s FIRM Database specifications and geographic information standards. This information is provided in a digital format so that it can be incorporated into a local GIS and be accessed more easily by the community. The FIRM Database includes most of the tabular information contained in the FIS Report in such a way that the data can be associated with pertinent spatial features. For example, the information contained in the Floodway Data table and Flood Profiles can be linked to the cross sections that are shown on the FIRMs. Additional information about the FIRM Database and its contents can be found in FEMA’s *Guidelines and Standards for Flood Risk Analysis and Mapping*, <https://www.fema.gov/guidelines-and-standards-flood-risk-analysis-and-mapping>.

Base map information shown on the FIRM was derived from the sources described in Table 22.

Table 22: Base Map Sources

Data Type	Data Provider	Data Date	Data Scale	Data Description
8-Digit Watershed Boundary	USDA/NRCS - National Cartography & Geospatial Center	2013	24,000	
Orthophoto	USDA-FSA Aerial Photography Field Office	2016	12,000	Orthoimagery for all of Madison County
Submittal Information	ATKINS	2017	N/A	
USGS National Hydrography Dataset	United States Geological Survey	2017	24,000	Digital geospatial datasets of surface water, including rivers, streams, canals, lakes, ponds, dams and stream gages
Virginia Administrative Boundaries	Virginia Geographic Information Network	2017	24,000	County and community boundary data and shapefiles
Virginia Road Centerlines	Virginia Geographic Information Network	2016	24,000	Primary and secondary roadway data and shapefiles

6.3 Floodplain and Floodway Delineation

The FIRM shows tints, screens, and symbols to indicate floodplains and floodways as well as the locations of selected cross sections used in the hydraulic analyses and floodway computations.

For riverine flooding sources, the mapped floodplain boundaries shown on the FIRM have been delineated using the flood elevations determined at each cross section; between cross sections, the boundaries were interpolated using the topographic elevation data described in Table 23.

In cases where the 1% and 0.2% annual chance floodplain boundaries are close together, only the 1% annual chance floodplain boundary has been shown. Small areas within the floodplain boundaries may lie above the flood elevations but cannot be shown due to limitations of the map scale and/or lack of detailed topographic data.

The floodway widths presented in this FIS Report and on the FIRM were computed for certain stream segments on the basis of equal conveyance reduction from each side of the floodplain. Floodway widths were computed at cross sections. Between cross sections, the floodway boundaries were interpolated. Table 2 indicates the flooding sources for which floodways have been determined. The results of the floodway computations for those flooding sources have been tabulated for selected cross sections and are shown in Table 24, "Floodway Data."

Table 23: Summary of Topographic Elevation Data used in Mapping

Community	Flooding Source	Source for Topographic Elevation Data			
		Description	Vertical Accuracy	Horizontal Accuracy	Citation
Madison County	Rapidan-Upper Rappahannock Watershed	LiDAR	18.9 cm RMSEZ	1 meter at 95% confidence level	STARRII 2017

BFEs shown at cross sections on the FIRM represent the 1% annual chance water surface elevations shown on the Flood Profiles and in the Floodway Data tables in the FIS Report.

Table 24: Floodway Data

Not applicable to this Flood Risk Project.

Table 25: Flood Hazard and Non-Encroachment Data for Selected Streams

Not applicable to this Flood Risk Project.

6.4 Coastal Flood Hazard Mapping

This section is not applicable to this Flood Risk Project.

Table 26: Summary of Coastal Transect Mapping Considerations

Not applicable to this Flood Risk Project.

6.5 FIRM Revisions

This FIS Report and the FIRM are based on the most up-to-date information available to FEMA at the time of its publication; however, flood hazard conditions change over time. Communities or private parties may request flood map revisions at any time. Certain types of requests require submission of supporting data. FEMA may also initiate a revision. Revisions may take several forms, including Letters of Map Amendment (LOMAs), Letters of Map Revision Based on Fill (LOMR-Fs), Letters of Map Revision (LOMRs) (referred to collectively as Letters of Map Change (LOMCs)), Physical Map Revisions (PMRs), and FEMA-contracted restudies. These types of revisions are further described below. Some of these types of revisions do not result in the republishing of the FIS Report. To assure that any user is aware of all revisions, it is advisable to contact the community repository of flood-hazard data (shown in Table 31, “Map Repositories”).

6.5.1 Letters of Map Amendment

A LOMA is an official revision by letter to an effective NFIP map. A LOMA results from an administrative process that involves the review of scientific or technical data submitted by the owner or lessee of property who believes the property has incorrectly been included in a designated SFHA. A LOMA amends the currently effective FEMA map and establishes that a specific property is not located in a SFHA.

To obtain an application for a LOMA, visit <https://www.fema.gov/floodplain-management/letter-map-amendment-loba> and download the form “MT-1 Application Forms and Instructions for Conditional and Final Letters of Map Amendment and Letters of Map Revision Based on Fill”. Visit the “Flood Map-Related Fees” section to determine the cost, if any, of applying for a LOMA.

FEMA offers a tutorial on how to apply for a LOMA. The LOMA Tutorial Series can be accessed at <https://www.fema.gov/online-tutorials>.

For more information about how to apply for a LOMA, call the FEMA Mapping and Insurance eXchange, toll free, at 1-877-FEMA MAP (1-877-336-2627).

6.5.2 Letters of Map Revision Based on Fill

A LOMR-F is an official revision by letter to an effective NFIP map. A LOMR-F states FEMA's determination concerning whether a structure or parcel has been elevated on fill above the base flood elevation and is, therefore, excluded from the SFHA.

Information about obtaining an application for a LOMR-F can be obtained in the same manner as that for a LOMA, by visiting <https://www.fema.gov/floodplain-management/letter-map-amendment-loma> for the "MT-1 Application Forms and Instructions for Conditional and Final Letters of Map Amendment and Letters of Map Revision Based on Fill" or by calling the FEMA Mapping and Insurance eXchange, toll free, at 1- 877-FEMA MAP (1-877-336-2627). Fees for applying for a LOMR-F, if any, are listed in the "Flood Map-Related Fees" section.

A tutorial for LOMR-F is available at <https://www.fema.gov/online-tutorials>.

6.5.3 Letters of Map Revision

A LOMR is an official revision to the currently effective FEMA map. It is used to change flood zones, floodplain and floodway delineations, flood elevations and planimetric features. All requests for LOMRs should be made to FEMA through the chief executive officer of the community, since it is the community that must adopt any changes and revisions to the map. If the request for a LOMR is not submitted through the chief executive officer of the community, evidence must be submitted that the community has been notified of the request.

To obtain an application for a LOMR, visit <https://www.fema.gov/national-flood-insurance-program-flood-hazard-mapping/mt-2-application-forms-and-instructions> and download the form "MT-2 Application Forms and Instructions for Conditional Letters of Map Revision and Letters of Map Revision". Visit the "Flood Map-Related Fees" section to determine the cost of applying for a LOMR. For more information about how to apply for a LOMR, call the FEMA Mapping and Insurance eXchange; toll free, at 1-877-FEMA MAP (1-877-336-2627) to speak to a Map Specialist.

Previously issued mappable LOMCs (including LOMRs) that have been incorporated into the Madison County FIRM are listed in Table 27.

Table 27: Incorporated Letters of Map Change

Not applicable to this Flood Risk Project.

6.5.4 Physical Map Revisions

A Physical Map Revisions (PMR) is an official republication of a community's NFIP map to effect changes to base flood elevations, floodplain boundary delineations, regulatory floodways and planimetric features. These changes typically occur as a result of structural works or improvements, annexations resulting in additional flood hazard areas or correction to base flood elevations or SFHAs.

The community's chief executive officer must submit scientific and technical data to FEMA to support the request for a PMR. The data will be analyzed and the map will be revised if warranted. The community is provided with copies of the revised information and is afforded a review period. When the base flood elevations are changed, a 90-day appeal period is provided. A 6-month adoption period for formal approval of the revised map(s) is also provided.

For more information about the PMR process, please visit <https://www.fema.gov> and visit the "Flood Map Revision Processes" section.

6.5.5 Contracted Restudies

The NFIP provides for a periodic review and restudy of flood hazards within a given community. FEMA accomplishes this through a national watershed-based mapping needs assessment strategy, known as the Coordinated Needs Management Strategy (CNMS). The CNMS is used by FEMA to assign priorities and allocate funding for new flood hazard analyses used to update the FIS Report and FIRM. The goal of CNMS is to define the validity of the engineering study data within a mapped inventory. The CNMS is used to track the assessment process, document engineering gaps and their resolution, and aid in prioritization for using flood risk as a key factor for areas identified for flood map updates. Visit <https://www.fema.gov> to learn more about the CNMS or contact the FEMA Regional Office listed in Section 8 of this FIS Report.

6.5.6 Community Map History

The current FIRM presents flooding information for the entire geographic area of Madison County. Previously, separate FIRMs, Flood Hazard Boundary Maps (FHBM) and/or Flood Boundary and Floodway Maps (FBFM) may have been prepared for the incorporated communities and the unincorporated areas in the county that had identified SFHAs. Current and historical data relating to the maps prepared for the project area are presented in Table 28, "Community Map History." A description of each of the column headings and the source of the date is also listed below.

- *Community Name* includes communities falling within the geographic area shown on the FIRM, including those that fall on the boundary line, nonparticipating communities, and communities with maps that have been rescinded. Communities with No Special Flood Hazards are indicated by a footnote. If all maps (FHBM, FBFM, and FIRM) were rescinded for a community, it is not listed in this table unless SFHAs have been identified in this community.
- *Initial Identification Date (First NFIP Map Published)* is the date of the first NFIP map that identified flood hazards in the community. If the FHBM has been converted to a FIRM, the initial FHBM date is shown. If the community has never been mapped, the upcoming effective date or "pending" (for Preliminary FIS Reports) is shown. If the community is listed in Table 28 but not identified on the map, the community is treated as if it were unmapped.
- *Initial FHBM Effective Date* is the effective date of the first FHBM. This date may be the same date as the Initial NFIP Map Date.

- *FHBM Revision Date(s)* is the date(s) that the FHBM was revised, if applicable.
- *Initial FIRM Effective Date* is the date of the first effective FIRM for the community.
- *FIRM Revision Date(s)* is the date(s) the FIRM was revised, if applicable. This is the revised date that is shown on the FIRM panel, if applicable. As countywide studies are completed or revised, each community listed should have its FIRM dates updated accordingly to reflect the date of the countywide study. Once the FIRMs exist in countywide format, as PMRs of FIRM panels within the county are completed, the FIRM Revision Dates in the table for each community affected by the PMR are updated with the date of the PMR, even if the PMR did not revise all the panels within that community.

The initial effective date for the Madison County FIRMs in countywide format was 01/05/2007.

Table 28: Community Map History

Community Name	Initial Identification Date	Initial FHBM Effective Date	FHBM Revision Date(s)	Initial FIRM Effective Date	FIRM Revision Date(s)
Madison County, Unincorporated Areas	11/08/1974	11/08/1974	02/24/1978	04/03/1989	09/18/2020 01/05/2007
Madison, Town of ^{1,2}	01/05/2007	None	None	01/05/2007	09/18/2020

¹ This community did not have a FIRM prior to the first countywide FIRM for Madison County

² No identified Special Flood Hazard Areas

SECTION 7.0 – CONTRACTED STUDIES AND COMMUNITY COORDINATION

7.1 Contracted Studies

Table 29 provides a summary of the contracted studies, by flooding source, that are included in this FIS Report.

Table 29: Summary of Contracted Studies Included in this FIS Report

Flooding Source	FIS Report Dated	Contractor	Number	Work Completed Date	Affected Communities
Hughes River	04/03/1989	USGS	EMW-85-1823	July 1987	Madison County, Unincorporated Areas

Flooding Source	FIS Report Dated	Contractor	Number	Work Completed Date	Affected Communities
Rose River	04/03/1989	USGS	EMW-85-1823	July 1987	Madison County, Unincorporated Areas
Robinson River	04/03/1989	USGS	EMW-85-1823	July 1987	Madison County, Unincorporated Areas
Zone A	09/18/2020	STARRII	HSFE07-17-J-0009	October 2017	Madison County, Unincorporated Areas

7.2 Community Meetings

The dates of the community meetings held for this Flood Risk Project and previous Flood Risk Projects are shown in Table 30. These meetings may have previously been referred to by a variety of names (Community Coordination Officer (CCO), Scoping, Discovery, etc.), but all meetings represent opportunities for FEMA, community officials, study contractors, and other invited guests to discuss the planning for and results of the project.

Table 30: Community Meetings

Community	FIS Report Dated	Date of Meeting	Meeting Type	Attended By
Madison County Unincorporated Areas	04/03/1989	01/22/1985	Initial CCO Meeting	FEMA, the community, and the study contractor
		02/08/2010	Final CCO Meeting	FEMA, the community, and the study contractor
	01/05/2007	06/07/2006	Final CCO Meeting	FEMA, the community, and the study contractor
	09/18/2020	09/21/2017	Discovery	FEMA, the community, and the mapping contractor
	09/18/2020	02/05/2018	Flood Risk Review Meeting	FEMA, the community, and the mapping contractor
Madison, Town of	01/05/2007	06/07/2006	Final CCO Meeting	FEMA, the community, and the study contractor
	09/18/2020	09/21/2017	Discovery	FEMA, the community, and the mapping contractor
	09/18/2020	02/05/2018	Flood Risk Review Meeting	FEMA, the community, and the mapping contractor

SECTION 8.0 – ADDITIONAL INFORMATION

Information concerning the pertinent data used in the preparation of this FIS Report can be obtained by submitting an order with any required payment to the FEMA Engineering Library. For more information on this process, see <https://www.fema.gov>.

Table 31 is a list of the locations where FIRMs for Madison County can be viewed. Please note that the maps at these locations are for reference only and are not for distribution. Also, please note that only the maps for the community listed in the table are available at that particular repository. A user may need to visit another repository to view maps from an adjacent community.

Table 31: Map Repositories

Community	Address	City	State	Zip Code
Madison County, Unincorporated Areas	Madison County Administrative Center 414 North Main Street	Madison	VA	22727
Madison, Town of	Madison Town Office 23 Washington Circle	Madison	VA	22727

The National Flood Hazard Layer (NFHL) dataset is a compilation of effective FIRM Databases and LOMCs. Together they create a GIS data layer for a State or Territory. The NFHL is updated as studies become effective and extracts are made available to the public monthly. NFHL data can be viewed or ordered from the website shown in Table 32.

Table 32 contains useful contact information regarding the FIS Report, the FIRM, and other relevant flood hazard and GIS data. In addition, information about the State NFIP Coordinator and GIS Coordinator is shown in this table. At the request of FEMA, each Governor has designated an agency of State or territorial government to coordinate that State's or territory's NFIP activities. These agencies often assist communities in developing and adopting necessary floodplain management measures. State GIS Coordinators are knowledgeable about the availability and location of State and local GIS data in their state.

Table 32: Additional Information

FEMA and the NFIP	
FEMA and FEMA Engineering Library website	https://www.fema.gov/national-flood-insurance-program-flood-hazard-mapping/engineering-library
FEMA Region III	Federal Emergency Management Agency One Independence Mall 615 Chestnut Street, 6 th Floor Philadelphia, PA 19106-4404 (215) 931-5500
NFHL Dataset	https://msc.fema.gov
NFIP website	https://www.fema.gov/national-flood-insurance-program
Other Federal Agencies	
Hydraulic Engineering Center website	https://www.hec.usace.army.mil
USGS website	https://www.usgs.gov
State Agencies and Organizations	
State GIS Coordinator	Stuart Blankenship, Geospatial Projects Manager Integrated Services Program VITA, Virginia Geographic Information Network 11751 Meadowville Lane Chester, Virginia 23836 stuart.blankenship@vita.virginia.gov
Acting State NFIP Coordinator	Kristin Owen, CFM Virginia Department of Conservation and Recreation Division of Dam Safety and Floodplain Management 600 East Main Street, 24 th Floor Richmond, Virginia 23219 (804) 371-6135 charley.banks@dcr.virginia.gov

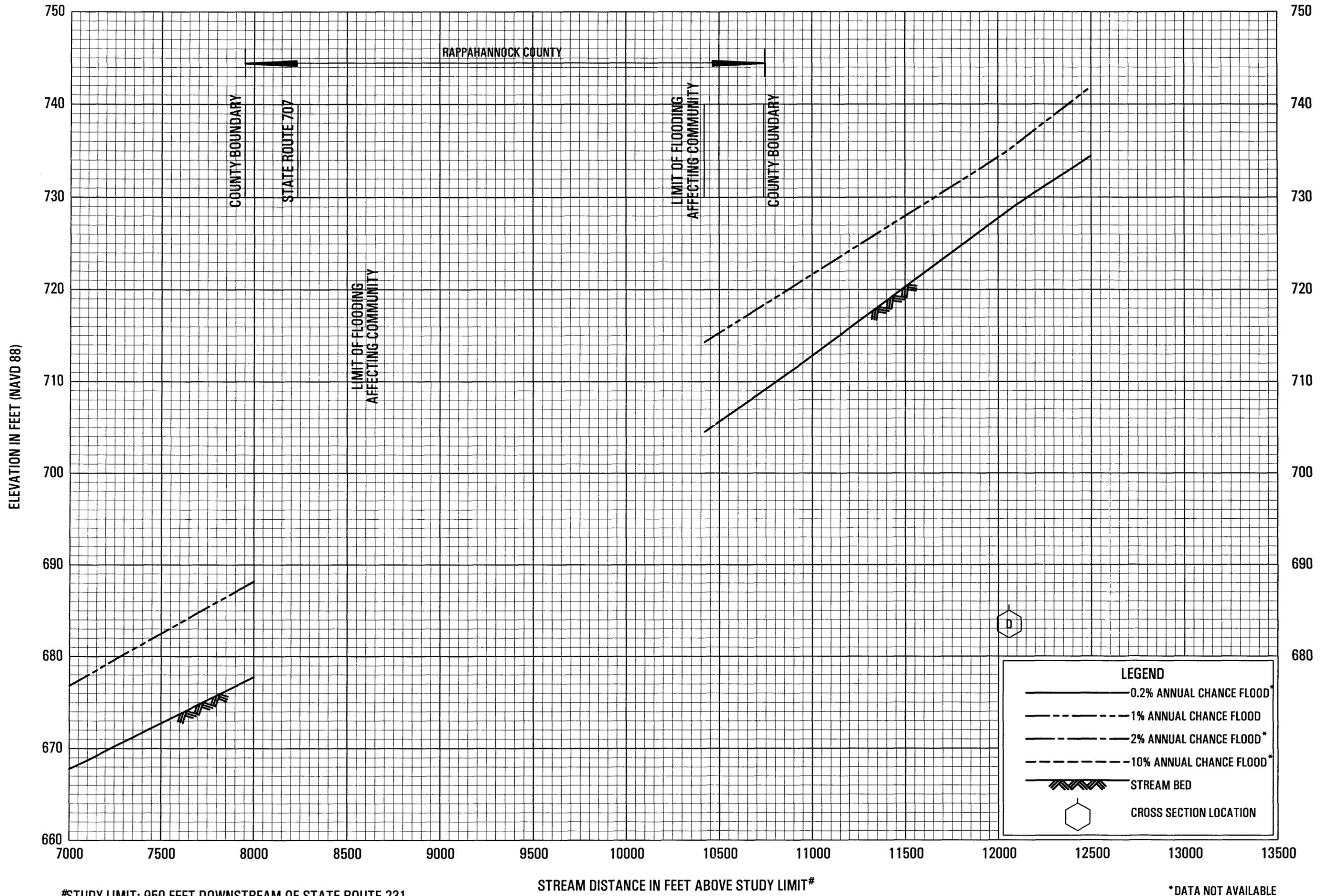
SECTION 9.0 – BIBLIOGRAPHY AND REFERENCES

Table 33 includes sources used in the preparation of and cited in this FIS Report as well as additional studies that have been conducted in the study area.

Table 33: Bibliography and References

Citation in this FIS	Publisher/ Issuer	<i>Publication Title, "Article," Volume, Number, etc.</i>	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
USGS	U.S. Department of the Interior, Geological Survey	Water Resources Investigations 78-5, <i>Technique for Estimating Magnitude and Frequency of Floods in Virginia</i>	E.M. Miller	Washington, D.C.	1978	https://pubs.er.usgs.gov/publication/wri785
USGS	U.S. Department of the Interior, Geological Survey	Water Resources Investigations 77-83, <i>A Technique for Determining Depths for T-Year Discharges in Boundary Channels</i>	D.E. Burkham	Washington, D.C.	1977	https://pubs.er.usgs.gov/publication/wri7783
USGS	U.S. Department of the Interior, Geological Survey, in cooperation with the Federal Highway Administration	<i>WSPRO User's Manual</i>	J.O. Sherman and others	Washington, D.C.	1983	https://water.usgs.gov/software/WSPRO/
USGS	U.S. Department of the Interior, Geological Survey	<i>7.5-Minute Series Topographic Maps, Scale 1:24,000, Contour Interval 20 Feet</i>	U.S. Department of the Interior, Geological Survey	Washington, D.C.	Various	https://topomaps.usgs.gov
FIA	U.S. Department of Housing and Urban Development, Federal Insurance Administration	<i>Flood Hazard Boundary Map, Unincorporated Areas of Madison County, Virginia</i>	U.S. Department of Housing and Urban Development, Federal Insurance Administration	Washington, D.C.	February 24, 1978	FEMA Flood Map Service Center https://msc.fema.gov

Citation in this FIS	Publisher/ Issuer	<i>Publication Title, "Article," Volume, Number, etc.</i>	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
FEMA	Federal Emergency Management Agency	<i>Flood Insurance Study, Madison County, Virginia and Incorporated Areas</i>	Federal Emergency Management Agency	Washington, D.C.	April 3, 1989	FEMA Flood Map Service Center https://msc.fema.gov
FEMA	Federal Emergency Management Agency	<i>Flood Insurance Study, Madison County, Virginia and Incorporated Areas</i>	Federal Emergency Management Agency	Washington, D.C.	January 5, 2007	FEMA Flood Map Service Center https://msc.fema.gov
FEMA	Federal Emergency Management Agency	<i>Flood Insurance Study, Unincorporated Areas of Orange County, Virginia</i>	Federal Emergency Management Agency	Washington, D.C.	September 10, 1984	FEMA Flood Map Service Center https://msc.fema.gov
USGS	U.S. Department of Interior, Geological Survey	<i>Peak Streamflow for Virginia</i>	U.S. Department of Interior, Geological Survey	Washington, D.C.		USGS https://nwis.waterdata.usgs.gov/va/nwis/peak



FLOOD PROFILES

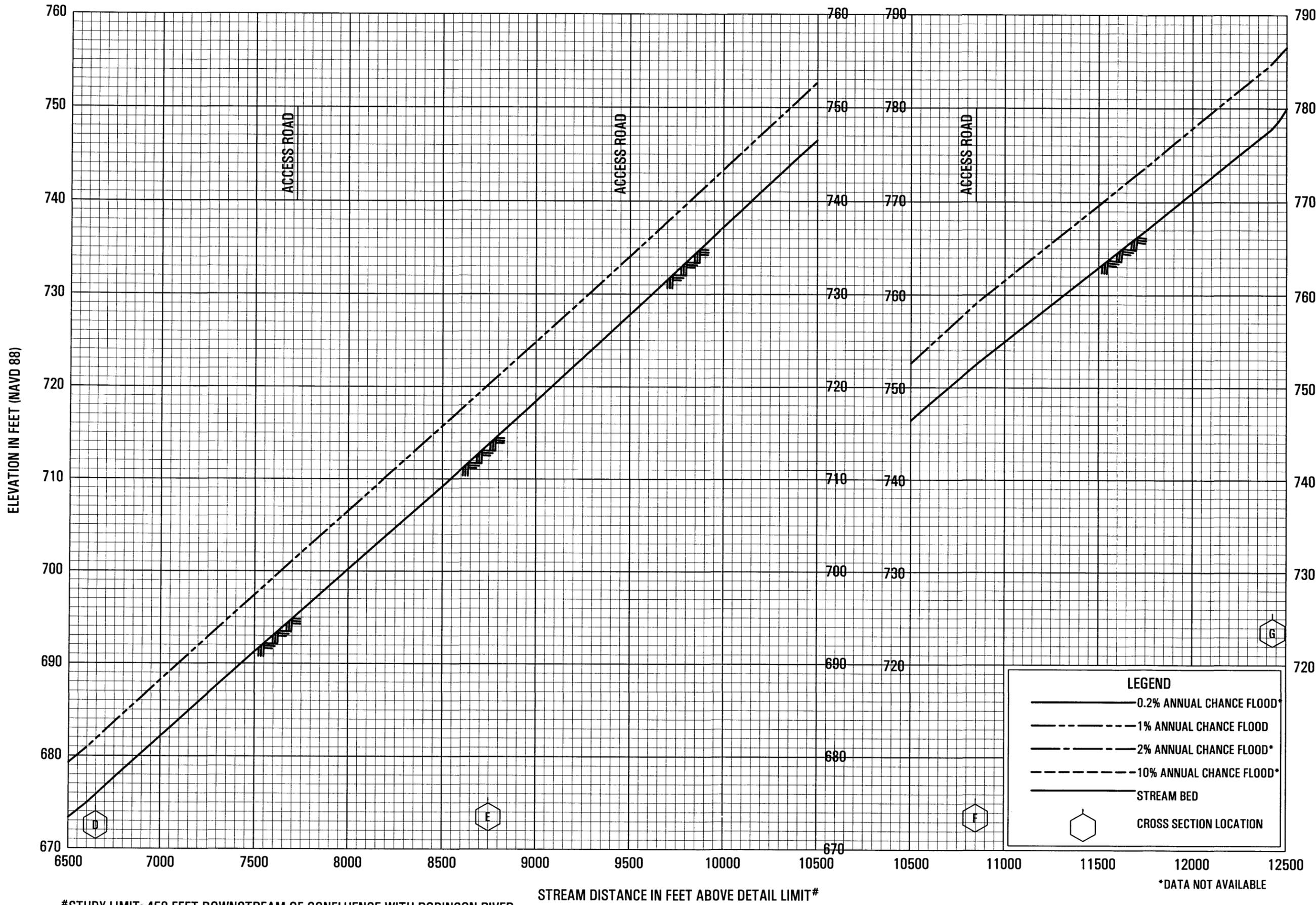
HUGHES RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

MADISON COUNTY, VA

AND INCORPORATED AREAS

02P



#STUDY LIMIT: 450 FEET DOWNSTREAM OF CONFLUENCE WITH ROBINSON RIVER

STREAM DISTANCE IN FEET ABOVE DETAIL LIMIT#

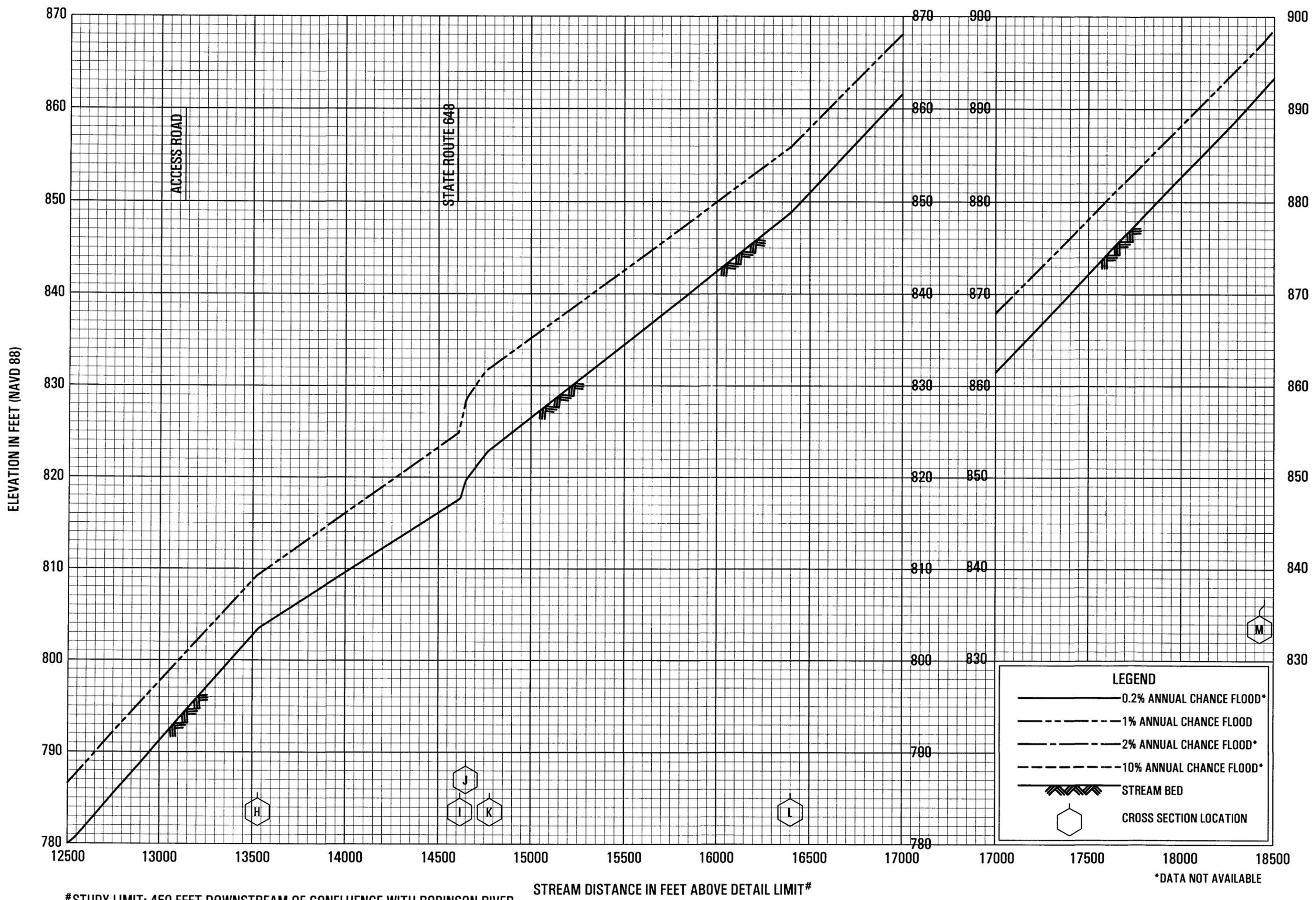
*DATA NOT AVAILABLE

FLOOD PROFILES

ROSE RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY
MADISON COUNTY, VA
 AND INCORPORATED AREAS

05P



#STUDY LIMIT: 450 FEET DOWNSTREAM OF CONFLUENCE WITH ROBINSON RIVER

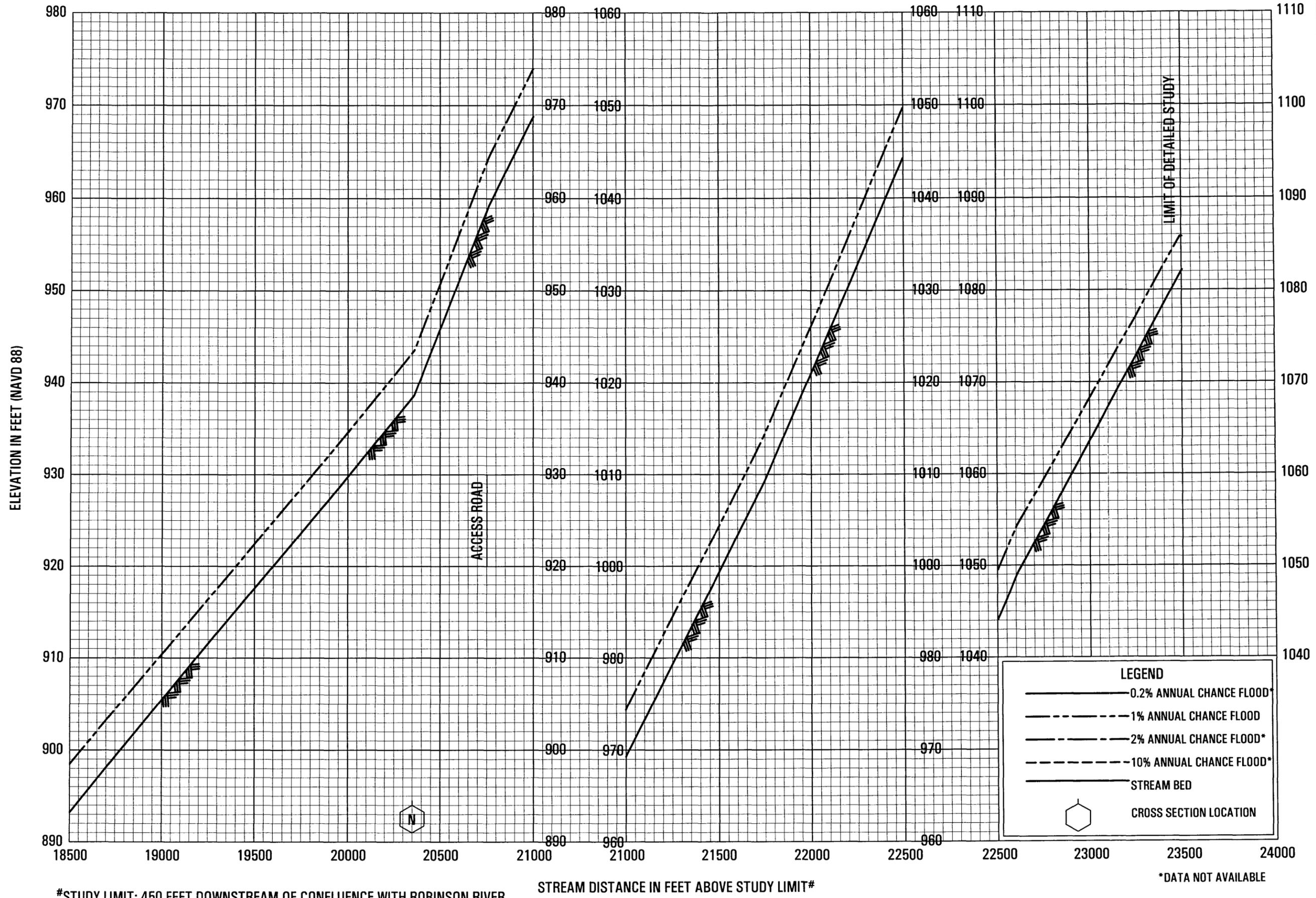
STREAM DISTANCE IN FEET ABOVE DETAIL LIMIT#

*DATA NOT AVAILABLE

FEDERAL EMERGENCY MANAGEMENT AGENCY
MADISON COUNTY, VA
 AND INCORPORATED AREAS

FLOOD PROFILES
 ROSE RIVER

06P



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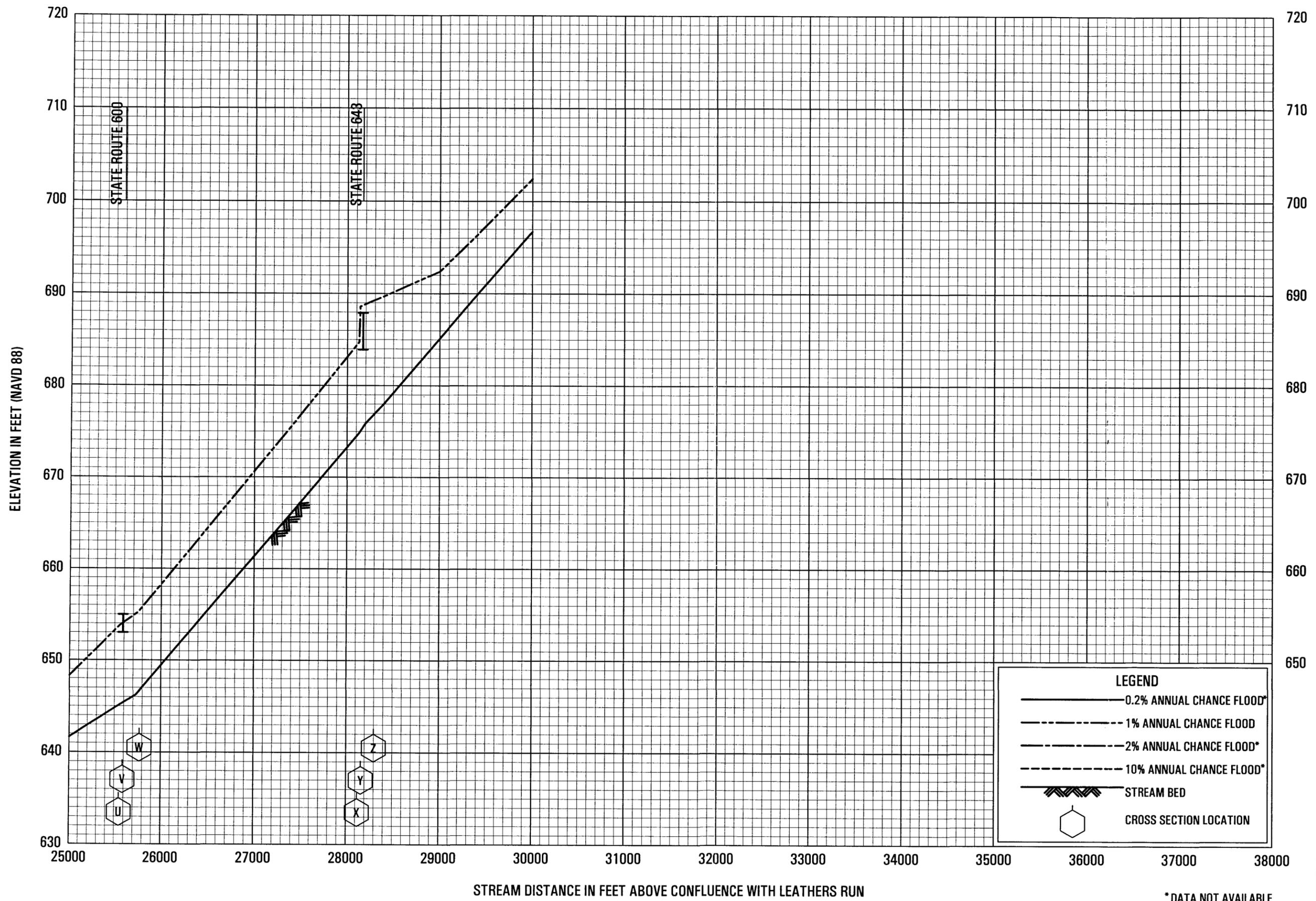
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FLOOD PROFILES

ROSE RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY
 MADISON COUNTY, VA
 AND INCORPORATED AREAS



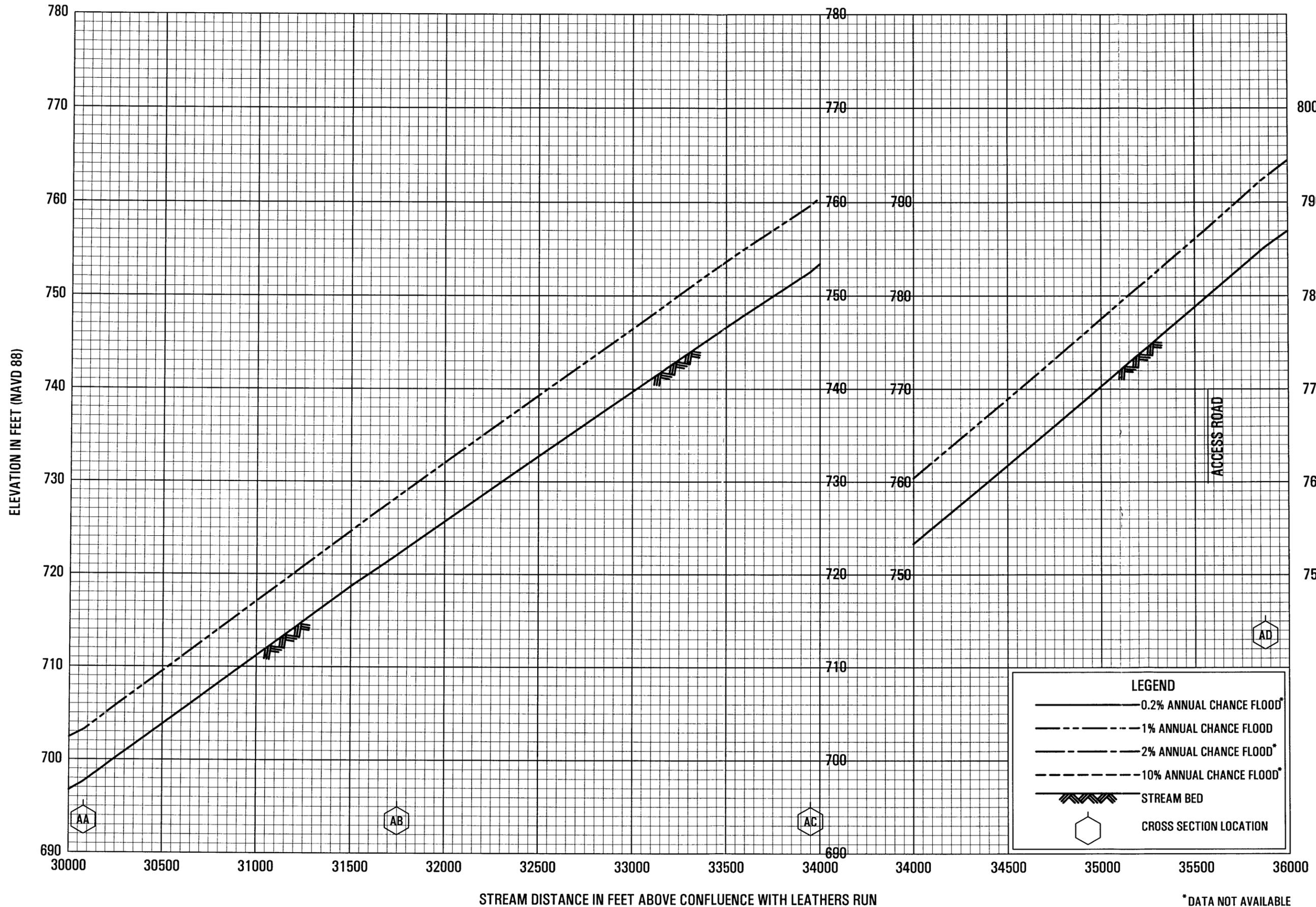
FLOOD PROFILES

ROBINSON RIVER UPPER REACH

FEDERAL EMERGENCY MANAGEMENT AGENCY
MADISON COUNTY, VA
AND INCORPORATED AREAS

11P

* DATA NOT AVAILABLE



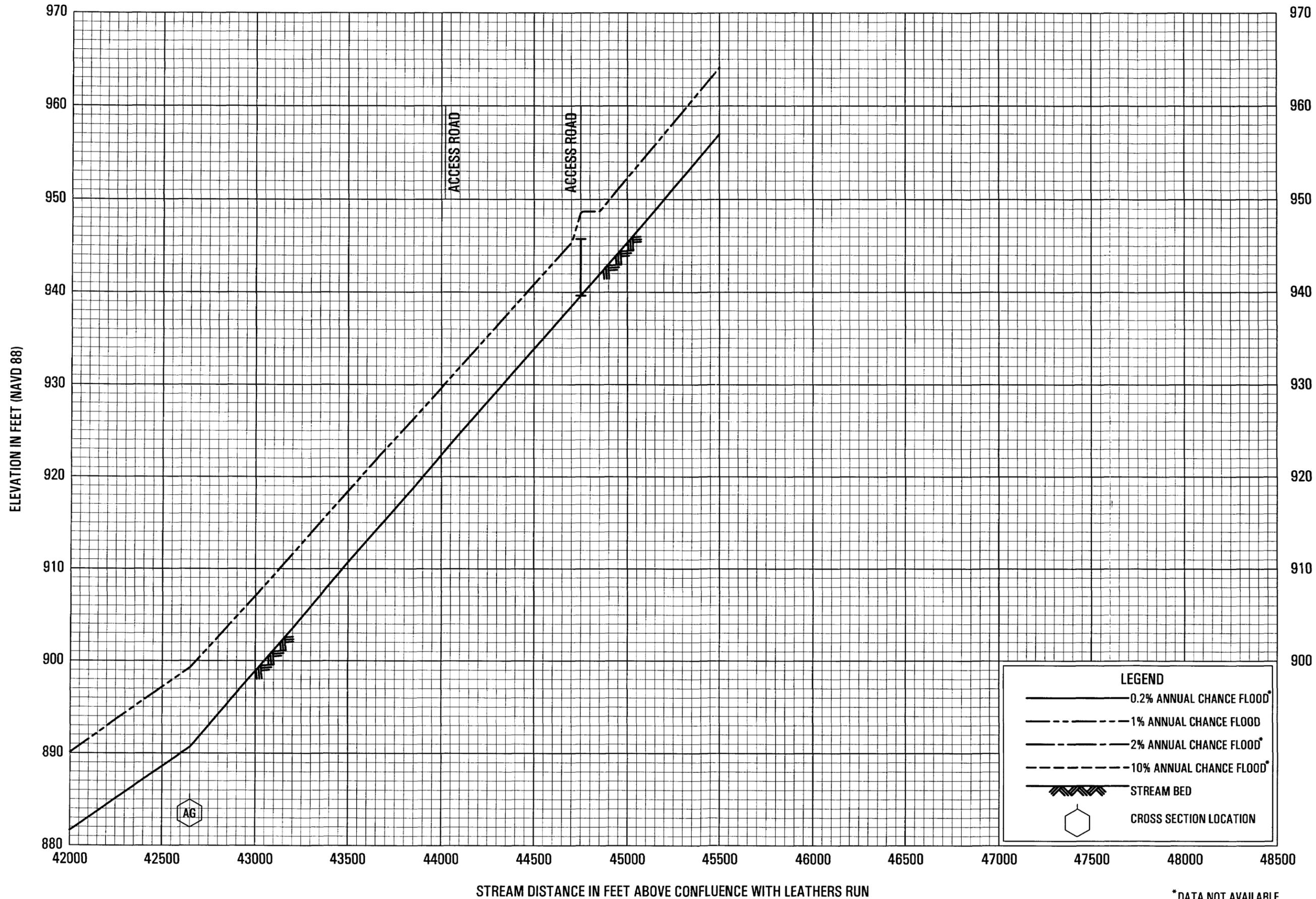
FLOOD PROFILES

ROBINSON RIVER UPPER REACH

FEDERAL EMERGENCY MANAGEMENT AGENCY
MADISON COUNTY, VA
AND INCORPORATED AREAS

12P

*DATA NOT AVAILABLE



FLOOD PROFILES
ROBINSON RIVER UPPER REACH

FEDERAL EMERGENCY MANAGEMENT AGENCY
MADISON COUNTY, VA
AND INCORPORATED AREAS

*DATA NOT AVAILABLE

