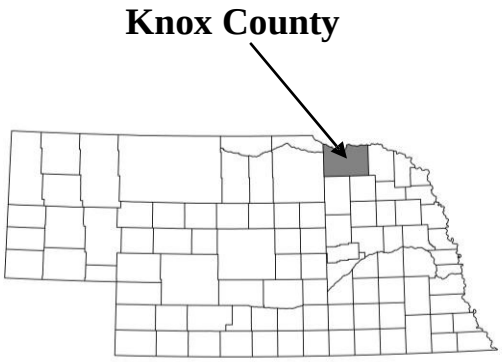
FLOOD INSURANCE STUDY

KNOX COUNTY, NEBRASKA AND INCORPORATED AREAS



COMMUNITY NAME	COMMUNITY NUMBER
BAZILE MILL, VILLAGE OF	310238
BLOOMFIELD, CITY OF	310351
CENTER, VILLAGE OF	310519
CREIGHTON, CITY OF	310360
CROFTON, CITY OF	310361
KNOX COUNTY, (UNINCORPORATED AREAS)	310451
NIOBRARA, VILLAGE OF	310132
SANTEE, VILLAGE OF	310489
VERDEL, VILLAGE OF	310518
VERDIGRE, VILLAGE OF	310133
WAUSA, VILLAGE OF	310405
*WINNETOON, VILLAGE OF	310517

*Non-Flood Prone Community

Revised: TO BE DETERMINED

Federal Emergency Management Agency

Flood Insurance Study Number
31107CV000A

NOTICE TO
FLOOD INSURANCE STUDY USERS

Communities participating in the National Flood Insurance Program 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. Please contact the Community Map Repository for any additional data.

The Federal Emergency Management Agency (FEMA) may revise and republish part or all of this FIS report at any time. In addition, FEMA may revise part of this FIS report by the Letter of Map Revision process, which does not involve republication or redistribution of the FIS report. Therefore, users should consult with community officials and check the Community Map Repository to obtain the most current FIS report components.

Initial Countywide FIS Effective Date: TO BE DETERMINED

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Flood Insurance Rate Map

FLOOD INSURANCE STUDY
KNOX COUNTY, NEBRASKA AND INCORPORATED AREAS

1.0 INTRODUCTION

1.1 Purpose of Study

This Flood Insurance Study (FIS) revises and updates information on the existence and severity of flood hazards in the geographic area of Knox County, including the Cities of Bloomfield, Creighton, Crofton, and Niobrara; the Villages of Bazile Mills, Center, Santee, Verdel, Verdigre, Wausa, and Winnetoon; and the unincorporated areas of Knox County (referred to collectively herein as Knox County), and aids in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. 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.

Please note that the Village of Winnetoon is non-floodprone, and the Village of Santee is unmapped.

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 takes precedence and the State (or other jurisdictional agency) will be able to explain them.

1.2 Authority and Acknowledgments

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

Little Bazile Creek and its tributaries were studied as part of this FIS. The restudy was performed by the Nebraska Department of Natural Resources (NDNR) for FEMA through CTP agreement EMK-2010-CA-1006. The hydrologic and hydraulic analyses for this study were completed in November 2013 and utilized Interferometric Synthetic Aperture Radar (IFSAR) data collected in June 2009 (Reference 1), and Light Detection and Ranging (LiDAR) was collected between November 2010 and April 2011 (Reference 2).

Prior to the restudy of Little Bazile Creek and its tributaries, all mapped streams within Knox County were studied in 2003 using approximate methods. As is typically the case, a countywide FIS report was not prepared for these approximate methods. Therefore, information regarding the previously studied streams is limited and only provided when available.

1.3 Coordination

The purpose of an initial Consultation Coordination Officer (CCO) meeting is to discuss the scope of the FIS. A final CCO meeting is held to review the results of the study. The final CCO meeting for the countywide maps was held on November 16, 2004. The initial CCO meeting for Little Bazile Creek Watershed project was held on November 1, 2010, and the final CCO meeting was held on TBD.

2.0 AREA STUDIED

2.1 Scope of Study

This FIS covers the geographic area of Knox County, Nebraska, including the incorporated communities listed in Section 1.1. The areas studied by detailed methods were selected with priority given to all known flood hazards and areas of projected development or proposed construction.

The 2011 study done by NDNR covers the significant flooding sources affecting the City of Bloomfield as defined at the time of the study; this includes Little Bazile Creek and its tributaries. The limits of the limited detailed study are indicated on the Flood Profiles (Exhibit 1) and on the Flood Insurance Rate Map (FIRM) (Exhibit 2).

Approximate analyses were used to study those areas having low development potential or minimal flood hazards. The scope and methods of study were proposed to and agreed upon by FEMA.

2.2 Community Description

Knox County is located in northeastern Nebraska, and is bordered by Cedar County to the east, Antelope and Pierce County to the south, Boyd and Holt County to the west, and the State of South Dakota to the north. According to the 2010 U.S. Census, the estimated population of Knox County was 8,701 (Reference 3).

The climate in Knox County is humid continental with a mean annual temperature of 47.2 degrees Fahrenheit (°F) and recorded extremes of 104 °F on July 4, 1911 to -42 °F on January 12, 1912. January has the monthly average minimum temperature of 7.1 °F, while July has the monthly average maximum temperature of 86.9 °F. The average annual rainfall is 25.44 inches, with record annual high of 35.15 inches in 2010 and a record annual low of 14.68 inches in 1931. This data was obtained from the High Plains Regional Climate Center (Reference 4)

Most of Knox County drains into the Missouri River through tributaries such as Ponca Creek for the Village of Verdel; the Missouri River and the Niobrara River for the City of Niobrara; Verdigre Creek for the Village of Verdigre; Bazile Creek for the City of Creighton, the Village of Bazile Mills, and the Village of Center; and Little Bazile Creek for the City of Bloomfield. The exception is a small portion in the southeast corner of Knox County which drains to the Elkhorn River; however, this area does not affect any major communities within Knox County.

2.3 Principal Flood Problems

Low-lying areas in the City of Bloomfield are subject to periodic flooding from Little Bazile Creek and its tributaries. The main channel of Little Bazile Creek running through the city poses the greatest potential flood risk for the community.

Additional principal flood problems in Knox County typically occur from April through June as the result of snowmelt, ice jams, rainfall runoff, or a combination of these conditions. The most significant flooding typically occurs in low-lying areas adjacent to the Missouri River. During the spring of 2011, the portions of the Upper Missouri River Basin received record rainfall events on top of an above average snowpack. The runoff from the snowmelt and rainfall caused the Missouri River to reach unprecedented historic flood levels which caused flood damage along the entire northern border of Knox County. Flood levels remained high throughout the summer months as water continued to be released from the six mainstem dams on the Missouri River. Flooding on the Niobrara River at the City of Niobrara also occurred at this time due to backwater from the Missouri River.

Flood records indicate that the Niobrara River reached a record 39,000 cfs due to an ice jam break near the Village of Verdel on March 27, 1960. Also on March 27, 1960, Ponca Creek reached a discharge of 15,700 cfs at the Village of Verdel. Flood records for the Village of Verdigre show that Verdigre Creek is the primary source of flooding for the community with floods recorded in June 1951, March 1962, and June 1967.

Historical information indicates that there has been major flooding within the City of Bloomfield. An article found in the Omaha Daily Bee from May 14, 1913 recorded a “Cloudburst” that dropped 3.5 inches in a short time creating a flash flood in the middle of the night, flooding the greater part of Main Street and the residential part of town. It states that most of the cellars in the affected part of town were filled with water and many of them were filled to the first floors. The article also states that the majority of the damage was in the business district and the damage in and around town would easily reach $100,000. The article mentions that it was much more damaging than the flood 13 years prior. (Reference 5). The recent data, since 1993, comes from the National Climatic Data Center (Reference 6) and the City of Bloomfield; All-Hazards Mitigation

Plan (Reference 7), which recorded two flash floods along Little Bazile Creek in Bloomfield. The first on July 21, 1999 was a result of five inches of rain in three hours which closed Main Street for several hours. The debris and high water from the flash flood destroyed the sewer line that crossed Little Bazile Creek, and caused sewer backups and property damage. The second flash flood was on June 21, 2005, which caused extensive basement flooding and some first-floor flooding in Anderson Addition. The amount of the property damage is unknown for both events.

2.4 Flood Protection Measures

There are no flood protection measures in Knox County. The City of Bloomfield has constructed spoil piles along Little Bazile Creek; however they are not high enough to protect from the 1-percent-annual-chance flood.

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.

3.1.1 Methods for Little Bazile Watershed

The discharge-frequency relationship for Little Bazile Creek Watershed was developed by U.S. Geological Survey (USGS). The 50-, 10-, 4-, 2-,

1-, and 0.2-percent annual exceedance probability discharges for Little Bazile Creek were developed using a rainfall-runoff model prepared for parts of the Bazile Creek basin. The rainfall-runoff model was developed in HEC-HMS version 3.4 (Reference 8). The model was built from geospatial data sets such as digital elevation data, land use/land cover data, and SSURGO soil data (Reference 9) using HEC Geo-HMS. The SCS curve number method was used to estimate volume of runoff, and the SCS lag method was used to estimate timing in each model subbasin. Routing was simulated using the Muskingum-Cunge method.

Little Bazile Creek watershed has relatively uniform hydrologic characteristics throughout. The watershed is characterized by rolling hills used chiefly for row crops and pastures. There are no major flood mitigation reservoirs in the watershed, though there are several small farm ponds. Best management practices such as grass waterways are present in some areas, but the use of terracing and contour buffer strips is not widespread.

The HEC-HMS model was prepared for the Bazile Creek basin upstream from the USGS streamflow gage 06466400 Bazile Creek at the Village of Center. The curve numbers in the model were adjusted such that the measured runoff volume for a precipitation event of June 22-23, 2010, in the Bazile Creek watershed above the Village of Center was similar to the volume produced by the model. The rainfall-runoff model was further adjusted by using data collected at four pressure transducers deployed in Bloomfield for this study to match the times of concentration. Small fluctuations in peak discharges along the main stem of Little Bazile Creek were observed in the model results and may be due to overbank storage during high-flow events. A summary of the discharges is provided in Table 1.

Table 1 - Summary of Discharges

	Peak Discharges (cubic feet per second)				
Flooding Source and Location	10-Percent-Annual-Chance	4-Percent-Annual Chance	2-Percent-Annual-Chance	1-Percent-Annual-Chance	0.2-Percent-Annual-Chance
LITTLE BAZILE CREEK					
At 545th Ave	1,665	3,028	4,364	5,646	9,343
At State Hwy 84	1,712	3,111	4,485	5,811	9,648
Confluence with Tributary 2	8,372	12,025	15,309	18,289	26,409
Confluence with Tributary 1	8,721	12,895	16,606	19,957	29,313
TRIBUTARY 1					
At 882nd Road	700	1,289	1,844	2,385	3,973
TRIBUTARY 2					
At 882nd Road	5,765	7,576	9,062	10,330	13,622
Confluence with Tributary 2.2	7,242	9,530	11,400	13,027	17,235
TRIBUTARY 2.2					
At 882nd Road	1,517	1,969	2,338	2,657	3,441

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 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.

3.2.1 Methods for Little Bazile Watershed

Interferometric Synthetic Aperture Radar (IFSAR) data was collected in June of 2009 by Intermap Technologies (Reference 1) for Little Bazile Creek watershed. The IFSAR data was used to create a digital terrain model (DTM), as a triangulated irregular network (TIN), and 5-foot contours. The IFSAR TIN was the primary topographic data source used for the approximate study models. In December of 2010, NDNR sent out a survey crew to obtain bridge geometry and cross section data along the limited detailed study area for Little Bazile Creek watershed. Light Detection and Ranging (LiDAR) was acquired between November 2010 and April 2011 by Merrick and Company (Reference 2). Merrick and Company created 1-meter Digital Elevation Models (DEMs) from the LiDAR data. NDNR resampled the DEMs to 2-meter resolution DEMs, projected to Nebraska State Plane coordinate system, and recalculated the units from meters to feet. The resampled DEMs were the primary topographic data source used for the limited detailed study area. The limited detailed study was originally done with the IFSAR data, however when the LiDAR data became available it was decided to redo the hydraulics and floodplain delineation based on the new LiDAR data.

The limited detailed study of Little Bazile Creek watershed was performed using the U.S. Army Corps of Engineers' HEC-GeoRAS (Reference 10), an extension used within Geographic Information System (GIS) software, and HEC-RAS (Reference 11) programs. HEC-GeoRAS used the LiDAR DEM to cut a 3D streamline and 3D cross sections. The 3D cross sections and 3D streamline along with the bridge locations, bank points, and flow paths were georeferenced and imported into the HEC-RAS model. Once imported the surveyed cross sections were used to adjust the channel shape, slope and depth within the imported cross sections. Bridge geometry was added based on the survey and the as-built drawings

obtained from Nebraska Department of Roads (NDOR). Ineffective flow areas were used as needed throughout the model.

Starting water surface elevations (WSELs) for Little Bazile Creek watershed were determined by normal-depth calculations. Channel roughness factors (Manning's "n") for the hydraulic computations were assigned on the basis of field inspection and aerial photography of the floodplain areas. Channel roughness coefficients ranged from 0.035 to 0.08, and overbanks roughness coefficients ranged from 0.034 to 0.07. Contraction coefficients of 0.1 at gradual transitions, and 0.3 at roadway crossings, and expansion coefficients of 0.3 at gradual transitions, and 0.5 at roadway crossings were assigned throughout the HEC-RAS model.

During the hydraulic analysis it was determined that a significant amount of flow leaves Tributary 2 and flows in to Tributary 1 or back into Tributary 2 via Tributary 1.1 and/or Tributary 2.1. Therefore, a split flow, in the form of a lateral weir, was added to Tributary 2 between river stations 5419.763 and 4449.473, and to Tributary 1.1 between river stations 1774.615 and 672.5944. The station-elevation data for these lateral weirs were cut from the LiDAR, and the cross sections for the streams were terminated at the lateral weir. The split flows were optimized using the HEC-RAS Steady Flow Analysis – Flow Optimization Option. Then using the Steady Flow Data options and Initial Lateral Flows and Pump Flows options the flows were fine-tuned by using the output split flows from the previous run and manually adjusting the steady flow data accordingly. The flows converged to less than 3 cfs.

An approximate study was performed on all streams within the Little Bazile watershed that had a drainage area greater than 1 square mile, but located outside of the limited detail study area. This process was done using NDNR's N-FACT tool (Reference 12), which is an extension of ArcView 3.2. The streamlines were hand digitized and the cross sections were hand drawn using the 5-foot contours developed from the IFSAR data. The N-FACT tool was used to calculate the channel slope and the station and elevations for each cross section along the streamline. N-FACT then input the 1-percent-annual-chance flows, provided by USGS, a standard Manning's "n" value of 0.05, and the channel slope into the Manning's normal depth equation to calculate the water depth at each cross section. The final product from the N-FACT tool is a 1-percent annual chance water surface. This was then compared to the LiDAR data to create the floodplain boundary.

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 National Geodetic Vertical Datum of 1929 (NGVD). With the finalization of the North American Vertical Datum of 1988 (NAVD), many FIS reports and FIRMs are being prepared using NAVD as the referenced vertical datum.

All flood elevations shown in this FIS report and on the FIRM are referenced to NAVD. Structure and ground elevations in the community must, therefore, be referenced to NAVD. It is important to note that adjacent communities may be referenced to NGVD. This may result in differences in Base Flood Elevations (BFEs) across the corporate limits between the communities. The average conversion factor that was used to convert the data in this FIS report to NAVD was calculated using the U.S. Army Corps of Engineers' Corpscon program (Reference 13). The data points used to determine the conversion are listed in Table 2.

For more information on NAVD, see the FEMA publication entitled Converting the National Flood Insurance Program to the North American Vertical Datum of 1988 (Reference 14), or contact the Vertical Network Branch, National Geodetic Survey, Coast and Geodetic Survey, National Oceanic and Atmospheric Administration, Silver Spring, Maryland 20910 (Internet address 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 the FIS report and FIRM for this community. Interested individuals may contact FEMA to access these data.

Table 2 - Vertical Datum Conversion

Quad Name	Corner	Latitude	Longitude	Conversion from NGVD to NAVD
Bloomfield	NE	42.625	-97.625	0.751
Bloomfield NE	NE	42.750	-97.500	0.679
Bloomfield SE	NE	42.625	-97.500	0.725
Bon Homme Colony	NE	42.875	-97.625	0.712
Center East	NE	42.625	-97.750	0.732
Center West	NE	42.625	-97.875	0.682
Creighton	NE	42.500	-97.875	0.676
Dorsey	NE	42.750	-98.250	0.791
Howe Creek	NE	42.750	-97.750	0.761
Lindy	NE	42.750	-97.625	0.735
Midland	NE	42.500	-97.625	0.712
Monowi	NE	42.875	-98.250	0.814
Orchard NE	NE	42.500	-98.000	0.702
Orchard NW	NE	42.500	-98.125	0.679
Pishelville	NE	42.750	-98.125	0.761
Plainview NE	NE	42.500	-97.750	0.709
Santee	NE	42.875	-97.750	0.709
Sparta	NE	42.750	-97.875	0.735
Springfield	NE	42.875	-97.875	0.738
Star	NE	42.625	-98.250	0.801
Tabor SE	NE	42.875	-97.500	0.686
Venus	NE	42.500	-98.250	0.712
Verdigre	NE	42.625	-98.000	0.696
Verdigre NE	NE	42.750	-98.000	0.686
Walnut	NE	42.625	-98.125	0.709
Wausa	NE	42.500	-97.500	0.712
			Average:	**0.723**

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 the FIS report, including Flood Profiles, Floodway Data Table, and Summary of Stillwater Elevations Table, where applicable. Users should reference the data presented in the 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 flood has been adopted by FEMA as the base flood for floodplain management purposes. The 0.2-percent-annual-chance 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.

The 1- and 0.2-percent-annual-chance floodplain boundaries are shown on the FIRM (Exhibit 2). 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 (Exhibit 2).

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 as 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 countywide FIRM presents flooding information for the entire geographic area of Knox County. Previously, FIRMs were prepared for each incorporated community and the unincorporated areas of the County identified as flood-prone. This countywide FIRM also includes flood-hazard information that was presented separately on Flood Boundary and Floodway Maps, where applicable. Historical data relating to the maps prepared for each community are presented in Table 3.

COMMUNITY NAME	INITIAL IDENTIFICATION	FLOOD HAZARD BOUNDAY MAP REVISION DATE	FIRM EFFECTIVE DATE	FIRM REVISION DATE
Bazile Mills, Village of	August 18, 2005	N/A	August 18, 2005	N/A
Bloomfield, City of	July 16, 1976	N/A	August 18, 2005	TBD
Center, Village of	August 18, 2005	N/A	August 18, 2005	N/A
Creighton, City of	November 12, 1976	N/A	September 1, 1996	August 18, 2005
Crofton, City of	June 27, 1975	December 4, 1984	September 1, 1986	August 18, 2005
Niobrara, Village of	December 13, 1974	N/A	August 18, 2005	N/A
Santee, Village of	August 14, 1979	N/A	August 18, 2005	N/A
Verdel, Village of	August 18, 2005	N/A	August 18, 2005	N/A
Verdigre, Village of	June 28, 1974	December 5, 1975	September 1, 1986	August 18, 2005
Wausa, Village of	August 8, 1975	N/A	August 18, 2005	N/A
*Winnetoon, Village of	August 18, 2005	N/A	August 18, 2005	N/A
Knox County (Unincorporated Areas)	August 18, 2005	N/A	August 18, 2005	TBD

*Non-Floodprone Community

TABLE 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

KNOX COUNTY, NE
AND INCORPORATED AREAS

COMMUNITY MAP HISTORY

7.0 OTHER STUDIES

There are no previous FIS studies for Knox County and its incorporated areas.

8.0 LOCATION OF DATA

Information concerning the pertinent data used in the preparation of this study can be obtained by contacting FEMA, Federal Insurance and Mitigation Division, 9221 Ward Parkway, Suite 300, Kansas City, Missouri 64114-3372.

9.0 BIBLIOGRAPHY AND REFERENCES

1. Intermap Technologies. 5 Meter Posting, Interferometric Synthetic Aperture Radar (IFSAR) for Little Bazile Creek Watershed. Nebraska: IFSAR, 2009.

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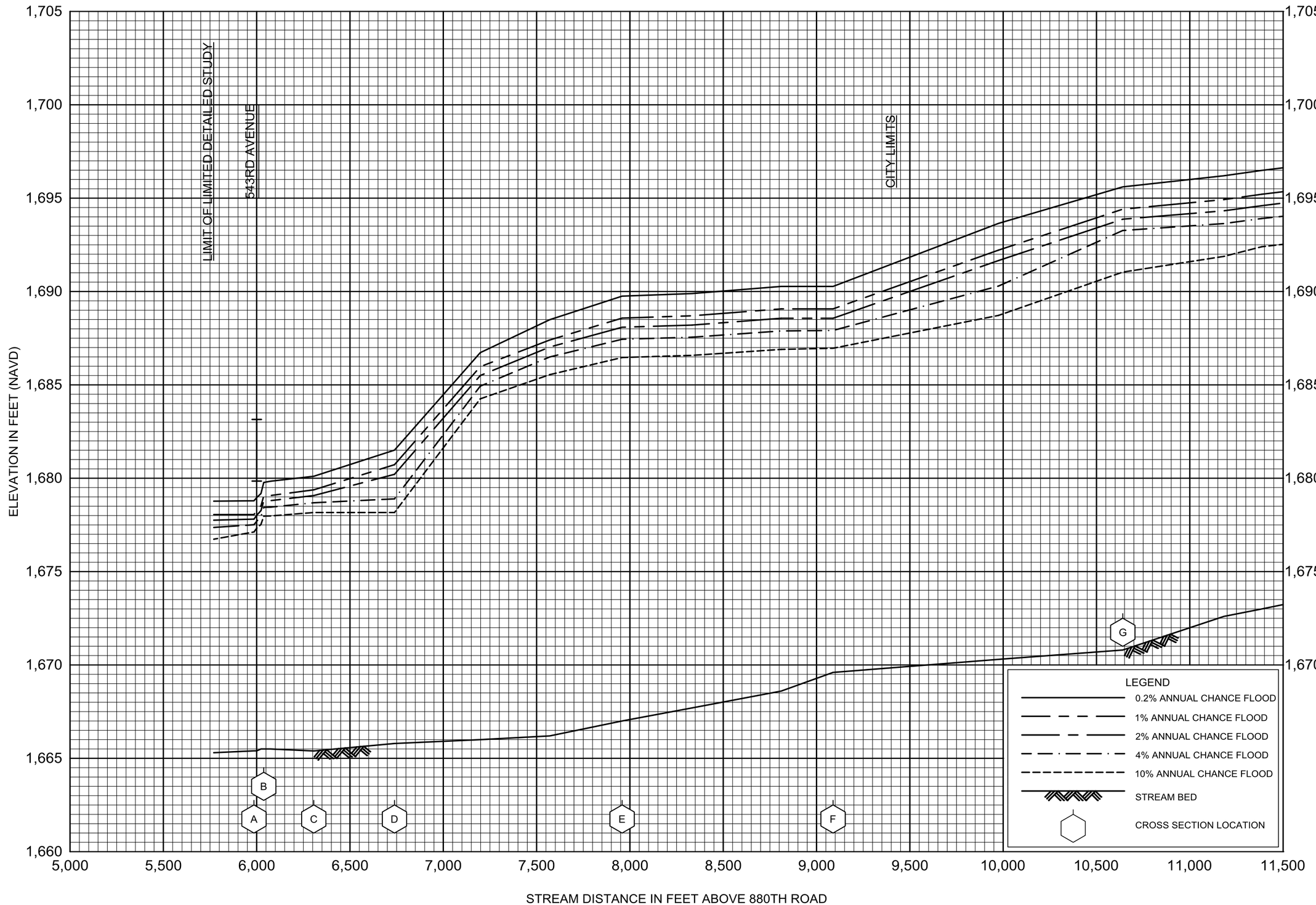


FLOOD PROFILES

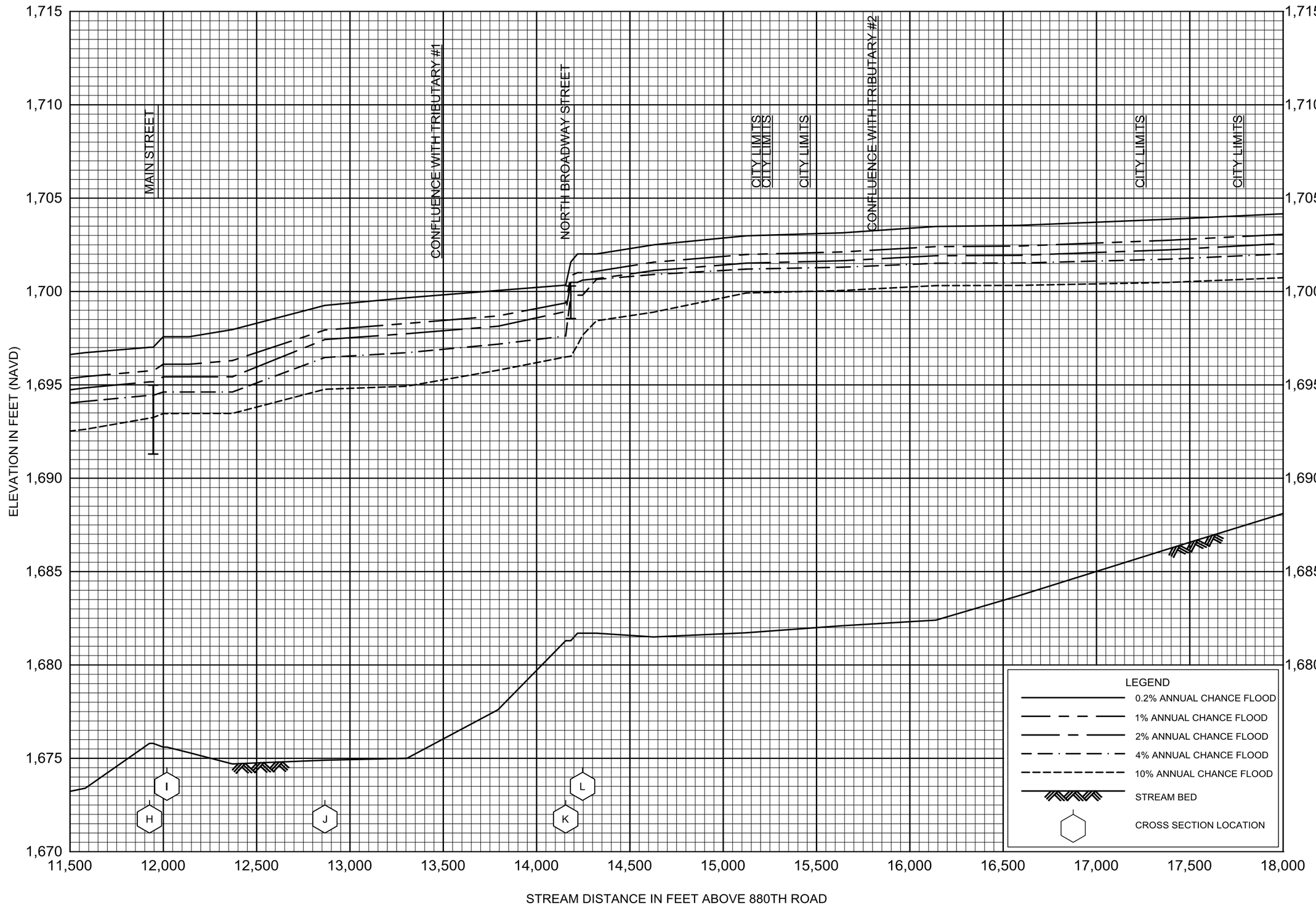
LITTLE BAZILE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KNOX COUNTY, NE

AND INCORPORATED AREAS

01P



FLOOD PROFILES

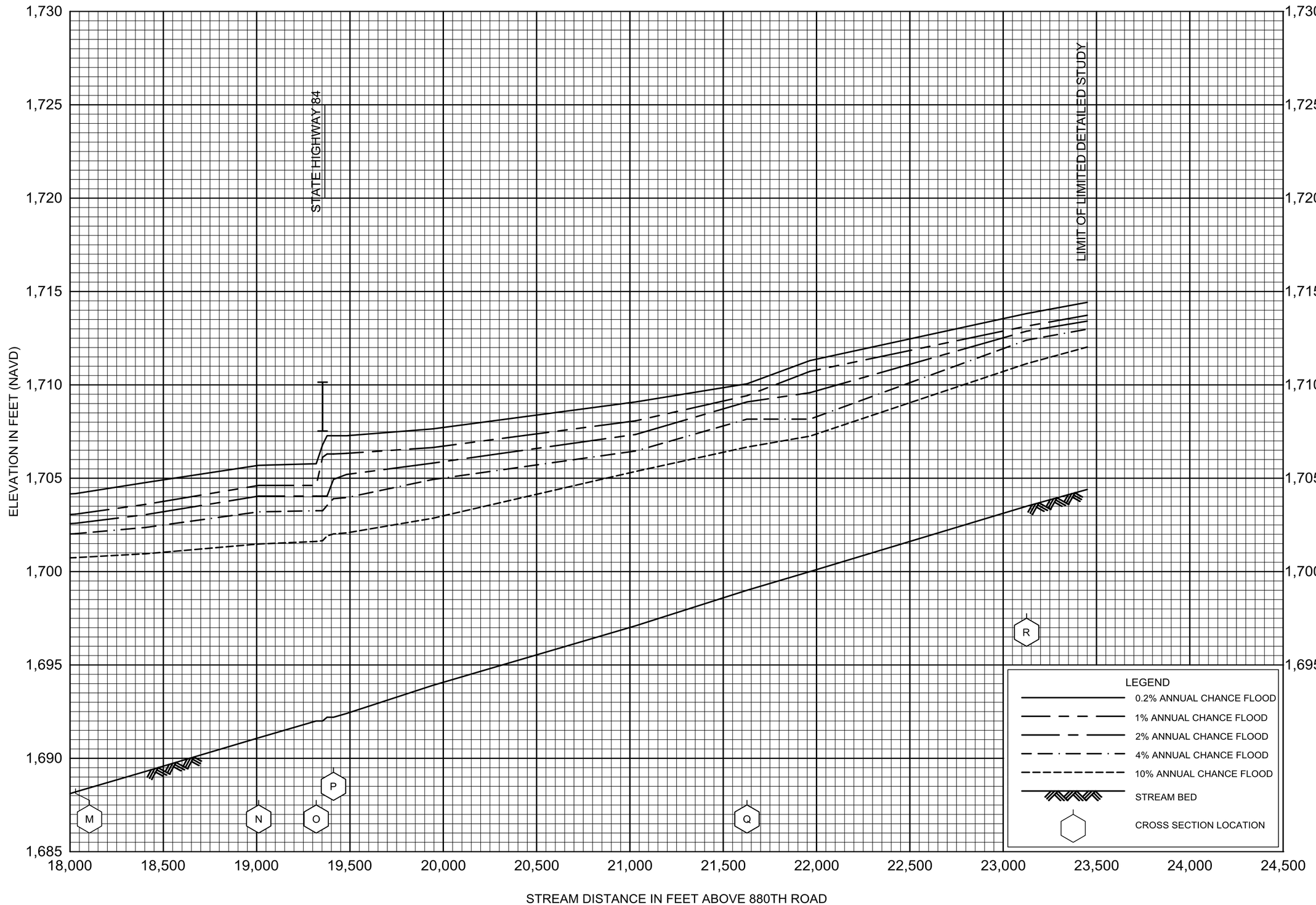
LITTLE BAZILE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KNOX COUNTY, NE

AND INCORPORATED AREAS

02P



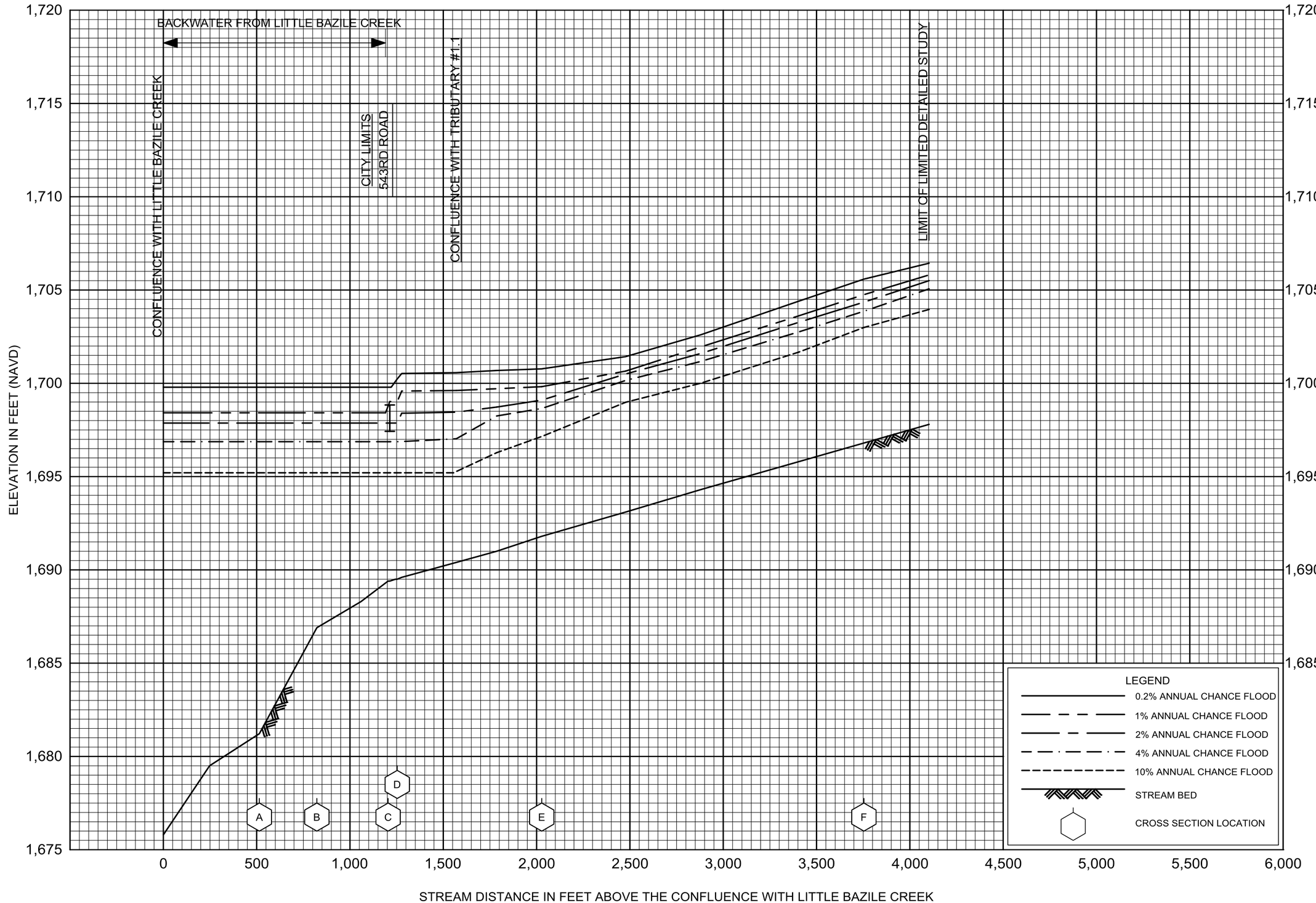
FLOOD PROFILES

LITTLE BAZILE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KNOX COUNTY, NE

AND INCORPORATED AREAS



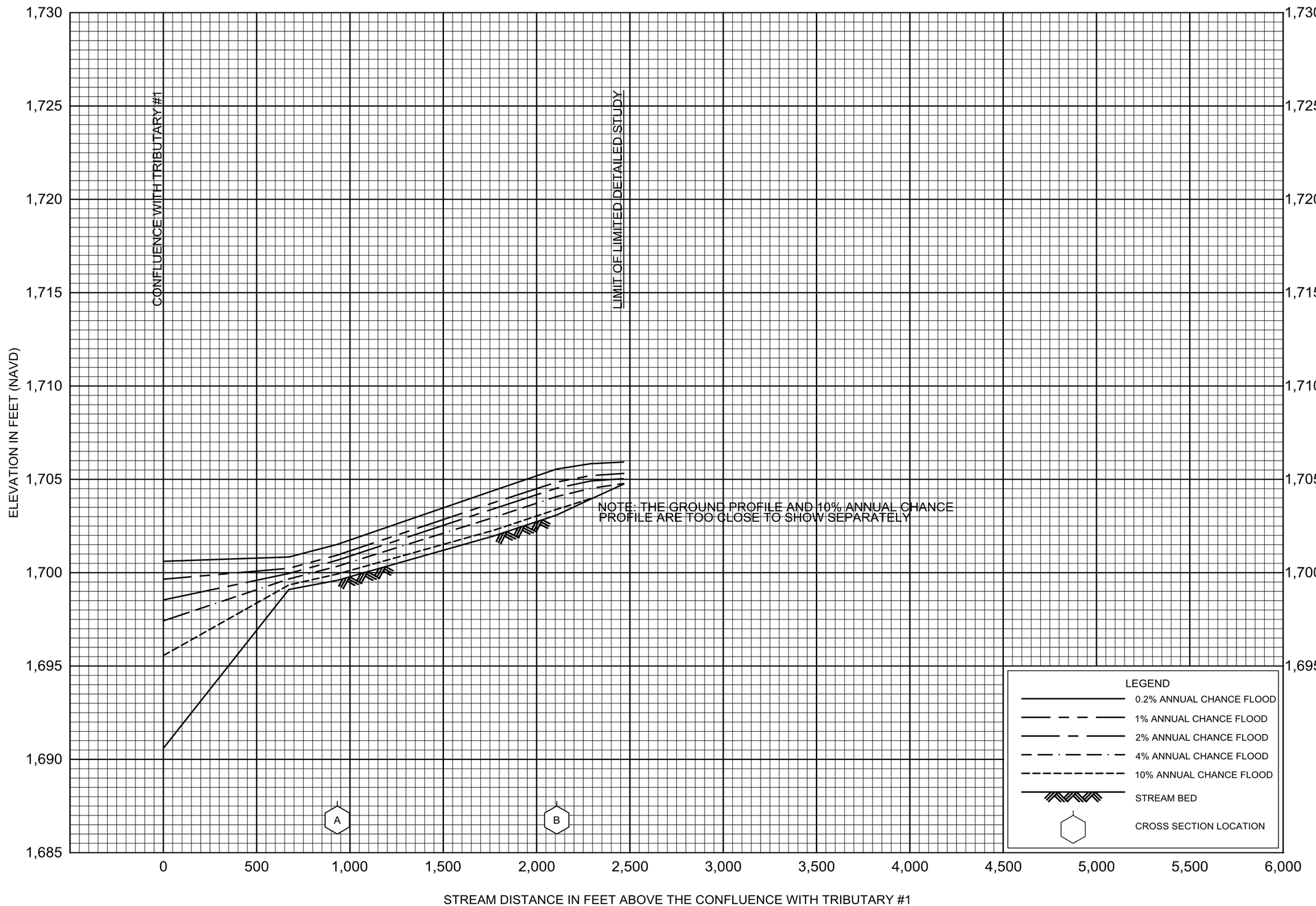
FLOOD PROFILES

TRIBUTARY #1

FEDERAL EMERGENCY MANAGEMENT AGENCY

KNOX COUNTY, NE

AND INCORPORATED AREAS



FLOOD PROFILES

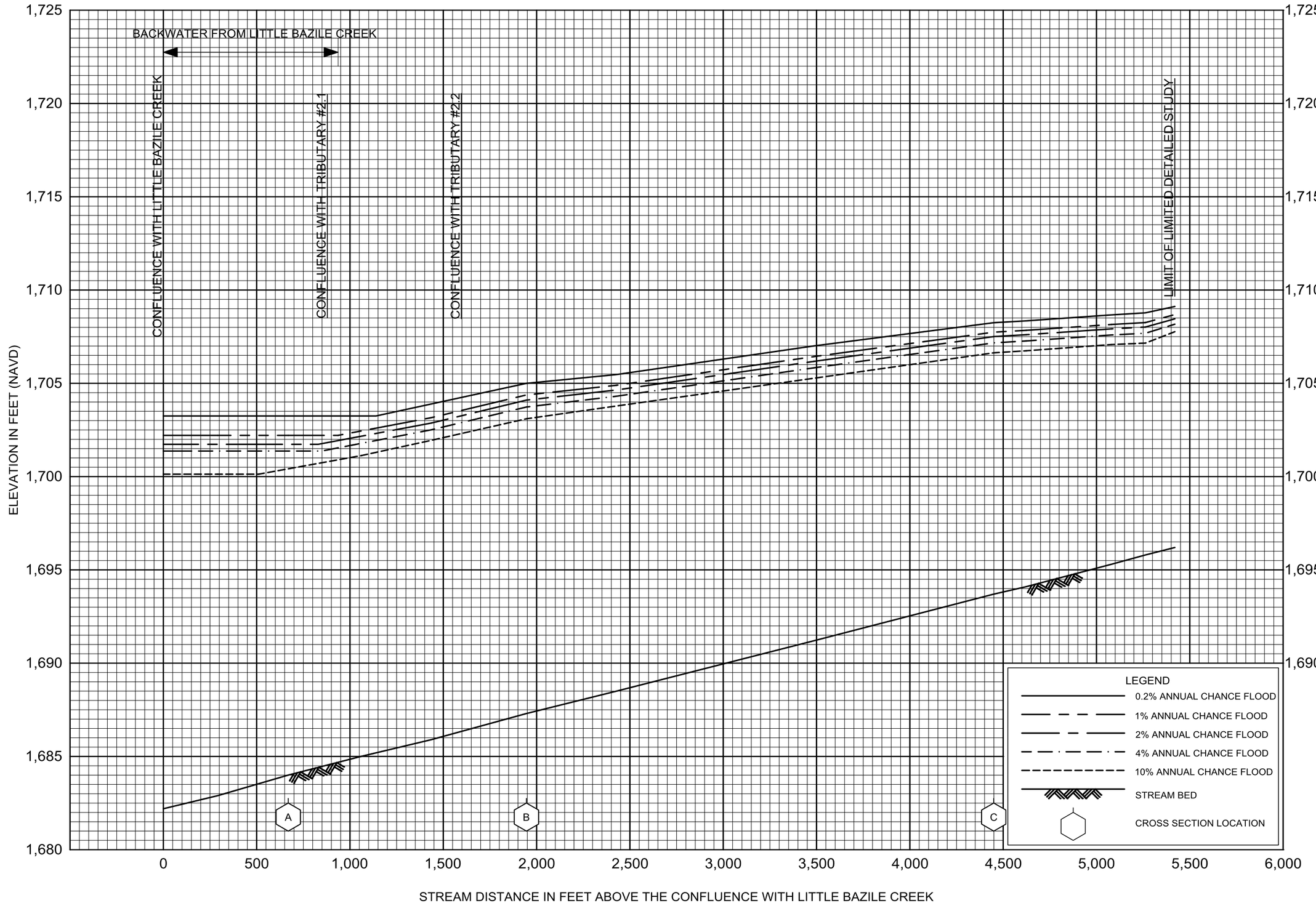
TRIBUTARY #1.1

FEDERAL EMERGENCY MANAGEMENT AGENCY

KNOX COUNTY, NE

AND INCORPORATED AREAS

05P



FLOOD PROFILES

TRIBUTARY #2

FEDERAL EMERGENCY MANAGEMENT AGENCY

KNOX COUNTY, NE

AND INCORPORATED AREAS

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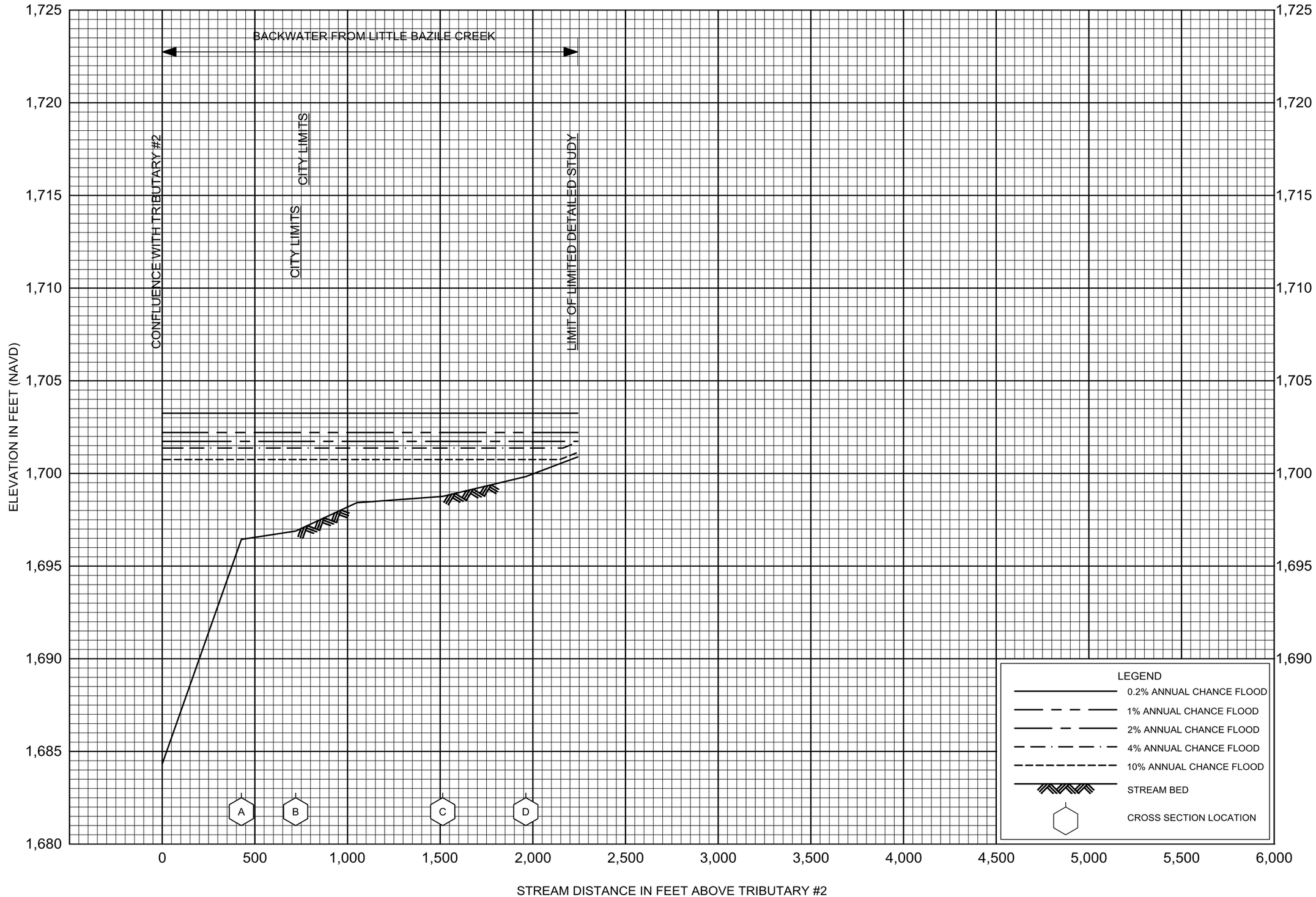


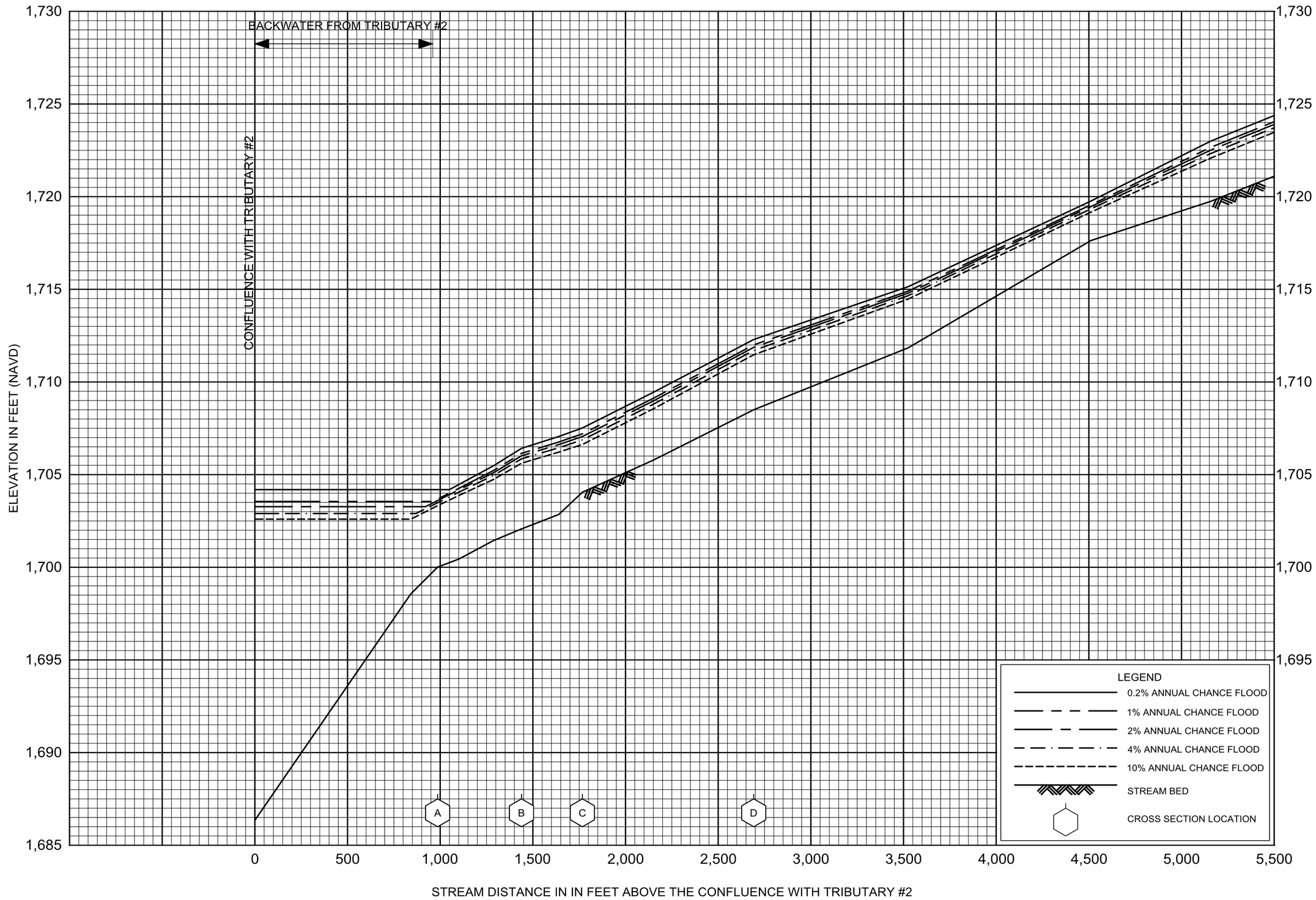
FLOOD PROFILES

TRIBUTARY #2.1

FEDERAL EMERGENCY MANAGEMENT AGENCY

KNOX COUNTY, NE

AND INCORPORATED AREAS



FLOOD PROFILES

TRIBUTARY #2.2

FEDERAL EMERGENCY MANAGEMENT AGENCY

KNOX COUNTY, NE

AND INCORPORATED AREAS

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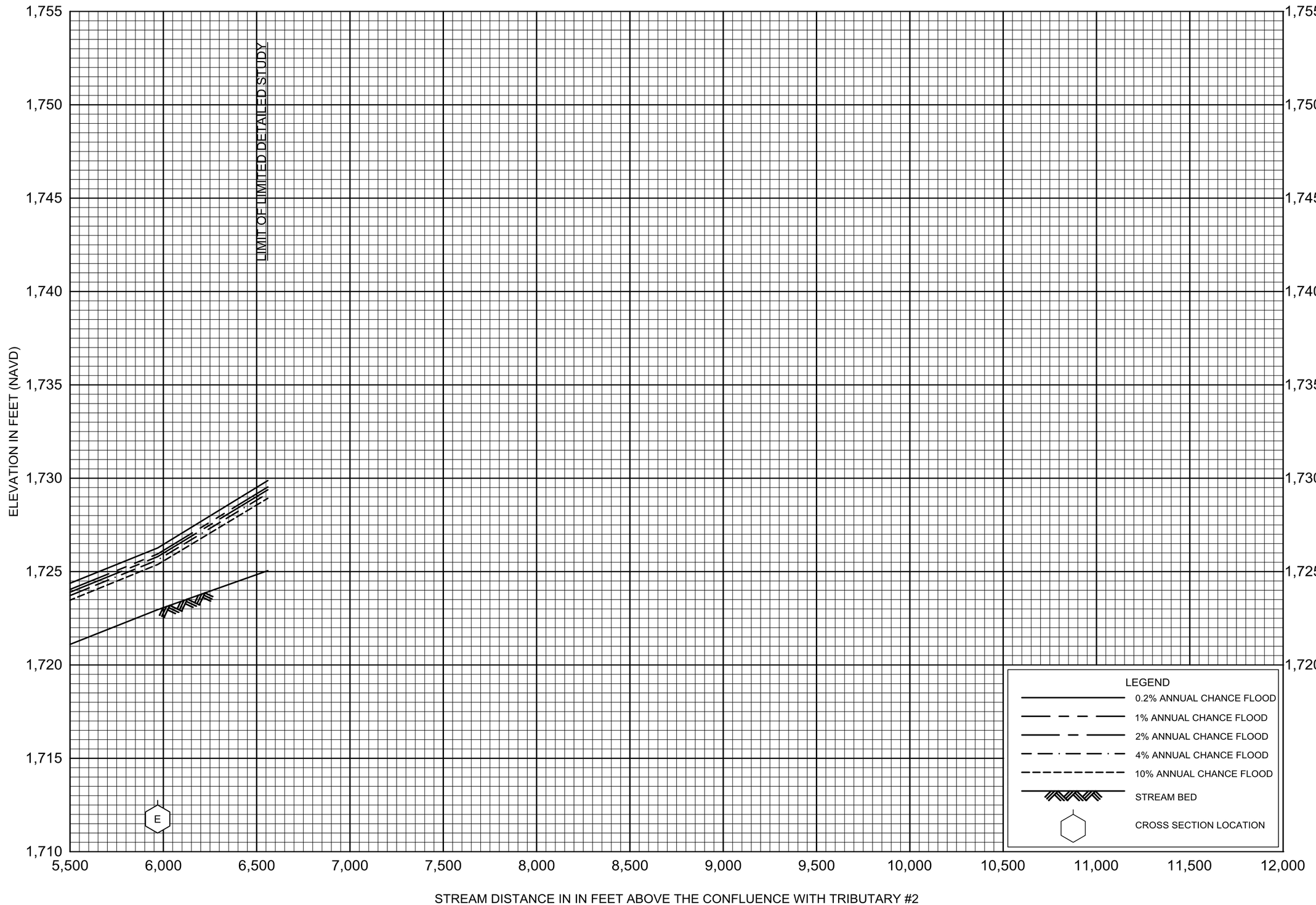

FLOOD PROFILES

TRIBUTARY #2.2

FEDERAL EMERGENCY MANAGEMENT AGENCY

KNOX COUNTY, NE

AND INCORPORATED AREAS