

FLOOD INSURANCE STUDY

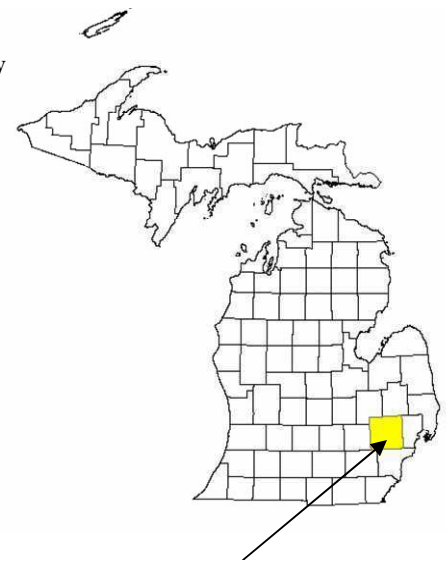
OAKLAND COUNTY, MICHIGAN

ALL JURISDICTIONS

VOLUME 1 OF 5



| Community Name | Community Number | Community Name | Community Number |
|-----------------------------|------------------|-------------------------------------|------------------|
| Addison, Township of | 261029 | Milford, Village of | 260317 |
| Auburn Hills, City of | 260263 | Northville, City of (Wayne/Oakland) | 260235 |
| * Berkley, City of | 260292 | Novi, City of | 260175 |
| Beverly Hills, Village of | 260256 | * Novi, Township of | 261039 |
| Bingham Farms, Village of | 260713 | * Oak Park, City of | 260323 |
| Birmingham, City of | 260168 | Oakland, Township of | 260476 |
| Bloomfield, Township of | 260169 | Orchard Lake Village, City of | 260477 |
| Bloomfield Hills, City of | 260712 | Orion, Township of | 261033 |
| Brandon, Township of | 261031 | Ortonville, Village of | 261034 |
| Clarkston, Village of | 260472 | * Oxford, Township of | 261035 |
| * Clawson, City of | 260170 | * Oxford, Village of | 261036 |
| Commerce, Township of | 260473 | * Pleasant Ridge, City of | 260606 |
| Farmington, City of | 260171 | Pontiac, City of | 260177 |
| Farmington Hills, City of | 260172 | Rochester, City of | 260326 |
| * Ferndale, City of | 260262 | Rochester Hills, City of | 260471 |
| Franklin, Village of | 260325 | Rose, Township of | 260729 |
| Groveland, Township of | 260992 | * Royal Oak, City of | 260178 |
| * Hazel Park, City of | 260289 | * Royal Oak, Township of | 260341 |
| Highland, Township of | 260650 | South Lyon, City of | 261037 |
| Holly, Township of | 260474 | Southfield, City of | 260179 |
| Holly, Village of | 260587 | Southfield, Township of | 260176 |
| * Huntington Woods, City of | 260723 | * Springfield, Township of | 260478 |
| Independence, Township of | 260475 | Sylvan Lake, City of | 260701 |
| Keego Harbor, City of | 260173 | Troy, City of | 260180 |
| Lake Angelus, City of | 260700 | Walled Lake, City of | 260181 |
| Lake Orion, Village of | 260588 | Waterford, Charter Township of | 260284 |
| * Lathrup Village, City of | 260297 | West Bloomfield, Township of | 260182 |
| * Leonard, Village of | 261030 | White Lake, Township of | 260479 |
| Lyon, Township of | 261032 | Wixom, City of | 261038 |
| * Madison Heights, City of | 260174 | Wolverine Lake, Village of | 260480 |
| Milford, Township of | 261040 | * Non Flood Prone | |



Oakland County



SEPTEMBER 29, 2006
Federal Emergency Management Agency

FLOOD INSURANCE STUDY NUMBER
26125CV001A

NOTICE TO
FLOOD INSURANCE STUDY USERS

Communities participating in the National Flood Insurance Program (NFIP) have established repositories of flood hazard data for floodplain management and flood insurance purposes. This Flood Insurance Study (FIS) report may not contain all data available within the Community Map Repository. It is advisable to contact the Community Map Repository for any additional data.

Part or all of this Flood Insurance Study may be revised and republished at any time. In addition, part of this Flood Insurance Study may be revised by the Letter of Map Revision process, which does not involve republication or redistribution of the Flood Insurance Study. It is, therefore, the responsibility of the user to consult with community officials and to check the community repository to obtain the most current Flood Insurance Study components.

Selected Flood Insurance Rate Map panels for this community contain information that was previously shown separately on the corresponding Flood Boundary and Floodway Map panels (e.g., floodways, cross sections). In addition, former flood hazard zone designations have been changed as follows:

| <u>Old Zones</u> | <u>New Zone</u> |
|------------------|-----------------|
| A1 through A30 | AE |
| B | X |
| C | X |

Countywide FIS Effective Date: September 29, 2006

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PUBLISHED SEPARATELY

- Flood Insurance Rate Map Index
- Flood Insurance Rate Maps

FLOOD INSURANCE STUDY

OAKLAND COUNTY, MICHIGAN – ALL JURISDICTIONS

1.0 INTRODUCTION

1.1 Purpose of Study

This 2006 Flood Insurance Study (FIS) revises and supersedes the FIS reports, Flood Insurance Rate Maps (FIRMs) and/or Flood Boundary and Floodway Maps (FBFMs) in the geographic area of Oakland County, including the Townships of Addison, Bloomfield, Brandon, Commerce, Groveland, Highland, Holly, Independence, Lyon, Milford, Novi, Oakland, Orion, Oxford, Rose, Royal Oak, Southfield, Springfield, West Bloomfield, and White Lake; the Charter Township of Waterford; the Villages of Beverly Hills, Bingham Farms, Clarkston, Franklin, Holly, Lake Orion, Leonard, Milford, Ortonville, Oxford, and Wolverine Lake; and the Cities of Auburn Hills (formerly Township of Pontiac), Berkley, Birmingham, Bloomfield Hills, Clawson, Farmington, Farmington Hills, Ferndale, Hazel Park, Huntington Woods, Keego Harbor, Lake Angelus, Lathrup Village, Madison Heights, Northville, Novi, Oak Park, Orchard Lake Village, Pleasant Ridge, Pontiac, Rochester, Rochester Hills, Royal Oak, South Lyon, Southfield, Sylvan Lake, Troy, Walled Lake, and Wixom of Oakland County (hereinafter referred to collectively as Oakland County), and aids in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. Please note that the Cities of Berkley, Clawson, Ferndale, Hazel Park, Huntington Woods, Lathrup Village, Madison Heights, Oak Park, Pleasant Ridge, and Royal Oak; the Townships of Novi, Oxford, Royal Oak, and Springfield; and the Villages of Leonard, and Oxford are Non-Flood Prone. This study has developed flood-risk data for various areas of the community that will be used to establish actuarial flood insurance rates and to assist the community in its efforts to promote sound floodplain management. Minimum floodplain management requirements for participation in the National Flood Insurance Program (NFIP) are set forth in the Code of Federal Regulations at 44 CFR. 60.3.

In some states or communities, floodplain management criteria or regulations may exist that are more restrictive or comprehensive than the minimum Federal requirements. In such cases, the more restrictive criteria take precedence and the State (or other jurisdictional agency) will be able to explain them.

The Digital Flood Insurance Rate Map (DFIRM) and FIS Report for this countywide study have been produced in digital format. Flood hazard information was converted to meet the FEMA DFIRM database specifications and Geographic Information System (GIS) format requirements. The flood hazard information was created and is provided in a digital format so that it can be incorporated into a local GIS and be accessed more easily by the community.

1.2 Authority and Acknowledgments

The sources of authority for this 2006 FIS are the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973.

Information on the authority and acknowledgments for each of the previously printed FISs and Flood Insurance Rate Maps (FIRMs) for communities within Oakland County was compiled, and is shown below.

- Township of Bloomfield: The hydrologic and hydraulic analyses for the November 1987 study for the Township of Bloomfield were performed by McNamee, Porter and Seeley/Smith, Hinchman and Grylls for the Federal Insurance Administration, under Contract No. H-4705. The analysis for this study was completed in May 1981. The hydraulic analysis for revisions were performed by Hubbell, Roth and Clark, Inc., Consulting Engineers. FEMA reviewed and accepted this data for purposes of a revision (Reference 1).
- Township of Commerce: The hydrologic and hydraulic analyses for the September 1980 study for the Township of Commerce were performed by Johnson & Anderson, Inc., for the Federal Insurance Administration, under Contract No. H-4535. The analysis for this study was completed in June 1979 (Reference 2).
- Township of Highland: The hydrologic and hydraulic analyses for the July 1983 study for the Township of Highland were performed by Johnson & Anderson, Inc., for the Federal Insurance Administration, under Contract No. H-6839 (EMW-C-0335). The analysis for this study was completed in July 1983 (Reference 3).
- Township of Independence: The hydrologic and hydraulic analyses for the November 1982 study for the Township of Independence were performed by McNamee, Porter and Seeley/Smith, Hinchman and Grylls, for the Federal Insurance Administration, under Contract No. H-4705. The analysis for this study was completed in August 1981 (Reference 4).
- Township of Oakland: The hydrologic and hydraulic analyses for the June 1982 study for the Township of Oakland were performed by the U.S. Department of Agriculture, Soil Conservation, Service in their reports entitled "Flood Hazard Study, Paint Creek, Oakland County, Michigan" (Reference 5) and "Flood Hazard Study, West Branch Stony Creek and McClure Drain, Oakland County, Michigan" (Reference 6). The reports were converted to a Flood Insurance Study by McNamee, Porter and Seeley/Smith, Hinchman and Grylls for Federal Insurance Administration, under Contract No. H-4705. The analysis for this study was completed in April 1981 (Reference 7).

- Township of Pontiac: The hydrologic and hydraulic analyses for the January 1979 study for the Township of Pontiac were performed by Johnson & Anderson, Inc., for the Federal Insurance Administration, under Contract No. H-3969. The analysis for this study was completed in October 1977 (Reference 8).
- Township of West Bloomfield: The hydrologic and hydraulic analyses for the September 1982 study for the Township of West Bloomfield were performed by Johnson & Anderson, Inc., for the Federal Insurance Administration, under Contract No. H-4535. The analysis for this study was completed in June 1979 (Reference 9).
- Township of White Lake: The hydrologic and hydraulic analyses for the August 1984 study for the Township of White Lake were performed by Johnson & Anderson, Inc., for the Federal Insurance Administration, under Contract No. EMW-C-0335. The analysis for this study was completed in December 1981 (Reference 10).
- Charter Township of Waterford: The hydrologic and hydraulic analyses for the August 1982 study for the Charter Township of Waterford were performed by Johnson & Anderson, Inc., for the Federal Insurance Administration, under Contract No. H-4535. The analysis for this study was completed in June 1981 (Reference 11).
- Village of Beverly Hills: The hydrologic and hydraulic analyses for the December 1978 study for the Village of Beverly Hills were performed by Johnson & Anderson, Inc., for the Federal Insurance Administration, under Contract No. H-3969. The analysis for this study was completed in August 1977 (Reference 12).
- Village of Bingham Farms: The hydrologic and hydraulic analyses for the July 1984 study for the Village of Bingham Farms were performed by Johnson & Anderson, Inc., for the Federal Insurance Administration, under Contract No. H-6839 (EMW-C-0335). The analysis for this study was completed in March 1981 (Reference 13).
- Village of Clarkston: The hydrologic and hydraulic analyses for the September 1982 study for the Village of Clarkston were performed by McNamee, Porter and Seeley/Smith, Hinchman and Grylls, for the Federal Insurance Administration, under Contract No. H-4705. The analysis for this study was completed in August 1981 (Reference 14).

- Village of Franklin: The hydrologic and hydraulic analyses for the June 1981 study for the Village of Franklin were performed by McNamee, Porter and Seeley/Smith, Hinchman and Grylls, for the Federal Insurance Administration, under Contract No. H-4705. The analysis for this study was completed in December 1979 (Reference 15).
- Village of Holly: The hydrologic and hydraulic analyses for the June 1984 study for the Village of Holly were performed by Gove Associates, Inc., for the Federal Insurance Administration, under Contract No. H-4728. The analysis for this study was completed in April 1983 (Reference 16).
- Village of Lake Orion: The hydrologic and hydraulic analyses for the March 1981 study for the Village of Lake Orion were performed by the U.S. Department of Agriculture, Soil Conservation Service. McNamee, Porter and Seeley/Smith, Hinchman and Grylls have assembled this information for the Federal Insurance Administration, under Contract No. H-4705 (Reference 17).
- City of Birmingham: The hydrologic and hydraulic analyses for the November 1979 study for the City of Birmingham were performed by the U.S. Army Corps of Engineers, Detroit District, for the Federal Insurance Administration, under Inter-Agency Agreement No. IAA-H-2-73, Project Order No. 2 and amended by Inter-Agency Agreement No. IAA-H-18-78, Project Order No. 27. The analysis for this study was completed in October 1978 (Reference 18).
- City of Bloomfield Hills: The hydrologic and hydraulic analyses for the January 1984 study for the City of Bloomfield Hills were performed by Johnson & Anderson, Inc., for the Federal Insurance Administration, under Contract No. EMW-C-0335. The analysis for this study was completed in December 1981 (Reference 19).
- City of Farmington: The hydrologic and hydraulic analyses for the January 1980 study for the City of Farmington were performed by the U.S. Army Corps of Engineers, Detroit District, for the Federal Insurance Administration, under Inter-Agency Agreement No. IAA-H-19-74, Project Order No. 20 and amended by Inter-Agency Agreement No. IAA-H-7-76, Project Order No. 5. The analysis for this study was completed in October 1977 (Reference 20).
- City of Farmington Hills: The hydrologic and hydraulic analyses for the August 1979 and February 1980 studies for the City of Farmington Hills were performed by Johnson & Anderson, Inc., for the Federal Insurance

Administration, under Contract No. H-3969. This study was completed in May 1978.

The hydrologic and hydraulic analyses for the November 1999 revision for the City of Farmington Hills were performed by the U.S. Army Corps of Engineers, Detroit District, for the Federal Insurance Administration, under Inter-Agency Agreement No. EMW-92-E-3842, Project Order No. 9. The analysis for this study was completed in August 1994 (Reference 21). The digital base mapping information was provided by the USACE Planning Division, Box 1027, Detroit, Michigan, 48231-1027 the Michigan Department of Natural Resources. Files were compiled from aerial photos and digital U.S. Geological Survey 1:24,000 scale quadrangles. Data was produced in Universal Transverse Mercator coordinates referenced to the North American Datum of 1927 and the Clarke 1866 spheroid.

City of Keego Harbor: The hydrologic and hydraulic analyses for the June 1982 study for the City of Keego Harbor were performed by Johnson & Anderson, Inc. McNamee, Porter and Seeley/Smith, Hinchman and Grylls converted the analyses to the Flood Insurance Study format for the Federal Insurance Administration, under Contract No. H-4705. The analysis for this study was completed in July 1981 (Reference 22).

City of Lake Angelus: The hydrologic and hydraulic analyses for the April 1986 study for the City of Lake Angelus were taken from the Federal Insurance Study for the Charter Township of Waterford. The hydrologic and hydraulic analyses for revisions were obtained from the consulting firm of Johnson & Anderson, Inc., Pontiac, Michigan. FEMA reviewed and accepted the data for purposes of a revision (Reference 23).

City of Northville: The hydrologic and hydraulic analyses for the March 1981 study for the City of Northville were performed by Wade, Trim & Associates, Inc., for the Federal Insurance Administration, under Contract No. H-4542. This study was completed in November 1979.

The hydrologic and hydraulic analyses for the December 1999 revision for a portion of the Middle River Rouge on the upstream side of Eight-Mile Road were performed by JCK & Associates, Inc. This revision also included two LOMRs prepared by McNeely & Lincoln Associates, Inc. and Seiber, Keast & Associates, Inc. with Dewberry & Davis. This study was completed in May 1998 (Reference 24). The digital base mapping

information was provided by the Michigan Department of Natural Resources, P.O. Box 30028, Lansing, Michigan, 48909. Files were compiled from aerial photos and U.S. Geological Survey 7.5-Minute Series Topographic Maps 1:24,000 scale quadrangles. Data was produced in Universal Transverse Mercator coordinates referenced to the North American Datum of 1927 and the Clarke 1866 spheroid.

City of Novi:

The hydrologic and hydraulic analyses for the May 1993 study for the City of Novi were performed by the U.S. Army Corps of Engineers, Detroit District, for the Federal Insurance Administration, under Inter-Agency Agreement No. EMW-86-E-2226, Project Order No. 10. The analysis for this study was completed in January 1988. The hydrologic and hydraulic analyses for reaches of Thornton Creek and Walled Lake Branch downstream of Nine Mile Road were performed by JCK & Associates in 1991. The hydrologic and hydraulic analyses for Novi-Lyon Drain and Tributary C were taken from the previously published Flood Insurance Study for the City of Novi, Michigan (Reference 25).

City of Pontiac:

The hydrologic and hydraulic analyses for the February 1979 study for the City of Pontiac were performed by Johnson & Anderson, Inc., for the Federal Insurance Administration, under Contract No. H-3969. The analysis for this study was completed in November 1977 (Reference 26).

City of Rochester:

The hydrologic and hydraulic analyses for the March 1982 study for the City of Rochester were performed by Johnson & Anderson, Inc., for the Federal Insurance Administration, under Contract No. H-4535. The analysis for this study was completed in March 1979 (Reference 27).

City of Rochester Hills:

The hydrologic and hydraulic analyses for the September 1994 study for the City of Rochester Hills were performed by Johnson & Anderson, Inc., for the Federal Insurance Administration, under Contract No. H-4535. The analysis for this study was completed in March 1979 (Reference 28).

City of Southfield:

The hydrologic and hydraulic analyses for the March 1979 study for the City of Southfield were performed by the U.S. Army Corps of Engineers, Detroit District, for the Federal Insurance Administration, under Inter-Agency Agreement No. IAA-H-2-73, Project Order No. 2. The analysis for this study was completed in December 1973 (Reference 29).

City of Sylvan Lake: The hydrologic and hydraulic analyses for the December 1981 study for the City of Sylvan Lake were performed by Johnson & Anderson, Inc., for the Federal Insurance Administration, under Contract No. EMW-C-0335. The analysis for this study was completed in December 1981 (Reference 30).

City of Troy: The hydrologic and hydraulic analyses for the September 1988 study for the City of Troy were performed by McNamee, Porter and Seeley/Smith, Hinchman and Grylls, for the Federal Insurance Administration, under Contract No. H-4705. The analysis for this study was completed in April 1981. Additional hydrologic and hydraulic analyses were performed by Zeimet-Wozniak & Associates, Inc. and the Land and Water Management Division of the Michigan Department of Natural Resources (MDNR), and by Giffels-Webster Engineers, Inc., of Auburn Hills, Michigan. FEMA reviewed and accepted the data for purposes of a revision (Reference 31).

Revised and additional detailed areas were incorporated in this 2006 FIS. The hydrologic and hydraulic analyses for these studies were prepared by the U.S. Army Corps of Engineers, Detroit District, for the Federal Emergency Management Agency (FEMA) under Inter-Agency Agreement No. EMW-95-E-4756, Project Order No. 4. A special problem report was submitted on February 13, 1998, which was approved on September 30, 1998. This work was completed in March 1999.

In addition to incorporating the existing twenty nine Flood Insurance Studies for communities within Oakland County, this 2006 countywide FIS includes nine additional approximate studies, seven new detailed study areas, four restudied detail study areas, redelineation of all other effective profiles, and incorporation of approved Letter of Map Changes (LOMC). The vertical datum was shifted to North American Vertical Datum of 1988 (NAVD88). The digital floodplain data was merged into a single, updated Digital Flood Insurance Rate Map (DFIRM). The DFIRM includes 2002 Digital orthophotography, two foot contours, topographic break lines and spot elevations, political boundaries, road centerlines with street names, railroads with names, airports, rivers, lakes, streams, bridges and other hydraulic structures, and elevation reference marks.

Additional approximate hydrologic analyses for this 2006 FIS were performed by the Michigan Department of Environmental Quality (MDEQ). Fuller, Mossbarger, Scott and May Engineers, Inc. (FMSM) performed additional approximate hydraulic analyses for the FEMA under Contract No. EMC-2001-CO-0058. This work, which was completed in October 2004, covered unprotected flooding sources affecting Oakland County.

1.3 Coordination

The purpose of an initial Consultation Coordination Officer's (CCO's) meeting is to discuss the scope of the FIS. A final CCO meeting is held to review the results of the

study. The dates of the initial and final CCO meeting held for the previous FIS for Oakland County and the incorporated communities within its boundaries are shown in Table 1 (References 1-31).

On February 23, 1995, an initial CCO meeting was held concerning detailed studies performed by the Army Corps of Engineers, with representatives of FEMA, the Michigan Department of Natural Resources (MDNR), the County of Oakland, Village of Lake Orion, Independence Township, Village of Milford, Springfield Township, Bloomfield Township, City of Rochester Hills, Lyon Township, Orion Township, City of Birmingham, a number of Engineering consultants for various communities and the study contractor.

TABLE 1 – Oakland County CCO Meetings

| <u>Community Name</u> | <u>Initial CCO Date</u> | <u>Final CCO Date</u> |
|-------------------------------|-------------------------|-----------------------|
| Township of Bloomfield | March 1, 1978 | January 13, 1982 |
| Township of Commerce | April 21, 1977 | January 23, 1980 |
| Township of Highland | June 6, 1979 | November 30, 1982 |
| Township of Independence | March 1, 1978 | March 29, 1982 |
| Township of Oakland | March 1, 1978 | January 14, 1982 |
| Township of Pontiac | March 5, 1976 | August 21, 1978 |
| Township of West Bloomfield | April 18, 1977 | March 29, 1982 |
| Township of White Lake | June 6, 1979 | November 30, 1982 |
| Charter Township of Waterford | April 19, 1977 | February 24, 1982 |
| Village of Beverly Hills | March 2, 1976 | June 21, 1978 |
| Village of Bingham Farms | June 6, 1979 | December 7, 1982 |
| Village of Clarkston | March 1, 1978 | March 29, 1982 |
| Village of Franklin | March 1, 1978 | January 20, 1981 |
| Village of Holly | November 6, 1978 | November 7, 1982 |
| Village of Lake Orion | March 23, 1978 | October 8, 1980 |
| City of Birmingham | not published | May 22, 1979 |
| City of Bloomfield Hills | June 6, 1979 | December 1, 1982 |
| City of Farmington | not published | May 23, 1979 |
| City of Farmington Hills | not published | January 30, 1979 |
| Revision | May 19, 1991 | July 22, 1996 |
| City of Keego Harbor | March 1, 1978 | January 13, 1982 |
| City of Lake Angelus | not published | November 22, 1982 |
| City of Northville | January 4, 1978 | October 21, 1980 |
| City of Novi | October 11, 1985 | April 16, 1992 |
| City of Pontiac | not published | September 21, 1978 |
| City of Rochester | April 20, 1977 | May 12, 1980 |
| City of Rochester Hills | April 20, 1977 | October 9, 1980 |
| City of Southfield | not published | September 21, 1978 |
| City of Sylvan Lake | June 6, 1979 | December 7, 1982 |
| City of Troy | March 1, 1978 | June 3, 1982 |
| Oakland County | July 22, 2003 | February 22, 2005 |

Results of the technical aspects of this study were coordinated with, reviewed and approved by the Michigan Department of Natural Resources, the State coordinating agency.

On July 22, 2003, in initial CCO meeting was held concerning this 2006 countywide FIS. The final CCO meeting was held on February 22, 2005. Both meetings were attended by representatives of Oakland County, MDEQ, and FEMA.

2.0 AREA STUDIED

2.1 Scope of Study

This 2006 FIS covers the geographic area of Oakland County, Michigan.

The flooding sources studied previously by detailed methods are shown in Tables 2.

TABLE 2 – Limits of Previously Detailed Studies

| <u>Flooding Source</u> | <u>Limits of Detailed Study</u> |
|--------------------------|--|
| Amy Drain | From mouth at Quarton Branch to approximately 4900 feet above the Township of Bloomfield corporate limits (City of Bloomfield Hills, Township of Bloomfield) |
| Bishop Creek | From mouth at Ingersol Creek to Twelve Oak Lakes Dam (City of Novi) |
| Carpenter Branch | From confluence with Rouge River to City of Southfield corporate limits (City of Southfield) |
| Carus Lake/Pleasant Lake | From approximately 3070 feet above Welch Road to Pleasant Lake (Township of Commerce, Township of West Bloomfield) |
| Chapman Creek | From mouth at Walled Lake Branch to Ten Mile Road (City of Novi) |
| Clinton River | From Oakland County line to I-75 (City of Rochester Hills, City of Rochester, Township of Pontiac, City of Pontiac, City of Keego Harbor, Charter Township of Waterford, Township of Independence, Village of Clarkston) |
| Evans Branch | From Oakland County line to Northwestern Highway (City of Southfield) |
| Farmington Branch | From confluence with Carpenter Branch to City of Southfield corporate limits |
| Franklin Branch | From mouth at Rouge River to Woodpecker Lake (City of Southfield, Village of Bingham Farms, Village of Franklin, Township of Bloomfield, Township of West Bloomfield) |
| Galloway Creek | From mouth at Clinton River to City of Pontiac corporate limits (City of Rochester, Township of Pontiac, City of Pontiac) |
| Galloway Ditch | From mouth at Galloway Creek to I-75 (City of Pontiac, Township of Pontiac) |
| Gibson-Renshaw Drain | From Dequindre Road to approximately 130 feet downstream of South Boulevard (City of Troy) |
| Gibson-Renshaw W Drain | From mouth at Gibson-Renshaw Drain to approximately 1100 feet west of Livernois Road (City of Troy) |

TABLE 2 – Limits of Previously Detailed Studies *(continued)*

| <u>Flooding Source</u> | <u>Limits of Detailed Study</u> |
|------------------------|--|
| Hamlin Drain | From mouth at Stonycroft Branch to approximately 595 feet above the Township of Bloomfield corporate limits (City of Bloomfield Hills, Township of Bloomfield) |
| Hawthorn Drain | From Oakland County line to 300 feet east of Milverton Avenue (City of Troy) |
| Holly-Patterson Drain | Within Village of Holly corporate limits (Village of Holly) |
| Houghton Drain | From Rochester Road to Long Lake Road (City of Troy) |
| Houghton Drain East | From mouth at Shanahan Drain to Wattles Road (City of Troy) |
| Huron River | From mouth at North Commerce Lake to Pontiac Lake (Township of Commerce, Township of White Lake) |
| Huron River-W Branch | From mouth at North Commerce Lake to confluence with Huron River (Township of Commerce) |
| Ingersol Creek | From mouth at Meadowbrook Lake to I-96 ramp (City of Novi) |
| Kirts Drain | From enclosure 200 feet south of Kirts Road to Crooks Road (City of Troy) |
| Lane Drain | From mouth at Sturgis Drain to approximately 1600 feet east of I-75 (City of Troy) |
| Leavenworth Creek | From mouth at Walled Lake Branch to approximately 700 feet east of Clark Road (City of Novi) |
| Long Lake-Forest Lake | From mouth at Quarton Branch to Club Drive (City of Bloomfield Hills, Township of Bloomfield) |
| Main Ravines | From City of Farmington Hills corporate limits Ten Mile Road |
| Main Ravines-Trib A | From mouth at Main Ravines Drain to City of Farmington Hills corporate limits (City of Farmington Hills) |
| Main Ravines-Trib B | From mouth at Main Ravines Drain to Tuck Street (City of Farmington Hills) |
| Main Ravines-Trib C | From mouth at Main Ravines Drain to Middlebelt Road (City of Farmington Hills) |
| McClure Drain | From Stony Creek Lake to outlet of Twin Lakes (Township of Oakland) |
| Middle River Rouge | From Oakland County line to Old Novi Road (City of Northville) |
| Minnow Pond Drain | From confluence with Upper River Rouge to West Maple Road (City of Farmington Hills, Township of West Bloomfield) |

TABLE 2 – Limits of Previously Detailed Studies *(continued)*

| <u>Flooding Source</u> | <u>Limits of Detailed Study</u> |
|------------------------|---|
| Munro Creek | From mouth at Walled Lake Branch to Taft Road (City of Novi) |
| Murphy Drain | From mouth at Stonycroft Branch to Wilshire Drive (City of Bloomfield Hills, Township of Bloomfield) |
| N Branch Main Ravines | From City of Farmington Hills corporate limits to Eleven Mile Road (City of Farmington Hills) |
| Novi-Lyon Drain | From City of Novi corporate limits to Ten Mile Road (City of Novi) |
| Novi-Lyon Drain Trib C | From mouth at Novi-Lyon Drain to Beck Road (City of Novi) |
| Oakland Lake–W Outlet | From confluence with Clinton River to Oakland Lake (Charter Township of Waterford) |
| Paint Creek | From mouth at Clinton River to Lake Orion (City of Rochester, City of Rochester Hills, Township of Oakland, Village of Lake Orion) |
| Pebble Creek | From mouth at Rouge River to West Maple Road (City of Southfield, City of Farmington Hills, Township of West Bloomfield) |
| Pettibone Creek | From Township of Highland corporate limits to Upper Pettibone Lake (Township of Highland) |
| Quarton Branch | From mouth at Rouge River to confluence with Amy Drain and Stonycroft Branch (City of Birmingham, City of Bloomfield Hills) |
| Randolph Street Drain | From Oakland County line to City of Northville corporate limits (City of Northville) |
| Rouge River | From Oakland County line to confluence with Sprague Drain and Sprague Branch (City of Southfield, Village of Bingham Farms, Village of Beverly Hills, City of Birmingham, Township of Bloomfield, City of Troy) |
| Sargent Creek | From Paint Creek to 100 feet east of Adams Road (City of Rochester, City of Rochester Hills) |
| Sashabaw Creek | From Township of Independence corporate limits to I-75 (Township of Independence) |
| Seeley Drain | From confluence with Upper River Rouge to City of Farmington Hills corporate limits (City of Farmington Hills) |
| Shanahan Drain | From Oakland County line to John R Road (City of Troy) |
| Shaw Creek | From mouth at Walled Lake Branch to City of Novi corporate limits (City of Novi) |
| Shiawassee River | Within Village of Holly corporate limits (Village of Holly) |
| Simpson Lake Outlet | From mouth at Franklin Branch to Simpson Lake (Township of West Bloomfield) |

TABLE 2 – Limits of Previously Detailed Studies *(continued)*

| <u>Flooding Source</u> | <u>Limits of Detailed Study</u> |
|-------------------------|--|
| Sodon Lake Drain | From mouth at Long Lake-Forest Lake Branch to approximately 100 feet upstream of Telegraph Road (City of Bloomfield Hills, Township of Bloomfield) |
| Spencer-Barnard Drain | From Oakland County line to Maple Road (City of Troy) |
| Sprague Branch | From confluence with Sprague Drain and Rouge River to Adams Road (City of Troy) |
| Sprague Drain | From confluence with Sprague Branch and Rouge River to South Boulevard (City of Troy) |
| Stony Creek | From mouth at Clinton River to 400 feet east of Winkler Mill Road (City of Rochester Hills) |
| Stonycroft Branch | From mouth at Quarton Branch to confluence with Murphy and Hamlin Drains (City of Bloomfield Hills) |
| Sturgis Drain | From inlet to Douglas Drain Enclosure to Livernois Road (City of Troy) |
| Sugden Creek | From mouth at Huron River to Bogie Lake (Township of White Lake) |
| Tamarack Creek | From confluence with Evans Branch to Northwestern Highway (City of Southfield) |
| Tarabusi Creek | From City of Farmington Hills corporate limits to Grand River Avenue (City of Farmington Hills, City of Farmington) |
| Thornton Creek | From mouth at Walled Lake Branch to Ten Mile Road (City of Novi) |
| Upper River Rouge | From City of Farmington Hills corporate limits to confluence with Minnow Pond and Seeley Drain (City of Farmington Hills, City of Farmington) |
| Walled Lake Branch | From City of Novi corporate limits to approximately 1700 feet south of South Lake Drive and West Road (City of Novi) |
| Walnut Lake Outlet | From Simpson Lake to Walnut Lake (Township of West Bloomfield) |
| Walters Lake Drain | From Dennis Lake to Walters Lake (Township of Independence) |
| West Branch Bell Creek | From City of Farmington Hills corporate limits to approximately 100 feet south of Nine Mile Road (City of Farmington Hills) |
| West Branch Stony Creek | From Stony Creek Lake to outlet of Clam Lake (Township of Oakland) |

Detailed Studies on Lakes

| | | | |
|-------------------|----------------------|---------------------|----------------------|
| Alderman Lake | Gerundegut Bay | Middle Lake | Sugden Lake |
| Bass Lake | Grass Lake | Middle Straits Lake | Sylvan Lake |
| Bevins Lake | Green Lake | Mill Pond | Townsend Lake |
| Bogie Lake | Galloway Lake | Mandon Lake | Tull Lake |
| Brendel Lake | Greens Lake | Mohawk Lake | Twin Suns Lake |
| Bush Lake | Hammond Lake | Moore Lake | Union Lake |
| Carroll Lake | Harvey Lake | Morris Lake | Upper Long Lake |
| Cass Lake | Lake Angelus | Mud Lake | Upper Pettibone Lake |
| Cedar Island Lake | Lake Neva | North Commerce Lake | Upper Silver Lake |
| Coles Bay | Lake Oakland | Otter Lake | Upper Straits Lake |
| Cooley Lake | Lake Orion | Oxbow Lake | Van Norman Lake |
| Cranbrook Lake | Lake Placid | Parke Lake | Vhay Lake |
| Crystal Lake | Lake Sherwood | Pine Lake | Walnut Lake |
| Dark Lake | Leonard Lake | Pleasant Lake | Walters Lake |
| Deer Lake | Lester Lake | Pontiac Lake | Whipple Lake |
| Dennis Lake | Long Lake | Reed Lake | White Lake |
| Dollar Lake | Loon Lake | Round Lake | Williams Lake |
| Duck Lake | Lotus Lake | Schoolhouse Lake | Woodhull Lake |
| Eagle Lake | Lower Pettibone Lake | Silver Lake | Woodpecker Lake |
| Endicott Lake | Lower Straits Lake | Simpson Lake | Wormer Lake |
| Fox Lake | Maceday Lake | South Commerce Lake | |

The following streams/lakes were restudied in detail as part of this study:

TABLE 3 – Limits of Restudied Detailed Studies

| <u>Flooding Source</u> | <u>Limits of Detailed Study</u> |
|------------------------|--|
| Clinton River | From Township of Pontiac corporate limit to Squirrel Road; From Dawsons Millpond Dam in the City of Pontiac to approximately 3000 feet south of Elizabeth Lake Road in Charter Township of Waterford (includes City of Keego Harbor and Township of West Bloomfield); From Dixie Highway in Township of Independence to I-75 (includes Village of Clarkston) |
| Gibson-Renshaw Drain | From Dequindre Road to approximately 130 feet downstream of South Boulevard (City of Troy) |
| Houghten Drain | From Rochester Road to Long Lake Road (City of Troy) |
| Pebble Creek | From Township of West Bloomfield corporate limit to approximately 600 feet north of West Maple Road |
| Quarton Branch | From mouth at Rouge River in City of Birmingham to Chesterfield Road in City of Bloomfield Hills |
| Rouge River | From Oakland County line to City of Southfield corporate limit; From Adams Road to confluence with Sprague Drain (City of Troy) |
| Sprague Branch | From confluence with Sprague Drain and Rouge River to Adams Road (City of Troy) |
| Sprague Drain | From confluence with Sprague Branch and Rouge River to South Boulevard (City of Troy) |

Flooding Source

Limits of Detailed Study

| | |
|---------------|--|
| Sturgis Drain | From inlet to Douglas Drain Enclosure to Livernois Road (City of Troy) |
| Vogt Drain | From confluence with Henry Graham Drain to John R Road (City of Troy) |

In addition to the above streams, the following lakes were restudied in detail:

| | | | |
|------------------|-------------|-------------|-------------|
| Cass Lake | Deer Lake | Long Lake | Parke Lake |
| Dark Lake | Greens Lake | Middle Lake | Round Lake |
| Dawson Mill Pond | Lake Orion | Otter Lake | Sylvan Lake |

A new detailed study was performed on the following streams as part of this study:

TABLE 4 – Limits of Newly Detailed Studies

Flooding Source

Limits of Detailed Study

| | |
|-----------------|--|
| Duck Creek | Village of Ortonville corporate limits |
| Huron River | Village of Milford corporate limits |
| Kearsley Creek | Village of Ortonville corporate limits |
| Mill Lake | From Township of Orion corporate limit to Baldwin Road |
| Norton Creek | City of Wixom corporate limits |
| Pettibone Creek | Village of Milford corporate limits |
| Sargent Creek | From Adams Road to Rochester Hills corporate limit |

In addition to the above streams, the following lakes were newly studied in detail:

| | | | |
|-----------------|--------------|--------------------------------------|---------------|
| Bald Eagle Lake | Hummer Lake | Lonesome Lake | Square Lake |
| Buckhorn Lake | Judah Lake | Mill Lake (Township of Independence) | Tommys Lake |
| Bunny Run Lake | Lake Louise | Mill Lake (Township of Orion) | Voorheis Lake |
| Elkhorn Lake | Lake Sixteen | Seymour Lake | |

Approximate analyses are usually used to study areas having a low development potential or minimal flood hazards. In 2004, additional approximate analyses were performed to protect areas where flood hazards were not previously identified.

This countywide 2006 FIS also incorporates the determination of letters issued by the Federal Emergency Management Agency (FEMA) resulting in map revisions (Letter of Map Revisions (LOMR)) and map amendments (Letter of Map Amendments (LOMA)). Letters of Map Amendment (LOMA) incorporated for this study are summarized in the Summary of Map Amendment (SOMA) included in the Technical Support Data Notebook (TSDN) associated with this FIS update. Copies of the TSDN may be obtained from the Community Map Repository.

2.2 Community Description

Oakland County is located in the southeastern portion of the lower peninsula of Michigan. It is bordered on the south by Washtenaw and Wayne Counties; on the west by Livingston County; on the northwest by Genesee County; on the north by Lapeer County; and on the east by Macomb County. The major transportation arteries of Oakland County are I-96, I-696, I-75, Telegraph Road (Highway-24), and M-59. The April 1, 2000 census population of Oakland County was reported to be 1,194,156. The estimated July 1, 2003 population was 1,207,869 (Reference 32).

As is the case for most of Michigan, the climate of Oakland County is affected by the moderating influence of the Great Lakes, but only minimally. The “lake effect” usually results only in cloudy conditions, predominantly in the colder months. Oakland County also tends to display a wider temperature range than areas at similar latitudes near the Great Lakes. Consequently, it is rare for Oakland to experience extended periods of heat, cold, or humidity. Climatology data was gathered from Michigan State Climatologist’s Office, a service of the Michigan State University Department of Geography. Oakland County’s climate is continental. On average, the warmest month is July, with an average maximum temperature of 83.5°F, as recorded at the station located at the State Hospital in Pontiac. The lowest average daily minimum temperature occurs in January and averages 15.3°F. The average total annual precipitation is 29.3 inches, well distributed seasonally. Average annual snowfall is about 34.8 inches, with most falling in December through March. The highest monthly snow fall was 28.0 inches in January 1978 (Reference 33).

Oakland County is covered with many small natural lakes. The Clinton, Flint, Huron, Rouge, and Shiawassee Rivers along with their tributaries primarily drain the county. The southeastern corner of the county consists of a nearly level glacial lake plain. The rest of the county consists of two gently undulating to very hilly end moraine bands separated by three major outwash plains. These landforms have a northeast to southwest orientation (References 34 and 35).

There are approximately 39 types of soil in Oakland County; primarily of the Marlette, Oshtemo, and Spinks series. These soils range widely in texture, natural drainage and other characteristics. In the southeastern corner of the county, the undisturbed soils are mostly nearly level to gently sloping; poorly drained to moderately well drained; and sandy, loamy, or clayey throughout. In the northern two-thirds of the county, the soils are mostly undulating to very hilly. They are dominantly moderately well drained to well drained and are loamy or loamy and sandy throughout. Some are underlain by gravelly sand (References 35-38).

2.3 Principal Flood Problems

Floods may occur at any time of the year resulting from either rain or melting snow, long duration rain storms, or locally intense thunderstorm activity. Since the area experiences an average of 60 days per season with at least one inch of snow on the ground, snowmelt can be a definite factor in the severity of flooding events. Major events that have affected a majority of the county occurred in April 1947, June 1968, March 1974, October 1981, and February 2001 (References 39-41). Table 5 shows high water marks from past flooding events.

The flood of April 1947 is the worst known flood to have occurred on the Clinton River in the vicinity of the City of Pontiac. The rains fell on partially frozen ground producing a crest stage of 23.5 feet above the channel and a peak discharge of 21,200 cfs in Mount Clemens near the mouth of the Clinton River. Newspaper accounts indicated that there were numerous impassable streets within the City of Pontiac due to the rain.

More records exist for the June 1968 storm damages that produced damage along the Clinton River on both residential and commercial structures. In the City of Rochester, commercial damage was estimated at \$100,000. In the Township of Pontiac, the Michigan Highway 59 was impassable and a foot of water was reported over Opdyke Road. Extensive flooding was reported on Galloway Creek between Joslyn Avenue and Giddings Road, where Walton Boulevard was reported to be underwater. The Quarton Branch of the Rouge River in the City of Bloomfield Hills flooded many streets and bridges including Woodwark Avenue and Long Lake Road. The earth embankment between Endicott Lake dam and the Chesterfield Road bridge weir was breached. Minor damages were also reported along Minnow Pond Drain in the City of Farmington Hills in the Kendallwood subdivision area and on the Upper River Rouge near the City of Farmington.

During the March 1974 flood, hundreds of shoreline homes along Sylvan Lake, Otter Lake, Cass Lake, and Gerundegut Bay were flooded. Cass Lake reached a peak elevation which was 20 inches above its legal lake level of 928.84 feet North American Vertical Datum of 1988 (NAVD88). The Sylvan and Otter Lakes were 18 inches above their normal lake levels.

Although many areas in floodplains have been utilized as parks or have not seen development, the principal flood problems that are reported throughout the county are residential. Another common problem is siltation. Siltation of many highway bridge openings has caused a reduction in the effective area available for the conveyance of floodwater. The sedimentation and accumulation of debris at structures and river bends can create additional flood hazards. Urbanization, influenced by the Detroit metropolitan area growth, will result in decreasing the recurrence interval of floods while increasing overbank flooding.

In the City of Pontiac, spring floods have created nearly annual problems, especially for the area north of Crystal Lake near Wessen Street and Beaudette Street. Sandbag dikes are often constructed along the river in the area to retain high water. During heavy rains, the city often experiences sewer backups from the Clinton River. In the City of Birmingham, some commercial buildings have been constructed low in the valley creating extensive flooding from the Rouge River. In the City of Farmington, the construction of a twin culvert under Interstate Highway 96 in the 1960's reduced flooding from the Upper River Rouge. Inadequate culverts have caused flooding in the Township of Commerce and the City of Southfield. In the City of Novi, major flooding problems exist in the low areas adjacent to Walled Lake (Reference 42). Stream crossings, especially on Franklin Branch, Pebble Creek, and Minnow Pond Drain, are the major flood problems in the Township of West Bloomfield. In the Village of Clarkston, several residents along the Clinton River have been flooded when the small ogee spillway and overbanks of the Clarkson Dam were submerged (Reference 43). While the Dawson Mill Pond Dam protects residents of the City of Pontiac, the residents in the City of Lake Sylvan fault the Dam for their flooding problems.

TABLE 5 - High Water Marks

| <u>Stream</u> | <u>Location</u> | <u>Date</u> | <u>Elevation (NAVD88)</u> | <u>Flow (cfs)</u> |
|--------------------------|--|---|-------------------------------|-----------------------|
| Cass Lake | West Bloomfield Township | March, 1974 | 928.84 | |
| | | April, 1975 | 928.76 | |
| Clinton River | Diversion Street Bridge (downstream side) -(Reference 44) | June, 1968 | 725.89 | |
| | | Crooks Road Bridge (downstream side) -(Reference 45) | June, 1968 | 775.28 |
| | USGS gaging station at Auburn Hills -(References 40 and 45) | June 25, 1968 | 851.00 | 1,400 |
| | | March 5, 1974 | 850.98 | 1,360 |
| | | April 19, 1975 | 851.49 | 1,720 |
| | | September 22, 1980 | 850.63 | 1,210 |
| | | September 30, 1981 | 851.53 | 1,780 |
| | | August 24, 1985 | 851.50 | 1,730 |
| | | September 27, 1986 | 851.45 | 1,690 |
| | | June 21, 1987 | 851.21 | 1,520 |
| | | July 22, 1988 | 850.75 | 1,250 |
| | | July 27, 1989 | 851.37 | 1,640 |
| | Irene St and Hess St -(Reference 45) | June 25, 1968 | 919.75 | |
| | | Bethune Elementary School -(Reference 45) | June 25, 1968 | 921.02 |
| | USGS gaging station near Drayton Plains -(Reference 40) | June 30, 1968 | 944.27 | 175 |
| | | March 17, 1973 | 943.88 | 173 |
| | | March 12, 1974 | 944.57 | 276 |
| | | September 3, 1975 | 944.15 | 218 |
| | | March 7, 1976 | 944.27 | 221 |
| | | October 6, 1981 | 944.34 | 217 |
| April 9, 1985 | | 944.22 | 183 | |
| June 16, 1986 | | 943.94 | 164 | |
| June 24, 1996 | | 944.01 | 185 | |
| September 14, 2000 | | 943.96 | 184 | |
| Old Hatchery Road bridge | April, 1947 | 951.62 | | |
| Evans Branch | USGS gaging station at Southfield -(Reference 40) | June 25, 1968 | 627.64 | 903 |
| | | July 25, 1976 | 626.08 | 688 |
| | | October 1, 1981 | 629.72 | 1,200 |
| | | May 26, 1991 | 626.07 | 686 |
| | | August 3, 1995 | 626.37 | 754 |
| | | June 12, 1996 | 626.08 | 704 |
| | | July 2, 1997 | 626.79 | 828 |
| | | August 6, 1998 | 627.52 | 962 |
| | | June 25, 2000 | 626.41 | 761 |
| May 21, 2001 | 626.12 | 500 | | |

| <u>Stream</u> | <u>Location</u> | <u>Date</u> | <u>Elevation (NAVD88)</u> | <u>Flow (cfs)</u> | |
|---------------------|--|-----------------------------------|--|-----------------------|--------|
| Huron River | USGS gaging station in Milford -(Reference 40) | February 15, 1949 | 887.10 | 414 | |
| | | April 5, 1950 | 887.87 | 645 | |
| | | May 14, 1956 | 887.75 | 545 | |
| | | July 13, 1957 | 887.85 | 438 | |
| | | April 16, 1965 | 886.93 | 357 | |
| | | June 28, 1968 | 887.88 | 567 | |
| | | March 6, 1974 | 887.22 | 515 | |
| | | September 7, 1975 | 887.28 | 478 | |
| | | March 6, 1976 | 887.18 | 505 | |
| | | October 3, 1981 | 887.49 | 648 | |
| | | Paint Creek | USGS gaging station at Rochester - (References 40 and 44) | February 10, 1965 | 760.68 |
| January 1, 1968 | 759.95 | | | 918 | |
| June, 1968 | 759.63 | | | | |
| December 31, 1972 | 759.58 | | | 490 | |
| March 5, 1974 | 760.48 | | | 788 | |
| April 19, 1975 | 760.52 | | | 819 | |
| October 1, 1981 | 759.11 | | | 721 | |
| February 24, 1985 | 759.15 | | | 690 | |
| February 18, 1998 | 759.29 | | | 763 | |
| June 25, 2000 | 759.01 | | | 679 | |
| February 9, 2001 | 760.00 | | | 1,200 | |
| Tienken Road Bridge | June, 1968 | | | 772.89 | |
| -(Reference 45) | | | | | |
| Rouge River | USGS gaging station at Southfield -(Reference 40) | | | June 26, 1968 | 628.28 |
| | | October 1, 1981 | 627.44 | 4,400 | |
| | | May 2, 1983 | 622.30 | 1,900 | |
| | | February 24, 1985 | 622.07 | 1,830 | |
| | | June 21, 1989 | 624.33 | 2,740 | |
| | | February 22, 1990 | 622.15 | 1,800 | |
| | | May 26, 1991 | 622.47 | 2,000 | |
| | | June 19, 1996 | 623.13 | 2,250 | |
| | | August 6, 1998 | 623.19 | 2,430 | |
| | | February 10, 2001 | 622.76 | 1,970 | |
| | | USGS gaging station at Birmingham | April 29, 1956 | 720.94 | 700 |
| | | -(Reference 40) | March 12, 1962 | 721.16 | 624 |
| | | | June 26, 1968 | 724.26 | 1,390 |
| | | | October 1, 1981 | 722.82 | 1,050 |
| | May 26, 1991 | 721.24 | 664 | | |
| | June 18, 1996 | 722.92 | 1,070 | | |
| | May 19, 1997 | 721.01 | 626 | | |
| | August 6, 1998 | 721.66 | 769 | | |
| | June 25, 2000 | 721.34 | 708 | | |
| | February 9, 2001 | 721.48 | 741 | | |

| <u>Stream</u> | <u>Location</u> | <u>Date</u> | <u>Elevation (NAVD88)</u> | <u>Flow (cfs)</u> |
|------------------------------|---|-------------------|-------------------------------|-----------------------|
| Sashabaw Creek | USGS gaging station near Drayton Plains -(Reference 40) | March 12, 1962 | 973.92 | 98 |
| | | June 26, 1968 | 973.84 | 138 |
| | | December 31, 1972 | 973.75 | 99 |
| | | February 23, 1974 | 974.00 | 161 |
| | | January 12, 1975 | 973.99 | 160 |
| | | February 23, 1976 | 973.76 | 126 |
| | | October 1, 1981 | 974.15 | 181 |
| | | February 14, 1984 | 973.57 | 105 |
| | | June 19, 1996 | 973.71 | 118 |
| | | February 10, 2001 | 973.83 | 133 |
| Sylvan Lake | Oakland County Drain Commission staff gage at Telegraph Road -(Reference 45) | March 13, 1974 | 929.52 | |
| | | March 17, 1974 | 929.57 | |
| | | April 4, 1975 | 929.86 | |
| | | April 20, 1975 | 929.70 | |
| | | September 5, 1975 | 929.65 | |
| | | September 5, 1975 | 930.42 | |
| | | March 8, 1976 | 928.37 | |
| | | March 8, 1976 | 929.02 | |
| Upper River Rouge | Interstate Highway 96 Bridges -(Reference 44) Powers Road -(Reference 46) Footbridge, D/s of Shiawassee St -(Reference 44) Shiawassee St -(Reference 46) Shiawassee St Bridge - Downstream -(Reference 44) Shiawassee St Bridge – Upstream -(Reference 44) | June 25-27, 1968 | 687.63 | |
| | | April, 1947 | 692.82 | |
| | | June 25-27, 1968 | 697.08 | |
| | | April, 1947 | 703.22 | |
| | | June 25-27, 1968 | 702.51 | |
| | | June 25-27, 1968 | 706.89 | |

2.4 Flood Protection Measures

A combination of structural and nonstructural measures have been utilized in the Oakland County area to prevent or reduce potential flooding damages. Structural measures include improvements (particularly to the Clinton River), dams and lake controls, retention, and detention. Other measures such as fill and seawalls have been used, for example, in the City of Sylvan Lake. The City of Bloomfield has conducted test on flooding in the community, but have not taken any action on those studies.

The Clinton River in the City of Pontiac has seen approximately \$40 million dollars in improvements since 1963. The area from the outlet of Crystal Lake to west of Wide Track Drive were improved through open earth channels and an enclosed drain. Some dredging was performed on Crystal Lake. The section through downtown Pontiac was enclosed from west of Wide Track Drive to east of Union Street. The area from Union Street to the eastern City of Pontiac corporate limit at Opdyke Road were realigned and

both earth and rectangular concrete channel reaches were constructed to increase flow capacity. The improvements in the City of Pontiac have had an effect on downstream areas, especially on Dawson Mill Pond Dam in the Charter Township of Waterford. When the gates are open, larger flows are passed through the Dam allowing lower flood storage stages on the lake upstream.

The Clarkston Dam, located at Washington Street in the Village of Clarkston, has a small outlet which passes underneath Washington Street, and there is also a small ogee weir located about 200 feet upstream on the east bank of the Mill Pond. There is no impoundment of flood flows, and therefore, no reduction in peak discharge, due to the relatively small volume of storage available. However, during major floods, a small portion of flow will pass through the small outlet at the dam thereby reducing the flow which passes over the ogee weir further upstream. These two flows recombine at the inlet to Middle Lake (Reference 43).

Randolph Street Drain, in the City of Northville has three dams along the studied length. Other major dams are located at the outlets of Ford Pond and Mill Pond, also in the City of Northville; Lake Orion in the Village of Lake Orion; Cass Lake, Oakland Lake, Van Norman Lake, and in the state owned hatchery area at Loon Lake in the Charter Township of Waterford. A 1968 court ruling changed the legal lake level for Cass Lake, in the City of Keego Harbor, to 928.83 feet (NAVD88) from May 16 to October 1, and 927.49 for the remainder of the year (Reference 47). Controls are also set on Moore Lake, Leonard Lake, and Duck Lake in the Township of Highland; Bogie Lake, Lake Neva, Cedar Island Lake, Oxbow Lake, and Pontiac Lake in the Township of White Lake; and Commerce Lake, Fox Lake, Lower Straits Lake, and Lake Sherwood in the Township of Commerce. These controls offer minimal protection against flooding and are primarily used for recreational purposes.

Some retention and detention guidelines have been established by certain communities. The City of Farmington Hills created a floodplain ordinance with development in the floodplain guided by use of the United States Army Corps floodplain information report (Reference 48). The retention policy is enforced for new development in the community, including stream structures which vary in the degree of effectiveness for reducing the 1-percent annual chanceflood. Significant flood retention is present along Minnow Pond Drain, Seeley Drain, and Pebble Creek. Tarabusi Creek has the most significant retention with enough stream storage to keep the 1-percent annual chanceflood at approximately the same magnitude as in the previous FIS.

In the City of Novi, a policy was established in the early 1970's requiring all new developments to provide on-site stormwater detention facilities. In 1982, Novi City Council approved a plan to construct 28 regional detention basins.

In the City of Troy, existing flood protection structures are limited to on-line retention basins which are generally designed for 10-percent annual chancestorm frequencies, and provide no protection from 1-percent annual chancefloods.

Nonstructural measures of flood protection are also being utilized to aid in prevention of further damage. These are in the form of land use regulations adopted from the Code of Federal Regulations which controls building within areas that have a high risk of flooding (Reference 49). Flood protection measures are implemented through the Plat Act of the State of Michigan, which prohibits the establishment of plats with the flood plain. The

City of Farmington enforces an ordinance that prohibits filling of the floodplain without approval of the City Council and State of Michigan Act 245, Public Acts of 1929, as amended by Act 167, Public Acts of 1968, which prohibits floodway encroachments that cause more than a 0.1 foot surcharge. The city has also established minimum finish grade elevations for development adjacent to the floodplains.

3.0 ENGINEERING METHODS

For the flooding sources studied by detailed methods 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 once on the average during any 10-, 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-, 50-, 100-, and 500-year floods, have a 10-, 2-, 1-, and 0.2-percent 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 1-percent-annual-chance (100-year) flood in any 50-year period is approximately 40 percent (4 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.

3.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish peak discharge-frequency relationships for each flooding source studied by detailed methods affecting the community.

This 2006 FIS report includes information from previously published FIS reports as well as new information. Unless indicated otherwise, the information provided in this section was obtained from the previously published FIS for Oakland County.

Flood flow frequency data for Amy Drain, Clinton River, Crystal Lake, Farmington Branch-Main Ravines, Franklin Branch, Gibson-Renshaw Drain, Gibson-Renshaw West Drain, Hamlin Drain, Hawthorn Drain, Houghton Drain, Houghton Drain East, Johnson Drain, Kirts Drain, Lane Drain, Long Lake-Forest Lake Branch, Main Ravines Tributaries A, B, and C, Murphy Drain, Novi-Lyon Drain, Novi-Lyon Drain Tributary C, Quarton Branch, Rouge River, Shanahan Drain, Sodon Lake Branch, Spencer-Barnard Drain, Sprague Branch, Sprague Drain, Stoneycroft Branch, Sturgis Drain, Sylvan Lake, Thornton Creek Overflow, Vogt Drain, Walters Lake Drain and West Branch Bell Creek in the Townships of Bloomfield and Independence; Villages of Clarkston and Franklin; and Cities of Bloomfield Hills, Farmington, Farmington Hills, Northville, Novi, Pontiac, and Troy was based on an analysis utilizing Brater's Unit Hydrograph Method (Reference 50). This method is used to develop runoff hydrographs in both urbanized and rural areas. Factors considered in the development of the hydrographs include population density, infiltration capacity and rainfall intensity-duration patterns.

A decrease in discharge occurs on Amy Drain and is attributed to storage upstream in Vhay Lake and a backup at the Grand Trunk Western Railroad. On Hamlin Drain,

downstream of the confluence of Stoneycroft Drain, a very restricted culvert under Grand Trunk Western Railroad causes a major portion of the flood flow to be diverted to Amy Drain during a flood event.

In areas of natural and induced ponding, hydrograph routing, such as HEC-1 routing was required. These areas include Amy Drain, Clinton River, Hamlin Drain, Hawthorn Drain, Long Lake-Forest Lake Branch, Minnow Pond, Pebble Creek, Quarton Branch, Rouge River, Seeley Drain, Sodon Lake Drain, Spencer-Barnard Drain, Sprague Branch, Stoneycroft Branch, and Tarabusi Creek (Reference 51 and 52). HEC-1 related the basin characteristics and rainfall data to stream discharge. For routings, storage was developed from the best available topographic information. For overflow calculations, data was collected by the field crew. Storage effects of the Kendallwood subdivision stormwater control facilities were accounted for by routing HEC-1 hydrographs through the EPA Stormwater Management Model (SMWW) version 4.30 (Reference 53). The control facilities affect discharges in Minnow Pond Drain over a reach between Chesterbrook Street and Farmington Road south of Twelve Mile Road.

The Henry Graham Drain, in the City of Troy, is an enclosure running north to south through most of the city. This drain intercepts flows from Houghton Drain, Shanahan Drain, Sturgis Drain, and Spencer-Barnard Drain. The flow is carried in the Henry Graham Drain and is discharged to the Red Run Drain located in Madison Heights, south of the City of Troy. Since the Henry Graham Drain does not have capacity to carry 1-percent annual chanceflows, backup in the drain will force flow out of the enclosure, causing overland flow in abandoned open channels, east of Henry Graham Drain.

The decrease in the 10-percent annual chance storm discharge on the Rouge River that occurs below the Grand Trunk Western Railroad can be attributed to storage of floodwaters behind the railroad embankments.

Peak elevations for Deer Lake, Parke Lake, Mill Pond, and Middle Lake were computed using Brater's Method and the HEC-1 computer programs as described above.

Flood flow frequency data for the Cass Lake, Clinton River, Clinton River West Channel, Lake Angelus, Lake Mohawk, Oakland Lake-West Outlet, Sashabaw River, and Sylvan Lake in the Charter Township of Waterford; Townships of Independence and West Bloomfield; and the Cities of Keego Harbor and Lake Angelus, used the combination of Hydrocomp's "Hydrological Simulation Model" (Reference 54), a report prepared by E.F. Brater (Reference 55), and a gaging analysis (Reference 56) on the USGS gage (No. 0416090) located on the Clinton River at State Highway 59.

The flood flow frequency data for the Clinton River at the USGS gage (No. 0416090) at Highland Road were calculated from both the gaging analysis and Brater's method. After inspection of the two methods, it was decided that the Brater method was more accurate, and therefore, the Brater method was used instead of the gaging analysis. The flood flows for the other locations on the Clinton River were determined by comparing the simulated flows from the computer study with the flow recorded at the stream gage (No. 0416090). This comparison is based on the April 1975 flood. The assumption was made that the 10-, 2-, 1-, and 0.2-percent annual chance flood flows yield a same discharge-area ratio as the April 1975 flood event.

The discharges vary along the Clinton River due to the river flowing in and out of the various lakes within the Township of Independence. There is a decrease in discharge on the Clinton River between Mill Pond and the outlet of Deer Lake as a result of the divergence of flows through the Clarkston Dam outlet channel.

For Carus Lake and Pleasant Lake Channel, Clinton River, Galloway Creek, Galloway Ditch, Galloway Lake, Paint Creek, Sargent Creek, Stony Creek in the Townships of Commerce, Pontiac, and West Bloomfield and the Cities of Pontiac, Rochester, and Rochester Hills, flood flow frequency data were based on an analysis of the drainage areas utilizing the SCS TR-20 Hydrology Computer Program (Reference 56) in conjunction with Brater's analysis technique (Reference 50). The urbanization and channel conditions considered in the analysis were for existing conditions. As urbanization effects imperviousness and channel conditions, flows can be expected to increase. The Michigan Department of Natural Resources concurred with the analyses. The flows for a majority of the lakes in Oakland, including Hammond Lake, Morris Lake, Simpson Lake, Upper Long Lake, and Walnut Lake were completely determined by the TR-20 program with monthly rainfall instead of 24-hour precipitation. Due to large differences in peak times between the local areas and Pleasant Lake hydrographs, only average or "mean" outflows from Pleasant Lake were added to the local hydrographs in the determination of flood frequency flows in the channel between the two lakes. There are large storage areas present on the Clinton River, Galloway Creek, and Galloway Ditch causing decreases in the peak flows for some portions of the streams.

The values of the 10-, 2-, 1-, and 0.2-percent annual chance peak discharges for the Huron River, West Branch Huron River, Upper River Rouge, Shawood Lake, Walled Lake, Rouge River, Rouge River North Branch, and Quarton Branch in the Township of Commerce; Villages of Beverly Hills and Bingham Farms; and Cities of Birmingham, Farmington, Farmington Hills, Northville, Novi, and Southfield were obtained from a log-Pearson Type III distribution of annual peak flow data. The basic procedures used in this study are based on those presented in the U.S. Water Resources Council Bulletins 15 and 17A (Reference 57 and 58). For the Huron River and the West Branch Huron River, flood-flow frequency data were based on discharge records covering a 31-year period at the Commerce gaging station, a 28-year period at the Milford gaging station, a 28-year period at the New Haven gaging station, and a 25-year period at the Hamburg gaging station. For the Upper River Rouge, discharge data was based on a gaging station located 800 feet downstream from Shiawassee Street Bridge in Farmington period of record analyzed was from 1958, the beginning date of operation, to 1975. The reliability of these records for this gage was extended by correlating them with those for the gage located on the main branch of the Rouge River at Detroit, which has been in operation since October 1930. For Shawood and Walled Lake, flood-flow frequency information was based on 33 years of data collected at Walled Lake. Flood flow frequency data for the Rouge River and the Rouge River North Branch were based on a statistical analysis of stage-discharge records covering a 25-year period at the Birmingham gaging station and a 17-year period at the Southfield gaging station. These gaging stations are operated and maintained by the USGS (Reference 41). Since no gages exist on Quarton Branch, unit hydrographs were developed and the 10-, 50-, and 1-percent annual chance flood discharges were derived by application of rainfall data from the U.S. Weather Bureau Technical Paper 25 (Reference 59). The discharge versus area relationship was adjusted by a regional skewness factor. The final flow was then determined based upon the relative size of each drainage area (References 60).

Flood frequency discharge relationships for parts of the Rouge River and its tributaries (Franklin Branch, Carpenter Branch, and Farmington Branch) in the Villages of Beverly Hills and Bingham Farms and the Cities of Northville and Southfield were developed by the USACE during preparation of the Flood Plain Information Reports (References 61, 62, and 63). The discharge of the Rouge River upstream from the Franklin Branch was increased to reflect current development of the basin at the request of the MDNR. The 0.2-percent annual chance flood and a regional frequency relationship for the 10-, 2-, 1-, and 0.2-percent annual chance floods was developed from frequency discharge relationships for the Rouge River system. These Regional frequency curves were then used to develop discharges for Pebble Creek and the Carpenter and Farmington Branches.

For the detailed analysis of the Middle River Rouge, in the City of Northville, two study methods were used with the USACE Flood Plain Information Report (Reference 63). Flood discharges used in this report were based on studies of 21 years of records for the stream gaging station at Garden City (No. 04167000). The SCS TR-20 computer program was used for this analysis. The flood routing method was also used. This method utilized inflow hydrographs, reservoir geometry, and outlet capacity information on Mill Pond and Ford Pond.

The drainage basins for Evans Branch and Tamarack Creek, in the City of Southfield, are approaching complete development of the land and most of the drainage is carried in enclosed storm drains. The discharges expected on Evans Branch and Tamarack Creek were determined by use of rainfall information and the triangular hydrograph method described in the U.S. Department of the Interior publication Design of Small Dams (Reference 64).

For Huron River (including lakes that form the Huron River system), Pettibone Creek (including lakes that form Pettibone Creek system), Randolph Street Drain, Sugden Creek in the Townships of Highland and White Lake and the City of Northville, flood flow data were determined through an iterative process using the HEC-2 step backwater program (References 65 and 66). Stage-discharge curves for lakes were established using HEC-2 or manual calculations, and inserted in the TR-20 computer model. After routing, resulting peak flows and elevations are used in the HEC-2 model to refine stage-discharge relationships. The process is repeated until both models converge to common peak flow and elevation values. The minor reduction in Huron River discharge at the Cedar Island Lake outlet is a result of this analysis. There is an abandoned dam north of Highland Road (State Highway 59) on Pettibone Creek which was not in operation at the time the original study was conducted. Should this structure be placed in service in the future, peak flows and elevation along this watercourse would be affected.

Channel flood routings to establish peak discharge-frequency relationships were made by the U.S. Department of Agriculture, Soil Conservation Service (SCS) methodology for "Estimation of Direct Runoff from Storm Rainfall," as outlined in the SCS National Engineering Handbook (Reference 67), using the TR-20 hydrology program and Michigan State University computer facilities for Holly-Patterson Drain, McClure Drain, Paint Creek, Shiawassee River and West Branch Stony Creek in the Township of Oakland and the Villages of Holly and Lake Orion. The convex method of routing through stream channels is used by this program. This method is derived from inflow-outflow hydrograph relationships. Several data were used in developing this watershed model. Time of concentration for each local drainage area was computed from subwatershed relief, hydraulics and travel length. Drainage area, hydrologic soil groups,

and land use and cover were used to develop runoff hydrographs. There is a small reduction in peak flow on McClure Drain at the site levee near Hixon Road due to the available storage upstream of the structure.

The U.S. SCS method was used with a HEC-1 model to determine discharges for Walled Lake Branch upstream of Novi Road in Section 35 and included the tributaries known as Thornton, Chapman, Munro, Leavenworth, Shaw, Bishop, and Ingersol Creeks in the City of Novi. Rainfall-duration values were taken from TP-40 (Reference 68). The 10-, 2-, 1-, and 0.2-percent annual chance precipitation values (24-hour duration) are: 3.55, 4.35, 4.7, and 5.5 inches, for those recurrence intervals, respectively. Type I rainfall distribution was utilized. It was determined that a 24-hour duration would be sufficient to use, as the retention basins are designed for the 10-percent annual chance event and would not have a significant effect on the 1-percent annual chance discharge. Drainage area, hydrologic soil groups, and land use and cover were used to develop runoff hydrographs. The land use was determined from the City of Novi Storm Water management Master Plan (Reference 42) which has a base year of approximately 1992 for the area in which detailed studies were conducted. Time of concentration values for overland flow were computed using MDNR methodology (Reference 69). In regions with planned or existing storm sewers, the time of concentration was calculated based on flow through the same sewer network. The time of concentration was multiplied by 0.6 to obtain the SCS lag. In regions with swamps, the peak discharge was reduced by the factors in the MDNR publication. The COE HEC-1 model includes only those basins already constructed. The hydraulic characteristics of the basins were taken from as-built drawings or were derived from information in the City of Novi's master plan.

Newly studied areas and restudy areas in this report used five methods of analysis; gage analysis, drainage area ratio method, State of Michigan U.S.G.S. regression equations, SCS/ HEC-1, and Brater's Method using 1990 census data. Precipitation was taken from Rainfall Frequency for Michigan, published by the MDNR in September 1990. The 1-percent annual chance, 24-hour storm amount was taken directly from the report. The 0.2-percent annual chance value was determined by extrapolating a plot of the 50-, 20-, 10-, 4-, 2-, and 1-percent annual chance values given in the report (Reference 70).

The time of concentration values for subbasin runoff were determined as indicated in Computing Flood Discharges for Small Ungaged Watersheds, published by the MDNR in October 1991 (Reference 71).

The SCS curve numbers were used to determine precipitation losses. The hydrologic group designations were determined from the Soil Survey of Oakland County, Michigan (Reference 35). Land use was obtained from the MDNR 1992 statewide land cover/land use inventory, in digital format. The hydrologic group designations and land uses were digitized using Microstation GIS. The percent land use for each of the hydrologic group designations were determined for each of the subbasins. SCS curve numbers were determined for each combination of hydrologic group designation and land use, by subbasin. A weighted calculation was performed to combine the various curve numbers into a single value for each subbasin.

The modified Puls routing method was used for most areas of lake/ swamp storage and flow restrictions. The contours were planimetered and the area determined for each storage area. Usually the stage-discharge relationships for area were based on Manning's equation or, for road crossings, on culvert flow calculations. The geometry for the

calculations was taken from the topographic maps and field observations. In one case, there was a HEC-2 model output developed to determine the stage-discharge relationship. On several streams with substantial flooding, preliminary HEC-2 models were used to determine the stage-storage relationship used in the modified Puls routing. The kinematic routing reach parameters were determined based on the topographic maps and field observations.

Since the Detroit Metropolitan Area is a rapidly growing community, it should be noted that continued growth will have a resultant impact of increasing peak discharges and constantly changing conditions to the hydrologic and hydraulic analyses for the County of Oakland.

Peak discharges for the 10-, 2-, 1-, and 0.2-percent annual chance floods of each flooding source studied in detail in the community are shown in Table 6.

TABLE 6 – Peak Discharge Values

| <u>Flooding Source and Location</u> | <u>Drainage Area (Sq Miles)</u> | <u>Peak Discharge (cfs)</u> | | | |
|---|---------------------------------|-----------------------------|-------------------------|-------------------------|---------------------------|
| | | <u>10% Annual Chance</u> | <u>2% Annual Chance</u> | <u>1% Annual Chance</u> | <u>0.2% Annual Chance</u> |
| Amy Drain | | | | | |
| At Vhay Lake Drain | 3.40 | 330 | 510 | 620 | 835 |
| Just D/S Kingsley Trail | 1.60 | 185 | 280 | 320 | 420 |
| Just D/S Great Oaks Drive | 1.30 | 125 | 180 | 220 | 290 |
| At Square Lake Road | 1.10 | 45 | 70 | 80 | 90 |
| Bishop Creek | | | | | |
| At Mouth | 2.46 | 150 | 245 | 300 | 455 |
| At Grand River Avenue | 1.99 | 130 | 210 | 260 | 405 |
| Carus Lake and Pleasant Lake Channel | | | | | |
| At Welch Road | 3.25 | 175 | 250 | 265 | 320 |
| At Haggerty Highway | 2.07 | 18 | 30 | 32 | 41 |
| At Pontiac Trail | 2.07 | 150 | 225 | 240 | 285 |
| U/S of Grand Trunk Western RR | 1.20 | 110 | 165 | 180 | 215 |
| About 900' u/s Grand Trunk Western RR | 1.10 | 50 | 80 | 90 | 100 |
| Pleasant Lake Outflow | 0.61 | 4 | 7 | 8 | 10 |
| Chapman Creek | | | | | |
| At Mouth | 0.82 | 210 | 300 | 340 | 430 |
| Clarkston Dam Outlet | | | | | |
| * | * | 25 | 30 | 30 | 30 |
| Clinton River | | | | | |
| At City of Rochester Eastern Corp Limit | 299.12 | 4520 | 6970 | 7870 | 10800 |
| Above Stony Creek | 225.52 | 3450 | 5030 | 5670 | 7990 |
| Above Paint Creek | 152.95 | 2530 | 3425 | 5825 | 5600 |
| 1,100' above Grand Trunk Western RR Br | 151.97 | 2520 | 3400 | 3800 | 5570 |
| 1,900' above Livernois Road Bridge | 150.04 | 2490 | 3355 | 3750 | 5500 |
| 3,500' below Crooks Road Bridge | 148.37 | 2470 | 3320 | 3710 | 5445 |
| Above Crooks Road Bridge | 147.79 | 2460 | 3305 | 3690 | 5420 |
| Above Hamlin Road Bridge | 146.35 | 2340 | 3270 | 3655 | 5370 |
| At Adams Road Bridge | 126.52 | 2155 | 2810 | 3210 | 4665 |

| <u>Flooding Source and Location</u> | <u>Drainage Area (Sq Miles)</u> | <u>Peak Discharge (cfs)</u> | | | |
|--|---------------------------------|-----------------------------|-------------------------|-------------------------|---------------------------|
| | | <u>10% Annual Chance</u> | <u>2% Annual Chance</u> | <u>1% Annual Chance</u> | <u>0.2% Annual Chance</u> |
| Clinton River (continued) | | | | | |
| At Western Corp Limits | 126.09 | 2150 | 2800 | 3200 | 4650 |
| Gaging Station | 123.48 | 2050 | 2660 | 3080 | 4490 |
| Interstate Highway 75 | 122.38 | 2000 | 2630 | 3010 | 4360 |
| Opdyke Road | 119.60 | 2410 | 3460 | 3950 | 5440 |
| East Boulevard | 117.80 | 2200 | 3150 | 3600 | 4950 |
| Paddock Street | 115.90 | 1670 | 2380 | 2710 | 3700 |
| Crystal Lake Outlet | 109.30 | 805 | 1100 | 1240 | 1630 |
| Dawson Dam | 107.00 | * | * | 600 | 750 |
| Outflow from Cass Lake | 102.50 | * | * | 555 | 680 |
| At Cass Lake Inlet | 102.50 | * | * | 635 | 890 |
| At Cass Lake Road | 102.50 | 385 | 540 | 600 | 750 |
| At Highland Road | 78.70 | 270 | 440 | 500 | 700 |
| At Indianview Drive | 73.50 | 365 | 595 | 675 | 945 |
| Outflow from Loon Lake | 73.50 | 250 | 405 | 460 | 645 |
| Outflow from Oakland Lake | 68.60 | 350 | 570 | 650 | 910 |
| At Andersonville Road | 37.00 | 365 | 600 | 680 | 950 |
| Outflow from Van Norman Lake | 37.00 | 250 | 410 | 465 | 650 |
| At Inlet to Lester Lake | 29.50 | 255 | 300 | 320 | 360 |
| Just D/S of Dixie Highway | 27.90 | * | * | 420 | 540 |
| Just U/S Confluence of Deer Lake | 12.80 | * | * | 310 | 400 |
| U/S of Spillway at Mill Pond | 11.70 | * | * | 250 | 310 |
| Clinton River West Channel | | | | | |
| At Hatchery Road | 73.50 | 75 | 130 | 155 | 225 |
| Duck Creek | | | | | |
| Just U/S Confluence of Kearsley Creek | 6.12 | | | 219 | 270 |
| Franklin Branch | | | | | |
| 13 Mile Road | 15.40 | 965 | 1410 | 1640 | 2220 |
| U/S of Franklin Road | 13.60 | 870 | 1280 | 1490 | 2030 |
| At Township of West Bloomfield Corp Limit | 11.52 | 745 | 1140 | 1310 | 1805 |
| U/S of Edwards Drain | 7.30 | 380 | 570 | 660 | 895 |
| U/S of Walnut Lake Outlet | 1.88 | 240 | 380 | 430 | 600 |
| U/S of Green Road | 0.78 | 68 | 87 | 125 | 165 |
| U/S of Morris Lake | 0.68 | 25 | 33 | 37 | 45 |
| At Woodpecker Lake Outlet | 0.17 | 6 | 8 | 9 | 11 |
| Galloway Creek | | | | | |
| At Mouth | 18.94 | 235 | 444 | 516 | 787 |
| 1,600' Above Butler Road | 18.50 | 225 | 432 | 498 | 762 |
| At City of Rochester Hills West Corp Limit | 14.00 | 430 | 615 | 655 | 920 |
| Squirrel Road-Section E | 13.44 | 385 | 555 | 610 | 870 |
| Cross Section J | 12.96 | 320 | 455 | 505 | 755 |
| Interstate Highway 75 | 11.64 | 255 | 385 | 430 | 555 |
| Galloway Lake (inflow) | 11.17 | 360 | 520 | 570 | 765 |
| Galloway Lake (outflow) | 11.17 | 190 | 370 | 430 | 520 |
| At Galloway Ditch | 9.40 | 345 | 635 | 730 | 1180 |
| Above Galloway Ditch | 5.45 | 215 | 400 | 460 | 775 |

| <u>Flooding Source and Location</u> | <u>Drainage Area (Sq Miles)</u> | <u>Peak Discharge (cfs)</u> | | | |
|--|---------------------------------|-----------------------------|-------------------------|-------------------------|---------------------------|
| | | <u>10% Annual Chance</u> | <u>2% Annual Chance</u> | <u>1% Annual Chance</u> | <u>0.2% Annual Chance</u> |
| Galloway Creek (continued) | | | | | |
| Collier Road | 4.13 | 185 | 270 | 300 | 410 |
| City Landfill (inflow) | 3.13 | 135 | 205 | 235 | 335 |
| City Landfill (outflow) | 3.13 | 100 | 135 | 165 | 305 |
| Joslyn Avenue (outflow) | 3.13 | 65 | 80 | 85 | 105 |
| Grand Truck Railroad | 1.67 | 135 | 205 | 235 | 335 |
| Collier Road (inflow) | 0.76 | 15 | 60 | 75 | 140 |
| Collier Road (outflow) | 0.76 | 1.2 | 1.5 | 1.6 | 1.8 |
| Galloway Ditch | | | | | |
| Township Limit with the City of Pontiac | 3.95 | 270 | 395 | 435 | 600 |
| Interstate Highway 75 | 2.99 | 325 | 465 | 510 | 650 |
| Gibson-Renshaw Drain | | | | | |
| At Dequindre Road | 12.2 | 490 | 720 | 850 | 1150 |
| At Confluence of Gibson-Renshaw W Drain | 9.2 | 380 | 560 | 660 | 920 |
| At Unnamed Tributary at Emerald Lake Rd | 5.8 | 510 | 770 | 910 | 1220 |
| Gibson-Renshaw West Drain | | | | | |
| Just U/S Confluence w/ Gibson-Renshaw | 1.80 | 245 | 360 | 430 | 590 |
| At Unnamed Trib at Square Lake Road | 1.50 | 215 | 325 | 390 | 535 |
| Hamlin Drain | | | | | |
| Confl w/ Stonycroft Br and Murphy Drain | 1.30 | 55 | 60 | 62 | 65 |
| Kensington Road | 1.20 | 240 | 360 | 430 | 600 |
| Hawthorn Drain | | | | | |
| At Dequindre Road | 0.20 | 390 | 500 | 520 | 790 |
| Holly-Patterson Drain | | | | | |
| At D/S Village of Holly Limit | 3.42 | 53 | 81 | 91 | 118 |
| At Bush Lake Outlet | 1.53 | 10 | 19 | 20 | 21 |
| Houghton Drain | | | | | |
| At Henry Graham Drain | 2.8 | 320 | 510 | 600 | 810 |
| 1300 ft D/S of Lanni Drain Enclosure | 1.5 | 250 | 340 | 370 | 460 |
| Overland flow from 1300 ft D/S Lanni Drain Enclosure | * | 0 | 60 | 100 | 180 |
| Just U/S Page Drain | 1.5 | 140 | 200 | 240 | 320 |
| 1150 ft U/S Page Drain entrance | 1.1 | 245 | 430 | 550 | 750 |
| Houghton Drain East | | | | | |
| Just U/S Confluence with Shanahan Drain | 0.06 | 12 | 19 | 22 | 30 |
| Huron River | | | | | |
| At Commerce Lake Inlet | 218.00 | 705 | 990 | 1145 | 1440 |
| At D/S Village of Milford Corp Limit | 131.50 | | | 800 | 1000 |
| At Hayes Creek | 96.00 | 290 | 390 | 440 | 520 |
| At Fox Lake Outlet | 48.00 | 145 | 205 | 240 | 300 |
| At Brendel Lake Outlet | 44.00 | 135 | 190 | 225 | 280 |
| At Cedar Island Lake Outlet | 27.40 | 94 | 125 | 135 | 165 |
| At Oxbow Lake Outlet | 25.50 | 84 | 125 | 140 | 170 |
| At Pontiac Lake Outlet | 20.90 | 84 | 125 | 135 | 170 |
| At White Lake Outlet | 6.50 | 1 | 18 | 25 | 53 |
| Ingersol Creek | | | | | |
| At Mouth | 7.90 | 480 | 775 | 930 | 1340 |

| <u>Flooding Source and Location</u> | <u>Drainage Area (Sq Miles)</u> | <u>Peak Discharge (cfs)</u> | | | |
|---|---------------------------------|-----------------------------|-------------------------|-------------------------|---------------------------|
| | | <u>10% Annual Chance</u> | <u>2% Annual Chance</u> | <u>1% Annual Chance</u> | <u>0.2% Annual Chance</u> |
| Ingersol Creek (continued) | | | | | |
| Just U/S of Confluence of Bishop Creek | 4.32 | 410 | 670 | 790 | 1090 |
| About 2,200' U/S of Grand River Avenue | 1.61 | 200 | 330 | 395 | 550 |
| Kearsley Creek | | | | | |
| At Oakwood Road | 29.19 | | | 630 | 770 |
| Just U/S Confluence of Duck Creek | 21.98 | | | 491 | 600 |
| Kirts Drain | | | | | |
| At Crooks Road | 0.60 | 170 | * | 300 | * |
| Lane Drain | | | | | |
| Just U/S Confluence with Sturgis Drain | 2.20 | 190 | 340 | 450 | 750 |
| Leavenworth Creek | | | | | |
| About 1,800' D/S of Taft Road | 0.61 | 165 | 230 | 260 | 330 |
| Long Lake-Forest Lake Branch | | | | | |
| Confluence of Quarton Branch | 8.90 | 430 | 620 | 710 | 930 |
| Confluence of Sodon Lake Branch | 6.10 | 275 | 410 | 485 | 665 |
| At Lahser Road | 5.90 | 190 | 245 | 270 | 330 |
| At West Long Lake Road | 5.60 | 155 | 180 | 195 | 230 |
| At Orange Lake Outlet | 5.30 | 75 | 110 | 130 | 185 |
| At Franklin Road | 4.60 | 20 | 35 | 60 | 95 |
| Main Ravines Drain | | | | | |
| At D/S Face of Inkster Road | 5.60 | * | * | 1140 | 1500 |
| Approximately 300' U/S of Unkster Road | 3.78 | * | * | 920 | 1190 |
| U/S of Confluence w/ Main Ravines Trib A | 2.21 | * | * | 780 | 1050 |
| U/S of Confluence w/ Main Ravines Trib B | 1.66 | * | * | 600 | 780 |
| Main Ravines Drain-Tributary A | | | | | |
| U/S of Confluence with Main Ravines Drain | 1.30 | * | * | 510 | 660 |
| At D/S Face of Ashley Road | 0.96 | * | * | 420 | 560 |
| Main Ravines Drain-Tributary B | | | | | |
| U/S of Confluence with Main Ravines Drain | 0.18 | * | * | 160 | 200 |
| At D/S Face of Stockton Road | 0.14 | * | * | 140 | 190 |
| At D/S Face of Brookplace Court Culvert | 0.08 | * | * | 80 | 110 |
| Main Ravines Drain-Tributary C | | | | | |
| U/S of Confluence with Main Ravines Drain | 1.82 | * | * | 610 | 810 |
| At D/S Face of Glencreek Road | 1.53 | * | * | 590 | 770 |
| Approximately 1,600' U/S of Tenmile Road | 1.23 | * | * | 490 | 640 |
| Approximately 600' U/S of Hemlock Road | 0.79 | * | * | 390 | 520 |
| McClure Drain | | | | | |
| At Mouth | 3.25 | 120 | 180 | 220 | 290 |
| At a Point 1,600' U/S of Gunn Road | 2.07 | 60 | 85 | 95 | 120 |
| At Hixon Road | 1.74 | 55 | 80 | 100 | 145 |
| Just D/S of Site Levee | 1.74 | 55 | 75 | 85 | 105 |
| Middle River Rouge | | | | | |
| D/S Johnson Drain | 45.80 | 2270 | 3170 | 3680 | 5090 |
| U/S Johnson Drain | 19.70 | 1040 | 1610 | 1850 | 2490 |
| U/S Randolph Street Drain | 17.70 | 1040 | 1590 | 1820 | 2460 |

| <u>Flooding Source and Location</u> | <u>Drainage Area (Sq Miles)</u> | <u>Peak Discharge (cfs)</u> | | | |
|---|---------------------------------|-----------------------------|-------------------------|-------------------------|---------------------------|
| | | <u>10% Annual Chance</u> | <u>2% Annual Chance</u> | <u>1% Annual Chance</u> | <u>0.2% Annual Chance</u> |
| Minnow Pond Drain | | | | | |
| U/S of Confluence with Upper River Rouge | 10.10 | * | * | 1600 | 2200 |
| 125' D/S of Farmington Rd S of 12 Mile Rd | 8.00 | * | * | 980 | 1560 |
| Approximately 750' D/S of Kendallwood Rd | 8.00 | * | * | 480 | 1080 |
| Approximately 350' D/S of Chesterbrook St | 8.00 | * | * | 420 | 900 |
| 275' U/S of Farmington Rd | 5.20 | * | * | 1020 | 1370 |
| Approximately 200' U/S of 13 Mile Road | 4.29 | * | * | 950 | 1260 |
| Approximately 300' D/S of Halsted Road | 3.10 | * | * | 550 | 930 |
| At Fourteen Mile Road | 2.75 | 135 | 260 | 350 | 615 |
| U/S of Halsted Road | 2.20 | * | * | 360 | 610 |
| At West Maple Road | 1.82 | 80 | 120 | 140 | 180 |
| Munro Creek | | | | | |
| At Mouth | 0.78 | 110 | 160 | 190 | 290 |
| At Taft Road | 0.48 | 110 | 170 | 195 | 260 |
| Murphy Drain | | | | | |
| U/S of Confluence of Hamlin Drain | 2.10 | 330 | 480 | 570 | 780 |
| Woodward Avenue | 1.80 | 300 | 445 | 525 | 730 |
| Just U/S of Woodward Avenue | 1.50 | 300 | 445 | 525 | 730 |
| At Wendover Road | 1.30 | 220 | 340 | 400 | 570 |
| North Branch Main Ravines Drain | | | | | |
| At City of Farmington Hills D/S Corp Limits | 1.94 | * | * | 660 | 1120 |
| U/S of Unnamed Tributary | 1.38 | * | * | 540 | 700 |
| D/S of Elevenmile Road | 1.09 | * | * | 450 | 600 |
| Norton Creek | | | | | |
| At D/S City of Wixom Corp Limit | 16.10 | | | 650 | 930 |
| Disposal Pond Road | 14.60 | | | 600 | 860 |
| U/S of Loon Lake Tributary | 10.70 | | | 490 | 650 |
| U/S of Unnamed Tributary NW Section 31 | 8.20 | | | 400 | 500 |
| U/S of Unnamed Tributary NE Section 6 | 5.15 | | | 540 | 720 |
| U/S of Abandoned Road SW Section 6 | 4.60 | | | 490 | 640 |
| Novi-Lyon Drain | | | | | |
| At Napier Road | 6.15 | 90 | 150 | 180 | 260 |
| Just U/S of Confluence of Tributary C | 3.97 | 175 | 255 | 285 | 380 |
| At Ten Mile Road | 3.26 | 85 | 100 | 105 | 110 |
| Novi-Lyon Drain-Tributary C | | | | | |
| At Mouth | 1.70 | 255 | 340 | 395 | 540 |
| About 1,000' U/S of Wixom Road | 1.14 | 173 | 260 | 305 | 420 |
| Paint Creek | | | | | |
| At Mouth | 71.66 | 975 | 1205 | 1745 | 2610 |
| Above Sargent Creek | 65.64 | 675 | 1040 | 1265 | 1750 |
| At Confluence of Unnamed Tributary | 64.09 | 675 | 1040 | 1265 | 1750 |
| Above Unnamed Tributary | 62.10 | 615 | 950 | 1160 | 1615 |
| At Dutton Road | 59.30 | 610 | 950 | 1160 | 1610 |
| At Orion Road in Goodison | 54.32 | 490 | 770 | 940 | 1310 |
| At Private Drive Near Adams Road | 37.66 | 410 | 520 | 560 | 720 |

| <u>Flooding Source and Location</u> | <u>Drainage Area (Sq Miles)</u> | <u>Peak Discharge (cfs)</u> | | | |
|---|---------------------------------|-----------------------------|-------------------------|-------------------------|---------------------------|
| | | <u>10% Annual Chance</u> | <u>2% Annual Chance</u> | <u>1% Annual Chance</u> | <u>0.2% Annual Chance</u> |
| Paint Creek (continued) | | | | | |
| At Village of Lake Orion South Corp Limits | 37.00 | 390 | 500 | 540 | 720 |
| At Kern Road | 36.28 | 390 | 500 | 540 | 720 |
| Pebble Creek | | | | | |
| At City of Farmington Hills D/S Corp Limits | 6.29 | * | * | 1300 | 1840 |
| Approximately 600' U/S of 12 Mile Road | 4.97 | * | * | 1000 | 1310 |
| U/S of Dam, at Golf Course | 3.82 | * | * | 860 | 1190 |
| D/S of Dam, at Golf Course | 3.82 | * | * | 860 | 1190 |
| At Fourteen Mile Road | 1.47 | * | * | 500 | 650 |
| At Gravel Drive | 1.01 | * | * | 390 | 530 |
| At Drakeshire Lane | 0.53 | * | * | 270 | 370 |
| Pettibone Creek | | | | | |
| At Moore Lake Outlet | 9.82 | 160 | 223 | 226 | 261 |
| Mouth at Huron River | 8.11 | | | 210 | 310 |
| At Lower Pettibone Lake Outlet | 8.01 | 132 | 160 | 172 | 209 |
| D/S face Commerce Road | 7.80 | | | 230 | 330 |
| At Alderman Lake Outlet | 5.42 | 94 | 121 | 132 | 159 |
| At Leonard Lake Outlet | 1.50 | 12 | 25 | 28 | 35 |
| At Upper Pettibone Lake Outlet | 0.84 | 8 | 13 | 15 | 19 |
| Quarton Branch | | | | | |
| At Mouth | 22.00 | 460 | 690 | 790 | 1070 |
| Quarton Road | 16.70 | 850 | 1250 | 1450 | 1900 |
| U/S of Confl of Long Lake-Forest Lake | 6.60 | 620 | 920 | 1080 | 1450 |
| Randolph Street Drain | | | | | |
| Mouth at Middle River Rouge | 1.90 | 430 | 660 | 770 | 1070 |
| At Lexington Boulevard | 1.03 | 215 | 363 | 433 | 541 |
| At Coldspring Drive | 0.97 | 207 | 356 | 433 | 532 |
| Approximately 900' U/S of Coldspring Drive | 0.74 | 159 | 265 | 323 | 407 |
| Just D/S of 60-inch Culvert | 0.38 | 110 | 161 | 180 | 232 |
| At the City of Northville U/S Corp Limit | 0.32 | 73 | 106 | 138 | 207 |
| Rouge River | | | | | |
| At D/S City of Southfield Corp Limit | 89.20 | | | 5500 | 9300 |
| Village of Bingham Farms South Corp Limit | 47.00 | 1200 | 2230 | 2800 | 4450 |
| Below Lasher Road | 44.20 | 1195 | 2105 | 2600 | 3895 |
| Above 13 Mile Road | 43.80 | 1194 | 2080 | 2560 | 3820 |
| Above Riverside Drive | 38.20 | 1180 | 1800 | 2100 | 2820 |
| At Confluence with Quarton Lake Branch | 14.80 | 1100 | 1700 | 1980 | 2650 |
| Just U/S Grand Trunk Western Railroad | 13.30 | 1180 | 1630 | 1830 | 2270 |
| At Wattles Road | 10.0 | 960 | 1350 | 1550 | 2050 |
| At Beach Road | 8.9 | 870 | 1240 | 1440 | 1920 |
| At Beechwood Lake Outlet | 7.3 | 690 | 1020 | 1200 | 1690 |
| At Square Lake Road | 7.0 | 640 | 950 | 1120 | 1500 |

| <u>Flooding Source and Location</u> | <u>Drainage Area (Sq Miles)</u> | <u>Peak Discharge (cfs)</u> | | | |
|---|---------------------------------|-----------------------------|-------------------------|-------------------------|---------------------------|
| | | <u>10% Annual Chance</u> | <u>2% Annual Chance</u> | <u>1% Annual Chance</u> | <u>0.2% Annual Chance</u> |
| Sargent Creek | | | | | |
| At mouth | 4.92 | 535 | 840 | 980 | 1410 |
| Above Private Bridge | 3.77 | 390 | 615 | 710 | 1015 |
| 200' Below Tienken Road | 2.72 | 295 | 460 | 525 | 745 |
| 50' Below New Kent Drive | 1.96 | 230 | 350 | 395 | 560 |
| Adams Road | 1.40 | | | 190 | 290 |
| Charleswood Drive | 0.80 | | | 130 | 170 |
| Arbor Creek Drive | 0.50 | | | 90 | 110 |
| Sashabaw Creek | | | | | |
| At Township of Independence Corp Limit | 23.30 | 205 | 345 | 410 | 590 |
| At D/S Orion Township Corp Limit | 14.41 | | | 190 | 245 |
| U/S Judah Lake Creek | 9.43 | | | 85 | 115 |
| D/S Baldwin Road | 6.81 | | | 55 | 90 |
| Seeley Drain | | | | | |
| At Confluence with Upper River Rouge | 5.66 | * | * | 1050 | 1430 |
| Approximately 1,700' D/S of Halsted Road | 4.00 | * | * | 610 | 1750 |
| U/S of Twelve Mile Road | 3.20 | * | * | 550 | 670 |
| Approximately 2,000' D/S of 13 Mile Road | 2.28 | * | * | 540 | 730 |
| Shanahan Drain | | | | | |
| At Inlet to Henry Graham Drain | 5.70 | 240 | 460 | 560 | 750 |
| At Dequindre Road | 0.24 | 25 | 38 | 45 | 62 |
| Just U/S Confluence of Houghton Dr East | 0.10 | 10 | 16 | 19 | 27 |
| Shaw Creek | | | | | |
| At Mouth | 1.54 | 300 | 435 | 500 | 640 |
| At Taft Road | 1.36 | 98 | 140 | 170 | 200 |
| A Novi/Wixom Corporate Boundary | 0.93 | 47 | 71 | 84 | 97 |
| Shiawassee River | | | | | |
| At D/S Village of Holly Limit | 61.00 | 290 | 400 | 450 | 560 |
| Simpson Lake Outlet | | | | | |
| U/S of Confluence with Franklin Branch | 4.48 | 51 | 66 | 71 | 80 |
| At Simpson Lake Outlet | 4.43 | 51 | 66 | 71 | 80 |
| At Walnut Lake Outlet | 3.13 | 19 | 30 | 32 | 39 |
| Sodon Lake Drain | | | | | |
| Confluence with Long Lake-Forest Lake | 2.30 | 280 | 390 | 440 | 560 |
| Confluence of Sunken Bridge Drain | 1.50 | 210 | 245 | 260 | 295 |
| At Township of Bloomfield D/S Corp Limits | 1.40 | 120 | 170 | 190 | 270 |
| At Stoneleigh Drive | 1.30 | 90 | 129 | 140 | 190 |
| Just D/S Lakes | 1.20 | 35 | 40 | 45 | 50 |
| Spencer-Barnard Drain | | | | | |
| At Dequindre Road | 0.30 | 530 | 890 | 1600 | 2290 |
| At Inlet to Henry Graham Drain | 5.00 | 1100 | 1600 | 1900 | 2600 |
| At Maple Road | 4.20 | 370 | 580 | 660 | 850 |
| Sprague Branch | | | | | |
| Just U/S Confluence with Rouge River | 4.4 | 480 | 700 | 820 | 1100 |
| Just U/S Coolidge Road | 2.0 | 270 | 400 | 490 | 670 |
| Just D/S of Lake Charnwood | 1.5 | 160 | 230 | 280 | 340 |

| <u>Flooding Source and Location</u> | <u>Drainage Area (Sq Miles)</u> | <u>Peak Discharge (cfs)</u> | | | |
|---|---------------------------------|-----------------------------|-------------------------|-------------------------|---------------------------|
| | | <u>10% Annual Chance</u> | <u>2% Annual Chance</u> | <u>1% Annual Chance</u> | <u>0.2% Annual Chance</u> |
| Sprague Drain | | | | | |
| Just U/S Confluence with Rouge River | 2.6 | 320 | 480 | 570 | 780 |
| Stony Creek | | | | | |
| At Mouth | 72.77 | 665 | 1045 | 1215 | 1695 |
| 2,000' Below Romeo Road Bridge | 72.33 | 665 | 1040 | 1210 | 1680 |
| Above Tienken Road Bridge | 70.55 | 485 | 720 | 810 | 1100 |
| Stonycroft Branch | | | | | |
| U/S of Confluence of Amy Drain | 2.30 | 395 | 560 | 650 | 865 |
| Sturgis Drain | | | | | |
| At Douglas Drain Enclosure | 5.7 | 480 | 830 | 1030 | 1510 |
| At Confluence of Lane Drain | 3.0 | 290 | 490 | 580 | 760 |
| At Wattles Road | 0.6 | 125 | 130 | 140 | 160 |
| At Long Lake Road | 0.1 | 50 | 50 | 60 | 75 |
| Sugden Creek | | | | | |
| At Sugden Lake Outlet | 1.10 | 9 | 11 | 12 | 15 |
| At Boogie Lake Outlet | 0.90 | 14 | 20 | 21 | 26 |
| Sylvan Lake | | | | | |
| At Lake's Outlet | 107.00 | 385 | 540 | 600 | 750 |
| Tarabusi Creek | | | | | |
| At City of Farmington Hills Corp Limits | 4.91 | * | * | 1160 | 1510 |
| Approximately 400' U/S of Bridgeman Av | 4.32 | * | * | 1120 | 1400 |
| Approximately 1,800' D/S of Nine Mile Rd | 3.69 | * | * | 810 | 1050 |
| At D/S Face of Nine Mile Road | 3.59 | * | * | 790 | 1100 |
| At Cross Section M | 3.20 | 560 | 820 | 930 | 1080 |
| Thornton Creek | | | | | |
| At Mouth | 2.56 | 120 | 280 | 340 | 500 |
| At Taft Road | 1.10 | 80 | 130 | 160 | 220 |
| Thornton Creek Diversion | | | | | |
| In Northville | 2.80 | 102 | 155 | 182 | 255 |
| Upper River Rouge | | | | | |
| At City of Farmington Hills D/S Corp Limits | 19.50 | 735 | 1530 | 2080 | 3940 |
| At Cross Section A | 18.50 | 710 | 1480 | 2010 | 3800 |
| At D/S Side of Inverson Drive | 18.00 | 710 | 1480 | 2010 | 3800 |
| At USGS Stream Gage #1663 | 17.50 | 670 | 1400 | 1900 | 3600 |
| At Confl of Seeley Dr and Minnow Pond | 16.23 | 625 | 1330 | 1810 | 3410 |
| Walled Lake Branch | | | | | |
| At Novi Road | 23.58 | 1315 | 2005 | 2380 | 3405 |
| Just U/S of Confluence of Thornton Creek | 21.02 | 1195 | 1805 | 2150 | 3050 |
| Just U/S of Confluence of Ingersol Creek | 11.62 | 795 | 1025 | 1215 | 1705 |
| Just U/S of Confluence of Chapman Creek | 10.54 | 635 | 925 | 1115 | 1570 |
| Just U/S of Confl of Leavenworth Creek | 8.26 | 460 | 695 | 820 | 1160 |
| At Interstate 96 | 8.16 | 530 | 820 | 950 | 1270 |
| Walters Lake Drain | | | | | |
| At Dennis Lake Inlet | 1.30 | 60 | 85 | 100 | 145 |
| Just U/S of New Road | 1.10 | 60 | 80 | 105 | 145 |

| <u>Flooding Source and Location</u> | <u>Drainage Area (Sq Miles)</u> | <u>Peak Discharge (cfs)</u> | | | |
|---|---------------------------------|-----------------------------|-------------------------|-------------------------|---------------------------|
| | | <u>10% Annual Chance</u> | <u>2% Annual Chance</u> | <u>1% Annual Chance</u> | <u>0.2% Annual Chance</u> |
| Walters Lake Drain (continued) | | | | | |
| Just D/S of Avalon Road | 1.00 | 50 | 70 | 80 | 110 |
| Just D/S of Eston Road | 0.90 | 15 | 25 | 30 | 80 |
| West Branch Bell Creek | | | | | |
| At City of Farmington Hills D/S Corp Limits | 2.20 | * | * | 640 | 860 |
| At U/S Face of Rhonswood Road | 0.69 | * | * | 310 | 430 |
| Approximately 300' U/S of Lujon Drive | 0.55 | * | * | 270 | 380 |
| West Branch Stony Creek | | | | | |
| At mouth | 14.45 | 310 | 450 | 530 | 670 |
| At Gunn Road | 12.46 | 265 | 385 | 455 | 575 |
| At Buell Road | 11.08 | 225 | 330 | 390 | 515 |
| At Stony Creek Road | 8.52 | 130 | 185 | 220 | 295 |

3.2 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. Users should be aware that flood elevations shown on the Flood Insurance Rate Map (FIRM) represent rounded whole-foot elevations and may not exactly reflect the elevations shown on the Flood Profiles or in the Floodway Data table in the FIS report. 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.

Elevation-frequency data was calculated by two methods. Method one used the HEC-2 computer program developed by the COE. The elevations for each flood frequency flow are assumed to be the energy grade line elevations, as determined by HEC-2, at the outlet of each lake. Method two uses the TR-20 program developed by the SCS utilizing monthly rainfall (Reference 56).

Lakes

Numerous lakes in Oakland County have been studied, and still water lake elevations have been determined. The elevations are shown in Table 7.

TABLE 7 – Summary of Still Water Elevations

| <u>FLOODING SOURCE</u> | <u>LOCATION</u> | <u>ELEVATION (NAVD88)</u> | | | |
|------------------------|------------------------|---------------------------|-------------------------|-------------------------|---------------------------|
| | | <u>10% Annual Chance</u> | <u>2% Annual Chance</u> | <u>1% Annual Chance</u> | <u>0.2% Annual Chance</u> |
| Bald Eagle Lake | Brandon Township | | | 970.4 | 970.7 |
| Bass Lake | Township of Commerce | 918.6 | 918.9 | 919.0 | 919.3 |
| Bevins Lake | Village of Holly | 911.8 | 911.9 | 912.0 | 912.2 |
| Bogie Lake | Township of White Lake | 937.7 | 937.8 | 937.8 | 937.9 |
| Buckhorn Lake | Orion Township | | | 988.8 | |

| <u>FLOODING SOURCE</u> | <u>LOCATION</u> | <u>ELEVATION (NAVD88)</u> | | | |
|------------------------|-------------------------------|----------------------------------|---------------------------------|---------------------------------|-----------------------------------|
| | | <u>10% Annual Chance</u> | <u>2% Annual Chance</u> | <u>1% Annual Chance</u> | <u>0.2% Annual Chance</u> |
| Bunny Run Lake | Orion Township | | | 966.6 | |
| Bush Lake | Village of Holly | 913.9 | 914.4 | 914.5 | 914.8 |
| Carroll Lake | Township of Commerce | 923.0 | 923.9 | 924.6 | 925.6 |
| Cass Lake | Charter Township of Waterford | | | 930.9 | 931.6 |
| | City of Keego Harbor | | | | |
| | City of Orchard Lake Village | | | | |
| | Township of West Bloomfield | | | | |
| Cedar Island Lake | Township of White Lake | 934.5 | 934.9 | 935.0 | 935.5 |
| Coles Bay | Charter Township of Waterford | 930.4 | 931.2 | 931.5 | 932.1 |
| Cooley Lake | Township of White Lake | 935.7 | 935.9 | 935.9 | 936.1 |
| Crystal Lake | City of Pontiac | 917.3 | 918.7 | 919.0 | 919.7 |
| Dark Lake | Township of Independence | 973.4 | 974.7 | 975.3 | 977.1 |
| Dark Lake | Orion Township | | | 1001.1 | |
| Dawson Mill Pond | City of Pontiac | | | 928.7 | 930.1 |
| Deer Lake | Township of Independence | | | 972.9 | 973.0 |
| | Village of Clarkston | | | | |
| Dennis Lake | Township of Independence | 1031.5 | 1032.3 | 1032.6 | 1033.7 |
| Dollar Lake | City of Keego Harbor | 930.4 | 931.2 | 931.5 | 932.1 |
| Duck Lake | Township of Highland | 1016.2 | 1016.8 | 1017.0 | 1017.5 |
| Eagle Lake | Charter Township of Waterford | 958.8 | 959.7 | 959.9 | 960.8 |
| Elkhorn Lake | Orion Township | | | 987.3 | |
| Fox Lake | Township of Commerce | 930.5 | 930.7 | 930.8 | 930.9 |
| Galloway Lake | City of Pontiac | 906.5 | 908.4 | 909.3 | 911.7 |
| Gerundegut Bay | Charter Township of Waterford | 930.4 | 931.2 | 931.5 | 932.1 |
| Grass Lake | Township of White Lake | 1016.5 | 1017.1 | 1017.4 | 1017.9 |
| Green Lake | Township of West Bloomfield | 929.0 | 929.5 | 929.5 | 929.7 |
| Greens Lake | Township of Independence | 968.2 | 968.9 | 969.2 | 969.9 |
| Greens Lake | Orion Township | | | 998.1 | |
| Hammond Lake | Township of Bloomfield | 920.2 | 920.5 | 920.6 | 920.9 |
| | Township of West Bloomfield | | | | |
| Harvey Lake | Township of Highland | 998.6 | 999.7 | 1000.2 | 1001.2 |
| Hummer Lake | Brandon Township | | | 1050.2 | 1050.6 |
| Judah Lake | Orion Township | | | 990.3 | |
| Lake Angelus | City of Lake Angelus | 950.9 | 952.2 | 952.8 | 954.3 |
| Lake Louise | Brandon Township | | | 965.3 | 965.7 |
| Lake Neva | Township of White Lake | 945.5 | 945.8 | 945.8 | 946.1 |
| Lake Orion | Orion Township | 985.3 | 986.5 | 987.1 | 988.4 |
| | Village of Lake Orion | | | | |
| Lake Sherwood | Township of Commerce | 930.3 | 930.7 | 930.8 | 931.2 |
| Lake Sixteen | Orion Township | | | 986.2 | |
| Lester Lake | Charter Township of Waterford | 968.0 | 968.7 | 969.0 | 969.7 |
| | Township of Independence | | | | |
| Lonesome Lake | Orion Township | | | 997.9 | |
| Long Lake | Township of Commerce | 934.2 | 934.9 | 935.2 | 935.8 |
| | Township of White Lake | | | | |
| Long Lake | Orion Township | | | 968.1 | |
| Loon Lake | Charter Township of Waterford | 950.5 | 951.5 | 952.1 | 953.4 |

| <u>FLOODING SOURCE</u> | <u>LOCATION</u> | <u>ELEVATION (NAVD88)</u> | | | |
|-----------------------------|---|----------------------------------|---------------------------------|---------------------------------|-----------------------------------|
| | | <u>10% Annual Chance</u> | <u>2% Annual Chance</u> | <u>1% Annual Chance</u> | <u>0.2% Annual Chance</u> |
| Lotus Lake | Charter Township of Waterford | 968.0 | 968.7 | 969.0 | 969.7 |
| Lower Straits Lake | Township of Commerce | 931.4 | 931.8 | 931.9 | 932.3 |
| Maceday Lake | Charter Township of Waterford | 968.0 | 968.7 | 969.0 | 969.7 |
| Mandon Lake | Township of White Lake | 935.6 | 936.0 | 936.2 | 936.5 |
| Middle Lake | Township of Independence Village of Clarkston | | | 972.9 | 973.0 |
| Middle Straits Lake | Orion Township Township of Commerce | 931.7 | 932.0 | 932.2 | 932.5 |
| Mill Lake | Township of West Bloomfield | | | 982.3 | 982.7 |
| Mill Lake - D/S Miller Road | Village of Clarkston | | | 1000.2 | 1000.3 |
| Mill Lake - U/S Miller Road | Township of Independence Village of Clarkston | | | 1001.8 | 1001.9 |
| Mill Pond | Village of Holly | 925.6 | 926.5 | 926.9 | 927.9 |
| Mohawk Lake | Charter Township of Waterford City of Lake Angelus | 950.9 | 952.2 | 952.8 | 954.3 |
| Morris Lake | Township of West Bloomfield | 924.6 | 925.3 | 925.6 | 926.1 |
| Mud Lake | Township of Commerce | 913.9 | 914.0 | 914.0 | 914.1 |
| North Commerce Lake | Township of Commerce | 908.6 | 909.2 | 909.5 | 910.1 |
| Oakland Lake | Charter Township of Waterford Township of Independence | 958.8 | 959.5 | 959.7 | 960.5 |
| Otter Lake | Charter Township of Waterford | | | 929.4 | 930.7 |
| Parke Lake | Township of Independence Village of Clarkston | | | 990.9 | 991.2 |
| Pine Lake | Township of West Bloomfield | 931.1 | 931.4 | 931.5 | 931.9 |
| Pleasant Lake | Township of West Bloomfield | 946.8 | 947.3 | 947.5 | 947.9 |
| Pontiac Lake | Township of White Lake | 964.2 | 964.7 | 964.8 | 965.1 |
| Reed Lake | Township of Commerce | 915.5 | 916.5 | 916.9 | 917.8 |
| Round Lake | Township of White Lake | 934.7 | 935.0 | 935.1 | 935.4 |
| Round Lake | Township of Independence | 1040.3 | 1041.2 | 1041.6 | 1042.7 |
| Round Lake | Orion Township | | | 986.4 | |
| Schoolhouse Lake | Charter Township of Waterford | 950.9 | 952.2 | 952.8 | 954.3 |
| Seymour Lake | Brandon Township | | | 1041.6 | 1041.9 |
| Shawood Lake | City of Novi | 933.3 | 933.7 | 933.8 | 934.0 |
| Silver Lake | Charter Township of Waterford | 950.5 | 951.5 | 952.1 | 953.4 |
| Simpson Lake | Township of West Bloomfield | 878.2 | 878.7 | 878.9 | 879.4 |
| South Commerce Lake | Township of Commerce | 908.6 | 909.2 | 909.5 | 910.1 |
| Square Lake | Orion Township | | | 991.6 | |
| Sylvan Lake | Charter Township of Waterford City of Keego Harbor City of Pontiac City of Sylvan Lake | | | 929.4 | 930.7 |
| Tommys Lake | Orion Township | | | 986.5 | |
| Townsend Lake | Township of Independence | 958.8 | 959.7 | 959.9 | 960.8 |
| Tull Lake | Township of White Lake | 953.3 | 953.5 | 953.6 | 953.8 |
| Twelve Oaks Lake | City of Novi | 896.4 | 896.7 | 896.8 | 897.5 |

| <u>FLOODING SOURCE</u> | <u>LOCATION</u> | <u>ELEVATION (NAVD88)</u> | | | |
|-----------------------------------|-------------------------------|----------------------------------|---------------------------------|---------------------------------|-----------------------------------|
| | | <u>10% Annual Chance</u> | <u>2% Annual Chance</u> | <u>1% Annual Chance</u> | <u>0.2% Annual Chance</u> |
| Twin Suns Lake | Township of Commerce | 918.1 | 918.8 | 919.0 | 919.4 |
| Union Lake | Township of Commerce | 927.3 | 927.6 | 927.7 | 928.1 |
| | Township of West Bloomfield | | | | |
| Unnamed Lake on Galloway Creek | City of Pontiac | 925.0 | 925.9 | 926.1 | 926.9 |
| Upper Long Lake | Township of Bloomfield | 913.0 | 913.3 | 913.4 | 913.7 |
| | Township of West Bloomfield | | | | |
| Upper Silver Lake | Charter Township of Waterford | 950.5 | 951.5 | 952.1 | 953.4 |
| Upper Straits Lake | Township of West Bloomfield | 931.7 | 932.1 | 932.2 | 932.5 |
| Van Norman Lake | Charter Township of Waterford | 968.0 | 968.7 | 969.0 | 969.7 |
| | Township of Independence | | | | |
| Voorheis Lake | Orion Township | | | 984.3 | 985.1 |
| Walled Lake | City of Novi | 933.3 | 933.7 | 933.8 | 934.0 |
| Walnut Lake | Township of Bloomfield | 881.8 | 882.5 | 882.7 | 883.3 |
| | Township of West Bloomfield | | | | |
| Walters Lake | Township of Independence | 1040.7 | 1041.1 | 1041.2 | 1041.6 |
| Whipple Lake | Township of Independence | 1032.6 | 1033.0 | 1033.3 | 1033.9 |
| White Lake | Township of Highland | 1020.3 | 1020.6 | 1020.7 | 1020.8 |
| | Township of White Lake | | | | |
| Williams Lake | Charter Township of Waterford | 968.0 | 968.7 | 969.0 | 969.7 |
| Woodhull Lake | Charter Township of Waterford | 958.8 | 959.7 | 959.9 | 960.8 |
| | Township of Independence | | | | |
| Woodpecker Lake | Township of West Bloomfield | 948.4 | 948.4 | 948.5 | 948.6 |
| Wormer Lake | Charter Township of Waterford | 950.9 | 952.2 | 952.8 | 954.3 |

Water-surface elevations for floods of the selected recurrence intervals for Crystal Lake and Sylvan Lake are based on the hydraulic characteristics of their respective outlets. Crystal Lake elevations were determined by relating the flows of the selected recurrence intervals for the Clinton River to the elevation-discharge characteristics of the Gillespie Street dam-inlet structure. Since Sylvan Lake is controlled by the Dawson Mill Pond Dam, which is located downstream of Sylvan Lake in the City of Pontiac, an operating policy was assumed that would likely be adopted during periods of intense flooding. The analyses of the hydrologic and hydraulic characteristics of the Clinton River through the City of Pontiac indicated:

- a. that the magnitude of the peak flows on the Clinton River contributed by the City of Pontiac greatly exceeded the peak flows contributed by the upstream drainage areas;
- b. that the peak flows contributed by the City of Pontiac preceded the peak flows contributed by the upstream drainage areas;
- c. that, with the recent construction of the Clinton River Drain No. 3 project, the City of Pontiac would not experience overbank flooding from any of the studied flow predicted from the drainage area upstream of the city.

In consideration of these points, it was assumed that during large magnitude flow events, following the localized, short-duration Clinton River flood peak contributed by the City of Pontiac, four gates of the Dawson Mill Pond Dam would be half opened and one gate would be closed. The gates could be opened in anticipation of upstream flooding.

During the short-duration flood flows contributed by the City of Pontiac, it was assumed that the mean flood flow of the Clinton River as presented in Brater's report would be passing through the Dawson Mill Pond Dam.

Water-surface profile calculations were continued upstream from the dam to Sylvan Lake. Since the resultant hydraulic flood levels developed at Sylvan Lake reflect four gates half open and one gate closed and the hydraulic capacity of the intervening channel, these flood levels are presented as representative of the existing flooding potential of Sylvan Lake.

Rivers and Streams

Cross section data used in the riverine hydraulic models are described in Table 8. The methods used to obtain cross section data for each hydraulic study is listed.

TABLE 8 – Cross Section Data

| Flooding Source | Location | Year | Description |
|------------------------|-------------------------------|-------------|---|
| Amy Drain | City of Bloomfield Hills | 1979 | Field survey |
| | Township of Bloomfield | 1978 | Photogeometrically. The below-water sections were obtained from field surveys. Bridges, dams, and culverts field checked for elevation and structural data. |
| Bishop Creek | City of Novi | 1985 | Field survey. All bridges and culverts were surveyed to obtain elevation and structural geometry. |
| Carpenter Branch | City of Southfield | 1977 | Field survey |
| Carus Lake | Township of West Bloomfield | 1979 | Overbank and channel cross sections were obtained from field surveys. 12 valley and 5 bridge cross sections field surveyed. |
| Pleasant Lake Channel | Township of Commerce | 1979 | 3 valley cross sections field surveyed. |
| Chapman Creek | City of Novi | 1985 | Field survey. All bridges and culverts were surveyed to obtain elevation and structural geometry. |
| | | | |
| Clinton River | Charter Township of Waterford | 1972 | 76 valley, 20 bridge, and 5 dam sections were field surveyed for the backwater analysis. |
| | City of Pontiac | 1976 | "As-built" construction plans (Reference 72). |
| | City of Pontiac | 1976 | Unimproved sections of Clinton River 10 valley and 6 bridge cross sections field surveyed. |
| | City of Rochester | 1977 | Field survey |
| | City of Rochester Hills | 1977 | Field survey |
| | Township of Pontiac | 1976 | 20 valley and 12 bridge cross sections field surveyed for the backwater analysis. |
| | Village of Clarkston | 1978 | Photogeometrically. The below-water sections were obtained from field surveys. Bridges, dams, and culverts field checked for elevation and structural data. |

| Flooding Source | Location | Year | Description |
|------------------------------|-----------------------------|-------------|--|
| Clinton River (continued) | Township of Independence | 1978 | Photogeometrically. The below-water sections were obtained from field surveys. Bridges, dams, and culverts field checked for elevation and structural data. |
| Clinton River Drain No. 2 | City of Pontiac | 1976 | "As-built" construction plans (Reference 73). |
| Clinton River Drain No. 3 | City of Pontiac | 1976 | Construction plans (Reference 74) |
| Evans Branch | City of Southfield | 1977 | Field survey |
| Farmington Branch | City of Southfield | 1977 | Field survey |
| Franklin Branch | City of Southfield | 1977 | Field survey |
| | Township of Bloomfield | 1978 | Photogeometrically. The below-water sections were obtained from field surveys. Bridges, dams, and culverts field checked for elevation and structural data. |
| | Township of West Bloomfield | 1978 | Cross sections field surveyed from only from bank to bank. Overbank sections were obtained from two-foot contour maps of West Bloomfield. 36 valley and 28 bridge cross sections were field surveyed. |
| | Village of Bingham Farms | 1979 | Cross sections for the backwater analysis were field surveyed. 8 valley and 3 bridge sections surveyed. |
| | Village of Franklin | 1978 | Field survey. All bridges and culverts were surveyed to obtain elevation and structural geometry. |
| Galloway Creek | City of Pontiac | 1976 | 14 valley and 11 bridge cross sections were field surveyed. |
| | City of Rochester Hills | 1977 | Field survey |
| | Township of Pontiac | 1976 | 22 valley and 12 bridge cross sections field surveyed for the backwater analysis. |
| Galloway Ditch | City of Pontiac | 1976 | 4 valley and 3 bridge cross sections were field surveyed. |
| | Township of Pontiac | 1976 | 2 valley and 6 bridge cross sections field surveyed for the backwater analysis. |
| Gibson-Renshaw Drain | City of Troy | 1978 | Photogeometrically. Revisions to the 1976 topography were obtained by aerial photographs flown in May 1979. The below-water sections were obtained by field measurement. Bridges, dams, and culverts were field check to obtain elevation and structural geometry. |
| Gibson-Renshaw West Drain | City of Troy | 1978 | Photogeometrically. Revisions to the 1976 topography were obtained by aerial photographs flown in May 1979. The below-water sections were obtained by field measurement. Bridges, dams, and culverts were field check to obtain elevation and structural geometry. |

| Flooding Source | Location | Year | Description |
|-------------------------|--------------------------|-------------|--|
| Hamlin Drain | City of Bloomfield Hills | 1979 | Field survey |
| | Township of Bloomfield | 1978 | Photogeometrically. The below-water sections were obtained from field surveys. Bridges, dams, and Culverts field checked for elevation and structural data. |
| Hawthorn Drain | City of Troy | 1978 | Photogeometrically. Revisions to the 1976 topography were obtained by aerial photographs flown in May 1979. The below-water sections were obtained by field measurement. Bridges, dams, and culverts were field check to obtain elevation and structural geometry. |
| Holly-Patterson Drain | Village of Holly | 1979 | Aerial photographic cross sections in the flood plain area with field surveyed channel sections. All bridges and dams were field checked to obtain elevation and structural geometry. |
| Houghton Drain | City of Troy | 1978 | Photogeometrically. Revisions to the 1976 topography were obtained by aerial photographs flown in May 1979. The below-water sections were obtained by field measurement. Bridges, dams, and culverts were field check to obtain elevation and structural geometry. |
| Houghton East Drain | City of Troy | 1978 | Photogeometrically. Revisions to the 1976 topography were obtained by aerial photographs flown in May 1979. The below-water sections were obtained by field measurement. Bridges, dams, and culverts were field check to obtain elevation and structural geometry. |
| Huron River | Township of Commerce | 1977 | 16 valley and 6 bridge cross sections field surveyed. |
| | Township of White Lake | 1980 | Field survey supplemented with overbank data from aerial surveys (Reference 75). |
| Huron River West Branch | Township of Commerce | 1977 | 4 valley cross sections field surveyed. |
| Ingersol Creek | City of Novi | 1985 | Field survey. All bridges and culverts were surveyed to obtain elevation and structural geometry. |
| Kirts Drain | City of Troy | 1978 | Photogeometrically. Revisions to the 1976 topography were obtained by aerial photographs flown in May 1979. The below-water sections were obtained by field measurement. Bridges, dams, and culverts were field check to obtain elevation and structural geometry. |

| Flooding Source | Location | Year | Description |
|--|--|--------------|--|
| Lane Drain | City of Troy | 1978 | Photogeometrically. Revisions to the 1976 topography were obtained by aerial photographs flown in May 1979. The below-water sections were obtained by field measurement. Bridges, dams, and culverts were field check to obtain elevation and structural geometry. |
| Leavenworth Creek | City of Novi | 1985 | Field survey. All bridges and culverts were surveyed to obtain elevation and structural geometry. |
| Long Lake-Forest Lake Branch | City of Bloomfield Hills Township of Bloomfield | 1979 1978 | Field survey Photogeometrically. The below-water sections were obtained from field surveys. Bridges, dams, and culverts field checked for elevation and structural data. |
| Main Ravines Drain | City of Farmington Hills | 1992 | Field survey supplemented by topographic maps. Bridges and Culverts surveyed for pertinent elevation and structural geometry. |
| Main Ravines Drain Tributary A | City of Farmington Hills | 1992 | Field survey supplemented by topographic maps. Bridges and Culverts surveyed for pertinent elevation and structural geometry. |
| Main Ravines Drain Tributary B | City of Farmington Hills | 1992 | Field survey supplemented by topographic maps. Bridges and Culverts surveyed for pertinent elevation and structural geometry. |
| Main Ravines Drain Tributary C | City of Farmington Hills | 1992 | Field survey supplemented by topographic maps. Bridges and Culverts surveyed for pertinent elevation and structural geometry. |
| McClure Drain Middle River Rouge | Township of Oakland City of Northville | 1976 | Field survey Cross sections for the backwater analysis were provided by the USACE (Reference 63). Cross section locations were supplemented by USGS topographic maps of the study area (Reference 76). |
| Minnow Pond Drain | City of Farmington Hills | 1992 | Field survey supplemented by topographic maps. Bridges and Culverts surveyed for pertinent elevation and structural geometry. |
| | Township of West Bloomfield | 1978 | Cross sections field surveyed from only from bank to bank. Overbank sections were obtained from two- foot contour maps of West Bloomfield. 12 valley and 4 bridge cross sections field surveyed. |
| | City of Farmington Hills | 1976 | Field survey supplemented by topographic maps. Bridges and Culverts surveyed for pertinent elevation and structural geometry. |
| Munro Creek | City of Novi | 1985 | Field survey. All bridges and culverts were surveyed to obtain elevation and structural geometry. |

| Flooding Source | Location | Year | Description |
|------------------------------------|-----------------------------|-------------|--|
| Murphy Drain | City of Bloomfield Hills | 1979 | Field survey |
| | Township of Bloomfield | 1978 | Photogeometrically. The below-water sections were obtained from field surveys. Bridges, dams, and culverts field checked for elevation and structural data. |
| North Branch of Main Ravines Drain | City of Farmington Hills | 1992 | Field survey supplemented by topographic maps. Bridges and Culverts surveyed for pertinent elevation and structural geometry. |
| Novi-Lyon Drain | City of Novi | 1985 | Field survey. All bridges and culverts were surveyed to obtain elevation and structural geometry. |
| Novi-Lyon Drain Tributary C | City of Novi | 1985 | Field survey. All bridges and culverts were surveyed to obtain elevation and structural geometry. |
| Paint Creek | City of Rochester | 1977 | Field survey |
| | City of Rochester Hills | 1977 | Field survey |
| | Township of Oakland | 1976 | Field survey |
| | Village of Lake Orion | 1976 | Field survey by Johnson and Anderson, Inc., of Pontiac (Reference 77). |
| Pebble Creek | City of Farmington Hills | 1992 | Field survey supplemented by topographic maps. Bridges and Culverts surveyed for pertinent elevation and structural geometry. |
| | City of Southfield | 1977 | Field survey |
| | Township of West Bloomfield | 1978 | Cross sections field surveyed from only from bank to bank. Overbank sections were obtained from two- foot contour maps of West Bloomfield. 16 valley and 10 bridge cross sections field surveyed. |
| Pettibone Creek | Township of Highland | 1980 | Cross sections for the backwater analysis were acquired by field and aerial survey. Field crews collected channel and structure data which was supplemented with overbank data from aerial surveys (Reference 78). 16 valley and 8 channel cross sections were field surveyed. |
| Quarton Branch | City of Bloomfield Hills | 1979 | Cross sections for the backwater analysis were obtained from field survey. Cross sections for the Chesterfield Road bridge and the proposed bridge over the Quarton Branch were obtained from construction plans (References 79 and 80). |
| | City of Birmingham | 1978 | Field survey |
| Randolph Street Drain | City of Northville | | Cross sections on the downstream side of Lexington Boulevard were developed from plans from Randolph Street Drain improvements (Reference 81) and supplemented by USGS topographic maps. Sections on the upstream side of Lexington were obtained from field surveys. |

| Flooding Source | Location | Year | Description |
|--------------------------|--------------------------|-------------|---|
| Rouge River | City of Birmingham | 1978 | Field survey |
| | City of Southfield | 1977 | Field survey |
| | City of Troy | 1978 | Photogeometrically. Revisions to the 1976 topography were obtained by aerial photographs flown in May 1979. The below-water sections were obtained by field measurement. Bridges, dams, and culverts were field check to obtain elevation and structural geometry. |
| | Township of Bloomfield | 1978 | Cross sections for the backwater analysis were obtained photogeometrically. The below-water sections were obtained from field surveys. Bridges, dams, and Culverts field checked for elevation and structural data. |
| | Village of Beverly Hills | 1976 | For backwater analysis 22 valley, 2 dam, and 6 bridge sections were field surveyed. All bridges and culverts were field surveyed for elevation and structural geometry. |
| Rouge River North Branch | Village of Bingham Farms | 1976 | Cross sections for the backwater analysis were field surveyed. 4 valley sections surveyed. |
| | Village of Beverly Hills | 1976 | For backwater analysis 22 valley, 2 dam, and 6 bridge sections were field surveyed. All bridges and culverts were field surveyed for elevation and structural geometry. |
| Sargent Creek | City of Rochester | 1977 | Field survey |
| | City of Rochester Hills | 1977 | Cross sections field measured as well as obtained from plans for subdivision development. |
| Sashabaw Creek | Township of Independence | 1978 | Cross sections for the backwater analysis were obtained photogeometrically from aerial photographs. The below-water sections were obtained from field measurements. All bridges, dams, and culverts were field checked to obtain elevation and structural geometry. |
| Seeley Drain | City of Farmington Hills | 1992 | Field survey supplemented by topographic maps. Bridges and Culverts surveyed for pertinent elevation and structural geometry. |
| Shanahan Drain (East) | City of Troy | 1978 | Photogeometrically. Revisions to the 1976 topography were obtained by aerial photographs flown in May 1979. The below-water sections were obtained by field measurement. Bridges, dams, and culverts were field check to obtain elevation and structural geometry. |

| Flooding Source | Location | Year | Description |
|------------------------|--|--------------|--|
| Shanahan Drain (West) | City of Troy | 1978 | Photogeometrically. Revisions to the 1976 topography were obtained by aerial photographs flown in May 1979. The below-water sections were obtained by field measurement. Bridges, dams, and culverts were field check to obtain elevation and structural geometry. |
| Shaw Creek | City of Novi | 1985 | Field survey. All bridges and culverts were surveyed to obtain elevation and structural geometry. |
| Shiawassee River | Village of Holly | 1979 | Aerial photographic cross sections with field surveys. All bridges and dams were field checked to obtain elevation and structural geometry. |
| Simpson Lake Outlet | Township of West Bloomfield | 1978 | Cross sections field surveyed from only from bank to bank. Overbank sections were obtained from two- foot contour maps of West Bloomfield. |
| Sodon Lake Drain | City of Bloomfield Hills Township of Bloomfield | 1979 1978 | Field survey Photogeometrically. The below-water sections were obtained from field surveys. Bridges, dams, and culverts field checked for elevation and structural data. |
| Spencer-Barnard Drain | City of Troy | 1978 | Photogeometrically. Revisions to the 1976 topography were obtained by aerial photographs flown in May 1979. The below-water sections were obtained by field measurement. Bridges, dams, and culverts were field check to obtain elevation and structural geometry. |
| Sprague Branch | City of Troy | 1978 | Photogeometrically. Revisions to the 1976 topography were obtained by aerial photographs flown in May 1979. The below-water sections were obtained by field measurement. Bridges, dams, and culverts were field check to obtain elevation and structural geometry. |
| Sprague Drain | City of Troy | 1978 | Photogeometrically. Revisions to the 1976 topography were obtained by aerial photographs flown in May 1979. The below-water sections were obtained by field measurement. Bridges, dams, and culverts were field check to obtain elevation and structural geometry. |
| Stonycroft Branch | City of Bloomfield Hills | 1979 | Field survey |
| Stony Creek | City of Rochester | 1977 | Field survey |
| | City of Rochester Hills | 1977 | Field survey |
| Sturgis Drain | City of Troy | 1978 | Photogeometrically. Revisions to the 1976 topography were obtained by aerial photographs flown in May 1979. The below-water sections were obtained by field measurement. Bridges, dams, and culverts were field check to obtain elevation and structural geometry. |

| Flooding Source | Location | Year | Description |
|--------------------------|-----------------------------|-------------|---|
| Sugden Creek | Township of White Lake | 1980 | Field survey supplemented with overbank data from aerial surveys (Reference 75). |
| Tamarack Creek | City of Southfield | 1977 | Field survey |
| Tarabusi Creek | City of Farmington Hills | 1992 | Field survey supplemented by topographic maps. Bridge information obtained from plans provided by the Oakland County Drain Commission |
| Thornton Creek | City of Novi | 1985 | Field survey. All bridges and culverts were surveyed to obtain elevation and structural geometry. |
| Thornton Creek Diversion | City of Novi | 1985 | Field survey. All bridges and culverts were surveyed to obtain elevation and structural geometry. |
| Upper River Rouge | City of Farmington Hills | 1976 | Field survey supplemented by topographic maps. Bridges and culverts surveyed for pertinent elevation and structural geometry. |
| Walled Lake Branch | City of Novi | 1985 | Field survey. All bridges and culverts were surveyed to obtain elevation and structural geometry. |
| Walnut Lake Outlet | Township of West Bloomfield | 1978 | Cross sections field surveyed from only from bank to bank. Overbank sections were obtained from two-foot contour maps of West Bloomfield. |
| Walters Lake Drain | Township of Independence | 1978 | Cross sections for the backwater analysis were obtained photogeometrically from aerial photographs. The below-water sections were obtained from field measurements. All bridges, dams, and culverts were field checked to obtain elevation and structural geometry. |
| West Branch Bell Creek | City of Farmington Hills | 1992 | Field survey supplemented by topographic maps. Bridges and Culverts surveyed for pertinent elevation and structural geometry. |
| West Branch Stony Creek | Township of Oakland | 1976 | Field survey |

For the Special Bridge routine, values of inlet losses and weir coefficients were taken from "Hydraulic Charts for the Selection of Highway Culverts" and the "Measurement of Peak Discharge at Dams by Indirect Methods", respectively (References 82 and 83).

In the City of Farmington Hills, stream reach lengths and geometry were verified by aerial photography (Reference 84), personal reconnaissance, and sample cross section data taken at areas of visible change. In the Townships of Bloomfield and Independence, the City of Troy, and the Village of Clarkston, cross sections were obtained photogrammetrically from aerial photographs flown at a negative scale of 1:9600 (References 85, 86, and 87). Revisions to the City of Troy topography were obtained by high level aerial photographs flown in May 1979 at a negative scale of 1:4800 (Reference 86). Revisions to Murphy Drain in the Township of Bloomfield were made using two-foot contour mapping provided by Giffels-Webster Engineers, Inc. (Reference 88). In the Township of West Bloomfield, overbank information was obtained from two-foot contour maps of West Bloomfield (Reference 89).

Locations of selected cross sections used in the hydraulic analyses are shown on the Flood Profiles (Exhibit 1). For stream segments for which a floodway is computed (Section 4.2), selected cross section locations are shown on the Flood Boundary and Floodway Map.

Detail-studied streams that were not re-studied as part of this map update may include a "profile base line" on the maps. This "profile base line" provides a link to the flood profiles included in the Flood Insurance Study report. The detail-studied stream centerline may have been digitized or redelineated as part of this revision. The "profile base lines" for these streams were based on the best available data at the time of their study and are depicted as they were on the previous FIRMs. In some cases where improved topographic data was used to redelineate floodplain boundaries, the "profile base line" may deviate significantly from the channel centerline or may be outside the SFHA.

Roughness factors (Manning's "n") used in the hydraulic computations were chosen by engineering judgment and based on field observation, photographs (References 75, 78, 90, and 91), methods used by Chow (Reference 92), and the U.S. Geological Survey's Roughness Characteristics of Natural Channels (Reference 93). Table 9 shows the channel and overbank "n" values typical for early summer conditions for the flooding sources studied by detailed methods:

TABLE 9 – Manning’s “n” Values

| <u>Flooding Source</u> | <u>Channel "n" Values</u> | <u>Overbank "n" Values</u> |
|--------------------------|---------------------------|----------------------------|
| Amy Drain | .030 - .075 | .030 - .150 |
| Bishop Creek | .013 - .050 | .015 - .100 |
| Carpenter Branch | .015 - .100 | .050 - .150 |
| Carus Lake/Pleasant Lake | .040 - .066 | .075 - .110 |
| Chapman Creek | .013 - .050 | .015 - .100 |
| Clinton River | .012 - .080 | .020 - .120 |
| Duck Creek | 0.040 | .030 - .080 |
| Evans Branch | .015 - .100 | .050 - .150 |
| Farmington Branch | .015 - .100 | .050 - .150 |
| Franklin Branch | .030 - .085 | .030 - .150 |
| Galloway Creek | .030 - .100 | .032 - .125 |
| Galloway Ditch | .030 - .100 | .035 - .125 |
| Gibson-Renshaw Drain | .013 - .055 | .025 - .090 |
| Gibson-Renshaw W Drain | .025 - .060 | 0.095 |
| Hamlin Drain | .030 - .075 | .030 - .150 |
| Hawthorn Drain | 0.050 | 0.075 |
| Holly-Patterson Drain | 0.028 | 0.030 |
| Houghton Drain | 0.050 - 0.055 | 0.080 – 0.085 |
| Houghton Drain East | 0.060 | 0.100 |
| Huron River | .030 - .050 | .030 - .100 |
| Huron River-W Branch | .032 - .050 | .050 - .085 |
| Ingersol Creek | .013 - .050 | .015 - .100 |
| Kearsley Creek | .030 - .045 | .030 - .080 |
| Kirts Drain | 0.065 | 0.065 |
| Lane Drain | .025 - .065 | .095 - .100 |

| <u>Flooding Source</u> | <u>Channel "n" Values</u> | <u>Overbank "n" Values</u> |
|-------------------------|---------------------------|----------------------------|
| Leavenworth Creek | .013 - .050 | .015 - .100 |
| Long Lake-Forest Lake | .030 - .075 | .030 - .150 |
| Main Ravines | .012 - .080 | .015 - .120 |
| Main Ravines-Trib A | .012 - .080 | .015 - .120 |
| Main Ravines-Trib B | .012 - .080 | .015 - .120 |
| Main Ravines-Trib C | .012 - .080 | .015 - .120 |
| McClure Drain | .060 - .125 | .100 - .175 |
| Middle River Rouge | .020 - .040 | .080 - .120 |
| Minnow Pond Drain | .012 - .080 | .015 - .120 |
| Munro Drain | .013 - .050 | .015 - .100 |
| Murphy Drain | .030 - .075 | .030 - .150 |
| N Branch Main Ravines | .012 - .080 | .015 - .120 |
| Norton Creek | .060 - .070 | .100 - .120 |
| Novi-Lyon Drain | .013 - .050 | .015 - .100 |
| Novi-Lyon Drain Trib C | .013 - .050 | .015 - .100 |
| Oakland Lake-W Outlet | .032 - .040 | .020 - .100 |
| Paint Creek | .032 - .065 | .028 - .135 |
| Pebble Creek | .012 - .100 | .015 - .150 |
| Pettibone Creek | .020 - .052 | .020 - .125 |
| Quarton Branch | .011 - .080 | .030 - .150 |
| Randolph Street Drain | .013 - .035 | .050 - .120 |
| Rouge River | .011 - .100 | .030 - .150 |
| Sargent Creek | .032 - .060 | .031 - .100 |
| Sashabaw Creek | .025 - .045 | .060 - .090 |
| Seeley Drain | .012 - .080 | .015 - .120 |
| Shanahan Drain | .055 - .060 | .075 - .100 |
| Shaw Creek | .013 - .050 | .015 - .100 |
| Shiawassee River | 0.024 | 0.040 |
| Simpson Lake Outlet | .032 - .048 | .030 - .080 |
| Sodon Lake Branch | .030 - .075 | .030 - .150 |
| Spencer-Barnard Drain | .050 - .075 | .075 - .094 |
| Sprague Branch | .030 - .095 | .030 - .120 |
| Sprague Drain | .035 | .020 - .120 |
| Stony Creek | .035 - .045 | .030 - .100 |
| Stonycroft Branch | .015 - .060 | .015 - .060 |
| Sturgis Drain | .030 - .0100 | .080 - .095 |
| Sugden Creek | .035 - .050 | .035 - .080 |
| Tamarack Creek | .015 - .100 | .050 - .150 |
| Tarabusi Creek | .012 - .080 | .015 - .120 |
| Thornton Creek | .013 - .050 | .015 - .100 |
| Upper River Rouge | .012 - .080 | .015 - .150 |
| Walled Lake Branch | .013 - .050 | .015 - .100 |
| Walnut Lake Outlet | .032 - .048 | .030 - .080 |
| Walters Lake Drain | .060 - .070 | 0.100 |
| West Branch Bell Creek | .012 - .080 | .015 - .120 |
| West Branch Stony Creek | .055 - .070 | .090 - .200 |

The methods for determining starting water surface elevations used in each hydraulic model are described in Table 10.

TABLE 10 – Starting Water Surface Elevations

| Flooding Source | Method for Determining Starting WSE |
|---------------------------------------|---|
| Amy Drain | Confluence with Quarton Branch |
| Bishop Creek | Confluence with Ingersol Creek |
| Carpenter Branch | Confluence with Rouge River |
| Carus Lake and Pleasant Lake | Convergence |
| Chapman Creek | Confluence with Walled Lake Branch |
| Clinton River - Waterford | The energy grade line elevation as determined at the outlet of each lake. |
| Clinton River - Rochester Hills | Starting water-surface elevations are from the Township of Shelby FIS flood profiles (Reference 94). |
| Clinton River - Township of Pontiac | Slope area method |
| Clinton River - West Bloomfield | The energy grade line elevation as determined at the outlet of each lake. |
| Clinton River Drain No. 3 | The starting water-surface profile calculations for the open channel portion begin at the Bagley-Orchard Lake inlet at critical depth. |
| Clinton River West Channel | Backwater from Clinton River |
| Evans Branch | USACE reports (Reference 61) |
| Farmington Branch | Confluence with Carpenter Branch |
| Franklin Branch - City of Southfield | Confluence with Rouge River |
| Franklin Branch - West Bloomfield | Convergence technique to select the proper elevation at the southern corporate boundary of the township. |
| Franklin Branch - Village of Franklin | Slope area method |
| Galloway Creek - Rochester Hills | Stage-discharge relationship with Clinton River at confluence. |
| Galloway Creek - Pontiac | Slope area method |
| Galloway Ditch | Galloway Creek flood elevations at the confluence where simultaneous peaks occur in the two hydrographs. |
| Gibson-Renshaw Drain | Starting water-surface elevation taken from computer data available in the Sterling Heights FIS. Several cross sections downstream of the study limit were used to develop the starting elevation (Reference 95). |
| Gibson-Renshaw West Drain | Normal Depth |
| Hamlin Drain | Confluence with Stoneycroft Branch |
| Hawthorn Drain | Starting water-surface elevation taken from computer data available in the Sterling Heights FIS. Several cross sections downstream of the study limit were used to develop the starting elevation (Reference 94). |
| Holly-Patterson Drain | Convergence |
| Houghton Drain | Normal Depth |
| Houghton Drain East | Normal Depth |
| Huron River | Commerce Lake WSE |
| Huron River West Branch | Commerce Lake WSE |
| Ingersol Creek | Confluence with Walled Lake Branch |
| Kirts Drain | Normal Depth |
| Lane Drain | Confluence with Sturgis Drain |
| Leavenworth Creek | Confluence with Walled Lake Branch |
| Long Lake-Forest Lake Branch | Confluence with Quarton Branch |
| Main Ravines Drain | Confluence with Farmington Branch |
| Main Ravines Drain Tributary A | Confluence with Main Ravines Drain |
| Main Ravines Drain Tributary B | Confluence with Main Ravines Drain |

| Flooding Source | Method for Determining Starting WSE |
|--|---|
| Main Ravines Drain Tributary C | Confluence with Main Ravines Drain |
| McClure Drain | Stony Creek Lake WSE |
| Middle River Rouge | Starting water-surface elevation taken from the Township of Northville FIS (Reference 96). |
| Minnow Pond Drain | Confluence with Upper River Rouge |
| Munro Creek | Confluence with Walled Lake Branch |
| Murphy Drain | Confluence with Stoneycroft Branch |
| North Branch of Main Ravines Drain | Confluence with Carpenter Branch |
| Novi -Lyon Drain Tributary C | Confluence with Novi-Lyon Drain |
| Novi-Lyon Drain | Flow convergence trials starting at a point 1.2 miles downstream of the City of Novi corporate limits. |
| Paint Creek - City of Rochester | Stage-discharge relationship with Clinton River at confluence. |
| Paint Creek - Village of Lake Orion | Step-method to solve the Bernoulli equation and the Bureau of Public Roads' bridge loss procedures (Reference 82). |
| Pebble Creek | Confluence with Rouge River with hydrologic adjustment |
| Pettibone Creek | The starting water-surface elevation was determined to be controlled by the Chesapeake and Ohio Railroad culvert 1800 feet downstream of Moore Lake. |
| Quarton Branch | Confluence with Rouge River |
| Randolph Street Drain | Critical depth |
| Rouge River - City of Southfield | Army Corps reports (Reference 62) |
| Rouge River - Village of Beverly Hills | Convergence technique by commencing 3,300 feet downstream of the Beverly Hills village limits and converging to normal depth near the village limits. |
| Rouge River North Branch | Convergence technique by commencing 3,300 feet downstream of the Beverly Hills village limits and converging to normal depth near the village limits. |
| Sargent Creek | Stage-discharge relationship developed for Paint Creek |
| Sashabaw Creek | Slope area method |
| Seeley Drain | Confluence with Upper River Rouge |
| Shanahan Drain (East) | Normal Depth |
| Shanahan Drain (West) | Normal Depth |
| Shaw Creek | Confluence with Walled Lake Branch |
| Shiawassee River | Convergence |
| Simpson Lake Outlet | Confluence with Franklin Branch |
| Sodon Lake Drain | Confluence with Long Lake-Forest Lake Branch. |
| Spencer-Barnard Drain | Starting water-surface elevation taken from computer data available in the Sterling Heights FIS. Several cross sections downstream of the study limit were used to develop the starting elevation (Reference 95). |
| Sprague Branch | Confluence with Rouge River |
| Sprague Drain | Confluence with Rouge River |
| Stoneycroft Branch | Confluence with Quarton Branch |
| Stony Creek | Stage-discharge relationship develop with Clinton River at confluence. |
| Sturgis Drain | Normal Depth |
| Sugden Creek | Confluence with Huron River |
| Tamarack Creek | Confluence with Evans Branch |
| Tarabusi Creek | The starting water-surface elevation is based on the City of Livonia FIS with adjustment to reflect the current hydrology (Reference 97). |

| Flooding Source | Method for Determining Starting WSE |
|--------------------------|--|
| Thornton Creek | Confluence with Walled Lake Branch |
| Thornton Creek Diversion | Confluence with Thornton Creek |
| Upper River Rouge | The first step was to use the high water marks of the 1968 flood as a calibration run for roughness value determination. When calibration completed the second step was to use a convergence method approach by beginning 5,490 feet downstream of the corporate limit (Reference 48). |
| Walled Lake Branch | Confluence with Middle River Rouge |
| Walnut Lake Outlet | Confluence with Franklin Branch |
| Walters Lake Drain | Slope area method |
| West Branch Bell Creek | Slope area method |
| West Branch Stony Creek | Confluence with Stony Creek Lake |

Water-surface elevations, of the 1- and 0.2-percent annual chance floods were computed, on most streams, using HEC-2 step-backwater computer program. In the City of Wixom and in the City of Troy, the Corps' HECRAS computer program was used (Reference 103).

The starting water-surface elevations at the downstream study limits were based on the slope area method to obtain normal depth for Kearsley Creek in the Village of Ortonville, Sashabaw Creek in the Township of Orion and Norton Creek in the City of Wixom.

The starting water-surface elevations at the downstream study limits were based on information from current or previous FIS analysis for the Clinton River in the Village of Clarkston, Cities of Auburn Hills, Keego Harbor, and the Townships of Waterford and West Bloomfield, Rouge River in the City of Southfield, Quarton Branch in the Cities of Birmingham and Bloomfield Hills, Pebble Creek in the Township of West Bloomfield, and Duck Creek in Ortonville.

The starting water surface elevation at the downstream study limit for the Huron River at the Village of Milford was based on critical depth at a dam just downstream of the study limits. The starting water-surface elevation at the downstream study limit for Dawson Mill Pond at the City of Pontiac was based on orifice and weir flow at the control structure at the outlet.

The starting water surface elevation at the downstream study limit was Pettibone Creek at the Village of Milford was based on normal pool elevation of the Huron River.

The starting water surface elevation at the downstream study limit for the Clinton River in the Township of Independence was based on existing HEC-2 which has been modified to correct for errors.

The starting water surface elevation on Sargent Creek/ Dutton Ditch was based on revised HEC-2 from the existing study on Sargent Creek in the City of Rochester Hills.

Water-surface elevations of floods of the selected recurrence intervals for most streams studied in detail were computed through use of the U.S. Army Corps of Engineers (COE) HEC-2 step-backwater computer program (References 98 and 99). In most cases, the encroachments for the 1-percent annual chancenatural floodway were based on a 1:1 convergence and 1:4 divergence from bridges or other constructions. In some reaches of Franklin Branch and Rouge River in the Village of Bingham Farms, this method was not

feasible due to severe meandering of the stream. In these cases, the 1-percent annual chance natural floodway was based on the sweep and extent of moving floodwaters. Water-surface profiles in the Township of Oakland, were developed by the SCS using the computer program WSP-2 (Reference 100). This program uses the step-backwater method and the Bureau of Public Roads' bridge loss procedures to compute water-surface elevations. Flood discharges determined from flood routings were used in the water-surface profile program to develop high water profiles. In the City of Troy, hydraulic for the limited detail stream, Kirts Drain, were done by hand computations though the bridges with normal depth computations between structures or bridges. Obstructions to movement of floodwaters, such as buildings or bridges, were considered as existing encroachments or conveyance limiting factors.

The 1-percent annual chance flood levels for those areas studied by approximate methods were estimated by relating these streams to local streams of similar characteristics and known drainage area-stream depth relationships. In the Village of Lake Orion, approximate flooding delineated in the overflow area from Lake Orion was determined using historical data, the flooding elevations for Lake Orion, and topographic maps (Reference 101). In the City of Northville, for the flooding sources studied by approximate methods, the 1-percent annual chance boundaries were determined using normal depth calculations. In the City of Troy, revisions were made to an unnamed tributary to Plum Brook based on the U.S. Department of Agriculture, SCS UD-21 method (Reference 102) and the 1-percent annual chance frequency storm water profile.

As part of the newly studied areas and restudy areas in this 2006 report, a field survey was made during the period July 6, 1995 to December 7, 1997. At this time, selected cross sections, bridges, culverts and other structures were surveyed to obtain the elevation data and structural geometry. Existing information was also used with bridge or outlet structure modifications. Plans were obtained for the bridge modifications in the City of Bloomfield Hills and for the outlet structure on Dawson Mill Pond in the City of Pontiac. In cases where existing data were used, channel lengths were maintained for the most part. The biggest exception was in the Township of Independence where the modeling approach around the island was modified. Also, in this area, the reach lengths in the HEC-2 could not be matched to the mapping. The reach lengths for restudies will not necessarily match stream lengths as shown on the MIRIS base map being used in this study. In the City of Troy, the survey information from the prior studies was used.

The hydraulic analyses for this study are based only on the effects of unobstructed flow. The flood elevations as shown on the profiles (Exhibit 1) are, therefore, considered valid only if hydraulic structures, in general, remain unobstructed and if channel and overbank conditions remain essentially the same as ascertained during this study.

Flood profiles were drawn showing the computed water-surface elevations to an accuracy of 0.5 foot for floods of the selected recurrence intervals. Flood profiles were not drawn for the enclosed portions of Clinton River Drain No. 1 and Clinton River Drain No. 3. In the Village of Clarkston, an analysis of the flood conditions downstream of the Clarkston Dam Outlet has shown that the 1-percent annual chance flood would be contained within the channel. Therefore, the profile for this reach exhibits only the backwater elevations from the Clinton River. In cases where two or more profiles are close together, due to limitations of the profile scale, only the higher profile has been shown.

All elevations are referenced from North American Vertical Datum of (NAVD88); elevation reference marks used in the study are shown on the maps.

3.3 Vertical Datum

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 in use for newly created or revised FIS reports and FIRMs was the NGVD29. With the finalization of the NAVD88, many FIS reports and FIRMs are being prepared using NAVD88 as the referenced vertical datum.

Effective information for this 2006 FIS report was converted from NGVD29 to NAVD88 based on data presented in Table 11. The average conversion of -.385 foot was applied to convert all effective Base Flood Elevations (BFEs). Structure and ground elevations in the community must, therefore, be referenced to NAVD88. It is important to note that adjacent communities in other counties not presented in this 2006 FIS may be referenced to NGVD29. This may result in differences in BFEs across the corporate limits between communities.

Table 11 – Datum Conversion Calculations

| <u>Quad Name</u> | <u>Corner</u> | <u>Latitude</u> | <u>Longitude</u> | <u>Conversion (ft) from NGVD29 to NAVD88</u> |
|------------------|---------------|-----------------|------------------|--|
| Hadley | SW | 42.875 | 83.500 | -0.381 |
| Metamora | SW | 42.875 | 83.375 | -0.374 |
| Almont | SW | 42.875 | 83.125 | -0.394 |
| Goodrich | SW | 42.875 | 83.625 | -0.397 |
| Thornville | SW | 42.875 | 83.250 | -0.397 |
| Ortonville | SW | 42.750 | 83.500 | -0.285 |
| Lake Orion | SW | 42.750 | 83.250 | -0.384 |
| Romeo | SW | 42.750 | 83.125 | -0.417 |
| Davisburg | SW | 42.750 | 83.625 | -0.341 |
| Oxford | SW | 42.750 | 83.375 | -0.308 |
| Highland | SW | 42.625 | 83.625 | -0.367 |
| Clarkston | SW | 42.625 | 83.500 | -0.351 |
| Rochester | SW | 42.625 | 83.250 | -0.397 |
| Pontiac North | SW | 42.625 | 83.375 | -0.358 |
| Utica | SW | 42.625 | 83.125 | -0.440 |
| Birmingham | SW | 42.500 | 83.250 | -0.436 |
| Milford | SW | 42.500 | 83.625 | -0.407 |
| Walled Lake | SW | 42.500 | 83.500 | -0.394 |
| Pontiac South | SW | 42.500 | 83.375 | -0.420 |
| Warren | SW | 42.500 | 83.125 | -0.453 |

For more information on NAVD88, see the FEMA publication entitled *Converting the National Flood Insurance Program to the North American Vertical Datum of 1988* (Reference 104), or contact the Vertical Network Branch, National Geodetic Survey, Coast and Geodetic Survey, National Oceanic and Atmospheric Administration, Silver Spring, Maryland 20910 (<http://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 Technical Support Data Notebook associated with this 2006 FIS report and FIRM for this community. Interested individuals may contact FEMA to access these data.

4.0 FLOODPLAIN MANAGEMENT APPLICATIONS

The NFIP encourages State and local governments to adopt sound floodplain management programs. Therefore, each FIS provides 1-percent-annual-chance (100-year) flood elevations and delineations of the 1- and 0.2-percent-annual-chance (500-year) floodplain boundaries and 1-percent-annual-chance floodway to assist communities in developing floodplain management measures. This information is presented on the FIRM and in many components of this 2006 FIS report, including Flood Profiles, Floodway Data Table, and Summary of Stillwater Elevations Table. Users should reference the data presented in this 2006 FIS report as well as additional information that may be available at the local map repository before making flood elevation and/or floodplain boundary determinations.

4.1 Floodplain Boundaries

To provide a national standard without regional discrimination, the 1-percent-annual-chance (100-year) flood has been adopted by FEMA as the base flood for floodplain management purposes. The 0.2-percent-annual-chance (500-year) flood is employed to indicate additional areas of flood risk in the community. For each stream studied by detailed methods, the 1- and 0.2-percent-annual-chance floodplain boundaries have been delineated using the flood elevations determined at each cross section. Between cross sections, the boundaries were interpolated using digital base map information provided by the Oakland County Department of Information Technology. This data includes 2002 digital orthophotography and contours at two foot intervals; referenced to a Michigan State Plane South coordinate system, NAD83 horizontal datum, and NAVD88 vertical datum (Reference 105).

The 1- and 0.2-percent-annual-chance floodplain boundaries are shown on the FIRM. On this map, the 1-percent-annual-chance floodplain boundary corresponds to the boundary of the areas of special flood hazards (Zones A and AE); and the 0.2-percent-annual-chance floodplain boundary corresponds to the boundary of areas of moderate flood hazards. In cases where the 1- and 0.2-percent-annual-chance floodplain boundaries are close together, only the 1-percent-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.

For the streams studied by approximate methods, only the 1-percent-annual-chance floodplain boundary is shown on the FIRM.

Approximate 1-percent-annual-chance floodplain boundaries were delineated using digital base map information described above. Approximate floodplains from the previous FIRMs were redelineated using cross sections with interpolated 1-percent annual chancewater-surface elevations.

4.2 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 this aspect of floodplain management. Under this concept, the area of the 1-percent-annual-chance floodplain is divided into a floodway and a floodway fringe. The floodway is the channel of a stream, plus any adjacent floodplain areas, that must be kept free of encroachment so that the 1-percent-annual-chance flood can be carried without substantial increases in flood heights. Minimum Federal standards limit such increases to 1.0 foot, provided that hazardous velocities are not produced. The floodways in this study are presented to local agencies as minimum standards that can be adopted directly or that can be used as a basis for additional floodway studies.

The floodway presented in this 2006 FIS report and on the FIRM was 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. The results of the floodway computations have been tabulated for selected cross sections. In cases where the floodway and 1-percent-annual-chance floodplain boundaries are either close together or collinear, only the floodway boundary has been shown.

The area between the floodway and 1-percent-annual-chance floodplain boundaries is termed the floodway fringe. The floodway fringe encompasses the portion of the floodplain that could be completely obstructed without increasing the water-surface elevation of the 1-percent-annual-chance flood more than 1.0 foot at any point. Typical relationships between the floodway and the floodway fringe and their significance to floodplain development are shown in Figure 1.

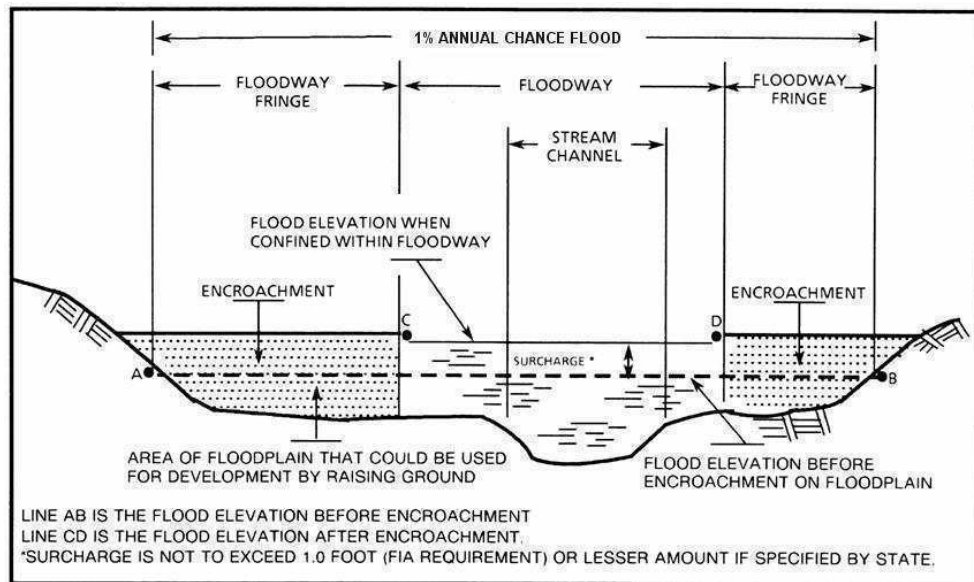


FIGURE 1 – Floodway Schematic

In Michigan, under the State's Floodplain Regulatory Authority, found in of the Natural Resources and Environmental Protection Act, 1994, PA 451, Water Resources Protection, Part 31 (Reference 106), encroachment in the floodplain is limited to that which will cause only insignificant increases in flood heights. At the recommendation of the Michigan Department of Environmental Quality, Land and Water Management Division, a floodway having no more that a 0.1-foot surcharge has been delineated for this 2006 FIS.

The floodways presented in this study were initially computed on the basis of equal conveyance reduction from each side of the flood plain. In those areas where problems arose with the equal conveyance reduction encroachment option of the HEC-2 or HEC-RAS backwater programs, modifications were applied based on experience.

In the redelineation efforts, the floodways were not recalculated. As a result, there were areas where the previous floodway did not fit within the boundaries of the redelineated 1-percent annual chance floodplain. In these areas, the floodway was reduced. Water surface elevations, with and without a floodway, the mean velocity in the floodway, and the location and area at each surveyed cross section as determined by hydraulic methods can be seen in Table 13, Floodway Data Table. The width of the floodway depicted by the FIRM panels and the amount of reduction to fit the floodway inside the 1-percent annual chance floodplain, if necessary, is also listed.

5.0 INSURANCE APPLICATIONS

For flood insurance rating purposes, flood insurance zone designations are assigned to a community based on the results of the engineering analyses. These zones are as follows:

Zone A

Zone A is the flood insurance risk zone that corresponds to the 1-percent-annual-chance floodplains that are determined in the FIS by approximate methods. Because detailed hydraulic analyses are not performed for such areas, no BFEs or base flood depths are shown within this zone.

Zone AE

Zone AE is the flood insurance risk zone that corresponds to the 1-percent-annual-chance floodplains that are determined in the FIS by detailed methods. In most instances, whole-foot BFEs derived from the detailed hydraulic analyses are shown at selected intervals within this zone.

Zone X

Zone X is the flood insurance risk zone that corresponds to areas outside the 0.2-percent-annual-chance floodplain, areas within the 0.2-percent-annual-chance floodplain, areas of 1-percent-annual-chance flooding where average depths are less than 1 foot, areas of 1-percent-annual-chance flooding where the contributing drainage area is less than 1 square mile, and areas protected from the 1-percent-annual-chance flood by levees. No BFEs or base flood depths are shown within this zone.

6.0 FLOOD INSURANCE RATE MAP

The FIRM is designed for flood insurance and floodplain management applications.

For flood insurance applications, the map designates flood insurance risk zones described in Section 5.0 and, in the 1-percent-annual-chance floodplains that were studied by detailed methods, shows selected whole-foot BFEs or average depths. Insurance agents use the zones and BFEs in conjunction with information on structures and their contents to assign premium rates for flood insurance policies.

For floodplain management applications, the map shows by tints, screens, and symbols, the 1- and 0.2-percent-annual-chance floodplains, floodways, and the locations of selected cross sections used in the hydraulic analyses and floodway computations.

The current FIRM presents flooding information for the entire geographic area of Oakland County. Previously, separate FIRMs were prepared for each identified floodprone incorporated community and the unincorporated areas of the county. Historical data relating to the maps prepared for each community are presented in Table 12.

7.0 OTHER STUDIES

This 2006 FIS incorporates all previously published FISs and FIRMs for the incorporate and unincorporated areas within Oakland County.

This FIS report either supersedes or is compatible with all previous studies published on streams studied in this report and should be considered authoritative for purposes of the National Flood Insurance Program.

FEMA has published FIS reports and FIRMs for the Township of Salem in Washtenaw County (Reference 107); the Townships of Green Oak (Reference 108) and Hartland (Reference 109) in Livingston County; the City of Fenton (Reference 110) and the Townships of Atlas (Reference 111), Fenton (Reference 112), and Grand Blanc (Reference 113) in Genesee County. The results presented in this 2006 FIS report and on the FIRM for Oakland County are in exact agreement with the results for those towns.

Countywide FISs are in progress for Macomb and Wayne Counties. The results of those studies will be in agreement with the results of this 2006 study.

8.0 LOCATION OF DATA

Information concerning the pertinent data used in the preparation of this study can be obtained by contacting the Flood Insurance and Mitigation Division, Federal Emergency Management Agency, 536 South Clark Street, Sixth Floor, Chicago, Illinois 60605.

| COMMUNITY NAME | INITIAL IDENTIFICATION | FLOOD HAZARD BOUNDARY MAP REVISIONS DATE | FIRM EFFECTIVE DATE | FIRM REVISIONS DATE |
|-----------------------------|------------------------|--|---------------------|---------------------|
| ** Addison, Township of | N/A | N/A | N/A | N/A |
| Auburn Hills, City of | June 28, 1974 | June 18, 1976 | July 16, 1979 | none |
| * Berkley, City of | N/A | N/A | N/A | N/A |
| Beverly Hills, Village of | February 22, 1974 | June 11, 1976 | June 15, 1979 | none |
| Bingham Farms, Village of | January 3, 1985 | none | January 3, 1985 | none |
| Birmingham, City of | April 6, 1973 | June 18, 1976 | May 15, 1980 | none |
| Bloomfield, Township of | May 17, 1974 | June 18, 1976 | January 6, 1983 | November 19, 1987 |
| Bloomfield Hills, City of | July 5, 1984 | none | July 5, 1984 | none |
| ** Brandon, Township of | N/A | N/A | N/A | N/A |
| Clarkston, Village of | April 25, 1975 | October 31, 1975 | March 2, 1983 | none |
| * Clawson, City of | N/A | N/A | N/A | N/A |
| Commerce, Township of | March 25, 1977 | none | March 16, 1981 | none |
| Farmington, City of | October 12, 1973 | June 4, 1976 | July 16, 1980 | none |
| Farmington Hills, City of | March 15, 1974 | August 27, 1976 | February 1, 1980 | November 8, 1999 |
| * Ferndale, City of | N/A | N/A | N/A | N/A |
| Franklin, Village of | April 11, 1975 | none | December 1, 1981 | none |
| ** Groveland, Township of | N/A | N/A | N/A | N/A |
| * Hazel Park, City of | N/A | N/A | N/A | N/A |
| Highland, Township of | January 18, 1984 | none | January 18, 1984 | none |
| Holly, Township of | June 24, 1977 | none | February 1, 1988 | none |
| Holly, Village of | October 3, 1975 | none | December 4, 1984 | none |
| * Huntington Woods, City of | N/A | N/A | N/A | N/A |
| Independence, Township of | May 13, 1977 | none | May 16, 1983 | none |
| Keego Harbor, City of | May 24, 1974 | February 13, 1976 | December 1, 1982 | none |

* NON FLOOD PRONE

** NOT MAPPED PRIOR TO 2006 FIS

TABLE 12

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

COMMUNITY MAP HISTORY

| COMMUNITY NAME | INITIAL IDENTIFICATION | FLOOD HAZARD BOUNDARY MAP REVISIONS DATE | FIRM EFFECTIVE DATE | FIRM REVISIONS DATE |
|-------------------------------|------------------------|--|---------------------|---------------------|
| Lake Angelus, City of | November 16, 1983 | none | November 16, 1983 | April 15, 1986 |
| Lake Orion, Village of | October 10, 1975 | none | September 16, 1981 | none |
| * Lathrup Village, City of | N/A | N/A | N/A | N/A |
| * Leonard, Village of | N/A | N/A | N/A | N/A |
| ** Lyon, Township of | N/A | N/A | N/A | N/A |
| * Madison Heights, City of | N/A | N/A | N/A | N/A |
| ** Milford, Township of | N/A | N/A | N/A | N/A |
| Milford, Village of | May 10, 1974 | June 18, 1976 | December 21, 1984 | none |
| Northville, City of | September 6, 1974 | September 3, 1976 | September 16, 1981 | December 6, 1999 |
| Novi, City of | June 28, 1974 | August 27, 1976 | April 3, 1978 | May 3, 1993 |
| * Novi, Township of | N/A | N/A | N/A | N/A |
| * Oak Park, City of | N/A | N/A | N/A | N/A |
| Oakland, Township of | April 1, 1977 | none | December 1, 1982 | none |
| Orchard Lake Village, City of | July 18, 1975 | none | January 7, 1983 | none |
| ** Orion, Township of | N/A | N/A | N/A | N/A |
| ** Ortonville, Village of | N/A | N/A | N/A | N/A |
| * Oxford, Township of | N/A | N/A | N/A | N/A |
| * Oxford, Village of | N/A | N/A | N/A | N/A |
| * Pleasant Ridge, City of | N/A | N/A | N/A | N/A |
| Pontiac, City of | February 1, 1974 | August 20, 1976 | August 15, 1979 | none |
| Rochester, City of | April 11, 1975 | November 19, 1976 | May 5, 1981 | March 12, 1982 |
| Rochester Hills, City of | April 25, 1975 | none | September 16, 1981 | September 2, 1994 |
| ** Rose, Township of | N/A | N/A | N/A | N/A |
| * Royal Oak, City of | N/A | N/A | N/A | N/A |

* NON FLOOD PRONE

** NOT MAPPED PRIOR TO 2006 FIS

TABLE 12

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

COMMUNITY MAP HISTORY

| COMMUNITY NAME | INITIAL IDENTIFICATION | FLOOD HAZARD BOUNDARY MAP REVISIONS DATE | FIRM EFFECTIVE DATE | FIRM REVISIONS DATE |
|--------------------------------|------------------------|--|---------------------|--|
| * Royal Oak, Township of | N/A | N/A | N/A | N/A |
| ** South Lyon, City of | N/A | N/A | N/A | N/A |
| Southfield, City of | May 17, 1974 | July 9, 1976 | September 28, 1979 | none |
| ** Southfield, Township of | N/A | N/A | N/A | N/A |
| * Springfield, Township of | N/A | N/A | N/A | N/A |
| Sylvan Lake, City of | July 14, 1978 | none | November 16, 1983 | none |
| Troy, City of | June 28, 1974 | October 3, 1975 May 7, 1976 | May 2, 1983 | January 16, 1987 September 16, 1988 |
| ** Walled Lake, City of | N/A | N/A | N/A | N/A |
| Waterford, Charter Township of | August 16, 1974 | June 4, 1976 | February 2, 1983 | none |
| West Bloomfield, Township of | June 28, 1974 | January 30, 1976 | March 2, 1983 | none |
| White Lake, Township of | May 27, 1977 | none | February 1, 1985 | none |
| ** Wixom, City of | N/A | N/A | N/A | N/A |
| Wolverine Lake, Village of | April 11, 1975 | none | May 1, 1987 | none |

* NON FLOOD PRONE

** NOT MAPPED PRIOR TO 2006 FIS

TABLE 12

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

COMMUNITY MAP HISTORY

9.0 BIBLIOGRAPHY AND REFERENCES

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11. Federal Emergency Management Agency, Federal Insurance Administration, Flood Insurance Study, Charter Township of Waterford, Oakland County, Michigan, Washington, D.C., August 2, 1982 (Flood Insurance Study); February 2, 1983 (Flood Insurance Rate Map).
12. Federal Emergency Management Agency, Federal Insurance Administration, Flood Insurance Study, Village of Beverly Hills, Oakland County, Michigan, Washington, D.C., December 1978 (Flood Insurance Study); June 15, 1979 (Flood Insurance Rate Map).

13. Federal Emergency Management Agency, Federal Insurance Administration, Flood Insurance Study, Village of Bingham Farms, Oakland County, Michigan, Washington, D.C., July 3, 1984 (Flood Insurance Study); January 3, 1985 (Flood Insurance Rate Map).
14. Federal Emergency Management Agency, Federal Insurance Administration, Flood Insurance Study, Village of Clarkston, Oakland County, Michigan, Washington, D.C., September, 2, 1982 (Flood Insurance Study); March 2, 1983 (Flood Insurance Rate Map).
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19. Federal Emergency Management Agency, Federal Insurance Administration, Flood Insurance Study, City of Bloomfield Hills, Oakland County, Michigan, Washington, D.C., January 5, 1984 (Flood Insurance Study); July 5, 1984 (Flood Insurance Rate Map).
20. Federal Emergency Management Agency, Federal Insurance Administration, Flood Insurance Study, City of Farmington, Oakland County, Michigan, Washington, D.C., January 1980 (Flood Insurance Study); July 16, 1980 (Flood Insurance Rate Map).
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| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-----------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| AMY DRAIN | | | | | | | | | |
| A | 320 | 4 | 68 | 3.3 | | 837.6 | 837.6 | 837.6 | 0.0 |
| B | 436 | 235 | 2,750 | 0.2 | | 837.6 | 837.6 | 837.6 | 0.0 |
| C | 486 | 236 | 2,375 | 0.3 | | 837.6 | 837.6 | 837.6 | 0.0 |
| D | 663 | 286 | 722 | 0.9 | | 837.9 | 837.9 | 837.9 | 0.0 |
| E | 2,550 | 199 | 941 | 0.7 | | 838.0 | 838.0 | 838.0 | 0.0 |
| F | 2,654 | 178 | 300 | 2.1 | | 838.0 | 838.0 | 838.0 | 0.0 |
| G | 2,763 | 268 | 711 | 0.9 | | 838.1 | 838.1 | 838.1 | 0.0 |
| H | 3,250 | 270 | 782 | 0.9 | 54 | 838.2 | 838.2 | 838.2 | 0.0 |
| I | 4,140 | 395 | 1,016 | 0.6 | | 838.3 | 838.3 | 838.3 | 0.0 |
| J | 4,366 | 300 | 466 | 1.3 | | 840.0 | 840.0 | 840.0 | 0.0 |
| K | 4,415 | 228 | 353 | 1.8 | | 840.0 | 840.0 | 840.0 | 0.0 |
| L | 4,595 | 272 | 629 | 1.0 | | 840.8 | 840.8 | 840.8 | 0.0 |
| M | 4,645 | 247 | 755 | 0.8 | | 840.8 | 840.8 | 840.8 | 0.0 |
| N | 5,105 | 78 | 166 | 3.7 | | 841.2 | 841.2 | 841.2 | 0.0 |
| O | 5,760 | 120 | 292 | 2.1 | | 844.0 | 844.0 | 844.0 | 0.0 |
| P | 5,953 | 100 | 300 | 2.1 | | 846.3 | 846.3 | 846.3 | 0.0 |
| Q | 6,000 | 90 | 189 | 3.3 | | 846.3 | 846.3 | 846.3 | 0.0 |
| R | 6,204 | 267 | 458 | 1.4 | | 846.8 | 846.8 | 846.8 | 0.0 |
| S | 6,264 | 280 | 819 | 0.4 | | 846.7 | 846.7 | 846.7 | 0.0 |
| T | 6,679 | 370 | 1,018 | 0.3 | | 848.2 | 848.2 | 848.2 | 0.0 |
| U | 7,274 | 100 | 187 | 1.7 | | 849.0 | 849.0 | 849.0 | 0.0 |
| V | 7,754 | 33 | 82 | 3.9 | | 850.3 | 850.3 | 850.3 | 0.0 |
| W | 7,884 | 7 | 29 | 7.7 | | 852.8 | 852.8 | 852.8 | 0.0 |
| X | 8,004 | 38 | 116 | 1.9 | 35 | 853.2 | 853.2 | 853.2 | 0.0 |
| Y | 8,339 | 50 | 98 | 2.2 | | 854.1 | 854.1 | 854.1 | 0.0 |
| Z | 8,479 | 140 | 92 | 2.4 | | 854.7 | 854.7 | 854.7 | 0.0 |

¹Feet above Confluence with Quarton Branch

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

AMY DRAIN

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-----------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| AMY DRAIN | | | | | | | | | |
| AA | 8,554 | 42 | 123 | 1.8 | 35 | 854.8 | 854.8 | 854.8 | 0.0 |
| AB | 9,329 | 47 | 120 | 1.8 | | 855.3 | 855.3 | 855.3 | 0.0 |
| AC | 9,614 | 103 | 316 | 0.3 | | 856.6 | 856.6 | 856.6 | 0.0 |
| AD | 10,364 | 540 | 128 | 0.6 | | 856.7 | 856.7 | 856.7 | 0.0 |
| AE | 10,974 | 200 | 894 | 0.1 | | 858.5 | 858.5 | 858.5 | 0.0 |
| AF | 11,974 | 320 | 327 | 0.2 | | 858.5 | 858.5 | 858.5 | 0.0 |

¹Feet above Confluence with Quarton Branch

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

AMY DRAIN

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-----------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| BISHOP CREEK | | | | | | | | | |
| A | 775 | 19 | 162 | 1.9 | 35 | 842.4 | 842.4 | 842.5 | 0.1 |
| B | 1,250 | 14 | 125 | 2.4 | 33 | 842.8 | 842.8 | 842.9 | 0.1 |
| C | 2,339 | 110 | 336 | 0.9 | | 851.2 | 851.2 | 851.3 | 0.1 |
| D | 3,140 | 25 | 73 | 4.1 | | 853.0 | 853.0 | 853.0 | 0.0 |
| E | 4,230 | 20 | 86 | 4.6 | | 859.6 | 859.6 | 859.6 | 0.0 |
| F | 5,670 | 10 | 127 | 4.2 | 58 | 866.8 | 866.8 | 866.9 | 0.1 |
| G | 7,200 | 194 | 955 | 0.3 | | 872.4 | 872.4 | 872.5 | 0.1 |
| H | 7,835 | 27 | 62 | 4.2 | | 872.5 | 872.5 | 872.6 | 0.1 |
| I | 8,035 | 25 | 37 | 7.1 | | 873.8 | 873.8 | 873.8 | 0.0 |
| J | 8,502 | 47 | 306 | 0.9 | 35 | 878.2 | 878.2 | 878.3 | 0.1 |
| K | 8,775 | 44 | 148 | 1.8 | | 878.3 | 878.3 | 878.4 | 0.1 |
| L | 9,091 | 196 | 883 | 0.3 | | 878.4 | 878.4 | 878.5 | 0.1 |
| M | 9,569 | 176 | 389 | 0.7 | | 878.5 | 878.5 | 878.5 | 0.0 |
| N | 10,193 | 20 | 178 | 1.5 | 76 | 882.4 | 882.4 | 882.4 | 0.0 |
| O | 11,326 | 113 | 392 | 0.4 | | 892.5 | 892.5 | 892.5 | 0.0 |
| P | 11,725 | 30 | 106 | 1.5 | | 894.6 | 894.6 | 894.6 | 0.0 |
| Q | 11,853 | 25 | 122 | 1.3 | | 895.6 | 895.6 | 895.6 | 0.0 |

¹Feet above Confluence with Ingersol Creek

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

BISHOP CREEK

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|------------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| CARPENTER BRANCH | | | | | | | | | |
| A | 250 | 281 | 2,999 | 0.4 | | 631.0 | 631.0 | 631.1 | 0.1 |
| B | 1,010 | 295 | 2,776 | 0.4 | | 631.0 | 631.0 | 631.1 | 0.1 |

¹Feet above Confluence with Rouge River

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

CARPENTER BRANCH

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|--------------------------------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| CARUS LAKE AND PLEASANT LAKE CHANNEL | | | | | | | | | |
| A | 3,070 | 403 | 443 | 0.3 | 55 | 931.0 | 931.0 | 931.1 | 0.1 |
| B | 4,070 | 561 | 729 | 0.2 | | 931.2 | 931.2 | 931.3 | 0.1 |
| C | 5,590 | 243 | 188 | 0.8 | | 931.7 | 931.7 | 931.8 | 0.1 |
| D | 6,226 | 63 | 113 | 0.3 | | 935.5 | 935.5 | 935.5 | 0.0 |
| E | 6,646 | 23 | 18 | 1.8 | | 937.0 | 937.0 | 937.0 | 0.0 |
| F | 7,267 | - | - | - | | - | - | - | - |
| G | 7,600 | - | - | - | | - | - | - | - |
| H | 8,673 | 57 | 34 | 0.1 | | 939.1 | 939.1 | 939.2 | 0.1 |
| I | 8,783 | 20 | 44 | 0.1 | | 939.1 | 939.1 | 939.2 | 0.1 |
| J | 9,873 | - | - | - | | - | - | - | - |
| K | 10,719 | - | - | - | | - | - | - | - |
| L | 11,242 | 18 | 16 | 5.6 | | 943.9 | 943.9 | 943.9 | 0.0 |
| M | 11,642 | 32 | 38 | 2.4 | | 947.0 | 947.0 | 947.0 | 0.0 |
| N | 11,952 | 18 | 34 | 0.2 | | 947.4 | 947.4 | 947.4 | 0.0 |
| O | 12,303 | 18 | 42 | 0.2 | | 947.5 | 947.5 | 947.5 | 0.0 |

¹Feet above Welch Road

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

CARUS LAKE AND PLEASANT LAKE CHANNEL

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-----------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| CHAPMAN CREEK | | | | | | | | | |
| A | 450 | 78 | 141 | 2.4 | | 860.6 | 860.6 | 860.6 | 0.0 |
| B | 925 | 80 | 88 | 3.9 | | 871.7 | 871.7 | 871.7 | 0.0 |
| C | 2,221 | 100 | 100 | 3.4 | | 881.6 | 881.6 | 881.6 | 0.0 |
| D | 3,118 | 122 | 590 | 0.5 | | 892.6 | 892.6 | 892.6 | 0.0 |
| E | 3,669 | 348 | 1,505 | 0.2 | | 892.6 | 892.6 | 892.6 | 0.0 |
| F | 4,719 | 455 | 1,907 | 0.2 | | 892.6 | 892.6 | 892.6 | 0.0 |
| G | 5,520 | 350 | 1,262 | 0.2 | | 892.6 | 892.6 | 892.6 | 0.0 |

¹Feet above Confluence with Walled Lake Branch

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

CHAPMAN CREEK

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-----------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| CLINTON RIVER | | | | | | | | | |
| A | 31.557 | 158 | 1,948 | 4.0 | 368 | 675.4 | 675.4 | 675.4 | 0.0 |
| B | 31.752 | 278 | 1,903 | 4.1 | 184 | 678.3 | 678.3 | 678.3 | 0.0 |
| C | 31.829 | 606 | 3,757 | 2.0 | 48 | 679.5 | 679.5 | 679.5 | 0.0 |
| D | 31.940 | 120 | 1,245 | 16.1 | | 680.4 | 680.4 | 680.4 | 0.0 |
| E | 31.999 | 275 | 1,757 | 4.3 | 215 | 681.0 | 681.0 | 681.0 | 0.0 |
| F | 32.125 | 724 | 2,734 | 2.7 | | 682.4 | 682.4 | 682.4 | 0.0 |
| G | 32.237 | 381 | 1,761 | 4.2 | 108 | 683.3 | 683.3 | 683.4 | 0.1 |
| H | 32.530 | 591 | 2,556 | 2.8 | | 685.9 | 685.9 | 686.0 | 0.1 |
| I | 32.845 | 526 | 2,523 | 2.9 | 117 | 689.1 | 689.1 | 689.1 | 0.0 |
| J | 33.137 | 622 | 2,154 | 3.2 | | 691.8 | 691.8 | 691.8 | 0.0 |
| K | 33.421 | 118 | 1,562 | 3.6 | 241 | 694.5 | 694.5 | 694.5 | 0.0 |
| L | 33.610 | 288 | 1,497 | 3.8 | 138 | 697.2 | 697.2 | 697.2 | 0.0 |
| M | 33.683 | 365 | 2,866 | 2.0 | | 702.2 | 702.2 | 702.2 | 0.0 |
| N | 33.721 | 528 | 2,987 | 1.8 | | 703.0 | 703.0 | 703.0 | 0.0 |
| O | 33.816 | 753 | 2,759 | 2.0 | | 703.5 | 703.5 | 703.5 | 0.0 |
| P | 34.071 | 325 | 1,147 | 4.6 | | 706.4 | 706.4 | 706.4 | 0.0 |
| Q | 34.353 | 565 | 1,126 | 4.5 | | 711.2 | 711.2 | 711.2 | 0.0 |
| R | 34.513 | 114 | 694 | 7.4 | | 714.3 | 714.3 | 714.3 | 0.0 |
| S | 34.645 | 507 | 1,765 | 2.9 | | 716.5 | 716.5 | 716.5 | 0.0 |
| T | 35.037 | 43 | 378 | 10.1 | | 726.0 | 726.0 | 726.0 | 0.0 |
| U | 35.076 | 260 | 1,156 | 3.3 | 40 | 729.0 | 729.0 | 729.0 | 0.0 |
| V | 35.152 | 231 | 1,141 | 3.4 | | 729.4 | 729.4 | 729.4 | 0.0 |
| W | 35.266 | 253 | 1,613 | 2.4 | 83 | 730.2 | 730.2 | 730.2 | 0.0 |
| X | 35.629 | 156 | 964 | 4.0 | 145 | 736.4 | 736.4 | 736.4 | 0.0 |
| Y | 35.800 | 261 | 918 | 4.2 | 112 | 738.6 | 738.6 | 738.6 | 0.0 |
| Z | 35.980 | 154 | 761 | 5.0 | | 741.8 | 741.8 | 741.8 | 0.0 |

¹Miles above Mouth

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

CLINTON RIVER

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-----------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| CLINTON RIVER | | | | | | | | | |
| AA | 36.048 | 69 | 553 | 6.9 | | 743.7 | 743.7 | 743.7 | 0.0 |
| AB | 36.257 | 495 | 2,009 | 1.9 | | 745.7 | 745.7 | 745.7 | 0.0 |
| AC | 36.494 | 68 | 399 | 9.5 | 30 | 748.9 | 748.9 | 748.9 | 0.0 |
| AD | 36.573 | 300 | 2,182 | 11.7 | | 755.5 | 755.5 | 755.5 | 0.0 |
| AE | 36.636 | 273 | 1,818 | 2.1 | | 755.6 | 755.6 | 755.6 | 0.0 |
| AF | 36.939 | 345 | 2,557 | 1.5 | 265 | 755.9 | 755.9 | 755.9 | 0.0 |
| AG | 37.300 | 167 | 2,352 | 1.6 | 599 | 756.8 | 756.8 | 756.8 | 0.0 |
| AH | 37.692 | 98 | 1,373 | 2.7 | 478 | 759.0 | 759.0 | 759.0 | 0.0 |
| AI | 38.174 | 371 | 910 | 4.1 | | 767.6 | 767.6 | 767.6 | 0.0 |
| AJ | 38.467 | 488 | 1,457 | 2.6 | | 771.4 | 771.4 | 771.4 | 0.0 |
| AK | 38.827 | 132 | 676 | 5.5 | | 775.9 | 775.9 | 775.9 | 0.0 |
| AL | 38.848 | 244 | 842 | 4.4 | | 778.6 | 778.6 | 778.6 | 0.0 |
| AM | 39.123 | 518 | 1,561 | 2.4 | | 779.8 | 779.8 | 779.8 | 0.0 |
| AN | 39.160 | 462 | 2,432 | 1.5 | | 780.8 | 780.8 | 780.8 | 0.0 |
| AO | 39.403 | 464 | 1,389 | 2.6 | | 783.5 | 783.5 | 783.6 | 0.1 |
| AP | 39.571 | 530 | 1,886 | 1.9 | | 785.2 | 785.2 | 785.3 | 0.1 |
| AQ | 40.200 | 333 | 984 | 3.7 | | 796.6 | 796.6 | 796.6 | 0.0 |
| AR | 40.519 | 29 | 271 | 11.8 | | 803.6 | 803.6 | 803.6 | 0.0 |
| AS | 40.727 | 186 | 878 | 3.7 | | 806.8 | 806.8 | 806.8 | 0.0 |
| AT | 41.093 | 660 | 1,783 | 1.8 | | 811.8 | 811.8 | 811.8 | 0.0 |
| AU | 41.460 | 172 | 584 | 5.5 | | 814.8 | 814.8 | 814.8 | 0.0 |
| AV | 41.710 | 204 | 585 | 5.5 | | 818.8 | 818.8 | 818.8 | 0.0 |
| AW | 41.866 | 129 | 598 | 5.4 | 43 | 821.0 | 821.0 | 821.0 | 0.0 |
| AX | 42.076 | 128 | 447 | 17.2 | | 825.3 | 825.3 | 825.3 | 0.0 |
| AY | 42.195 | 164 | 584 | 15.5 | | 828.2 | 828.2 | 828.2 | 0.0 |
| AZ | 42.392 | 384 | 1,781 | 1.8 | | 831.0 | 831.0 | 831.0 | 0.0 |

¹Miles above Mouth

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

CLINTON RIVER

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-----------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| CLINTON RIVER | | | | | | | | | |
| BA | 42.610 | 110 | 726 | 4.4 | | 833.2 | 833.2 | 833.3 | 0.1 |
| BB | 42.629 | 60 | 497 | 6.4 | | 833.5 | 833.5 | 833.6 | 0.1 |
| BC | 42.816 | 110 | 478 | 6.7 | | 835.6 | 835.6 | 835.6 | 0.1 |
| BD | 42.863 | 59 | 534 | 6.0 | | 836.8 | 836.8 | 836.8 | 0.0 |
| BE | 42.873 | 47 | 659 | 4.9 | 59 | 837.0 | 837.0 | 837.0 | 0.0 |
| BF | 43.009 | 65 | 568 | 5.6 | 29 | 837.9 | 837.9 | 837.9 | 0.0 |
| BG | 43.057 | 46 | 467 | 6.9 | 6 | 838.7 | 838.7 | 838.7 | 0.0 |
| BH | 43.346 | 264 | 1,048 | 3.1 | 36 | 840.2 | 840.2 | 840.2 | 0.0 |
| BI | 43.561 | 219 | 656 | 4.9 | | 843.1 | 843.1 | 843.1 | 0.0 |
| BJ | 43.758 | 240 | 700 | 4.6 | | 846.5 | 846.5 | 846.5 | 0.0 |
| BK | 43.867 | 374 | 1,508 | 2.1 | | 847.8 | 847.8 | 847.8 | 0.0 |
| BL | 44.039 | 209 | 811 | 3.9 | | 848.3 | 848.3 | 848.3 | 0.0 |
| BM | 44.123 | 115 | 464 | 6.9 | | 851.0 | 851.0 | 851.0 | 0.0 |
| BN | 44.164 | 40 | 367 | 8.7 | | 855.6 | 855.6 | 855.6 | 0.0 |
| BO | 44.174 | 83 | 505 | 6.1 | | 856.3 | 856.3 | 856.3 | 0.0 |
| BP | 44.259 | 159 | 1,033 | 3.0 | | 857.0 | 857.0 | 857.0 | 0.0 |
| BQ | 44.416 | 225 | 1,354 | 2.3 | | 857.5 | 857.5 | 857.6 | 0.1 |
| BR | 44.572 | 232 | 1,191 | 2.6 | | 858.3 | 858.3 | 858.4 | 0.1 |
| BS | 44.805 | 40 | 297 | 10.4 | | 859.2 | 859.2 | 859.3 | 0.1 |
| BT | 44.999 | 350 | 2,153 | 1.4 | | 862.2 | 862.2 | 862.3 | 0.1 |
| BU | 45.147 | 80 | 464 | 6.6 | | 863.2 | 863.2 | 863.3 | 0.1 |
| BV | 45.163 | 40 | 425 | 7.2 | | 863.4 | 863.4 | 863.4 | 0.0 |
| BW | 45.181 | 40 | 430 | 7.2 | | 863.5 | 863.5 | 863.5 | 0.0 |
| BX | 45.320 | 530 | 3,474 | 0.9 | | 864.8 | 864.8 | 864.8 | 0.0 |
| BY | 45.457 | 300 | 1,737 | 1.7 | | 865.0 | 865.0 | 865.1 | 0.1 |
| BZ | 45.655 | 304 | 2,070 | 1.5 | 59 | 865.5 | 865.5 | 865.5 | 0.0 |

¹Miles above Mouth

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

CLINTON RIVER

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-----------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| CLINTON RIVER | | | | | | | | | |
| CA | 45.782 | 350 | 1,218 | 3.2 | 94 | 866.0 | 866.0 | 866.0 | 0.0 |
| CB | 45.813 | 275 | 1,083 | 3.6 | | 866.8 | 866.8 | 866.8 | 0.0 |
| CC | 45.963 | 350 | 1,169 | 3.4 | | 868.1 | 868.1 | 868.1 | 0.0 |
| CD | 45.990 | 374 | 832 | 4.7 | | 869.4 | 869.4 | 869.4 | 0.0 |
| CE | 46.038 | 180 | 1,302 | 3.0 | | 869.3 | 869.3 | 869.3 | 0.0 |
| CF | 46.170 | 140 | 990 | 4.0 | | 869.4 | 869.4 | 869.4 | 0.0 |
| CG | 46.227 | 120 | 943 | 4.2 | | 869.4 | 869.4 | 869.4 | 0.0 |
| CH | 46.294 | 114 | 884 | 4.5 | | 869.5 | 869.5 | 869.5 | 0.0 |
| CI | 46.312 | 99 | 735 | 5.4 | | 869.5 | 869.5 | 869.5 | 0.0 |
| CJ | 46.417 | 100 | 722 | 5.5 | | 869.7 | 869.7 | 869.7 | 0.0 |
| CK | 46.508 | 98 | 709 | 5.6 | | 869.9 | 869.9 | 869.9 | 0.0 |
| CL | 46.544 | 100 | 718 | 5.5 | | 870.1 | 870.1 | 870.1 | 0.0 |
| CM | 46.606 | 98 | 702 | 5.6 | | 870.3 | 870.3 | 870.3 | 0.0 |
| CN | 46.687 | 103 | 662 | 6.0 | | 870.4 | 870.4 | 870.4 | 0.0 |
| CO | 46.720 | 98 | 691 | 5.7 | 870.6 | 870.6 | 870.6 | 0.0 | |
| CP | 46.749 | 97 | 630 | 6.3 | 870.6 | 870.6 | 870.6 | 0.0 | |
| CQ | 46.768 | 98 | 631 | 6.3 | 870.6 | 870.6 | 870.6 | 0.0 | |
| CR | 46.852 | 99 | 703 | 5.6 | 35 | 871.2 | 871.2 | 871.2 | 0.0 |
| CS | 47.085 | 63 | 662 | 5.6 | | 871.8 | 871.8 | 871.8 | 0.0 |
| CT | 47.088 | 40 | 624 | 6.0 | | 871.8 | 871.8 | 871.8 | 0.0 |
| CU | 47.112 | 30 | 234 | 15.9 | | 874.8 | 874.8 | 874.8 | 0.0 |
| CV | 47.426 | 30 | 271 | 13.3 | | 880.8 | 880.8 | 880.8 | 0.0 |
| CW | 47.432 | 30 | 261 | 13.8 | | 881.7 | 881.7 | 881.7 | 0.0 |
| CX | 47.434 | 48 | 268 | 13.4 | | 884.5 | 884.5 | 884.5 | 0.0 |
| CY | 47.442 | 118 | 900 | 4.0 | | 887.3 | 887.3 | 887.3 | 0.0 |
| CZ | 47.534 | 117 | 876 | 4.1 | | 887.3 | 887.3 | 887.3 | 0.0 |

¹Miles above Mouth

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

CLINTON RIVER

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-----------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| CLINTON RIVER | | | | | | | | | |
| DA | 47.686 | 119 | 898 | 3.8 | | 887.6 | 887.6 | 887.6 | 0.0 |
| DB | 47.875 | 87 | 682 | 4.9 | | 887.8 | 887.8 | 887.8 | 0.0 |
| DC | 47.970 | 76 | 603 | 5.6 | | 887.9 | 887.9 | 887.9 | 0.0 |
| DD | 48.121 | 75 | 597 | 5.6 | | 888.3 | 888.3 | 888.3 | 0.0 |
| DE | 48.129 | 92 | 939 | 3.6 | | 888.6 | 888.6 | 888.6 | 0.0 |
| DF | 48.130 | 30 | 447 | 7.5 | | 888.6 | 888.6 | 888.6 | 0.0 |
| DG | 48.171 | 30 | 280 | 9.7 | | 893.8 | 893.8 | 893.8 | 0.0 |
| DH | 48.254 | 30 | 273 | 9.9 | | 894.0 | 894.0 | 894.0 | 0.0 |
| DI | 48.443 | 30 | 259 | 10.5 | | 894.5 | 894.5 | 894.5 | 0.0 |
| DJ | 48.452 | 30 | 189 | 14.3 | | 894.5 | 894.5 | 894.5 | 0.0 |
| DK | 49.298 | 25 | 18 | 4.7 | | 910.8 | 910.8 | 910.8 | 0.0 |
| DL | 49.307 | 27 | 34 | 2.5 | | 911.3 | 911.3 | 911.3 | 0.0 |
| DM | 49.393 | 23 | 38 | 2.2 | | 912.6 | 912.6 | 912.6 | 0.0 |
| DN | 49.476 | 21 | 45 | 1.9 | | 913.2 | 913.2 | 913.2 | 0.0 |
| DO | 49.549 | 29 | 61 | 1.4 | | 913.7 | 913.7 | 913.7 | 0.0 |
| DP | 49.606 | 44 | 125 | 0.7 | | 913.9 | 913.9 | 913.9 | 0.0 |
| DQ | 49.675 | 53 | 127 | 5.0 | | 915.0 | 915.0 | 915.0 | 0.0 |
| DR | 49.787 | 106 | 180 | 3.6 | | 915.9 | 915.9 | 915.9 | 0.0 |
| DS | 49.806 | 57 | 169 | 3.8 | | 916.0 | 916.0 | 916.0 | 0.0 |
| DT | 49.843 | 73 | 193 | 3.3 | | 916.2 | 916.2 | 916.2 | 0.0 |
| DU | 49.900 | 185 | 486 | 1.3 | | 916.5 | 916.5 | 916.5 | 0.0 |
| DV | 49.938 | 117 | 288 | 2.2 | | 916.5 | 916.5 | 916.5 | 0.0 |
| DW | 49.957 | 56 | 151 | 4.2 | | 916.5 | 916.5 | 916.5 | 0.0 |
| DX | 49.981 | 30 | 98 | 6.5 | | 917.1 | 917.1 | 917.1 | 0.0 |
| DY | 49.995 | 57 | 191 | 3.4 | | 917.8 | 917.8 | 917.8 | 0.0 |
| DZ | 50.886 | 270 | 635 | 2.0 | | 919.0 | 919.0 | 919.0 | 0.0 |

¹Miles above Mouth

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

CLINTON RIVER

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-----------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| CLINTON RIVER | | | | | | | | | |
| EA | 51.199 | 153 | 398 | 3.1 | | 921.6 | 921.6 | 921.6 | 0.0 |
| EB | 51.260 | 42 | 145 | 8.6 | | 921.8 | 921.8 | 921.8 | 0.0 |
| EC | 51.272 | 56 | 310 | 4.0 | | 923.2 | 923.2 | 923.2 | 0.0 |
| ED | 51.311 | 190 | 362 | 3.4 | | 923.5 | 923.5 | 923.5 | 0.0 |
| EE | 51.347 | 156 | 304 | 4.1 | | 924.8 | 924.8 | 924.8 | 0.0 |
| EF | 51.452 | 262 | 1,446 | 0.9 | | 925.4 | 925.4 | 925.4 | 0.0 |
| EG | 51.799 | 19 | 123 | 4.9 | | 925.4 | 925.4 | 925.4 | 0.0 |
| EH | 51.803 | 55 | 652 | 0.9 | 67 | 925.8 | 925.8 | 925.8 | 0.0 |
| EI | 51.816 | - | - | - | | 925.8 | 925.8 | - | - |
| EJ | 51.917 | - | - | - | | 928.2 | 928.2 | - | - |
| EK | 52.343 | - | - | - | | 928.4 | 928.4 | - | - |
| EL | 52.532 | - | - | - | | 929.0 | 929.0 | - | - |
| EM | 52.545 | - | - | - | | 929.3 | 929.3 | - | - |
| EN | 52.574 | - | - | - | | 929.4 | 929.4 | - | - |
| EO | 54.274 | 244 | 784 | 0.7 | 79 | 929.4 | 929.4 | 929.4 | 0.0 |
| EP | 54.444 | 63 | 261 | 2.1 | | 930.5 | 930.5 | 930.5 | 0.0 |
| EQ | 54.465 | 51 | 195 | 2.9 | 28 | 930.6 | 930.6 | 930.6 | 0.0 |
| ER | 56.165 | 480 | 1,387 | 0.5 | | 930.9 | 930.9 | 930.9 | 0.0 |
| ES | 56.269 | 600 | 1,821 | 0.3 | | 930.9 | 930.9 | 931.0 | 0.1 |
| ET | 56.506 | 370 | 1,240 | 0.5 | 198 | 931.0 | 931.0 | 931.1 | 0.1 |
| EU | 56.828 | 252 | 869 | 0.7 | 65 | 931.1 | 931.1 | 931.2 | 0.1 |
| EV | 56.996 | 320 | 817 | 0.8 | 36 | 931.2 | 931.2 | 931.3 | 0.1 |
| EW | 57.036 | 169 | 456 | 1.4 | 159 | 931.3 | 931.3 | 931.4 | 0.1 |
| EX | 57.131 | 448 | 1,213 | 0.5 | | 931.4 | 931.4 | 931.5 | 0.1 |
| EY | 57.239 | 370 | 931 | 0.7 | | 931.5 | 931.5 | 931.6 | 0.1 |
| EZ | 57.443 | 684 | 1,396 | 0.4 | | 931.6 | 931.6 | 931.7 | 0.1 |

¹Miles above Mouth

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

CLINTON RIVER

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-----------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| CLINTON RIVER | | | | | | | | | |
| FA | 57.657 | 500 | 632 | 1.0 | | 931.7 | 931.7 | 931.7 | 0.0 |
| FB | 57.769 | 228 | 524 | 1.2 | 48 | 932.0 | 932.0 | 932.1 | 0.1 |
| FC | 57.881 | 200 | 362 | 1.7 | | 932.4 | 932.4 | 932.5 | 0.1 |
| FD | 58.087 | 116 | 322 | 1.9 | | 933.1 | 933.1 | 933.2 | 0.1 |
| FE | 58.107 | 28 | 253 | 2.3 | 37 | 933.2 | 933.2 | 933.3 | 0.1 |
| FF | 58.126 | 68 | 210 | 2.8 | | 933.3 | 933.3 | 933.4 | 0.1 |
| FG | 58.195 | 465 | 1,331 | 0.4 | | 933.6 | 933.6 | 933.7 | 0.1 |
| FH | 58.299 | 498 | 1,601 | 0.4 | | 933.6 | 933.6 | 933.7 | 0.1 |
| FI | 58.442 | 640 | 1,032 | 0.6 | | 933.7 | 933.7 | 933.8 | 0.1 |
| FJ | 58.599 | 463 | 814 | 0.7 | | 933.9 | 933.9 | 934.0 | 0.1 |
| FK | 58.881 | 600 | 1,161 | 0.5 | | 934.2 | 934.2 | 934.3 | 0.1 |
| FL | 59.044 | 381 | 699 | 0.8 | | 934.3 | 934.3 | 934.4 | 0.1 |
| FM | 59.207 | 271 | 479 | 1.2 | | 934.7 | 934.7 | 934.8 | 0.1 |
| FN | 59.557 | 143 | 714 | 0.8 | 209 | 936.6 | 936.6 | 936.6 | 0.0 |
| FO | 59.720 | 350 | 724 | 0.8 | | 936.8 | 936.8 | 936.8 | 0.0 |
| FP | 59.902 | 540 | 938 | 0.6 | | 937.0 | 937.0 | 937.0 | 0.0 |
| FQ | 60.004 | 285 | 591 | 0.9 | | 937.1 | 937.1 | 937.1 | 0.0 |
| FR | 60.159 | 308 | 555 | 1.0 | | 937.3 | 937.3 | 937.4 | 0.1 |
| FS | 60.231 | 307 | 589 | 1.0 | | 937.5 | 937.5 | 937.5 | 0.0 |
| FT | 60.347 | 64 | 293 | 1.8 | 71 | 937.7 | 937.7 | 937.8 | 0.1 |
| FU | 60.363 | 30 | 101 | 5.3 | | 937.7 | 937.7 | 937.7 | 0.0 |
| FV | 60.409 | 282 | 713 | 0.8 | | 938.5 | 938.5 | 938.5 | 0.0 |
| FW | 60.557 | 282 | 566 | 1.0 | | 938.6 | 938.6 | 938.6 | 0.0 |
| FX | 60.820 | 295 | 633 | 0.9 | | 939.1 | 939.1 | 939.1 | 0.0 |
| FY | 60.894 | 288 | 501 | 1.1 | | 939.2 | 939.2 | 939.3 | 0.1 |
| FZ | 60.970 | 258 | 541 | 1.0 | | 939.4 | 939.4 | 939.5 | 0.1 |

¹Miles above Mouth

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

CLINTON RIVER

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-----------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| CLINTON RIVER | | | | | | | | | |
| GA | 61.142 | 56 | 228 | 2.3 | | 939.8 | 939.8 | 939.9 | 0.1 |
| GB | 61.158 | 39 | 146 | 3.6 | | 939.9 | 939.9 | 939.9 | 0.0 |
| GC | 61.290 | 82 | 301 | 1.7 | 60 | 940.6 | 940.6 | 940.6 | 0.0 |
| GD | 61.366 | 42 | 146 | 3.6 | | 940.9 | 940.9 | 940.9 | 0.0 |
| GE | 61.378 | 26 | 110 | 4.7 | | 941.0 | 941.0 | 941.1 | 0.1 |
| GF | 61.440 | 57 | 278 | 1.9 | 32 | 941.8 | 941.8 | 941.8 | 0.0 |
| GG | 61.527 | 123 | 403 | 1.3 | 26 | 942.0 | 942.0 | 942.0 | 0.0 |
| GH | 61.627 | 41 | 182 | 2.9 | | 942.4 | 942.4 | 942.4 | 0.0 |
| GI | 61.820 | 96 | 341 | 1.5 | 35 | 943.4 | 943.4 | 943.4 | 0.0 |
| GJ | 61.921 | 158 | 526 | 1.0 | | 943.5 | 943.5 | 943.5 | 0.0 |
| GK | 62.039 | 49 | 194 | 2.6 | | 943.7 | 943.7 | 943.7 | 0.0 |
| GL | 62.055 | 37 | 183 | 2.7 | | 943.7 | 943.7 | 943.7 | 0.0 |
| GM | 62.142 | 47 | 196 | 2.6 | | 944.0 | 944.0 | 944.1 | 0.1 |
| GN | 62.201 | 165 | 467 | 1.1 | 168 | 944.2 | 944.2 | 944.2 | 0.0 |
| GO | 62.440 | 283 | 760 | 0.7 | | 944.4 | 944.4 | 944.4 | 0.0 |
| GP | 62.606 | 37 | 232 | 2.1 | | 944.5 | 944.5 | 944.5 | 0.0 |
| GQ | 62.642 | 73 | 464 | 1.1 | 51 | 944.9 | 944.9 | 944.9 | 0.0 |
| GR | 62.756 | 266 | 673 | 0.7 | | 945.0 | 945.0 | 945.0 | 0.0 |
| GS | 62.972 | 412 | 1,335 | 0.4 | | 945.0 | 945.0 | 945.0 | 0.0 |
| GT | 63.076 | 46 | 188 | 1.8 | | 945.1 | 945.1 | 945.1 | 0.0 |
| GU | 63.352 | 131 | 390 | 0.9 | | 945.4 | 945.4 | 945.4 | 0.0 |
| GV | 63.591 | 27 | 142 | 2.4 | | 945.7 | 945.7 | 945.7 | 0.0 |
| GW | 63.616 | 51 | 168 | 2.0 | | 945.8 | 945.8 | 945.8 | 0.0 |
| GX | 63.722 | 38 | 102 | 3.3 | | 946.3 | 946.3 | 946.3 | 0.0 |
| GY | 63.835 | 34 | 148 | 3.3 | | 950.0 | 950.0 | 950.0 | 0.0 |
| GZ | 63.899 | 29 | 165 | 3.0 | | 950.4 | 950.4 | 950.4 | 0.0 |

¹Miles above Mouth

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

CLINTON RIVER

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-----------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| CLINTON RIVER | | | | | | | | | |
| HA | 63.972 | 268 | 1,139 | 0.4 | 69 | 950.5 | 950.5 | 950.5 | 0.0 |
| HB | 64.176 | 134 | 517 | 1.0 | | 950.5 | 950.5 | 950.5 | 0.0 |
| HC | 64.273 | 23 | 74 | 6.6 | | 950.8 | 950.8 | 950.8 | 0.0 |
| HD | 64.395 | 34 | 153 | 3.2 | | 951.9 | 951.9 | 951.9 | 0.0 |
| HE | 64.512 | 193 | 1,523 | 0.3 | | 952.1 | 952.1 | 952.1 | 0.0 |
| HF | 64.627 | 329 | 2,316 | 0.2 | | 952.1 | 952.1 | 952.1 | 0.0 |
| HG | 65.488 | 63 | 538 | 1.3 | | 952.1 | 952.1 | 952.1 | 0.0 |
| HH | 65.508 | 27 | 149 | 4.5 | | 952.1 | 952.1 | 952.1 | 0.0 |
| HI | 65.638 | 277 | 1,312 | 0.5 | | 952.5 | 952.5 | 952.5 | 0.0 |
| HJ | 65.746 | 25 | 149 | 4.4 | | 952.8 | 952.8 | 952.8 | 0.0 |
| HK | 65.751 | 75 | 405 | 1.6 | | 953.1 | 953.1 | 953.1 | 0.0 |
| HL | 65.833 | 77 | 633 | 0.5 | | 953.2 | 953.2 | 953.2 | 0.0 |
| HM | 65.858 | 15 | 188 | 1.8 | | 953.2 | 953.2 | 953.2 | 0.0 |
| HN | 68.979 | 374 | 1,250 | 0.4 | | 959.9 | 959.9 | 959.9 | 0.0 |
| HO | 69.208 | 310 | 1,331 | 0.3 | | 959.9 | 959.9 | 959.9 | 0.0 |
| HP | 69.217 | 350 | 1,557 | 0.3 | | 960.0 | 960.0 | 960.0 | 0.0 |
| HQ | 69.622 | 350 | 1,323 | 0.4 | | 960.0 | 960.0 | 960.0 | 0.0 |
| HR | 69.787 | 79 | 182 | 2.6 | 960.0 | 960.0 | 960.0 | 0.0 | |
| HS | 69.870 | 37 | 233 | 2.0 | 962.8 | 962.8 | 962.9 | 0.1 | |
| HT | 69.921 | 80 | 166 | 2.8 | 969.0 | 969.0 | 969.0 | 0.0 | |
| HU | 71.226 | 120 | 491 | 0.8 | 969.0 | 969.0 | 969.1 | 0.1 | |
| HV | 71.264 | 27 | 181 | 1.8 | 969.0 | 969.0 | 969.1 | 0.1 | |
| HW | 71.273 | 16 | 407 | 1.0 | 60 | 969.1 | 969.1 | 969.2 | 0.1 |
| HX | 71.444 | 246 | 866 | 0.5 | | 969.2 | 969.2 | 969.3 | 0.1 |
| HY | 72.373 | 87 | 623 | 0.7 | | 969.2 | 969.2 | 969.3 | 0.1 |
| HZ | 72.525 | 28 | 53 | 7.9 | | 969.6 | 969.6 | 969.6 | 0.0 |

¹Miles above Mouth

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

CLINTON RIVER

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-----------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| CLINTON RIVER | | | | | | | | | |
| IA | 72.559 | 53 | 443 | 0.5 | 60 | 972.8 | 972.8 | 972.9 | 0.1 |
| IB | 72.686 | 29 | 394 | 0.6 | 43 | 972.8 | 972.8 | 972.9 | 0.1 |
| IC | 72.697 | 26 | 320 | 0.7 | 102 | 972.9 | 972.9 | 973.0 | 0.1 |
| ID | 72.754 | 180 | 731 | 0.3 | 48 | 972.9 | 972.9 | 973.0 | 0.1 |
| IE | 73.489 | 47 | 229 | 1.4 | 116 | 972.9 | 972.9 | 973.0 | 0.1 |
| IF | 73.553 | 71 | 290 | 1.1 | | 978.4 | 978.4 | 978.4 | 0.0 |
| IG | 73.666 | 77 | 310 | 1.0 | | 978.5 | 978.5 | 978.5 | 0.0 |
| IH | 73.739 | 81 | 240 | 1.3 | | 983.2 | 983.2 | 983.3 | 0.1 |
| IJ | 73.824 | 34 | 77 | 4.0 | | 983.6 | 983.6 | 983.7 | 0.1 |
| IK | 73.885 | 87 | 245 | 1.3 | | 989.6 | 989.6 | 989.6 | 0.0 |
| IL | 73.972 | 44 | 77 | 4.0 | | 990.5 | 990.5 | 990.3 | -0.2 |
| IM | 73.989 | 186 | 568 | 0.5 | | 990.9 | 990.9 | 991.0 | 0.1 |
| IN | 74.264 | 19 | 38 | 8.1 | | 990.7 | 990.7 | 990.7 | 0.0 |
| IO | 74.313 | 26 | 113 | 2.7 | | 996.2 | 996.2 | 996.2 | 0.0 |
| IP | 74.709 | 250 | 1,811 | 0.1 | | 1001.8 | 1001.8 | 1001.8 | 0.0 |
| IQ | 74.775 | 60 | 278 | 0.9 | | 1001.8 | 1001.8 | 1001.8 | 0.0 |
| IR | 74.846 | 53 | 165 | 1.5 | | 1001.8 | 1001.8 | 1001.8 | 0.0 |
| IS | 74.915 | 242 | 1,163 | 0.2 | 40 | 1003.7 | 1003.7 | 1003.8 | 0.1 |
| IT | 75.038 | 183 | 553 | 0.5 | | 1003.7 | 1003.7 | 1003.8 | 0.1 |
| IU | 75.204 | 22 | 58 | 4.3 | | 1003.7 | 1003.7 | 1003.8 | 0.1 |
| IV | 75.252 | 44 | 201 | 1.2 | | 1007.3 | 1007.3 | 1007.3 | 0.0 |
| IW | 75.346 | 465 | 2,881 | 0.1 | | 1010.0 | 1010.0 | 1010.0 | 0.0 |
| IX | 75.602 | 828 | 2,346 | 0.1 | | 1010.0 | 1010.0 | 1010.0 | 0.0 |
| IY | 75.829 | 514 | 981 | 0.3 | | 1010.0 | 1010.0 | 1010.0 | 0.0 |
| IZ | 75.925 | 253 | 754 | 0.3 | 49 | 1010.1 | 1010.1 | 1010.1 | 0.0 |

¹Miles above Mouth

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

CLINTON RIVER

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|------------------------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| CLINTON RIVER - EAST CHANNEL | | | | | | | | | |
| A | 97,475 | 82 | 206 | 1.0 | | 972.8 | 972.8 | 972.9 | 0.1 |
| B | 97,577 | 53 | 532 | 0.4 | 209 | 972.9 | 972.9 | 973.0 | 0.1 |

¹Feet above Confluence with Otter Lake Inlet

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

CLINTON RIVER - EAST CHANNEL

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|----------------------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| CLINTON RIVER WEST CHANNEL | | | | | | | | | |
| A | 1,294 | 26 | 92 | 1.7 | | 947.0 | 947.0 | 947.0 | 0.0 |
| B | 1,794 | 37 | 57 | 2.7 | | 947.4 | 947.4 | 947.4 | 0.0 |
| C | 2,144 | 36 | 99 | 1.6 | | 948.0 | 948.0 | 948.0 | 0.0 |
| D | 2,180 | 22 | 71 | 2.2 | | 948.0 | 948.0 | 948.0 | 0.0 |
| E | 2,694 | 27 | 80 | 1.9 | | 949.5 | 949.5 | 949.5 | 0.0 |
| F | 2,860 | 43 | 109 | 1.4 | | 949.6 | 949.6 | 949.6 | 0.0 |
| G | 3,430 | 40 | 110 | 1.4 | | 949.9 | 949.9 | 949.9 | 0.0 |
| H | 3,910 | 44 | 153 | 1.0 | | 950.0 | 950.0 | 950.0 | 0.0 |

¹Feet above Confluence with Clinton River

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

CLINTON RIVER WEST CHANNEL

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-----------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| DUCK CREEK | | | | | | | | | |
| A | 1,135 | 28 | 58 | 3.8 | | 937.0 | 937.0 | 937.1 | 0.1 |
| B | 1,270 | 30 | 97 | 2.3 | | 940.0 | 940.0 | 940.0 | 0.0 |

¹Feet above Confluence with Kearsley Creek

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

DUCK CREEK

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-----------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| EVANS BRANCH | | | | | | | | | |
| A | 2,685 | 342 | 4,323 | 0.6 | | 631.4 | 631.4 | 631.5 | 0.1 |
| B | 4,100 | 286 | 4,437 | 0.6 | | 631.6 | 631.6 | 631.7 | 0.1 |
| C | 6,330 | 266 | 3,362 | 0.8 | | 631.9 | 631.9 | 632.0 | 0.1 |
| D | 9,300 | 128 | 2,113 | 1.2 | 145 | 632.6 | 632.6 | 632.7 | 0.1 |
| E | 12,450 | 213 | 2,190 | 1.2 | 100 | 634.8 | 634.8 | 634.9 | 0.1 |
| F | 15,420 | 173 | 1,039 | 2.5 | | 640.4 | 640.4 | 640.4 | 0.0 |
| G | 16,830 | 153 | 907 | 2.9 | | 642.7 | 642.7 | 642.8 | 0.1 |
| H | 19,630 | 257 | 1,747 | 1.1 | | 646.4 | 646.4 | 646.4 | 0.0 |
| I | 22,555 | 98 | 963 | 1.9 | 189 | 647.9 | 647.9 | 647.9 | 0.0 |
| J | 24,615 | 121 | 1,879 | 1.0 | 169 | 658.1 | 658.1 | 658.2 | 0.1 |
| K | 25,665 | 356 | 2,286 | 0.8 | | 658.2 | 658.2 | 658.3 | 0.1 |

¹Feet above Confluence with Rouge River

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

EVANS BRANCH

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-------------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| FARMINGTON BRANCH | | | | | | | | | |
| A | 685 | 125 | 871 | 1.3 | | 631.6 | 631.6 | 631.7 | 0.1 |
| B | 785 | 240 | 1,125 | 1.0 | 49 | 631.7 | 631.7 | 631.8 | 0.1 |

¹Feet above Confluence with Carpenter Branch

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

FARMINGTON BRANCH

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-----------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| FRANKLIN BRANCH | | | | | | | | | |
| A | 2,662 | 220 | 707 | 2.3 | 194 | 660.0 | 660.0 | 660.0 | 0.0 |
| B | 2,838 | 240 | 1,004 | 1.6 | | 661.2 | 661.2 | 661.2 | 0.0 |
| C | 4,030 | 42 | 444 | 3.6 | | 662.9 | 662.9 | 663.0 | 0.1 |
| D | 6,401 | 253 | 514 | 3.2 | | 673.1 | 673.1 | 673.1 | 0.0 |
| E | 7,036 | 206 | 1,141 | 1.4 | | 674.7 | 674.7 | 674.7 | 0.0 |
| F | 8,036 | 254 | 859 | 1.9 | | 676.0 | 676.0 | 676.0 | 0.0 |
| G | 9,168 | 275 | 846 | 1.9 | | 678.1 | 678.1 | 678.1 | 0.0 |
| H | 10,852 | 150 | 405 | 4.1 | | 684.9 | 684.9 | 684.9 | 0.0 |
| I | 11,132 | 47 | 323 | 5.1 | | 685.6 | 685.6 | 685.6 | 0.0 |
| J | 11,934 | 31 | 223 | 7.4 | | 689.2 | 689.2 | 689.2 | 0.0 |
| K | 13,611 | 49 | 240 | 6.8 | | 694.2 | 694.2 | 694.2 | 0.0 |
| L | 14,072 | 22 | 175 | 9.4 | | 698.1 | 698.1 | 698.1 | 0.0 |
| M | 14,552 | 93 | 430 | 3.8 | | 41 | 700.8 | 700.8 | 700.8 |
| N | 14,823 | 0 | 185 | 8.9 | 22 | 701.2 | 701.2 | 701.2 | 0.0 |
| O | 14,885 | 109 | 575 | 2.9 | 702.8 | 702.8 | 702.8 | 0.0 | |
| P | 15,745 | 141 | 369 | 4.4 | 705.6 | 705.6 | 705.6 | 0.0 | |
| Q | 16,496 | 38 | 233 | 7.0 | 710.1 | 710.1 | 710.1 | 0.0 | |
| R | 16,895 | 71 | 347 | 4.7 | 713.4 | 713.4 | 713.4 | 0.0 | |
| S | 18,795 | 101 | 455 | 3.6 | 722.7 | 722.7 | 722.7 | 0.0 | |
| T | 22,495 | 212 | 722 | 2.3 | 735.7 | 735.7 | 735.7 | 0.0 | |
| U | 25,295 | 153 | 628 | 2.6 | 747.2 | 747.2 | 747.2 | 0.0 | |
| V | 27,795 | 192 | 575 | 2.9 | 759.1 | 759.1 | 759.1 | 0.0 | |
| W | 28,095 | 130 | 581 | 2.8 | 762.6 | 762.6 | 762.7 | 0.1 | |
| X | 28,285 | 100 | 297 | 5.5 | 766.8 | 766.8 | 766.9 | 0.1 | |
| Y | 28,385 | 170 | 832 | 1.8 | 766.8 | 766.8 | 766.9 | 0.1 | |
| Z | 28,435 | 210 | 1,419 | 1.1 | 766.9 | 766.9 | 767.0 | 0.1 | |

¹Feet above Confluence with Rouge River

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

FRANKLIN BRANCH

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-----------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| FRANKLIN BRANCH | | | | | | | | | |
| AA | 29,245 | 191 | 650 | 2.3 | | 767.5 | 767.5 | 767.6 | 0.1 |
| AB | 29,885 | 84 | 325 | 4.6 | | 770.4 | 770.4 | 770.5 | 0.1 |
| AC | 30,810 | 50 | 257 | 5.8 | | 777.2 | 777.2 | 777.3 | 0.1 |
| AD | 33,260 | 210 | 826 | 1.8 | | 787.5 | 787.5 | 787.6 | 0.1 |
| AE | 37,260 | 77 | 307 | 4.3 | | 799.3 | 799.3 | 799.3 | 0.0 |
| AF | 37,780 | 93 | 253 | 5.2 | | 800.6 | 800.6 | 800.6 | 0.0 |
| AG | 40,050 | 192 | 629 | 2.1 | | 805.7 | 805.7 | 805.7 | 0.0 |
| AH | 40,810 | 188 | 399 | 3.3 | | 807.1 | 807.1 | 807.1 | 0.0 |
| AI | 42,560 | 63 | 253 | 2.6 | | 817.4 | 817.4 | 817.4 | 0.0 |
| AJ | 43,940 | 162 | 226 | 2.9 | | 822.9 | 822.9 | 822.9 | 0.0 |
| AK | 43,997 | 134 | 1,193 | 0.6 | 81 | 826.8 | 826.8 | 826.8 | 0.0 |
| AL | 44,250 | 143 | 497 | 1.3 | | 826.8 | 826.8 | 826.8 | 0.0 |
| AM | 44,529 | 48 | 159 | 4.2 | | 828.6 | 828.6 | 828.6 | 0.0 |
| AN | 44,560 | 56 | 147 | 4.5 | | 828.6 | 828.6 | 828.6 | 0.0 |
| AO | 45,520 | 181 | 410 | 1.6 | | 830.8 | 830.8 | 830.8 | 0.0 |
| AP | 46,320 | 146 | 226 | 2.9 | | 833.1 | 833.1 | 833.1 | 0.0 |
| AQ | 48,210 | 26 | 69 | 9.6 | | 843.2 | 843.2 | 843.2 | 0.0 |
| AR | 48,685 | 138 | 629 | 1.0 | 29 | 848.4 | 848.4 | 848.4 | 0.0 |
| AS | 49,480 | 211 | 679 | 1.0 | | 848.6 | 848.6 | 848.6 | 0.0 |
| AT | 51,145 | 325 | 453 | 1.5 | | 852.1 | 852.1 | 852.1 | 0.0 |
| AU | 51,475 | 372 | 385 | 1.7 | | 853.3 | 853.3 | 853.4 | 0.1 |
| AV | 52,000 | 169 | 372 | 1.8 | 36 | 855.1 | 855.1 | 855.1 | 0.0 |
| AW | 53,169 | 206 | 255 | 2.6 | | 860.6 | 860.6 | 860.6 | 0.0 |
| AX | 53,344 | 235 | 308 | 2.1 | | 861.0 | 861.0 | 861.1 | 0.1 |
| AY | 53,690 | 74 | 114 | 5.8 | | 863.9 | 863.9 | 863.9 | 0.0 |
| AZ | 53,792 | 48 | 343 | 1.9 | | 870.5 | 870.5 | 870.5 | 0.0 |

¹Feet above Confluence with Rouge River

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

FRANKLIN BRANCH

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-----------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| FRANKLIN BRANCH | | | | | | | | | |
| BA | 54,770 | 280 | 1,575 | 0.4 | | 870.6 | 870.6 | 870.6 | 0.0 |
| BB | 55,250 | 155 | 589 | 1.1 | | 870.6 | 870.6 | 870.6 | 0.0 |
| BC | 55,660 | 115 | 253 | 2.6 | | 870.7 | 870.7 | 870.8 | 0.1 |
| BD | 56,010 | 111 | 112 | 3.8 | | 872.0 | 872.0 | 872.0 | 0.0 |
| BE | 56,510 | 115 | 158 | 2.7 | | 874.9 | 874.9 | 874.9 | 0.0 |
| BF | 56,560 | 148 | 913 | 0.5 | 27 | 880.9 | 880.9 | 880.9 | 0.0 |
| BG | 57,190 | 83 | 136 | 3.2 | | 881.7 | 881.7 | 881.7 | 0.0 |
| BH | 58,075 | 15 | 101 | 4.3 | 49 | 886.1 | 886.1 | 886.1 | 0.0 |
| BI | 58,990 | 95 | 181 | 2.4 | 31 | 889.0 | 889.0 | 889.0 | 0.0 |
| BJ | 59,451 | 110 | 376 | 1.1 | 29 | 892.8 | 892.8 | 892.8 | 0.0 |
| BK | 59,510 | 183 | 479 | 0.9 | | 892.8 | 892.8 | 892.8 | 0.0 |
| BL | 59,751 | 112 | 172 | 2.5 | | 893.2 | 893.2 | 893.2 | 0.0 |
| BM | 60,470 | 54 | 224 | 1.9 | 78 | 894.3 | 894.3 | 894.3 | 0.0 |
| BN | 60,650 | 70 | 160 | 2.5 | 74 | 894.6 | 894.6 | 894.6 | 0.0 |
| BO | 60,787 | 224 | 693 | 0.6 | | 899.3 | 899.3 | 899.3 | 0.0 |
| BP | 61,103 | 90 | 393 | 1.1 | | 899.4 | 899.4 | 899.4 | 0.0 |
| BQ | 61,274 | 80 | 340 | 1.3 | | 899.4 | 899.4 | 899.4 | 0.0 |
| BR | 61,330 | 76 | 370 | 1.2 | | 899.4 | 899.4 | 899.4 | 0.0 |
| BS | 61,445 | 95 | 448 | 1.0 | | 899.4 | 899.4 | 899.4 | 0.0 |
| BT | 61,640 | 100 | 355 | 1.2 | | 899.4 | 899.4 | 899.4 | 0.0 |
| BU | 61,715 | 200 | 1,016 | 0.4 | | 899.4 | 899.4 | 899.4 | 0.0 |
| BV | 62,960 | 513 | 962 | 0.4 | | 899.6 | 899.6 | 899.7 | 0.1 |
| BW | 63,082 | 510 | 274 | 1.6 | | 902.1 | 902.1 | 902.1 | 0.0 |
| BX | 63,960 | 270 | 432 | 1.0 | | 902.6 | 902.6 | 902.7 | 0.1 |
| BY | 64,792 | 54 | 311 | 1.4 | | 910.8 | 910.8 | 910.8 | 0.0 |
| BZ | 64,992 | 79 | 216 | 2.0 | 32 | 912.7 | 912.7 | 912.7 | 0.0 |

¹Feet above Confluence with Rouge River

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

FRANKLIN BRANCH

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-----------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| FRANKLIN BRANCH | | | | | | | | | |
| CA | 65,370 | 0 | 102 | 1.2 | 32 | 912.9 | 912.9 | 912.9 | 0.0 |
| CB | 65,570 | 30 | 90 | 1.4 | | 914.3 | 914.3 | 914.3 | 0.0 |
| CC | 65,915 | 21 | 31 | 4.0 | | 915.0 | 915.0 | 915.0 | 0.0 |
| CD | 66,006 | 14 | 23 | 5.3 | | 916.7 | 916.7 | 916.7 | 0.0 |
| CE | 66,560 | 14 | 26 | 2.0 | | 921.1 | 921.1 | 921.1 | 0.0 |
| CF | 66,949 | 38 | 34 | 1.5 | | 923.5 | 923.5 | 923.5 | 0.0 |
| CG | 67,136 | 11 | 16 | 1.1 | | 924.4 | 924.4 | 924.4 | 0.0 |
| CH | 67,230 | 15 | 33 | 0.5 | | 925.4 | 925.4 | 925.4 | 0.0 |
| CI | 69,509 | 11 | 11 | 3.4 | | 928.3 | 928.3 | 928.3 | 0.0 |
| CJ | 69,749 | 10 | 14 | 2.6 | | 930.5 | 930.5 | 930.5 | 0.0 |
| CK | 70,049 | 42 | 40 | 0.9 | | 931.3 | 931.3 | 931.3 | 0.0 |
| CL | 70,499 | 24 | 12 | 3.1 | | 932.7 | 932.7 | 932.7 | 0.0 |
| CM | 70,799 | 19 | 20 | 1.9 | | 934.9 | 934.9 | 934.9 | 0.0 |
| CN | 71,149 | 9 | 74 | 0.5 | 70 | 935.2 | 935.2 | 935.2 | 0.0 |
| CO | 71,899 | 41 | 35 | 0.7 | 36 | 937.7 | 937.7 | 937.7 | 0.0 |
| CP | 72,500 | 10 | 10 | 2.4 | | 941.1 | 941.1 | 941.1 | 0.0 |
| CQ | 72,990 | 8 | 10 | 2.4 | | 944.0 | 944.0 | 944.0 | 0.0 |
| CR | 73,760 | 6 | 4 | 2.3 | | 944.9 | 944.9 | 944.9 | 0.0 |
| CS | 73,885 | 2 | 3 | 3.0 | | 946.0 | 946.0 | 946.0 | 0.0 |
| CT | 74,168 | 8 | 11 | 0.8 | | 948.5 | 948.5 | 948.5 | 0.0 |

¹Feet above Confluence with Rouge River

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

FRANKLIN BRANCH

FLOOD INSURANCE STUDY

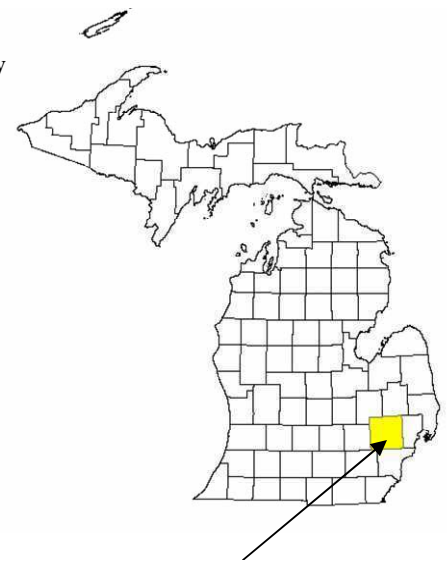
OAKLAND COUNTY, MICHIGAN

ALL JURISDICTIONS

VOLUME 2 OF 5



| Community Name | Community Number | Community Name | Community Number |
|-----------------------------|------------------|-------------------------------------|------------------|
| Addison, Township of | 261029 | Milford, Village of | 260317 |
| Auburn Hills, City of | 260263 | Northville, City of (Wayne/Oakland) | 260235 |
| * Berkley, City of | 260292 | Novi, City of | 260175 |
| Beverly Hills, Village of | 260256 | * Novi, Township of | 261039 |
| Bingham Farms, Village of | 260713 | * Oak Park, City of | 260323 |
| Birmingham, City of | 260168 | Oakland, Township of | 260476 |
| Bloomfield, Township of | 260169 | Orchard Lake Village, City of | 260477 |
| Bloomfield Hills, City of | 260712 | Orion, Township of | 261033 |
| Brandon, Township of | 261031 | Ortonville, Village of | 261034 |
| Clarkston, Village of | 260472 | * Oxford, Township of | 261035 |
| * Clawson, City of | 260170 | * Oxford, Village of | 261036 |
| Commerce, Township of | 260473 | * Pleasant Ridge, City of | 260606 |
| Farmington, City of | 260171 | Pontiac, City of | 260177 |
| Farmington Hills, City of | 260172 | Rochester, City of | 260326 |
| * Ferndale, City of | 260262 | Rochester Hills, City of | 260471 |
| Franklin, Village of | 260325 | Rose, Township of | 260729 |
| Groveland, Township of | 260992 | * Royal Oak, City of | 260178 |
| * Hazel Park, City of | 260289 | * Royal Oak, Township of | 260341 |
| Highland, Township of | 260650 | South Lyon, City of | 261037 |
| Holly, Township of | 260474 | Southfield, City of | 260179 |
| Holly, Village of | 260587 | Southfield, Township of | 260176 |
| * Huntington Woods, City of | 260723 | * Springfield, Township of | 260478 |
| Independence, Township of | 260475 | Sylvan Lake, City of | 260701 |
| Keego Harbor, City of | 260173 | Troy, City of | 260180 |
| Lake Angelus, City of | 260700 | Walled Lake, City of | 260181 |
| Lake Orion, Village of | 260588 | Waterford, Charter Township of | 260284 |
| * Lathrup Village, City of | 260297 | West Bloomfield, Township of | 260182 |
| * Leonard, Village of | 261030 | White Lake, Township of | 260479 |
| Lyon, Township of | 261032 | Wixom, City of | 261038 |
| * Madison Heights, City of | 260174 | Wolverine Lake, Village of | 260480 |
| Milford, Township of | 261040 | * Non Flood Prone | |



Oakland County



SEPTEMBER 29, 2006
Federal Emergency Management Agency

FLOOD INSURANCE STUDY NUMBER
 26125CV002A

NOTICE TO
FLOOD INSURANCE STUDY USERS

Communities participating in the National Flood Insurance Program (NFIP) have established repositories of flood hazard data for floodplain management and flood insurance purposes. This Flood Insurance Study (FIS) report may not contain all data available within the Community Map Repository. It is advisable to contact the Community Map Repository for any additional data.

Part or all of this Flood Insurance Study may be revised and republished at any time. In addition, part of this Flood Insurance Study may be revised by the Letter of Map Revision process, which does not involve republication or redistribution of the Flood Insurance Study. It is, therefore, the responsibility of the user to consult with community officials and to check the community repository to obtain the most current Flood Insurance Study components.

Selected Flood Insurance Rate Map panels for this community contain information that was previously shown separately on the corresponding Flood Boundary and Floodway Map panels (e.g., floodways, cross sections). In addition, former flood hazard zone designations have been changed as follows:

| <u>Old Zones</u> | <u>New Zone</u> |
|------------------|-----------------|
| A1 through A30 | AE |
| B | X |
| C | X |

Countywide FIS Effective Date: September 29, 2006

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PUBLISHED SEPARATELY

- Flood Insurance Rate Map Index
- Flood Insurance Rate Maps

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-----------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| GALLOWAY CREEK | | | | | | | | | |
| A | 0.062 | 216 | 365 | 1.4 | | 814.1 | 814.1 | 814.1 | 0.0 |
| B | 0.237 | 113 | 184 | 2.8 | | 817.4 | 817.4 | 817.4 | 0.0 |
| C | 0.293 | 29 | 99 | 5.2 | | 819.3 | 819.3 | 819.3 | 0.0 |
| D | 0.301 | 23 | 163 | 3.2 | | 820.1 | 820.1 | 820.1 | 0.0 |
| E | 0.595 | 350 | 586 | 0.8 | | 821.6 | 821.6 | 821.6 | 0.0 |
| F | 0.929 | 109 | 216 | 2.3 | | 827.1 | 827.1 | 827.1 | 0.0 |
| G | 0.939 | 117 | 336 | 1.5 | | 828.0 | 828.0 | 828.0 | 0.0 |
| H | 1.280 | 108 | 540 | 1.1 | 410 | 828.7 | 828.7 | 828.7 | 0.0 |
| I | 1.383 | 262 | 507 | 1.3 | 67 | 830.5 | 830.5 | 830.5 | 0.0 |
| J | 1.439 | 291 | 501 | 1.3 | | 831.5 | 831.5 | 831.5 | 0.0 |
| K | 1.562 | 384 | 583 | 1.1 | | 832.9 | 832.9 | 832.9 | 0.0 |
| L | 1.658 | 232 | 256 | 2.6 | 47 | 835.0 | 835.0 | 835.0 | 0.0 |
| M | 1.984 | 230 | 455 | 1.4 | | 839.0 | 839.0 | 839.0 | 0.0 |
| N | 2.015 | 125 | 318 | 2.1 | | 840.8 | 840.8 | 840.8 | 0.0 |
| O | 2.123 | 76 | 190 | 3.4 | | 842.8 | 842.8 | 842.8 | 0.0 |
| P | 2.148 | 17 | 71 | 8.6 | | 843.2 | 843.2 | 843.2 | 0.0 |
| Q | 2.153 | 17 | 77 | 7.9 | | 843.7 | 843.7 | 843.7 | 0.0 |
| R | 2.335 | 169 | 185 | 3.3 | | 848.1 | 848.1 | 848.1 | 0.0 |
| S | 2.512 | 297 | 370 | 1.6 | | 854.5 | 854.5 | 854.5 | 0.0 |
| T | 2.792 | 15 | 382 | 1.6 | 234 | 859.8 | 859.8 | 859.8 | 0.0 |
| U | 2.986 | 164 | 238 | 2.1 | 64 | 865.0 | 865.0 | 865.0 | 0.0 |
| V | 3.084 | 11 | 56 | 9.0 | | 867.4 | 867.4 | 867.4 | 0.0 |
| W | 3.112 | 201 | 384 | 1.3 | 64 | 869.4 | 869.4 | 869.4 | 0.0 |
| X | 3.459 | 129 | 219 | 2.3 | | 876.4 | 876.4 | 876.4 | 0.0 |
| Y | 3.729 | 120 | 293 | 1.7 | 185 | 882.1 | 882.1 | 882.1 | 0.0 |
| Z | 3.941 | 20 | 446 | 1.1 | 198 | 885.3 | 885.3 | 885.3 | 0.0 |

¹Miles above Confluence with Clinton River

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

GALLOWAY CREEK

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-----------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| GALLOWAY CREEK | | | | | | | | | |
| AA | 4.128 | 37 | 308 | 1.6 | 291 | 890.0 | 890.0 | 890.0 | 0.0 |
| AB | 4.256 | 139 | 232 | 2.2 | | 895.1 | 895.1 | 895.1 | 0.0 |
| AC | 4.300 | 15 | 59 | 7.3 | | 896.4 | 896.4 | 896.4 | 0.0 |
| AD | 4.341 | 15 | 86 | 5.0 | | 897.7 | 897.7 | 897.7 | 0.0 |
| AE | 4.383 | 57 | 96 | 4.5 | 48 | 898.4 | 898.4 | 898.4 | 0.0 |
| AF | 4.544 | 32 | 67 | 6.4 | | 903.3 | 903.3 | 903.3 | 0.0 |
| AG | 4.582 | 12 | 81 | 5.3 | | 906.2 | 906.2 | 906.2 | 0.0 |
| AH | 4.610 | 52 | 207 | 2.1 | | 907.0 | 907.0 | 907.0 | 0.0 |
| AI | 4.648 | 11 | 83 | 5.2 | | 908.7 | 908.7 | 908.7 | 0.0 |
| AJ | 5.176 | 516 | 1,869 | 0.3 | | 909.3 | 909.3 | 909.3 | 0.0 |
| AK | 5.311 | 91 | 191 | 3.0 | | 911.7 | 911.7 | 911.7 | 0.0 |
| AL | 5.435 | 37 | 188 | 3.0 | | 913.7 | 913.7 | 913.7 | 0.0 |
| AM | 5.469 | 12 | 103 | 5.5 | | 914.9 | 914.9 | 914.9 | 0.0 |
| AN | 5.615 | 300 | 1,565 | 0.5 | | 915.6 | 915.6 | 915.6 | 0.0 |
| AO | 5.632 | 300 | 1,311 | 0.6 | | 915.6 | 915.6 | 915.6 | 0.0 |
| AP | 5.798 | 31 | 290 | 2.5 | 144 | 915.6 | 915.6 | 915.6 | 0.0 |
| AQ | 5.978 | 127 | 463 | 1.6 | | 918.1 | 918.1 | 918.1 | 0.0 |
| AR | 6.215 | 14 | 268 | 2.7 | 222 | 920.8 | 920.8 | 920.8 | 0.0 |
| AS | 6.229 | 15 | 999 | 0.7 | 176 | 922.6 | 922.6 | 922.6 | 0.0 |
| AT | 6.291 | 300 | 923 | 0.8 | | 922.7 | 922.7 | 922.7 | 0.0 |
| AU | 6.333 | 200 | 662 | 1.1 | | 922.8 | 922.8 | 922.8 | 0.0 |
| AV | 6.392 | 136 | 375 | 1.2 | | 922.9 | 922.9 | 922.9 | 0.0 |
| AW | 6.487 | 96 | 115 | 4.0 | | 924.1 | 924.1 | 924.1 | 0.0 |
| AX | 6.576 | 150 | 304 | 1.5 | | 926.0 | 926.0 | 926.0 | 0.0 |
| AY | 6.670 | 509 | 2,721 | 0.2 | 112 | 926.1 | 926.1 | 926.1 | 0.0 |
| AZ | 6.850 | 18 | 155 | 1.9 | 137 | 926.1 | 926.1 | 926.1 | 0.0 |

¹Miles above Confluence with Clinton River

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

GALLOWAY CREEK

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-----------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| GALLOWAY CREEK | | | | | | | | | |
| BA | 6.988 | 21 | 119 | 2.5 | 60 | 930.7 | 930.7 | 930.7 | 0.0 |
| BB | 7.073 | 4 | 448 | 0.7 | 161 | 938.0 | 938.0 | 938.0 | 0.0 |
| BC | 7.075 | 3 | 488 | 0.7 | 162 | 938.0 | 938.0 | 938.0 | 0.0 |
| BD | 7.079 | 148 | 329 | 0.9 | | 938.0 | 938.0 | 938.0 | 0.0 |
| BE | 7.244 | 26 | 89 | 1.0 | | 938.3 | 938.3 | 938.3 | 0.0 |
| BF | 7.388 | 26 | 65 | 1.3 | | 938.6 | 938.6 | 938.6 | 0.0 |
| BG | 7.410 | 6 | 35 | 2.4 | | 939.6 | 939.6 | 939.6 | 0.0 |
| BH | 7.427 | 25 | 80 | 2.1 | | 939.8 | 939.8 | 943.8 | 0.0 |
| BI | 7.763 | 49 | 180 | 0.9 | | 940.7 | 940.7 | 940.7 | 0.0 |
| BJ | 7.860 | 61 | 133 | 1.2 | | 940.8 | 940.8 | 940.8 | 0.0 |
| BK | 7.974 | 5 | 15 | 11.0 | | 941.2 | 941.2 | 941.2 | 0.0 |
| BL | 8.014 | 67 | 385 | 0.4 | | 943.8 | 943.8 | 943.8 | 0.0 |
| BM | 8.345 | 5 | 38 | 6.2 | | 946.1 | 946.1 | 946.1 | 0.0 |
| BN | 8.358 | 100 | 289 | 0.8 | | 946.9 | 946.9 | 946.9 | 0.0 |

¹Miles above Confluence with Clinton River

**T
A
B
L
E
1
3**

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

GALLOWAY CREEK

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-----------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| GALLOWAY DITCH | | | | | | | | | |
| A | 201 | 160 | 351 | 1.2 | | 922.4 | 922.4 | 922.4 | 0.0 |
| B | 1,102 | 23 | 149 | 2.9 | 64 | 924.1 | 924.1 | 924.1 | 0.0 |
| C | 1,872 | 28 | 93 | 4.7 | | 928.4 | 928.4 | 928.4 | 0.0 |
| D | 1,963 | 66 | 162 | 2.7 | 73 | 931.1 | 931.1 | 931.1 | 0.0 |
| E | 3,283 | 25 | 165 | 2.6 | 86 | 931.9 | 931.9 | 931.9 | 0.0 |
| F | 3,496 | 46 | 176 | 2.5 | 63 | 932.6 | 932.6 | 932.6 | 0.0 |
| G | 4,347 | 783 | 2,759 | 0.2 | | 933.0 | 933.0 | 933.0 | 0.0 |
| H | 4,581 | 668 | 2,534 | 0.2 | | 933.0 | 933.0 | 933.0 | 0.0 |
| I | 4,979 | 338 | 789 | 0.6 | | 933.0 | 933.0 | 933.0 | 0.0 |
| J | 5,677 | 296 | 793 | 0.6 | | 933.0 | 933.0 | 933.0 | 0.0 |
| K | 5,727 | 307 | 994 | 0.5 | | 933.0 | 933.0 | 933.0 | 0.0 |
| L | 6,324 | 130 | 576 | 0.9 | 146 | 933.0 | 933.0 | 933.0 | 0.0 |
| M | 6,569 | 140 | 346 | 1.5 | | 933.0 | 933.0 | 933.0 | 0.0 |
| N | 6,649 | 82 | 508 | 1.0 | 38 | 934.1 | 934.1 | 934.1 | 0.0 |
| O | 6,998 | 10 | 43 | 11.9 | | 934.1 | 934.1 | 934.1 | 0.0 |

¹Feet above Confluence with Galloway Creek

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

GALLOWAY DITCH

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|----------------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| GIBSON-RENSHAW DRAIN | | | | | | | | | |
| A | 0 | 245 | 318 | 2.7 | | 641.2 | 641.2 | 641.2 | 0.0 |
| B | 100 | 246 | 708 | 1.2 | | 641.3 | 641.3 | 641.3 | 0.0 |
| C | 1,100 | 138 | 336 | 2.5 | 12 | 642.1 | 642.1 | 642.2 | 0.1 |
| D | 1,710 | 329 | 796 | 1.1 | | 642.8 | 642.8 | 642.9 | 0.1 |
| E | 1,910 | 350 | 439 | 1.9 | | 643.0 | 643.0 | 643.1 | 0.1 |
| F | 2,050 | 359 | 773 | 1.1 | | 643.1 | 643.1 | 643.2 | 0.1 |
| G | 2,700 | 127 | 517 | 1.6 | | 643.5 | 643.5 | 643.6 | 0.1 |
| H | 2,930 | 38 | 158 | 5.4 | | 644.3 | 644.3 | 644.4 | 0.1 |
| I | 3,062 | 125 | 543 | 1.6 | | 644.6 | 644.6 | 644.7 | 0.1 |
| J | 3,662 | 72 | 352 | 2.4 | | 645.6 | 645.6 | 645.7 | 0.1 |
| K | 3,842 | 60 | 138 | 6.2 | 10 | 645.9 | 645.9 | 646.0 | 0.1 |
| L | 3,947 | 76 | 420 | 2.0 | 8 | 646.1 | 646.1 | 646.2 | 0.1 |
| M | 4,962 | 28 | 165 | 5.2 | | 648.4 | 648.4 | 648.5 | 0.1 |
| N | 6,192 | 204 | 314 | 2.7 | | 651.2 | 651.2 | 651.3 | 0.1 |
| O | 6,847 | 95 | 353 | 2.4 | | 652.7 | 652.7 | 652.8 | 0.1 |
| P | 6,987 | 24 | 152 | 5.6 | | 653.2 | 653.2 | 653.3 | 0.1 |
| Q | 7,112 | 238 | 782 | 1.1 | | 654.0 | 654.0 | 654.1 | 0.1 |
| R | 7,812 | 94 | 281 | 3.0 | | 654.5 | 654.5 | 654.6 | 0.1 |
| S | 7,962 | 27 | 168 | 5.1 | | 655.3 | 655.3 | 655.4 | 0.1 |
| T | 8,112 | 168 | 851 | 1.0 | | 655.7 | 655.7 | 655.8 | 0.1 |
| U | 9,012 | 123 | 651 | 1.3 | | 655.9 | 655.9 | 656.0 | 0.1 |
| V | 9,612 | 99 | 318 | 2.7 | | 656.1 | 656.1 | 656.2 | 0.1 |
| W | 10,662 | 39 | 157 | 5.1 | | 658.1 | 658.1 | 658.1 | 0.0 |
| X | 12,312 | 82 | 283 | 3.0 | | 662.9 | 662.9 | 663.0 | 0.1 |
| Y | 13,612 | 40 | 173 | 4.9 | | 666.9 | 666.9 | 667.0 | 0.1 |
| Z | 14,617 | 96 | 250 | 3.4 | | 670.6 | 670.6 | 670.7 | 0.1 |

¹Feet above City of Troy Corporate Limits

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

GIBSON-RENSHAW DRAIN

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|----------------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| GIBSON-RENSHAW DRAIN | | | | | | | | | |
| AA | 14,792 | 26 | 99 | 8.6 | 20 | 672.5 | 672.5 | 672.6 | 0.1 |
| AB | 15,152 | 78 | 365 | 2.3 | | 673.4 | 673.4 | 673.5 | 0.1 |
| AC | 15,492 | 24 | 152 | 5.6 | | 674.4 | 674.4 | 674.5 | 0.1 |
| AD | 15,647 | 88 | 405 | 2.1 | | 674.7 | 674.7 | 674.8 | 0.1 |
| AE | 15,917 | 79 | 357 | 2.4 | | 675.0 | 675.0 | 675.1 | 0.1 |
| AF | 16,152 | 17 | 110 | 7.7 | | 676.5 | 676.5 | 676.6 | 0.1 |
| AG | 16,287 | 72 | 413 | 2.1 | | 677.2 | 677.2 | 677.3 | 0.1 |
| AH | 16,577 | 70 | 282 | 3.0 | | 677.4 | 677.4 | 677.5 | 0.1 |
| AI | 16,722 | 70 | 281 | 3.0 | | 677.6 | 677.6 | 677.7 | 0.1 |
| AJ | 16,957 | 70 | 768 | 1.1 | | 677.9 | 677.9 | 678.0 | 0.1 |
| AK | 17,342 | 74 | 649 | 1.9 | 6 | 678.1 | 678.1 | 678.2 | 0.1 |
| AL | 17,712 | 40 | 213 | 4.0 | | 678.2 | 678.2 | 678.3 | 0.1 |
| AM | 17,912 | 15 | 110 | 6.0 | | 678.7 | 678.7 | 678.8 | 0.1 |
| AN | 18,002 | 17 | 133 | 5.0 | | 679.3 | 679.3 | 679.4 | 0.1 |
| AO | 18,107 | 33 | 188 | 3.5 | | 679.8 | 679.8 | 679.9 | 0.1 |
| AP | 18,554 | 116 | 702 | 0.9 | | 680.2 | 680.2 | 680.3 | 0.1 |
| AQ | 18,852 | 16 | 92 | 7.2 | | 680.6 | 680.6 | 680.7 | 0.1 |
| AR | 19,427 | 128 | 407 | 1.6 | | 682.4 | 682.4 | 682.5 | 0.1 |
| AS | 19,582 | 101 | 293 | 2.3 | | 682.5 | 682.5 | 682.6 | 0.1 |
| AT | 20,492 | 60 | 213 | 3.1 | | 684.6 | 684.6 | 684.7 | 0.1 |
| AU | 20,682 | 52 | 216 | 3.1 | 685.4 | 685.4 | 685.5 | 0.1 | |
| AV | 22,342 | 439 | 1,925 | 0.3 | 686.4 | 686.4 | 686.5 | 0.1 | |
| AW | 24,192 | 52 | 255 | 3.6 | 12 | 687.0 | 687.0 | 687.1 | 0.1 |
| AX | 24,457 | 76 | 205 | 4.4 | | 689.3 | 689.3 | 689.4 | 0.1 |
| AY | 24,737 | 85 | 519 | 1.8 | | 689.4 | 689.4 | 689.5 | 0.1 |
| AZ | 25,637 | 125 | 841 | 1.1 | | 689.6 | 689.6 | 689.7 | 0.1 |

¹Feet above City of Troy Corporate Limits

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

GIBSON-RENSHAW DRAIN

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|----------------------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| GIBSON-RENSHAW DRAIN BA | 26,712 | 101 | 589 | 1.5 | | 689.9 | 689.9 | 690.0 | 0.1 |

¹Feet above City of Troy Corporate Limits

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

GIBSON-RENSHAW DRAIN

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|---------------------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| GIBSON-RENSHAW WEST DRAIN | | | | | | | | | |
| A | 260 | 150 | 225 | 1.9 | | 681.3 | 681.3 | 681.4 | 0.1 |
| B | 750 | 160 | 180 | 2.4 | | 686.0 | 686.0 | 686.1 | 0.1 |
| C | 1,850 | 100 | 225 | 1.9 | | 694.1 | 694.1 | 694.2 | 0.1 |
| D | 2,350 | 160 | 257 | 1.7 | | 699.9 | 699.9 | 699.9 | 0.0 |
| E | 2,950 | 98 | 153 | 2.8 | | 704.4 | 704.4 | 704.5 | 0.1 |
| F | 3,200 | 10 | 59 | 7.3 | | 708.3 | 708.3 | 708.3 | 0.0 |
| G | 3,280 | 82 | 283 | 1.5 | | 708.9 | 708.9 | 708.9 | 0.0 |
| H | 3,405 | 150 | 142 | 3.0 | | 709.3 | 709.3 | 709.3 | 0.0 |
| I | 3,505 | 115 | 190 | 2.3 | | 709.4 | 709.4 | 709.4 | 0.0 |
| J | 4,000 | 70 | 283 | 1.5 | | 712.6 | 712.6 | 712.7 | 0.1 |
| K | 4,850 | 80 | 97 | 4.4 | | 724.5 | 724.5 | 724.6 | 0.1 |
| L | 5,300 | 79 | 170 | 2.5 | | 727.0 | 727.0 | 727.1 | 0.1 |
| M | 5,620 | 100 | 126 | 3.4 | | 729.4 | 729.4 | 729.5 | 0.1 |
| N | 6,275 | 66 | 115 | 3.7 | | 737.1 | 737.1 | 737.2 | 0.1 |
| O | 6,465 | 20 | 60 | 7.2 | | 741.3 | 741.3 | 741.3 | 0.0 |
| P | 7,920 | 116 | 187 | 2.3 | | 751.9 | 751.9 | 752.0 | 0.1 |

¹Feet above Confluence with Gibson-Renshaw Drain

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

GIBSON-RENSHAW WEST DRAIN

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-----------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| HAMLIN DRAIN | | | | | | | | | |
| A | 80 | 38 | 22 | 2.8 | 44 | 848.4 | 848.4 | 848.4 | 0.0 |
| B | 440 | 16 | 12 | 5.2 | | 851.8 | 851.8 | 851.8 | 0.0 |
| C | 507 | 30 | 81 | 0.8 | | 854.0 | 854.0 | 854.0 | 0.0 |
| D | 727 | 80 | 31 | 2.0 | | 860.4 | 860.4 | 860.4 | 0.0 |
| E | 770 | 90 | 548 | 0.1 | | 860.5 | 860.5 | 860.5 | 0.0 |
| F | 1,020 | 189 | 1,340 | 0.1 | | 866.9 | 866.9 | 866.9 | 0.0 |
| G | 1,320 | 140 | 633 | 0.7 | | 866.9 | 866.9 | 866.9 | 0.0 |
| H | 1,730 | 23 | 65 | 6.6 | | 870.3 | 870.3 | 870.3 | 0.0 |
| I | 2,415 | 18 | 47 | 9.1 | | 870.1 | 870.1 | 870.1 | 0.0 |
| J | 2,470 | 29 | 95 | 4.5 | | 871.8 | 871.8 | 871.8 | 0.0 |

¹Feet above Confluence with Stonycroft Branch

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

HAMLIN DRAIN

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-----------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| HAWTHORN DRAIN | | | | | | | | | |
| A | 25 | 484 | 1,429 | 0.2 | | 629.8 | 629.8 | 629.9 | 0.1 |
| B | 400 | 321 | 544 | 1.0 | | 629.9 | 629.9 | 630.0 | 0.1 |
| C | 865 | 422 | 861 | 0.6 | | 630.0 | 630.0 | 630.1 | 0.1 |
| D | 1,370 | 320 | 541 | 0.9 | | 630.2 | 630.2 | 630.2 | 0.0 |
| E | 2,030 | 219 | 282 | 1.8 | | 630.8 | 630.8 | 630.8 | 0.0 |
| F | 2,430 | 420 | 333 | 1.6 | | 631.6 | 631.6 | 631.6 | 0.0 |
| G | 2,655 | 299 | 721 | 1.5 | | 633.5 | 633.5 | 633.6 | 0.1 |
| H | 3,390 | 274 | 434 | 2.4 | | 633.8 | 633.8 | 633.9 | 0.1 |

¹Feet above Dequindre Road

**TABLE
13**

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

HAWTHORN DRAIN

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-----------------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| HOLLY-PATTERSON DRAIN | | | | | | | | | |
| A | 5,242 | 26 | 49 | 1.9 | 52 | 911.8 | 911.8 | 911.8 | 0.0 |
| B | 5,442 | 53 | 134 | 0.7 | 49 | 911.9 | 911.9 | 911.9 | 0.0 |
| C | 5,582 | 17 | 39 | 1.5 | | 911.9 | 911.9 | 911.9 | 0.0 |
| D | 6,181 | 92 | 262 | 0.2 | | 912.0 | 912.0 | 912.0 | 0.0 |
| E | 8,590 | 4 | 9 | 1.9 | | 912.0 | 912.0 | 912.0 | 0.0 |
| F | 9,452 | 6 | 16 | 1.0 | | 912.7 | 912.7 | 912.7 | 0.0 |
| G | 10,228 | 62 | 71 | 0.3 | | 914.1 | 914.1 | 914.1 | 0.0 |
| H | 11,298 | 3 | 7 | 2.7 | | 914.3 | 914.3 | 914.3 | 0.0 |
| I | 11,951 | 59 | 117 | 0.2 | 27 | 914.5 | 914.5 | 914.5 | 0.0 |

¹Feet above Confluence with Shiawassee River

**T
A
B
L
E
1
3**

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

HOLLY-PATTERSON DRAIN

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-----------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| HOUGHTON DRAIN | | | | | | | | | |
| A | 10,300 | 200 | 370 | 0.6 | | 669.2 | 669.2 | 669.2 | 0.0 |
| B | 10,980 | 186 | 256 | 0.9 | | 672.4 | 672.4 | 672.5 | 0.1 |
| C | 11,220 | 100 | 250 | 1.0 | | 673.1 | 673.1 | 673.2 | 0.1 |
| D | 12,155 | 155 | 278 | 2.0 | | 678.8 | 678.8 | 678.9 | 0.1 |
| E | 13,000 | 168 | 370 | 1.5 | | 680.7 | 680.7 | 680.8 | 0.1 |
| F | 13,300 | 149 | 301 | 1.8 | | 681.1 | 681.1 | 681.2 | 0.1 |
| G | 13,640 | 71 | 253 | 2.2 | | 684.5 | 684.5 | 684.6 | 0.1 |
| H | 14,130 | 123 | 306 | 1.8 | | 685.2 | 685.2 | 685.3 | 0.1 |
| I | 14,605 | 160 | 386 | 1.4 | | 686.0 | 686.0 | 686.1 | 0.1 |

¹Feet above Inlet to Henry Graham Drain

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

HOUGHTON DRAIN

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|---------------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| HOUGHTON DRAIN EAST | | | | | | | | | |
| A | 200 | 38 | 110 | 1.8 | | 637.4 | 636.6 ² | 636.7 | 0.1 |
| B | 400 | 38 | 112 | 1.8 | | 637.4 | 637.1 ² | 637.2 | 0.1 |
| C | 1,200 | 50 | 127 | 1.6 | | 637.8 | 637.8 | 637.9 | 0.1 |

¹Feet above Confluence with Shanahan Drain

²Elevations without considering backwater effect from Shanahan Drain East of Henry Graham Drain

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

HOUGHTON DRAIN EAST

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-----------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| HURON RIVER | | | | | | | | | |
| A | 6,860 | 133 | 1,330 | 0.6 | | 902.5 | 902.5 | 902.6 | 0.1 |
| B | 9,075 | 63 | 345 | 2.3 | | 902.6 | 902.6 | 902.7 | 0.1 |
| C | 9,209 | 69 | 341 | 2.3 | | 903.5 | 903.5 | 903.6 | 0.1 |
| D | 10,386 | 96 | 436 | 1.8 | | 904.1 | 904.1 | 904.1 | 0.0 |
| E | 12,666 | 180 | 977 | 0.8 | | 904.4 | 904.4 | 904.4 | 0.0 |
| F | 14,309 | 83 | 839 | 1.0 | 187 | 904.8 | 904.8 | 904.8 | 0.0 |
| G | 52,541 | 47 | 217 | 0.8 | | 909.5 | 909.5 | 909.5 | 0.0 |
| H | 53,216 | 52 | 246 | 0.7 | | 909.5 | 909.5 | 909.6 | 0.1 |
| I | 53,841 | 49 | 178 | 0.9 | | 909.6 | 909.6 | 909.6 | 0.0 |
| J | 54,487 | 64 | 102 | 3.5 | | 912.4 | 912.4 | 912.4 | 0.0 |
| K | 54,908 | 136 | 317 | 1.0 | | 912.7 | 912.7 | 912.7 | 0.0 |
| L | 55,293 | 59 | 126 | 2.5 | | 912.8 | 912.8 | 912.9 | 0.1 |
| M | 55,833 | 26 | 39 | 5.1 | | 916.9 | 916.9 | 917.0 | 0.1 |
| N | 56,433 | 25 | 35 | 5.7 | | 926.4 | 926.4 | 926.4 | 0.0 |
| O | 56,810 | 21 | 63 | 3.2 | | 928.9 | 928.9 | 928.9 | 0.0 |
| P | 57,011 | 128 | 591 | 0.3 | | 929.1 | 929.1 | 929.1 | 0.0 |
| Q | 57,311 | 135 | 410 | 0.5 | | 929.1 | 929.1 | 929.1 | 0.0 |
| R | 57,936 | 28 | 81 | 2.5 | | 929.1 | 929.1 | 929.1 | 0.0 |
| S | 58,411 | 38 | 124 | 1.6 | | 929.5 | 929.5 | 929.6 | 0.1 |
| T | 58,538 | 74 | 514 | 0.4 | | 930.8 | 930.8 | 930.8 | 0.0 |
| U | 58,788 | 23 | 724 | 0.3 | 88 | 930.8 | 930.8 | 930.8 | 0.0 |
| V | 59,238 | 20 | 207 | 1.0 | 36 | 930.8 | 930.8 | 930.8 | 0.0 |
| W | 59,988 | 389 | 1,158 | 0.2 | 115 | 930.8 | 930.8 | 930.8 | 0.0 |
| X | 60,548 | 37 | 97 | 2.1 | | 932.1 | 932.1 | 932.1 | 0.0 |
| Y | 64,650 | 22 | 77 | 3.1 | | 930.9 | 930.9 | 930.9 | 0.0 |
| Z | 64,769 | 258 | 514 | 0.5 | | 931.2 | 931.2 | 931.2 | 0.0 |

¹Feet above General Motors Road

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

HURON RIVER

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-----------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| HURON RIVER | | | | | | | | | |
| AA | 65,399 | 223 | 528 | 0.5 | 163 | 931.2 | 931.2 | 931.2 | 0.0 |
| AB | 66,044 | 124 | 181 | 1.3 | | 931.3 | 931.3 | 931.3 | 0.0 |
| AC | 66,894 | 234 | 329 | 0.7 | 54 | 931.7 | 931.7 | 931.7 | 0.0 |
| AD | 67,769 | 314 | 365 | 0.7 | | 932.0 | 932.0 | 932.0 | 0.0 |
| AE | 68,334 | 110 | 325 | 0.7 | | 932.0 | 932.0 | 932.0 | 0.0 |
| AF | 68,521 | 19 | 87 | 2.7 | | 932.1 | 932.1 | 932.1 | 0.0 |
| AG | 69,059 | 146 | 679 | 0.4 | 76 | 932.3 | 932.3 | 932.3 | 0.0 |
| AH | 69,829 | 64 | 119 | 2.0 | | 932.3 | 932.3 | 932.3 | 0.0 |
| AI | 69,940 | 19 | 86 | 2.7 | | 932.5 | 932.5 | 932.5 | 0.0 |
| AJ | 70,284 | 150 | 399 | 0.6 | 50 | 932.8 | 932.8 | 932.8 | 0.0 |
| AK | 71,119 | 125 | 304 | 0.8 | 55 | 933.0 | 933.0 | 933.0 | 0.0 |
| AL | 71,899 | 230 | 533 | 0.4 | 115 | 933.2 | 933.2 | 933.2 | 0.0 |
| AM | 72,899 | 59 | 240 | 1.0 | 27 | 933.4 | 933.4 | 933.4 | 0.0 |
| AN | 73,082 | 23 | 117 | 1.9 | | 933.4 | 933.4 | 933.4 | 0.0 |
| AO | 73,839 | 265 | 490 | 0.5 | 58 | 933.7 | 933.7 | 933.7 | 0.0 |
| AP | 75,104 | 125 | 327 | 0.7 | 35 | 933.8 | 933.8 | 933.8 | 0.0 |
| AQ | 76,225 | 742 | 1,123 | 0.2 | 39 | 933.9 | 933.9 | 933.9 | 0.0 |
| AR | 76,524 | 782 | 1,367 | 0.2 | | 933.9 | 933.9 | 933.9 | 0.0 |
| AS | 77,124 | 349 | 1,372 | 0.1 | 670 | 933.9 | 933.9 | 933.9 | 0.0 |
| AT | 78,934 | 128 | 285 | 0.5 | 113 | 933.9 | 933.9 | 933.9 | 0.0 |
| AU | 80,069 | 242 | 598 | 0.2 | 307 | 934.0 | 934.0 | 934.0 | 0.0 |
| AV | 81,284 | 9 | 33 | 4.1 | | 934.4 | 934.4 | 934.4 | 0.0 |
| AW | 81,311 | 26 | 90 | 1.5 | | 935.0 | 935.0 | 935.0 | 0.0 |
| AX | 87,389 | 43 | 318 | 0.4 | 190 | 935.0 | 935.0 | 935.0 | 0.0 |
| AY | 88,094 | 53 | 111 | 1.3 | | 935.1 | 935.1 | 935.1 | 0.0 |
| AZ | 88,213 | 15 | 52 | 2.7 | | 936.2 | 936.2 | 936.2 | 0.0 |

¹Feet above General Motors Road

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

HURON RIVER

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-----------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| HURON RIVER | | | | | | | | | |
| BA | 88,844 | 451 | 984 | 0.1 | | 936.4 | 936.4 | 936.4 | 0.0 |
| BB | 89,559 | 307 | 464 | 0.3 | 98 | 936.4 | 936.4 | 936.4 | 0.0 |
| BC | 90,264 | 44 | 147 | 1.0 | | 936.5 | 936.5 | 936.5 | 0.0 |
| BD | 90,346 | 16 | 64 | 2.2 | | 936.5 | 936.5 | 936.5 | 0.0 |
| BE | 91,064 | 359 | 466 | 0.3 | | 936.7 | 936.7 | 936.7 | 0.0 |
| BF | 92,644 | 27 | 78 | 1.8 | | 937.0 | 937.0 | 937.0 | 0.0 |
| BG | 92,808 | 6 | 15 | 9.3 | | 937.3 | 937.3 | 937.3 | 0.0 |
| BH | 93,202 | 129 | 753 | 0.2 | | 943.9 | 943.9 | 943.9 | 0.0 |
| BI | 93,477 | 16 | 55 | 2.6 | | 943.9 | 943.9 | 943.9 | 0.0 |
| BJ | 96,808 | 284 | 1,105 | 0.1 | | 943.9 | 943.9 | 943.9 | 0.0 |
| BK | 97,350 | 19 | 57 | 2.5 | | 943.9 | 943.9 | 943.9 | 0.0 |
| BL | 97,433 | 155 | 571 | 0.3 | 30 | 944.2 | 944.2 | 944.2 | 0.0 |
| BM | 98,533 | 415 | 863 | 0.2 | | 944.3 | 944.3 | 944.3 | 0.0 |
| BN | 100,783 | 179 | 569 | 0.3 | 114 | 944.3 | 944.3 | 944.3 | 0.0 |
| BO | 102,953 | 199 | 458 | 0.3 | | 944.4 | 944.4 | 944.4 | 0.0 |
| BP | 105,503 | 46 | 156 | 0.9 | 55 | 944.5 | 944.5 | 944.5 | 0.0 |
| BQ | 107,963 | 215 | 525 | 0.3 | 152 | 944.8 | 944.8 | 944.8 | 0.0 |
| BR | 109,963 | 46 | 109 | 1.3 | | 945.1 | 945.1 | 945.1 | 0.0 |
| BS | 110,142 | 16 | 48 | 2.9 | | 945.2 | 945.2 | 945.2 | 0.0 |
| BT | 110,768 | 28 | 200 | 0.7 | 272 | 945.9 | 945.9 | 945.9 | 0.0 |
| BU | 112,193 | 68 | 617 | 0.4 | 415 | 946.2 | 946.2 | 946.2 | 0.0 |
| BV | 112,783 | 40 | 205 | 0.7 | 378 | 946.3 | 946.3 | 946.3 | 0.0 |
| BW | 113,513 | 69 | 91 | 1.5 | | 946.8 | 946.8 | 946.8 | 0.0 |
| BX | 115,043 | 61 | 86 | 1.6 | | 948.7 | 948.7 | 948.7 | 0.0 |
| BY | 115,613 | 21 | 98 | 1.4 | 40 | 949.4 | 949.4 | 949.4 | 0.0 |
| BZ | 115,759 | 10 | 22 | 6.4 | | 950.3 | 950.3 | 950.3 | 0.0 |

¹Feet above General Motors Road

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

HURON RIVER

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-------------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| HURON RIVER CA | 115,767 | 26 | 80 | 1.8 | | 951.4 | 951.4 | 951.4 | 0.0 |

¹Feet above General Motors Road

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

HURON RIVER

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|---------------------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| HURON RIVER - WEST BRANCH | | | | | | | | | |
| A | 250 | 2 | 147 | 1.3 | 39 | 909.5 | 909.5 | 909.5 | 0.0 |
| B | 840 | 41 | 163 | 1.2 | | 909.6 | 909.6 | 909.6 | 0.0 |
| C | 1,090 | 50 | 146 | 1.3 | | 909.6 | 909.6 | 909.7 | 0.1 |

¹Feet above Confluence with North Commerce Lake

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

HURON RIVER - WEST BRANCH

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-----------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| INGERSOL CREEK | | | | | | | | | |
| A | 1,420 | 64 | 543 | 1.7 | 237 | 840.3 | 840.3 | 840.4 | 0.1 |
| B | 2,390 | 44 | 348 | 2.3 | 75 | 841.7 | 841.7 | 841.8 | 0.1 |
| C | 3,379 | 134 | 399 | 2.1 | | 843.3 | 843.3 | 843.4 | 0.1 |
| D | 3,780 | 29 | 161 | 5.0 | 35 | 843.6 | 843.6 | 843.7 | 0.1 |
| E | 4,601 | 38 | 192 | 4.2 | | 846.8 | 846.8 | 846.9 | 0.1 |
| F | 4,995 | 33 | 283 | 2.8 | 145 | 847.6 | 847.6 | 847.7 | 0.1 |
| G | 5,801 | 325 | 961 | 0.8 | | 851.7 | 851.7 | 851.8 | 0.1 |
| H | 6,675 | 94 | 490 | 1.6 | 56 | 852.4 | 852.4 | 852.5 | 0.1 |
| I | 7,843 | 150 | 1,063 | 0.8 | | 857.6 | 857.6 | 857.7 | 0.1 |
| J | 8,224 | 180 | 968 | 0.8 | | 857.6 | 857.6 | 857.7 | 0.1 |
| K | 8,887 | 206 | 396 | 2.0 | | 857.6 | 857.6 | 857.6 | 0.0 |
| L | 9,285 | 262 | 793 | 1.0 | 103 | 857.9 | 857.9 | 857.9 | 0.0 |
| M | 9,437 | 178 | 844 | 0.9 | 84 | 857.9 | 857.9 | 857.9 | 0.0 |
| N | 10,017 | 66 | 316 | 2.5 | | 858.0 | 858.0 | 858.0 | 0.0 |
| O | 10,418 | 14 | 110 | 3.3 | | 858.0 | 858.0 | 858.0 | 0.0 |

¹Feet above Confluence with Meadowbrook Lake

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

INGERSOL CREEK

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-----------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| KEARSLEY CREEK | | | | | | | | | |
| A | 1,425 | 44 | 177 | 3.5 | | 924.2 | 924.2 | 924.3 | 0.1 |
| B | 2,626 | 53 | 189 | 3.3 | | 926.6 | 926.6 | 926.6 | 0.0 |
| C | 4,759 | 45 | 160 | 3.9 | | 928.8 | 928.8 | 928.9 | 0.1 |
| D | 6,350 | 110 | 181 | 2.7 | | 932.7 | 932.7 | 932.8 | 0.1 |
| E | 9,623 | 32 | 108 | 4.5 | | 940.8 | 940.8 | 940.9 | 0.1 |

¹Feet above Village of Ortonville Corporate Limit

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

KEARSLEY CREEK

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-----------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| LANE DRAIN | | | | | | | | | |
| A | 600 | 130 | 271 | 1.7 | | 664.9 | 664.9 | 664.9 | 0.0 |
| B | 885 | 240 | 178 | 2.5 | | 665.8 | 665.8 | 665.8 | 0.0 |
| C | 1,000 | 240 | 571 | 0.8 | | 665.9 | 665.9 | 665.9 | 0.0 |
| D | 1,045 | 185 | 541 | 0.8 | | 665.9 | 665.9 | 665.9 | 0.0 |
| E | 1,307 | 200 | 185 | 2.4 | | 666.5 | 666.5 | 666.5 | 0.0 |
| F | 1,397 | 150 | 262 | 1.7 | | 666.5 | 666.5 | 666.5 | 0.0 |
| G | 1,825 | 70 | 186 | 2.4 | | 666.9 | 666.9 | 666.9 | 0.0 |
| H | 1,950 | 115 | 133 | 3.4 | | 667.6 | 667.6 | 667.6 | 0.0 |
| I | 2,025 | 50 | 187 | 2.4 | | 667.6 | 667.6 | 667.6 | 0.0 |
| J | 3,490 | 54 | 181 | 2.5 | | 668.6 | 668.6 | 668.6 | 0.0 |
| K | 3,675 | 12 | 69 | 6.5 | | 669.5 | 669.5 | 669.6 | 0.1 |
| L | 3,795 | 36 | 185 | 2.4 | | 670.6 | 670.6 | 670.7 | 0.1 |
| M | 4,408 | 41 | 197 | 2.3 | | 674.5 | 674.5 | 674.6 | 0.1 |

¹Feet above Confluence with Sturgis Drain

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

LANE DRAIN

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-------------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| LEAVENWORTH CREEK | | | | | | | | | |
| A | 620 | 15 | 41 | 6.0 | | 898.6 | 898.6 | 898.7 | 0.1 |
| B | 2,285 | 23 | 48 | 5.1 | | 906.7 | 906.7 | 906.7 | 0.0 |

¹Feet above Confluence with Walled Lake Branch

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

LEAVENWORTH CREEK

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-------------------------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| LONG LAKE - FOREST LAKE DRAIN | | | | | | | | | |
| A | 170 | 188 | 534 | 1.3 | | 807.4 | 807.4 | 807.4 | 0.0 |
| B | 550 | 91 | 162 | 4.4 | | 807.5 | 807.5 | 807.5 | 0.0 |
| C | 1,060 | 203 | 390 | 1.8 | 66 | 809.7 | 809.7 | 809.7 | 0.0 |
| D | 1,237 | 206 | 323 | 2.2 | | 811.2 | 811.2 | 811.2 | 0.0 |
| E | 1,290 | 237 | 657 | 1.1 | | 811.5 | 811.5 | 811.5 | 0.0 |
| F | 1,790 | 358 | 1,019 | 0.7 | 78 | 811.7 | 811.7 | 811.7 | 0.0 |
| G | 2,350 | 222 | 336 | 2.1 | 128 | 813.0 | 813.0 | 813.0 | 0.0 |
| H | 2,556 | 357 | 668 | 1.1 | | 815.8 | 815.8 | 815.8 | 0.0 |
| I | 2,610 | 297 | 1,357 | 0.5 | 103 | 815.9 | 815.9 | 815.9 | 0.0 |
| J | 3,490 | 322 | 829 | 0.9 | | 815.9 | 815.9 | 815.9 | 0.0 |
| K | 4,399 | 222 | 450 | 1.1 | 126 | 816.6 | 816.6 | 816.6 | 0.0 |
| L | 4,678 | 72 | 271 | 1.8 | 181 | 818.0 | 818.0 | 818.0 | 0.0 |
| M | 5,430 | 37 | 128 | 3.8 | 69 | 819.3 | 819.3 | 819.3 | 0.0 |
| N | 6,000 | 22 | 71 | 6.8 | | 824.0 | 824.0 | 824.0 | 0.0 |
| O | 6,196 | 129 | 308 | 1.6 | 47 | 829.6 | 829.6 | 829.6 | 0.0 |
| P | 6,211 | 46 | 331 | 1.5 | 133 | 829.7 | 829.7 | 829.7 | 0.0 |
| Q | 6,243 | 156 | 548 | 0.9 | | 829.8 | 829.8 | 829.8 | 0.0 |
| R | 6,440 | 154 | 404 | 1.2 | 57 | 829.8 | 829.8 | 829.8 | 0.0 |
| S | 6,960 | 176 | 263 | 1.8 | | 834.1 | 834.1 | 834.1 | 0.0 |
| T | 7,096 | 156 | 373 | 1.3 | 53 | 837.6 | 837.6 | 837.6 | 0.0 |
| U | 7,150 | 147 | 464 | 1.1 | | 837.8 | 837.8 | 837.8 | 0.0 |
| V | 7,233 | 79 | 499 | 1.0 | | 843.4 | 843.4 | 843.4 | 0.0 |
| W | 8,074 | 56 | 98 | 5.0 | | 844.1 | 844.1 | 844.1 | 0.0 |
| X | 8,414 | 113 | 117 | 4.2 | | 848.3 | 848.3 | 848.3 | 0.0 |
| Y | 9,064 | 85 | 105 | 4.6 | | 855.5 | 855.5 | 855.5 | 0.0 |
| Z | 9,214 | 76 | 87 | 5.6 | | 857.7 | 857.7 | 857.7 | 0.0 |

¹Feet above Confluence with Quarton Branch

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

LONG LAKE - FOREST LAKE DRAIN

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-------------------------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| LONG LAKE - FOREST LAKE DRAIN | | | | | | | | | |
| AA | 9,244 | 250 | 342 | 0.8 | | 858.0 | 858.0 | 858.1 | 0.1 |
| AB | 9,639 | 95 | 157 | 1.7 | | 861.7 | 861.7 | 861.8 | 0.1 |
| AC | 9,689 | 81 | 167 | 1.6 | | 861.8 | 861.8 | 861.9 | 0.1 |
| AD | 9,844 | 13 | 26 | 10.5 | | 865.4 | 865.4 | 865.4 | 0.0 |
| AE | 9,989 | 116 | 136 | 2.0 | | 867.3 | 867.3 | 867.4 | 0.1 |
| AF | 10,254 | 71 | 128 | 2.1 | | 868.9 | 868.9 | 869.0 | 0.1 |
| AG | 10,284 | 70 | 337 | 0.8 | | 870.8 | 870.8 | 870.9 | 0.1 |
| AH | 10,389 | 90 | 171 | 1.6 | | 870.9 | 870.9 | 871.0 | 0.1 |
| AI | 10,789 | 23 | 171 | 1.6 | 42 | 872.4 | 872.4 | 872.5 | 0.1 |
| AJ | 10,889 | 17 | 171 | 1.6 | 43 | 872.6 | 872.6 | 872.7 | 0.1 |
| AK | 10,989 | 12 | 69 | 3.9 | 38 | 873.2 | 873.2 | 873.2 | 0.0 |
| AL | 11,089 | 12 | 122 | 2.2 | | 881.7 | 881.7 | 881.8 | 0.1 |
| AM | 11,174 | 71 | 435 | 0.6 | | 881.8 | 881.8 | 881.9 | 0.1 |
| AN | 11,354 | 12 | 164 | 1.2 | | 889.2 | 889.2 | 889.3 | 0.1 |
| AO | 11,454 | 249 | 2,384 | 0.1 | | 889.2 | 889.2 | 889.3 | 0.1 |
| AP | 11,964 | 98 | 716 | 0.3 | | 889.2 | 889.2 | 889.3 | 0.1 |
| AQ | 11,989 | 106 | 515 | 0.4 | | 889.2 | 889.2 | 889.3 | 0.1 |
| AR | 12,414 | 116 | 863 | 0.2 | | 889.2 | 889.2 | 889.3 | 0.1 |
| AS | 12,714 | 105 | 638 | 0.3 | 38 | 889.2 | 889.2 | 889.3 | 0.1 |
| AT | 12,769 | 56 | 281 | 0.7 | | 889.2 | 889.2 | 889.3 | 0.1 |
| AU | 12,889 | 14 | 64 | 3.0 | | 890.3 | 890.3 | 890.4 | 0.1 |
| AV | 12,974 | 68 | 336 | 0.6 | | 890.5 | 890.5 | 890.6 | 0.1 |
| AW | 13,994 | 31 | 46 | 4.2 | | 893.9 | 893.9 | 893.9 | 0.0 |
| AX | 14,904 | 240 | 342 | 0.6 | | 896.4 | 896.4 | 896.5 | 0.1 |
| AY | 15,214 | 160 | 108 | 1.2 | | 898.7 | 898.7 | 898.8 | 0.1 |
| AZ | 15,289 | 170 | 41 | 3.2 | | 900.2 | 900.2 | 900.3 | 0.1 |

¹Feet above Confluence with Quarton Branch

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

LONG LAKE - FOREST LAKE DRAIN

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-------------------------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| LONG LAKE - FOREST LAKE DRAIN | | | | | | | | | |
| BA | 15,814 | 28 | 54 | 2.4 | | 901.2 | 901.2 | 901.3 | 0.1 |
| BB | 16,039 | 18 | 88 | 1.5 | | 905.1 | 905.1 | 905.2 | 0.1 |
| BC | 16,489 | 90 | 391 | 0.3 | | 905.1 | 905.1 | 905.2 | 0.1 |
| BD | 16,739 | 50 | 94 | 1.4 | | 905.2 | 905.2 | 905.3 | 0.1 |
| BE | 17,264 | 17 | 34 | 3.8 | | 906.3 | 906.3 | 906.3 | 0.0 |
| BF | 17,604 | 43 | 97 | 1.3 | | 906.9 | 906.9 | 906.9 | 0.0 |
| BG | 18,289 | 41 | 86 | 1.5 | | 907.3 | 907.3 | 907.4 | 0.1 |
| BH | 18,989 | 70 | 156 | 0.8 | | 907.8 | 907.8 | 907.9 | 0.1 |
| BI | 19,244 | 24 | 86 | 0.7 | | 909.3 | 909.3 | 909.4 | 0.1 |
| BJ | 19,424 | 48 | 90 | 0.6 | 27 | 909.3 | 909.3 | 909.4 | 0.1 |
| BK | 19,964 | 277 | 931 | 0.1 | | 909.3 | 909.3 | 909.4 | 0.1 |
| BL | 20,789 | 76 | 277 | 0.2 | 34 | 909.3 | 909.3 | 909.4 | 0.1 |
| BM | 21,104 | 48 | 277 | 0.2 | 72 | 909.3 | 909.3 | 909.4 | 0.1 |
| BN | 21,169 | 44 | 261 | 0.2 | 72 | 909.3 | 909.3 | 909.4 | 0.1 |
| BO | 21,304 | 67 | 226 | 0.3 | 33 | 909.3 | 909.3 | 909.4 | 0.1 |
| BP | 21,584 | 16 | 111 | 0.5 | 32 | 909.3 | 909.3 | 909.4 | 0.1 |
| BQ | 21,694 | 27 | 143 | 0.4 | 28 | 909.3 | 909.3 | 909.4 | 0.1 |
| BR | 21,739 | 26 | 143 | 0.4 | 36 | 909.3 | 909.3 | 909.4 | 0.1 |
| BS | 22,274 | 300 | 739 | 0.1 | | 909.5 | 909.5 | 909.6 | 0.1 |
| BT | 22,329 | 309 | 739 | 0.1 | | 909.5 | 909.5 | 909.6 | 0.1 |
| BU | 22,624 | 150 | 375 | 0.3 | | 910.5 | 910.5 | 910.6 | 0.1 |
| BV | 23,214 | 110 | 150 | 0.4 | | 910.6 | 910.6 | 910.7 | 0.1 |

¹Feet above Confluence with Qarton Branch

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

LONG LAKE - FOREST LAKE DRAIN

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|--------------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| MAIN RAVINES DRAIN | | | | | | | | | |
| A | 304 | 154 | 1,218 | 0.9 | | 633.0 | 633.0 | 633.1 | 0.1 |
| B | 424 | 125 | 909 | 1.0 | | 633.0 | 633.0 | 633.1 | 0.1 |
| C | 3,056 | 104 | 243 | 3.8 | | 636.8 | 636.8 | 636.8 | 0.0 |
| D | 4,789 | 255 | 182 | 4.3 | | 640.9 | 640.9 | 641.0 | 0.1 |
| E | 6,579 | 42 | 151 | 5.2 | | 655.7 | 655.7 | 655.7 | 0.0 |
| F | 7,679 | 150 | 358 | 2.2 | | 660.8 | 660.8 | 660.8 | 0.0 |
| G | 8,464 | 150 | 580 | 1.0 | | 666.3 | 666.3 | 666.3 | 0.0 |
| H | 10,329 | 53 | 125 | 4.8 | | 675.1 | 675.1 | 675.1 | 0.0 |
| I | 12,002 | 48 | 131 | 4.6 | | 686.4 | 686.4 | 686.4 | 0.0 |

¹Feet above City of Farmington Hills Corporate Limit

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

MAIN RAVINES DRAIN

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|--------------------------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| MAIN RAVINES DRAIN TRIBUTARY A | | | | | | | | | |
| A | 62 | 35 | 78 | 6.5 | | 640.6 | 640.6 | 640.7 | 0.1 |
| B | 259 | 80 | 1,060 | 0.5 | | 654.7 | 654.7 | 654.7 | 0.0 |
| C | 2,080 | 49 | 80 | 6.4 | | 656.4 | 656.4 | 656.4 | 0.0 |
| D | 2,740 | 30 | 57 | 8.0 | | 664.5 | 664.5 | 664.5 | 0.0 |
| E | 3,817 | 33 | 81 | 5.7 | | 669.2 | 669.2 | 669.3 | 0.1 |
| F | 4,465 | 80 | 207 | 1.9 | | 676.6 | 676.6 | 676.6 | 0.0 |
| G | 5,535 | 39 | 150 | 2.8 | | 682.0 | 682.0 | 682.0 | 0.0 |
| H | 6,159 | 89 | 115 | 3.7 | 31 | 686.4 | 686.4 | 686.4 | 0.0 |

¹Feet above Confluence with Main Ravines Drain

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

MAIN RAVINES DRAIN TRIBUTARY A

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|--------------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| MAIN RAVINES DRAIN | TRIBUTARY B | | | | | | | | |
| A | 50 | 80 | 366 | 0.4 | | 666.3 | 666.3 | 666.4 | 0.1 |
| B | 4,272 | 13 | 14 | 5.8 | | 702.0 | 702.0 | 702.0 | 0.0 |

¹Feet above Confluence with Main Ravines Drain

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

MAIN RAVINES DRAIN TRIBUTARY B

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|--------------------------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| MAIN RAVINES DRAIN TRIBUTARY C | | | | | | | | | |
| A | 380 | 80 | 421 | 1.4 | | 633.0 | 633.0 | 633.1 | 0.1 |
| B | 4,391 | 50 | 109 | 5.6 | | 648.9 | 648.9 | 648.9 | 0.0 |
| C | 5,795 | 47 | 103 | 5.7 | | 657.3 | 657.3 | 657.3 | 0.0 |
| D | 7,513 | 111 | 125 | 4.7 | | 668.8 | 668.8 | 668.8 | 0.0 |
| E | 10,767 | 29 | 64 | 7.6 | | 689.6 | 689.6 | 689.6 | 0.0 |
| F | 11,056 | 88 | 261 | 1.9 | | 695.2 | 695.2 | 695.2 | 0.0 |
| G | 11,477 | 134 | 110 | 3.6 | | 697.0 | 697.0 | 697.0 | 0.0 |
| H | 12,870 | 2 | 83 | 4.7 | 44 | 705.4 | 705.4 | 705.4 | 0.0 |
| I | 13,866 | 20 | 45 | 8.6 | | 715.8 | 715.8 | 715.8 | 0.0 |

¹Feet above Confluence with Main Ravines Drain

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

MAIN RAVINES DRAIN TRIBUTARY C

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-----------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| MCCLURE DRAIN | | | | | | | | | |
| A | 350 | 200 | 947 | 0.3 | | 805.5 | 805.5 | 805.5 | 0.0 |
| B | 950 | 25 | 64 | 3.4 | | 805.8 | 805.8 | 805.8 | 0.0 |
| C | 1,200 | 30 | 51 | 4.3 | | 809.2 | 809.2 | 809.2 | 0.0 |
| D | 1,700 | 100 | 89 | 3.3 | | 812.6 | 812.6 | 812.6 | 0.0 |
| E | 4,655 | 11 | 128 | 3.0 | 254 | 825.8 | 825.8 | 825.8 | 0.0 |
| F | 5,850 | 80 | 199 | 1.1 | | 840.5 | 840.5 | 840.5 | 0.0 |
| G | 6,350 | 190 | 200 | 1.9 | | 841.3 | 841.3 | 841.3 | 0.0 |
| H | 6,990 | 3 | 65 | 3.6 | 27 | 847.7 | 847.7 | 847.7 | 0.0 |
| I | 7,550 | 40 | 64 | 1.5 | | 855.2 | 855.2 | 855.2 | 0.0 |
| J | 8,950 | 12 | 36 | 2.6 | 50 | 867.2 | 867.2 | 867.2 | 0.0 |
| K | 9,750 | 11 | 75 | 1.3 | 49 | 875.7 | 875.7 | 875.7 | 0.0 |
| L | 10,050 | 0 | 420 | 0.2 | 15 | 881.5 | 881.5 | 881.5 | 0.0 |
| M | 10,150 | 70 | 127 | 1.2 | | 881.6 | 881.6 | 881.6 | 0.0 |
| N | 10,535 | 10 | 25 | 3.8 | | 882.9 | 882.9 | 882.9 | 0.0 |
| O | 10,595 | 70 | 71 | 2.9 | | 883.4 | 883.4 | 883.4 | 0.0 |
| P | 11,695 | 140 | 123 | 1.4 | | 887.1 | 887.1 | 887.1 | 0.0 |
| Q | 11,965 | 30 | 30 | 3.2 | | 890.5 | 890.5 | 890.5 | 0.0 |
| R | 12,160 | 180 | 280 | 0.3 | | 894.1 | 894.1 | 894.1 | 0.0 |
| S | 12,255 | 180 | 72 | 1.4 | | 894.1 | 894.1 | 894.1 | 0.0 |
| T | 12,295 | 180 | 180 | 0.6 | | 894.1 | 894.1 | 894.1 | 0.0 |
| U | 12,805 | 110 | 162 | 1.0 | | 894.5 | 894.5 | 894.5 | 0.0 |
| V | 14,500 | 240 | 220 | 0.5 | | 897.7 | 897.7 | 897.7 | 0.0 |
| W | 15,055 | 180 | 695 | 0.1 | | 897.7 | 897.7 | 897.7 | 0.0 |
| X | 16,255 | 285 | 323 | 0.3 | | 898.2 | 898.2 | 898.2 | 0.0 |

¹Feet above Confluence with Stony Creek Lake

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

MCCLURE DRAIN

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|--------------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| MIDDLE RIVER ROUGE | | | | | | | | | |
| A | 7,319 | 260 | 1,505 | 1.2 | | 811.4 | 811.4 | 811.4 | 0.0 |
| B | 7,912 | 0 | 231 | 7.9 | 27 | 814.4 | 814.4 | 814.4 | 0.0 |
| C | 7,956 | 27 | 326 | 5.6 | | 818.0 | 818.0 | 818.0 | 0.0 |
| D | 8,547 | 0 | 283 | 6.4 | 48 | 818.5 | 818.5 | 818.5 | 0.0 |
| E | 8,802 | 48 | 292 | 6.2 | | 819.0 | 819.0 | 819.0 | 0.0 |
| F | 9,742 | 461 | 2,370 | 0.9 | | 822.1 | 822.1 | 822.1 | 0.0 |

¹Feet above City of Northville Corporate Limits (Wayne County)

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

MIDDLE RIVER ROUGE

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-----------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| MILL LAKE | | | | | | | | | |
| A | 1,650 | 247 | 232 | 0.4 | | 980.2 | 980.2 | 980.3 | 0.1 |
| B | 4,991 | 45 | 94 | 0.9 | | 981.4 | 981.4 | 981.5 | 0.1 |
| C | 9,032 | 30 | 38 | 1.5 | | 983.2 | 983.2 | 983.3 | 0.1 |

¹Feet above Township of Orion Corporate Limit

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

MILL LAKE

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-------------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| MINNOW POND DRAIN | | | | | | | | | |
| A | 1,380 | 123 | 404 | 4.0 | 75 | 770.5 | 770.5 | 770.6 | 0.1 |
| B | 1,680 | 120 | 313 | 5.1 | 53 | 773.9 | 773.9 | 773.9 | 0.0 |
| C | 2,080 | 212 | 491 | 3.3 | | 777.7 | 777.7 | 777.7 | 0.0 |
| D | 2,380 | 172 | 394 | 4.1 | | 779.2 | 779.2 | 779.2 | 0.0 |
| E | 3,191 | 191 | 653 | 2.4 | | 788.1 | 788.1 | 788.1 | 0.0 |
| F | 3,781 | 16 | 426 | 3.8 | 136 | 790.4 | 790.4 | 790.4 | 0.0 |
| G | 4,451 | 27 | 437 | 3.7 | 118 | 794.0 | 794.0 | 794.0 | 0.0 |
| H | 5,551 | 25 | 611 | 2.6 | 201 | 798.5 | 798.5 | 798.5 | 0.0 |
| I | 6,001 | 17 | 366 | 4.4 | 130 | 801.9 | 801.9 | 801.9 | 0.0 |
| J | 6,666 | 19 | 454 | 3.5 | 130 | 806.5 | 806.5 | 806.5 | 0.0 |
| K | 7,586 | 22 | 496 | 3.2 | 129 | 810.3 | 810.3 | 810.3 | 0.0 |
| L | 8,506 | 137 | 423 | 3.8 | | 813.9 | 813.9 | 813.9 | 0.0 |
| M | 9,070 | 31 | 247 | 4.0 | | 821.2 | 821.2 | 821.2 | 0.0 |
| N | 11,141 | 115 | 555 | 1.8 | | 823.4 | 823.4 | 823.5 | 0.1 |
| O | 11,711 | 108 | 304 | 3.2 | | 824.0 | 824.0 | 824.1 | 0.1 |
| P | 12,196 | 27 | 199 | 4.9 | | 827.7 | 827.7 | 827.7 | 0.0 |
| Q | 12,823 | 224 | 1,359 | 0.7 | | 828.7 | 828.7 | 828.7 | 0.0 |
| R | 13,507 | 151 | 580 | 1.7 | | 829.0 | 829.0 | 829.0 | 0.0 |
| S | 14,685 | 186 | 524 | 1.9 | | 831.1 | 831.1 | 831.1 | 0.0 |
| T | 15,197 | 124 | 360 | 2.7 | | 831.9 | 831.9 | 832.0 | 0.1 |
| U | 15,655 | 31 | 245 | 4.0 | | 835.8 | 835.8 | 835.8 | 0.0 |
| V | 16,738 | 233 | 1,045 | 0.9 | 37 | 836.9 | 836.9 | 837.0 | 0.1 |
| W | 18,447 | 47 | 240 | 2.0 | | 839.9 | 839.9 | 839.9 | 0.0 |
| X | 20,151 | 49 | 173 | 2.8 | | 842.9 | 842.9 | 842.9 | 0.0 |
| Y | 20,631 | 31 | 84 | 5.7 | | 844.4 | 844.4 | 844.4 | 0.0 |
| Z | 21,737 | 42 | 180 | 2.7 | | 848.5 | 848.5 | 848.6 | 0.1 |

¹Feet above Confluence with Upper River Rouge

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

MINNOW POND DRAIN

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-------------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| MINNOW POND DRAIN | | | | | | | | | |
| AA | 22,455 | 68 | 259 | 1.9 | | 850.1 | 850.1 | 850.1 | 0.0 |
| AB | 22,755 | 39 | 139 | 3.5 | | 850.3 | 850.3 | 850.3 | 0.0 |
| AC | 23,200 | 115 | 262 | 1.6 | | 850.9 | 850.9 | 851.0 | 0.1 |
| AD | 23,875 | 169 | 530 | 0.8 | | 853.2 | 853.2 | 853.2 | 0.0 |
| AE | 24,240 | 32 | 116 | 3.6 | | 853.2 | 853.2 | 853.2 | 0.0 |
| AF | 24,552 | 35 | 153 | 2.7 | | 854.6 | 854.6 | 854.6 | 0.0 |
| AG | 25,056 | 34 | 133 | 3.2 | | 855.4 | 855.4 | 855.4 | 0.0 |
| AH | 25,531 | 31 | 126 | 3.3 | | 855.9 | 855.9 | 856.0 | 0.1 |
| AI | 26,053 | 48 | 116 | 3.6 | | 856.7 | 856.7 | 856.7 | 0.0 |
| AJ | 26,578 | 139 | 452 | 2.3 | 87 | 858.7 | 858.7 | 858.7 | 0.0 |
| AK | 28,497 | 292 | 870 | 1.2 | | 861.8 | 861.8 | 861.8 | 0.0 |
| AL | 28,967 | 40 | 371 | 2.7 | 157 | 862.1 | 862.1 | 862.1 | 0.0 |
| AM | 29,317 | 35 | 326 | 3.1 | 110 | 862.5 | 862.5 | 862.5 | 0.0 |
| AN | 29,797 | 64 | 267 | 3.8 | | 863.1 | 863.1 | 863.1 | 0.0 |
| AO | 30,613 | 308 | 1,115 | 0.8 | 36 | 866.8 | 866.8 | 866.9 | 0.1 |
| AP | 31,429 | 110 | 260 | 3.5 | | 866.9 | 866.9 | 867.0 | 0.1 |
| AQ | 32,007 | 168 | 596 | 1.6 | | 870.0 | 870.0 | 870.0 | 0.0 |
| AR | 33,042 | 226 | 731 | 1.3 | | 870.3 | 870.3 | 870.3 | 0.0 |
| AS | 33,970 | 300 | 1,478 | 0.6 | | 871.0 | 871.0 | 871.0 | 0.0 |
| AT | 34,901 | 350 | 1,131 | 0.8 | | 871.1 | 871.1 | 871.1 | 0.0 |
| AU | 35,481 | 368 | 836 | 1.1 | | 871.3 | 871.3 | 871.4 | 0.1 |
| AV | 37,069 | 77 | 244 | 3.9 | | 874.1 | 874.1 | 874.1 | 0.0 |
| AW | 37,814 | 92 | 402 | 2.4 | 61 | 875.2 | 875.2 | 875.2 | 0.0 |
| AX | 38,533 | 71 | 241 | 2.3 | | 875.8 | 875.8 | 875.8 | 0.0 |
| AY | 40,226 | 50 | 105 | 3.4 | 40 | 877.0 | 877.0 | 877.1 | 0.1 |
| AZ | 40,933 | 53 | 768 | 0.4 | 386 | 881.9 | 881.9 | 881.9 | 0.0 |

¹Feet above Confluence with Upper River Rouge

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

MINNOW POND DRAIN

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-------------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| MINNOW POND DRAIN | | | | | | | | | |
| BA | 41,533 | 69 | 115 | 3.0 | | 887.0 | 887.0 | 887.0 | 0.0 |
| BB | 41,759 | 79 | 157 | 2.0 | 55 | 888.5 | 888.5 | 888.5 | 0.0 |
| BC | 42,690 | 166 | 224 | 1.4 | 49 | 892.2 | 892.2 | 892.2 | 0.0 |
| BD | 43,100 | 179 | 171 | 1.8 | | 896.2 | 896.2 | 896.2 | 0.0 |
| BE | 43,600 | 21 | 110 | 2.8 | 69 | 901.1 | 901.1 | 901.1 | 0.0 |
| BF | 44,101 | 85 | 100 | 3.1 | | 909.5 | 909.5 | 909.5 | 0.0 |
| BG | 44,781 | 16 | 60 | 3.7 | 39 | 919.7 | 919.7 | 919.7 | 0.0 |
| BH | 45,306 | 35 | 54 | 4.1 | | 924.9 | 924.9 | 924.9 | 0.0 |
| BI | 45,871 | 214 | 628 | 0.4 | 64 | 925.5 | 925.5 | 925.5 | 0.0 |
| BJ | 46,614 | 93 | 117 | 1.7 | 50 | 927.4 | 927.4 | 927.4 | 0.0 |
| BK | 46,990 | 26 | 118 | 1.2 | 58 | 928.8 | 928.8 | 928.8 | 0.0 |
| BL | 47,755 | 25 | 41 | 3.4 | 29 | 930.7 | 930.7 | 930.7 | 0.0 |
| BM | 48,025 | 22 | 25 | 5.6 | | 934.3 | 934.3 | 934.3 | 0.0 |

¹Feet above Confluence with Upper River Rouge

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

MINNOW POND DRAIN

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-----------------------------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| MINNOW POND DRAIN - RIGHT CHANNEL | | | | | | | | | |
| A | 73,839 | 149 | 128 | 2.7 | | 877.6 | 877.6 | 877.6 | 0.0 |
| B | 74,450 | 180 | 88 | 4.0 | | 881.5 | 881.5 | 881.5 | 0.0 |

¹Feet above Eight Mile Road

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

MINNOW POND DRAIN - RIGHT CHANNEL

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-----------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| MUNRO CREEK | | | | | | | | | |
| A | 283 | 50 | 13 | 15.1 | 44 | 893.3 | 893.3 | 893.3 | 0.0 |
| B | 833 | 183 | 534 | 0.4 | | 893.5 | 893.5 | 893.5 | 0.0 |
| C | 1,533 | 101 | 143 | 1.3 | 70 | 894.7 | 894.7 | 894.8 | 0.1 |
| D | 2,258 | 72 | 76 | 2.5 | | 901.6 | 901.6 | 901.6 | 0.0 |
| E | 3,033 | 20 | 113 | 1.7 | 103 | 908.2 | 908.2 | 908.3 | 0.1 |
| F | 3,783 | 122 | 76 | 2.5 | | 915.4 | 915.4 | 915.4 | 0.0 |
| G | 4,858 | 29 | 143 | 1.3 | 110 | 921.2 | 921.2 | 921.2 | 0.0 |
| H | 6,208 | 11 | 458 | 0.4 | 215 | 921.8 | 921.8 | 921.8 | 0.0 |
| I | 7,060 | 81 | 45 | 4.4 | | 928.0 | 928.0 | 928.1 | 0.1 |

¹Feet above Confluence with Walled Lake Branch

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

MUNRO CREEK

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-----------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| MURPHY DRAIN | | | | | | | | | |
| A | 170 | 99 | 164 | 3.5 | 76 | 848.6 | 848.6 | 848.6 | 0.0 |
| B | 525 | 241 | 360 | 1.5 | | 850.1 | 850.1 | 850.1 | 0.0 |
| C | 1,000 | 60 | 140 | 4.1 | | 853.6 | 853.6 | 853.6 | 0.0 |
| D | 1,181 | 210 | 445 | 1.3 | | 857.5 | 857.5 | 857.5 | 0.0 |
| E | 1,266 | 249 | 189 | 3.0 | | 857.6 | 857.6 | 857.6 | 0.0 |
| F | 1,462 | 200 | 596 | 1.0 | | 858.1 | 858.1 | 858.1 | 0.0 |
| G | 1,602 | 145 | 166 | 3.4 | | 858.3 | 858.3 | 858.3 | 0.0 |
| H | 2,050 | 105 | 269 | 2.1 | 67 | 858.7 | 858.7 | 858.7 | 0.0 |
| I | 2,664 | 156 | 255 | 2.2 | 79 | 866.6 | 866.6 | 866.6 | 0.0 |
| J | 3,530 | 21 | 116 | 4.9 | 73 | 872.2 | 872.2 | 872.2 | 0.0 |
| K | 3,860 | 469 | 1,889 | 0.3 | | 878.6 | 878.6 | 878.6 | 0.0 |
| L | 3,900 | 431 | 1,898 | 0.3 | 41 | 878.6 | 878.6 | 878.6 | 0.0 |
| M | 4,600 | 141 | 1,185 | 0.5 | 130 | 878.6 | 878.6 | 878.6 | 0.0 |
| N | 5,280 | 136 | 235 | 2.4 | | 878.6 | 878.6 | 878.6 | 0.0 |
| O | 6,210 | 172 | 352 | 1.5 | 52 | 880.6 | 880.6 | 880.6 | 0.0 |
| P | 6,770 | 98 | 375 | 1.5 | 452 | 883.8 | 883.8 | 883.8 | 0.0 |
| Q | 6,943 | 150 | 251 | 2.1 | | 885.3 | 885.3 | 885.3 | 0.0 |
| R | 7,123 | 80 | 198 | 2.6 | | 885.9 | 885.9 | 886.0 | 0.1 |
| S | 7,213 | 80 | 251 | 2.1 | | 887.0 | 887.0 | 887.1 | 0.1 |
| T | 7,338 | 26 | 194 | 2.7 | 39 | 887.3 | 887.3 | 887.4 | 0.1 |
| U | 7,363 | 39 | 135 | 3.9 | 30 | 887.3 | 887.3 | 887.4 | 0.1 |
| V | 7,693 | 90 | 272 | 1.9 | | 891.1 | 891.1 | 891.1 | 0.0 |
| W | 7,888 | 121 | 315 | 1.7 | | 892.9 | 892.9 | 892.9 | 0.0 |
| X | 7,938 | 53 | 76 | 6.9 | | 892.9 | 892.9 | 893.1 | 0.2 |
| Y | 7,993 | 66 | 162 | 3.2 | | 894.3 | 894.3 | 894.3 | 0.0 |
| Z | 8,388 | 80 | 385 | 1.4 | | 901.8 | 901.8 | 901.8 | 0.0 |

¹Feet above Confluence with Stonycroft Branch

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

MURPHY DRAIN

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-----------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| MURPHY DRAIN | | | | | | | | | |
| AA | 8,563 | 79 | 222 | 2.4 | | 901.9 | 901.9 | 901.9 | 0.0 |
| AB | 8,778 | 200 | 993 | 0.5 | | 905.3 | 905.3 | 905.3 | 0.0 |
| AC | 8,938 | 209 | 876 | 0.6 | 32 | 905.3 | 905.3 | 905.3 | 0.0 |
| AD | 9,003 | 170 | 248 | 2.1 | | 905.6 | 905.6 | 905.6 | 0.0 |
| AE | 9,323 | 110 | 309 | 1.7 | | 906.7 | 906.7 | 906.8 | 0.1 |
| AF | 10,358 | 108 | 141 | 3.7 | | 911.1 | 911.1 | 911.1 | 0.0 |
| AG | 10,448 | 55 | 122 | 4.3 | | 912.2 | 912.2 | 912.2 | 0.0 |
| AH | 10,453 | 55 | 225 | 2.3 | | 914.1 | 914.1 | 914.1 | 0.0 |
| AI | 11,698 | 55 | 145 | 3.6 | | 914.2 | 914.2 | 914.2 | 0.0 |
| AJ | 11,978 | 35 | 975 | 5.4 | | 915.2 | 915.2 | 915.2 | 0.0 |
| AK | 12,238 | 87 | 208 | 2.5 | 51 | 918.2 | 918.2 | 918.2 | 0.0 |

¹Feet above Confluence with Stonycroft Branch

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

MURPHY DRAIN

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-----------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| NORTON CREEK | | | | | | | | | |
| A | 0 | 330 | 1,403 | 0.5 | 178 | 906.3 | 906.3 | 906.4 | 0.1 |
| B | 3,378 | 423 | 1,992 | 0.5 | | 907.6 | 907.6 | 907.7 | 0.1 |
| C | 5,365 | 844 | 5,299 | 0.1 | 1256 | 907.8 | 907.8 | 907.9 | 0.1 |
| D | 6,823 | 277 | 625 | 0.8 | 116 | 908.9 | 908.9 | 909.0 | 0.1 |
| E | 9,199 | 65 | 291 | 1.5 | 12 | 913.0 | 913.0 | 913.0 | 0.0 |
| F | 13,020 | 110 | 492 | 1.3 | | 920.6 | 920.6 | 920.6 | 0.0 |
| G | 13,544 | 108 | 962 | 0.9 | | 922.3 | 922.3 | 922.3 | 0.0 |
| H | 14,062 | 168 | 1,815 | 0.7 | 39 | 923.9 | 923.9 | 923.9 | 0.0 |
| I | 14,754 | 125 | 607 | 1.1 | | 924.7 | 924.7 | 924.7 | 0.0 |
| J | 15,161 | 68 | 1,461 | 0.4 | 425 | 924.9 | 924.9 | 924.9 | 0.0 |
| K | 18,956 | 318 | 1,128 | 0.5 | 398 | 925.9 | 925.9 | 926.1 | 0.2 |
| L | 21,215 | 308 | 650 | 0.8 | 217 | 927.6 | 927.6 | 927.7 | 0.1 |

¹Feet above City of Wixom Corporate Limit

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

NORTON CREEK

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-----------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| NOVI-LYON DRAIN | | | | | | | | | |
| A | 518 | 170 | 226 | 1.2 | | 945.5 | 945.5 | 945.5 | 0.0 |
| B | 2,595 | 1,307 | 17,256 | 0.0 | | 945.5 | 945.5 | 945.5 | 0.0 |
| C | 4,695 | 753 | 8,152 | 0.0 | | 945.5 | 945.5 | 945.5 | 0.0 |
| D | 7,520 | 27 | 93 | 3.1 | | 951.4 | 951.4 | 951.5 | 0.1 |
| E | 8,080 | 31 | 93 | 3.1 | | 955.8 | 955.8 | 955.8 | 0.0 |

¹Feet above Napier Road

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

NOVI-LYON DRAIN

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-------------------------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| NOVI-LYON DRAIN - TRIBUTARY C | | | | | | | | | |
| A | 560 | 30 | 66 | 6.0 | | 947.4 | 947.4 | 947.4 | 0.0 |
| B | 2,200 | 334 | 988 | 0.8 | | 952.9 | 952.9 | 952.9 | 0.0 |
| C | 2,760 | 50 | 260 | 1.5 | | 953.4 | 953.4 | 953.4 | 0.0 |
| D | 3,404 | 86 | 114 | 3.5 | 26 | 954.3 | 954.3 | 954.3 | 0.0 |
| E | 4,044 | 400 | 535 | 0.6 | | 955.2 | 955.2 | 955.2 | 0.0 |
| F | 5,509 | 266 | 672 | 0.5 | 94 | 955.8 | 955.8 | 955.8 | 0.0 |
| G | 5,774 | 390 | 994 | 0.3 | | 955.9 | 955.9 | 955.9 | 0.0 |
| H | 6,244 | 195 | 671 | 0.5 | 65 | 955.9 | 955.9 | 955.9 | 0.0 |
| I | 6,394 | 210 | 504 | 0.6 | | 956.0 | 956.0 | 956.0 | 0.0 |
| J | 7,039 | 23 | 189 | 1.6 | 157 | 956.0 | 956.0 | 956.0 | 0.0 |
| K | 7,139 | 35 | 123 | 2.5 | 101 | 956.5 | 956.5 | 956.5 | 0.0 |
| L | 7,260 | 105 | 281 | 1.1 | | 957.1 | 957.1 | 957.1 | 0.0 |
| M | 8,267 | 205 | 458 | 0.7 | | 957.7 | 957.7 | 957.7 | 0.0 |
| N | 8,298 | 190 | 405 | 0.8 | | 957.7 | 957.7 | 957.7 | 0.0 |
| O | 8,640 | 0 | 55 | 5.6 | 24 | 957.7 | 957.7 | 957.7 | 0.0 |
| P | 8,676 | 0 | 136 | 2.2 | 100 | 958.4 | 958.4 | 958.4 | 0.0 |
| Q | 9,190 | 160 | 248 | 0.5 | | 960.4 | 960.4 | 960.4 | 0.0 |
| R | 9,559 | 156 | 191 | 0.6 | | 960.4 | 960.4 | 960.4 | 0.0 |
| S | 9,754 | 204 | 431 | 0.3 | 53 | 960.4 | 960.4 | 960.4 | 0.0 |
| T | 10,062 | 37 | 264 | 0.4 | 177 | 960.5 | 960.5 | 960.5 | 0.0 |
| U | 10,411 | 200 | 309 | 0.4 | | 960.5 | 960.5 | 960.5 | 0.0 |
| V | 11,063 | 97 | 233 | 0.5 | 128 | 960.6 | 960.6 | 960.6 | 0.0 |
| W | 11,104 | 260 | 283 | 0.4 | | 960.6 | 960.6 | 960.6 | 0.0 |

¹Feet above Confluence with Novi-Lyon Drain

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

NOVI-LYON DRAIN - TRIBUTARY C

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|----------------------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| OAKLAND LAKE - WEST OUTLET | | | | | | | | | |
| A | 580 | 48 | 213 | 1.4 | | 953.2 | 953.1 ² | 953.1 | 0.0 |
| B | 785 | 19 | 38 | 5.0 | | 953.2 | 953.2 ² | 953.2 | 0.0 |

¹Feet above Confluence with Clinton River

²Elevations without considering backwater effect from Clinton River

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

OAKLAND LAKE - WEST OUTLET

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-----------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| PAINT CREEK | | | | | | | | | |
| A | 286 | 70 | 230 | 7.6 | | 716.7 | 716.7 ² | 716.7 | 0.0 |
| B | 889 | 55 | 253 | 6.9 | | 720.1 | 720.1 | 720.1 | 0.0 |
| C | 987 | 42 | 277 | 6.3 | | 720.7 | 720.7 | 720.7 | 0.0 |
| D | 1,770 | 45 | 176 | 9.9 | | 726.9 | 726.9 | 726.9 | 0.0 |
| E | 2,030 | 42 | 271 | 6.4 | | 730.3 | 730.3 | 730.3 | 0.0 |
| F | 2,778 | 50 | 212 | 8.2 | | 734.0 | 734.0 | 734.0 | 0.0 |
| G | 3,628 | 57 | 239 | 7.3 | | 739.0 | 739.0 | 739.0 | 0.0 |
| H | 3,810 | 40 | 204 | 8.6 | | 740.5 | 740.5 | 740.5 | 0.0 |
| I | 3,987 | 45 | 200 | 8.7 | | 741.6 | 741.6 | 741.6 | 0.0 |
| J | 4,205 | 213 | 408 | 4.3 | | 743.4 | 743.4 | 743.4 | 0.0 |
| K | 4,734 | 47 | 207 | 8.4 | | 746.2 | 746.2 | 746.2 | 0.0 |
| L | 5,269 | 70 | 235 | 7.4 | | 752.1 | 752.1 | 752.1 | 0.0 |
| M | 5,473 | 82 | 319 | 5.5 | | 753.3 | 753.3 | 753.3 | 0.0 |
| N | 5,807 | 55 | 212 | 8.2 | | 754.9 | 754.9 | 754.9 | 0.0 |
| O | 6,385 | 229 | 666 | 2.6 | 28 | 758.6 | 758.6 | 758.6 | 0.0 |
| P | 6,591 | 88 | 688 | 2.5 | 163 | 759.6 | 759.6 | 759.6 | 0.0 |
| Q | 7,110 | 83 | 281 | 6.2 | | 760.2 | 760.2 | 760.2 | 0.0 |
| R | 7,473 | 62 | 341 | 5.1 | 50 | 762.3 | 762.3 | 762.3 | 0.0 |
| S | 8,023 | 82 | 272 | 6.4 | | 763.6 | 763.6 | 763.6 | 0.0 |
| T | 8,211 | 44 | 372 | 4.7 | 33 | 764.4 | 764.4 | 764.4 | 0.0 |
| U | 8,345 | 40 | 165 | 7.7 | | 764.7 | 764.7 | 764.7 | 0.0 |
| V | 8,448 | 132 | 220 | 5.8 | | 765.4 | 765.4 | 765.4 | 0.0 |
| W | 9,188 | 125 | 575 | 2.2 | 322 | 768.2 | 768.2 | 768.2 | 0.0 |
| X | 9,755 | 152 | 286 | 4.4 | | 769.9 | 769.9 | 769.9 | 0.0 |
| Y | 9,995 | 90 | 263 | 4.8 | 47 | 771.0 | 771.0 | 771.0 | 0.0 |
| Z | 10,615 | 171 | 510 | 2.5 | 89 | 772.8 | 772.8 | 772.8 | 0.0 |

¹Feet above Confluence with Clinton River

²Elevations without considering backwater effect from Clinton River

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

PAINT CREEK

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-----------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| PAINT CREEK | | | | | | | | | |
| AA | 11,314 | 66 | 330 | 3.8 | | 774.9 | 774.9 | 774.9 | 0.0 |
| AB | 11,435 | 153 | 394 | 3.2 | | 775.0 | 775.0 | 775.0 | 0.0 |
| AC | 11,614 | 42 | 237 | 5.3 | 31 | 775.4 | 775.4 | 775.4 | 0.0 |
| AD | 11,788 | 59 | 209 | 6.1 | | 775.8 | 775.8 | 775.8 | 0.0 |
| AE | 12,132 | 87 | 325 | 3.9 | | 777.0 | 777.0 | 777.0 | 0.0 |
| AF | 12,293 | 62 | 263 | 4.8 | | 777.2 | 777.2 | 777.2 | 0.0 |
| AG | 12,400 | 42 | 205 | 6.2 | | 777.3 | 777.3 | 777.3 | 0.0 |
| AH | 12,893 | 147 | 348 | 3.6 | | 778.3 | 778.3 | 778.3 | 0.0 |
| AI | 14,123 | 55 | 211 | 6.0 | | 780.9 | 780.9 | 780.9 | 0.0 |
| AJ | 14,278 | 60 | 243 | 5.2 | | 782.4 | 782.4 | 782.4 | 0.0 |
| AK | 15,528 | 161 | 515 | 2.5 | | 785.2 | 785.2 | 785.3 | 0.1 |
| AL | 16,874 | 262 | 682 | 1.9 | 27 | 788.5 | 788.5 | 788.5 | 0.0 |
| AM | 17,533 | 91 | 249 | 4.7 | | 789.4 | 789.4 | 789.4 | 0.0 |
| AN | 17,593 | 66 | 331 | 3.5 | | 790.5 | 790.5 | 790.5 | 0.0 |
| AO | 19,120 | 133 | 366 | 3.2 | | 793.0 | 793.0 | 793.0 | 0.0 |
| AP | 19,335 | 45 | 173 | 6.7 | | 793.4 | 793.4 | 793.4 | 0.0 |
| AQ | 19,603 | 40 | 167 | 6.9 | | 794.8 | 794.8 | 794.8 | 0.0 |
| AR | 20,055 | 493 | 1,314 | 1.0 | 47 | 796.9 | 796.9 | 796.9 | 0.0 |
| AS | 21,795 | 300 | 1,096 | 1.3 | | 800.4 | 800.4 | 800.4 | 0.0 |
| AT | 23,225 | 50 | 164 | 7.1 | | 802.7 | 802.7 | 802.7 | 0.0 |
| AU | 25,425 | 250 | 832 | 2.4 | | 807.3 | 807.3 | 807.3 | 0.0 |
| AV | 27,025 | 35 | 231 | 5.0 | | 811.8 | 811.8 | 811.8 | 0.0 |
| AW | 28,575 | 260 | 584 | 3.7 | | 814.7 | 814.7 | 814.7 | 0.0 |
| AX | 29,775 | 60 | 188 | 6.2 | | 819.2 | 819.2 | 819.2 | 0.0 |
| AY | 29,985 | 100 | 374 | 4.4 | | 819.4 | 819.4 | 819.4 | 0.0 |
| AZ | 31,360 | 250 | 282 | 5.2 | | 822.9 | 822.9 | 822.9 | 0.0 |

¹Feet above Confluence with Clinton River

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

PAINT CREEK

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-----------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| PAINT CREEK | | | | | | | | | |
| BA | 32,010 | 25 | 109 | 10.7 | 200 | 828.3 | 828.3 | 828.3 | 0.0 |
| BB | 32,630 | 170 | 725 | 2.5 | | 832.1 | 832.1 | 832.1 | 0.0 |
| BC | 33,130 | 20 | 133 | 8.7 | | 832.9 | 832.9 | 832.9 | 0.0 |
| BD | 33,475 | 60 | 198 | 5.6 | | 835.0 | 835.0 | 835.0 | 0.0 |
| BE | 33,775 | 40 | 155 | 6.1 | | 836.2 | 836.2 | 836.2 | 0.0 |
| BF | 36,575 | 320 | 896 | 2.2 | | 842.0 | 842.0 | 842.0 | 0.0 |
| BG | 36,955 | 200 | 96 | 9.8 | | 844.7 | 844.7 | 844.7 | 0.0 |
| BH | 38,555 | 30 | 182 | 5.2 | | 848.3 | 848.3 | 848.3 | 0.0 |
| BI | 39,305 | 360 | 604 | 2.6 | | 849.7 | 849.7 | 849.7 | 0.0 |
| BJ | 39,485 | 425 | 106 | 8.7 | | 850.0 | 850.0 | 850.0 | 0.0 |
| BK | 41,335 | 250 | 940 | 4.0 | | 854.3 | 854.3 | 854.3 | 0.0 |
| BL | 43,685 | 35 | 194 | 4.8 | | 859.0 | 859.0 | 859.0 | 0.0 |
| BM | 43,810 | 315 | 1,007 | 2.2 | | 859.0 | 859.0 | 859.0 | 0.0 |
| BN | 47,510 | 240 | 395 | 3.8 | | 866.8 | 866.8 | 866.8 | 0.0 |
| BO | 51,110 | 390 | 977 | 2.5 | | 870.8 | 870.8 | 870.8 | 0.0 |
| BP | 51,985 | 430 | 135 | 4.2 | | 872.4 | 872.4 | 872.4 | 0.0 |
| BQ | 54,635 | 30 | 87 | 6.4 | | 881.6 | 881.6 | 881.6 | 0.0 |
| BR | 54,735 | 75 | 242 | 4.4 | | 882.5 | 882.5 | 882.5 | 0.0 |
| BS | 57,635 | 200 | 370 | 3.0 | | 892.4 | 892.4 | 892.4 | 0.0 |
| BT | 59,335 | 270 | 330 | 2.9 | | 900.2 | 900.2 | 900.2 | 0.0 |
| BU | 62,135 | 40 | 90 | 6.2 | | 909.2 | 909.2 | 909.2 | 0.0 |
| BV | 65,235 | 230 | 328 | 2.9 | | 925.3 | 925.3 | 925.3 | 0.0 |
| BW | 65,475 | 30 | 93 | 6.0 | | 925.9 | 925.9 | 925.9 | 0.0 |
| BX | 76,520 | 8 | 50 | 10.7 | | 969.2 | 969.2 | 969.2 | 0.0 |
| BY | 76,690 | 215 | 771 | 0.7 | | 970.4 | 970.4 | 970.4 | 0.0 |
| BZ | 77,870 | 131 | 137 | 2.8 | | 971.5 | 971.5 | 971.5 | 0.0 |

¹Feet above Confluence with Clinton River

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

PAINT CREEK

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-----------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| PAINT CREEK | | | | | | | | | |
| CA | 79,070 | 172 | 379 | 2.3 | | 973.1 | 973.1 | 973.1 | 0.0 |
| CB | 80,210 | 185 | 353 | 1.5 | | 974.2 | 974.2 | 974.2 | 0.0 |
| CC | 80,365 | 45 | 346 | 1.6 | | 974.2 | 974.2 | 974.2 | 0.0 |
| CD | 80,500 | 73 | 675 | 0.8 | 42 | 976.6 | 976.6 | 976.6 | 0.0 |

¹Feet above Confluence with Clinton River

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

PAINT CREEK

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-----------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| PEBBLE CREEK | | | | | | | | | |
| A | 2,030 | 227 | 1,762 | 0.8 | | 632.4 | 632.4 | 632.5 | 0.1 |
| B | 4,520 | 295 | 1,255 | 1.1 | | 633.2 | 633.2 | 633.3 | 0.1 |
| C | 6,895 | 32 | 352 | 4.0 | 145 | 636.8 | 636.8 | 636.9 | 0.1 |
| D | 7,630 | 209 | 830 | 1.7 | | 639.9 | 639.9 | 640.0 | 0.1 |
| E | 8,760 | 201 | 715 | 1.4 | | 643.7 | 643.7 | 643.8 | 0.1 |
| F | 11,105 | 253 | 675 | 1.5 | 46 | 649.1 | 649.1 | 649.2 | 0.1 |
| G | 14,380 | 211 | 873 | 1.1 | 83 | 660.6 | 660.6 | 660.7 | 0.1 |
| H | 16,185 | 50 | 444 | 2.2 | 83 | 668.2 | 668.2 | 668.3 | 0.1 |
| I | 20,680 | 124 | 372 | 2.7 | | 688.2 | 688.2 | 688.2 | 0.0 |
| J | 21,560 | 164 | 1,538 | 0.8 | 51 | 698.5 | 698.5 | 698.5 | 0.0 |
| K | 22,360 | 250 | 430 | 3.0 | | 698.6 | 698.6 | 698.6 | 0.0 |
| L | 23,060 | 54 | 221 | 5.9 | | 699.8 | 699.8 | 699.8 | 0.0 |
| M | 23,399 | 72 | 290 | 4.5 | | 701.1 | 701.1 | 701.2 | 0.1 |
| N | 23,637 | 152 | 1,277 | 1.0 | | 709.7 | 709.7 | 709.7 | 0.0 |
| O | 23,896 | 211 | 1,551 | 0.8 | | 709.8 | 709.8 | 709.8 | 0.0 |
| P | 24,767 | 113 | 634 | 2.1 | | 710.0 | 710.0 | 710.0 | 0.0 |
| Q | 25,691 | 194 | 558 | 2.3 | | 711.1 | 711.1 | 711.1 | 0.0 |
| R | 26,059 | 185 | 333 | 3.9 | | 712.7 | 712.7 | 712.7 | 0.0 |
| S | 26,923 | 88 | 354 | 3.7 | | 716.8 | 716.8 | 716.8 | 0.0 |
| T | 27,256 | 49 | 242 | 5.4 | | 721.1 | 721.1 | 721.1 | 0.0 |
| U | 28,675 | 130 | 330 | 3.0 | | 723.1 | 723.1 | 723.1 | 0.0 |
| V | 29,371 | 75 | 318 | 3.1 | 51 | 730.5 | 730.5 | 730.5 | 0.0 |
| W | 29,632 | 21 | 251 | 4.0 | 97 | 731.4 | 731.4 | 731.4 | 0.0 |
| X | 30,083 | 41 | 176 | 5.7 | 71 | 736.3 | 736.3 | 736.3 | 0.0 |
| Y | 31,502 | 228 | 287 | 3.5 | | 751.8 | 751.8 | 751.8 | 0.0 |
| Z | 32,302 | 45 | 429 | 2.3 | 156 | 756.4 | 756.4 | 756.4 | 0.0 |

¹Feet above Confluence with Rouge River

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

PEBBLE CREEK

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-----------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| PEBBLE CREEK | | | | | | | | | |
| AA | 32,902 | 198 | 257 | 3.9 | | 763.2 | 763.2 | 763.2 | 0.0 |
| AB | 33,416 | 113 | 246 | 4.1 | | 768.4 | 768.4 | 768.4 | 0.0 |
| AC | 34,181 | 117 | 202 | 5.0 | | 775.4 | 775.4 | 775.5 | 0.1 |
| AD | 35,181 | 33 | 277 | 3.6 | 92 | 780.9 | 780.9 | 780.9 | 0.0 |
| AE | 35,751 | 227 | 265 | 3.8 | | 790.3 | 790.3 | 790.3 | 0.0 |
| AF | 36,431 | 187 | 465 | 2.2 | 102 | 796.8 | 796.8 | 796.8 | 0.0 |
| AG | 37,316 | 132 | 217 | 4.6 | | 807.2 | 807.2 | 807.2 | 0.0 |
| AH | 37,516 | 30 | 111 | 9.0 | | 810.8 | 810.8 | 810.8 | 0.0 |
| AI | 38,105 | 240 | 972 | 1.0 | 39 | 816.3 | 816.3 | 816.3 | 0.0 |
| AJ | 38,307 | 252 | 638 | 1.6 | | 816.4 | 816.4 | 816.4 | 0.0 |
| AK | 38,707 | 87 | 193 | 5.2 | | 818.0 | 818.0 | 818.0 | 0.0 |
| AL | 38,986 | 28 | 318 | 3.1 | | 825.9 | 825.9 | 825.9 | 0.0 |
| AM | 39,436 | 298 | 1,862 | 0.5 | | 827.6 | 827.6 | 827.6 | 0.0 |
| AN | 39,890 | 192 | 822 | 1.2 | | 829.2 | 829.2 | 829.2 | 0.0 |
| AO | 40,445 | 86 | 307 | 3.3 | 121 | 829.6 | 829.6 | 829.6 | 0.0 |
| AP | 40,969 | 166 | 441 | 2.3 | | 834.5 | 834.5 | 834.5 | 0.0 |
| AQ | 41,299 | 197 | 419 | 2.4 | | 835.8 | 835.8 | 835.8 | 0.0 |
| AR | 41,691 | 84 | 153 | 6.5 | | 837.6 | 837.6 | 837.6 | 0.0 |
| AS | 41,749 | 106 | 219 | 4.6 | | 838.6 | 838.6 | 838.6 | 0.0 |
| AT | 41,868 | 164 | 1,147 | 0.9 | | 845.5 | 845.5 | 845.5 | 0.0 |
| AU | 42,953 | 99 | 302 | 3.3 | | 845.7 | 845.7 | 845.7 | 0.0 |
| AV | 43,121 | 82 | 190 | 5.3 | | 845.8 | 845.8 | 845.8 | 0.0 |
| AW | 43,303 | 65 | 225 | 4.4 | | 846.7 | 846.7 | 846.7 | 0.0 |
| AX | 43,468 | 67 | 205 | 4.9 | | 847.0 | 847.0 | 847.0 | 0.0 |
| AY | 43,504 | 61 | 366 | 2.3 | 115 | 847.6 | 847.6 | 847.6 | 0.0 |
| AZ | 44,277 | 177 | 341 | 2.8 | | 849.4 | 849.4 | 849.4 | 0.0 |

¹Feet above Confluence with Rouge River

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

PEBBLE CREEK

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-----------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| PEBBLE CREEK | | | | | | | | | |
| BA | 44,949 | 190 | 348 | 2.7 | | 850.5 | 850.5 | 850.5 | 0.0 |
| BB | 45,434 | 284 | 543 | 1.7 | | 851.5 | 851.5 | 851.5 | 0.0 |
| BC | 46,090 | 205 | 378 | 2.5 | | 852.6 | 852.6 | 852.6 | 0.0 |
| BD | 46,640 | 263 | 167 | 5.6 | 262 | 855.8 | 855.8 | 855.8 | 0.0 |
| BE | 47,049 | 175 | 220 | 4.3 | | 857.6 | 857.6 | 857.6 | 0.0 |
| BF | 48,114 | 22 | 31 | 6.8 | | 867.5 | 867.5 | 867.5 | 0.0 |
| BG | 48,428 | 35 | 98 | 9.6 | | 874.1 | 874.1 | 874.2 | 0.1 |
| BH | 49,181 | 44 | 147 | 6.4 | | 878.6 | 878.6 | 878.6 | 0.0 |
| BI | 49,472 | 60 | 136 | 6.9 | | 881.5 | 881.5 | 881.5 | 0.0 |
| BJ | 50,062 | 33 | 209 | 4.5 | 47 | 885.0 | 885.0 | 885.1 | 0.1 |
| BK | 50,342 | 42 | 146 | 6.4 | | 886.8 | 886.8 | 886.8 | 0.0 |
| BL | 50,812 | 144 | 390 | 2.4 | | 889.0 | 889.0 | 889.1 | 0.1 |
| BM | 51,255 | 120 | 244 | 2.0 | | 892.2 | 892.2 | 892.2 | 0.0 |
| BN | 51,414 | 97 | 455 | 1.1 | | 892.2 | 892.2 | 892.3 | 0.1 |
| BO | 52,116 | 26 | 81 | 6.2 | | 895.1 | 895.1 | 895.2 | 0.1 |
| BP | 53,663 | 72 | 177 | 2.8 | | 904.0 | 904.0 | 904.0 | 0.0 |
| BQ | 55,373 | 37 | 95 | 5.3 | | 912.8 | 912.8 | 912.9 | 0.1 |
| BR | 58,483 | 57 | 85 | 4.6 | | 932.1 | 932.1 | 932.1 | 0.0 |
| BS | 60,357 | 91 | 177 | 2.0 | 59 | 944.5 | 944.5 | 944.6 | 0.1 |
| BT | 62,155 | 119 | 262 | 1.3 | | 947.5 | 947.5 | 947.6 | 0.1 |
| BU | 62,960 | 54 | 146 | 0.9 | | 948.7 | 948.7 | 948.8 | 0.1 |

¹Feet above Confluence with Rouge River

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

PEBBLE CREEK

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-----------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| PETTIBONE CREEK | | | | | | | | | |
| A | 679 | 11 | 20 | 8.0 | | 914.4 | 914.4 | 914.4 | 0.0 |
| B | 1,602 | 70 | 82 | 2.2 | 47 | 918.5 | 918.5 | 918.6 | 0.1 |
| C | 2,750 | 183 | 184 | 0.6 | | 945.5 | 945.5 | 945.5 | 0.0 |
| D | 3,290 | 51 | 158 | 0.9 | | 947.4 | 947.4 | 947.5 | 0.1 |
| E | 4,070 | 46 | 238 | 0.6 | | 949.6 | 949.6 | 949.6 | 0.0 |
| F | 4,760 | 135 | 607 | 0.2 | | 949.6 | 949.6 | 949.7 | 0.1 |
| G | 12,527 | 9 | 33 | 5.2 | | 957.0 | 957.0 | 957.0 | 0.0 |
| H | 12,892 | 433 | 791 | 0.2 | | 957.6 | 957.6 | 957.6 | 0.0 |
| I | 13,422 | 130 | 249 | 0.7 | 28 | 957.6 | 957.6 | 957.6 | 0.0 |
| J | 17,072 | 141 | 472 | 0.3 | 230 | 957.6 | 957.6 | 957.6 | 0.0 |
| K | 18,912 | 137 | 288 | 0.5 | | 957.7 | 957.7 | 957.7 | 0.0 |
| L | 19,782 | 341 | 550 | 0.2 | | 975.0 | 975.0 | 975.0 | 0.0 |
| M | 21,272 | 108 | 105 | 1.3 | 90 | 960.7 | 960.7 | 960.7 | 0.0 |
| N | 21,756 | 5 | 29 | 4.6 | | 965.1 | 965.1 | 965.1 | 0.0 |
| O | 22,216 | 10 | 53 | 2.5 | | 974.9 | 974.9 | 974.9 | 0.0 |
| P | 22,356 | 229 | 1,682 | 0.1 | 53 | 975.0 | 975.0 | 975.0 | 0.0 |
| Q | 23,701 | 10 | 57 | 2.3 | | 975.0 | 975.0 | 975.0 | 0.0 |
| R | 24,380 | 13 | 31 | 4.3 | | 976.0 | 976.0 | 976.0 | 0.0 |
| S | 25,240 | 11 | 25 | 5.3 | | 984.4 | 984.4 | 984.4 | 0.0 |
| T | 27,050 | 104 | 88 | 1.5 | | 989.3 | 989.3 | 989.3 | 0.0 |
| U | 28,171 | 474 | 331 | 0.4 | | 990.2 | 990.2 | 990.2 | 0.0 |
| V | 30,795 | 93 | 36 | 0.8 | | 991.5 | 991.5 | 991.5 | 0.0 |
| W | 31,151 | 4 | 4 | 7.0 | | 997.0 | 997.0 | 997.0 | 0.0 |
| X | 32,540 | 54 | 88 | 0.2 | | 997.0 | 997.0 | 997.0 | 0.0 |
| Y | 33,808 | 11 | 17 | 0.9 | | 997.3 | 997.3 | 997.3 | 0.0 |

¹Feet above Confluence with Huron River

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

PETTIBONE CREEK

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-----------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| QUARTON BRANCH | | | | | | | | | |
| A | 240 | 58 | 231 | 6.3 | | 726.0 | 726.0 | 726.1 | 0.1 |
| B | 600 | 51 | 481 | 3.0 | | 727.9 | 727.9 | 728.0 | 0.1 |
| C | 1,350 | 342 | 3,093 | 0.5 | 105 | 737.6 | 737.6 | 737.7 | 0.1 |
| D | 2,700 | 84 | 433 | 3.3 | | 737.5 | 737.5 | 737.6 | 0.1 |
| E | 2,950 | 77 | 319 | 4.5 | | 737.7 | 737.7 | 737.8 | 0.1 |
| F | 3,100 | 53 | 230 | 6.3 | | 738.0 | 738.0 | 738.1 | 0.1 |
| G | 3,300 | 140 | 627 | 2.3 | | 740.2 | 740.2 | 740.2 | 0.1 |
| H | 3,600 | 229 | 1,087 | 1.3 | | 740.6 | 740.6 | 740.7 | 0.1 |
| I | 4,350 | 242 | 1,533 | 0.9 | | 743.0 | 743.0 | 743.1 | 0.1 |
| J | 6,150 | 177 | 723 | 2.0 | | 747.3 | 747.3 | 747.4 | 0.1 |
| K | 6,945 | 138 | 771 | 1.9 | | 748.9 | 748.9 | 749.0 | 0.1 |
| L | 7,314 | 180 | 1,220 | 1.2 | | 753.0 | 753.0 | 753.0 | 0.0 |
| M | 7,364 | 214 | 1,558 | 0.9 | | 753.1 | 753.1 | 753.1 | 0.0 |
| N | 7,385 | 215 | 1,365 | 1.1 | | 753.1 | 753.1 | 753.1 | 0.0 |
| O | 7,783 | 292 | 1,766 | 0.8 | | 753.1 | 753.1 | 753.1 | 0.0 |
| P | 7,953 | 324 | 1,675 | 0.9 | | 753.1 | 753.1 | 753.1 | 0.0 |
| Q | 8,003 | 359 | 1,813 | 0.8 | | 753.1 | 753.1 | 753.1 | 0.0 |
| R | 8,640 | 355 | 1,922 | 0.8 | | 753.1 | 753.1 | 753.1 | 0.0 |
| S | 9,371 | 129 | 568 | 2.6 | | 754.5 | 754.5 | 754.6 | 0.1 |
| T | 10,206 | 78 | 286 | 5.1 | 51 | 756.5 | 756.5 | 756.5 | 0.0 |
| U | 11,092 | 75 | 411 | 3.5 | 309 | 759.5 | 759.5 | 759.6 | 0.1 |
| V | 11,374 | 195 | 462 | 3.1 | 89 | 760.1 | 760.1 | 760.2 | 0.1 |
| W | 11,514 | 145 | 378 | 3.8 | | 761.0 | 761.0 | 761.1 | 0.1 |
| X | 12,133 | 370 | 5,351 | 0.3 | | 768.0 | 768.0 | 768.0 | 0.0 |
| Y | 13,215 | 72 | 346 | 4.2 | 162 | 768.0 | 768.0 | 768.0 | 0.0 |
| Z | 13,770 | 67 | 466 | 3.1 | 88 | 769.5 | 769.5 | 769.5 | 0.0 |

¹Feet above Confluence with Rouge River

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

QUARTON BRANCH

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-----------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| QUARTON BRANCH | | | | | | | | | |
| AA | 13,988 | 180 | 780 | 1.9 | 42 | 772.1 | 772.1 | 772.1 | 0.0 |
| AB | 14,038 | 172 | 925 | 1.6 | 68 | 772.2 | 772.2 | 772.2 | 0.0 |
| AC | 14,320 | 236 | 479 | 3.0 | | 773.3 | 773.3 | 773.3 | 0.0 |
| AD | 14,365 | 205 | 820 | 1.8 | 63 | 773.6 | 773.6 | 773.6 | 0.0 |
| AE | 14,536 | 114 | 981 | 1.5 | 171 | 775.0 | 775.0 | 775.0 | 0.0 |
| AF | 14,588 | 252 | 987 | 1.5 | 30 | 775.0 | 775.0 | 775.0 | 0.0 |
| AG | 14,956 | 255 | 624 | 2.3 | 65 | 775.4 | 775.4 | 775.4 | 0.0 |
| AH | 15,007 | 320 | 975 | 1.5 | | 775.6 | 775.6 | 775.6 | 0.0 |
| AI | 15,937 | 92 | 275 | 5.3 | | 777.3 | 777.3 | 777.3 | 0.0 |
| AJ | 16,113 | 17 | 114 | 12.7 | | 779.2 | 779.2 | 779.2 | 0.0 |
| AK | 16,163 | 100 | 569 | 2.6 | | 782.4 | 782.4 | 782.4 | 0.0 |
| AL | 16,270 | 185 | 937 | 1.3 | | 782.5 | 782.5 | 782.5 | 0.0 |
| AM | 17,016 | 149 | 667 | 1.8 | | 783.9 | 783.9 | 783.9 | 0.0 |
| AN | 17,402 | 230 | 583 | 2.1 | | 784.2 | 784.2 | 784.2 | 0.0 |
| AO | 17,563 | 203 | 360 | 3.4 | | 784.3 | 784.3 | 784.3 | 0.0 |
| AP | 17,804 | 198 | 854 | 1.4 | 38 | 787.1 | 787.1 | 787.1 | 0.0 |
| AQ | 18,176 | 33 | 145 | 8.5 | | 788.7 | 788.7 | 788.7 | 0.0 |
| AR | 18,248 | 14 | 162 | 7.6 | | 793.1 | 793.1 | 793.1 | 0.0 |
| AS | 18,668 | 200 | 654 | 1.9 | | 794.5 | 794.5 | 794.5 | 0.0 |
| AT | 18,891 | 300 | 960 | 1.3 | | 797.9 | 797.9 | 797.9 | 0.0 |
| AU | 20,045 | 104 | 594 | 2.4 | | 798.4 | 798.4 | 798.4 | 0.0 |
| AV | 20,191 | 40 | 222 | 6.5 | | 798.3 | 798.3 | 798.3 | 0.0 |
| AW | 20,365 | 117 | 354 | 4.1 | | 799.2 | 799.2 | 799.2 | 0.0 |
| AX | 20,697 | 74 | 262 | 5.5 | | 800.0 | 800.0 | 800.0 | 0.0 |
| AY | 21,098 | 280 | 943 | 1.5 | | 800.9 | 800.9 | 800.9 | 0.0 |
| AZ | 21,302 | 50 | 207 | 7.0 | | 800.9 | 800.9 | 800.9 | 0.0 |

¹Feet above Confluence with Rouge River

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

QUARTON BRANCH

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-----------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| QUARTON BRANCH | | | | | | | | | |
| BA | 21,365 | 19 | 177 | 8.2 | | 803.5 | 803.5 | 803.5 | 0.0 |
| BB | 21,415 | 120 | 738 | 2.0 | | 804.7 | 804.7 | 804.7 | 0.0 |
| BC | 21,446 | 180 | 696 | 2.1 | | 804.8 | 804.8 | 804.8 | 0.0 |
| BD | 21,476 | 236 | 1,281 | 1.1 | | 804.9 | 804.9 | 804.9 | 0.0 |
| BE | 21,676 | 346 | 1,825 | 0.8 | | 804.9 | 804.9 | 804.9 | 0.0 |
| BF | 21,851 | 277 | 1,524 | 1.0 | | 805.0 | 805.0 | 805.0 | 0.0 |
| BG | 21,970 | 146 | 943 | 1.5 | 57 | 805.0 | 805.0 | 805.0 | 0.0 |
| BH | 22,201 | 270 | 1,045 | 1.4 | 28 | 805.4 | 805.4 | 805.4 | 0.0 |
| BI | 22,401 | 227 | 757 | 1.9 | | 805.4 | 805.4 | 805.4 | 0.0 |
| BJ | 22,605 | 95 | 227 | 6.4 | | 805.6 | 805.6 | 805.6 | 0.0 |
| BK | 22,774 | 171 | 547 | 2.0 | | 809.7 | 809.7 | 809.7 | 0.0 |
| BL | 22,824 | 194 | 663 | 1.6 | | 810.0 | 810.0 | 810.0 | 0.0 |
| BM | 23,598 | 172 | 408 | 2.7 | 40 | 810.8 | 810.8 | 810.8 | 0.0 |
| BN | 24,010 | 80 | 252 | 4.3 | | 812.1 | 812.1 | 812.1 | 0.0 |
| BO | 24,320 | 48 | 591 | 1.8 | 72 | 816.7 | 816.7 | 816.7 | 0.0 |
| BP | 24,495 | 252 | 1,673 | 0.7 | | 816.9 | 816.9 | 816.9 | 0.0 |
| BQ | 25,335 | 236 | 799 | 1.4 | 71 | 817.0 | 817.0 | 817.0 | 0.0 |
| BR | 26,135 | 139 | 476 | 2.3 | 67 | 817.8 | 817.8 | 817.8 | 0.0 |
| BS | 27,255 | 79 | 866 | 1.3 | 123 | 821.7 | 821.7 | 821.7 | 0.0 |

¹Feet above Confluence with Rouge River

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

QUARTON BRANCH

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-----------------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| RANDOLPH STREET DRAIN | | | | | | | | | |
| A | 4,187 | 8 | 65 | 6.1 | | 872.0 | 872.0 | 872.0 | 0.0 |
| B | 4,230 | 20 | 59 | 6.8 | | 872.4 | 872.4 | 872.4 | 0.0 |
| C | 4,490 | 39 | 82 | 4.9 | | 877.4 | 877.4 | 877.4 | 0.0 |
| D | 4,630 | 27 | 127 | 3.2 | 144 | 879.6 | 879.6 | 879.6 | 0.0 |
| E | 4,870 | 23 | 51 | 8.4 | | 884.7 | 884.7 | 884.7 | 0.0 |
| F | 4,982 | 35 | 134 | 3.2 | | 888.8 | 888.8 | 888.8 | 0.0 |
| G | 5,420 | 76 | 143 | 3.0 | 46 | 890.9 | 890.9 | 890.9 | 0.0 |
| H | 5,683 | 154 | 782 | 0.6 | | 897.8 | 897.8 | 897.8 | 0.0 |
| I | 6,692 | 125 | 118 | 3.7 | | 901.8 | 901.8 | 901.8 | 0.0 |
| J | 7,207 | 80 | 302 | 1.4 | 104 | 904.3 | 904.3 | 904.3 | 0.0 |
| K | 7,377 | 180 | 539 | 0.8 | | 905.6 | 905.6 | 905.6 | 0.0 |
| L | 8,567 | 62 | 44 | 4.1 | | 905.8 | 905.8 | 905.8 | 0.0 |
| M | 8,932 | 10 | 32 | 5.6 | | 909.5 | 909.5 | 909.6 | 0.1 |
| N | 9,704 | 25 | 24 | 5.7 | | 915.5 | 915.5 | 915.5 | 0.0 |

¹Feet above Mouth

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

RANDOLPH STREET DRAIN

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-----------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| ROUGE RIVER | | | | | | | | | |
| A | 57,825 | 417 | 5,926 | 0.9 | 34 | 627.8 | 627.8 | 627.9 | 0.1 |
| B | 60,080 | 511 | 6,381 | 0.9 | | 628.1 | 628.1 | 628.2 | 0.1 |
| C | 62,540 | 361 | 4,286 | 1.3 | 75 | 628.6 | 628.6 | 628.7 | 0.1 |
| D | 63,765 | 565 | 6,771 | 0.8 | | 629.2 | 629.2 | 629.3 | 0.1 |
| E | 68,260 | 533 | 6,288 | 0.9 | 87 | 629.9 | 629.9 | 630.0 | 0.1 |
| F | 71,820 | 421 | 4,171 | 1.3 | | 630.9 | 630.9 | 631.0 | 0.1 |
| G | 73,915 | 575 | 5,593 | 1.0 | 575 | 632.1 | 632.1 | 632.2 | 0.1 |
| H | 76,000 | 393 | 3,991 | 1.0 | 98 | 632.7 | 632.7 | 632.8 | 0.1 |
| I | 81,050 | 65 | 693 | 5.5 | | 635.3 | 635.3 | 635.4 | 0.1 |
| J | 81,150 | 125 | 1,312 | 2.9 | | 637.1 | 637.1 | 637.1 | 0.0 |
| K | 84,740 | 594 | 5,453 | 0.7 | 71 | 637.9 | 637.9 | 638.0 | 0.1 |
| L | 86,760 | 395 | 2,987 | 1.3 | | 638.4 | 638.4 | 638.5 | 0.1 |
| M | 91,340 | 95 | 1,054 | 3.6 | 28 | 645.1 | 645.1 | 645.2 | 0.1 |
| N | 93,240 | 470 | 4,290 | 0.9 | | 646.6 | 646.6 | 646.7 | 0.1 |
| O | 94,420 | 89 | 831 | 4.6 | | 648.0 | 648.0 | 648.1 | 0.1 |
| P | 96,020 | 436 | 5,094 | 0.7 | 44 | 652.7 | 652.7 | 652.8 | 0.1 |
| Q | 97,300 | 323 | 3,613 | 1.1 | 112 | 652.8 | 652.8 | 652.9 | 0.1 |
| R | 100,050 | 271 | 1,101 | 2.5 | 153 | 653.7 | 653.7 | 653.8 | 0.1 |
| S | 104,600 | 91 | 1,707 | 1.6 | 414 | 658.5 | 658.5 | 658.6 | 0.1 |
| T | 106,600 | 324 | 1,024 | 2.7 | | 660.7 | 660.7 | 660.7 | 0.0 |
| U | 107,230 | 541 | 1,690 | 1.7 | 47 | 661.7 | 661.7 | 661.7 | 0.0 |
| V | 107,560 | 475 | 1,612 | 1.7 | 161 | 662.0 | 662.0 | 662.0 | 0.0 |
| W | 108,110 | 345 | 984 | 2.8 | 35 | 662.8 | 662.8 | 662.8 | 0.0 |
| X | 109,666 | 102 | 646 | 4.3 | 90 | 664.9 | 664.9 | 664.9 | 0.0 |
| Y | 110,141 | 180 | 779 | 3.6 | 136 | 666.0 | 666.0 | 666.0 | 0.0 |
| Z | 110,933 | 390 | 1,029 | 2.5 | 73 | 667.2 | 667.2 | 667.2 | 0.0 |

¹Feet above Mouth

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

ROUGE RIVER

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-----------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| ROUGE RIVER | | | | | | | | | |
| AA | 111,620 | 39 | 304 | 8.6 | | 669.1 | 669.1 | 669.1 | 0.0 |
| AB | 111,831 | 103 | 542 | 4.8 | | 670.9 | 670.9 | 670.9 | 0.0 |
| AC | 112,200 | 172 | 1,042 | 2.5 | 29 | 673.1 | 673.1 | 673.1 | 0.0 |
| AD | 112,728 | 120 | 543 | 4.8 | | 673.1 | 673.1 | 673.1 | 0.0 |
| AE | 113,204 | 525 | 1,519 | 1.7 | 75 | 673.9 | 673.9 | 673.9 | 0.0 |
| AF | 113,943 | 428 | 1,647 | 1.6 | 177 | 674.2 | 674.2 | 674.2 | 0.0 |
| AG | 114,735 | 129 | 521 | 4.9 | 100 | 676.0 | 676.0 | 676.0 | 0.0 |
| AH | 114,840 | 125 | 550 | 4.7 | 103 | 676.3 | 676.3 | 676.3 | 0.0 |
| AI | 115,421 | 39 | 319 | 8.0 | | 677.6 | 677.6 | 677.6 | 0.0 |
| AJ | 115,896 | 375 | 1,445 | 1.8 | 121 | 679.4 | 679.4 | 679.4 | 0.0 |
| AK | 116,424 | 662 | 2,153 | 1.2 | | 679.9 | 679.9 | 679.9 | 0.0 |
| AL | 117,058 | 259 | 593 | 4.3 | 105 | 680.3 | 680.3 | 680.3 | 0.0 |
| AM | 118,061 | 176 | 761 | 3.4 | 65 | 683.8 | 683.8 | 683.8 | 0.0 |
| AN | 118,484 | 125 | 794 | 3.2 | 54 | 684.2 | 684.2 | 684.2 | 0.0 |
| AO | 119,276 | 184 | 757 | 3.4 | | 684.8 | 684.8 | 684.8 | 0.0 |
| AP | 119,276 | 130 | 499 | 5.1 | | 685.8 | 685.8 | 685.8 | 0.0 |
| AQ | 121,968 | 197 | 691 | 3.7 | | 690.6 | 690.6 | 690.6 | 0.0 |
| AR | 122,444 | 192 | 1,093 | 2.3 | 206 | 691.4 | 691.4 | 691.4 | 0.0 |
| AS | 122,866 | 120 | 424 | 4.8 | | 692.4 | 692.4 | 692.4 | 0.0 |
| AT | 123,077 | 35 | 278 | 7.3 | | 692.5 | 692.5 | 692.5 | 0.0 |
| AU | 123,130 | 118 | 575 | 3.5 | | 693.3 | 693.3 | 693.3 | 0.0 |
| AV | 123,341 | 187 | 431 | 4.7 | | 693.4 | 693.4 | 693.4 | 0.0 |
| AW | 123,605 | 136 | 974 | 2.1 | 98 | 700.5 | 700.5 | 700.5 | 0.0 |
| AX | 123,922 | 221 | 2,618 | 1.0 | 189 | 700.6 | 700.6 | 700.6 | 0.0 |
| AY | 124,344 | 0 | 760 | 3.4 | 295 | 701.5 | 701.5 | 701.5 | 0.0 |
| AZ | 124,767 | 394 | 1,623 | 1.6 | | 702.0 | 702.0 | 702.0 | 0.0 |

¹Feet above Mouth

**T
A
B
L
E
1
3**

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

ROUGE RIVER

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-----------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| ROUGE RIVER | | | | | | | | | |
| BA | 125,664 | 667 | 2,937 | 0.7 | | 702.3 | 702.3 | 702.3 | 0.0 |
| BB | 126,403 | 319 | 2,367 | 0.9 | 393 | 702.4 | 702.4 | 702.4 | 0.0 |
| BC | 130,220 | 314 | 1,416 | 1.5 | | 712.1 | 712.1 | 712.1 | 0.0 |
| BD | 131,475 | 157 | 774 | 2.7 | | 713.8 | 713.8 | 713.9 | 0.1 |
| BE | 133,640 | 281 | 1,161 | 1.8 | | 718.3 | 718.3 | 718.3 | 0.0 |
| BF | 135,970 | 82 | 517 | 4.1 | 42 | 723.6 | 723.6 | 723.6 | 0.0 |
| BG | 137,595 | 267 | 2,373 | 0.8 | 51 | 731.3 | 731.3 | 731.4 | 0.1 |
| BH | 139,505 | 82 | 454 | 4.6 | | 734.2 | 734.2 | 734.2 | 0.0 |
| BI | 140,240 | 74 | 617 | 3.2 | | 739.0 | 739.0 | 739.0 | 0.0 |
| BJ | 140,715 | 201 | 1,361 | 1.5 | | 739.5 | 739.5 | 739.5 | 0.0 |
| BK | 141,535 | 50 | 758 | 2.6 | | 747.2 | 747.2 | 747.2 | 0.0 |
| BL | 143,665 | 333 | 3,444 | 0.6 | | 747.6 | 747.6 | 747.6 | 0.0 |
| BM | 144,365 | 80 | 1,038 | 1.9 | | 747.6 | 747.6 | 747.6 | 0.0 |
| BN | 144,665 | 180 | 1,111 | 1.8 | | 747.8 | 747.8 | 747.8 | 0.0 |
| BO | 145,765 | 170 | 2,252 | 0.9 | | 748.4 | 748.4 | 748.4 | 0.0 |
| BP | 145,925 | 248 | 1,474 | 1.3 | | 750.2 | 750.2 | 750.2 | 0.0 |
| BQ | 146,375 | 248 | 1,482 | 1.3 | | 750.2 | 750.2 | 750.2 | 0.0 |
| BR | 147,425 | 249 | 1,482 | 1.3 | | 750.3 | 750.3 | 750.3 | 0.0 |
| BS | 147,600 | 267 | 1,625 | 1.1 | | 756.6 | 756.6 | 756.6 | 0.0 |
| BT | 147,685 | 325 | 3,256 | 0.6 | | 756.9 | 756.9 | 756.9 | 0.0 |
| BU | 148,590 | 150 | 1,111 | 1.6 | | 757.0 | 757.0 | 757.0 | 0.0 |
| BV | 150,275 | 332 | 1,973 | 0.9 | | 757.6 | 757.6 | 757.6 | 0.0 |
| BW | 151,945 | 181 | 875 | 2.1 | | 758.4 | 758.4 | 758.5 | 0.1 |
| BX | 153,300 | 167 | 697 | 2.6 | | 761.3 | 761.3 | 761.4 | 0.1 |
| BY | 154,125 | 250 | 709 | 2.6 | | 763.5 | 763.5 | 763.6 | 0.1 |
| BZ | 154,335 | 98 | 604 | 3.0 | | 767.4 | 767.4 | 767.4 | 0.0 |

¹Feet above Mouth

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

ROUGE RIVER

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-----------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| ROUGE RIVER | | | | | | | | | |
| CA | 154,860 | 226 | 1,645 | 1.1 | | 767.9 | 767.9 | 767.9 | 0.0 |
| CB | 155,585 | 196 | 1,211 | 1.5 | | 768.2 | 768.2 | 768.2 | 0.0 |
| CC | 156,145 | 450 | 805 | 1.9 | | 768.6 | 768.6 | 768.6 | 0.0 |
| CD | 156,310 | 480 | 424 | 3.7 | | 770.0 | 770.0 | 770.1 | 0.1 |
| CE | 156,385 | 310 | 1,522 | 1.0 | | 770.2 | 770.2 | 770.2 | 0.0 |
| CF | 157,375 | 200 | 658 | 2.4 | 49 | 771.0 | 771.0 | 771.1 | 0.1 |
| CG | 157,495 | 200 | 665 | 2.3 | | 771.6 | 771.6 | 771.7 | 0.1 |
| CH | 157,690 | 220 | 818 | 1.9 | 10 | 772.0 | 772.0 | 772.1 | 0.1 |
| CI | 157,760 | 270 | 898 | 1.7 | | 772.1 | 772.1 | 772.2 | 0.1 |
| CJ | 158,385 | 192 | 680 | 2.3 | | 773.5 | 773.5 | 773.6 | 0.1 |
| CK | 158,525 | 140 | 563 | 2.8 | | 774.0 | 774.0 | 774.1 | 0.1 |
| CL | 158,615 | 179 | 780 | 2.0 | | 774.2 | 774.2 | 774.3 | 0.1 |
| CM | 158,935 | 254 | 514 | 2.8 | | 775.5 | 775.5 | 775.6 | 0.1 |
| CN | 159,035 | 254 | 1,217 | 1.2 | | 775.5 | 775.5 | 775.6 | 0.1 |
| CO | 159,385 | 180 | 598 | 2.4 | | 775.9 | 775.9 | 776.0 | 0.1 |
| CP | 159,585 | 276 | 701 | 2.1 | | 776.6 | 776.6 | 776.7 | 0.1 |
| CQ | 159,685 | 283 | 975 | 1.5 | | 776.9 | 776.9 | 777.0 | 0.1 |
| CR | 159,885 | 226 | 687 | 2.1 | | 777.1 | 777.1 | 777.2 | 0.1 |
| CS | 160,010 | 182 | 414 | 3.5 | | 777.7 | 777.7 | 777.7 | 0.0 |
| CT | 160,085 | 200 | 389 | 3.7 | | 778.0 | 778.0 | 778.0 | 0.0 |
| CU | 160,510 | 365 | 977 | 1.5 | | 779.1 | 779.1 | 779.2 | 0.1 |
| CV | 161,720 | 232 | 851 | 1.7 | | 779.9 | 779.9 | 780.0 | 0.1 |
| CW | 162,730 | 200 | 300 | 4.8 | | 781.1 | 781.1 | 781.2 | 0.1 |
| CX | 163,335 | 177 | 619 | 2.3 | | 782.4 | 782.4 | 782.5 | 0.1 |
| CY | 163,560 | 280 | 375 | 3.8 | | 783.9 | 783.9 | 784.0 | 0.1 |
| CZ | 163,625 | 280 | 1,156 | 1.2 | 13 | 783.9 | 783.9 | 784.0 | 0.1 |

¹Feet above Mouth

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

ROUGE RIVER

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-----------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| ROUGE RIVER | | | | | | | | | |
| DA | 164,185 | 155 | 444 | 2.7 | | 784.3 | 784.3 | 784.4 | 0.1 |
| DB | 164,365 | 44 | 244 | 4.9 | | 785.0 | 785.0 | 785.1 | 0.1 |
| DC | 164,410 | 52 | 170 | 7.1 | | 785.2 | 785.2 | 785.3 | 0.1 |
| DD | 165,195 | 230 | 1,520 | 0.8 | | 785.8 | 785.8 | 785.9 | 0.1 |
| DE | 165,905 | 150 | 1,183 | 1.0 | | 785.8 | 785.8 | 785.9 | 0.1 |
| DF | 166,470 | 58 | 261 | 4.6 | | 785.8 | 785.8 | 785.9 | 0.1 |
| DG | 167,785 | 136 | 440 | 2.7 | | 788.5 | 788.5 | 788.6 | 0.1 |
| DH | 169,085 | 106 | 430 | 2.8 | | 790.8 | 790.8 | 790.9 | 0.1 |
| DI | 169,435 | 75 | 408 | 2.9 | | 791.8 | 791.8 | 791.9 | 0.1 |
| DJ | 169,785 | 63 | 232 | 5.2 | | 792.8 | 792.8 | 792.8 | 0.0 |
| DK | 170,095 | 246 | 1,318 | 1.6 | | 796.8 | 796.8 | 796.9 | 0.1 |
| DL | 170,245 | 304 | 1,132 | 1.0 | | 798.0 | 798.0 | 798.1 | 0.1 |
| DM | 170,755 | 248 | 928 | 1.2 | | 798.1 | 798.1 | 798.1 | 0.0 |
| DN | 171,255 | 620 | 1,616 | 0.7 | | 798.3 | 798.3 | 798.3 | 0.0 |
| DO | 171,670 | 642 | 1,286 | 0.9 | | 798.4 | 798.4 | 798.4 | 0.0 |

¹Feet above Mouth

**T
A
B
L
E
1
3**

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

ROUGE RIVER

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|--------------------------|-----------------------|------------------------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH ² (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| ROUGE RIVER NORTH BRANCH | | | | | | | | | |
| A | 23.38 | 107 | 431 | 1.2 | | 692.3 | 692.3 | 692.3 | 0.0 |
| B | 23.46 | 42 | 242 | 2.2 | | 700.5 | 700.5 | 700.5 | 0.0 |
| C | 23.48 | 36 | 207 | 2.6 | | 700.5 | 700.5 | 700.5 | 0.0 |
| D | 23.51 | 104 | 622 | 0.9 | | 700.6 | 700.6 | 700.6 | 0.0 |

¹Miles above Confluence with Rouge River

²Width within Corporate Limits

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

ROUGE RIVER NORTH BRANCH

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-----------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| SARGENT CREEK | | | | | | | | | |
| A | 310 | 38 | 111 | 8.8 | | 767.8 | 767.8 | 767.8 | 0.0 |
| B | 410 | 24 | 93 | 10.5 | | 769.3 | 769.3 | 769.3 | 0.0 |
| C | 960 | 43 | 184 | 5.3 | | 774.2 | 774.2 | 774.2 | 0.0 |
| D | 1,150 | 96 | 341 | 2.9 | | 775.0 | 775.0 | 775.0 | 0.0 |
| E | 1,380 | 69 | 517 | 1.9 | 128 | 775.8 | 775.8 | 775.8 | 0.0 |
| F | 1,461 | 69 | 326 | 3.0 | 85 | 775.8 | 775.8 | 775.8 | 0.0 |
| G | 1,829 | 108 | 335 | 2.9 | | 778.6 | 778.6 | 778.6 | 0.0 |
| H | 2,271 | 158 | 408 | 2.1 | 71 | 783.9 | 783.9 | 783.9 | 0.0 |
| I | 2,521 | 104 | 257 | 3.8 | | 783.9 | 783.9 | 783.9 | 0.0 |
| J | 3,590 | 86 | 158 | 5.9 | | 790.7 | 790.7 | 790.7 | 0.0 |
| K | 4,259 | 151 | 290 | 2.8 | | 796.9 | 796.9 | 796.9 | 0.0 |
| L | 4,781 | 156 | 351 | 2.3 | | 801.8 | 801.8 | 801.8 | 0.0 |
| M | 5,000 | 47 | 179 | 5.2 | | 801.8 | 801.8 | 801.8 | 0.0 |
| N | 5,137 | 15 | 86 | 10.9 | | 802.7 | 802.7 | 802.7 | 0.0 |
| O | 5,580 | 222 | 863 | 1.1 | | 805.3 | 805.3 | 805.3 | 0.0 |
| P | 5,930 | 185 | 438 | 2.1 | | 805.4 | 805.4 | 805.4 | 0.0 |
| Q | 6,005 | 147 | 294 | 3.2 | | 805.6 | 805.6 | 805.6 | 0.0 |
| R | 6,145 | 184 | 257 | 3.6 | | 806.9 | 806.9 | 806.9 | 0.0 |
| S | 6,620 | 113 | 210 | 4.5 | | 810.6 | 810.6 | 810.6 | 0.0 |
| T | 6,780 | 33 | 122 | 7.7 | | 812.1 | 812.1 | 812.1 | 0.0 |
| U | 6,830 | 42 | 188 | 3.8 | | 813.4 | 813.4 | 813.4 | 0.0 |
| V | 7,120 | 338 | 520 | 1.4 | | 814.2 | 814.2 | 814.2 | 0.0 |
| W | 7,620 | 237 | 424 | 1.7 | | 815.3 | 815.3 | 815.3 | 0.0 |
| X | 8,120 | 215 | 304 | 2.3 | | 818.5 | 818.5 | 818.5 | 0.0 |
| Y | 8,418 | 104 | 448 | 1.6 | | 822.2 | 822.2 | 822.2 | 0.0 |
| Z | 8,615 | 57 | 134 | 5.3 | | 822.9 | 822.9 | 822.9 | 0.0 |

¹Feet above Confluence with Paint Creek

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

SARGENT CREEK

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-----------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| SARGENT CREEK | | | | | | | | | |
| AA | 9,315 | 24 | 114 | 6.2 | 37 | 827.8 | 827.8 | 827.8 | 0.0 |
| AB | 9,360 | 61 | 135 | 5.3 | | 829.4 | 829.4 | 829.4 | 0.0 |
| AC | 9,920 | 247 | 227 | 3.1 | | 839.1 | 839.1 | 839.1 | 0.0 |
| AD | 10,120 | 230 | 357 | 2.0 | | 840.9 | 840.9 | 840.9 | 0.0 |
| AE | 10,320 | 168 | 223 | 3.2 | | 843.2 | 843.2 | 843.2 | 0.0 |
| AF | 10,520 | 185 | 334 | 2.1 | | 845.2 | 845.2 | 845.2 | 0.0 |
| AG | 10,720 | 217 | 353 | 2.0 | | 846.2 | 846.2 | 846.2 | 0.0 |
| AH | 10,920 | 238 | 351 | 2.0 | | 847.4 | 847.4 | 847.4 | 0.0 |
| AI | 11,120 | 185 | 267 | 2.7 | 82 | 848.9 | 848.9 | 848.9 | 0.0 |
| AJ | 11,325 | 67 | 187 | 3.8 | 137 | 850.7 | 850.7 | 850.7 | 0.0 |
| AK | 11,525 | 108 | 175 | 4.1 | | 854.2 | 854.2 | 854.2 | 0.0 |
| AL | 11,720 | 315 | 834 | 0.9 | | 854.6 | 854.6 | 854.6 | 0.0 |
| AM | 11,995 | 181 | 211 | 3.4 | | 854.7 | 854.7 | 854.7 | 0.0 |
| AN | 12,495 | 95 | 134 | 5.3 | | 859.6 | 859.6 | 859.6 | 0.0 |
| AO | 13,055 | 138 | 188 | 3.8 | | 863.9 | 863.9 | 863.9 | 0.0 |
| AP | 13,455 | 17 | 53 | 9.9 | | 866.7 | 866.7 | 866.7 | 0.0 |
| AQ | 13,555 | 26 | 112 | 4.7 | | 869.0 | 869.0 | 869.0 | 0.0 |
| AR | 14,205 | 93 | 149 | 3.5 | 36 | 871.2 | 871.2 | 871.2 | 0.0 |
| AS | 15,105 | 120 | 145 | 3.6 | | 879.0 | 879.0 | 879.0 | 0.0 |
| AT | 15,165 | 154 | 218 | 2.4 | | 883.3 | 883.3 | 883.3 | 0.0 |
| AU | 15,205 | 233 | 720 | 0.7 | | 883.5 | 883.5 | 883.5 | 0.0 |
| AV | 15,635 | 211 | 192 | 2.7 | 55 | 886.5 | 886.5 | 886.5 | 0.0 |
| AW | 16,305 | 138 | 151 | 3.5 | | 893.4 | 893.4 | 893.4 | 0.0 |
| AX | 16,625 | 172 | 227 | 2.3 | | 897.9 | 897.9 | 897.9 | 0.0 |
| AY | 16,805 | 104 | 145 | 3.6 | | 900.0 | 900.0 | 900.0 | 0.0 |
| AZ | 16,945 | 130 | 541 | 1.0 | 149 | 900.9 | 900.9 | 900.9 | 0.0 |

¹Feet above Confluence with Paint Creek

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

SARGENT CREEK

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-----------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| SARGENT CREEK | | | | | | | | | |
| BA | 17,505 | 209 | 323 | 1.6 | 38 | 902.4 | 902.4 | 902.4 | 0.0 |
| BB | 17,850 | 184 | 233 | 2.3 | 47 | 904.6 | 904.6 | 904.6 | 0.0 |
| BC | 18,395 | 188 | 271 | 1.9 | | 909.6 | 909.6 | 909.6 | 0.0 |
| BD | 18,995 | 107 | 158 | 3.3 | | 914.6 | 914.6 | 914.6 | 0.0 |
| BE | 19,455 | 140 | 187 | 2.8 | 37 | 918.7 | 918.7 | 918.7 | 0.0 |
| BF | 20,155 | 21 | 62 | 8.5 | | 925.5 | 925.5 | 925.5 | 0.0 |
| BG | 20,293 | 13 | 73 | 7.2 | | 928.3 | 928.3 | 928.3 | 0.0 |
| BH | 20,309 | 43 | 263 | 2.0 | | 929.2 | 929.2 | 929.2 | 0.0 |
| BI | 21,325 | 38 | 95 | 4.2 | | 932.9 | 932.9 | 932.9 | 0.0 |
| BJ | 21,455 | 13 | 59 | 6.7 | | 935.9 | 935.9 | 935.9 | 0.0 |
| BK | 23,050 | 110 | 195 | 2.0 | | 938.8 | 938.8 | 938.8 | 0.0 |
| BL | 24,240 | 166 | 179 | 2.2 | | 941.6 | 941.6 | 941.6 | 0.0 |

¹Feet above Confluence with Paint Creek

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

SARGENT CREEK

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-----------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| SASHABAW CREEK | | | | | | | | | |
| A | 100 | 178 | 832 | 0.9 | | 961.4 | 961.4 | 961.4 | 0.0 |
| B | 1,650 | 147 | 374 | 1.4 | | 961.7 | 961.7 | 961.7 | 0.0 |
| C | 2,450 | 133 | 285 | 2.5 | | 963.4 | 963.4 | 963.5 | 0.1 |
| D | 3,400 | 77 | 100 | 5.2 | | 965.7 | 965.7 | 965.8 | 0.1 |
| E | 3,560 | 97 | 730 | 1.1 | | 967.9 | 967.9 | 967.9 | 0.0 |
| F | 3,650 | 192 | 510 | 1.5 | | 967.9 | 967.9 | 967.9 | 0.0 |
| G | 4,660 | 86 | 135 | 3.2 | | 968.8 | 968.8 | 968.9 | 0.1 |
| H | 4,750 | 128 | 390 | 1.3 | | 969.0 | 969.0 | 969.1 | 0.1 |
| I | 5,000 | 77 | 153 | 2.8 | | 969.3 | 969.3 | 969.4 | 0.1 |
| J | 5,950 | 204 | 341 | 1.3 | | 969.5 | 969.5 | 969.6 | 0.1 |
| K | 6,210 | 0 | 42 | 9.8 | 18 | 970.1 | 970.1 | 970.1 | 0.0 |
| L | 6,380 | 303 | 907 | 0.9 | | 972.4 | 972.4 | 972.4 | 0.0 |

¹Feet above Independence Township Corporate Limit

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

SASHABAW CREEK

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-----------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| SEELEY DRAIN | | | | | | | | | |
| A | 1,000 | 159 | 329 | 3.2 | | 765.8 | 765.8 | 765.9 | 0.1 |
| B | 1,902 | 70 | 154 | 6.8 | | 779.2 | 779.2 | 779.2 | 0.0 |
| C | 2,888 | 184 | 362 | 2.9 | | 789.5 | 789.5 | 789.5 | 0.0 |
| D | 3,817 | 0 | 140 | 7.5 | 41 | 796.4 | 796.4 | 796.4 | 0.0 |
| E | 4,444 | 35 | 144 | 7.3 | 28 | 804.9 | 804.9 | 804.9 | 0.0 |
| F | 5,021 | 87 | 158 | 6.6 | | 811.2 | 811.2 | 811.2 | 0.0 |
| G | 5,521 | 47 | 212 | 4.9 | 54 | 814.3 | 814.3 | 814.3 | 0.0 |
| H | 6,980 | 166 | 306 | 3.4 | | 824.9 | 824.9 | 824.9 | 0.0 |
| I | 8,035 | 56 | 206 | 3.0 | 69 | 829.9 | 829.9 | 829.9 | 0.0 |
| J | 9,133 | 130 | 178 | 3.4 | | 840.3 | 840.3 | 840.3 | 0.0 |
| K | 10,554 | 106 | 463 | 1.3 | | 848.9 | 848.9 | 848.9 | 0.0 |
| L | 10,902 | 40 | 127 | 4.8 | | 851.1 | 851.1 | 851.1 | 0.0 |
| M | 12,115 | 99 | 202 | 3.0 | | 855.9 | 855.9 | 855.9 | 0.0 |
| N | 12,616 | 58 | 129 | 4.7 | | 861.3 | 861.3 | 861.3 | 0.0 |
| O | 13,972 | 63 | 211 | 2.9 | | 863.9 | 863.9 | 864.0 | 0.1 |
| P | 15,100 | 360 | 1,236 | 0.5 | | 866.3 | 866.3 | 866.3 | 0.0 |
| Q | 15,290 | 208 | 366 | 1.8 | | 866.3 | 866.3 | 866.3 | 0.0 |
| R | 15,600 | 60 | 111 | 5.9 | 45 | 867.0 | 867.0 | 867.0 | 0.0 |
| S | 15,860 | 60 | 303 | 2.2 | 103 | 868.9 | 868.9 | 868.9 | 0.0 |
| T | 16,380 | 21 | 184 | 3.6 | 99 | 870.1 | 870.1 | 870.1 | 0.0 |
| U | 17,162 | 37 | 166 | 4.0 | 60 | 872.8 | 872.8 | 872.8 | 0.0 |
| V | 18,074 | 250 | 560 | 1.2 | | 874.5 | 874.5 | 874.5 | 0.0 |
| W | 18,874 | 31 | 257 | 2.1 | 169 | 876.2 | 876.2 | 876.3 | 0.1 |
| X | 19,774 | 56 | 123 | 4.4 | | 880.2 | 880.2 | 880.2 | 0.0 |
| Y | 20,524 | 28 | 74 | 7.3 | | 885.3 | 885.3 | 885.3 | 0.0 |
| Z | 20,956 | 95 | 524 | 1.0 | | 893.3 | 893.3 | 893.3 | 0.0 |

¹Feet above Confluence with Upper River Rouge

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

SEELEY DRAIN

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|--------------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| SEELEY DRAIN AA | 21,724 | 73 | 1,586 | 0.3 | | 893.4 | 893.4 | 893.4 | 0.0 |

¹Feet above Confluence with Upper River Rouge

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

SEELEY DRAIN

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|---|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| SHANAHAN DRAIN (EAST OF HENRY GRAHAM DRAIN) | | | | | | | | | |
| A | 25 | 371 | 511 | 0.8 | | 636.1 | 636.1 | 636.1 | 0.0 |
| B | 915 | 561 | 1,121 | 0.4 | | 636.1 | 636.1 | 636.1 | 0.0 |
| C | 1,200 | 405 | 556 | 0.7 | | 636.2 | 636.2 | 636.2 | 0.0 |
| D | 2,200 | 137 | 308 | 1.3 | | 637.1 | 637.1 | 637.2 | 0.1 |
| E | 3,375 | 71 | 161 | 2.1 | | 638.5 | 638.5 | 638.6 | 0.1 |
| F | 3,615 | 149 | 302 | 1.1 | | 639.9 | 639.9 | 640.0 | 0.1 |
| G | 4,120 | 210 | 413 | 0.8 | | 640.3 | 640.3 | 640.4 | 0.1 |

¹Feet above City of Troy Corporate Limit

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

SHANAHAN DRAIN (EAST OF HENRY GRAHAM DRAIN)

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|---|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| SHANAHAN DRAIN (WEST OF HENRY GRAHAM DRAIN) | | | | | | | | | |
| A | 575 | 76 | 300 | 1.9 | | 642.5 | 642.5 | 642.5 | 0.0 |
| B | 800 | 80 | 322 | 1.7 | | 643.0 | 643.0 | 643.0 | 0.0 |
| C | 1,750 | 244 | 340 | 1.6 | | 644.0 | 644.0 | 644.1 | 0.1 |
| D | 2,425 | 152 | 311 | 1.8 | | 645.1 | 645.1 | 645.2 | 0.1 |

¹Feet above inlet to Henry Graham Drain

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

SHANAHAN DRAIN (WEST OF HENRY GRAHAM DRAIN)

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-----------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| SHAW CREEK | | | | | | | | | |
| A | 2,580 | 90 | 572 | 0.9 | 116 | 932.9 | 932.9 | 933.0 | 0.1 |
| B | 4,080 | 264 | 240 | 2.1 | | 934.9 | 934.9 | 935.0 | 0.1 |

¹Feet above Confluence with Walled Lake Branch

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

SHAW CREEK

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|------------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| SHIAWASSEE RIVER | | | | | | | | | |
| A | 398,672 | 110 | 304 | 1.5 | | 915.2 | 915.2 | 915.2 | 0.0 |
| B | 400,011 | 98 | 322 | 1.4 | | 916.5 | 916.5 | 916.5 | 0.0 |
| C | 400,461 | 75 | 250 | 1.8 | | 916.6 | 916.6 | 916.6 | 0.0 |
| D | 401,023 | 82 | 211 | 2.1 | | 917.5 | 917.5 | 917.5 | 0.0 |
| E | 401,136 | 24 | 138 | 3.3 | | 917.5 | 917.5 | 917.5 | 0.0 |
| F | 402,737 | 178 | 458 | 1.0 | | 917.8 | 917.8 | 917.8 | 0.0 |
| G | 404,107 | 35 | 143 | 3.2 | | 917.9 | 917.9 | 917.9 | 0.0 |
| H | 404,221 | 13 | 70 | 6.4 | | 918.4 | 918.4 | 918.4 | 0.0 |
| I | 405,321 | 400 | 1,935 | 0.2 | | 919.1 | 919.1 | 919.1 | 0.0 |

¹Feet above Mouth

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

SHIAWASSEE RIVER

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|---------------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| SIMPSON LAKE OUTLET | | | | | | | | | |
| A | 430 | 108 | 154 | 0.5 | | 871.6 | 871.6 | 871.6 | 0.0 |
| B | 1,170 | 52 | 164 | 0.4 | | 875.9 | 875.9 | 875.9 | 0.0 |
| C | 1,445 | 10 | 17 | 4.2 | | 876.0 | 876.0 | 876.0 | 0.0 |
| D | 1,560 | 22 | 61 | 1.2 | | 876.4 | 876.4 | 876.4 | 0.0 |
| E | 1,865 | 116 | 246 | 0.3 | | 879.0 | 879.0 | 879.0 | 0.0 |

¹Feet above Confluence with Franklin Branch

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

SIMPSON LAKE OUTLET

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|------------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| SODON LAKE DRAIN | | | | | | | | | |
| A | 100 | 138 | 296 | 1.5 | | 816.7 | 816.7 | 816.7 | 0.0 |
| B | 446 | 92 | 565 | 0.8 | 136 | 820.1 | 820.1 | 820.1 | 0.0 |
| C | 500 | 166 | 261 | 1.7 | 89 | 820.2 | 820.2 | 820.2 | 0.0 |
| D | 550 | 170 | 1,100 | 0.4 | 30 | 820.3 | 820.3 | 820.3 | 0.0 |
| E | 1,220 | 287 | 814 | 0.5 | 39 | 820.3 | 820.3 | 820.3 | 0.0 |
| F | 1,705 | 211 | 505 | 0.9 | 29 | 820.4 | 820.4 | 820.4 | 0.0 |
| G | 1,805 | 188 | 315 | 0.8 | | 820.4 | 820.4 | 820.4 | 0.0 |
| H | 2,195 | 74 | 69 | 3.8 | | 823.8 | 823.8 | 823.8 | 0.0 |
| I | 2,375 | 75 | 338 | 0.8 | | 828.2 | 828.2 | 828.2 | 0.0 |
| J | 2,425 | 238 | 769 | 0.3 | 35 | 828.2 | 828.2 | 828.2 | 0.0 |
| K | 2,630 | 202 | 758 | 0.3 | | 828.2 | 828.2 | 828.2 | 0.0 |
| L | 2,830 | 113 | 358 | 0.7 | | 828.2 | 828.2 | 828.2 | 0.0 |
| M | 3,030 | 135 | 826 | 0.2 | | 831.1 | 831.1 | 831.2 | 0.1 |
| N | 3,380 | 150 | 710 | 0.3 | | 831.1 | 831.1 | 831.2 | 0.1 |
| O | 3,700 | 324 | 1,658 | 0.1 | | 831.1 | 831.1 | 831.2 | 0.1 |
| P | 4,500 | 63 | 127 | 0.8 | 57 | 831.2 | 831.2 | 831.3 | 0.1 |
| Q | 4,625 | 79 | 86 | 1.2 | 51 | 831.7 | 831.7 | 831.7 | 0.0 |
| R | 4,675 | 60 | 74 | 1.3 | 40 | 832.4 | 832.4 | 832.4 | 0.0 |
| S | 5,000 | 52 | 74 | 1.3 | 28 | 835.1 | 835.1 | 835.1 | 0.0 |
| T | 5,530 | 52 | 60 | 1.7 | 59 | 838.5 | 838.5 | 838.5 | 0.0 |
| U | 6,210 | 6 | 80 | 1.3 | 49 | 845.8 | 845.8 | 845.9 | 0.1 |
| V | 6,610 | 70 | 351 | 0.1 | | 847.1 | 847.1 | 847.2 | 0.1 |
| W | 6,800 | 10 | 17 | 2.7 | | 848.2 | 848.2 | 848.3 | 0.1 |
| X | 6,870 | 74 | 113 | 0.4 | | 848.3 | 848.3 | 848.4 | 0.1 |
| Y | 7,350 | 197 | 348 | 0.1 | | 848.3 | 848.3 | 848.4 | 0.1 |
| Z | 7,950 | 13 | 11 | 4.2 | | 848.3 | 848.3 | 848.4 | 0.1 |

¹Feet above Confluence with Long Lake-Forest Lake Drain

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

SODON LAKE DRAIN

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|------------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| SODON LAKE DRAIN | | | | | | | | | |
| AA | 8,000 | 14 | 14 | 3.3 | | 849.7 | 849.7 | 849.7 | 0.0 |
| AB | 8,150 | 9 | 24 | 1.9 | | 851.0 | 851.0 | 851.0 | 0.0 |
| AC | 8,240 | 27 | 18 | 2.6 | | 854.2 | 854.2 | 854.2 | 0.0 |
| AD | 8,340 | 28 | 88 | 0.5 | | 854.3 | 854.3 | 854.3 | 0.0 |
| AE | 8,610 | 11 | 17 | 2.7 | | 854.6 | 854.6 | 854.6 | 0.0 |
| AF | 8,790 | 15 | 20 | 2.2 | | 855.1 | 855.1 | 855.1 | 0.0 |

¹Feet above Confluence with Long Lake-Forest Lake Drain

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

SODON LAKE DRAIN

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-----------------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| SPENCER-BARNARD DRAIN | | | | | | | | | |
| A | 100 | 356 | 1,237 | 1.3 | | 631.3 | 631.3 | 631.4 | 0.1 |
| B | 800 | 356 | 1,363 | 1.2 | | 631.7 | 631.7 | 631.7 | 0.0 |
| C | 1,275 | 460 | 1,214 | 1.3 | | 631.9 | 631.9 | 631.9 | 0.0 |
| D | 1,436 | 468 | 1,790 | 0.9 | | 632.3 | 632.3 | 632.4 | 0.1 |
| E | 1,560 | 457 | 1,539 | 1.0 | | 632.4 | 632.4 | 632.5 | 0.1 |
| F | 2,360 | 378 | 1,571 | 1.8 | | 632.7 | 632.7 | 632.8 | 0.1 |
| G | 2,660 | 222 | 1,110 | 2.2 | | 632.8 | 632.8 | 632.9 | 0.1 |
| H | 3,160 | 142 | 747 | 2.1 | | 633.2 | 633.2 | 633.2 | 0.0 |
| I | 3,410 | 142 | 767 | 2.1 | | 633.4 | 633.4 | 633.4 | 0.0 |
| J | 4,620 | 80 | 642 | 3.0 | | 634.9 | 634.9 | 634.9 | 0.0 |
| K | 4,865 | 179 | 727 | 2.6 | | 635.2 | 635.2 | 635.2 | 0.0 |
| L | 5,080 | 400 | 1,277 | 1.5 | | 635.5 | 635.5 | 635.5 | 0.0 |
| M | 5,855 | 259 | 843 | 2.3 | | 635.8 | 635.8 | 635.8 | 0.0 |
| N | 6,930 | 247 | 666 | 2.9 | | 636.8 | 636.8 | 636.9 | 0.1 |
| O | 7,150 | 381 | 957 | 2.0 | | 637.8 | 637.8 | 637.9 | 0.1 |
| P | 7,790 | 349 | 990 | 1.9 | | 638.3 | 638.3 | 638.4 | 0.1 |
| Q | 8,695 | 61 | 373 | 5.1 | | 639.6 | 639.6 | 639.7 | 0.1 |
| R | 9,465 | 97 | 444 | 4.3 | | 641.5 | 641.5 | 641.6 | 0.1 |
| S | 9,755 | 40 | 231 | 8.2 | | 642.1 | 642.1 | 642.2 | 0.1 |
| T | 9,780 | 200 | 2,050 | 0.9 | 24 | 643.5 | 643.5 | 643.5 | 0.0 |
| U | 10,375 | 205 | 2,066 | 0.9 | | 644.0 | 644.0 | 644.1 | 0.1 |
| V | 10,660 | 200 | 196 | 9.7 | | 646.5 | 646.5 | 646.5 | 0.0 |
| W | 10,805 | 442 | 2,075 | 0.9 | | 648.2 | 648.2 | 648.3 | 0.1 |
| X | 11,735 | 117 | 430 | 4.4 | | 649.2 | 649.2 | 649.3 | 0.1 |
| Y | 12,895 | 69 | 405 | 4.7 | | 650.0 | 650.0 | 650.1 | 0.1 |
| Z | 12,955 | 48 | 240 | 7.9 | | 650.6 | 650.6 | 650.7 | 0.1 |

¹Feet above Dequindre Road

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

SPENCER-BARNARD DRAIN

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-----------------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| SPENCER-BARNARD DRAIN | | | | | | | | | |
| AA | 13,680 | 53 | 332 | 5.7 | | 653.0 | 653.0 | 653.1 | 0.1 |
| AB | 13,975 | 400 | 337 | 5.6 | | 655.6 | 655.6 | 655.6 | 0.0 |
| AC | 14,620 | 90 | 288 | 6.6 | | 656.0 | 656.0 | 656.0 | 0.0 |
| AD | 15,220 | 120 | 297 | 6.4 | | 657.5 | 657.5 | 657.5 | 0.0 |

¹Feet above Dequindre Road

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

SPENCER-BARNARD DRAIN

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-----------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| SPRAGUE BRANCH | | | | | | | | | |
| A | 17,690 | 700 | 1,816 | 0.8 | | 798.5 | 798.5 | 798.5 | 0.0 |
| B | 18,135 | 1,050 | 3,133 | 0.5 | | 798.6 | 798.6 | 798.6 | 0.0 |
| C | 18,435 | 400 | 1,044 | 0.8 | | 798.6 | 798.6 | 798.6 | 0.0 |
| D | 18,685 | 258 | 342 | 2.4 | | 798.9 | 798.9 | 798.9 | 0.0 |
| E | 19,185 | 126 | 403 | 2.0 | | 799.9 | 799.9 | 799.9 | 0.0 |
| F | 19,385 | 89 | 341 | 2.4 | | 800.0 | 800.0 | 800.0 | 0.0 |
| G | 19,685 | 113 | 429 | 1.9 | | 800.2 | 800.2 | 800.3 | 0.1 |
| H | 19,995 | 70 | 258 | 3.2 | | 800.4 | 800.4 | 800.5 | 0.1 |
| I | 20,490 | 130 | 294 | 2.8 | | 801.9 | 801.9 | 802.0 | 0.1 |
| J | 20,785 | 167 | 383 | 2.1 | | 803.5 | 803.5 | 803.5 | 0.0 |
| K | 21,885 | 99 | 205 | 2.4 | | 809.2 | 809.2 | 809.3 | 0.1 |
| L | 22,935 | 92 | 188 | 2.6 | | 813.3 | 813.3 | 813.4 | 0.1 |
| M | 23,985 | 113 | 247 | 2.0 | | 821.5 | 821.5 | 821.6 | 0.1 |
| N | 24,235 | 99 | 149 | 3.3 | | 823.3 | 823.3 | 823.4 | 0.1 |
| O | 24,435 | 110 | 89 | 3.1 | | 825.9 | 825.9 | 825.9 | 0.0 |
| P | 25,295 | 105 | 225 | 1.2 | | 826.0 | 826.0 | 826.0 | 0.0 |
| Q | 25,710 | 20 | 36 | 7.7 | | 828.3 | 828.3 | 828.3 | 0.0 |
| R | 25,955 | 160 | 106 | 2.6 | | 833.8 | 833.8 | 833.9 | 0.1 |
| S | 26,135 | 59 | 120 | 2.3 | | 834.1 | 834.1 | 834.2 | 0.1 |
| T | 26,485 | 190 | 123 | 2.3 | | 834.7 | 834.7 | 834.8 | 0.1 |
| U | 26,835 | 95 | 116 | 2.4 | | 835.3 | 835.3 | 835.3 | 0.0 |
| V | 27,010 | 210 | 203 | 1.4 | | 835.6 | 835.6 | 835.6 | 0.0 |

¹Feet above City of Troy Corporate Limits

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

SPRAGUE BRANCH

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-----------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| SPRAGUE DRAIN | | | | | | | | | |
| A | 260 | 700 | 1,816 | 0.8 | | 798.5 | 798.5 | 798.5 | 0.0 |
| B | 855 | 1,050 | 3,133 | 0.5 | | 798.6 | 798.6 | 798.6 | 0.0 |
| C | 1,110 | 130 | 895 | 0.9 | | 798.6 | 798.6 | 798.7 | 0.1 |
| D | 1,425 | 141 | 957 | 0.9 | | 798.6 | 798.6 | 798.7 | 0.1 |
| E | 1,655 | 20 | 170 | 4.8 | | 798.9 | 798.9 | 799.0 | 0.1 |
| F | 1,915 | 155 | 1,064 | 0.8 | | 799.0 | 799.0 | 799.1 | 0.1 |
| G | 2,630 | 128 | 859 | 1.0 | | 799.0 | 799.0 | 799.1 | 0.1 |
| H | 2,750 | 76 | 476 | 1.7 | | 799.0 | 799.0 | 799.1 | 0.1 |
| I | 3,250 | 73 | 453 | 1.8 | | 799.1 | 799.1 | 799.2 | 0.1 |
| J | 3,750 | 68 | 421 | 1.9 | | 799.1 | 799.1 | 799.2 | 0.1 |
| K | 4,190 | 70 | 439 | 1.9 | | 799.3 | 799.3 | 799.4 | 0.1 |

¹Feet above Confluence with Rouge River

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

SPRAGUE DRAIN

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-----------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| STONY CREEK | | | | | | | | | |
| A | 150 | 276 | 839 | 1.4 | | 693.2 | 692.7 ² | 692.7 | 0.0 |
| B | 600 | 61 | 231 | 5.3 | | 693.2 | 693.0 ² | 693.0 | 0.0 |
| C | 880 | 131 | 233 | 5.2 | | 694.3 | 694.3 | 694.3 | 0.0 |
| D | 1,100 | 36 | 177 | 6.9 | | 696.0 | 696.0 | 696.0 | 0.0 |
| E | 1,620 | 180 | 893 | 1.4 | | 697.0 | 697.0 | 697.1 | 0.1 |
| F | 2,480 | 170 | 280 | 4.3 | | 699.4 | 699.4 | 699.4 | 0.0 |
| G | 4,580 | 154 | 293 | 4.1 | | 711.0 | 711.0 | 711.0 | 0.0 |
| H | 6,370 | 102 | 316 | 3.8 | | 719.9 | 719.9 | 719.9 | 0.0 |
| I | 6,560 | 24 | 137 | 8.8 | | 721.5 | 721.5 | 721.5 | 0.0 |
| J | 7,220 | 42 | 135 | 9.0 | | 725.9 | 725.9 | 725.9 | 0.0 |
| K | 7,430 | 36 | 209 | 5.8 | | 728.1 | 728.1 | 728.1 | 0.0 |
| L | 8,330 | 55 | 161 | 5.0 | | 732.2 | 732.2 | 732.2 | 0.0 |
| M | 9,970 | 52 | 161 | 5.0 | | 739.7 | 739.7 | 739.7 | 0.0 |
| N | 11,390 | 72 | 236 | 3.4 | 108 | 747.4 | 747.4 | 747.4 | 0.0 |
| O | 13,130 | 180 | 239 | 3.4 | | 755.5 | 755.5 | 755.5 | 0.0 |
| P | 14,000 | 92 | 223 | 3.6 | | 758.6 | 758.6 | 758.6 | 0.0 |
| Q | 15,540 | 104 | 229 | 3.5 | | 764.5 | 764.5 | 764.6 | 0.1 |
| R | 15,980 | 19 | 100 | 8.1 | | 766.8 | 766.8 | 766.8 | 0.0 |

¹Feet above Confluence with Clinton River

²Elevations without considering backwater effect from Clinton River

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

STONY CREEK

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-------------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| STONYCROFT BRANCH | | | | | | | | | |
| A | 20,179 | 16 | 479 | 1.4 | 124 | 825.7 | 825.7 | 825.7 | 0.0 |
| B | 21,205 | 106 | 154 | 4.2 | | 833.2 | 833.2 | 833.2 | 0.0 |
| C | 21,778 | 104 | 144 | 4.5 | | 838.5 | 838.5 | 838.5 | 0.0 |
| D | 21,850 | 78 | 136 | 4.8 | | 839.2 | 839.2 | 839.2 | 0.0 |
| E | 21,937 | 153 | 486 | 1.3 | | 842.7 | 842.7 | 842.7 | 0.0 |
| F | 22,587 | 177 | 195 | 3.3 | | 843.5 | 843.5 | 843.5 | 0.0 |
| G | 23,135 | 20 | 197 | 3.3 | 232 | 847.0 | 847.0 | 847.0 | 0.0 |

¹Feet above City of Bloomfield Hills Corporate Limit

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

STONYCROFT BRANCH

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-----------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| STURGIS DRAIN | | | | | | | | | |
| A | 0 | 324 | 408 | 2.5 | | 644.3 | 644.3 | 644.3 | 0.0 |
| B | 1,200 | 97 | 250 | 4.1 | | 647.3 | 647.3 | 647.4 | 0.1 |
| C | 2,060 | 400 | 408 | 2.5 | | 650.0 | 650.0 | 650.1 | 0.1 |
| D | 2,195 | 380 | 648 | 1.6 | | 650.2 | 650.2 | 650.3 | 0.1 |
| E | 2,460 | 375 | 484 | 2.1 | | 650.8 | 650.8 | 650.9 | 0.1 |
| F | 3,290 | 76 | 263 | 3.9 | | 652.6 | 652.6 | 652.7 | 0.1 |
| G | 3,850 | 37 | 217 | 4.7 | | 654.3 | 654.3 | 654.4 | 0.1 |
| H | 3,975 | 38 | 197 | 5.2 | | 654.7 | 654.7 | 654.8 | 0.1 |
| I | 4,450 | 116 | 305 | 3.4 | | 656.0 | 656.0 | 656.1 | 0.1 |
| J | 4,660 | 160 | 157 | 6.6 | | 660.3 | 660.3 | 660.4 | 0.1 |
| K | 4,805 | 155 | 467 | 2.2 | | 660.4 | 660.4 | 660.5 | 0.1 |
| L | 5,055 | 120 | 435 | 2.4 | | 660.7 | 660.7 | 660.8 | 0.1 |
| M | 5,150 | 120 | 398 | 2.6 | | 660.8 | 660.8 | 660.9 | 0.1 |
| N | 5,250 | 103 | 301 | 3.4 | | 661.6 | 661.6 | 661.7 | 0.1 |
| O | 5,380 | 77 | 613 | 1.7 | | 661.6 | 661.6 | 661.7 | 0.1 |
| P | 5,810 | 167 | 460 | 2.2 | | 661.7 | 661.7 | 661.8 | 0.1 |
| Q | 6,405 | 145 | 281 | 3.7 | | 662.6 | 662.6 | 662.7 | 0.1 |
| R | 6,590 | 175 | 286 | 3.6 | | 663.5 | 663.5 | 663.6 | 0.1 |
| S | 6,650 | 150 | 354 | 2.9 | | 663.7 | 663.7 | 663.8 | 0.1 |
| T | 7,275 | 90 | 400 | 2.6 | | 664.5 | 664.5 | 664.6 | 0.1 |
| U | 7,725 | 67 | 319 | 1.8 | | 665.3 | 665.3 | 665.4 | 0.1 |
| V | 8,035 | 43 | 174 | 3.3 | | 665.7 | 665.7 | 665.8 | 0.1 |
| W | 8,550 | 168 | 576 | 1.0 | | 666.1 | 666.1 | 666.2 | 0.1 |
| X | 8,710 | 159 | 288 | 2.0 | | 666.3 | 666.3 | 666.4 | 0.1 |
| Y | 8,765 | 93 | 320 | 1.8 | | 666.4 | 666.4 | 666.5 | 0.1 |
| Z | 9,050 | 130 | 317 | 1.8 | | 666.7 | 666.7 | 666.8 | 0.1 |

¹Feet above inlet to Douglas Drain Enclosure

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

STURGIS DRAIN

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-----------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| STURGIS DRAIN | | | | | | | | | |
| AA | 9,150 | 116 | 300 | 1.9 | 5 | 666.7 | 666.7 | 666.8 | 0.1 |
| AB | 9,950 | 100 | 230 | 2.5 | | 667.4 | 667.4 | 667.5 | 0.1 |
| AC | 11,000 | 300 | 644 | 0.9 | | 667.8 | 667.8 | 667.9 | 0.1 |
| AD | 12,125 | 300 | 621 | 0.9 | | 668.1 | 668.1 | 668.2 | 0.1 |
| AE | 12,330 | 231 | 759 | 0.2 | | 669.2 | 669.2 | 669.2 | 0.0 |
| AF | 13,735 | 23 | 45 | 2.9 | | 669.4 | 669.4 | 669.5 | 0.1 |
| AG | 14,413 | 85 | 60 | 1.0 | | 673.2 | 673.2 | 673.2 | 0.0 |
| AH | 14,914 | 31 | 40 | 1.3 | | 674.0 | 674.0 | 674.1 | 0.1 |
| AI | 16,314 | 34 | 42 | 1.4 | | 677.1 | 677.1 | 677.2 | 0.1 |
| AJ | 16,472 | 35 | 78 | 0.8 | | 679.2 | 679.2 | 679.2 | 0.0 |
| AK | 18,072 | 11 | 12 | 2.0 | | 690.0 | 690.0 | 690.0 | 0.0 |
| AL | 19,867 | 13 | 25 | 2.4 | | 709.8 | 709.8 | 709.8 | 0.0 |
| AM | 21,400 | 12 | 25 | 2.4 | | 730.9 | 730.9 | 730.9 | 0.0 |

¹Feet above inlet to Douglas Drain Enclosure

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

STURGIS DRAIN

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-----------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| SUGDEN CREEK | | | | | | | | | |
| A | 240 | 160 | 317 | 0.0 | 33 | 932.0 | 932.0 | 932.0 | 0.0 |
| B | 755 | 33 | 75 | 0.2 | 37 | 932.0 | 932.0 | 932.0 | 0.0 |
| C | 925 | 4 | 6 | 2.1 | | 932.0 | 932.0 | 932.0 | 0.0 |
| D | 1,262 | 312 | 317 | 0.0 | 36 | 932.1 | 932.1 | 932.1 | 0.0 |
| E | 1,687 | 242 | 170 | 0.1 | 68 | 932.1 | 932.1 | 932.1 | 0.0 |
| F | 3,707 | 14 | 29 | 0.7 | 37 | 932.3 | 932.3 | 932.3 | 0.0 |
| G | 3,844 | 2 | 6 | 3.6 | | 933.8 | 933.8 | 933.8 | 0.0 |
| H | 3,917 | 72 | 744 | 0.0 | | 934.1 | 934.1 | 934.1 | 0.0 |
| I | 4,097 | 9 | 37 | 0.6 | 28 | 936.5 | 936.5 | 936.5 | 0.0 |
| J | 4,311 | 67 | 117 | 0.2 | | 937.8 | 937.8 | 937.8 | 0.0 |

¹Feet above Confluence with Huron River

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

SUGDEN CREEK

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-----------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| TAMARACK CREEK | | | | | | | | | |
| A | 488 | 192 | 908 | 0.8 | | 646.4 | 646.4 | 646.5 | 0.1 |
| B | 1,437 | 226 | 599 | 1.3 | | 647.2 | 647.2 | 647.3 | 0.1 |
| C | 3,004 | 142 | 203 | 2.3 | | 649.6 | 649.6 | 649.6 | 0.0 |
| D | 3,880 | 76 | 198 | 2.3 | 35 | 654.7 | 654.7 | 654.8 | 0.1 |
| E | 4,355 | 104 | 712 | 0.7 | | 661.5 | 661.5 | 661.6 | 0.1 |
| F | 4,925 | 204 | 1,926 | 0.2 | | 661.5 | 661.5 | 661.6 | 0.1 |

¹Feet above Confluence with Evans Branch

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

TAMARACK CREEK

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-----------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| TARABUSI CREEK | | | | | | | | | |
| A | 4.805 | 152 | 680 | 1.7 | | 700.1 | 700.1 | 700.1 | 0.0 |
| B | 4.843 | 254 | 933 | 1.1 | | 700.2 | 700.2 | 700.2 | 0.0 |
| C | 4.881 | 200 | 550 | 1.9 | | 700.2 | 700.2 | 700.2 | 0.0 |
| D | 4.919 | 175 | 395 | 2.6 | | 700.3 | 700.3 | 700.4 | 0.1 |
| E | 4.956 | 126 | 242 | 4.3 | 39 | 700.7 | 700.7 | 700.7 | 0.0 |
| F | 4.995 | 160 | 259 | 4.0 | | 702.3 | 702.3 | 702.4 | 0.1 |
| G | 5.089 | 57 | 898 | 1.1 | 218 | 704.3 | 704.3 | 704.4 | 0.1 |
| H | 5.217 | 37 | 211 | 4.9 | 43 | 704.5 | 704.5 | 704.6 | 0.1 |
| I | 5.349 | 185 | 722 | 1.4 | | 712.1 | 712.1 | 712.2 | 0.1 |
| J | 5.405 | 101 | 457 | 2.3 | | 712.4 | 712.4 | 712.5 | 0.1 |
| K | 5.454 | 145 | 635 | 1.6 | | 712.7 | 712.7 | 712.8 | 0.1 |
| L | 5.521 | 150 | 409 | 2.5 | | 713.1 | 713.1 | 713.2 | 0.1 |
| M | 5.600 | 63 | 334 | 3.1 | | 713.6 | 713.6 | 713.7 | 0.1 |
| N | 5.661 | 100 | 928 | 1.2 | | 720.4 | 720.4 | 720.4 | 0.0 |
| O | 5.704 | 167 | 1,256 | 0.9 | | 720.4 | 720.4 | 720.4 | 0.0 |
| P | 5.750 | 158 | 1,110 | 1.0 | | 720.4 | 720.4 | 720.4 | 0.0 |
| Q | 5.882 | 84 | 518 | 2.2 | | 720.4 | 720.4 | 720.4 | 0.0 |
| R | 5.977 | 75 | 407 | 2.8 | | 720.5 | 720.5 | 720.5 | 0.0 |
| S | 6.087 | 65 | 267 | 3.0 | | 720.7 | 720.7 | 720.7 | 0.0 |
| T | 6.180 | 60 | 215 | 3.8 | | 721.1 | 721.1 | 721.1 | 0.0 |
| U | 6.396 | 49 | 155 | 5.2 | | 724.9 | 724.9 | 724.9 | 0.0 |
| V | 6.443 | 134 | 338 | 2.4 | | 725.6 | 725.6 | 725.7 | 0.1 |
| W | 6.573 | 98 | 246 | 3.2 | | 728.2 | 728.2 | 728.2 | 0.0 |
| X | 6.630 | 183 | 288 | 2.7 | | 728.5 | 728.5 | 728.6 | 0.1 |
| Y | 6.726 | 89 | 198 | 4.0 | | 729.4 | 729.4 | 729.5 | 0.1 |
| Z | 6.783 | 62 | 168 | 4.7 | | 730.2 | 730.2 | 730.3 | 0.1 |

¹Miles above Confluence with Bell and No. Branch Drain

**T
A
B
L
E
1
3**

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

TARABUSI CREEK

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-----------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| TARABUSI CREEK | | | | | | | | | |
| AA | 6.897 | 29 | 139 | 5.7 | 26 | 732.1 | 732.1 | 732.1 | 0.0 |
| AB | 6.953 | 30 | 135 | 5.8 | 28 | 733.3 | 733.3 | 733.3 | 0.0 |
| AC | 6.972 | 48 | 135 | 5.8 | | 734.3 | 734.3 | 734.3 | 0.0 |
| AD | 7.142 | 46 | 152 | 5.2 | | 747.8 | 747.8 | 747.9 | 0.1 |
| AE | 7.170 | 100 | 199 | 4.0 | | 748.7 | 748.7 | 748.8 | 0.1 |
| AF | 7.180 | 81 | 166 | 5.6 | | 748.6 | 748.6 | 748.6 | 0.0 |
| AG | 7.203 | 145 | 631 | 1.5 | 106 | 749.8 | 749.8 | 749.9 | 0.1 |
| AH | 7.233 | 133 | 185 | 5.0 | | 750.1 | 750.1 | 750.1 | 0.0 |
| AI | 7.271 | 125 | 431 | 2.2 | | 751.6 | 751.6 | 751.7 | 0.1 |
| AJ | 7.284 | 102 | 452 | 2.1 | | 751.7 | 751.7 | 751.8 | 0.1 |
| AK | 7.339 | 46 | 155 | 6.0 | | 752.1 | 752.1 | 752.2 | 0.1 |
| AL | 7.364 | 74 | 358 | 2.6 | 55 | 753.1 | 753.1 | 753.2 | 0.1 |
| AM | 7.392 | 43 | 475 | 2.0 | 85 | 753.5 | 753.5 | 753.5 | 0.0 |
| AN | 7.421 | 43 | 151 | 6.2 | | 753.5 | 753.5 | 753.5 | 0.0 |
| AO | 7.449 | 52 | 218 | 4.3 | | 756.2 | 756.2 | 756.3 | 0.1 |
| AP | 7.487 | 56 | 251 | 3.7 | | 756.8 | 756.8 | 756.9 | 0.1 |
| AQ | 7.542 | 51 | 196 | 4.7 | | 757.7 | 757.7 | 757.7 | 0.0 |
| AR | 7.547 | 67 | 148 | 6.3 | | 759.7 | 759.7 | 759.7 | 0.0 |
| AS | 7.582 | 162 | 478 | 1.9 | 64 | 761.1 | 761.1 | 761.2 | 0.1 |
| AT | 7.608 | 251 | 681 | 1.4 | | 761.3 | 761.3 | 761.4 | 0.1 |
| AU | 7.625 | 276 | 766 | 1.2 | | 761.3 | 761.3 | 761.4 | 0.1 |
| AV | 7.638 | 343 | 786 | 1.2 | | 761.4 | 761.4 | 761.5 | 0.1 |
| AW | 7.648 | 203 | 177 | 5.3 | | 761.4 | 761.4 | 761.5 | 0.1 |
| AX | 7.680 | 363 | 371 | 2.5 | | 763.1 | 763.1 | 763.1 | 0.0 |
| AY | 7.710 | 255 | 469 | 2.0 | | 763.9 | 763.9 | 763.9 | 0.0 |
| AZ | 7.743 | 85 | 491 | 1.9 | 205 | 764.4 | 764.4 | 764.5 | 0.1 |

¹Miles above Confluence with Bell and No. Branch Drain

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

TARABUSI CREEK

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-----------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| TARABUSI CREEK | | | | | | | | | |
| BA | 7.786 | 39 | 101 | 9.2 | | 766.7 | 766.7 | 766.7 | 0.0 |
| BB | 7.820 | 48 | 157 | 5.9 | | 770.0 | 770.0 | 770.0 | 0.0 |
| BC | 7.850 | 47 | 108 | 8.6 | | 772.3 | 772.3 | 772.3 | 0.0 |
| BD | 7.873 | 144 | 191 | 4.9 | | 774.5 | 774.5 | 774.5 | 0.0 |
| BE | 7.888 | 32 | 96 | 9.7 | | 775.3 | 775.3 | 775.3 | 0.0 |
| BF | 7.947 | 63 | 226 | 3.5 | 138 | 777.5 | 777.5 | 777.6 | 0.1 |
| BG | 7.977 | 28 | 387 | 2.4 | 243 | 778.8 | 778.8 | 778.9 | 0.1 |
| BH | 8.008 | 61 | 127 | 7.3 | | 779.9 | 779.9 | 779.9 | 0.0 |
| BI | 8.042 | 44 | 196 | 4.7 | 42 | 782.2 | 782.2 | 782.2 | 0.0 |
| BJ | 8.077 | 0 | 104 | 8.9 | 44 | 784.4 | 784.4 | 784.4 | 0.0 |
| BK | 8.108 | 45 | 271 | 3.4 | | 788.7 | 788.7 | 788.7 | 0.0 |
| BL | 8.153 | 149 | 463 | 2.0 | 72 | 789.2 | 789.2 | 789.2 | 0.0 |
| BM | 8.193 | 25 | 265 | 3.5 | 76 | 789.7 | 789.7 | 789.8 | 0.1 |
| BN | 8.216 | 38 | 618 | 1.5 | 106 | 791.8 | 791.8 | 791.9 | 0.1 |
| BO | 8.263 | 28 | 90 | 10.3 | | 794.0 | 794.0 | 794.0 | 0.0 |
| BP | 8.277 | 36 | 180 | 5.2 | | 796.8 | 796.8 | 796.8 | 0.0 |
| BQ | 8.303 | 239 | 940 | 1.0 | | 798.7 | 798.7 | 798.7 | 0.0 |
| BR | 8.320 | 247 | 1,036 | 0.9 | | 799.1 | 799.1 | 799.1 | 0.0 |
| BS | 8.347 | 99 | 134 | 6.9 | | 799.4 | 799.4 | 799.4 | 0.0 |

¹Miles above Confluence with Bell and No. Branch Drain

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

TARABUSI CREEK

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-----------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| THORNTON CREEK | | | | | | | | | |
| A | 850 | 12 | N/A | N/A | 188 | 826.6 | 826.6 | 826.6 | 0.0 |
| B | 1,796 | 25 | N/A | N/A | 50 | 829.6 | 829.6 | 829.6 | 0.0 |
| C | 1,996 | 24 | N/A | N/A | 51 | 830.8 | 830.8 | 830.8 | 0.0 |
| D | 2,456 | 24 | N/A | N/A | | 832.6 | 832.6 | 832.6 | 0.0 |
| E | 3,066 | 4 | N/A | N/A | 26 | 835.1 | 835.1 | 835.1 | 0.0 |
| F | 3,754 | 28 | 97 | 3.5 | 39 | 842.5 | 842.5 | 842.5 | 0.0 |
| G | 3,965 | 0 | 69 | 4.9 | 21 | 844.4 | 844.4 | 844.4 | 0.0 |
| H | 4,852 | 49 | 110 | 3.1 | 30 | 850.3 | 850.3 | 850.3 | 0.0 |
| I | 6,069 | 23 | 80 | 4.2 | | 858.6 | 858.6 | 858.6 | 0.0 |
| J | 6,793 | 73 | 75 | 2.1 | | 866.8 | 866.8 | 866.9 | 0.1 |
| K | 7,356 | 13 | 66 | 2.4 | | 873.2 | 873.2 | 873.3 | 0.1 |
| L | 8,021 | 44 | 63 | 2.5 | | 878.7 | 878.7 | 878.7 | 0.0 |
| M | 8,836 | 7 | 28 | 5.6 | | 885.8 | 885.8 | 885.9 | 0.1 |
| N | 9,461 | 12 | 78 | 2.0 | 68 | 888.8 | 888.8 | 888.9 | 0.1 |
| O | 10,285 | 10 | 26 | 6.1 | | 893.7 | 893.7 | 893.7 | 0.0 |
| P | 11,154 | 220 | 64 | 2.5 | | 898.1 | 898.1 | 898.1 | 0.0 |
| Q | 11,994 | 84 | 399 | 0.4 | | 906.3 | 906.3 | 906.3 | 0.0 |
| R | 13,069 | 240 | 173 | 0.9 | | 907.9 | 907.9 | 907.9 | 0.0 |
| S | 14,494 | 123 | 134 | 1.2 | | 917.2 | 917.2 | 917.3 | 0.1 |
| T | 14,903 | 70 | 72 | 2.2 | | 919.5 | 919.5 | 919.6 | 0.1 |
| U | 16,112 | 12 | 95 | 1.7 | 91 | 928.3 | 928.3 | 928.4 | 0.1 |
| V | 16,862 | 53 | 105 | 1.5 | 27 | 933.8 | 933.8 | 933.9 | 0.1 |
| W | 17,612 | 3 | 49 | 3.3 | 40 | 940.0 | 940.0 | 940.1 | 0.1 |
| X | 18,512 | 40 | 61 | 2.6 | | 950.0 | 950.0 | 950.1 | 0.1 |
| Y | 19,386 | 71 | 43 | 3.7 | | 960.4 | 960.4 | 960.4 | 0.0 |

¹Feet above Confluence with Walled Lake Branch

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

THORNTON CREEK

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-------------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| UPPER RIVER ROUGE | | | | | | | | | |
| A | 30,863 | 245 | 1,242 | 1.7 | | 645.7 | 645.7 | 645.7 | 0.0 |
| B | 31,964 | 349 | 2,300 | 0.9 | | 646.1 | 646.1 | 646.1 | 0.0 |
| C | 33,064 | 195 | 1,043 | 2.0 | | 646.3 | 646.3 | 646.3 | 0.0 |
| D | 33,989 | 33 | 168 | 12.4 | | 646.6 | 646.6 | 646.6 | 0.0 |
| E | 35,047 | 380 | 2,511 | 0.8 | | 651.6 | 651.6 | 651.6 | 0.0 |
| F | 35,472 | 227 | 1,658 | 1.3 | 173 | 651.7 | 651.7 | 651.7 | 0.0 |
| G | 37,032 | 477 | 816 | 2.5 | | 653.2 | 653.2 | 653.2 | 0.0 |
| H | 38,582 | 485 | 1,242 | 1.6 | 40 | 657.1 | 657.1 | 657.1 | 0.0 |
| I | 38,688 | 456 | 840 | 2.4 | | 659.5 | 659.5 | 659.5 | 0.0 |
| J | 39,489 | 168 | 537 | 3.8 | 376 | 661.2 | 661.2 | 661.2 | 0.0 |
| K | 39,587 | 200 | 684 | 3.0 | | 663.6 | 663.6 | 663.6 | 0.0 |
| L | 40,359 | 364 | 206 | 5.7 | | 667.0 | 667.0 | 667.0 | 0.0 |
| M | 40,860 | 395 | 1,606 | 1.3 | | 669.8 | 669.8 | 669.8 | 0.0 |
| N | 41,261 | 152 | 663 | 3.0 | | 670.1 | 670.1 | 670.1 | 0.0 |
| O | 41,908 | 140 | 1,315 | 1.5 | | 674.7 | 674.7 | 674.7 | 0.0 |
| P | 42,333 | 529 | 3,918 | 0.5 | 39 | 674.8 | 674.8 | 674.8 | 0.0 |
| Q | 43,266 | 314 | 828 | 2.4 | | 675.0 | 675.0 | 675.0 | 0.0 |
| R | 44,335 | 208 | 1,440 | 1.4 | 239 | 676.1 | 676.1 | 676.2 | 0.1 |
| S | 46,075 | 260 | 1,135 | 1.8 | | 683.4 | 683.4 | 683.5 | 0.1 |
| T | 46,295 | 29 | 1,172 | 1.7 | 267 | 684.4 | 684.4 | 684.5 | 0.1 |
| U | 47,255 | 110 | 695 | 2.9 | | 690.9 | 690.9 | 690.9 | 0.0 |
| V | 47,805 | 28 | 366 | 5.5 | 52 | 692.0 | 692.0 | 692.1 | 0.1 |
| W | 49,045 | 225 | 797 | 2.5 | 133 | 697.4 | 697.4 | 697.4 | 0.0 |
| X | 49,495 | 60 | 322 | 6.2 | 136 | 699.0 | 699.0 | 699.0 | 0.0 |
| Y | 50,545 | 61 | 483 | 3.9 | 59 | 704.0 | 704.0 | 704.0 | 0.0 |
| Z | 51,265 | 35 | 198 | 9.6 | | 706.7 | 706.7 | 706.7 | 0.0 |

¹Feet above Confluence with Rouge Creek

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

UPPER RIVER ROUGE

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-------------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| UPPER RIVER ROUGE | | | | | | | | | |
| AA | 51,515 | 40 | 239 | 7.9 | 47 | 709.7 | 709.7 | 709.7 | 0.0 |
| AB | 52,145 | 121 | 619 | 3.1 | 37 | 713.8 | 713.8 | 713.8 | 0.0 |
| AC | 53,175 | 165 | 507 | 3.7 | 36 | 716.8 | 716.8 | 716.8 | 0.0 |
| AD | 55,865 | 274 | 837 | 2.3 | | 723.9 | 723.9 | 723.9 | 0.0 |
| AE | 56,955 | 294 | 800 | 2.4 | | 725.3 | 725.3 | 725.3 | 0.0 |
| AF | 58,005 | 331 | 718 | 2.6 | | 728.2 | 728.2 | 728.2 | 0.0 |
| AG | 59,105 | 302 | 817 | 2.3 | | 730.9 | 730.9 | 730.9 | 0.0 |
| AH | 60,160 | 278 | 610 | 3.1 | | 733.5 | 733.5 | 733.5 | 0.0 |
| AI | 61,010 | 141 | 611 | 3.1 | 113 | 736.8 | 736.8 | 736.8 | 0.0 |
| AJ | 61,820 | 220 | 570 | 3.3 | | 739.8 | 739.8 | 739.8 | 0.0 |
| AK | 63,091 | 194 | 549 | 3.5 | | 745.2 | 745.2 | 745.2 | 0.0 |
| AL | 63,912 | 261 | 719 | 2.6 | | 747.3 | 747.3 | 747.3 | 0.0 |
| AM | 64,472 | 125 | 818 | 2.3 | 182 | 748.4 | 748.4 | 748.4 | 0.0 |
| AN | 65,432 | 200 | 443 | 4.1 | | 754.3 | 754.3 | 754.3 | 0.0 |
| AO | 66,042 | 239 | 688 | 2.6 | 50 | 757.4 | 757.4 | 757.4 | 0.0 |
| AP | 66,272 | 186 | 355 | 5.1 | | 758.7 | 758.7 | 758.7 | 0.0 |

¹Feet above Confluence with Rouge Creek

**T
A
B
L
E
1
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FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

UPPER RIVER ROUGE

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|--------------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| WALLED LAKE BRANCH | | | | | | | | | |
| A | 4,015 | 44 | N/A | N/A | 191 | 823.7 | 823.7 | 823.7 | 0.0 |
| B | 4,752 | 216 | N/A | N/A | 34 | 824.9 | 824.9 | 824.9 | 0.0 |
| C | 5,873 | 320 | N/A | N/A | | 825.1 | 825.1 | 825.1 | 0.0 |
| D | 6,323 | 325 | N/A | N/A | | 825.7 | 825.7 | 825.7 | 0.0 |
| E | 8,360 | 430 | N/A | N/A | | 826.8 | 826.8 | 826.8 | 0.0 |
| F | 8,660 | 522 | N/A | N/A | 178 | 827.3 | 827.3 | 827.3 | 0.0 |
| G | 10,460 | 438 | 1,308 | 1.6 | | 833.2 | 833.2 | 833.2 | 0.0 |
| H | 10,803 | 374 | 2,221 | 1.0 | 341 | 833.7 | 833.7 | 833.8 | 0.1 |
| I | 11,450 | 320 | 1,204 | 1.8 | 39 | 833.7 | 833.7 | 833.8 | 0.1 |
| J | 12,241 | 302 | 938 | 2.3 | 89 | 834.7 | 834.7 | 834.7 | 0.0 |
| K | 14,699 | 45 | 548 | 2.2 | 375 | 839.2 | 839.2 | 839.3 | 0.1 |
| L | 15,874 | 233 | 458 | 2.7 | | 843.6 | 843.6 | 843.7 | 0.1 |
| M | 16,449 | 200 | 451 | 2.7 | | 846.0 | 846.0 | 846.1 | 0.1 |
| N | 17,600 | 180 | 471 | 2.6 | | 850.1 | 850.1 | 850.1 | 0.0 |
| O | 18,207 | 20 | 130 | 9.3 | | 852.8 | 852.8 | 852.8 | 0.0 |
| P | 18,859 | 364 | 1,776 | 0.7 | | 855.5 | 855.5 | 855.5 | 0.0 |
| Q | 20,084 | 225 | 484 | 2.3 | | 858.4 | 858.4 | 858.5 | 0.1 |
| R | 20,634 | 20 | 106 | 10.5 | | 863.1 | 863.1 | 863.1 | 0.0 |
| S | 20,897 | 0 | 100 | 11.2 | 13 | 865.7 | 865.7 | 865.7 | 0.0 |
| T | 21,496 | 134 | 554 | 2.0 | | 868.9 | 868.9 | 868.9 | 0.0 |
| U | 22,246 | 196 | 576 | 1.9 | | 870.5 | 870.5 | 870.6 | 0.1 |
| V | 22,647 | 19 | 115 | 9.7 | | 873.2 | 873.2 | 873.2 | 0.0 |
| W | 22,983 | 35 | 206 | 5.4 | | 875.8 | 875.8 | 875.9 | 0.1 |
| X | 23,458 | 51 | 205 | 5.4 | | 880.8 | 880.8 | 880.9 | 0.1 |
| Y | 24,383 | 235 | 798 | 1.4 | | 885.3 | 885.3 | 885.4 | 0.1 |
| Z | 25,714 | 0 | 670 | 1.4 | 200 | 892.4 | 892.4 | 892.4 | 0.0 |

¹Feet above CSX Railroad

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

WALLED LAKE BRANCH

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|--------------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| WALLED LAKE BRANCH | | | | | | | | | |
| AA | 26,065 | 55 | 187 | 4.9 | | 894.0 | 894.0 | 894.1 | 0.1 |
| AB | 26,900 | 66 | 730 | 1.1 | 84 | 907.6 | 907.6 | 907.6 | 0.0 |
| AC | 27,151 | 66 | 420 | 2.0 | | 907.6 | 907.6 | 907.6 | 0.0 |
| AD | 27,478 | 150 | 854 | 1.0 | | 908.5 | 908.5 | 908.6 | 0.1 |
| AE | 27,828 | 327 | 857 | 1.0 | | 908.5 | 908.5 | 908.6 | 0.1 |
| AF | 28,315 | 84 | 969 | 0.8 | 156 | 908.6 | 908.6 | 908.6 | 0.0 |
| AG | 29,115 | 200 | 389 | 2.1 | | 909.1 | 909.1 | 909.1 | 0.0 |
| AH | 30,216 | 37 | 472 | 1.7 | 77 | 911.6 | 911.6 | 911.7 | 0.1 |
| AI | 31,333 | 109 | 463 | 2.1 | | 914.4 | 914.4 | 914.5 | 0.1 |
| AJ | 32,629 | 58 | 230 | 4.1 | | 919.2 | 919.2 | 919.3 | 0.1 |
| AK | 33,380 | 145 | 230 | 3.4 | | 921.0 | 921.0 | 921.1 | 0.1 |
| AL | 35,003 | 115 | 476 | 1.7 | | 923.8 | 923.8 | 923.9 | 0.1 |
| AM | 35,513 | 218 | 844 | 0.9 | | 924.0 | 924.0 | 924.0 | 0.0 |
| AN | 36,063 | 10 | 58 | 13.7 | | 924.6 | 924.6 | 924.6 | 0.0 |
| AO | 37,166 | 36 | 208 | 1.6 | | 931.5 | 931.5 | 931.5 | 0.0 |
| AP | 38,066 | 198 | 778 | 0.4 | | 931.7 | 931.7 | 931.7 | 0.0 |
| AQ | 39,066 | 555 | 1,721 | 0.2 | | 931.7 | 931.7 | 931.7 | 0.0 |
| AR | 40,841 | 231 | 577 | 0.6 | | 931.7 | 931.7 | 931.7 | 0.0 |
| AS | 41,891 | 511 | 1,022 | 0.3 | | 931.8 | 931.8 | 931.9 | 0.1 |
| AT | 42,866 | 745 | 2,264 | 0.2 | | 931.9 | 931.9 | 932.0 | 0.1 |
| AU | 44,466 | 76 | 87 | 3.9 | | 932.6 | 932.6 | 932.7 | 0.1 |

¹Feet above CSX Railroad

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

WALLED LAKE BRANCH

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|--------------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| WALNUT LAKE OUTLET | | | | | | | | | |
| A | 0 | 13 | 20 | 1.6 | | 879.0 | 879.0 | 879.0 | 0.0 |
| B | 320 | 18 | 23 | 1.4 | | 879.9 | 879.9 | 879.9 | 0.0 |
| C | 548 | 10 | 24 | 1.3 | | 881.7 | 881.7 | 881.7 | 0.0 |
| D | 940 | 15 | 29 | 1.1 | | 882.5 | 882.5 | 882.5 | 0.0 |
| E | 1,038 | 9 | 26 | 1.2 | | 882.6 | 882.6 | 882.6 | 0.0 |

¹Feet above Limit of Detailed Study (Limit of Detailed Study is 400 feet downstream of Middlebelt Road)

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

WALNUT LAKE OUTLET

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|--------------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| WALTERS LAKE DRAIN | | | | | | | | | |
| A | 0 | 175 | 145 | 1.1 | | 1032.6 | 1031.3 ² | 1031.3 | 0.0 |
| B | 200 | 65 | 160 | 0.6 | | 1033.6 | 1033.6 | 1033.7 | 0.1 |
| C | 400 | 65 | 180 | 0.6 | | 1033.7 | 1033.7 | 1033.8 | 0.1 |
| D | 525 | 10 | 53 | 1.1 | | 1034.0 | 1034.0 | 1034.1 | 0.1 |
| E | 625 | 124 | 372 | 0.4 | | 1034.0 | 1034.0 | 1034.1 | 0.1 |
| F | 1,250 | 175 | 396 | 0.5 | | 1034.0 | 1034.0 | 1034.1 | 0.1 |
| G | 1,850 | 77 | 131 | 1.1 | | 1034.1 | 1034.1 | 1034.2 | 0.1 |
| H | 1,975 | 115 | 255 | 0.6 | | 1036.4 | 1036.4 | 1036.4 | 0.0 |
| I | 2,080 | 103 | 245 | 0.4 | | 1036.4 | 1036.4 | 1036.4 | 0.0 |
| J | 2,275 | 99 | 209 | 0.4 | 26 | 1036.5 | 1036.5 | 1036.5 | 0.0 |
| K | 2,370 | 168 | 440 | 0.3 | | 1036.5 | 1036.5 | 1036.5 | 0.0 |
| L | 2,575 | 122 | 175 | 0.7 | | 1036.5 | 1036.5 | 1036.5 | 0.0 |
| M | 2,675 | 44 | 108 | 0.9 | | 1036.5 | 1036.5 | 1036.5 | 0.0 |
| N | 3,425 | 138 | 149 | 1.0 | 89 | 1036.9 | 1036.9 | 1037.0 | 0.1 |
| O | 3,525 | 83 | 203 | 0.2 | | 1039.6 | 1039.6 | 1039.7 | 0.1 |
| P | 3,675 | 89 | 177 | 0.2 | 106 | 1039.6 | 1039.6 | 1039.7 | 0.1 |
| Q | 3,990 | 78 | 135 | 0.2 | | 1039.6 | 1039.6 | 1039.7 | 0.1 |

¹Feet above Confluence with Dennis Lake

²Elevations without considering backwater effect from Dennis Lake

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

WALTERS LAKE DRAIN

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|------------------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| WEST BRANCH BELL CREEK | | | | | | | | | |
| A | 325 | 66 | 103 | 6.2 | | 756.3 | 756.3 | 756.3 | 0.0 |
| B | 1,496 | 5 | 256 | 2.5 | 120 | 761.7 | 761.7 | 761.8 | 0.1 |
| C | 2,611 | 33 | 118 | 5.4 | 28 | 775.8 | 775.8 | 775.8 | 0.0 |
| D | 3,654 | - | - | - | | 782.8 | - | - | - |
| E | 4,348 | - | - | - | | 793.2 | - | - | - |
| F | 5,610 | - | - | - | | 807.7 | - | - | - |
| G | 6,647 | - | - | - | | 815.9 | - | - | - |
| H | 7,517 | - | - | - | | 825.3 | - | - | - |

¹Feet above City of Farmington Hills Corporate Limits

*No floodway data computed

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

WEST BRANCH BELL CREEK

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-------------------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| WEST BRANCH STONY CREEK | | | | | | | | | |
| A | 900 | 20 | 132 | 4.0 | | 809.4 | 809.4 | 809.4 | 0.0 |
| B | 2,110 | 300 | 441 | 1.9 | | 819.9 | 819.9 | 819.9 | 0.0 |
| C | 5,285 | 380 | 2,128 | 0.3 | | 845.2 | 845.2 | 845.2 | 0.0 |
| D | 5,330 | 202 | 513 | 1.3 | 48 | 845.2 | 845.2 | 845.2 | 0.0 |
| E | 5,800 | 30 | 255 | 2.1 | | 852.5 | 852.5 | 852.5 | 0.0 |
| F | 6,070 | 280 | 1,683 | 0.5 | | 852.5 | 852.5 | 852.5 | 0.0 |
| G | 7,630 | 156 | 305 | 3.5 | 84 | 859.8 | 859.8 | 859.8 | 0.0 |
| H | 10,020 | 20 | 178 | 3.0 | | 884.5 | 884.5 | 884.5 | 0.0 |
| I | 10,180 | 90 | 170 | 3.5 | | 885.0 | 885.0 | 885.0 | 0.0 |
| J | 11,145 | 20 | 100 | 5.3 | | 897.6 | 897.6 | 897.6 | 0.0 |
| K | 11,410 | 130 | 948 | 0.7 | | 897.6 | 897.6 | 897.6 | 0.0 |
| L | 12,175 | 220 | 1,429 | 0.5 | | 897.7 | 897.7 | 897.7 | 0.0 |
| M | 15,160 | 183 | 522 | 1.8 | 32 | 902.1 | 902.1 | 902.1 | 0.0 |
| N | 17,095 | 290 | 298 | 1.5 | | 911.1 | 911.1 | 911.1 | 0.0 |
| O | 17,140 | 350 | 136 | 10.1 | | 911.5 | 911.5 | 911.5 | 0.0 |
| P | 19,180 | 160 | 222 | 2.5 | | 914.8 | 914.8 | 914.8 | 0.0 |
| Q | 21,510 | 100 | 347 | 1.1 | | 920.9 | 920.9 | 920.9 | 0.0 |
| R | 21,600 | 20 | 59 | 6.6 | | 922.1 | 922.1 | 922.1 | 0.0 |
| S | 23,305 | 100 | 281 | 1.7 | | 925.5 | 925.5 | 925.5 | 0.0 |
| T | 23,405 | 60 | 31 | 12.7 | | 926.8 | 926.8 | 926.8 | 0.0 |
| U | 24,140 | 128 | 396 | 1.2 | 37 | 927.1 | 927.1 | 927.1 | 0.0 |
| V | 25,620 | 215 | 693 | 0.6 | | 928.1 | 928.1 | 928.1 | 0.0 |
| W | 25,920 | 175 | 411 | 2.2 | | 928.5 | 928.5 | 928.5 | 0.0 |
| X | 30,500 | 294 | 247 | 3.1 | 51 | 932.3 | 932.3 | 932.3 | 0.0 |
| Y | 30,890 | 40 | 320 | 1.2 | | 937.1 | 937.1 | 937.1 | 0.0 |
| Z | 32,740 | 930 | 2,552 | 0.2 | | 937.2 | 937.2 | 937.2 | 0.0 |

¹Feet above Confluence with Stony Creek Lake

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

WEST BRANCH STONY CREEK

| FLOODING SOURCE | | FLOODWAY | | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) | | | |
|-------------------------|-----------------------|-----------------|-------------------------------------|--|---|---|---------------------|------------------|----------|
| CROSS SECTION | DISTANCE ¹ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WIDTH REDUCED FROM PRIOR STUDY (FEET) | REGULATORY | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| WEST BRANCH STONY CREEK | | | | | | | | | |
| AA | 34,625 | 1,090 | 5,735 | 0.1 | | 937.2 | 937.2 | 937.2 | 0.0 |
| AB | 35,165 | 320 | 612 | 0.4 | | 937.2 | 937.2 | 937.2 | 0.0 |
| AC | 39,390 | 210 | 454 | 1.4 | | 938.7 | 938.7 | 938.7 | 0.0 |
| AD | 39,590 | 80 | 92 | 2.4 | | 940.7 | 940.7 | 940.7 | 0.0 |
| AE | 40,580 | 130 | 33 | 6.6 | | 941.1 | 941.1 | 941.1 | 0.0 |

¹Feet above Confluence with Stony Creek Lake

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY

**OAKLAND COUNTY, MI
ALL JURISDICTIONS**

FLOODWAY DATA

WEST BRANCH STONY CREEK

FLOOD INSURANCE STUDY

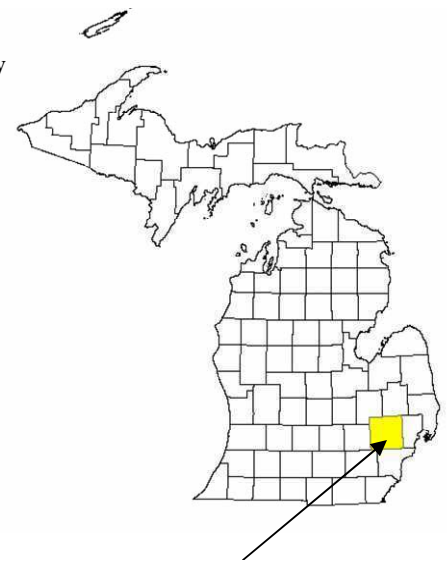
OAKLAND COUNTY, MICHIGAN

ALL JURISDICTIONS

VOLUME 3 OF 5



| Community Name | Community Number | Community Name | Community Number |
|-----------------------------|-------------------------|-------------------------------------|-------------------------|
| Addison, Township of | 261029 | Milford, Village of | 260317 |
| Auburn Hills, City of | 260263 | Northville, City of (Wayne/Oakland) | 260235 |
| * Berkley, City of | 260292 | Novi, City of | 260175 |
| Beverly Hills, Village of | 260256 | * Novi, Township of | 261039 |
| Bingham Farms, Village of | 260713 | * Oak Park, City of | 260323 |
| Birmingham, City of | 260168 | Oakland, Township of | 260476 |
| Bloomfield, Township of | 260169 | Orchard Lake Village, City of | 260477 |
| Bloomfield Hills, City of | 260712 | Orion, Township of | 261033 |
| Brandon, Township of | 261031 | Ortonville, Village of | 261034 |
| Clarkston, Village of | 260472 | * Oxford, Township of | 261035 |
| * Clawson, City of | 260170 | * Oxford, Village of | 261036 |
| Commerce, Township of | 260473 | * Pleasant Ridge, City of | 260606 |
| Farmington, City of | 260171 | Pontiac, City of | 260177 |
| Farmington Hills, City of | 260172 | Rochester, City of | 260326 |
| * Ferndale, City of | 260262 | Rochester Hills, City of | 260471 |
| Franklin, Village of | 260325 | Rose, Township of | 260729 |
| Groveland, Township of | 260992 | * Royal Oak, City of | 260178 |
| * Hazel Park, City of | 260289 | * Royal Oak, Township of | 260341 |
| Highland, Township of | 260650 | South Lyon, City of | 261037 |
| Holly, Township of | 260474 | Southfield, City of | 260179 |
| Holly, Village of | 260587 | Southfield, Township of | 260176 |
| * Huntington Woods, City of | 260723 | * Springfield, Township of | 260478 |
| Independence, Township of | 260475 | Sylvan Lake, City of | 260701 |
| Keego Harbor, City of | 260173 | Troy, City of | 260180 |
| Lake Angelus, City of | 260700 | Walled Lake, City of | 260181 |
| Lake Orion, Village of | 260588 | Waterford, Charter Township of | 260284 |
| * Lathrup Village, City of | 260297 | West Bloomfield, Township of | 260182 |
| * Leonard, Village of | 261030 | White Lake, Township of | 260479 |
| Lyon, Township of | 261032 | Wixom, City of | 261038 |
| * Madison Heights, City of | 260174 | Wolverine Lake, Village of | 260480 |
| Milford, Township of | 261040 | * Non Flood Prone | |



Oakland County



SEPTEMBER 29, 2006
Federal Emergency Management Agency

FLOOD INSURANCE STUDY NUMBER
 26125CV003A

NOTICE TO
FLOOD INSURANCE STUDY USERS

Communities participating in the National Flood Insurance Program (NFIP) have established repositories of flood hazard data for floodplain management and flood insurance purposes. This Flood Insurance Study (FIS) report may not contain all data available within the Community Map Repository. It is advisable to contact the Community Map Repository for any additional data.

Part or all of this Flood Insurance Study may be revised and republished at any time. In addition, part of this Flood Insurance Study may be revised by the Letter of Map Revision process, which does not involve republication or redistribution of the Flood Insurance Study. It is, therefore, the responsibility of the user to consult with community officials and to check the community repository to obtain the most current Flood Insurance Study components.

Selected Flood Insurance Rate Map panels for this community contain information that was previously shown separately on the corresponding Flood Boundary and Floodway Map panels (e.g., floodways, cross sections). In addition, former flood hazard zone designations have been changed as follows:

| <u>Old Zones</u> | <u>New Zone</u> |
|------------------|-----------------|
| A1 through A30 | AE |
| B | X |
| C | X |

Countywide FIS Effective Date: September 29, 2006

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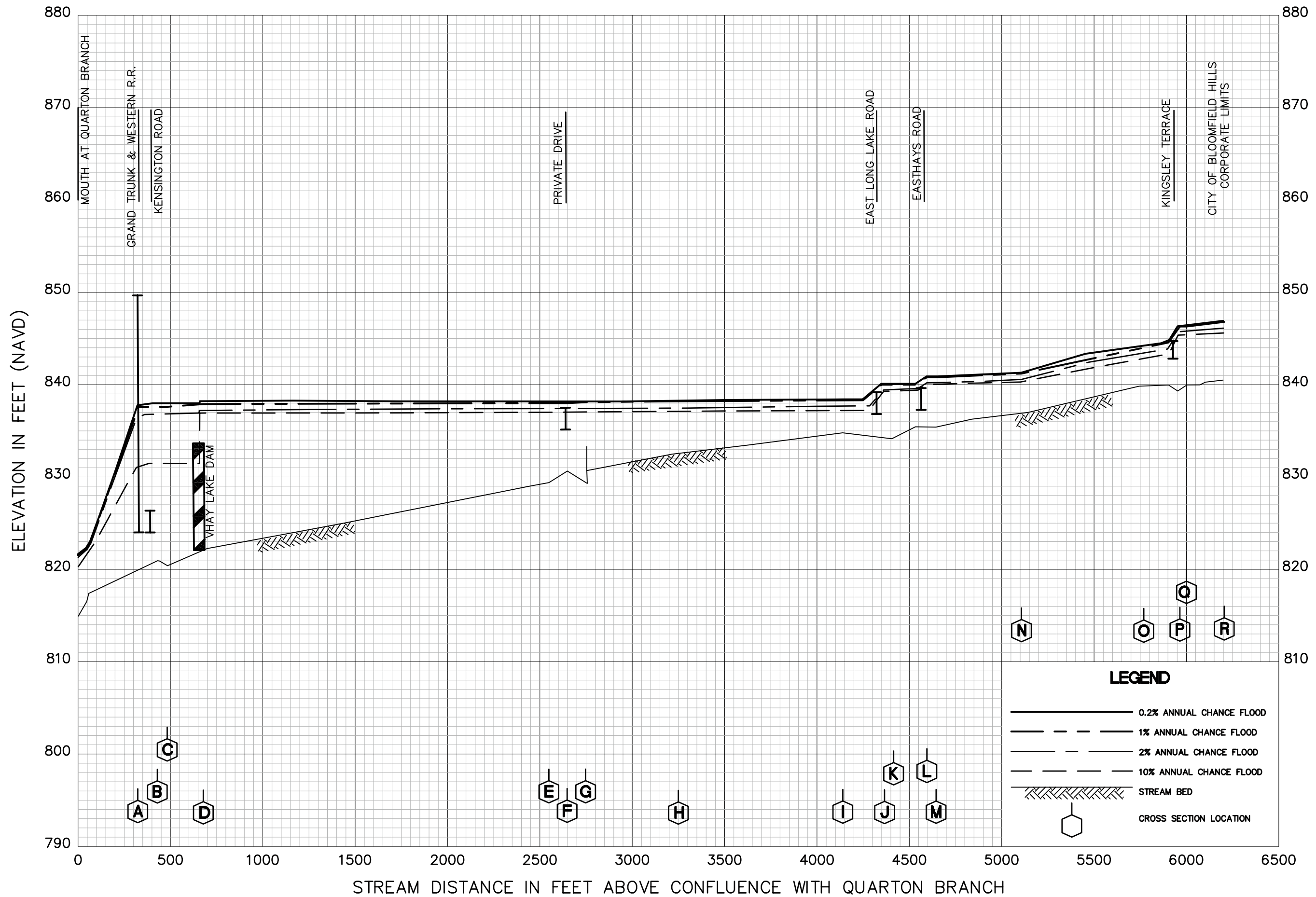
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PUBLISHED SEPARATELY

- Flood Insurance Rate Map Index
- Flood Insurance Rate Maps

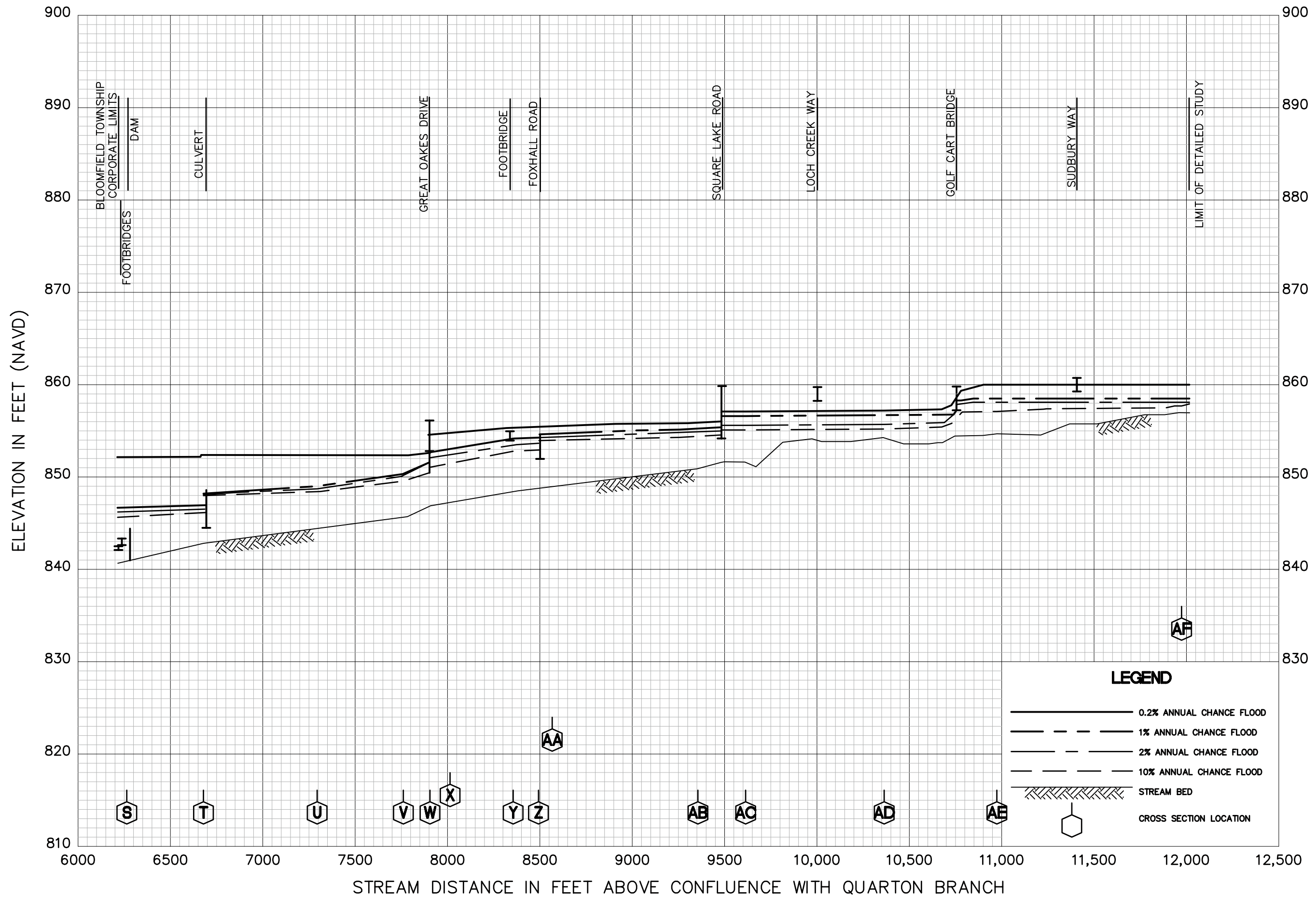


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- ▨ STREAM BED
- CROSS SECTION LOCATION

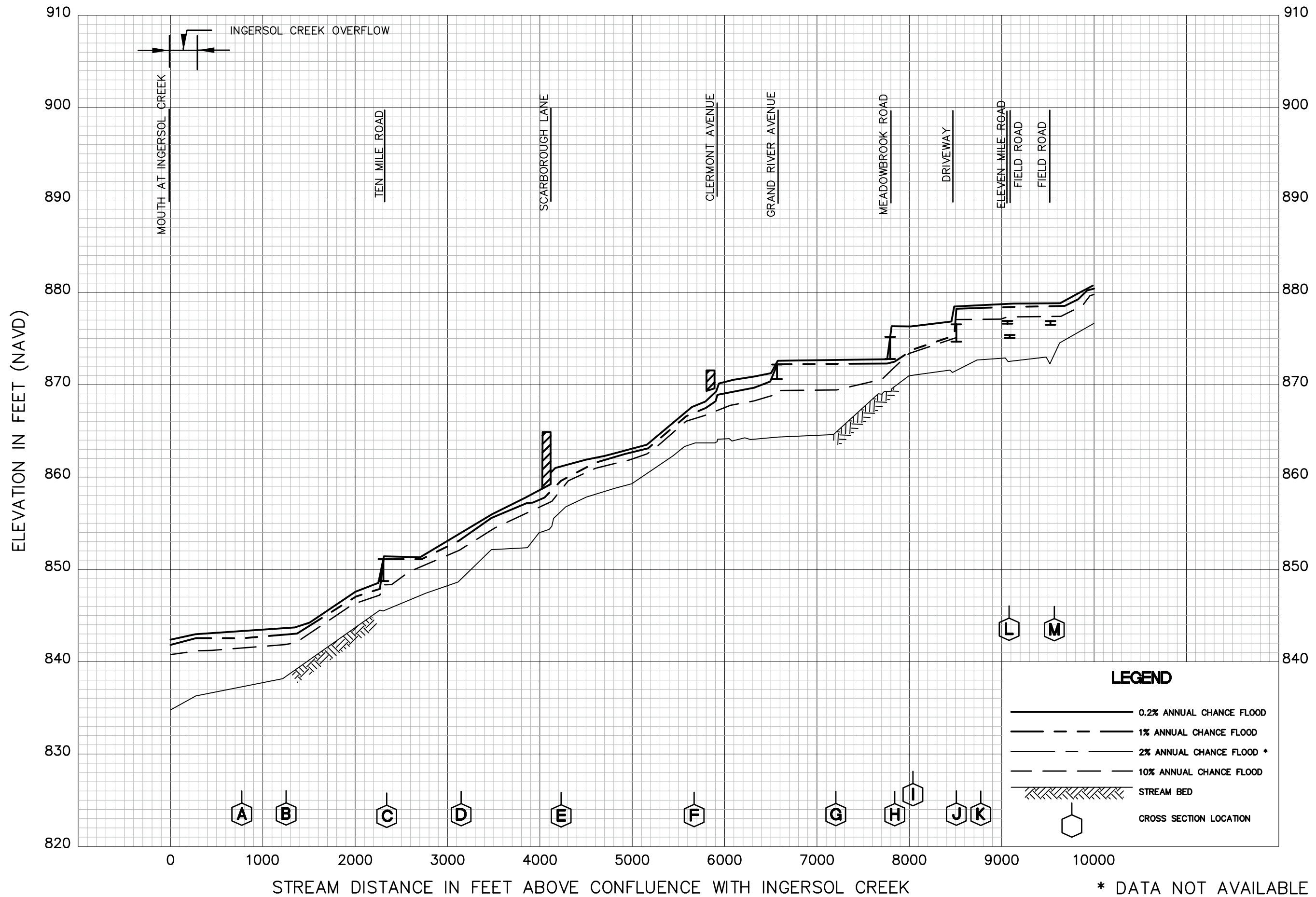
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AMY DRAIN

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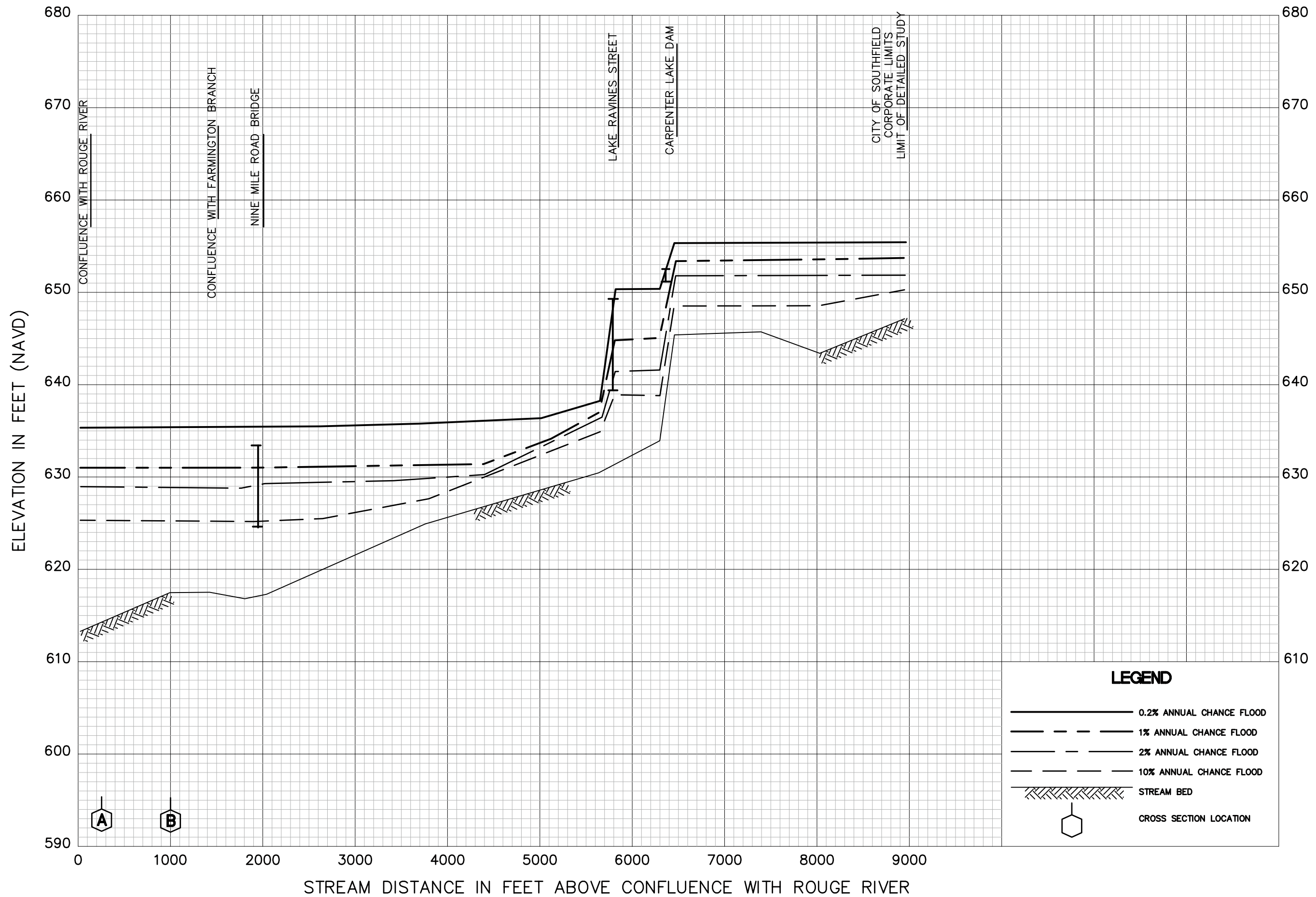
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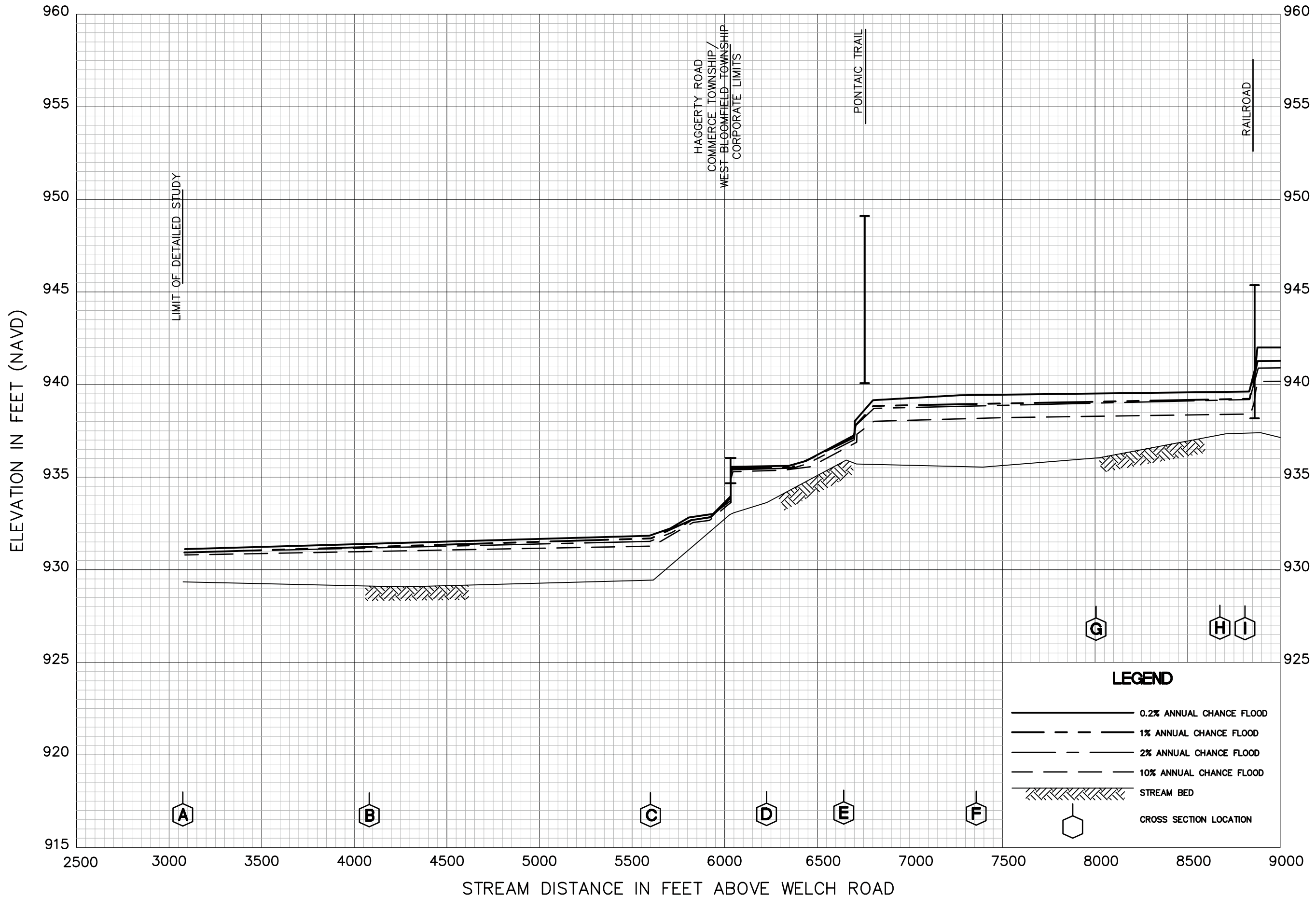
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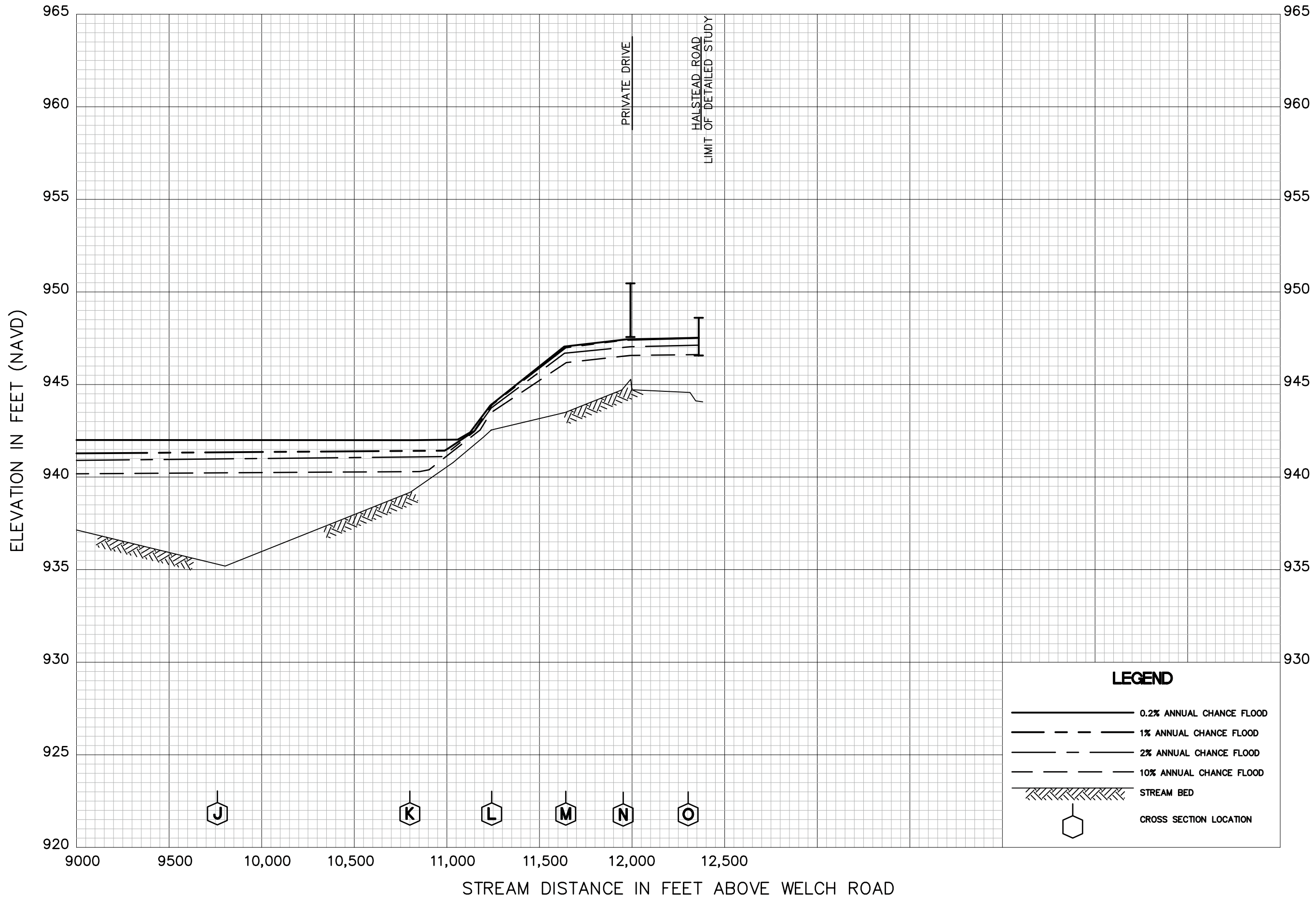
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FLOOD PROFILES
CARUS LAKE AND PLEASANT LAKE CHANNEL

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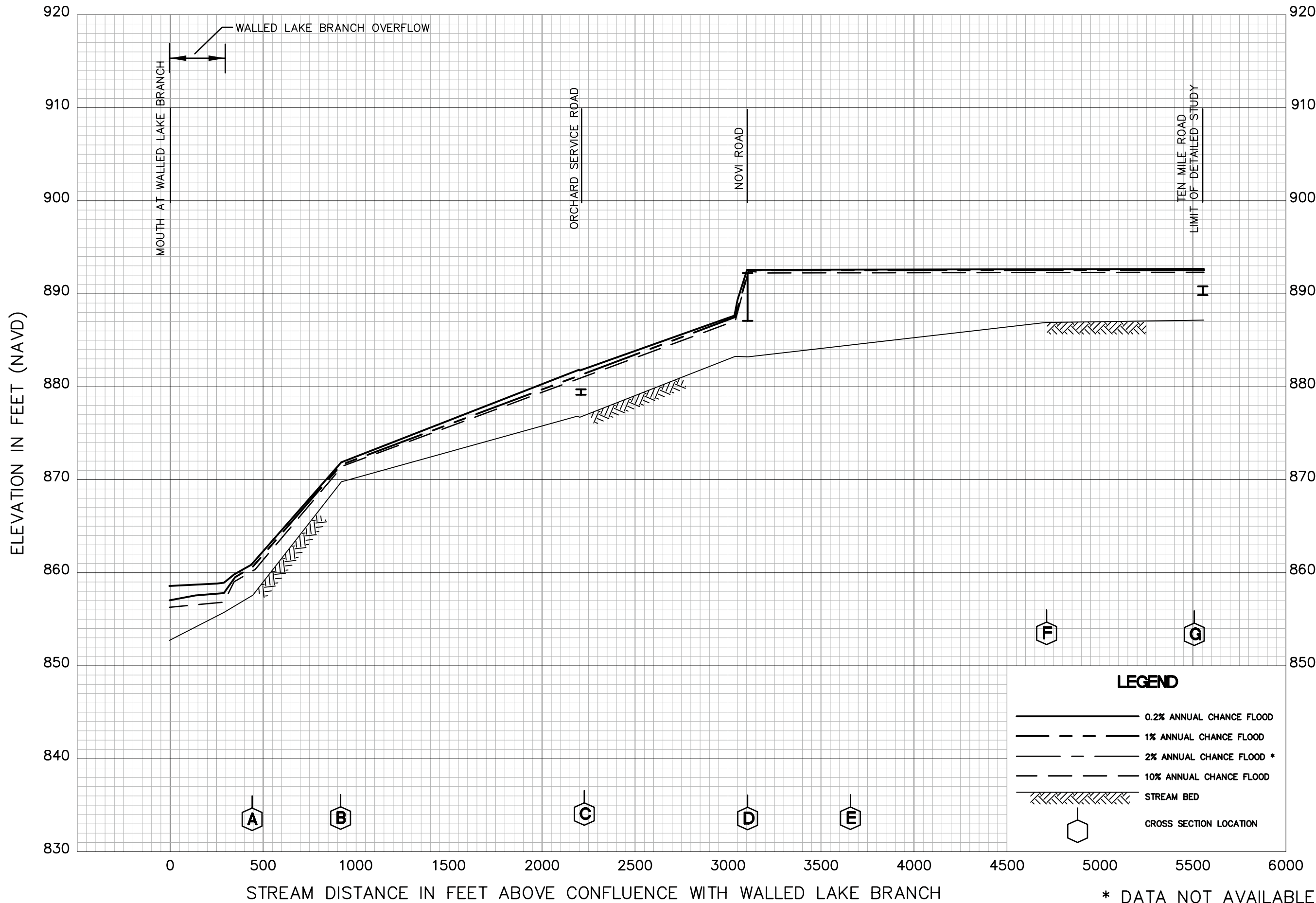
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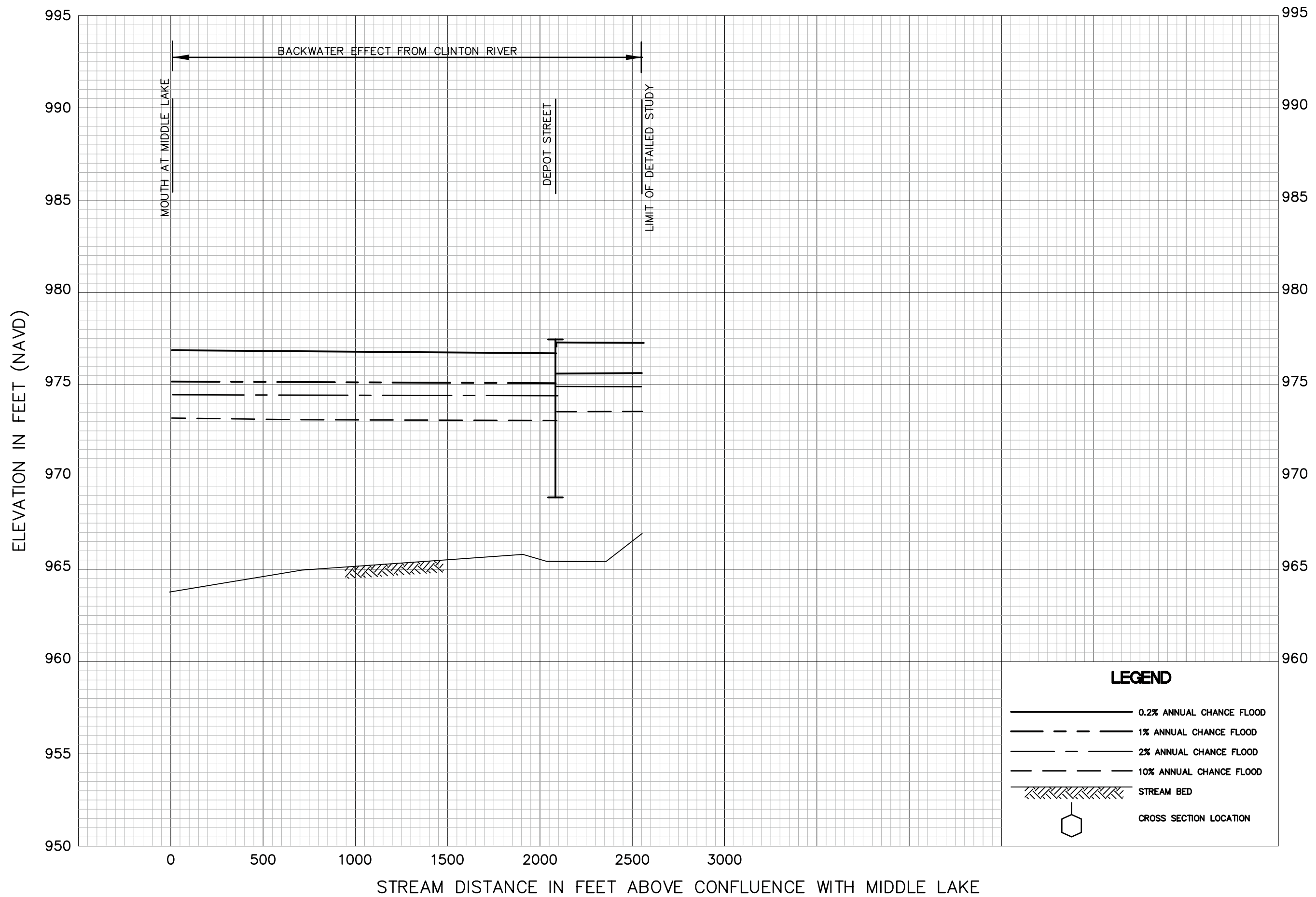
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- ⬢ CROSS SECTION LOCATION

STREAM DISTANCE IN FEET ABOVE CONFLUENCE WITH WALLED LAKE BRANCH

* DATA NOT AVAILABLE

**FLOOD PROFILES
CHAPMAN CREEK**

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LEGEND

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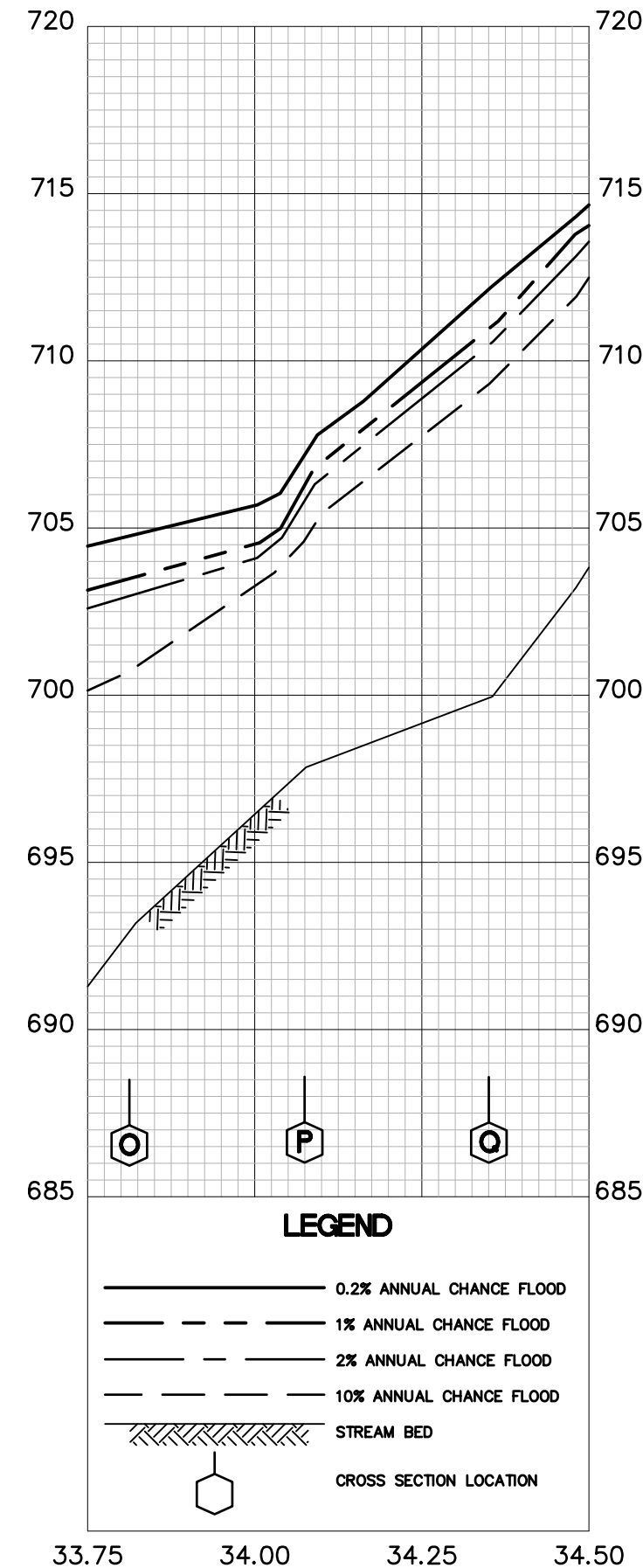
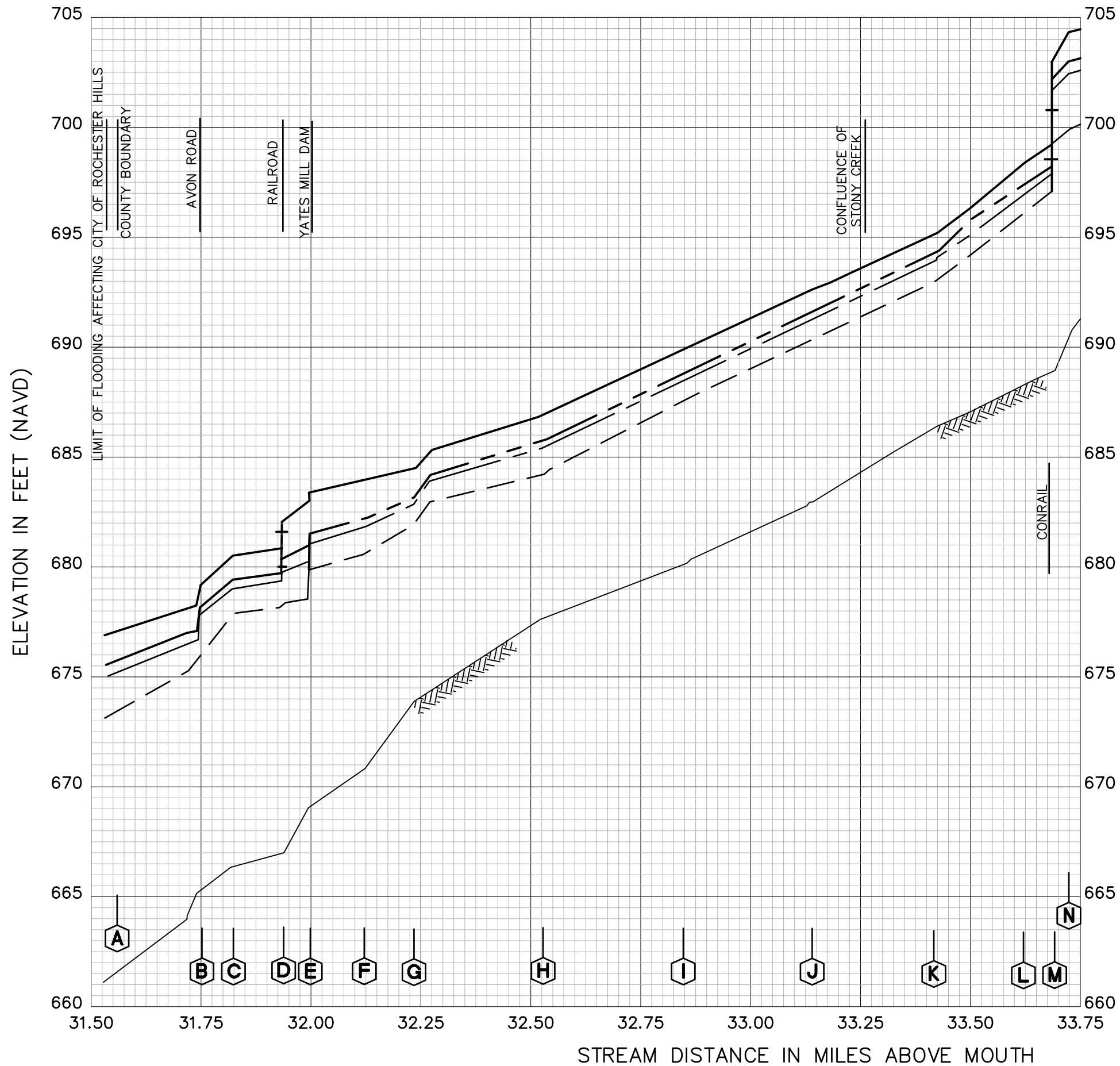
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CLARKSTON DAM OUTLET

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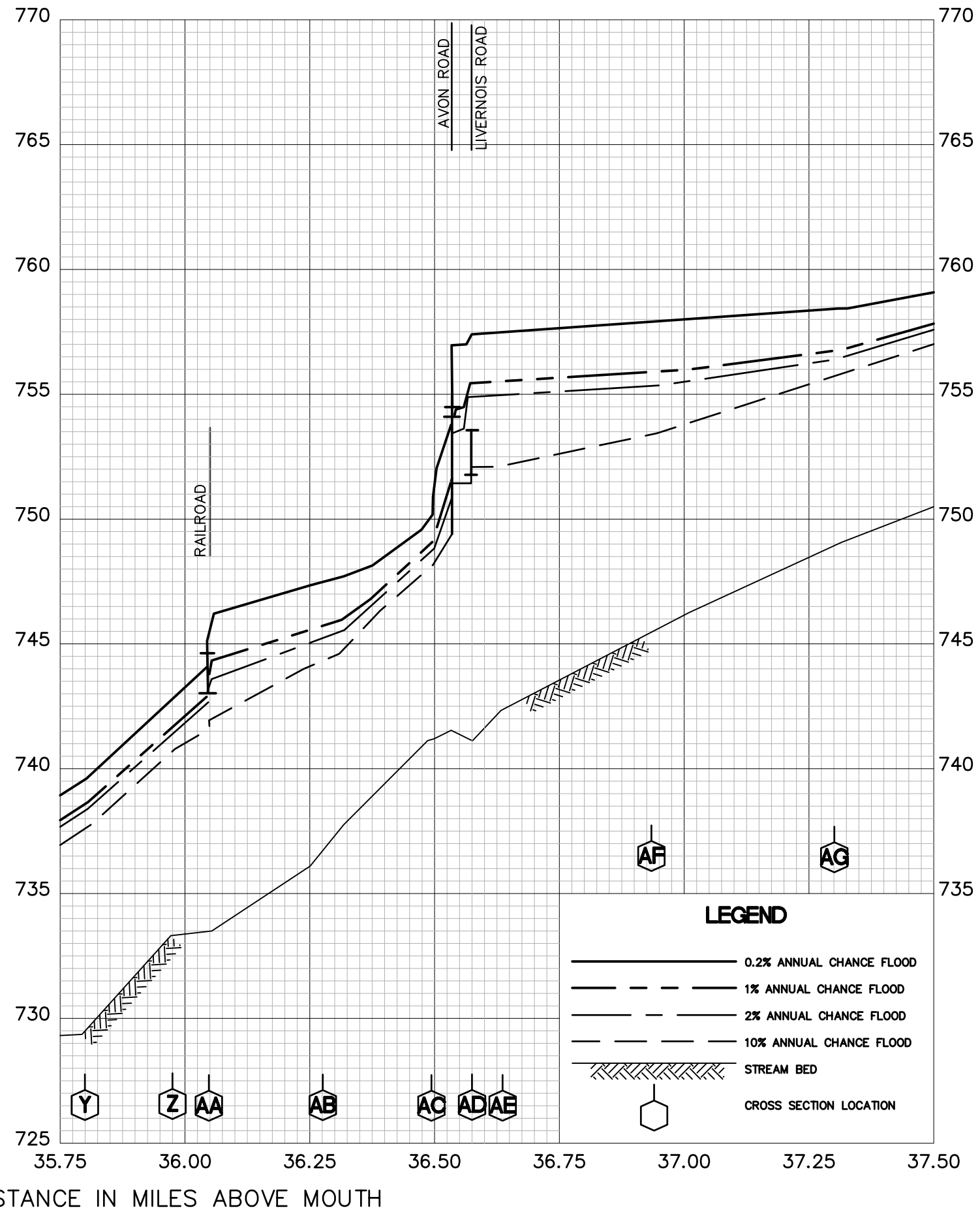
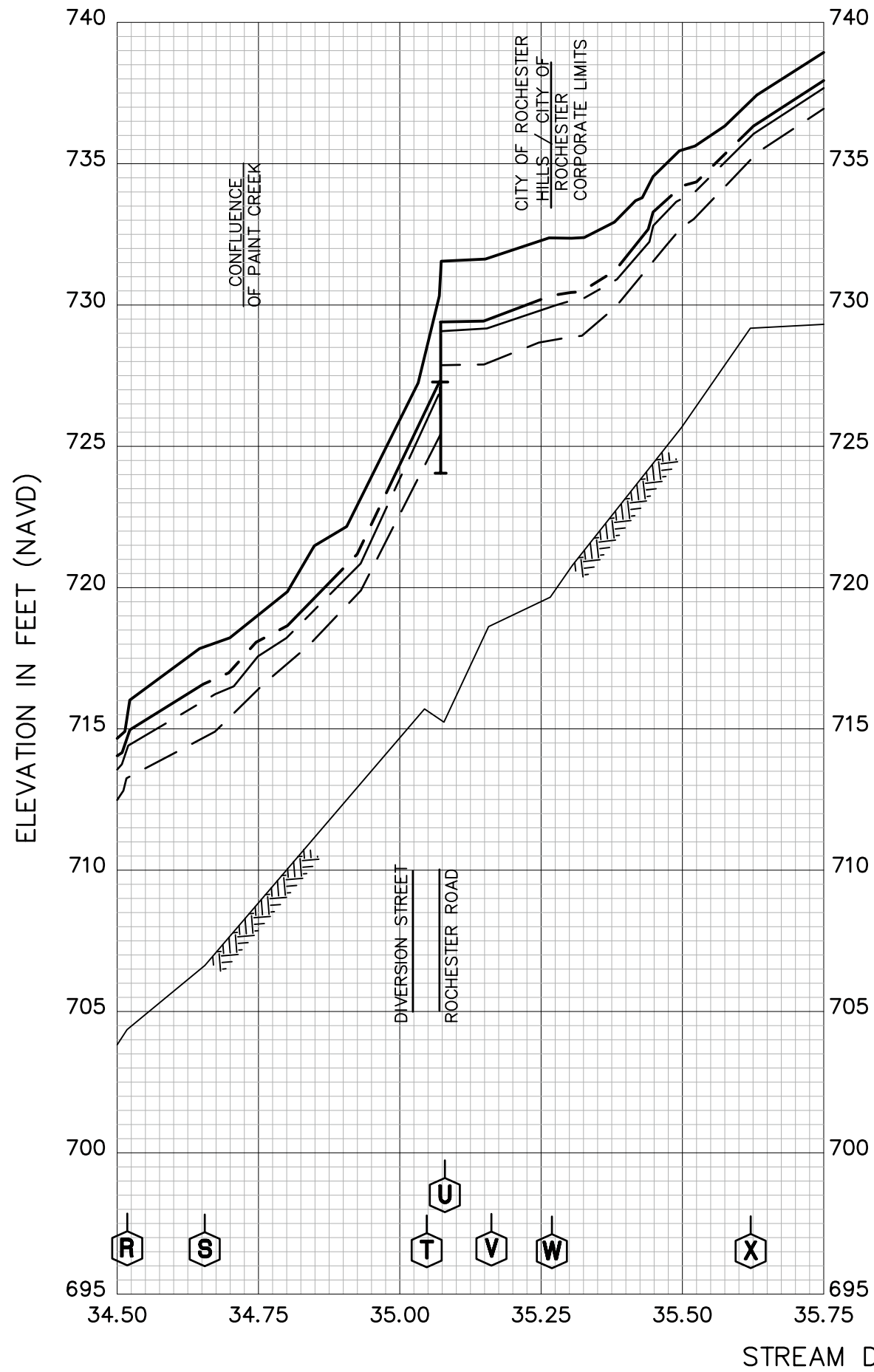
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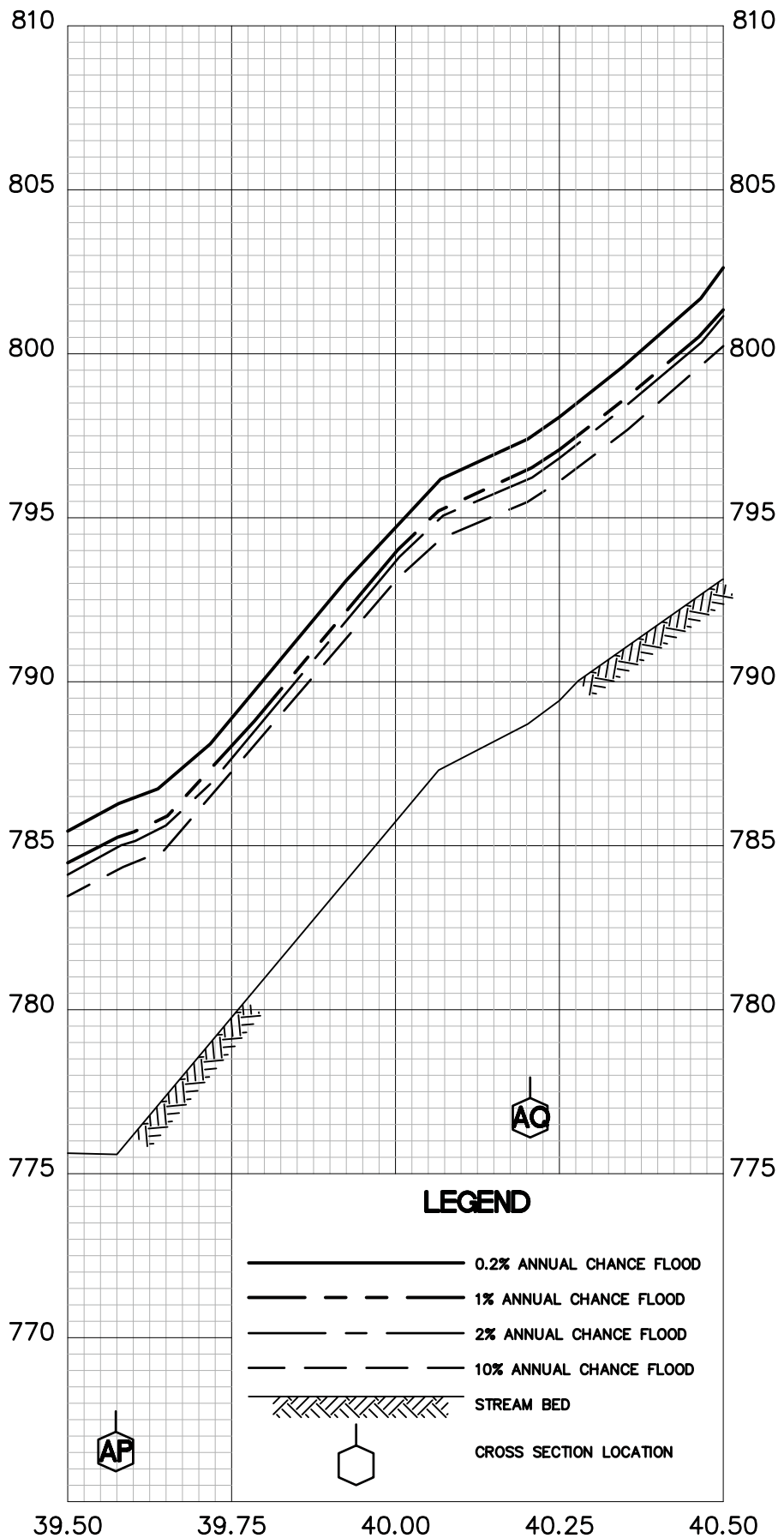
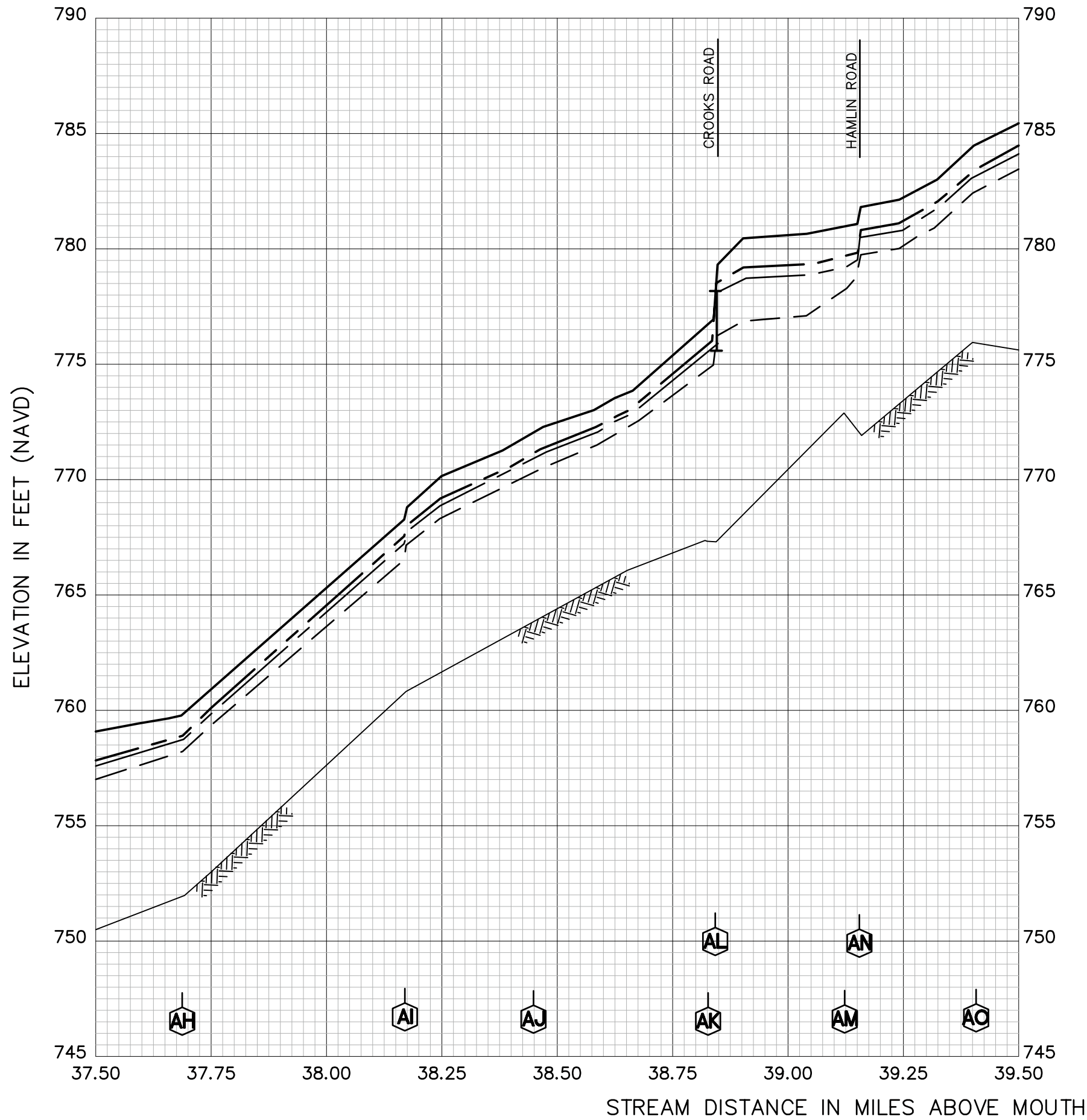


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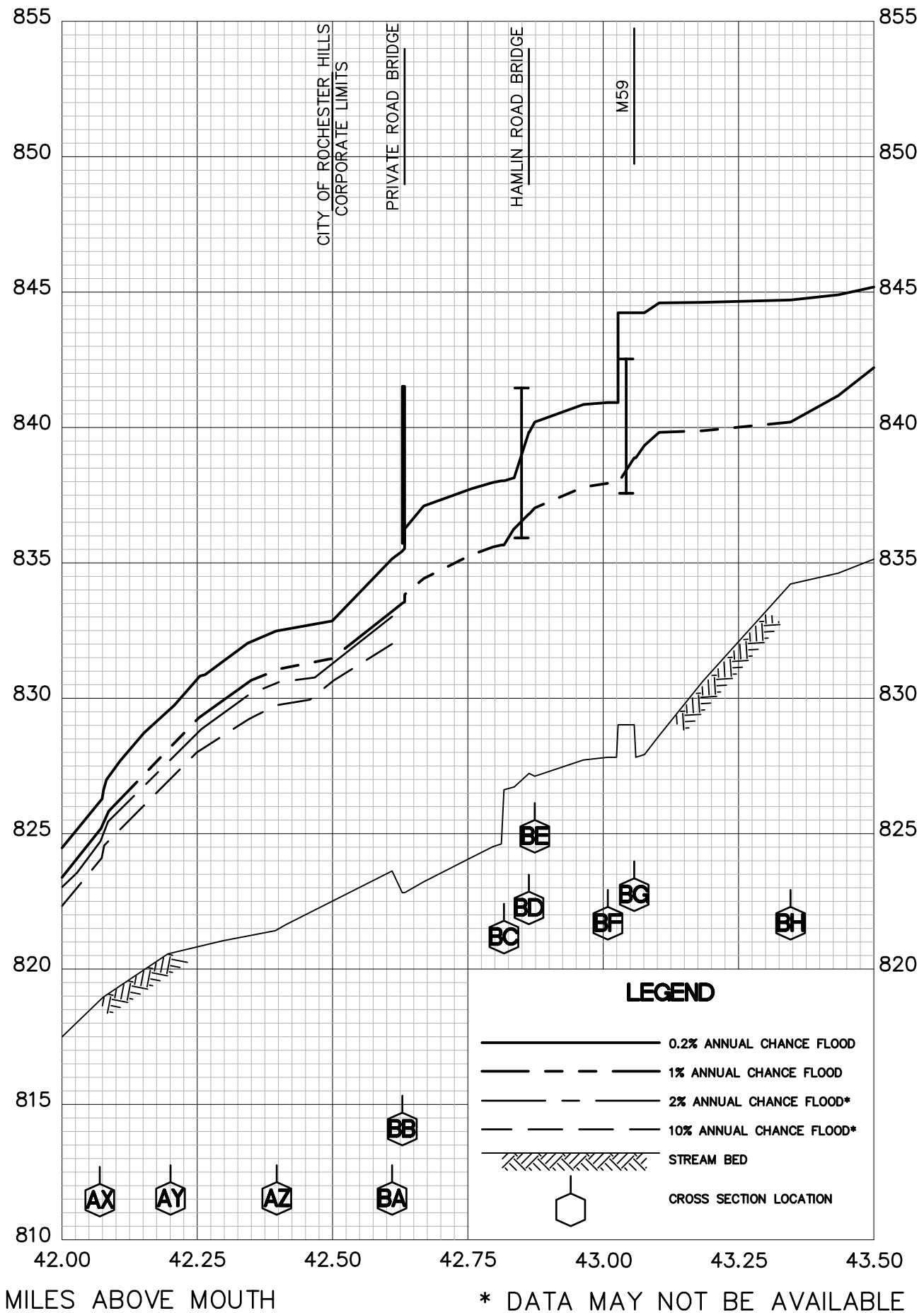
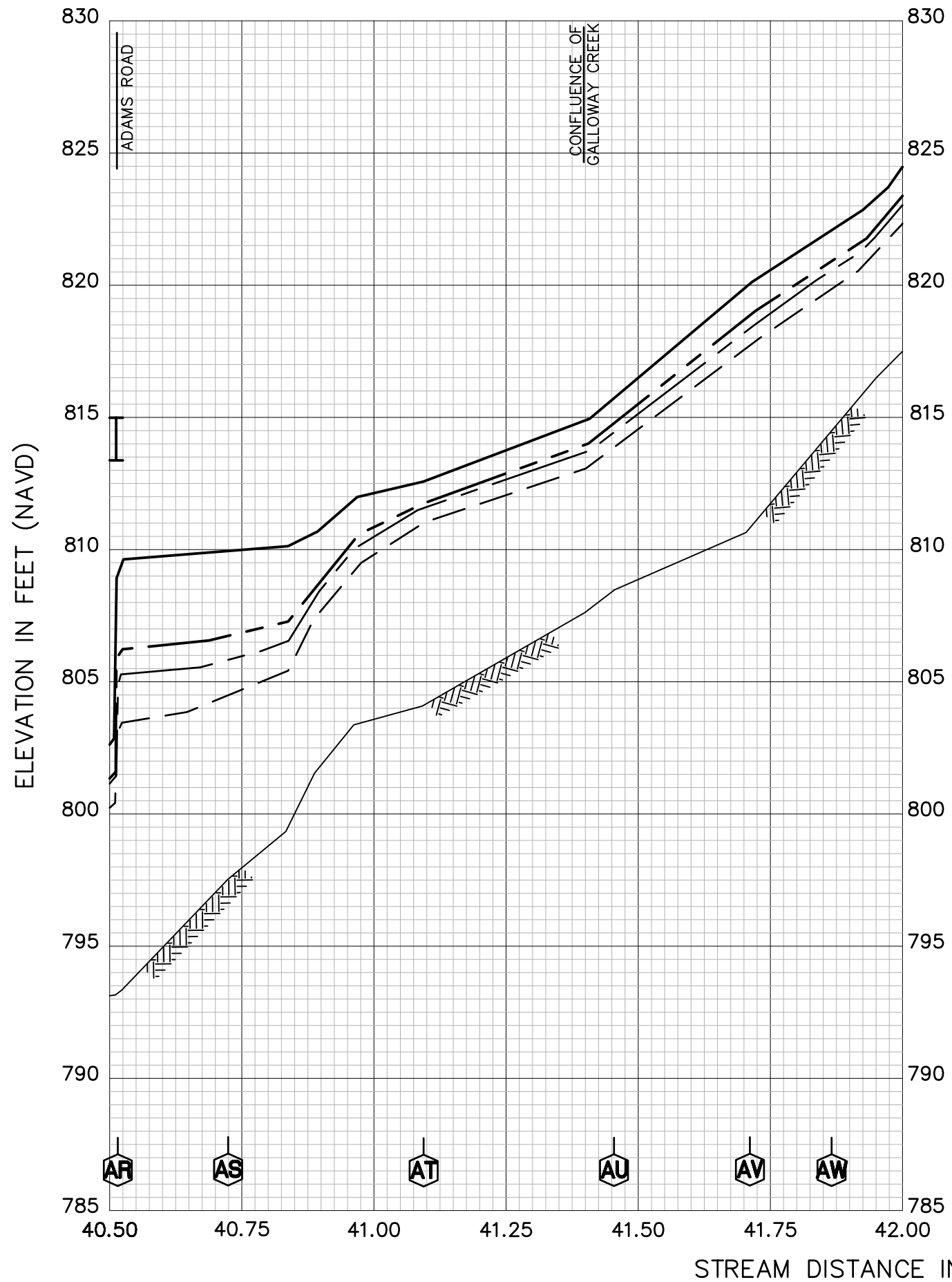


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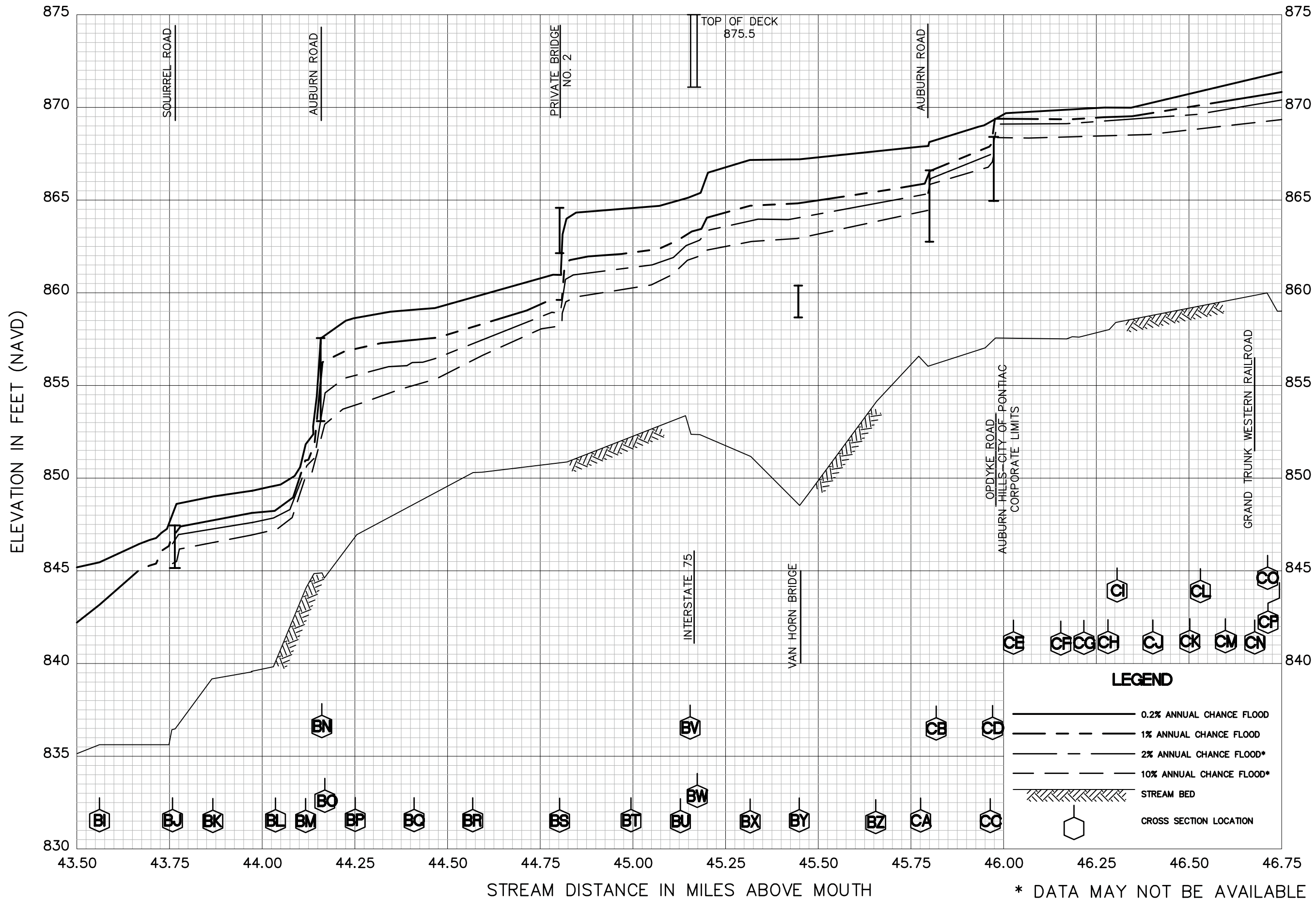
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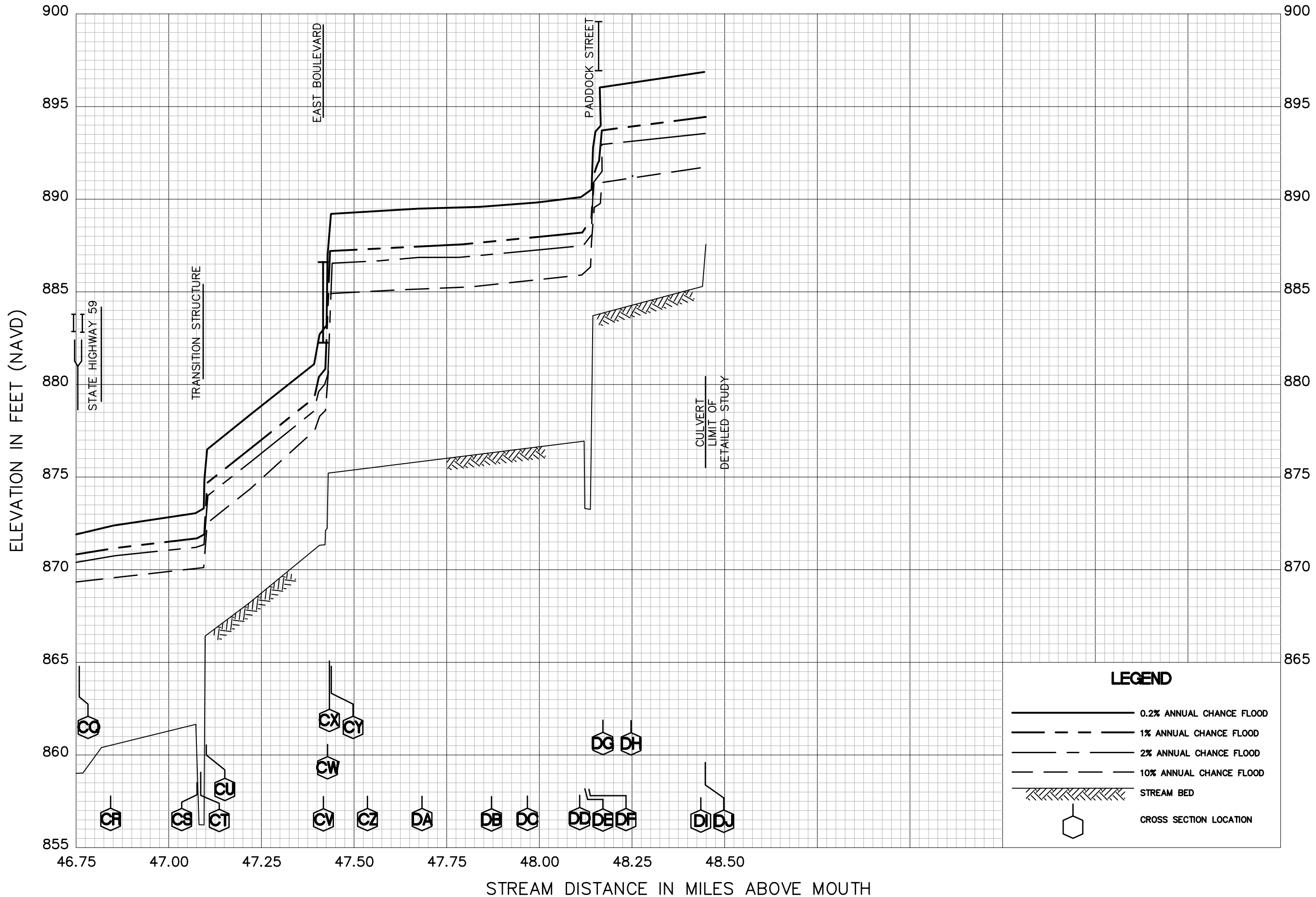
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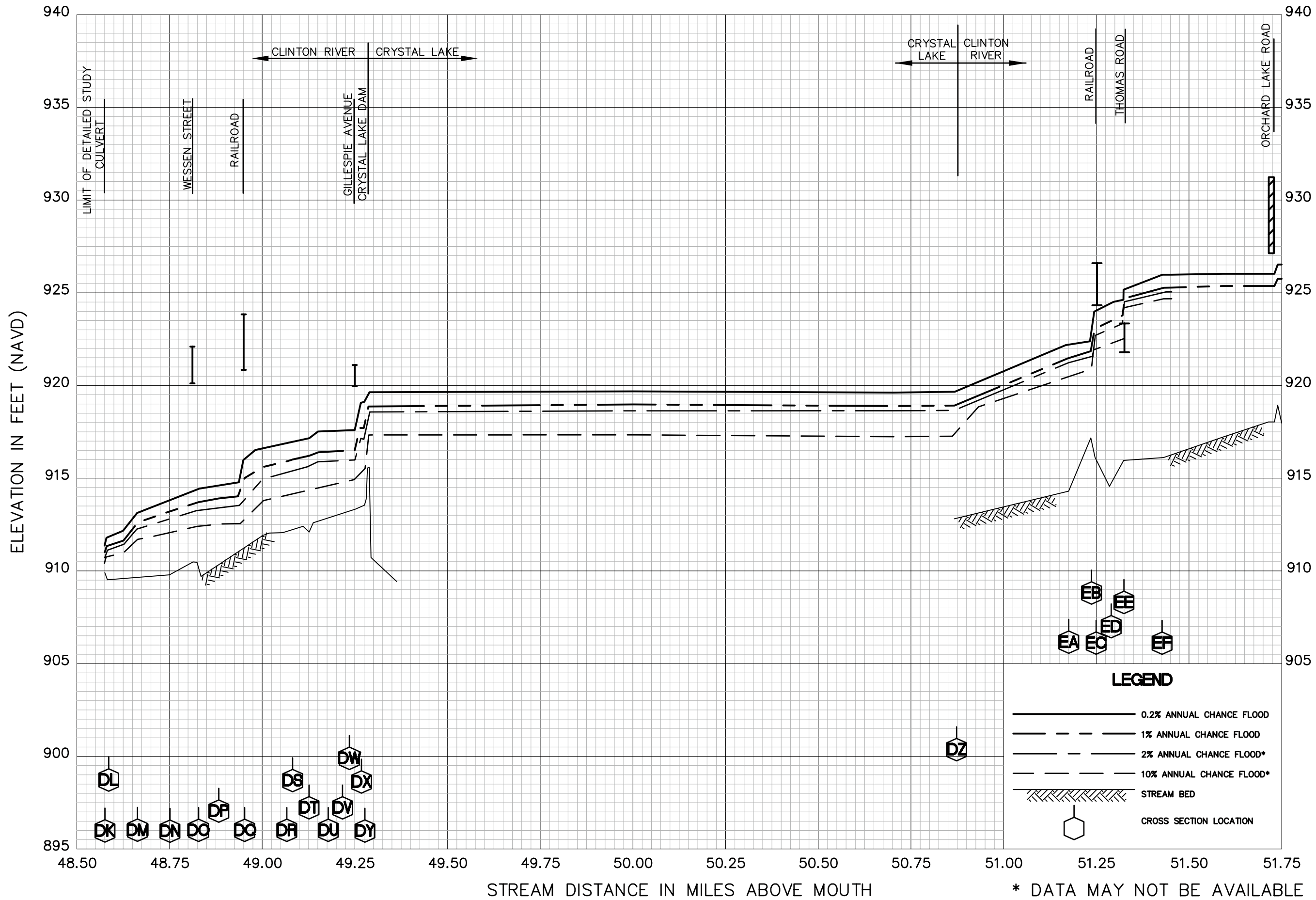
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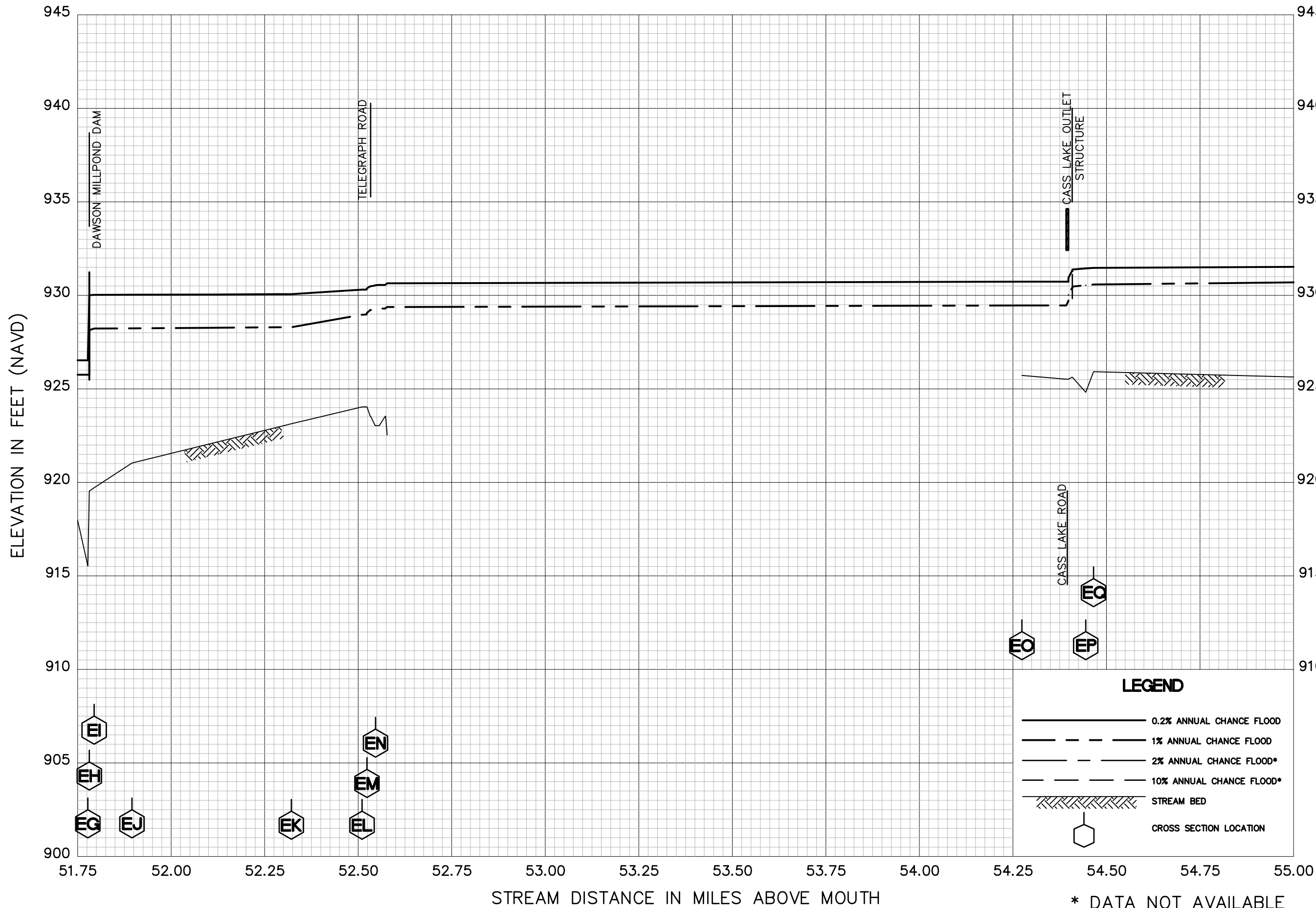
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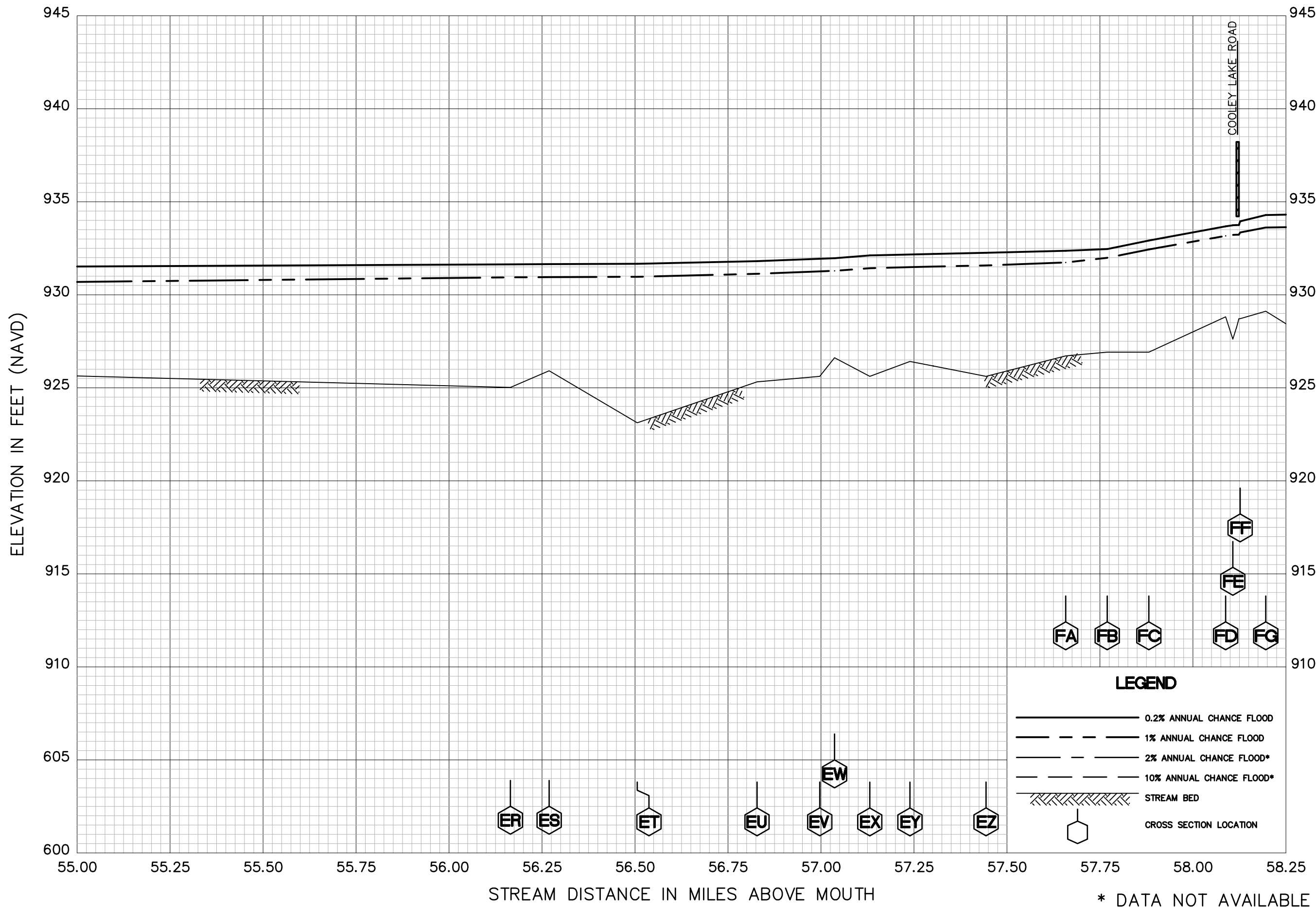
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FLOOD PROFILES
CLINTON RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
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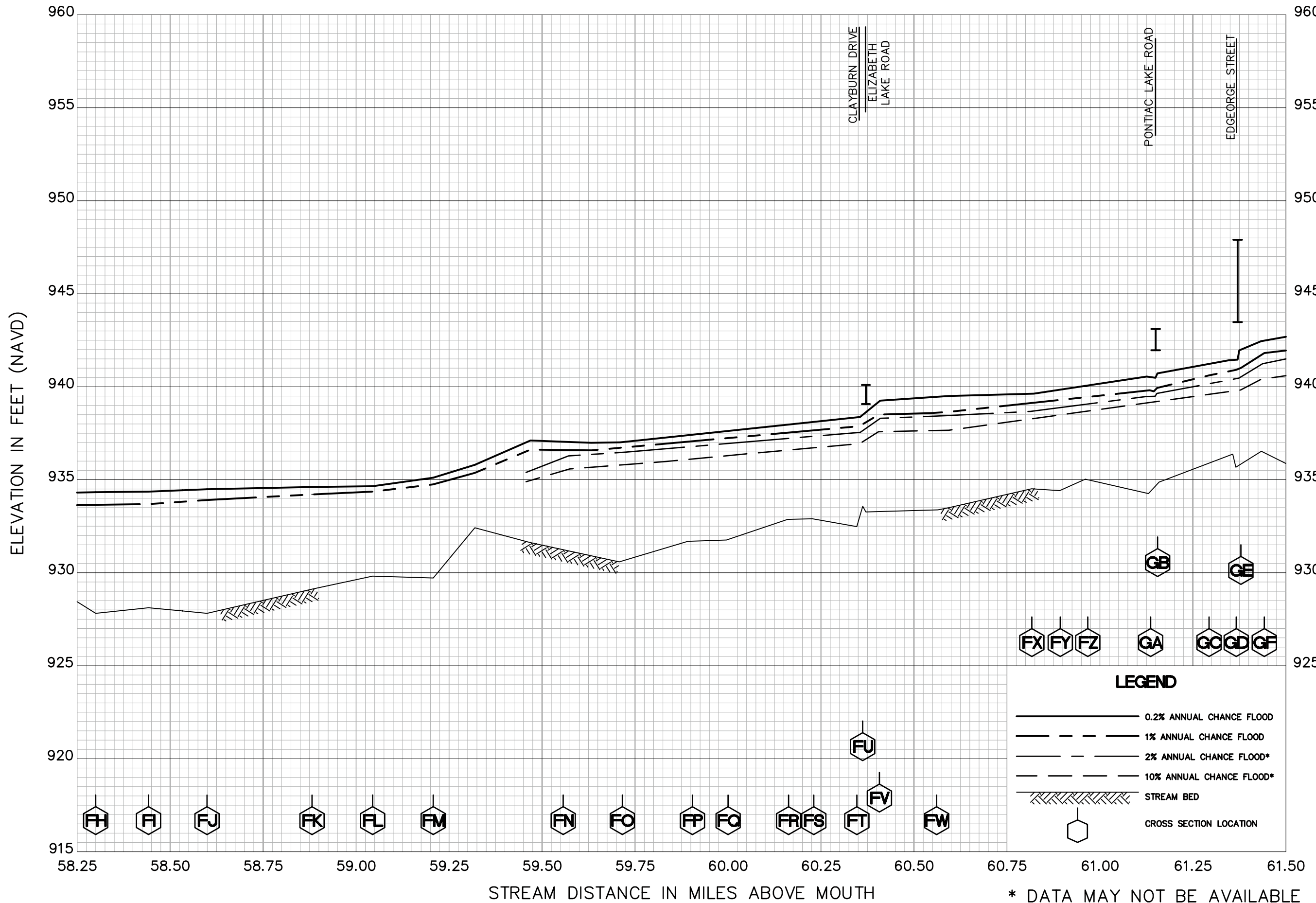
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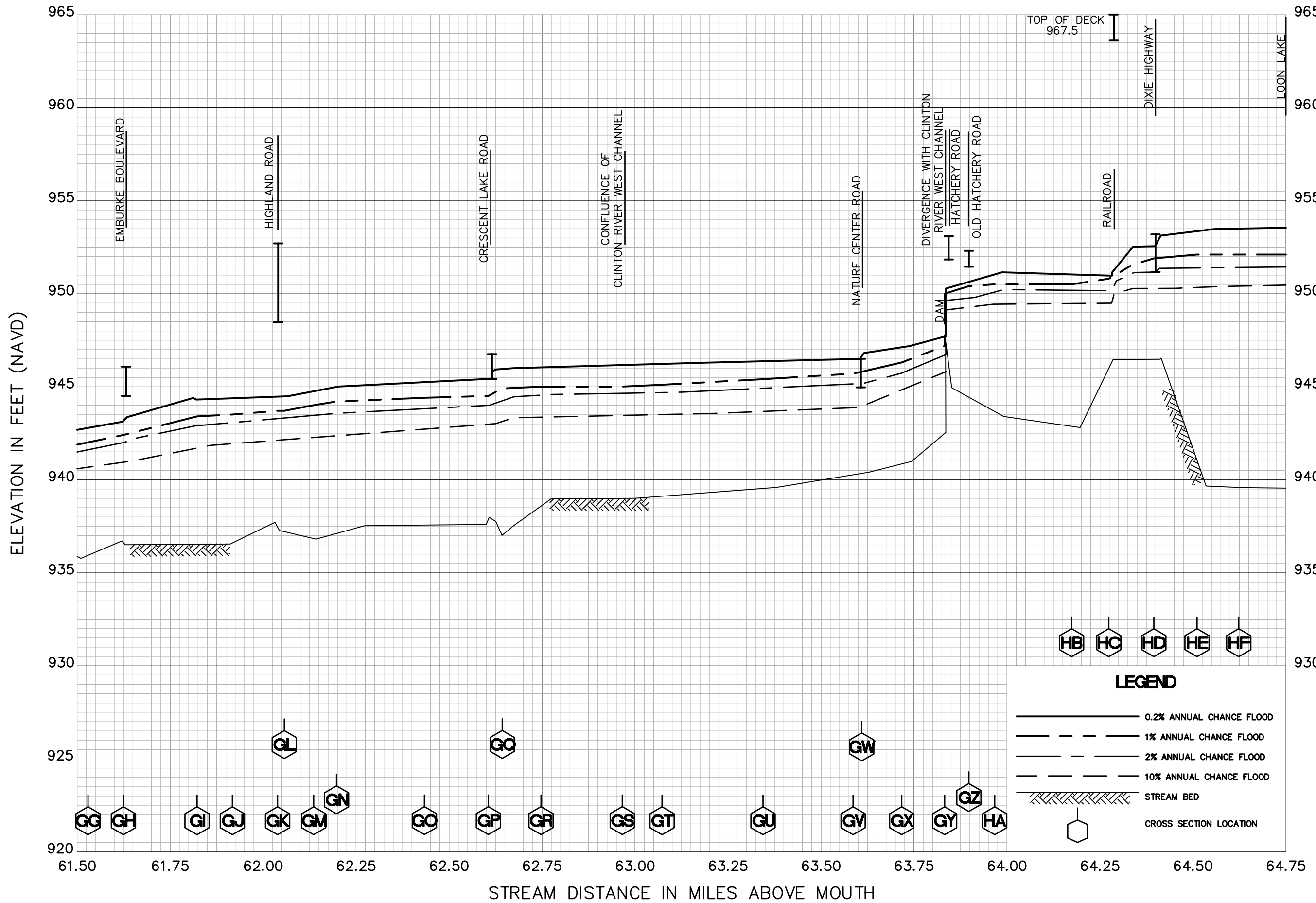
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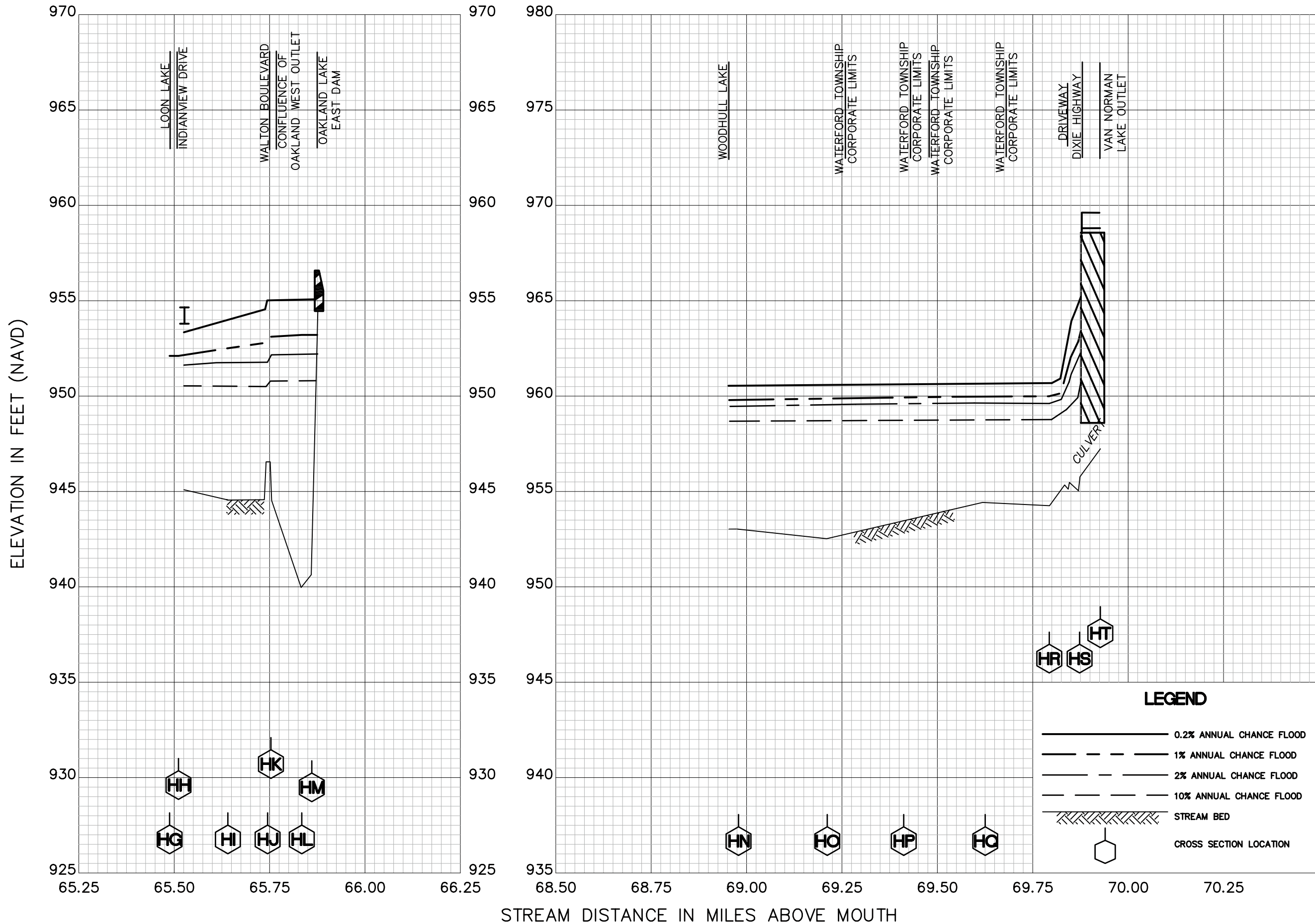
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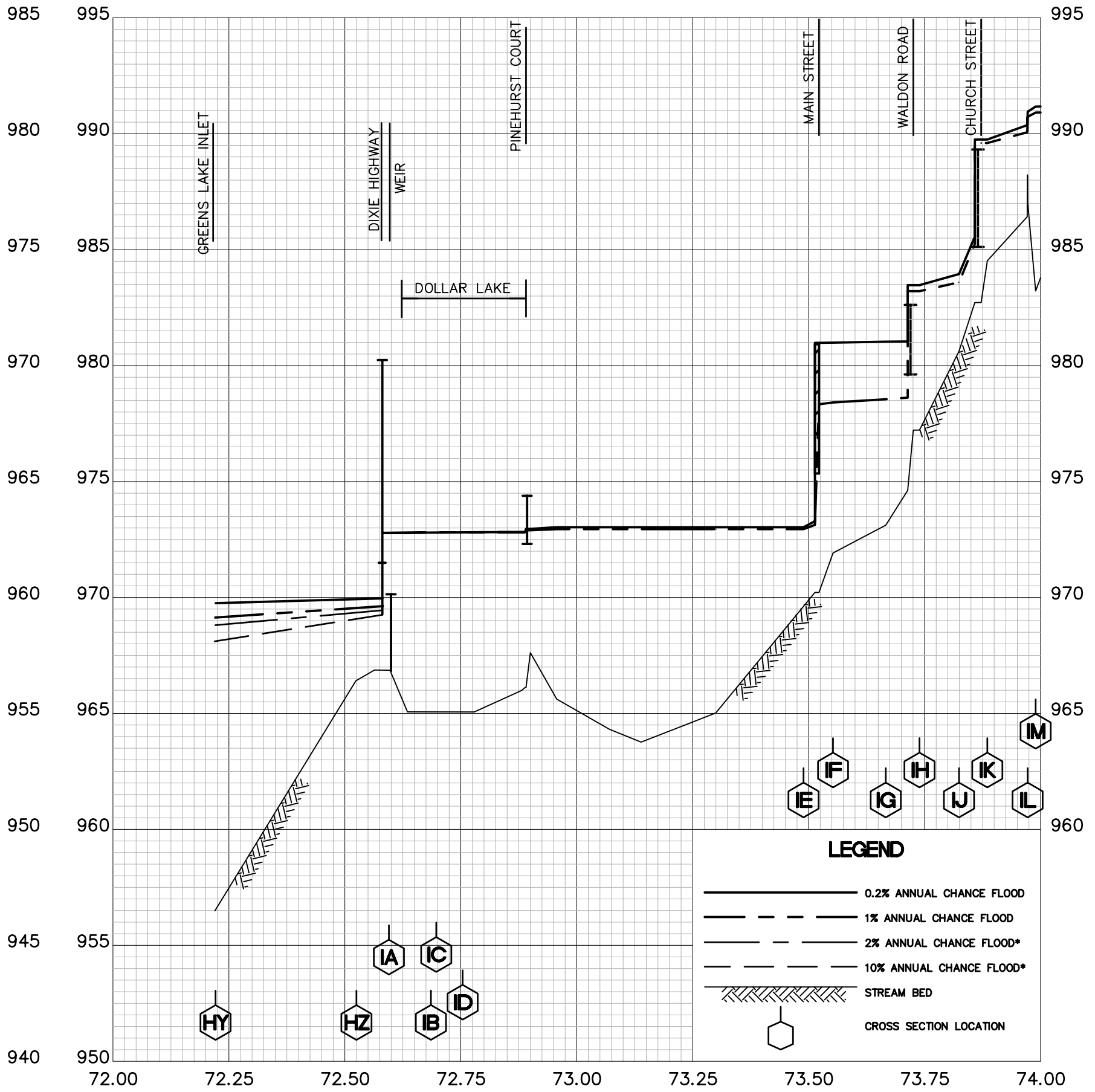
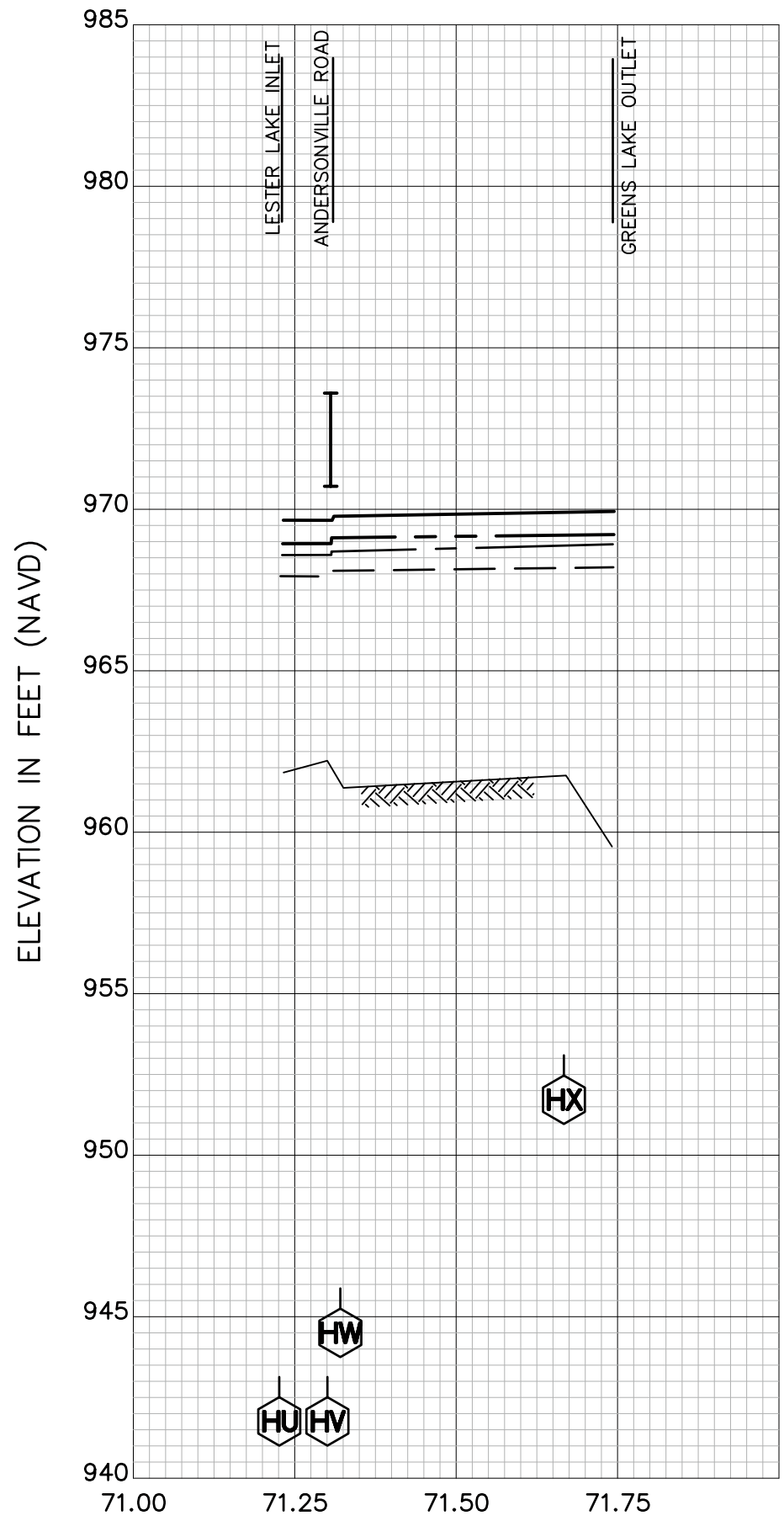
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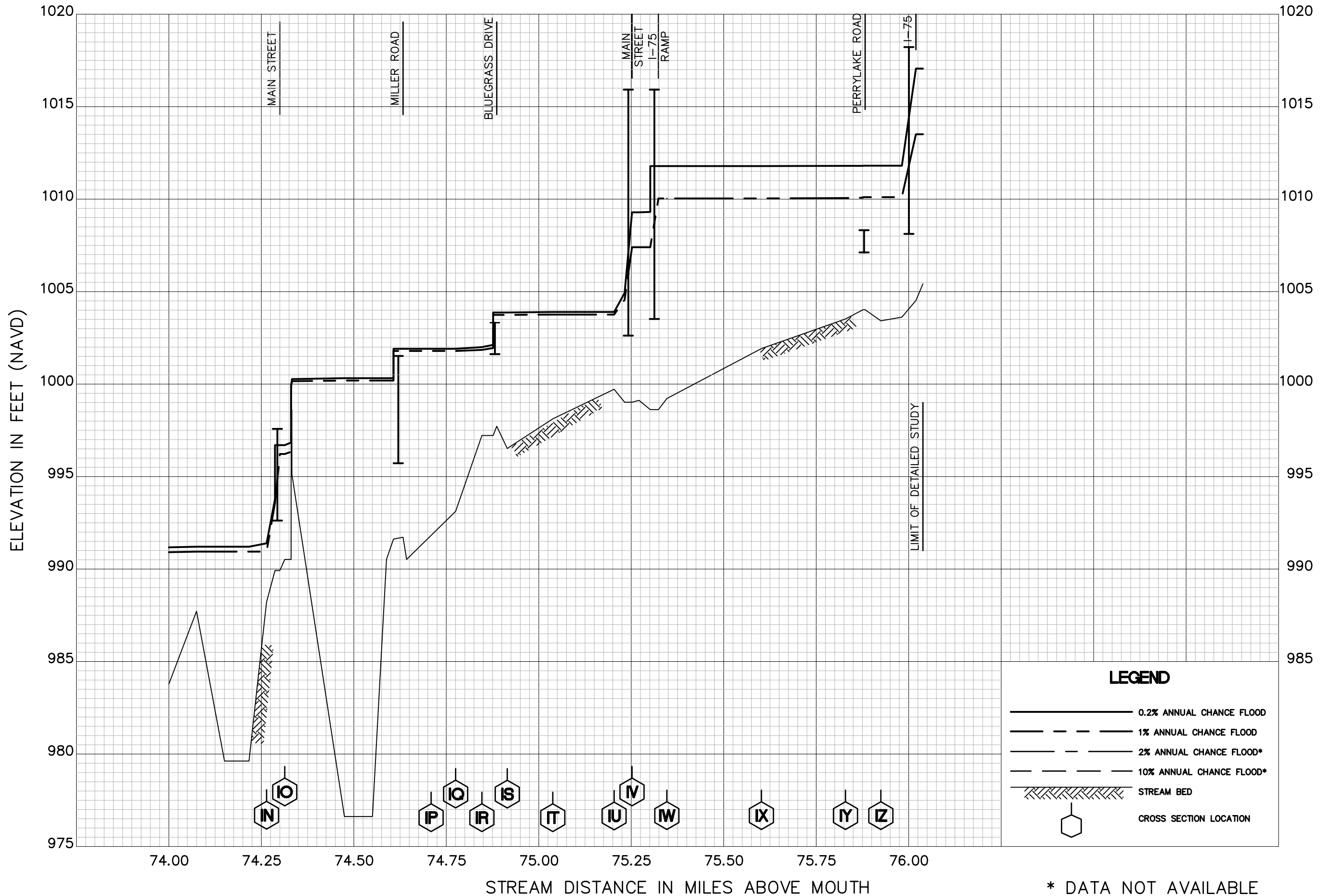
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CLINTON RIVER**

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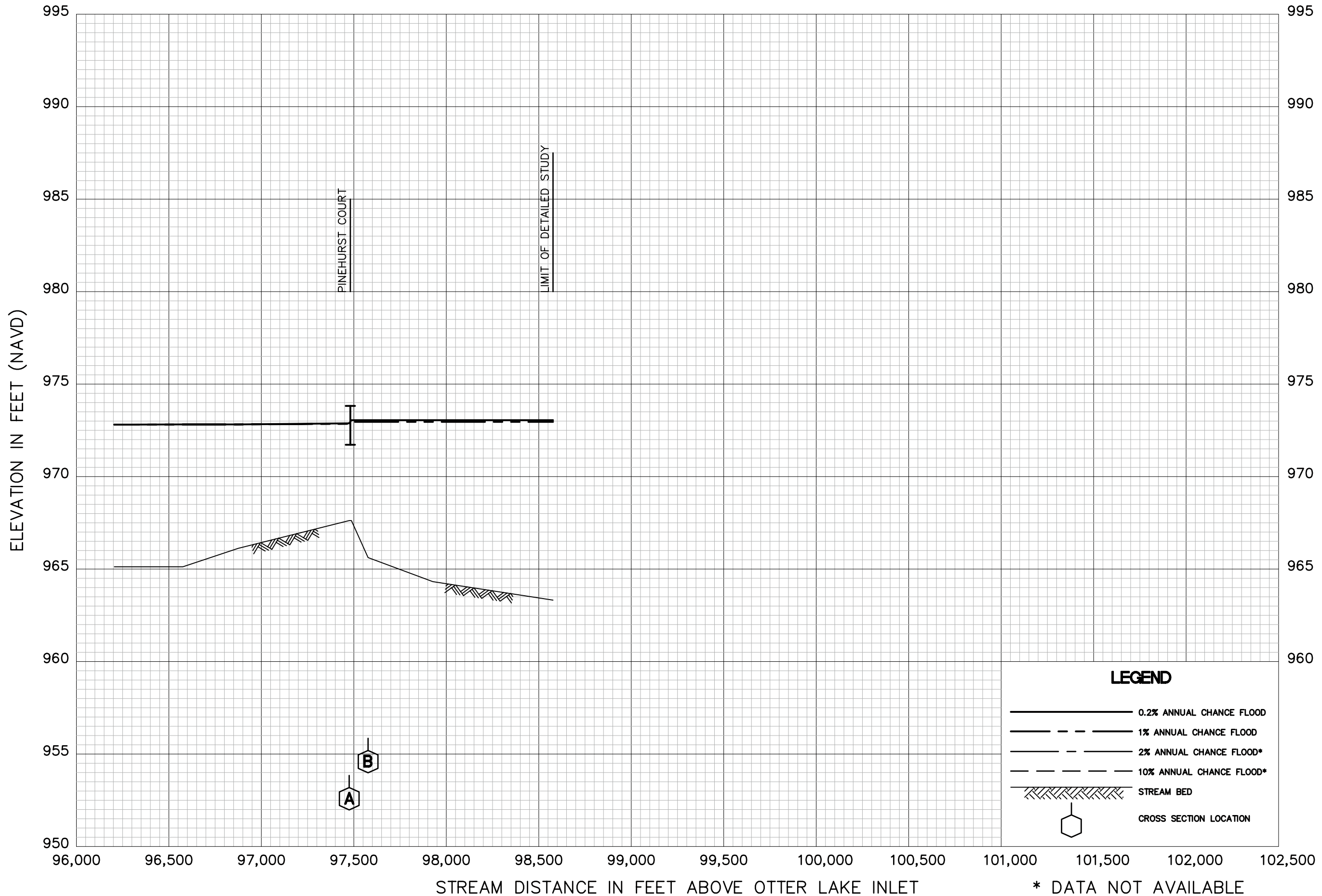
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**FLOOD PROFILES
CLINTON RIVER**

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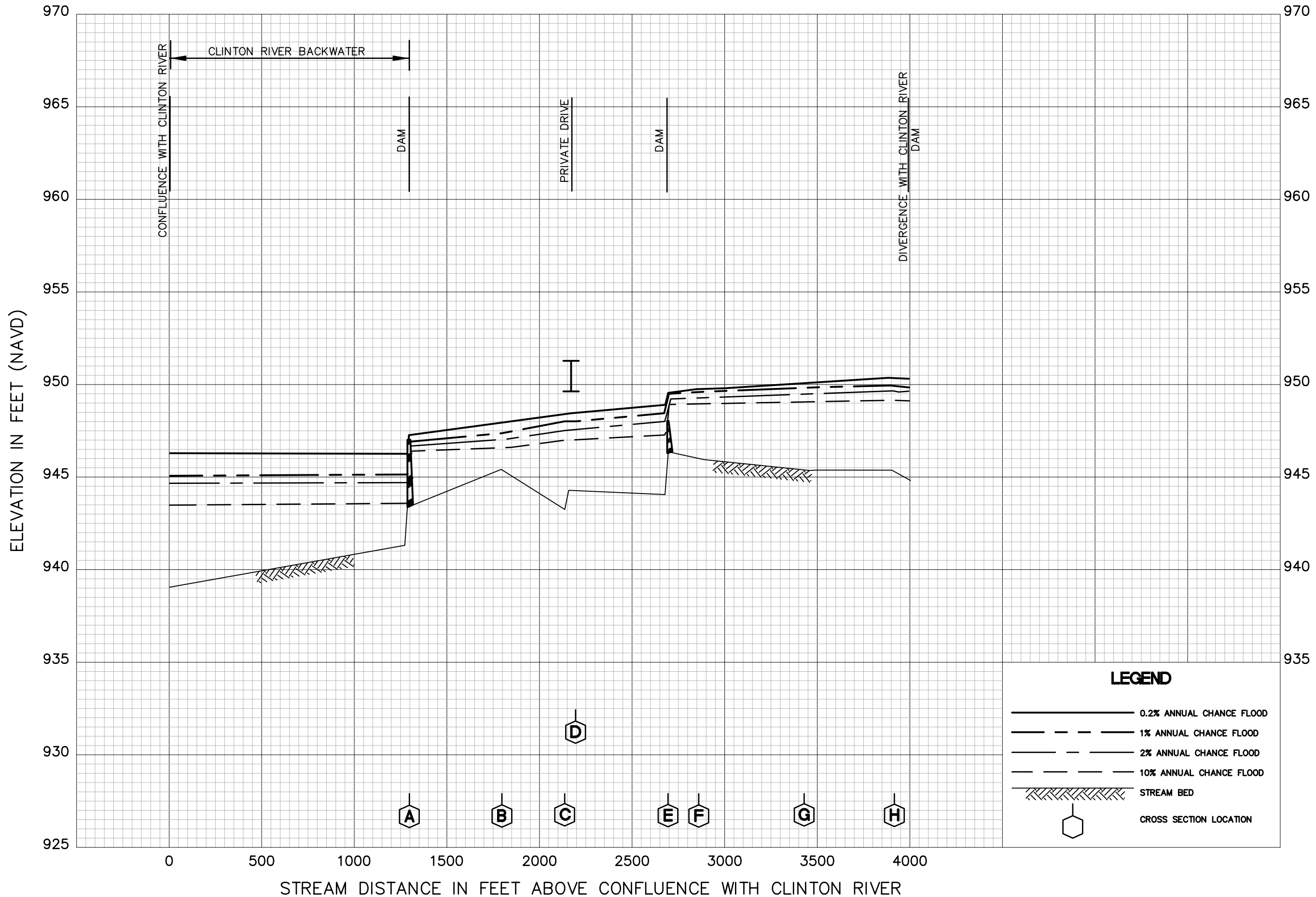
FLOOD PROFILES

CLINTON RIVER - EAST CHANNEL

FEDERAL EMERGENCY MANAGEMENT AGENCY

OAKLAND COUNTY, MI

(ALL JURISDICTIONS)

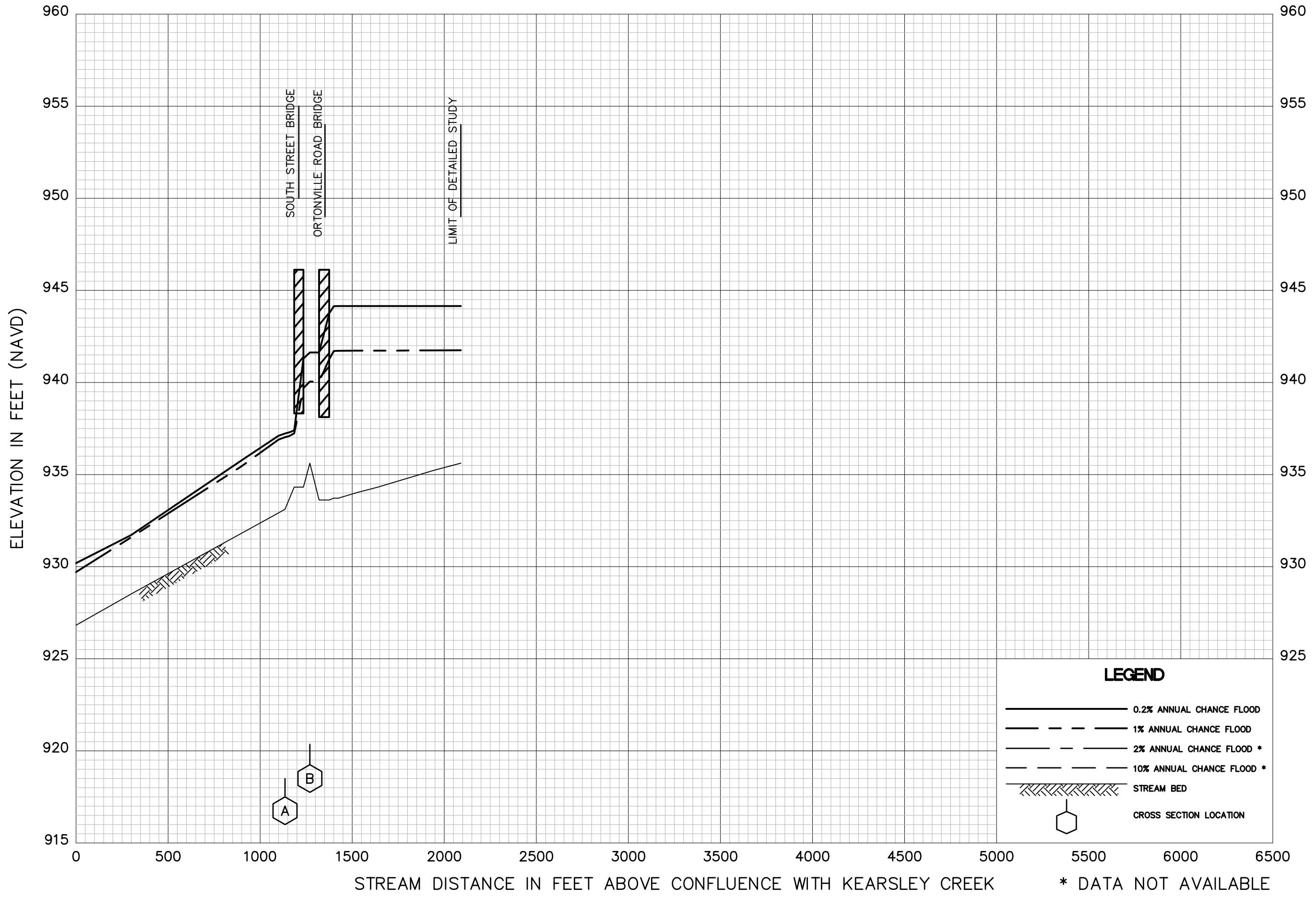


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CLINTON RIVER WEST CHANNEL

FEDERAL EMERGENCY MANAGEMENT AGENCY

OAKLAND COUNTY, MI
(ALL JURISDICTIONS)



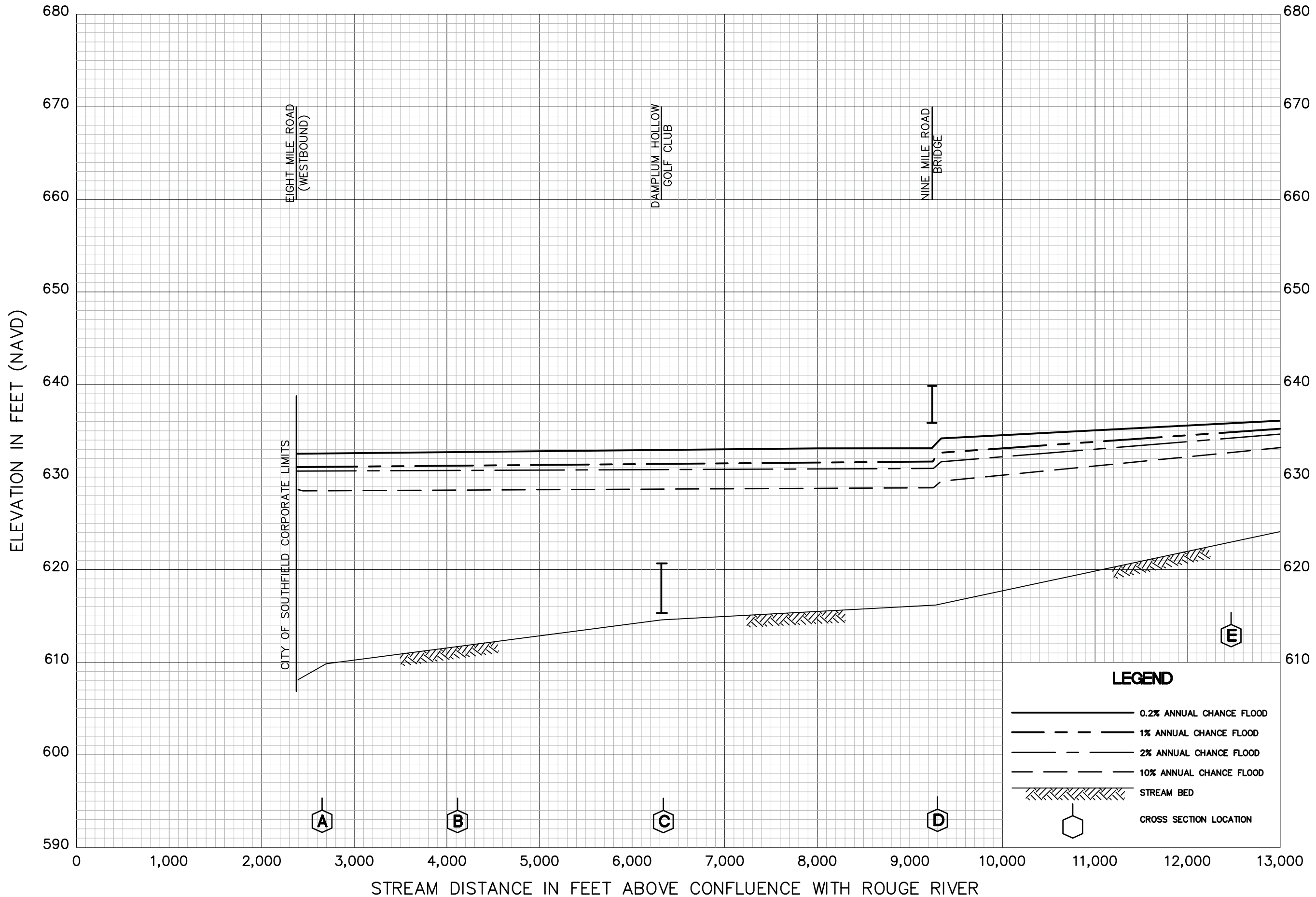
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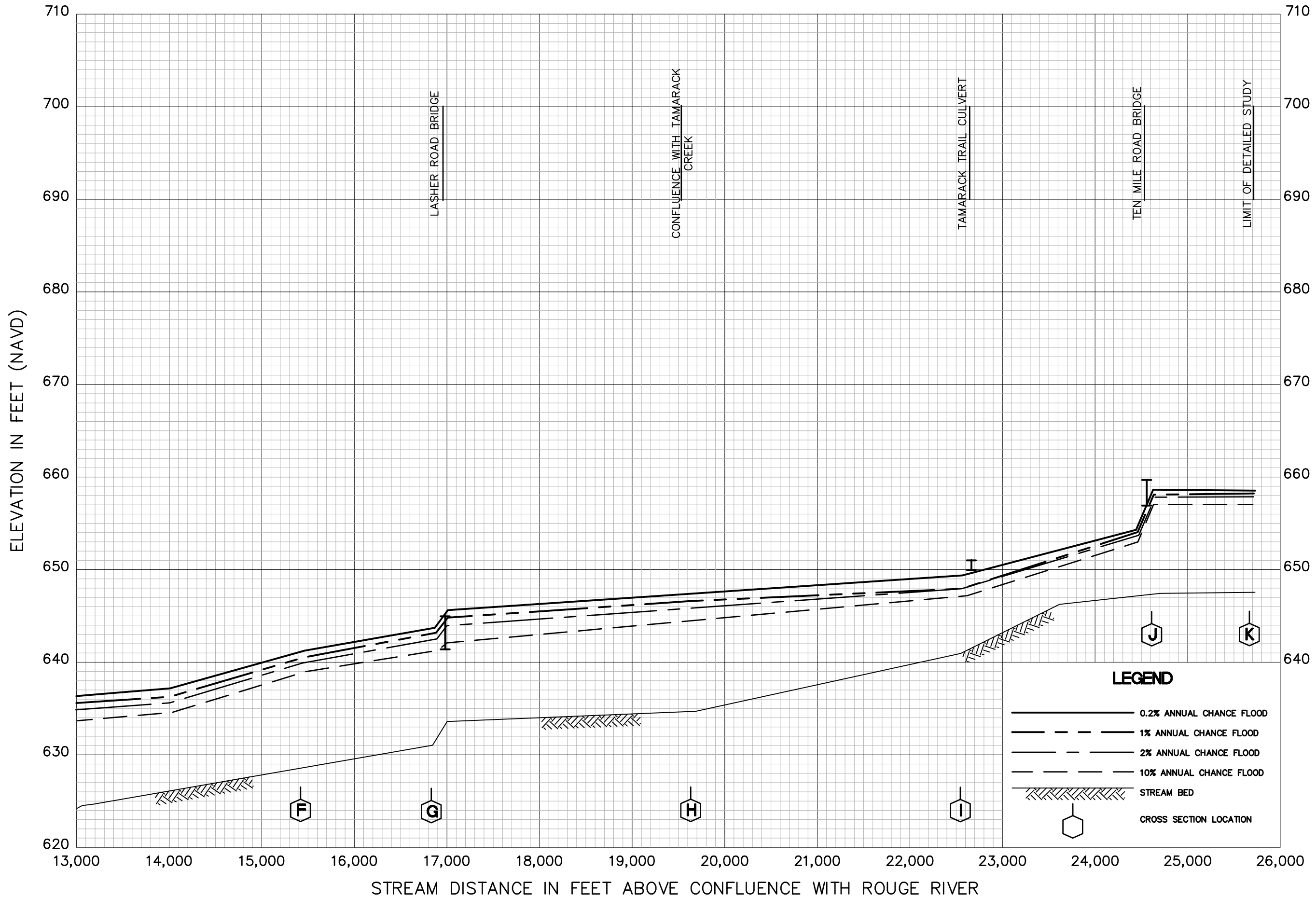
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DUCK CREEK

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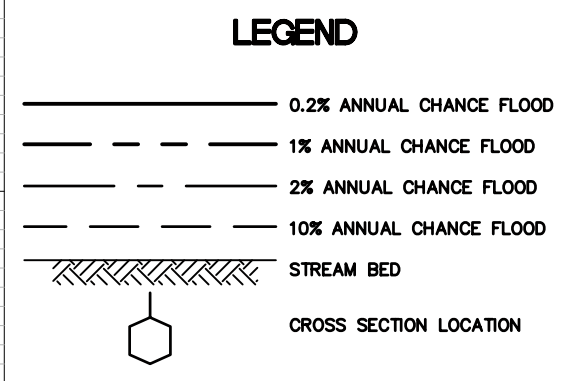
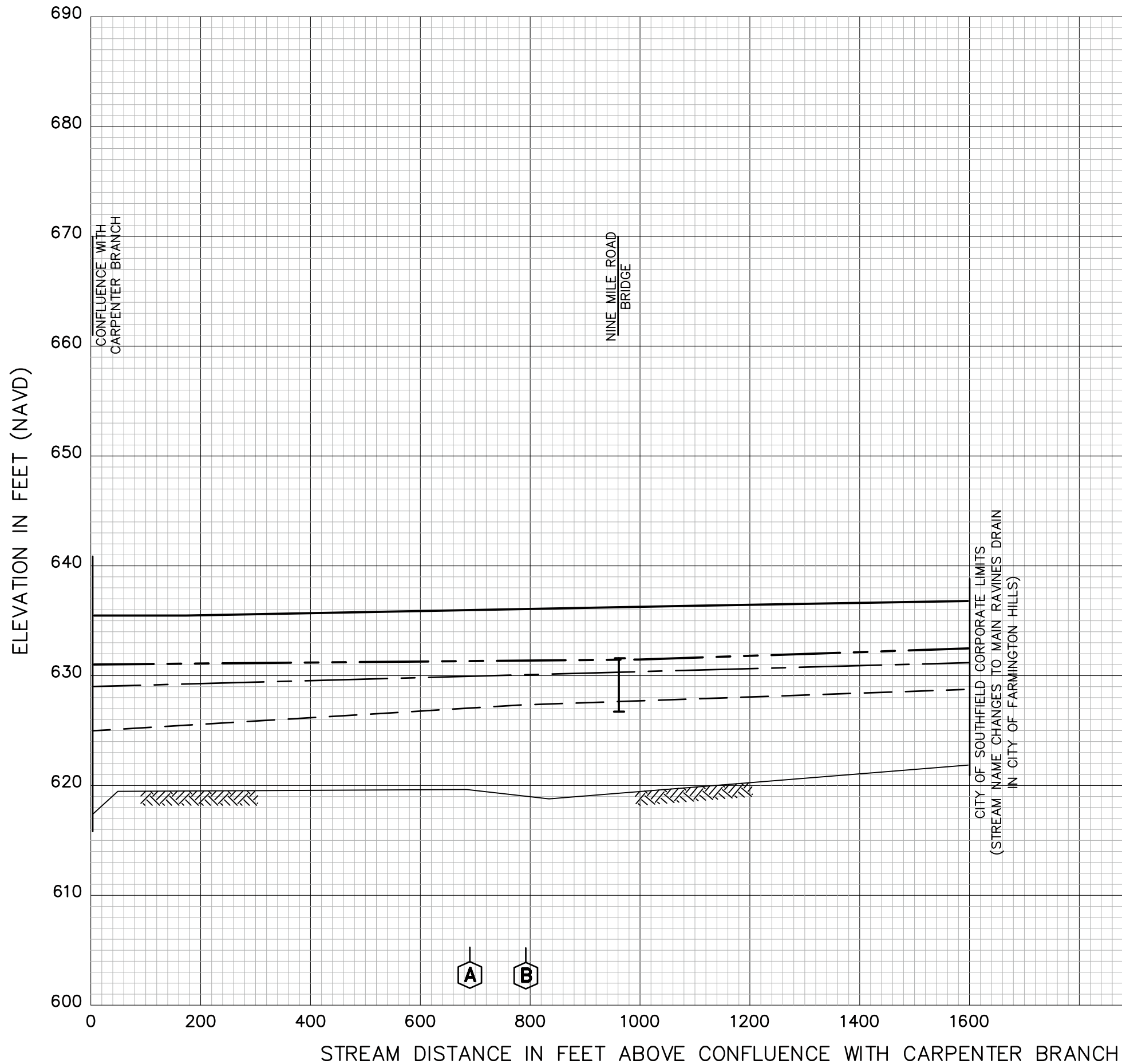
FLOOD PROFILES
EVANS BRANCH

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(ALL JURISDICTIONS)



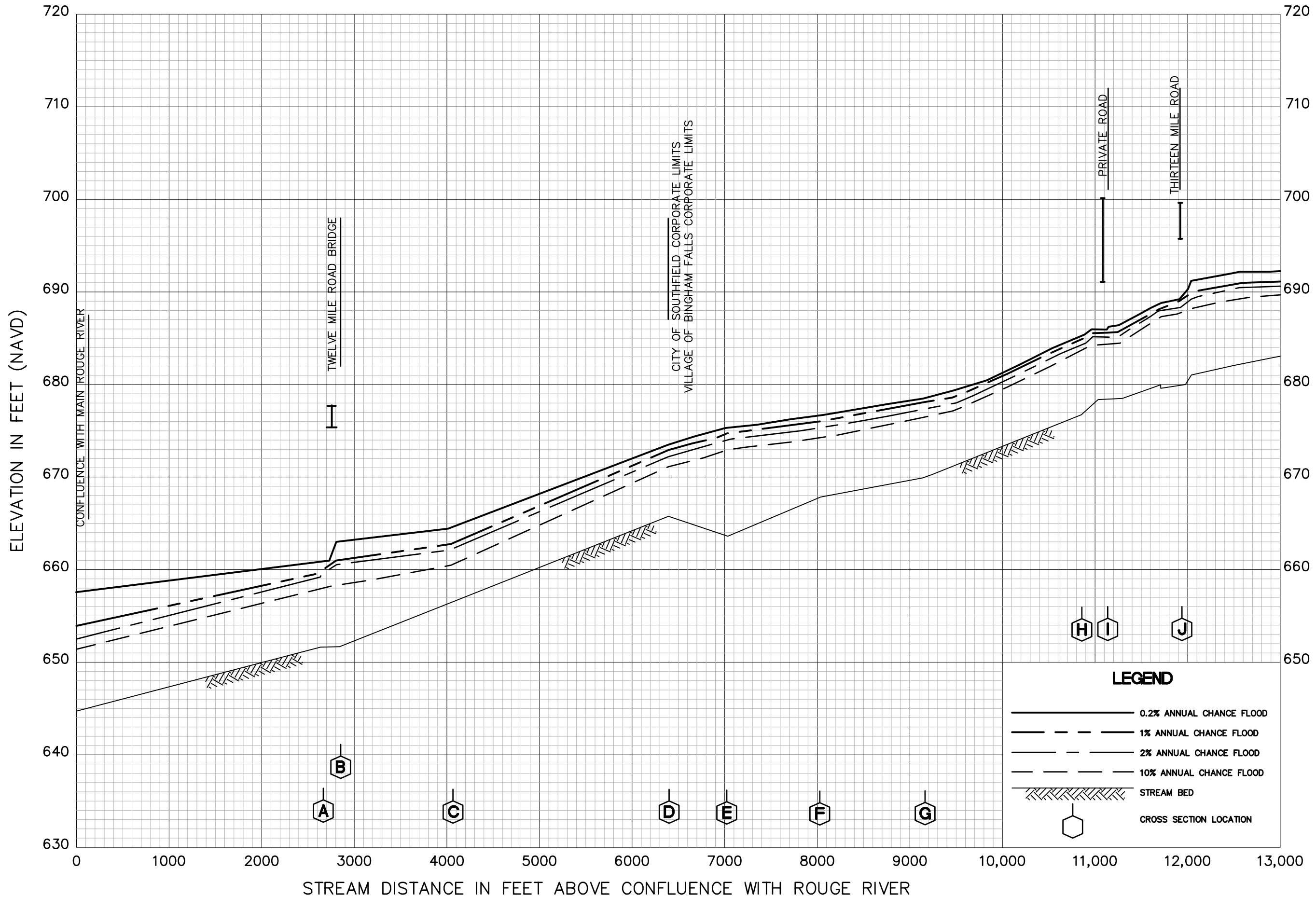
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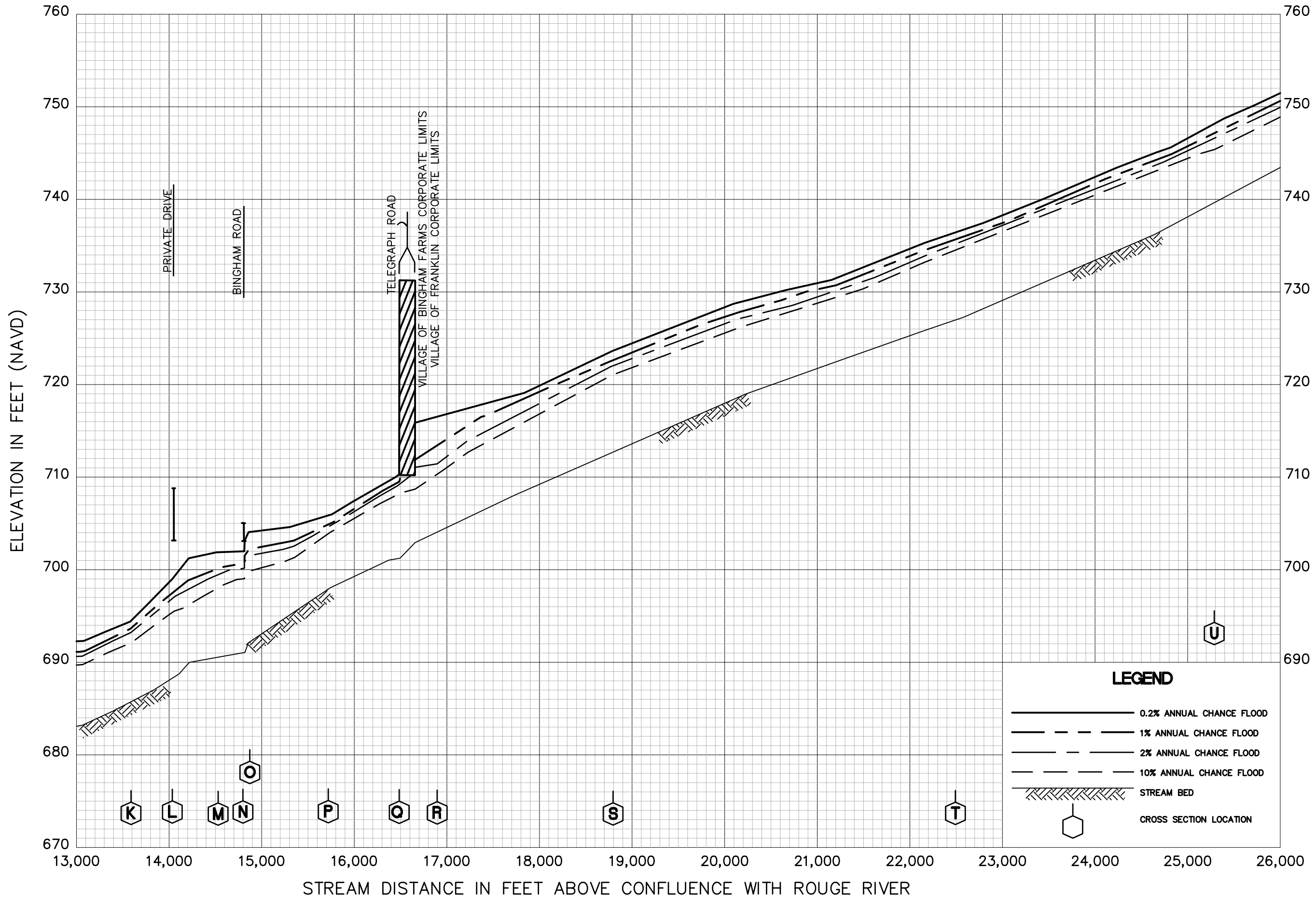
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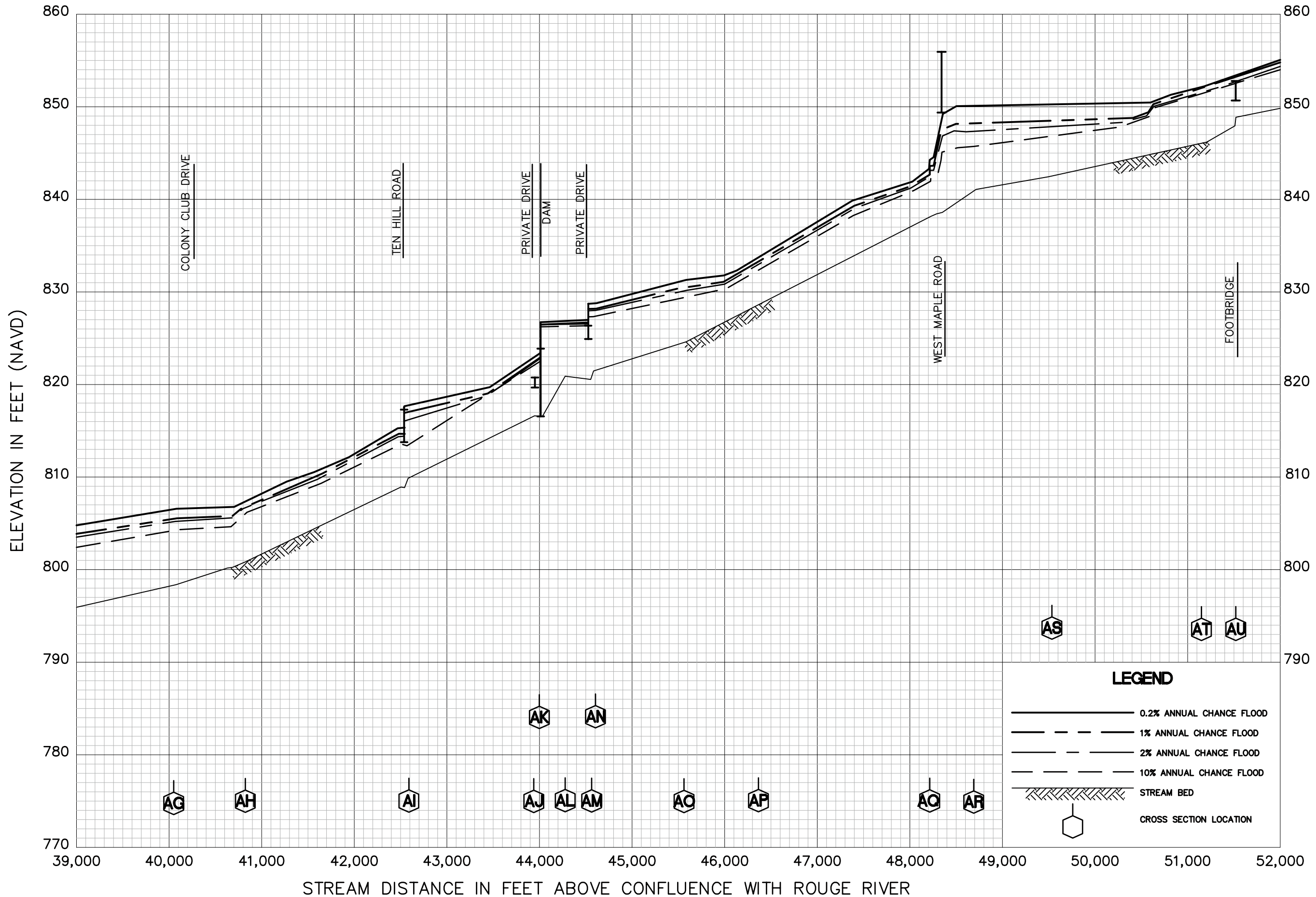
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FRANKLIN BRANCH**

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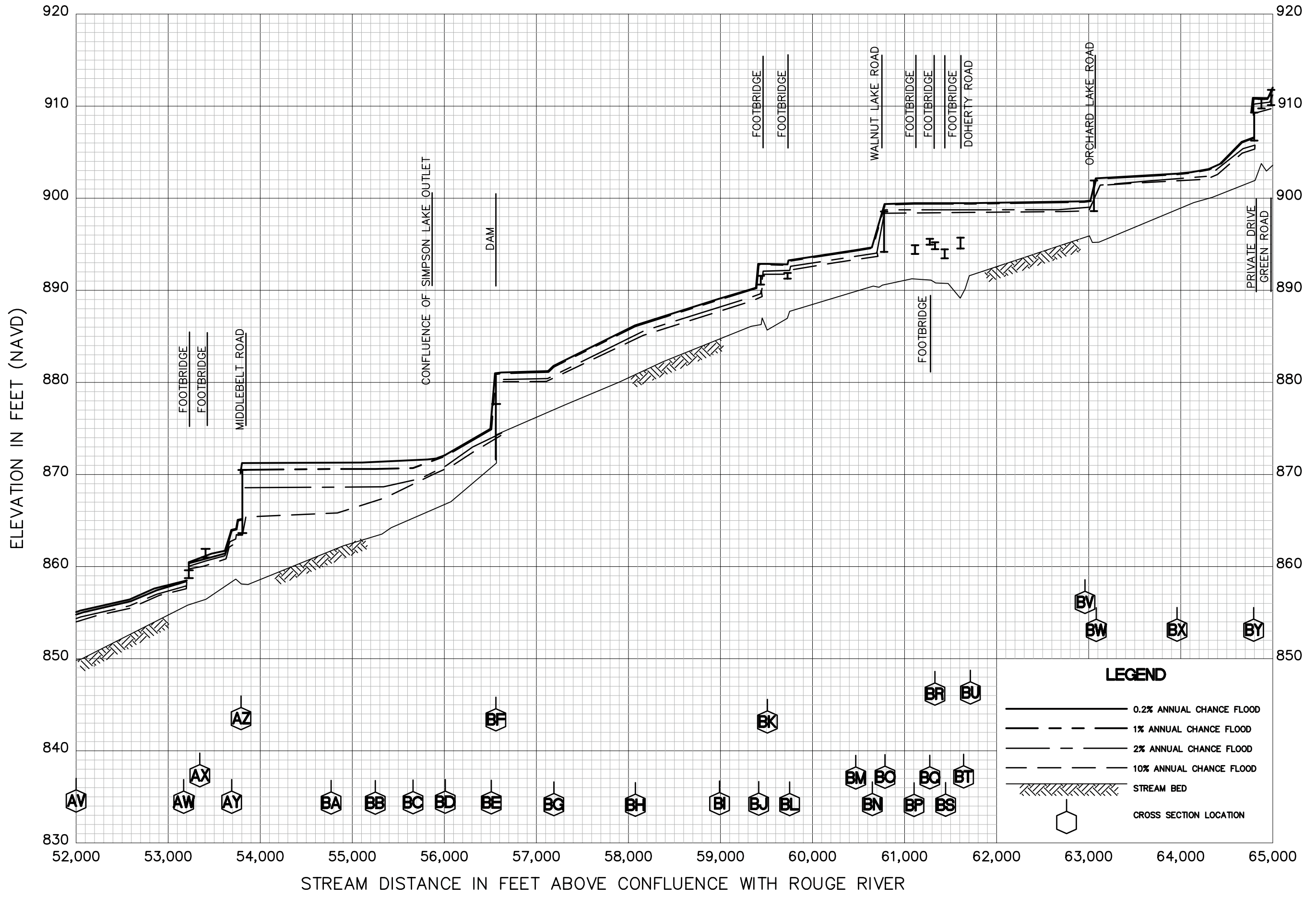
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OAKLAND COUNTY, MI
(ALL JURISDICTIONS)



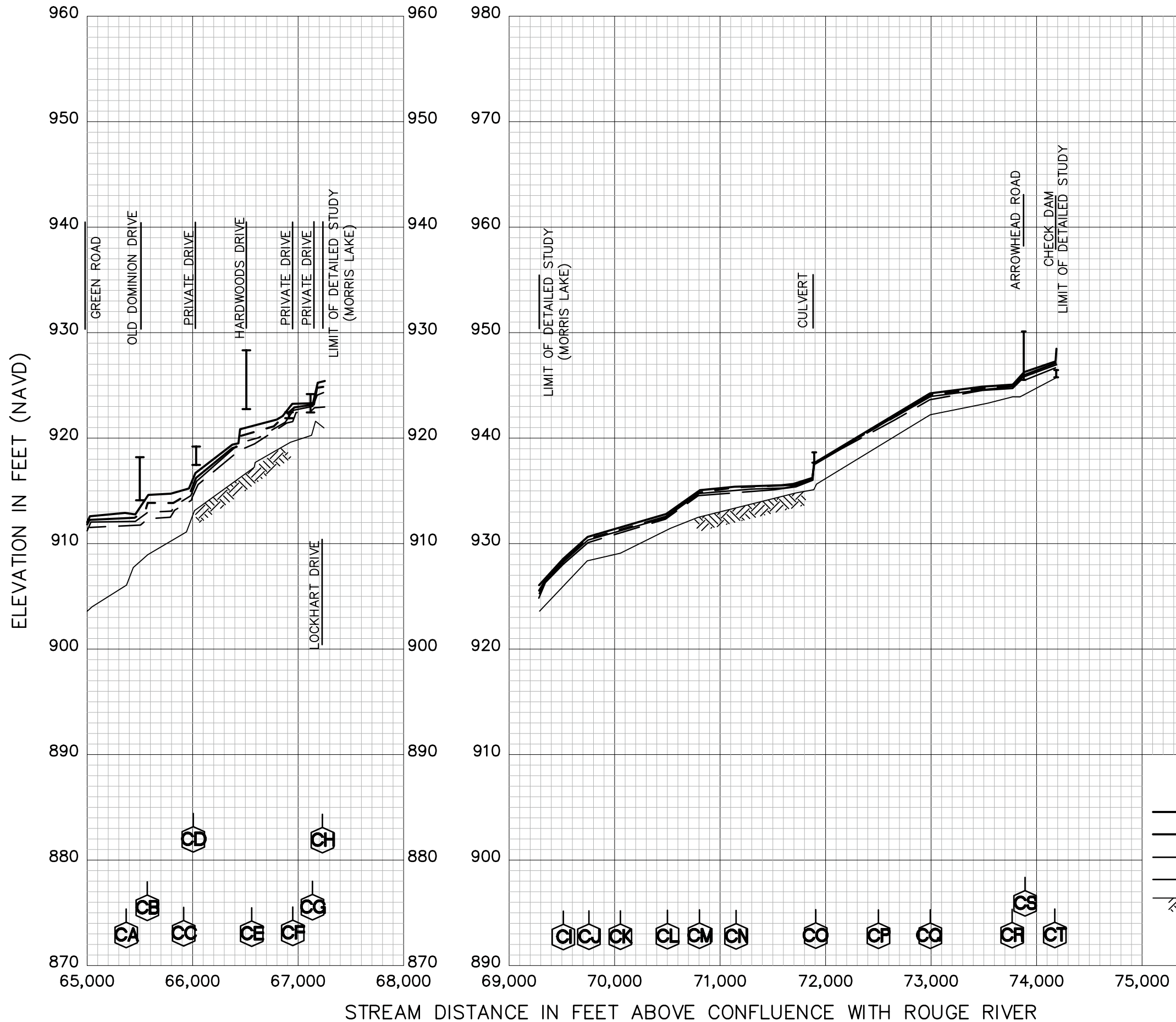
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FRANKLIN BRANCH**

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
(ALL JURISDICTIONS)



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FRANKLIN BRANCH**

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
(ALL JURISDICTIONS)

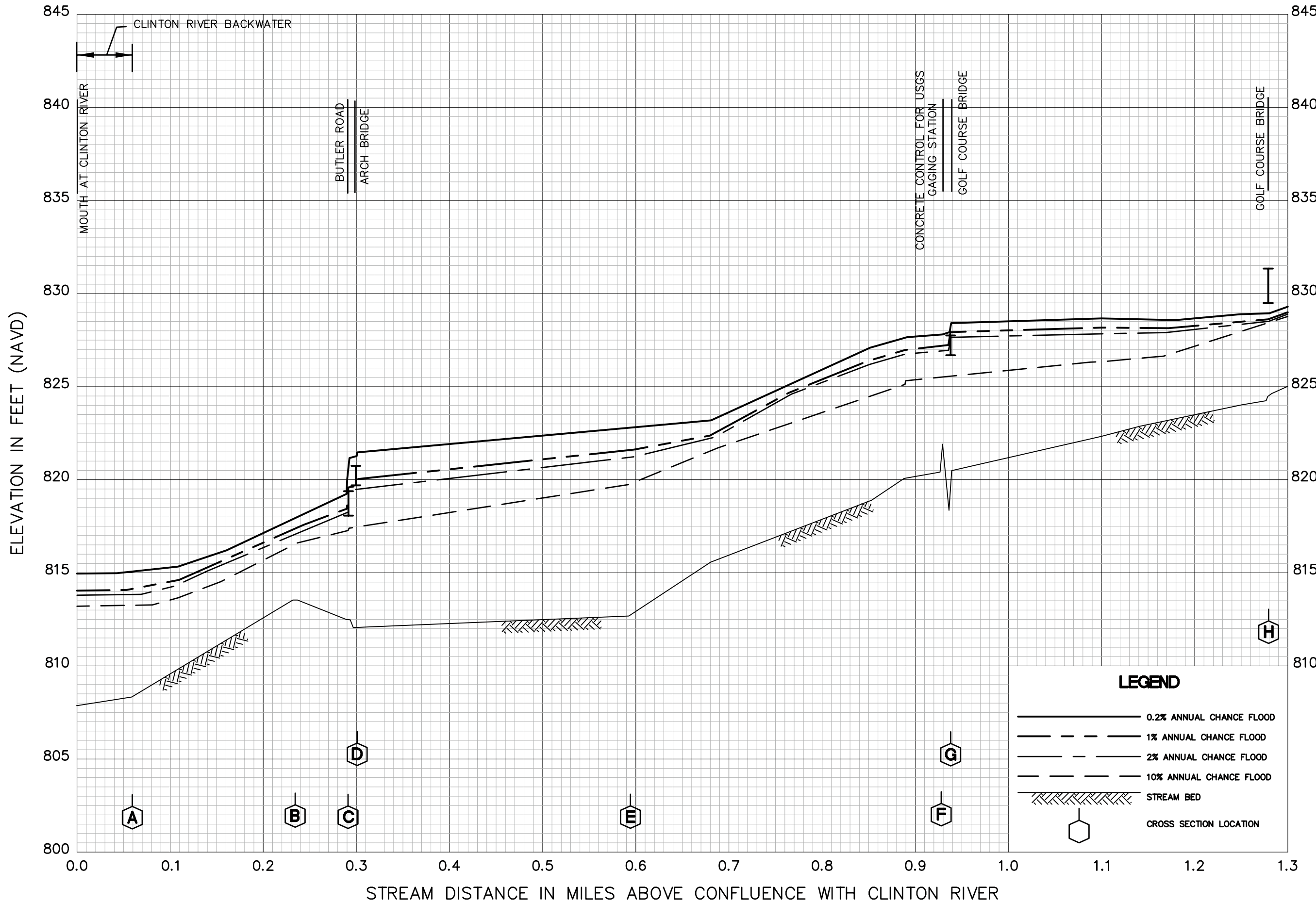


LEGEND

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- - - 1% ANNUAL CHANCE FLOOD
- 2% ANNUAL CHANCE FLOOD
- · · 10% ANNUAL CHANCE FLOOD
- ▨ STREAM BED
- ⬡ CROSS SECTION LOCATION

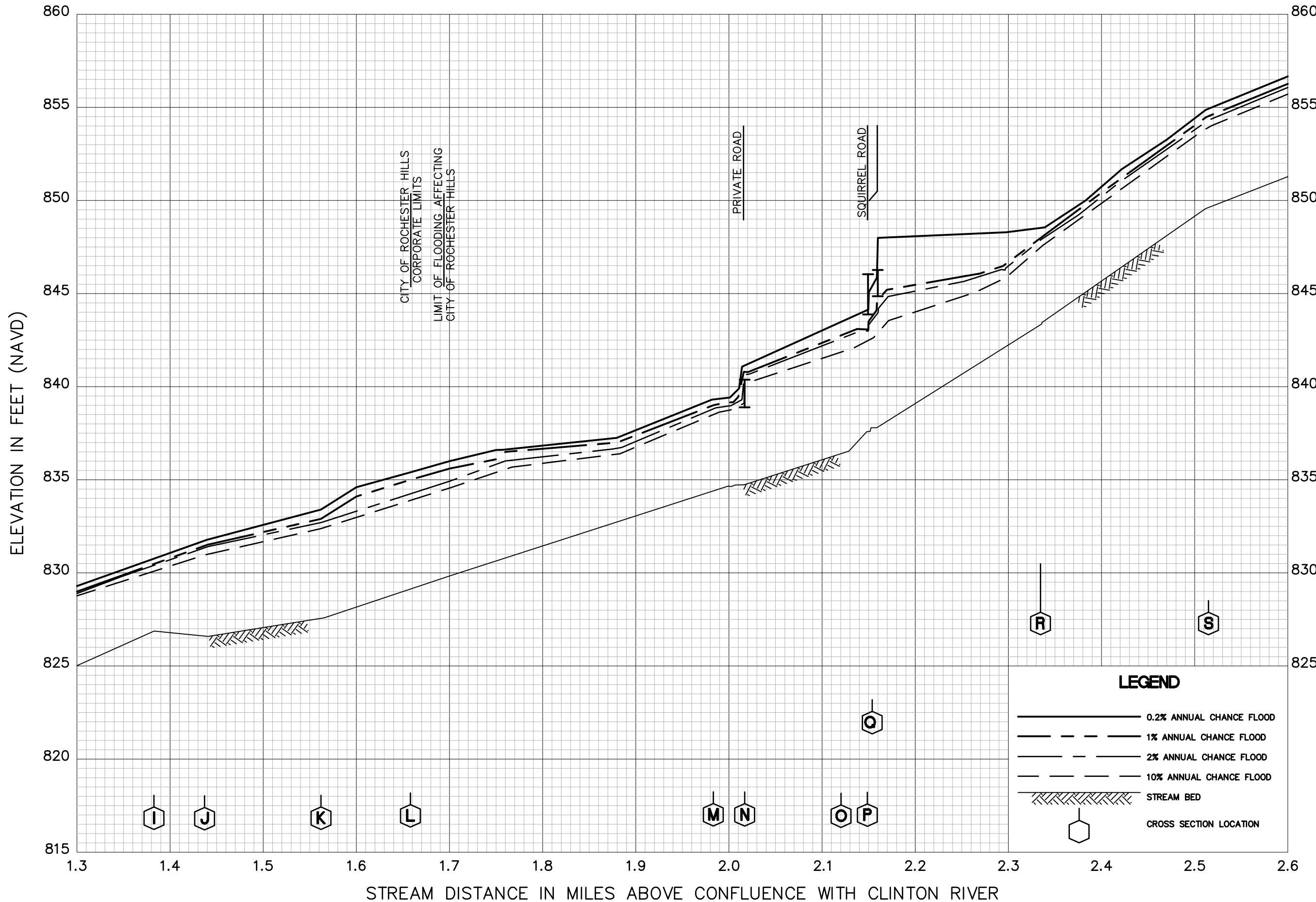
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(ALL JURISDICTIONS)



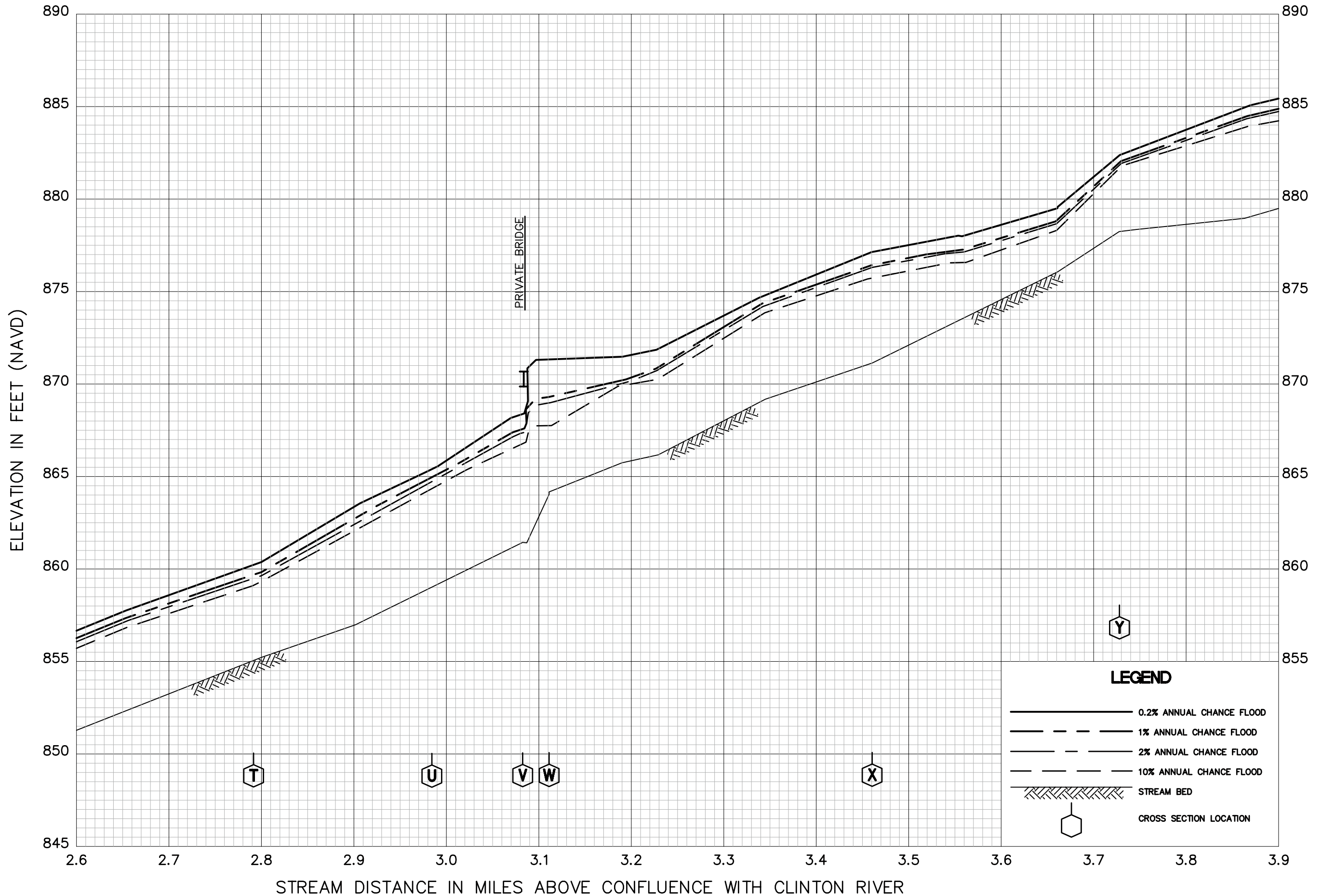
FLOOD PROFILES
GALLOWAY CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
(ALL JURISDICTIONS)



**FLOOD PROFILES
GALLOWAY CREEK**

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
(ALL JURISDICTIONS)

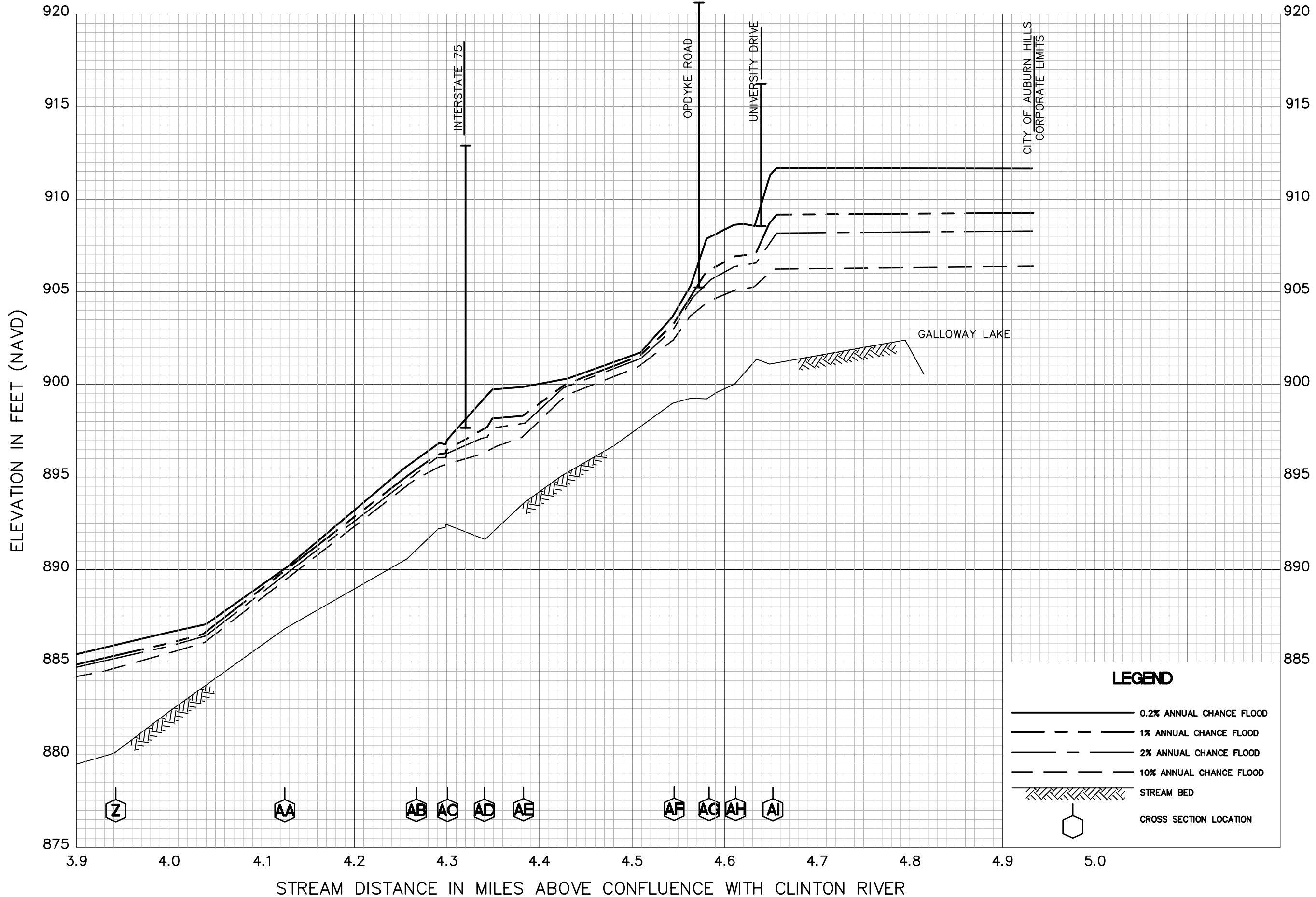


**FLOOD PROFILES
GALLOWAY CREEK**

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OAKLAND COUNTY, MI
(ALL JURISDICTIONS)

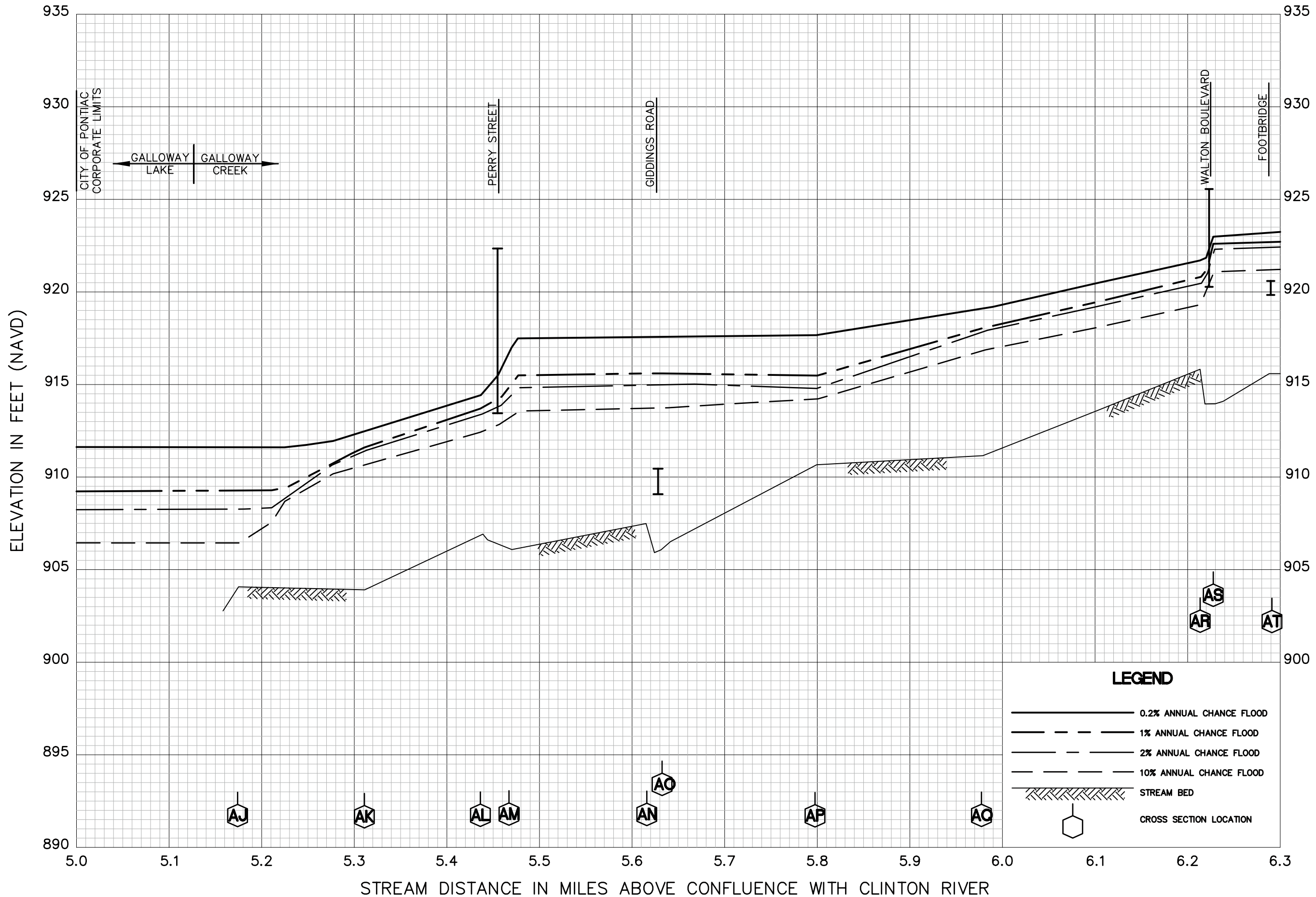
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- ⬡ CROSS SECTION LOCATION



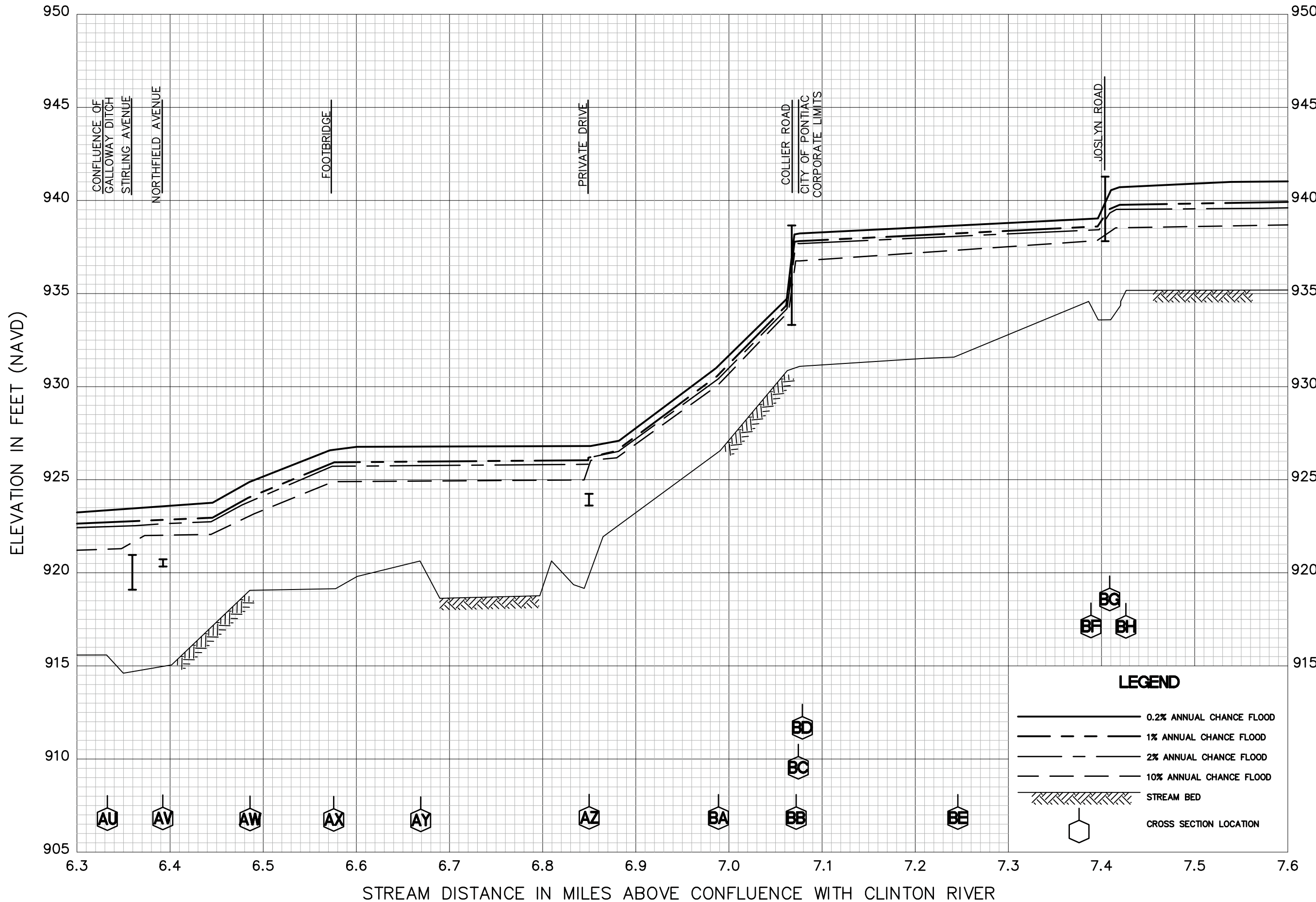
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GALLOWAY CREEK**

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
(ALL JURISDICTIONS)



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GALLOWAY CREEK**

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
(ALL JURISDICTIONS)

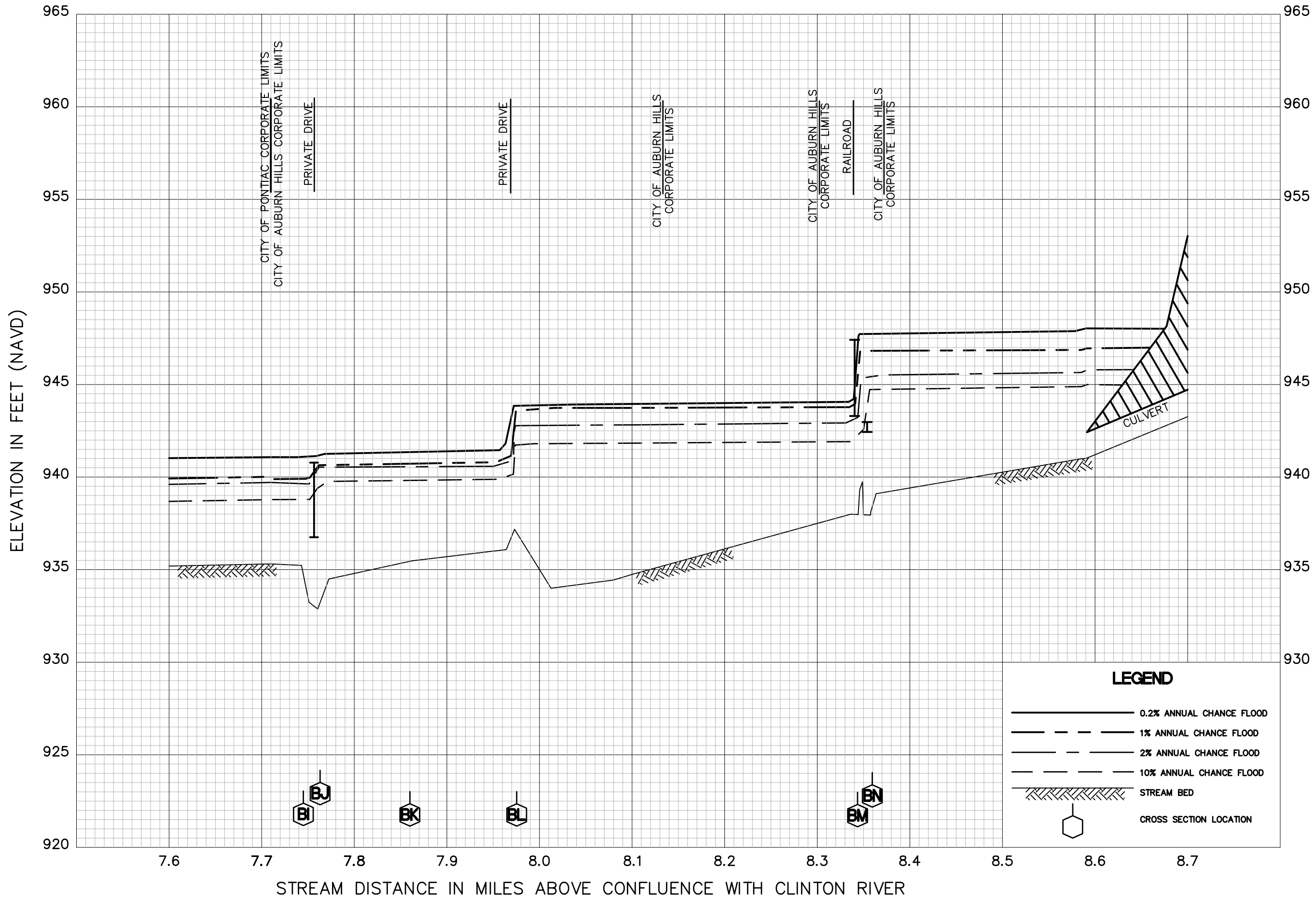


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GALLOWAY CREEK**

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
(ALL JURISDICTIONS)

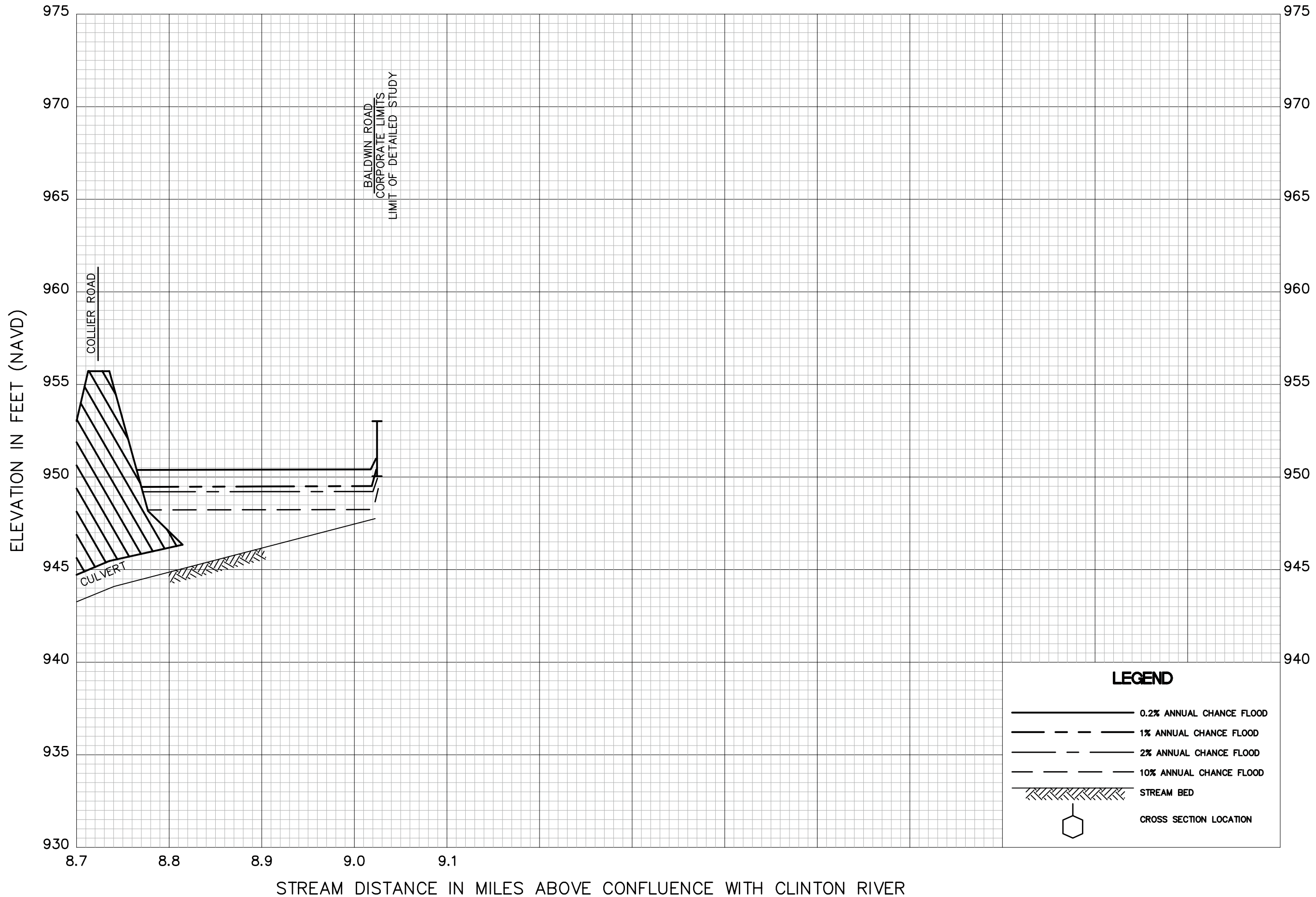
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- ▨ STREAM BED
- CROSS SECTION LOCATION



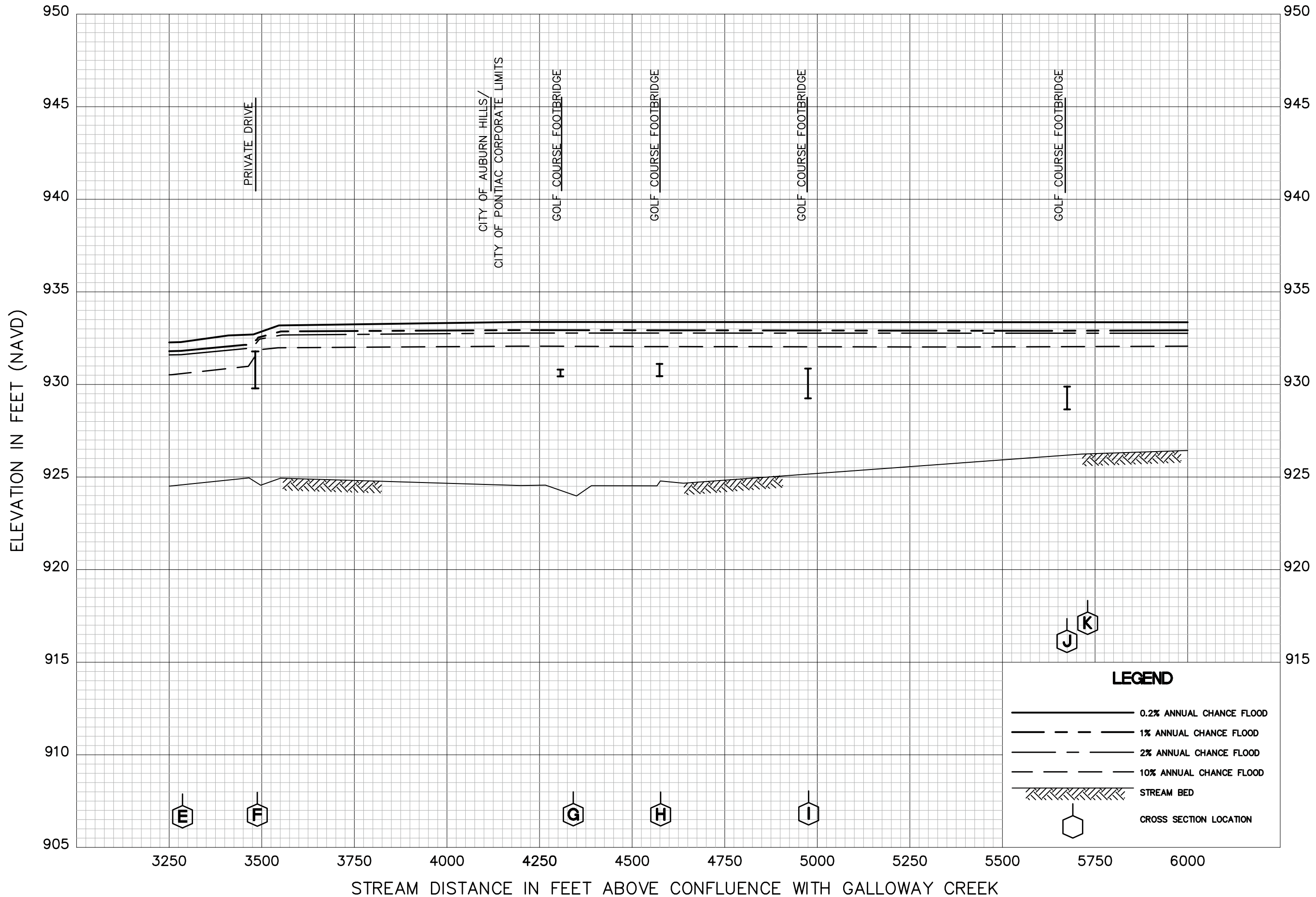
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(ALL JURISDICTIONS)



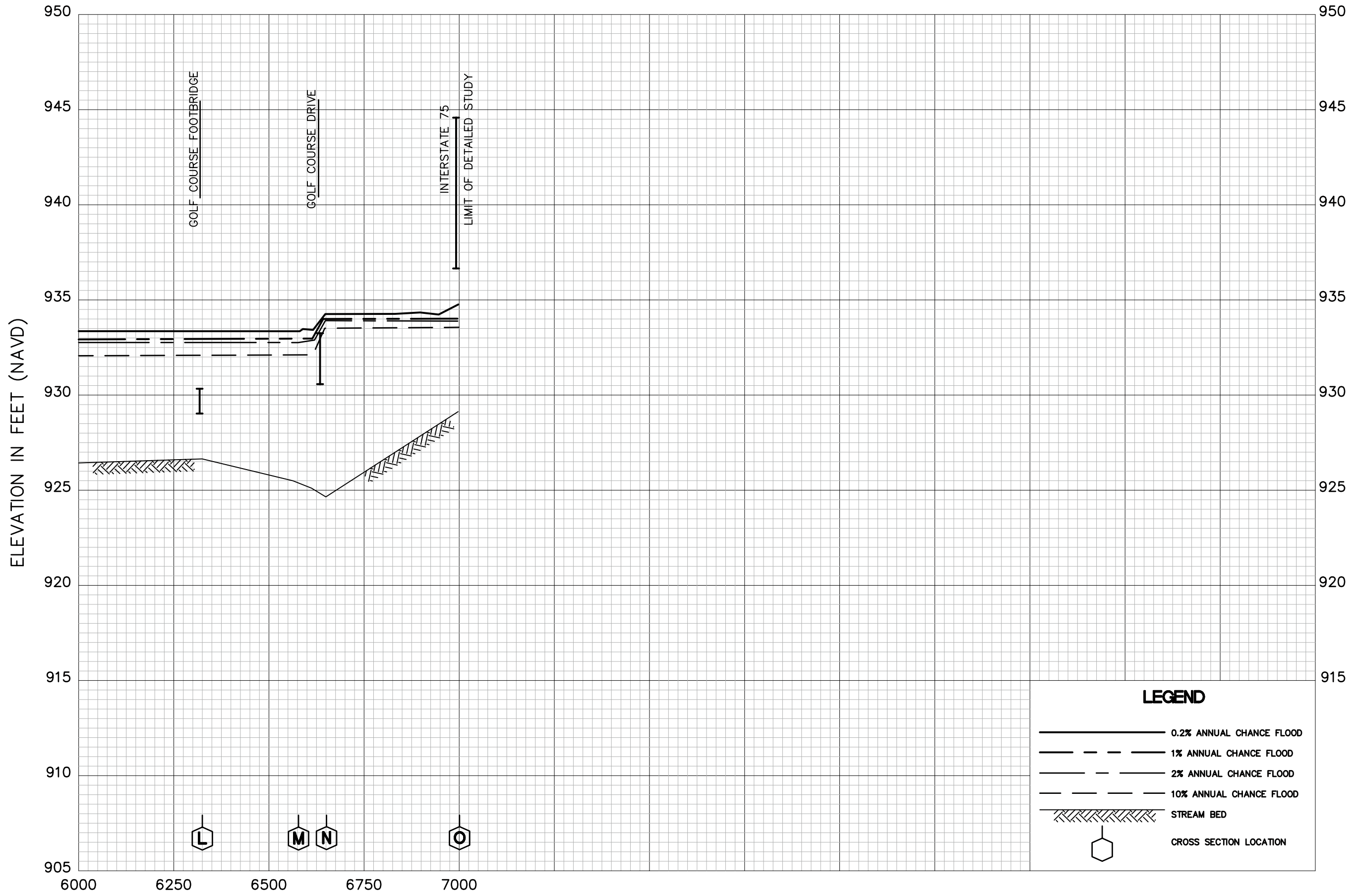
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GALLOWAY CREEK

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OAKLAND COUNTY, MI
(ALL JURISDICTIONS)



FLOOD PROFILES
GALLOWAY DITCH

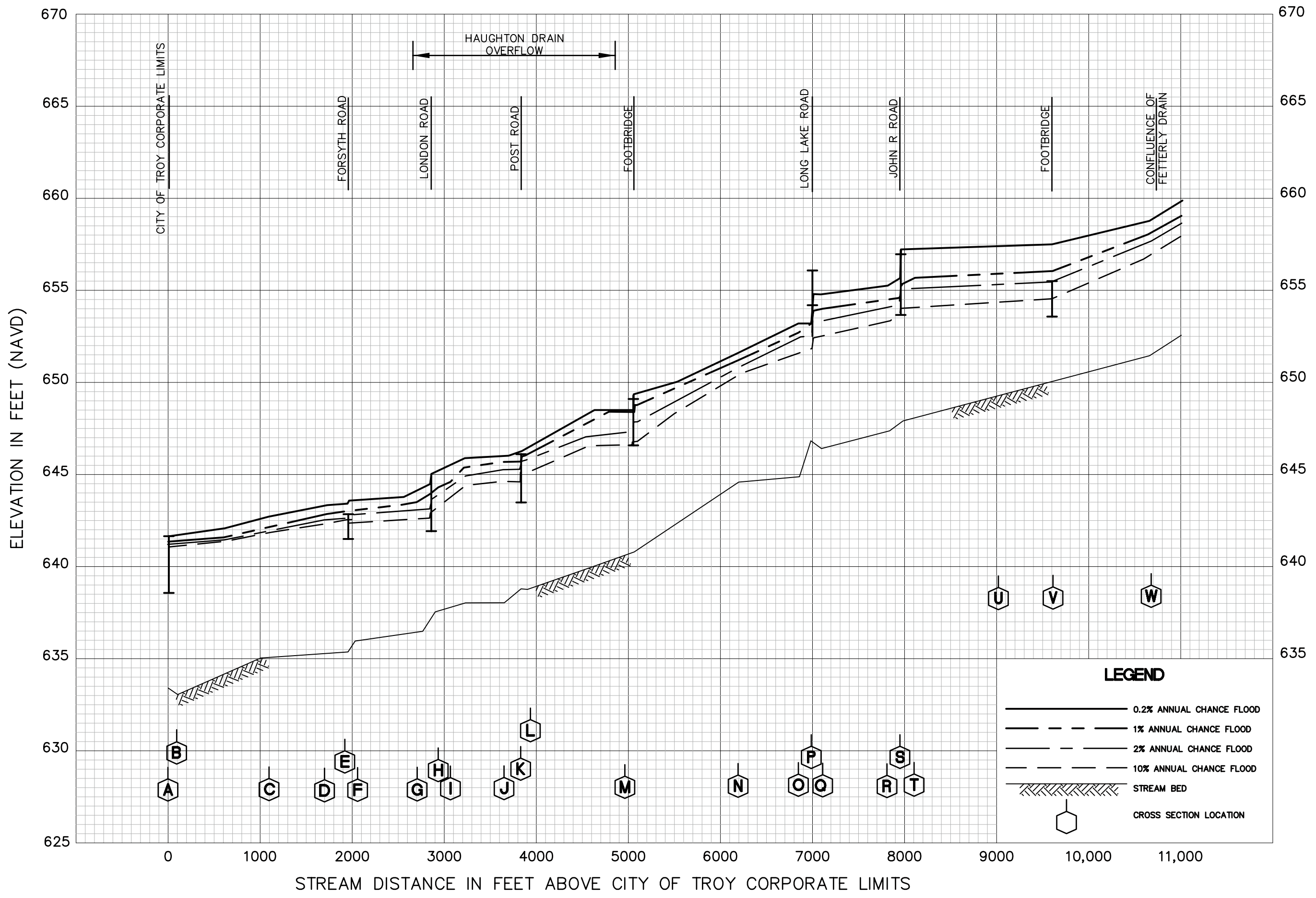
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OAKLAND COUNTY, MI
(ALL JURISDICTIONS)



STREAM DISTANCE IN FEET ABOVE CONFLUENCE WITH GALLOWAY CREEK

FLOOD PROFILES
GALLOWAY DITCH

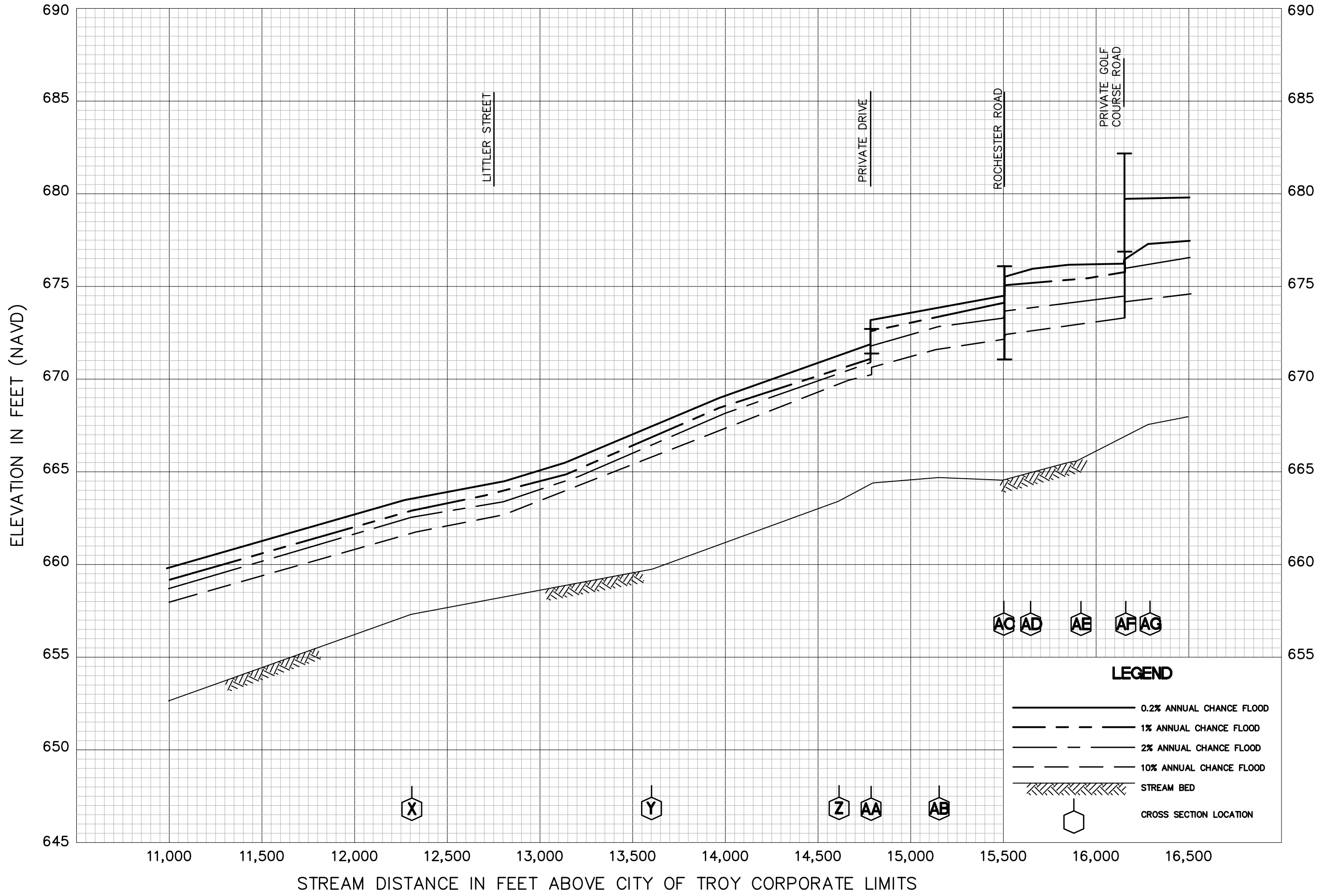
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OAKLAND COUNTY, MI
(ALL JURISDICTIONS)



FLOOD PROFILES
GIBSON - RENSHAW DRAIN

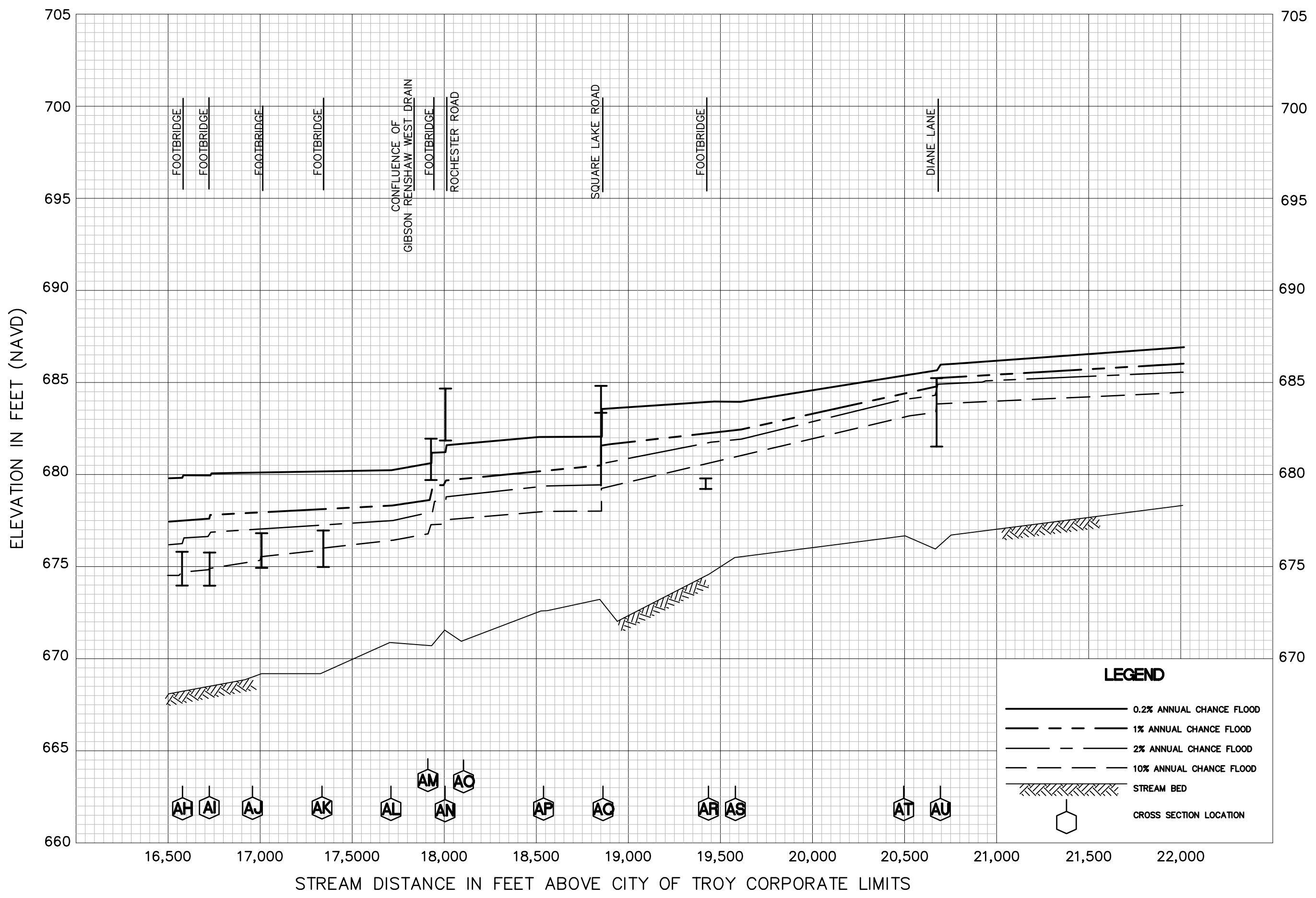
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OAKLAND COUNTY, MI
 (ALL JURISDICTIONS)



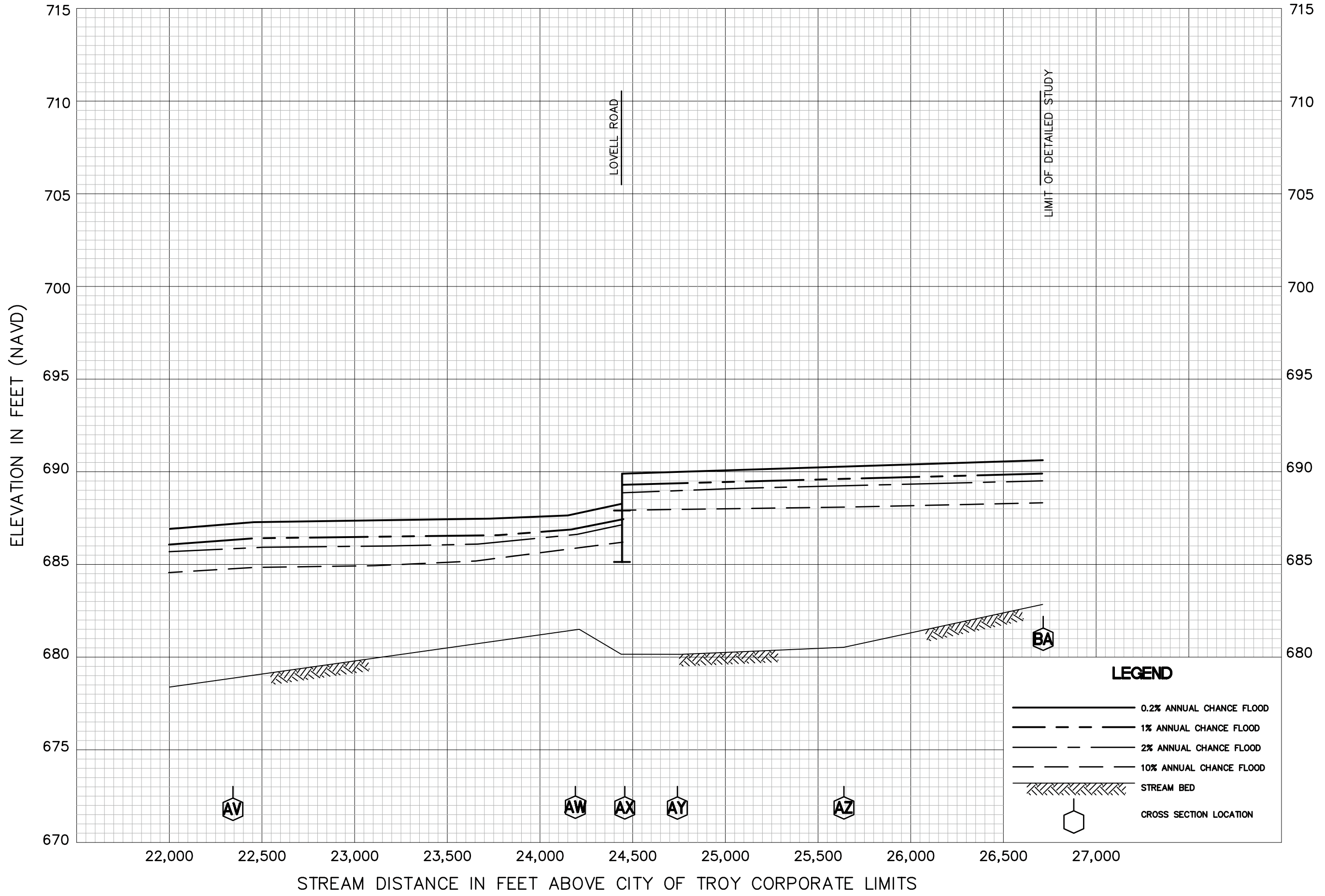
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GIBSON - RENSHAW DRAIN

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
 (ALL JURISDICTIONS)



FLOOD PROFILES
GIBSON - RENSHAW DRAIN

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
 (ALL JURISDICTIONS)



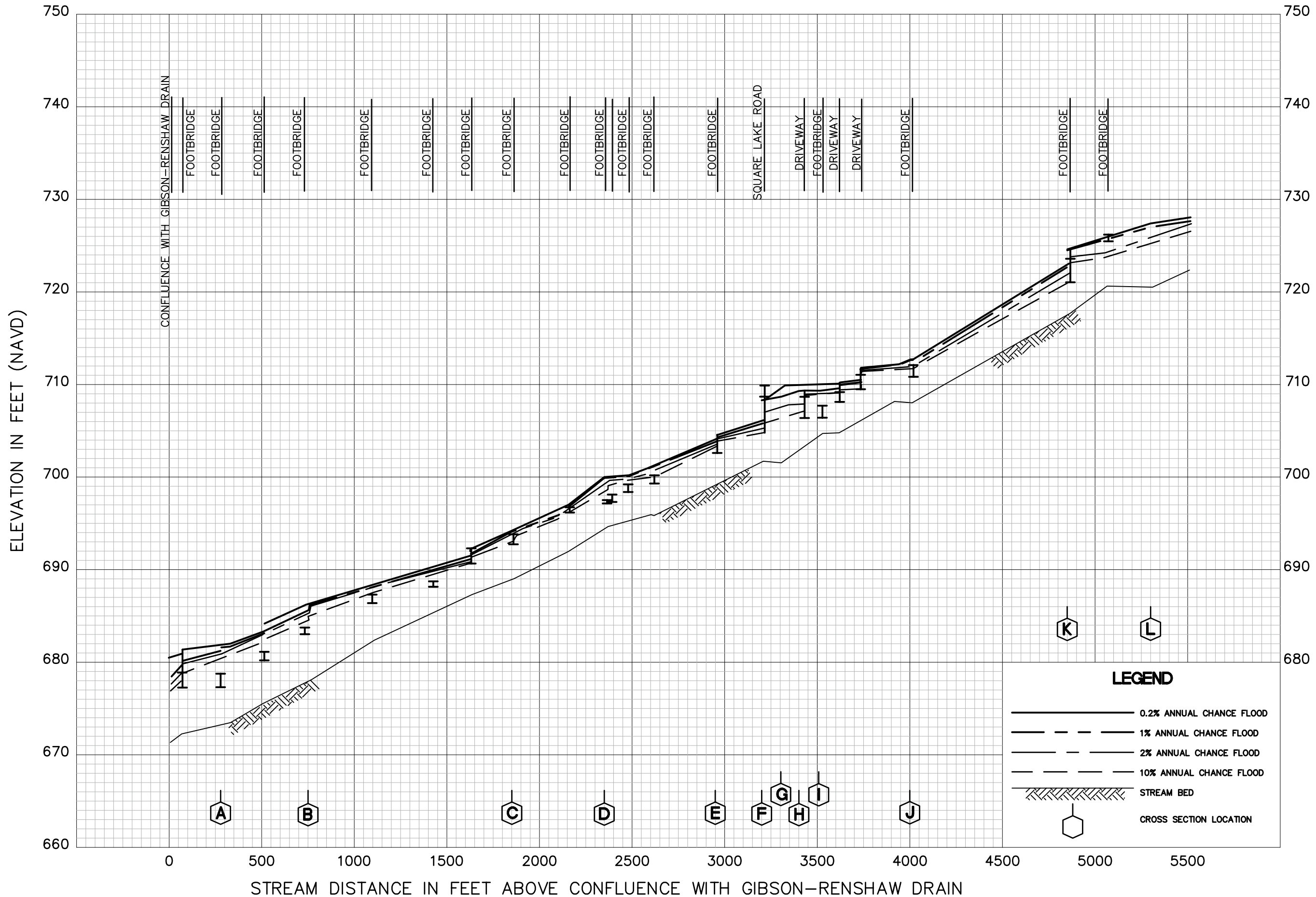
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GIBSON - RENSHAW DRAIN

FEDERAL EMERGENCY MANAGEMENT AGENCY

OAKLAND COUNTY, MI

(ALL JURISDICTIONS)



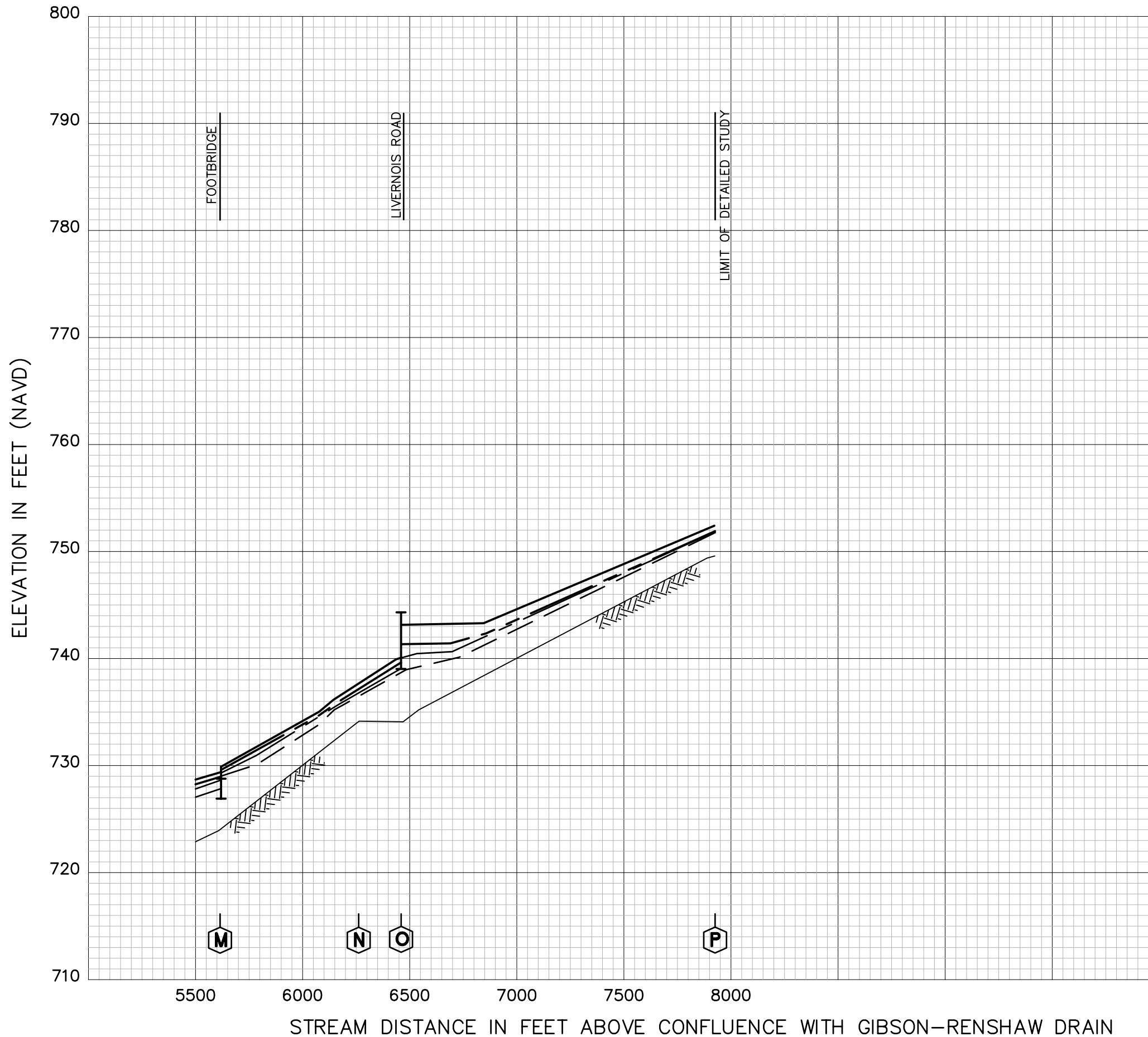
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GIBSON - RENSRAW WEST DRAIN

FEDERAL EMERGENCY MANAGEMENT AGENCY

OAKLAND COUNTY, MI

(ALL JURISDICTIONS)



LEGEND

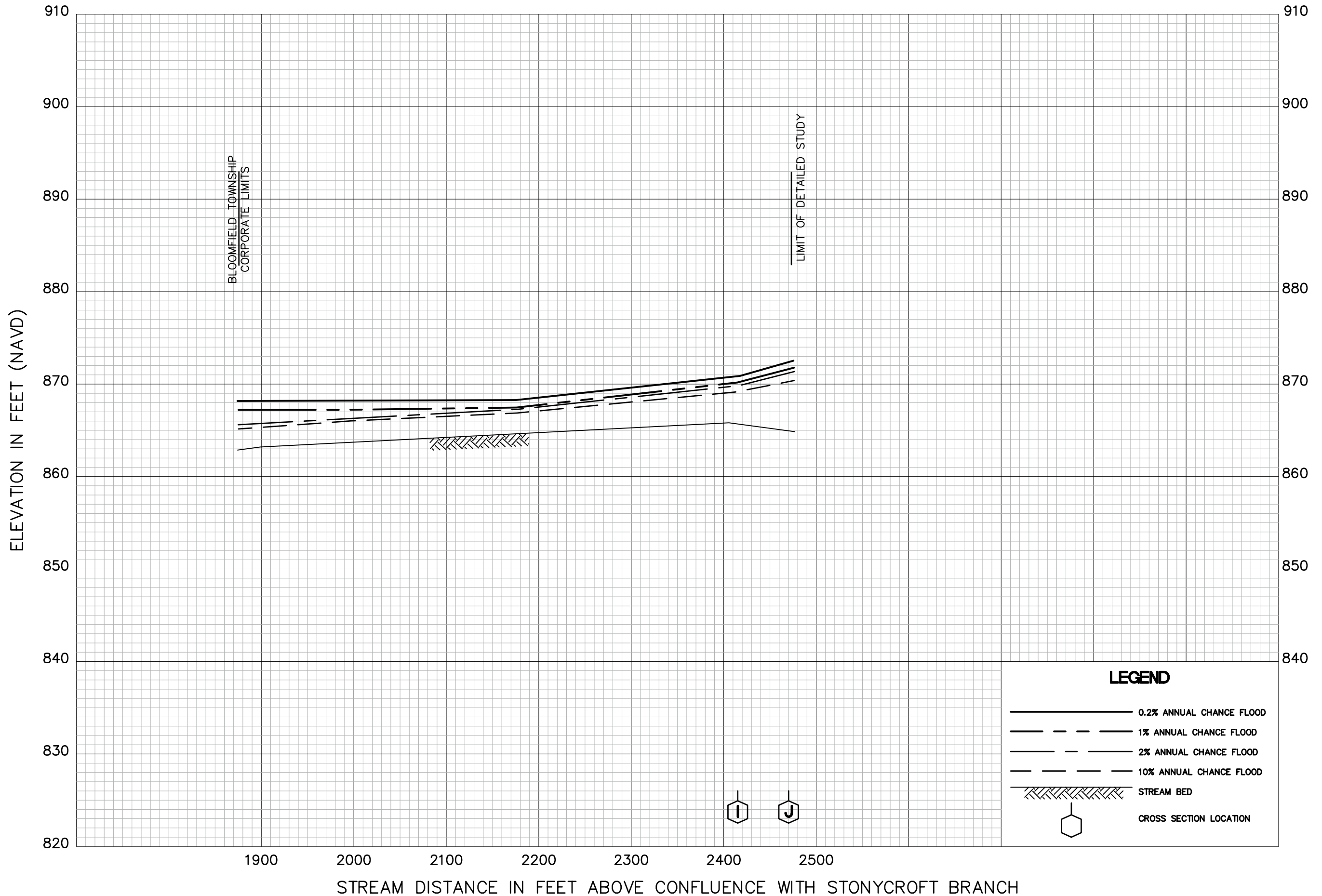
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- - - - 10% ANNUAL CHANCE FLOOD
- ▨ STREAM BED
- ⬡ CROSS SECTION LOCATION

FLOOD PROFILES

GIBSON - RENSHAW WEST DRAIN

FEDERAL EMERGENCY MANAGEMENT AGENCY

OAKLAND COUNTY, MI
(ALL JURISDICTIONS)



ELEVATION IN FEET (NAVD)

STREAM DISTANCE IN FEET ABOVE CONFLUENCE WITH STONYCROFT BRANCH

LEGEND

- 0.2% ANNUAL CHANCE FLOOD
- - - 1% ANNUAL CHANCE FLOOD
- · - 2% ANNUAL CHANCE FLOOD
- - - 10% ANNUAL CHANCE FLOOD
- ▨ STREAM BED
- ⬡ CROSS SECTION LOCATION

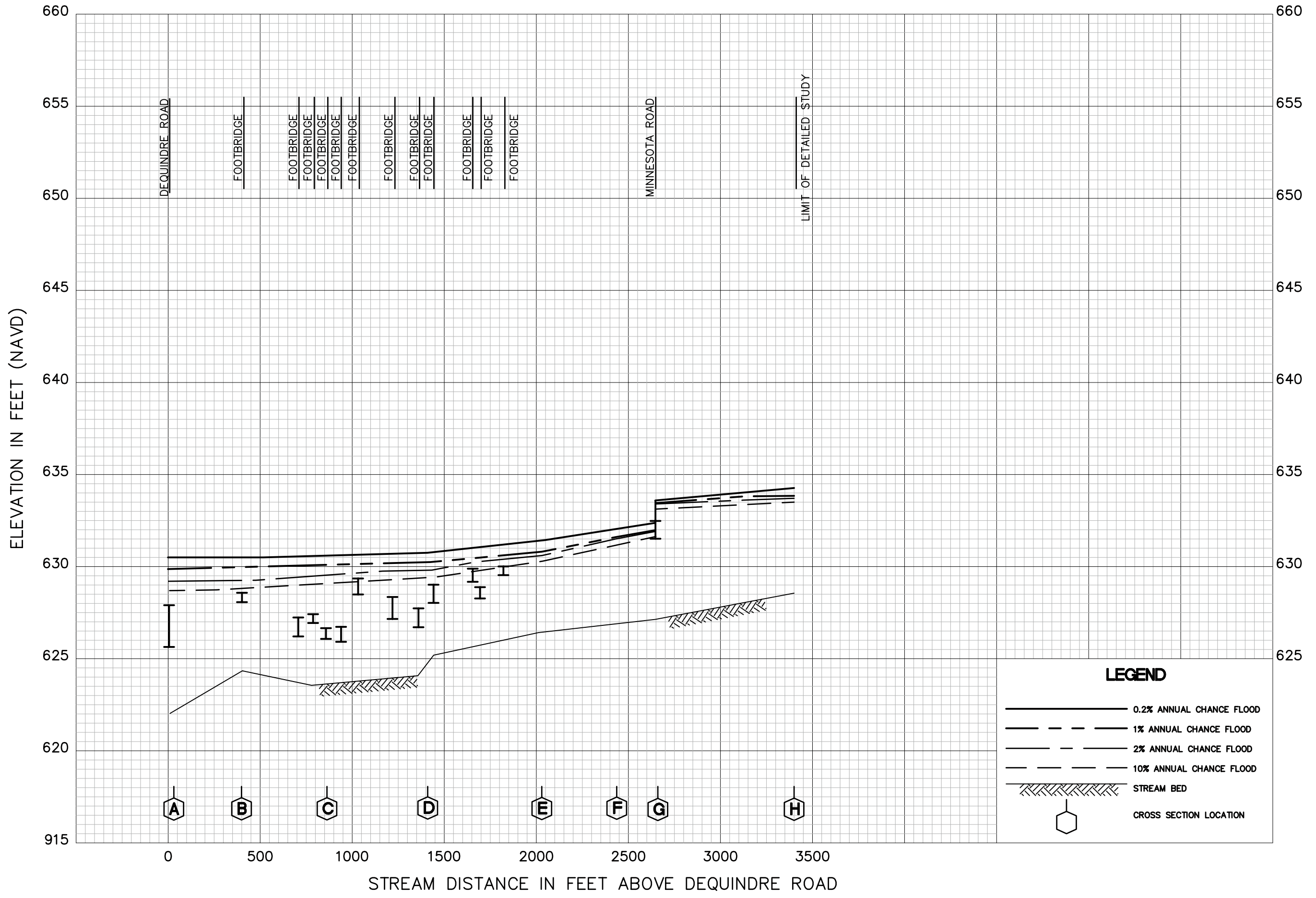
FLOOD PROFILES

HAMLIN DRAIN

FEDERAL EMERGENCY MANAGEMENT AGENCY

OAKLAND COUNTY, MI

(ALL JURISDICTIONS)

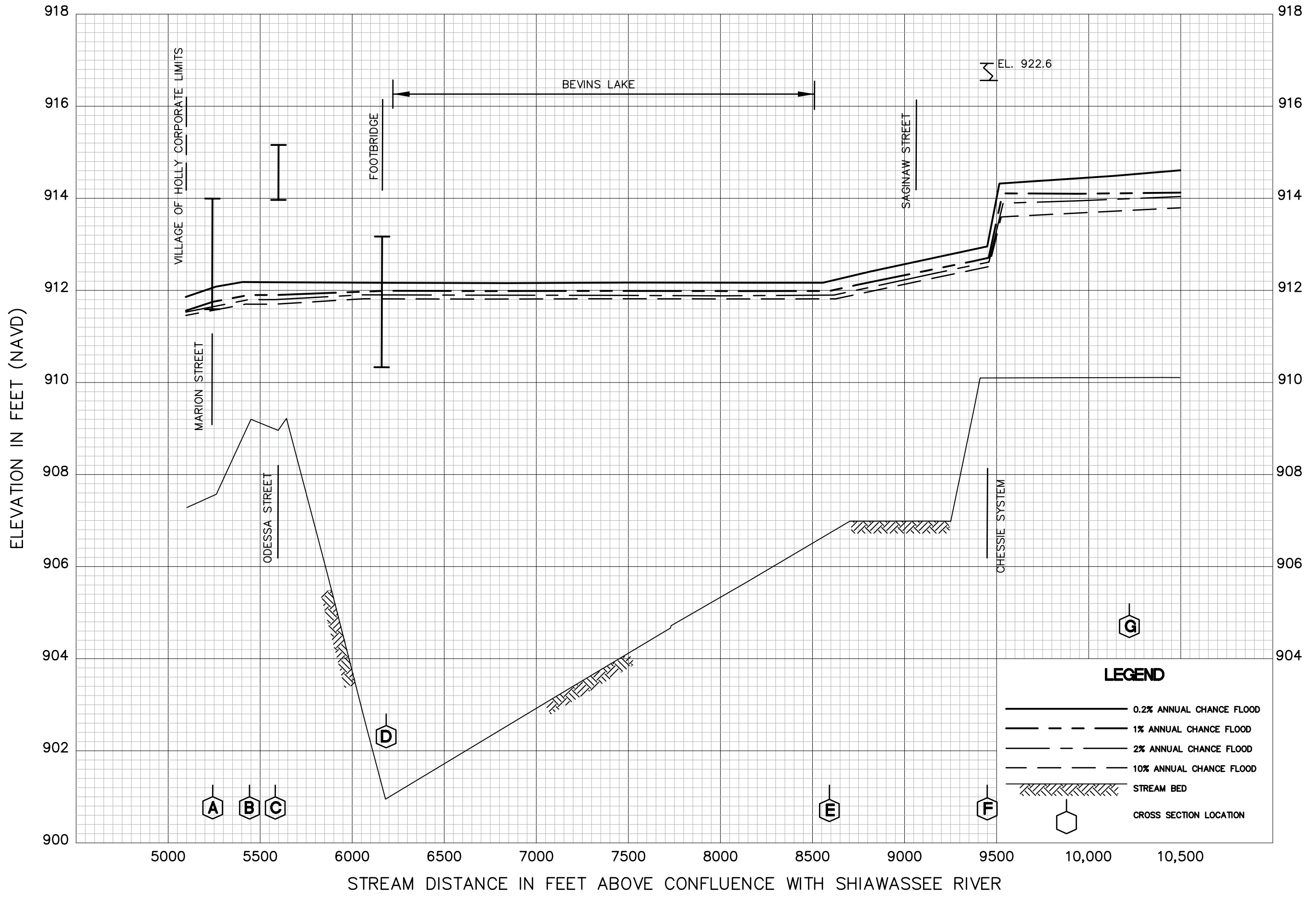


LEGEND

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- - - - 10% ANNUAL CHANCE FLOOD
- ▨ STREAM BED
- ⬡ CROSS SECTION LOCATION

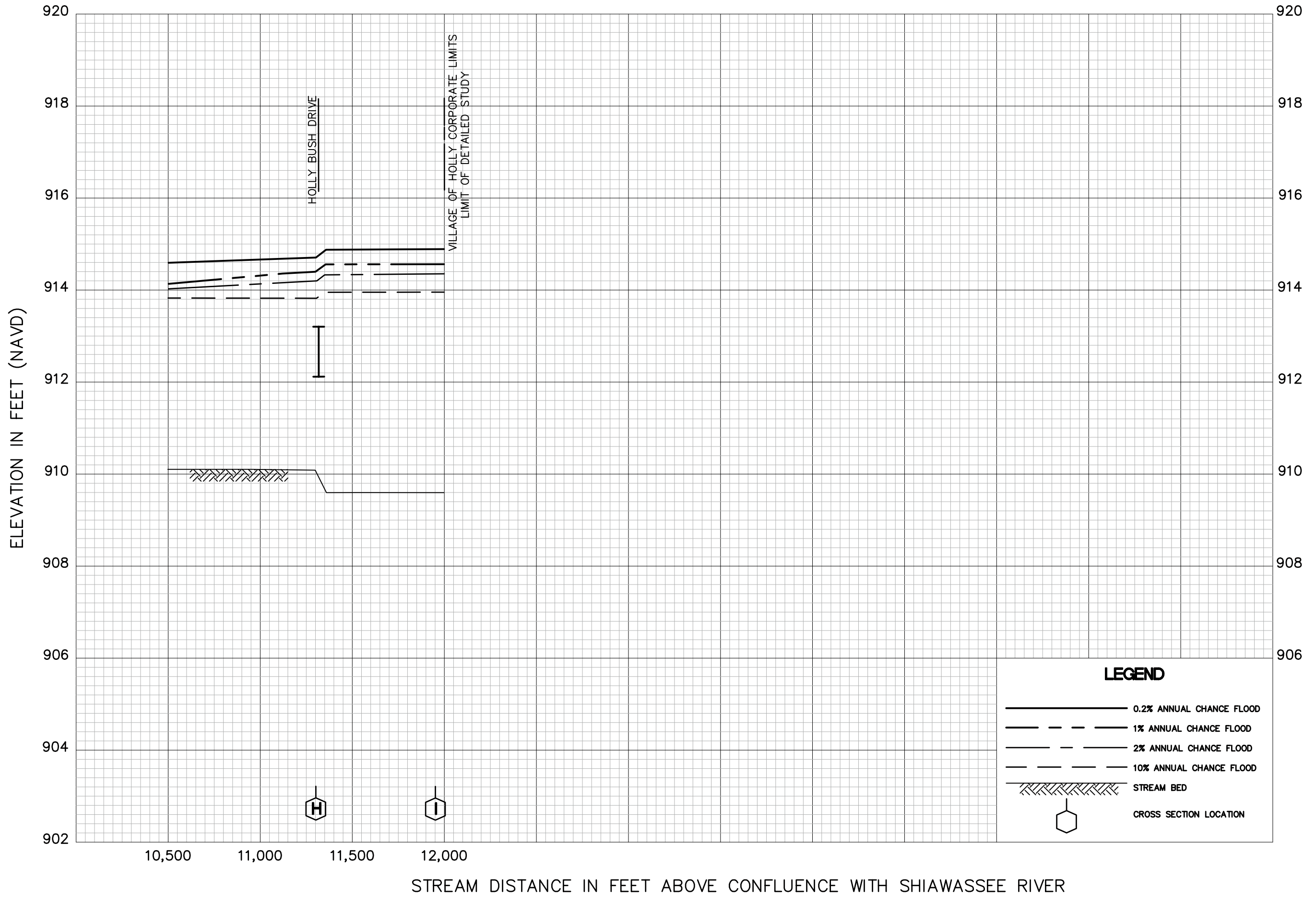
**FLOOD PROFILES
HAWTHORN DRAIN**

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
(ALL JURISDICTIONS)



FLOOD PROFILES
HOLLY-PATTERSON DRAIN

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
(ALL JURISDICTIONS)



LEGEND

- 0.2% ANNUAL CHANCE FLOOD
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- · - 2% ANNUAL CHANCE FLOOD
- - - 10% ANNUAL CHANCE FLOOD
- ▨ STREAM BED
- ⬡ CROSS SECTION LOCATION

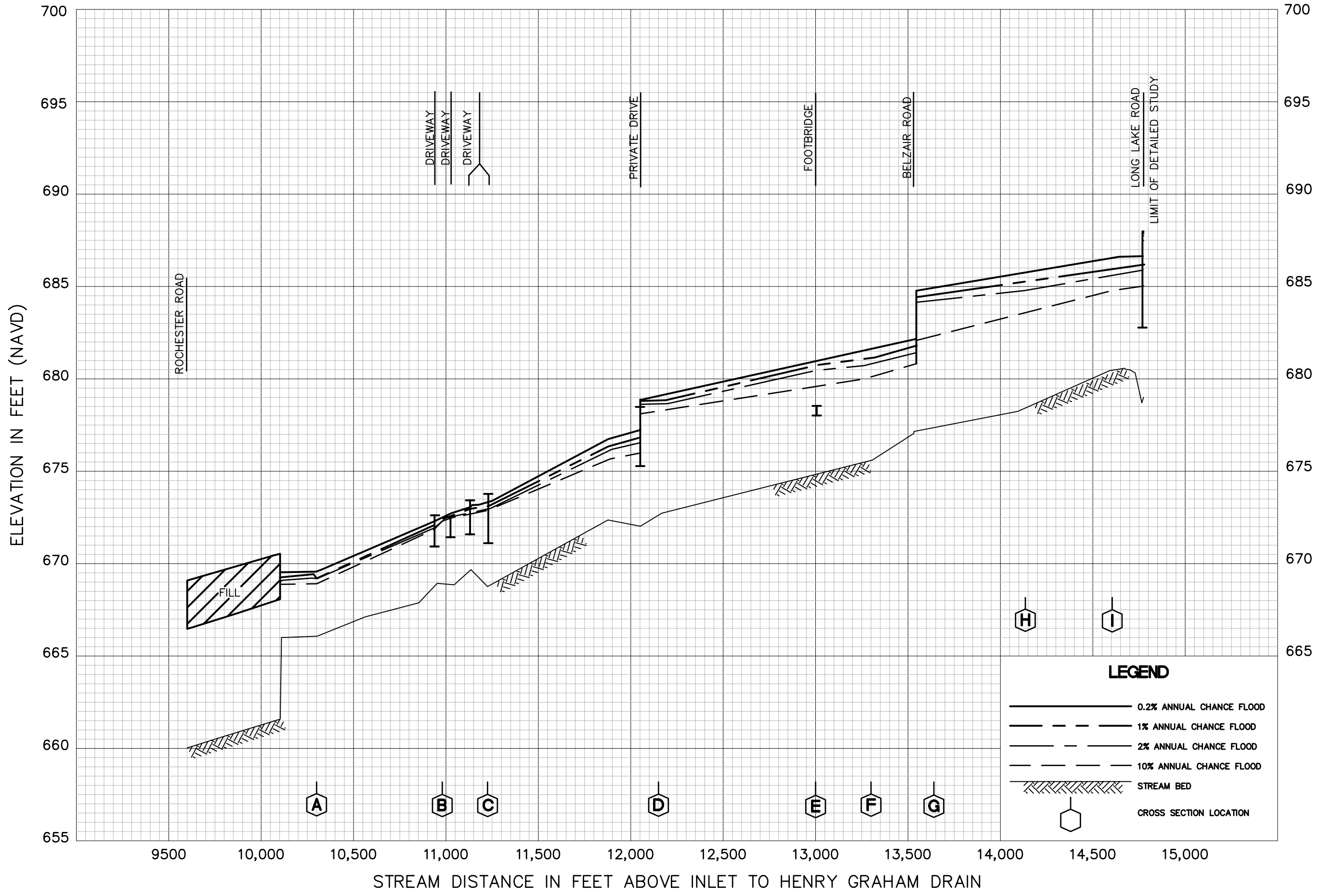
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HOLLY-PATTERSON DRAIN

FEDERAL EMERGENCY MANAGEMENT AGENCY

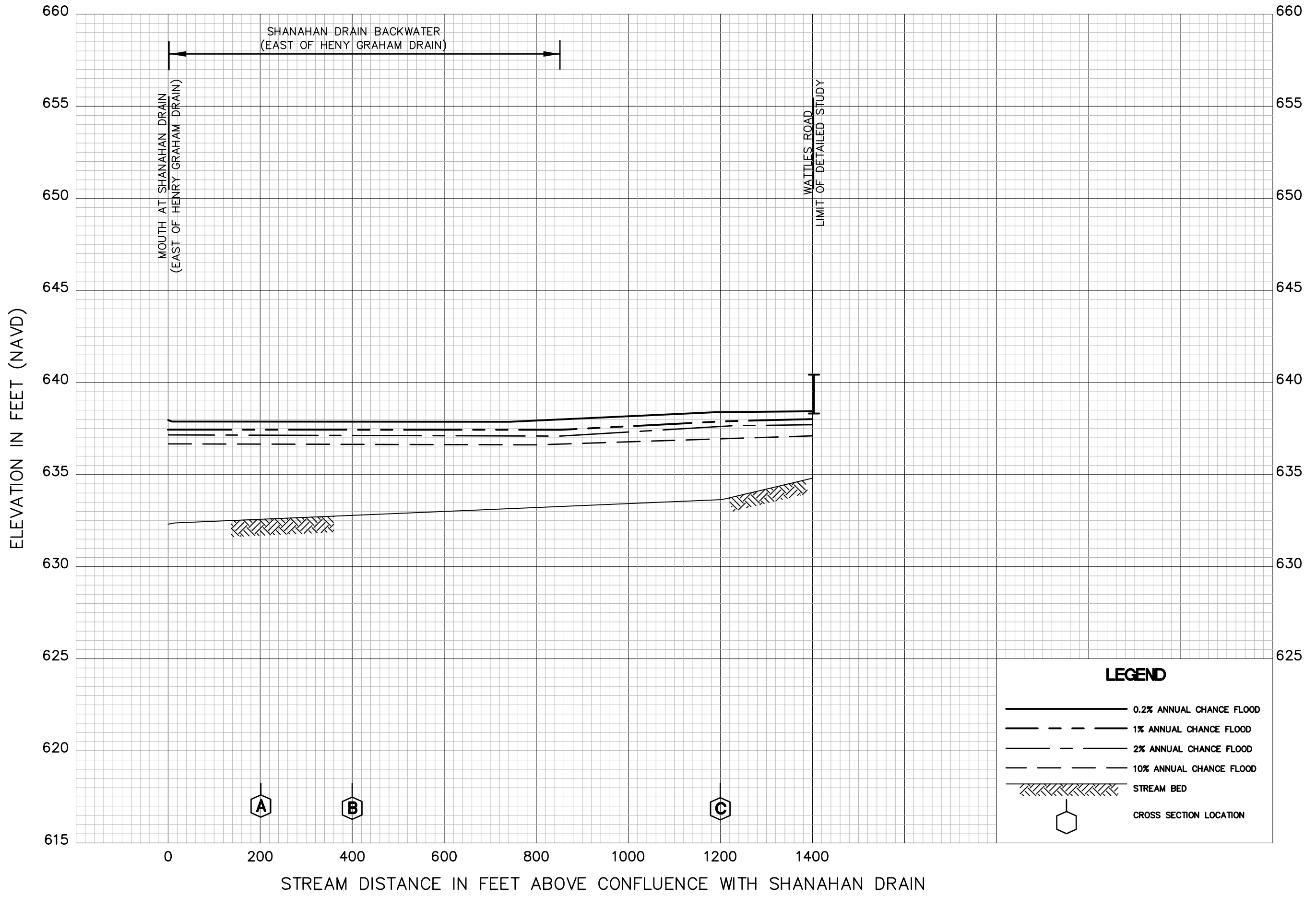
OAKLAND COUNTY, MI

(ALL JURISDICTIONS)



FLOOD PROFILES
HOUGHTON DRAIN

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
(ALL JURISDICTIONS)



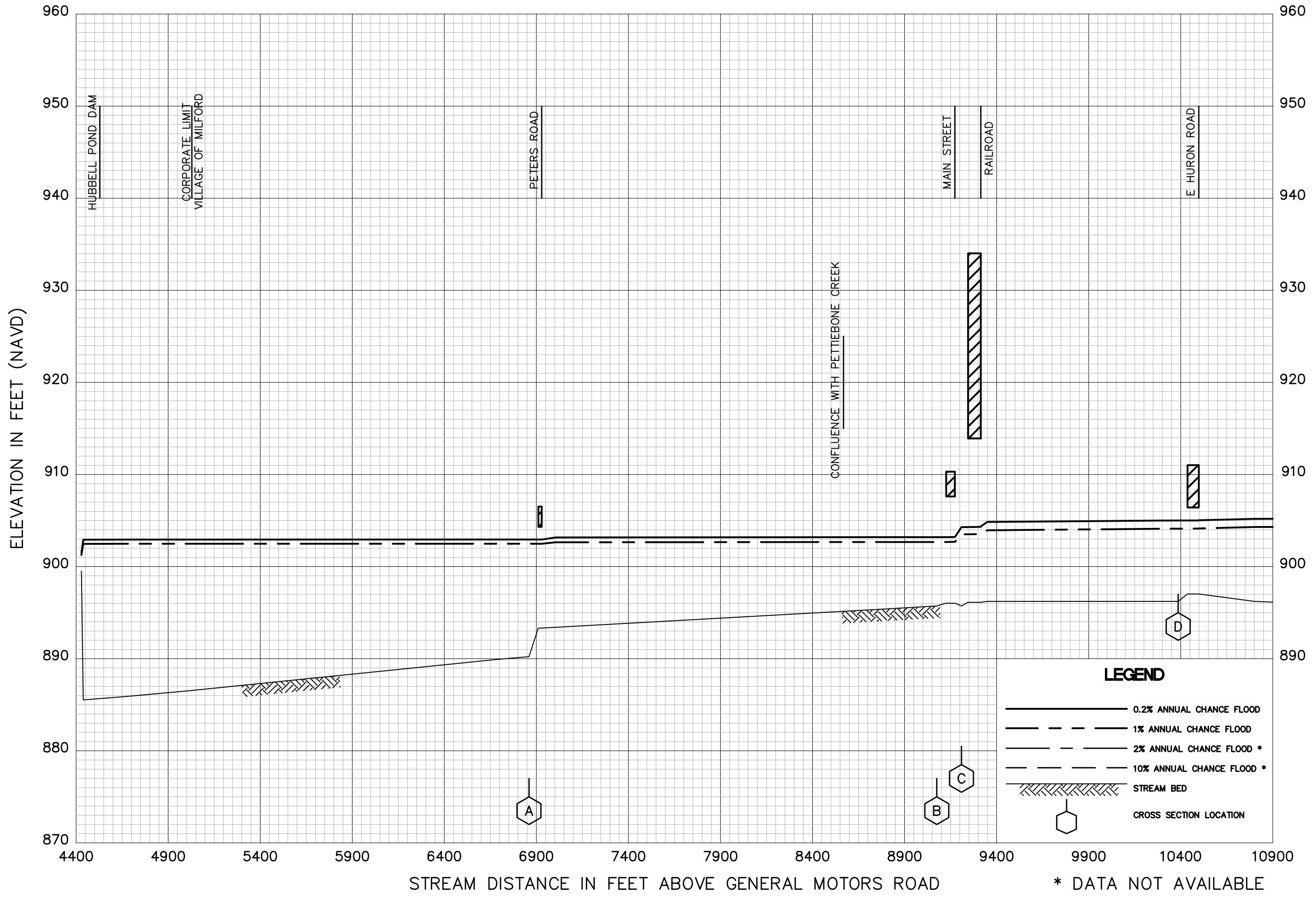
FLOOD PROFILES

HOUGHTON DRAIN EAST

FEDERAL EMERGENCY MANAGEMENT AGENCY

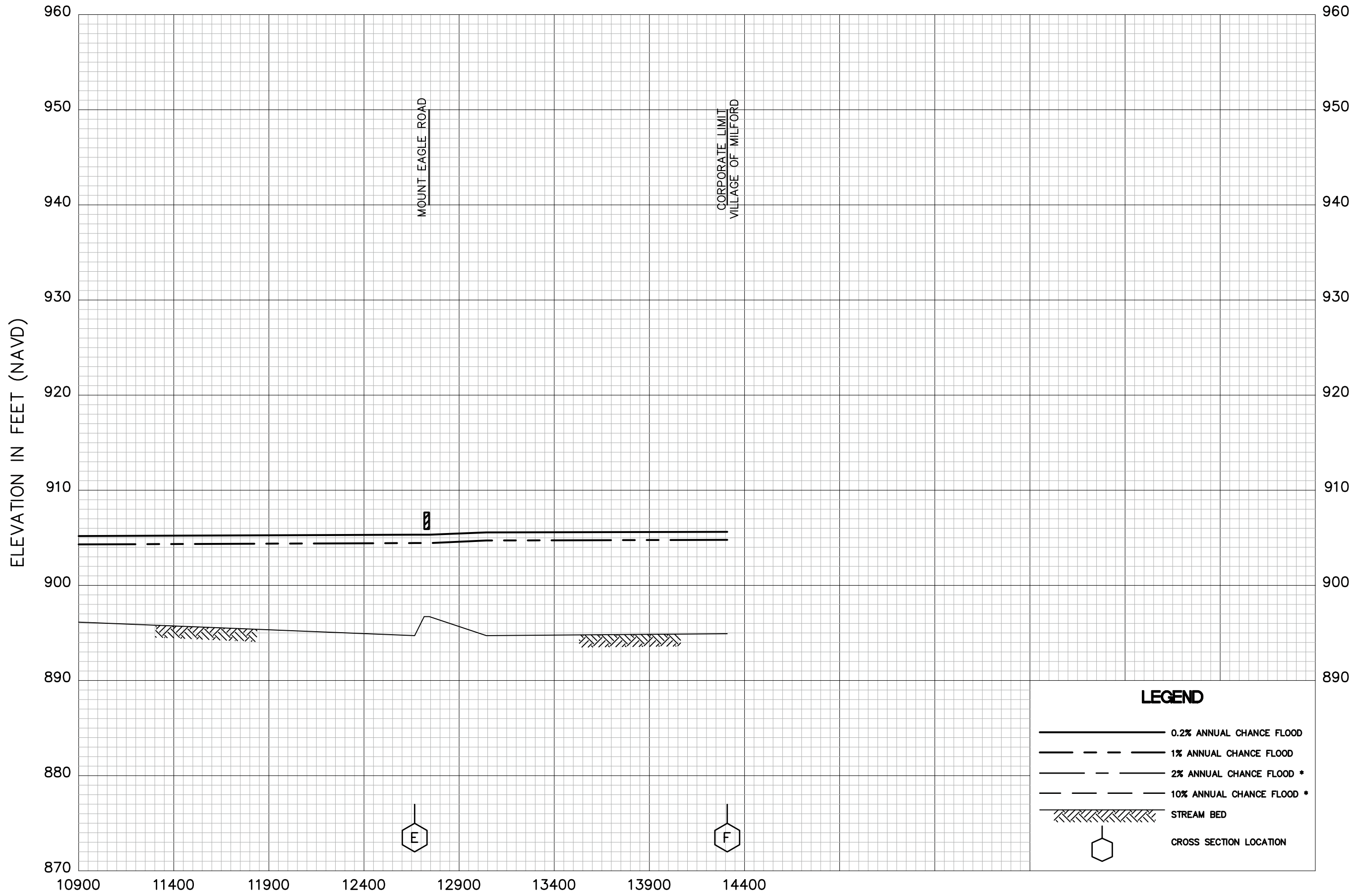
OAKLAND COUNTY, MI

(ALL JURISDICTIONS)



FLOOD PROFILES
HURON RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
(ALL JURISDICTIONS)



LEGEND

- 0.2% ANNUAL CHANCE FLOOD
- - - 1% ANNUAL CHANCE FLOOD
- . - . 2% ANNUAL CHANCE FLOOD *
- - - - 10% ANNUAL CHANCE FLOOD *
- ▨ STREAM BED
- ⬡ CROSS SECTION LOCATION

* DATA NOT AVAILABLE

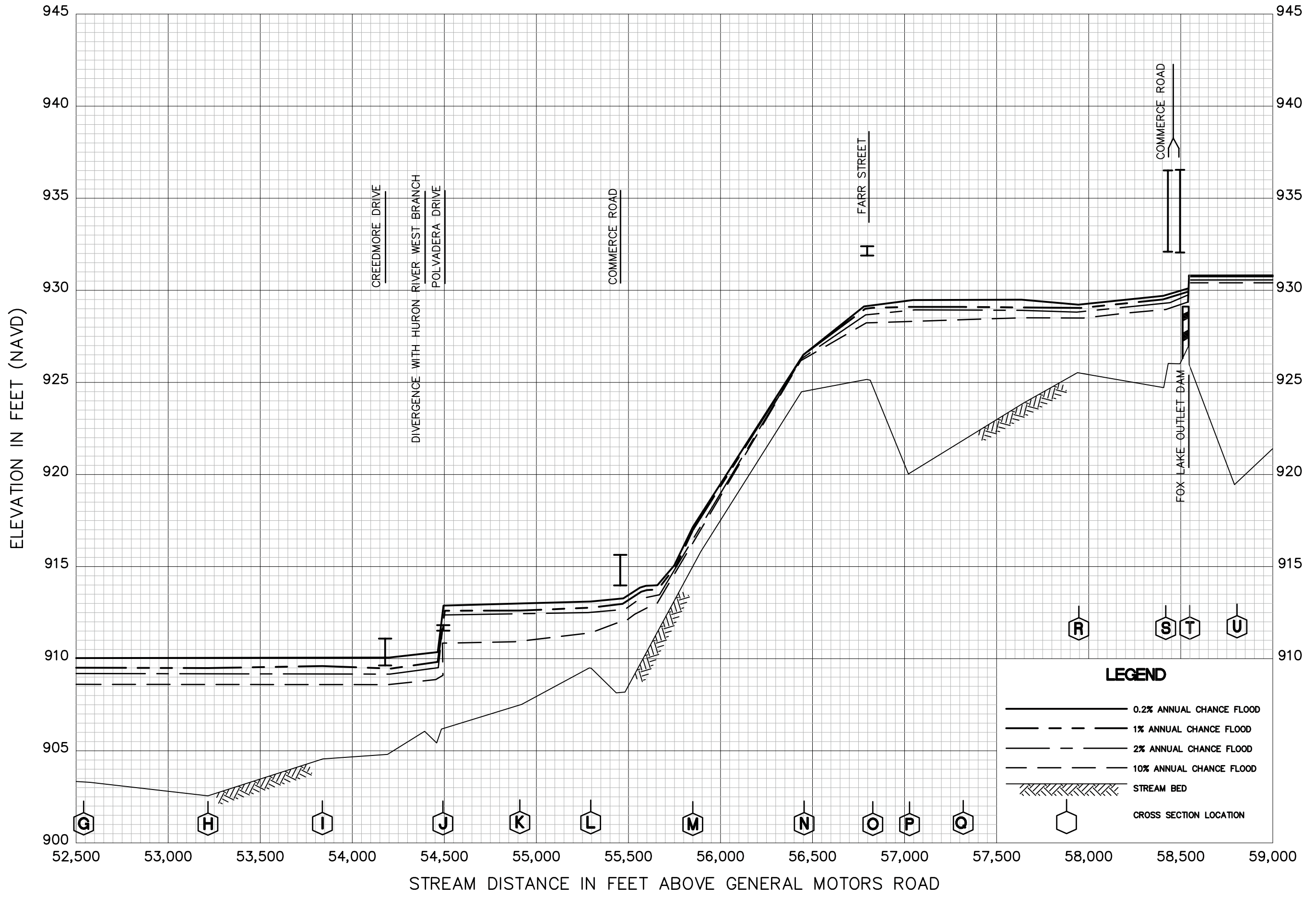
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HURON RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

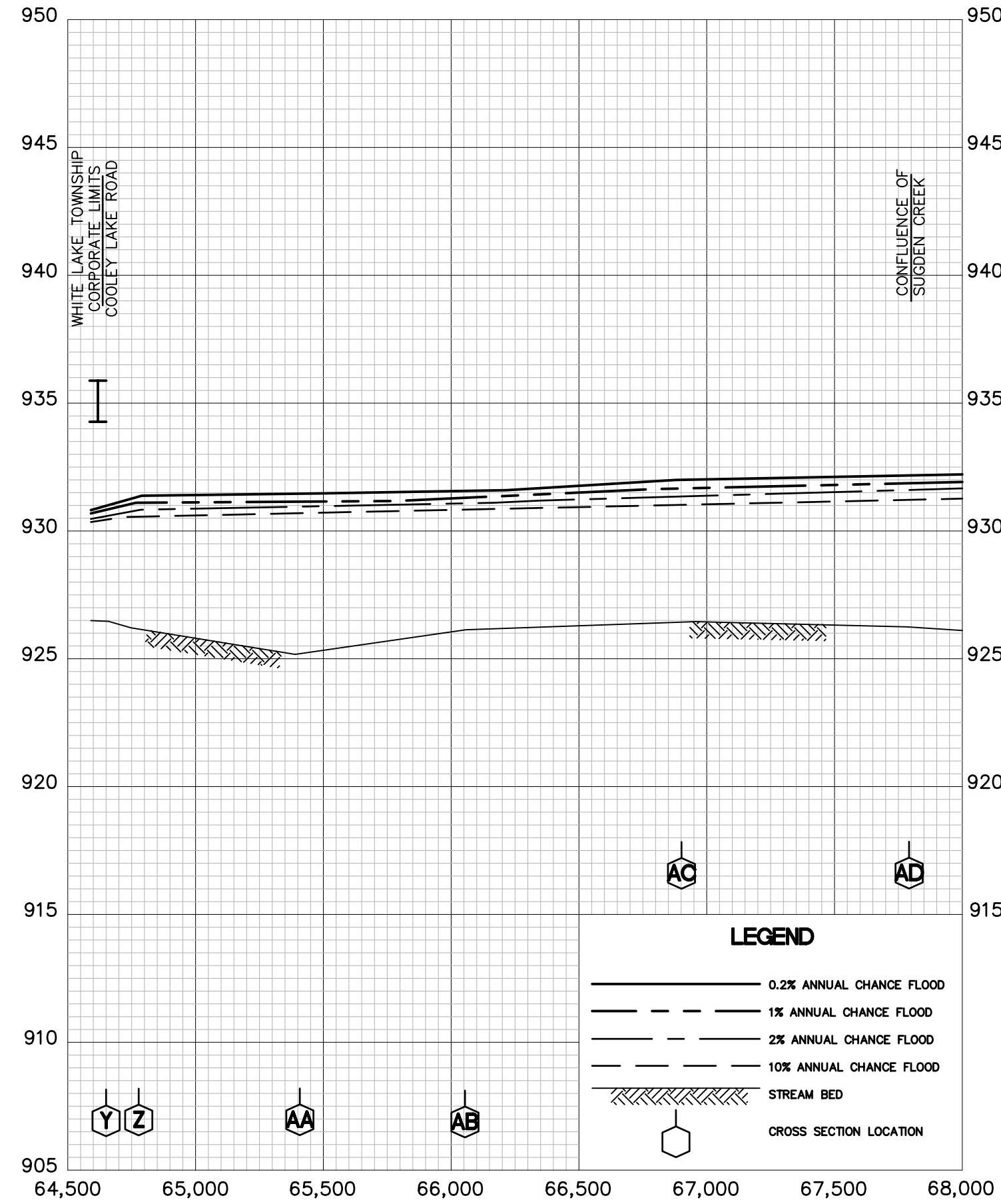
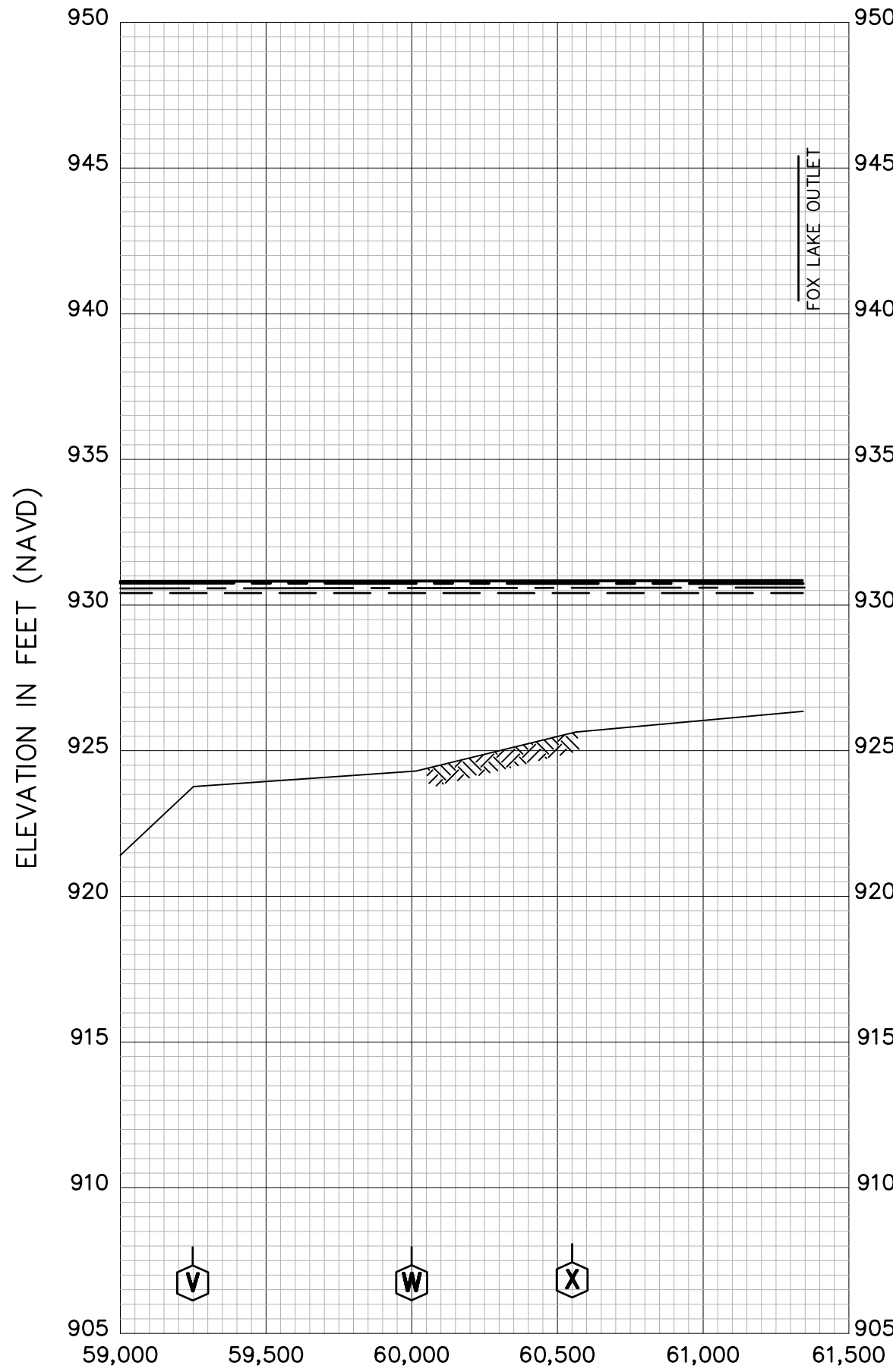
OAKLAND COUNTY, MI

(ALL JURISDICTIONS)



FLOOD PROFILES
HURON RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
(ALL JURISDICTIONS)



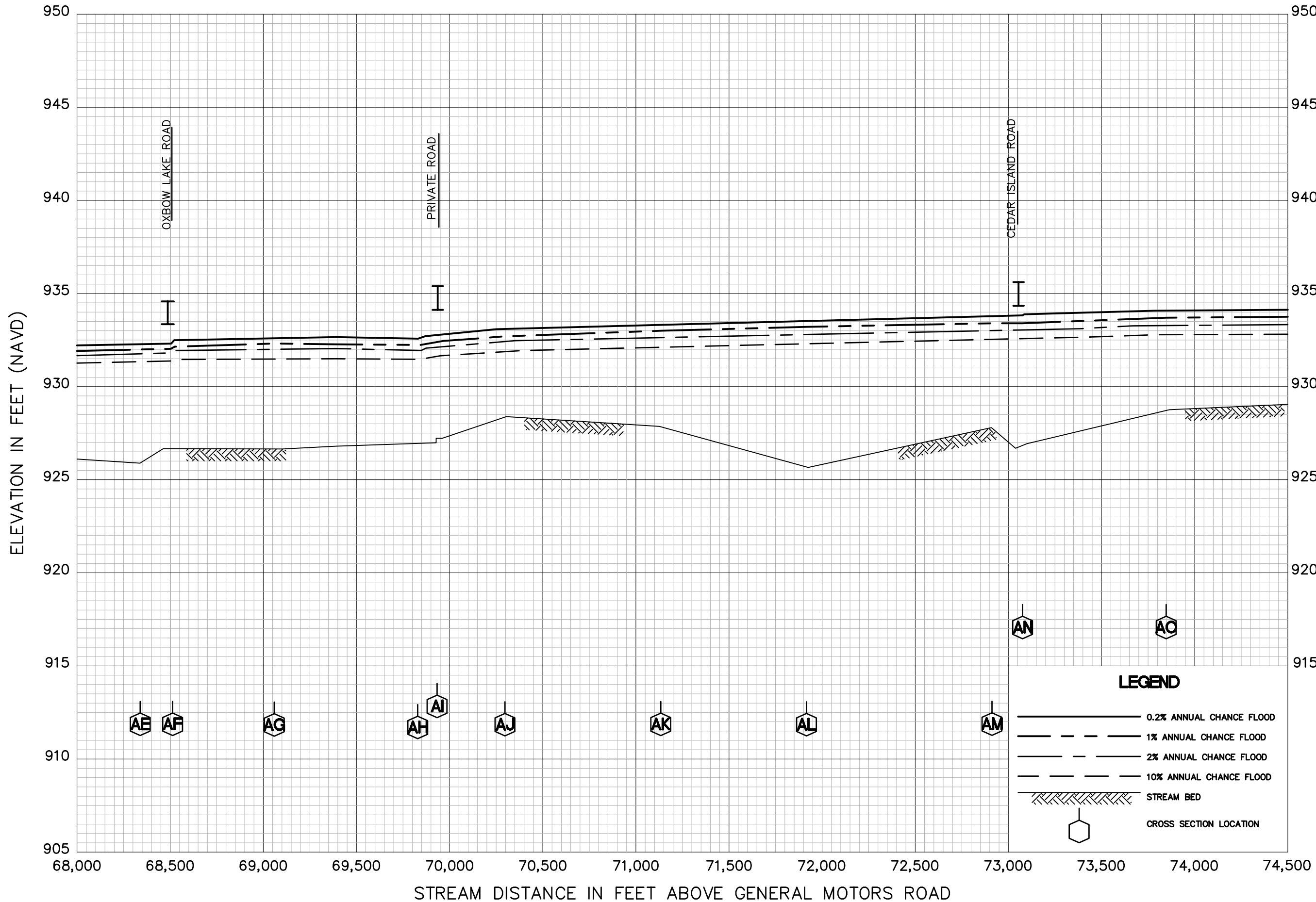
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- ▨ STREAM BED
- ⬡ CROSS SECTION LOCATION

STREAM DISTANCE IN FEET ABOVE GENERAL MOTORS ROAD

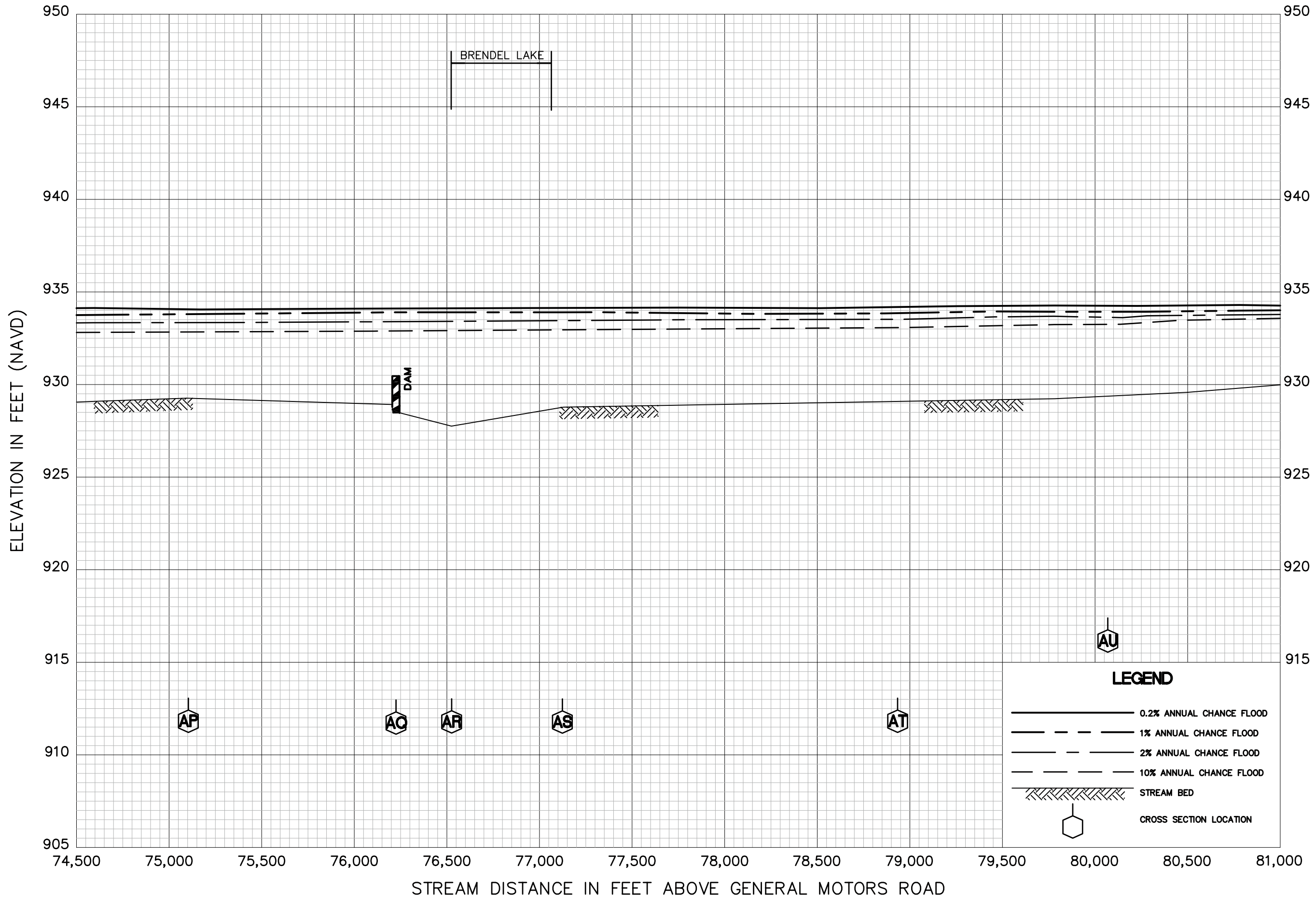
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HURON RIVER**

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
(ALL JURISDICTIONS)



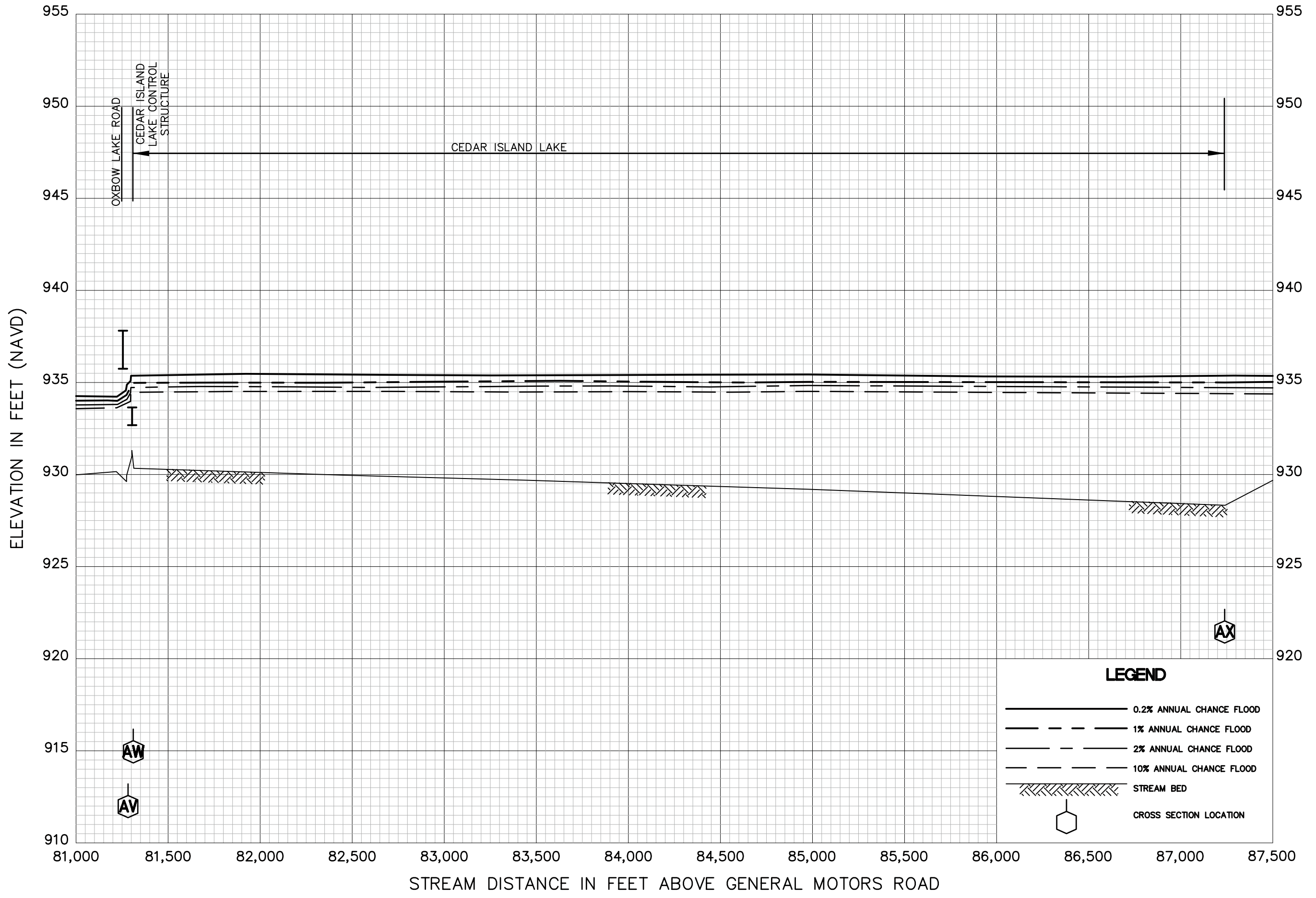
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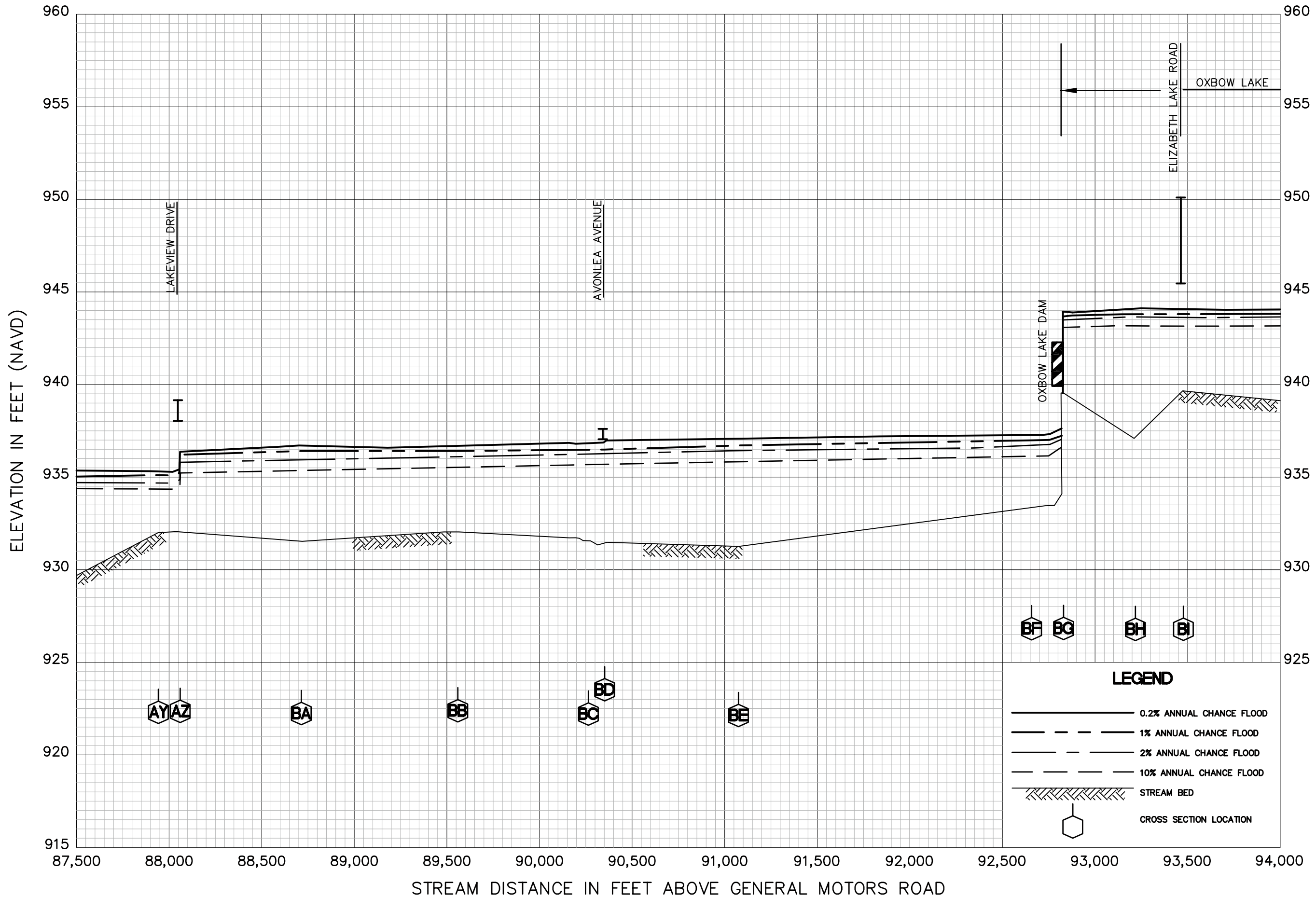
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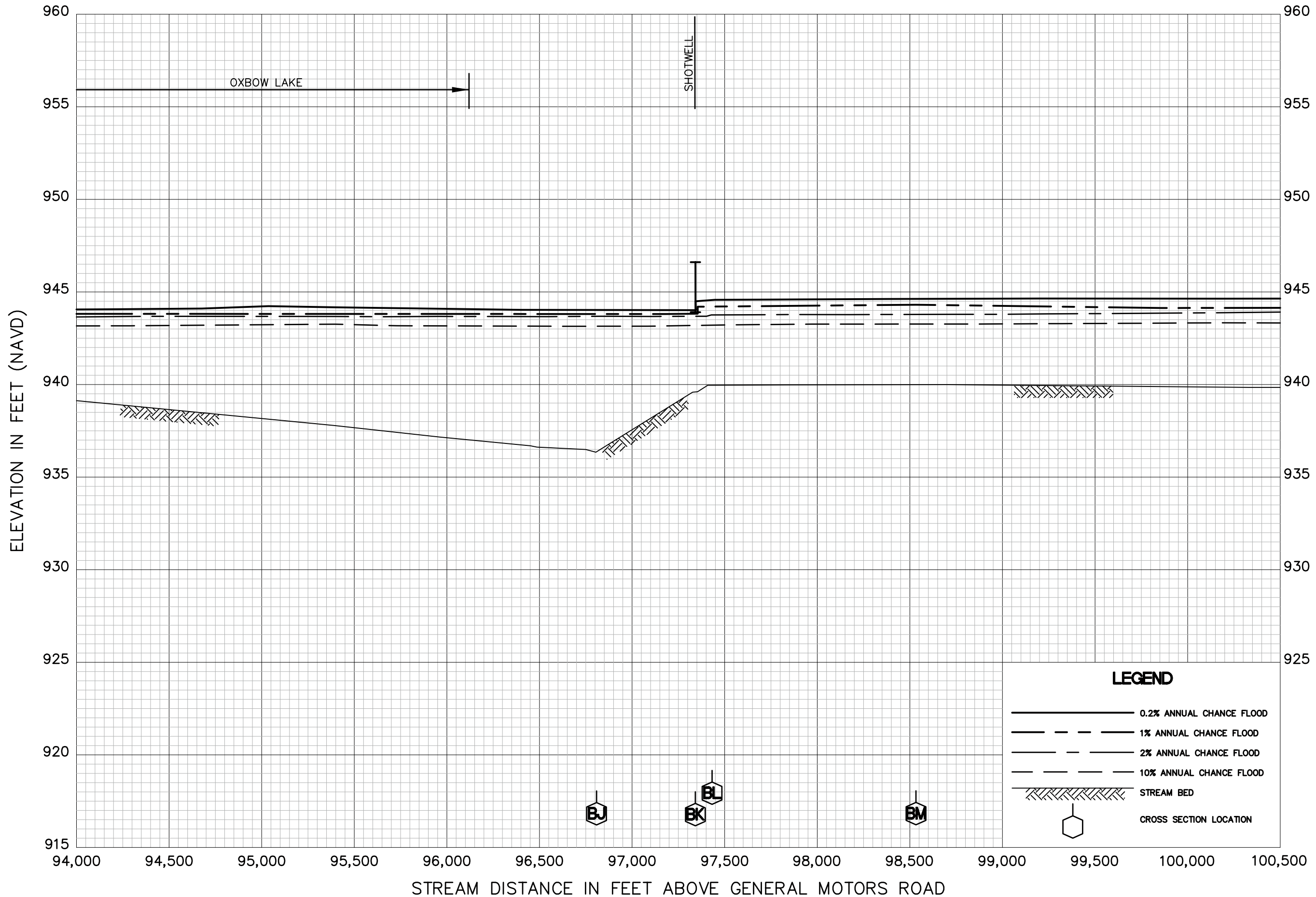
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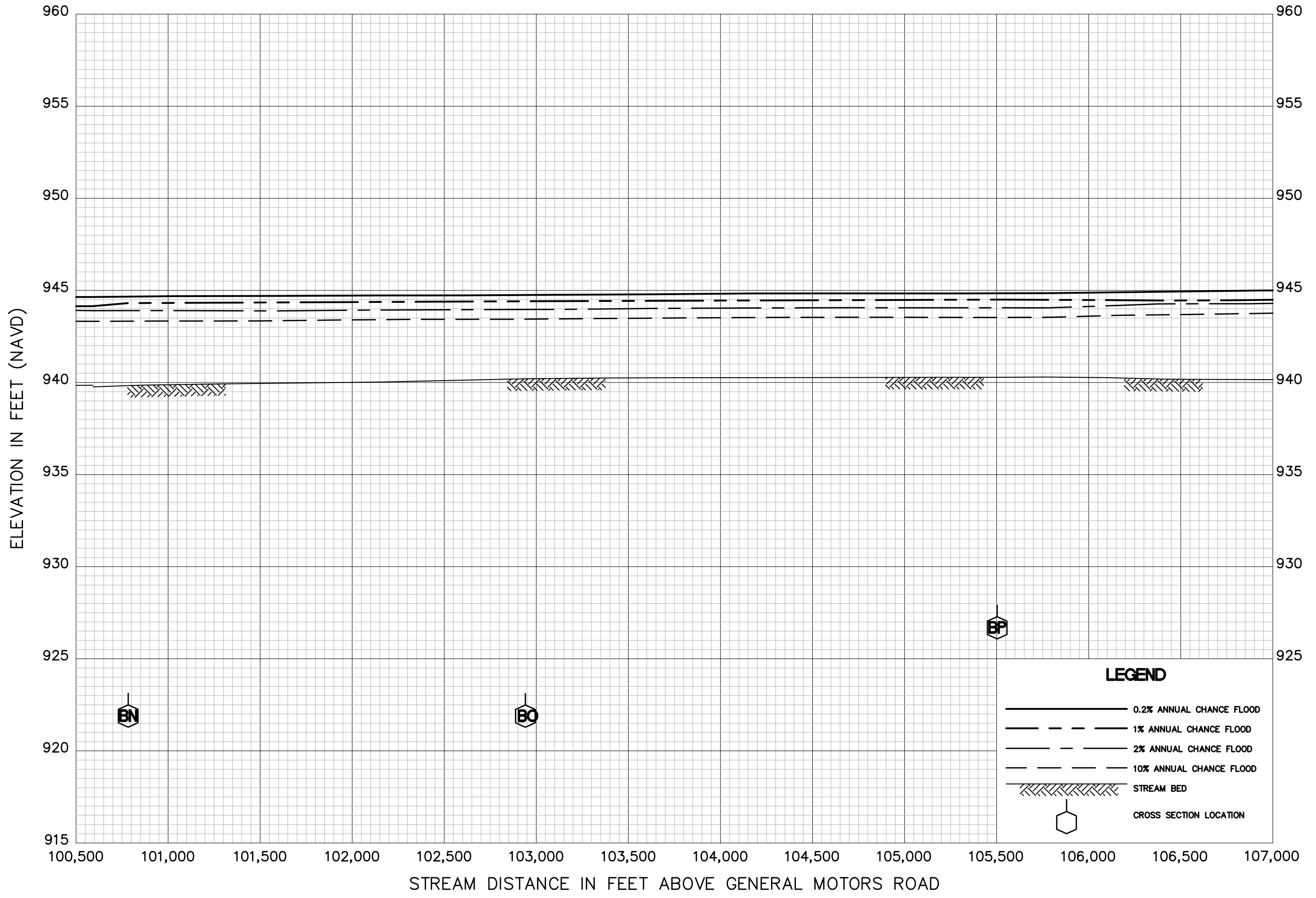
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OAKLAND COUNTY, MI
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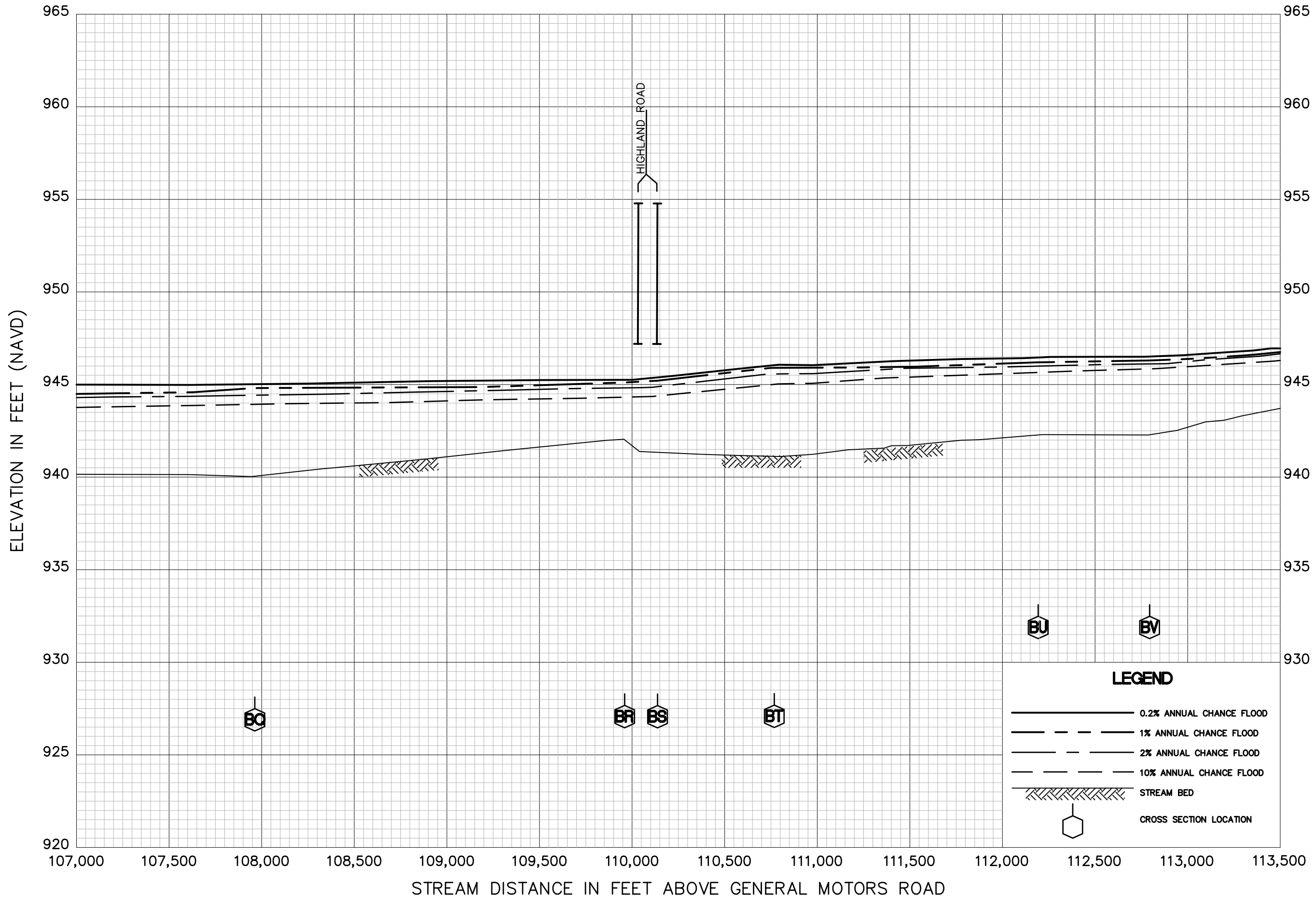


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OAKLAND COUNTY, MI
(ALL JURISDICTIONS)

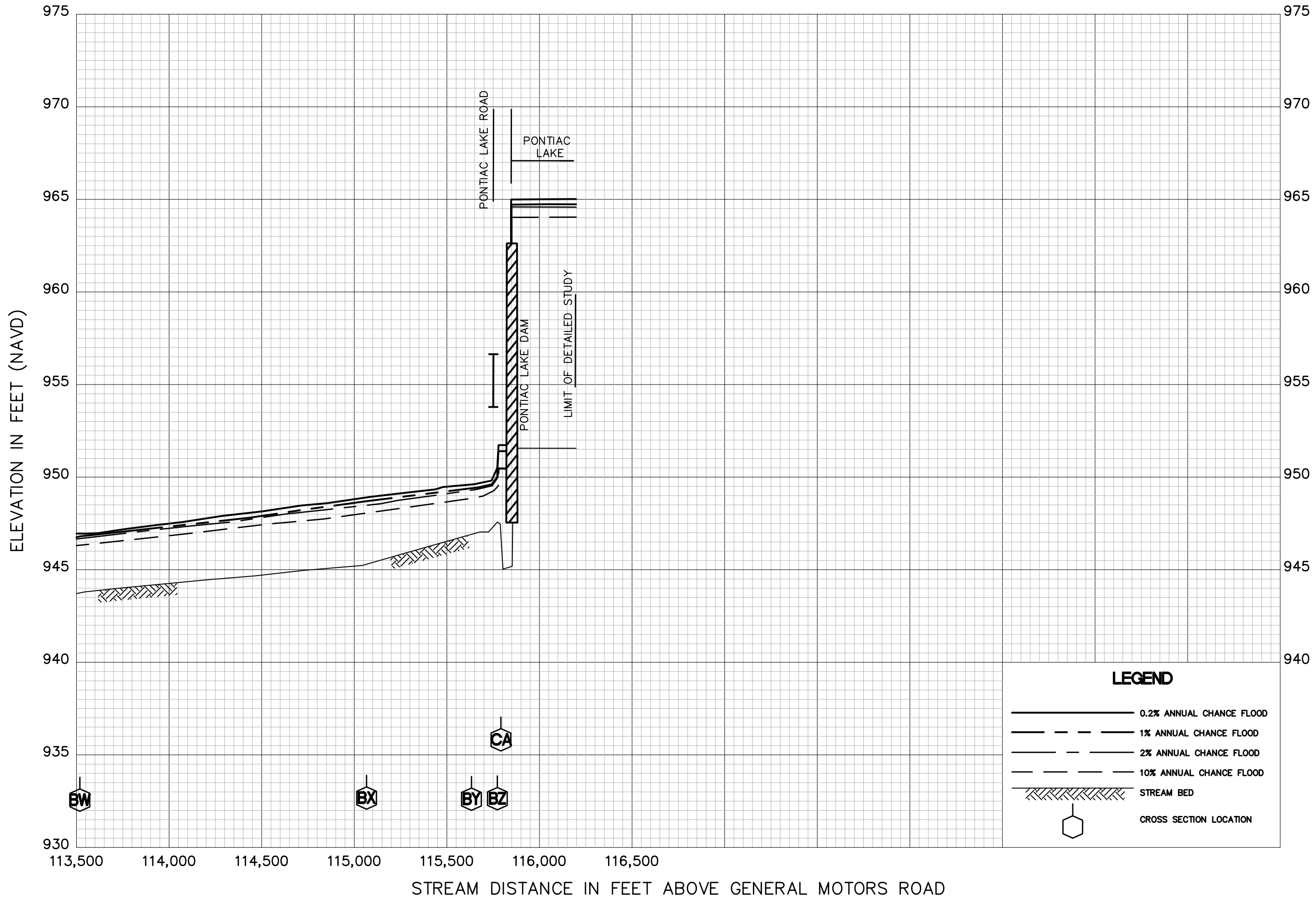
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- - - 1% ANNUAL CHANCE FLOOD
- · - 2% ANNUAL CHANCE FLOOD
- - - - 10% ANNUAL CHANCE FLOOD
- ▨ STREAM BED
- ⬡ CROSS SECTION LOCATION



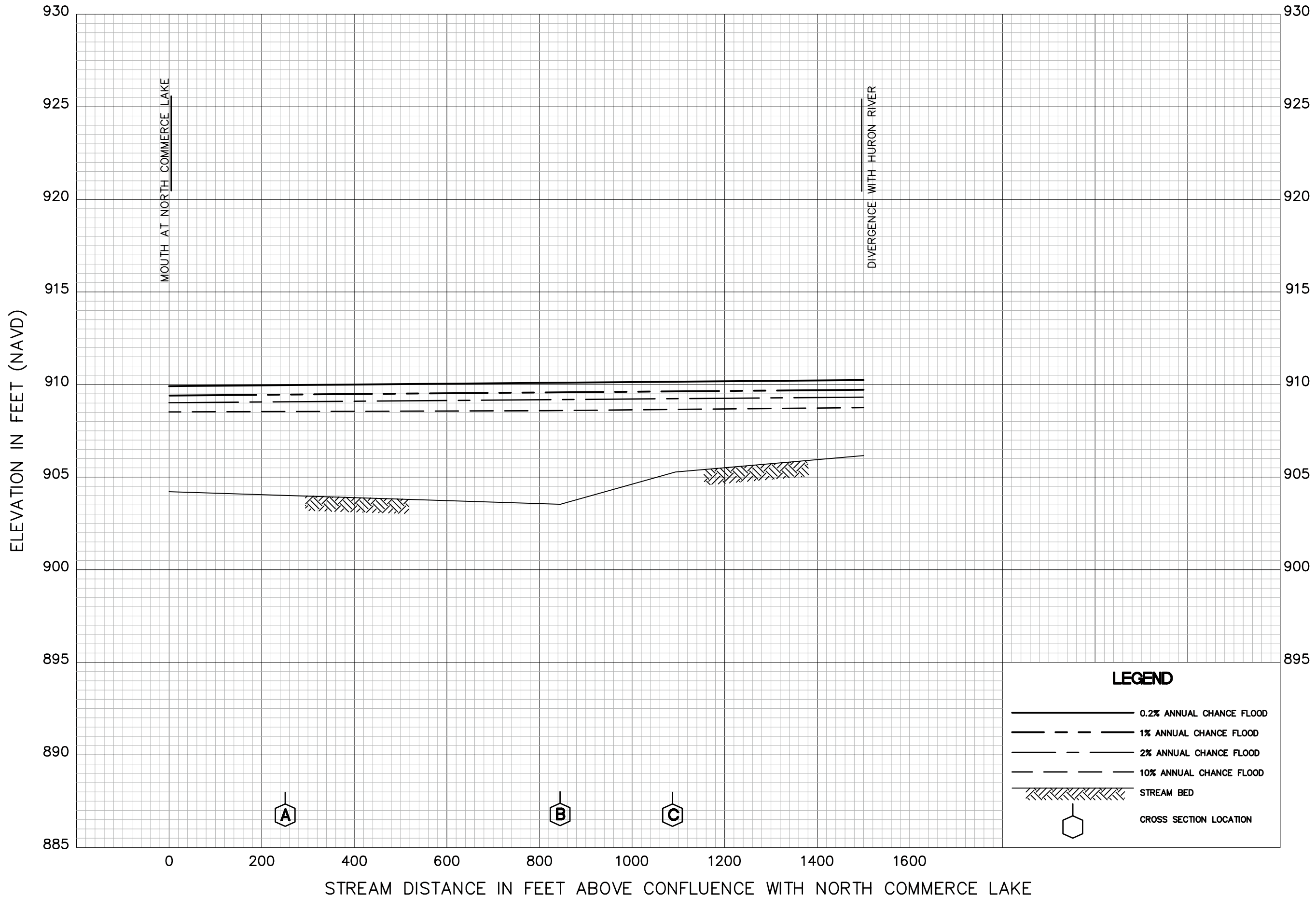
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HURON RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
(ALL JURISDICTIONS)



FLOOD PROFILES
HURON RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
(ALL JURISDICTIONS)



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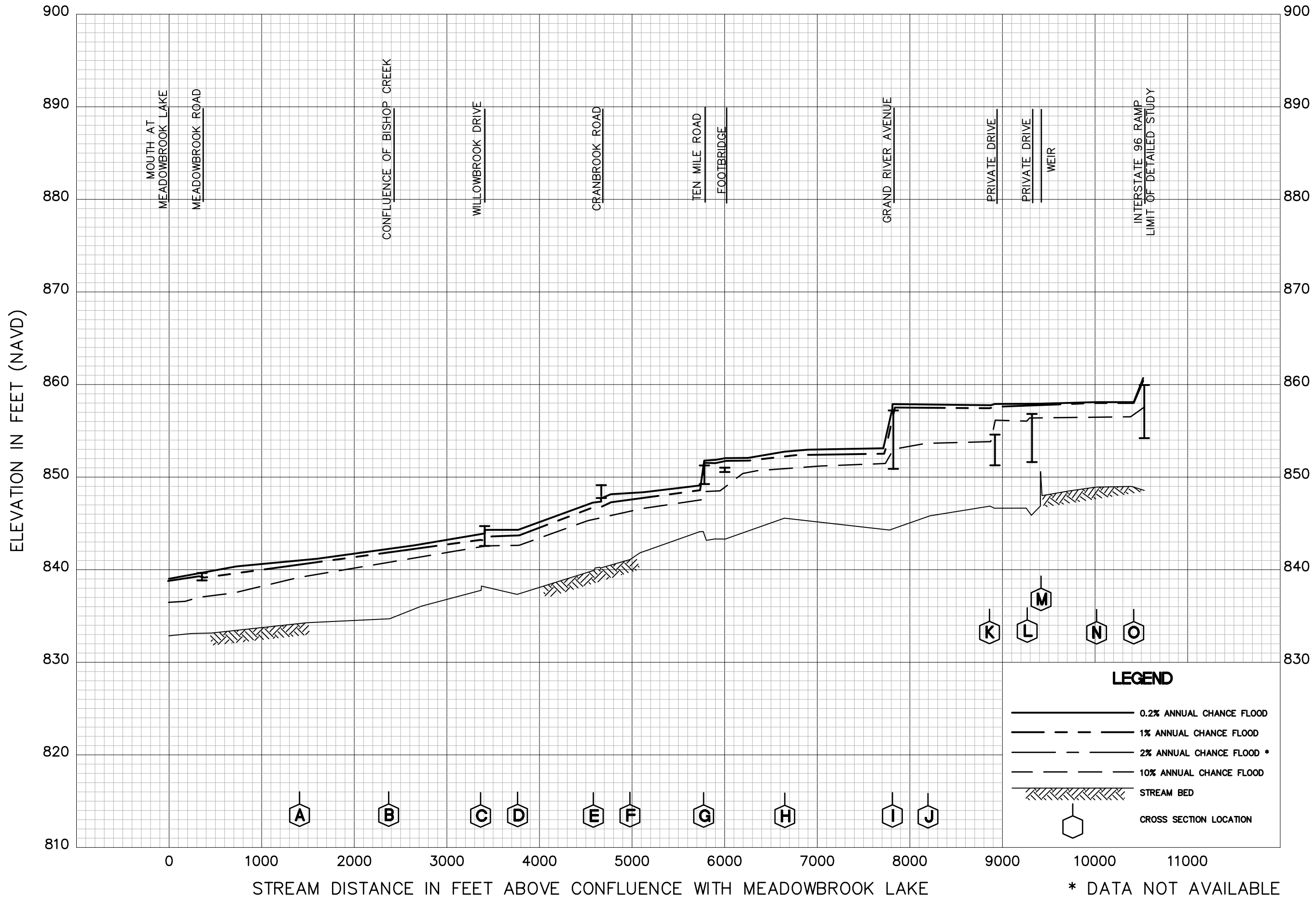
FLOOD PROFILES

HURON RIVER WEST BRANCH

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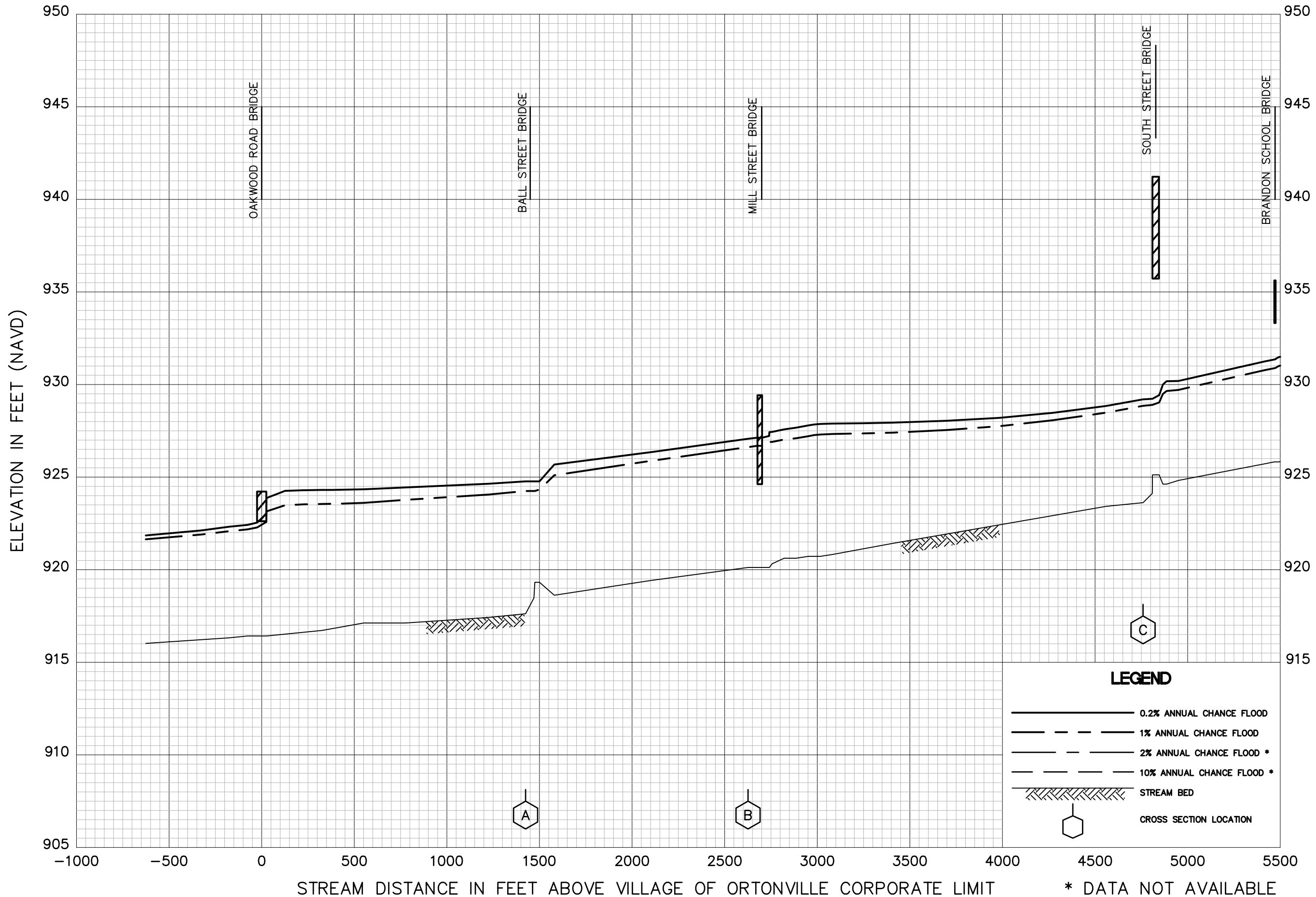
OAKLAND COUNTY, MI

(ALL JURISDICTIONS)



FLOOD PROFILES
INGERSOL CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY
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(ALL JURISDICTIONS)



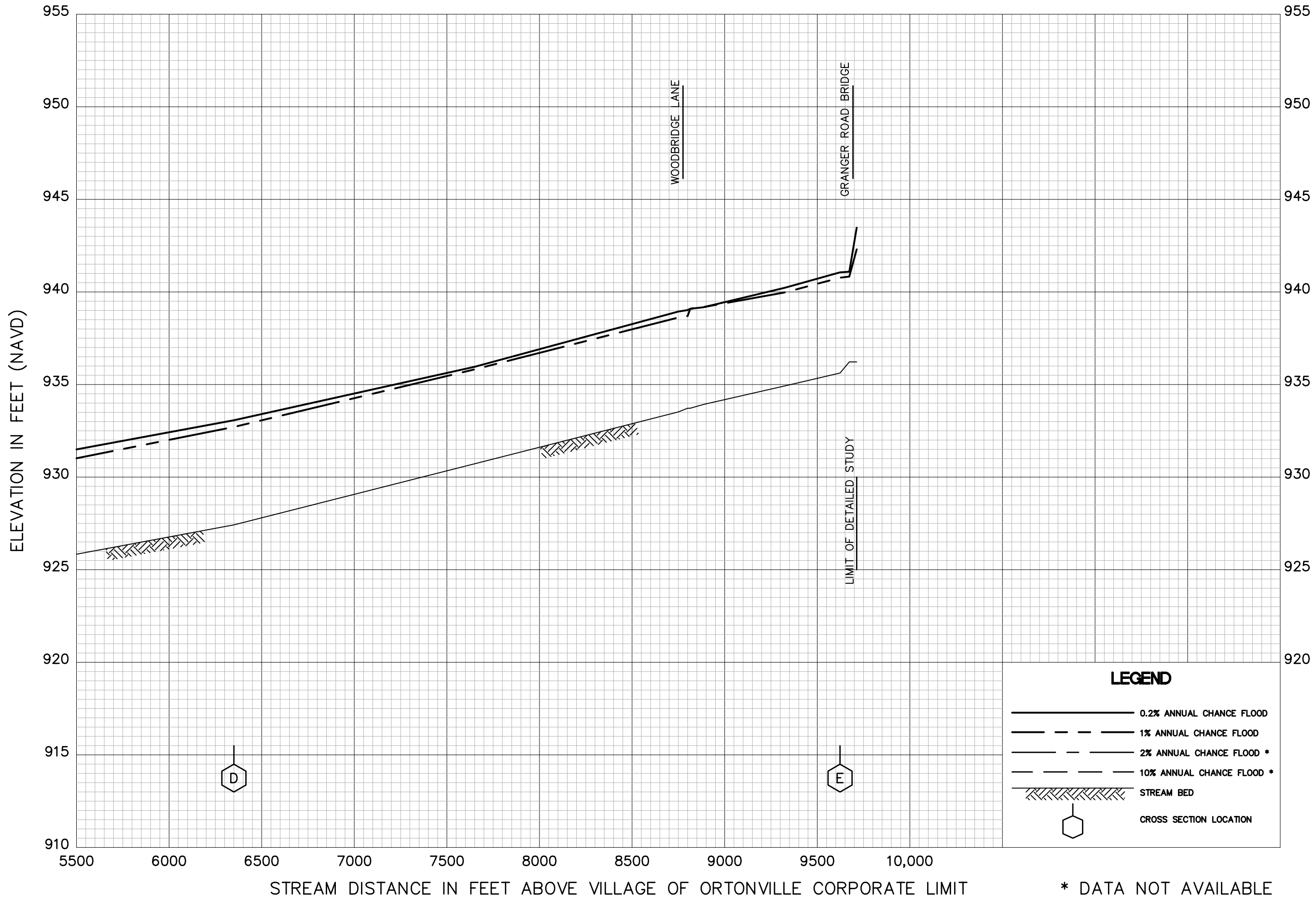
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- · - 2% ANNUAL CHANCE FLOOD *
- - - 10% ANNUAL CHANCE FLOOD *
- ▨ STREAM BED
- ⬡ CROSS SECTION LOCATION

* DATA NOT AVAILABLE

**FLOOD PROFILES
KEARSLEY CREEK**

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
(ALL JURISDICTIONS)



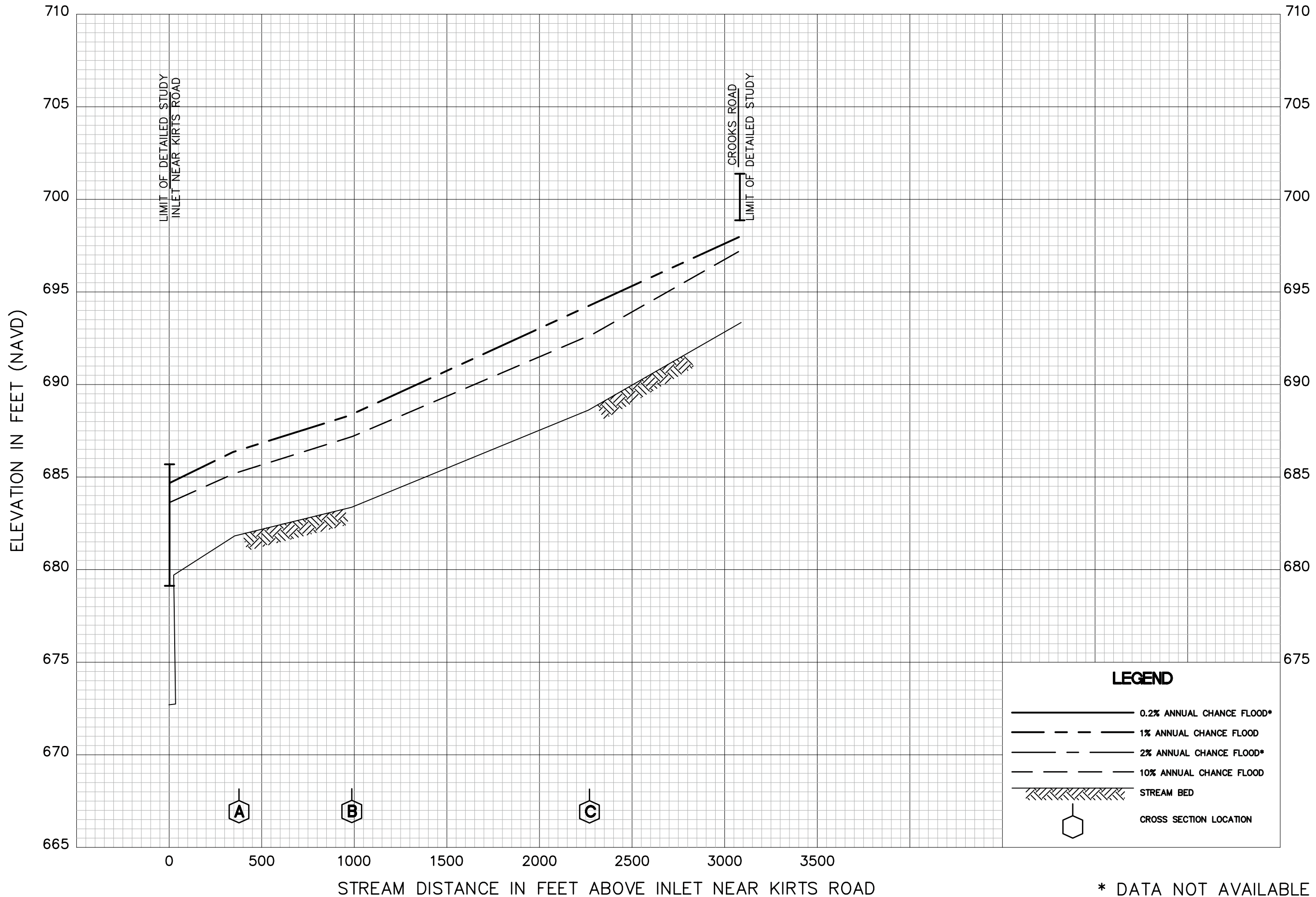
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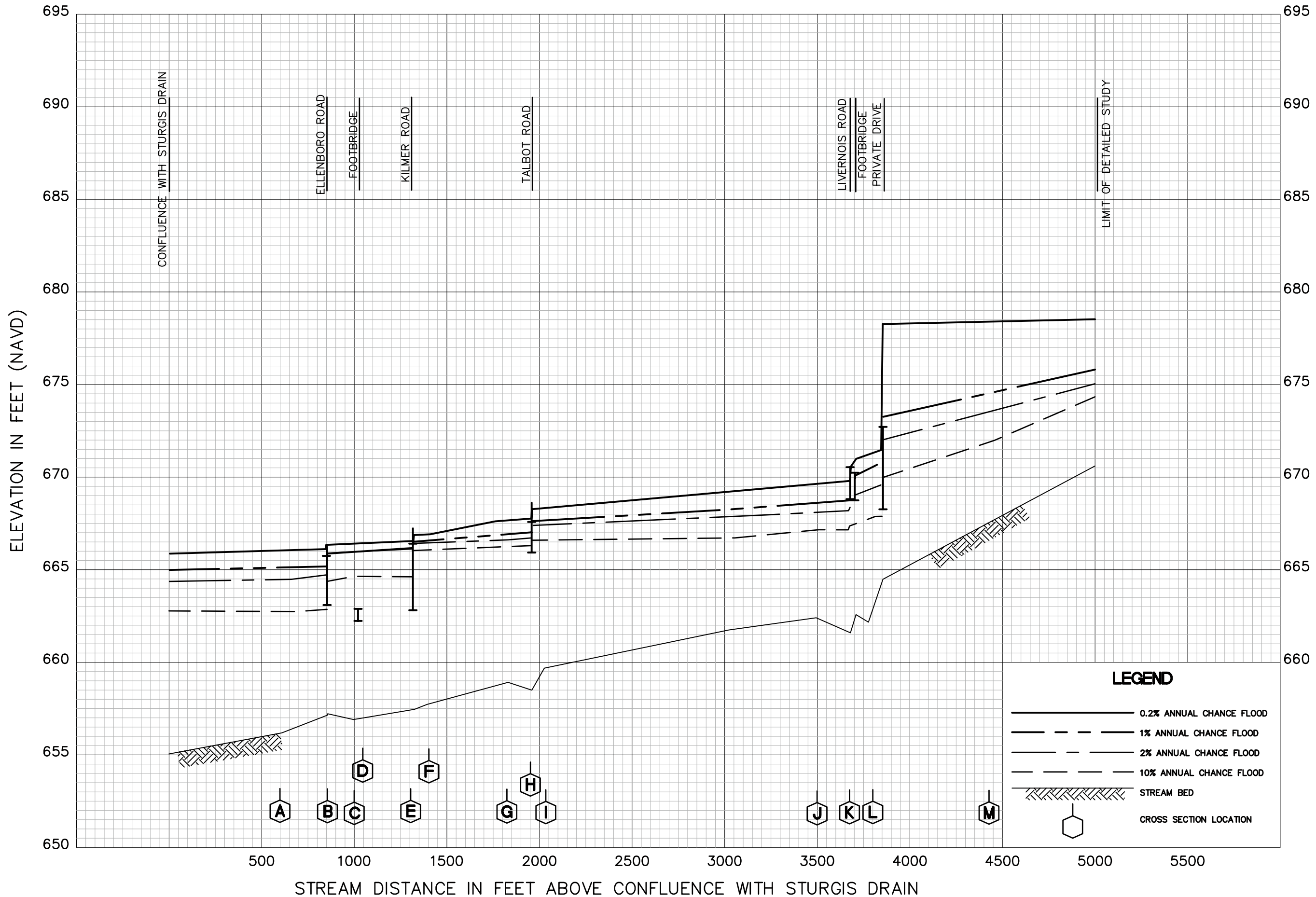
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- · - 2% ANNUAL CHANCE FLOOD *
- - - - 10% ANNUAL CHANCE FLOOD *
- ▨ STREAM BED
- ⬡ CROSS SECTION LOCATION

* DATA NOT AVAILABLE

**FLOOD PROFILES
KEARSLEY CREEK**

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
(ALL JURISDICTIONS)





FLOOD PROFILES
LANE DRAIN

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
(ALL JURISDICTIONS)

FLOOD INSURANCE STUDY

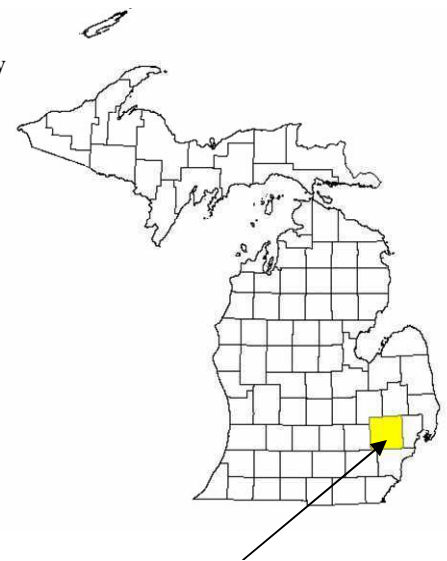
OAKLAND COUNTY, MICHIGAN

ALL JURISDICTIONS

VOLUME 4 OF 5



| Community Name | Community Number | Community Name | Community Number |
|-----------------------------|------------------|-------------------------------------|------------------|
| Addison, Township of | 261029 | Milford, Village of | 260317 |
| Auburn Hills, City of | 260263 | Northville, City of (Wayne/Oakland) | 260235 |
| * Berkley, City of | 260292 | Novi, City of | 260175 |
| Beverly Hills, Village of | 260256 | * Novi, Township of | 261039 |
| Bingham Farms, Village of | 260713 | * Oak Park, City of | 260323 |
| Birmingham, City of | 260168 | Oakland, Township of | 260476 |
| Bloomfield, Township of | 260169 | Orchard Lake Village, City of | 260477 |
| Bloomfield Hills, City of | 260712 | Orion, Township of | 261033 |
| Brandon, Township of | 261031 | Ortonville, Village of | 261034 |
| Clarkston, Village of | 260472 | * Oxford, Township of | 261035 |
| * Clawson, City of | 260170 | * Oxford, Village of | 261036 |
| Commerce, Township of | 260473 | * Pleasant Ridge, City of | 260606 |
| Farmington, City of | 260171 | Pontiac, City of | 260177 |
| Farmington Hills, City of | 260172 | Rochester, City of | 260326 |
| * Ferndale, City of | 260262 | Rochester Hills, City of | 260471 |
| Franklin, Village of | 260325 | Rose, Township of | 260729 |
| Groveland, Township of | 260992 | * Royal Oak, City of | 260178 |
| * Hazel Park, City of | 260289 | * Royal Oak, Township of | 260341 |
| Highland, Township of | 260650 | South Lyon, City of | 261037 |
| Holly, Township of | 260474 | Southfield, City of | 260179 |
| Holly, Village of | 260587 | Southfield, Township of | 260176 |
| * Huntington Woods, City of | 260723 | * Springfield, Township of | 260478 |
| Independence, Township of | 260475 | Sylvan Lake, City of | 260701 |
| Keego Harbor, City of | 260173 | Troy, City of | 260180 |
| Lake Angelus, City of | 260700 | Walled Lake, City of | 260181 |
| Lake Orion, Village of | 260588 | Waterford, Charter Township of | 260284 |
| * Lathrup Village, City of | 260297 | West Bloomfield, Township of | 260182 |
| * Leonard, Village of | 261030 | White Lake, Township of | 260479 |
| Lyon, Township of | 261032 | Wixom, City of | 261038 |
| * Madison Heights, City of | 260174 | Wolverine Lake, Village of | 260480 |
| Milford, Township of | 261040 | * Non Flood Prone | |



Oakland County



SEPTEMBER 29, 2006
Federal Emergency Management Agency

FLOOD INSURANCE STUDY NUMBER
26125CV004A

NOTICE TO
FLOOD INSURANCE STUDY USERS

Communities participating in the National Flood Insurance Program (NFIP) have established repositories of flood hazard data for floodplain management and flood insurance purposes. This Flood Insurance Study (FIS) report may not contain all data available within the Community Map Repository. It is advisable to contact the Community Map Repository for any additional data.

Part or all of this Flood Insurance Study may be revised and republished at any time. In addition, part of this Flood Insurance Study may be revised by the Letter of Map Revision process, which does not involve republication or redistribution of the Flood Insurance Study. It is, therefore, the responsibility of the user to consult with community officials and to check the community repository to obtain the most current Flood Insurance Study components.

Selected Flood Insurance Rate Map panels for this community contain information that was previously shown separately on the corresponding Flood Boundary and Floodway Map panels (e.g., floodways, cross sections). In addition, former flood hazard zone designations have been changed as follows:

| <u>Old Zones</u> | <u>New Zone</u> |
|------------------|-----------------|
| A1 through A30 | AE |
| B | X |
| C | X |

Countywide FIS Effective Date: September 29, 2006

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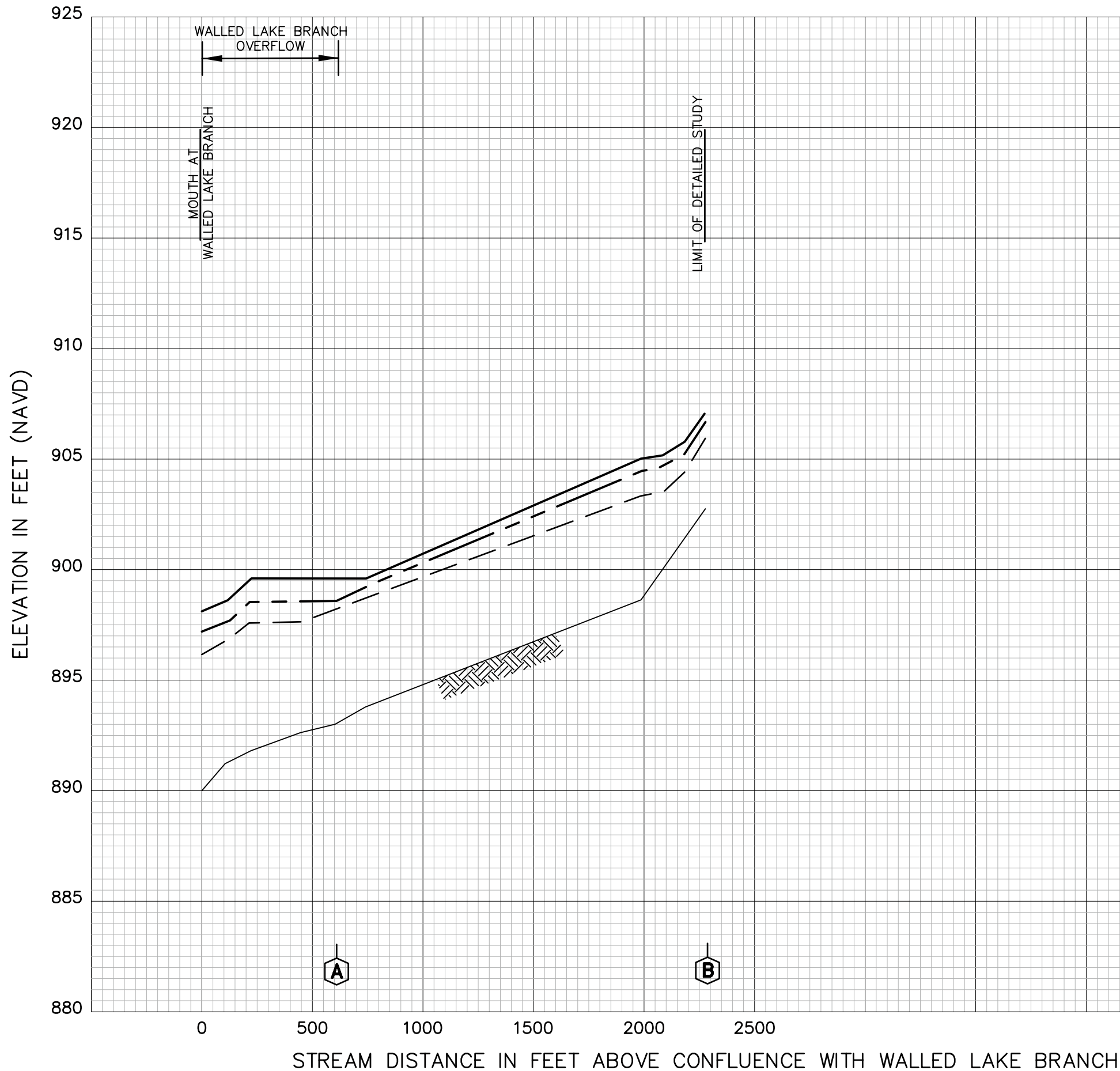
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- Flood Insurance Rate Map Index
- Flood Insurance Rate Maps



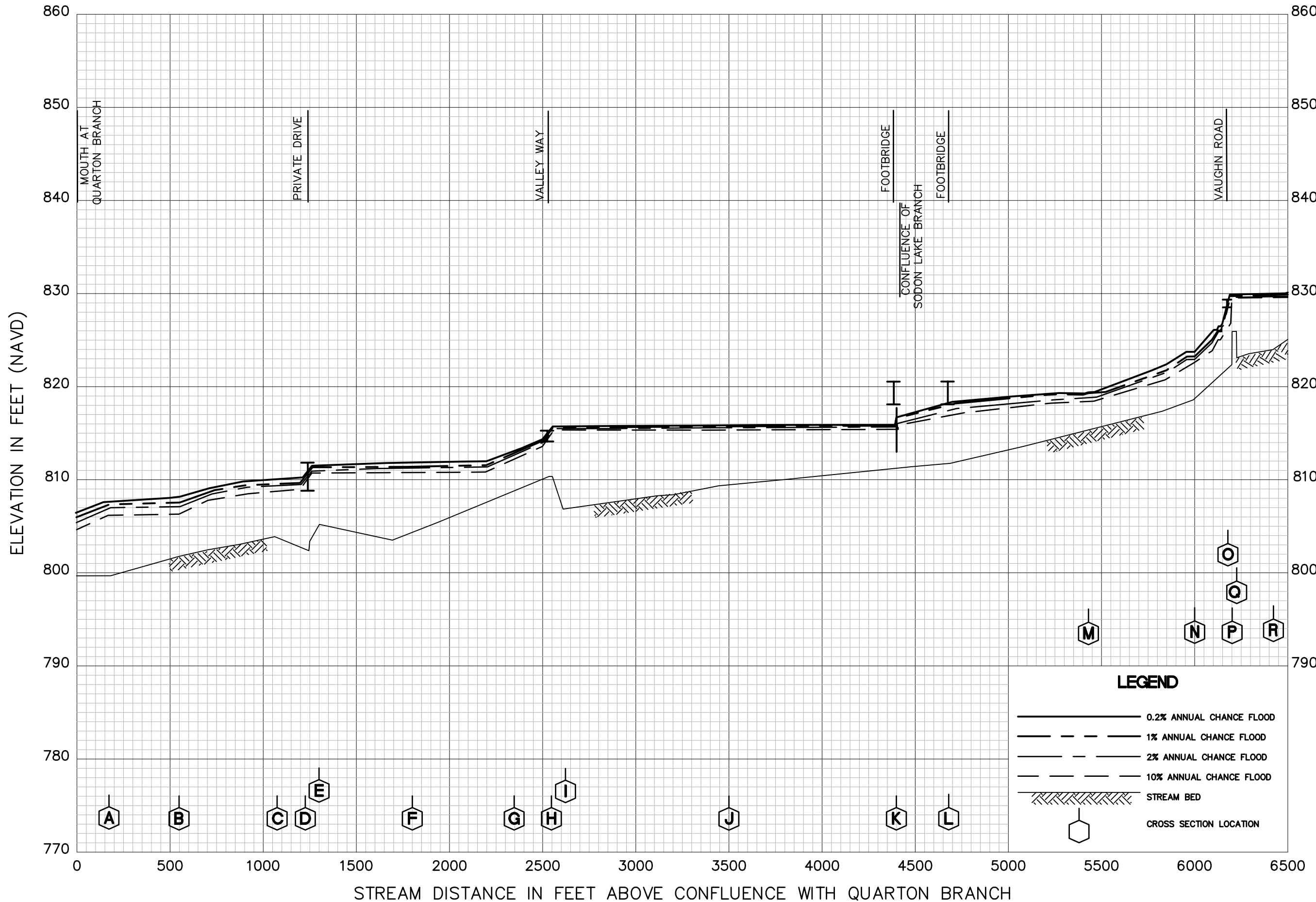
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- - - 10% ANNUAL CHANCE FLOOD
- ▨ STREAM BED
- ⬡ CROSS SECTION LOCATION

* DATA NOT AVAILABLE

**FLOOD PROFILES
LEAVENWORTH CREEK**

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(ALL JURISDICTIONS)



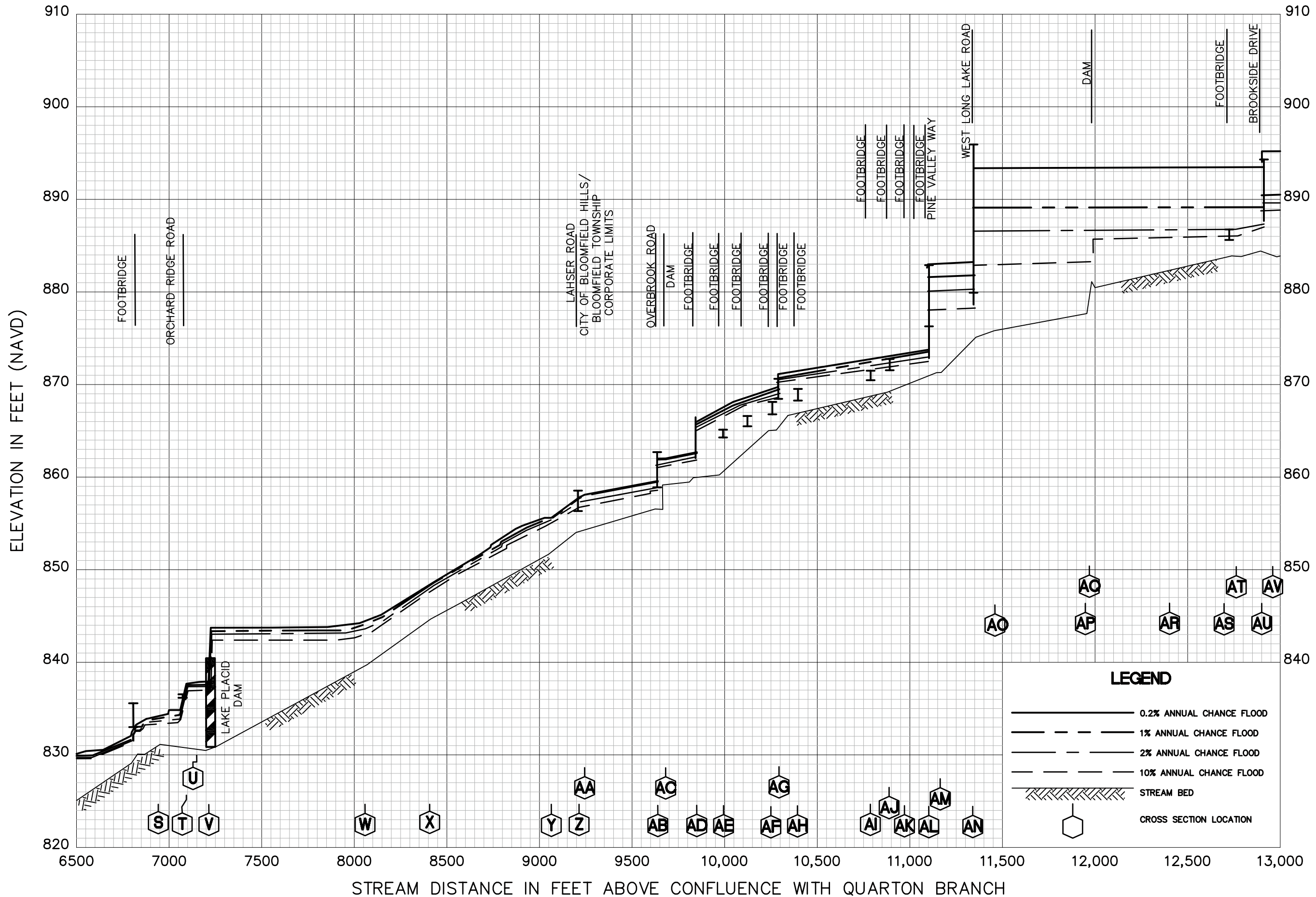
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LONG LAKE - FOREST LAKE DRAIN

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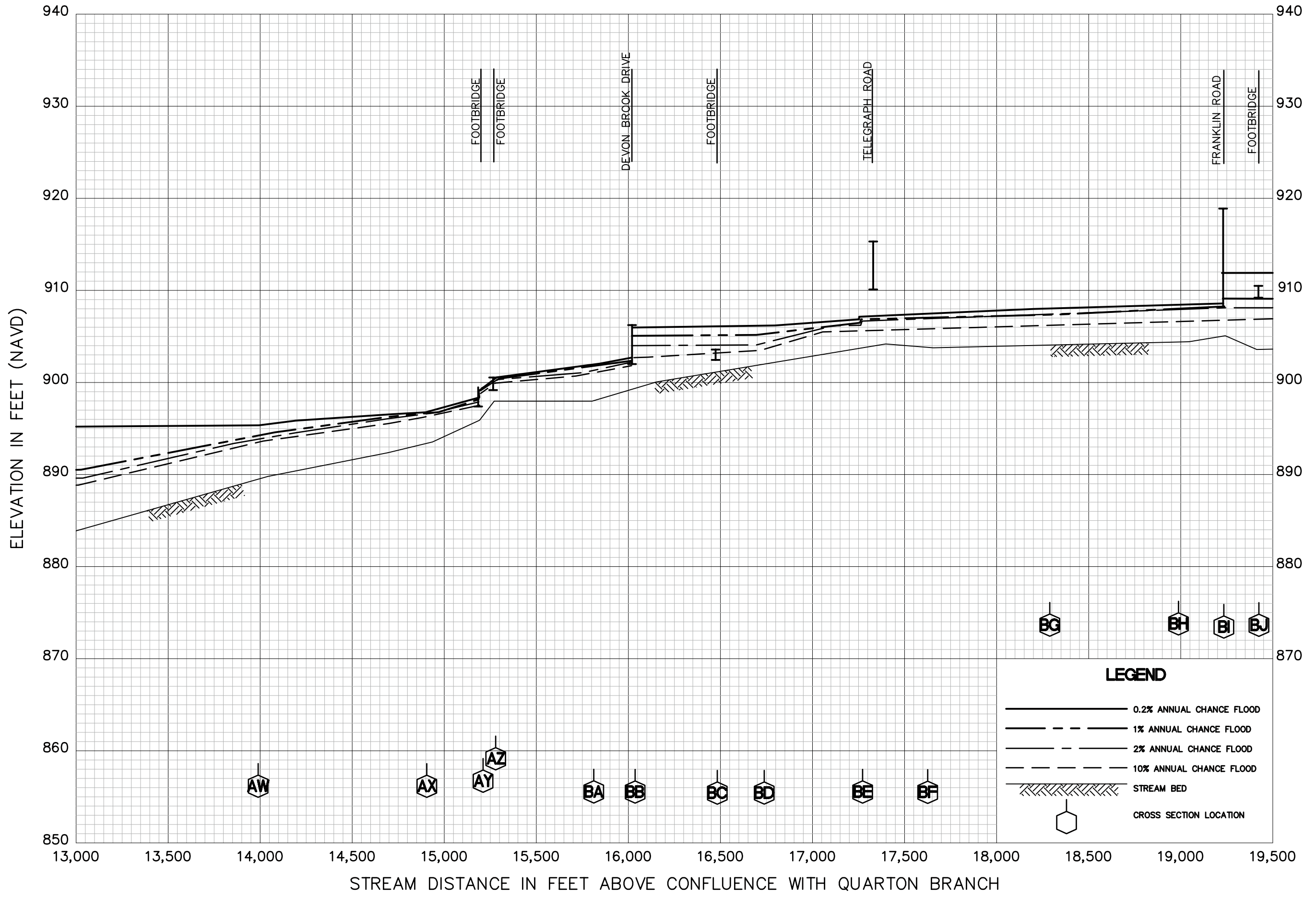
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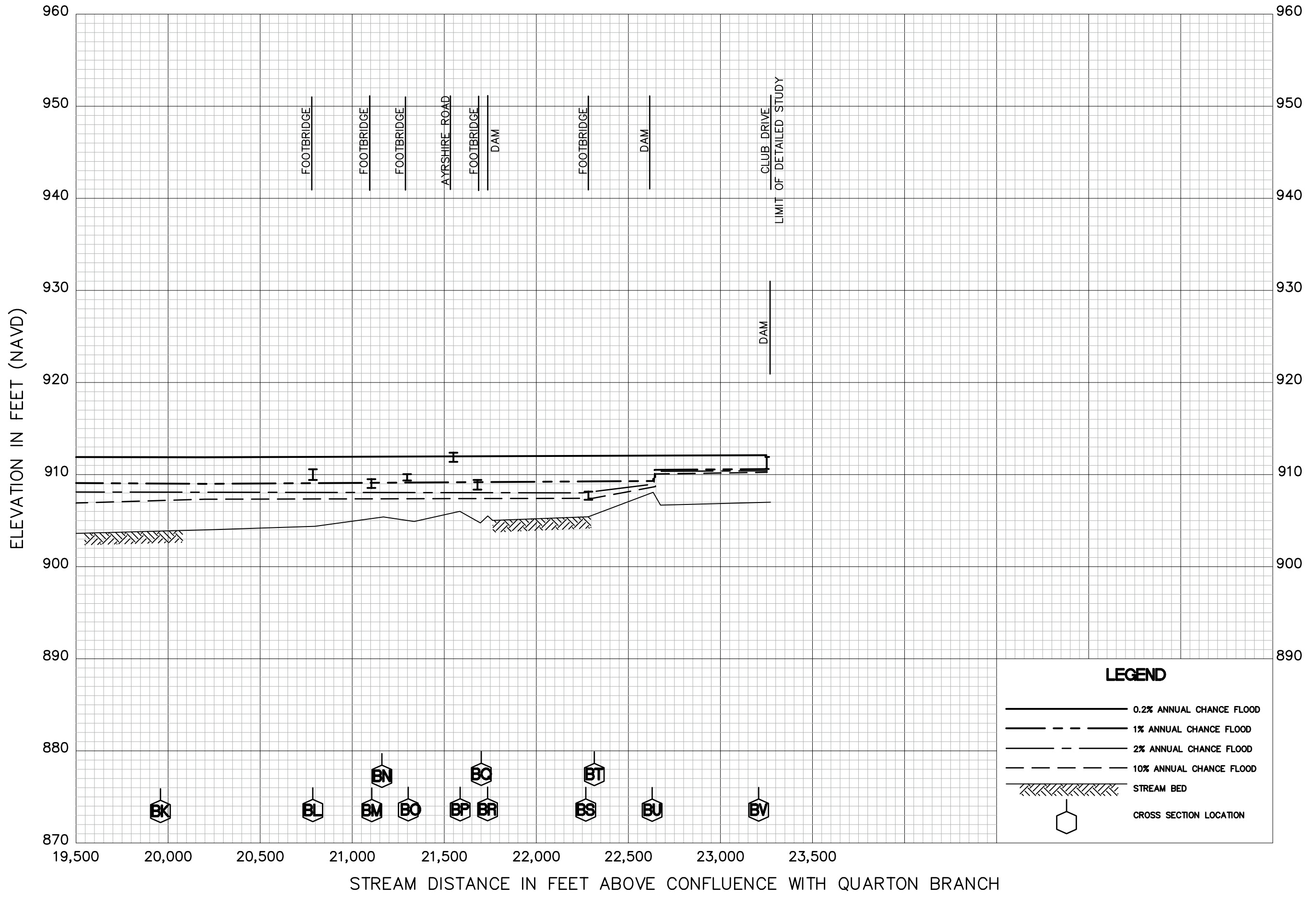


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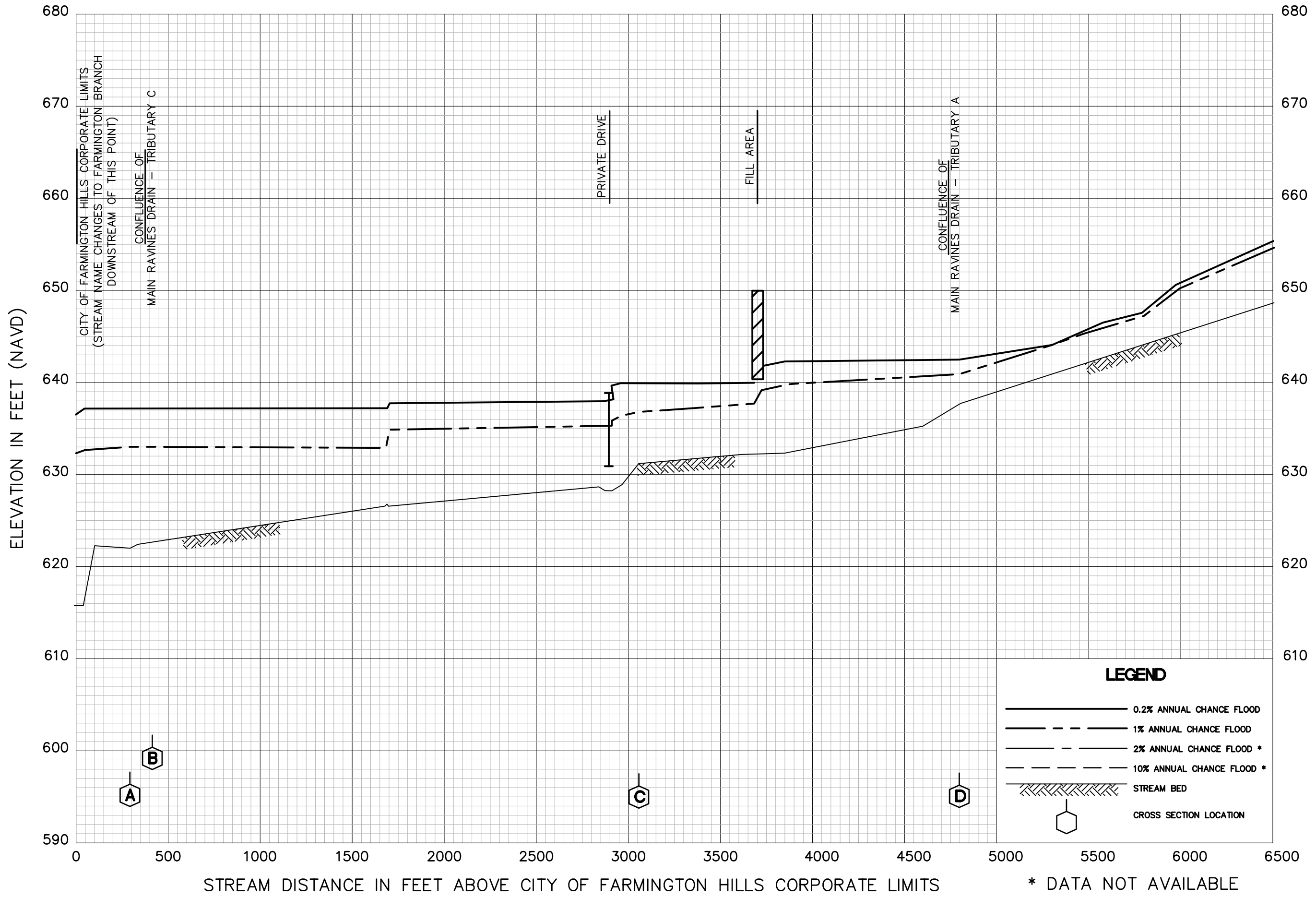
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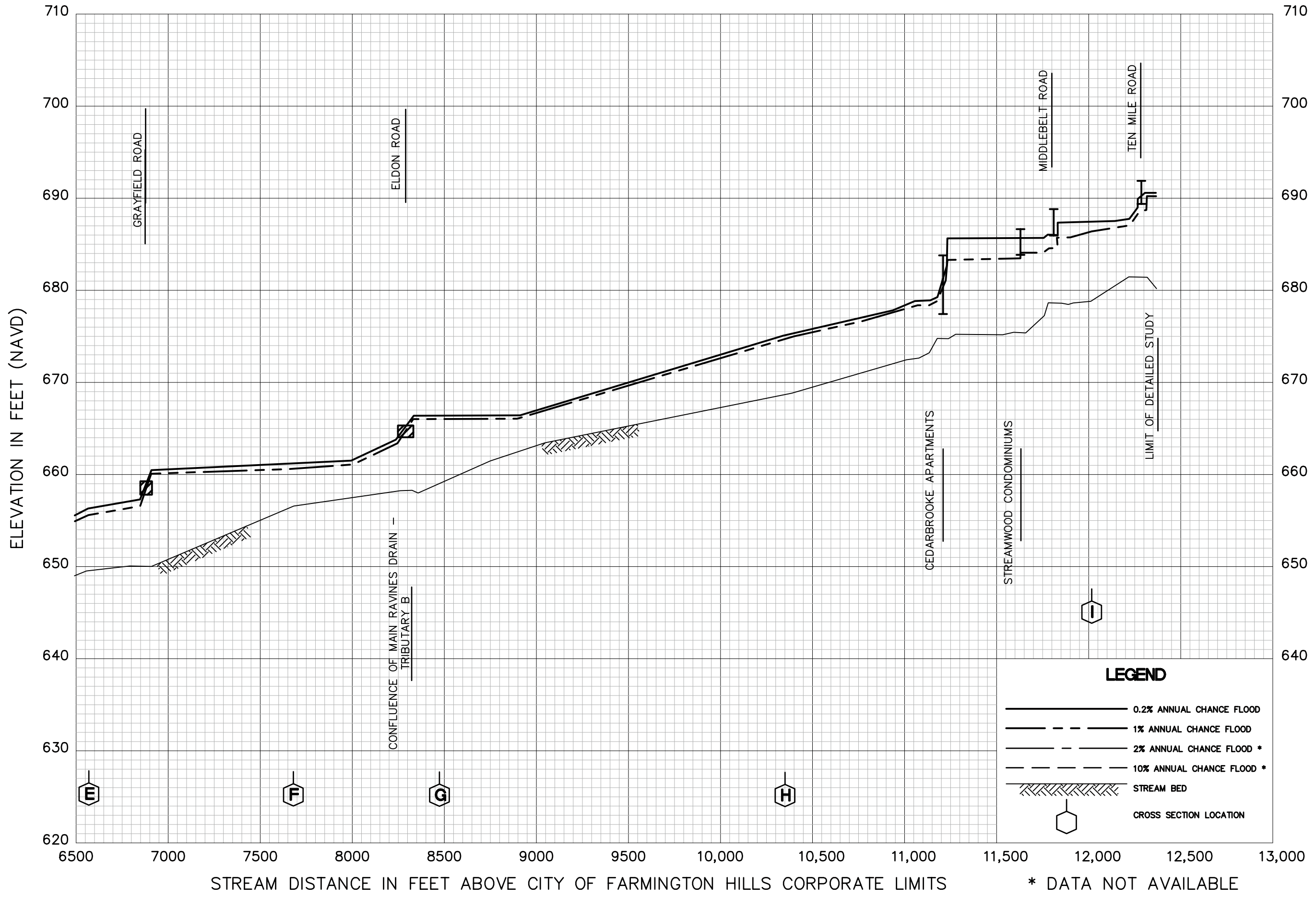
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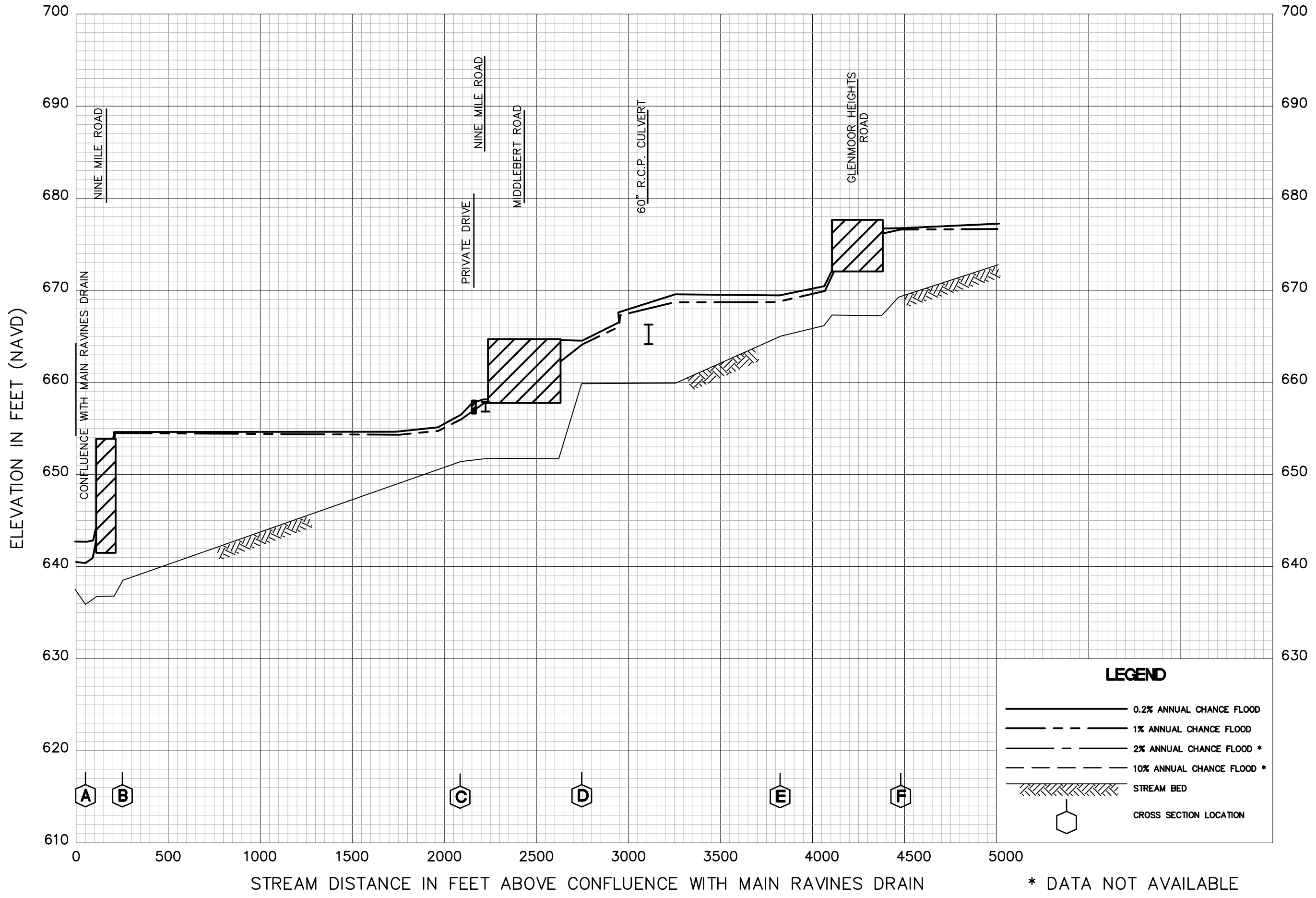
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MAIN RAVINES DRAIN**

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**FLOOD PROFILES
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(ALL JURISDICTIONS)



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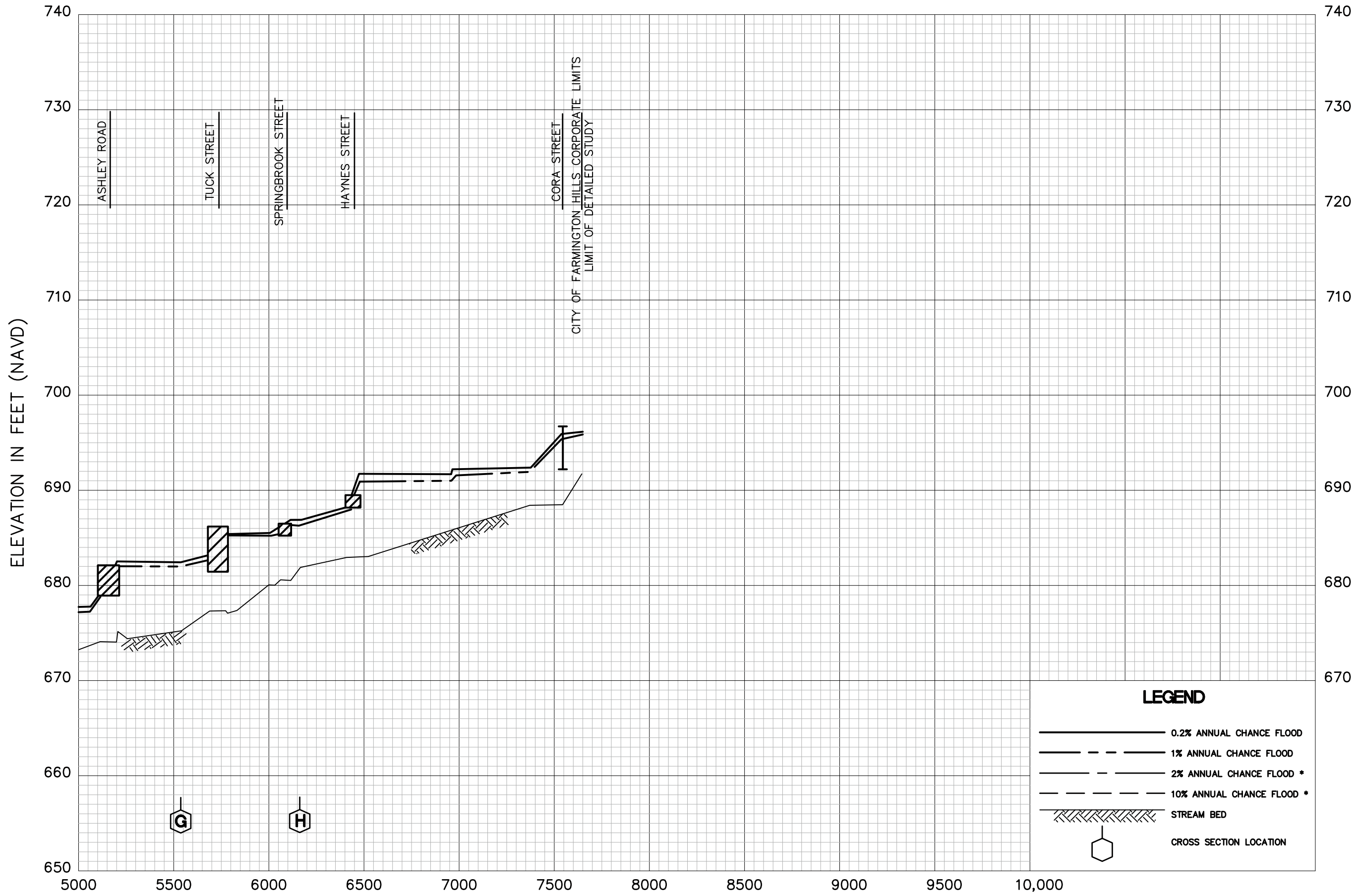
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MAIN RAVINES DRAIN - TRIBUTARY A

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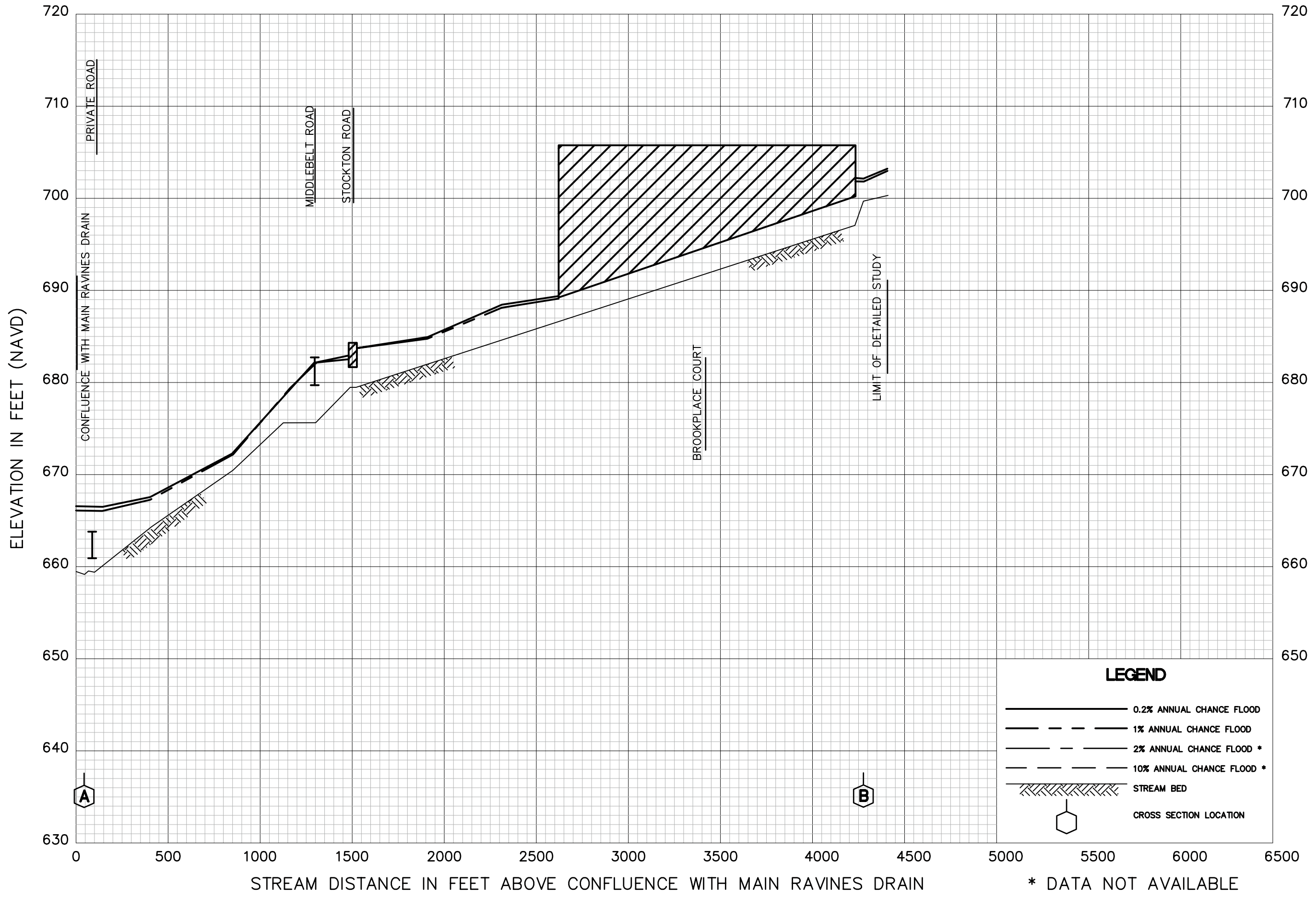
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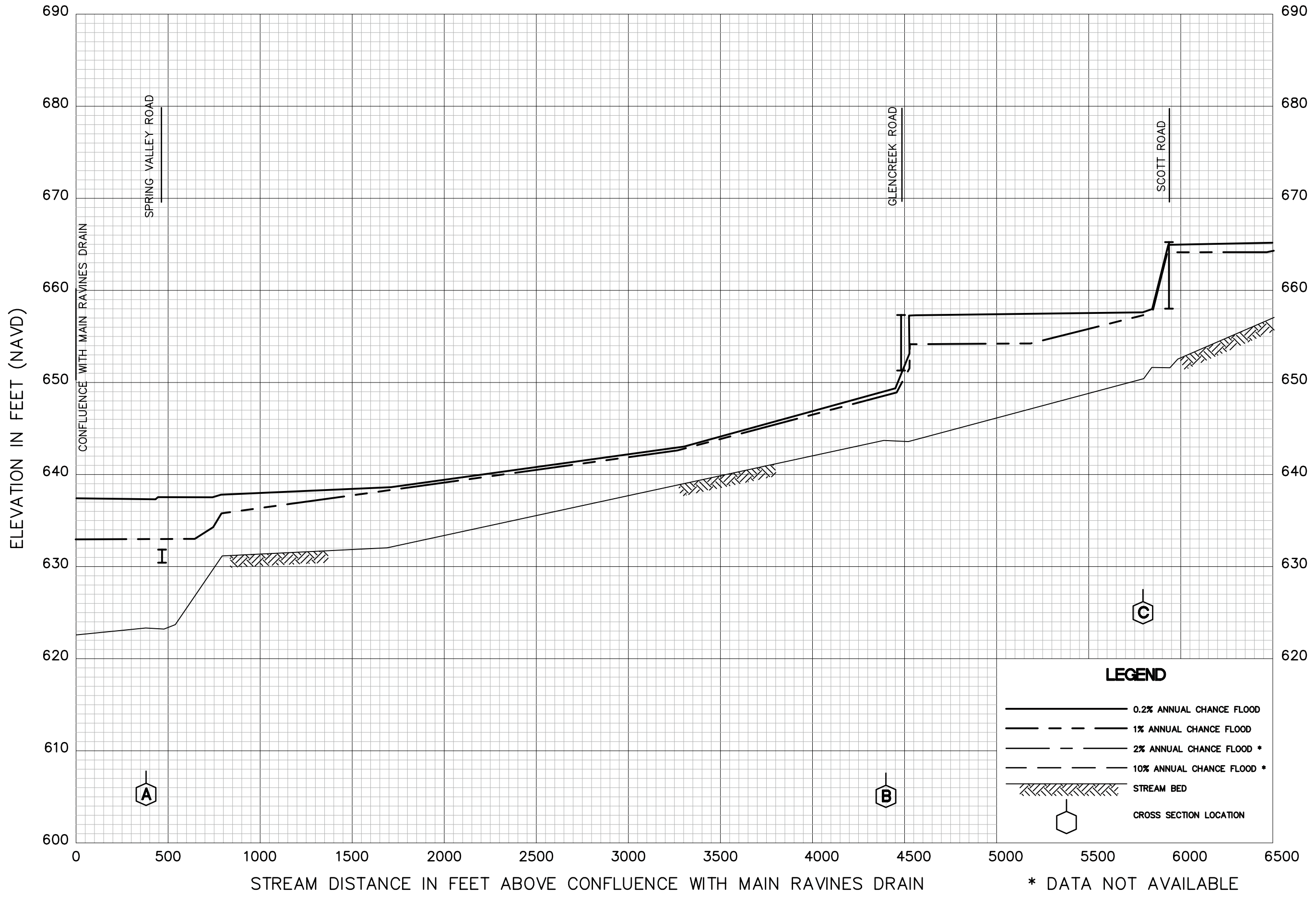
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FLOOD PROFILES

MAIN RAVINES DRAIN - TRIBUTARY B

FEDERAL EMERGENCY MANAGEMENT AGENCY

OAKLAND COUNTY, MI
(ALL JURISDICTIONS)



LEGEND

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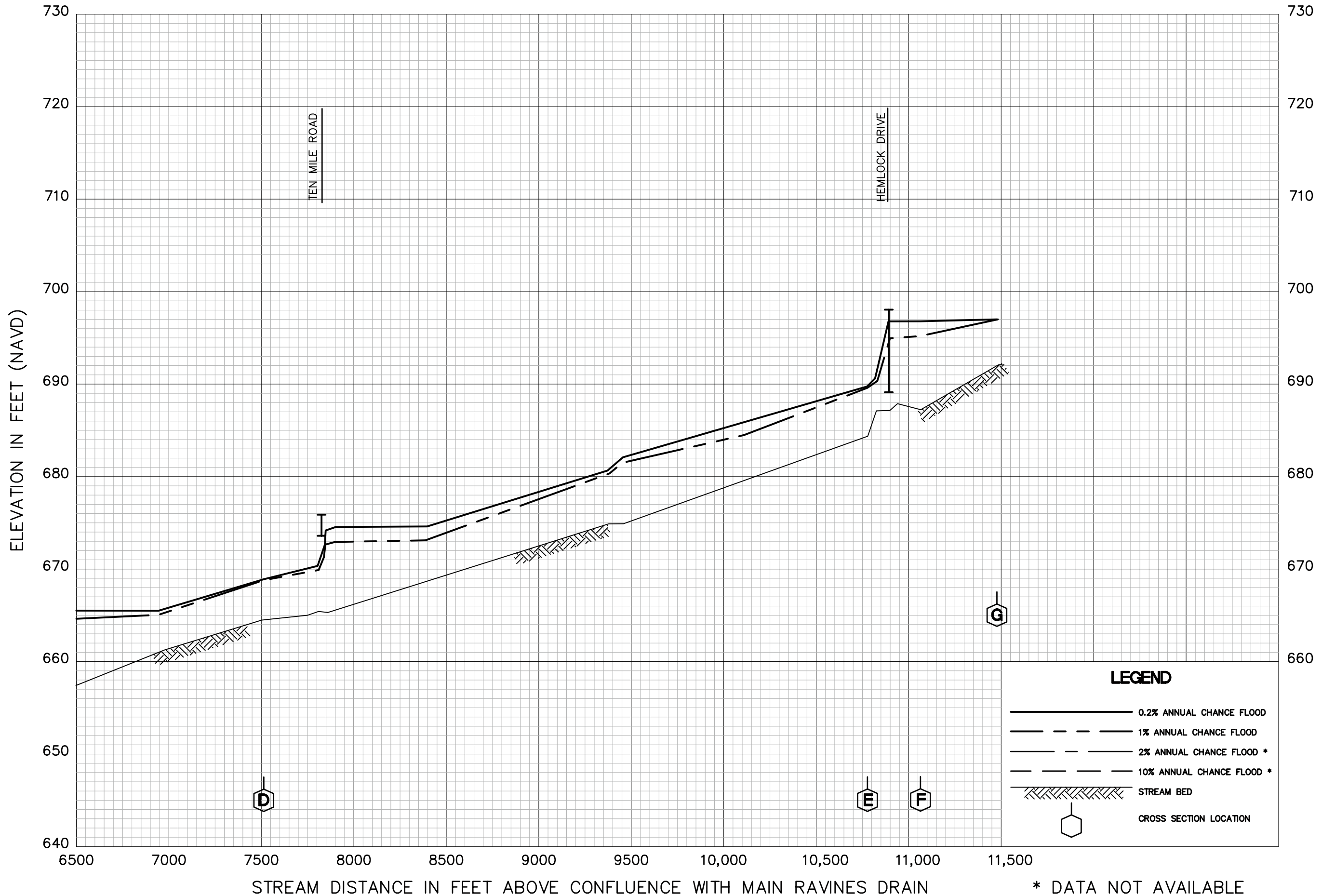
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(ALL JURISDICTIONS)



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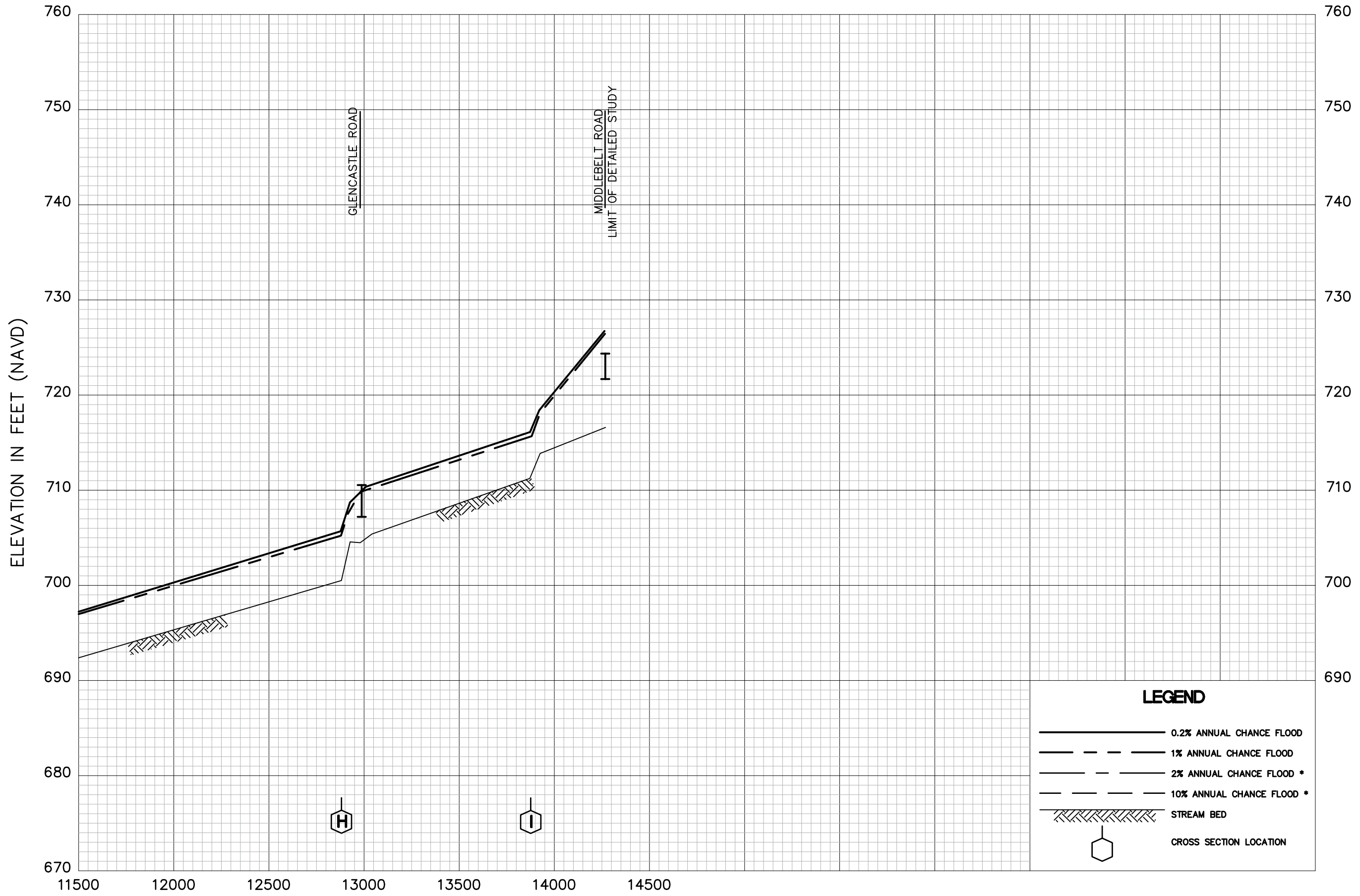
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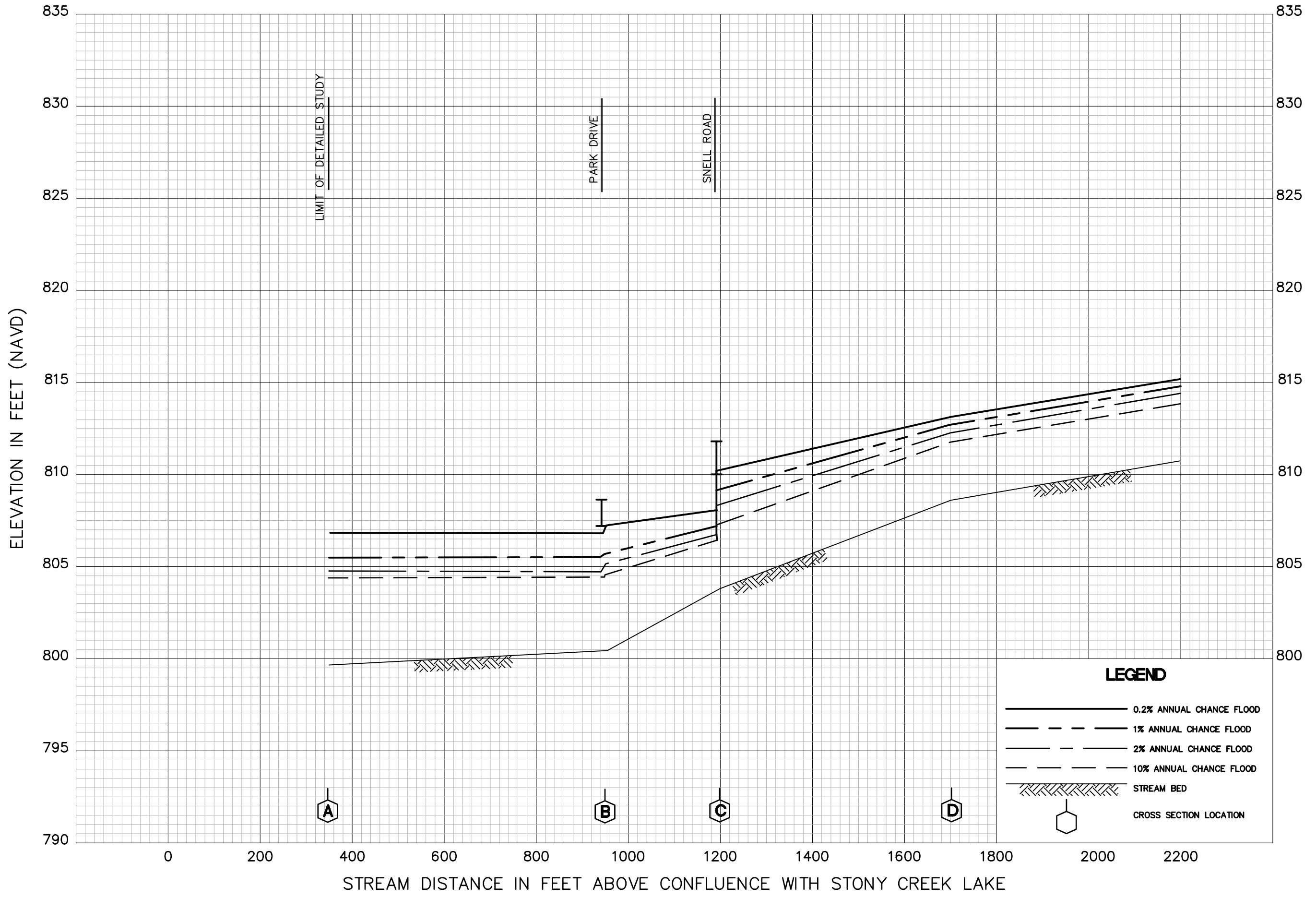
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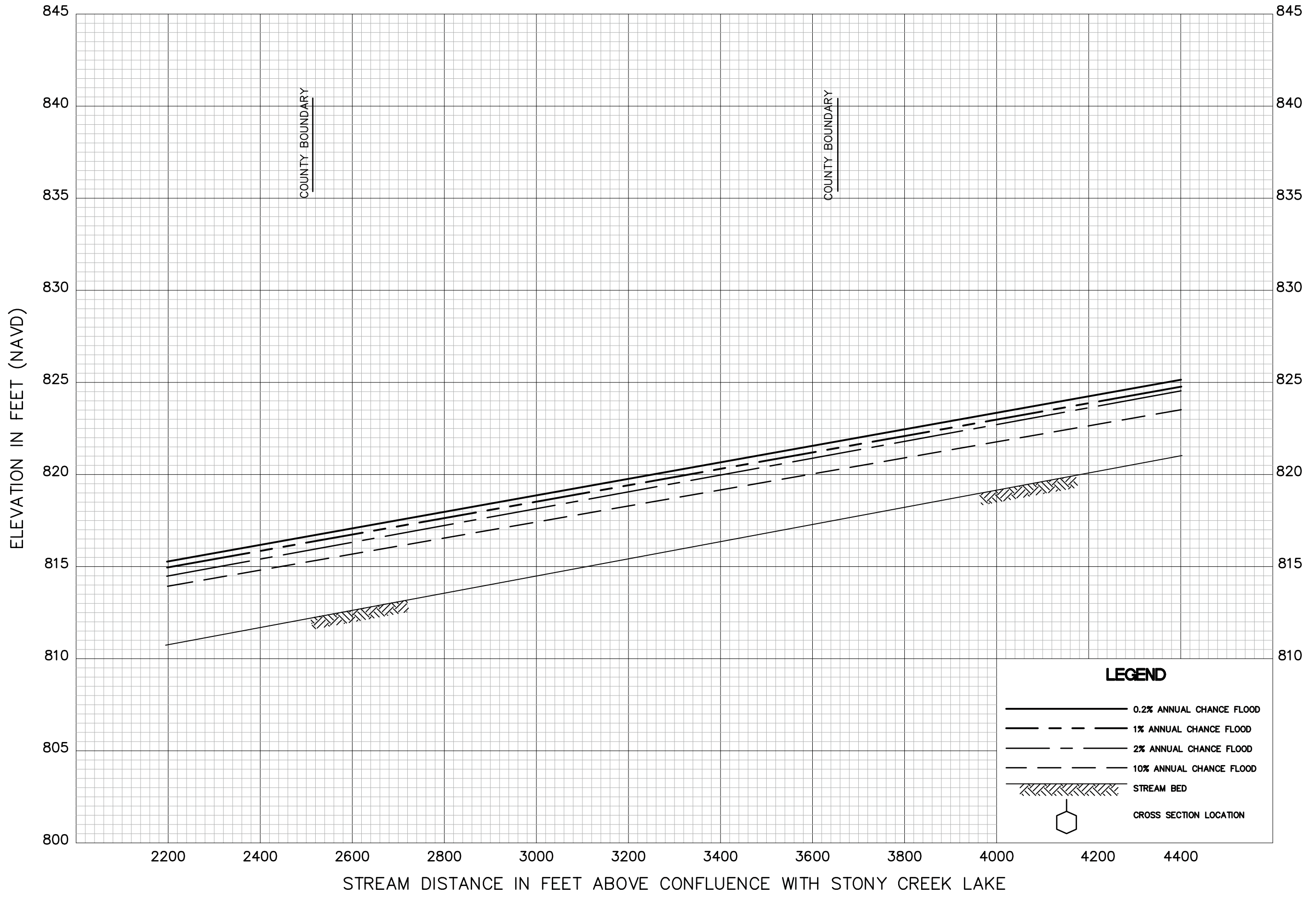
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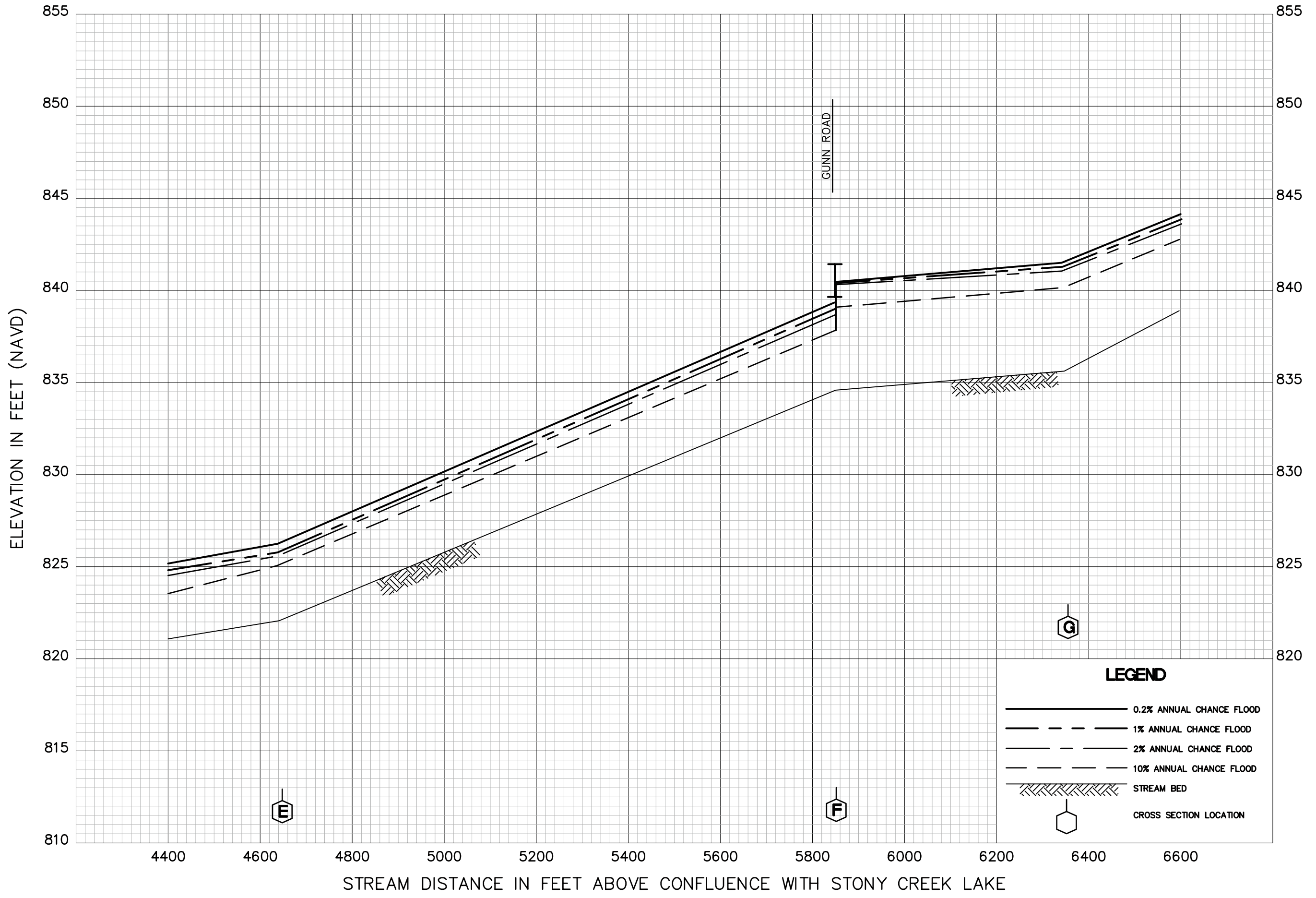
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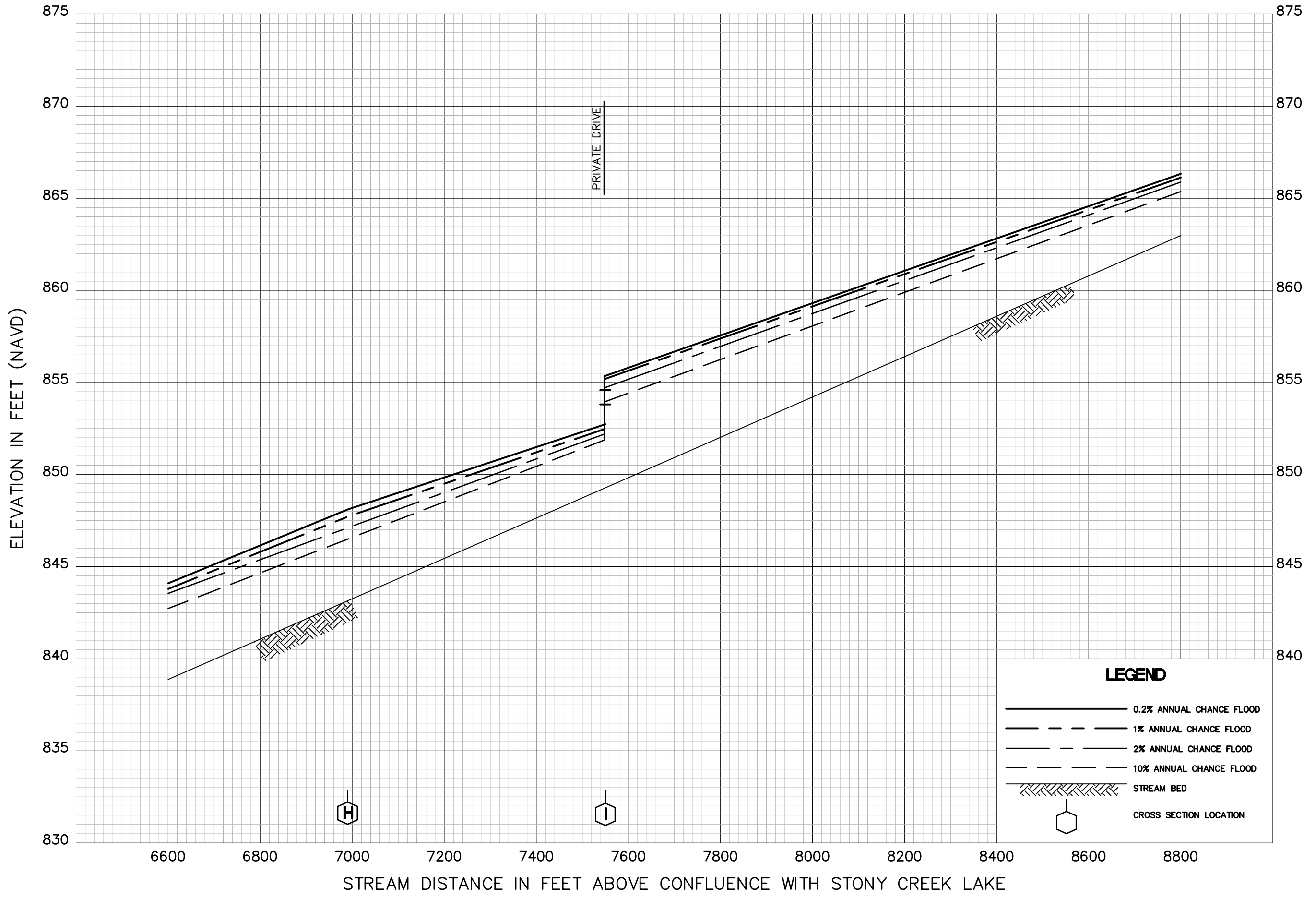
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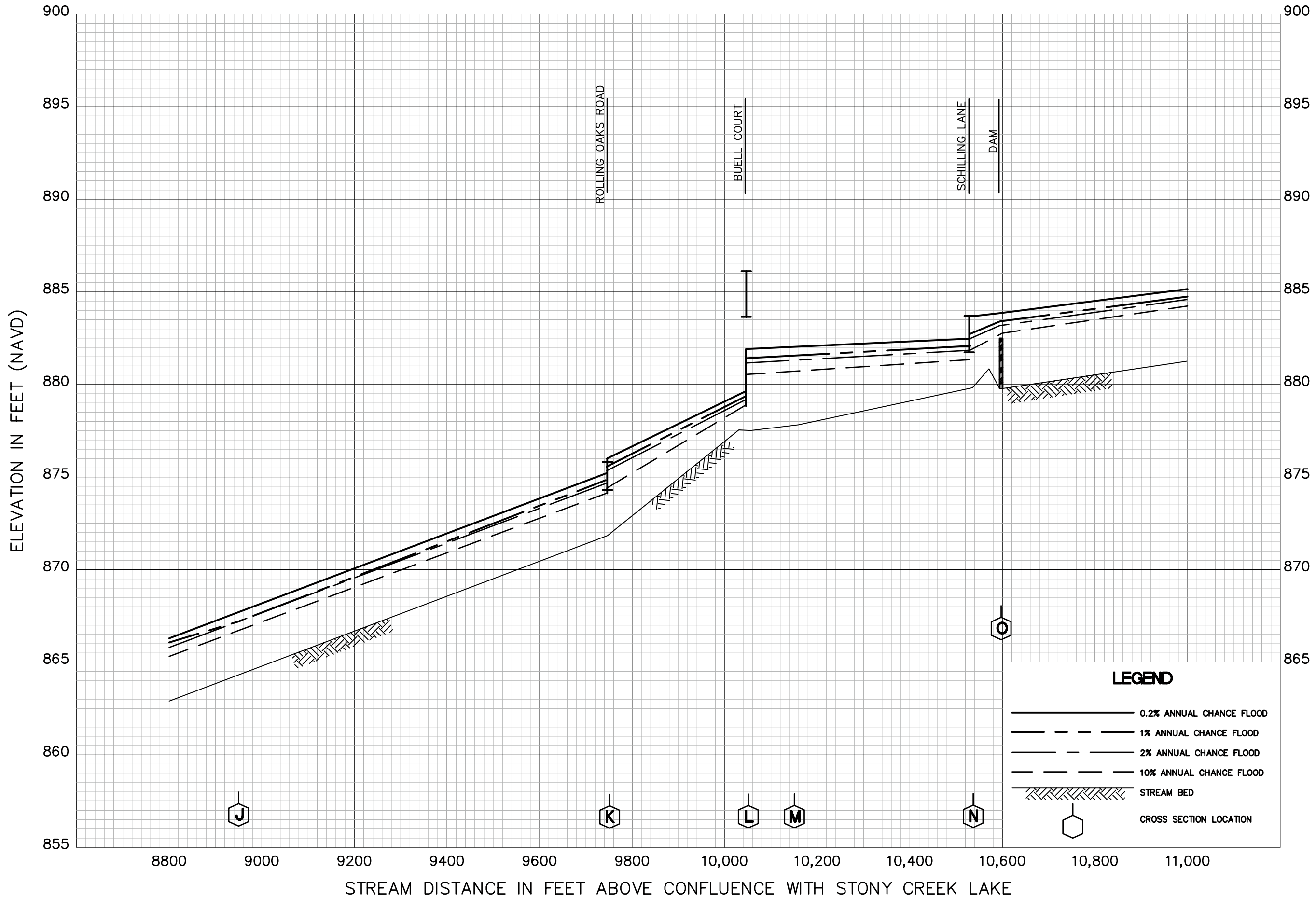


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**FLOOD PROFILES
McCLURE DRAIN**

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(ALL JURISDICTIONS)

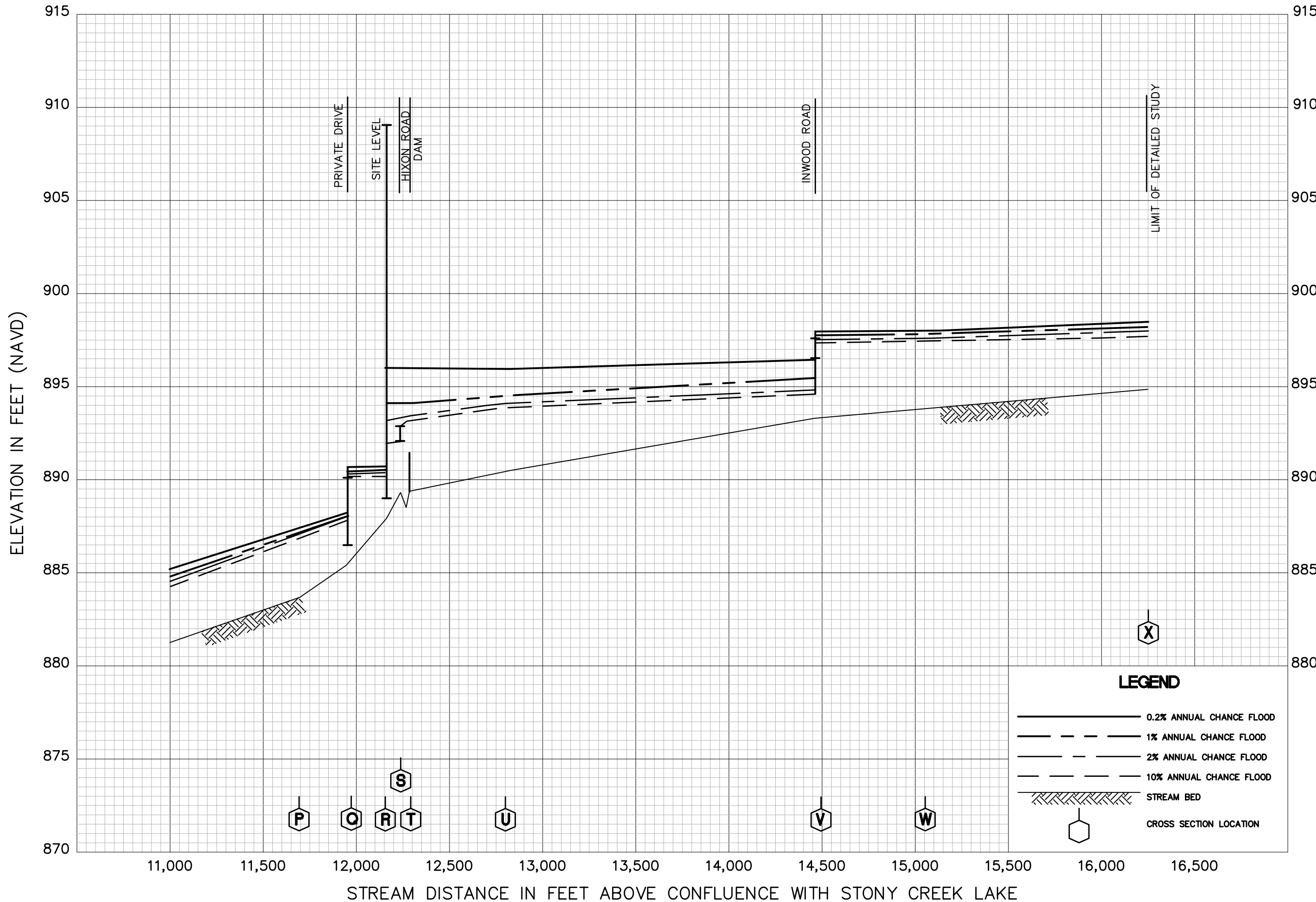


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**FLOOD PROFILES
McCLURE DRAIN**

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
(ALL JURISDICTIONS)

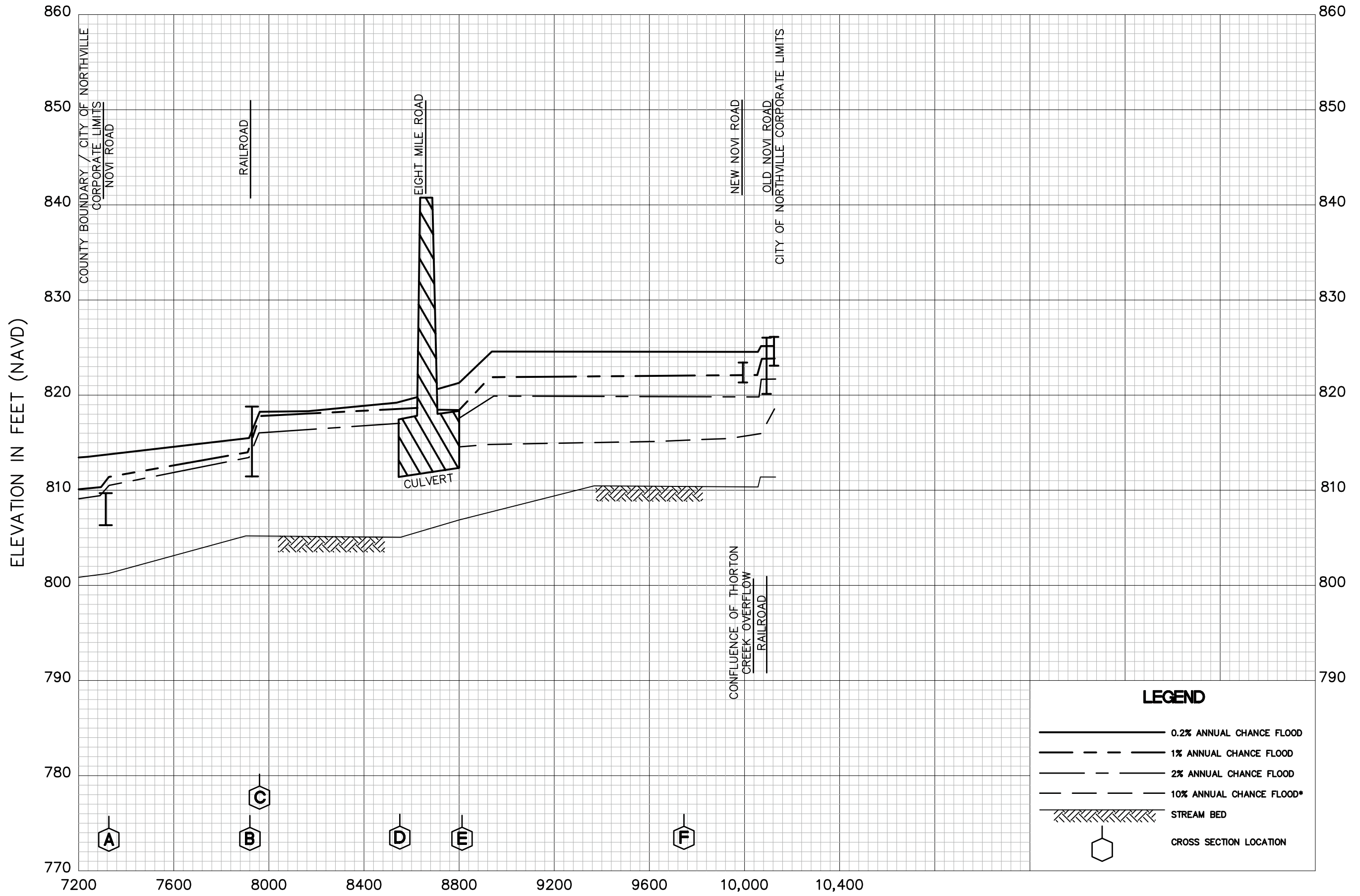


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**FLOOD PROFILES
McCLURE DRAIN**

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
(ALL JURISDICTIONS)



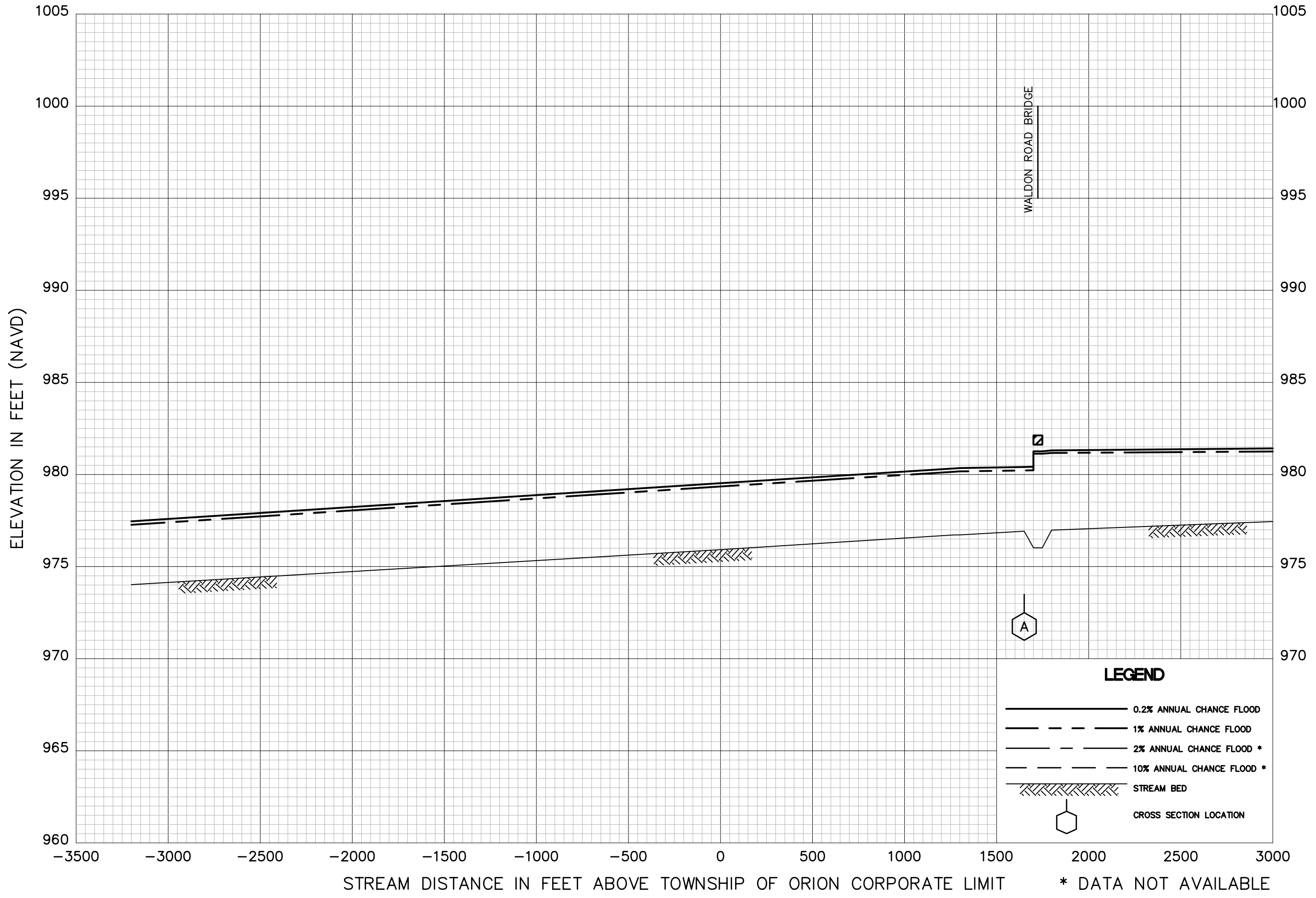
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STREAM DISTANCE IN FEET ABOVE CITY OF NORTHVILLE CORPORATE LIMITS (WAYNE COUNTY) * DATA NOT AVAILABLE

FLOOD PROFILES
MIDDLE RIVER ROUGE

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
(ALL JURISDICTIONS)



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FLOOD PROFILES

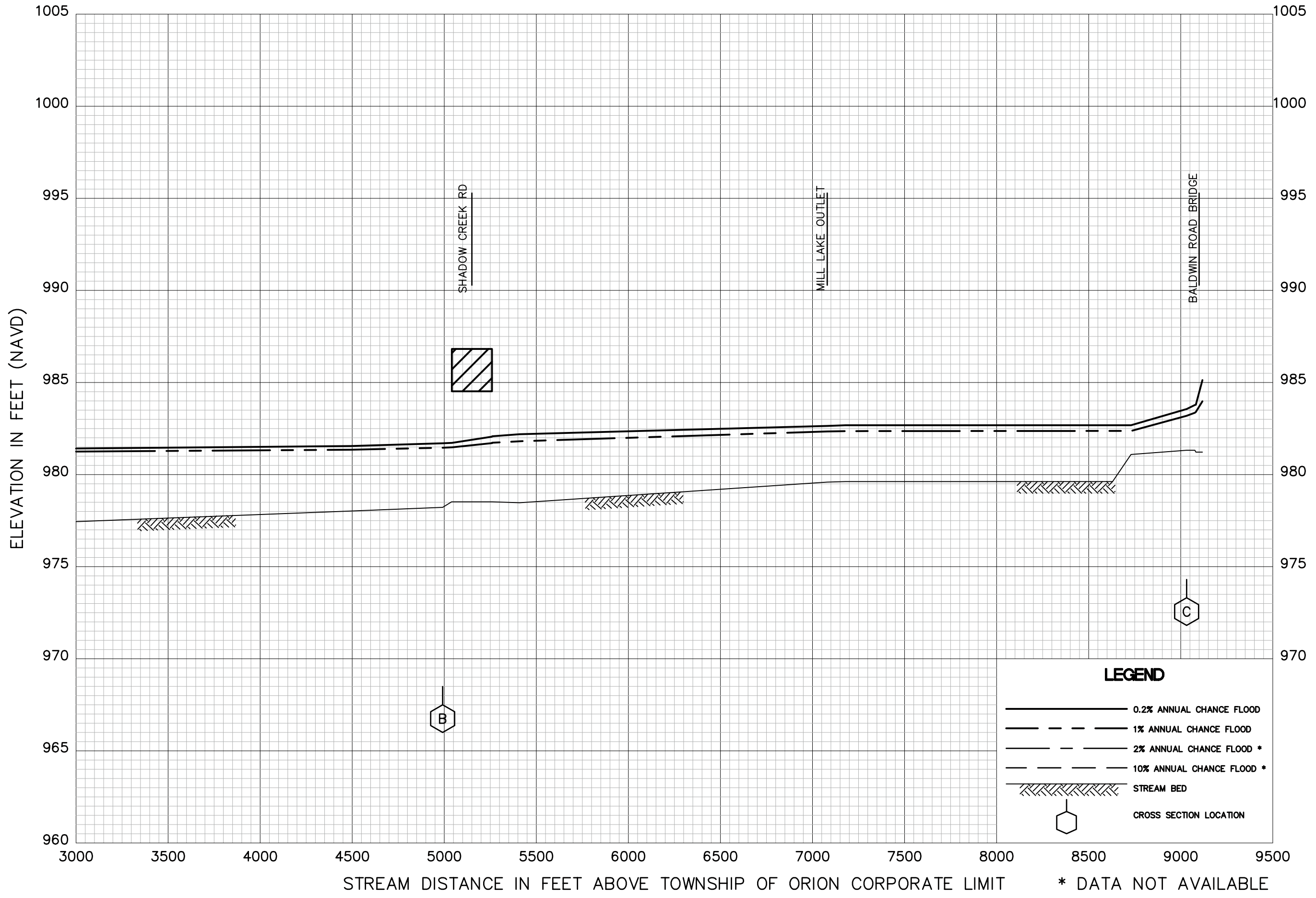
MILL LAKE

FEDERAL EMERGENCY MANAGEMENT AGENCY

OAKLAND COUNTY, MI

(ALL JURISDICTIONS)

98P



LEGEND

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FLOOD PROFILES

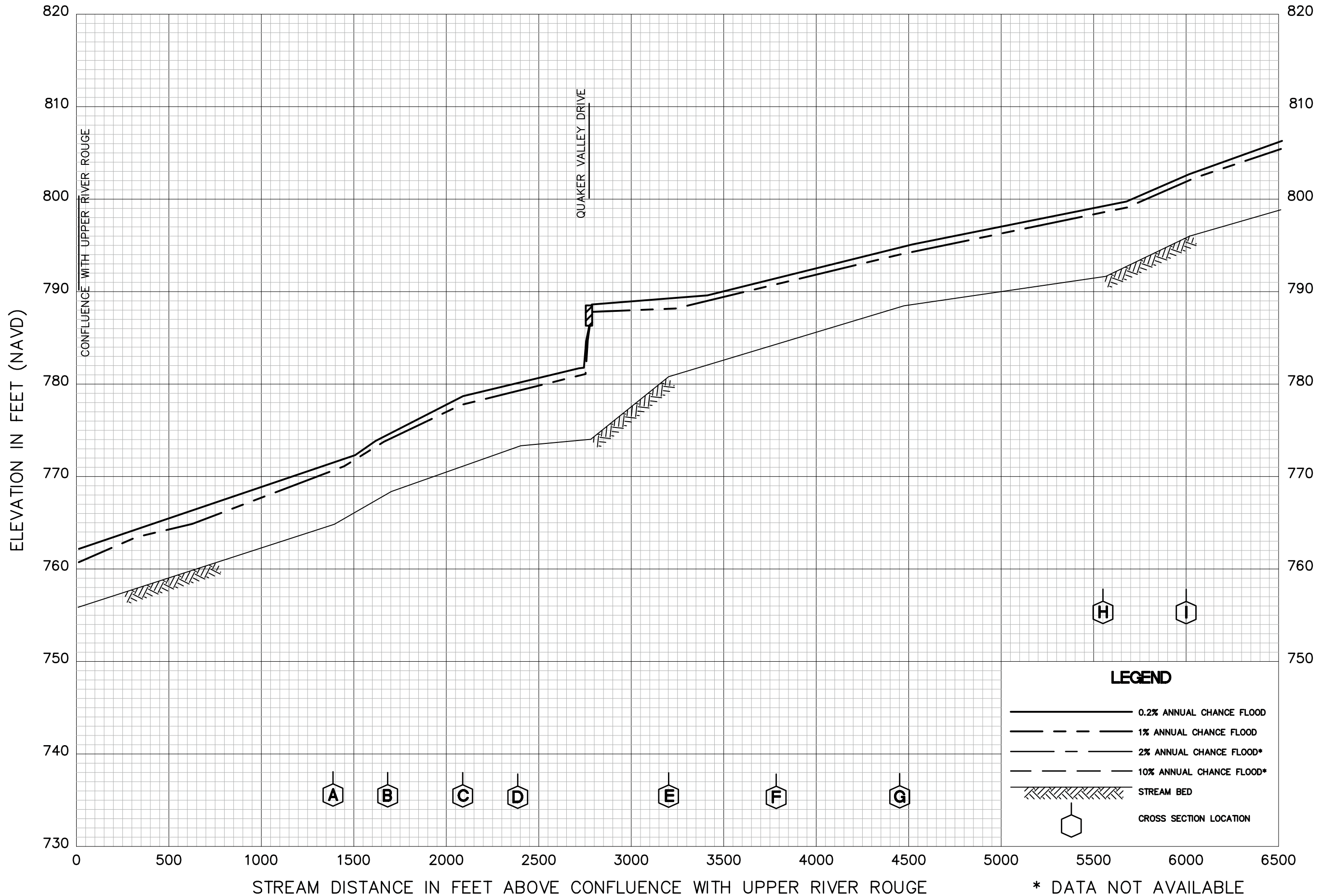
MILL LAKE

FEDERAL EMERGENCY MANAGEMENT AGENCY

OAKLAND COUNTY, MI

(ALL JURISDICTIONS)

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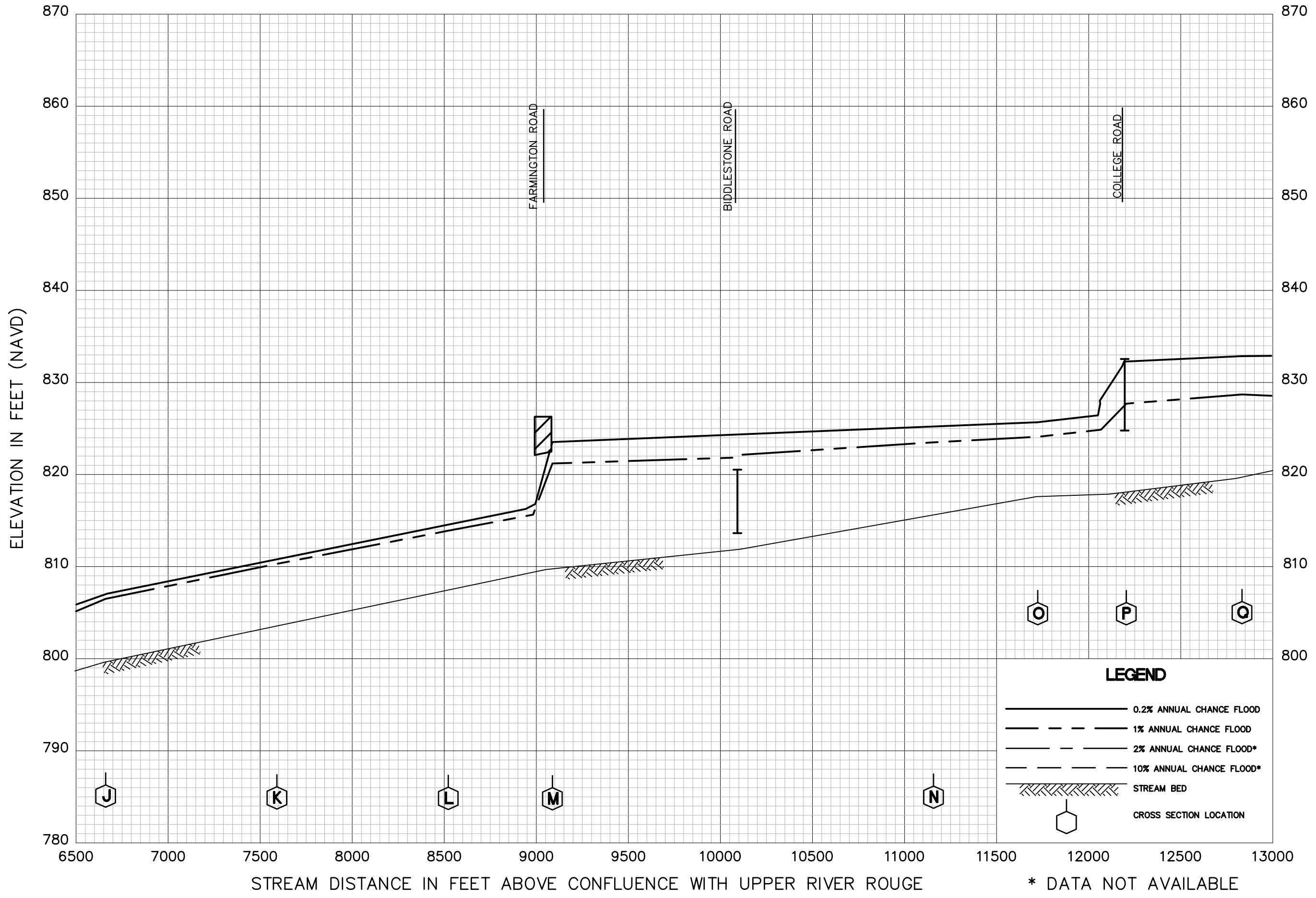
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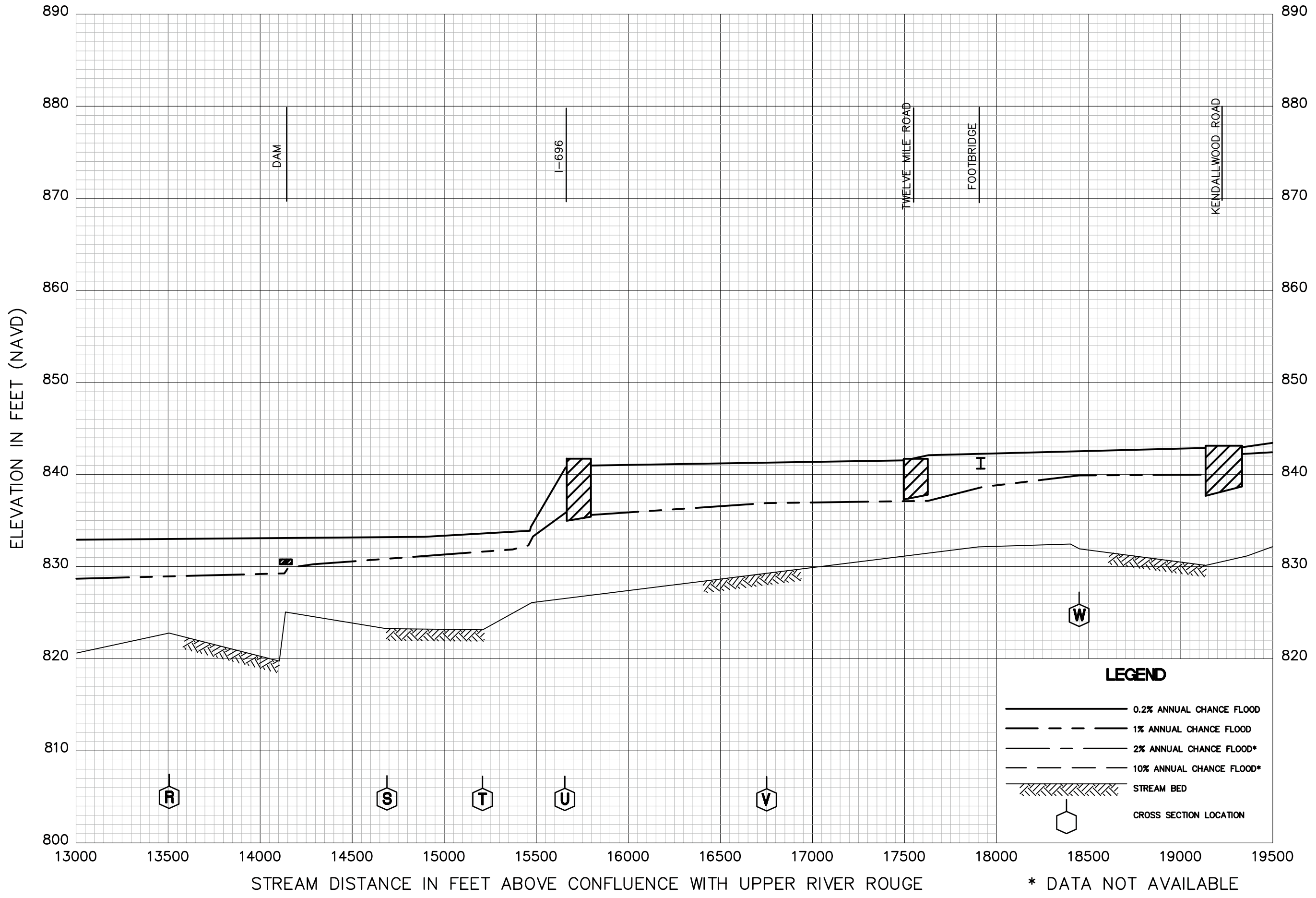
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MINNOW POND DRAIN**

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OAKLAND COUNTY, MI
(ALL JURISDICTIONS)



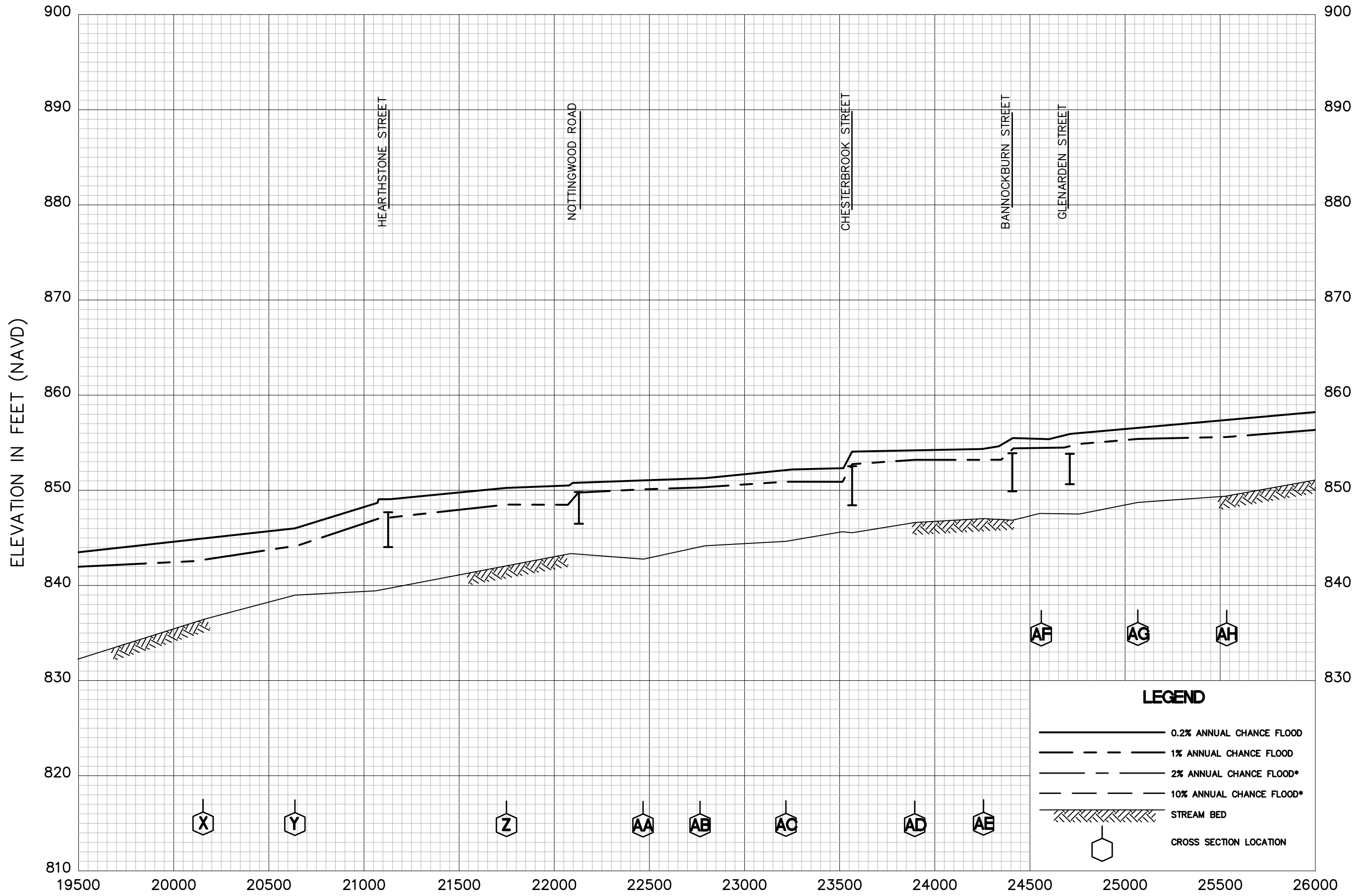
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MINNOW POND DRAIN

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OAKLAND COUNTY, MI
(ALL JURISDICTIONS)



FLOOD PROFILES
MINNOW POND DRAIN

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OAKLAND COUNTY, MI
(ALL JURISDICTIONS)



STREAM DISTANCE IN FEET ABOVE CONFLUENCE WITH UPPER RIVER ROUGE

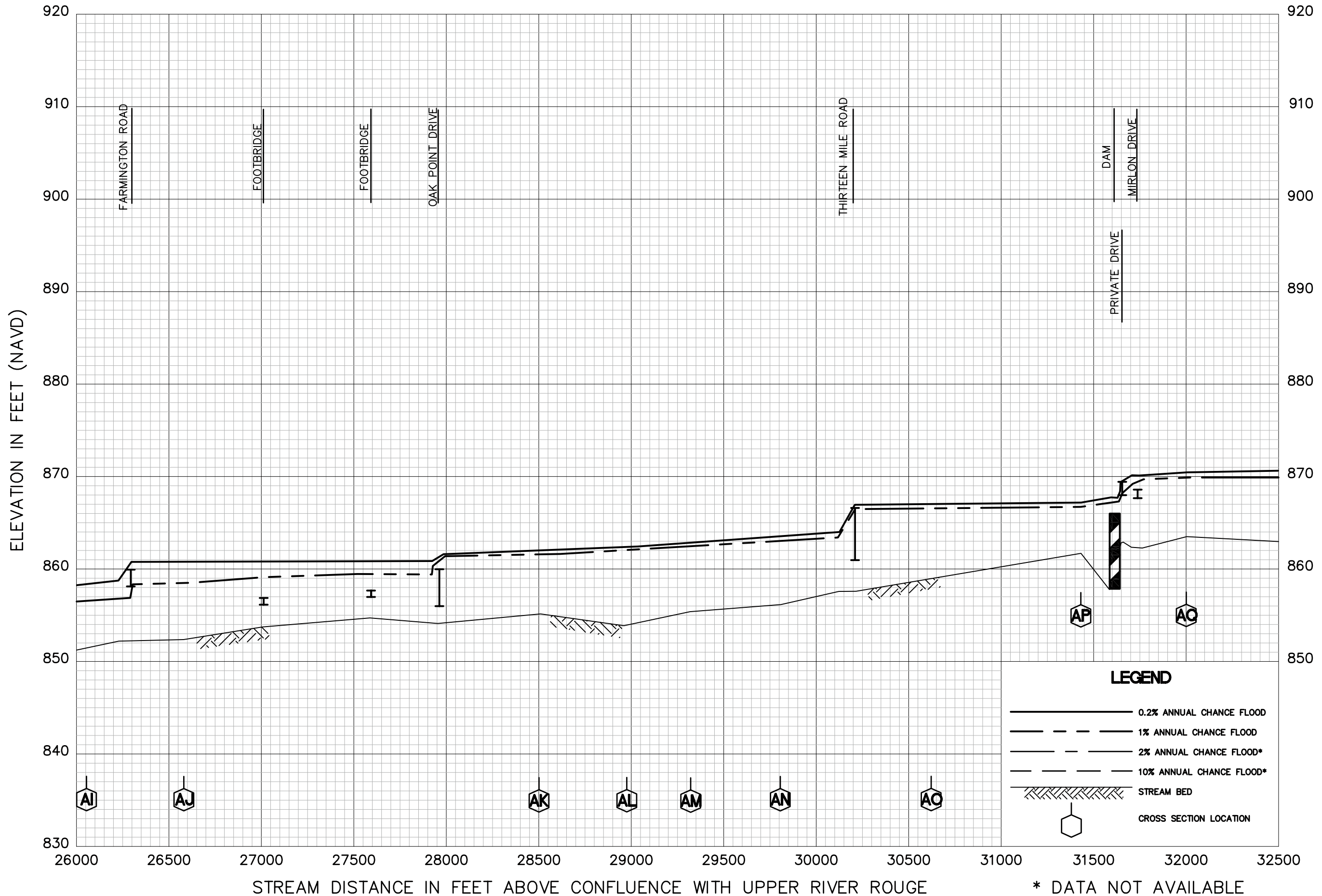
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- CROSS SECTION LOCATION

FLOOD PROFILES
MINNOW POND DRAIN

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
(ALL JURISDICTIONS)



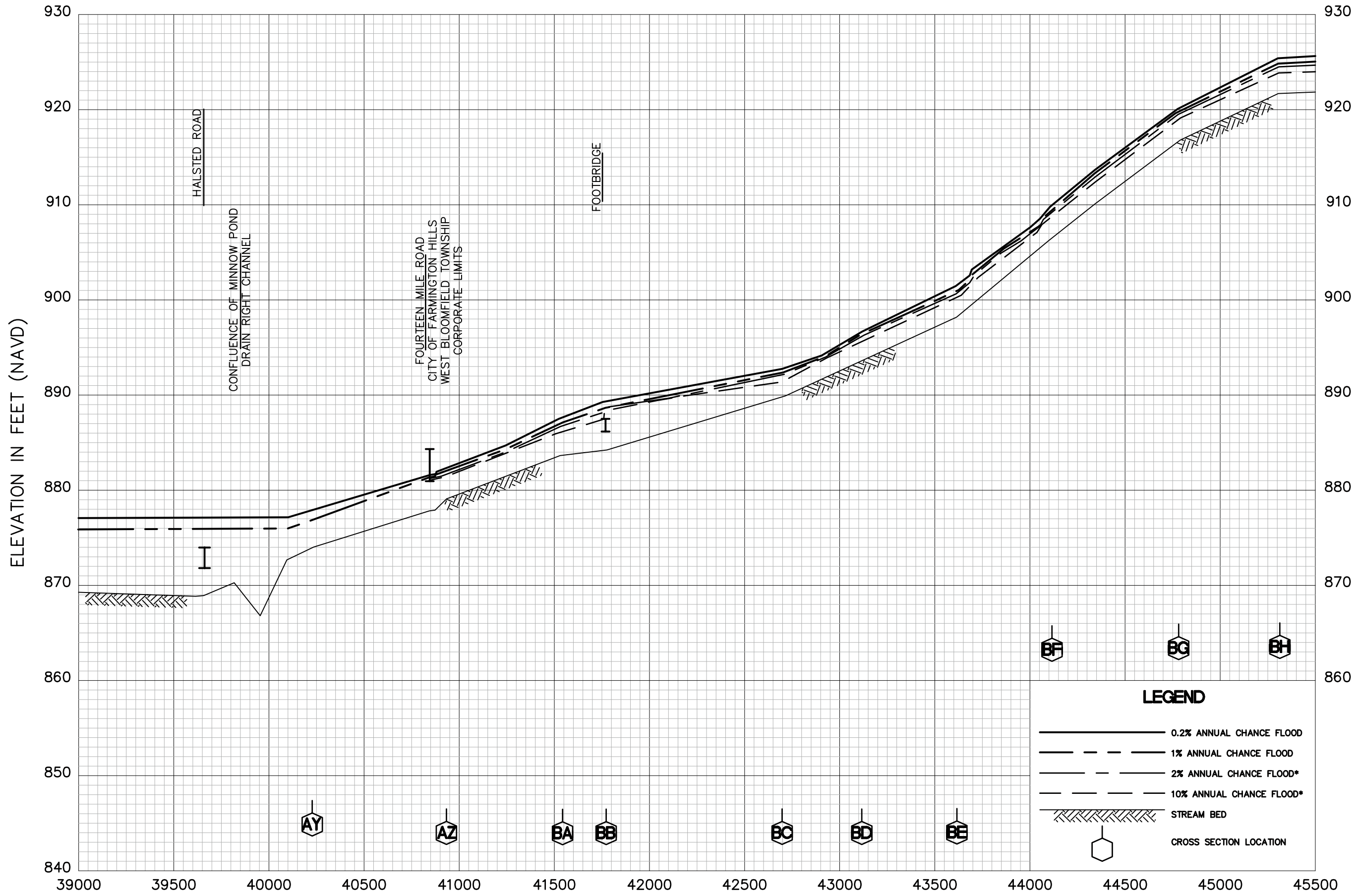
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* DATA NOT AVAILABLE

FLOOD PROFILES
MINNOW POND DRAIN

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
(ALL JURISDICTIONS)



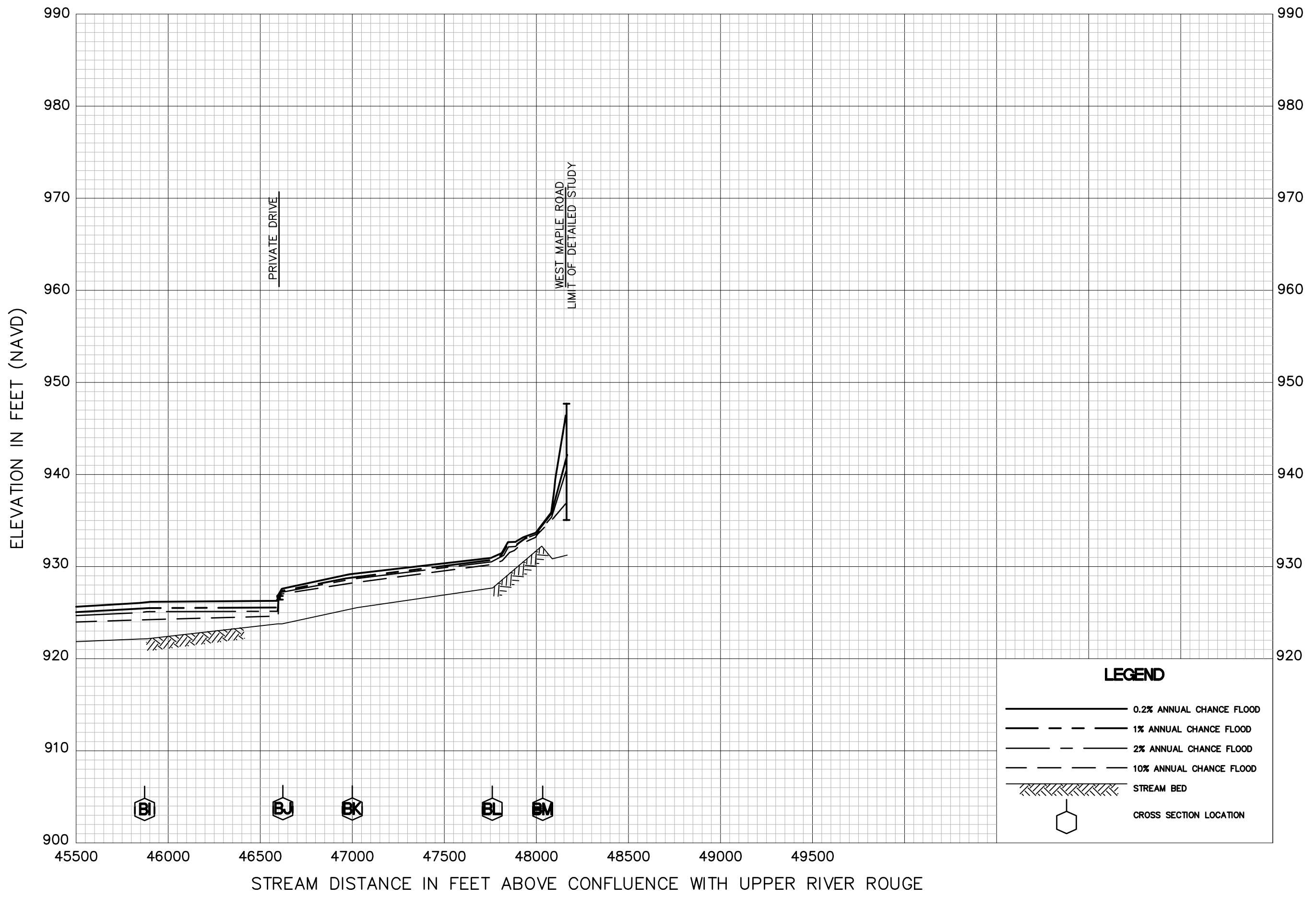
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**FLOOD PROFILES
MINNOW POND DRAIN**

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
(ALL JURISDICTIONS)

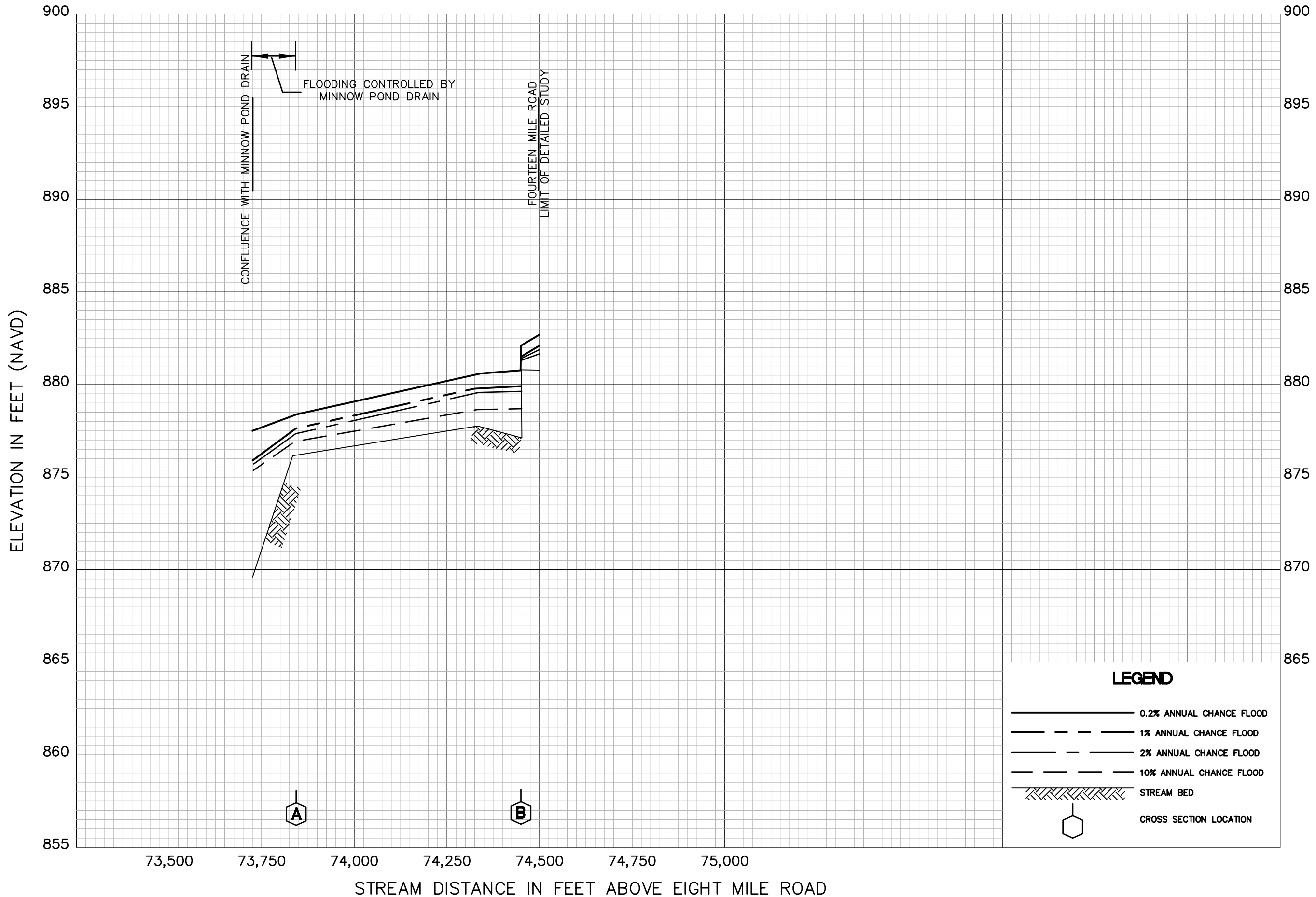


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**FLOOD PROFILES
MINNOW POND DRAIN**

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
(ALL JURISDICTIONS)



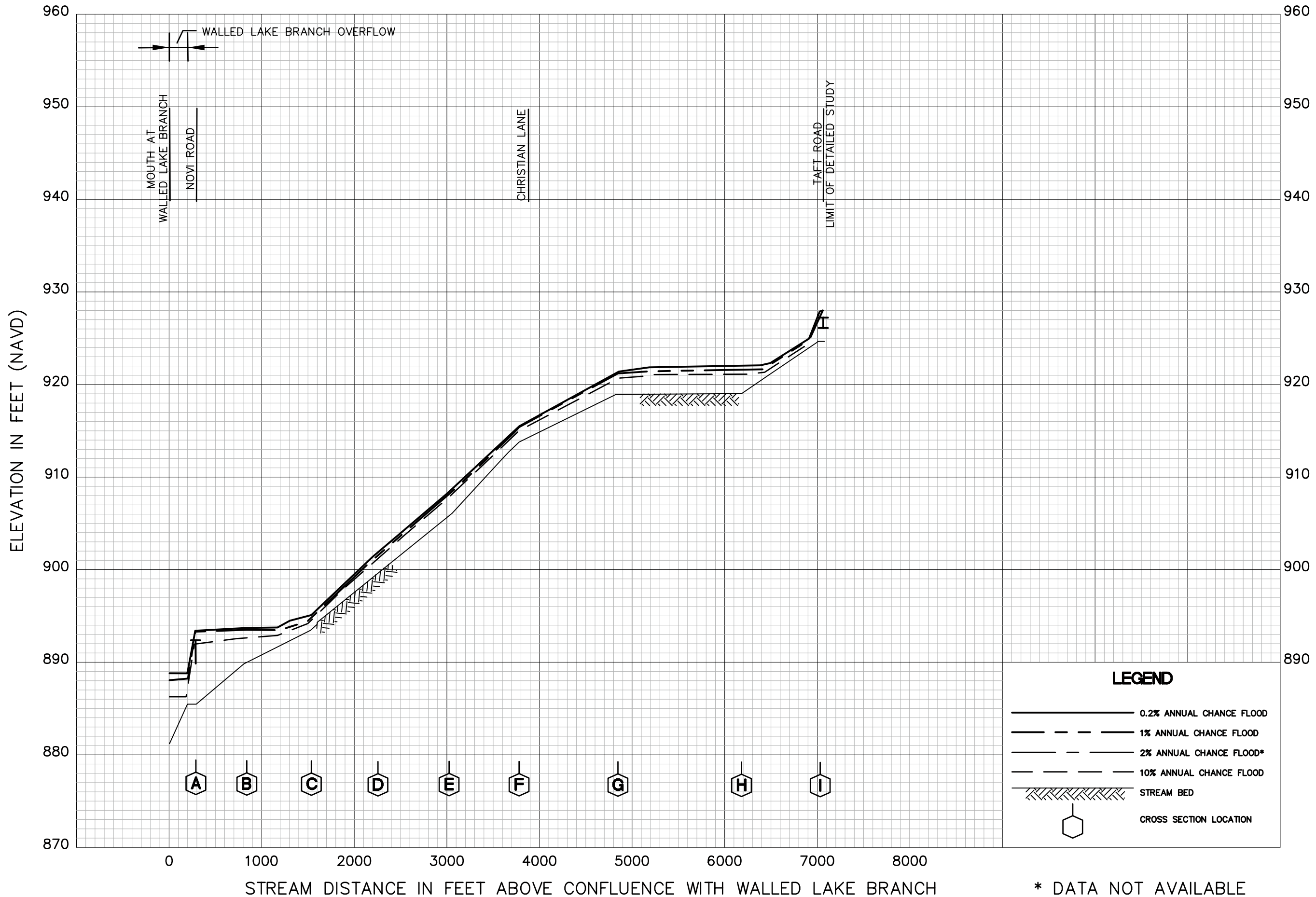
FLOOD PROFILES

MINNOW POND DRAIN RIGHT CHANNEL

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OAKLAND COUNTY, MI

(ALL JURISDICTIONS)



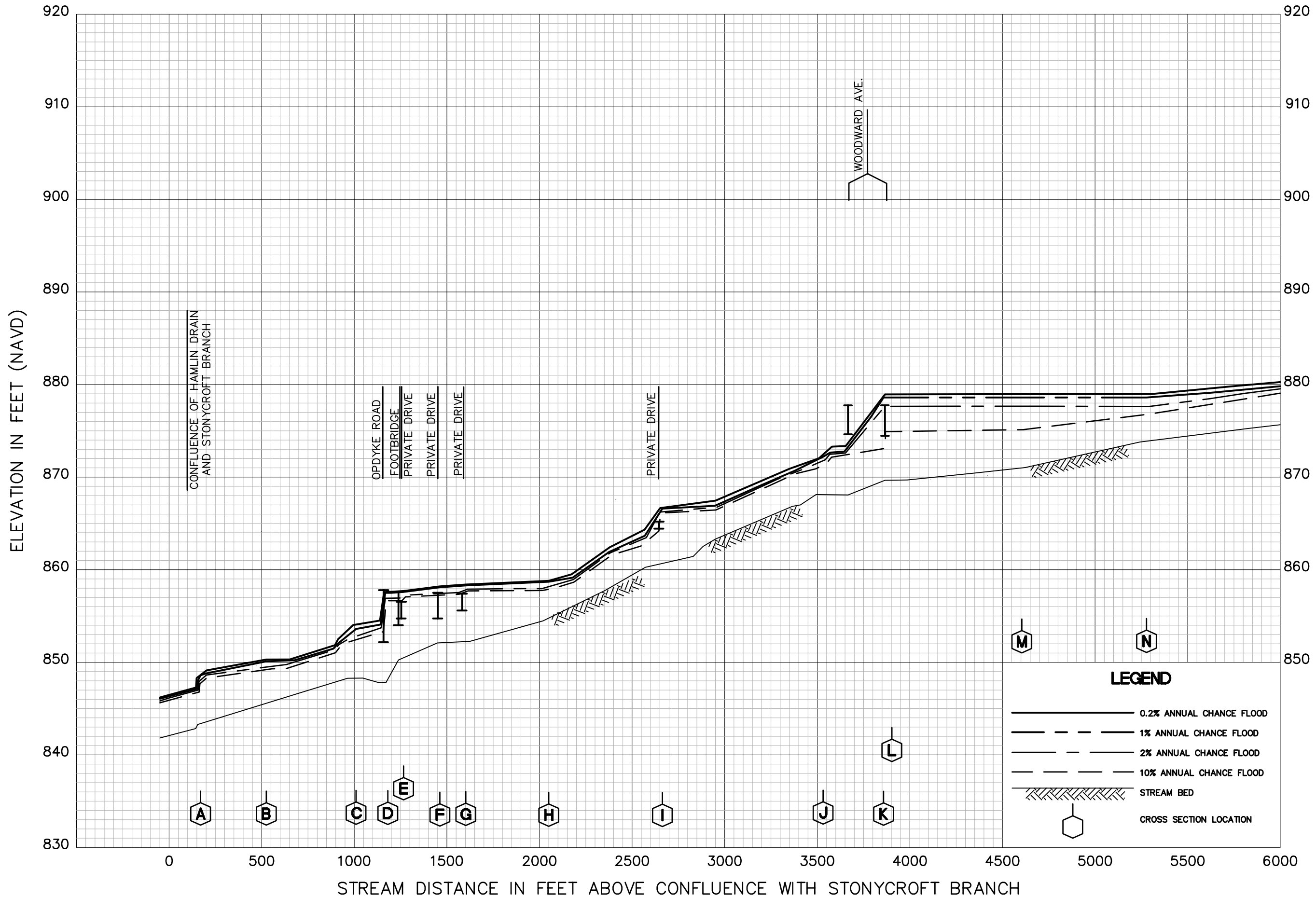
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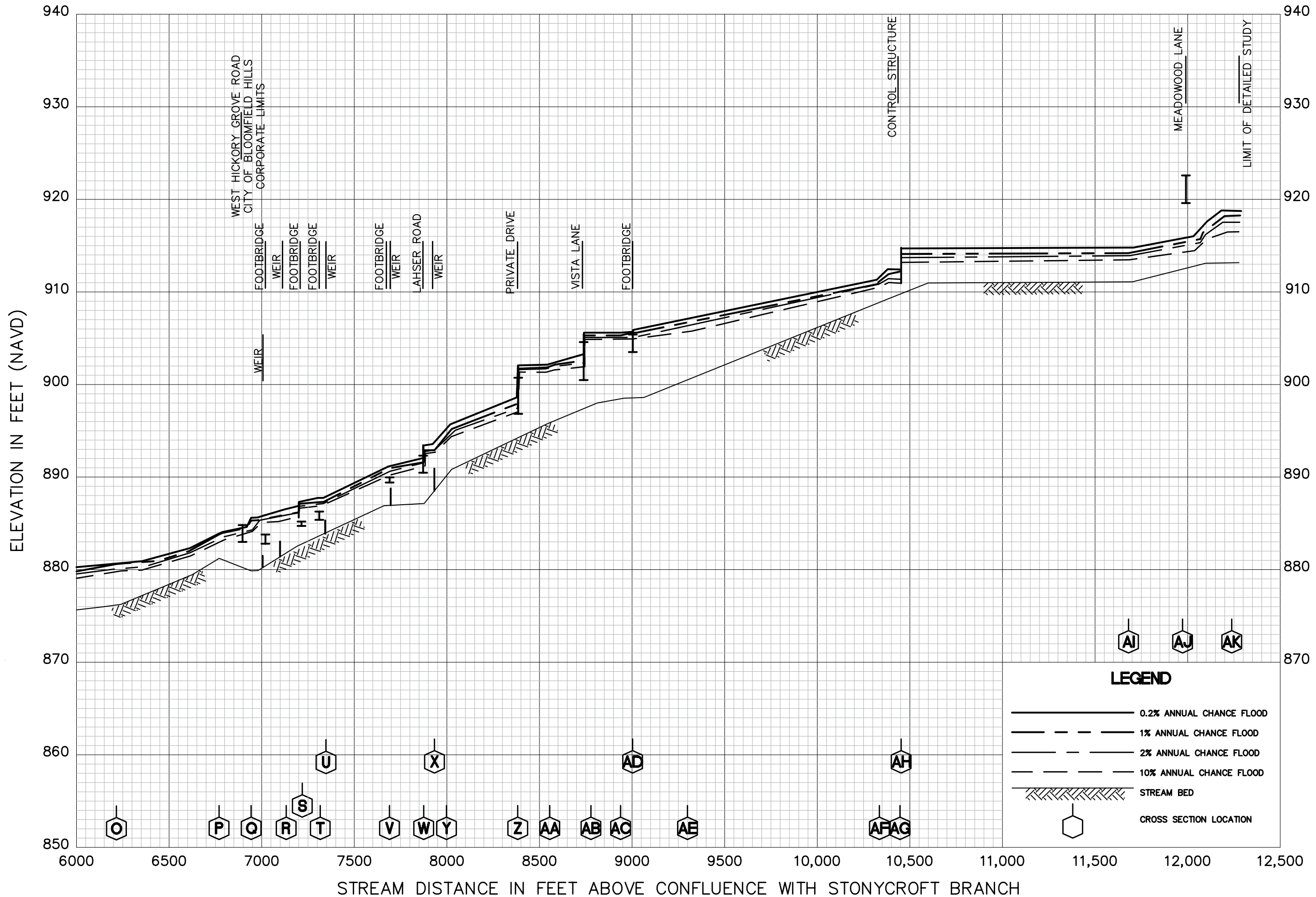
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MUNRO CREEK**

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
(ALL JURISDICTIONS)



FLOOD PROFILES
MURPHY DRAIN

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OAKLAND COUNTY, MI
(ALL JURISDICTIONS)

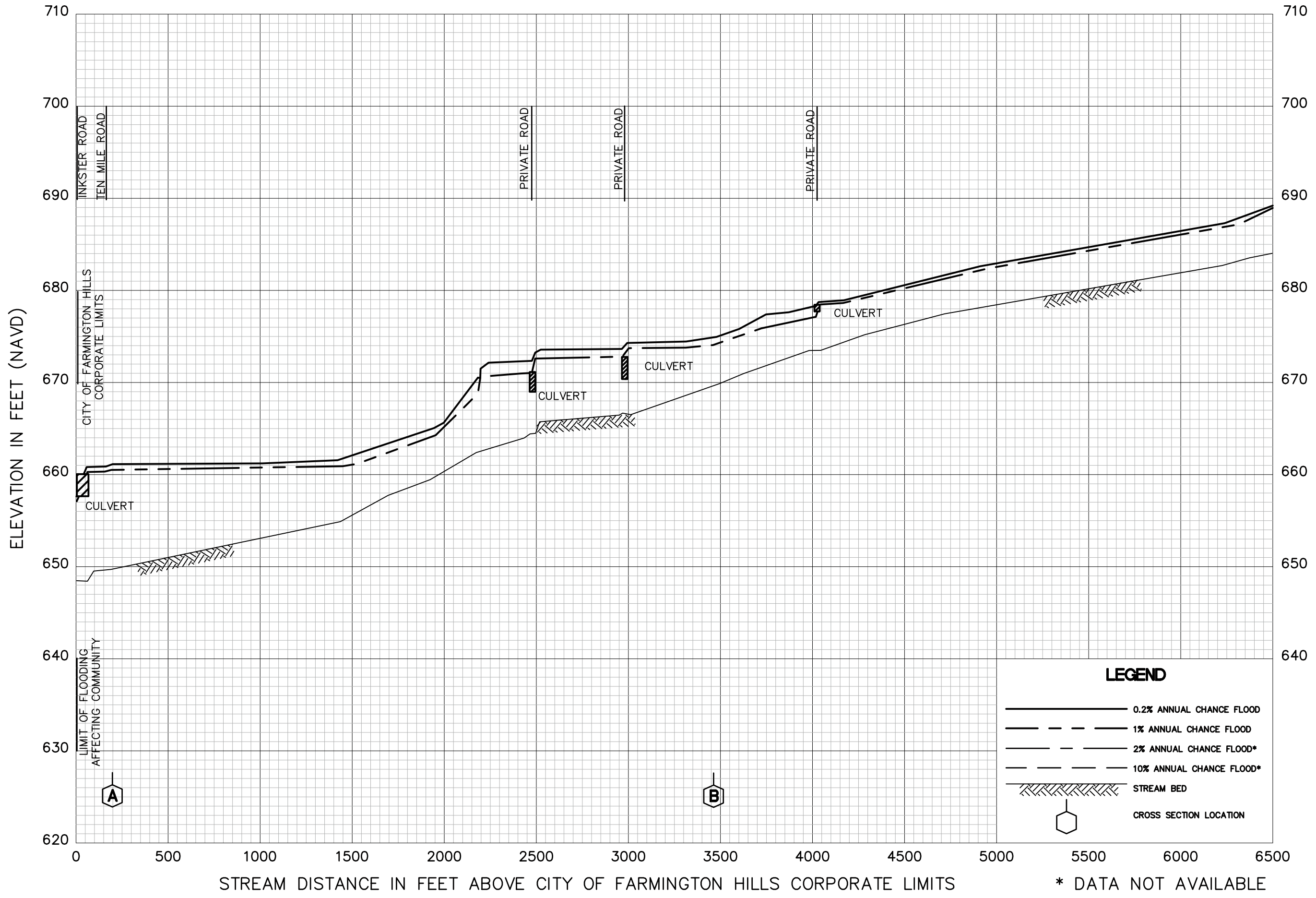


FLOOD PROFILES
MURPHY DRAIN

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
(ALL JURISDICTIONS)

LEGEND

- 0.2% ANNUAL CHANCE FLOOD
- - - 1% ANNUAL CHANCE FLOOD
- · - 2% ANNUAL CHANCE FLOOD
- - - 10% ANNUAL CHANCE FLOOD
- ▨ STREAM BED
- CROSS SECTION LOCATION



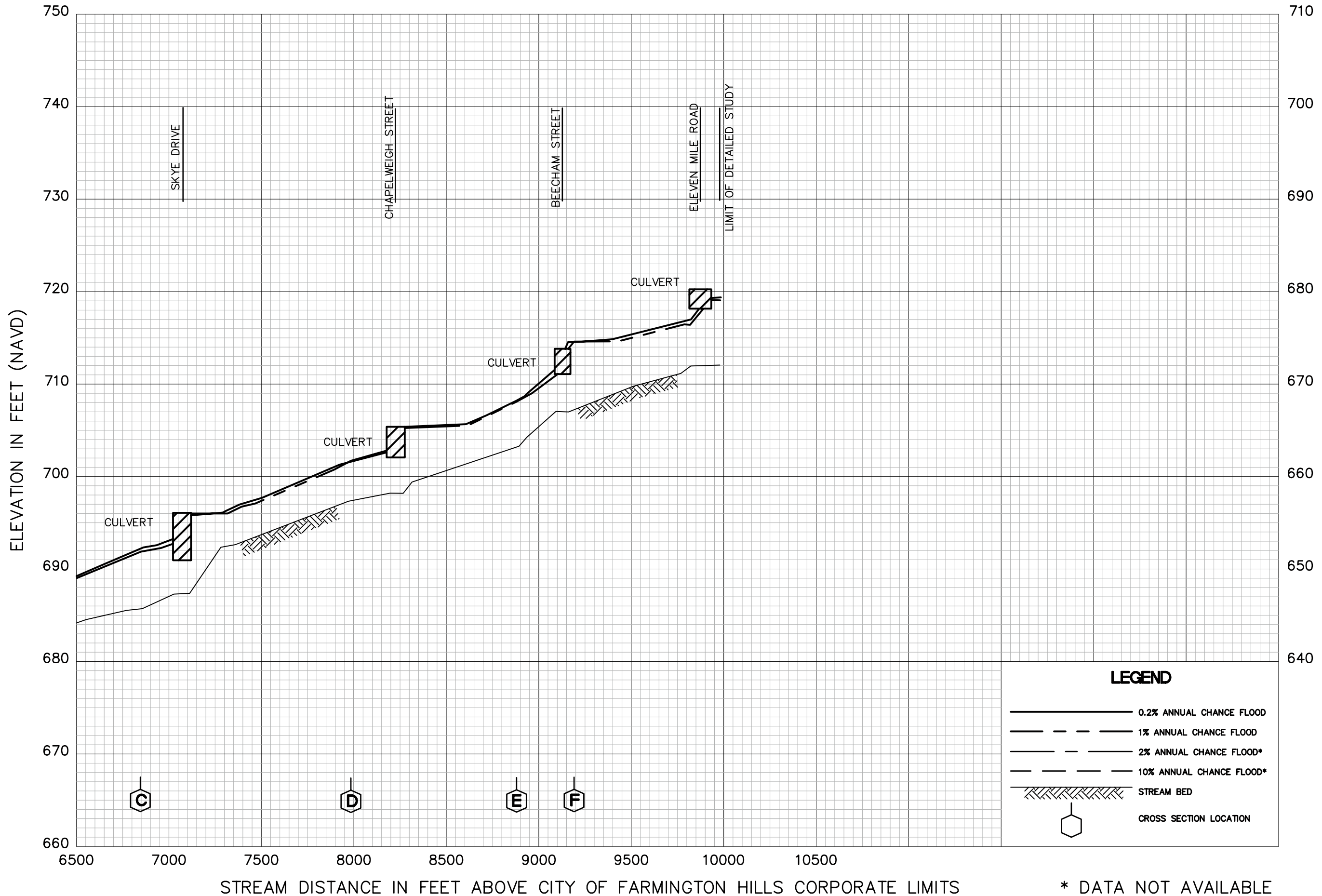
FLOOD PROFILES
NORTH BRANCH OF MAIN RAVINES DRAIN

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
(ALL JURISDICTIONS)

LEGEND

- 0.2% ANNUAL CHANCE FLOOD
- - - 1% ANNUAL CHANCE FLOOD
- · - 2% ANNUAL CHANCE FLOOD*
- - - - 10% ANNUAL CHANCE FLOOD*
- ▨ STREAM BED
- CROSS SECTION LOCATION

* DATA NOT AVAILABLE



LEGEND

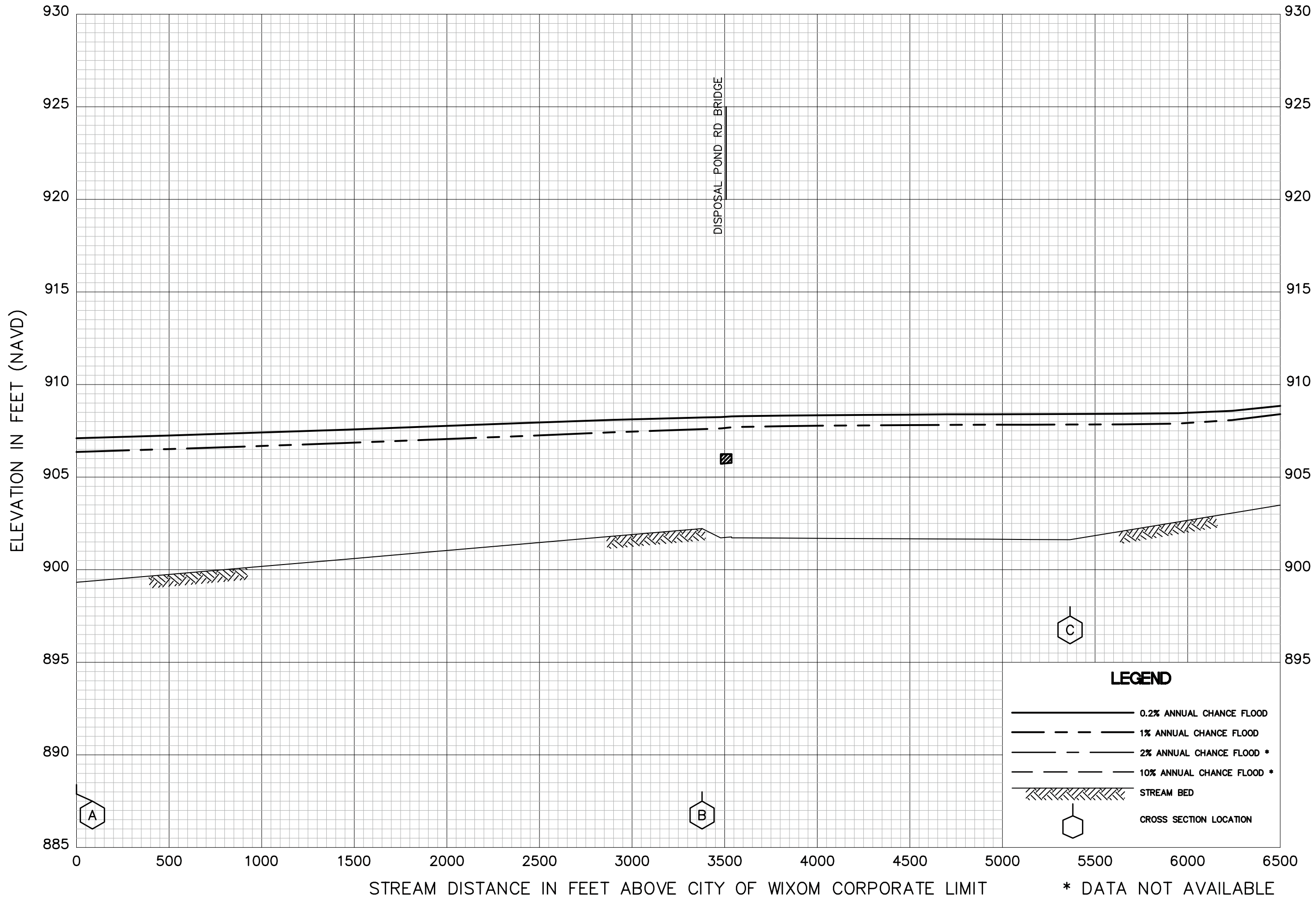
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- · - 2% ANNUAL CHANCE FLOOD*
- - - 10% ANNUAL CHANCE FLOOD*
- ▨ STREAM BED
- ⬡ CROSS SECTION LOCATION

* DATA NOT AVAILABLE

STREAM DISTANCE IN FEET ABOVE CITY OF FARMINGTON HILLS CORPORATE LIMITS

FLOOD PROFILES
NORTH BRANCH OF MAIN RAVINES DRAIN

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
(ALL JURISDICTIONS)



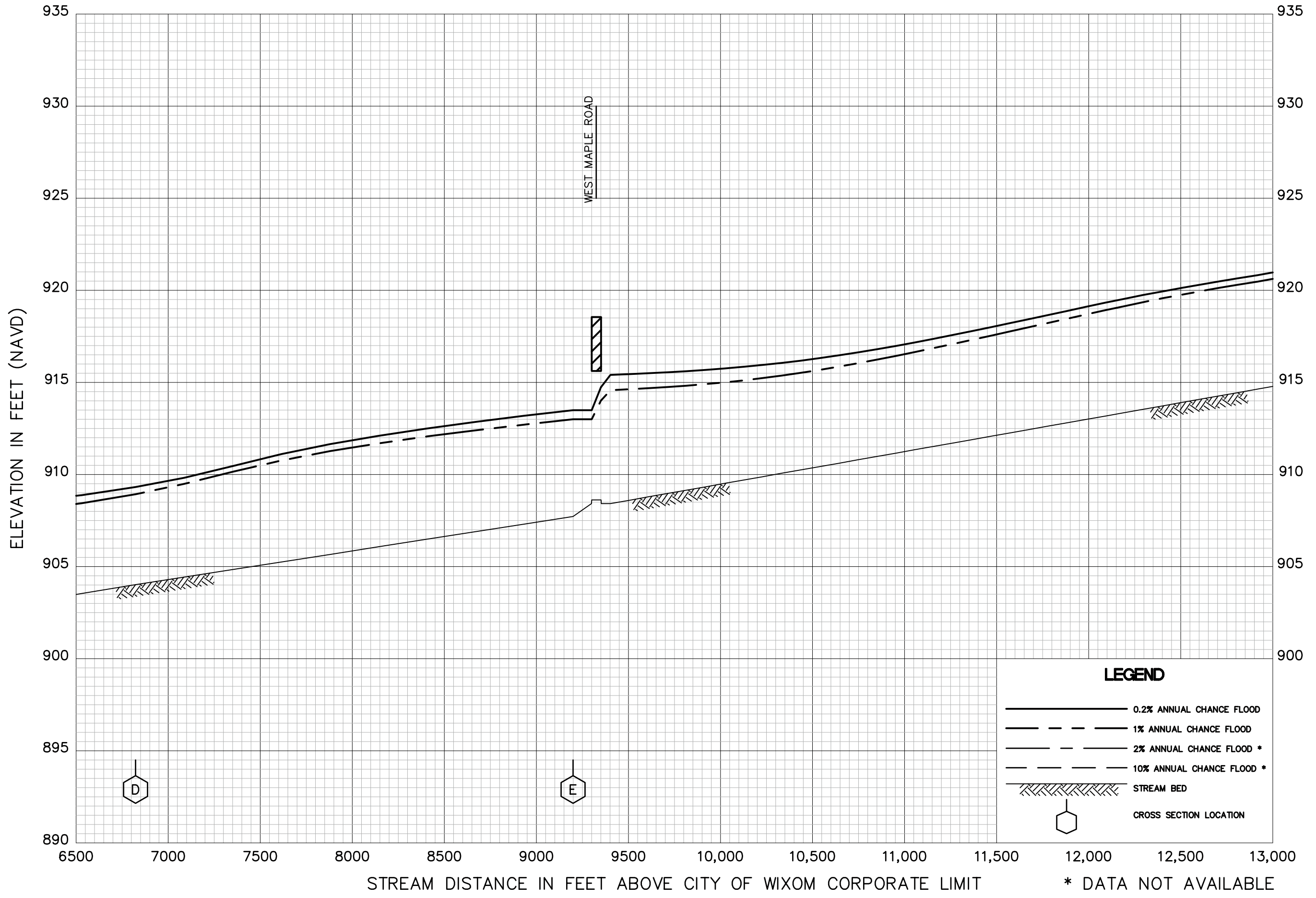
LEGEND

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- - - 10% ANNUAL CHANCE FLOOD *
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- ⬡ CROSS SECTION LOCATION

* DATA NOT AVAILABLE

**FLOOD PROFILES
NORTON CREEK**

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
(ALL JURISDICTIONS)



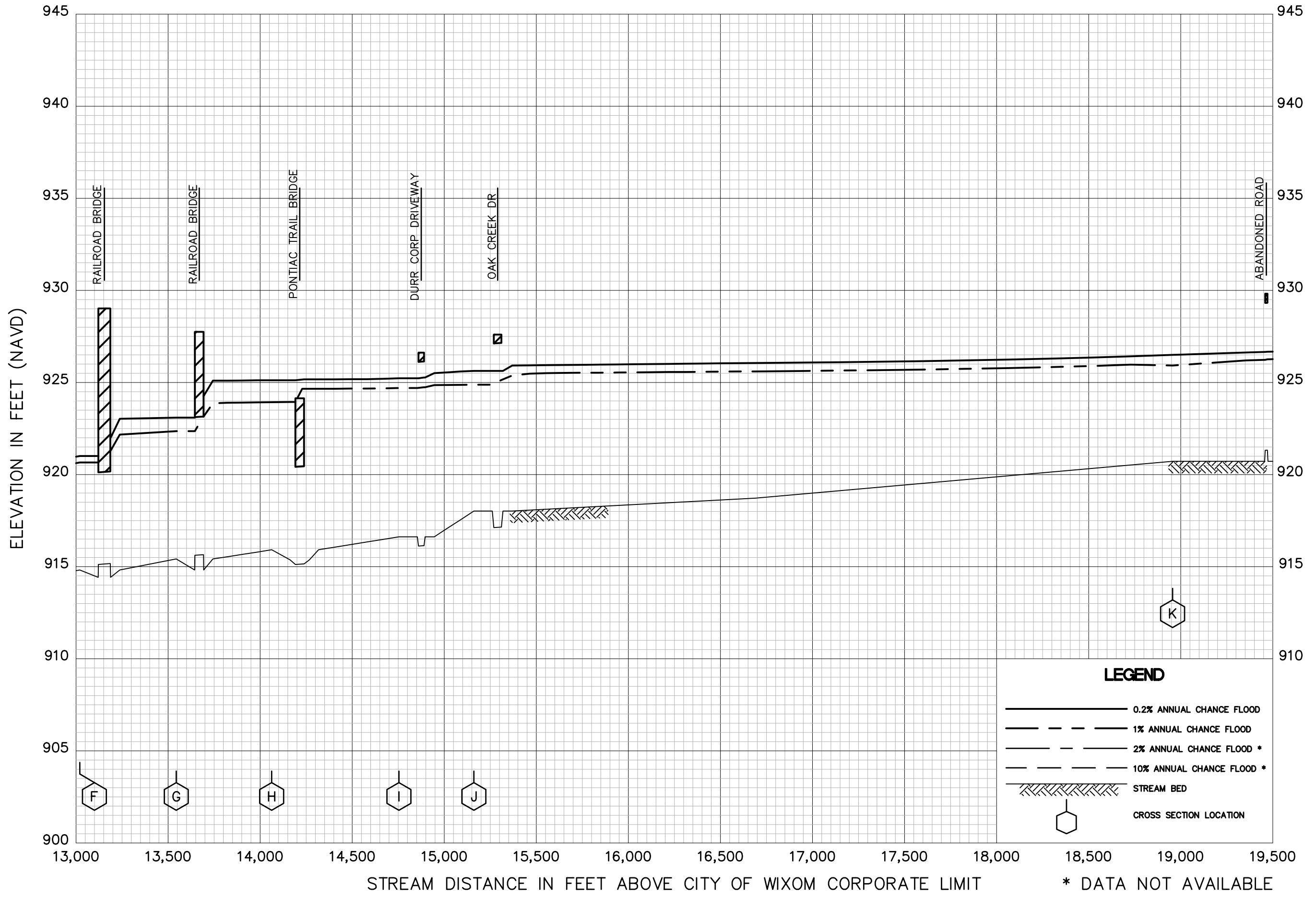
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* DATA NOT AVAILABLE

**FLOOD PROFILES
NORTON CREEK**

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
(ALL JURISDICTIONS)



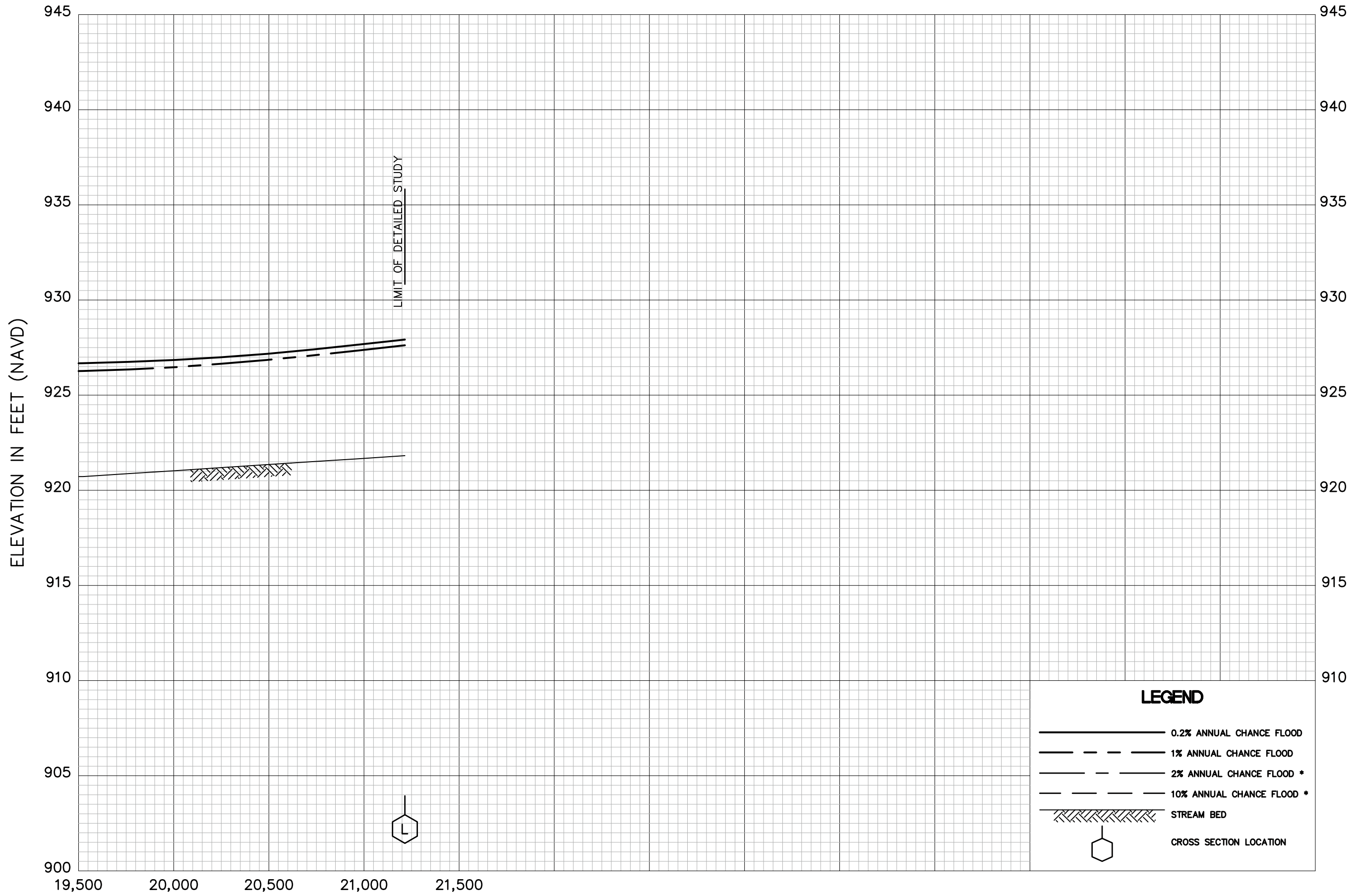
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- ⬡ CROSS SECTION LOCATION

* DATA NOT AVAILABLE

FLOOD PROFILES
NORTON CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
(ALL JURISDICTIONS)



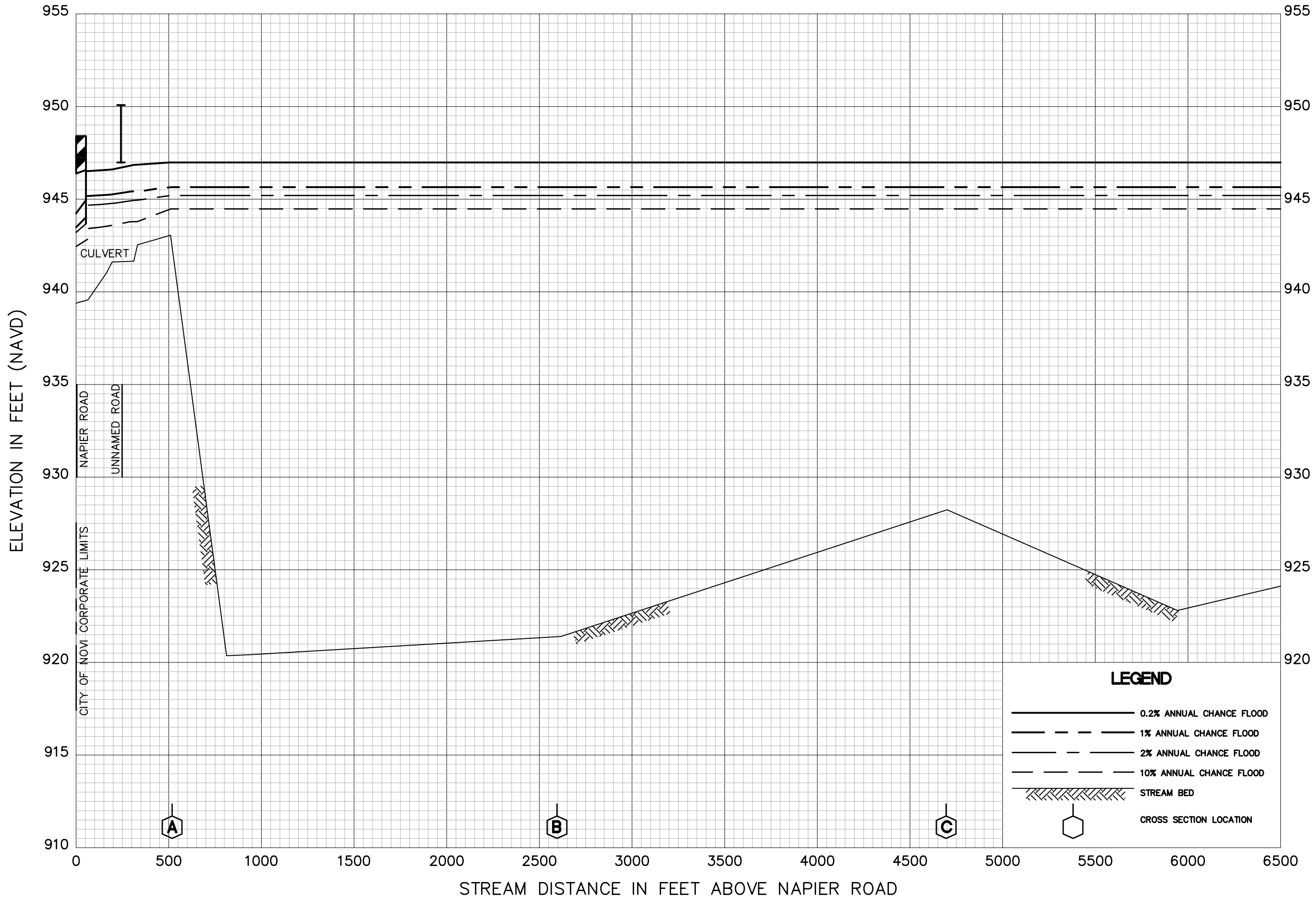
LEGEND

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* DATA NOT AVAILABLE

FLOOD PROFILES
NORTON CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
(ALL JURISDICTIONS)



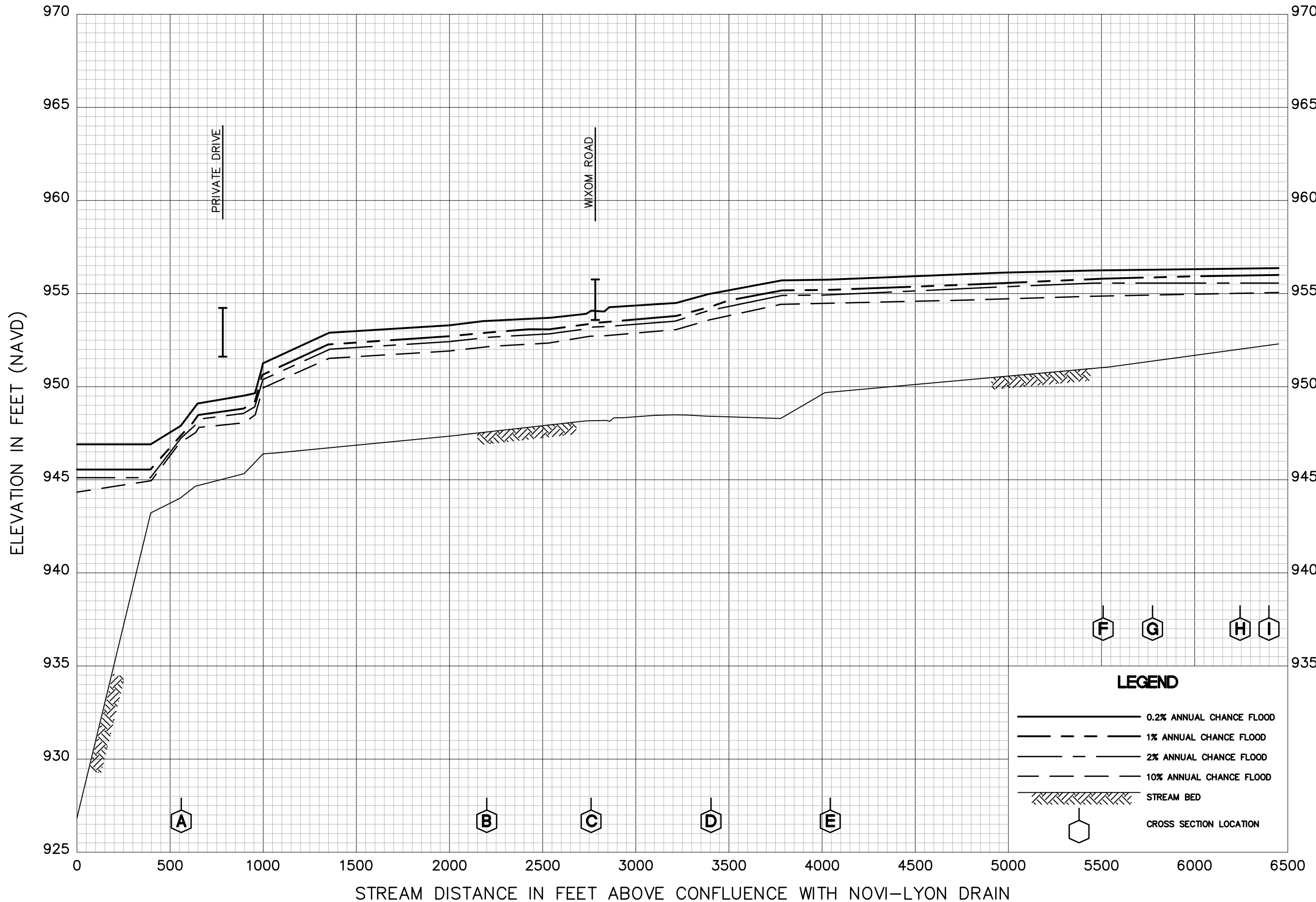
**FLOOD PROFILES
NOVI-LYON DRAIN**

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
(ALL JURISDICTIONS)



FLOOD PROFILES
NOVI-LYON DRAIN

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
(ALL JURISDICTIONS)



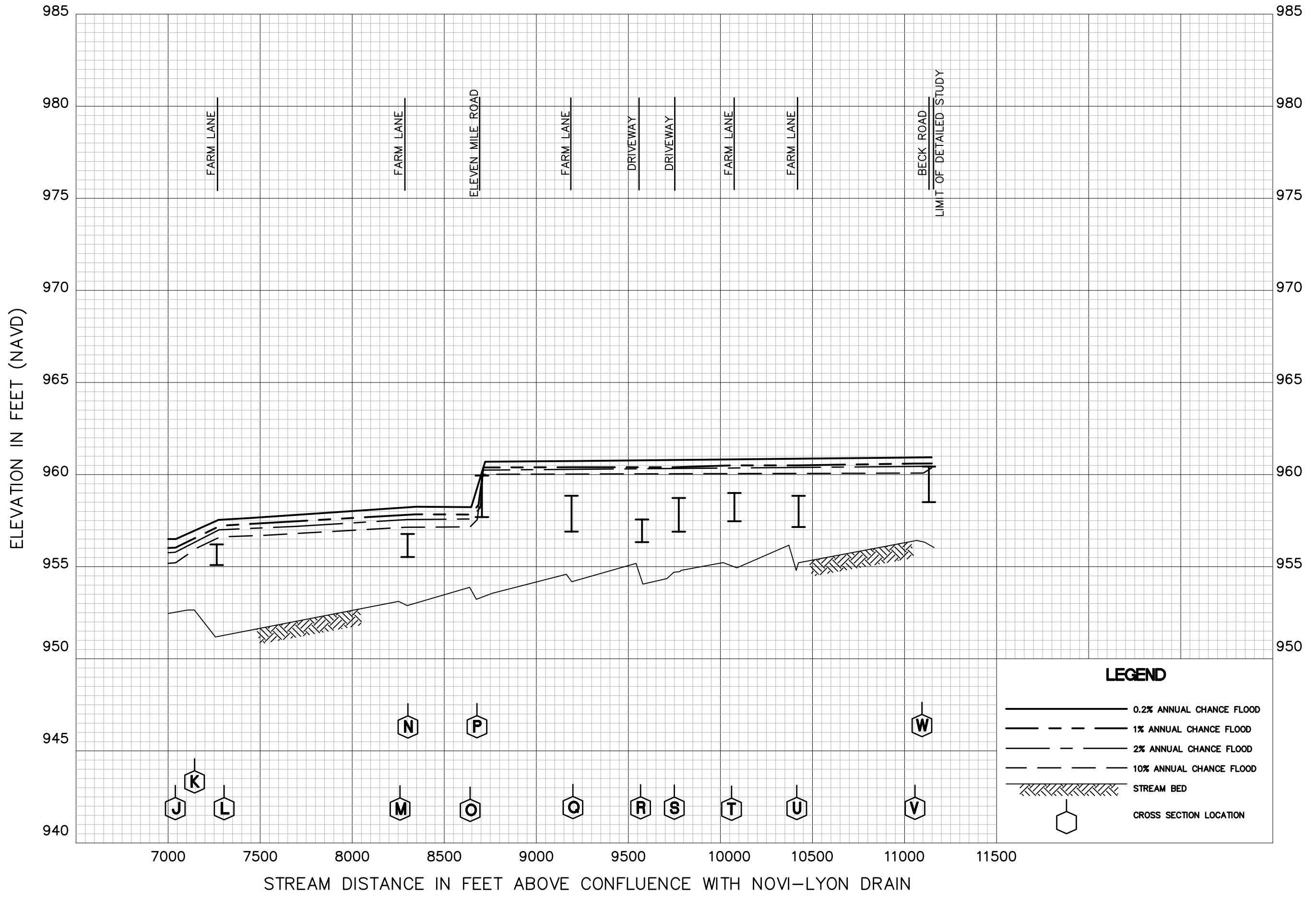
FLOOD PROFILES

NOVI-LYON DRAIN TRIBUTARY C

FEDERAL EMERGENCY MANAGEMENT AGENCY

OAKLAND COUNTY, MI

(ALL JURISDICTIONS)

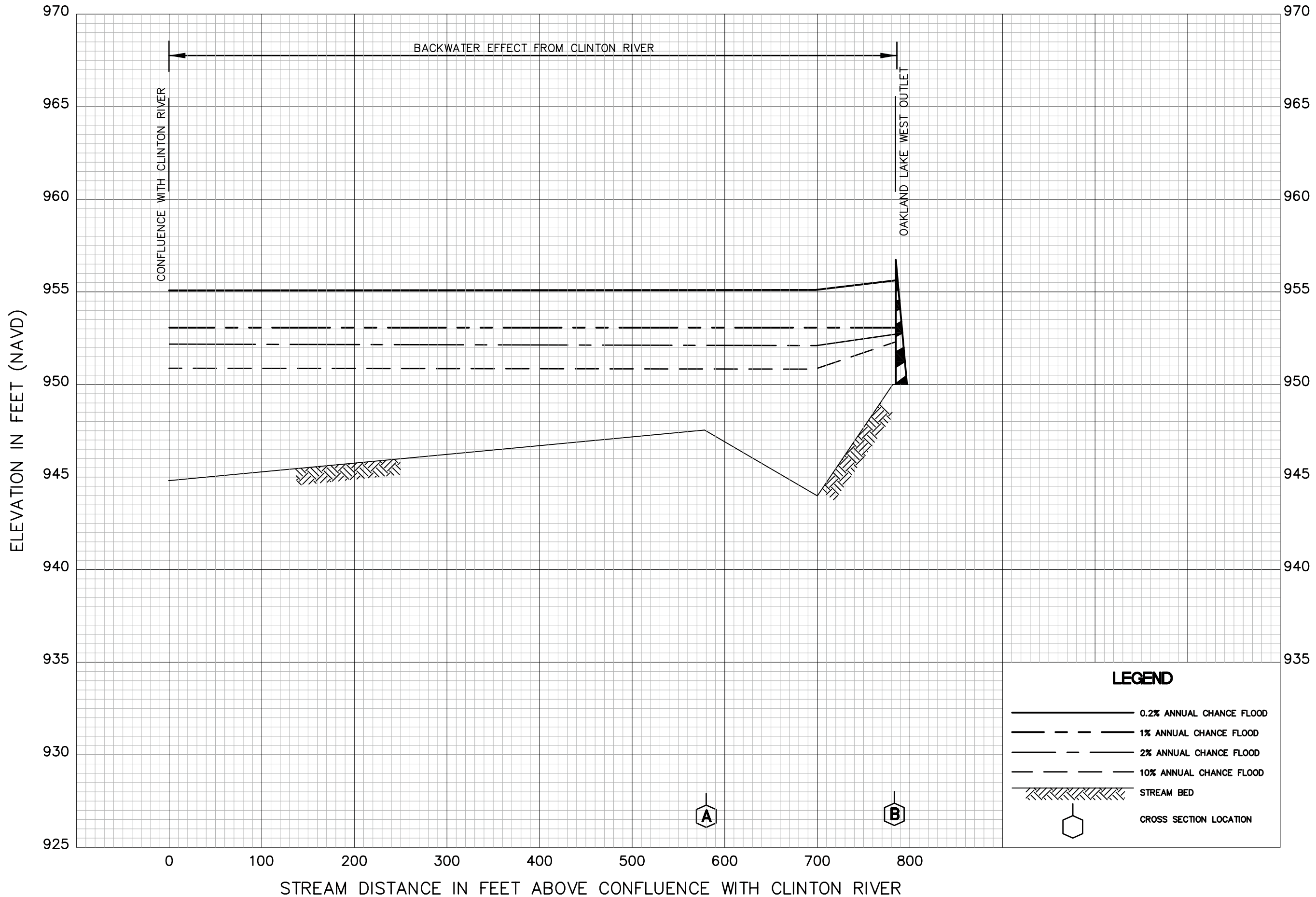


LEGEND

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- - - 10% ANNUAL CHANCE FLOOD
- ▨ STREAM BED
- CROSS SECTION LOCATION

FLOOD PROFILES
NOVI-LYON DRAIN TRIBUTARY C

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
 (ALL JURISDICTIONS)



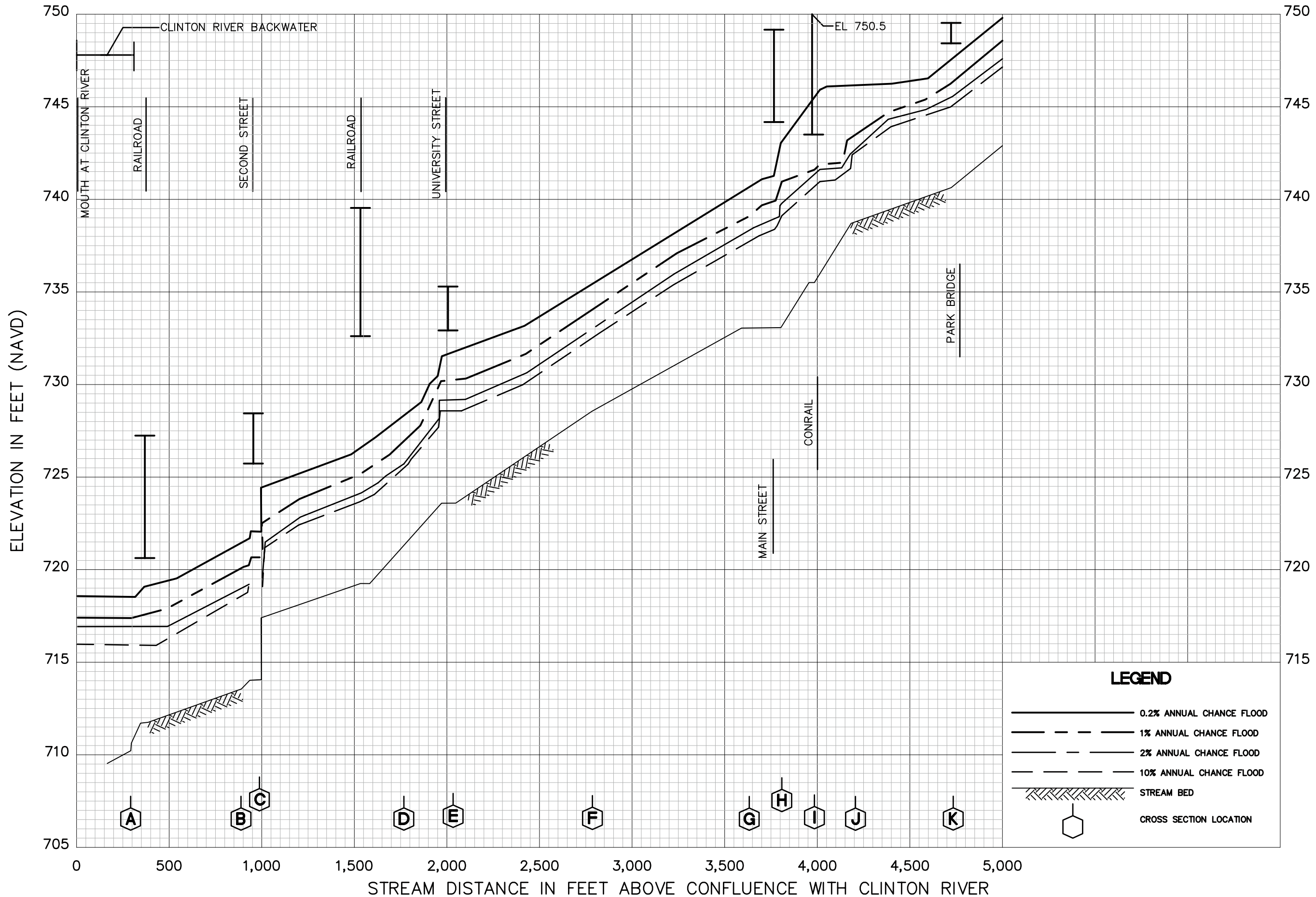
FLOOD PROFILES

OAKLAND LAKE-WEST OUTLET

FEDERAL EMERGENCY MANAGEMENT AGENCY

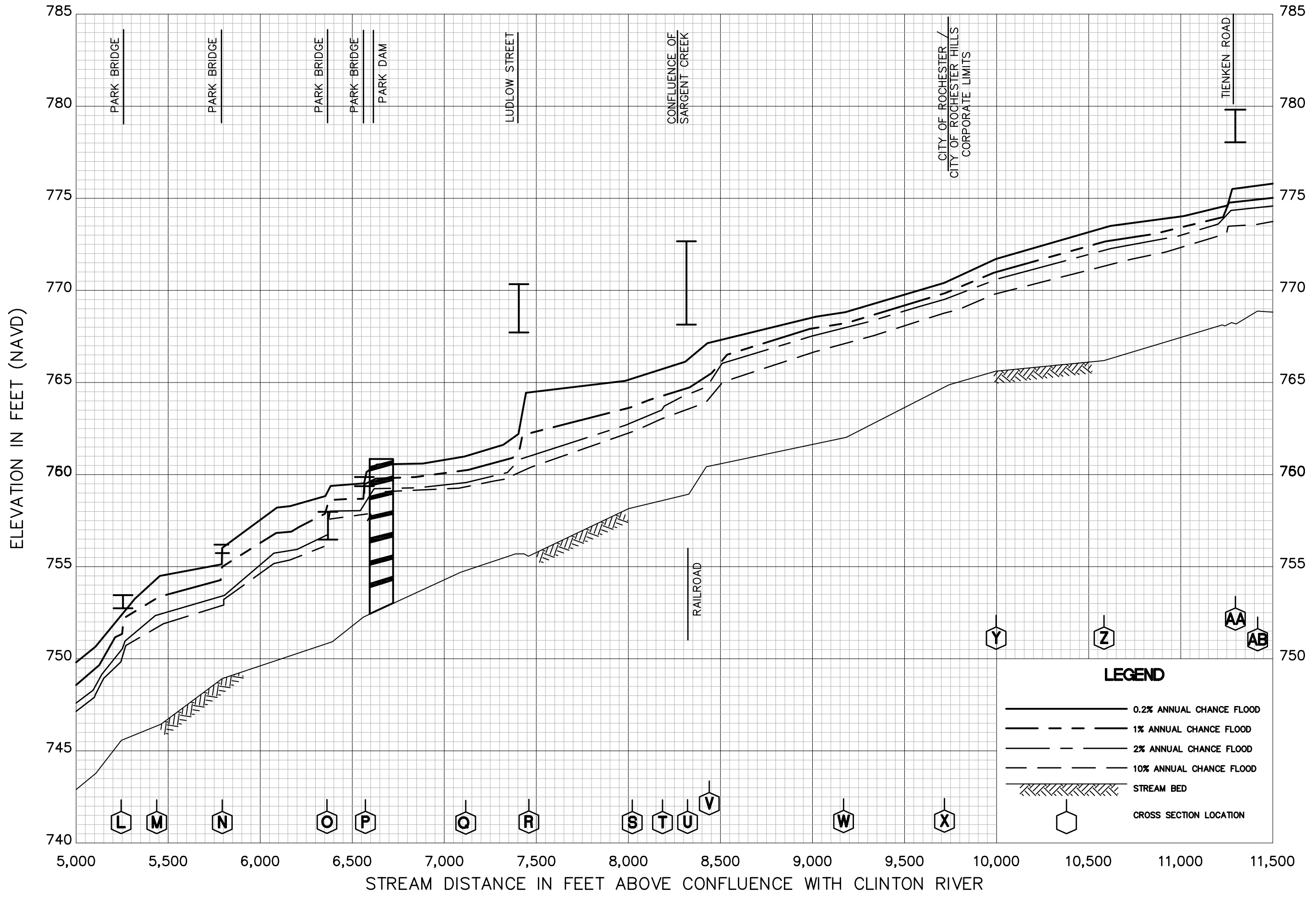
OAKLAND COUNTY, MI

(ALL JURISDICTIONS)



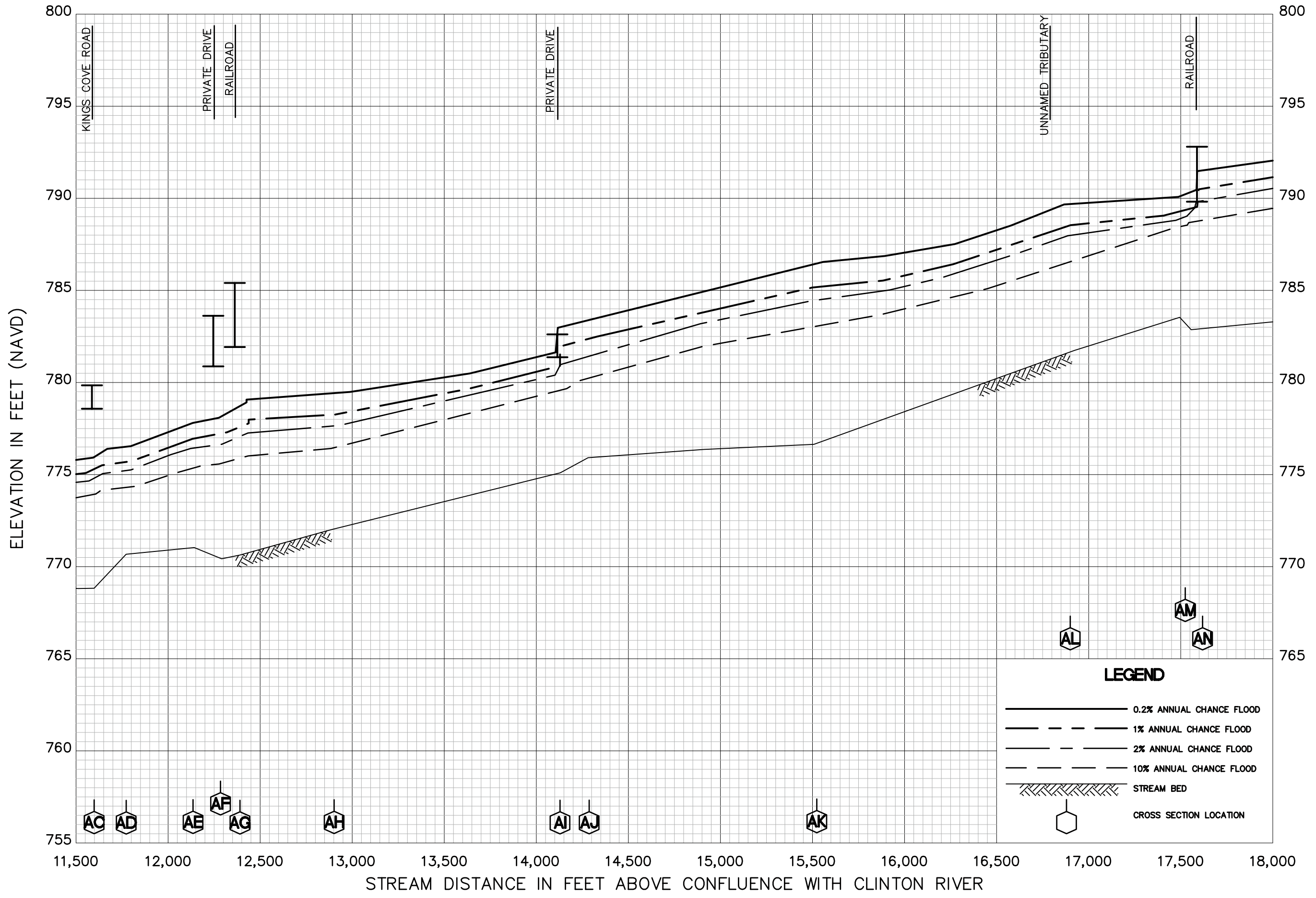
**FLOOD PROFILES
PAINT CREEK**

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
 (ALL JURISDICTIONS)



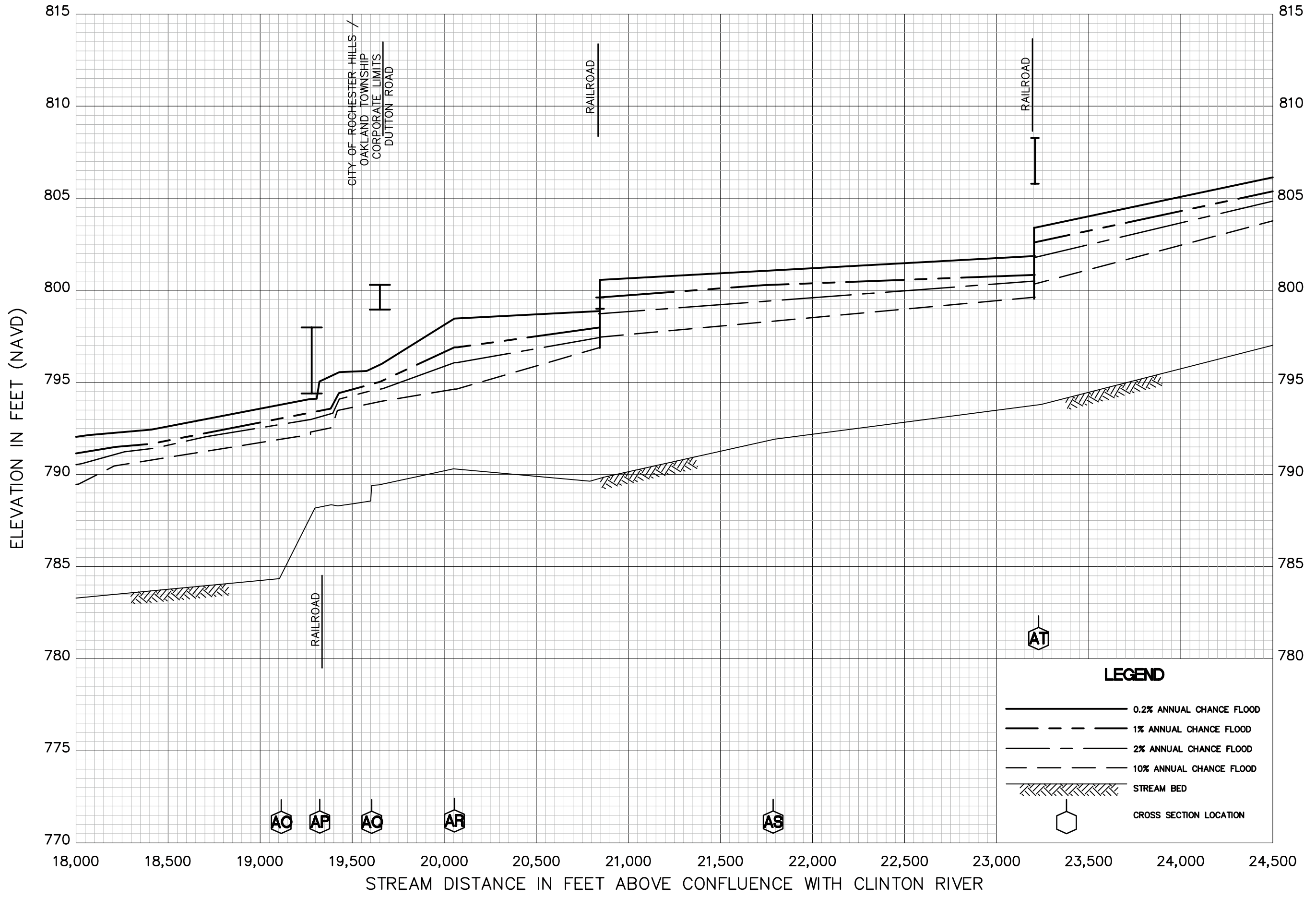
FLOOD PROFILES
PAINT CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
(ALL JURISDICTIONS)



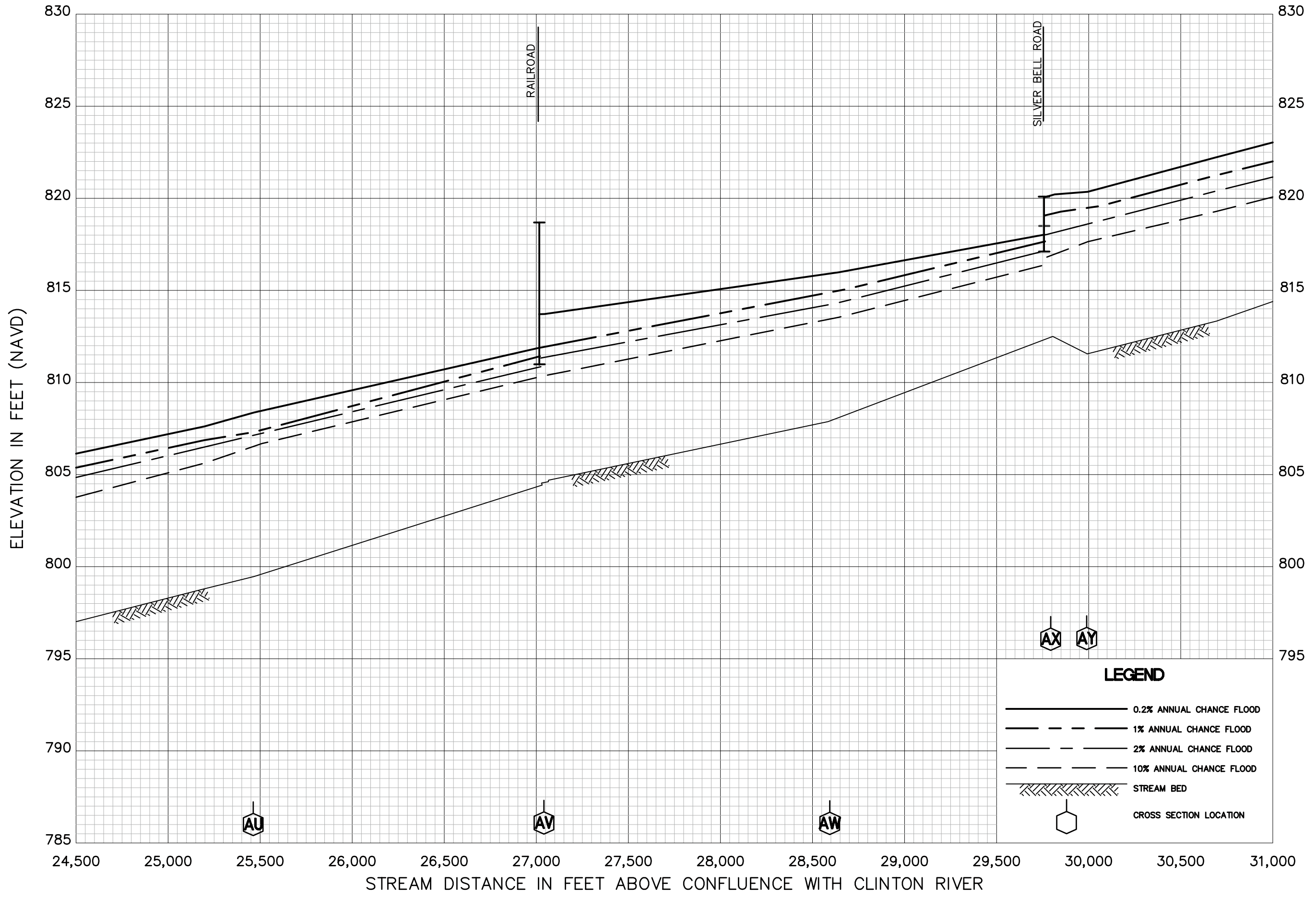
FLOOD PROFILES
PAINT CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
(ALL JURISDICTIONS)



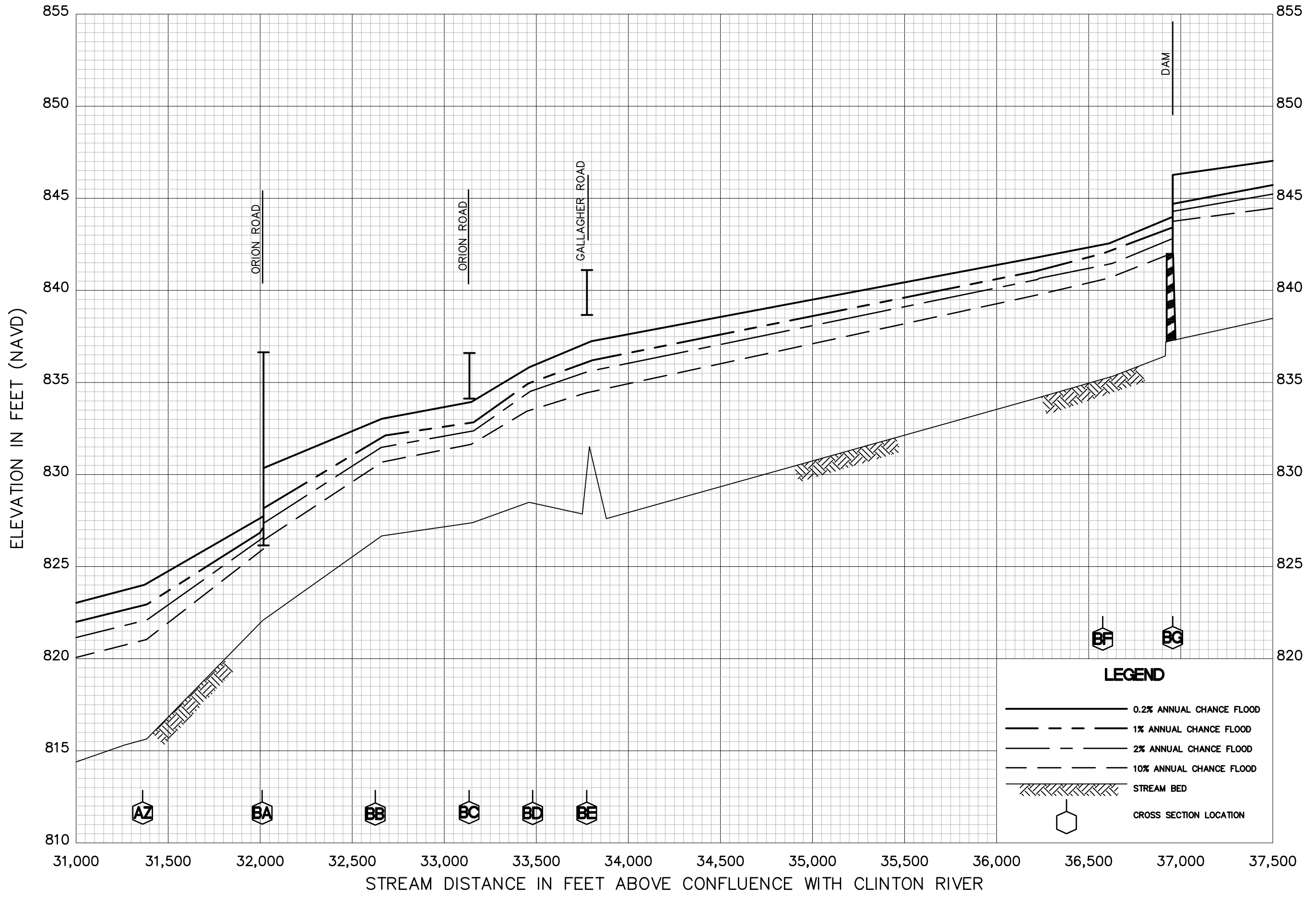
**FLOOD PROFILES
PAINT CREEK**

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
(ALL JURISDICTIONS)



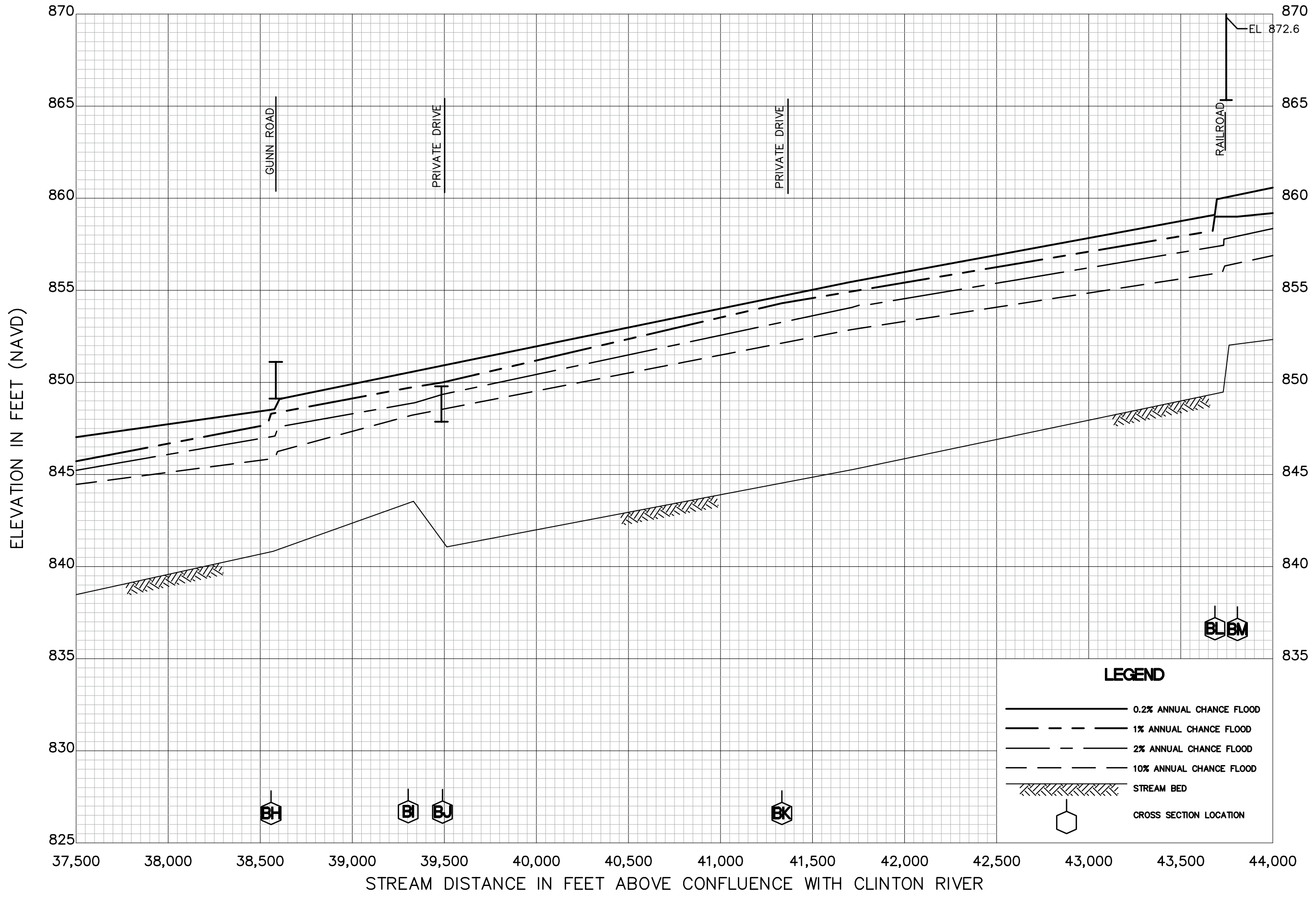
**FLOOD PROFILES
PAINT CREEK**

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
(ALL JURISDICTIONS)



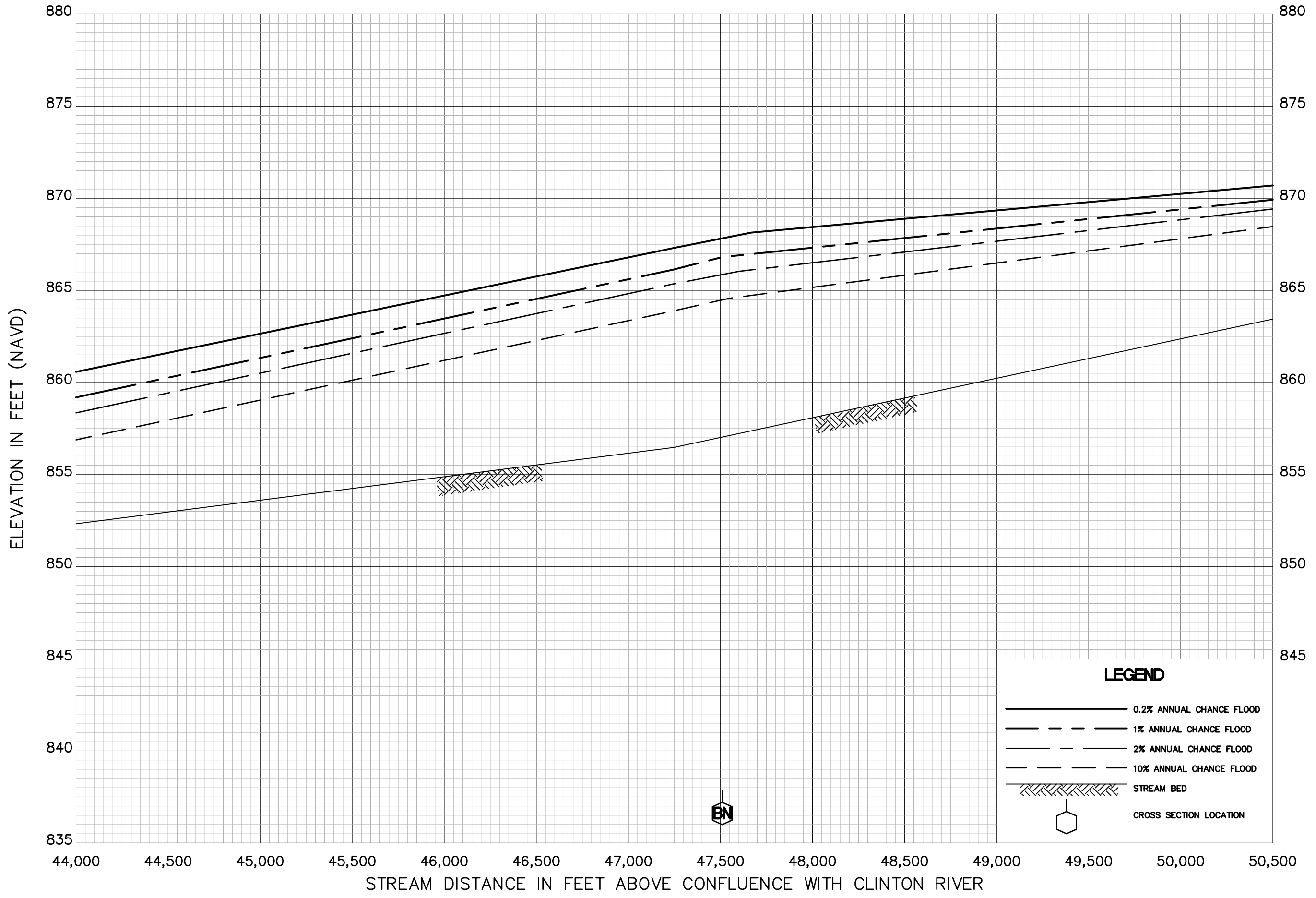
**FLOOD PROFILES
PAINT CREEK**

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
(ALL JURISDICTIONS)



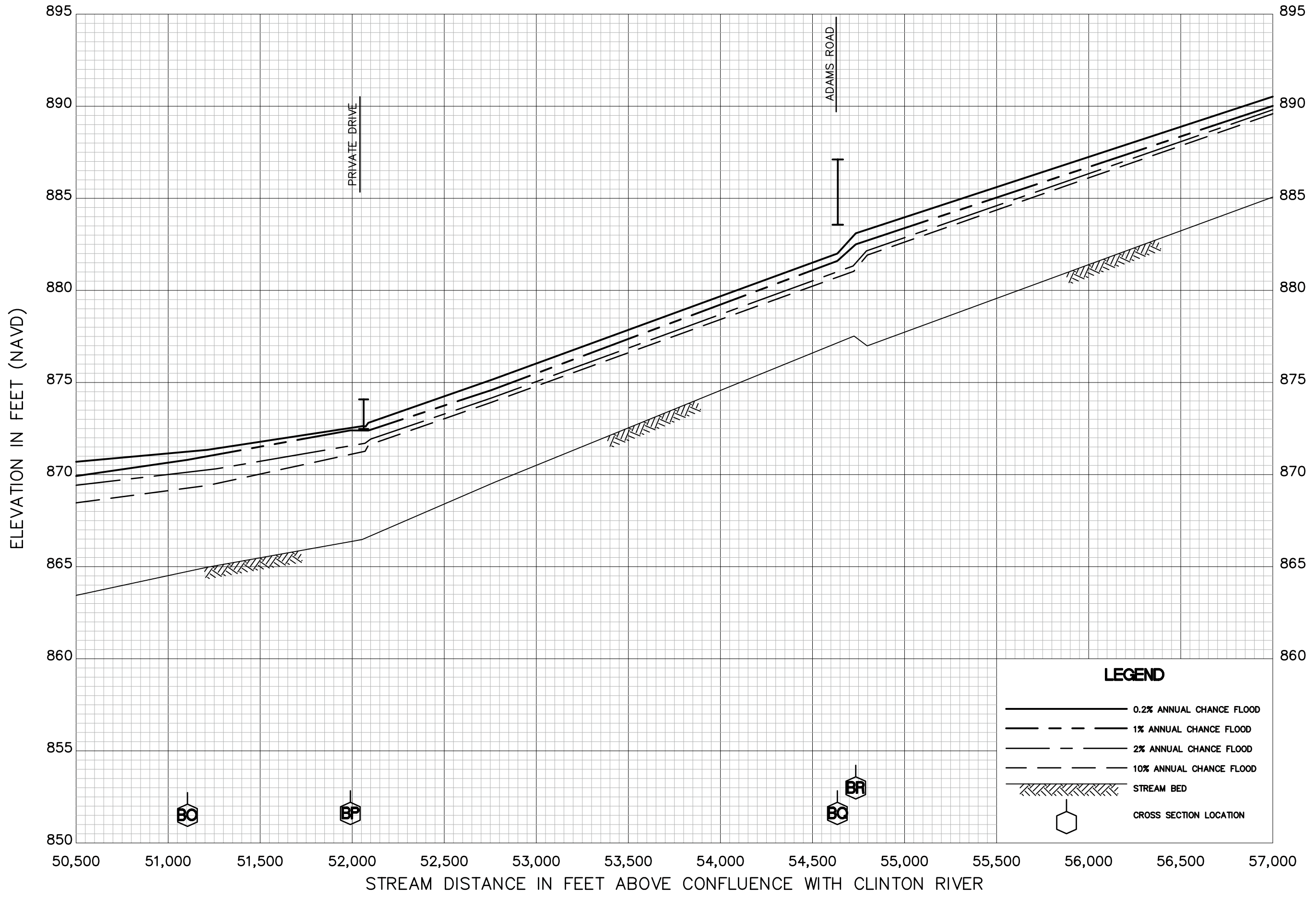
FLOOD PROFILES
PAINT CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
(ALL JURISDICTIONS)



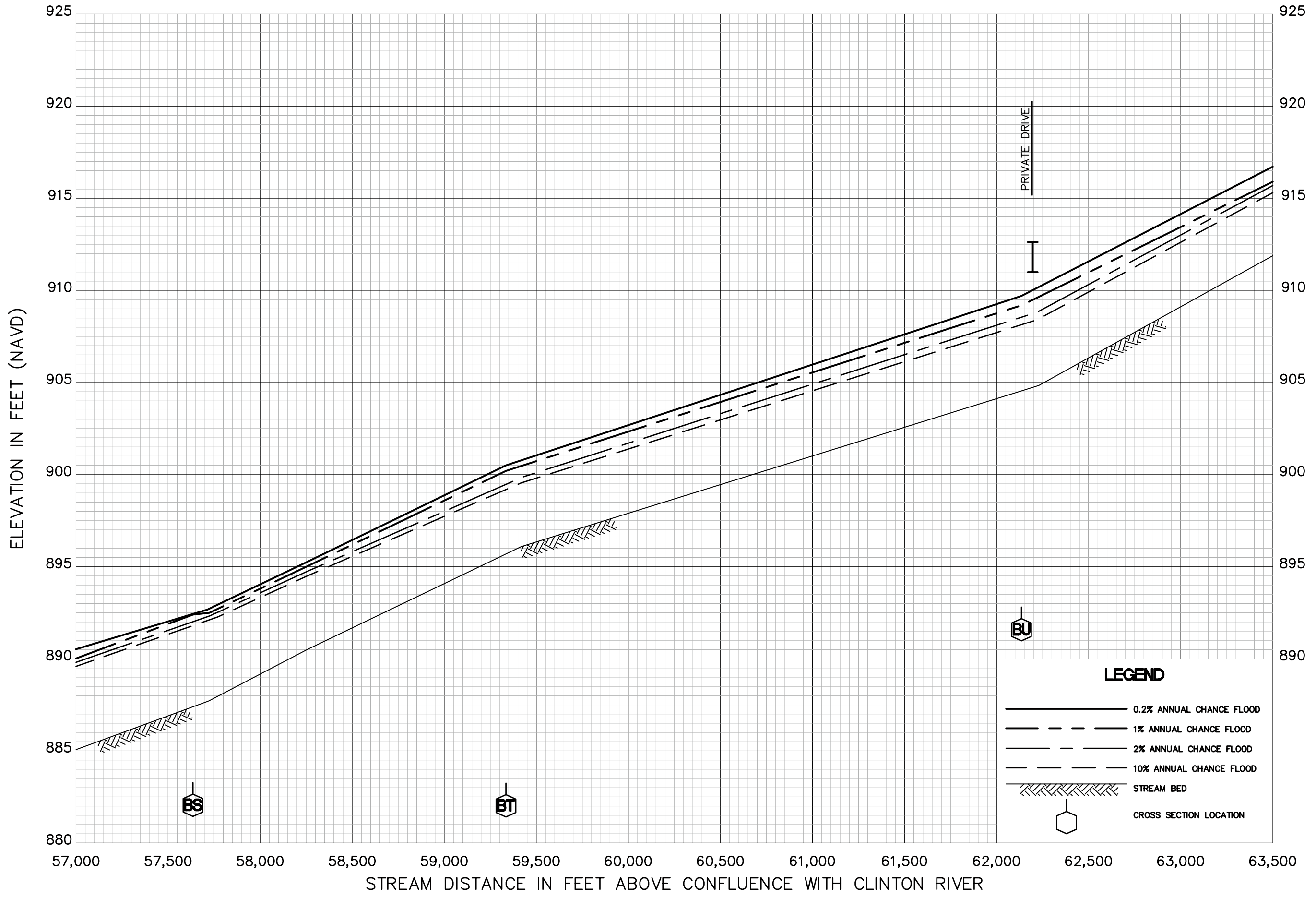
**FLOOD PROFILES
PAINT CREEK**

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
(ALL JURISDICTIONS)



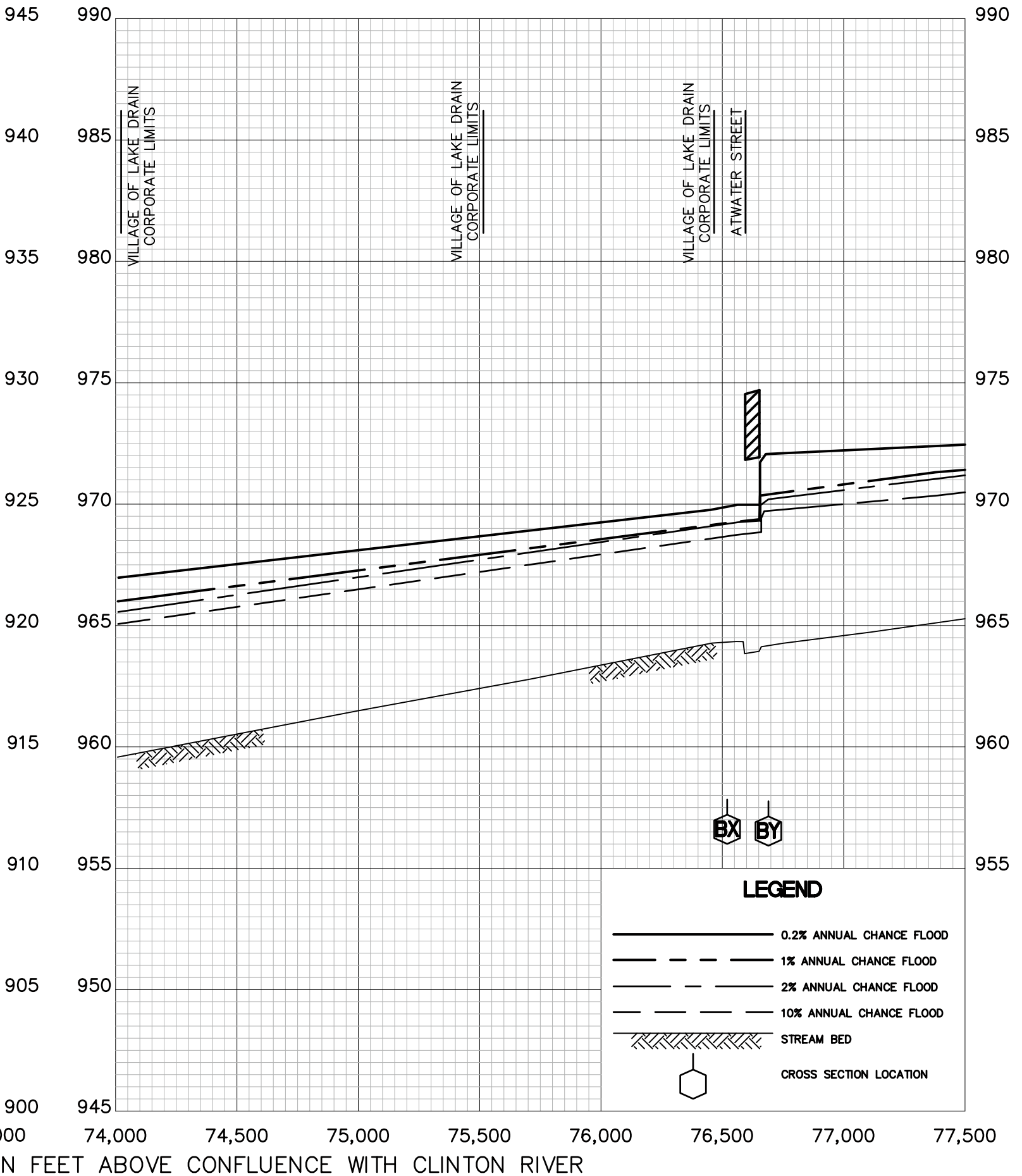
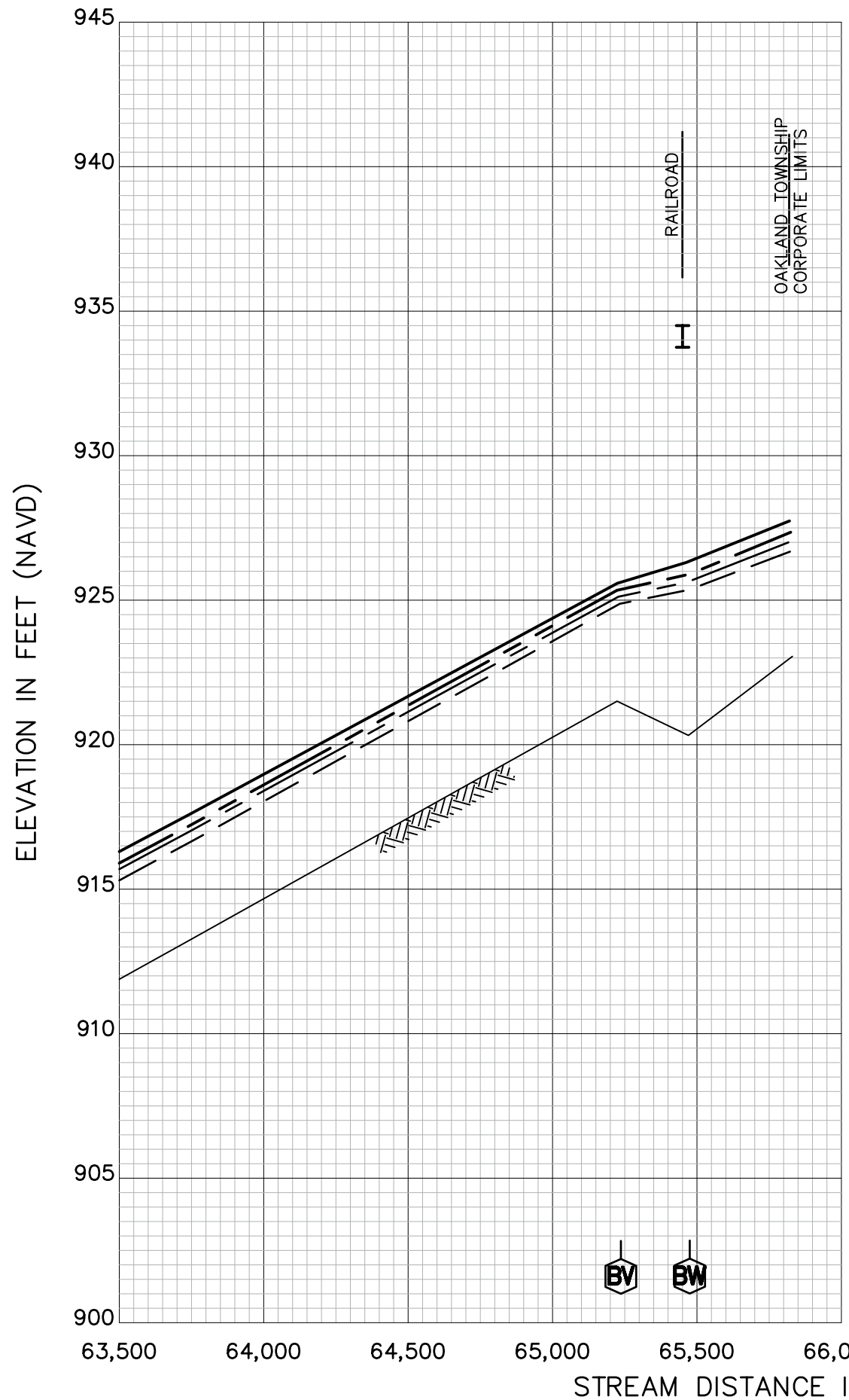
**FLOOD PROFILES
PAINT CREEK**

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
(ALL JURISDICTIONS)



**FLOOD PROFILES
PAINT CREEK**

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
(ALL JURISDICTIONS)

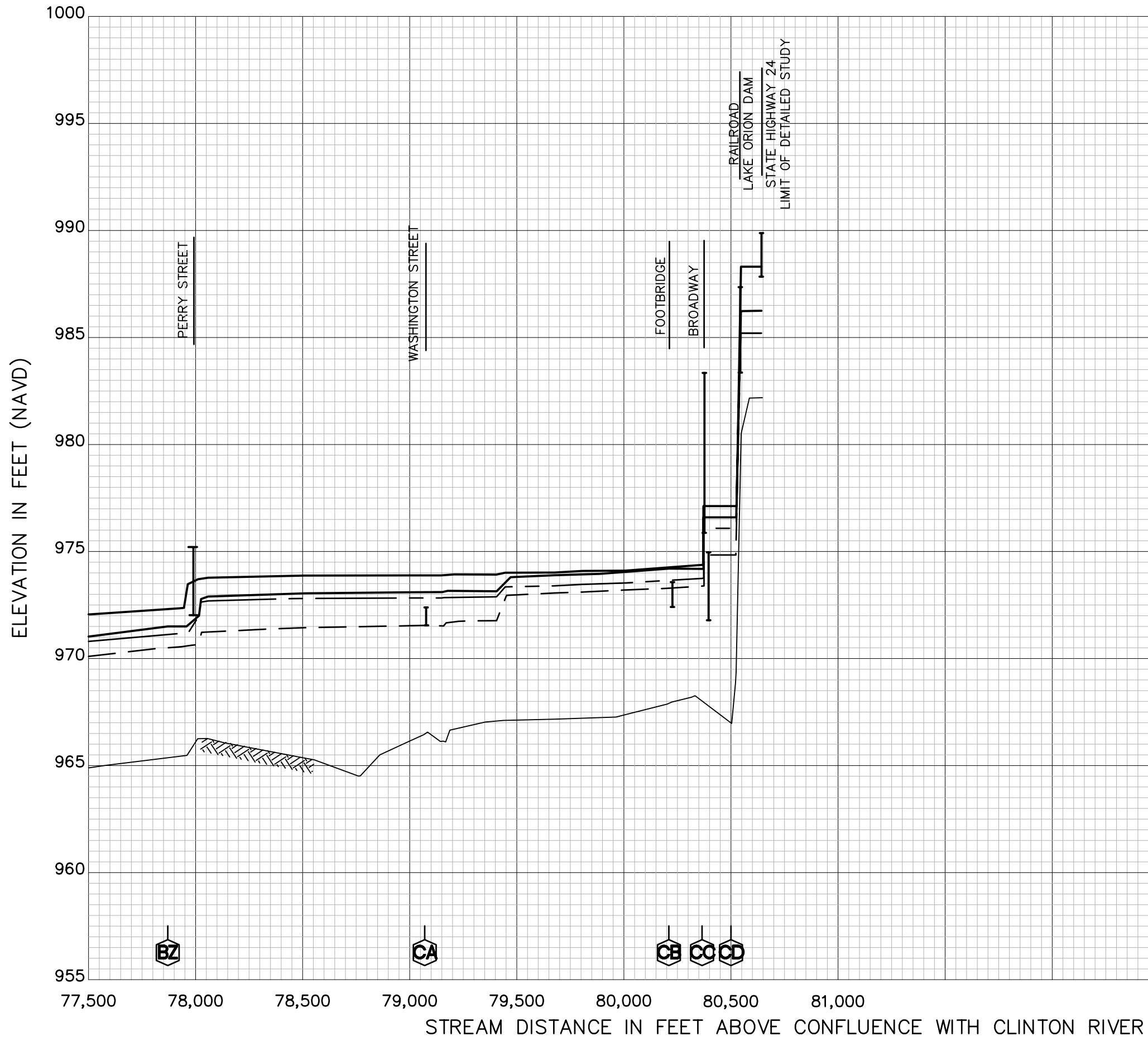


LEGEND

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- CROSS SECTION LOCATION

**FLOOD PROFILES
PAINT CREEK**

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
(ALL JURISDICTIONS)

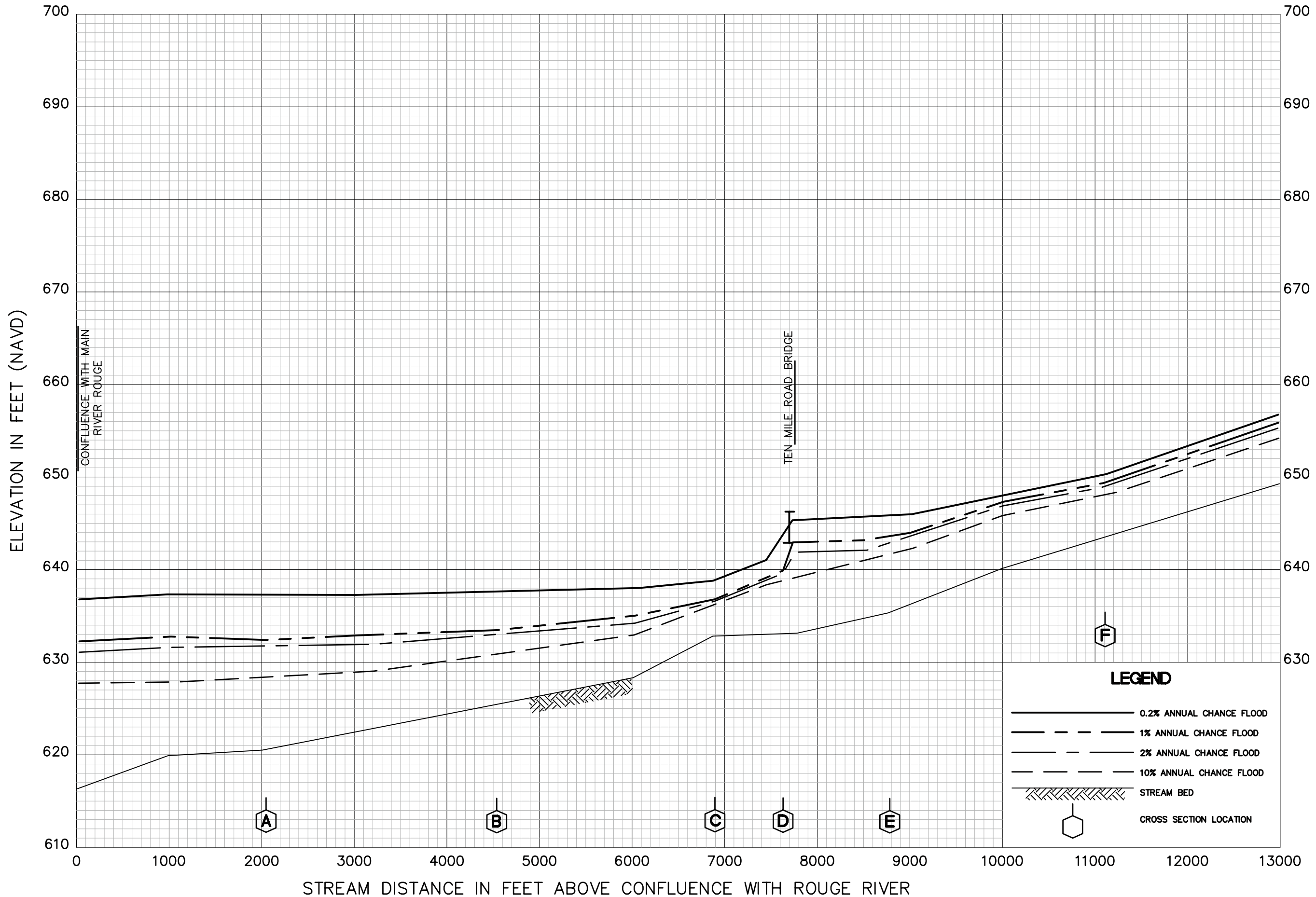


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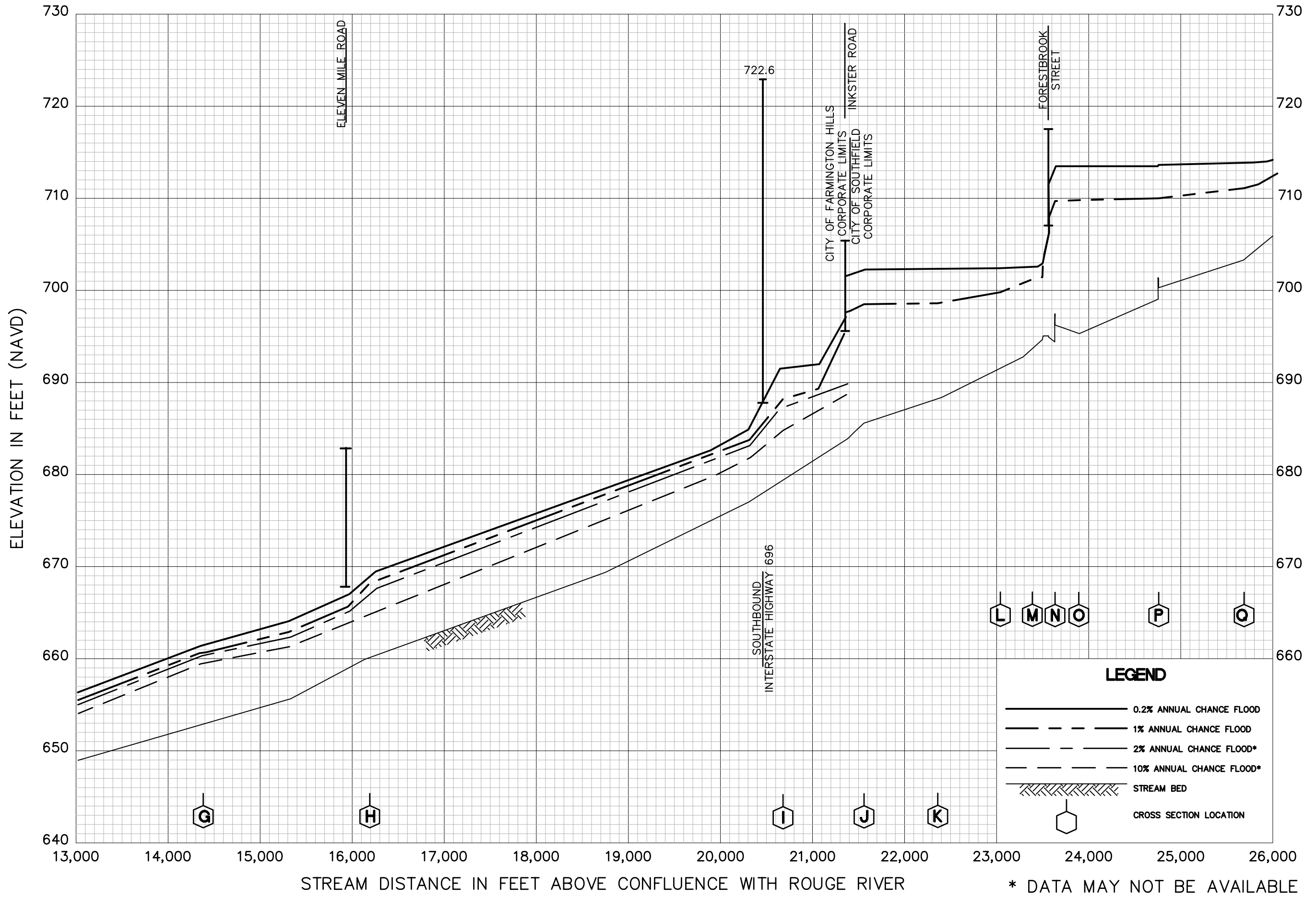
FLOOD PROFILES
PAINT CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
(ALL JURISDICTIONS)



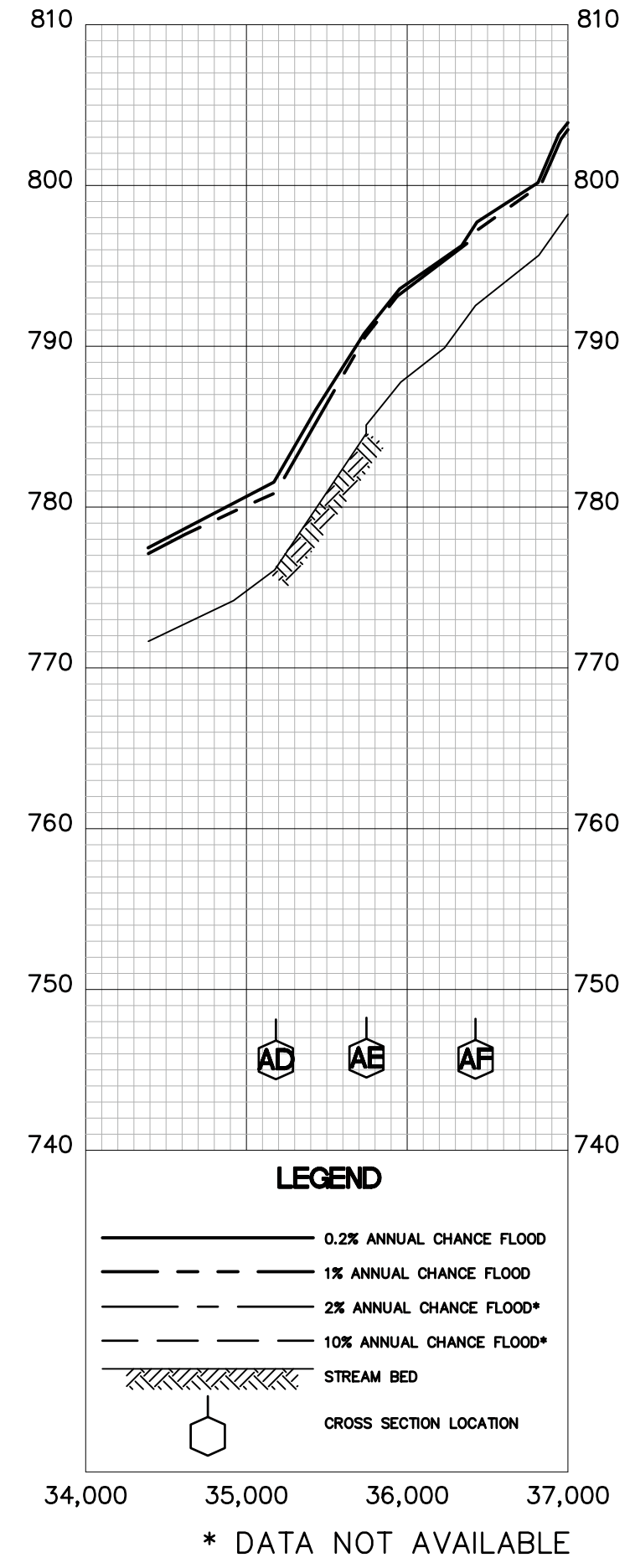
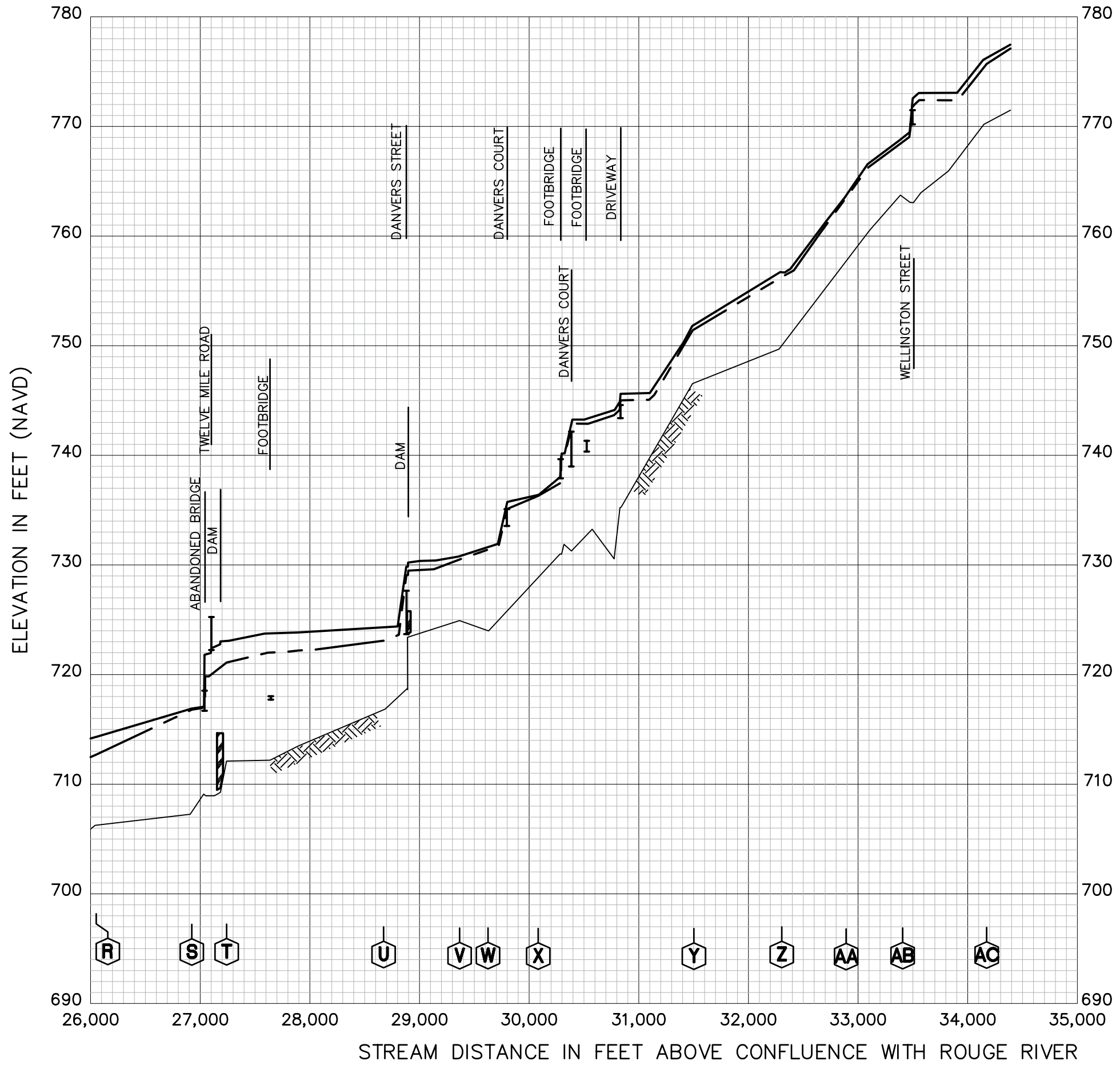
FLOOD PROFILES
PEBBLE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
(ALL JURISDICTIONS)



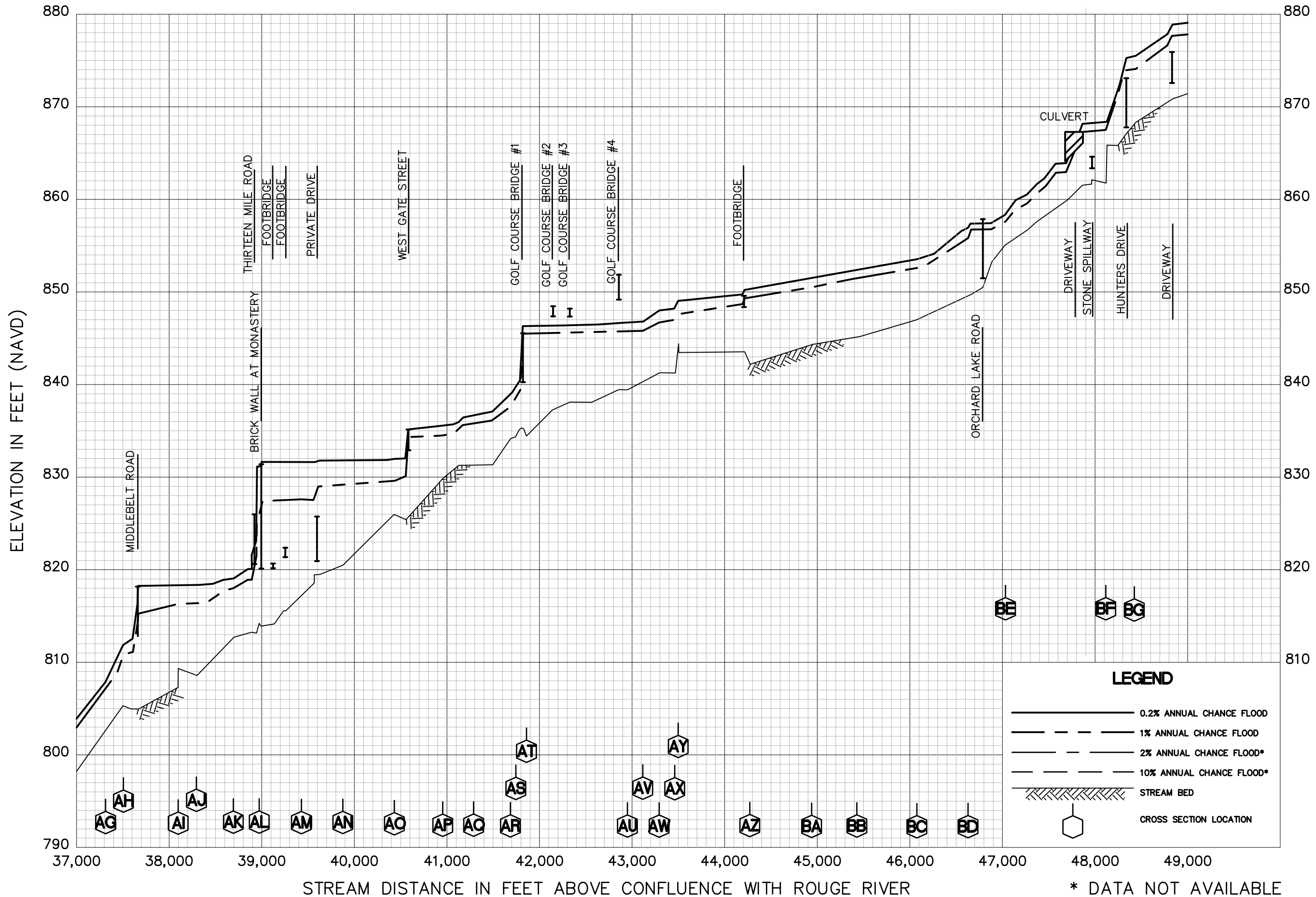
**FLOOD PROFILES
PEBBLE CREEK**

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
(ALL JURISDICTIONS)



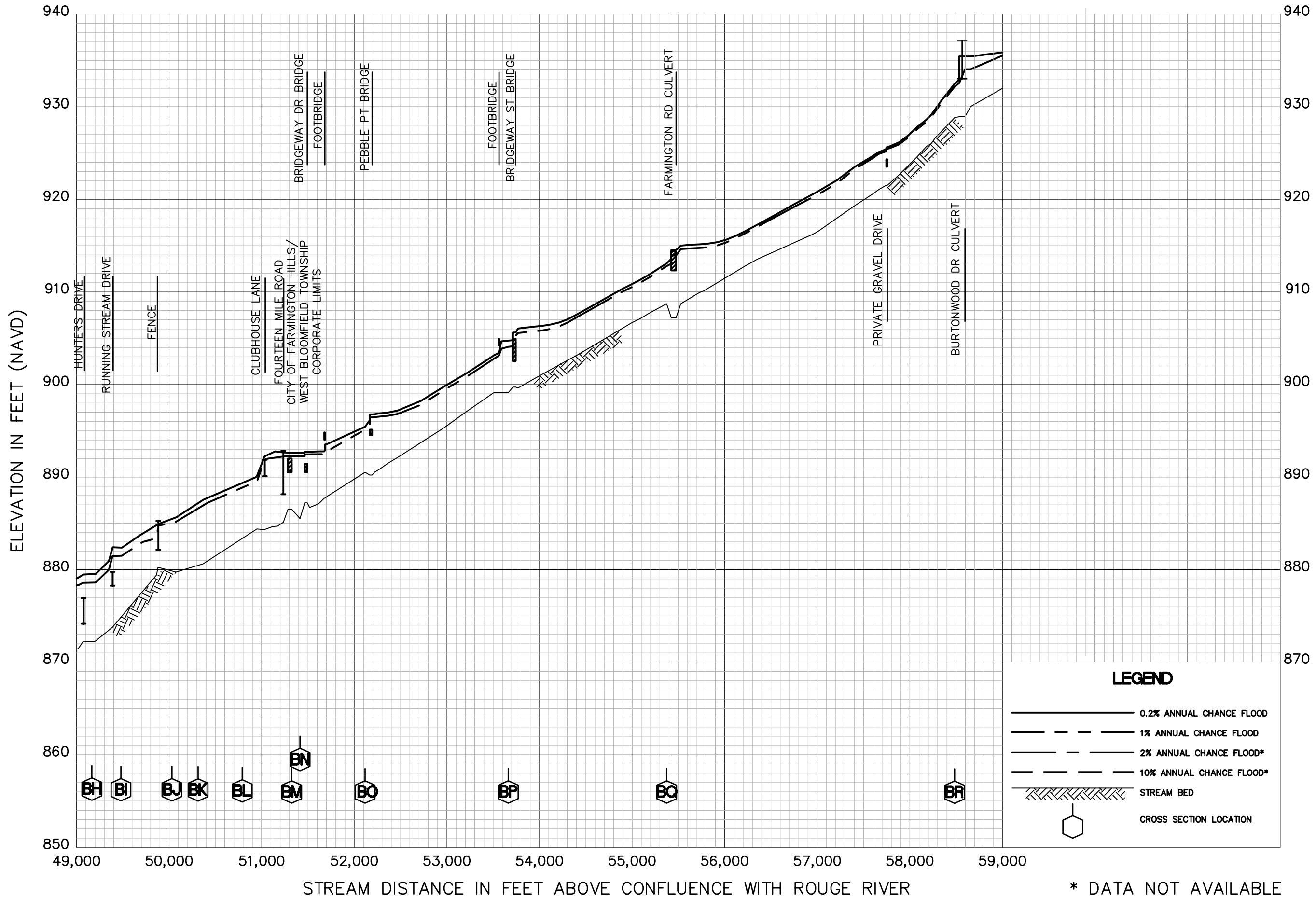
**FLOOD PROFILES
PEBBLE CREEK**

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
(ALL JURISDICTIONS)



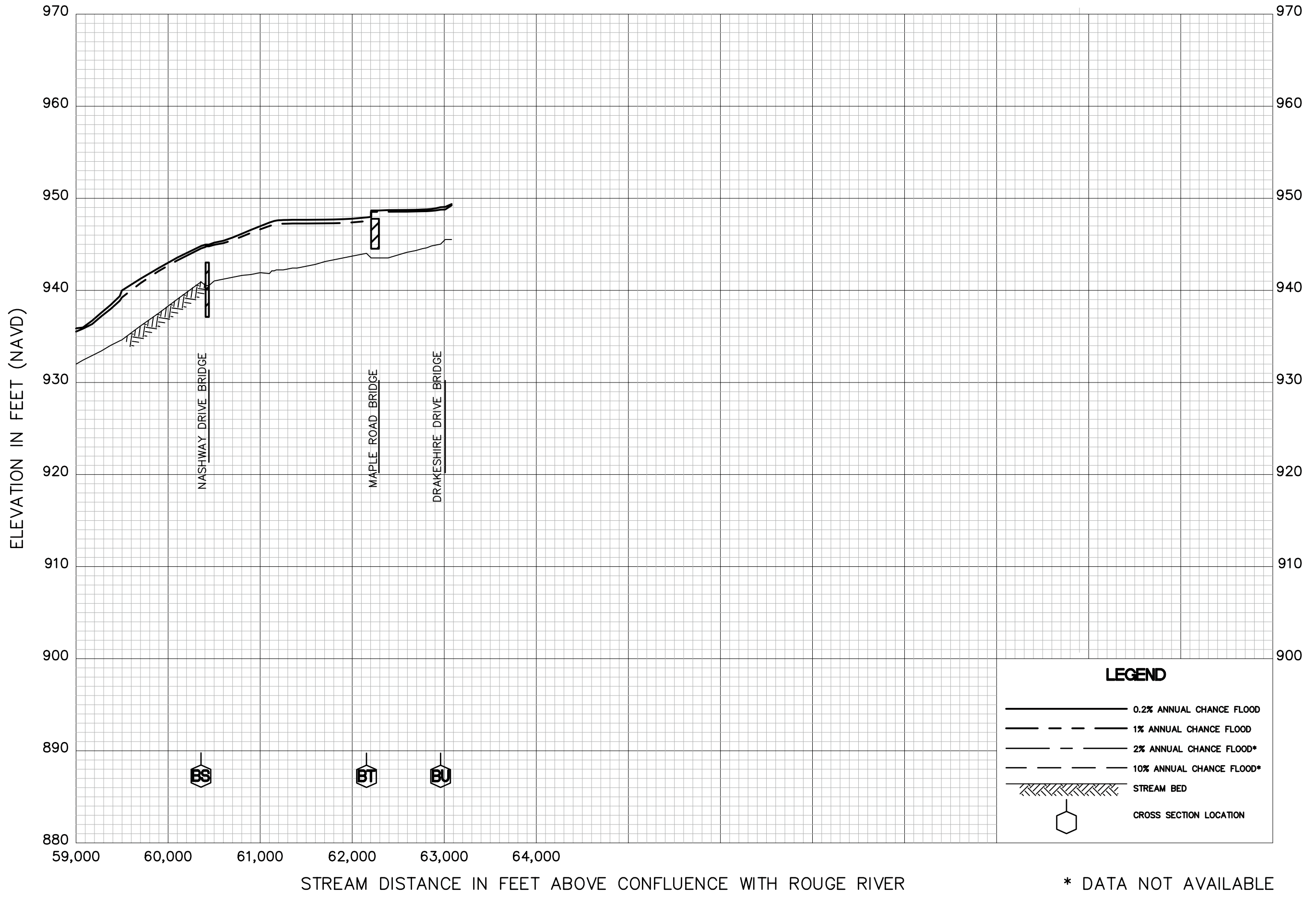
**FLOOD PROFILES
PEBBLE CREEK**

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
(ALL JURISDICTIONS)



**FLOOD PROFILES
PEBBLE CREEK**

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
(ALL JURISDICTIONS)



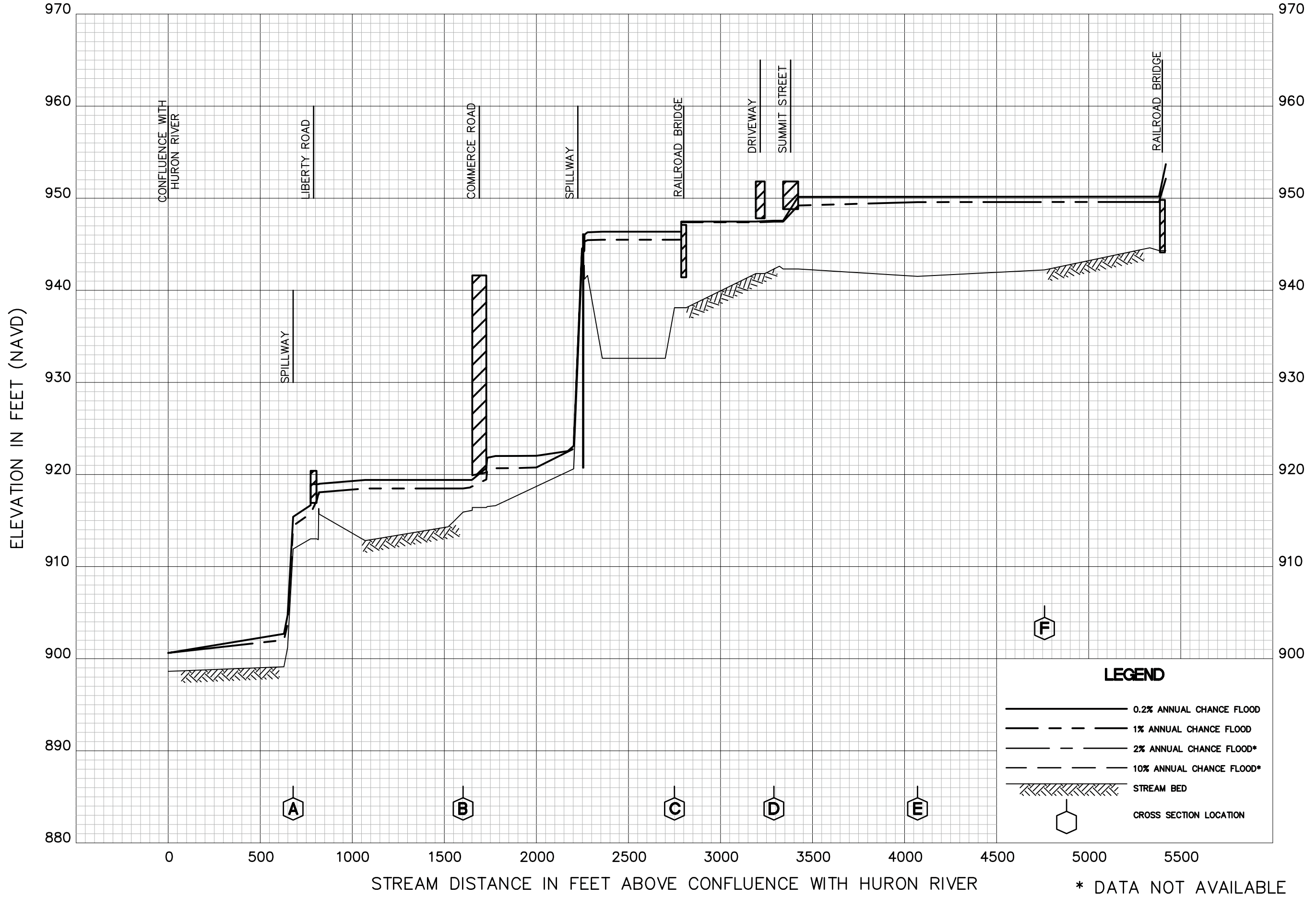
LEGEND

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- ⬡ CROSS SECTION LOCATION

* DATA NOT AVAILABLE

**FLOOD PROFILES
PEBBLE CREEK**

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
(ALL JURISDICTIONS)



LEGEND

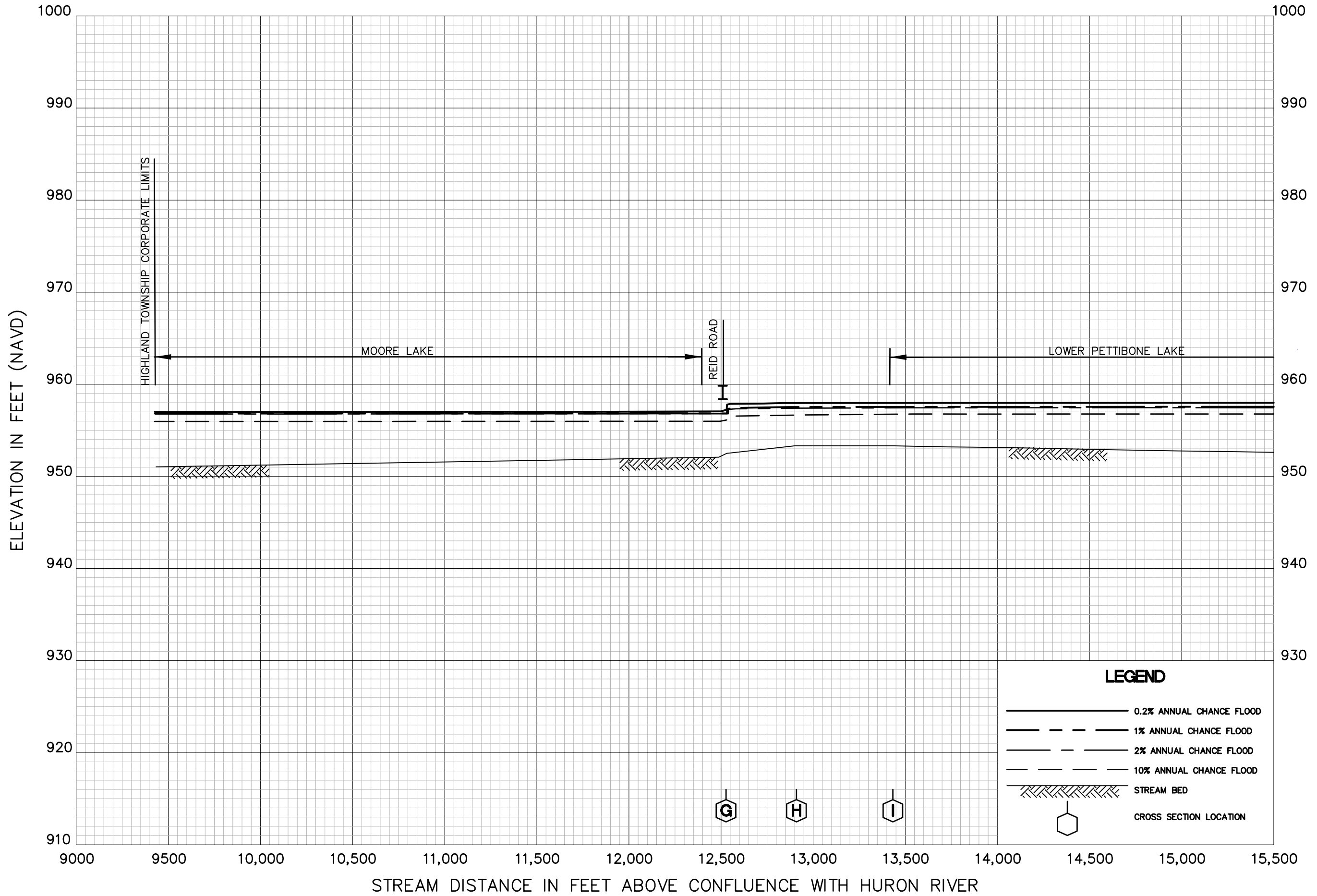
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- - - - 10% ANNUAL CHANCE FLOOD*
- ▨ STREAM BED
- ⬢ CROSS SECTION LOCATION

* DATA NOT AVAILABLE

**FLOOD PROFILES
PETTIBONE CREEK**

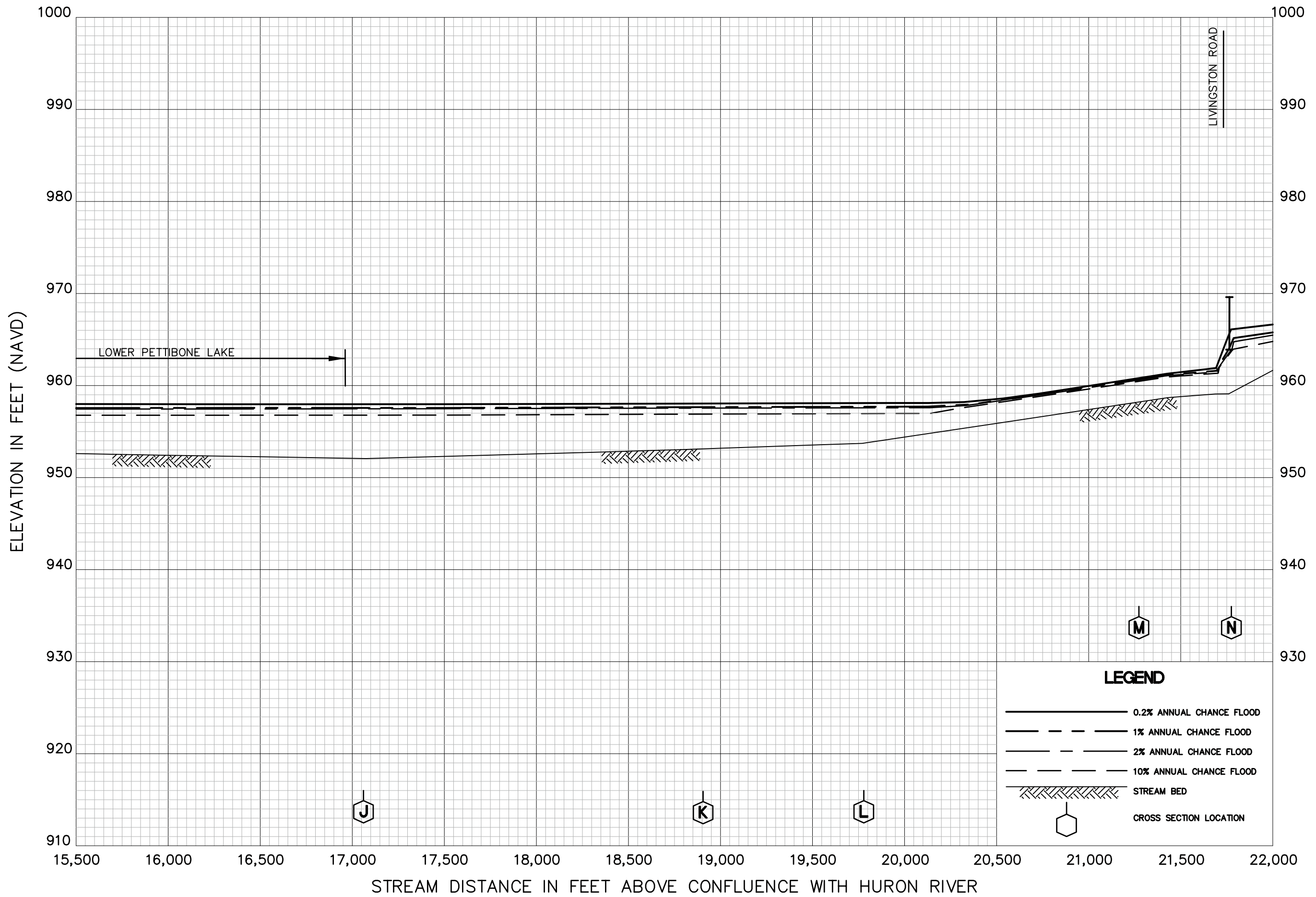
FEDERAL EMERGENCY MANAGEMENT AGENCY

OAKLAND COUNTY, MI
(ALL JURISDICTIONS)



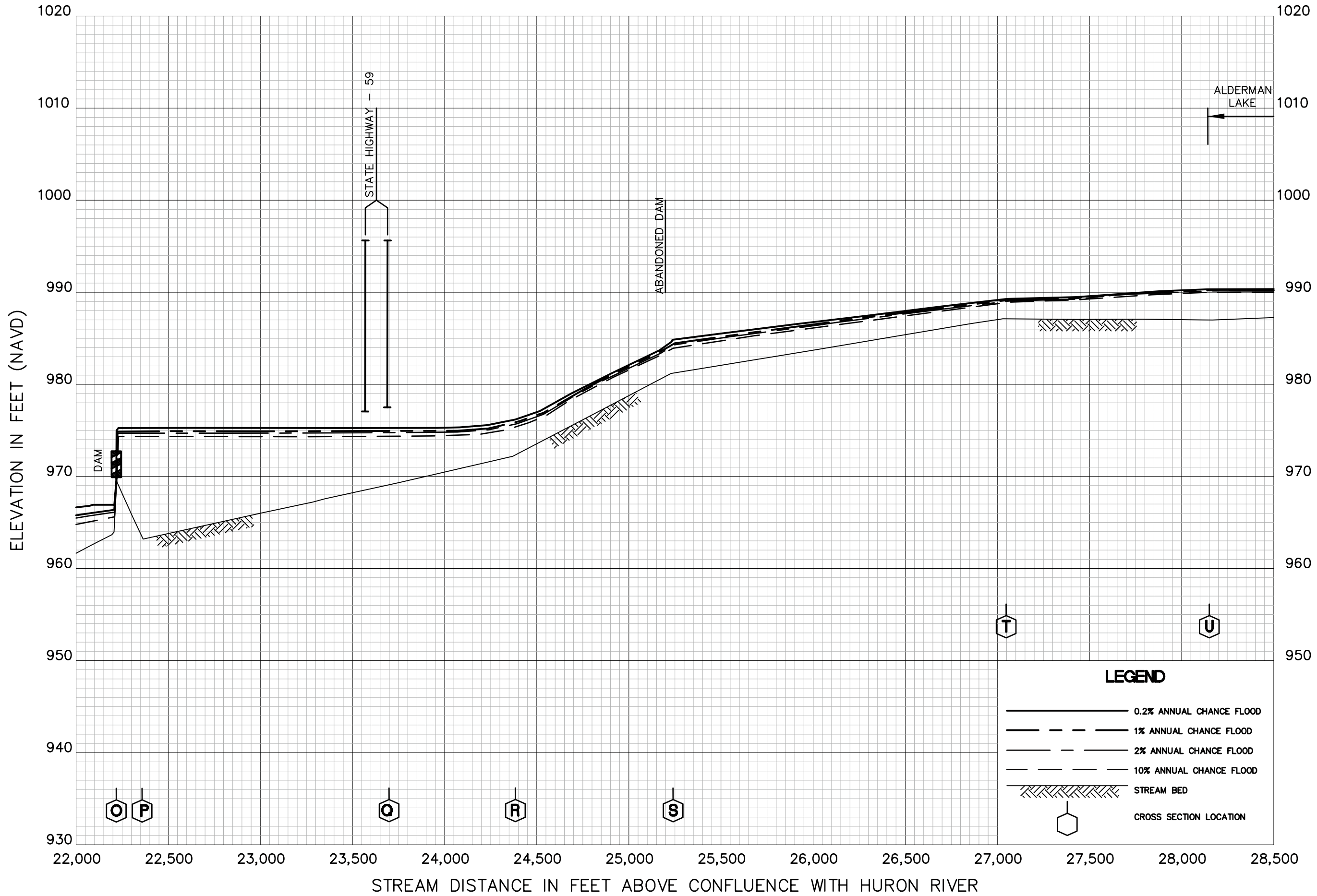
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PETTIBONE CREEK**

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
(ALL JURISDICTIONS)



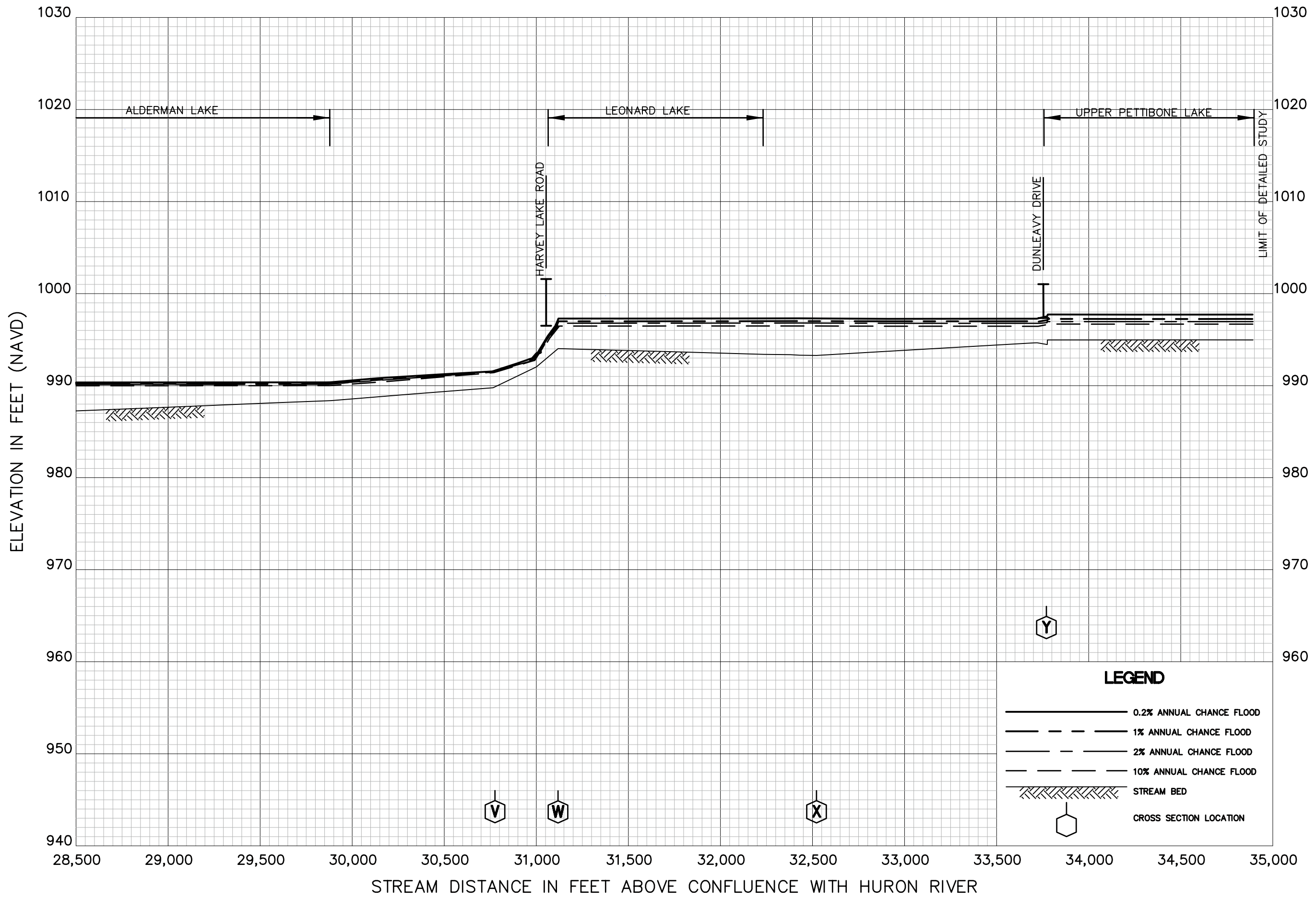
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PETTIBONE CREEK**

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
(ALL JURISDICTIONS)



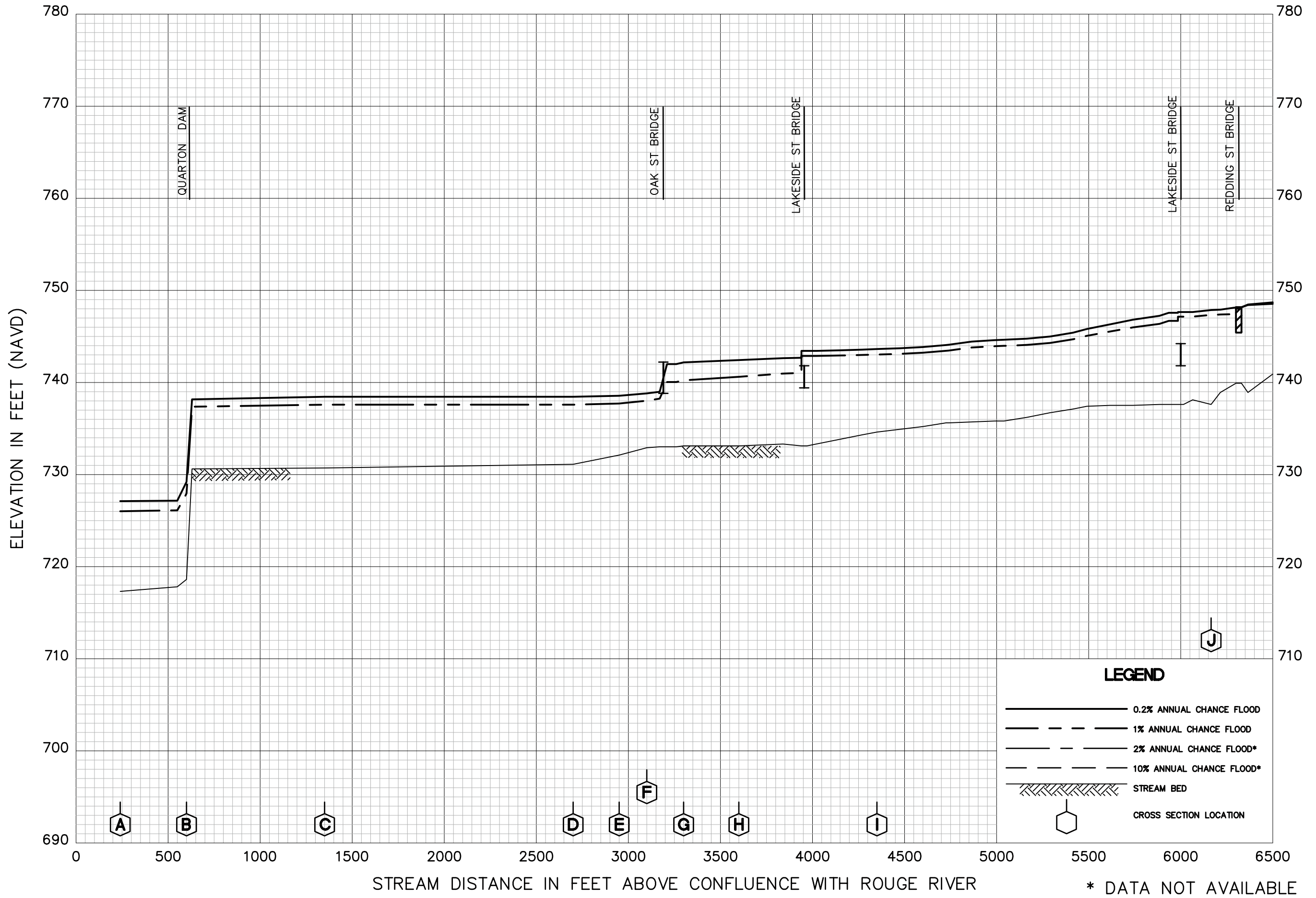
**FLOOD PROFILES
PETTIBONE CREEK**

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
(ALL JURISDICTIONS)



**FLOOD PROFILES
PETTIBONE CREEK**

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
(ALL JURISDICTIONS)



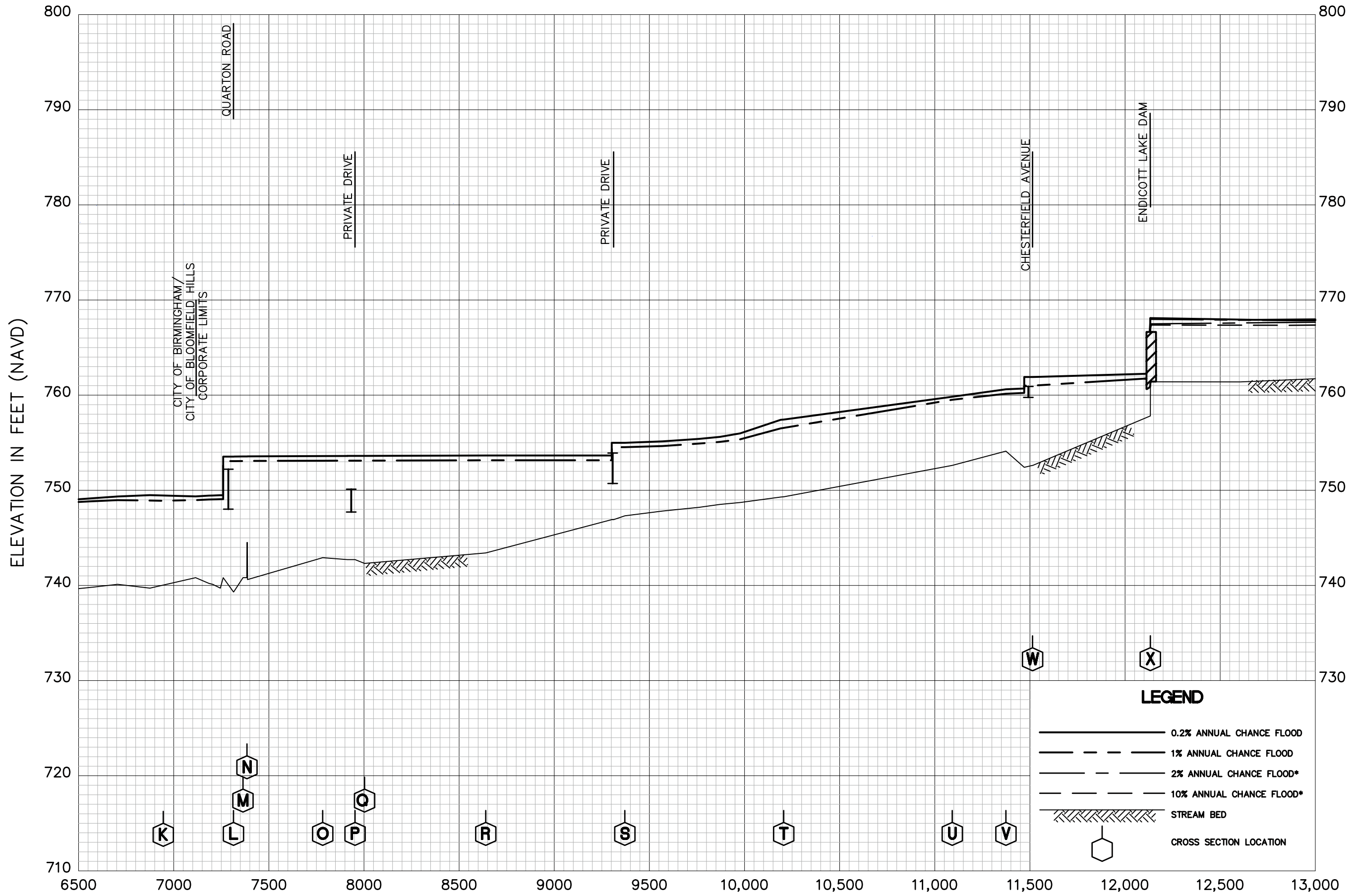
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- ⬡ CROSS SECTION LOCATION

* DATA NOT AVAILABLE

**FLOOD PROFILES
QUARTON BRANCH**

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
(ALL JURISDICTIONS)



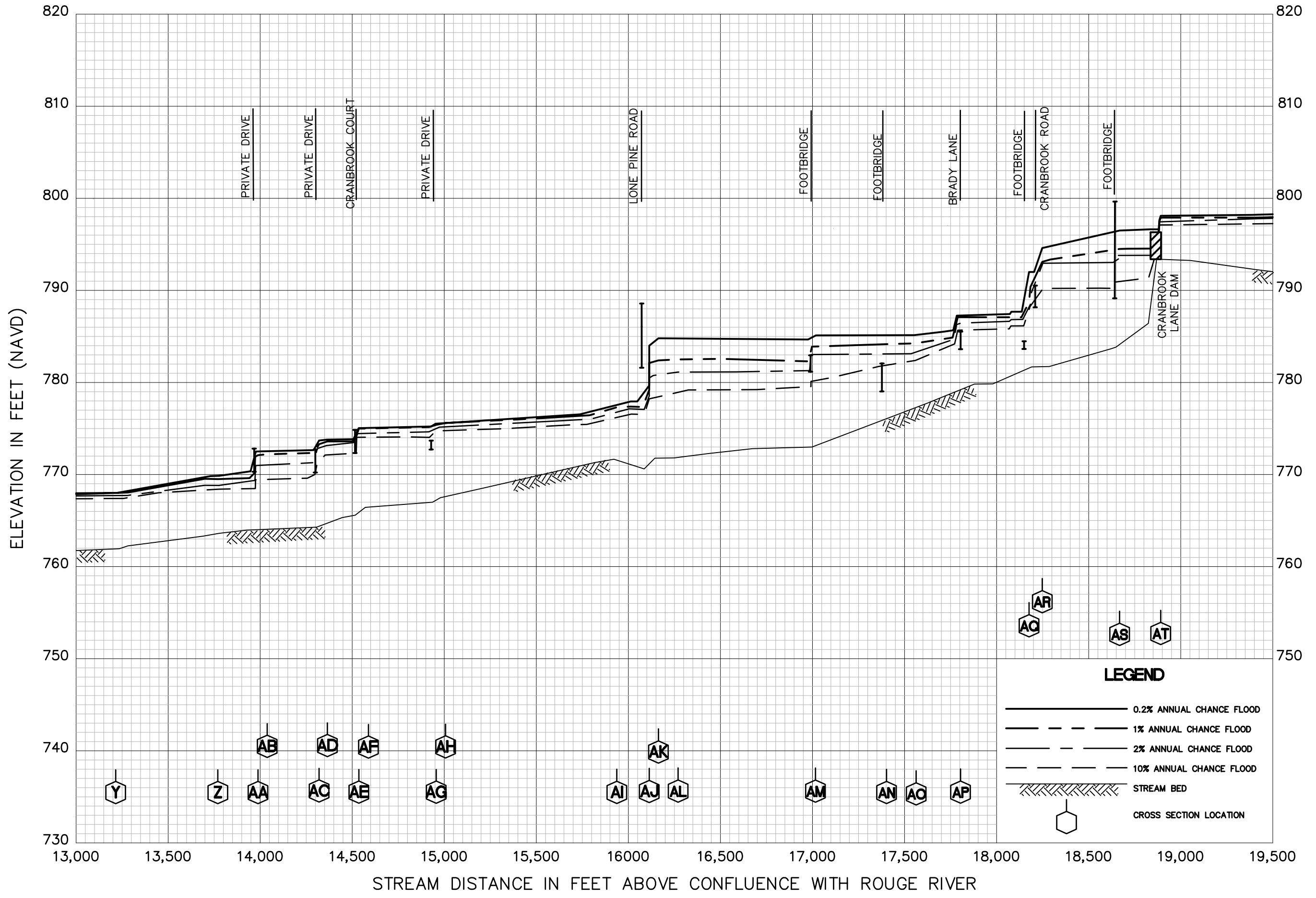
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- - - 10% ANNUAL CHANCE FLOOD*
- ▨ STREAM BED
- CROSS SECTION LOCATION

* DATA MAY NOT BE AVAILABLE

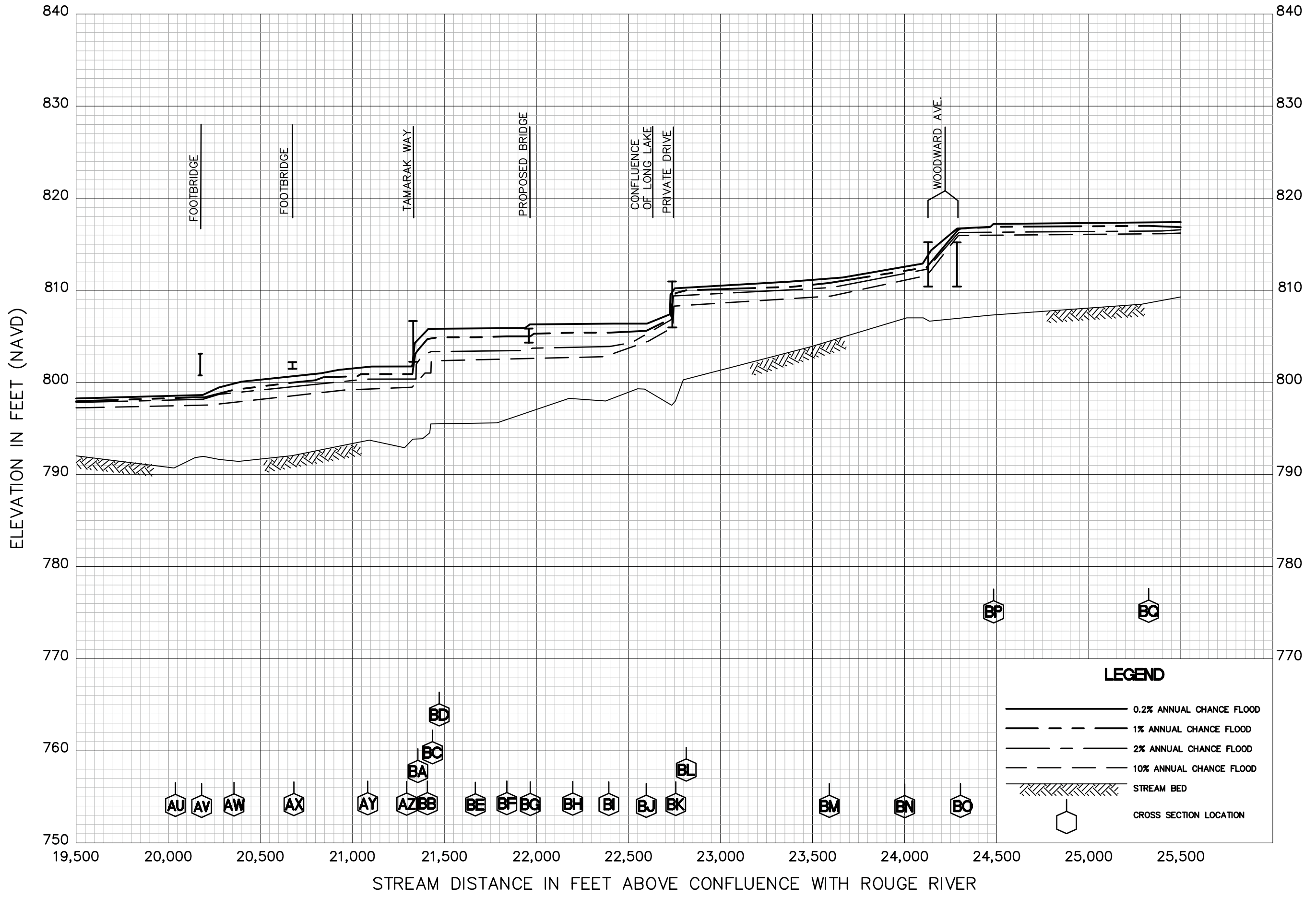
FLOOD PROFILES
QUARTON BRANCH

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
(ALL JURISDICTIONS)



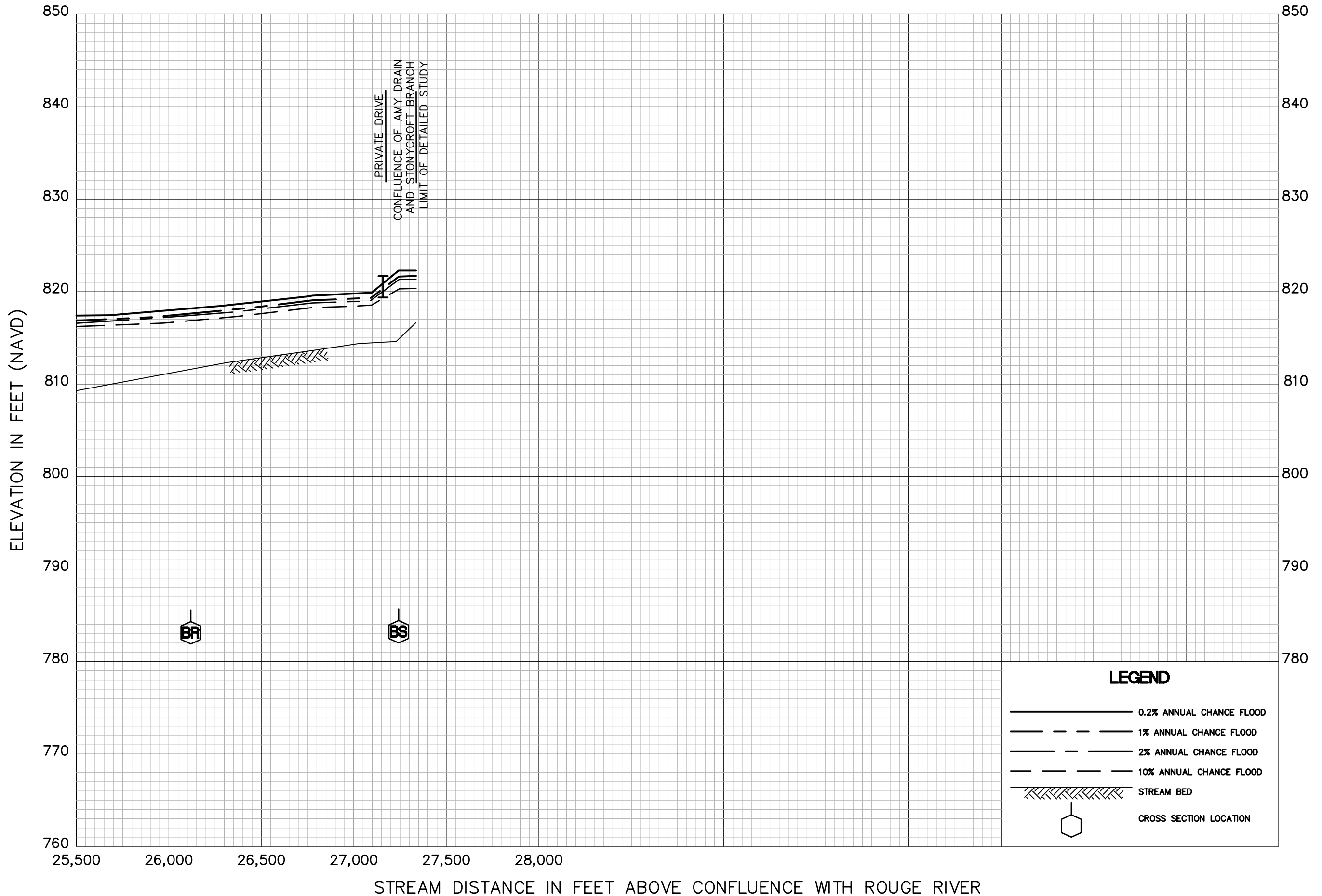
FLOOD PROFILES
QUARTON BRANCH

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
(ALL JURISDICTIONS)



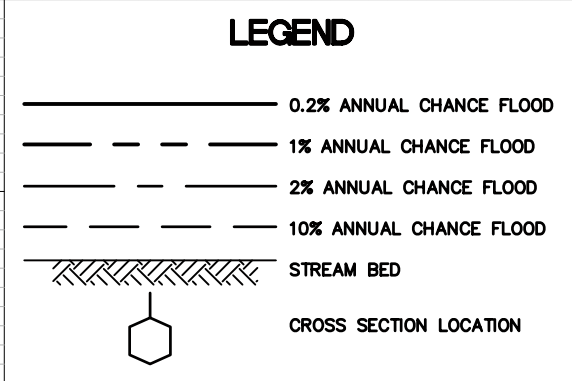
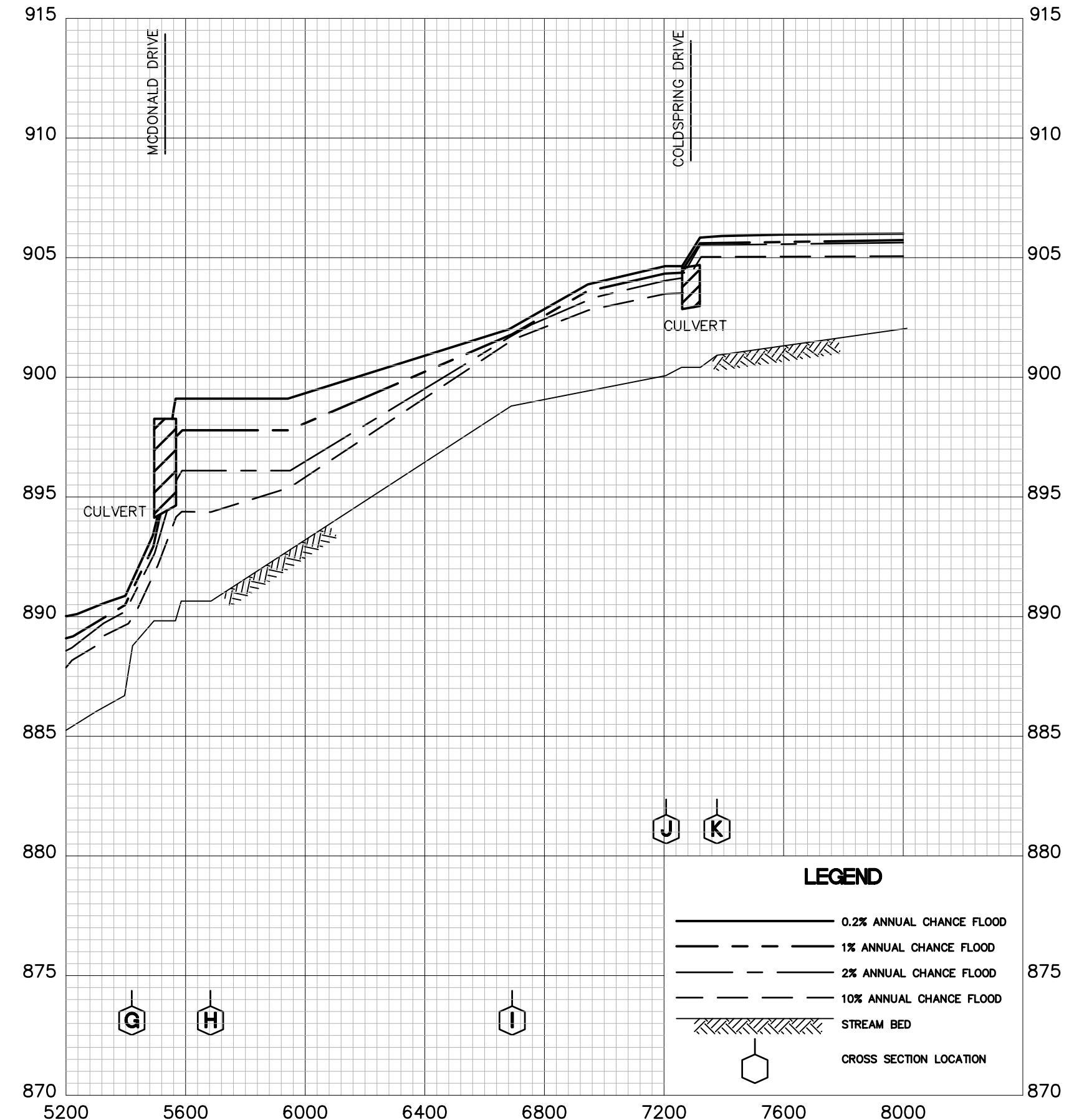
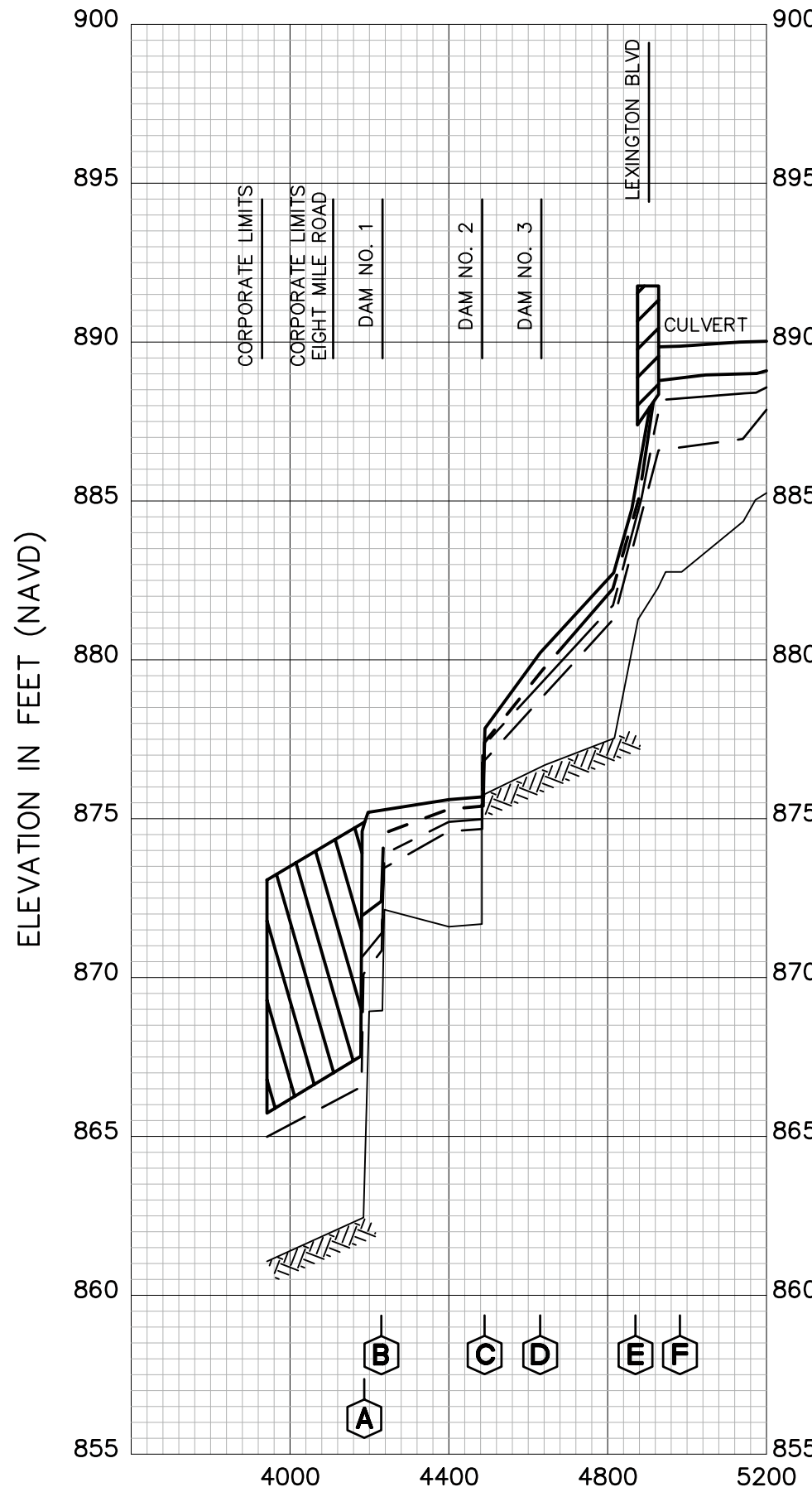
FLOOD PROFILES
QUARTON BRANCH

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
(ALL JURISDICTIONS)



FLOOD PROFILES
QUARTON BRANCH

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
(ALL JURISDICTIONS)



STREAM DISTANCE IN FEET ABOVE MOUTH

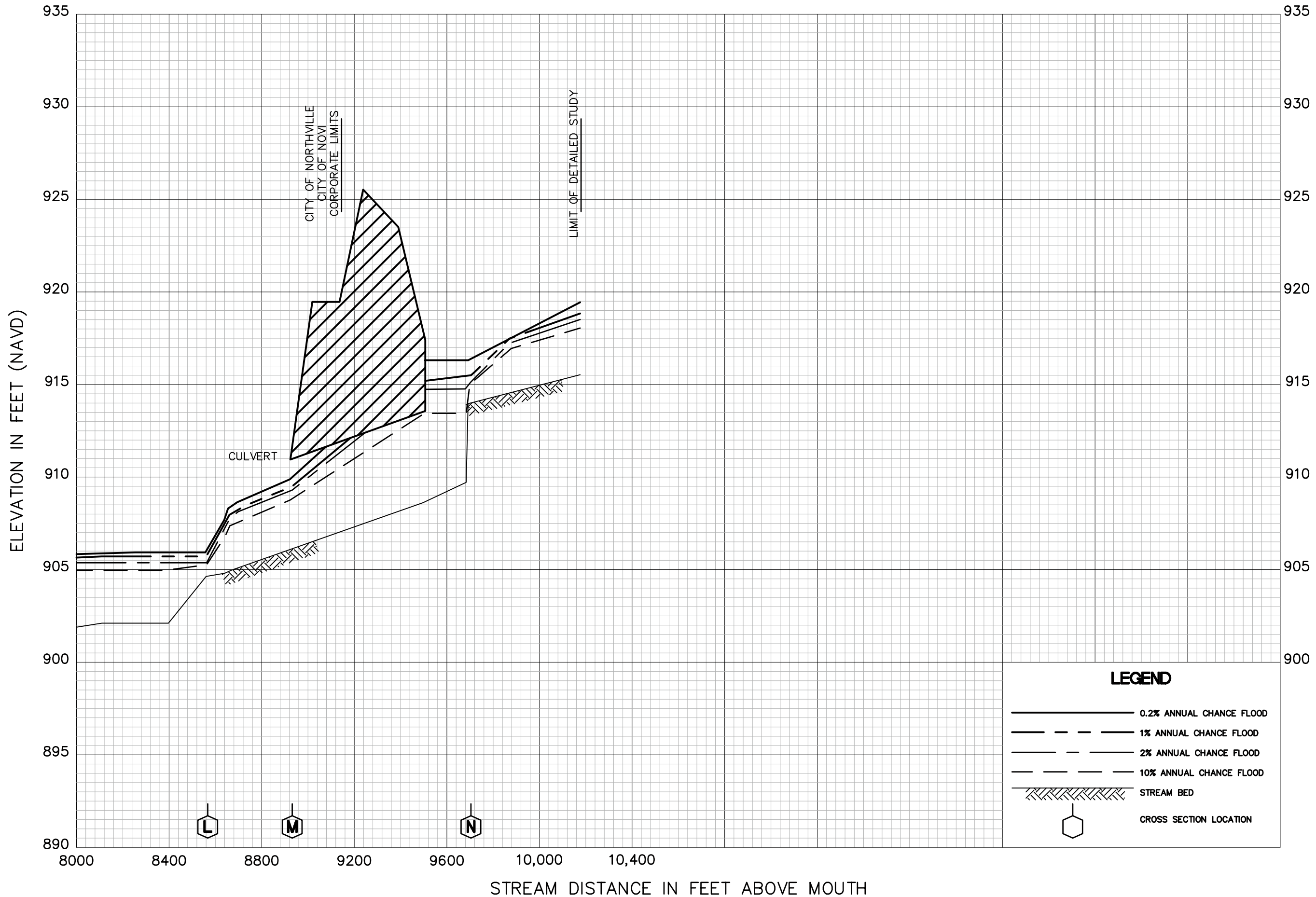
FLOOD PROFILES

RANDOLPH STREET DRAIN

FEDERAL EMERGENCY MANAGEMENT AGENCY

OAKLAND COUNTY, MI

(ALL JURISDICTIONS)



FLOOD PROFILES

RANDOLPH STREET DRAIN

FEDERAL EMERGENCY MANAGEMENT AGENCY

OAKLAND COUNTY, MI

(ALL JURISDICTIONS)

FLOOD INSURANCE STUDY

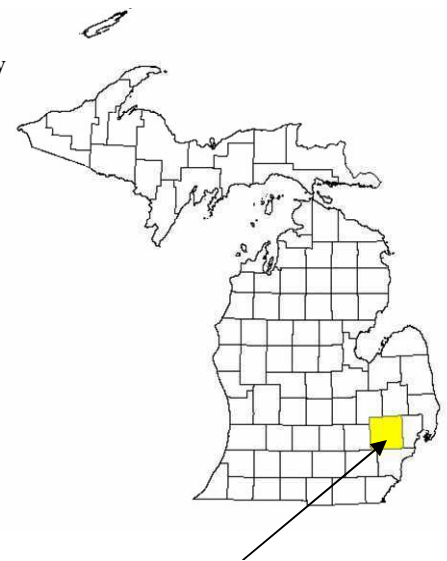
OAKLAND COUNTY, MICHIGAN

ALL JURISDICTIONS

VOLUME 5 OF 5



| Community Name | Community Number | Community Name | Community Number |
|-----------------------------|-------------------------|-------------------------------------|-------------------------|
| Addison, Township of | 261029 | Milford, Village of | 260317 |
| Auburn Hills, City of | 260263 | Northville, City of (Wayne/Oakland) | 260235 |
| * Berkley, City of | 260292 | Novi, City of | 260175 |
| Beverly Hills, Village of | 260256 | * Novi, Township of | 261039 |
| Bingham Farms, Village of | 260713 | * Oak Park, City of | 260323 |
| Birmingham, City of | 260168 | Oakland, Township of | 260476 |
| Bloomfield, Township of | 260169 | Orchard Lake Village, City of | 260477 |
| Bloomfield Hills, City of | 260712 | Orion, Township of | 261033 |
| Brandon, Township of | 261031 | Ortonville, Village of | 261034 |
| Clarkston, Village of | 260472 | * Oxford, Township of | 261035 |
| * Clawson, City of | 260170 | * Oxford, Village of | 261036 |
| Commerce, Township of | 260473 | * Pleasant Ridge, City of | 260606 |
| Farmington, City of | 260171 | Pontiac, City of | 260177 |
| Farmington Hills, City of | 260172 | Rochester, City of | 260326 |
| * Ferndale, City of | 260262 | Rochester Hills, City of | 260471 |
| Franklin, Village of | 260325 | Rose, Township of | 260729 |
| Groveland, Township of | 260992 | * Royal Oak, City of | 260178 |
| * Hazel Park, City of | 260289 | * Royal Oak, Township of | 260341 |
| Highland, Township of | 260650 | South Lyon, City of | 261037 |
| Holly, Township of | 260474 | Southfield, City of | 260179 |
| Holly, Village of | 260587 | Southfield, Township of | 260176 |
| * Huntington Woods, City of | 260723 | * Springfield, Township of | 260478 |
| Independence, Township of | 260475 | Sylvan Lake, City of | 260701 |
| Keego Harbor, City of | 260173 | Troy, City of | 260180 |
| Lake Angelus, City of | 260700 | Walled Lake, City of | 260181 |
| Lake Orion, Village of | 260588 | Waterford, Charter Township of | 260284 |
| * Lathrup Village, City of | 260297 | West Bloomfield, Township of | 260182 |
| * Leonard, Village of | 261030 | White Lake, Township of | 260479 |
| Lyon, Township of | 261032 | Wixom, City of | 261038 |
| * Madison Heights, City of | 260174 | Wolverine Lake, Village of | 260480 |
| Milford, Township of | 261040 | | |
| | | * Non Flood Prone | |



Oakland County



SEPTEMBER 29, 2006
Federal Emergency Management Agency

FLOOD INSURANCE STUDY NUMBER
 26125CV005A

NOTICE TO
FLOOD INSURANCE STUDY USERS

Communities participating in the National Flood Insurance Program (NFIP) have established repositories of flood hazard data for floodplain management and flood insurance purposes. This Flood Insurance Study (FIS) report may not contain all data available within the Community Map Repository. It is advisable to contact the Community Map Repository for any additional data.

Part or all of this Flood Insurance Study may be revised and republished at any time. In addition, part of this Flood Insurance Study may be revised by the Letter of Map Revision process, which does not involve republication or redistribution of the Flood Insurance Study. It is, therefore, the responsibility of the user to consult with community officials and to check the community repository to obtain the most current Flood Insurance Study components.

Selected Flood Insurance Rate Map panels for this community contain information that was previously shown separately on the corresponding Flood Boundary and Floodway Map panels (e.g., floodways, cross sections). In addition, former flood hazard zone designations have been changed as follows:

| <u>Old Zones</u> | <u>New Zone</u> |
|------------------|-----------------|
| A1 through A30 | AE |
| B | X |
| C | X |

Countywide FIS Effective Date: September 29, 2006

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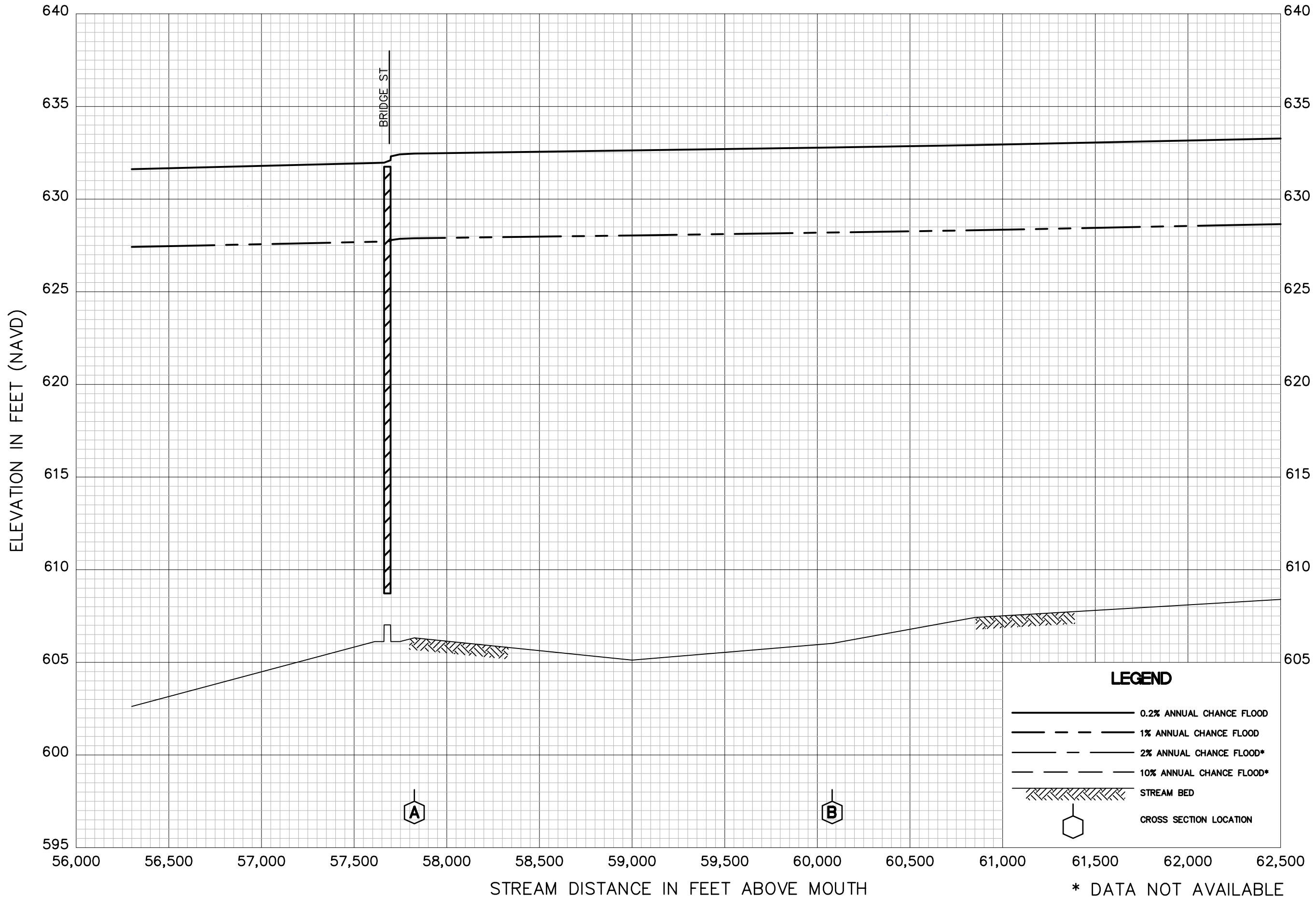
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- Flood Insurance Rate Map Index
- Flood Insurance Rate Maps



LEGEND

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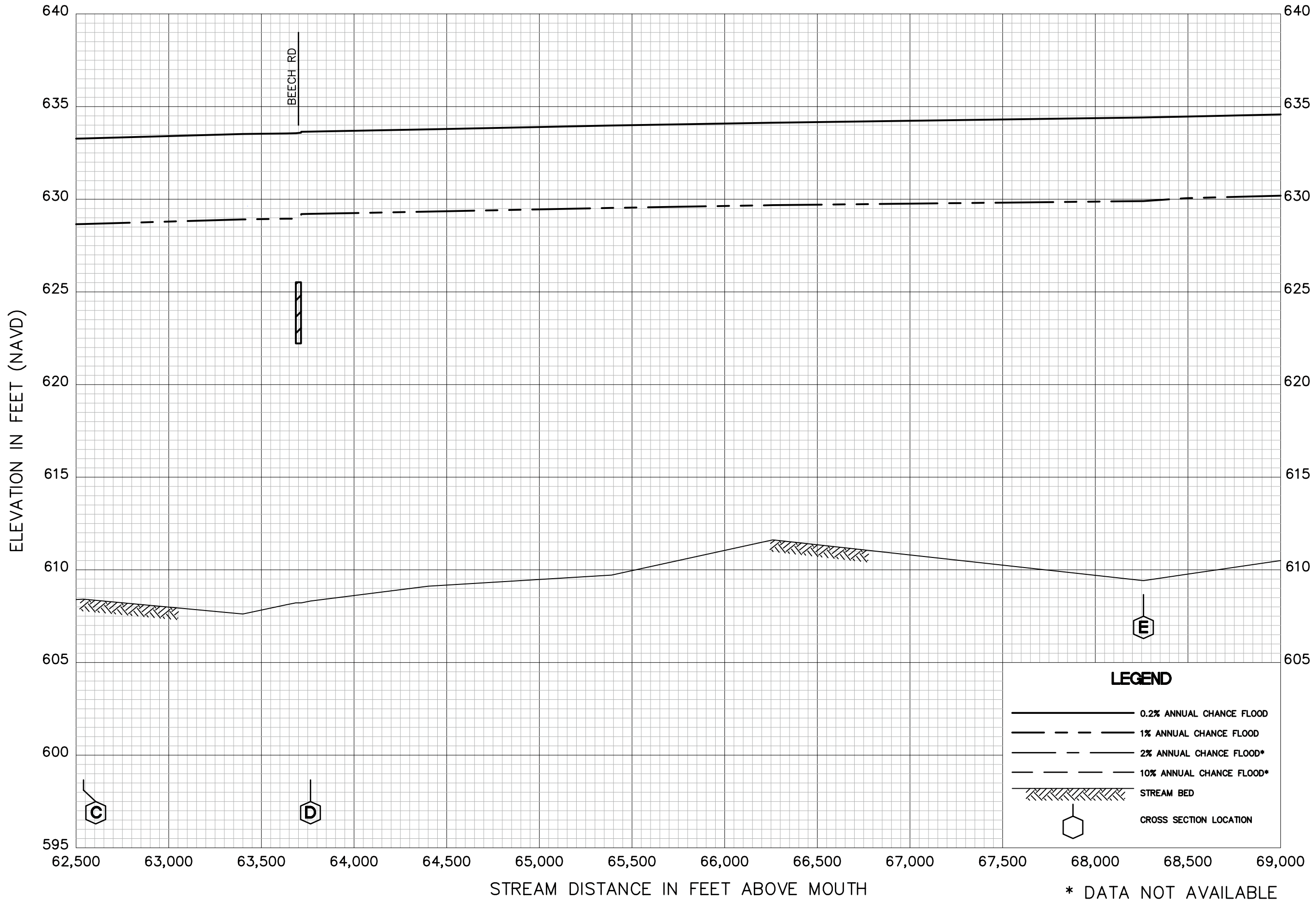
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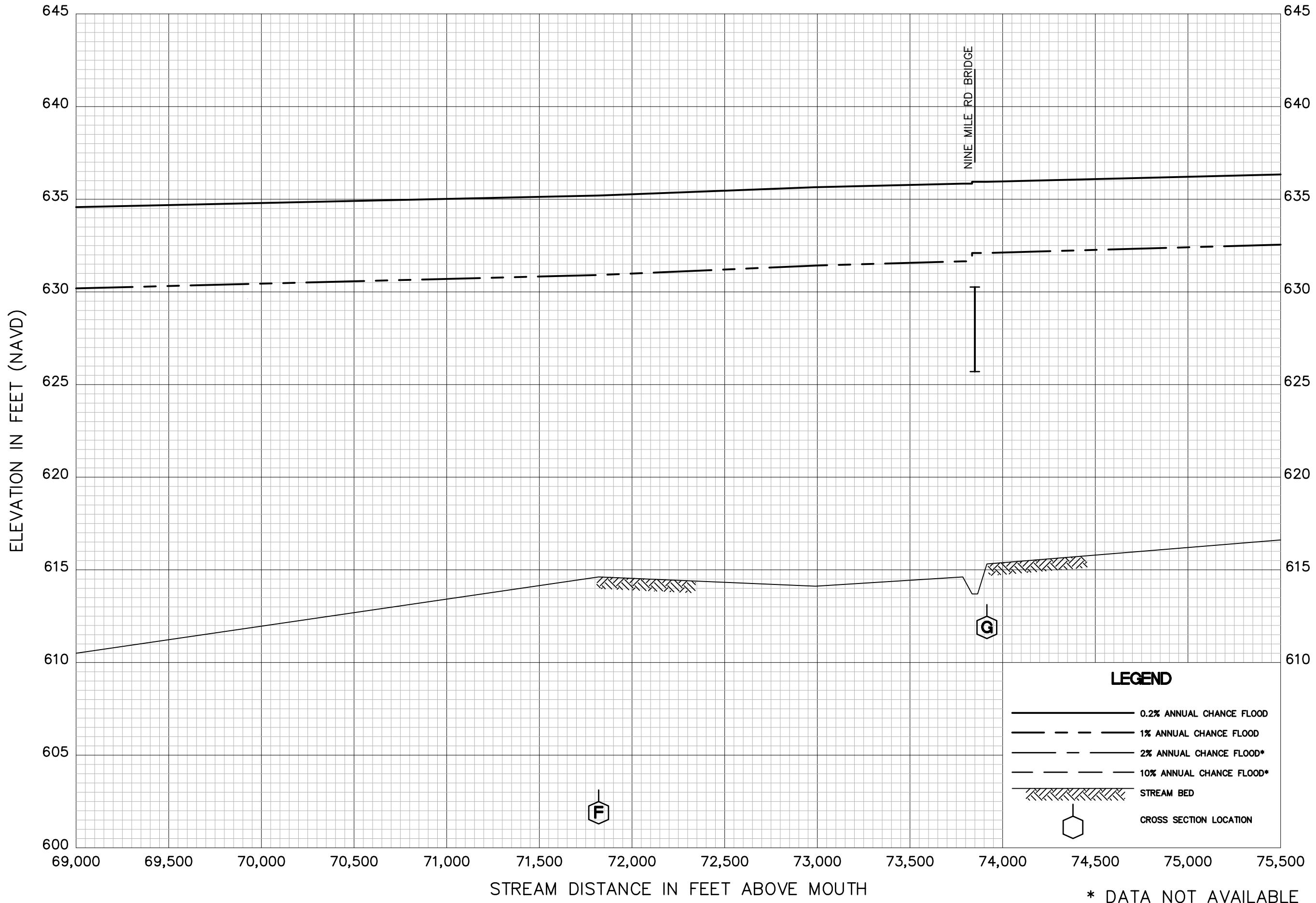
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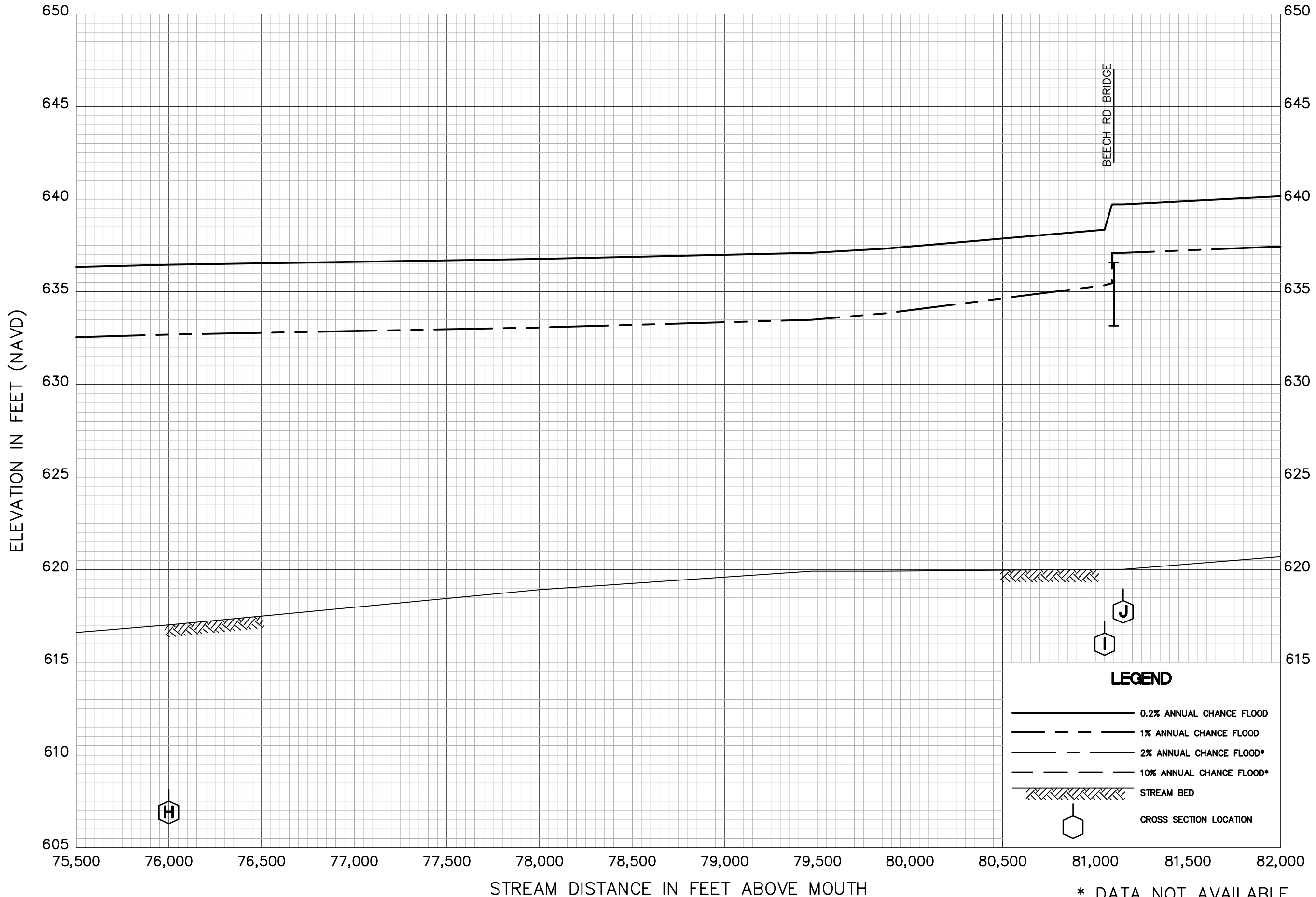
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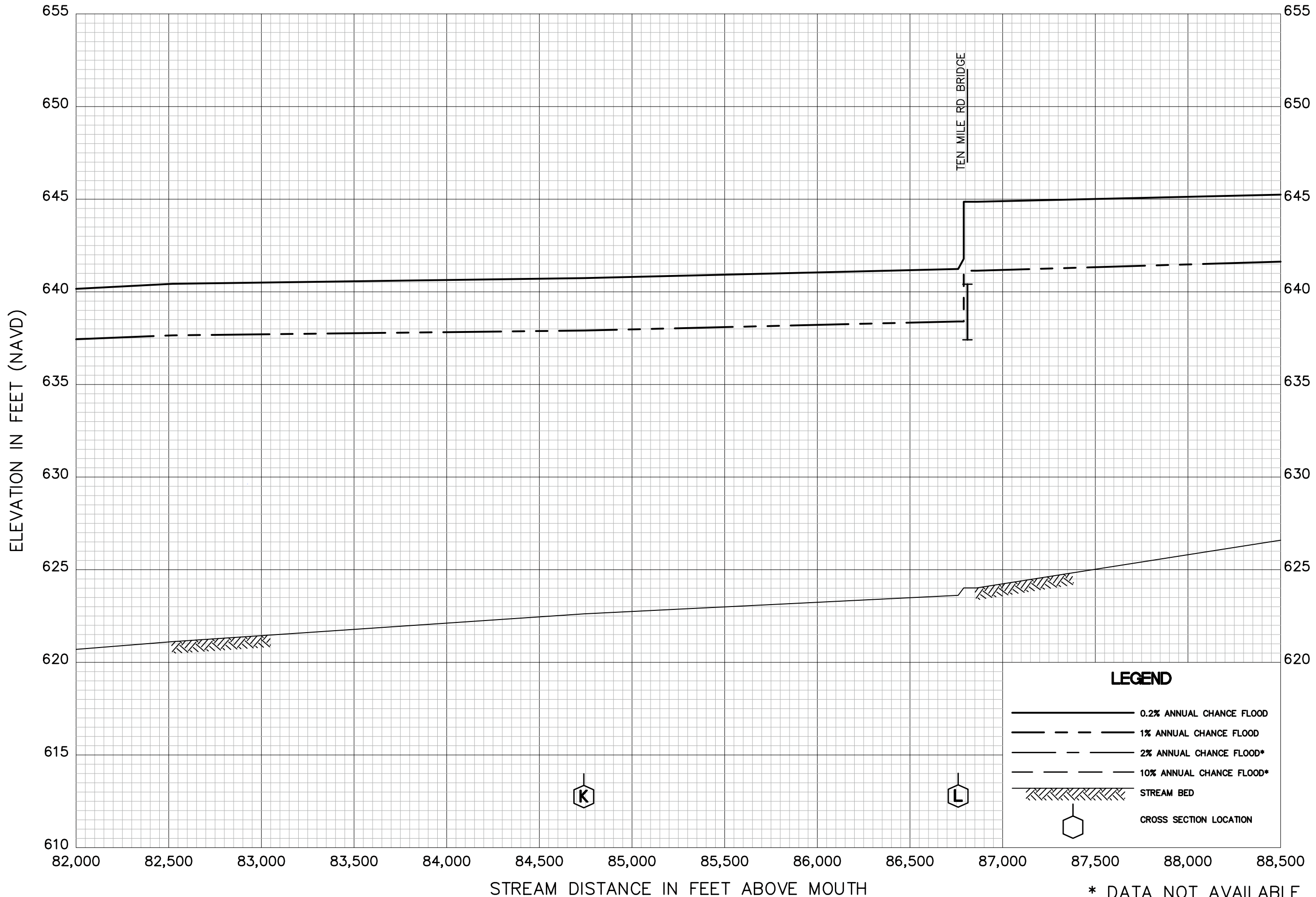
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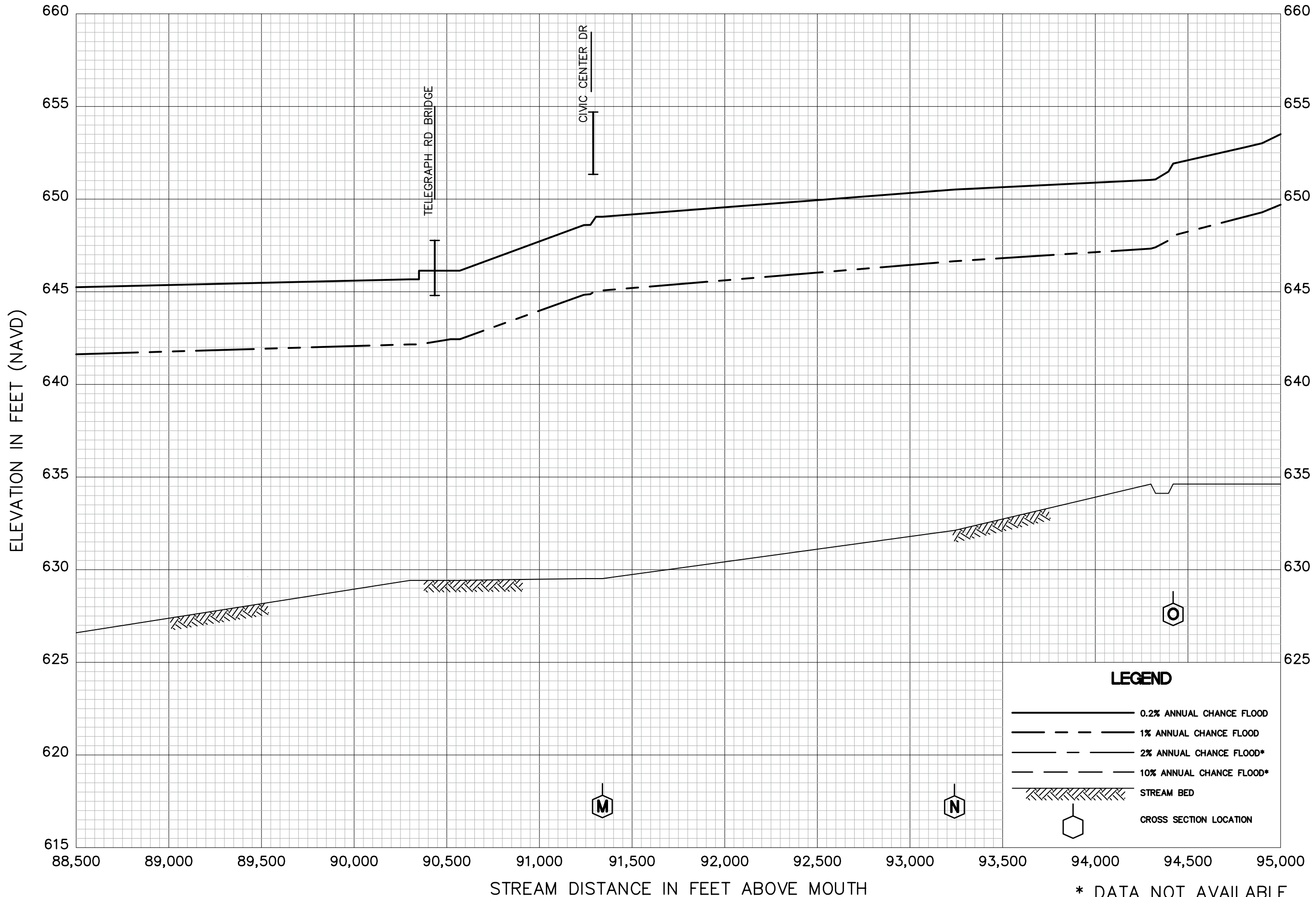
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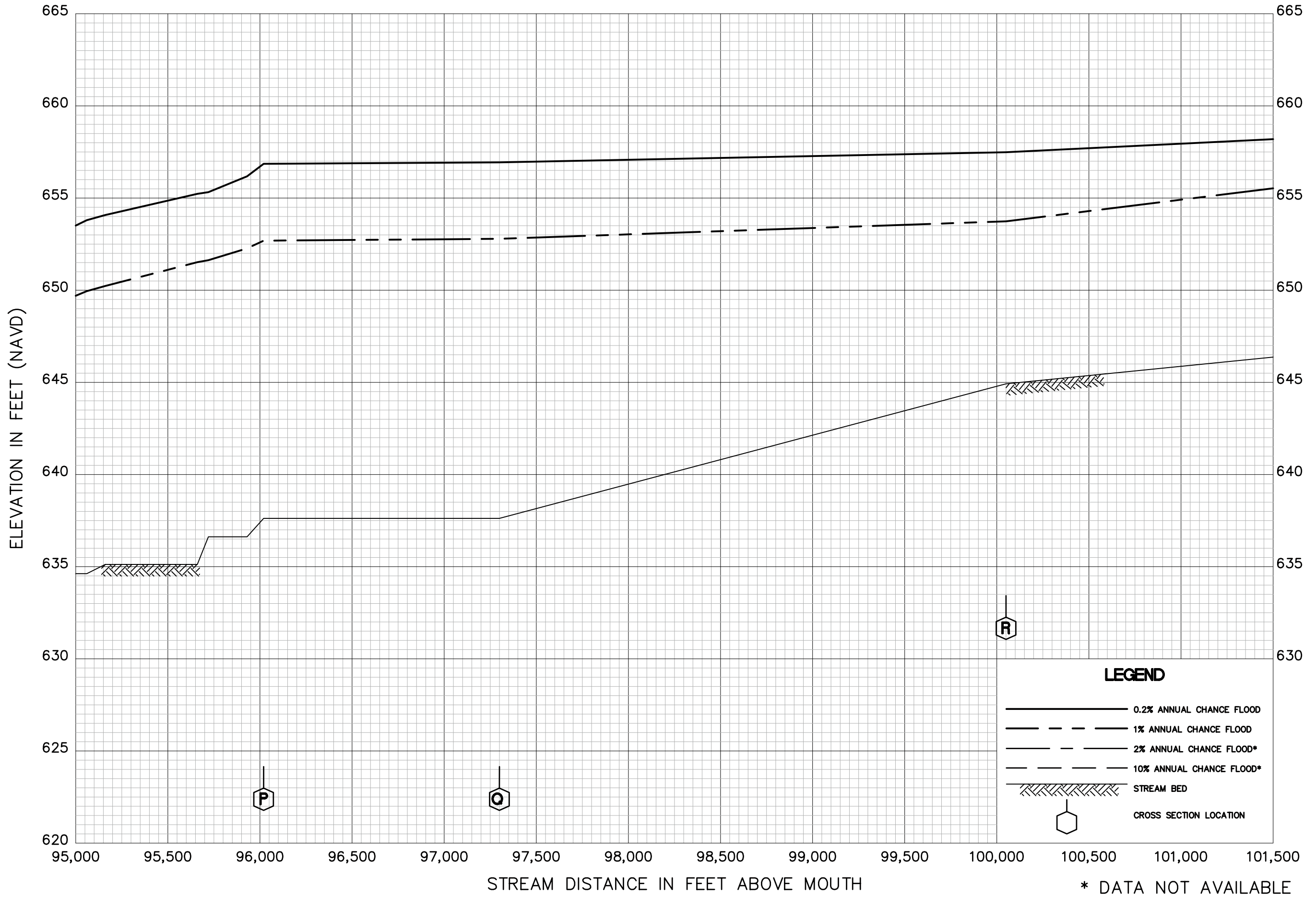
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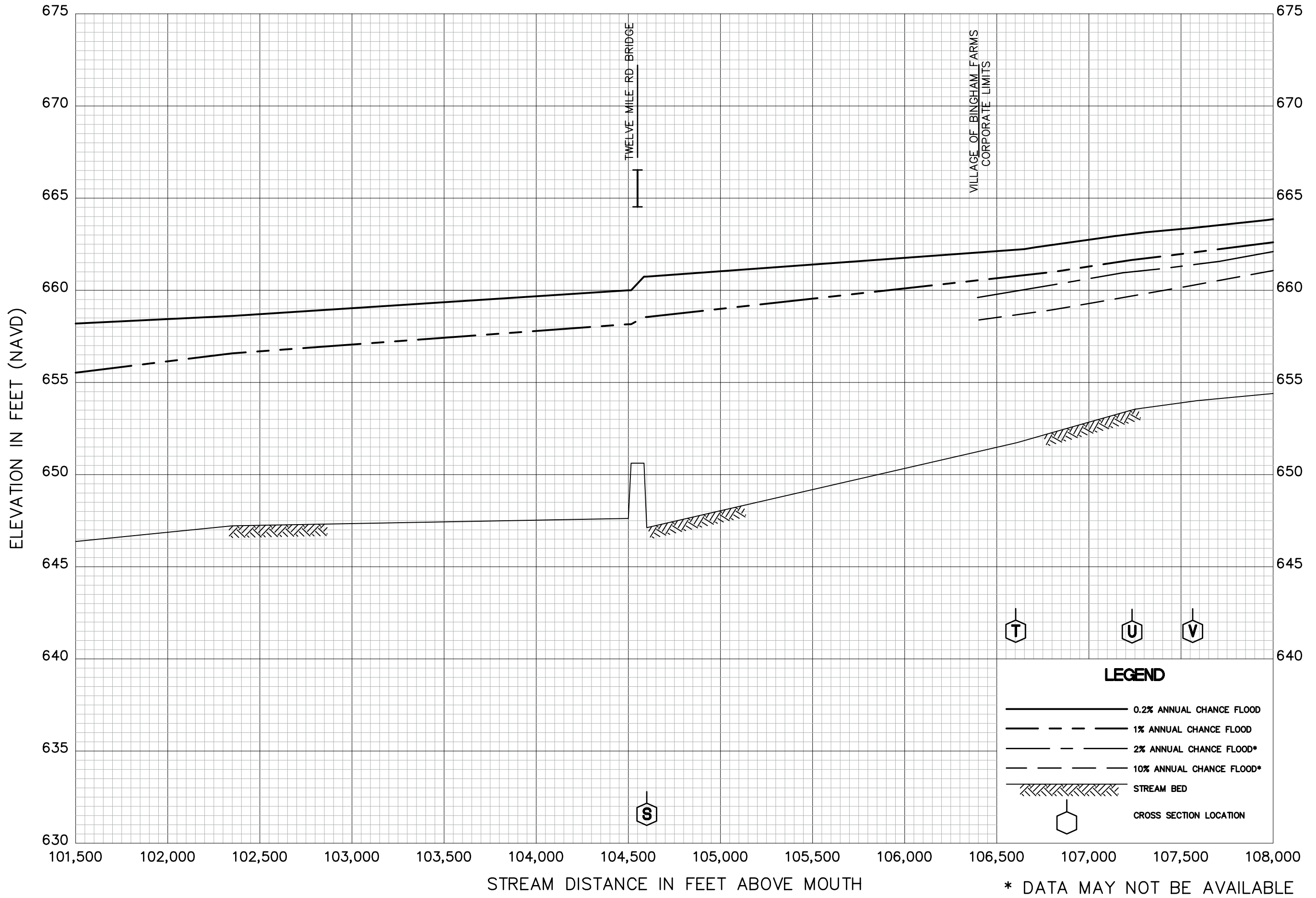
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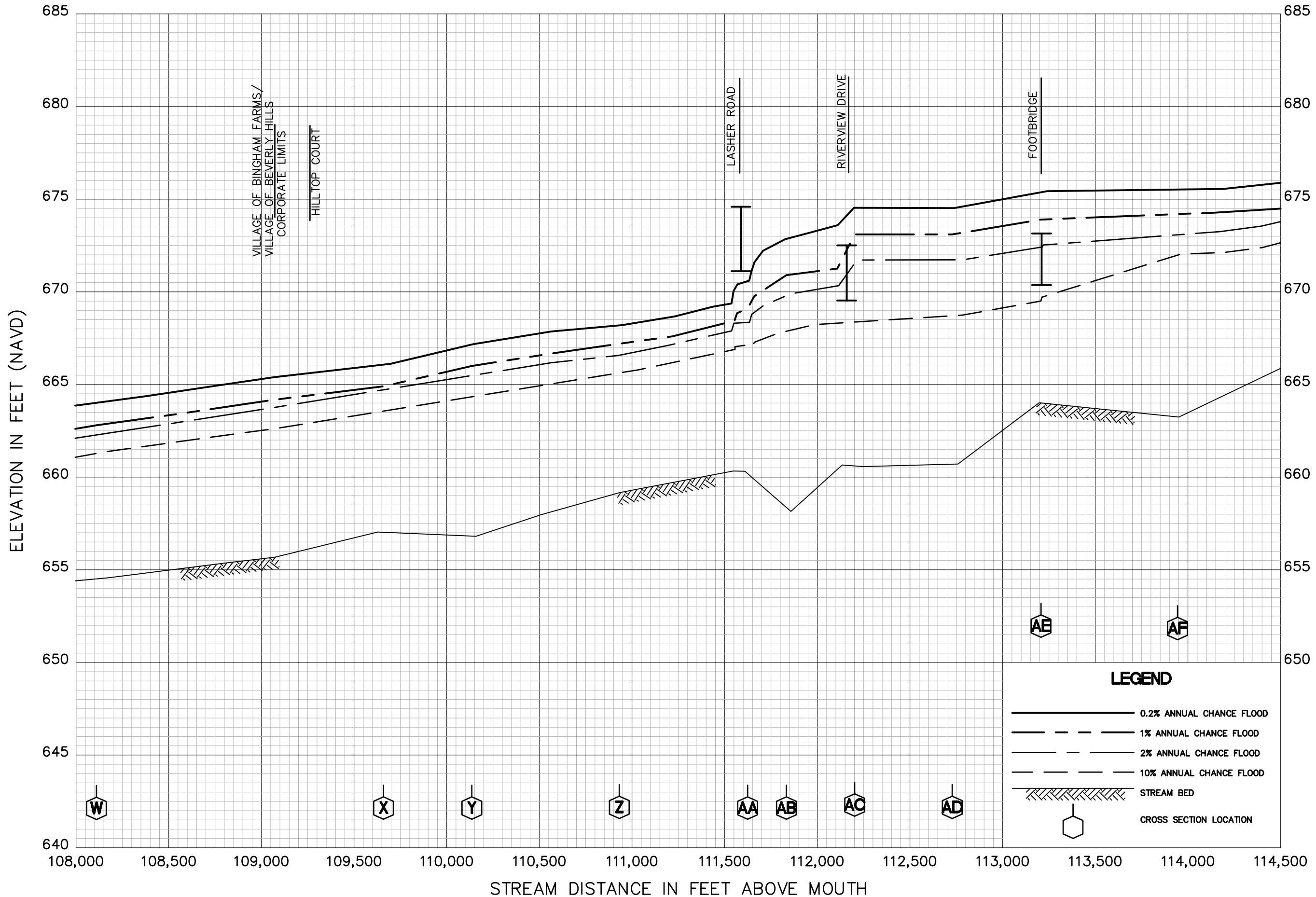
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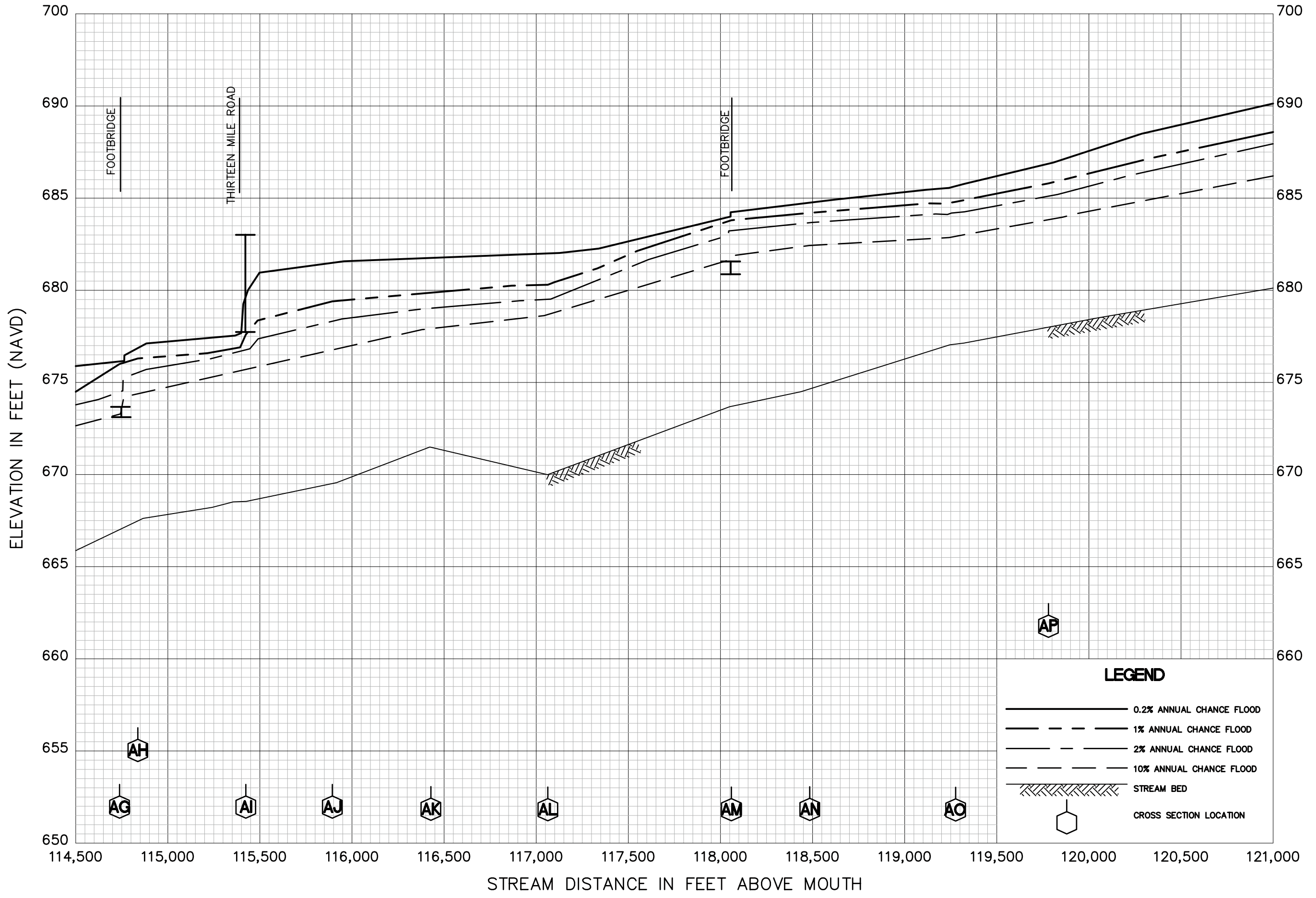
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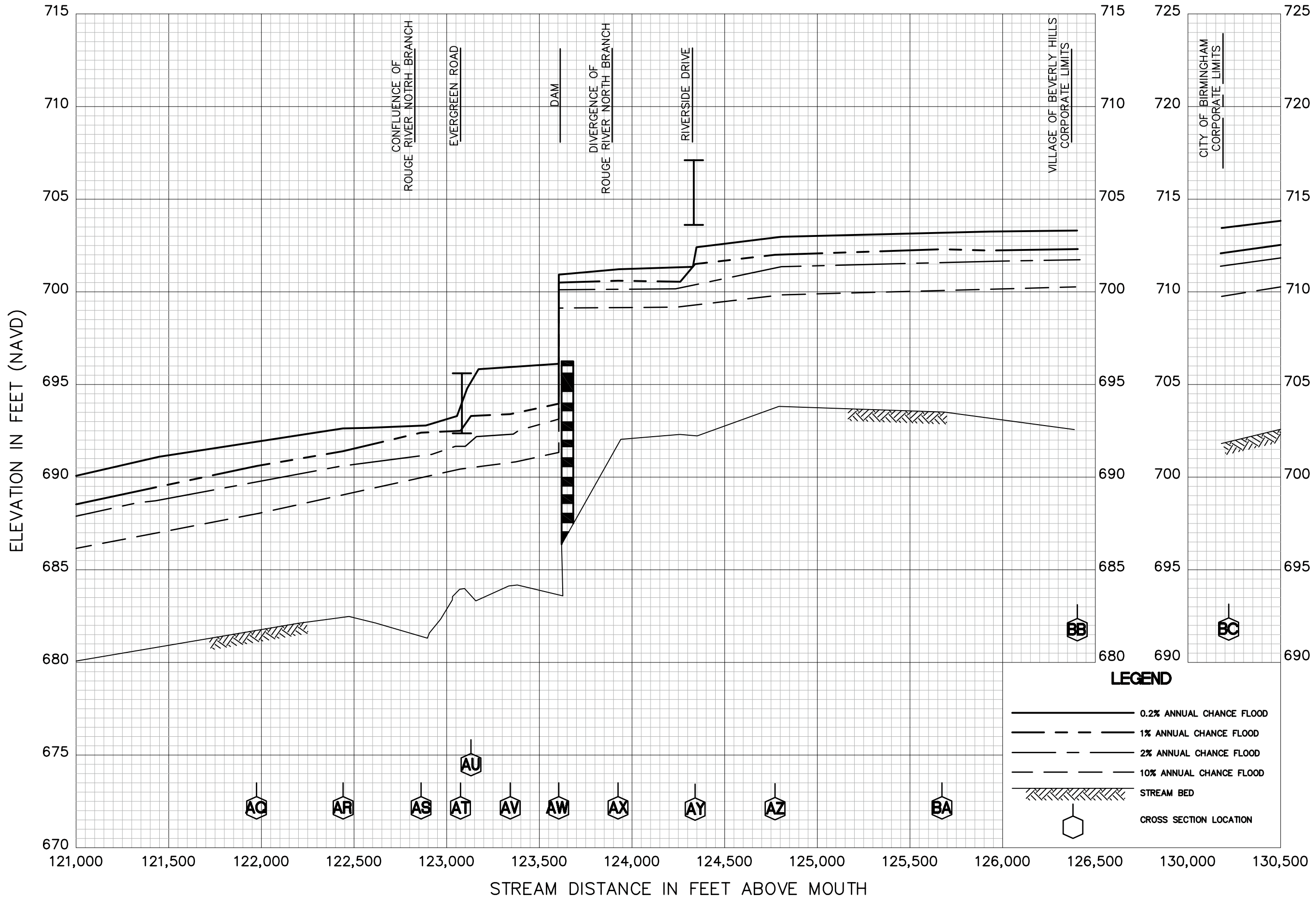


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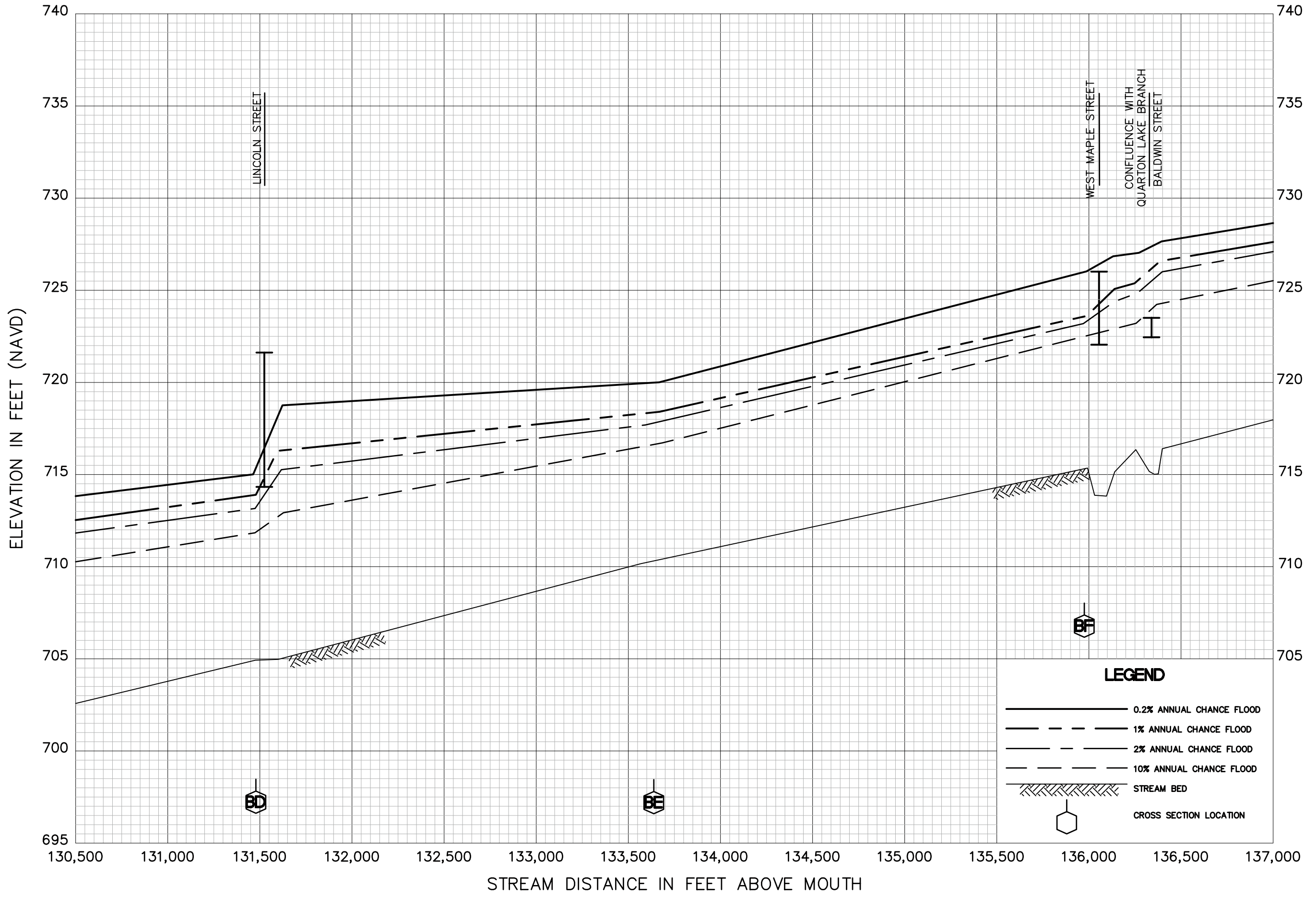
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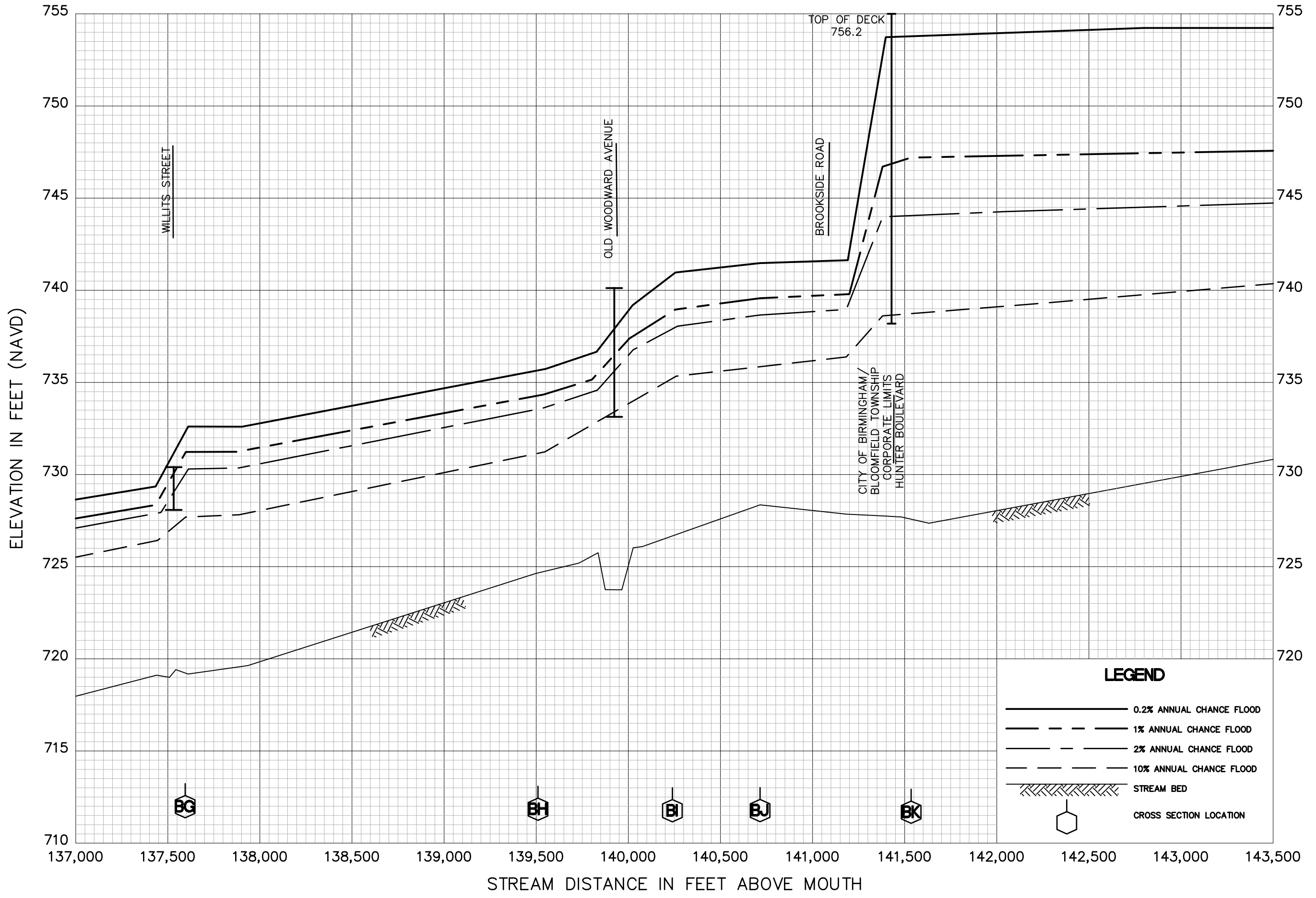


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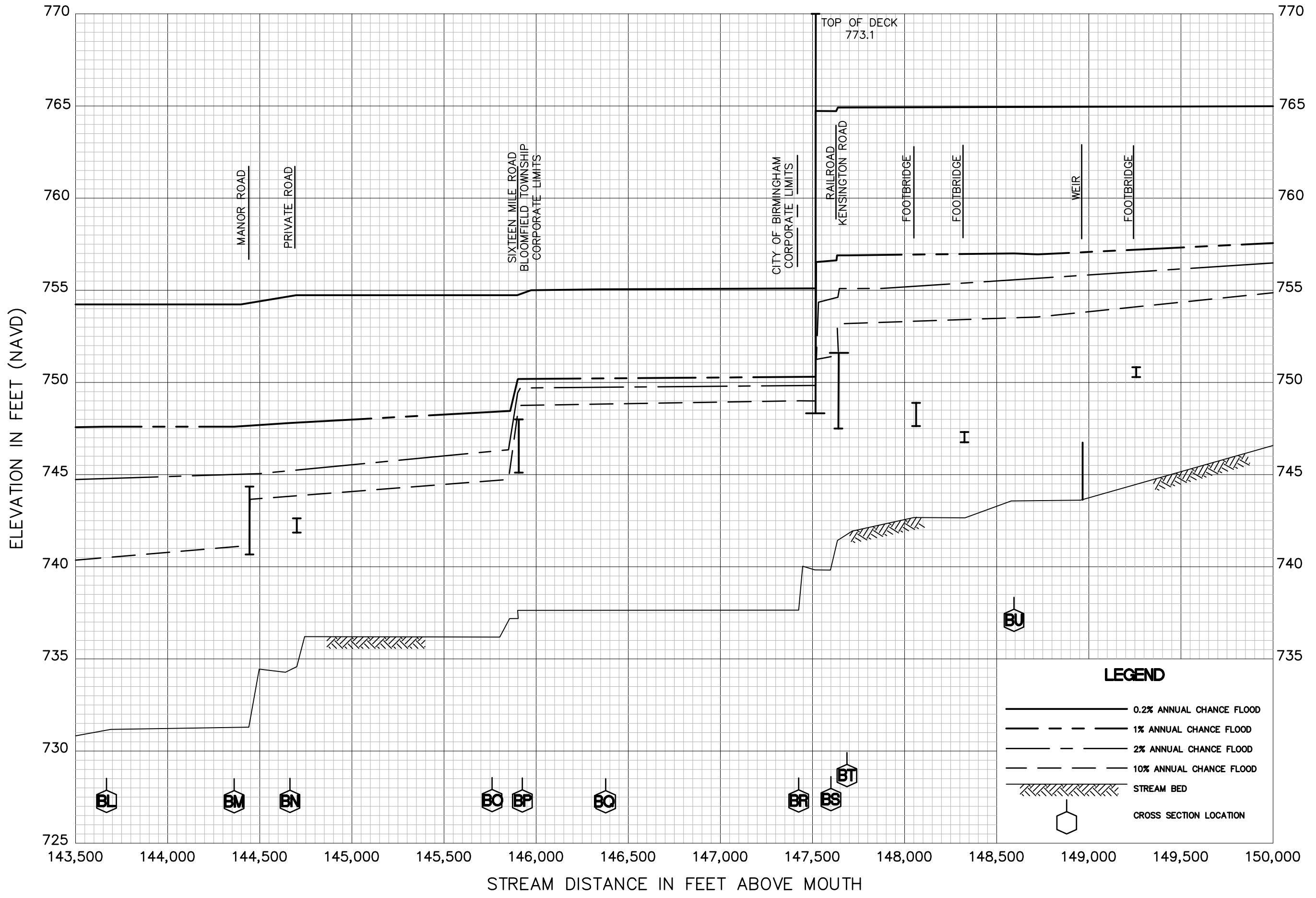
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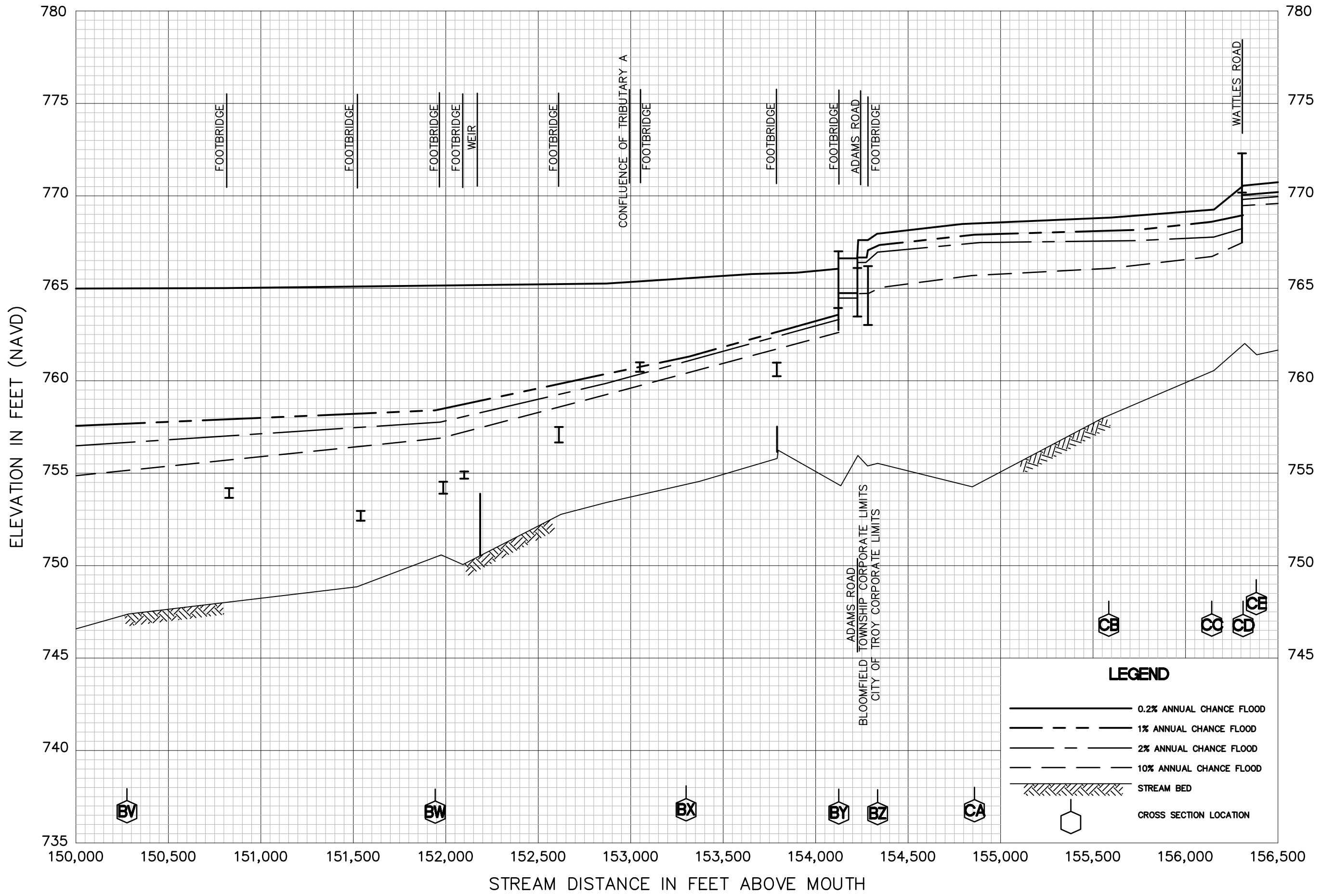
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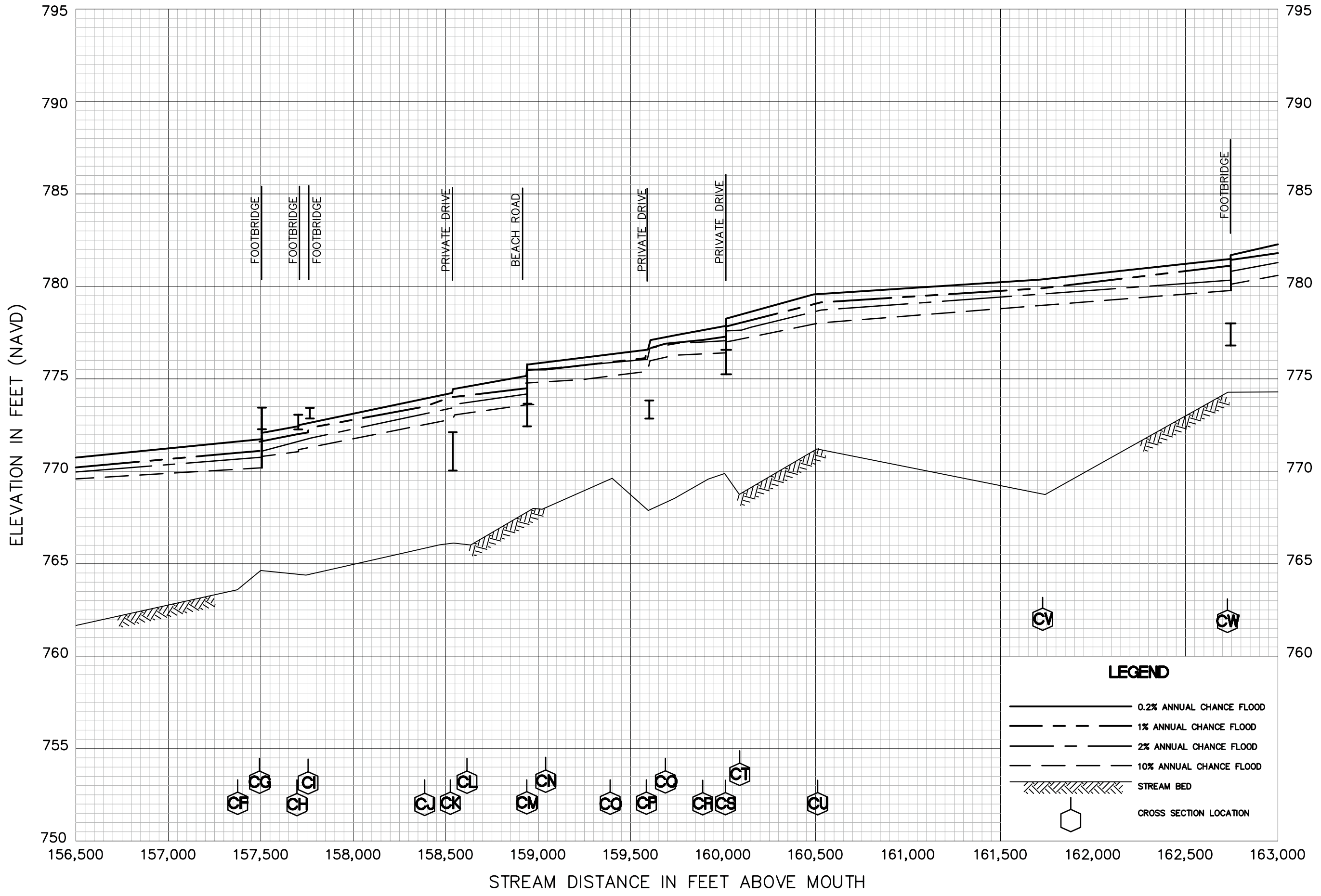
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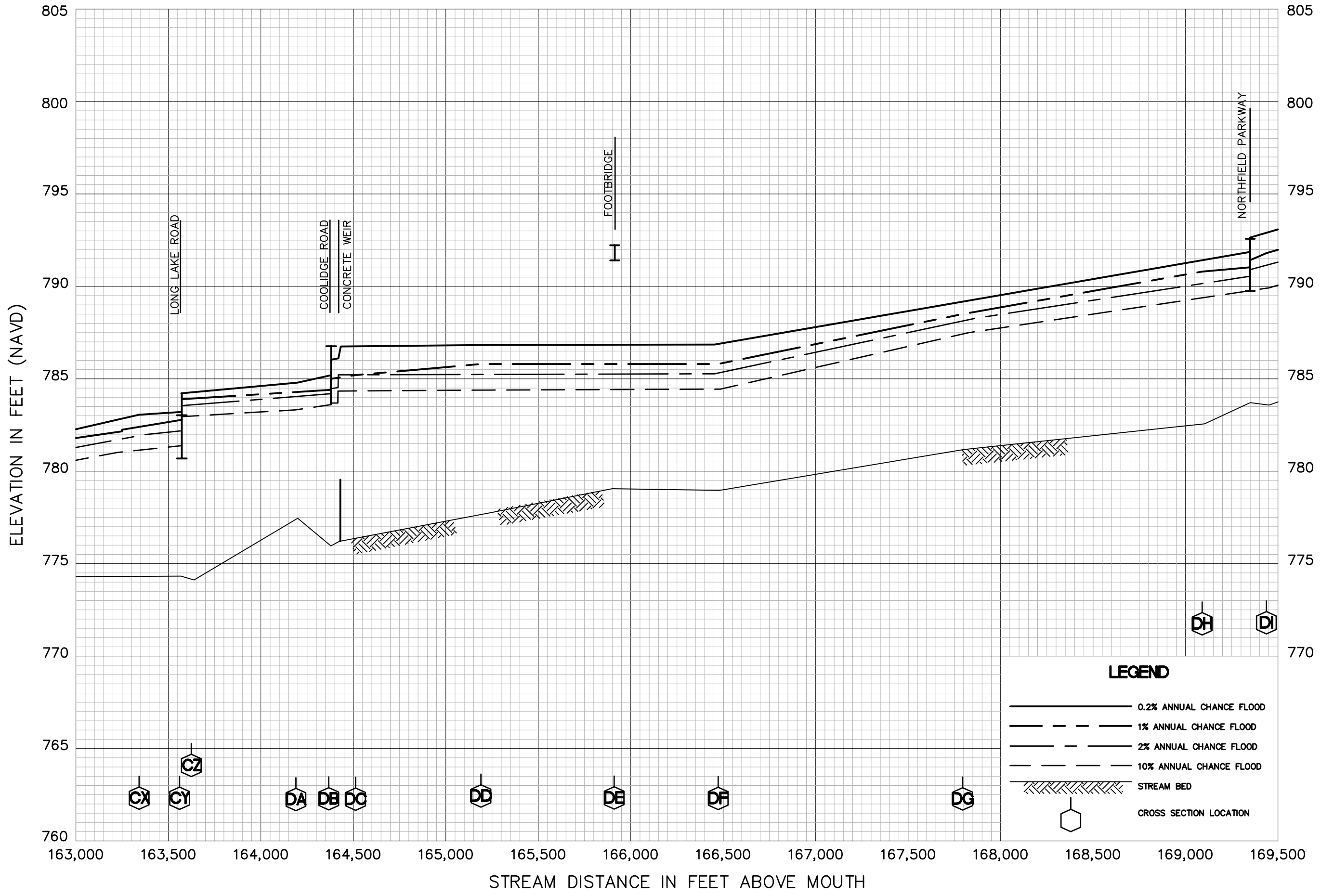
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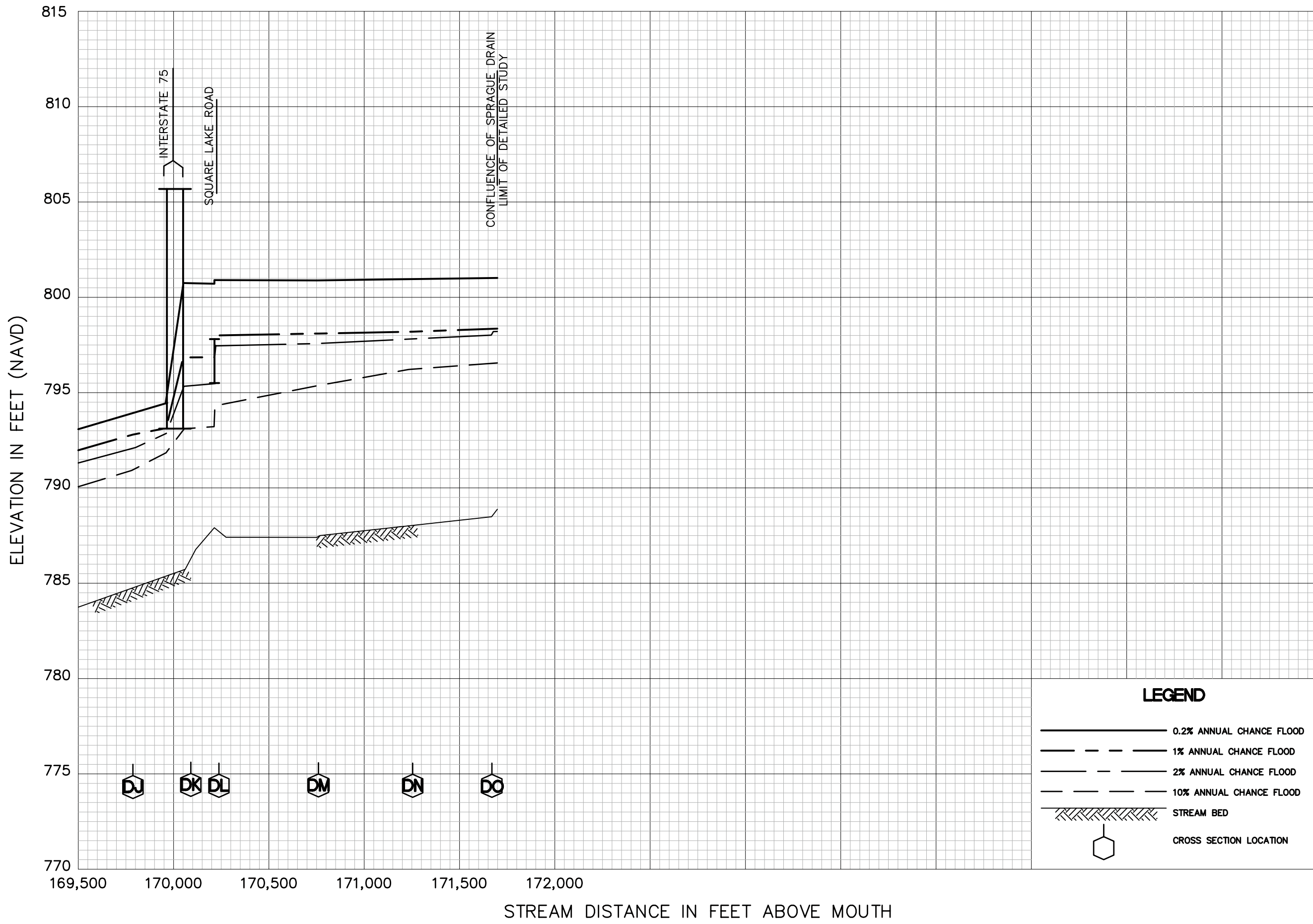
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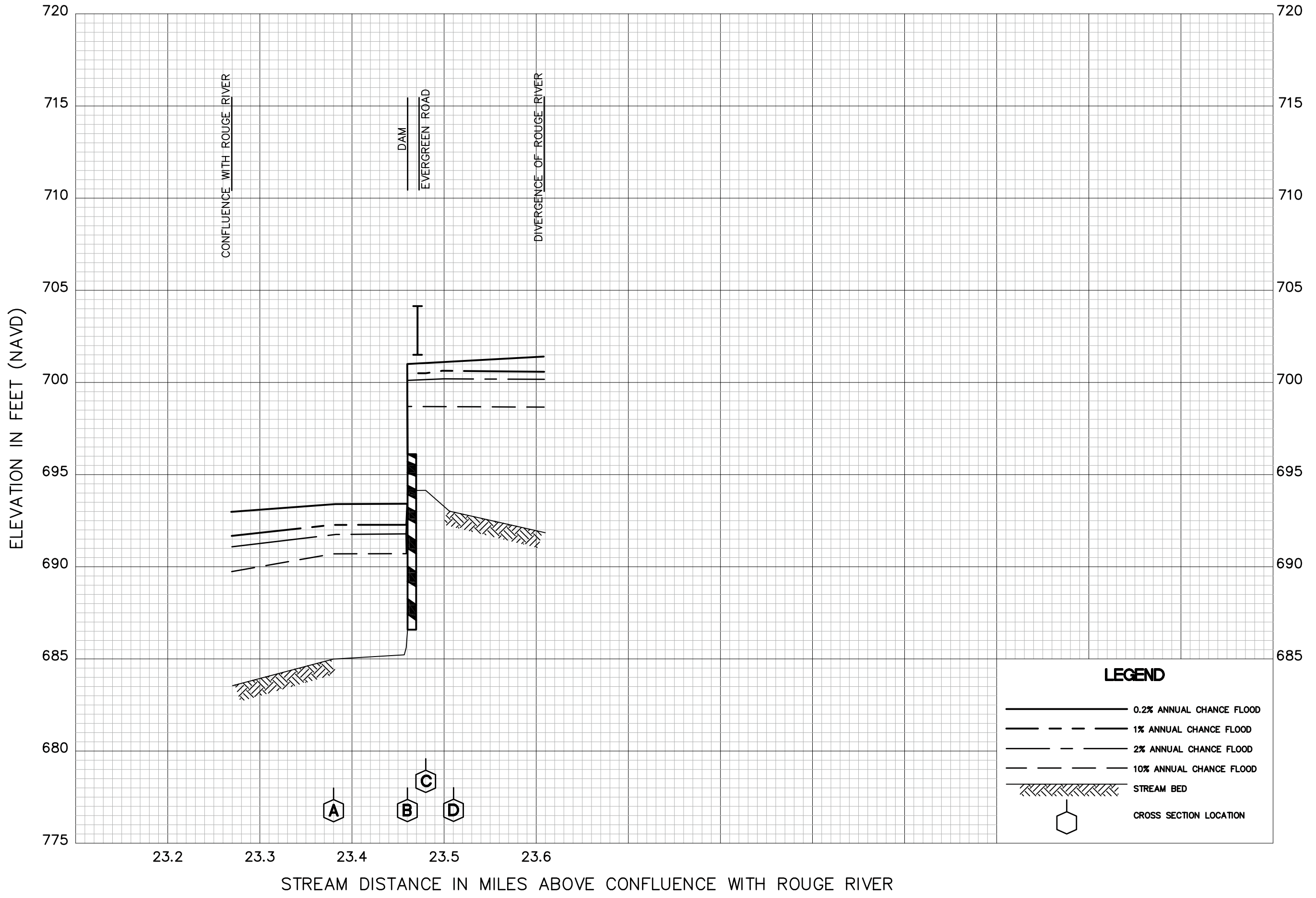
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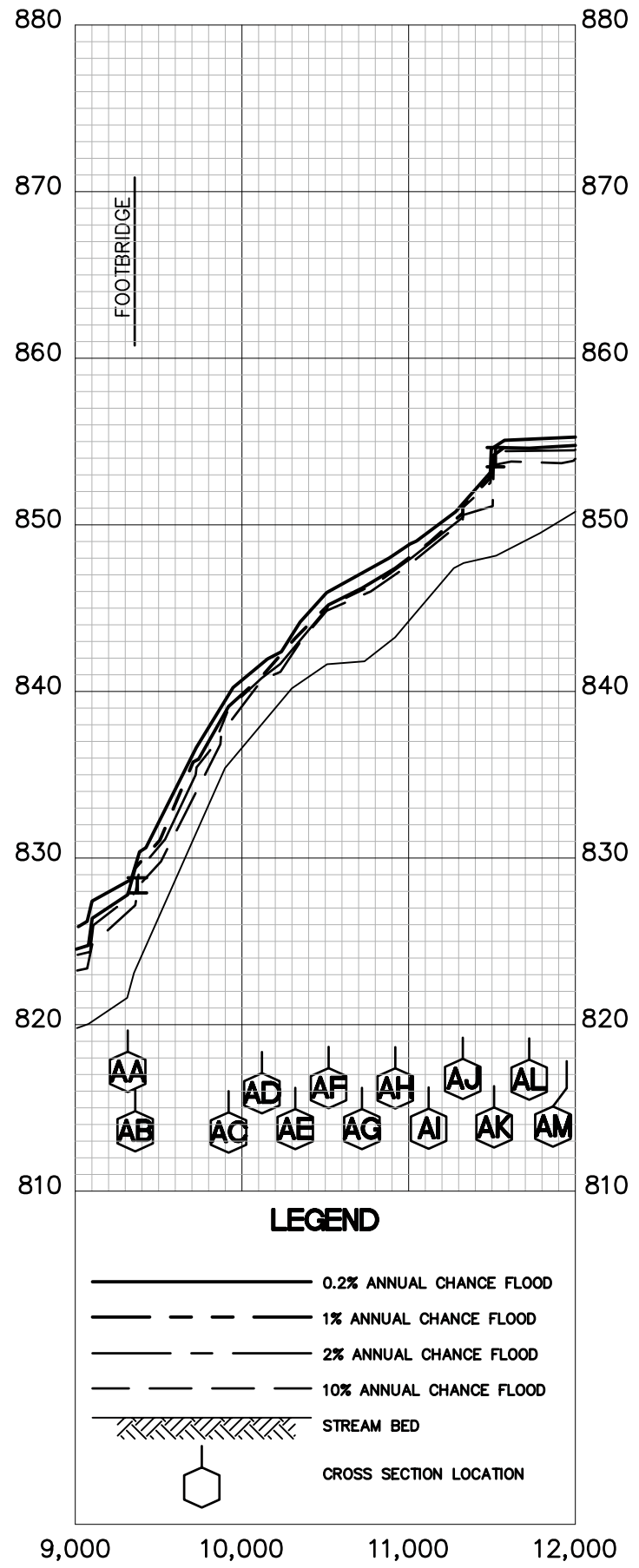
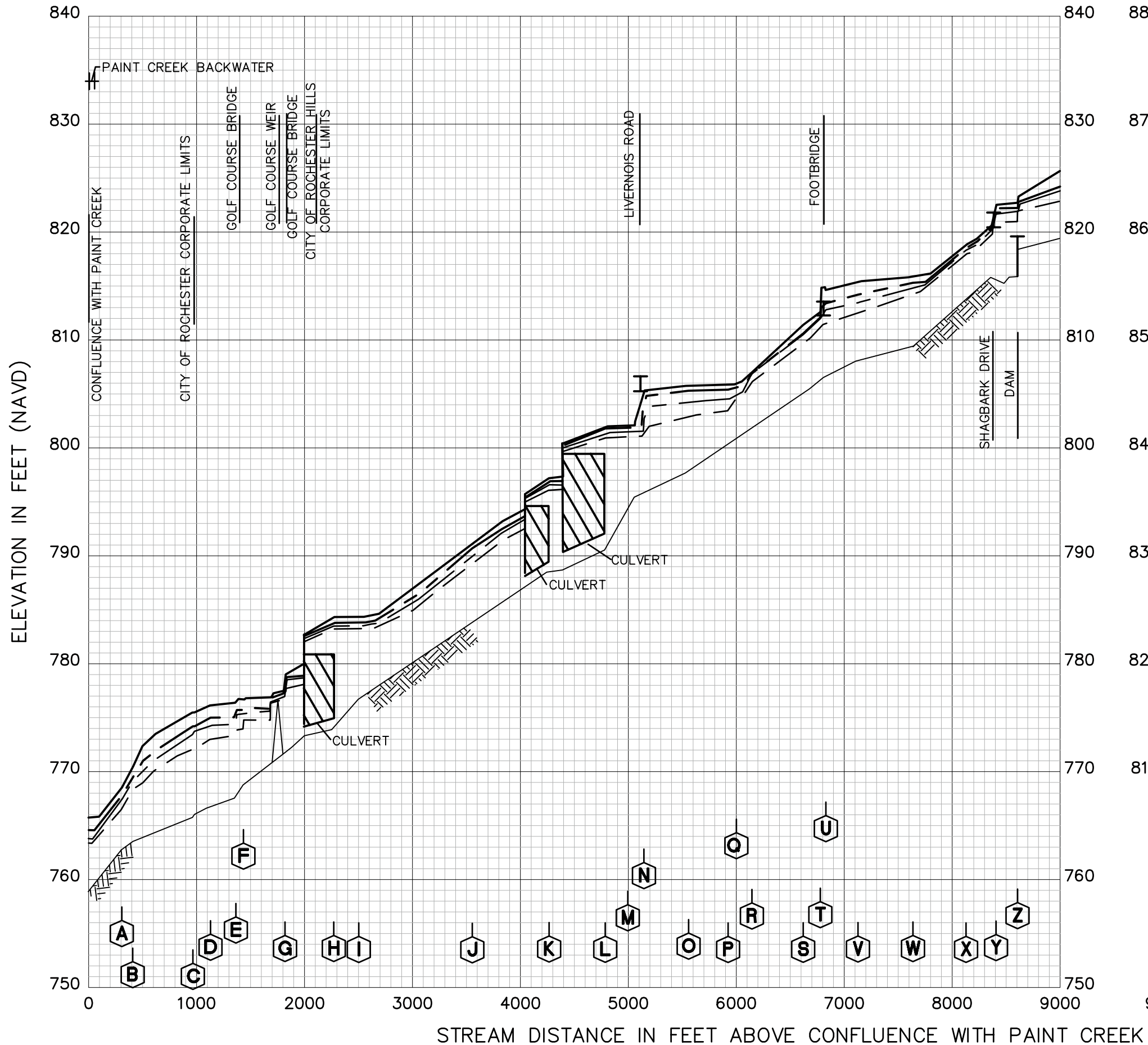
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ROUGE RIVER NORTH BRANCH

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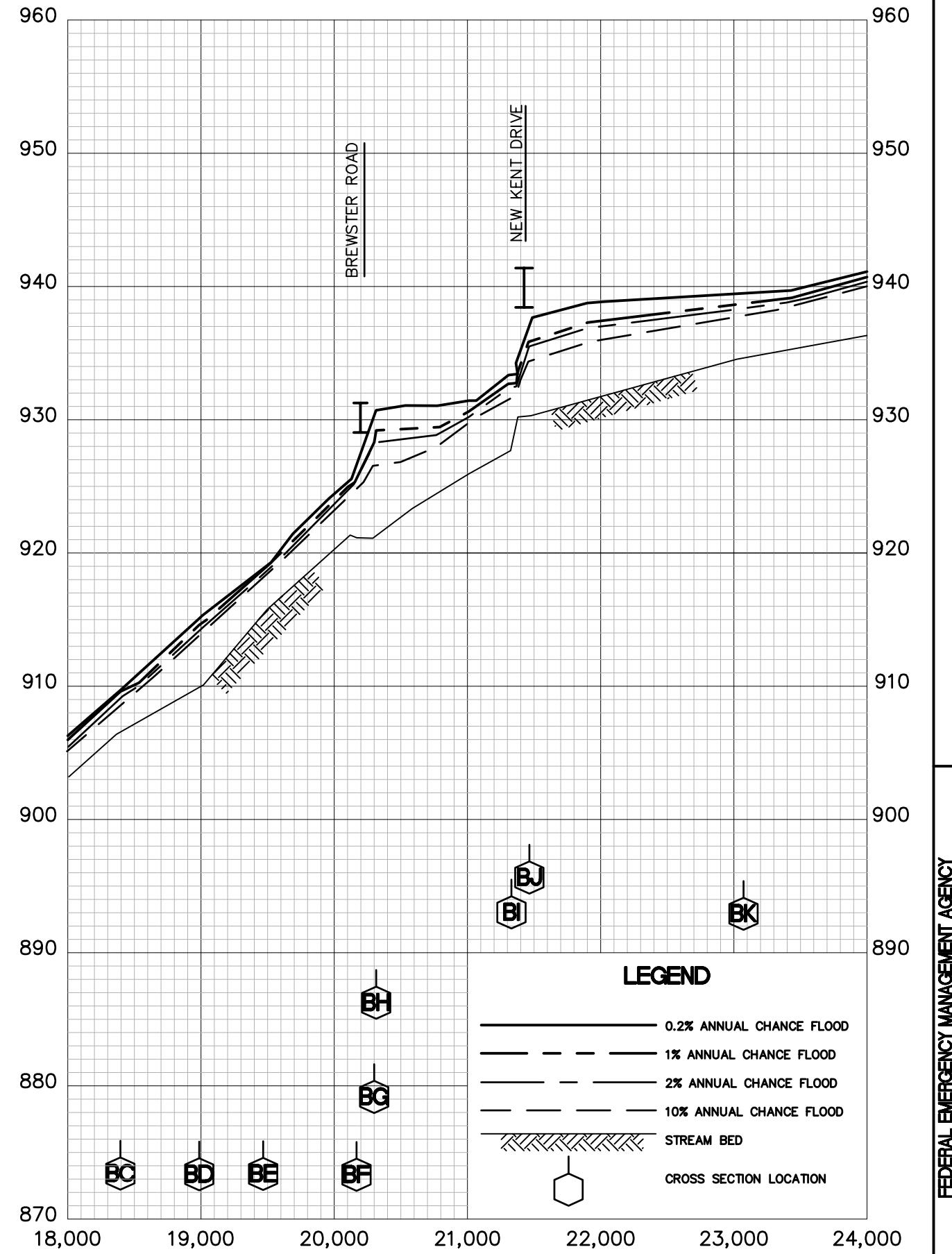
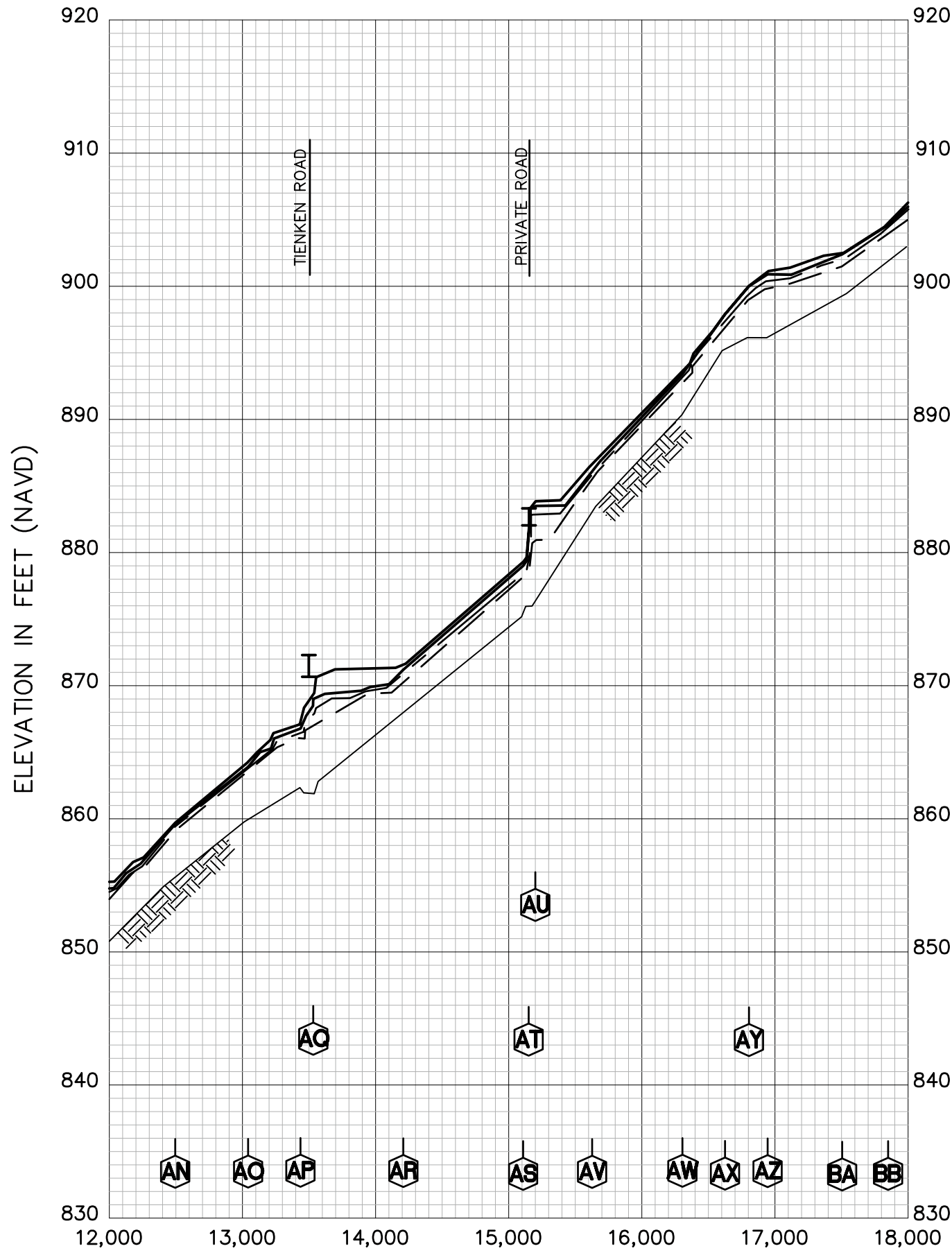
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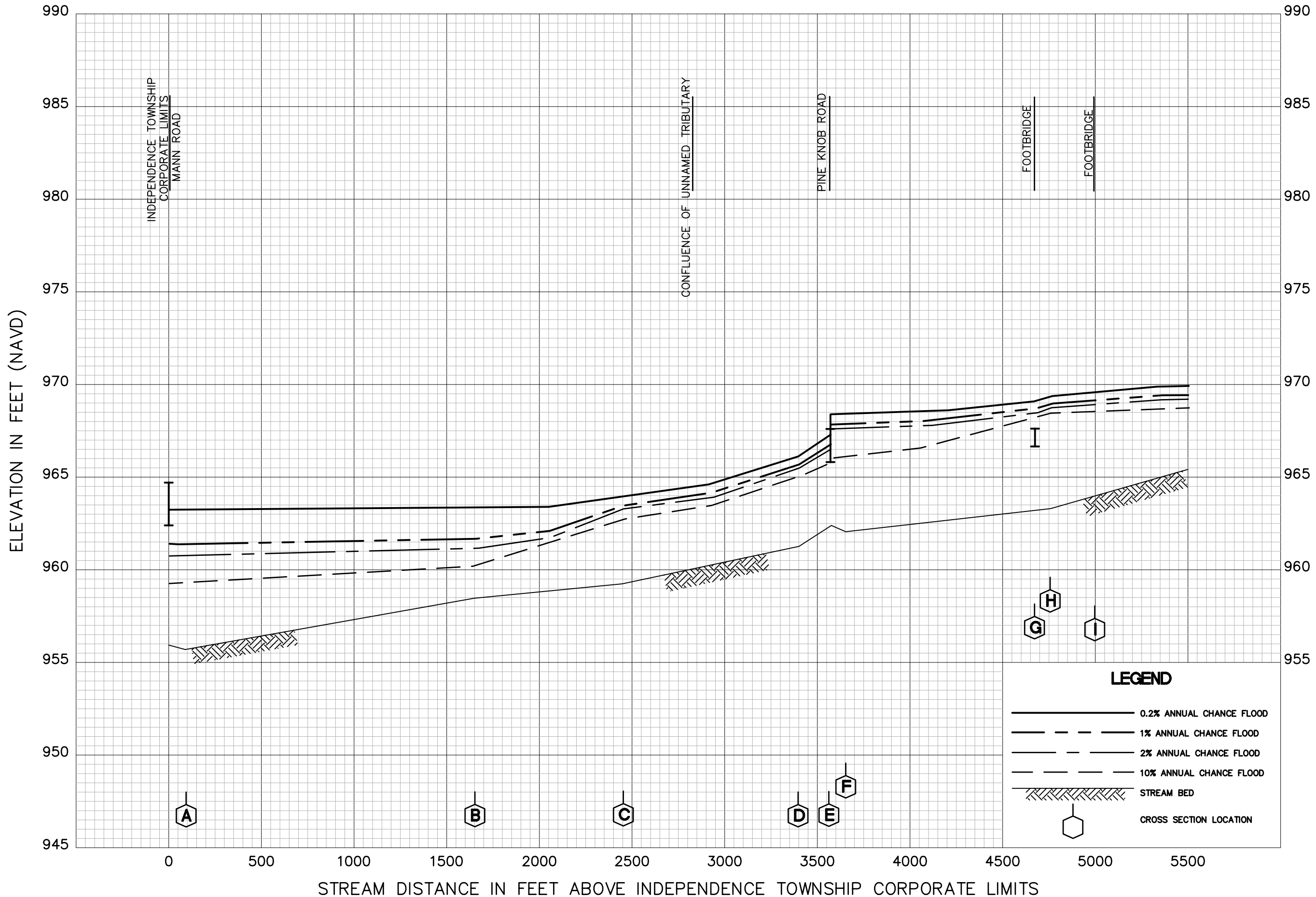


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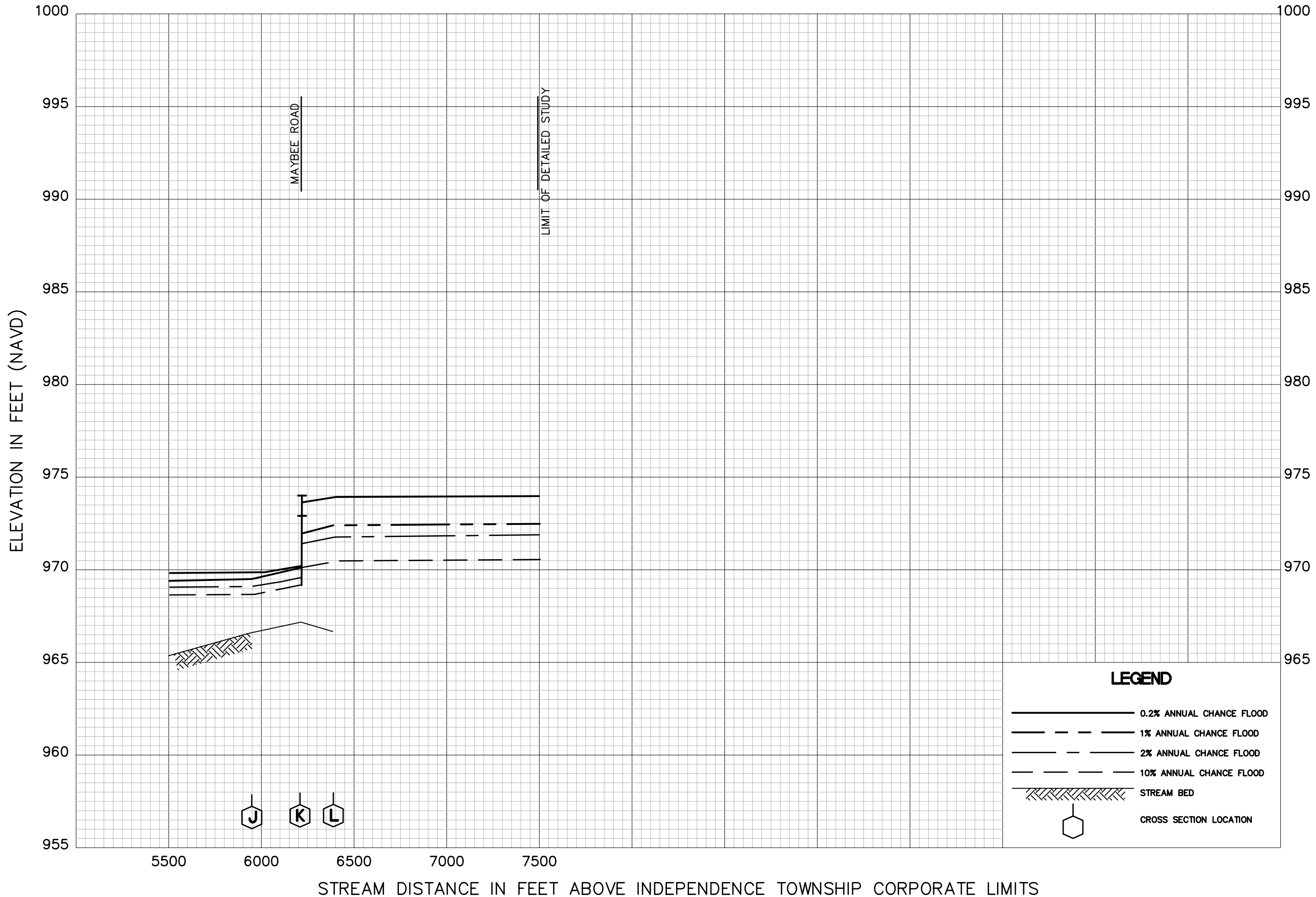
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SARGENT CREEK**

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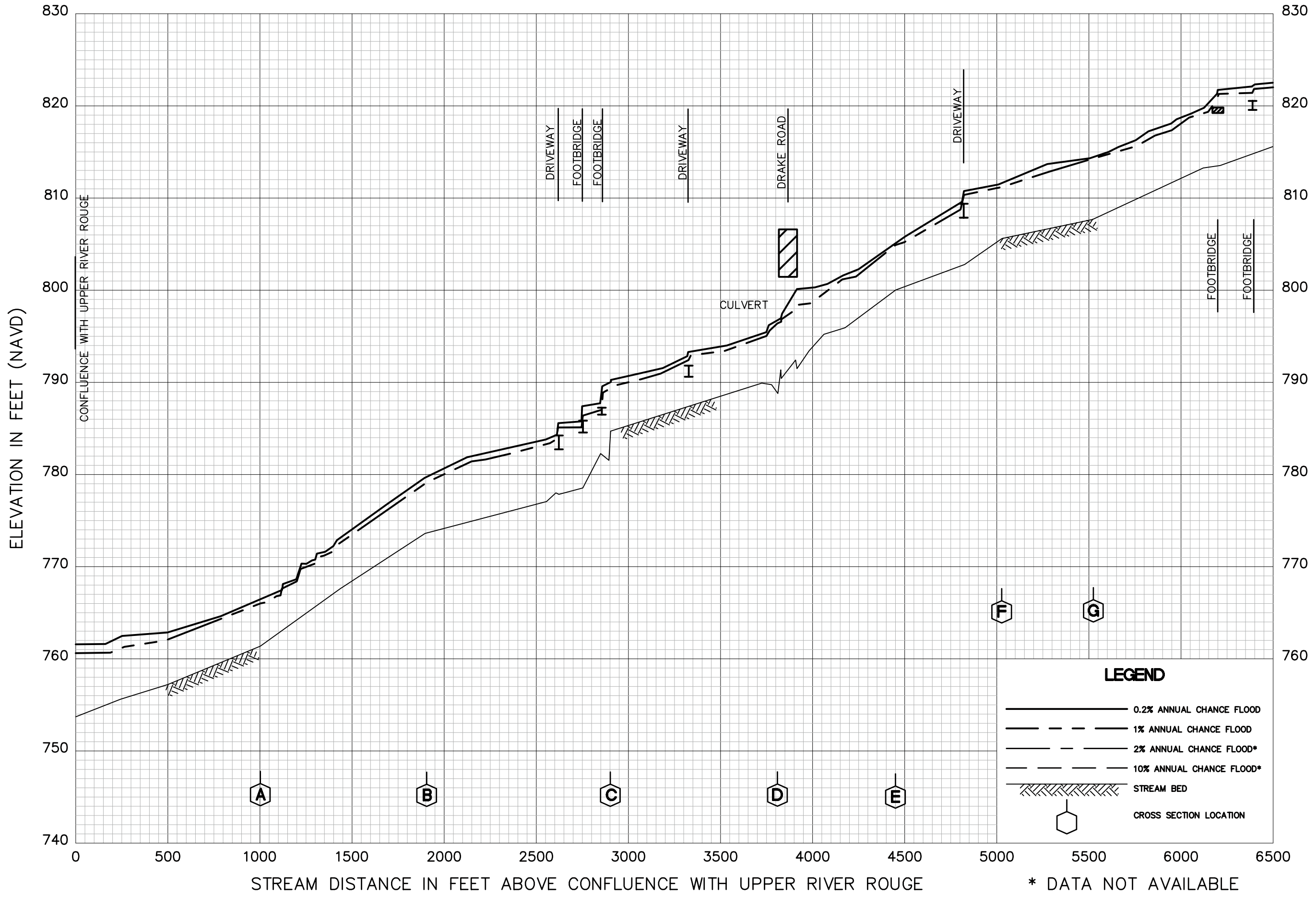
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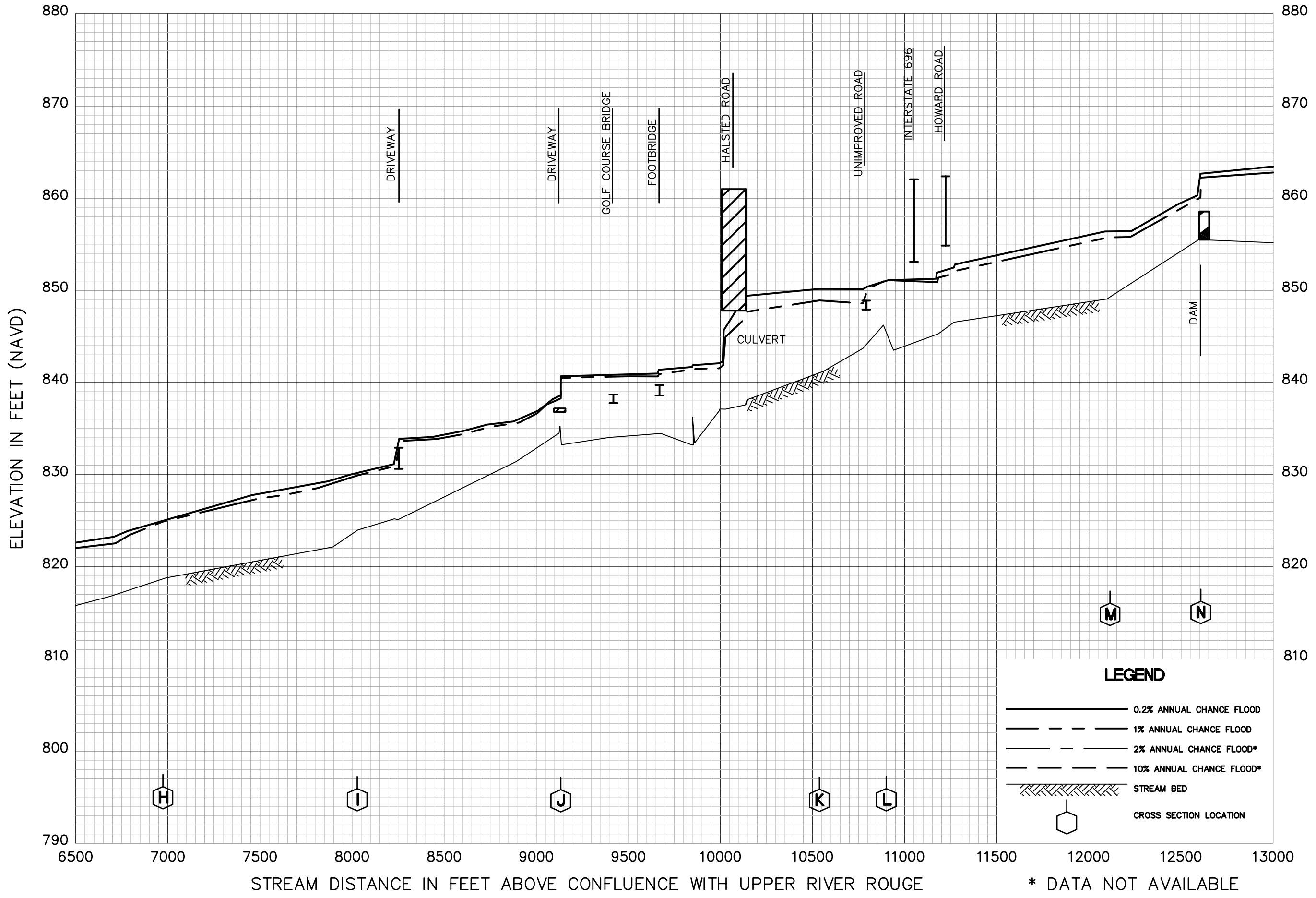
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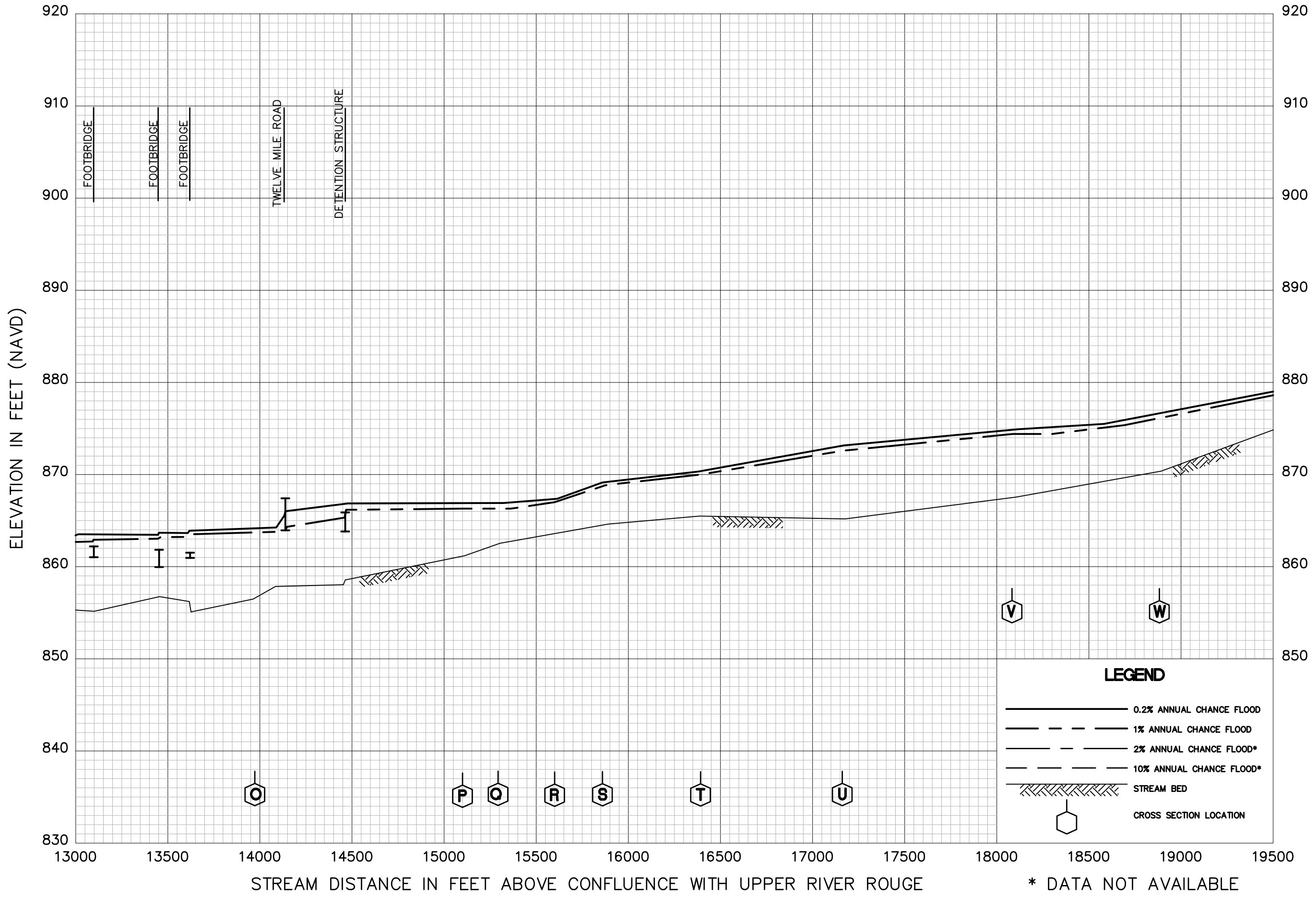
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SEELEY DRAIN

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**FLOOD PROFILES
SEELEY DRAIN**

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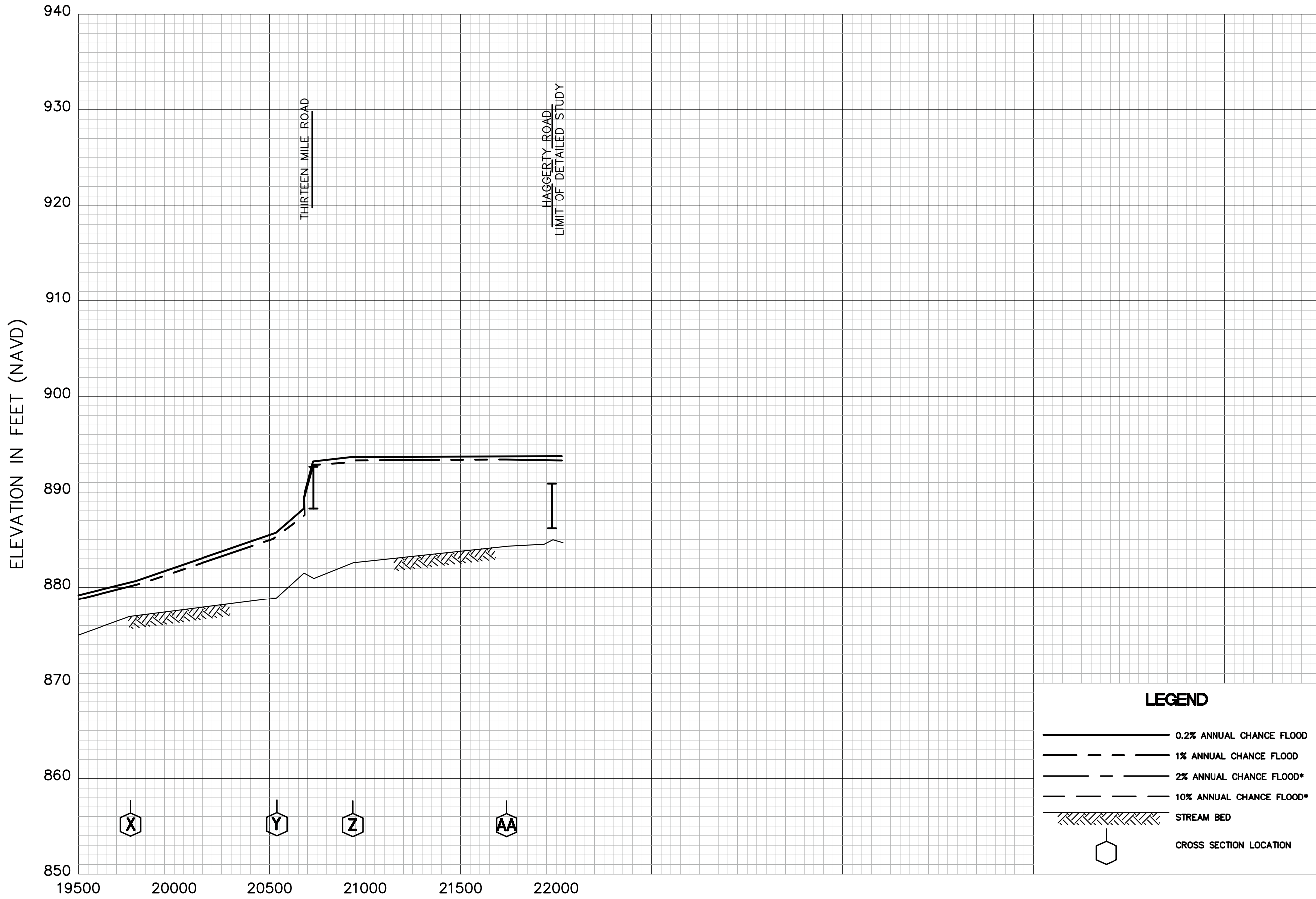
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* DATA NOT AVAILABLE

**FLOOD PROFILES
SEELEY DRAIN**

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
(ALL JURISDICTIONS)



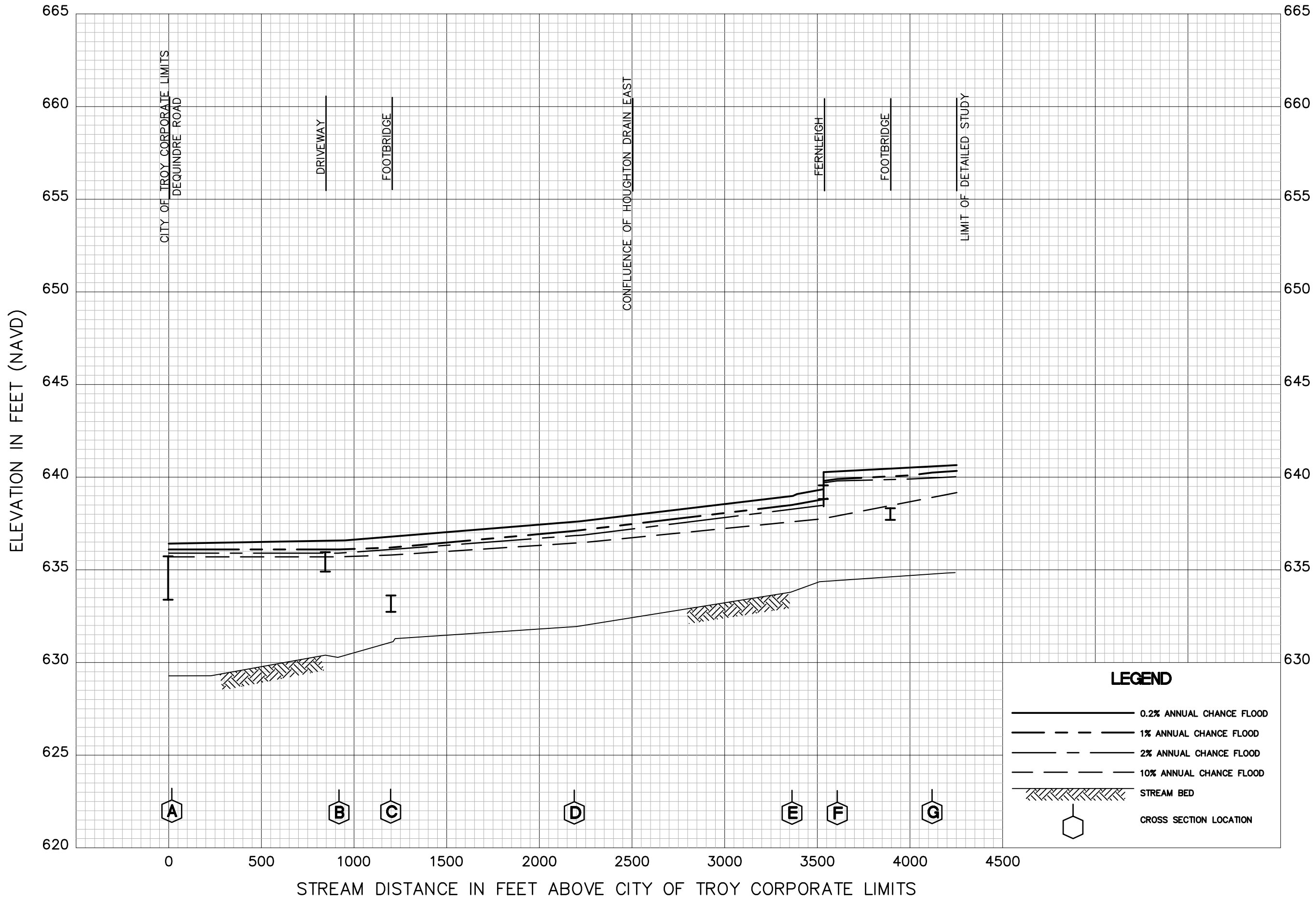
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**FLOOD PROFILES
SEELEY DRAIN**

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
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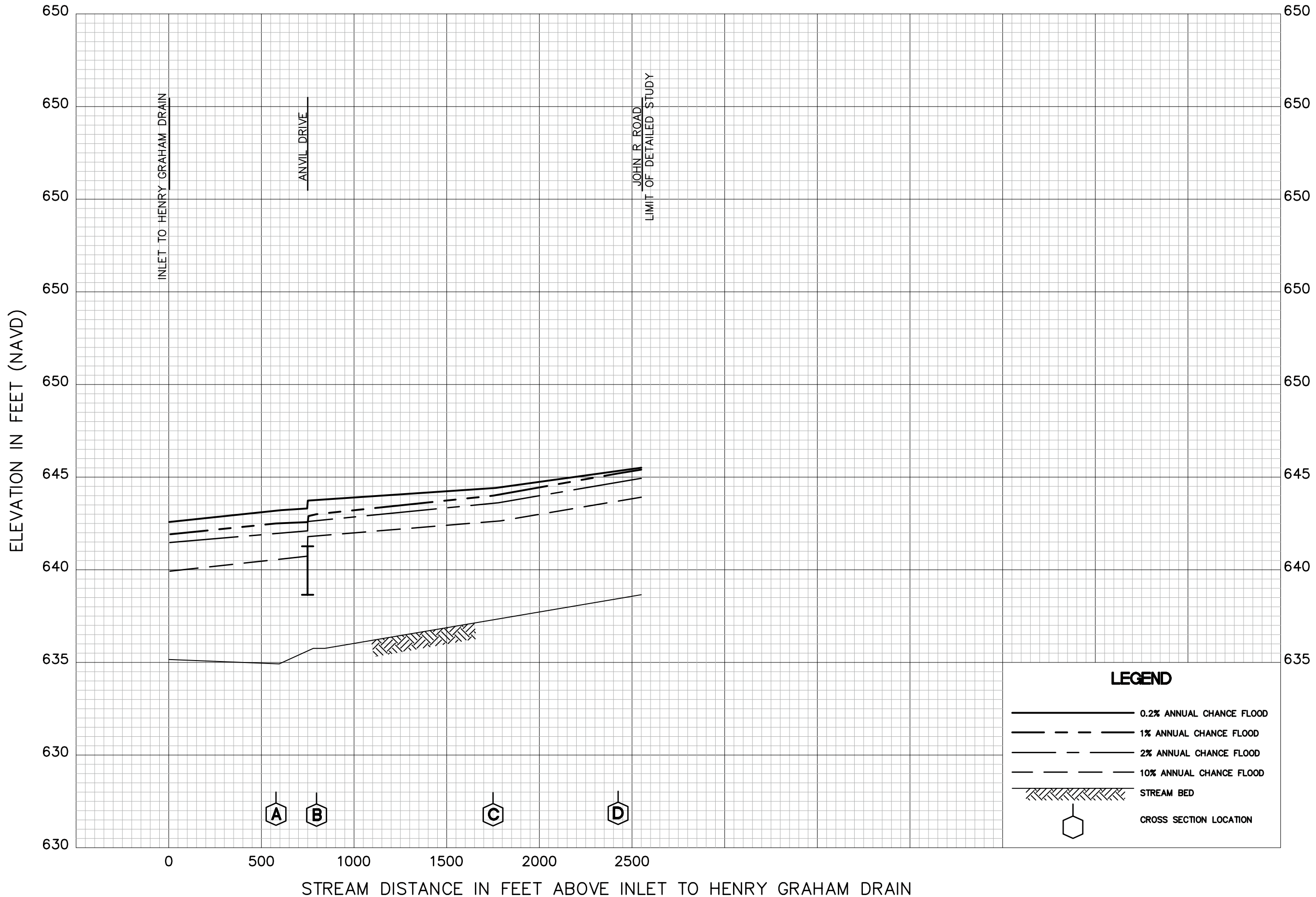
FLOOD PROFILES

SHANAHAN DRAIN (EAST OF HENRY GRAHAM DRAIN)

FEDERAL EMERGENCY MANAGEMENT AGENCY

OAKLAND COUNTY, MI

(ALL JURISDICTIONS)

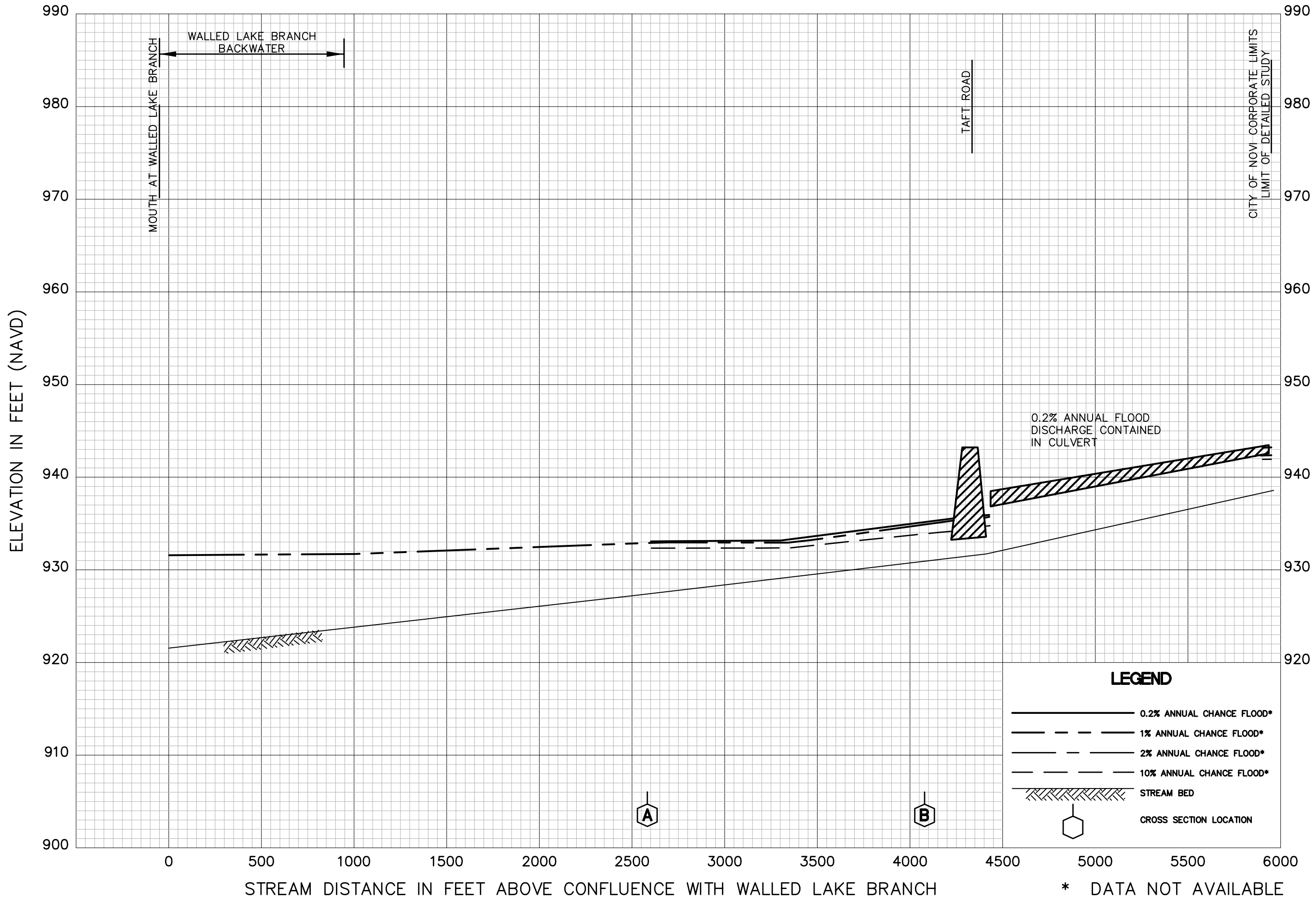


FLOOD PROFILES

SHANAHAN DRAIN (WEST OF HENRY GRAHAM DRAIN)

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OAKLAND COUNTY, MI
(ALL JURISDICTIONS)



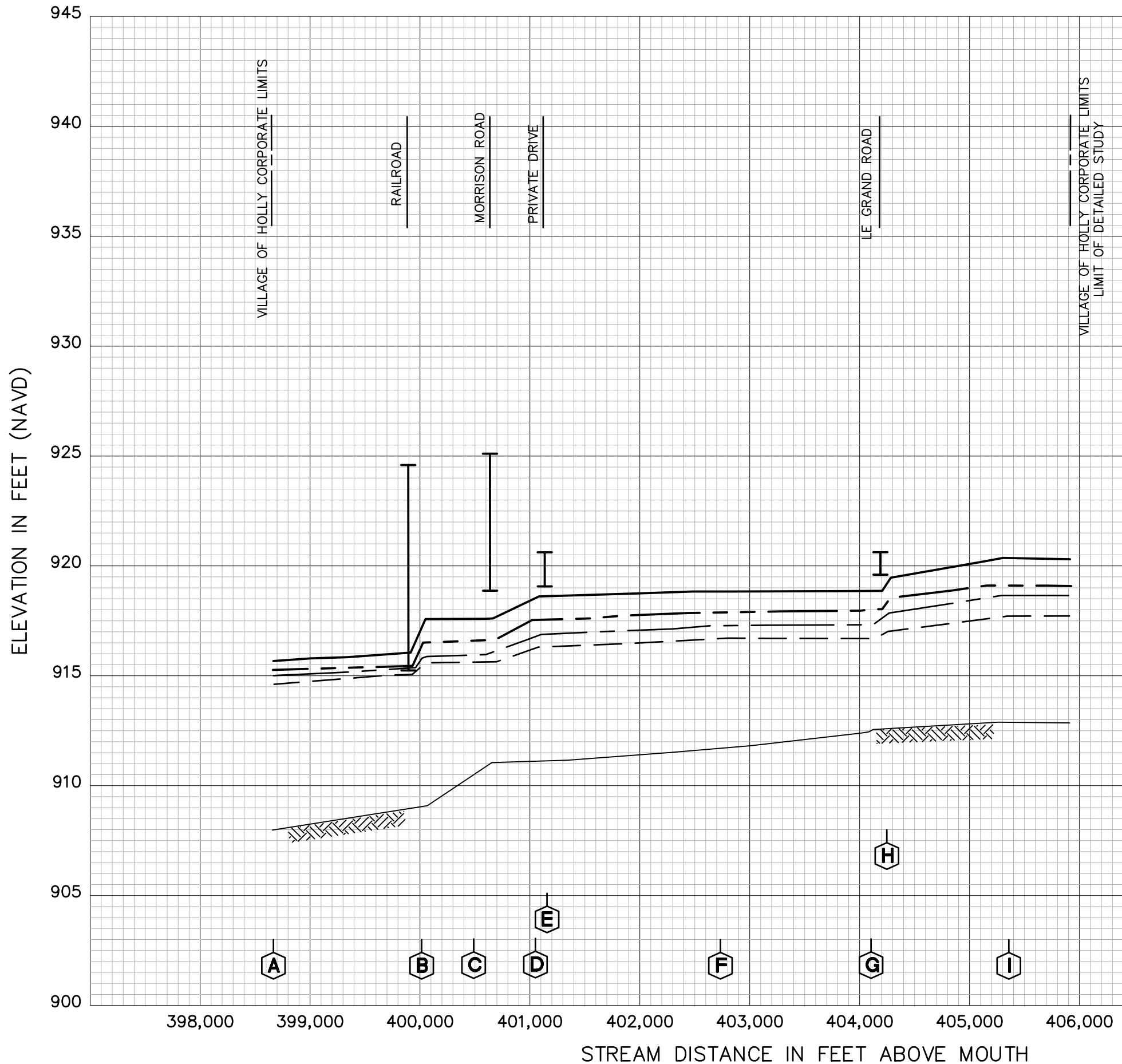
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FLOOD PROFILES
SHAW CREEK

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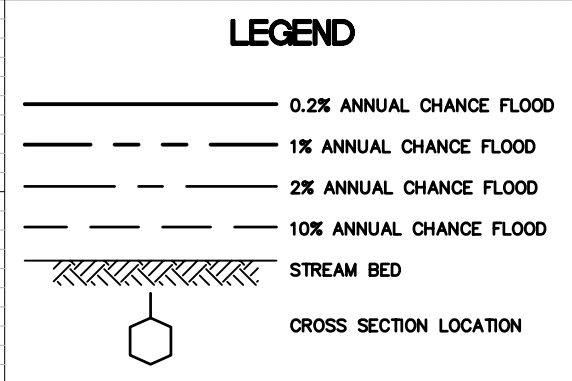
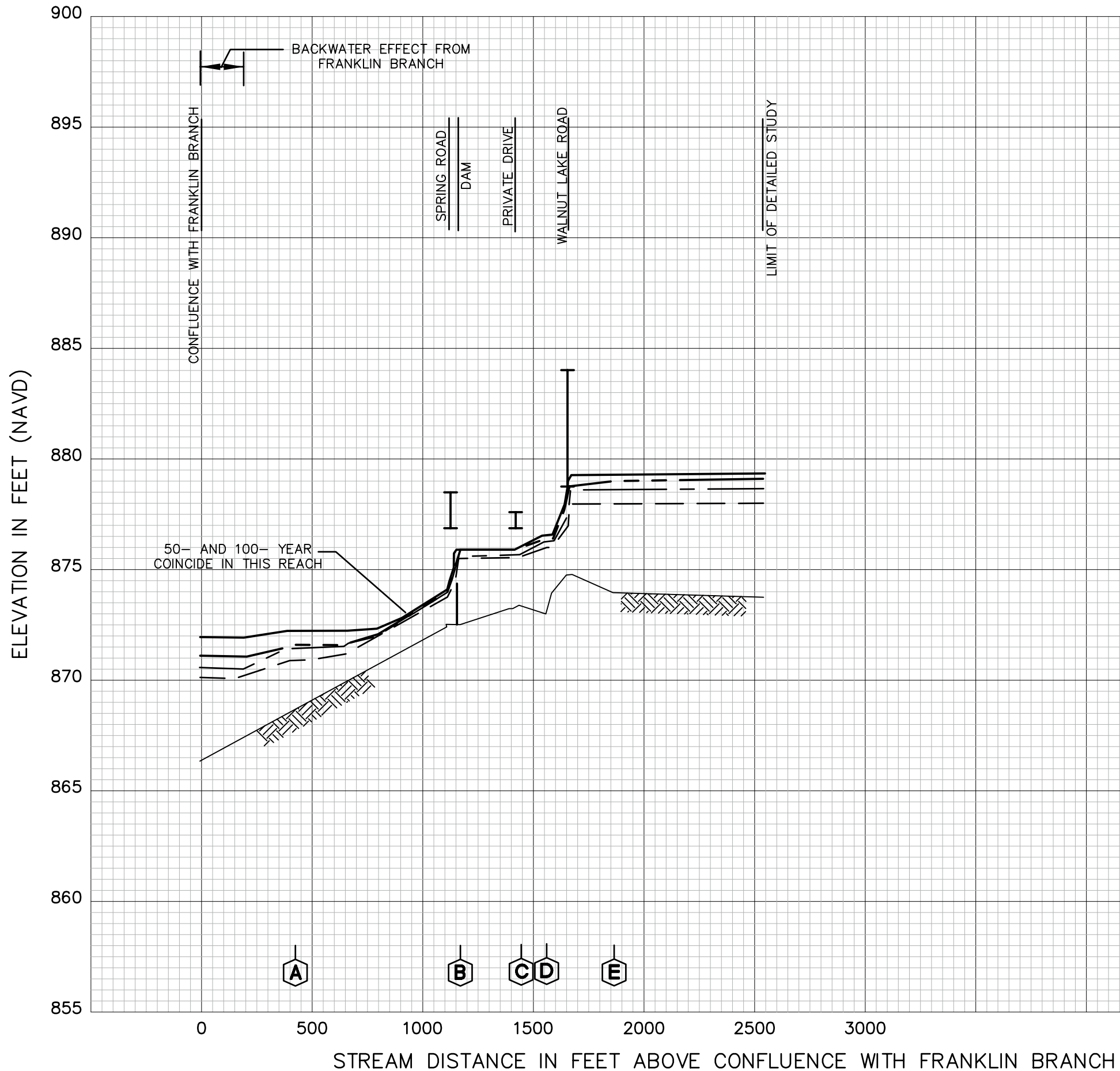


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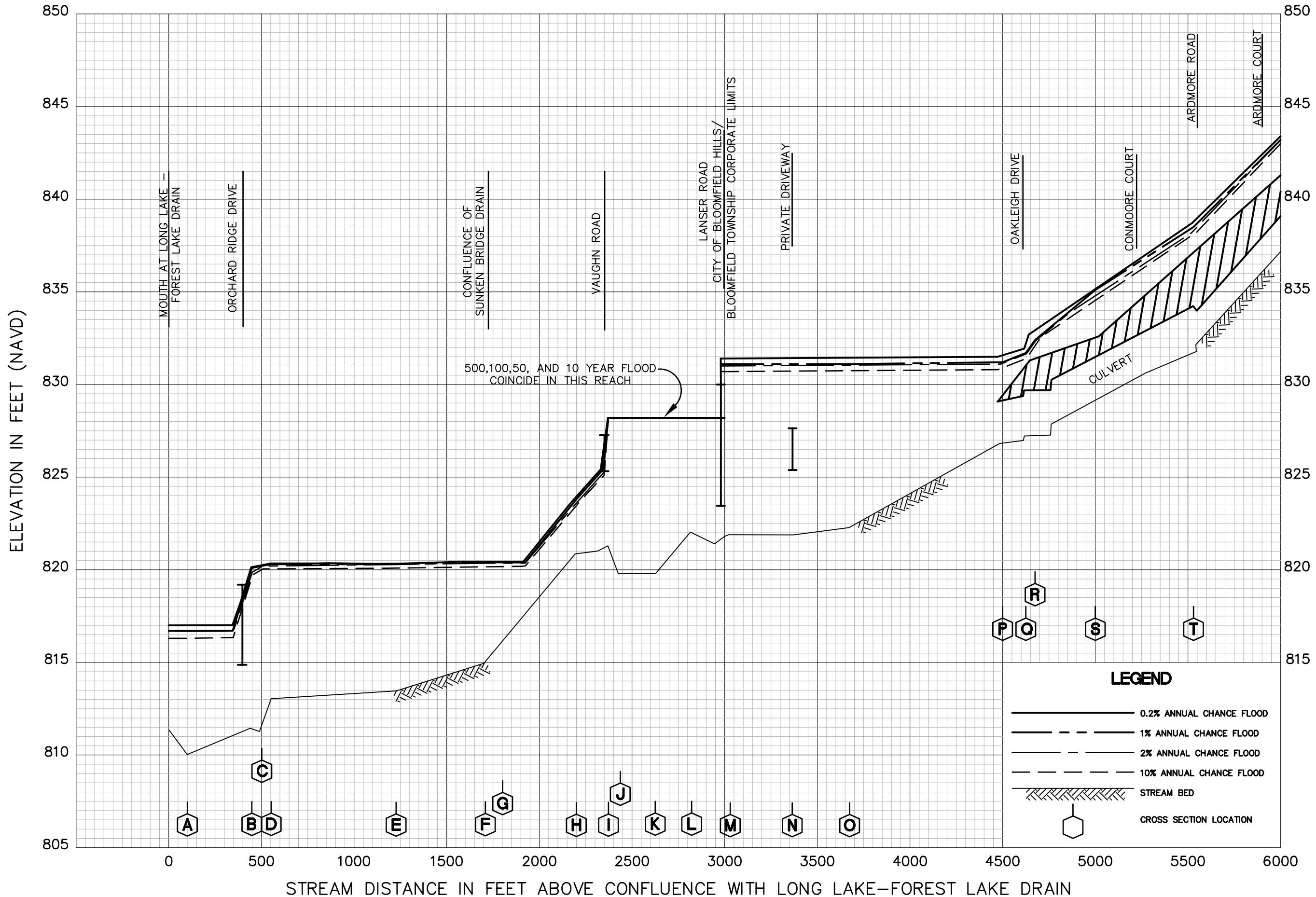
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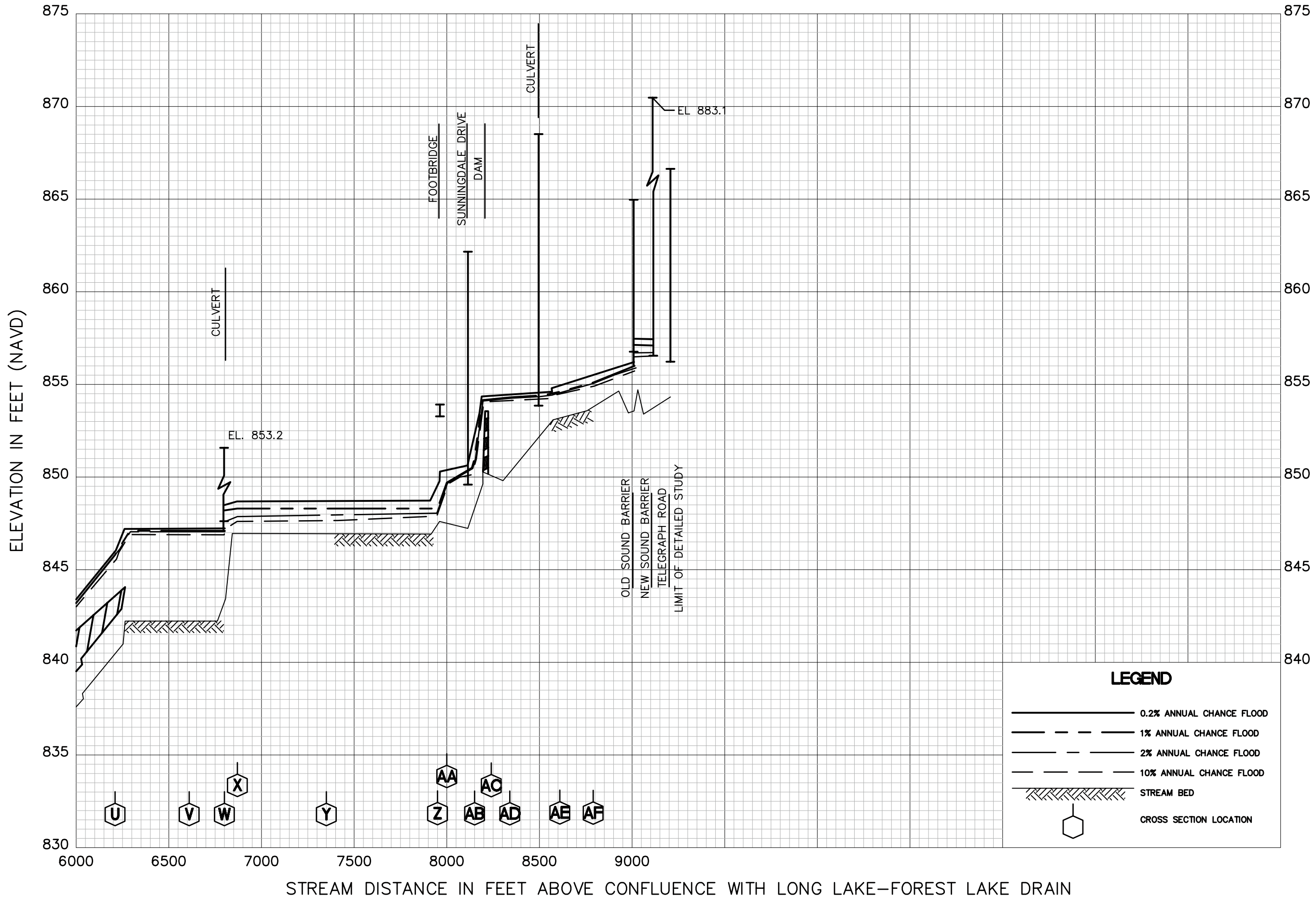
FLOOD PROFILES
SIMPSON LAKE OUTLET

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
(ALL JURISDICTIONS)



FLOOD PROFILES
SODON LAKE DRAIN

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
(ALL JURISDICTIONS)

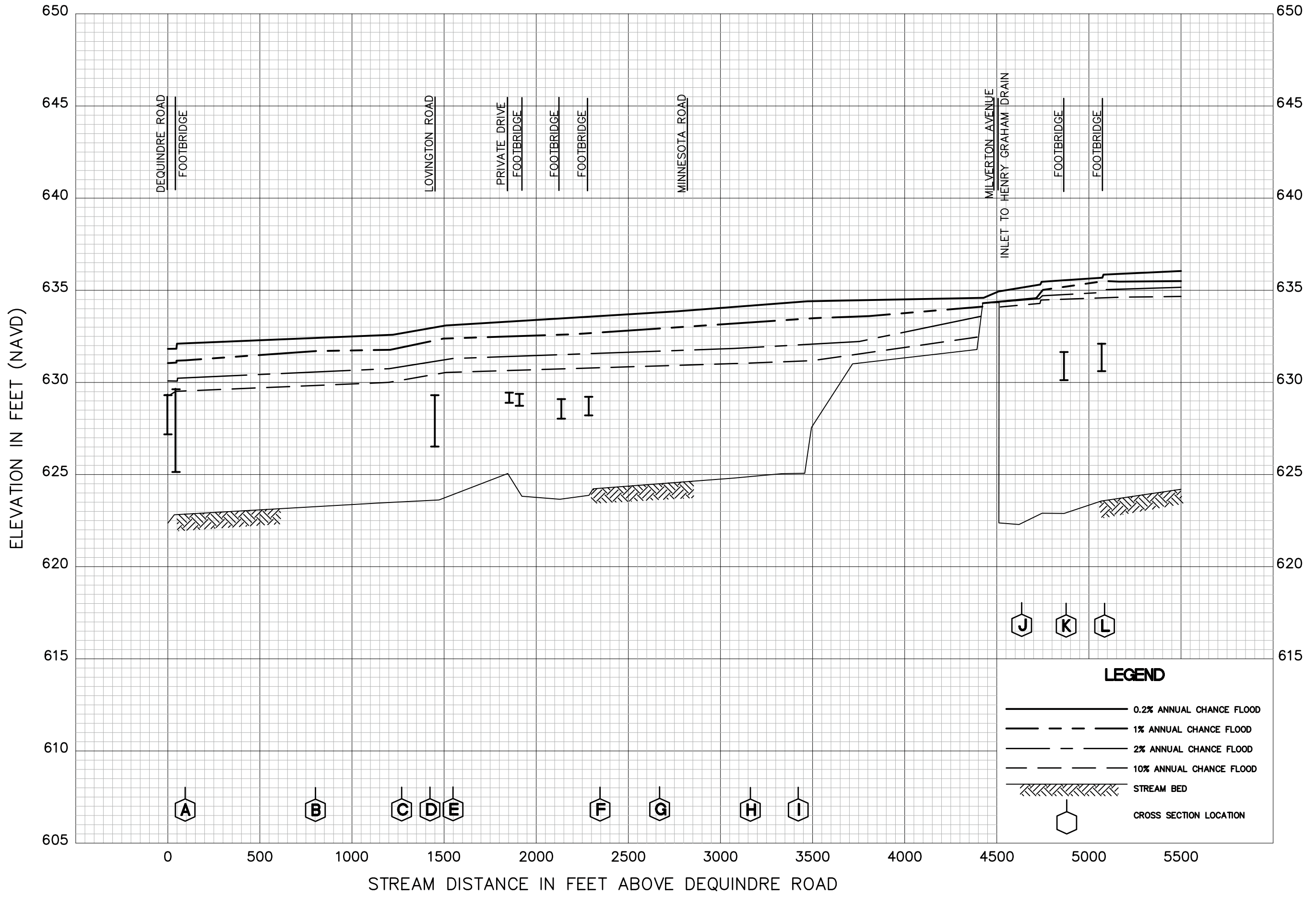


LEGEND

- 0.2% ANNUAL CHANCE FLOOD
- - - 1% ANNUAL CHANCE FLOOD
- · - 2% ANNUAL CHANCE FLOOD
- - - - 10% ANNUAL CHANCE FLOOD
- ▨ STREAM BED
- CROSS SECTION LOCATION

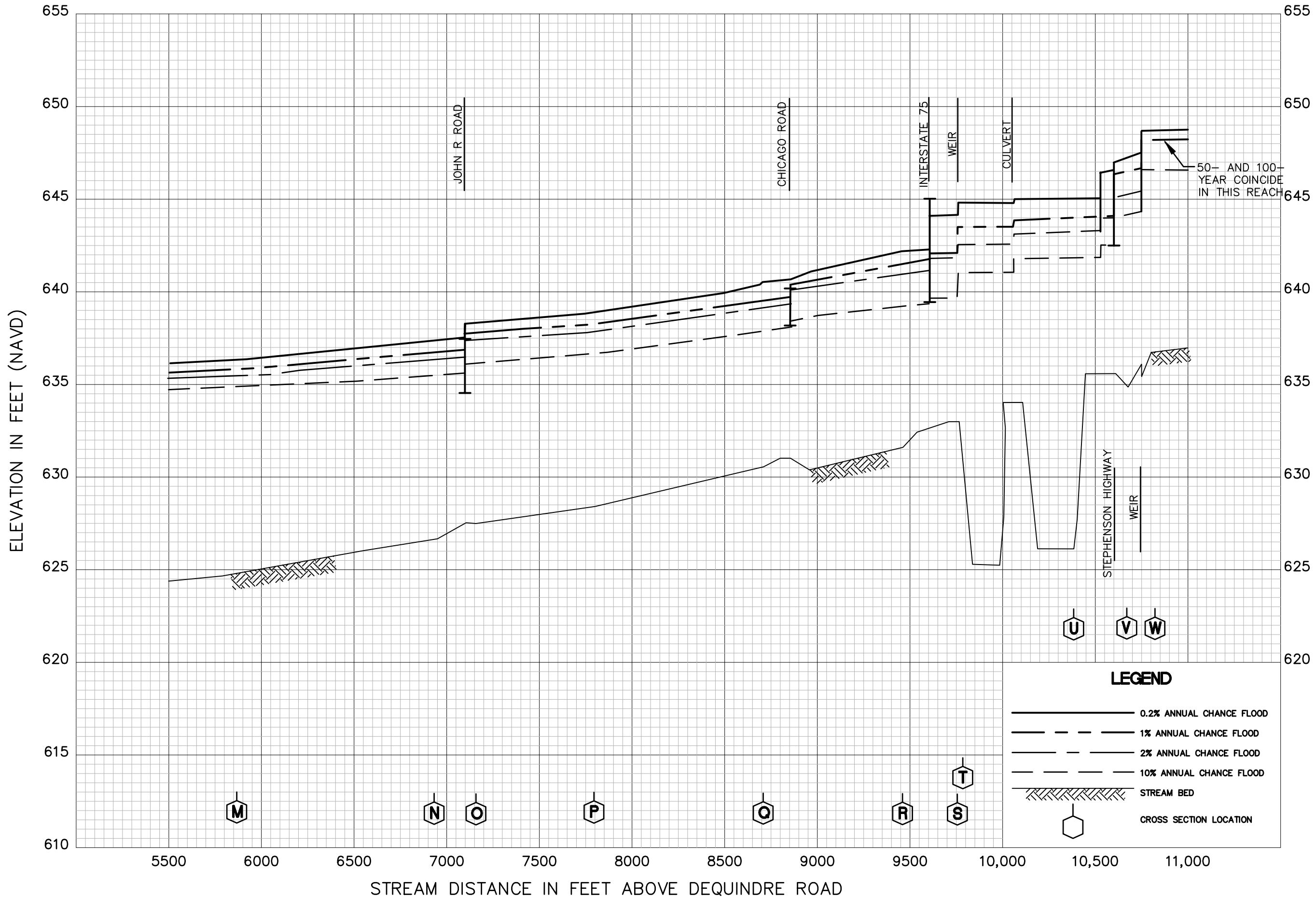
**FLOOD PROFILES
SODON LAKE DRAIN**

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
(ALL JURISDICTIONS)



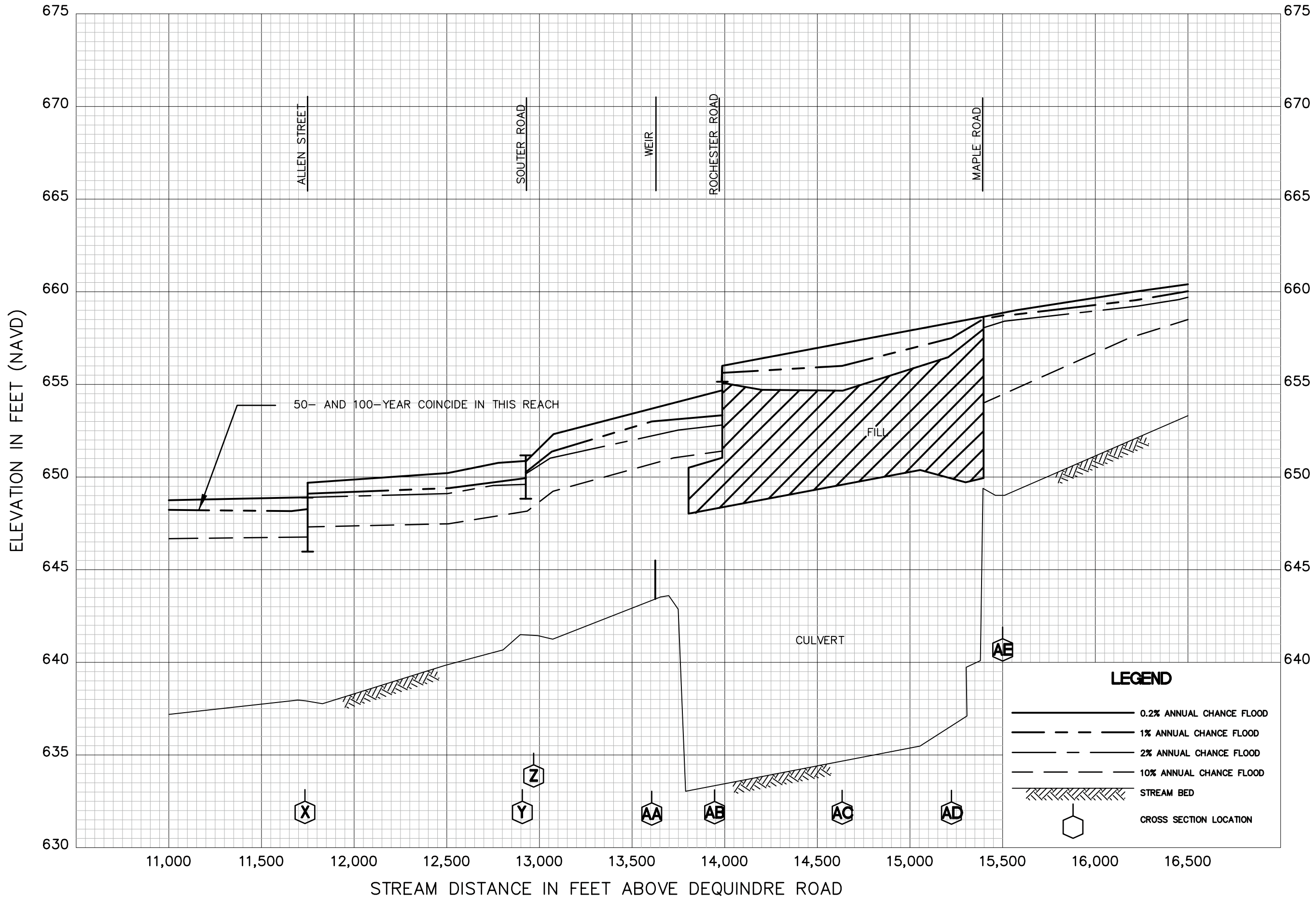
FLOOD PROFILES
SPENCER-BARNARD DRAIN

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
 (ALL JURISDICTIONS)



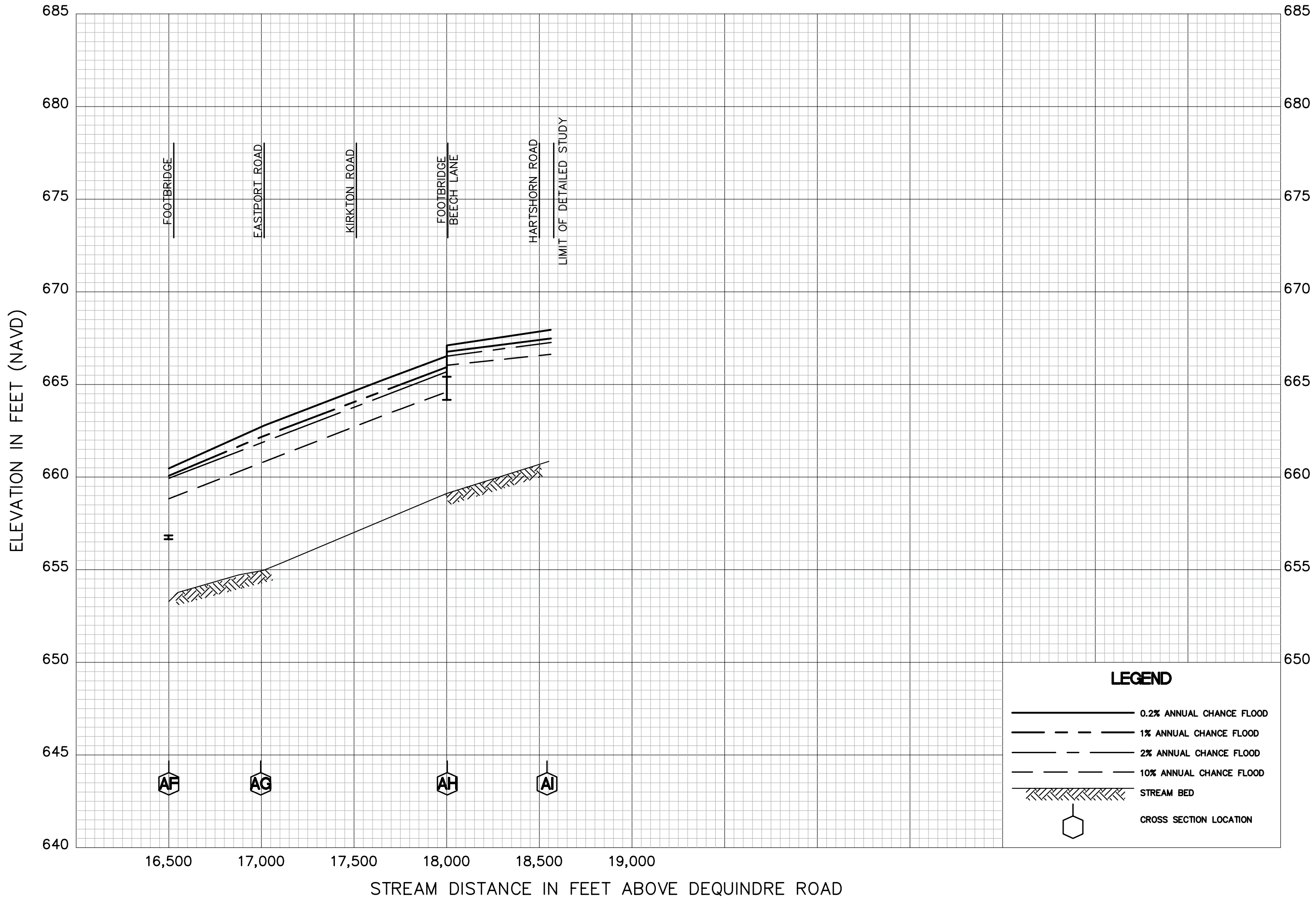
FLOOD PROFILES
SPENCER-BARNARD DRAIN

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
(ALL JURISDICTIONS)



FLOOD PROFILES
SPENCER-BARNARD DRAIN

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
 (ALL JURISDICTIONS)



LEGEND

- 0.2% ANNUAL CHANCE FLOOD
- - - 1% ANNUAL CHANCE FLOOD
- · - 2% ANNUAL CHANCE FLOOD
- - - - 10% ANNUAL CHANCE FLOOD
- ▨ STREAM BED
- ⬡ CROSS SECTION LOCATION

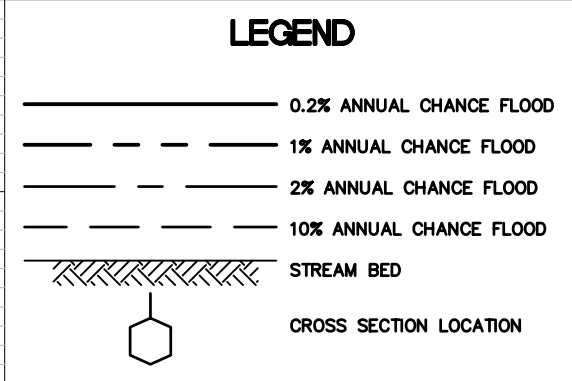
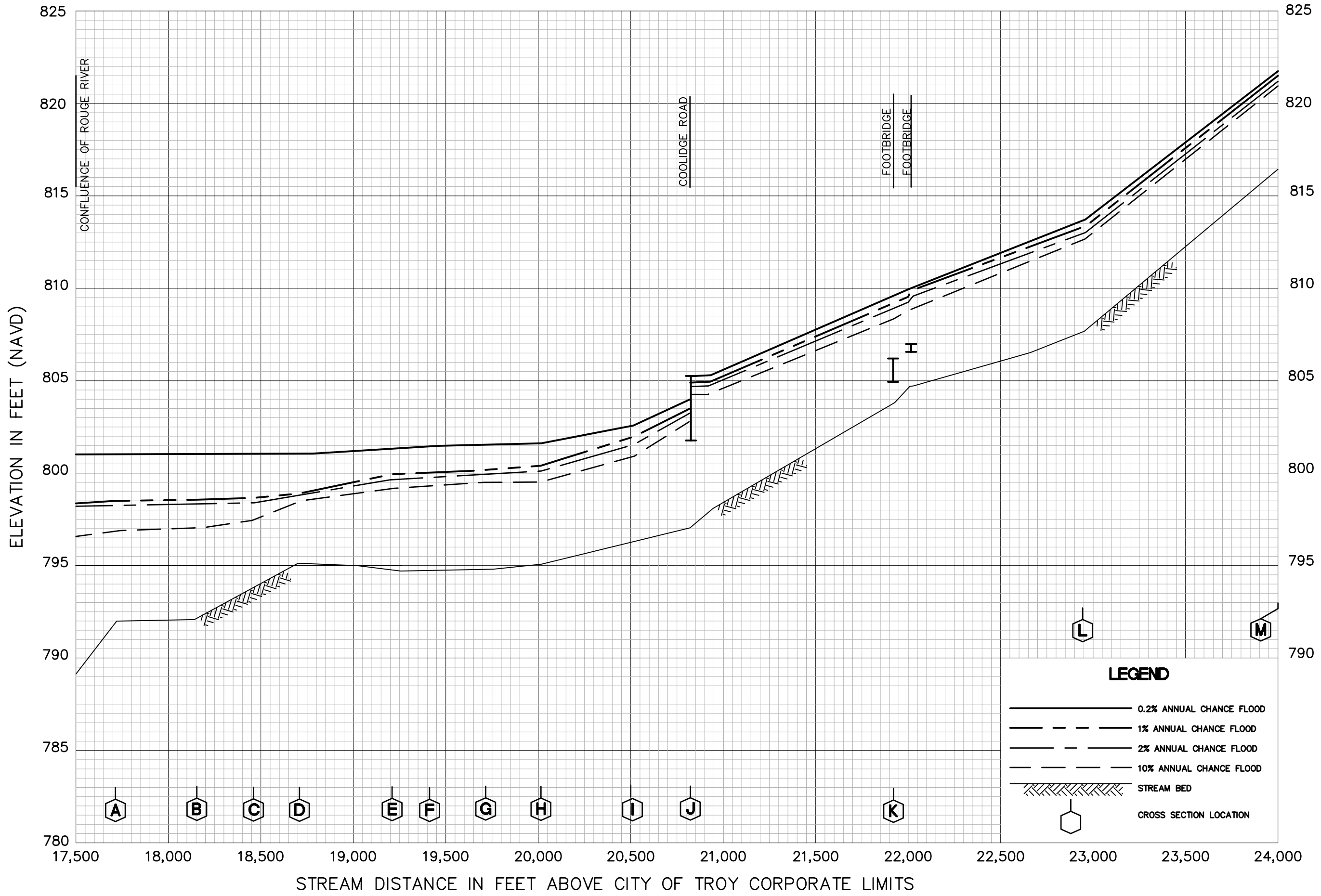
FLOOD PROFILES

SPENCER-BARNARD DRAIN

FEDERAL EMERGENCY MANAGEMENT AGENCY

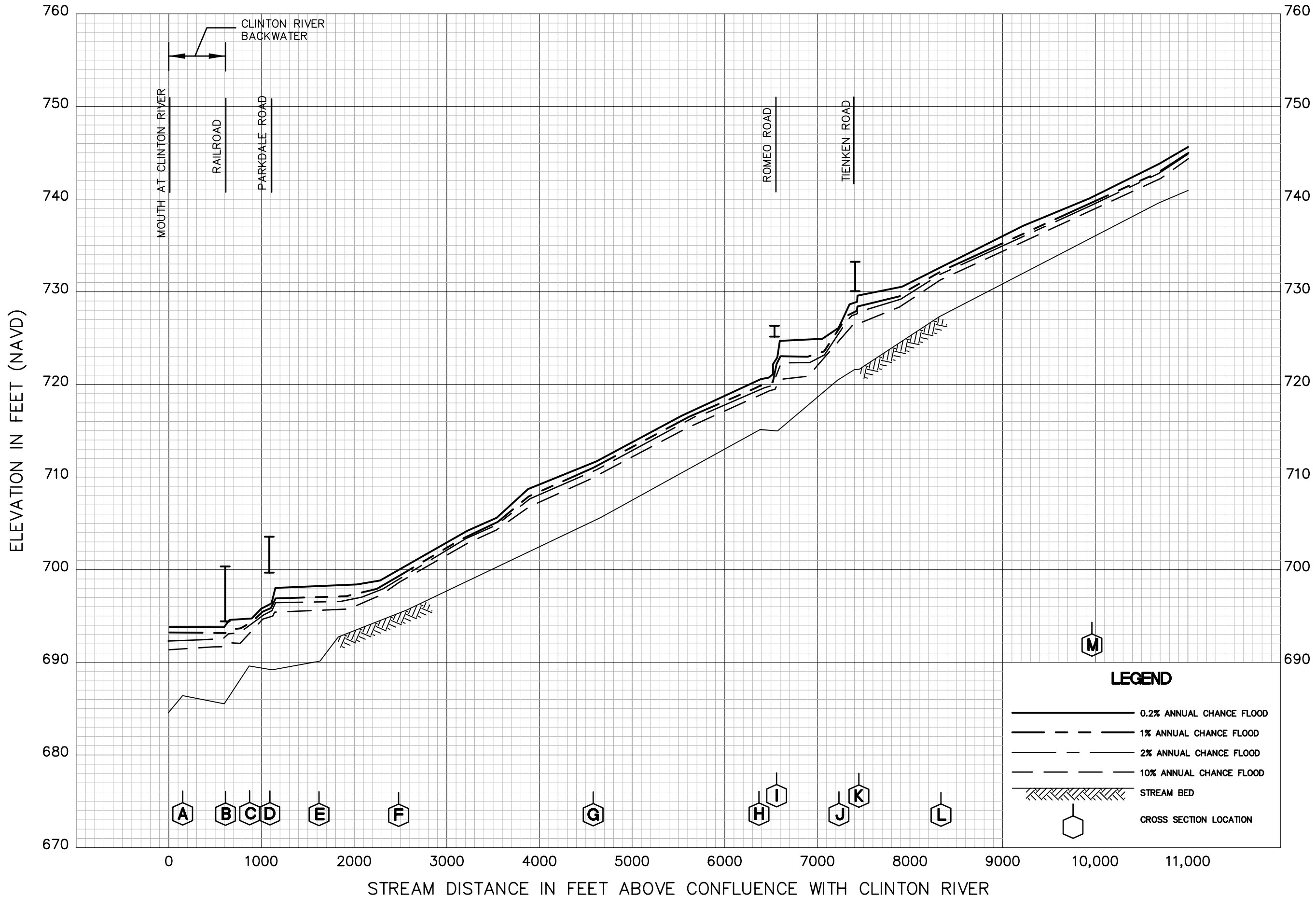
OAKLAND COUNTY, MI

(ALL JURISDICTIONS)



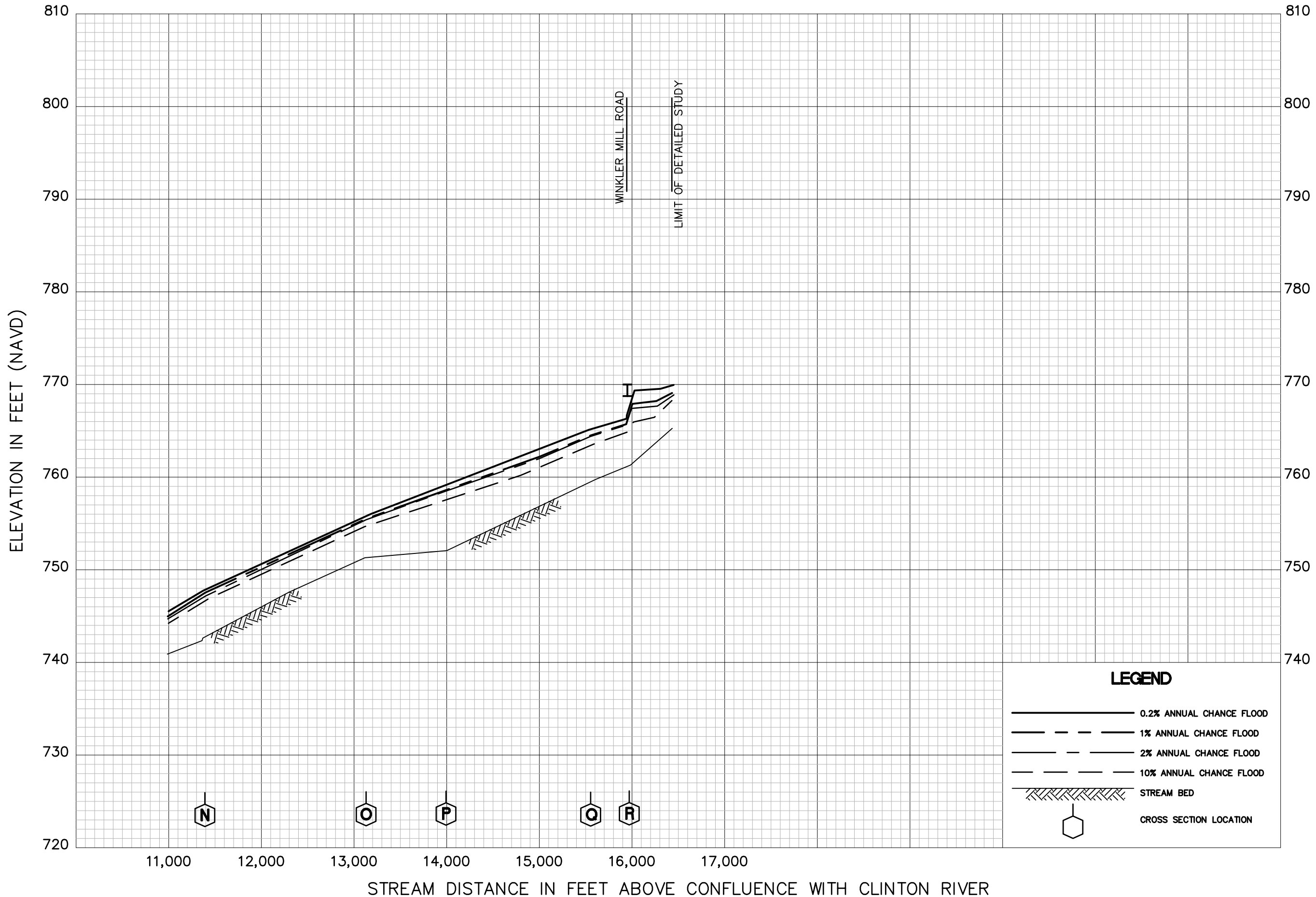
**FLOOD PROFILES
SPRAGUE BRANCH**

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
(ALL JURISDICTIONS)



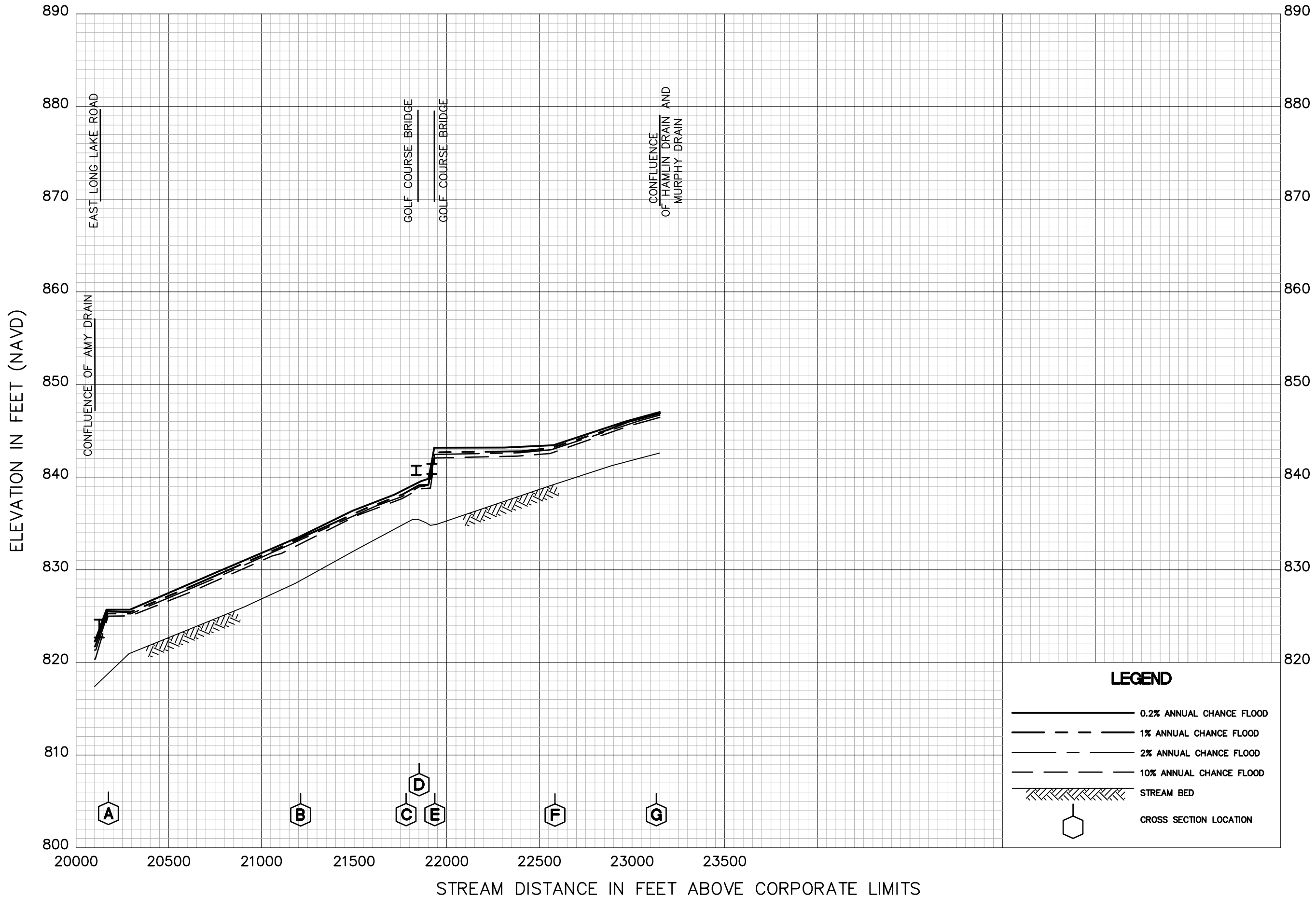
FLOOD PROFILES
STONY CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
(ALL JURISDICTIONS)



FLOOD PROFILES
STONY CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
(ALL JURISDICTIONS)



LEGEND

- 0.2% ANNUAL CHANCE FLOOD
- - - 1% ANNUAL CHANCE FLOOD
- · - 2% ANNUAL CHANCE FLOOD
- - - 10% ANNUAL CHANCE FLOOD
- ▨ STREAM BED
- ⬡ CROSS SECTION LOCATION

FLOOD PROFILES

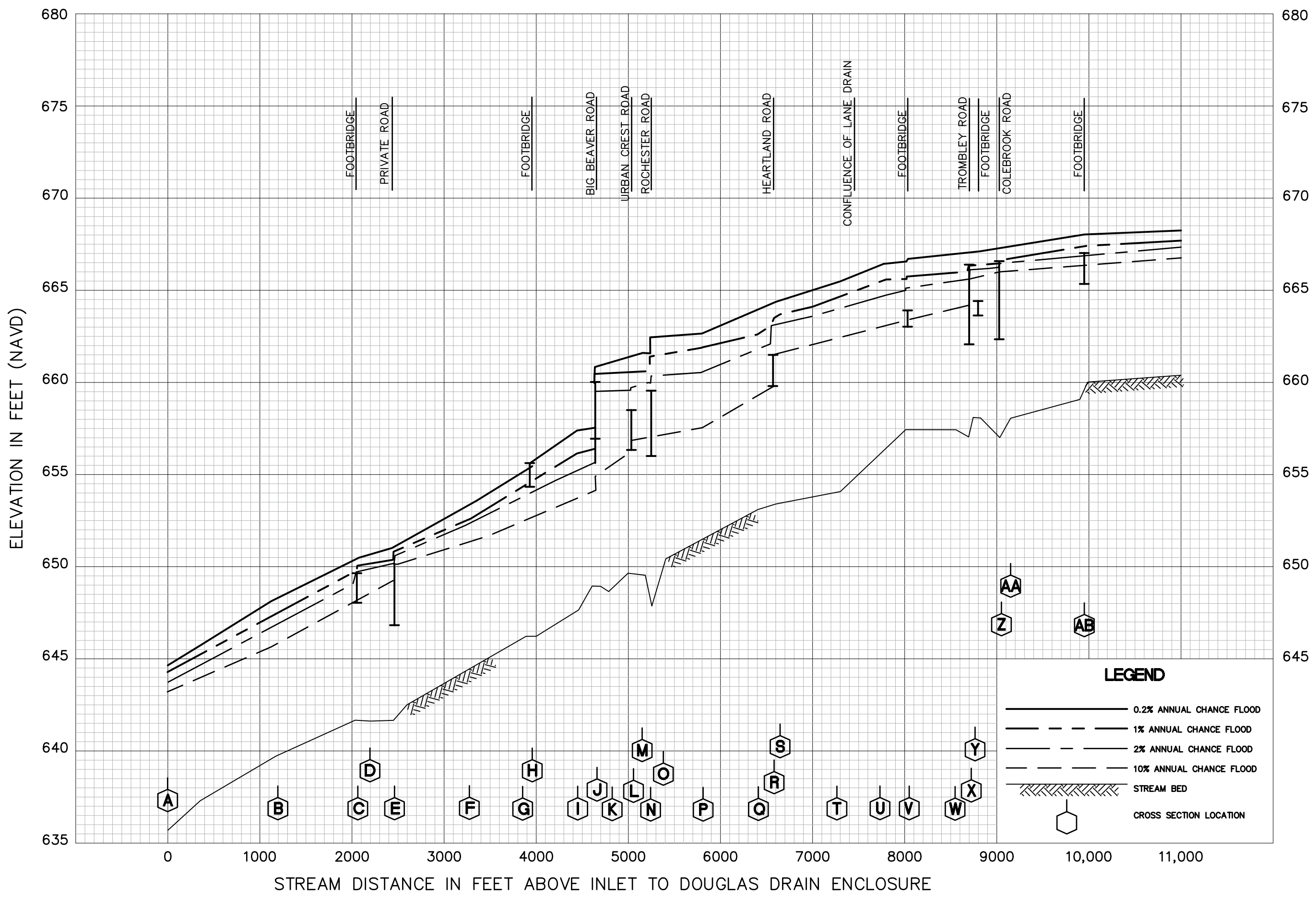
STONYCROFT BRANCH

FEDERAL EMERGENCY MANAGEMENT AGENCY

OAKLAND COUNTY, MI

(ALL JURISDICTIONS)

197P

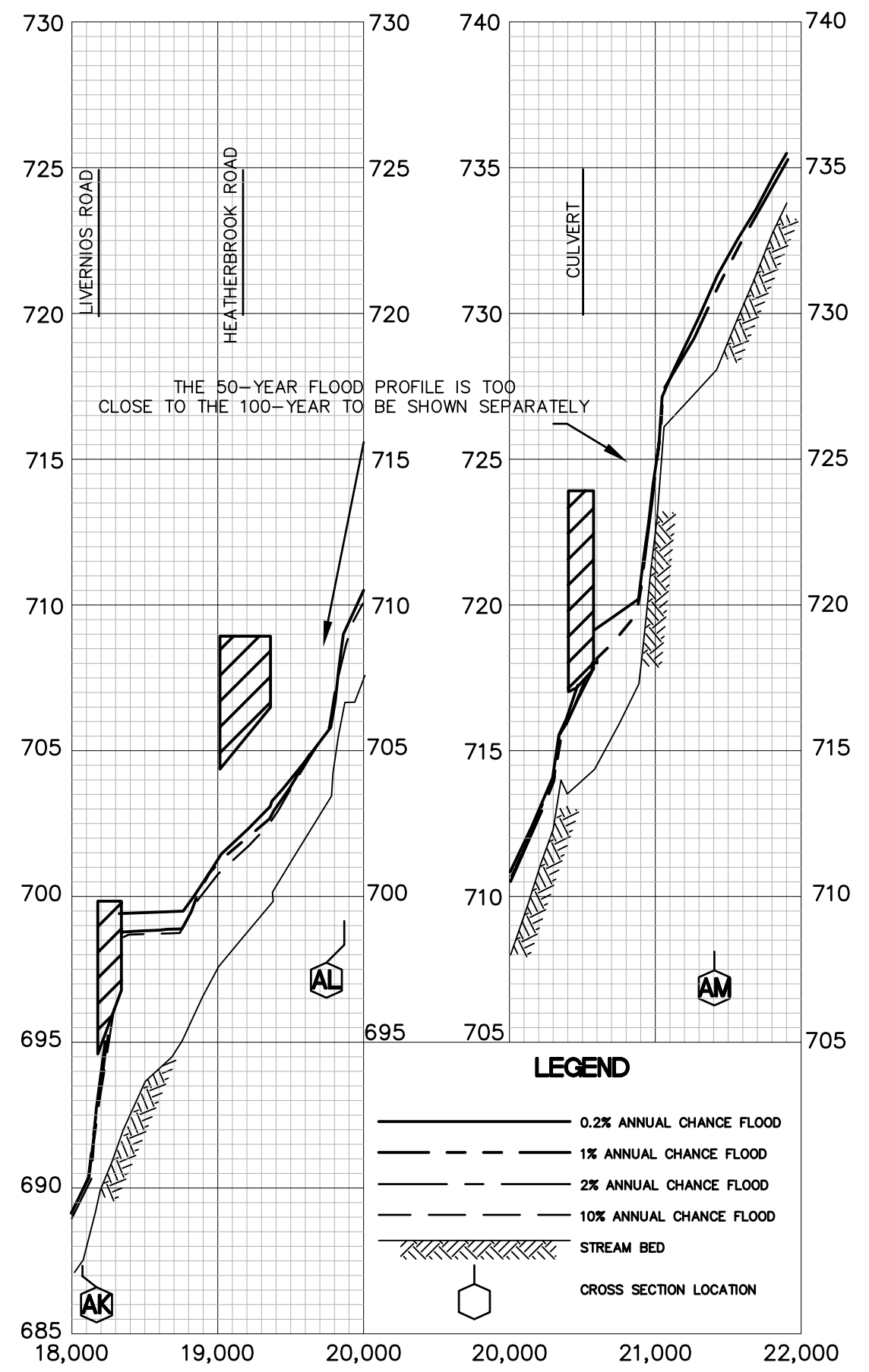
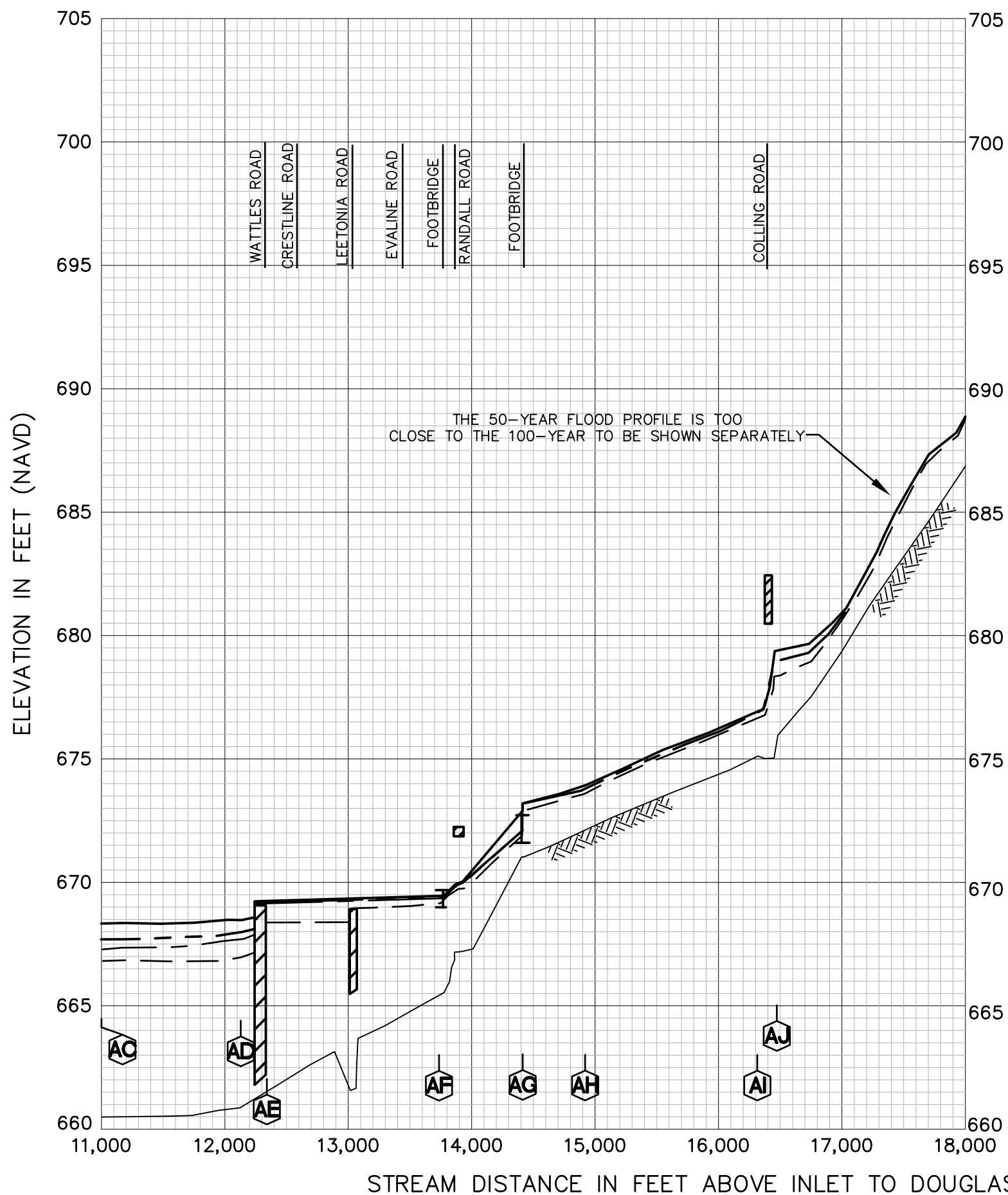


**FLOOD PROFILES
STURGIS DRAIN**

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
(ALL JURISDICTIONS)

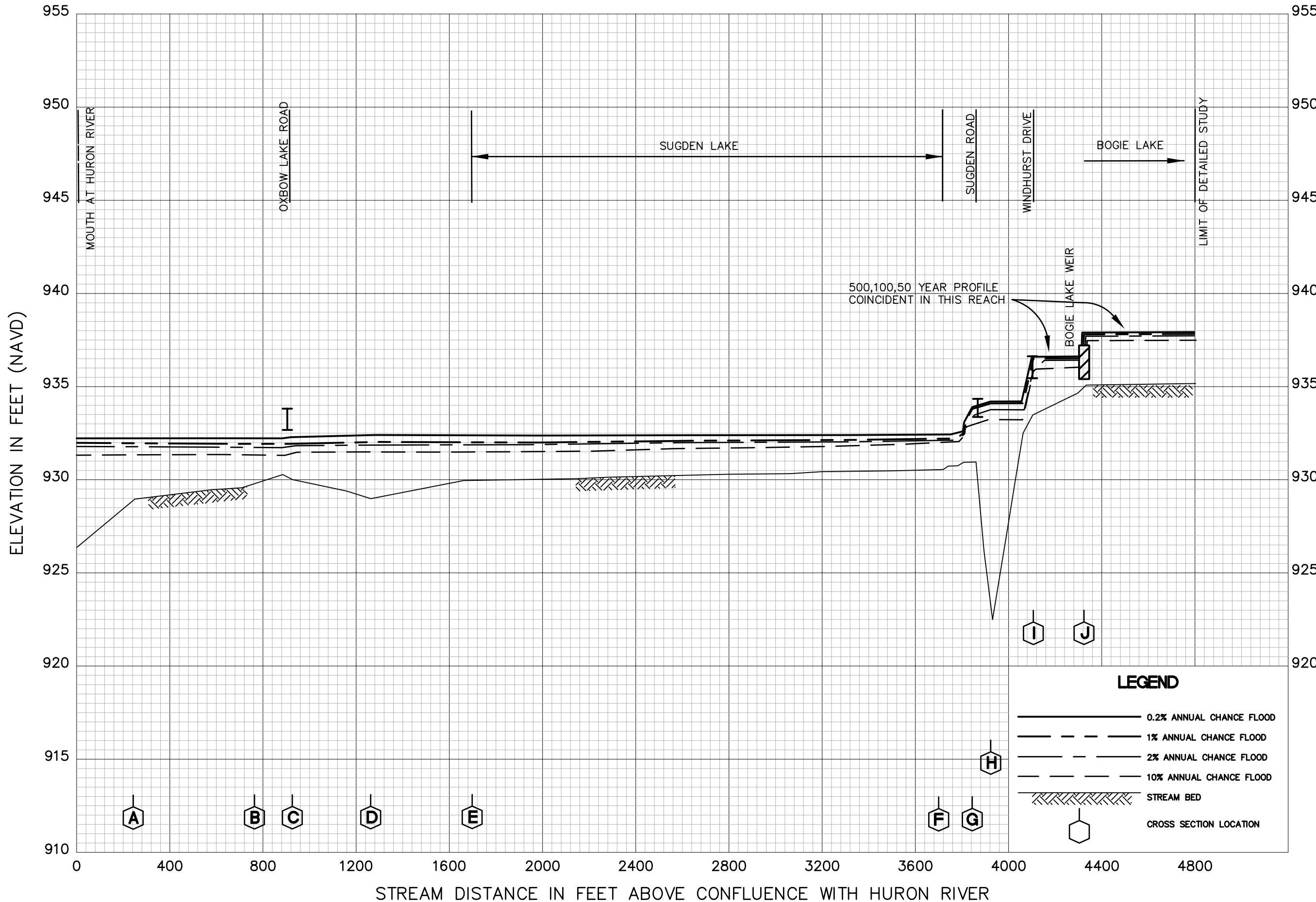
LEGEND

- 0.2% ANNUAL CHANCE FLOOD
- - - 1% ANNUAL CHANCE FLOOD
- · - 2% ANNUAL CHANCE FLOOD
- - - - 10% ANNUAL CHANCE FLOOD
- ▨ STREAM BED
- ⬡ CROSS SECTION LOCATION



FLOOD PROFILES
STURGIS DRAIN

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
(ALL JURISDICTIONS)

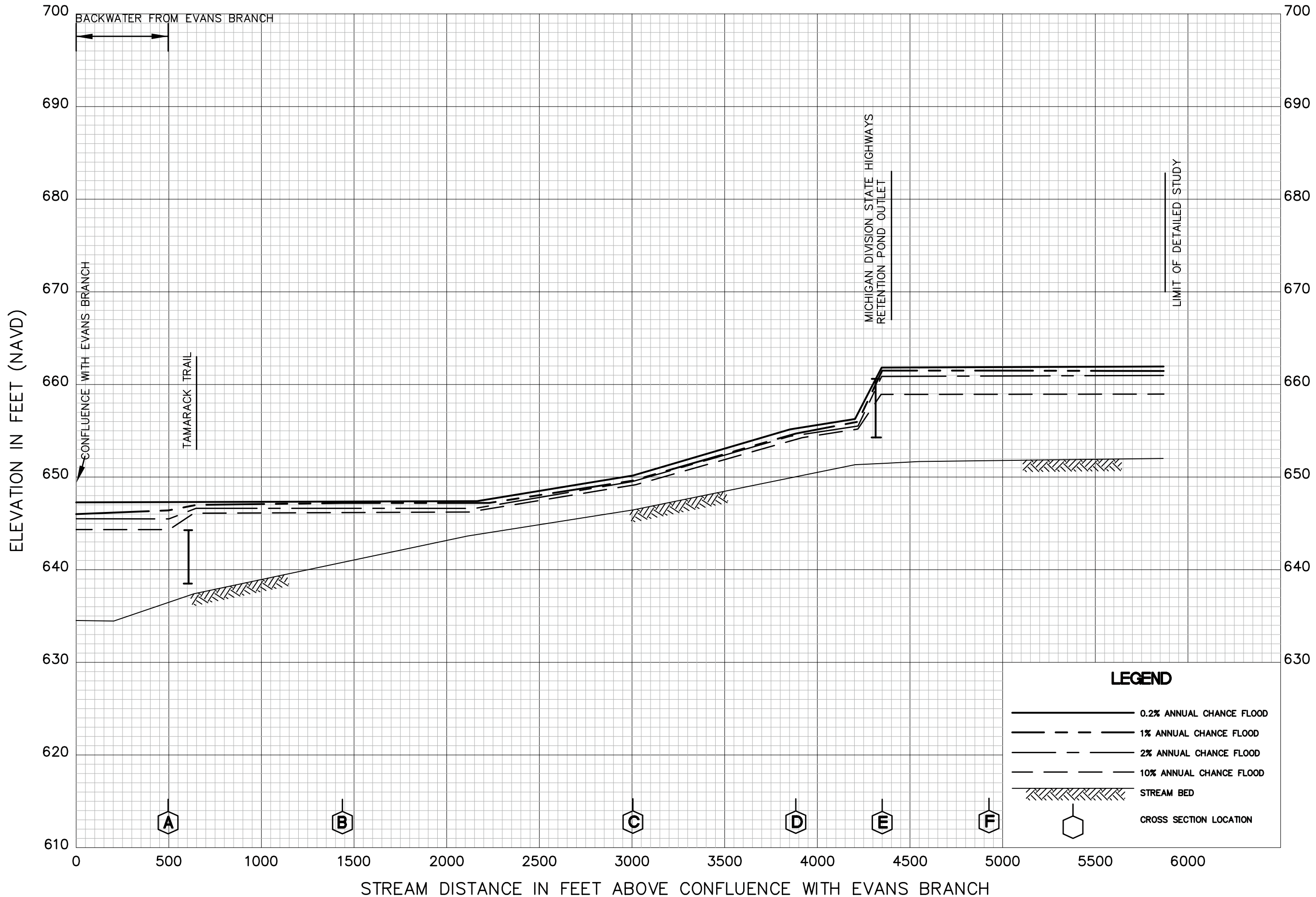


LEGEND

| | |
|--|--------------------------|
| | 0.2% ANNUAL CHANCE FLOOD |
| | 1% ANNUAL CHANCE FLOOD |
| | 2% ANNUAL CHANCE FLOOD |
| | 10% ANNUAL CHANCE FLOOD |
| | STREAM BED |
| | CROSS SECTION LOCATION |

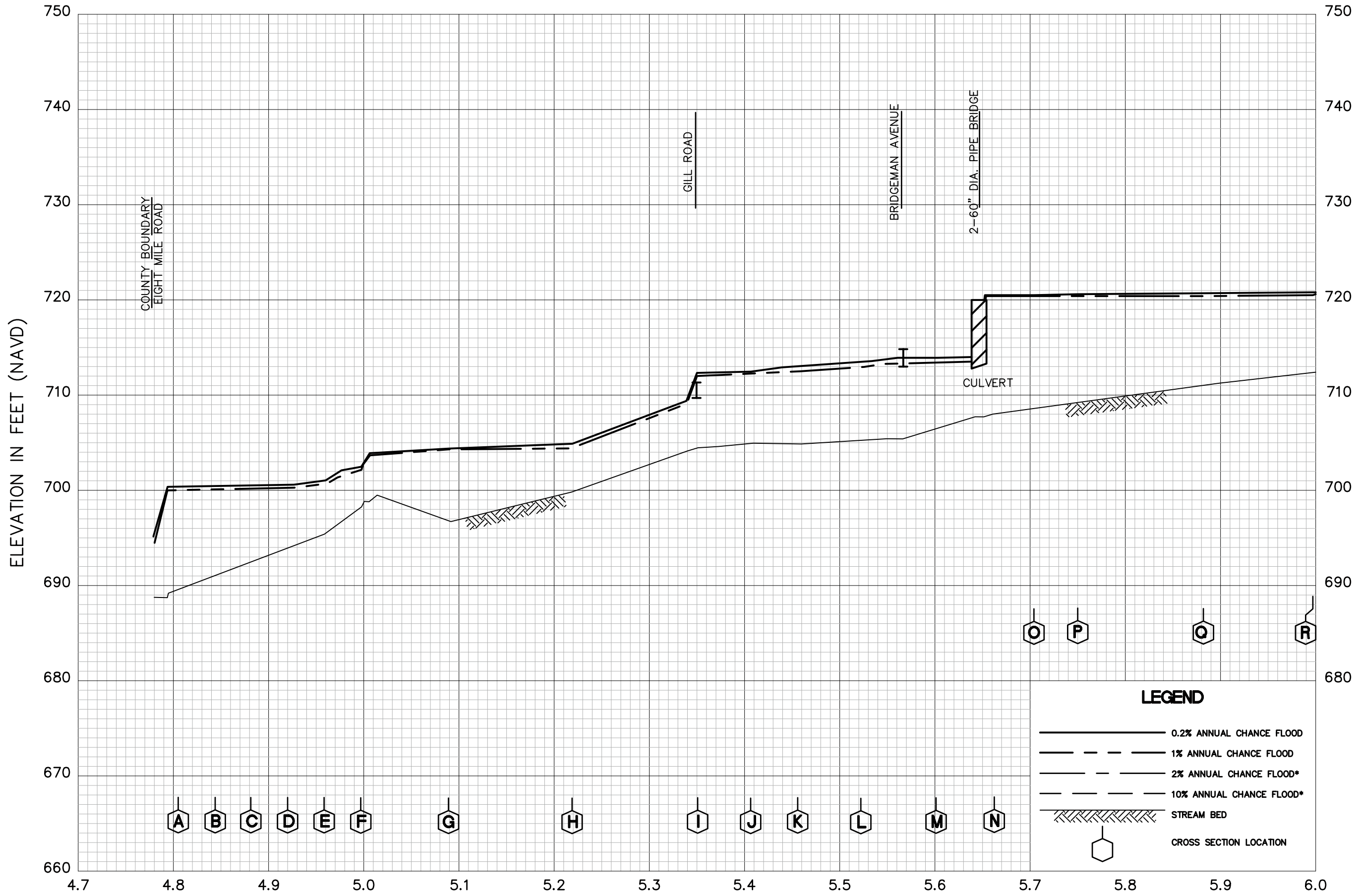
FLOOD PROFILES
SUGDEN CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
(ALL JURISDICTIONS)



**FLOOD PROFILES
TAMARACK CREEK**

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
(ALL JURISDICTIONS)



STREAM DISTANCE IN MILES ABOVE CONFLUENCE WITH BELL & NO. BRANCH DRAIN

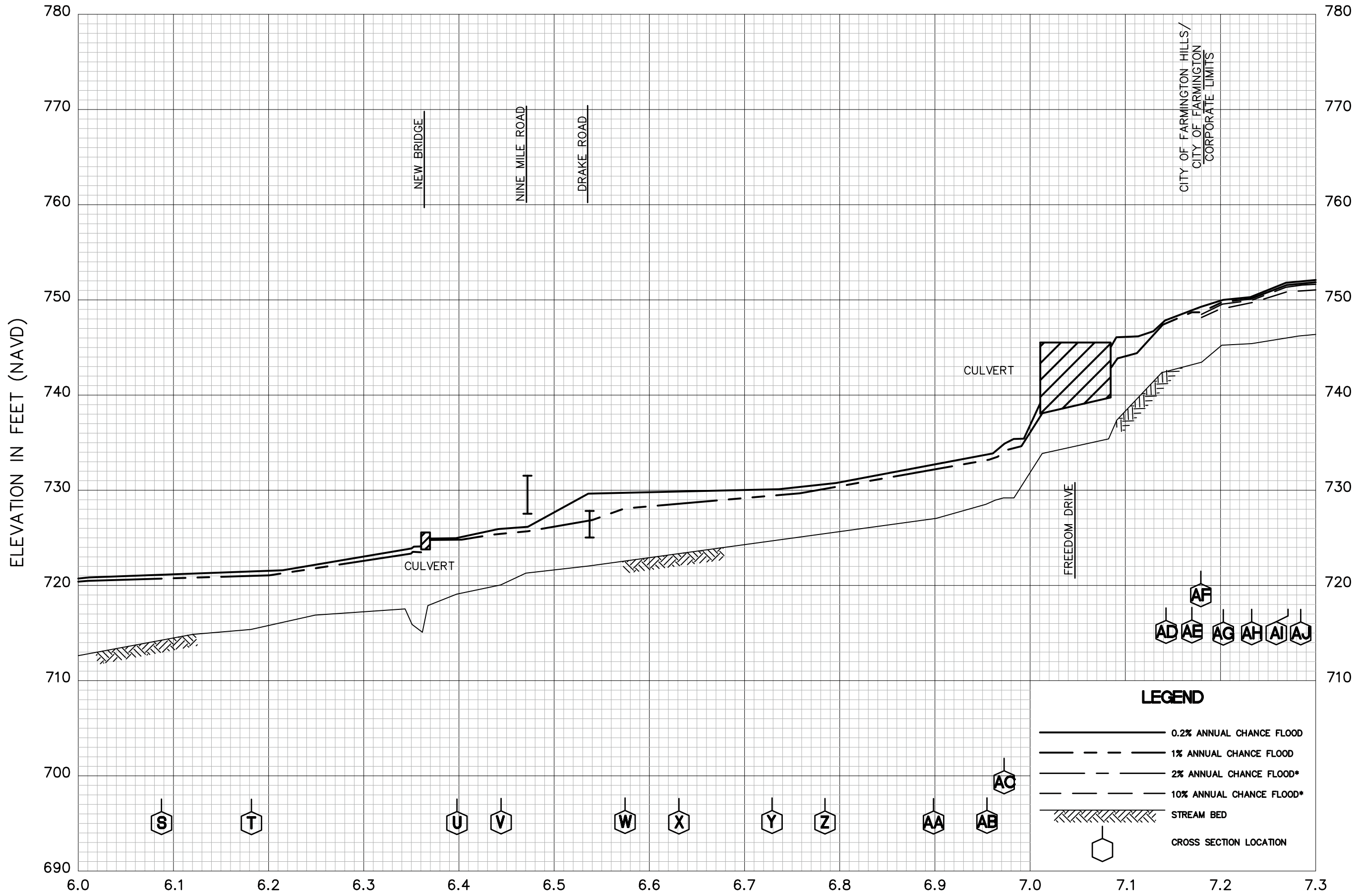
* DATA NOT AVAILABLE

LEGEND

- 0.2% ANNUAL CHANCE FLOOD
- - - 1% ANNUAL CHANCE FLOOD
- · - 2% ANNUAL CHANCE FLOOD*
- - - 10% ANNUAL CHANCE FLOOD*
- ▨ STREAM BED
- CROSS SECTION LOCATION

**FLOOD PROFILES
TARABUSI CREEK**

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
(ALL JURISDICTIONS)



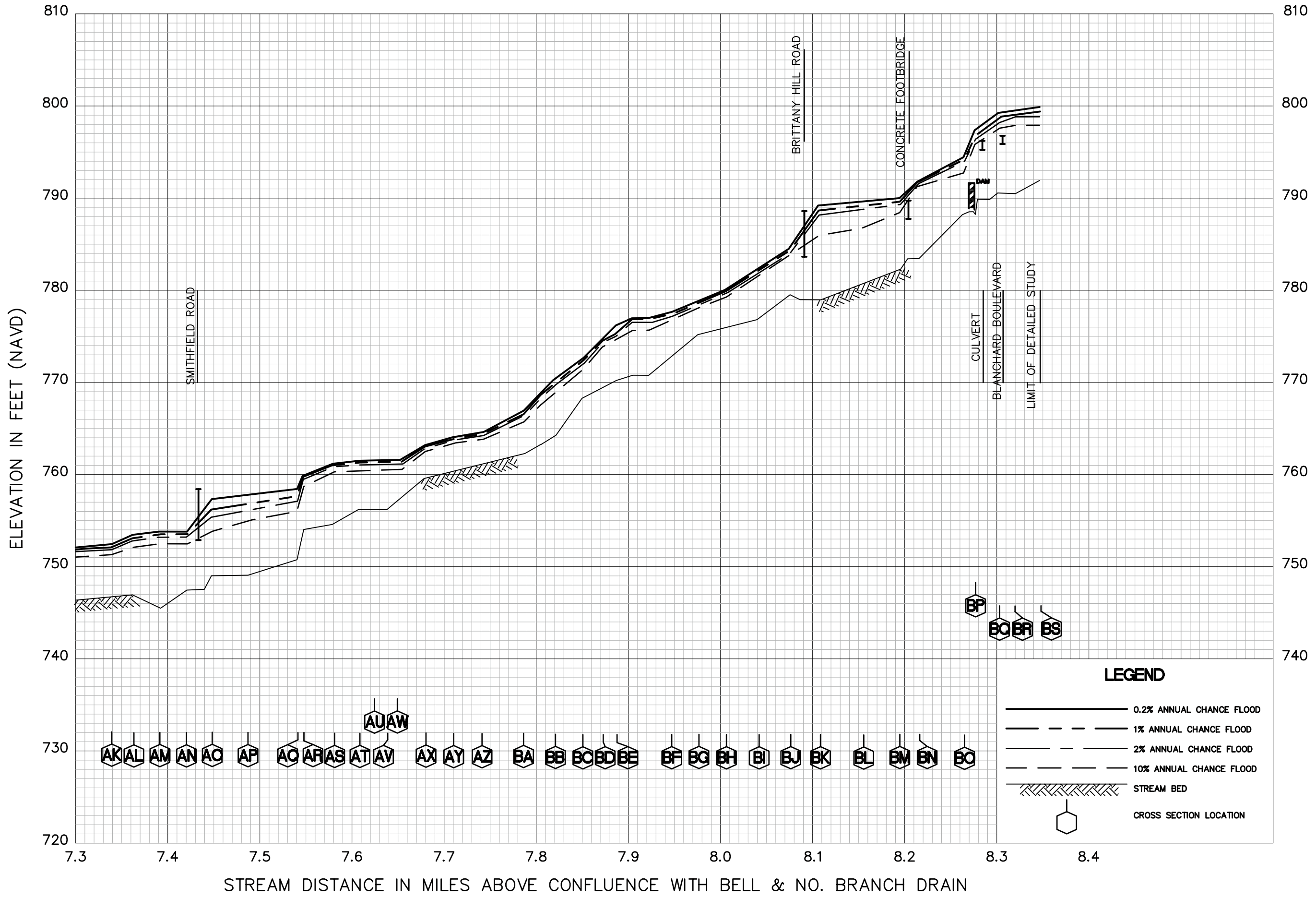
STREAM DISTANCE IN MILES ABOVE CONFLUENCE WITH BELL & NO. BRANCH DRAIN * DATA MAY NOT BE AVAILABLE

LEGEND

- 0.2% ANNUAL CHANCE FLOOD
- - - 1% ANNUAL CHANCE FLOOD
- · - 2% ANNUAL CHANCE FLOOD*
- - - - 10% ANNUAL CHANCE FLOOD*
- ▨ STREAM BED
- CROSS SECTION LOCATION

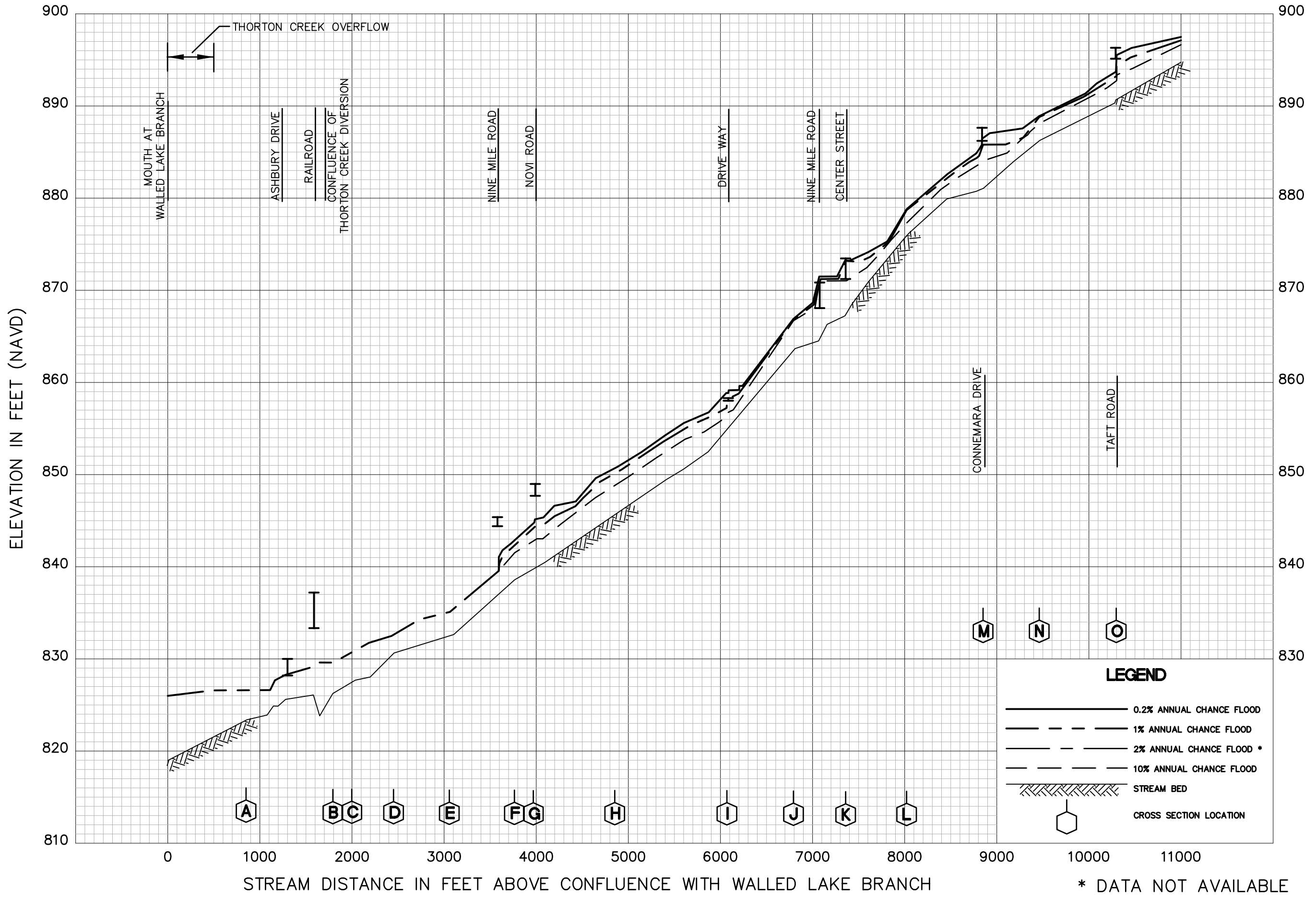
**FLOOD PROFILES
TARABUSI CREEK**

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
(ALL JURISDICTIONS)



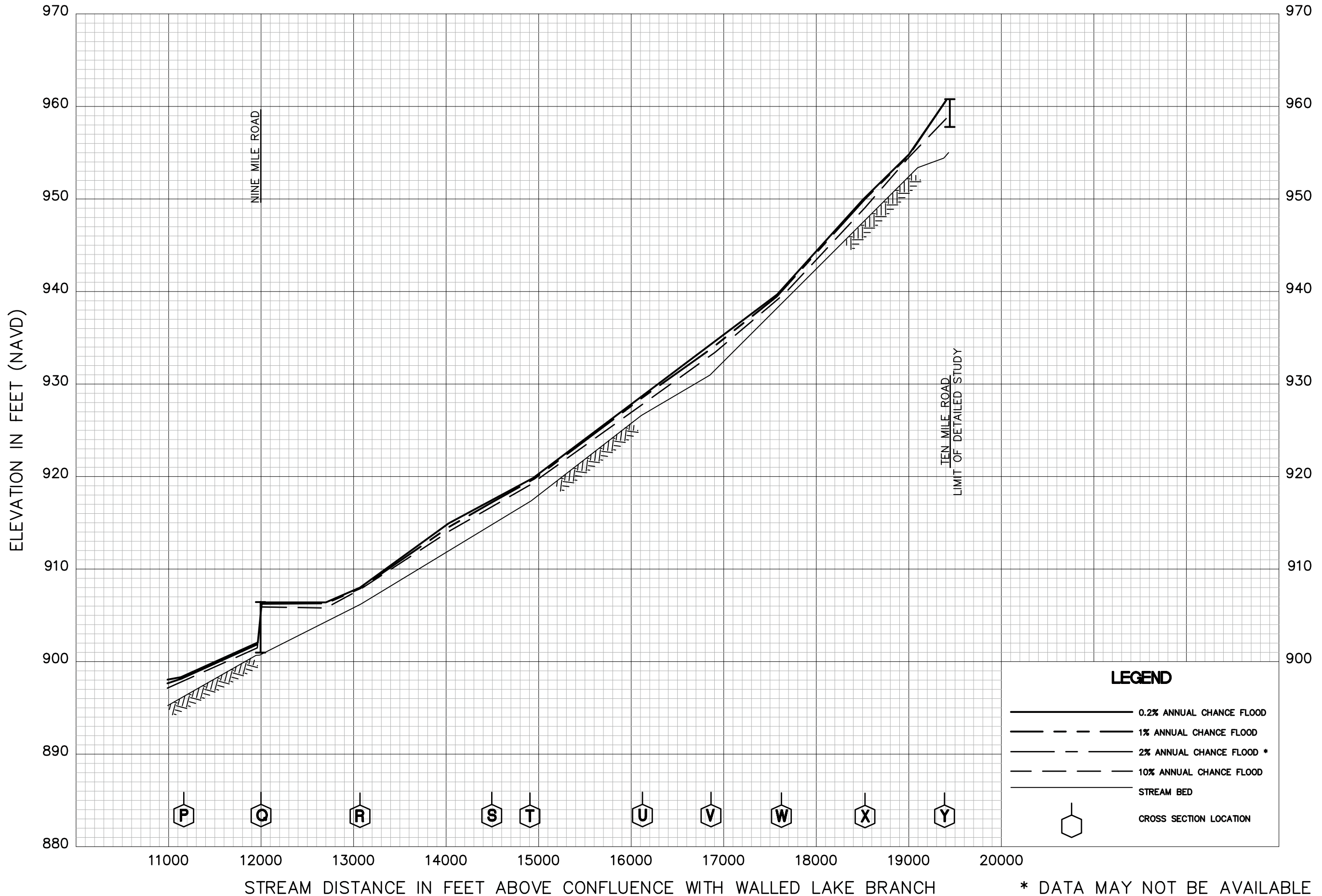
**FLOOD PROFILES
TARABUSI CREEK**

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
(ALL JURISDICTIONS)



FLOOD PROFILES
THORNTON CREEK

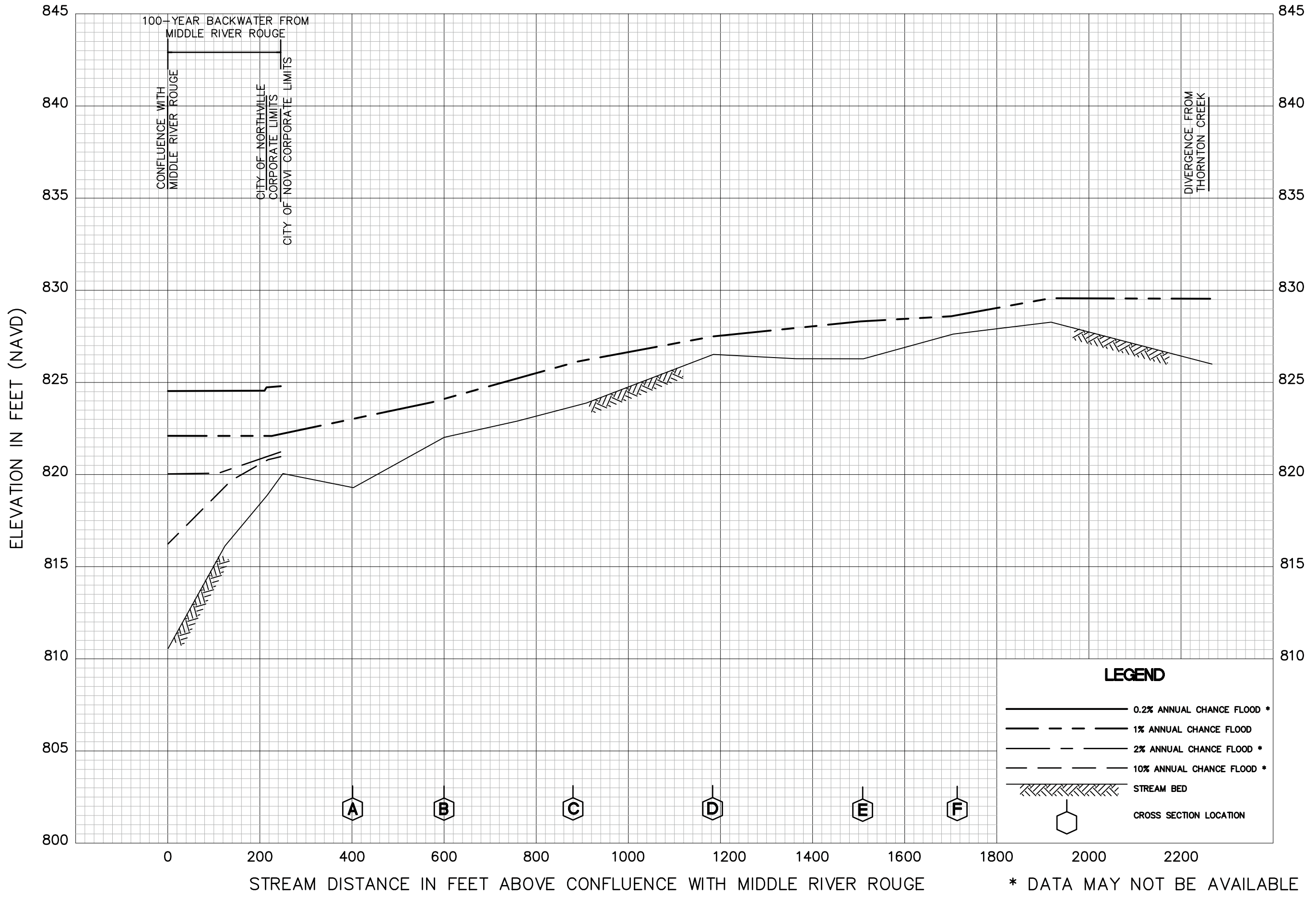
FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
(ALL JURISDICTIONS)



* DATA MAY NOT BE AVAILABLE

**FLOOD PROFILES
THORNTON CREEK**

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
(ALL JURISDICTIONS)



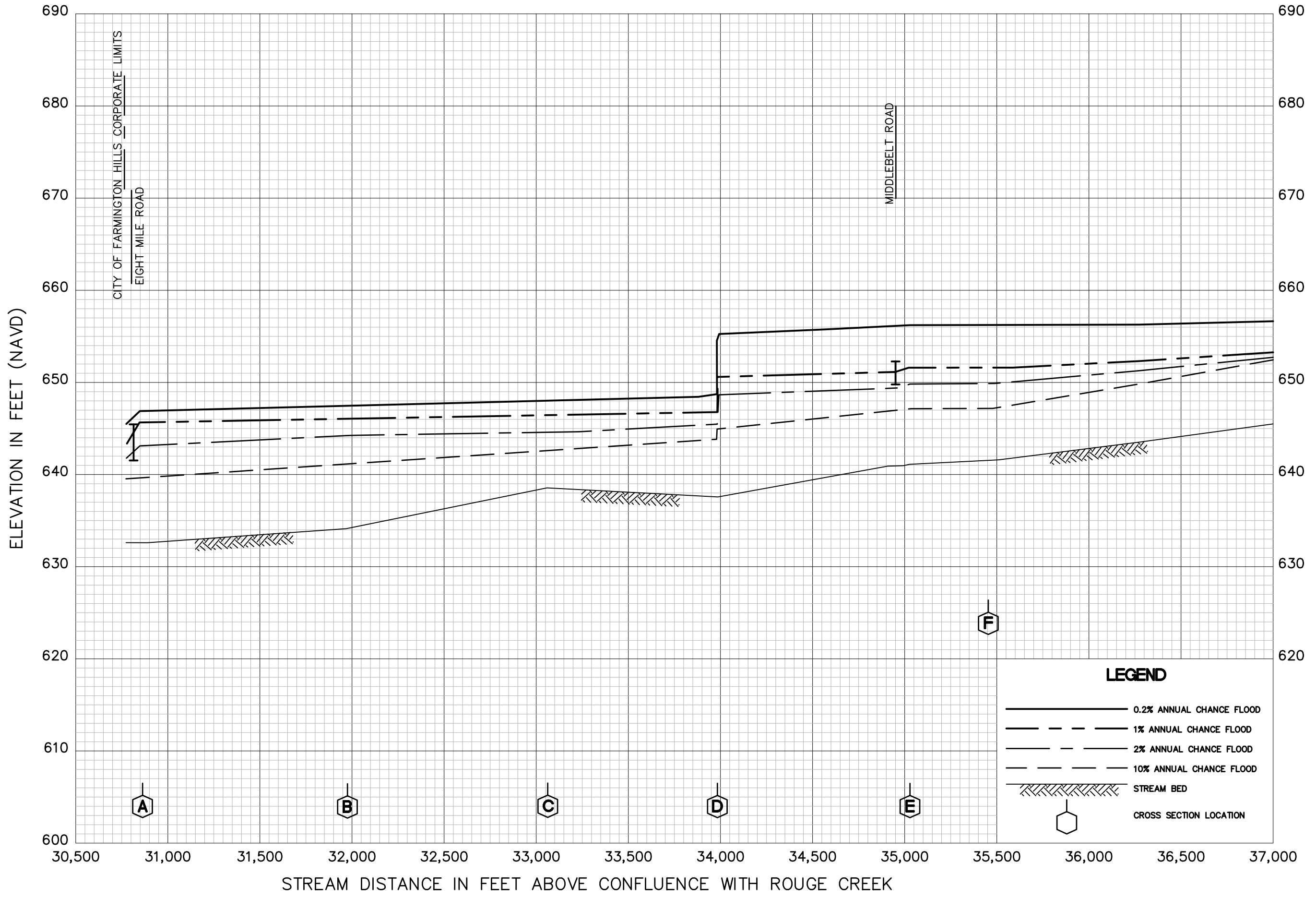
LEGEND

- 0.2% ANNUAL CHANCE FLOOD *
- - - 1% ANNUAL CHANCE FLOOD
- · - 2% ANNUAL CHANCE FLOOD *
- - - 10% ANNUAL CHANCE FLOOD *
- ▨ STREAM BED
- ⬡ CROSS SECTION LOCATION

* DATA MAY NOT BE AVAILABLE

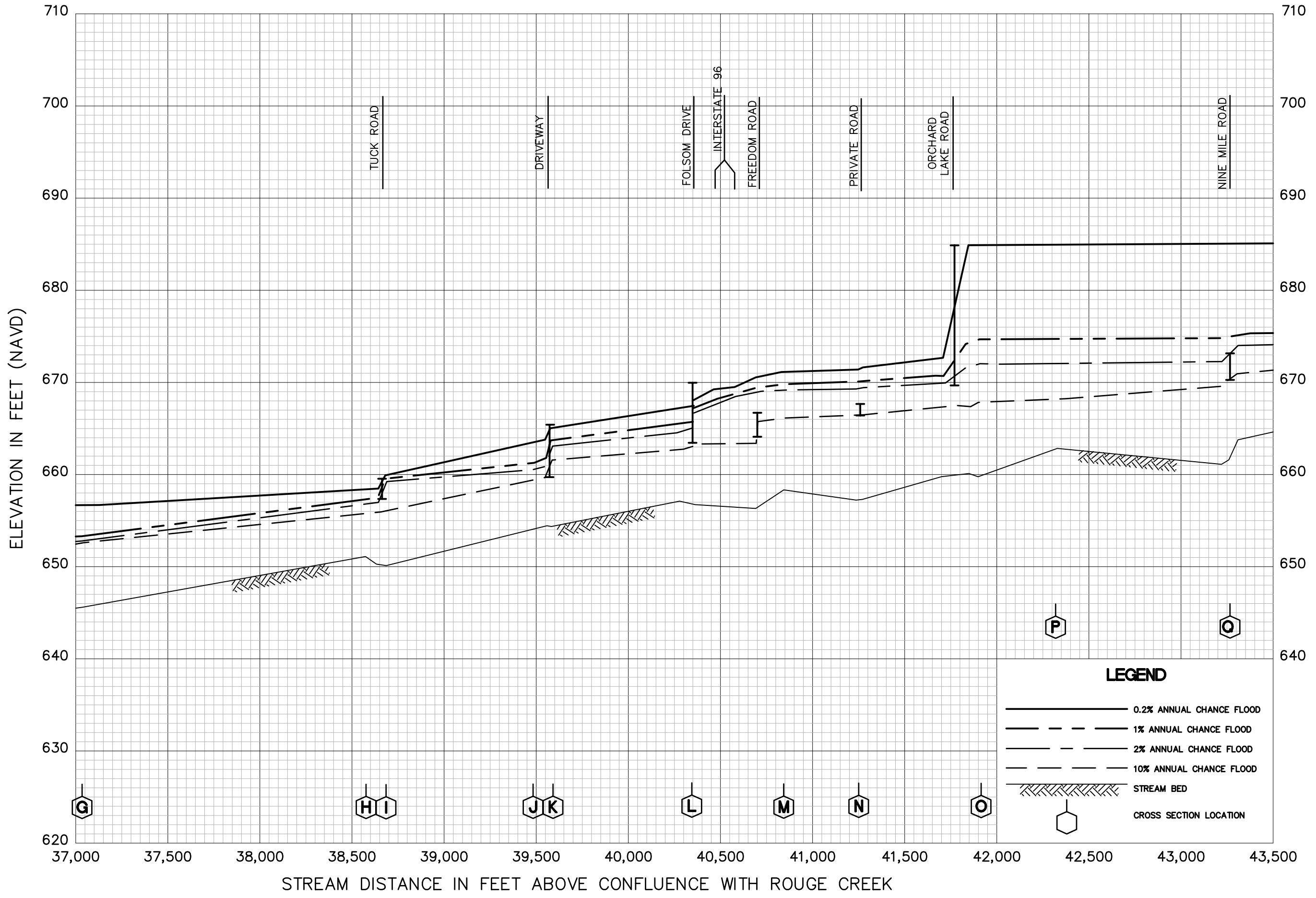
FLOOD PROFILES
THORNTON CREEK DIVERSION

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
(ALL JURISDICTIONS)



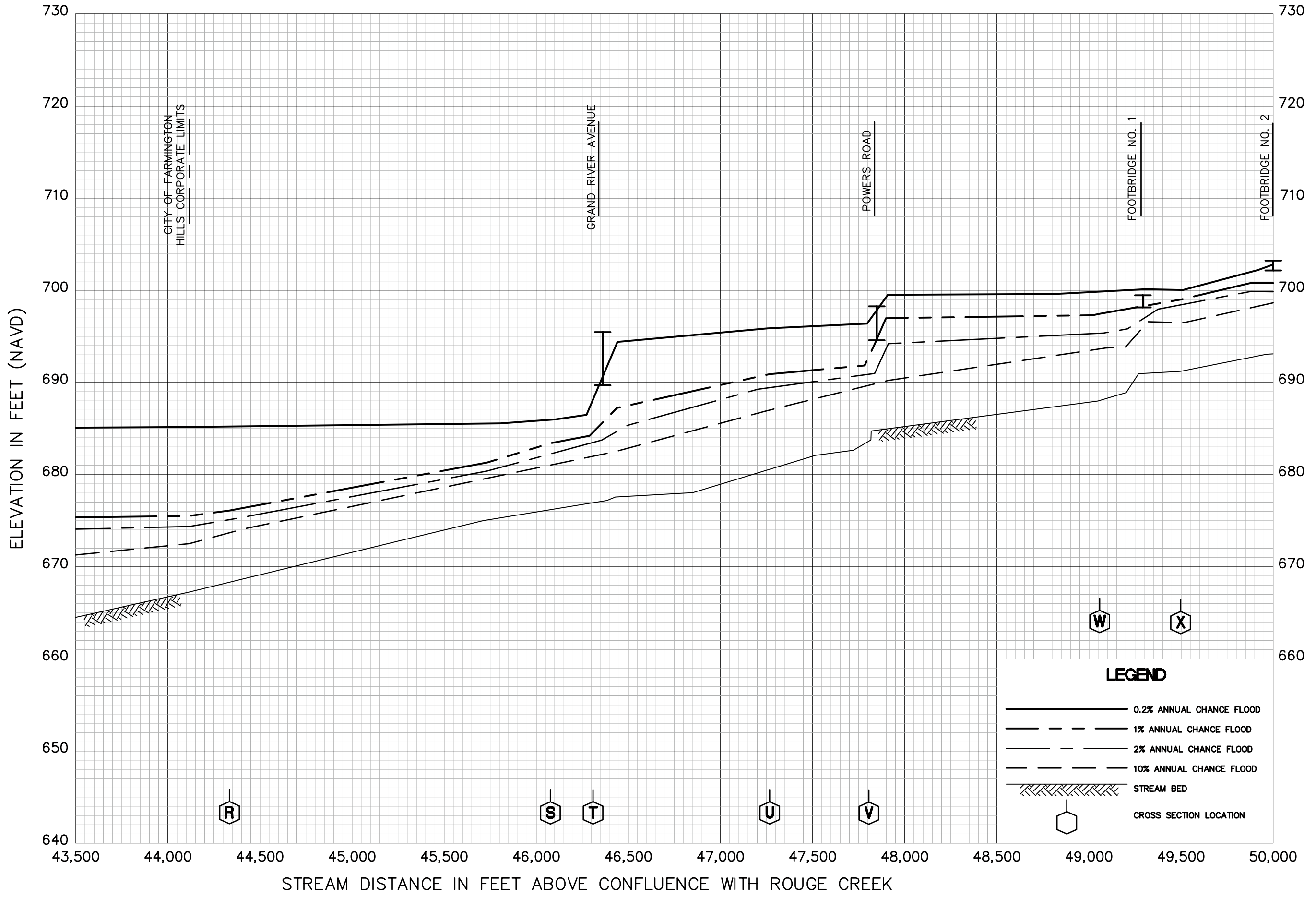
FLOOD PROFILES
UPPER RIVER ROUGE

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
(ALL JURISDICTIONS)



**FLOOD PROFILES
UPPER RIVER ROUGE**

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
(ALL JURISDICTIONS)

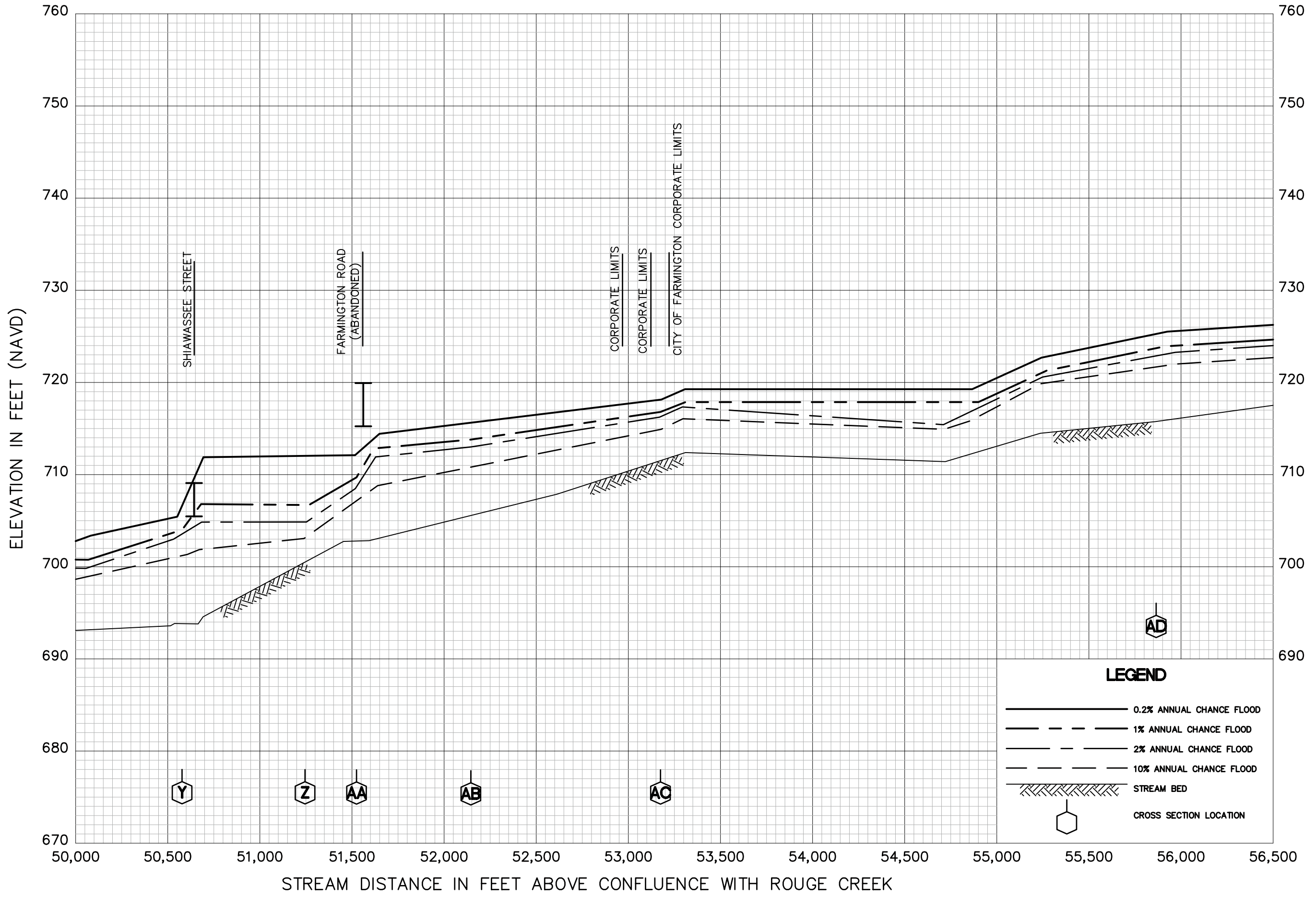


FLOOD PROFILES
UPPER RIVER ROUGE

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
(ALL JURISDICTIONS)

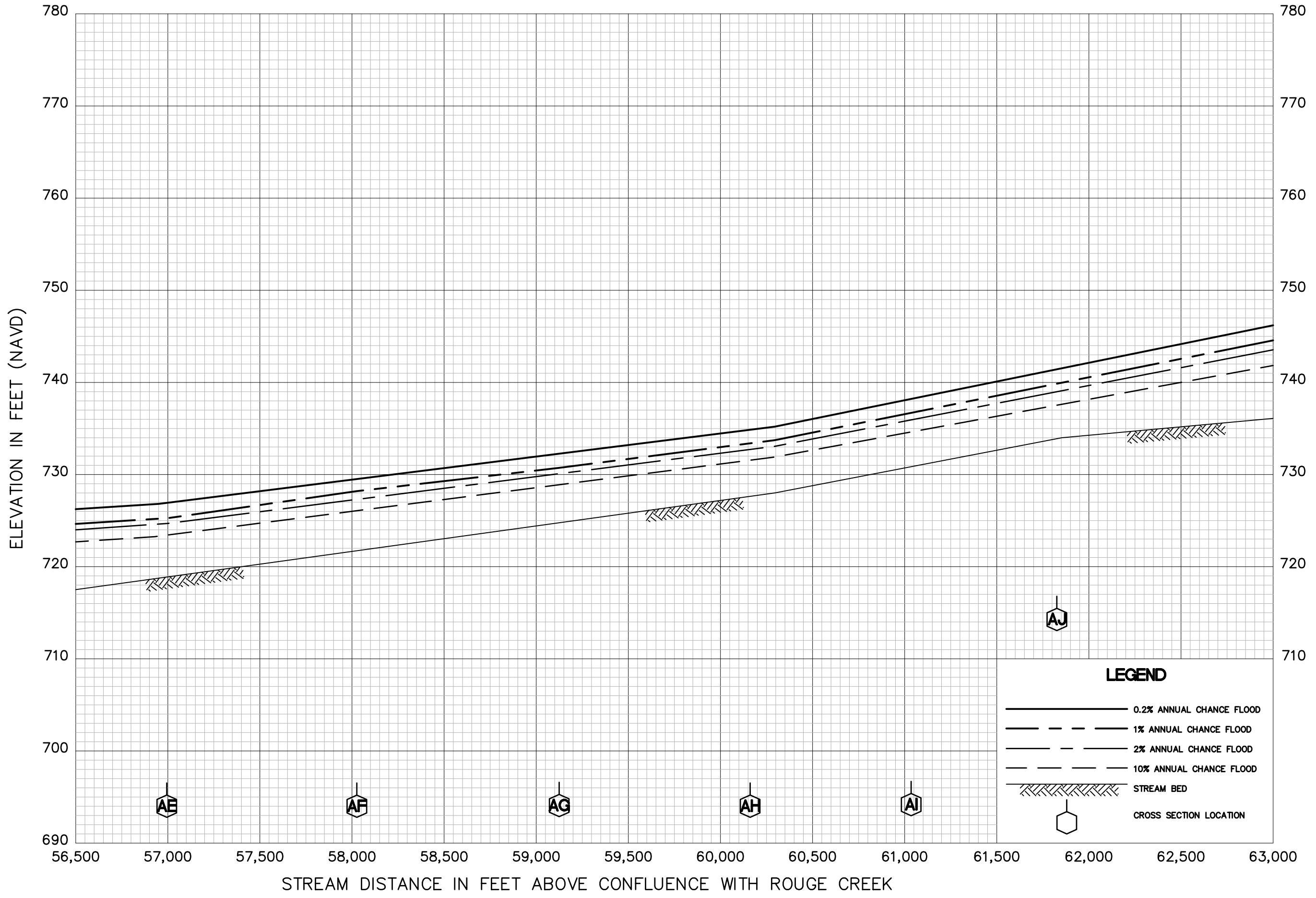
LEGEND

- 0.2% ANNUAL CHANCE FLOOD
- - - 1% ANNUAL CHANCE FLOOD
- · - 2% ANNUAL CHANCE FLOOD
- - - - 10% ANNUAL CHANCE FLOOD
- ▨ STREAM BED
- ⬡ CROSS SECTION LOCATION



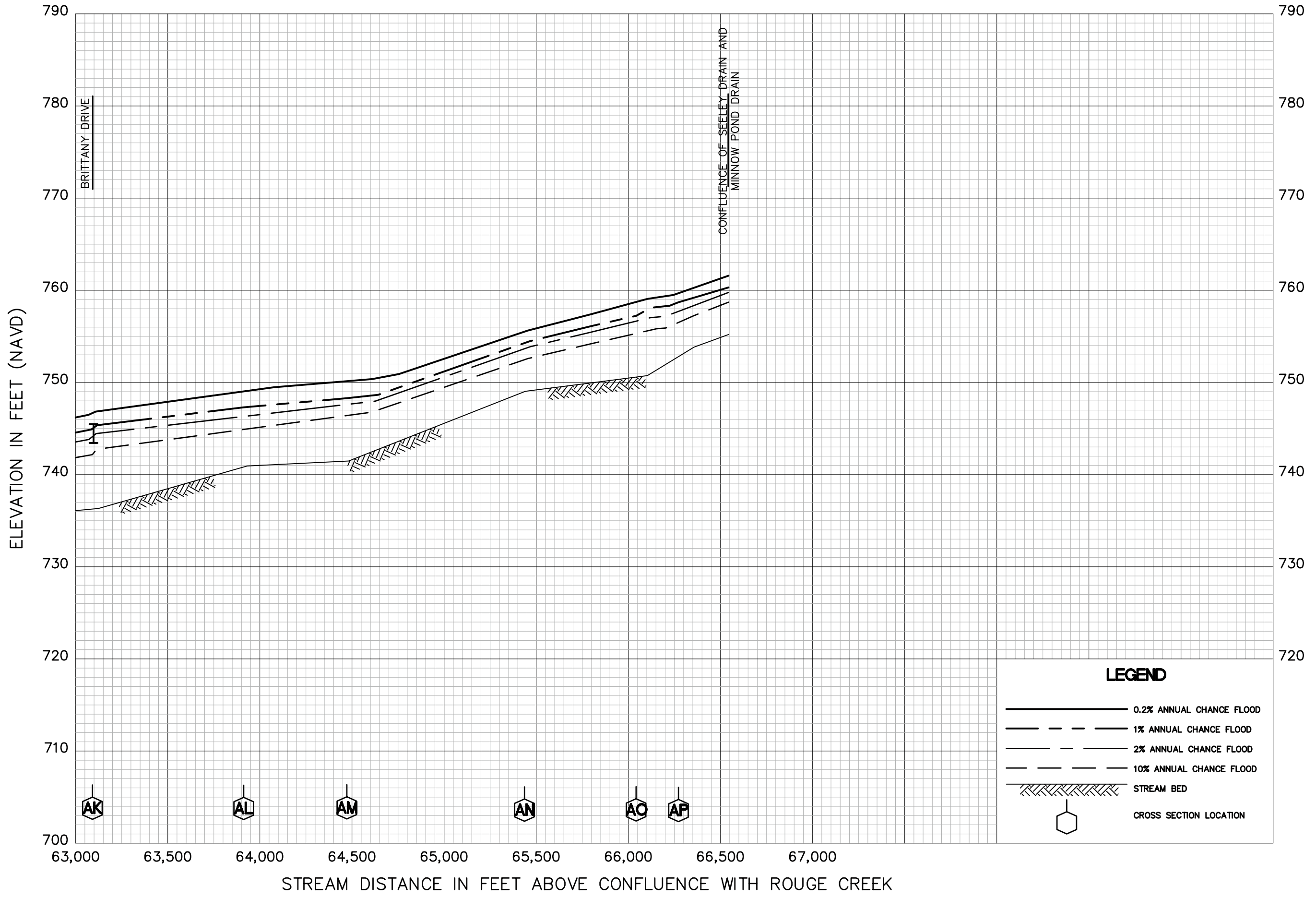
FLOOD PROFILES
UPPER RIVER ROUGE

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
(ALL JURISDICTIONS)



**FLOOD PROFILES
UPPER RIVER ROUGE**

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
(ALL JURISDICTIONS)

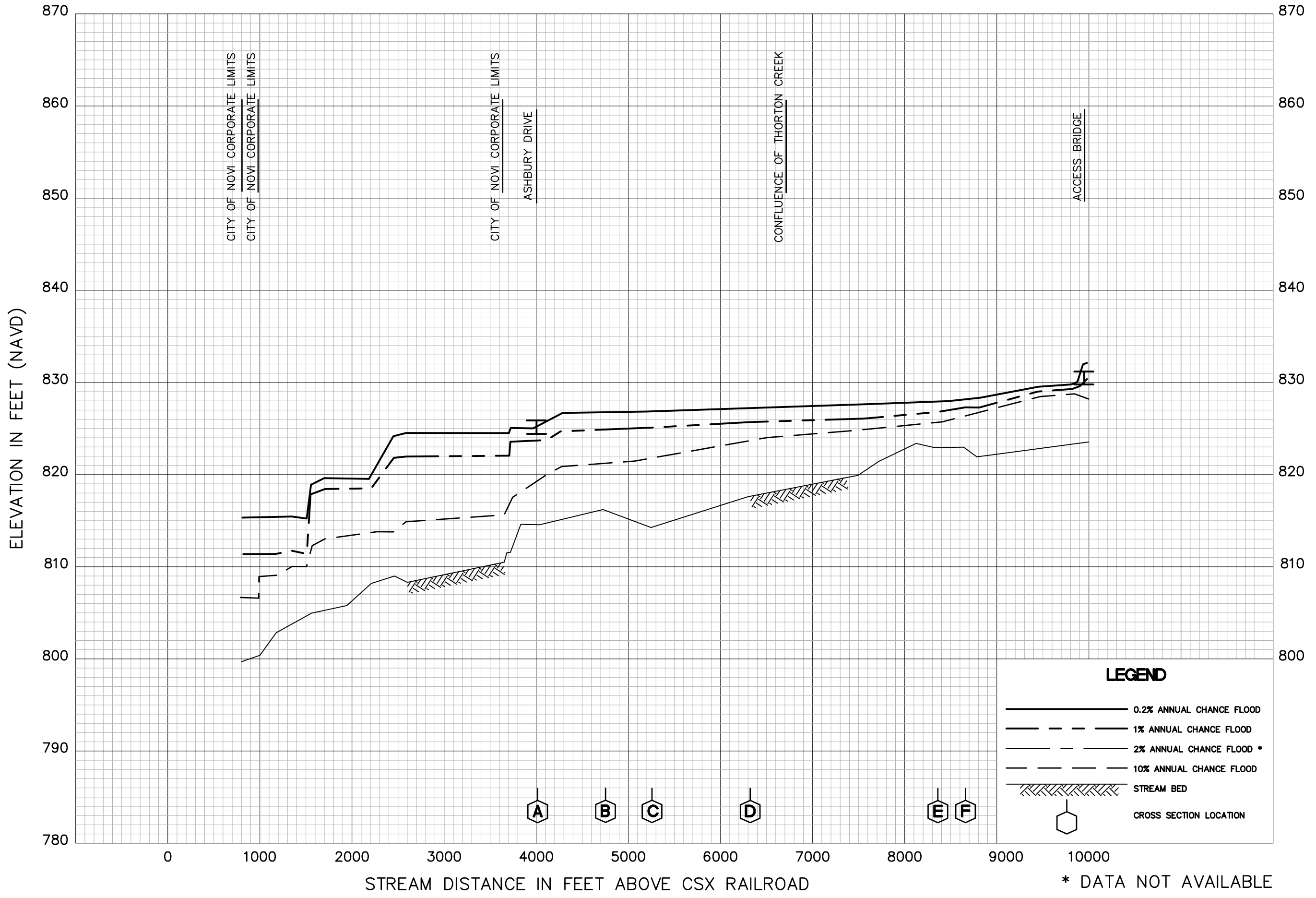


LEGEND

- 0.2% ANNUAL CHANCE FLOOD
- - - 1% ANNUAL CHANCE FLOOD
- · - 2% ANNUAL CHANCE FLOOD
- - - - 10% ANNUAL CHANCE FLOOD
- ▨ STREAM BED
- ⬡ CROSS SECTION LOCATION

**FLOOD PROFILES
UPPER RIVER ROUGE**

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
(ALL JURISDICTIONS)



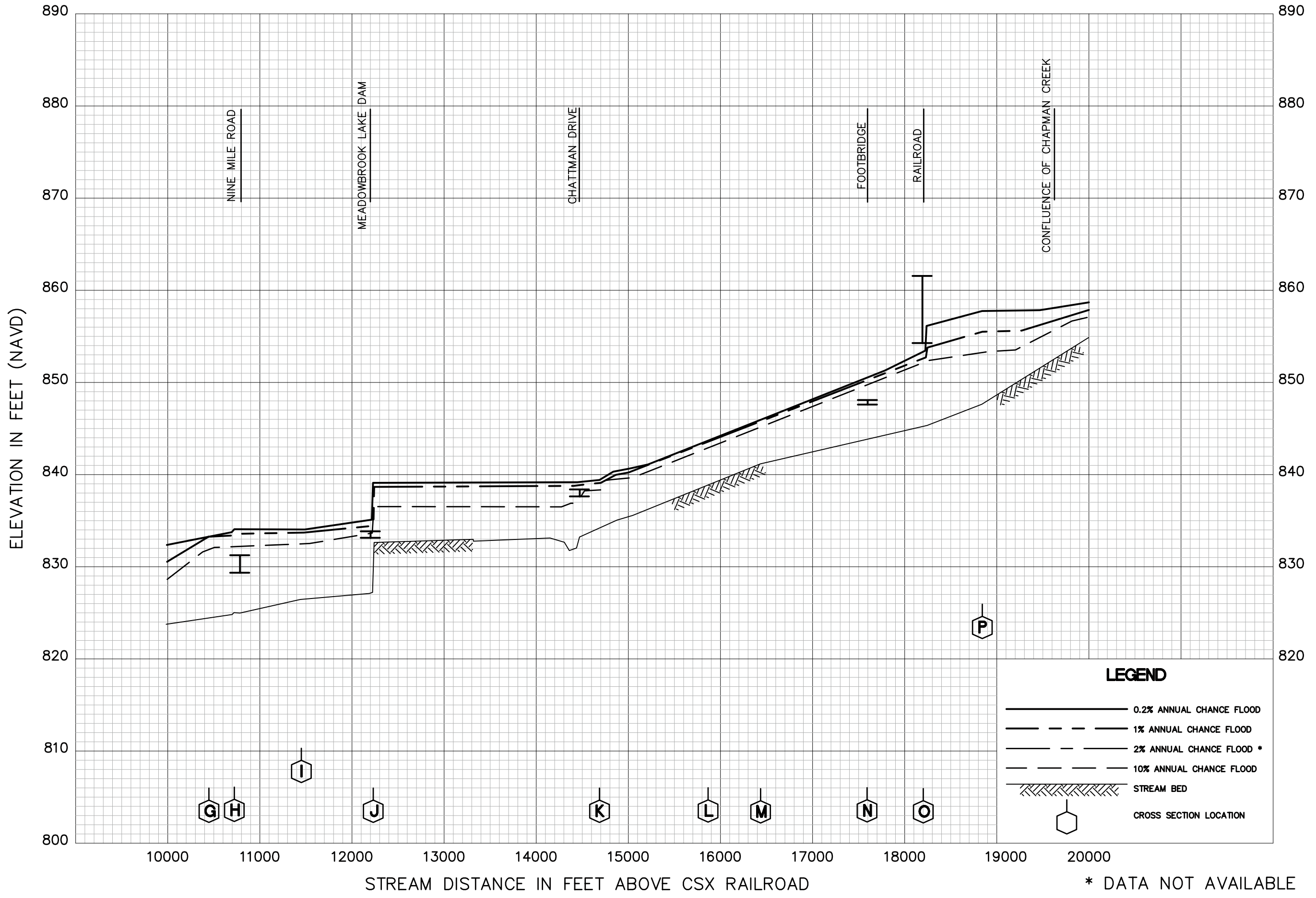
FLOOD PROFILES

WALLED LAKE BRANCH

FEDERAL EMERGENCY MANAGEMENT AGENCY

OAKLAND COUNTY, MI

(ALL JURISDICTIONS)



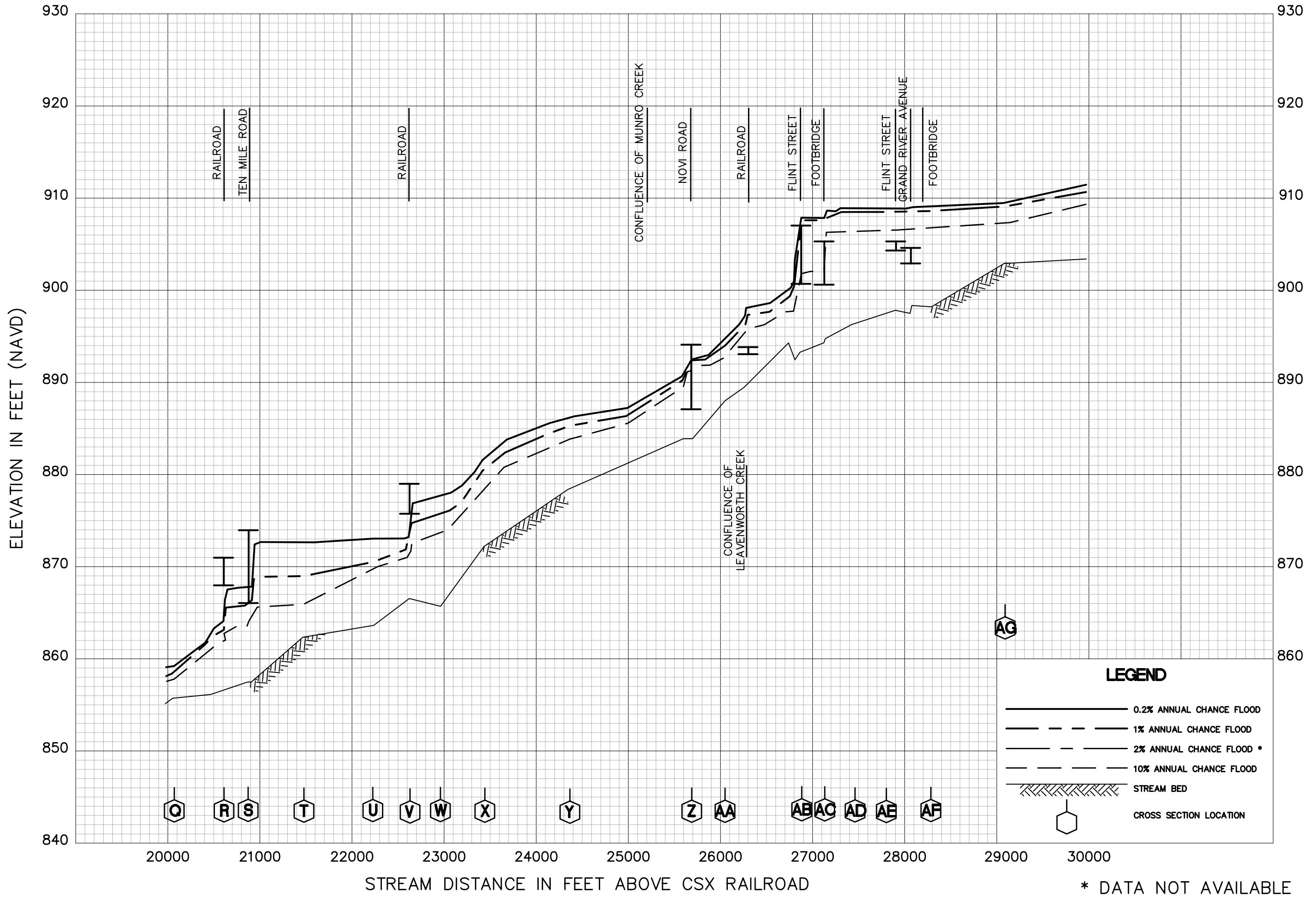
FLOOD PROFILES

WALLED LAKE BRANCH

FEDERAL EMERGENCY MANAGEMENT AGENCY

OAKLAND COUNTY, MI

(ALL JURISDICTIONS)



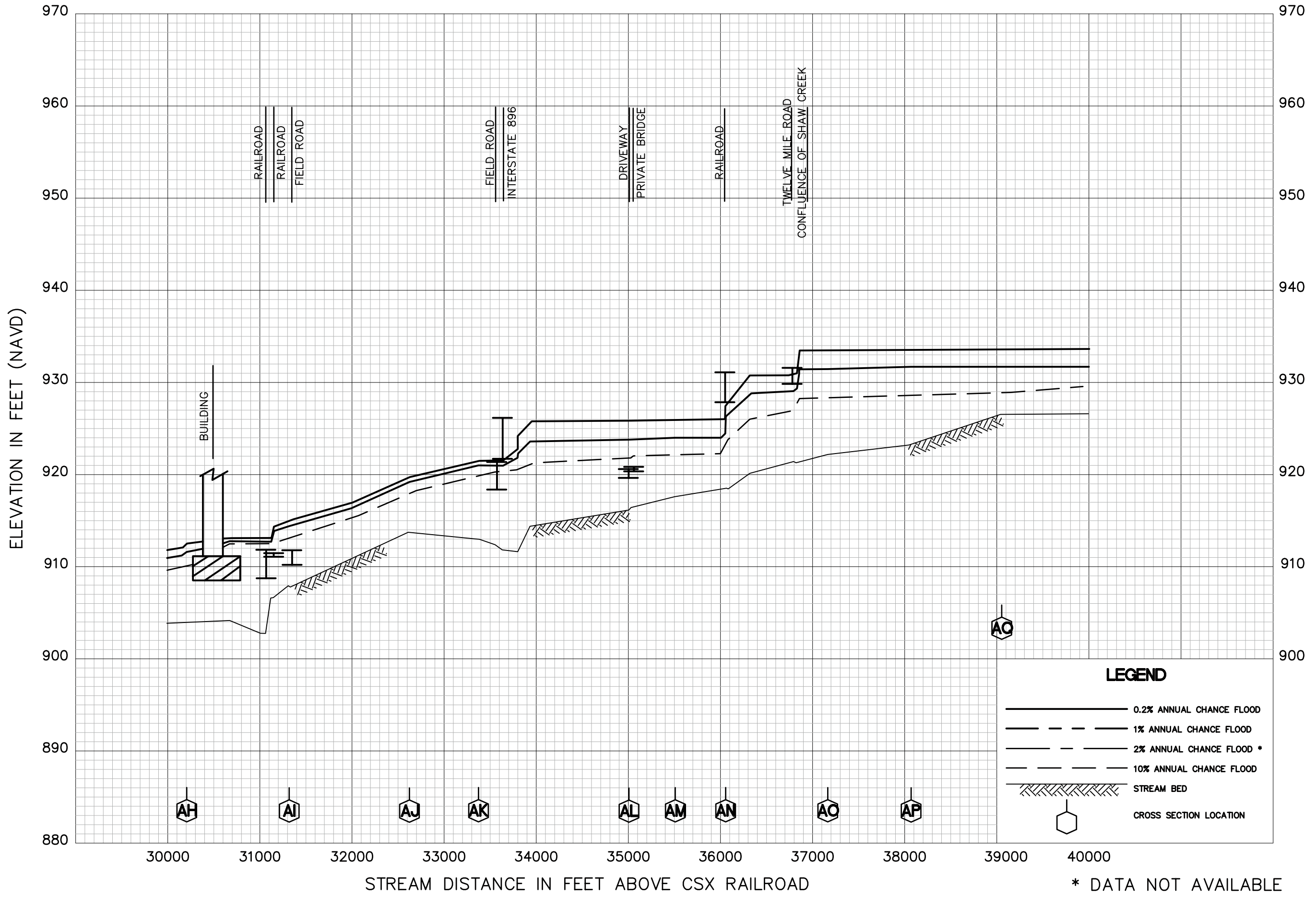
FLOOD PROFILES

WALLED LAKE BRANCH

FEDERAL EMERGENCY MANAGEMENT AGENCY

OAKLAND COUNTY, MI

(ALL JURISDICTIONS)



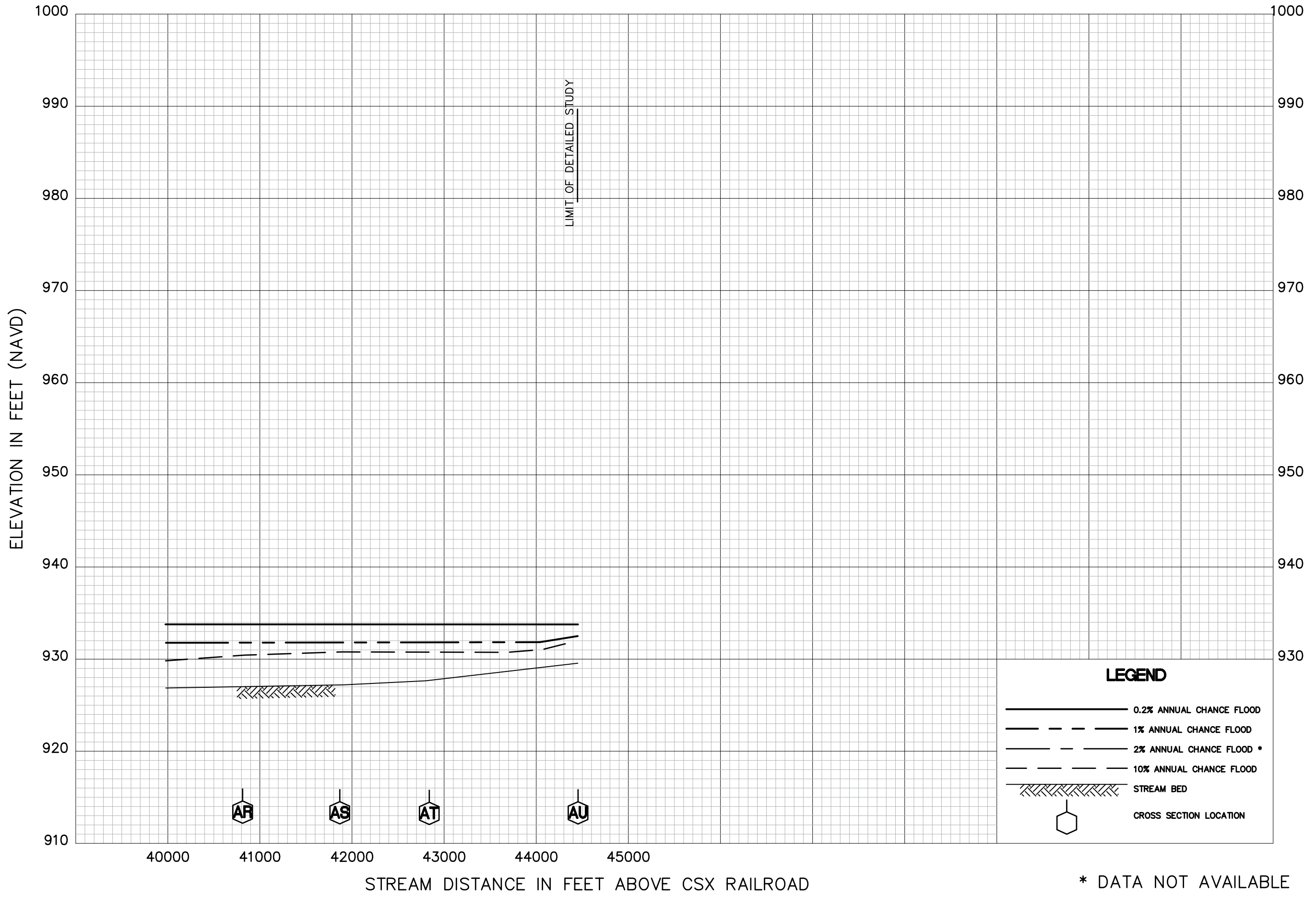
FLOOD PROFILES

WALLED LAKE BRANCH

FEDERAL EMERGENCY MANAGEMENT AGENCY

OAKLAND COUNTY, MI

(ALL JURISDICTIONS)



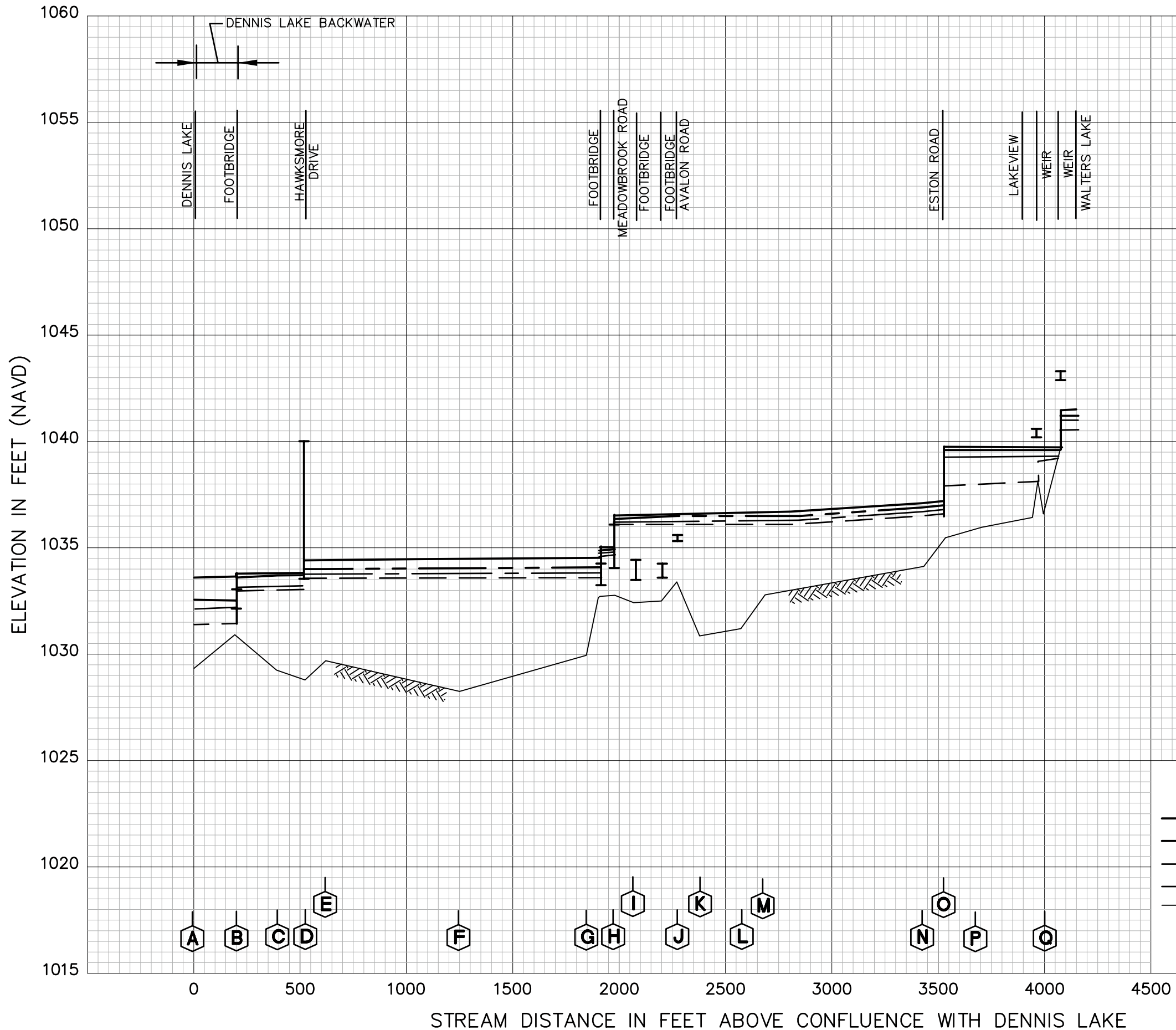
FLOOD PROFILES

WALLED LAKE BRANCH

FEDERAL EMERGENCY MANAGEMENT AGENCY

OAKLAND COUNTY, MI

(ALL JURISDICTIONS)

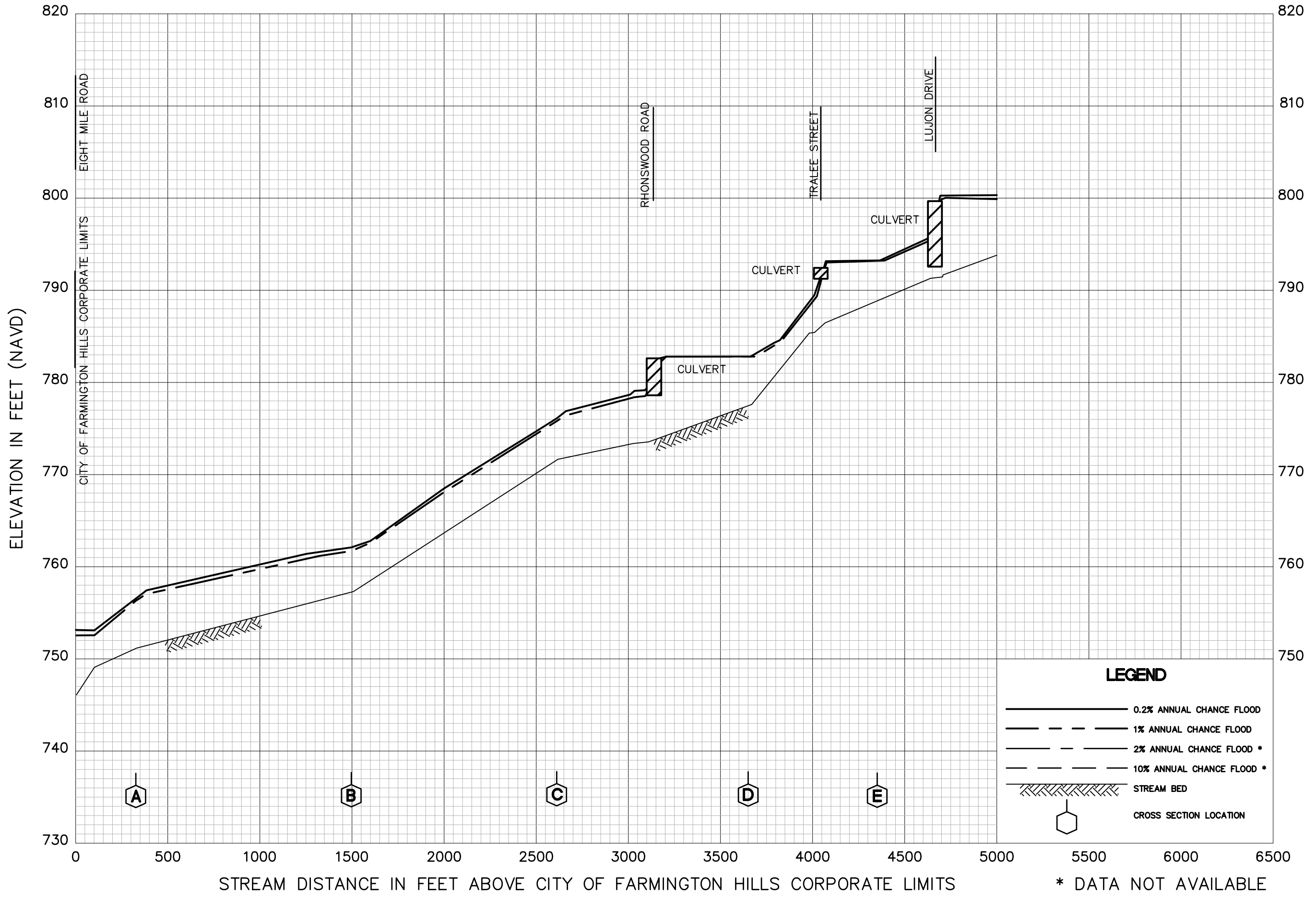


LEGEND

- 0.2% ANNUAL CHANCE FLOOD
- - - 1% ANNUAL CHANCE FLOOD
- · - 2% ANNUAL CHANCE FLOOD
- - - - 10% ANNUAL CHANCE FLOOD
- ▨ STREAM BED
- CROSS SECTION LOCATION

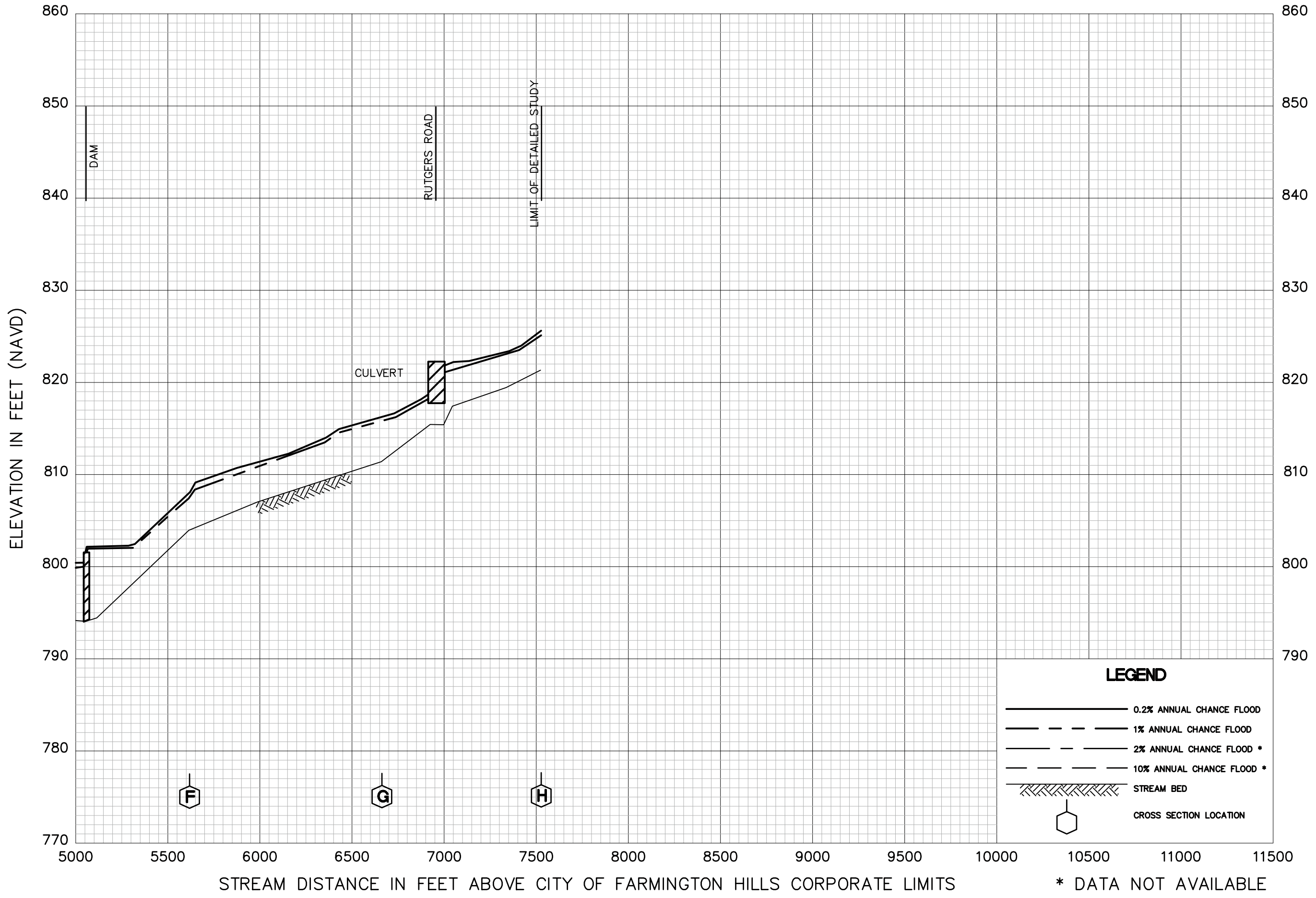
**FLOOD PROFILES
WALTERS LAKE DRAIN**

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
(ALL JURISDICTIONS)



FLOOD PROFILES
WEST BRANCH BELL CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
 (ALL JURISDICTIONS)



LEGEND

- 0.2% ANNUAL CHANCE FLOOD
- - - 1% ANNUAL CHANCE FLOOD
- . - . 2% ANNUAL CHANCE FLOOD *
- - - - 10% ANNUAL CHANCE FLOOD *
- ▨ STREAM BED
- ⬡ CROSS SECTION LOCATION

* DATA NOT AVAILABLE

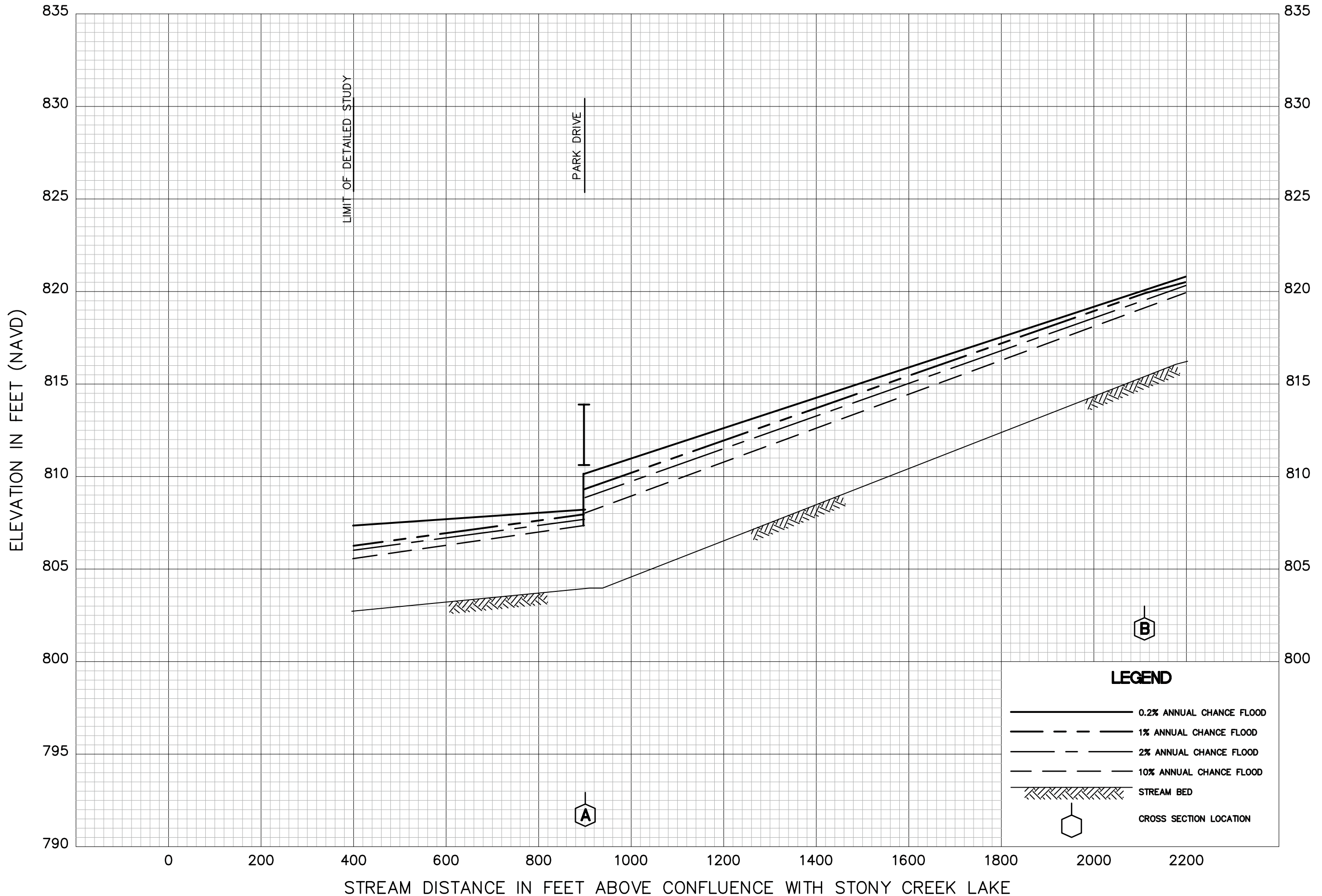
FLOOD PROFILES

WEST BRANCH BELL CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

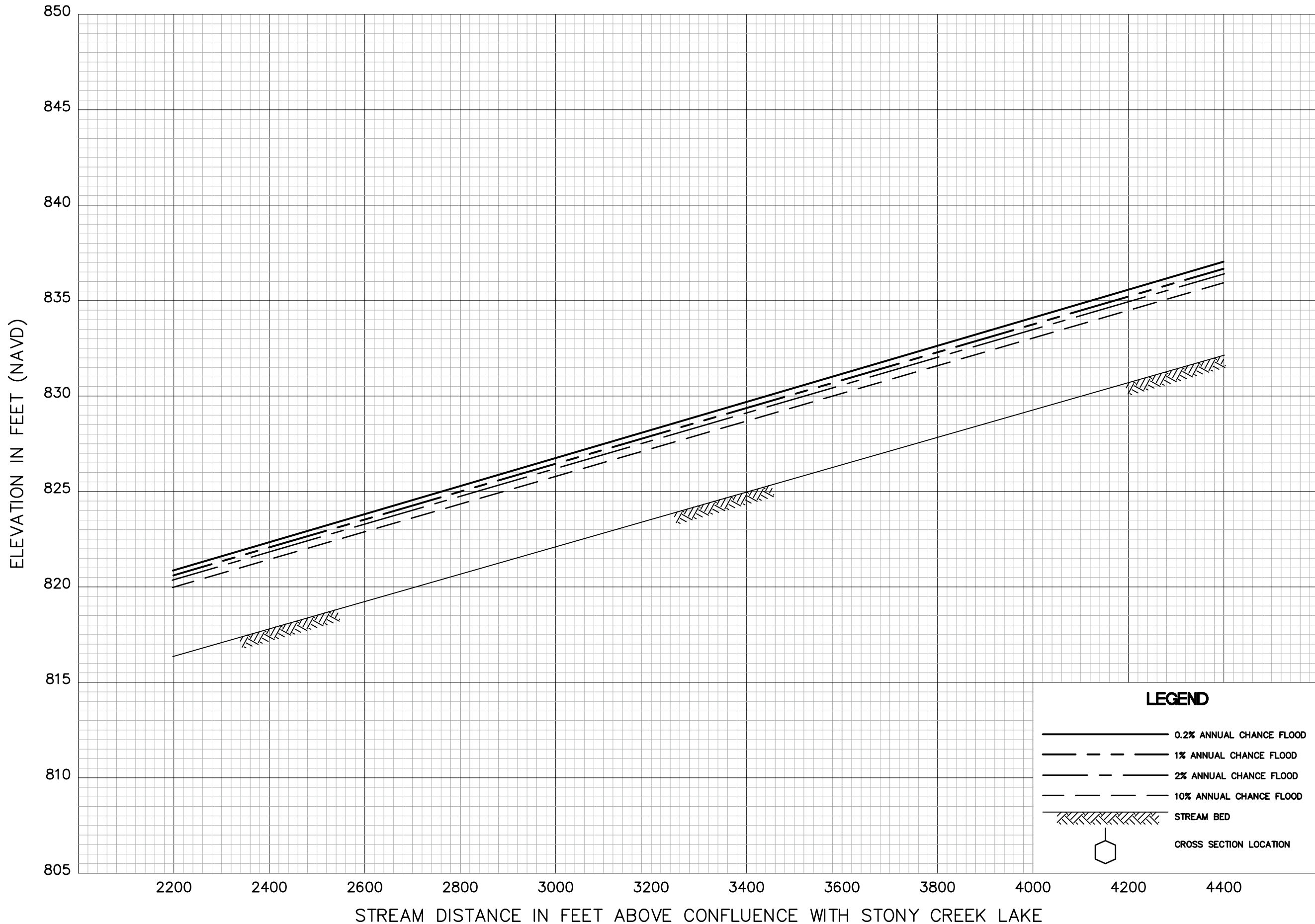
OAKLAND COUNTY, MI

(ALL JURISDICTIONS)



FLOOD PROFILES
WEST BRANCH STONY CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
(ALL JURISDICTIONS)



LEGEND

- 0.2% ANNUAL CHANCE FLOOD
- - - 1% ANNUAL CHANCE FLOOD
- · - 2% ANNUAL CHANCE FLOOD
- - - 10% ANNUAL CHANCE FLOOD
- ▨ STREAM BED
- CROSS SECTION LOCATION

FLOOD PROFILES

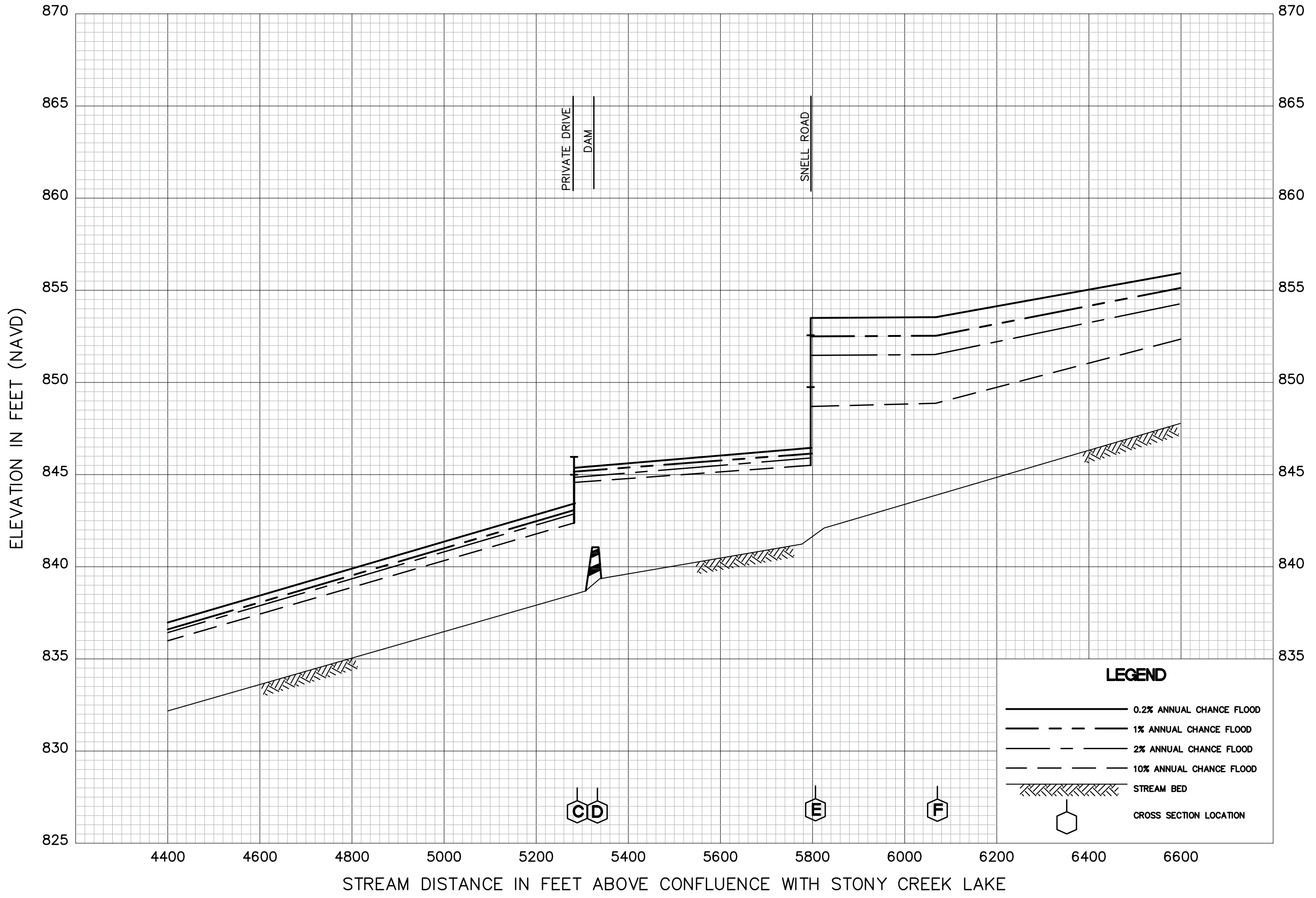
WEST BRANCH STONY CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

OAKLAND COUNTY, MI

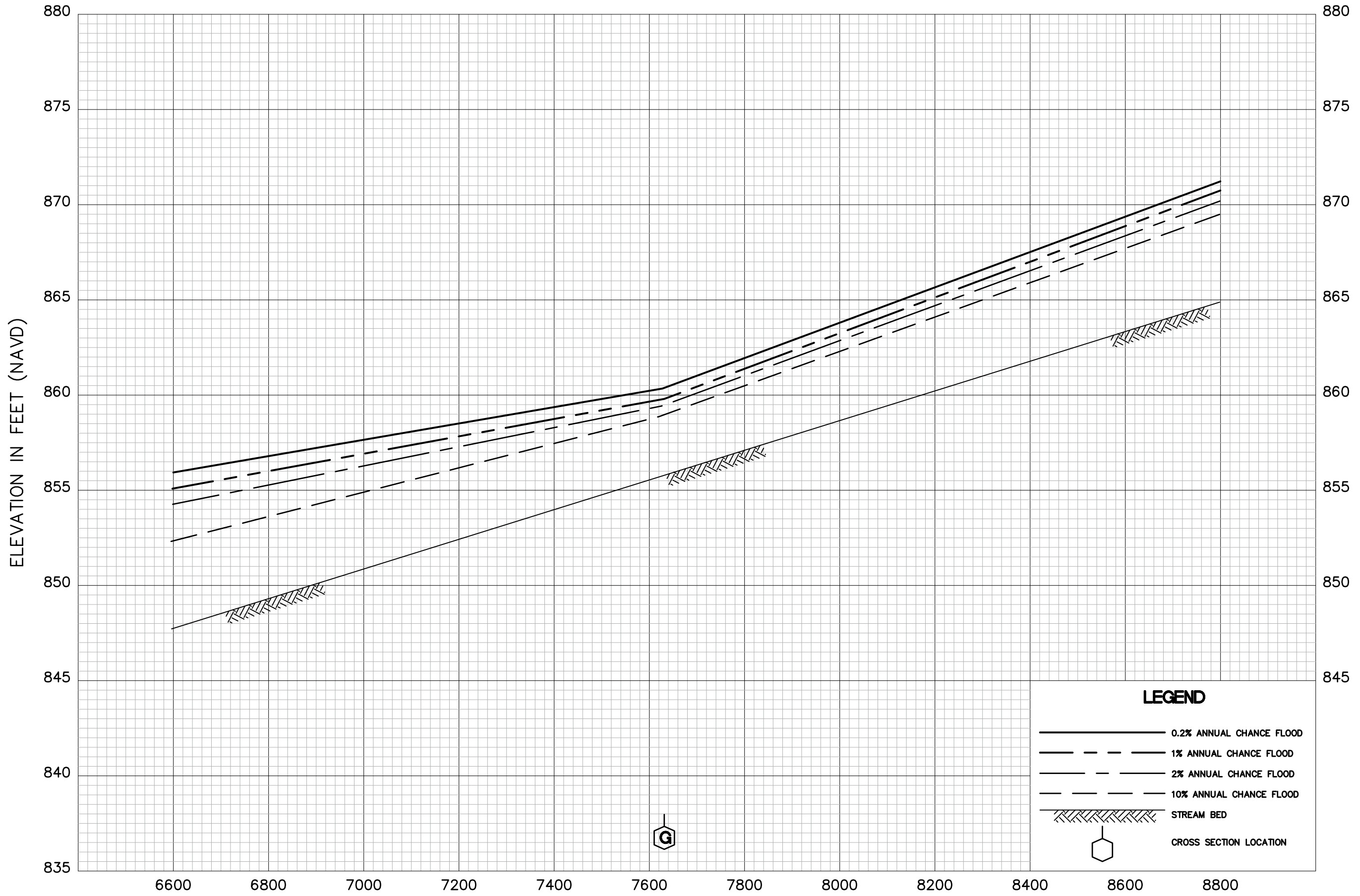
(ALL JURISDICTIONS)

224P



FLOOD PROFILES
WEST BRANCH STONY CREEK

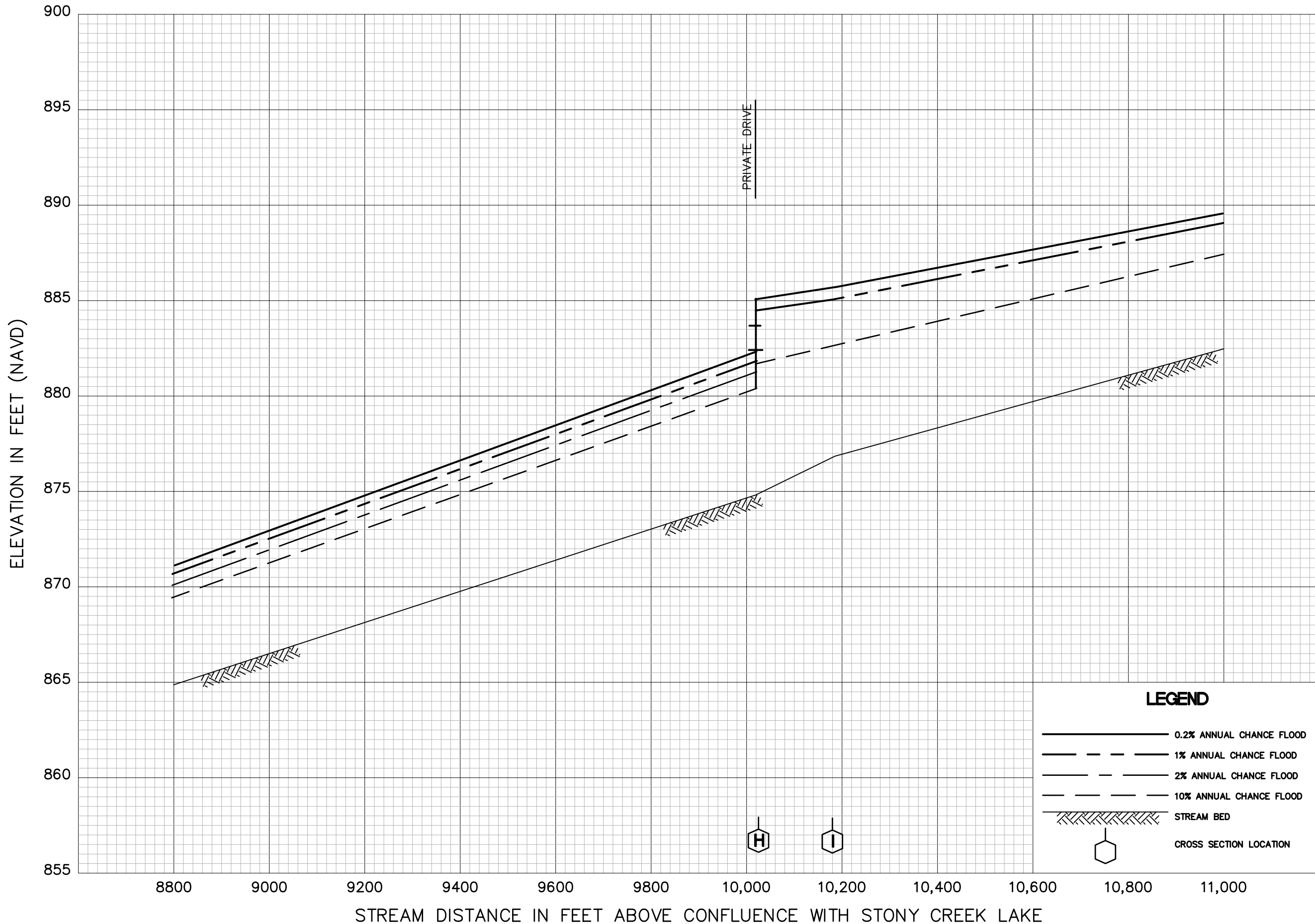
FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
 (ALL JURISDICTIONS)



STREAM DISTANCE IN FEET ABOVE CONFLUENCE WITH STONY CREEK LAKE

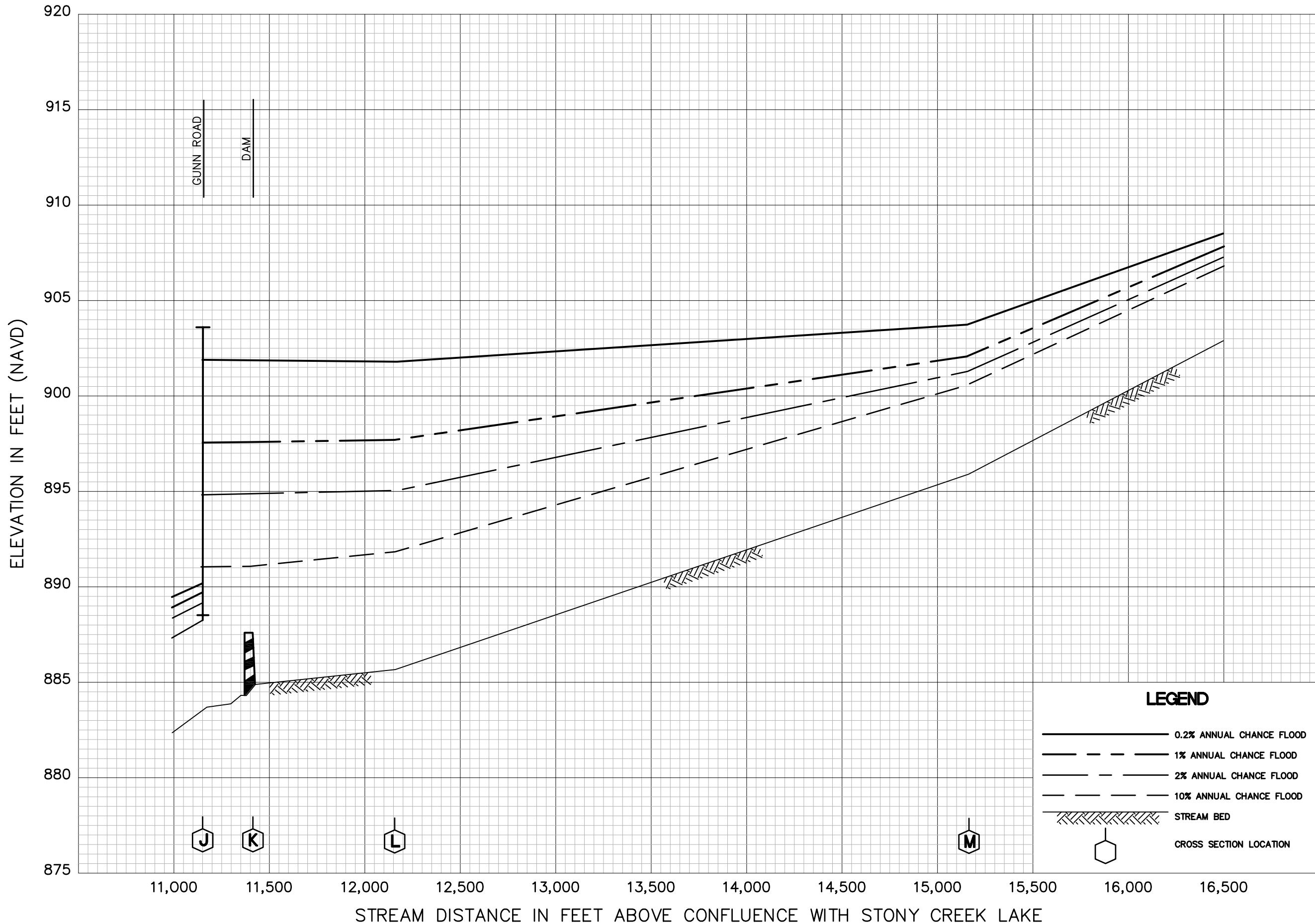
FLOOD PROFILES
WEST BRANCH STONY CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
(ALL JURISDICTIONS)



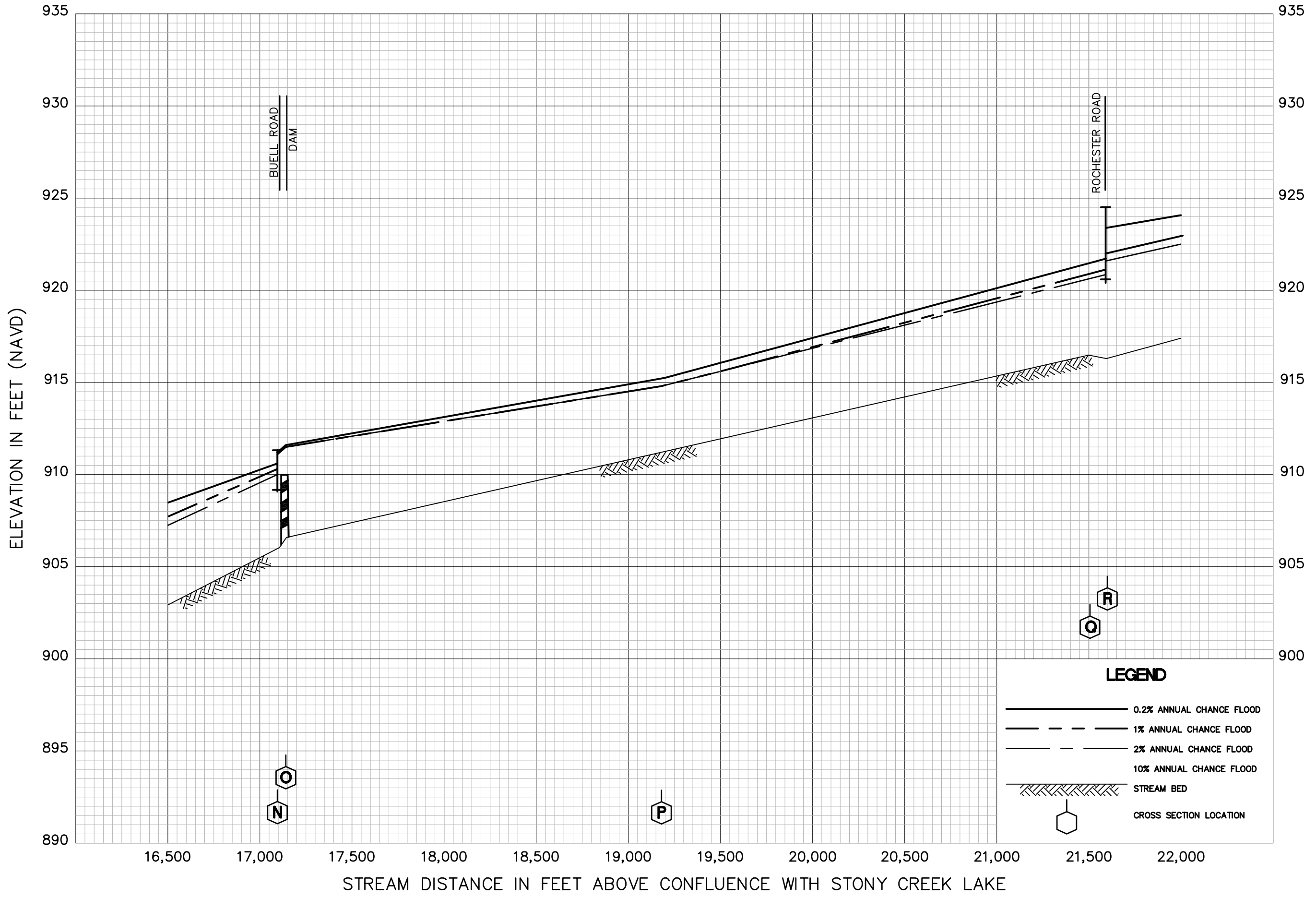
FLOOD PROFILES
WEST BRANCH STONY CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
(ALL JURISDICTIONS)



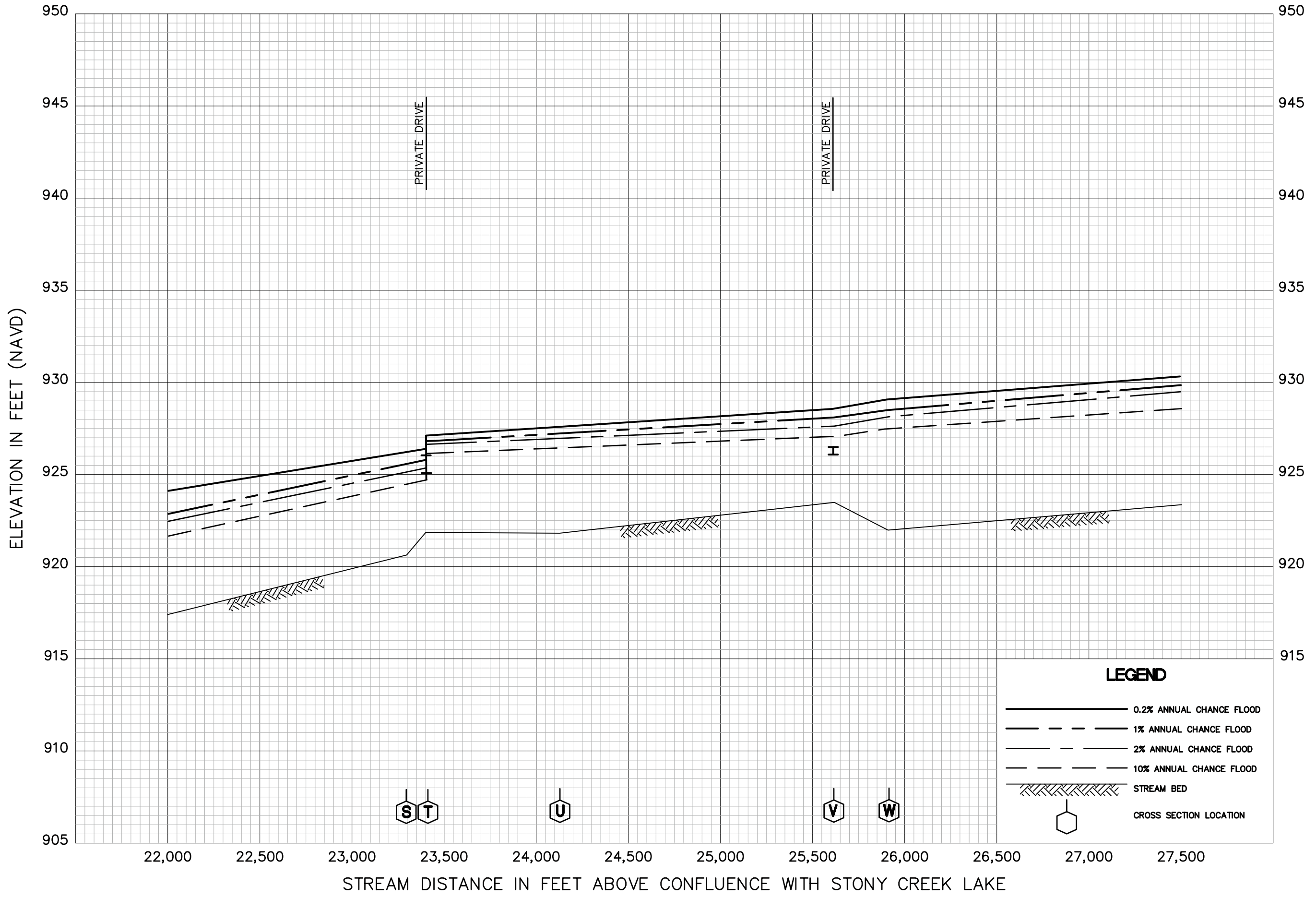
FLOOD PROFILES
WEST BRANCH STONY CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
 (ALL JURISDICTIONS)



FLOOD PROFILES
WEST BRANCH STONY CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
(ALL JURISDICTIONS)



LEGEND

- 0.2% ANNUAL CHANCE FLOOD
- - - 1% ANNUAL CHANCE FLOOD
- · - 2% ANNUAL CHANCE FLOOD
- - - - 10% ANNUAL CHANCE FLOOD
- ▨ STREAM BED
- ⬡ CROSS SECTION LOCATION

FLOOD PROFILES

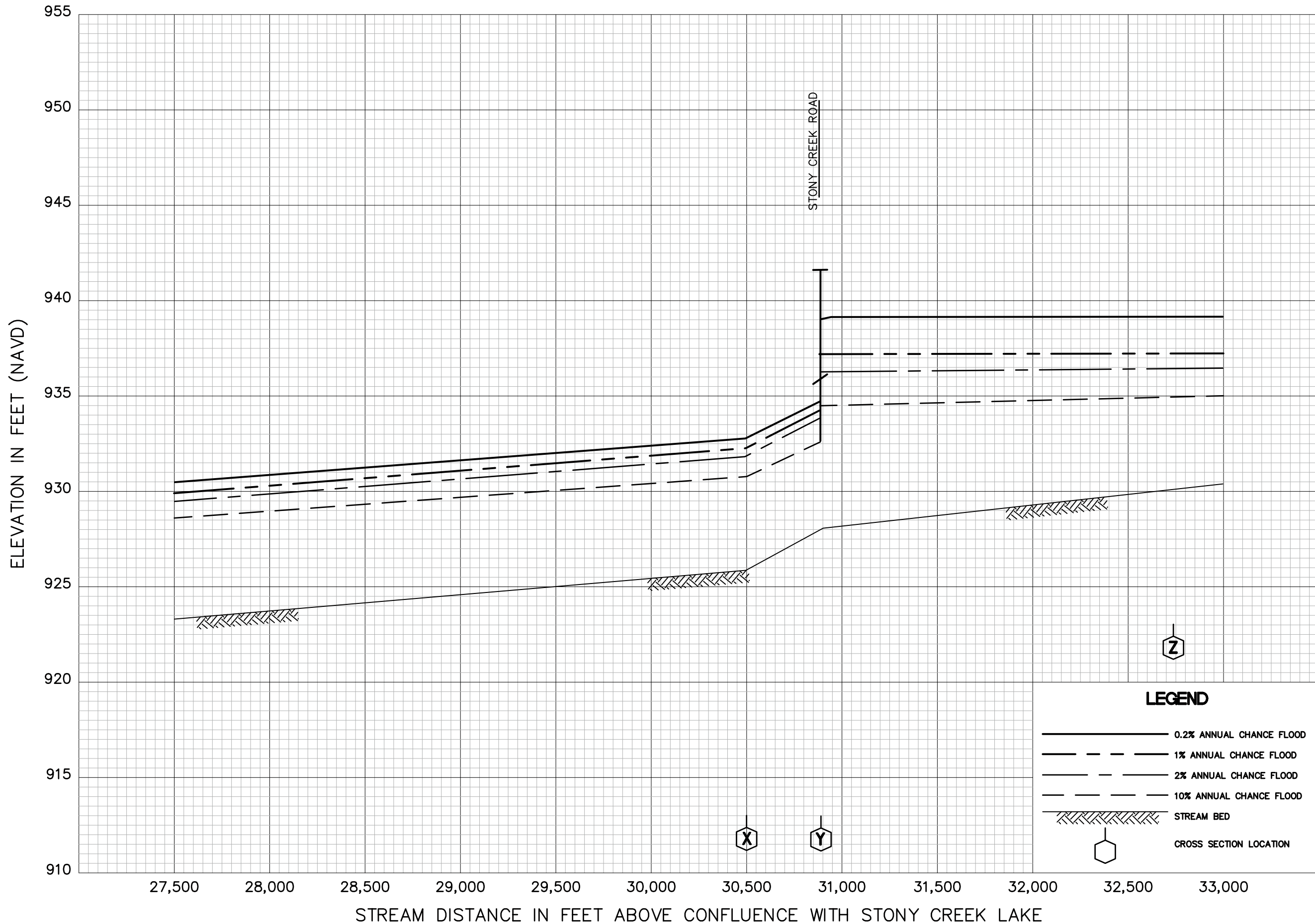
WEST BRANCH STONY CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

OAKLAND COUNTY, MI

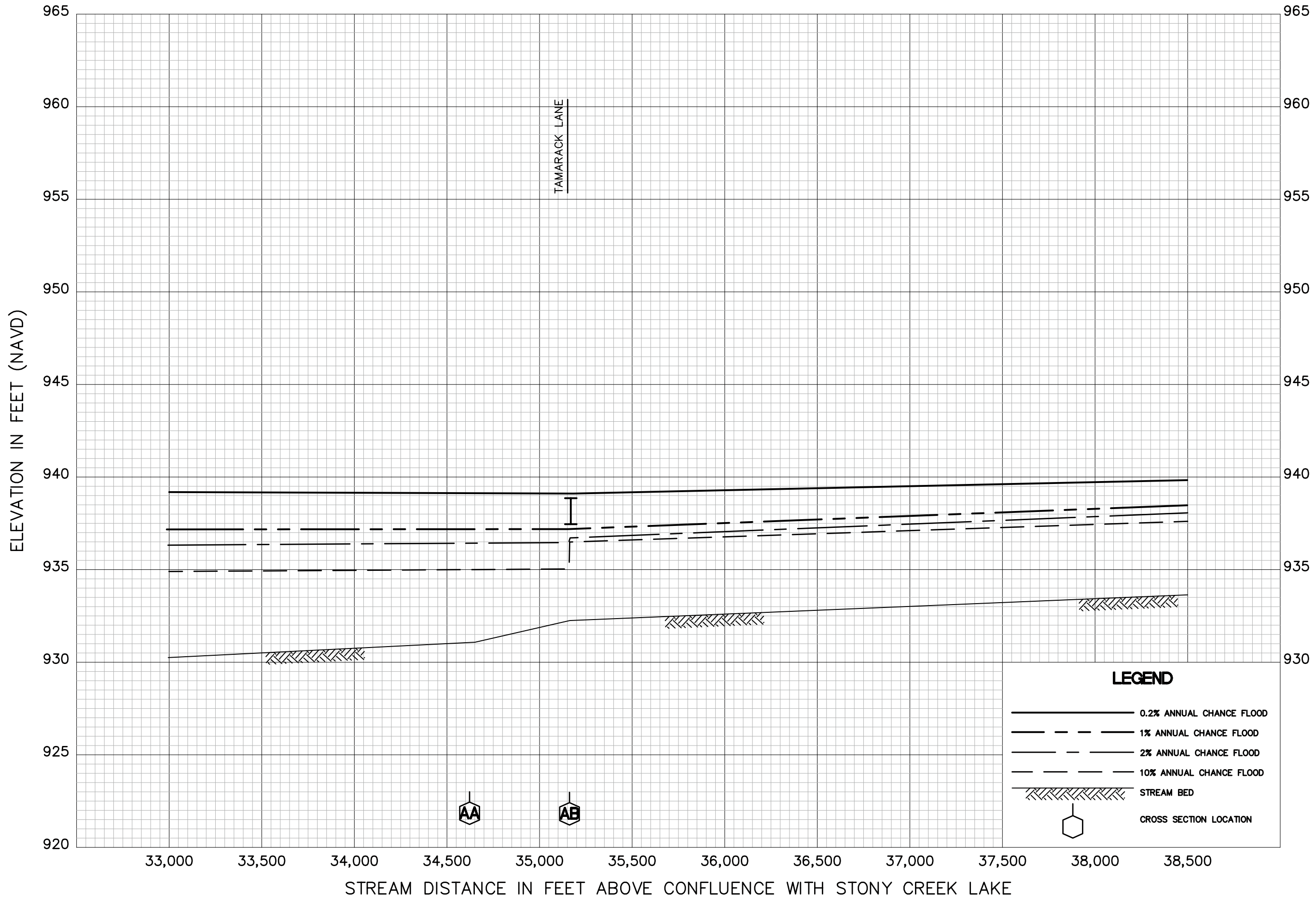
(ALL JURISDICTIONS)

230P



FLOOD PROFILES
WEST BRANCH STONY CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY
OAKLAND COUNTY, MI
(ALL JURISDICTIONS)



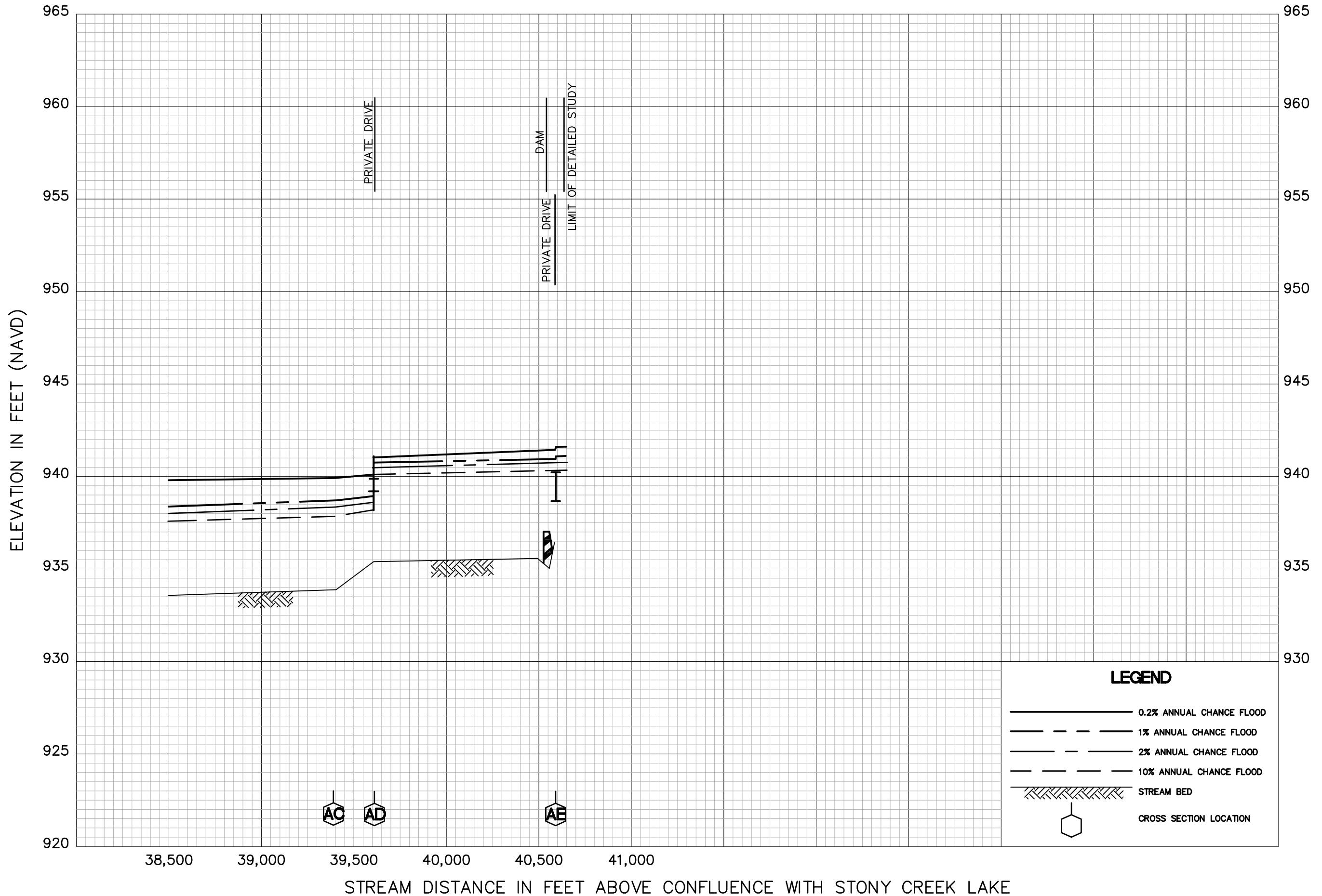
FLOOD PROFILES

WEST BRANCH STONY CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

OAKLAND COUNTY, MI

(ALL JURISDICTIONS)



LEGEND

- 0.2% ANNUAL CHANCE FLOOD
- - - 1% ANNUAL CHANCE FLOOD
- · - 2% ANNUAL CHANCE FLOOD
- - - 10% ANNUAL CHANCE FLOOD
- ▨ STREAM BED
- CROSS SECTION LOCATION

FLOOD PROFILES

WEST BRANCH STONY CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

OAKLAND COUNTY, MI

(ALL JURISDICTIONS)

233P