CENTRE PARK OF WEST CHESTER
PHASE 1 PROPOSED CONDITIONS FLOODPLAIN

Prepared for:

Mark A. Davis
HiFive Development Services
202 West Main Street
Mason, Ohio 64040-1883

Prepared by:

Greg Boehm, P.E.
Richard K. Evans, P.E.
Henderson and Bodwell, L.L.P.
3530 Irwin Simpson Road
Mason, Ohio 45040-9161

August 27, 2008

In my opinion, this report is consistent with the standards of the Butler County Flood Damage Prevention Regulations.

TABLE OF CONTENTS

SUBJECT

HiFive Development Services proposes a commercial development in Butler County. The ownership parcel for this development includes approximately 29.6 acres. The site as indicated on the USGS Quadrangle and Aerial Map is located at the southwest corner of the intersection of Union Center Boulevard and Cincinnati-Dayton Road, and is bounded to the south by the Tributary to East Fork Mill Creek and to the west by East Fork Mill Creek. The Flood Insurance Rate Map indicates there is both floodplain and floodway of both the East Fork Mill Creek and the Tributary to East Fork Mill Creek within the limits of the parcel. The property is within the southeast and southwest ¼'s of Section 27 Township 3 North Range 2 East of the Third Principal Meridian.

The proposed development will include hotels and retail businesses, stormwater management ponds, and compensatory floodplain storage area. The development parcel includes two existing residences and has an inactive concrete plant on the south bank of the Tributary to East Fork Mill Creek. The Existing Conditions Floodplain Exhibit indicates the topography, the Flood Insurance Rate Map floodplain delineation, and the existing conditions floodplain limits based on topography and, also the floodway, and stream buffers.

Proposed work consists of two phases:

- Phase 1 includes removal of an existing on-site bridge deck, construction of a detention pond at the on-site confluence of the two watercourses, and grading outside of the effective regulatory floodway.
- Proposed Phase 2 work is addressed under separate cover. It will include a pilot channel to provide additional conveyance and storage for the Tributary to the East Fork Mill Creek, grading within its floodway and flood fringe, and a revised floodway delineation and base flood profile. The planned Phase 2 work would involve relocating the floodway of the Tributary to the East Fork Mill Creek in a manner that will correct the floodway location based on existing topography, modify the overbank area with a pilot channel in a manner that will reduce the base flood profile, and facilitate development at the southeasterly portion of the development parcel.

The Phase 1 Floodplain Exhibit compares the existing and proposed conditions floodplains. Construction of the large detention pond on the westerly portion of the development parcel and grading in the overbank area will combine to restore the base flood profile to the effective regulatory condition.

PURPOSE

The purpose of this report is to demonstrate the permissibility of the proposed Phase 1 conditions. All proposed work except for the removal of the existing bridge on site is outside of the effective regulatory floodway and beyond the limits of a foot above the 2-year frequency flood.

Floodplain volumes are maintained for both of the two watercourses between the existing and proposed conditions. Off-site floodplain limits are maintained or reduced. Floodplain profiles of Phase 1 increase above the existing are contained on site in the reach between cross-sections 4.60 and 4.61.

REGULATORY CONDITIONS

The January 21, 1998 Flood Insurance Rate Map was revised by a September 20, 2004 Letter of Map Revision in accordance with a study of the East Fork Mill Creek prepared by Evans, Mechwart, Hambleton & Tilton to reflect construction activity along East Fork Mill Creek from Allen Road north to Beckett Road. This revised condition is what is shown on the Flood Insurance Rate Map exhibit in this report. The Existing Floodplain Exhibit includes line work labeled "Floodplain Delineation shown on FIRM" and is actually the floodplain delineation reflected on this Letter of Map Revision. The effective regulatory condition on the Flood Insurance Rate Map for the Tributary to the East Fork Mill Creek is reflected on the 1998 Flood Insurance Rate Map and was not revised with the Letter of Map Revision.

The East Fork Mill Creek and the Tributary to the East Fork Mill Creek converge within the western portion of the project site. At their confluence the January 21, 1998 Flood Insurance Study indicates the tributary area to the East Fork Mill Creek is 8.0 square miles and the tributary area to the Tributary to East Fork Mill Creek is 2.8 square miles.

EXISTING CONDITIONS

The existing conditions of the subject site include an inactive concrete plant. Fill has been placed within the floodplain of the Tributary to the East Fork Mill Creek in a manner that makes the existing conditions floodplain of the site inconsistent with the mapped floodplain indicated on the effective Flood Insurance Rate Map. The tributary's floodplain is narrowed and the flood profile raised within the project reach as a result of the fill that was placed on the tributary.

An existing on-site bridge crosses the Tributary to the East Fork Mill Creek as shown on the Existing Floodplain Exhibit at cross-section 3.20. Photographs and surveyed data of the bridge are included in Appendix B of this report. The topography on Existing Floodplain Exhibit has the on-site surveyed topography, as-built conditions to the west. Beyond the limits of the site and the off-site as-built topography the work map topography is the county Geographic Information System with 0.56-foot adjustment to match the FEMA model datum.

The Existing Floodplain Exhibit includes the effective regulatory floodway limits. The Letter of Map Revision delineation of the floodplain is indicated on the exhibit. The existing conditions and corrected-effective conditions base flood profile elevations are indicated at each cross-section of the hydraulic modeling. The existing conditions floodplain per the model flood profile is delineated.

PROPOSED CONDITIONS

Proposed Phase 1 conditions include commercial development, hotels, and a detention pond to be located at the confluence of the East Fork Mill Creek and the Tributary to the East Fork Mill Creek. The top of berming of the proposed pond will be located below the existing grade. Accordingly above the detention pond storage the pond area provides floodplain storage and additional conveyance.

The Phase 1 proposed work includes removal of the existing bridge over the Tributary to the East Fork Mill Creek. The bridge abutments will remain in place.

A construction limit one foot above the 2-year frequency flood profile was located in order to preserve the stream channel corridor. Beyond this construction limit the Phase 1 grading slopes up above the floodplain at a 3:1 grade on the north bank channel overbank area. A 440-foot retaining wall will line the north overbank area of the tributary from a point approximately 180 feet downstream of the existing bridge abutments and extending approximately 240 feet upstream of the existing abutments.

The Proposed Floodplain Exhibit includes the effective regulatory floodway limits. The existing conditions floodplain per the model flood profile is delineated. The proposed Phase 1 conditions floodplain per the Phase 1 conditions flood profile is delineated on the exhibit. The existing conditions, corrected-effective conditions, and proposed Phase 1 base flood profile elevations are indicated at each cross-section of the hydraulic modeling.

REGULATORY CONDITIONS HYDRAULICS ANALYSES

The regulatory hydraulics models of the East Fork Mill Creek and the Tributary to the East Fork Mill Creek were obtained both from Butler County and the Federal Emergency Management Agency. Both models were prepared by Evans, Mechwart, Hambleton & Tilton.

The East Fork Mill Creek was modeled using the U.S. Army Corps of Engineers HEC-RAS river hydraulics modeling program to obtain the September 30, 2004 Letter of Map Revision. The Tributary East Fork Mill Creek was modeled using the U.S. Army Corps of Engineers HEC-2 hydraulics modeling program.

Both from the Federal Emergency Management Agency were used as the base models to create the "Corrected-Effective" models. The Corrected-Effective models are identical to the regulatory models except for the input values of the reach lengths between cross-sections. Appendix B includes the existing conditions work map. The measurements for downstream reach lengths on the work map are what were used in the Corrected-Effective modeling.

EXISTING CONDITIONS HYDRAULICS ANALYSIS

The base models for the existing conditions hydraulics analyses are the corrected-effective models. Six cross-sections were added to the corrected-effective model of the Tributary to the East Fork Mill Creek: 2.30, 2.60, 3.15, 3.35, 5.20, and 5.40. Cross-sections 2.30 and 2.60 are required to model the impact in the proposed conditions of the excavation of the proposed detention pond at the confluence of the two watercourses. Cross-section 3.15 was added to model the impact of the proposed conditions retaining wall and grading in the north overbank area. Cross-section 3.35 was added to more accurately model the existing bridge. Cross-sections 5.20 and 5.40 were added in order add accuracy to the flood profile determination in the portion of the subject reach where the channel is actually located outside of the effective regulatory floodway.

The existing conditions modeling on-site floodplain geometry was coded from the surveyed on-site topography. The coding is shown on the existing conditions work map included in Appendix B.

The existing modeling flow rates are from the regulatory modeling obtained from Butler County and the Federal Emergency Management Agency.

The existing and corrected-effective conditions base flood profile elevations are summarized below in Table 1.

TABLE 1A: EXISTING AND CORRECTED-EFFECTIVE CONDITIONS BASE FLOOD CONDITIONS – TRIBUTARY TO EAST FORK MILL CREEK

CROSS-SECTION	CORRECTED-EFFECTIVE	EXISTING CONDITIONS
2.00	603.2	603.1
3.10	606.6	606.8
3.20	609.3	608.0
3.30	612.9	609.4
3.40	612.9	612.1
4.20	612.9	612.1
4.30	613.2	612.1
4.40	613.3	612.1
4.50	613.3	612.2
4.60	613.7	612.5
4.61	614.0	614.5
5.00	615.4	615.6
6.10	618.9	618.9
6.20	619.9	619.9
6.30	619.9	619.9

TABLE 1B: EXISTING AND CORRECTED-EFFECTIVE CONDITIONS BASE FLOOD CONDITIONS – EAST FORK MILL CREEK

CROSS-SECTION	CORRECTED-EFFECTIVE	EXISTING CONDITIONS
15.0	600.6	600.6
15.3	602.1	602.1
15.4	–	602.6
15.5	602.6	602.9
15.7	603.0	603.1
15.8	604.4	603.4
15.9	604.8	604.6
16.0	604.8	604.6
16.2	605.1	605.0
16.3	606.7	606.7
16.4	608.0	608.0
16.8	608.6	608.6

The abutments for the on-site bridge narrow flood flow which is actually contained within the abutments and which is lower than the existing bridge low-chord. Flood profiles and floodplain limits of the existing conditions very closely match those of the corrected-effective modeling.

The HEC-RAS input files for the existing conditions have been included on a CD-ROM in Appendix E. Hard copies of the on-site flood profiles, summary tables, and cross-section plots are included in Appendices B and C.

PROPOSED CONDITIONS HYDRAULICS ANALYSIS

The base models for the proposed conditions hydraulics analyses are the existing conditions models. The proposed conditions models of both the East Fork Mill Creek and the Tributary to the East Fork Mill Creek have cross-sections at the same locations as the existing conditions models. The proposed conditions modeling was coded from the proposed Phase 1 grading plan. The proposed Phase 1 grading is indicated on the Phase 1 Floodplain Exhibit. The coding for the Phase 1 modeling is annotated on the proposed conditions workmap included in Appendix B. Note that although the workman indicates proposed Phase 2 grading on the south overbank of the Tributary to the East Fork Mill Creek. This proposed Phase 2 grading is not included in the proposed Phase 1 condition and is addressed under separate cover.

The proposed modeling flow rates match the existing and regulatory model flow rates.

The corrected-effective, existing, and Phase 1 proposed conditions base flood profile elevations are summarized below in Table 2.

TABLE 2A: PROPOSED, EXISTING, AND CORRECTED-EFFECTIVE CONDITIONS BASE FLOOD CONDITIONS – TRIBUTARY TO EAST FORK MILL CREEK

CROSS-SECTION	CORRECTED-EFFECTIVE	EXISTING CONDITIONS	PROPOSED CONDITIONS
2.00	603.2	603.1	603.1
2.30	–	603.8	603.6
2.60	–	605.4	605.4
3.10	606.6	606.8	606.7
3.15	–	607.1	607.0
3.20	609.3	608.0	608.0
3.30	612.9	609.4	608.5
3.35	–	612.0	612.1
3.40	612.9	612.1	612.2
4.20	612.9	612.1	612.2
4.30	613.2	612.1	612.2
4.40	613.3	612.1	612.2
4.50	613.3	612.2	612.2
4.60	613.7	612.5	612.8
4.61	614.0	614.5	614.1
5.00	615.4	615.6	615.7
5.20	–	617.5	617.1
5.40	–	617.2	617.0
6.10	618.9	618.9	618.5
6.20	619.9	619.9	619.8
6.30	619.9	619.9	619.8

TABLE 2B: PROPOSED, EXISTING, AND CORRECTED-EFFECTIVE CONDITIONS BASE FLOOD CONDITIONS – EAST FORK MILL CREEK

CROSS-SECTION	CORRECTED-EFFECTIVE	EXISTING CONDITIONS	PROPOSED CONDITIONS
15.0	600.6	600.6	600.6
15.3	602.1	602.1	602.1
15.4	–	602.6	602.6
15.5	602.6	602.9	602.8
15.7	603.0	603.1	602.9
15.8	604.4	603.4	603.4
15.9	604.8	604.6	604.6
16.0	604.8	604.6	604.6
16.2	605.1	605.0	605.0
16.3	606.7	606.7	606.7
16.4	608.0	608.0	608.0
16.8	608.6	608.6	608.6

The Phase 1 construction proposes removal of the existing on-site bridge deck. As the low-chord of the bridge deck is actually above the flood profile, it has no effect on the proposed flood profiles and could be left if deemed preferable for maintenance access.

The HEC-RAS input files for the proposed Phase 1 conditions have been included on a CD-ROM in Appendix E. Hard copies of the on-site flood profiles, summary tables, and cross-section plots are included in Appendices B and C.

Existing and proposed floodplain storage volumes were determined with AutoCAD surfaces of the existing and proposed base flood profiles and ground for both the Tributary to the East Fork Mill Creek and the East Fork Mill Creek. Documentation is provided in Appendix D. Floodplain volumes are summarized in Table 3.

TABLE 3: FLOODPLAIN STORAGE VOLUMES

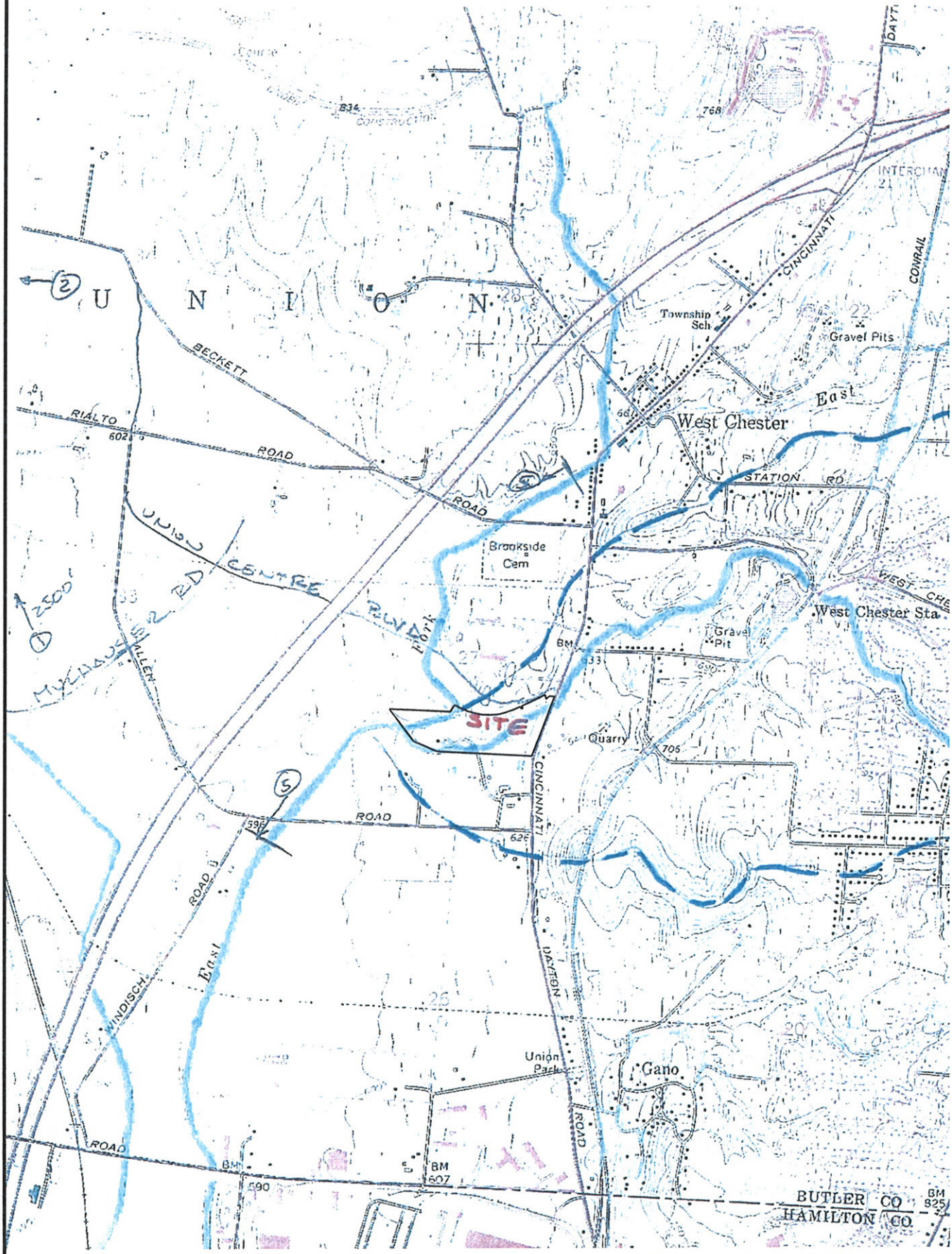
WATERCOURSE	EXISTING-CONDITIONS	PROPOSED CONDITIONS	DIFFERENCE
TRIBUTARY TO EAST FORK MILL CREEK	45.7	46.6	0.9
EAST FORK MILL CREEK	15.8	16.5	0.7

CONCLUSION

This report demonstrates the permissibility of the proposed phase 1 construction of the Centre Park of West Chester with respect to the required standards for development within the floodplain and floodway of the East Fork Mill Creek and the Tributary to the East Fork Mill Creek.

Regulatory hydraulics models input was obtained from Butler County and the Federal Emergency Management Agency. The regulatory model output was duplicated as a base model. A corrected-effective model was prepared of each watercourse with reach lengths from the base models revised to agree with the cross-section alignment and topography indicated on the floodplain exhibits and work maps. The existing conditions modeling was prepared from the corrected-effective modeling by coding the surveyed topographic data and inputting it into the baseline floodplain modeling. The proposed Phase 1 bridge removal and grading was coded from the proposed Phase 1 plan and was input into Phase 1 hydraulics models for each watercourse.

The proposed Phase 1 construction maintains or reduces off-site flood profiles and maintains the existing floodplain storage volumes.

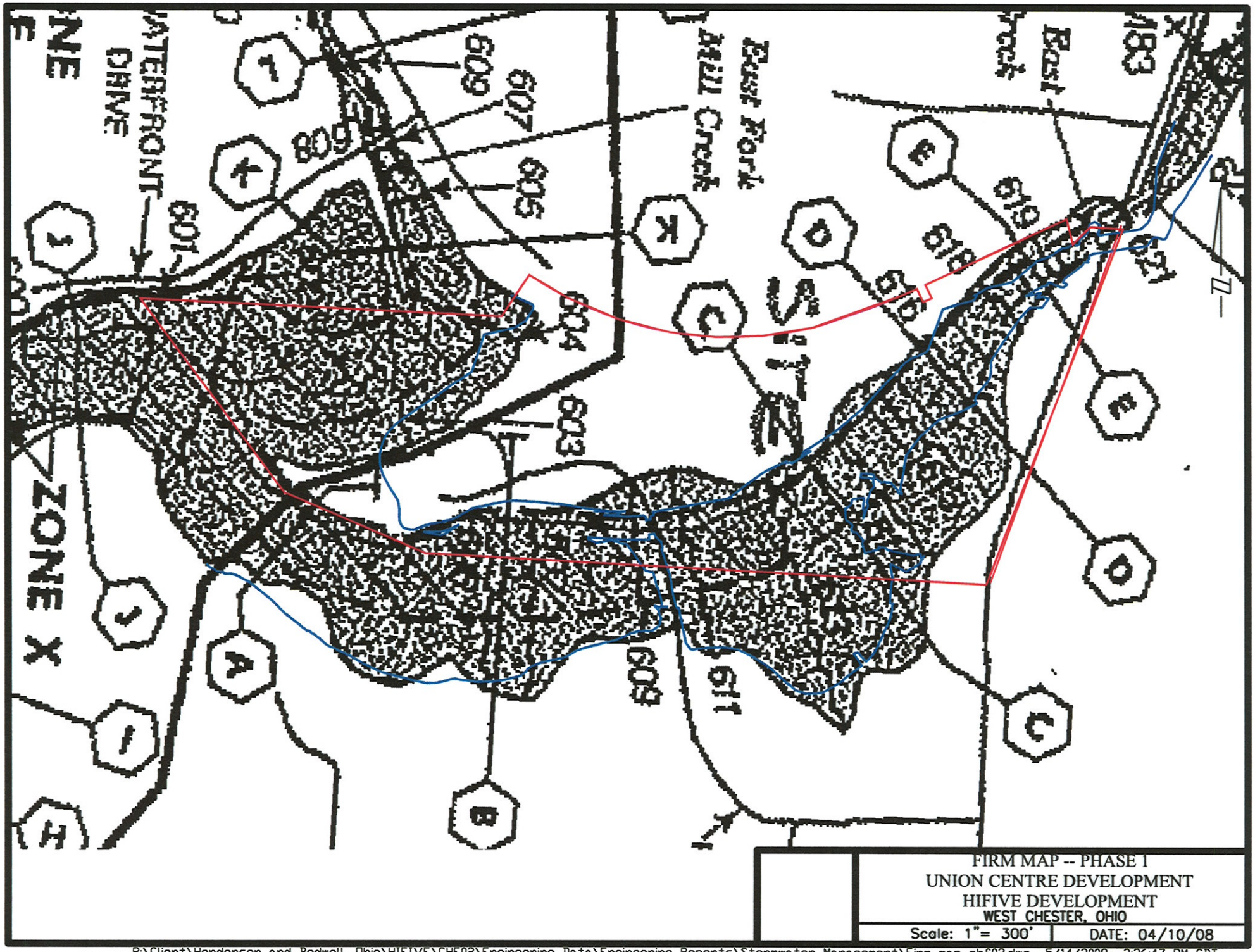


HENDERSON AND BODWELL, L.L.P.

USGS MAP
UNION CENTRE DEVELOPMENT
HIFIVE DEVELOPMENT
WEST CHESTER, OHIO

Scale: 1" = 2000' | DATE: 04/10/08

P:\Client\Henderson and Bodwell, Ohio\HIFIVE\CHF02\Engineering Data\Engineering Reports\Stormwater Management\USGS MAP- chf02.dwg 5/14/2008 3:31:52 PM CDT



FIRM MAP -- PHASE 1
UNION CENTRE DEVELOPMENT
HIFIVE DEVELOPMENT
WEST CHESTER, OHIO

Scale: 1"= 300' | DATE: 04/10/08

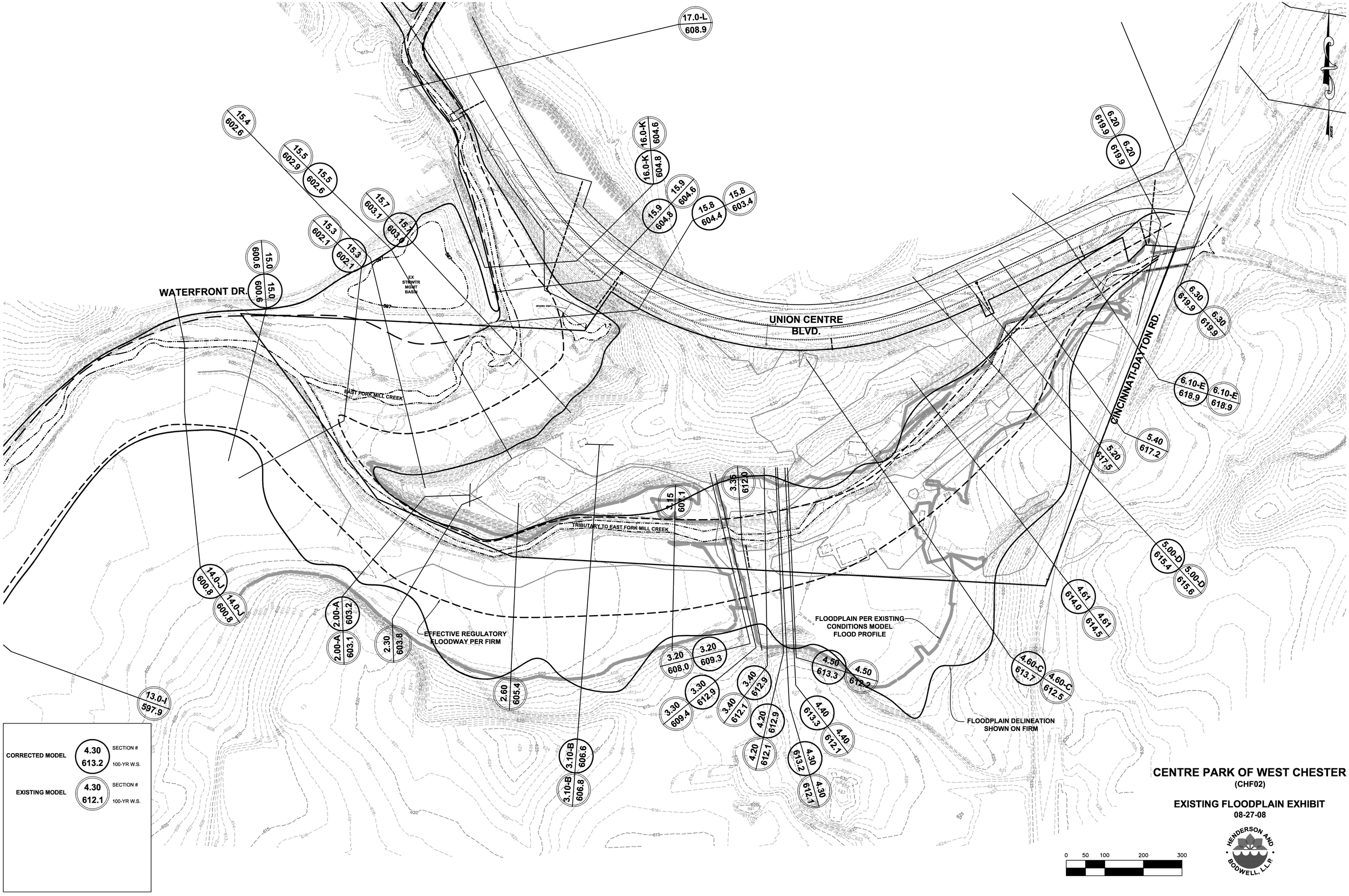
P:\Client\Henderson and Bodwell, Ohio\HIFIVE\CHF02\Engineering Data\Engineering Reports\Stormwater Management\Firm map chf02.dwg 5/14/2008 2:26:47 PM CDT

AERIAL MAP
UNION CENTRE DEVELOPMENT
HIFIVE DEVELOPMENT
WEST CHESTER, OHIO

Scale: 1"= 300'

DATE: 04/10/08

P:\Client\Henderson and Bodwell, Ohio\HIFIVE\CHF02\Engineering Data\Engineering Reports\Stormwater Management\Aerial map chf02.dwg 4/10/2008 11:34:40 AM CDT



CENTRE PARK OF WEST CHESTER
(CHF02)

EXISTING FLOODPLAIN EXHIBIT
08-27-08

HENDERSON AND BODWELL, L.L.P.

P:\CHF02\Improvement Plans\dwg_CHF02_FLOODWAY ANALYSIS.dwg, EXISTING FLOODPLAIN EXHIBIT-CB, 8/27/2008 5:20:53 PM, jcarey, 1:1

WATERFRONT DR.

UNION CENTRE BLVD.

CINCINNATI-DAYTON RD.

EAST FORK MILL CREEK

TRIBUTARY TO EAST FORK MILL CREEK

RETAINING WALL

RETAINING WALL

EX STRMWTR MGMT BASIN

EFFECTIVE REGULATORY FLOODWAY PER FIRM

FLOODPLAIN PER EXISTING CONDITIONS MODEL FLOOD PROFILE

FLOODPLAIN PER PHASE 1 CONDITIONS FLOOD PROFILE

CORRECTED MODEL	4.30 / 613.2	SECTION # / 100-YR W.S.
EXISTING MODEL	4.30 / 612.1	SECTION # / 100-YR W.S.
PHASE 1 MODEL	4.30 / 612.2	SECTION # / 100-YR W.S.

0 50 100 200 300

CENTRE PARK OF WEST CHESTER
(CHF02)

PHASE 1 FLOODPLAIN EXHIBIT
08-27-08

HENDERSON AND BODWELL, L.L.P.

P:\CHF02\Improvement Plans\dwg_CHF02_FLOODWAY ANALYSIS.dwg, PHASE 1 FLOODPLAIN EXHIBIT-DB, 8/27/2008 5:15:23 PM, jamey_t1

APPENDIX:

A. Flood Insurance Study Data
   - Summary of Discharges
   - Manning's Roughness Coefficients
   - Tributary to East Fork Mill Creek Floodway Data
   - Tributary to East Fork Mill Creek Flood Profiles
   - January 27, 2005 Letter of Map Revision for East Fork Mill Creek

This Revision

Discharge frequency relationships for Mill Creek, East Fork Mill Creek, and Gregory Creek were developed using the USACE HEC-1 Flood Hydrograph Package (Reference 13). A report prepared by Water Resources and Coastal Engineering, Inc. provides detailed descriptions on the development of the computer models (Reference 14).

A summary of the drainage area-peak discharge relationships for the streams studied by detailed methods is shown in Table 1, "Summary of Discharges."

TABLE 1 - SUMMARY OF DISCHARGES

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-YEAR	50-YEAR	100-YEAR	500-YEAR
GREAT MIAMI RIVER					
At Fairfield	3,667	77,300	111,000	125,250	158,000
At Hamilton	3,630	76,565	107,140	119,815	148,640
Upstream of Four Mile Creek	3,300	65,000	92,000	102,000	140,640
Upstream of Gregory Creek	3,240	63,500	89,000	99,000	137,000
Upstream of Dicks Creek	3,191	62,000	87,000	96,500	135,000
Upstream of Elk Creek	3,141	59,200	86,500	93,540	132,200
Upstream of Browns Run	3,117	59,000	86,000	93,000	130,600
DRY FORK WHITEWATER RIVER					
Upstream of Alert-New London Road	40	6,100	9,385	10,800	13,700
FOUR MILE CREEK					
At mouth	311	29,800	43,000	48,200	61,000
Upstream of Sevenmile Creek	166	14,350	21,240	24,350	31,200
At State Route 177	140	11,960	17,790	19,740	25,600
At State Route 73	120	10,180	15,240	17,640	22,900
SEVENMILE CREEK					
At mouth	137	12,770	20,000	22,470	26,600
At State Road bridge	120	12,400	17,400	19,400	24,000
EAST FORK MILL CREEK					
At mouth	9.2	2,150	2,856	2,998	3,389
At confluence with Tributary to East Fork Mill Creek	8.0	2,754	4,304	4,845	6,617
Upstream of confluence with Tributary to East Fork Mill Creek	5.3	1,872	2,873	3,221	4,354

This Revision

Cross sections for the flooding sources studied by detailed methods were obtained from Butler County topographic maps and were supplemented with field survey, bridge plans, and grading plans for various subdivision and industrial developments (References 18, 19, and 20).

Water-surface elevations of floods of the selected recurrence intervals were computed using the USACE HEC-2 step-backwater computer program (Reference 16). Starting water-surface elevations for Mill Creek and East Fork Mill Creek were taken from an addendum to a FIS for the City of Sharonville (Reference 21). Starting water-surface elevations for Tributary to East Fork Mill Creek were set to be at the corresponding flood stages at East Fork Mill Creek. It is likely that peak flows for the two streams will coincide. Starting water-surface elevations for Gregory Creek were taken from the previously printed FIS for the unincorporated areas of Butler County (Reference 22).

Roughness factors (Manning's "n") used in the hydraulic computations were chosen by engineering judgment from characteristics of historical floods in the study reach and existing floodplain conditions. The Butler County aerial photographs were used in conjunction with field observations to characterize the floodplain conditions for determination of roughness factors for each study area. The tabulation below shows the channel and overbank "n" values for all of the streams studied by detailed methods:

Stream	Channel "n"	Overbank "n"
Great Miami River	0.030	0.040-0.100
Dry Fork Whitewater River	0.055	0.040-0.100
Four Mile Creek	0.055	0.040-0.100
Sevenmile Creek	0.055	0.040-0.100
Indian Creek	0.055	0.040-0.100
East Fork Mill Creek	0.030-0.050	0.060-0.150
Gregory Creek	0.012-0.050	0.060-0.150
Elk Creek	0.055	0.040-0.100
Coldwater Creek	0.055	0.040-0.100
Browns Run	0.055	0.040-0.100
Beals Run	0.055	0.040-0.100
Mill Creek	0.030-0.055	0.060-1.000
Tributary To East Fork Mill Creek	0.040-0.050	0.060-0.150

4.0 FLOODPLAIN MANAGEMENT APPLICATIONS

The NFIP encourages State and local governments to adopt sound floodplain management programs. Therefore, each FIS generally provides 100-year flood elevations and delineations of the 100- and 500-year floodplains and floodway to assist in developing floodplain management measures.

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION (FEET NGVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Tributary to East Fork Mill Creek								
A	600	185	428	5.2	603.2	603.2	604.1	0.9
B	1,100	263	793	2.8	606.6	606.6	607.6	1.0
C	1,860	180	743	3.0	613.3	613.3	614.2	0.9
D	2,260	169	283	7.8	615.4	615.4	615.4	0.0
E	2,610	60	286	7.7	618.8	618.8	618.9	0.1
F	3,380	78	227	9.7	625.6	625.6	625.7	0.1
G	3,680	39	231	9.6	629.7	629.7	630.0	0.3
H	4,080	45	239	9.2	632.7	632.7	633.2	0.5
I	4,380	50	225	9.8	637.8	637.8	637.8	0.0
J	4,680	56	381	5.8	642.0	642.0	642.7	0.7
K	4,980	50	245	9.0	644.1	644.1	644.9	0.8
L	5,380	52	276	8.0	649.2	649.2	649.6	0.4
M	5,550	65	332	6.6	650.7	650.7	651.3	0.6

[1]Feet above confluence with East Fork Mill Creek

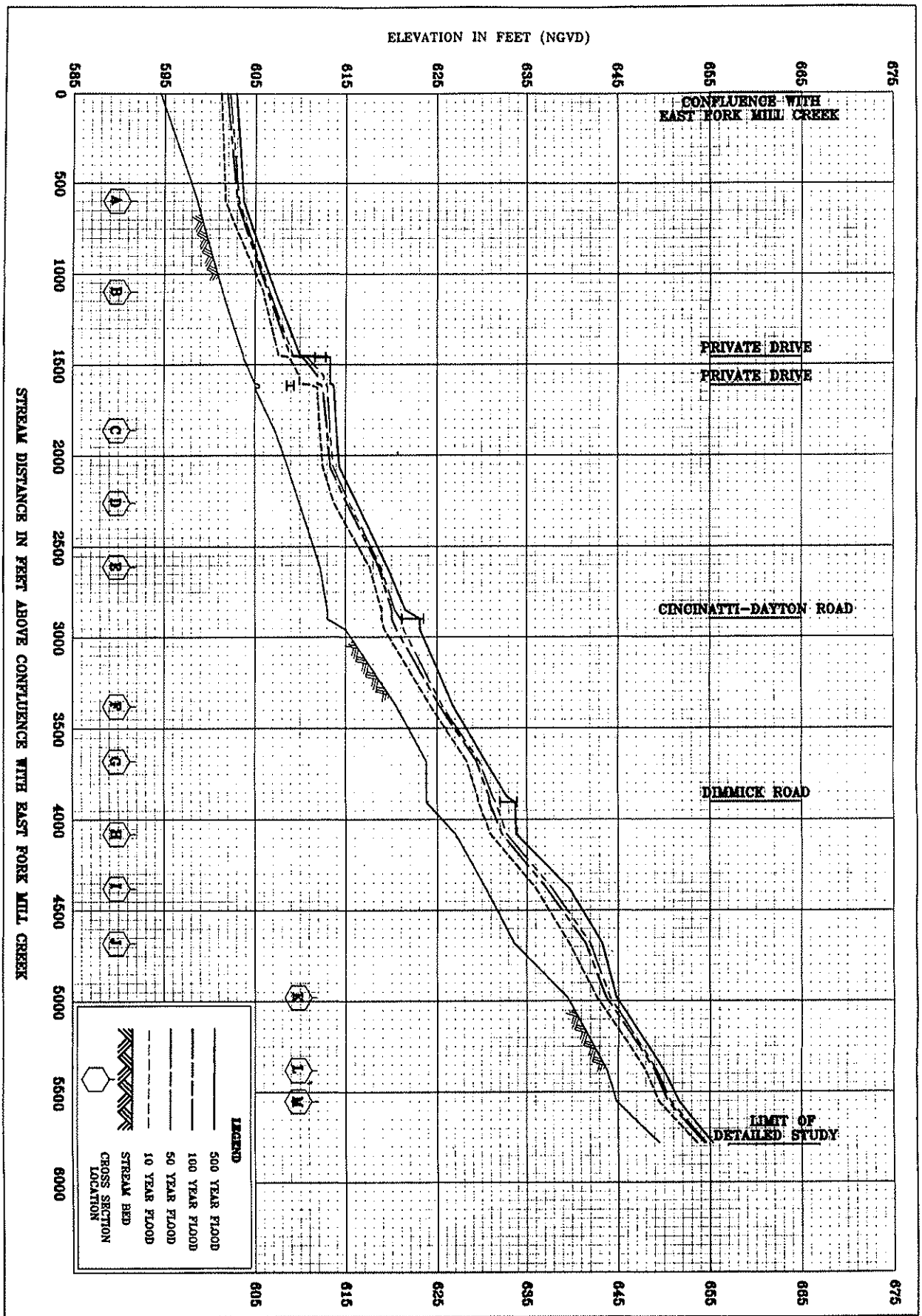
TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

BUTLER COUNTY, OH
(UNINCORPORATED AREAS)

FLOODWAY DATA

TRIBUTARY TO EAST FORK MILL CREEK



47P

FEDERAL EMERGENCY MANAGEMENT AGENCY

BUTLER COUNTY, OH

(UNINCORPORATED AREAS)

FLOOD PROFILES

TRIBUTARY TO EAST FORK MILL CREEK

Federal Emergency Management Agency

Washington, D.C. 20472

SEP 3 0 2004

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Charles R. Furmon
President, Board of Commissioners, Butler County
315 High Street, 4th Floor
Government Services Center
Hamilton, OH 45011

IN REPLY REFER TO:

Case Number: **03-05-5177P**
Community Name: Butler County, Ohio (Unincorporated Areas)
Community Number: 390037
Effective Date of this Revision: JAN 2 7 2005

Dear Mr. Furmon:

The Flood Insurance Study (FIS) report and Flood Insurance Rate Map (FIRM) for your community have been revised by this Letter of Map Revision (LOMR). Please use the enclosed annotated map panel revised by this LOMR for floodplain management purposes and for all flood insurance policies and renewals issued in your community.

Additional documents are enclosed that provide information regarding this LOMR. Please see the List of Enclosures below to determine which documents are included. Other attachments specific to this request may be included as referenced in the Determination Document. If you have any questions regarding floodplain management regulations for your community or the National Flood Insurance Program (NFIP) in general, please contact the Consultation Coordination Officer (CCO) for your community. If you have any technical questions regarding this LOMR, please contact the Director, Federal Insurance and Mitigation Division of the Federal Emergency Management Agency (FEMA) in Chicago, Illinois, at (312) 408-5548, or the FEMA Map Assistance Center, toll free, at 1-877-336-2627 (1-877-FEMA MAP). Additional information about the NFIP is available on our web site at http://www.fema.gov/nfip.

Sincerely,

Michael B. Godesky, CFM, Project Engineer
Hazard Identification Section
Mitigation Division
Emergency Preparedness
and Response Directorate

For: Doug Bellomo, P.E., CFM, Acting Chief
Hazard Identification Section
Mitigation Division
Emergency Preparedness
and Response Directorate

List of Enclosures:
Letter of Map Revision Determination Document
Annotated Flood Insurance Study Report
Annotated Flood Insurance Rate Map
List of Current Flood Insurance Study Data

cc: [redacted] Zoning and Drainage Inspector, Butler County
[redacted] Executive Director, Butler County Transportation Improvement Division
[redacted] EMH&T, Inc.
Community Map Repository

From FEMA

Federal Emergency Management Agency
Washington, D.C. 20472

LETTER OF MAP REVISION DETERMINATION DOCUMENT (CONTINUED)

COMMUNITY INFORMATION

APPLICABLE NFIP REGULATIONS/COMMUNITY OBLIGATION

We have made this determination pursuant to Section 206 of the Flood Disaster Protection Act of 1973 (P.L. 93-234) and in accordance with the National Flood Insurance Act of 1968, as amended (Title XIII of the Housing and Urban Development Act of 1968, P.L. 90-448), 42 U.S.C. 4001-4128, and 44 CFR Part 65. Pursuant to Section 1361 of the National Flood Insurance Act of 1968, as amended, communities participating in the NFIP are required to adopt and enforce floodplain management regulations that meet or exceed NFIP criteria. These criteria, including adoption of the FIS and FIRM, and the modifications made by this LOMR, are the minimum requirements for continued NFIP participation and do not supersede more stringent State/Commonwealth or local requirements to which the regulations apply.

We provide the floodway designation to your community as a tool to regulate floodplain development. Therefore, the floodway revision we have described in this letter, while acceptable to us, must also be acceptable to your community and adopted by appropriate community action, as specified in Paragraph 60.3(d) of the NFIP regulations.

COMMUNITY REMINDERS

We based this determination on the 1% annual chance flood discharges computed in the FIS for your community without considering subsequent changes in watershed characteristics that could increase flood discharges. Future development of projects upstream could cause increased flood discharges, which could cause increased flood hazards. A comprehensive restudy of your community's flood hazards would consider the cumulative effects of development on flood discharges subsequent to the publication of the FIS for your community and could, therefore, establish greater flood hazards in this area.

Your community must regulate all proposed floodplain development and ensure that permits required by Federal and/or State law have been obtained. State or community officials, based on knowledge of local conditions and in the interest of safety, may set higher standards for construction or may limit development in floodplain areas. If your State or community has adopted more restrictive or comprehensive floodplain management criteria, those criteria take precedence over the minimum NFIP requirements.

We will not print and distribute this LOMR to primary users, such as local insurance agents or mortgage lenders; instead, the community will serve as a repository for the new data. We encourage you to disseminate the information in this LOMR by preparing a news release for publication in your community's newspaper that describes the revision and explains how your community will provide the data and help interpret the NFIP maps. In that way, interested persons, such as property owners, insurance agents, and mortgage lenders, can benefit from the information.

We have enclosed a document, titled *List of Current Flood Insurance Study Data*, which includes this letter, to help your community maintain all information for floodplain management and flood insurance. If any of the items in that document are not filed in your community's map repository, please contact the FEMA Map Assistance Center at the number listed below for information on how to obtain those items.

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Assistance Center, toll free, at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the FEMA MCC Services, 12101 Indian Creek Court, Beltsville, MD 20705. Additional information about the NFIP is available on our web site at http://www.fema.gov/nfip.

Michael B. Godesky, CFM, Project Engineer
Hazard Identification Section
Mitigation Division
Emergency Preparedness
and Response Directorate

Federal Emergency Management Agency
Washington, D.C. 20472

LETTER OF MAP REVISION
DETERMINATION DOCUMENT (CONTINUED)

PUBLIC NOTIFICATION OF REVISION

Within 90 days of the second publication in the local newspaper, a citizen may request that we reconsider this determination. Any request for reconsideration must be based on scientific or technical data. Therefore, this letter will be effective only after the 90-day appeal period elapses and we resolve any appeals that we receive during this appeal period. Until this LOMR is effective, the revised BFEs presented in this LOMR may be changed.

This information will be published in the *Federal Register* and your local newspaper as detailed below.

LOCAL NEWSPAPER Name: *The Journal-News*
Dates: 10/21/2004 10/28/2004

PUBLIC NOTIFICATION

FLOODING SOURCE	LOCATION OF REFERENCED ELEVATION	BFE (FEET NGVD)		MAP PANEL NUMBER
		EFFECTIVE	REVISED	
EAST FORK MILL CREEK	Approximately 300 feet upstream of Beckett Road	623	624	390037 0050 C
	Approximately 2,350 feet upstream of Allen Road	602	601	390037 0050 C

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Assistance Center, toll free, at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the FEMA MCC Services, 12101 Indian Creek Court, Beltsville, MD 20705. Additional Information about the NFIP is available on our web site at http://www.fema.gov/nfip.

Michael B. Godesky, CFM, Project Engineer
Hazard Identification Section
Mitigation Division
Emergency Preparedness
and Response Directorate

LETTERS OF MAP AMENDMENT AND MAP REVISION BASED ON FILL *(continued)*

Panel Numbers	Effective Date
0035 B	March 7, 2003
	April 2, 2004
0040 C	October 21, 1998
	July 6, 1999
0045 C	August 1, 2001
	August 15, 2001
	November 30, 2001
	June 12, 2002
	July 25, 2003
0050 C	August 17, 2001
	May 28, 2003
	June 18, 2003
0060 B	October 15, 1999
0065 C	September 20, 1996
0070 C	January 22, 1998
	July 2, 1998
	September 30, 1998
	November 17, 1998
	December 2, 1998
	December 16, 1998
	December 18, 1998
	December 30, 1998
	January 6, 1999
	January 8, 1999
	January 27, 1999
	January 28, 1999
	March 5, 1999
	September 15, 1999
	September 29, 1999
	May 25, 2000
	June 16, 2000
	June 23, 2000
	September 6, 2000
	May 4, 2001
	September 5, 2001

CHANGES ARE MADE IN DETERMINATIONS OF BASE FLOOD ELEVATIONS FOR THE UNINCORPORATED AREAS OF BUTLER COUNTY, OHIO, UNDER THE NATIONAL FLOOD INSURANCE PROGRAM

On January 21, 1998, the Department of Homeland Security's Federal Emergency Management Agency identified Special Flood Hazard Areas (SFHAs) in the Unincorporated Areas of Butler County, Ohio, through issuance of a Flood Insurance Rate Map (FIRM). The Mitigation Division has determined that modification of the elevations of the flood having a 1% chance of being equaled or exceeded in any given year (base or 100-year flood) for certain locations in this community is appropriate. The modified Base Flood Elevations (BFEs) revise the FIRM for the community.

The changes are being made pursuant to Section 206 of the Flood Disaster Protection Act of 1973 (Public Law 93-234) and are in accordance with the National Flood Insurance Act of 1968, as amended (Title XIII of the Housing and Urban Development Act of 1968, Public Law 90-448), 42 U.S.C. 4001-4128, and 44 CFR Part 65.

A hydraulic analysis was performed to incorporate a new bridge and associated fill and has resulted in a revised delineation of the floodway and SFHA, and revised BFEs for East Fork Mill Creek from approximately 1,350 feet upstream of Beckett Road to approximately 250 feet downstream of Allen Road. The table below indicates existing and modified BFEs for selected locations along the affected lengths of the flooding source cited above.

Location	Existing BFE (feet)*	Modified BFE (feet)*
Approximately 300 feet upstream of Beckett Road	623	624
Approximately 2,350 feet upstream of Allen Road	602	601

*National Geodetic Vertical Datum, rounded to nearest whole foot

Under the above-mentioned Acts of 1968 and 1973, the Mitigation Division must develop criteria for floodplain management. For the community to participate in the National Flood Insurance Program (NFIP), the community must use the modified BFEs to administer the floodplain management measures of the NFIP. These modified BFEs will also be used to calculate the appropriate flood insurance premium rates for new buildings and their contents and for the second layer of insurance on existing buildings and contents.

Upon the second publication of notice of these changes in this newspaper, any person has 90 days in which he or she can request, through the Chief Executive Officer of the community, that the Mitigation Division reconsider the determination. Any request for reconsideration must be based on knowledge of changed conditions or new scientific or technical data. All interested parties are

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION (FEET NGVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
East Fork Mill Creek								
A	4,349	120	659	4.5	586.3	586.3	586.7	0.4
B	5,164	121	482	6.7	587.7	587.7	588.1	0.4
C	6,344	265	1,677	2.7	590.4	590.4	591.4	1.0
D	6,944	532	3,962	1.2	591.2	591.2	592.2	1.0
E	7,544	556	3,161	1.5	591.5	591.5	592.4	0.9
F	8,864	450	1,796	2.7	592.7	592.7	593.6	0.9
G	9,844	400	1,806	2.7	595.6	595.6	596.4	0.8
H	10,950	347	2,111	2.3	597.6	597.6	598.7	1.0
I	11,270	246	1,575	3.1	597.9	597.9	598.8	0.9
J	12,316	235	1,389	3.5	600.8	600.8	601.0	0.1
K	13,508	85	478	6.7	604.7	604.7	605.1	0.4
L	14,026	40	346	9.3	608.9	608.9	609.7	0.8
M	14,556	305	1,970	1.6	611.9	611.9	612.5	0.6
N	14,973	226	1,373	2.4	612.3	612.3	612.8	0.5
O	15,767	121	466	6.9	613.9	613.9	614.2	0.2
P	16,684	166	843	3.8	618.9	618.9	619.7	0.8
Q	17,945	200	764	4.2	624.9	624.9	625.7	0.9
R	18,635	190	572	5.6	629.3	629.3	629.6	0.4
S	19,215	120	328	9.8	634.6	634.6	634.6	0.0
T	19,895	103	582	5.5	641.3	641.3	642.1	0.8
U	20,397	61	446	7.2	647.1	647.1	647.1	0.0
V	20,897	63	323	10.0	651.3	651.3	651.5	0.2
W	21,712	41	283	11.4	660.6	660.6	661.0	0.4

Q
4855
4882
4862
3203
3218

REVISED AREA

[1] Feet above confluence with Mill Creek

JAN 2 7 2005

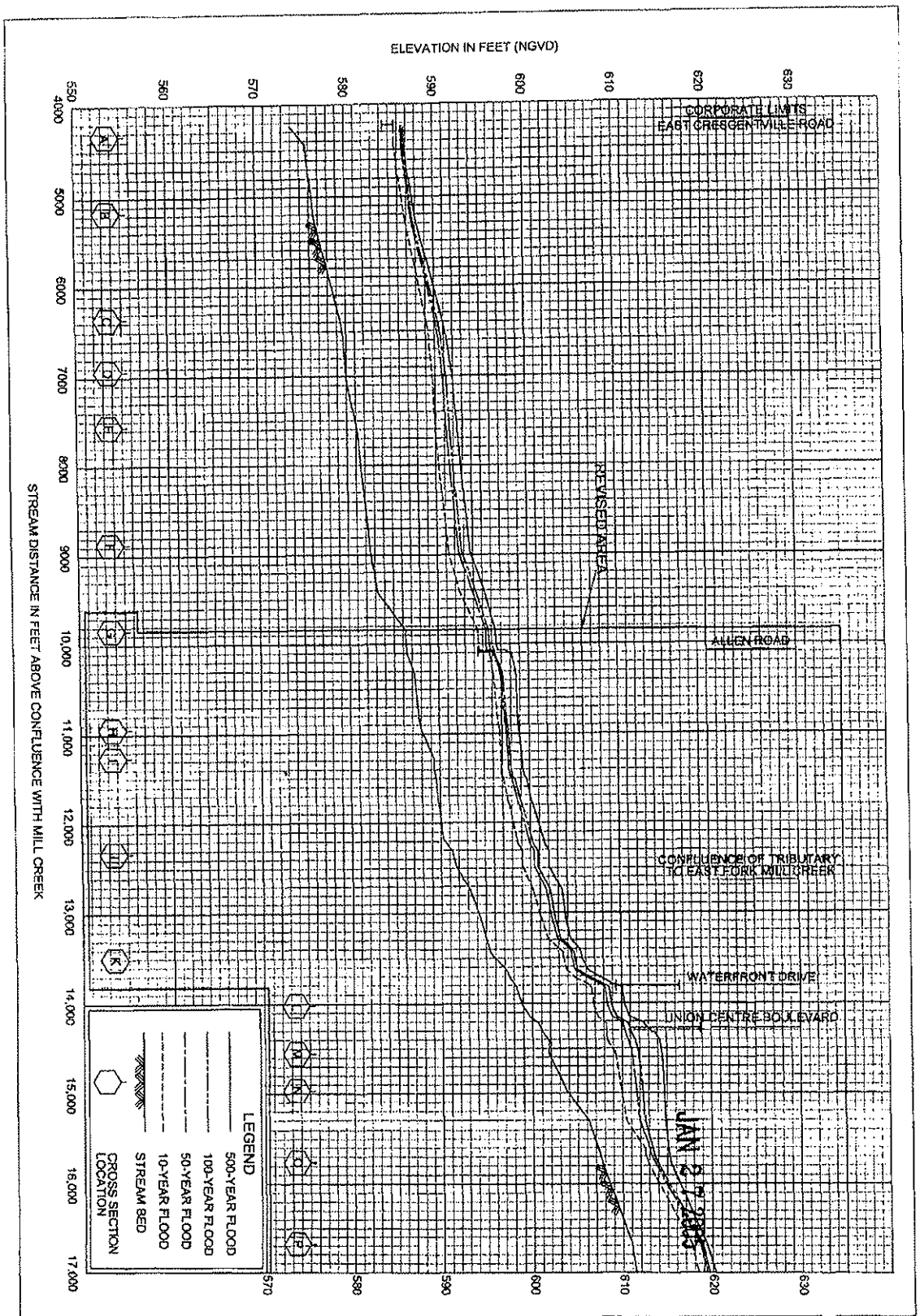
TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

BUTLER COUNTY, OH (UNINCORPORATED AREAS)

FLOODWAY DATA

EAST FORK MILL CREEK



31P	FEDERAL EMERGENCY MANAGEMENT AGENCY BUTLER COUNTY, OH (UNINCORPORATED AREAS)	FLOOD PROFILES EAST FORK MILL CREEK

APPENDIX:

B. HEC-RAS Analyses of Tributary to East Fork Mill Creek
- Work Maps – Existing and Proposed
- Base Flood Elevations Sketch
- Survey Sketch of On-Site Bridge
- Flow Rate Computation for 2-Year Frequency Flood
- HEC-RAS Base Flood Profiles of Regulatory, Corrected-Effective, Existing, and Proposed Conditions
- HEC-RAS Summary of Converted Regulatory, Corrected-Effective, Existing, and Proposed Base Flood Profiles
- Duplicate of Effective Regulatory HEC-2
- Cross-Sections Plots of Corrected-Effective and Existing Conditions
- Cross-Sections Plots of Existing and Proposed Conditions

UNION CENTRE BOULEVARD

EAST FORK MILL CREEK

EX R/W

WATERFRONT

Sediment Fence (Typ.)

Sediment Control Structure, Ref. Detail Sheet 23.

Basin #1
W.P. = 597.0
Bottom = 587.0

75' Temporary Outlet Pipe @ 0.50% Slope

Temporary Swale @ 0.40% Slope

Temporary Swale @ 0.40% Slope

Temporary Swale @ 0.40% Slope

8'Wx8'Lx2.5'D Dumped Rock Fill, Type C

8'Wx8'Lx2.5'D Dumped Rock Fill, Type C

MATCH LINE - REFERENCE SHEET 19

NOTE: GIS TOPOGRAPHY CONVERSION TO FEMA DATUM ON THIS WORKMAP REQUIRES: +0.56 FOOT. GIS TOPOGRAPHY IS THE AERIAL AND RED CONTOURS.

WORKMAP
UNION CENTRE DEVELOPMENT
CHFOZ GB 4-11-08

7-1-08 EAST FORK TOPO SPLICED

ADD X-SEC 6+14 "REVISED" CONFLICT.

REMOVE PEDESTRIAN BRIDGE AND NOT USED X-SEC STATIONS TO MATCH EFFECTIVE STATION ALIGNMENT

FEMA MODEL FLOODWAY ENCROACHMENTS ARE NOT WITH FIRM PANEL AT: X-SECS: 3.2, 3.3, 3.4, 4.2, 4.3, 4.4, 4.5

X-SEC 2.0 +/- MODEL IS 185 LF BUT IS MAPPED 165 FEET WIDE — DOESN'T AFFECT SUBJECT PROPERTY

REVISE FLOODWAY U AT THE FLOODPLAIN LIMIT AT X-SEC 2.0

SD BRIDGE CROSSING
AREA: $\frac{3.3+3.6}{2} \times (609.20 - 602.91) = 209.8\,SQ\,FT$
HEIGHT: 3 PIERS x 2' = 6.0'

EAST FORK MILL CREEK

Basin #1
M.P. = 597.0
Bottom = 587.0

4'Wx6'Lx2.5'D Dumped Rock Fill, Type C

8'Wx8'Lx2.5'D Dumped Rock Fill, Type C

75 L.F. 4" Temporary Outlet @ 0.50% Slope

Sediment Control Structure, Ref. Detail Sheet 23.

Sediment Fence (Typ.)

Aggregate Check Dam

Temporary Swale @ 0.50% Slope

Existing Trees Typ.

GRADING ESMT

FEMA Floodway

FEMA 100Yr Flood Elev.

EX. 21" Sanitary

Sanitary

Storm

Water

U/G E

O/H E

BLVD.

DR.

EAST FORK MILL CREEK

Denotes Temporary Swale Centerline Elevation

S03° 06'W 326.78'

N47°23'24"W 236.15'

N84°55'43"W 176.16'

UNION CENTRE
BLVD.

5.20

5.40

U/G E

O/H E

634.45

638.67

635.17

636.85

639.70

642.94

641.21

636.72

631.84

631.52

623.57

619.93

616.0

610.84

626.71

620.33

616.03

613.97

614.41

619.49

616.16

615°

614°

613°

612°

611°

610°

609°

608°

607°

606°

605°

604°

603°

602°

601°

600°

599°

598°

597°

596°

595°

594°

593°

592°

591°

590°

589°

588°

587°

586°

585°

584°

583°

582°

581°

580°

579°

578°

577°

576°

575°

574°

573°

572°

571°

570°

569°

568°

567°

566°

565°

564°

563°

562°

561°

560°

559°

558°

557°

556°

555°

554°

553°

552°

551°

550°

549°

548°

547°

546°

545°

544°

543°

542°

541°

540°

539°

538°

537°

536°

535°

534°

533°

532°

531°

530°

529°

528°

527°

526°

525°

524°

523°

522°

521°

520°

519°

518°

517°

516°

515°

514°

513°

512°

511°

510°

509°

508°

507°

506°

505°

504°

503°

502°

501°

500°

499°

498°

497°

496°

495°

494°

493°

492°

491°

490°

489°

488°

487°

486°

485°

484°

483°

482°

481°

480°

479°

478°

477°

476°

475°

474°

473°

472°

471°

470°

469°

468°

467°

466°

465°

464°

463°

462°

461°

460°

459°

458°

457°

456°

455°

454°

453°

452°

451°

450°

449°

448°

447°

446°

445°

444°

443°

442°

441°

440°

439°

438°

437°

436°

435°

434°

433°

432°

431°

430°

429°

428°

427°

426°

425°

424°

423°

422°

421°

420°

419°

418°

417°

416°

415°

414°

413°

412°

411°

410°

409°

408°

407°

406°

405°

404°

403°

402°

401°

400°

399°

398°

397°

396°

395°

394°

393°

392°

391°

390°

389°

388°

387°

386°

385°

384°

383°

382°

381°

380°

379°

378°

377°

376°

375°

374°

373°

372°

371°

370°

369°

368°

367°

366°

365°

364°

363°

362°

361°

360°

359°

358°

357°

356°

355°

354°

353°

352°

351°

350°

349°

348°

347°

346°

345°

344°

343°

342°

341°

340°

339°

338°

337°

336°

335°

334°

333°

332°

331°

330°

329°

328°

327°

326°

325°

324°

323°

322°

321°

320°

319°

318°

317°

316°

315°

314°

313°

312°

311°

310°

309°

308°

307°

306°

305°

304°

303°

302°

301°

300°

299°

298°

297°

296°

295°

294°

293°

292°

291°

290°

289°

288°

287°

286°

285°

284°

283°

282°

281°

280°

279°

278°

277°

276°

275°

274°

273°

272°

271°

270°

269°

268°

267°

266°

265°

264°

263°

262°

261°

260°

259°

258°

257°

256°

255°

254°

253°

252°

251°

250°

249°

248°

247°

246°

245°

244°

243°

242°

241°

240°

239°

238°

237°

236°

235°

234°

233°

232°

231°

230°

229°

228°

227°

226°

225°

224°

223°

222°

221°

220°

219°

218°

217°

216°

215°

214°

213°

212°

211°

210°

209°

208°

207°

206°

205°

204°

203°

202°

201°

200°

199°

198°

197°

196°

195°

194°

193°

192°

191°

190°

189°

188°

187°

186°

185°

184°

183°

182°

181°

180°

179°

178°

177°

176°

175°

174°

173°

172°

171°

170°

169°

168°

167°

166°

165°

164°

163°

162°

161°

160°

159°

158°

157°

156°

155°

154°

153°

152°

151°

150°

149°

148°

147°

146°

145°

144°

143°

142°

141°

140°

139°

138°

137°

136°

135°

134°

133°

132°

131°

130°

129°

128°

127°

126°

125°

124°

123°

122°

121°

120°

119°

118°

117°

116°

115°

114°

113°

112°

111°

110°

109°

108°

107°

106°

105°

104°

103°

102°

101°

100°

99°

98°

97°

96°

95°

94°

93°

92°

91°

90°

89°

88°

87°

86°

85°

84°

83°

82°

81°

80°

79°

78°

77°

76°

75°

74°

73°

72°

71°

70°

69°

68°

67°

66°

65°

64°

63°

62°

61°

60°

59°

58°

57°

56°

55°

54°

53°

52°

51°

50°

49°

48°

47°

46°

45°

44°

43°

42°

41°

40°

39°

38°

37°

36°

35°

34°

33°

32°

31°

30°

29°

28°

27°

26°

25°

24°

23°

22°

21°

20°

19°

18°

17°

16°

15°

14°

13°

12°

11°

10°

9°

8°

7°

6°

5°

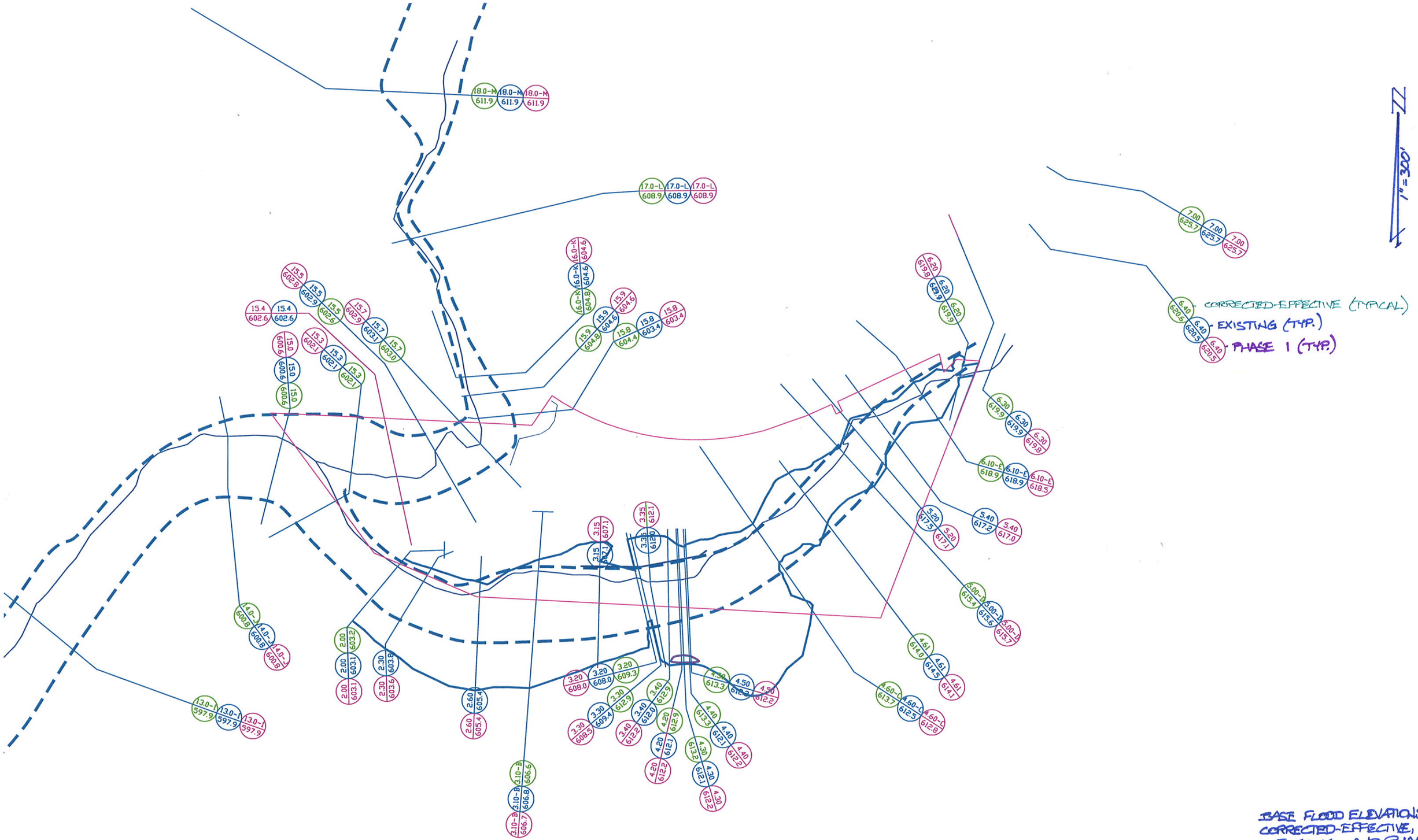
4°

3°

2°

1°

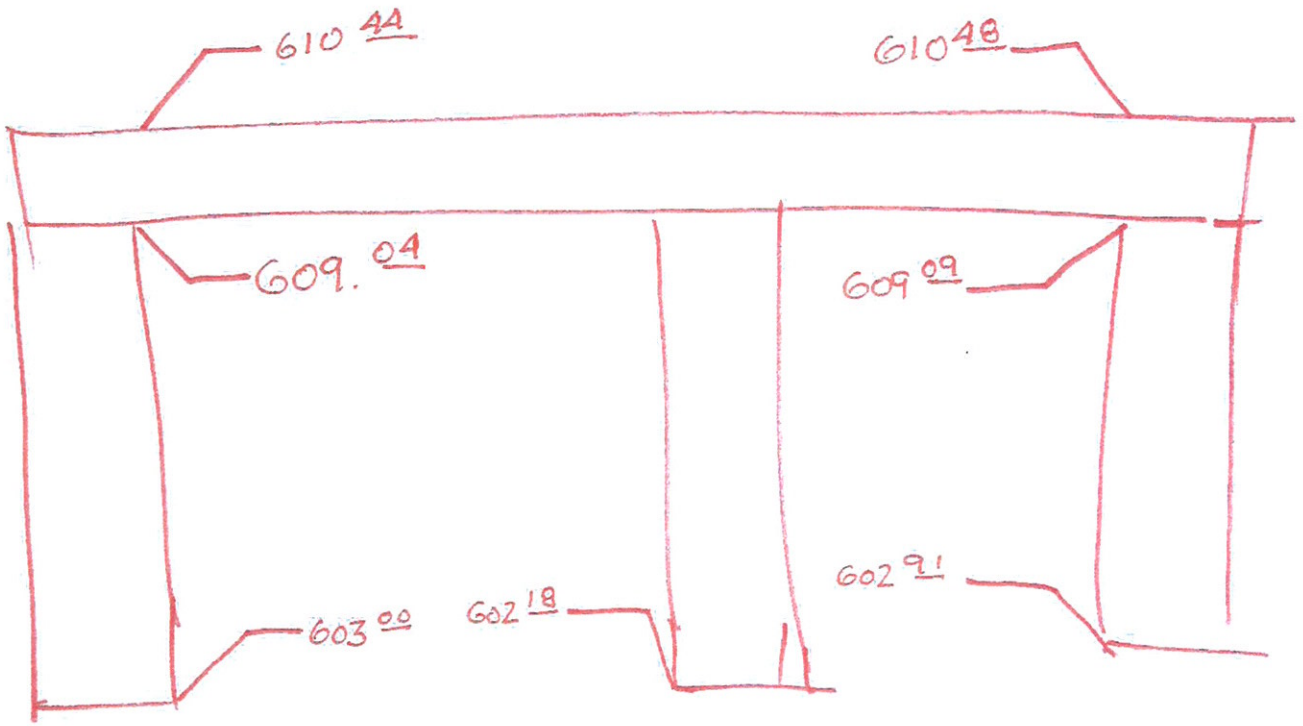
0°

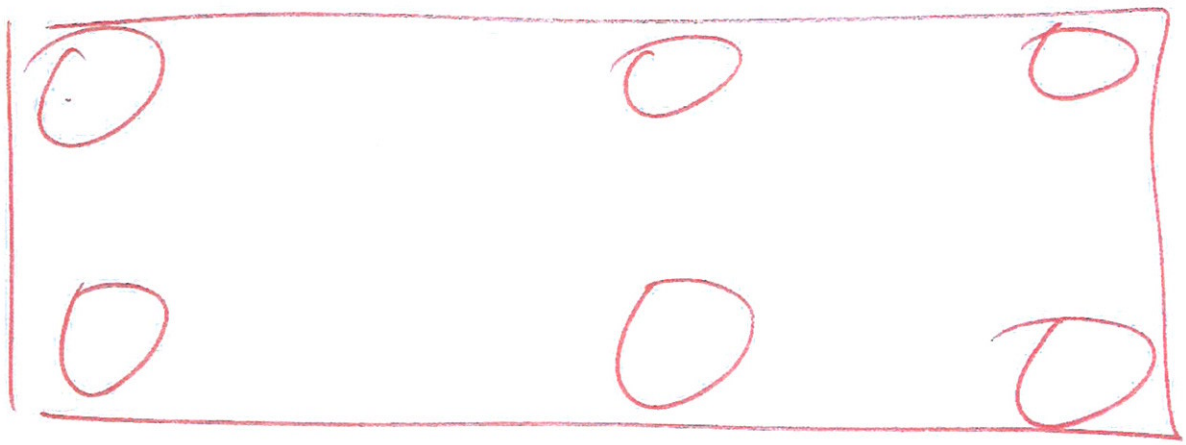


BASE FLOOD ELEVATIONS
CORRECTED-EFFECTIVE,
EXISTING, AND PHASE 1
GB 8-19-08 CFH02

LOOKING UPSTREAM

LOOKING UPSTREAM





Tributary to the East Fork

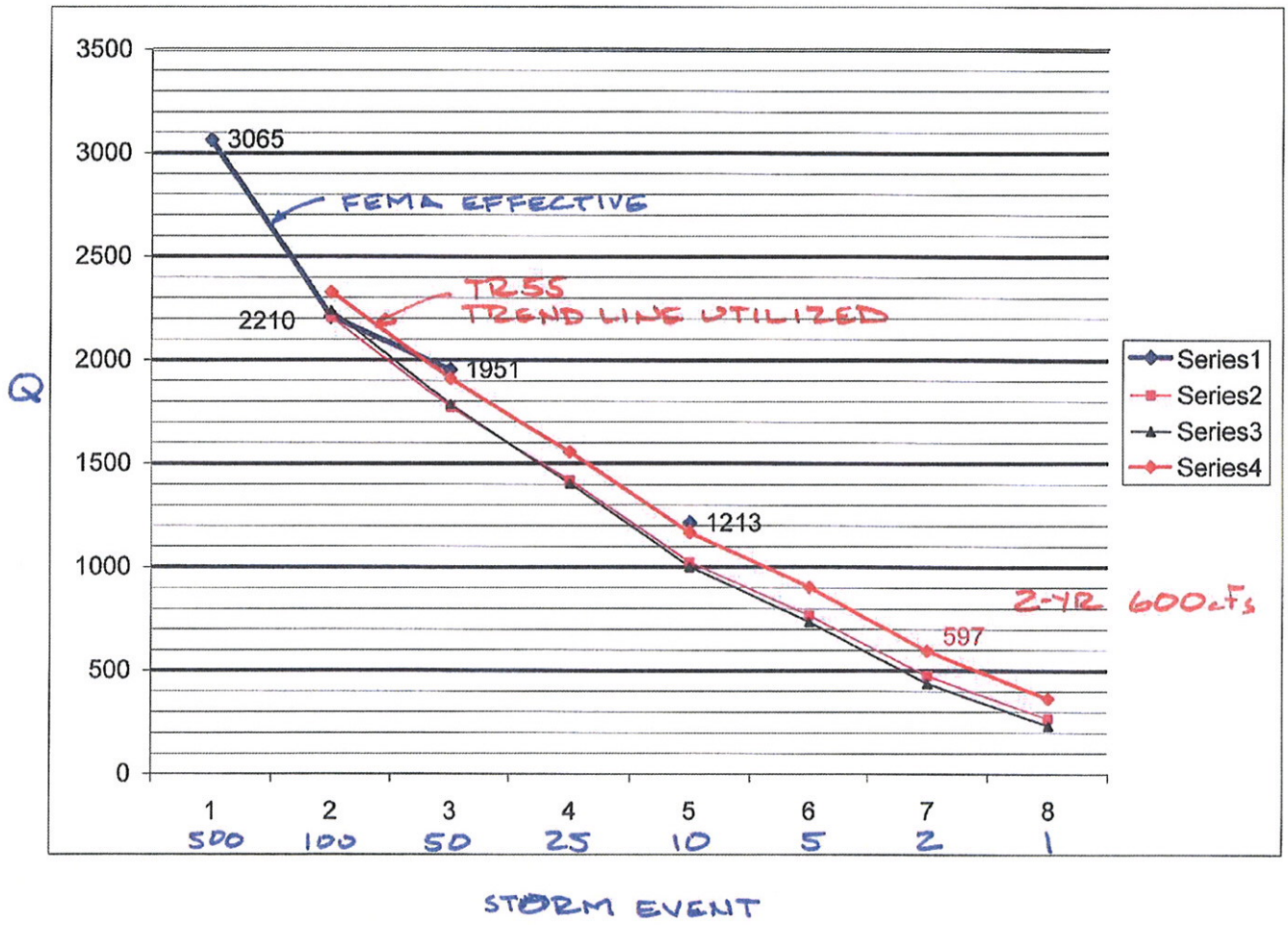
5/7/2008

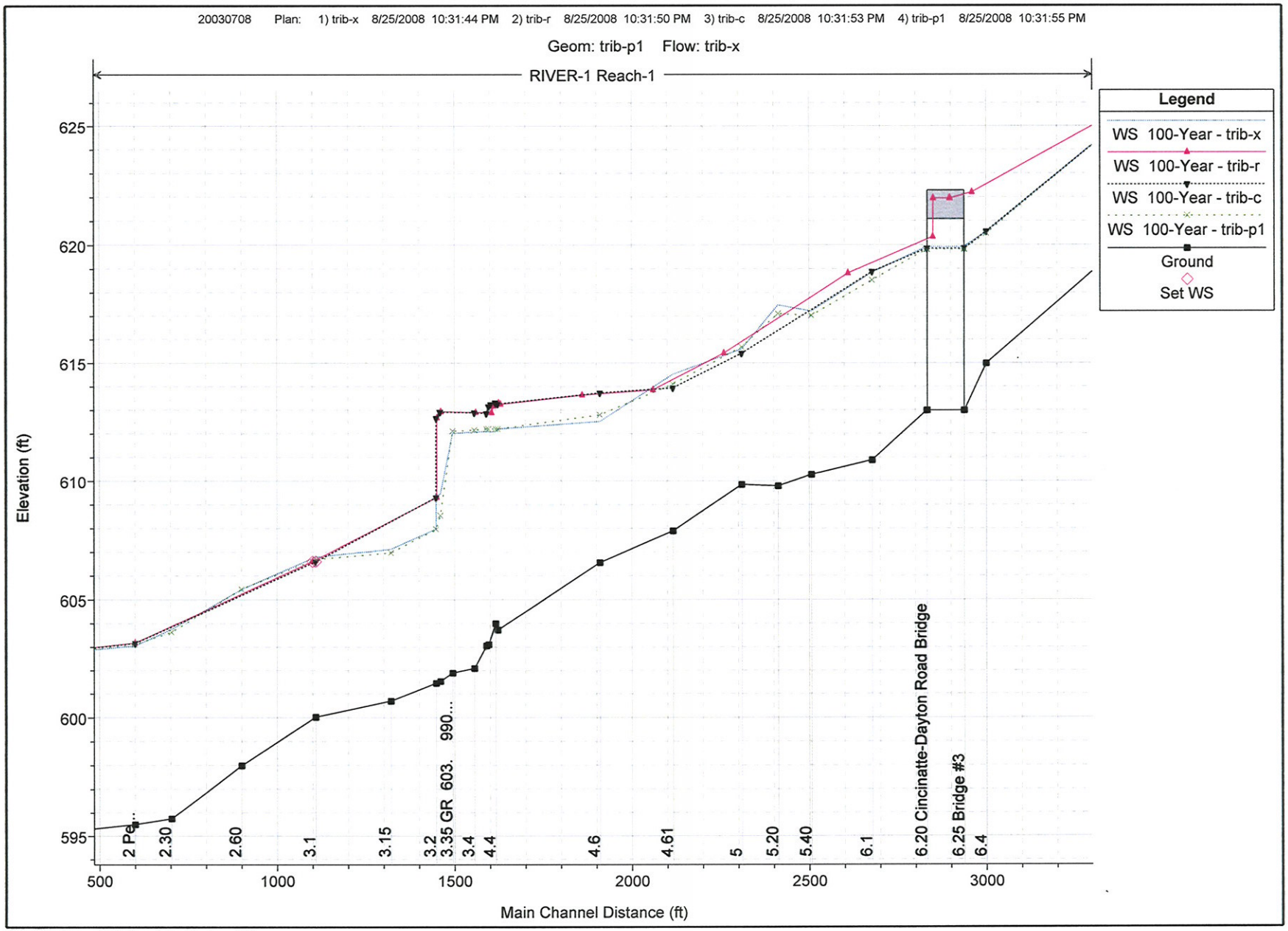
Based on TR55 Graph of Typical Storm Events

Comparative Trend Lines for Storm Events to Predict 2-yr Event Compared to FEMA Model Effective Flows Flows

Various TR55 Graphs for Trend Lines

Storm Event	Q Effective	TR-55	Compared to Effective	TR-55	Compared to Effective	TR-55	Compared to Effective
	cfs	cfs	%	cfs	%	cfs	%
500	**3065**						
100	**2210**	2205	99.8%	2239	101.3%	2328	105.3%
50	**1951**	1773	90.9%	1786	91.5%	1910	97.9%
25		1420		1404		1557	
10	**1213**	1025	84.5%	1002	82.6%	1167	96.2%
5		770		736		906	
2		478		439		597	
1		269		233		366	





1 in Horiz. = 400 ft 1 in Vert. = 6 ft

HEC-RAS River: RIVER-1 Reach: Reach-1 Profile: 100-Year

Reach	River Sta	Profile	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Reach-1	1	100-Year	trib-x	4845.00	594.50	602.19	600.60	602.47	0.001600	5.34	2132.99	787.94	0.36
Reach-1	1	100-Year	trib-r	4845.00	594.50	602.19	600.60	602.47	0.001600	5.34	2132.99	787.94	0.36
Reach-1	1	100-Year	trib-c	4845.00	594.50	602.19	600.60	602.47	0.001600	5.34	2132.99	787.94	0.36
Reach-1	1	100-Year	trib-p1	4845.00	594.50	602.19	600.60	602.47	0.001600	5.34	2132.99	787.94	0.36
Reach-1	2	100-Year	trib-x	2210.00	595.51	603.06		603.73	0.004745	7.38	501.56	224.39	0.57
Reach-1	2	100-Year	trib-r	2210.00	598.60	603.17	603.17	604.20	0.009289	8.80	372.63	222.73	0.79
Reach-1	2	100-Year	trib-c	2210.00	598.60	603.17	603.17	604.20	0.009289	8.80	372.63	222.73	0.79
Reach-1	2	100-Year	trib-p1	2210.00	595.51	603.11		603.63	0.003898	6.73	672.77	366.04	0.52
Reach-1	2.30	100-Year	trib-x	2210.00	595.76	603.75		604.19	0.003552	6.17	659.40	312.77	0.45
Reach-1	2.30	100-Year	trib-p1	2210.00	595.76	603.64		604.04	0.003501	6.05	773.10	398.95	0.45
Reach-1	2.60	100-Year	trib-x	2210.00	598.00	605.43	605.43	606.17	0.006536	8.33	572.21	366.57	0.61
Reach-1	2.60	100-Year	trib-p1	2210.00	598.00	605.44	605.44	606.16	0.006402	8.25	588.52	377.58	0.61
Reach-1	3.1	100-Year	trib-x	2210.00	600.04	606.79		606.91	0.002038	3.88	1036.79	442.84	0.30
Reach-1	3.1	100-Year	trib-r	2210.00	601.40	606.60		606.72	0.003268	3.78	940.37	436.60	0.31
Reach-1	3.1	100-Year	trib-c	2210.00	601.40	606.60		606.72	0.003268	3.78	940.37	436.60	0.31
Reach-1	3.1	100-Year	trib-p1	2210.00	600.04	606.69		606.85	0.001866	4.36	1006.59	443.27	0.36
Reach-1	3.15	100-Year	trib-x	2210.00	600.70	607.12		608.04	0.007063	8.35	459.98	410.19	0.63
Reach-1	3.15	100-Year	trib-p1	2210.00	600.70	606.97		608.01	0.008087	8.77	414.70	322.18	0.67
Reach-1	3.2	100-Year	trib-x	2210.00	601.46	607.98	606.82	609.34	0.010242	9.38	235.52	43.48	0.71
Reach-1	3.2	100-Year	trib-r	2210.00	603.70	609.31	609.31	611.77	0.017960	12.58	175.74	332.10	1.00
Reach-1	3.2	100-Year	trib-c	2210.00	603.70	609.31	609.31	611.77	0.017960	12.58	175.74	332.10	1.00
Reach-1	3.2	100-Year	trib-p1	2210.00	601.46	607.97	606.81	609.35	0.010448	9.44	234.06	42.46	0.71
Reach-1	3.25			Bridge									
Reach-1	3.3	100-Year	trib-x	2210.00	601.54	609.43	608.53	611.53	0.014189	11.62	193.14	147.78	0.83
Reach-1	3.3	100-Year	trib-r	2210.00	603.70	612.93	609.31	612.97	0.000336	2.48	2056.01	480.71	0.15
Reach-1	3.3	100-Year	trib-c	2210.00	603.70	612.93	609.31	612.97	0.000336	2.48	2056.01	480.71	0.15
Reach-1	3.3	100-Year	trib-p1	2210.00	601.54	608.54	608.54	611.39	0.021095	13.55	163.09	29.38	1.00
Reach-1	3.35	100-Year	trib-x	2210.00	601.90	612.03		612.17	0.000588	3.64	1380.17	440.89	0.22
Reach-1	3.35	100-Year	trib-p1	2210.00	601.90	612.11	607.65	612.26	0.000593	3.68	1182.90	341.21	0.22
Reach-1	3.4	100-Year	trib-x	2210.00	602.10	612.07		612.21	0.000655	3.69	1369.81	434.84	0.23
Reach-1	3.4	100-Year	trib-r	2210.00	604.60	612.90		613.10	0.000874	4.35	1203.81	417.93	0.27
Reach-1	3.4	100-Year	trib-c	2210.00	604.60	612.90		613.10	0.000875	4.35	1203.35	417.92	0.27
Reach-1	3.4	100-Year	trib-p1	2210.00	602.10	612.15		612.30	0.000650	3.70	1204.40	342.83	0.23
Reach-1	4.2	100-Year	trib-x	2210.00	603.06	612.09		612.24	0.000744	3.84	1333.95	425.31	0.25
Reach-1	4.2	100-Year	trib-r	2210.00	605.00	612.89	610.00	613.24	0.002456	7.30	1045.15	394.04	0.46
Reach-1	4.2	100-Year	trib-c	2210.00	605.00	612.87	610.00	613.23	0.002500	7.35	1037.72	393.43	0.46
Reach-1	4.2	100-Year	trib-p1	2210.00	603.06	612.21		612.33	0.000619	3.54	1284.86	352.98	0.23
Reach-1	4.3	100-Year	trib-x	2210.00	603.11	612.08		612.25	0.000945	4.28	1260.86	418.52	0.28
Reach-1	4.3	100-Year	trib-r	2210.00	605.50	613.17		613.31	0.003321	6.05	1089.15	402.95	0.40
Reach-1	4.3	100-Year	trib-c	2210.00	605.50	613.16		613.31	0.003349	6.07	1085.98	402.70	0.40
Reach-1	4.3	100-Year	trib-p1	2210.00	603.11	612.20		612.34	0.000758	3.88	1237.21	356.29	0.25
Reach-1	4.4	100-Year	trib-x	2210.00	604.00	612.08		612.30	0.001572	4.62	969.88	314.53	0.34
Reach-1	4.4	100-Year	trib-r	2210.00	605.50	613.30	611.45	613.43	0.002892	5.72	1142.51	407.23	0.37
Reach-1	4.4	100-Year	trib-c	2210.00	605.50	613.31	611.45	613.44	0.002848	5.68	1148.60	407.72	0.37
Reach-1	4.4	100-Year	trib-p1	2210.00	604.00	612.20		612.38	0.001308	4.27	939.30	259.59	0.31
Reach-1	4.5	100-Year	trib-x	2210.00	603.73	612.20		612.33	0.001031	4.67	1263.12	414.96	0.29
Reach-1	4.5	100-Year	trib-r	2210.00	605.00	613.25	610.00	613.50	0.001776	6.39	1188.16	405.67	0.39
Reach-1	4.5	100-Year	trib-c	2210.00	605.00	613.27	610.00	613.51	0.001748	6.35	1195.50	406.25	0.39
Reach-1	4.5	100-Year	trib-p1	2210.00	603.73	612.21		612.39	0.001307	5.26	1217.01	368.74	0.33
Reach-1	4.6	100-Year	trib-x	2210.00	606.56	612.52	612.52	613.71	0.010384	9.58	323.76	149.35	0.83
Reach-1	4.6	100-Year	trib-r	2210.00	607.20	613.65		613.83	0.001081	3.68	868.10	411.26	0.28
Reach-1	4.6	100-Year	trib-c	2210.00	607.20	613.74		613.92	0.000993	3.57	909.83	427.19	0.27
Reach-1	4.6	100-Year	trib-p1	2210.00	606.56	612.80		613.37	0.007813	6.08	367.87	157.54	0.67
Reach-1	4.61	100-Year	trib-x	2210.00	607.90	614.52		614.96	0.003606	5.91	548.08	207.84	0.45
Reach-1	4.61	100-Year	trib-r	2210.00	608.60	613.86		614.26	0.003844	5.20	493.64	222.05	0.45
Reach-1	4.61	100-Year	trib-c	2210.00	608.60	613.95		614.33	0.003548	5.06	513.70	236.07	0.44
Reach-1	4.61	100-Year	trib-p1	2210.00	607.90	614.10		614.72	0.005404	6.85	422.31	152.76	0.55
Reach-1	5	100-Year	trib-x	2210.00	609.86	615.59	615.59	617.28	0.009901	10.84	275.05	118.36	0.84
Reach-1	5	100-Year	trib-r	2210.00	609.90	615.42	615.42	616.62	0.011026	9.02	282.94	143.38	0.89
Reach-1	5	100-Year	trib-c	2210.00	609.90	615.42	615.42	616.62	0.011026	9.02	282.94	143.38	0.89
Reach-1	5	100-Year	trib-p1	2210.00	609.86	615.68	615.68	616.98	0.007984	9.84	284.92	120.50	0.75
Reach-1	5.20	100-Year	trib-x	2210.00	609.80	617.47		617.79	0.001980	4.78	588.89	166.19	0.34
Reach-1	5.20	100-Year	trib-p1	2210.00	609.80	617.10		617.49	0.002529	5.18	529.21	157.56	0.38
Reach-1	5.40	100-Year	trib-x	2210.00	610.29	617.21		618.39	0.008776	9.04	304.59	103.50	0.69

HEC-RAS River: RIVER-1 Reach: Reach-1 Profile: 100-Year (Continued)

Reach	River Sta	Profile	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Reach-1	5.40	100-Year	trib-p1	2210.00	610.29	617.02		618.10	0.008809	8.84	341.71	128.05	0.69
Reach-1	6.1	100-Year	trib-x	2210.00	610.90	618.85		619.79	0.007429	7.78	283.94	59.97	0.63
Reach-1	6.1	100-Year	trib-r	2210.00	612.20	618.83	617.57	619.71	0.007067	7.64	335.82	150.43	0.62
Reach-1	6.1	100-Year	trib-c	2210.00	612.20	618.91	617.57	619.75	0.006831	7.49	348.19	158.05	0.60
Reach-1	6.1	100-Year	trib-p1	2210.00	610.90	618.54		619.61	0.008959	8.34	265.11	58.17	0.69
Reach-1	6.20	100-Year	trib-x	2210.00	613.00	619.93	618.67	621.08	0.007810	8.64	255.88	199.87	0.66
Reach-1	6.20	100-Year	trib-r	2210.00	613.00	620.34	618.67	621.33	0.006070	8.01	275.99	238.59	0.59
Reach-1	6.20	100-Year	trib-c	2210.00	613.00	619.87	618.67	621.05	0.008093	8.73	253.16	197.92	0.67
Reach-1	6.20	100-Year	trib-p1	2210.00	613.00	619.81	618.67	621.02	0.008390	8.82	250.44	195.98	0.69
Reach-1	6.25			Bridge									
Reach-1	6.3	100-Year	trib-x	2210.00	613.00	619.94	618.67	621.09	0.008119	8.62	256.53	200.33	0.66
Reach-1	6.3	100-Year	trib-r	2210.00	613.00	621.95	618.67	622.55	0.002089	6.24	354.14	355.79	0.41
Reach-1	6.3	100-Year	trib-c	2210.00	613.00	619.88	618.67	621.06	0.006338	8.71	253.84	198.41	0.67
Reach-1	6.3	100-Year	trib-p1	2210.00	613.00	619.83	618.67	621.03	0.006567	8.80	251.15	196.49	0.68
Reach-1	6.4	100-Year	trib-x	2210.00	615.00	620.54		621.51	0.006698	8.09	317.19	80.16	0.63
Reach-1	6.4	100-Year	trib-r	2210.00	615.00	622.20		622.72	0.002533	5.99	457.05	98.28	0.40
Reach-1	6.4	100-Year	trib-c	2210.00	615.00	620.58		621.53	0.006527	8.03	320.21	80.31	0.62
Reach-1	6.4	100-Year	trib-p1	2210.00	615.00	620.48		621.47	0.007000	8.21	312.11	79.91	0.64
Reach-1	7	100-Year	trib-x	2210.00	620.50	625.67	625.67	627.44	0.017132	10.79	226.71	80.88	0.95
Reach-1	7	100-Year	trib-r	2210.00	620.50	625.67	625.67	627.44	0.017115	10.78	226.81	80.90	0.95
Reach-1	7	100-Year	trib-c	2210.00	620.50	625.67	625.67	627.44	0.017127	10.79	226.74	80.88	0.95
Reach-1	7	100-Year	trib-p1	2210.00	620.50	625.67	625.67	627.44	0.017127	10.79	226.74	80.88	0.95
Reach-1	8.1	100-Year	trib-x	2210.00	623.80	629.67		630.97	0.008369	9.44	322.65	99.31	0.70
Reach-1	8.1	100-Year	trib-r	2210.00	623.80	629.67		630.97	0.008374	9.44	322.56	99.29	0.70
Reach-1	8.1	100-Year	trib-c	2210.00	623.80	629.67		630.97	0.008371	9.44	322.63	99.31	0.70
Reach-1	8.1	100-Year	trib-p1	2210.00	623.80	629.67		630.97	0.008371	9.44	322.63	99.31	0.70
Reach-1	8.2	100-Year	trib-x	2210.00	623.80	631.20	629.65	632.50	0.007363	9.14	241.92	214.25	0.65
Reach-1	8.2	100-Year	trib-r	2210.00	623.80	631.20	629.65	632.50	0.007362	9.13	241.93	214.25	0.65
Reach-1	8.2	100-Year	trib-c	2210.00	623.80	631.20	629.65	632.50	0.007363	9.14	241.92	214.25	0.65
Reach-1	8.2	100-Year	trib-p1	2210.00	623.80	631.20	629.65	632.50	0.007363	9.14	241.92	214.25	0.65
Reach-1	8.25			Bridge									
Reach-1	8.3	100-Year	trib-x	2210.00	623.80	632.97	629.64	633.41	0.001699	5.84	796.07	252.99	0.36
Reach-1	8.3	100-Year	trib-r	2210.00	623.80	632.97	629.64	633.41	0.001699	5.83	796.09	253.00	0.36
Reach-1	8.3	100-Year	trib-c	2210.00	623.80	632.97	629.64	633.41	0.001699	5.84	796.07	252.99	0.36
Reach-1	8.3	100-Year	trib-p1	2210.00	623.80	632.97	629.64	633.41	0.001699	5.84	796.07	252.99	0.36
Reach-1	8.4	100-Year	trib-x	2210.00	627.00	633.16		634.46	0.010823	9.23	259.59	60.95	0.71
Reach-1	8.4	100-Year	trib-r	2210.00	627.00	633.16		634.46	0.010823	9.23	259.60	60.95	0.71
Reach-1	8.4	100-Year	trib-c	2210.00	627.00	633.16		634.46	0.010823	9.23	259.59	60.95	0.71
Reach-1	8.4	100-Year	trib-p1	2210.00	627.00	633.16		634.46	0.010823	9.23	259.59	60.95	0.71
Reach-1	9	100-Year	trib-x	2210.00	630.40	637.74	637.74	640.55	0.017962	14.21	248.53	70.24	0.95
Reach-1	9	100-Year	trib-r	2210.00	630.40	637.74	637.74	640.55	0.017962	14.21	248.53	70.24	0.95
Reach-1	9	100-Year	trib-c	2210.00	630.40	637.74	637.74	640.55	0.017962	14.21	248.53	70.24	0.95
Reach-1	9	100-Year	trib-p1	2210.00	630.40	637.74	637.74	640.55	0.017962	14.21	248.53	70.24	0.95
Reach-1	10	100-Year	trib-x	2210.00	633.60	642.24		642.79	0.003480	6.95	740.41	203.27	0.43
Reach-1	10	100-Year	trib-r	2210.00	633.60	642.24		642.79	0.003480	6.95	740.41	203.27	0.43
Reach-1	10	100-Year	trib-c	2210.00	633.60	642.24		642.79	0.003480	6.95	740.41	203.27	0.43
Reach-1	10	100-Year	trib-p1	2210.00	633.60	642.24		642.79	0.003480	6.95	740.41	203.27	0.43
Reach-1	11	100-Year	trib-x	2210.00	639.50	644.13	644.13	645.48	0.016577	9.77	344.95	173.29	0.85
Reach-1	11	100-Year	trib-r	2210.00	639.50	644.13	644.13	645.48	0.016577	9.77	344.95	173.29	0.85
Reach-1	11	100-Year	trib-c	2210.00	639.50	644.13	644.13	645.48	0.016577	9.77	344.95	173.29	0.85
Reach-1	11	100-Year	trib-p1	2210.00	639.50	644.13	644.13	645.48	0.016577	9.77	344.95	173.29	0.85
Reach-1	12	100-Year	trib-x	2210.00	643.80	649.17		649.95	0.007856	7.56	464.14	164.90	0.60
Reach-1	12	100-Year	trib-r	2210.00	643.80	649.17		649.95	0.007856	7.56	464.14	164.90	0.60
Reach-1	12	100-Year	trib-c	2210.00	643.80	649.17		649.95	0.007856	7.56	464.14	164.90	0.60
Reach-1	12	100-Year	trib-p1	2210.00	643.80	649.17		649.95	0.007856	7.56	464.14	164.90	0.60
Reach-1	13	100-Year	trib-x	2210.00	644.80	650.71		651.51	0.014246	9.57	556.06	176.50	0.76
Reach-1	13	100-Year	trib-r	2210.00	644.80	650.71		651.51	0.014246	9.57	556.06	176.50	0.76
Reach-1	13	100-Year	trib-c	2210.00	644.80	650.71		651.51	0.014246	9.57	556.06	176.50	0.76
Reach-1	13	100-Year	trib-p1	2210.00	644.80	650.71		651.51	0.014246	9.57	556.06	176.50	0.76
Reach-1	14	100-Year	trib-x	2210.00	649.50	654.73	654.70	656.01	0.026397	11.80	440.41	165.51	1.01
Reach-1	14	100-Year	trib-r	2210.00	649.50	654.73	654.70	656.01	0.026397	11.80	440.41	165.51	1.01
Reach-1	14	100-Year	trib-c	2210.00	649.50	654.73	654.70	656.01	0.026397	11.80	440.41	165.51	1.01
Reach-1	14	100-Year	trib-p1	2210.00	649.50	654.73	654.70	656.01	0.026397	11.80	440.41	165.51	1.01

```
1*****************************************
 *  HEC-2 WATER SURFACE PROFILES           *
 *                                         *
 *  Version   4.6.2;  May 1991             *
 *                                         *
 *  RUN DATE    31MAR08    TIME   08:34:29  *
 *****************************************
```

```
*************************************
*  U.S. ARMY CORPS OF ENGINEERS     *
*  HYDROLOGIC ENGINEERING CENTER    *
*  609 SECOND STREET, SUITE D       *
*  DAVIS, CALIFORNIA 95616-4687     *
*          (916) 756-1104           *
*************************************
```

```
X     X  XXXXXXX   XXXXX             XXXXX
X     X  X        X     X           X     X
X     X  X        X                       X
XXXXXXX  XXXX     X          XXXXX    XXXXX
X     X  X        X                  X
X     X  X        X     X            X
X     X  XXXXXXX   XXXXX             XXXXXXX
```

1

THIS RUN EXECUTED 31MAR08 08:34:29

```
************************************
 HEC-2 WATER SURFACE PROFILES

 Version   4.6.2;  May 1991
************************************
```

```
T1 Flood Insurance Study - Butler County, Ohio - Contract EMW-C-93-4160
T2      100-Year Flood, Unnamed Tributary to East Fork Mill Creek   tribefmc.hc2
T3      East Fork Trib-4 Floods [Looking Downstream]                GB  3-28-08

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                4                                                          602.19

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

      1                 -1


J3  VARIABLE CODES FOR SUMMARY PRINTOUT

    150       200       38        39        66        42        1         40        41
  Confluence with East Fork Tributary

QT        5      2754      4304      4845      6617      4845
NC     0.08      0.12      0.04       0.1       0.3
ET                                                     7.1       790      1100
  Section 1.0, same as East Fork Section 15.0
X1      1.0        19      1000      1082       170       174       175
GR      604       490       602       521       600       587       599       750       600       980
GR      602       985       602       990       600       995       598      1000       596      1020
GR      595      1025     594.5      1030     594.5      1060       595      1070       596      1082
GR      598      1104       600      1132       602      1304       604      1325
   Peak Flow from MILL.HC1, Sub12B

QT        5      1213      1951      2210      3065      2211
NH        4      0.06       914      0.14      1000     0.040      1055      0.13      1090
ET                                                     7.1       870      1055
X1      2.0        18      1000      1055       400       500       600
GR      610       757       608       766       606       772       604       783       602       824
GR      602       914       604       990       604       998       602      1000       600      1010
GR    598.6      1015     598.6      1040       600      1055       602      1060       604      1065
GR      606      1070       608      1080       610      1090

NH        4      0.06       920      0.14      1000     0.040      1035      0.13      1077
ET                                                     7.1       780      1043
X1      3.1        15      1000      1043       500       500       500
X5                                  606.60               607.614
GR      610       578       608       618       606       622       604       630       604       750
GR      606       920       604      1000       602      1005     601.4      1010     601.4      1028
GR      602      1035       604      1043       606      1052       608      1070       610      1077
```

1


```
NC     0.07      0.13     0.045       0.3       0.5
   Data taken from field measurement and Butler Co. topos (1988).
ET                                                    10.4
X1      3.2        15      1000    1035.5       350       350       350
X3       10                                                        609.8     609.8
GR      618       640       616       665       612       713       610       732       608       900
GR      608      1000       606      1006       604      1008     603.7      1010     603.7      1030
GR      604    1035.5       608      1045       610      1162       614      1190       616      1200
   Private Drive Bridge
   Top of Road 612.8, LC 611.6
```

```
SB      0.9       1.6       2.0                 35.5       1.8      212.3         0       605.3       605.3
X1      3.3                                     12         12         12
X2                                   1    611.6   612.8
X3       10                                                                    612.        612.
BT      -13       665       616                 713      615.5                 732         615
BT                900       612                1000      612.5                1010       612.8
BT               1020     612.8                1035.5    612.8                1045       612.5
BT               1060     612.5                1162       612                 1190         614
BT               1200       616

NC     0.08      0.13      0.04
X1      3.4        16      1003      1046        98         98         98
GR      618       725       616       733       614        738        612         742         610         955
GR      608      1000       606      1003     604.6       1010      604.6        1030         606        1046
GR      608      1053       610      1070       612       1150        614        1168         616        1182
GR      618      1195
   Private Drive data taken from field dimensions and Butler Co. topos (1988).
   Normal Bridge Cross Section 2

ET                                                    7.1        925        1030
X1      4.2        30      1000      1015         45         45         45
X3       10                                                                608.9       608.9
GR      618       690       616       700       614        710        612         720       611.5         820
GR      610       950       608       985       606        990        605        1000         605      1003.0
GR      605   1003.75       605    1004.5       605    1005.25        605      1006.0         605    1006.75
GR      605    1007.5       605   1008.25       605     1009.0        605     1009.75         605     1010.5
GR      605   1011.25       605    1012.0       605       1015        606        1030         608        1040
GR      610      1053       612      1085       614       1140        616        1150         618        1165
   Normal Bridge Cross Section 3
   Private driveway culvert (3@ 36" pipe culvert)
   Top of Road 609.3, LC 608.5

ET                                                    7.1        925        1030
X1      4.3        36    1003.0    1012.0          5          5          5
BT      -36       690       618       618       700        616        616         710         614         614
BT                720       612       612       820      611.5      611.5         950         610         610
BT                985     609.3       608       990      609.3        607        1000       609.3         607
BT             1003.0     609.3       607   1003.25      609.3      607.75     1003.75       609.3      608.25
BT             1004.5     609.3     608.5   1005.25      609.3      608.25     1005.75       609.3      607.75
BT             1006.0     609.3     607.0   1006.25      609.3      607.75     1006.75       609.3      608.25
BT             1007.5     609.3     608.5   1008.25      609.3      608.25     1008.75       609.3      607.75
BT             1009.0     609.3     607.0   1009.25      609.3      607.75     1009.75       609.3      608.25
1
   31MAR08      08:34:29                                                                                PAGE    3

BT             1010.5     609.3     608.5   1011.25      609.3      608.25     1011.75       609.3      607.75
BT             1012.0     609.3     607.0   1015.0       609.3      607.0      1030.0        609.3      607.0
BT             1040.0     609.3     608.0   1053.0       610.0      610.0      1085          612        612
BT               1140       614       614     1150         616        616      1165          618        618
GR      618       690       616       700       614        710        612         720       611.5         820
GR      610       950       608       985       607        990        607        1000         607      1003.0
GR   606.25   1003.25    605.75   1003.75     605.5     1004.5     605.75     1005.25      606.25    1005.75
GR      607    1006.0    606.25   1006.25    605.75    1006.75      605.5      1007.5      605.75    1008.25
GR   606.25    1008.75       607    1009.0    606.25     1009.25    605.75     1009.75       605.5      1010.5
GR   605.75   1011.25    606.25   1011.75       607     1012.0        607        1015         607        1030
GR      608      1040       610      1053       612       1085        614        1140         616        1150
GR      618      1165
   Normal Bridge Cross Section 4

ET                                                    7.1        925        1035
X1      4.4                                          15         15         15
X2                                                                 1
   Normal Bridge Cross Section 5

ET                                                    7.1        925        1030
X1      4.5        30      1000      1015          5          5          5
X3       10                                                                608.5       608.5
GR      618       690       616       700       614        710        612         720       611.5         820
GR      610       950       608       985       606        990        605        1000         605      1003.0
GR      605   1003.75       605    1004.5       605    1005.25        605      1006.0         605    1006.75
GR      605    1007.5       605   1008.25       605     1009.0        605     1009.75         605     1010.5
GR      605   1011.25       605    1012.0       605       1015        606        1030         608        1040
GR      610      1053       612      1085       614       1140        616        1150         618        1165

NC     0.06      0.11     0.040
ET                                                    7.1        900        1080
X1      4.6        16      -100    0  1100        230        230        230
X5                                                          614.235
GR      620       510       618       535       616        550        614         665         612         960
GR      610      1000       608      1005     607.2       1010      607.2        1027         608        1043
GR      610      1100       612      1108       614       1133        616        1169         618        1181
GR      620      1210

NC                         0.045       0.1       0.3
ET                                                    7.1        900        1080
X1     4.61                                        200        200        200                    1.4

NH         4     0.06       980      0.12      1000       0.04      1035       0.12        1110
ET                                                    7.1        870        1070
X1      5.0        20       980      1063       200        200        200
GR      624       675       622       679       620        686        618         730         616         882
GR      614       910       616       980       614        998        612        1000         610        1004
GR    609.9      1010     609.9      1020       610       1025        612        1035         614        1050
```

```
GR      616       1063        618       1067        620       1074        622       1080        624       1110
1
   31MAR08      08:34:29                                                                                  PAGE     4


NC     0.08       0.12       0.045
ET                                                     10.4
X1      6.1         14        1000       1060         350        350
GR      624        700         622        810         620        820        618       1000        616       1013
GR      614       1015       612.2       1020       612.2       1037        614       1048        616       1060
GR      618       1072         620       1082         622       1092        624       1108

NC     0.10       0.10       0.045        0.3         0.5
   Cincinatte-Dayton Road Bridge
   Top of Road 623.3, LC 620.8
   Cross Section/Bridge Data taken from field survey (1-14-94).
X1      6.2         13        1000       1048.6       220        255        240
X3       10                                                                  620.8       621.1
GR      626        500         624        600         622        740        621        785        620        875
GR     614.8       1000        613       1031.8      616.2      1034.2     616.5      1048.6     617.3      1055
GR     619.3       1070        624        1120       625.4       1230

NC                            0.040
SB      0.9        1.6         3.0                    48.6        0.1       291.6         0       615.1      615.1
X1      6.3                                            48         48
X2                             1         621.1       622.3
X3       10                                                                  622.3       623.8
BT      -11        500         626                    600        624                    740        622.6
BT                 785        622.4                   875       622.3                   1000        623.3
BT                1048.6      623.8                   1055       623.8                  1070        623.9
BT                 1120       624.2                   1230       625.4

NC     0.08       0.12       0.045
ET                                                     7.1        979        1062
X1      6.4         13        1000       1050         100         30         62
GR      630        825         624        860         622        978        620        982        618        998
GR      616       1000       615.5       1005        615       1015        615       1025       615.5      1040
GR      616       1050         620       1060         625       1070

NC     0.12       0.10       0.045        0.1         0.3
ET                                                     7.1        992        1070
X1      7.0         12        1000       1050         420        420
GR      630        860         628        881         626        990        624       1000        622       1005
GR     620.5       1010       620.5       1030        622       1035        624       1050        626       1077
GR      628       1095         630       1280

NC     0.15       0.15       0.045
ET                                                     10.4
X1      8.1         17        1000       1039         300        300        300
GR      636        890         634        918         632        940        630        973        628        985
GR      626        990         625       1000         624       1006       623.8      1015       623.8      1030
GR      624       1035         626       1039         628       1045        630       1080        630       1180
GR      630       1200         632       1210
1
   31MAR08      08:34:29                                                                                  PAGE     5


NC     0.15       0.15       0.045        0.3         0.5
X1      8.2         13        1000       1039         195        195        195
X3       10                                                                  633         632
GR      639        890         636        918         634        940        632        973        630        985
GR      629       1000       623.8       1009       623.8       1030        629       1039        630       1080
GR      630       1180         632       1200        632.6      1210
   Dimmick Road from Butler Co. Plans (Bridge #BUT-00.12, 1978)
   Top of Road 634, LC 632

NC                            0.04
SB      0.9        1.6         2.8                    25         0.1       278.8        0.9       623.8      623.8
X1      8.3                                            28         28         28
X2                             1         632         632.6
X3       10                                                                  634         632.8
BT       -8        890         639                    918        636.8                  940         636
BT                 1000        634                    1039       633.8                  1080        632.8
BT                 1180       632.6                   1210       632.6

NC     0.15       0.15       0.050
X1      8.4         14        1000       1045         153        197        177
GR      638        909         636        923         634        990        632        996        630       1000
GR      628       1011         627       1013         627       1030        628       1038        630       1045
GR      632       1050         634       1056         636       1065        638       1230

NC                                        0.1         0.3
ET                                                     7.1        1000       1050
X1      9.0          9        1000       1020         300        300
GR      640        990         632       1000        630.4       1003       630.4      1013        632       1020
GR      634       1030         636       1037         638       1067        640       1185

ET                                                     10.4
X1     10.0         13        1000       1028         300        300        300
GR      644        833         642        844         640        865        638        990        636       1000
GR      634       1003       633.6       1010        633.6       1018        634       1024        636       1028
GR      640       1032         642       1040         644       1090
```

```
X1     11.0         11       1000       1050        300        300        300
GR      650        990        642       1000        640       1004      639.5       1010       639.5       1032
GR      640       1040        642       1050        644       1170        646       1180        648       1280
GR      650       1325

X1     12.0         12       1000       1052        400        400        400
GR      652        883        650        898        648        915        646       1000        644       1012
GR    643.8       1022      643.8       1038        644       1045        646       1052        648       1057
GR      650       1079        652       1165

X1     13.0         15       1000       1025        100        170        170
GR      656        765        654        780        652        830        650        860        648        905
GR      646       1000        645       1005      644.8       1010      644.8       1012        645       1015
GR      646       1016        648       1025        650       1025        654       1030        656       1032
   Repeat cross section 13.0 at a slope of 0.0206 (12-20-93).
1
   31MAR08      08:34:29                                                                                    PAGE    6


ET                                                                  7.1        950       1025
X1     14.0                                        230        230        230                    4.7
1
   31MAR08      08:34:29                                                                                    PAGE    7

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST


 *PROF 1
0

CCHV=     .100 CEHV=     .300
*SECNO 1.000
     1.000      7.69    602.19       .00    602.19    602.45       .26       .00       .00    598.00
    4845.0    1573.5    2903.4     368.0    1164.8     559.8     408.4        .0        .0    596.00
       .00      1.35      5.19       .90       .080      .040      .120      .000    594.50    518.05
   .001511      170.      175.      174.         0         0         0       .00    787.94   1305.99


1490 NH CARD USED
*SECNO 2.000

3265 DIVIDED FLOW


3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
     2.000      4.55    603.15    603.15       .00    604.19      1.04      1.26       .23    602.00
    2210.0     315.7    1874.1      20.2     143.6     212.5      12.4      13.7       5.2    600.00
       .02      2.20      8.82      1.62       .065      .040      .130      .000    598.60    800.33
   .009398      400.      600.      500.        20        14         0       .00    221.58   1062.89


1490 NH CARD USED
*SECNO 3.100
 WATER EL=X5 CARD=    606.600
1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.73

     3.100      5.20    606.60       .00       .00    606.71       .11      2.51       .09    604.00
    2210.0    1459.9     737.2      12.9     725.2     199.2      16.0      21.3       9.0    604.00
       .07      2.01      3.70       .80       .066      .062      .130      .000    601.40    620.80
   .003126      500.      500.      500.         0         0         0       .00    436.60   1057.40


CCHV=     .300 CEHV=     .500
1
   31MAR08      08:34:29                                                                                    PAGE    8

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST


*SECNO 3.200

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       609.80 ELREA=       609.80

     3.200      5.53    609.23    609.23       .00    611.77      2.55      2.22      1.22    608.00
```

2210.0	.0	2210.0	.0	.0	172.6	.0	25.7	10.9	604.00
.08	.00	12.80	.00	.000	.045	.000	.000	603.70	1000.00
.019059	350.	350.	350.	20	11	0	.00	35.50	1035.50

SPECIAL BRIDGE

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	.90	1.60	2.00	.00	35.50	1.80	212.30	.00	605.30	605.30

*SECNO 3.300

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.60

CLASS A LOW FLOW

3420 BRIDGE W.S.= 609.70 BRIDGE VELOCITY= 14.91 CALCULATED CHANNEL AREA= 148.

EGPRS	EGLWC	H3	QWEIR	QLOW	BAREA	TRAPEZOID AREA	ELLC	ELTRD	WEIRLN
611.92	612.25	1.58	0.	2210.	212.	212.	611.60	612.80	0.

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 612.00 ELREA= 612.00

3.300	7.10	610.80	.00	.00	612.25	1.45	.48	.00	608.00
2210.0	.0	2210.0	.0	.0	228.7	.0	25.8	10.9	604.00
.08	.00	9.66	.00	.000	.045	.000	.000	603.70	1000.00
.007465	12.	12.	12.	0	0	0	.00	35.50	1035.50

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 3.400

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 2.69

3.400	8.00	612.60	.00	.00	612.84	.23	.22	.37	606.00
2210.0	535.0	1513.2	161.8	521.1	328.1	230.5	27.3	11.4	606.00
.09	1.03	4.61	.70	.080	.040	.130	.000	604.60	740.79
.001032	98.	98.	98.	3	0	0	.00	414.65	1155.44

*SECNO 4.200

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = .66

4.200	7.64	612.64	.00	.00	612.94	.30	.07	.03	605.00
2210.0	993.3	797.5	419.1	562.1	114.6	268.7	28.3	11.8	605.00
.09	1.77	6.96	1.56	.080	.040	.130	.000	605.00	716.81
.002334	45.	45.	45.	2	0	0	.00	385.73	1102.54

*SECNO 4.300

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = .56

3370 NORMAL BRIDGE, NRD= 36 MIN ELTRD= 609.30 MAX ELLC= 608.50

4.300	7.39	612.89	.00	.00	613.01	.12	.02	.05	607.00
2210.0	1581.0	209.1	419.9	574.1	51.9	214.7	28.4	11.9	607.00
.09	2.75	4.03	1.96	.080	.040	.130	.000	605.50	715.52
.007359	5.	5.	5.	2	0	0	-140.45	394.14	1109.66

*SECNO 4.400

3370 NORMAL BRIDGE, NRD= 36 MIN ELTRD= 609.30 MAX ELLC= 608.50

4.400	7.51	613.01	.00	.00	613.12	.11	.10	.00	607.00
2210.0	1593.2	200.3	416.5	606.5	52.9	225.8	28.7	12.0	607.00
.09	2.63	3.79	1.84	.080	.040	.130	.000	605.50	714.95
.006332	15.	15.	15.	2	0	0	-140.45	397.80	1112.76

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 4.500

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.89

4.500	7.96	612.96	.00	.00	613.19	.23	.02	.06	605.00
2210.0	1056.0	743.5	410.5	654.9	119.5	298.8	28.8	12.0	605.00
.10	1.61	6.22	1.37	.080	.040	.130	.000	605.00	715.18
.001764	5.	5.	5.	2	0	0	.00	396.35	1111.53

*SECNO 4.600

4.600	6.34	613.54	.00	.00	613.65	.12	.43	.03	620.00
2210.0	.0	2180.2	29.8	.0	790.6	35.2	33.8	14.1	610.00
.12	.00	2.76	.85	.000	.040	.110	.000	607.20	732.80
.001986	230.	230.	230.	2	0	0	.00	394.46	1127.25

CCHV= .100 CEHV= .300
*SECNO 4.610

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = .60

4.610	5.45	614.05	.00	.00	614.32	.27	.62	.05	621.40
2210.0	.0	2190.4	19.6	.0	523.7	15.9	37.0	15.6	611.40
.13	.00	4.18	1.23	.000	.045	.110	.000	608.60	863.19
.005586	200.	200.	200.	2	0	0	.00	253.01	1116.20

1490 NH CARD USED
*SECNO 5.000

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

5.000	5.53	615.43	615.43	.00	616.62	1.20	1.52	.28	616.00
2210.0	103.2	2106.8	.0	49.9	234.6	.0	38.8	16.5	616.00
.14	2.07	8.98	.00	.060	.037	.000	.000	609.90	890.01
.010921	200.	200.	200.	3	5	0	.00	144.09	1059.28

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 6.100

6.100	6.62	618.82	.00	.00	619.70	.89	3.05	.03	618.00
2210.0	25.8	2149.8	34.5	29.9	280.9	23.4	41.3	17.7	616.00
.15	.86	7.65	1.47	.080	.045	.120	.000	612.20	926.61
.007101	350.	350.	350.	2	0	0	.00	149.47	1076.08

CCHV= .300 CEHV= .500
*SECNO 6.200

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 620.80 ELREA= 621.10

6.200	7.34	620.34	.00	.00	621.33	1.00	1.57	.06	614.80
2210.0	.0	2210.0	.0	.0	275.9	.0	43.0	18.2	616.50
.16	.00	8.01	.00	.000	.045	.000	.000	613.00	1000.00
.006078	220.	240.	255.	4	0	0	.00	48.60	1048.60

SPECIAL BRIDGE

SB XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
.90	1.60	3.00	.00	48.60	.10	291.60	.00	615.10	615.10

*SECNO 6.300
PRESSURE FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD	WEIRLN
621.76	621.34	.01	0.	2210.	292.	291.	621.10	622.30	0.

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 622.30 ELREA= 623.80

6.300	7.95	620.95	.00	.00	621.76	.81	.43	.00	614.80
2210.0	.0	2210.0	.0	.0	305.8	.0	43.3	18.3	616.50
.16	.00	7.23	.00	.000	.040	.000	.000	613.00	1000.00
.003405	48.	48.	48.	3	0	0	.00	48.60	1048.60

*SECNO 6.400

6.400	6.35	621.35	.00	.00	622.03	.68	.23	.04	616.00
2210.0	100.2	2053.2	56.6	48.2	300.1	35.4	43.8	18.4	616.00
.16	2.08	6.84	1.60	.080	.045	.120	.000	615.00	979.29
.003939	100.	62.	30.	2	0	0	.00	83.41	1062.71

1

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

CCHV= .100 CEHV= .300
*SECNO 7.000

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

7.000	5.11	625.61	625.61	.00	627.44	1.83	3.07	.35	624.00
2210.0	9.2	2170.6	30.2	6.5	198.1	17.5	46.8	19.2	624.00
.18	1.42	10.96	1.72	.120	.045	.100	.000	620.50	991.94
.018018	420.	420.	420.	20	15	0	.00	79.81	1071.75

*SECNO 8.100

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.51

8.100	5.92	629.72	.00	.00	630.94	1.23	3.44	.06	625.00
2210.0	126.0	2036.4	47.6	64.6	220.4	42.1	48.6	19.8	626.00
.18	1.95	9.24	1.13	.150	.045	.150	.000	623.80	974.69
.007927	300.	300.	300.	3	0	0	.00	100.37	1075.06

CCHV= .300 CEHV= .500
*SECNO 8.200

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 633.00 ELREA= 632.00

8.200	7.38	631.18	.00	.00	632.48	1.31	1.50	.04	629.00
2210.0	.0	2210.0	.0	.0	240.9	.0	49.9	20.1	629.00
.19	.00	9.17	.00	.000	.045	.000	.000	623.80	1000.00
.007462	195.	195.	195.	5	0	0	.00	39.00	1039.00

1

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

SPECIAL BRIDGE

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	.90	1.60	2.80	.00	25.00	.10	278.80	.90	623.80	623.80

*SECNO 8.300
PRESSURE AND WEIR FLOW, Weir Submergence Based on TRAPEZOIDAL Shape

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD	WEIRLN
632.74	632.49	.02	5.	2194.	279.	265.	632.00	632.60	87.

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 634.00 ELREA= 632.80

8.300	7.76	631.56	.00	.00	632.71	1.16	.23	.00	629.00
2210.0	.0	2210.0	.0	.0	255.8	.0	50.1	20.1	629.00
.19	.00	8.64	.00	.000	.040	.000	.000	623.80	1000.00
.004830	28.	28.	28.	3	0	2	.00	39.00	1039.00

*SECNO 8.400

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = .58

8.400	5.73	632.73	.00	.00	634.29	1.56	1.37	.20	630.00
2210.0	11.5	2183.9	14.6	7.7	216.8	9.4	51.1	20.3	630.00
.20	1.49	10.07	1.54	.150	.050	.150	.000	627.00	993.81
.014432	153.	177.	197.	2	0	0	.00	58.38	1052.19

CCHV= .100 CEHV= .300
*SECNO 9.000

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

9.000	7.39	637.79	637.79	.00	640.33	2.55	4.63	.30	632.00
2210.0	45.9	1916.8	247.3	20.9	139.7	91.3	52.7	20.8	632.00
.20	2.20	13.72	2.71	.150	.050	.150	.000	630.40	992.77
.016575	300.	300.	300.	4	11	0	.00	71.02	1063.79

1

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 10.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 2.09

10.000	8.44	642.04	.00	.00	642.61	.58	2.08	.20	636.00
2210.0	588.4	1596.6	24.9	451.8	223.8	24.5	56.0	21.7	636.00
.22	1.30	7.13	1.02	.150	.050	.150	.000	633.60	843.80
.003794	300.	300.	300.	3	0	0	.00	197.12	1040.92

*SECNO 11.000

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

11.000	4.63	644.13	644.13	.00	645.48	1.35	2.08	.23	642.00
2210.0	3.2	2019.6	187.2	2.8	207.0	135.6	59.6	23.0	642.00
.23	1.13	9.76	1.38	.150	.050	.150	.000	639.50	997.34
.016522	300.	300.	300.	4	11	0	.00	173.31	1170.65

*SECNO 12.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.45

12.000	5.36	649.16	.00	.00	649.93	.77	4.39	.06	646.00
2210.0	273.3	1917.0	19.7	189.8	254.5	18.3	63.3	24.5	646.00
.24	1.44	7.53	1.07	.150	.050	.150	.000	643.80	905.10
.007819	400.	400.	400.	3	0	0	.00	164.72	1069.82

*SECNO 13.000

13.000	5.90	650.70	.00	.00	651.42	.71	1.48	.01	646.00
2210.0	1082.5	1127.3	.1	432.5	122.8	.3	64.8	25.0	650.00
.25	2.50	9.18	.48	.150	.050	.150	.000	644.80	849.42
.013117	100.	170.	170.	2	0	0	.00	176.46	1025.88

1

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 14.000

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY

```
3720 CRITICAL DEPTH ASSUMED
    14.000      5.09    654.59    654.59       .00    655.88      1.29      4.26       .17    650.70
    2210.0     988.3    1221.7        .0     314.7     102.4        .0      67.4      25.9    654.70
       .26      3.14     11.93       .00      .150      .050      .000      .000    649.50    862.48
   .028057      230.      230.      230.         4        15         0       .00    162.52   1025.00


1
   31MAR08      08:34:29                                                                          PAGE   16


 T1 Flood Insurance Study - Butler County, Ohio - Contract EMW-C-93-4160
 T2 Unnamed Tributary to East Fork Mill Creek
 T3       100-Year Floodway       [Looking Downstream]

 J1  ICHECK     INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                  6                                                                  603.14         0

 J2  NPROF      IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

       2                  -1


1
   31MAR08      08:34:29                                                                          PAGE   17


     SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
     Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
     TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
     SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST


 *PROF 2
0

 CCHV=     .100 CEHV=     .300
 *SECNO 1.000

 3470 ENCROACHMENT STATIONS=      790.0    1100.0  TYPE=      1  TARGET=      310.000
      1.000      8.64    603.14       .00    602.19    603.50       .36       .00       .00    598.00
     4845.0    1160.3    3531.6     153.2     722.9     637.7     113.8        .0        .0    596.00
       .00      1.61      5.54      1.35      .080      .040      .120      .000    594.50    790.00
    .001448      170.      175.      174.         0         0         0       .00    310.00   1100.00


 1490 NH CARD USED
 *SECNO 2.000

 3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .24


 3470 ENCROACHMENT STATIONS=      870.0    1055.0  TYPE=      1  TARGET=      185.000
      2.000      5.41    604.01       .00    603.15    604.73       .72      1.13       .11    602.00
     2211.0     312.4    1898.6        .0     168.0     259.8        .0      10.9       2.6 100000.00
        .02      1.86      7.31       .00      .076      .040      .000      .000    598.60    870.00
    .005416      400.      600.      500.         2         0         0       .00    185.00   1055.00


 1490 NH CARD USED
 *SECNO 3.100
  WATER EL=X5 CARD=    607.614
 1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

 3470 ENCROACHMENT STATIONS=      780.0    1043.0  TYPE=      1  TARGET=      263.000
      3.100      6.21    607.61       .00    606.60    607.77       .16      2.31       .06    604.00
     2211.0    1216.0     995.0        .0     550.4     242.8        .0      17.9       5.2 100000.00
        .07      2.21      4.10       .00      .077      .068      .000      .000    601.40    780.00
    .003976      500.      500.      500.         0         0         0       .00    263.00   1043.00


 CCHV=     .300 CEHV=     .500
 *SECNO 3.200
  2800 NAT Q1=     160.08  WSELK=     609.23  ENC Q1=     218.63  WSEL=     610.23  RATIO=   -.3658
  NAT Q1=     379.  RATIOS LOB, CH, ROB=    .3442   .5764   .0794  WSEL=     610.23
1
   31MAR08      08:34:29                                                                          PAGE   18


     SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
     Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
     TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
     SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST


 3301 HV CHANGED MORE THAN HVINS

 7185 MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED

 3470 ENCROACHMENT STATIONS=     1000.0    1035.5  TYPE=      4  TARGET=         .424

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       609.80 ELREA=       609.80
```

```
     3.200      5.58    609.28    609.28    609.23    611.77      2.49      2.74      1.17    608.00
    2211.0        .0    2211.0        .0        .0     174.5        .0      21.8       6.4    604.00
       .08       .00     12.67       .00      .000      .045      .000      .000    603.70   1000.00
   .022001       350.      350.      350.         2        11         0       .00     35.50   1035.50


SPECIAL BRIDGE

SB  XK         XKOR       COFQ       RDLEN      BWC        BWP        BAREA      SS         ELCHU      ELCHD
      .90       1.60       2.00         .00     35.50       1.80     212.30        .00     605.30     605.30

*SECNO 3.300
6840, FLOW IS BY WEIR AND LOW FLOW
 2800 NAT Q1=      255.78  WSELK=      610.80  ENC Q1=      325.34  WSEL=      611.80  RATIO=   -.2719
 NAT Q1=      325.  RATIOS LOB, CH, ROB=    .0000  1.0000   .0000  WSEL=      611.80
 WATER EL=CHANGE FROM NATURAL PROFILES BRIDGE

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.55


3470 ENCROACHMENT STATIONS=     1000.0    1035.5  TYPE=       4  TARGET=          .000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=       612.00 ELREA=       612.00

     3.300      7.16    610.86       .00    610.80    612.29      1.43       .16       .32    608.00
    2211.0        .0    2211.0        .0        .0     230.6        .0      21.9       6.4    604.00
       .08       .00      9.59       .00      .000      .045      .000      .000    603.70   1000.00
   .009134       12.       12.       12.         0         0         3       .00     35.50   1035.50


*SECNO 3.400
 2800 NAT Q1=      687.86  WSELK=      612.60  ENC Q1=      687.86  WSEL=      613.60  RATIO=    .0000
 NAT Q1=      981.  RATIOS LOB, CH, ROB=    .3196   .5897   .0908  WSEL=      613.60
1
   31MAR08       08:34:29                                                                        PAGE   19

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      L-BANK ELEV
    Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA        R-BANK ELEV
    TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN      SSTA
    SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID     ENDST


3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.11


3470 ENCROACHMENT STATIONS=      956.7    1046.0  TYPE=       4  TARGET=          .299
     3.400      7.88    612.48       .00    612.60    612.94       .46       .37       .29    606.00
    2211.0     322.8    1888.2        .0     168.8     322.8        .0      22.7       6.5    606.00
       .08      1.91      5.85       .00      .080      .040      .000      .000    604.60   956.70
   .002045       98.       98.       98.         3         0         0       .00     89.30   1046.00


*SECNO 4.200

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .66


3470 ENCROACHMENT STATIONS=      925.0    1030.0  TYPE=       1  TARGET=       105.000
     4.200      7.45    612.45       .00    612.64    613.24       .79       .13       .16    605.00
    2211.0     894.2    1083.2     233.6      275.5     111.8     104.3      23.2       6.6    605.00
       .08      3.25      9.69      2.24      .080      .040      .130      .000    605.00   925.00
   .004668       45.       45.       45.         2         0         0       .00    105.00   1030.00


*SECNO 4.300

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .35


3370 NORMAL BRIDGE, NRD=  36 MIN ELTRD=   609.30 MAX ELLC=   608.50


3470 ENCROACHMENT STATIONS=      925.0    1030.0  TYPE=       1  TARGET=       105.000
     4.300      6.99    612.49       .00    612.89    613.30       .81       .05       .01    607.00
    2211.0    1536.9     423.1     251.0      215.7      48.2      57.5      23.2       6.6    607.00
       .08      7.13      8.77      4.37      .080      .040      .130      .000    605.50   925.00
   .038374         5.        5.        5.         2         0         0   -114.00    105.00   1030.00


*SECNO 4.400
1
   31MAR08       08:34:29                                                                        PAGE   20

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      L-BANK ELEV
    Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA        R-BANK ELEV
    TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN      SSTA
    SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID     ENDST
```

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.53

3370 NORMAL BRIDGE, NRD= 36 MIN ELTRD= 609.30 MAX ELLC= 608.50

3470 ENCROACHMENT STATIONS= 925.0 1035.0 TYPE= 1 TARGET= 110.000

4.400	7.82	613.32	.00	613.01	613.77	.45	.36	.11	607.00
2211.0	1541.1	351.7	318.2	280.0	55.7	92.4	23.4	6.7	607.00
.09	5.50	6.32	3.44	.080	.040	.130	.000	605.50	925.00
.016456	15.	15.	15.	3	0	0	-124.25	110.00	1035.00

*SECNO 4.500

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 2.37

3470 ENCROACHMENT STATIONS= 925.0 1030.0 TYPE= 1 TARGET= 105.000

4.500	8.30	613.30	.00	612.96	613.85	.55	.03	.05	605.00
2211.0	967.3	1025.5	218.2	338.8	124.5	117.0	23.4	6.7	605.00
.09	2.85	8.24	1.87	.080	.040	.130	.000	605.00	925.00
.002926	5.	5.	5.	2	0	0	.00	105.00	1030.00

*SECNO 4.600
WATER EL=X5 CARD= 614.235

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.69

3470 ENCROACHMENT STATIONS= 900.0 1080.0 TYPE= 1 TARGET= 180.000

4.600	7.03	614.23	.00	613.54	614.37	.14	.37	.12	100000.00
2211.0	.0	2211.0	.0	.0	743.1	.0	26.9	7.4	100000.00
.11	.00	2.98	.00	.000	.040	.000	.000	607.20	900.00
.001021	230.	230.	230.	0	0	0	.00	180.00	1080.00

CCHV= .100 CEHV= .300
*SECNO 4.610
1

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = .52

3470 ENCROACHMENT STATIONS= 900.0 1080.0 TYPE= 1 TARGET= 180.000

4.610	5.90	614.50	.00	614.05	614.76	.26	.35	.04	100000.00
2211.0	.0	2211.0	.0	.0	538.8	.0	29.9	8.3	100000.00
.12	.00	4.10	.00	.000	.045	.000	.000	608.60	900.00
.003714	200.	200.	200.	2	0	0	.00	180.00	1080.00

1490 NH CARD USED
*SECNO 5.000

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 870.0 1070.0 TYPE= 1 TARGET= 200.000

5.000	5.52	615.42	615.42	615.43	616.63	1.21	1.19	.28	616.00
2211.0	101.3	2109.7	.0	49.1	233.6	.0	31.8	9.0	616.00
.13	2.07	9.03	.00	.060	.037	.000	.000	609.90	890.19
.011049	200.	200.	200.	20	11	0	.00	143.27	1059.20

*SECNO 6.100
2800 NAT Q1= 262.25 WSELK= 618.82 ENC Q1= 352.47 WSEL= 619.82 RATIO= -.3440
NAT Q1= 388. RATIOS LOB, CH, ROB= .0668 .9094 .0238 WSEL= 619.82

3470 ENCROACHMENT STATIONS= 1000.0 1060.0 TYPE= 4 TARGET= .091

6.100	6.72	618.92	.00	618.82	619.84	.93	3.19	.03	618.00
2211.0	.0	2211.0	.0	.0	286.4	.0	34.0	9.8	616.00
.14	.00	7.72	.00	.000	.045	.000	.000	612.20	1000.00
.007629	350.	350.	350.	2	0	0	.00	60.00	1060.00

CCHV= .300 CEHV= .500
1

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 6.200
2800 NAT Q1= 283.48 WSELK= 620.34 ENC Q1= 371.49 WSEL= 621.34 RATIO= -.3104
NAT Q1= 592. RATIOS LOB, CH, ROB= .3244 .6270 .0485 WSEL= 621.34

3470 ENCROACHMENT STATIONS= 1000.0 1048.6 TYPE= 4 TARGET= .373

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 620.80 ELREA= 621.10

6.200	7.53	620.53	.00	620.34	621.47	.93	1.62	.00	614.80
2211.0	.0	2211.0	.0	.0	285.3	.0	35.6	10.1	616.50
.15	.00	7.75	.00	.000	.045	.000	.000	613.00	1000.00
.006029	220.	240.	255.	2	0	0	.00	48.60	1048.60

SPECIAL BRIDGE

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	.90	1.60	3.00	.00	48.60	.10	291.60	.00	615.10	615.10

*SECNO 6.300
6790 POSSIBLE INVALID SOLUTION 20 TRIALS OF EG NOT ENOUGH
FINAL QWEIR + QPR = 3012. DOES NOT EQUAL ACTUAL Q = 2211.

6790 POSSIBLE INVALID SOLUTION 20 TRIALS OF EG NOT ENOUGH
FINAL QWEIR + QPR = 2524. DOES NOT EQUAL ACTUAL Q = 2211.

6840, FLOW IS BY WEIR AND LOW FLOW
2800 NAT Q1= 378.71 WSELK= 620.95 ENC Q1= 484.17 WSEL= 621.95 RATIO= -.2785
NAT Q1= 484. RATIOS LOB, CH, ROB= .0000 1.0000 .0000 WSEL= 621.95
WATER EL=CHANGE FROM NATURAL PROFILES BRIDGE

3470 ENCROACHMENT STATIONS= 1000.0 1048.6 TYPE= 4 TARGET= .000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 622.30 ELREA= 623.80

6.300	8.15	621.15	.00	620.95	621.91	.76	.22	.05	614.80
2211.0	.0	2211.0	.0	.0	315.4	.0	35.9	10.2	616.50
.15	.00	7.01	.00	.000	.040	.000	.000	613.00	1000.00
.003461	48.	48.	48.	0	0	20	.00	48.60	1048.60

*SECNO 6.400

3470 ENCROACHMENT STATIONS= 979.0 1062.0 TYPE= 1 TARGET= 83.000

6.400	6.54	621.54	.00	621.35	622.17	.63	.22	.04	616.00
2211.0	106.9	2045.3	58.8	52.1	309.5	37.5	36.5	10.3	616.00
.15	2.05	6.61	1.57	.080	.045	.120	.000	615.00	979.00
.003529	100.	62.	30.	2	0	0	.00	83.00	1062.00

1

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

CCHV= .100 CEHV= .300
*SECNO 7.000

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 992.0 1070.0 TYPE= 1 TARGET= 78.000

7.000	5.17	625.67	625.67	625.61	627.44	1.77	2.80	.34	624.00
2211.0	10.1	2166.6	34.3	7.0	201.2	18.7	39.5	11.1	624.00
.16	1.45	10.77	1.84	.120	.045	.100	.000	620.50	992.00
.017042	420.	420.	420.	20	15	0	.00	78.00	1070.00

*SECNO 8.100
2800 NAT Q1= 248.22 WSELK= 629.72 ENC Q1= 300.05 WSEL= 630.72 RATIO= -.2088
NAT Q1= 343. RATIOS LOB, CH, ROB= .0664 .8737 .0598 WSEL= 630.72

3470 ENCROACHMENT STATIONS= 1000.0 1039.0 TYPE= 4 TARGET= .126

8.100	6.20	630.00	.00	629.72	631.42	1.42	3.94	.03	625.00
2211.0	.0	2211.0	.0	.0	231.4	.0	41.1	11.5	626.00
.17	.00	9.56	.00	.000	.045	.000	.000	623.80	1000.00
.010445	300.	300.	300.	3	0	0	.00	39.00	1039.00

CCHV= .300 CEHV= .500
*SECNO 8.200
2800 NAT Q1= 255.84 WSELK= 631.18 ENC Q1= 328.39 WSEL= 632.18 RATIO= -.2836
NAT Q1= 388. RATIOS LOB, CH, ROB= .0000 .8461 .1539 WSEL= 632.18

3470 ENCROACHMENT STATIONS= 1000.0 1039.0 TYPE= 4 TARGET= .154

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 633.00 ELREA= 632.00

8.200	8.14	631.94	.00	631.18	632.98	1.03	1.44	.12	629.00
2211.0	.0	2211.0	.0	.0	271.1	.0	42.2	11.6	629.00
.18	.00	8.16	.00	.000	.045	.000	.000	623.80	1000.00
.005523	195.	195.	195.	2	0	0	.00	39.00	1039.00

1
31MAR08 08:34:29 PAGE 24

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

SPECIAL BRIDGE

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	.90	1.60	2.80	.00	25.00	.10	278.80	.90	623.80	623.80

*SECNO 8.300
2800 NAT Q1= 317.99 WSELK= 631.56 ENC Q1= 402.57 WSEL= 632.56 RATIO= -.2660
NAT Q1= 403. RATIOS LOB, CH, ROB= .0000 1.0000 .0000 WSEL= 632.56
WATER EL=CHANGE FROM NATURAL PROFILES BRIDGE

3470 ENCROACHMENT STATIONS= 1000.0 1039.0 TYPE= 4 TARGET= .000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 634.00 ELREA= 632.80

8.300	8.52	632.32	.00	631.56	633.25	.93	.13	.03	629.00
2211.0	.0	2211.0	.0	.0	285.6	.0	42.4	11.7	629.00
.18	.00	7.74	.00	.000	.040	.000	.000	623.80	1000.00
.003707	28.	28.	28.	0	0	2	.00	39.00	1039.00

*SECNO 8.400
2800 NAT Q1= 183.96 WSELK= 632.73 ENC Q1= 248.92 WSEL= 633.73 RATIO= -.3531
NAT Q1= 254. RATIOS LOB, CH, ROB= .0092 .9793 .0114 WSEL= 633.73

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = .54

3470 ENCROACHMENT STATIONS= 1000.0 1045.0 TYPE= 4 TARGET= .021

8.400	6.23	633.23	.00	632.73	634.56	1.32	1.11	.20	630.00
2211.0	.0	2211.0	.0	.0	239.4	.0	43.4	11.8	630.00
.19	.00	9.23	.00	.000	.050	.000	.000	627.00	1000.00
.012672	153.	177.	197.	2	0	0	.00	45.00	1045.00

CCHV= .100 CEHV= .300
*SECNO 9.000

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 1000.0 1050.0 TYPE= 1 TARGET= 50.000

9.000	7.39	637.79	637.79	637.79	640.36	2.57	5.02	.37	632.00
2211.0	.0	1920.9	290.1	.0	139.8	85.0	45.0	12.2	632.00
.19	.00	13.74	3.41	.000	.050	.150	.000	630.40	1000.00
.023143	300.	300.	300.	4	8	0	.00	50.00	1050.00

1
31MAR08 08:34:29 PAGE 25

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 10.000
2800 NAT Q1= 358.80 WSELK= 642.04 ENC Q1= 358.80 WSEL= 643.04 RATIO= .0000
NAT Q1= 477. RATIOS LOB, CH, ROB= .3215 .6616 .0169 WSEL= 643.04

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 2.03

```
3470 ENCROACHMENT STATIONS=      971.9    1028.0  TYPE=       4  TARGET=          .248
    10.000       9.09     642.69       .00     642.04     643.56       .87      3.03       .17     636.00
    2211.0     278.4     1932.6        .0      139.2      242.1        .0      47.1       12.5     636.00
       .20       2.00       7.98       .00       .150       .050       .000      .000     633.60     971.90
   .005637      300.       300.       300.          3          0          0       .00      56.10    1028.00


*SECNO 11.000
 2800 NAT Q1=      171.93  WSELK=      644.13  ENC Q1=      225.35  WSEL=      645.13  RATIO=   -.3107
 NAT Q1=      268.  RATIOS LOB, CH, ROB=    .0026    .8404    .1571  WSEL=      645.13

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .66


3470 ENCROACHMENT STATIONS=     1000.0    1050.0  TYPE=       4  TARGET=          .160
    11.000       5.38     644.88       .00     644.13     646.15      1.27      2.47       .12     642.00
    2211.0        .0     2211.0        .0        .0      244.6        .0      49.3       12.9     642.00
       .21       .00       9.04       .00       .000       .050       .000      .000     639.50    1000.00
   .013105      300.       300.       300.          2          0          0       .00      50.00    1050.00


*SECNO 12.000
 2800 NAT Q1=      249.92  WSELK=      649.16  ENC Q1=      295.46  WSEL=      650.16  RATIO=   -.1822
 NAT Q1=      361.  RATIOS LOB, CH, ROB=    .1650    .8183    .0167  WSEL=      650.16

3470 ENCROACHMENT STATIONS=     1000.0    1052.0  TYPE=       4  TARGET=          .182
    12.000       5.79     649.59       .00     649.16     650.58       .99      4.40       .03     646.00
    2211.0        .0     2211.0        .0        .0      276.3        .0      51.7       13.4     646.00
       .23       .00       8.00       .00       .000       .050       .000      .000     643.80    1000.00
   .009379      400.       400.       400.          3          0          0       .00      52.00    1052.00


1
   31MAR08       08:34:29                                                                                    PAGE   26

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      L-BANK ELEV
    Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA        R-BANK ELEV
    TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN      SSTA
    SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID     ENDST


*SECNO 13.000
 2800 NAT Q1=      192.97  WSELK=      650.70  ENC Q1=      192.97  WSEL=      651.70  RATIO=    .0000
 NAT Q1=      284.  RATIOS LOB, CH, ROB=    .5272    .4723    .0005  WSEL=      651.70

3470 ENCROACHMENT STATIONS=      960.2    1025.0  TYPE=       4  TARGET=          .320
    13.000       6.51     651.31       .00     650.70     652.68      1.38      1.99       .11     646.00
    2211.0     683.1     1527.9        .0      194.6      137.8        .0      52.7       13.6 100000.00
       .23       3.51      11.08       .00       .150       .050       .000      .000     644.80     960.16
   .017444      100.       170.       170.          3          0          0       .00      64.84    1025.00


*SECNO 14.000

3470 ENCROACHMENT STATIONS=      950.0    1025.0  TYPE=       1  TARGET=        75.000
    14.000       6.09     655.59       .00     654.59     656.95      1.36      4.26       .00     650.70
    2211.0     771.5     1439.5        .0      218.1      127.4        .0      54.5       13.9 100000.00
       .24       3.54      11.30       .00       .150       .050       .000      .000     649.50     950.00
   .019744      230.       230.       230.          2          0          0       .00      75.00    1025.00


1
   31MAR08       08:34:29                                                                                    PAGE   27

T1 Flood Insurance Study - Butler County, Ohio - Contract EMW-C-93-4160
T2 Unnamed Tributary to East Fork Mill Creek
T3      10-Year Flood           [Looking Downstream]

J1  ICHECK     INQ        NINV       IDIR       STRT       METRIC     HVINS      Q          WSEL       FQ

                 2                                                                          601.15          0

J2  NPROF      IPLOT      PRFVS      XSECV      XSECH      FN         ALLDC      IBW        CHNIM      ITRACE

      2                    -1


1
   31MAR08       08:34:29                                                                                    PAGE   28

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      L-BANK ELEV
    Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA        R-BANK ELEV
    TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN      SSTA
    SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID     ENDST


 *PROF 3
0

CCHV=      .100 CEHV=      .300
*SECNO 1.000
```

3265 DIVIDED FLOW

1.000	6.65	601.15	.00	601.15	601.35	.20	.00	.00	598.00
2754.0	610.1	1981.8	162.1	684.3	474.6	208.4	.0	.0	596.00
.00	.89	4.18	.78	.080	.040	.120	.000	594.50	549.05
.001222	170.	175.	174.	0	0	0	.00	672.60	1230.90

1490 NH CARD USED
*SECNO 2.000

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

2.000	3.12	601.72	601.72	.00	602.98	1.26	1.17	.32	602.00
1213.0	.0	1208.2	4.8	.0	133.8	3.7	8.5	3.8	600.00
.02	.00	9.03	1.31	.000	.040	.130	.000	598.60	1001.40
.017649	400.	600.	500.	20	14	0	.00	57.89	1059.30

1490 NH CARD USED
*SECNO 3.100
1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 2.51

3.100	4.47	605.87	.00	.00	605.96	.09	2.86	.12	604.00
1213.0	683.1	525.4	4.5	452.3	168.1	7.9	12.9	6.5	604.00
.08	1.51	3.13	.57	.064	.062	.130	.000	601.40	622.49
.002797	500.	500.	500.	6	0	0	.00	413.51	1051.44

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

CCHV= .300 CEHV= .500
*SECNO 3.200

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 609.80 ELREA= 609.80

3.200	3.92	607.62	607.62	.00	609.32	1.70	2.10	.81	608.00
1213.0	.0	1213.0	.0	.0	115.8	.0	15.9	8.3	604.00
.09	.00	10.47	.00	.000	.045	.000	.000	603.70	1001.14
.020765	350.	350.	350.	4	11	0	.00	34.36	1035.50

SPECIAL BRIDGE

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	.90	1.60	2.00	.00	35.50	1.80	212.30	.00	605.30	605.30

*SECNO 3.300

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.64

CLASS A LOW FLOW

3420 BRIDGE W.S.= 607.82 BRIDGE VELOCITY= 14.31 CALCULATED CHANNEL AREA= 85.

EGPRS	EGLWC	H3	QWEIR	QLOW	BAREA	TRAPEZOID AREA	ELLC	ELTRD	WEIRLN
.00	609.73	1.19	0.	1213.	212.	212.	611.60	612.80	0.

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 612.00 ELREA= 612.00

3.300	5.11	608.81	.00	.00	609.73	.92	.40	.00	608.00
1213.0	.0	1213.0	.0	.0	157.9	.0	16.0	8.4	604.00
.09	.00	7.68	.00	.000	.045	.000	.000	603.70	1000.00

.007735	12.	12.	12.	0	0	0	.00	35.50	1035.50

1

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 3.400

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.74

3.400	5.26	609.86	.00	.00	610.28	.42	.40	.15	606.00
1213.0	49.0	1133.2	30.7	47.3	209.9	34.6	16.5	8.5	606.00
.10	1.04	5.40	.89	.080	.040	.130	.000	604.60	958.24
.002566	98.	98.	98.	2	0	0	.00	110.53	1068.78

*SECNO 4.200

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = .57

4.200	4.83	609.83	.00	.00	610.68	.85	.19	.21	605.00
1213.0	281.3	687.9	243.8	86.9	72.5	104.2	16.8	8.6	605.00
.10	3.24	9.49	2.34	.080	.040	.130	.000	605.00	952.92
.007983	45.	45.	45.	2	0	0	.00	98.99	1051.91

*SECNO 4.300

3370 NORMAL BRIDGE, NRD= 36 MIN ELTRD= 609.30 MAX ELLC= 608.50

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

4.300	5.57	611.07	611.07	.00	611.60	.53	.08	.10	607.00
1213.0	628.3	307.5	277.2	131.1	35.4	77.2	16.8	8.6	607.00
.10	4.79	8.68	3.59	.080	.040	.130	.000	605.50	857.29
.056717	5.	5.	5.	20	13	0	-140.45	212.82	1070.12

*SECNO 4.400

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 2.29

3370 NORMAL BRIDGE, NRD= 36 MIN ELTRD= 609.30 MAX ELLC= 608.50

4.400	6.41	611.91	.00	.00	612.03	.12	.31	.12	607.00
1213.0	769.3	185.2	258.5	294.6	43.0	131.9	16.9	8.7	607.00
.10	2.61	4.31	1.96	.080	.040	.130	.000	605.50	737.33
.010771	15.	15.	15.	1	0	0	-140.45	346.28	1083.61

1

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 4.500

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 2.80

4.500	6.90	611.90	.00	.00	612.07	.18	.01	.03	605.00
1213.0	454.7	515.7	242.6	354.4	103.4	211.3	17.0	8.8	605.00
.10	1.28	4.99	1.15	.080	.040	.130	.000	605.00	740.87
.001372	5.	5.	5.	2	0	0	.00	342.46	1083.33

*SECNO 4.600

4.600	5.12	612.32	.00	.00	612.43	.11	.34	.02	620.00
1213.0	.0	1206.1	6.9	.0	453.3	11.3	20.0	10.2	610.00
.12	.00	2.66	.61	.000	.040	.110	.000	607.20	912.02
.001592	230.	230.	230.	3	0	0	.00	200.04	1112.07

CCHV= .100 CEHV= .300
*SECNO 4.610

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = .61

4.610	4.13	612.73	.00	.00	612.96	.24	.49	.04	621.40
1213.0	.0	1210.7	2.3	.0	310.1	3.5	21.8	11.0	611.40
.14	.00	3.90	.66	.000	.045	.110	.000	608.60	973.50
.004254	200.	200.	200.	2	0	0	.00	131.80	1105.30

1490 NH CARD USED
*SECNO 5.000

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

5.000	3.82	613.72	613.72	.00	615.07	1.34	1.45	.33	616.00
1213.0	.0	1213.0	.0	.0	130.5	.0	22.8	11.4	616.00
.14	.00	9.29	.00	.000	.037	.000	.000	609.90	998.28
.015150	200.	200.	200.	2	15	0	.00	49.65	1047.93

*SECNO 6.100

1

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.66

6.100	5.45	617.65	.00	.00	618.15	.51	3.01	.08	618.00
1213.0	.0	1206.5	6.5	.0	210.9	8.1	24.2	11.9	616.00
.16	.00	5.72	.80	.000	.045	.120	.000	612.20	1002.33
.005522	350.	350.	350.	2	0	0	.00	67.52	1069.85

CCHV= .300 CEHV= .500
*SECNO 6.200

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 620.80 ELREA= 621.10

6.200	5.88	618.88	.00	.00	619.42	.54	1.25	.02	614.80
1213.0	.0	1213.0	.0	.0	205.3	.0	25.4	12.2	616.50
.17	.00	5.91	.00	.000	.045	.000	.000	613.00	1000.00
.004904	220.	240.	255.	3	0	0	.00	48.60	1048.60

SPECIAL BRIDGE

SB XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
.90	1.60	3.00	.00	48.60	.10	291.60	.00	615.10	615.10

*SECNO 6.300
CLASS A LOW FLOW

3420 BRIDGE W.S.= 618.88 BRIDGE VELOCITY= 6.62 CALCULATED CHANNEL AREA= 183.

EGPRS	EGLWC	H3	QWEIR	QLOW	BAREA	TRAPEZOID AREA	ELLC	ELTRD	WEIRLN
.00	619.42	.00	0.	1213.	292.	291.	621.10	622.30	0.

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 622.30 ELREA= 623.80

6.300	5.88	618.88	.00	.00	619.42	.54	.00	.00	614.80
1213.0	.0	1213.0	.0	.0	205.2	.0	25.6	12.2	616.50
.17	.00	5.91	.00	.000	.040	.000	.000	613.00	1000.00
.003881	48.	48.	48.	0	0	0	.00	48.60	1048.60

1

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 6.400

6.400	4.16	619.16	.00	.00	619.74	.59	.29	.02	616.00
1213.0	13.6	1184.0	15.4	9.7	190.7	12.5	25.9	12.3	616.00
.18	1.40	6.21	1.23	.080	.045	.120	.000	615.00	988.69
.005944	100.	62.	30.	0	0	0	.00	69.21	1057.91

CCHV= .100 CEHV= .300
*SECNO 7.000

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

7.000	3.77	624.27	624.27	.00	625.60	1.33	4.34	.22	624.00
1213.0	.1	1212.6	.3	.2	131.2	.5	27.5	12.9	624.00
.19	.48	9.24	.59	.120	.045	.100	.000	620.50	998.63
.022181	420.	420.	420.	13	11	0	.00	55.08	1053.71

*SECNO 8.100

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.82

8.100	4.49	628.29	.00	.00	629.02	.73	3.36	.06	625.00
1213.0	50.8	1154.9	7.4	34.6	164.7	8.5	28.7	13.3	626.00
.20	1.47	7.01	.87	.150	.045	.150	.000	623.80	983.26
.006731	300.	300.	300.	4	0	0	.00	66.81	1050.07

CCHV= .300 CEHV= .500
*SECNO 8.200

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 633.00 ELREA= 632.00

8.200	5.75	629.55	.00	.00	630.28	.72	1.26	.00	629.00
1213.0	.0	1213.0	.0	.0	177.8	.0	29.6	13.6	629.00
.21	.00	6.82	.00	.000	.045	.000	.000	623.80	1000.00
.006186	195.	195.	195.	2	0	0	.00	39.00	1039.00

1

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

SPECIAL BRIDGE

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	.90	1.60	2.80	.00	25.00	.10	278.80	.90	623.80	623.80

*SECNO 8.300
CLASS A LOW FLOW

3420 BRIDGE W.S.= 629.55 BRIDGE VELOCITY= 7.01 CALCULATED CHANNEL AREA= 173.

EGPRS	EGLWC	H3	QWEIR	QLOW	BAREA	TRAPEZOID AREA	ELLC	ELTRD	WEIRLN
.00	630.28	.01	0.	1213.	279.	265.	632.00	632.60	0.

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 634.00 ELREA= 632.80

8.300	5.76	629.56	.00	.00	630.28	.72	.01	.00	629.00
1213.0	.0	1213.0	.0	.0	177.9	.0	29.7	13.6	629.00
.21	.00	6.82	.00	.000	.040	.000	.000	623.80	1000.00
.004881	28.	28.	28.	0	0	0	.00	39.00	1039.00

*SECNO 8.400

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = .47

8.400	3.89	630.89	.00	.00	632.16	1.27	1.60	.27	630.00
1213.0	.6	1211.6	.8	.8	133.9	1.0	30.3	13.8	630.00
.22	.80	9.04	.82	.150	.050	.150	.000	627.00	998.22
.022117	153.	177.	197.	3	0	0	.00	48.99	1047.22

CCHV= .100 CEHV= .300
*SECNO 9.000

9.000	5.62	636.02	.00	.00	637.65	1.63	5.38	.11	632.00
1213.0	16.4	1113.4	83.2	10.1	104.2	37.2	31.3	14.1	632.00
.23	1.63	10.68	2.24	.150	.050	.150	.000	630.40	994.98
.014846	300.	300.	300.	3	0	0	.00	42.20	1037.18

1

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV

TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 10.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.60

10.000	6.09	639.69	.00	.00	640.38	.70	2.64	.09	636.00
1213.0	98.9	1107.9	6.1	116.0	158.1	6.8	32.8	14.7	636.00
.24	.85	7.01	.90	.150	.050	.150	.000	633.60	884.48
.005825	300.	300.	300.	3	0	0	.00	147.21	1031.69

*SECNO 11.000

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

11.000	3.19	642.69	642.69	.00	643.91	1.22	3.15	.16	642.00
1213.0	.2	1201.9	10.9	.3	135.0	14.3	34.3	15.6	642.00
.25	.64	8.90	.76	.150	.050	.150	.000	639.50	999.14
.024312	300.	300.	300.	2	11	0	.00	92.28	1091.41

*SECNO 12.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.93

12.000	4.24	648.04	.00	.00	648.52	.49	4.54	.07	646.00
1213.0	72.9	1136.0	4.1	88.6	196.1	5.2	36.3	16.7	646.00
.27	.82	5.79	.78	.150	.050	.150	.000	643.80	914.64
.006549	400.	400.	400.	4	0	0	.00	142.82	1057.46

*SECNO 13.000

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = .68

13.000	4.59	649.39	.00	.00	649.99	.60	1.43	.03	646.00
1213.0	501.6	711.4	.0	248.9	90.0	.0	37.3	17.1	650.00
.28	2.01	7.91	.00	.150	.050	.000	.000	644.80	873.70
.014310	100.	170.	170.	3	0	0	.00	151.30	1025.00

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 14.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

14.000	4.10	653.60	653.60	.00	654.57	.97	4.35	.11	650.70
1213.0	451.4	761.6	.0	189.4	77.7	.0	38.9	17.8	654.70
.28	2.38	9.81	.00	.150	.050	.000	.000	649.50	884.78
.026141	230.	230.	230.	5	15	0	.00	140.22	1025.00

T1 Flood Insurance Study - Butler County, Ohio - Contract EMW-C-93-4160
T2 Unnamed Tributary to East Fork Mill Creek
T3 50-Year Flood [Looking Downstream]

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
		3							602.19	0

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	3		-1							

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 4
0

CCHV= .100 CEHV= .300
*SECNO 1.000

1.000	7.69	602.19	.00	602.19	602.40	.21	.00	.00	598.00
4304.0	1397.8	2579.2	326.9	1164.8	559.8	408.4	.0	.0	596.00
.00	1.20	4.61	.80	.080	.040	.120	.000	594.50	518.05
.001193	170.	175.	174.	0	0	0	.00	787.94	1305.99

1490 NH CARD USED
*SECNO 2.000

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

2.000	4.36	602.96	602.96	.00	603.94	.98	1.03	.23	602.00
1951.0	224.8	1709.3	16.8	113.4	201.7	10.9	13.5	5.2	600.00
.02	1.98	8.48	1.54	.064	.040	.130	.000	598.60	804.38
.009310	400.	600.	500.	20	11	0	.00	209.35	1062.39

1490 NH CARD USED
*SECNO 3.100
1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.73

3.100	5.02	606.42	.00	.00	606.52	.11	2.49	.09	604.00
1951.0	1252.2	688.5	10.4	658.8	191.7	13.6	20.3	8.9	604.00
.08	1.90	3.59	.76	.065	.062	.130	.000	601.40	621.15
.003100	500.	500.	500.	3	0	0	.00	434.67	1055.82

1
31MAR08 08:34:29 PAGE 39

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

CCHV= .300 CEHV= .500
*SECNO 3.200

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 609.80 ELREA= 609.80

3.200	5.18	608.88	608.88	.00	611.18	2.29	2.20	1.09	608.00
1951.0	.0	1951.0	.0	.0	160.5	.0	24.5	10.7	604.00
.08	.00	12.15	.00	.000	.045	.000	.000	603.70	1000.00
.018925	350.	350.	350.	20	8	0	.00	35.50	1035.50

SPECIAL BRIDGE

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	.90	1.60	2.00	.00	35.50	1.80	212.30	.00	605.30	605.30

*SECNO 3.300

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.57

CLASS A LOW FLOW

3420 BRIDGE W.S.= 609.30 BRIDGE VELOCITY= 14.46 CALCULATED CHANNEL AREA= 135.

EGPRS	EGLWC	H3	QWEIR	QLOW	BAREA	TRAPEZOID AREA	ELLC	ELTRD	WEIRLN
610.98	611.62	1.41	0.	1951.	212.	212.	611.60	612.80	0.

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 612.00 ELREA= 612.00

3.300	6.59	610.29	.00	.00	611.62	1.34	.45	.00	608.00
1951.0	.0	1951.0	.0	.0	210.4	.0	24.5	10.8	604.00
.08	.00	9.27	.00	.000	.045	.000	.000	603.70	1000.00
.007678	12.	12.	12.	0	0	0	.00	35.50	1035.50

1

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 3.400

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 2.35

3.400	7.30	611.90	.00	.00	612.20	.30	.27	.31	606.00
1951.0	339.5	1497.8	113.7	337.9	297.9	156.0	25.6	11.2	606.00
.09	1.00	5.03	.73	.080	.040	.130	.000	604.60	752.47
.001396	98.	98.	98.	2	0	0	.00	393.59	1146.07

*SECNO 4.200

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = .63

4.200	6.92	611.92	.00	.00	612.37	.45	.09	.07	605.00
1951.0	736.3	825.2	389.5	361.0	103.8	213.0	26.4	11.6	605.00
.09	2.04	7.95	1.83	.080	.040	.130	.000	605.00	735.81
.003470	45.	45.	45.	2	0	0	.00	347.93	1083.74

*SECNO 4.300

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = .50

3370 NORMAL BRIDGE, NRD= 36 MIN ELTRD= 609.30 MAX ELLC= 608.50

4.300	6.80	612.30	.00	.00	612.48	.18	.03	.08	607.00
1951.0	1315.4	241.4	394.2	402.9	46.5	161.1	26.5	11.7	607.00
.09	3.26	5.19	2.45	.080	.040	.130	.000	605.50	718.51
.014135	5.	5.	5.	4	0	0	-140.45	374.69	1093.20

*SECNO 4.400

3370 NORMAL BRIDGE, NRD= 36 MIN ELTRD= 609.30 MAX ELLC= 608.50

4.400	7.03	612.53	.00	.00	612.67	.14	.17	.01	607.00
1951.0	1352.3	215.4	383.4	469.8	48.6	180.9	26.7	11.8	607.00
.10	2.88	4.43	2.12	.080	.040	.130	.000	605.50	717.34
.009704	15.	15.	15.	2	0	0	-140.45	382.31	1099.65

1

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 4.500

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 2.16

4.500	7.49	612.49	.00	.00	612.75	.27	.02	.07	605.00
1951.0	848.9	728.1	374.0	519.1	112.3	255.8	26.8	11.8	605.00
.10	1.64	6.48	1.46	.080	.040	.130	.000	605.00	717.57
.002080	5.	5.	5.	2	0	0	.00	380.79	1098.36

*SECNO 4.600

4.600	5.96	613.16	.00	.00	613.29	.13	.50	.04	620.00
1951.0	.0	1929.0	22.0	.0	664.7	25.9	31.0	13.7	610.00
.12	.00	2.90	.85	.000	.040	.110	.000	607.20	787.45
.002236	230.	230.	230.	2	0	0	.00	335.18	1122.62

CCHV= .100 CEHV= .300
*SECNO 4.610

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = .65

4.610	5.11	613.71	.00	.00	613.99	.29	.65	.05	621.40
1951.0	.0	1938.8	12.2	.0	450.1	11.1	33.6	14.9	611.40
.13	.00	4.31	1.10	.000	.045	.110	.000	608.60	914.59
.005236	200.	200.	200.	2	0	0	.00	197.26	1111.85

1490 NH CARD USED
*SECNO 5.000

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

5.000	5.20	615.10	615.10	.00	616.32	1.23	1.48	.28	616.00
1951.0	51.8	1899.2	.0	29.4	210.8	.0	35.2	15.7	616.00
.14	1.76	9.01	.00	.060	.036	.000	.000	609.90	894.66
.011304	200.	200.	200.	3	5	0	.00	122.66	1057.12

1

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 6.100

6.100	6.38	618.58	.00	.00	619.37	.79	3.00	.04	618.00
1951.0	9.9	1915.0	26.1	14.9	266.5	19.7	37.4	16.7	616.00
.15	.66	7.18	1.32	.080	.045	.120	.000	612.20	948.18
.006714	350.	350.	350.	2	0	0	.00	126.70	1074.88

CCHV= .300 CEHV= .500
*SECNO 6.200

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 620.80 ELREA= 621.10

6.200	7.02	620.02	.00	.00	620.89	.87	1.49	.04	614.80
1951.0	.0	1951.0	.0	.0	260.7	.0	38.9	17.2	616.50
.16	.00	7.49	.00	.000	.045	.000	.000	613.00	1000.00
.005722	220.	240.	255.	3	0	0	.00	48.60	1048.60

SPECIAL BRIDGE

SB XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
.90	1.60	3.00	.00	48.60	.10	291.60	.00	615.10	615.10

*SECNO 6.300
CLASS A LOW FLOW

3420 BRIDGE W.S.= 620.02 BRIDGE VELOCITY= 8.18 CALCULATED CHANNEL AREA= 239.

EGPRS	EGLWC	H3	QWEIR	QLOW	BAREA	TRAPEZOID AREA	ELLC	ELTRD	WEIRLN
.00	620.90	.01	0.	1951.	292.	291.	621.10	622.30	0.

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 622.30 ELREA= 623.80

6.300	7.03	620.03	.00	.00	620.90	.87	.00	.00	614.80
1951.0	.0	1951.0	.0	.0	260.9	.0	39.2	17.2	616.50
.16	.00	7.48	.00	.000	.040	.000	.000	613.00	1000.00
.004506	48.	48.	48.	0	0	0	.00	48.60	1048.60

*SECNO 6.400

6.400	5.45	620.45	.00	.00	621.23	.78	.31	.03	616.00
1951.0	58.3	1853.6	39.1	30.4	255.1	24.7	39.6	17.3	616.00
.16	1.92	7.27	1.58	.080	.045	.120	.000	615.00	981.09
.005518	100.	62.	30.	2	0	0	.00	79.81	1060.91

1

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

CCHV= .100 CEHV= .300
*SECNO 7.000

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

7.000	4.82	625.32	625.32	.00	627.01	1.69	3.86	.27	624.00
1951.0	5.5	1927.5	18.0	4.4	183.7	11.8	42.1	18.1	624.00
.18	1.25	10.49	1.52	.120	.045	.100	.000	620.50	993.38
.018259	420.	420.	420.	20	11	0	.00	74.50	1067.88

*SECNO 8.100

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.53

8.100	5.57	629.37	.00	.00	630.48	1.11	3.41	.06	625.00
1951.0	104.4	1814.1	32.5	56.2	206.9	30.7	43.8	18.6	626.00
.19	1.86	8.77	1.06	.150	.045	.150	.000	623.80	976.77
.007763	300.	300.	300.	3	0	0	.00	92.25	1069.01

CCHV= .300 CEHV= .500
*SECNO 8.200

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 633.00 ELREA= 632.00

8.200	7.00	630.80	.00	.00	631.96	1.15	1.45	.02	629.00
1951.0	.0	1951.0	.0	.0	226.5	.0	45.0	18.9	629.00
.19	.00	8.62	.00	.000	.045	.000	.000	623.80	1000.00
.007150	195.	195.	195.	3	0	0	.00	39.00	1039.00

1

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

SPECIAL BRIDGE

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	.90	1.60	2.80	.00	25.00	.10	278.80	.90	623.80	623.80

*SECNO 8.300
CLASS A LOW FLOW

3420 BRIDGE W.S.= 630.80 BRIDGE VELOCITY= 8.94 CALCULATED CHANNEL AREA= 218.

EGPRS	EGLWC	H3	QWEIR	QLOW	BAREA	TRAPEZOID AREA	ELLC	ELTRD	WEIRLN
.00	631.97	.01	0.	1951.	279.	265.	632.00	632.60	0.

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 634.00 ELREA= 632.80

8.300	7.02	630.82	.00	.00	631.97	1.15	.01	.00	629.00
1951.0	.0	1951.0	.0	.0	226.8	.0	45.1	18.9	629.00
.19	.00	8.60	.00	.000	.040	.000	.000	623.80	1000.00
.005617	28.	28.	28.	0	0	0	.00	39.00	1039.00

*SECNO 8.400

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = .58

8.400	5.21	632.21	.00	.00	633.75	1.54	1.59	.20	630.00
1951.0	6.5	1936.1	8.4	4.9	193.5	6.1	46.0	19.1	630.00
.20	1.33	10.01	1.36	.150	.050	.150	.000	627.00	995.37
.016574	153.	177.	197.	2	0	0	.00	55.27	1050.63

CCHV= .100 CEHV= .300
*SECNO 9.000

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

9.000	6.85	637.25	637.25	.00	639.72	2.46	5.10	.28	632.00
1951.0	36.5	1724.3	190.2	17.3	129.1	70.1	47.4	19.5	632.00
.20	2.11	13.36	2.71	.150	.050	.150	.000	630.40	993.43
.017466	300.	300.	300.	3	11	0	.00	62.38	1055.81

1

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 10.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 2.08

10.000	7.93	641.53	.00	.00	642.12	.59	2.22	.19	636.00
1951.0	453.2	1479.0	18.8	373.4	209.6	18.8	50.2	20.4	636.00
.22	1.21	7.06	1.00	.150	.050	.150	.000	633.60	848.97
.004055	300.	300.	300.	3	0	0	.00	189.14	1038.11

*SECNO 11.000

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

11.000	4.16	643.66	643.66	.00	645.15	1.48	2.33	.27	642.00
1951.0	1.8	1845.1	104.1	1.7	183.6	82.9	53.2	21.6	642.00
.23	1.06	10.05	1.26	.150	.050	.150	.000	639.50	997.92
.020561	300.	300.	300.	4	11	0	.00	151.80	1149.73

*SECNO 12.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.72

12.000	5.21	649.01	.00	.00	649.67	.66	4.44	.08	646.00
1951.0	226.4	1709.2	15.5	175.1	246.4	15.6	56.5	23.0	646.00
.25	1.29	6.94	.99	.150	.050	.150	.000	643.80	906.42
.006927	400.	400.	400.	3	0	0	.00	161.67	1068.10

*SECNO 13.000

13.000	5.59	650.39	.00	.00	651.08	.69	1.40	.01	646.00
1951.0	927.0	1024.0	.0	386.2	115.0	.1	57.9	23.5	650.00
.25	2.40	8.90	.01	.150	.050	.150	.000	644.80	854.11
.013470	100.	170.	170.	2	0	0	.00	171.39	1025.49

1

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 14.000

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

14.000	4.86	654.36	654.36	.00	655.57	1.22	4.30	.16	650.70
1951.0	843.6	1107.4	.0	283.6	96.7	.0	60.2	24.3	654.70
.26	2.98	11.45	.00	.150	.050	.000	.000	649.50	867.68
.027659	230.	230.	230.	9	15	0	.00	157.32	1025.00

1

T1 Flood Insurance Study - Butler County, Ohio - Contract EMW-C-93-4160
T2 Unnamed Tributary to East Fork Mill Creek
T3 500-Year Flood [Looking Downstream]

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
		5							602.91	0

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	4		-1							

1

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 5
0

CCHV= .100 CEHV= .300
*SECNO 1.000

1.000	8.41	602.91	.00	602.91	603.20	.29	.00	.00	598.00
6617.0	2472.0	3546.3	598.7	1515.8	618.9	572.4	.0	.0	596.00
.00	1.63	5.73	1.05	.080	.040	.120	.000	594.50	506.90
.001614	170.	175.	174.	0	0	0	.00	806.66	1313.55

1490 NH CARD USED
*SECNO 2.000

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

2.000	5.11	603.71	603.71	.00	604.89	1.18	1.31	.27	602.00
3065.0	654.5	2378.8	31.7	240.6	243.0	17.2	17.4	5.5	600.00
.02	2.72	9.79	1.84	.067	.040	.130	.000	598.60	788.98
.009687	400.	600.	500.	3	14	0	.00	255.93	1064.27

1490 NH CARD USED
*SECNO 3.100
1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.86

3.100	5.84	607.24	.00	.00	607.36	.12	2.36	.11	604.00
3065.0	2177.6	863.9	23.5	967.8	226.7	27.1	27.3	9.5	604.00
.07	2.25	3.81	.87	.066	.062	.130	.000	601.40	619.52
.002791	500.	500.	500.	3	0	0	.00	443.63	1063.15

1
31MAR08 08:34:29 PAGE 49

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

CCHV= .300 CEHV= .500
*SECNO 3.200

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3.200	6.35	610.05	610.05	.00	610.89	.84	1.55	.36	608.00
3065.0	976.5	1863.5	225.0	381.4	201.9	161.3	35.2	13.0	604.00
.08	2.56	9.23	1.39	.070	.045	.130	.000	603.70	731.52
.008038	350.	350.	350.	20	8	0	.00	430.83	1162.35

SPECIAL BRIDGE

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	.90	1.60	2.00	.00	35.50	1.80	212.30	.00	605.30	605.30

*SECNO 3.300

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 4.04

PRESSURE AND WEIR FLOW, Weir Submergence Based on TRAPEZOIDAL Shape

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD	WEIRLN
615.23	613.60	.16	625.	2442.	212.	212.	611.60	612.80	356.

3.300	9.57	613.27	.00	.00	613.34	.06	2.45	.00	608.00

3065.0	1681.3	974.4	409.3	1298.5	316.4	606.7	35.6	13.1	604.00
.09	1.29	3.08	.67	.070	.045	.130	.000	603.70	697.71
.000492	12.	12.	12.	2	0	4	.00	487.21	1184.92

*SECNO 3.400

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = .63

1

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST
3.400	8.64	613.24	.00	.00	613.52	.29	.07	.11	606.00
3065.0	901.8	1903.0	260.2	687.9	355.4	301.7	39.6	14.1	606.00
.09	1.31	5.36	.86	.080	.040	.130	.000	604.60	739.52
.001251	98.	98.	98.	2	0	0	.00	421.63	1161.15

*SECNO 4.200

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = .69

4.200	8.29	613.29	.00	.00	613.63	.34	.08	.03	605.00
3065.0	1538.4	966.6	560.0	745.3	124.2	330.7	40.9	14.6	605.00
.10	2.06	7.78	1.69	.080	.040	.130	.000	605.00	713.59
.002618	45.	45.	45.	1	0	0	.00	406.64	1120.23

*SECNO 4.300

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = .65

3370 NORMAL BRIDGE, NRD= 36 MIN ELTRD= 609.30 MAX ELLC= 608.50

4.300	8.08	613.58	.00	.00	613.71	.13	.02	.06	607.00
3065.0	2272.7	230.1	562.2	772.6	58.0	288.2	41.0	14.6	607.00
.10	2.94	3.96	1.95	.080	.040	.130	.000	605.50	712.09
.006125	5.	5.	5.	2	0	0	-140.45	416.44	1128.53

*SECNO 4.400

3370 NORMAL BRIDGE, NRD= 36 MIN ELTRD= 609.30 MAX ELLC= 608.50

4.400	8.18	613.68	.00	.00	613.80	.12	.09	.00	607.00
3065.0	2280.3	224.0	560.7	800.1	58.9	299.3	41.4	14.8	607.00
.10	2.85	3.80	1.87	.080	.040	.130	.000	605.50	711.61
.005528	15.	15.	15.	2	0	0	-140.45	419.52	1131.13

*SECNO 4.500

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.66

1

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST
4.500	8.62	613.62	.00	.00	613.88	.26	.02	.07	605.00
3065.0	1607.5	905.2	552.3	843.6	129.3	368.3	41.6	14.8	605.00
.10	1.91	7.00	1.50	.080	.040	.130	.000	605.00	711.88
.002006	5.	5.	5.	2	0	0	.00	417.75	1129.64

*SECNO 4.600

4.600	7.04	614.24	.00	.00	614.36	.12	.43	.04	620.00
3065.0	.0	3013.4	51.6	.0	1079.7	57.3	48.1	17.2	610.00
.12	.00	2.79	.90	.000	.040	.110	.000	607.20	651.38
.001753	230.	230.	230.	2	0	0	.00	485.88	1137.26

CCHV= .100 CEHV= .300
*SECNO 4.610

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = .54

4.610	6.12	614.72	.00	.00	615.00	.28	.59	.05	621.40
3065.0	.0	3023.0	42.0	.0	713.4	29.5	52.4	19.1	611.40
.14	.00	4.24	1.43	.000	.045	.110	.000	608.60	765.26
.006017	200.	200.	200.	2	0	0	.00	359.24	1124.50

1490 NH CARD USED
*SECNO 5.000

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

5.000	6.31	616.21	616.21	.00	617.38	1.16	1.57	.27	616.00
3065.0	347.9	2717.1	.0	120.7	297.3	.0	55.1	20.4	616.00
.14	2.88	9.14	.01	.060	.039	.120	.000	609.90	865.76
.010727	200.	200.	200.	20	8	0	.00	197.67	1063.43

*SECNO 6.100

6.100	7.27	619.47	618.69	.00	620.64	1.17	3.26	.00	618.00
3065.0	133.1	2867.0	64.9	97.3	320.2	35.1	58.6	22.1	616.00
.15	1.37	8.95	1.85	.080	.045	.120	.000	612.20	867.64
.008162	350.	350.	350.	4	8	0	.00	211.72	1079.35

1
31MAR08 08:34:29 PAGE 52

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

CCHV= .300 CEHV= .500
*SECNO 6.200

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.86

6.200	8.51	621.51	.00	.00	621.84	.32	.95	.25	614.80
3065.0	1022.4	1888.2	154.5	611.5	333.1	103.8	62.6	23.5	616.50
.17	1.67	5.67	1.49	.100	.045	.100	.000	613.00	761.86
.002366	220.	240.	255.	2	0	0	.00	331.70	1093.56

SPECIAL BRIDGE

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	.90	1.60	3.00	.00	48.60	.10	291.60	.00	615.10	615.10

*SECNO 6.300

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.67

PRESSURE AND WEIR FLOW, Weir Submergence Based on TRAPEZOIDAL Shape

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD	WEIRLN
624.26	622.83	.00	550.	2489.	292.	291.	621.10	622.30	335.

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 622.30 ELREA= 623.80

6.300	10.14	623.14	.00	.00	623.32	.19	1.49	.00	614.80
3065.0	1250.0	1815.0	.0	1073.6	412.0	.0	64.0	23.9	616.50
.17	1.16	4.41	.00	.100	.040	.000	.000	613.00	660.36
.000851	48.	48.	48.	2	0	2	.00	388.24	1048.60

*SECNO 6.400

3301 HV CHANGED MORE THAN HVINS

1
31MAR08 08:34:29 PAGE 53

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = .52

6.400	7.98	622.98	.00	.00	623.69	.72	.10	.27	616.00
3065.0	228.2	2733.5	103.3	111.6	381.3	58.6	65.9	24.4	616.00
.18	2.04	7.17	1.76	.080	.045	.120	.000	615.00	920.39
.003144	100.	62.	30.	2	0	0	.00	145.57	1065.95

CCHV= .100 CEHV= .300
*SECNO 7.000

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

7.000	6.25	626.75	626.75	.00	628.64	1.89	2.42	.35	624.00
3065.0	48.3	2894.4	122.2	33.0	255.2	49.9	70.2	25.8	624.00
.19	1.46	11.34	2.45	.120	.045	.100	.000	620.50	948.89
.013764	420.	420.	420.	20	16	0	.00	134.90	1083.79

*SECNO 8.100

8.100	6.61	630.41	630.00	.00	632.11	1.71	3.45	.02	625.00
3065.0	195.4	2738.3	131.3	84.5	247.4	119.6	72.9	27.1	626.00
.20	2.31	11.07	1.10	.150	.045	.150	.000	623.80	966.22
.009746	300.	300.	300.	4	5	0	.00	235.84	1202.05

CCHV= .300 CEHV= .500
*SECNO 8.200
3280 CROSS SECTION 8.20 EXTENDED .15 FEET

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.48

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 633.00 ELREA= 632.00

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST
8.200	8.95	632.75	.00	.00	633.60	.85	1.23	.26	629.00
3065.0	.0	2482.7	582.3	.0	302.1	447.0	75.6	28.1	629.00
.20	.00	8.22	1.30	.000	.045	.150	.000	623.80	1000.00
.004431	195.	195.	195.	2	0	0	.00	210.00	1210.00

SPECIAL BRIDGE

SB	XK	XKOR	COEQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	.90	1.60	2.80	.00	25.00	.10	278.80	.90	623.80	623.80

*SECNO 8.300
3280 CROSS SECTION 8.30 EXTENDED 1.06 FEET

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.41

PRESSURE AND WEIR FLOW, Weir Submergence Based on TRAPEZOIDAL Shape

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD	WEIRLN
635.75	633.61	.01	873.	2188.	279.	265.	632.00	632.60	218.

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 634.00 ELREA= 632.80

8.300	9.86	633.66	.00	.00	634.28	.61	.68	.00	629.00
3065.0	.0	2394.5	670.5	.0	337.8	603.7	76.2	28.2	629.00
.21	.00	7.09	1.11	.000	.040	.150	.000	623.80	1000.00
.002243	28.	28.	28.	4	0	2	.00	210.00	1210.00

*SECNO 8.400

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = .40

8.400	6.82	633.82	.00	.00	635.75	1.93	.82	.66	630.00
3065.0	29.6	2998.9	36.5	16.3	266.2	19.1	78.8	28.8	630.00
.21	1.82	11.27	1.91	.150	.050	.150	.000	627.00	990.52
.013733	153.	177.	197.	2	0	0	.00	64.96	1055.48

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

CCHV= .100 CEHV= .300
*SECNO 9.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

9.000	9.25	639.65	639.65	.00	641.90	2.25	3.82	.10	632.00
3065.0	81.6	2399.6	583.8	36.5	176.9	258.3	81.5	29.6	632.00
.22	2.23	13.56	2.26	.150	.050	.150	.000	630.40	990.44
.011824	300.	300.	300.	7	11	0	.00	173.68	1164.12

*SECNO 10.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.80

10.000	9.67	643.27	.00	.00	643.88	.61	1.81	.16	636.00
3065.0	1017.3	1990.2	57.5	647.8	258.2	59.2	86.4	31.0	636.00
.23	1.57	7.71	.97	.150	.050	.150	.000	633.60	837.04
.003661	300.	300.	300.	2	0	0	.00	234.58	1071.63

*SECNO 11.000

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

11.000	5.35	644.85	644.85	.00	646.42	1.57	2.03	.29	642.00
3065.0	6.9	2631.6	426.4	5.1	243.1	224.0	91.4	32.4	642.00
.24	1.36	10.83	1.90	.150	.050	.150	.000	639.50	996.44
.016417	300.	300.	300.	4	11	0	.00	177.82	1174.26

*SECNO 12.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.43

12.000	6.20	650.00	.00	.00	650.93	.93	4.45	.06	646.00
3065.0	487.9	2530.9	46.2	272.7	298.3	37.2	96.4	34.1	646.00
.26	1.79	8.49	1.24	.150	.050	.150	.000	643.80	897.95
.008030	400.	400.	400.	2	0	0	.00	181.36	1079.31

*SECNO 13.000

13.000	6.79	651.59	.00	.00	652.40	.81	1.45	.01	646.00
3065.0	1604.6	1459.1	1.3	571.4	144.9	1.6	98.3	34.6	650.00
.26	2.81	10.07	.81	.150	.050	.150	.000	644.80	836.16
.012657	100.	170.	170.	2	0	0	.00	190.83	1026.99

*SECNO 14.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = .67

14.000	5.78	655.28	655.25	.00	656.78	1.50	4.17	.20	650.70
3065.0	1483.6	1581.3	.1	413.4	119.6	.2	101.6	35.6	654.70
.27	3.59	13.22	.62	.150	.050	.150	.000	649.50	851.34
.028175	230.	230.	230.	5	15	0	.00	174.39	1025.72

THIS RUN EXECUTED 31MAR08 08:34:30

****
HEC-2 WATER SURFACE PROFILES

Version 4.6.2; May 1991
****

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

East Fork Trib-4 Floods

SUMMARY PRINTOUT

	SECNO	XLCH	CUMDS	ELMIN	CWSEL	ELTRD	ELLC
	1.000	.00	.00	594.50	602.19	.00	.00
	1.000	.00	.00	594.50	603.14	.00	.00
	1.000	.00	.00	594.50	601.15	.00	.00
	1.000	.00	.00	594.50	602.19	.00	.00
	1.000	.00	.00	594.50	602.91	.00	.00
*	2.000	600.00	600.00	598.60	603.15	.00	.00
*	2.000	600.00	600.00	598.60	604.01	.00	.00
*	2.000	600.00	600.00	598.60	601.72	.00	.00
*	2.000	600.00	600.00	598.60	602.96	.00	.00
*	2.000	600.00	600.00	598.60	603.71	.00	.00
*	3.100	500.00	1100.00	601.40	606.60	.00	.00
*	3.100	500.00	1100.00	601.40	607.61	.00	.00
*	3.100	500.00	1100.00	601.40	605.87	.00	.00
*	3.100	500.00	1100.00	601.40	606.42	.00	.00
*	3.100	500.00	1100.00	601.40	607.24	.00	.00
*	3.200	350.00	1450.00	603.70	609.23	.00	.00
*	3.200	350.00	1450.00	603.70	609.28	.00	.00
*	3.200	350.00	1450.00	603.70	607.62	.00	.00
*	3.200	350.00	1450.00	603.70	608.88	.00	.00
*	3.200	350.00	1450.00	603.70	610.05	.00	.00
*	3.300	12.00	1462.00	603.70	610.80	612.80	611.60
*	3.300	12.00	1462.00	603.70	610.86	999999.00	.00
*	3.300	12.00	1462.00	603.70	608.81	612.80	611.60
*	3.300	12.00	1462.00	603.70	610.29	612.80	611.60
*	3.300	12.00	1462.00	603.70	613.27	612.80	611.60

	SECNO	XLCH	CUMDS	ELMIN	CWSEL	ELTRD	ELLC
*	3.400	98.00	1560.00	604.60	612.60	.00	.00
*	3.400	98.00	1560.00	604.60	612.48	.00	.00
*	3.400	98.00	1560.00	604.60	609.86	.00	.00
*	3.400	98.00	1560.00	604.60	611.90	.00	.00
*	3.400	98.00	1560.00	604.60	613.24	.00	.00
*	4.200	45.00	1605.00	605.00	612.64	.00	.00
*	4.200	45.00	1605.00	605.00	612.45	.00	.00
*	4.200	45.00	1605.00	605.00	609.83	.00	.00
*	4.200	45.00	1605.00	605.00	611.92	.00	.00
*	4.200	45.00	1605.00	605.00	613.29	.00	.00
*	4.300	5.00	1610.00	605.50	612.89	609.30	608.50
*	4.300	5.00	1610.00	605.50	612.49	609.30	608.50
*	4.300	5.00	1610.00	605.50	611.07	609.30	608.50
*	4.300	5.00	1610.00	605.50	612.30	609.30	608.50
*	4.300	5.00	1610.00	605.50	613.58	609.30	608.50
	4.400	15.00	1625.00	605.50	613.01	609.30	608.50
*	4.400	15.00	1625.00	605.50	613.32	609.30	608.50
*	4.400	15.00	1625.00	605.50	611.91	609.30	608.50
	4.400	15.00	1625.00	605.50	612.53	609.30	608.50
	4.400	15.00	1625.00	605.50	613.68	609.30	608.50
*	4.500	5.00	1630.00	605.00	612.96	.00	.00
*	4.500	5.00	1630.00	605.00	613.30	.00	.00
*	4.500	5.00	1630.00	605.00	611.90	.00	.00
*	4.500	5.00	1630.00	605.00	612.49	.00	.00
*	4.500	5.00	1630.00	605.00	613.62	.00	.00
	4.600	230.00	1860.00	607.20	613.54	.00	.00
*	4.600	230.00	1860.00	607.20	614.23	.00	.00
	4.600	230.00	1860.00	607.20	612.32	.00	.00
	4.600	230.00	1860.00	607.20	613.16	.00	.00
	4.600	230.00	1860.00	607.20	614.24	.00	.00
*	4.610	200.00	2060.00	608.60	614.05	.00	.00
*	4.610	200.00	2060.00	608.60	614.50	.00	.00
*	4.610	200.00	2060.00	608.60	612.73	.00	.00
*	4.610	200.00	2060.00	608.60	613.71	.00	.00
*	4.610	200.00	2060.00	608.60	614.72	.00	.00
*	5.000	200.00	2260.00	609.90	615.43	.00	.00
*	5.000	200.00	2260.00	609.90	615.42	.00	.00

*	5.000	200.00	2260.00	609.90	613.72	.00	.00
*	5.000	200.00	2260.00	609.90	615.10	.00	.00
*	5.000	200.00	2260.00	609.90	616.21	.00	.00

1

	SECNO	XLCH	CUMDS	ELMIN	CWSEL	ELTRD	ELLC
	6.100	350.00	2610.00	612.20	618.82	.00	.00
	6.100	350.00	2610.00	612.20	618.92	.00	.00
*	6.100	350.00	2610.00	612.20	617.65	.00	.00
	6.100	350.00	2610.00	612.20	618.58	.00	.00
	6.100	350.00	2610.00	612.20	619.47	.00	.00
	6.200	240.00	2850.00	613.00	620.34	.00	.00
	6.200	240.00	2850.00	613.00	620.53	.00	.00
	6.200	240.00	2850.00	613.00	618.88	.00	.00
	6.200	240.00	2850.00	613.00	620.02	.00	.00
*	6.200	240.00	2850.00	613.00	621.51	.00	.00
	6.300	48.00	2898.00	613.00	620.95	622.30	621.10
*	6.300	48.00	2898.00	613.00	621.15	999999.00	.00
	6.300	48.00	2898.00	613.00	618.88	622.30	621.10
	6.300	48.00	2898.00	613.00	620.03	622.30	621.10
*	6.300	48.00	2898.00	613.00	623.14	622.30	621.10
	6.400	62.00	2960.00	615.00	621.35	.00	.00
	6.400	62.00	2960.00	615.00	621.54	.00	.00
	6.400	62.00	2960.00	615.00	619.16	.00	.00
	6.400	62.00	2960.00	615.00	620.45	.00	.00
*	6.400	62.00	2960.00	615.00	622.98	.00	.00
*	7.000	420.00	3380.00	620.50	625.61	.00	.00
*	7.000	420.00	3380.00	620.50	625.67	.00	.00
*	7.000	420.00	3380.00	620.50	624.27	.00	.00
*	7.000	420.00	3380.00	620.50	625.32	.00	.00
*	7.000	420.00	3380.00	620.50	626.75	.00	.00
*	8.100	300.00	3680.00	623.80	629.72	.00	.00
	8.100	300.00	3680.00	623.80	630.00	.00	.00
*	8.100	300.00	3680.00	623.80	628.29	.00	.00
*	8.100	300.00	3680.00	623.80	629.37	.00	.00
	8.100	300.00	3680.00	623.80	630.41	.00	.00
	8.200	195.00	3875.00	623.80	631.18	.00	.00
	8.200	195.00	3875.00	623.80	631.94	.00	.00
	8.200	195.00	3875.00	623.80	629.55	.00	.00
	8.200	195.00	3875.00	623.80	630.80	.00	.00
*	8.200	195.00	3875.00	623.80	632.75	.00	.00
	8.300	28.00	3903.00	623.80	631.56	632.60	632.00
	8.300	28.00	3903.00	623.80	632.32	999999.00	.00
	8.300	28.00	3903.00	623.80	629.56	632.60	632.00
	8.300	28.00	3903.00	623.80	630.82	632.60	632.00
*	8.300	28.00	3903.00	623.80	633.66	632.60	632.00

1

	SECNO	XLCH	CUMDS	ELMIN	CWSEL	ELTRD	ELLC
*	8.400	177.00	4080.00	627.00	632.73	.00	.00
*	8.400	177.00	4080.00	627.00	633.23	.00	.00
*	8.400	177.00	4080.00	627.00	630.89	.00	.00
*	8.400	177.00	4080.00	627.00	632.21	.00	.00
*	8.400	177.00	4080.00	627.00	633.82	.00	.00
*	9.000	300.00	4380.00	630.40	637.79	.00	.00
*	9.000	300.00	4380.00	630.40	637.79	.00	.00
	9.000	300.00	4380.00	630.40	636.02	.00	.00
*	9.000	300.00	4380.00	630.40	637.25	.00	.00
*	9.000	300.00	4380.00	630.40	639.65	.00	.00
*	10.000	300.00	4680.00	633.60	642.04	.00	.00
*	10.000	300.00	4680.00	633.60	642.69	.00	.00
*	10.000	300.00	4680.00	633.60	639.69	.00	.00
*	10.000	300.00	4680.00	633.60	641.53	.00	.00
*	10.000	300.00	4680.00	633.60	643.27	.00	.00
*	11.000	300.00	4980.00	639.50	644.13	.00	.00
*	11.000	300.00	4980.00	639.50	644.88	.00	.00
*	11.000	300.00	4980.00	639.50	642.69	.00	.00
*	11.000	300.00	4980.00	639.50	643.66	.00	.00
*	11.000	300.00	4980.00	639.50	644.85	.00	.00
*	12.000	400.00	5380.00	643.80	649.16	.00	.00
	12.000	400.00	5380.00	643.80	649.59	.00	.00
*	12.000	400.00	5380.00	643.80	648.04	.00	.00
*	12.000	400.00	5380.00	643.80	649.01	.00	.00
*	12.000	400.00	5380.00	643.80	650.00	.00	.00
	13.000	170.00	5550.00	644.80	650.70	.00	.00

	13.000	170.00	5550.00	644.80	651.31	.00	.00
*	13.000	170.00	5550.00	644.80	649.39	.00	.00
	13.000	170.00	5550.00	644.80	650.39	.00	.00
	13.000	170.00	5550.00	644.80	651.59	.00	.00
*	14.000	230.00	5780.00	649.50	654.59	.00	.00
	14.000	230.00	5780.00	649.50	655.59	.00	.00
*	14.000	230.00	5780.00	649.50	653.60	.00	.00
*	14.000	230.00	5780.00	649.50	654.36	.00	.00
*	14.000	230.00	5780.00	649.50	655.28	.00	.00

East Fork Trib-4 Floods

SUMMARY PRINTOUT TABLE 150

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
	1.000	.00	.00	.00	594.50	4845.00	602.19	.00	602.45	15.11	5.19	2132.99	1246.25
	1.000	.00	.00	.00	594.50	4845.00	603.14	.00	603.50	14.48	5.54	1474.40	1273.08
	1.000	.00	.00	.00	594.50	2754.00	601.15	.00	601.35	12.22	4.18	1367.26	787.98
	1.000	.00	.00	.00	594.50	4304.00	602.19	.00	602.40	11.93	4.61	2132.99	1246.25
	1.000	.00	.00	.00	594.50	6617.00	602.91	.00	603.20	16.14	5.73	2707.02	1646.96
*	2.000	600.00	.00	.00	598.60	2210.00	603.15	603.15	604.19	93.98	8.82	368.49	227.96
*	2.000	600.00	.00	.00	598.60	2211.00	604.01	.00	604.73	54.16	7.31	427.79	300.43
*	2.000	600.00	.00	.00	598.60	1213.00	601.72	601.72	602.98	176.49	9.03	137.45	91.31
*	2.000	600.00	.00	.00	598.60	1951.00	602.96	602.96	603.94	93.10	8.48	326.00	202.20
*	2.000	600.00	.00	.00	598.60	3065.00	603.71	603.71	604.89	96.87	9.79	500.76	311.42
*	3.100	500.00	.00	.00	601.40	2210.00	606.60	.00	606.71	31.26	3.70	940.37	395.28
*	3.100	500.00	.00	.00	601.40	2211.00	607.61	.00	607.77	39.76	4.10	793.17	350.66
*	3.100	500.00	.00	.00	601.40	1213.00	605.87	.00	605.96	27.97	3.13	628.30	229.37
*	3.100	500.00	.00	.00	601.40	1951.00	606.42	.00	606.52	31.00	3.59	864.14	350.42
*	3.100	500.00	.00	.00	601.40	3065.00	607.24	.00	607.36	27.91	3.81	1221.48	580.21
*	3.200	350.00	.00	.00	603.70	2210.00	609.23	609.23	611.77	190.59	12.80	172.62	160.08
*	3.200	350.00	.00	.00	603.70	2211.00	609.28	609.28	611.77	220.01	12.67	174.53	149.06
*	3.200	350.00	.00	.00	603.70	1213.00	607.62	607.62	609.32	207.65	10.47	115.83	84.18
*	3.200	350.00	.00	.00	603.70	1951.00	608.88	608.88	611.18	189.25	12.15	160.52	141.82
*	3.200	350.00	.00	.00	603.70	3065.00	610.05	610.05	610.89	80.38	9.23	744.67	341.86
*	3.300	12.00	612.80	611.60	603.70	2210.00	610.80	.00	612.25	74.65	9.66	228.67	255.78
*	3.300	12.00	999999.00	.00	603.70	2211.00	610.86	.00	612.29	91.34	9.59	230.58	231.34
*	3.300	12.00	612.80	611.60	603.70	1213.00	608.81	.00	609.73	77.35	7.68	157.86	137.93
*	3.300	12.00	612.80	611.60	603.70	1951.00	610.29	.00	611.62	76.78	9.27	210.41	222.65
*	3.300	12.00	612.80	611.60	603.70	3065.00	613.27	.00	613.34	4.92	3.08	2221.61	1382.07
*	3.400	98.00	.00	.00	604.60	2210.00	612.60	.00	612.84	10.32	4.61	1079.72	687.86
*	3.400	98.00	.00	.00	604.60	2211.00	612.48	.00	612.94	20.45	5.85	491.61	488.97
*	3.400	98.00	.00	.00	604.60	1213.00	609.86	.00	610.28	25.66	5.40	291.86	239.46
*	3.400	98.00	.00	.00	604.60	1951.00	611.90	.00	612.20	13.96	5.03	791.69	522.22
*	3.400	98.00	.00	.00	604.60	3065.00	613.24	.00	613.52	12.51	5.36	1344.98	866.54
*	4.200	45.00	.00	.00	605.00	2210.00	612.64	.00	612.94	23.34	6.96	945.37	457.42
*	4.200	45.00	.00	.00	605.00	2211.00	612.45	.00	613.24	46.68	9.69	491.66	323.62
*	4.200	45.00	.00	.00	605.00	1213.00	609.83	.00	610.68	79.83	9.49	263.63	135.76
*	4.200	45.00	.00	.00	605.00	1951.00	611.92	.00	612.37	34.70	7.95	677.82	331.19
*	4.200	45.00	.00	.00	605.00	3065.00	613.29	.00	613.63	26.18	7.78	1200.28	598.98
*	4.300	5.00	609.30	608.50	605.50	2210.00	612.89	.00	613.01	73.59	4.03	840.63	257.63
*	4.300	5.00	609.30	608.50	605.50	2211.00	612.49	.00	613.30	383.74	8.77	321.41	112.87
*	4.300	5.00	609.30	608.50	605.50	1213.00	611.07	611.07	611.60	567.17	8.68	243.72	50.93
*	4.300	5.00	609.30	608.50	605.50	1951.00	612.30	.00	612.48	141.35	5.19	610.53	164.10
*	4.300	5.00	609.30	608.50	605.50	3065.00	613.58	.00	613.71	61.25	3.96	1118.77	391.63

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
	4.400	15.00	609.30	608.50	605.50	2210.00	613.01	.00	613.12	63.32	3.79	885.26	277.73
*	4.400	15.00	609.30	608.50	605.50	2211.00	613.32	.00	613.77	164.56	6.32	428.07	172.36
*	4.400	15.00	609.30	608.50	605.50	1213.00	611.91	.00	612.03	107.71	4.31	469.48	116.88
	4.400	15.00	609.30	608.50	605.50	1951.00	612.53	.00	612.67	97.04	4.43	699.33	198.05
	4.400	15.00	609.30	608.50	605.50	3065.00	613.68	.00	613.80	55.28	3.80	1158.29	412.24
*	4.500	5.00	.00	.00	605.00	2210.00	612.96	.00	613.19	17.64	6.22	1073.20	526.20
*	4.500	5.00	.00	.00	605.00	2211.00	613.30	.00	613.85	29.26	8.24	580.30	408.73
*	4.500	5.00	.00	.00	605.00	1213.00	611.90	.00	612.07	13.72	4.99	669.08	327.47
*	4.500	5.00	.00	.00	605.00	1951.00	612.49	.00	612.75	20.80	6.48	887.19	427.76
*	4.500	5.00	.00	.00	605.00	3065.00	613.62	.00	613.88	20.06	7.00	1341.24	684.26
	4.600	230.00	.00	.00	607.20	2210.00	613.54	.00	613.65	19.86	2.76	825.78	495.96
*	4.600	230.00	.00	.00	607.20	2211.00	614.23	.00	614.37	10.21	2.98	743.07	691.82
	4.600	230.00	.00	.00	607.20	1213.00	612.32	.00	612.43	15.92	2.66	464.60	304.01
	4.600	230.00	.00	.00	607.20	1951.00	613.16	.00	613.29	22.36	2.90	690.63	412.56
	4.600	230.00	.00	.00	607.20	3065.00	614.24	.00	614.36	17.53	2.79	1136.98	732.04
*	4.610	200.00	.00	.00	608.60	2210.00	614.05	.00	614.32	55.86	4.18	539.59	295.68

*	4.610	200.00	.00	.00	608.60	2211.00	614.50	.00	614.76	37.14	4.10	538.76	362.78
*	4.610	200.00	.00	.00	608.60	1213.00	612.73	.00	612.96	42.54	3.90	313.59	185.98
*	4.610	200.00	.00	.00	608.60	1951.00	613.71	.00	613.99	52.36	4.31	461.15	269.62
*	4.610	200.00	.00	.00	608.60	3065.00	614.72	.00	615.00	60.17	4.24	742.84	395.13
*	5.000	200.00	.00	.00	609.90	2210.00	615.43	615.43	616.62	109.21	8.98	284.53	211.48
*	5.000	200.00	.00	.00	609.90	2211.00	615.42	615.42	616.63	110.49	9.03	282.71	210.34
*	5.000	200.00	.00	.00	609.90	1213.00	613.72	613.72	615.07	151.50	9.29	130.52	98.55
*	5.000	200.00	.00	.00	609.90	1951.00	615.10	615.10	616.32	113.04	9.01	240.21	183.51
*	5.000	200.00	.00	.00	609.90	3065.00	616.21	616.21	617.38	107.27	9.14	418.01	295.93
	6.100	350.00	.00	.00	612.20	2210.00	618.82	.00	619.70	71.01	7.65	334.29	262.25
	6.100	350.00	.00	.00	612.20	2211.00	618.92	.00	619.84	76.29	7.72	286.42	253.13
*	6.100	350.00	.00	.00	612.20	1213.00	617.65	.00	618.15	55.22	5.72	218.98	163.23
	6.100	350.00	.00	.00	612.20	1951.00	618.58	.00	619.37	67.14	7.18	301.20	238.11
	6.100	350.00	.00	.00	612.20	3065.00	619.47	618.69	620.64	81.62	8.95	452.63	339.27
	6.200	240.00	.00	.00	613.00	2210.00	620.34	.00	621.33	60.78	8.01	275.86	283.48
	6.200	240.00	.00	.00	613.00	2211.00	620.53	.00	621.47	60.29	7.75	285.26	284.74
	6.200	240.00	.00	.00	613.00	1213.00	618.88	.00	619.42	49.04	5.91	205.27	173.21
	6.200	240.00	.00	.00	613.00	1951.00	620.02	.00	620.89	57.22	7.49	260.65	257.92
*	6.200	240.00	.00	.00	613.00	3065.00	621.51	.00	621.84	23.66	5.67	1048.44	630.07
	6.300	48.00	622.30	621.10	613.00	2210.00	620.95	.00	621.76	34.05	7.23	305.82	378.71
*	6.300	48.00	999999.00	.00	613.00	2211.00	621.15	.00	621.91	34.61	7.01	315.38	375.82
	6.300	48.00	622.30	621.10	613.00	1213.00	618.88	.00	619.42	38.81	5.91	205.18	194.72
	6.300	48.00	622.30	621.10	613.00	1951.00	620.03	.00	620.90	45.06	7.48	260.91	290.64
*	6.300	48.00	622.30	621.10	613.00	3065.00	623.14	.00	623.32	8.51	4.41	1485.60	1050.91

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
	6.400	62.00	.00	.00	615.00	2210.00	621.35	.00	622.03	39.39	6.84	383.68	352.11
	6.400	62.00	.00	.00	615.00	2211.00	621.54	.00	622.17	35.29	6.61	399.05	372.19
	6.400	62.00	.00	.00	615.00	1213.00	619.16	.00	619.74	59.44	6.21	212.91	157.33
	6.400	62.00	.00	.00	615.00	1951.00	620.45	.00	621.23	55.18	7.27	310.23	262.65
*	6.400	62.00	.00	.00	615.00	3065.00	622.98	.00	623.69	31.44	7.17	551.56	546.67
*	7.000	420.00	.00	.00	620.50	2210.00	625.61	625.61	627.44	180.18	10.96	222.09	164.64
*	7.000	420.00	.00	.00	620.50	2211.00	625.67	625.67	627.44	170.42	10.77	226.84	169.37
*	7.000	420.00	.00	.00	620.50	1213.00	624.27	624.27	625.60	221.81	9.24	131.93	81.45
*	7.000	420.00	.00	.00	620.50	1951.00	625.32	625.32	627.01	182.59	10.49	199.94	144.38
*	7.000	420.00	.00	.00	620.50	3065.00	626.75	626.75	628.64	137.64	11.34	338.19	261.25
*	8.100	300.00	.00	.00	623.80	2210.00	629.72	.00	630.94	79.27	9.24	327.13	248.22
	8.100	300.00	.00	.00	623.80	2211.00	630.00	.00	631.42	104.45	9.56	231.36	216.34
*	8.100	300.00	.00	.00	623.80	1213.00	628.29	.00	629.02	67.31	7.01	207.78	147.85
*	8.100	300.00	.00	.00	623.80	1951.00	629.37	.00	630.48	77.63	8.77	293.85	221.43
	8.100	300.00	.00	.00	623.80	3065.00	630.41	630.00	632.11	97.46	11.07	451.50	310.47
	8.200	195.00	.00	.00	623.80	2210.00	631.18	.00	632.48	74.62	9.17	240.94	255.84
	8.200	195.00	.00	.00	623.80	2211.00	631.94	.00	632.98	55.23	8.16	271.07	297.51
	8.200	195.00	.00	.00	623.80	1213.00	629.55	.00	630.28	61.86	6.82	177.83	154.22
	8.200	195.00	.00	.00	623.80	1951.00	630.80	.00	631.96	71.50	8.62	226.46	230.73
*	8.200	195.00	.00	.00	623.80	3065.00	632.75	.00	633.60	44.31	8.22	749.06	460.43
	8.300	28.00	632.60	632.00	623.80	2210.00	631.56	.00	632.71	48.30	8.64	255.79	317.99
	8.300	28.00	999999.00	.00	623.80	2211.00	632.32	.00	633.25	37.07	7.74	285.61	363.14
	8.300	28.00	632.60	632.00	623.80	1213.00	629.56	.00	630.28	48.81	6.82	177.90	173.62
	8.300	28.00	632.60	632.00	623.80	1951.00	630.82	.00	631.97	56.17	8.60	226.85	260.32
*	8.300	28.00	632.60	632.00	623.80	3065.00	633.66	.00	634.28	22.43	7.09	941.52	647.11
*	8.400	177.00	.00	.00	627.00	2210.00	632.73	.00	634.29	144.32	10.07	233.97	183.96
*	8.400	177.00	.00	.00	627.00	2211.00	633.23	.00	634.56	126.72	9.23	239.44	196.41
*	8.400	177.00	.00	.00	627.00	1213.00	630.89	.00	632.16	221.17	9.04	135.72	81.56
*	8.400	177.00	.00	.00	627.00	1951.00	632.21	.00	633.75	165.74	10.01	204.53	151.55
*	8.400	177.00	.00	.00	627.00	3065.00	633.82	.00	635.75	137.33	11.27	301.63	261.55
*	9.000	300.00	.00	.00	630.40	2210.00	637.79	637.79	640.33	165.75	13.72	251.91	171.66
*	9.000	300.00	.00	.00	630.40	2211.00	637.79	637.79	640.36	231.43	13.74	224.75	145.34
	9.000	300.00	.00	.00	630.40	1213.00	636.02	.00	637.65	148.46	10.68	151.51	99.55
*	9.000	300.00	.00	.00	630.40	1951.00	637.25	637.25	639.72	174.66	13.36	216.44	147.63
*	9.000	300.00	.00	.00	630.40	3065.00	639.65	639.65	641.90	118.24	13.56	471.77	281.87
*	10.000	300.00	.00	.00	633.60	2210.00	642.04	.00	642.61	37.94	7.13	700.05	358.80
*	10.000	300.00	.00	.00	633.60	2211.00	642.69	.00	643.56	56.37	7.98	381.30	294.48
*	10.000	300.00	.00	.00	633.60	1213.00	639.69	.00	640.38	58.25	7.01	280.83	158.94
*	10.000	300.00	.00	.00	633.60	1951.00	641.53	.00	642.12	40.55	7.06	601.71	306.38
*	10.000	300.00	.00	.00	633.60	3065.00	643.27	.00	643.88	36.61	7.71	965.16	506.59

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
*	11.000	300.00	.00	.00	639.50	2210.00	644.13	644.13	645.48	165.22	9.76	345.40	171.93
*	11.000	300.00	.00	.00	639.50	2211.00	644.88	.00	646.15	131.05	9.04	244.57	193.14
*	11.000	300.00	.00	.00	639.50	1213.00	642.69	642.69	643.91	243.12	8.90	149.60	77.80
*	11.000	300.00	.00	.00	639.50	1951.00	643.66	643.66	645.15	205.61	10.05	268.21	136.06
*	11.000	300.00	.00	.00	639.50	3065.00	644.85	644.85	646.42	164.17	10.83	472.13	239.21

*	12.000	400.00	.00	.00	643.80	2210.00	649.16	.00	649.93	78.19	7.53	462.61	249.92
	12.000	400.00	.00	.00	643.80	2211.00	649.59	.00	650.58	93.79	8.00	276.32	228.30
*	12.000	400.00	.00	.00	643.80	1213.00	648.04	.00	648.52	65.49	5.79	289.85	149.89
*	12.000	400.00	.00	.00	643.80	1951.00	649.01	.00	649.67	69.27	6.94	437.08	234.42
*	12.000	400.00	.00	.00	643.80	3065.00	650.00	.00	650.93	80.30	8.49	608.19	342.04
	13.000	170.00	.00	.00	644.80	2210.00	650.70	.00	651.42	131.17	9.18	555.61	192.97
	13.000	170.00	.00	.00	644.80	2211.00	651.31	.00	652.68	174.44	11.08	332.49	167.41
*	13.000	170.00	.00	.00	644.80	1213.00	649.39	.00	649.99	143.10	7.91	338.92	101.40
	13.000	170.00	.00	.00	644.80	1951.00	650.39	.00	651.08	134.70	8.90	501.29	168.10
	13.000	170.00	.00	.00	644.80	3065.00	651.59	.00	652.40	126.57	10.07	717.96	272.43
*	14.000	230.00	.00	.00	649.50	2210.00	654.59	654.59	655.88	280.57	11.93	417.16	131.94
	14.000	230.00	.00	.00	649.50	2211.00	655.59	.00	656.95	197.44	11.30	345.51	157.35
*	14.000	230.00	.00	.00	649.50	1213.00	653.60	653.60	654.57	261.41	9.81	267.11	75.02
*	14.000	230.00	.00	.00	649.50	1951.00	654.36	654.36	655.57	276.59	11.45	380.22	117.31
*	14.000	230.00	.00	.00	649.50	3065.00	655.28	655.25	656.78	281.75	13.22	533.21	182.60

1

East Fork Trib-4 Floods

SUMMARY PRINTOUT TABLE 150

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
	1.000	4845.00	602.19	.00	.00	.00	787.94	.00
	1.000	4845.00	603.14	.95	.00	.95	310.00	.00
	1.000	2754.00	601.15	-1.99	.00	.00	672.60	.00
	1.000	4304.00	602.19	1.04	.00	.00	787.94	.00
	1.000	6617.00	602.91	.72	.00	.00	806.66	.00
*	2.000	2210.00	603.15	.00	.96	.00	221.58	600.00
*	2.000	2211.00	604.01	.86	.87	.86	185.00	600.00
*	2.000	1213.00	601.72	-2.29	.57	.00	57.89	600.00
*	2.000	1951.00	602.96	1.24	.77	.00	209.35	600.00
*	2.000	3065.00	603.71	.75	.80	.00	255.93	600.00
*	3.100	2210.00	606.60	.00	3.45	.00	436.60	500.00
*	3.100	2211.00	607.61	1.01	3.60	1.01	263.00	500.00
*	3.100	1213.00	605.87	-1.74	4.16	.00	413.51	500.00
*	3.100	1951.00	606.42	.54	3.46	.00	434.67	500.00
*	3.100	3065.00	607.24	.82	3.53	.00	443.63	500.00
*	3.200	2210.00	609.23	.00	2.63	.00	35.50	350.00
*	3.200	2211.00	609.28	.05	1.66	.05	35.50	350.00
*	3.200	1213.00	607.62	-1.66	1.74	.00	34.36	350.00
*	3.200	1951.00	608.88	1.27	2.47	.00	35.50	350.00
*	3.200	3065.00	610.05	1.17	2.81	.00	430.83	350.00
*	3.300	2210.00	610.80	.00	1.58	.00	35.50	12.00
*	3.300	2211.00	610.86	.05	1.58	.05	35.50	12.00
*	3.300	1213.00	608.81	-2.05	1.19	.00	35.50	12.00
*	3.300	1951.00	610.29	1.48	1.41	.00	35.50	12.00
*	3.300	3065.00	613.27	2.98	3.22	.00	487.21	12.00
*	3.400	2210.00	612.60	.00	1.80	.00	414.65	98.00
*	3.400	2211.00	612.48	-.12	1.62	-.12	89.30	98.00
*	3.400	1213.00	609.86	-2.63	1.05	.00	110.53	98.00
*	3.400	1951.00	611.90	2.04	1.61	.00	393.59	98.00
*	3.400	3065.00	613.24	1.34	-.04	.00	421.63	98.00
*	4.200	2210.00	612.64	.00	.03	.00	385.73	45.00
*	4.200	2211.00	612.45	-.18	-.03	-.18	105.00	45.00
*	4.200	1213.00	609.83	-2.62	-.02	.00	98.99	45.00
*	4.200	1951.00	611.92	2.09	.02	.00	347.93	45.00
*	4.200	3065.00	613.29	1.37	.05	.00	406.64	45.00
*	4.300	2210.00	612.89	.00	.25	.00	394.14	5.00
*	4.300	2211.00	612.49	-.40	.04	-.40	105.00	5.00
*	4.300	1213.00	611.07	-1.42	1.24	.00	212.82	5.00
*	4.300	1951.00	612.30	1.23	.38	.00	374.69	5.00
*	4.300	3065.00	613.58	1.28	.29	.00	416.44	5.00

1

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
	4.400	2210.00	613.01	.00	.12	.00	397.80	15.00
*	4.400	2211.00	613.32	.31	.82	.31	110.00	15.00
*	4.400	1213.00	611.91	-1.41	.84	.00	346.28	15.00
	4.400	1951.00	612.53	.62	.23	.00	382.31	15.00
	4.400	3065.00	613.68	1.15	.10	.00	419.52	15.00
*	4.500	2210.00	612.96	.00	-.04	.00	396.35	5.00
*	4.500	2211.00	613.30	.33	-.02	.33	105.00	5.00
*	4.500	1213.00	611.90	-1.40	-.01	.00	342.46	5.00
*	4.500	1951.00	612.49	.59	-.05	.00	380.79	5.00
*	4.500	3065.00	613.62	1.14	-.05	.00	417.75	5.00

	4.600	2210.00	613.54	.00	.57	.00	394.46	230.00
*	4.600	2211.00	614.23	.70	.94	.70	180.00	230.00
	4.600	1213.00	612.32	-1.91	.43	.00	200.04	230.00
	4.600	1951.00	613.16	.84	.68	.00	335.18	230.00
	4.600	3065.00	614.24	1.08	.61	.00	485.88	230.00
*	4.610	2210.00	614.05	.00	.52	.00	253.01	200.00
*	4.610	2211.00	614.50	.45	.26	.45	180.00	200.00
*	4.610	1213.00	612.73	-1.77	.40	.00	131.80	200.00
*	4.610	1951.00	613.71	.98	.54	.00	197.26	200.00
*	4.610	3065.00	614.72	1.01	.48	.00	359.24	200.00
*	5.000	2210.00	615.43	.00	1.37	.00	144.09	200.00
*	5.000	2211.00	615.42	-.01	.92	-.01	143.27	200.00
*	5.000	1213.00	613.72	-1.69	1.00	.00	49.65	200.00
*	5.000	1951.00	615.10	1.37	1.39	.00	122.66	200.00
*	5.000	3065.00	616.21	1.12	1.49	.00	197.67	200.00
	6.100	2210.00	618.82	.00	3.39	.00	149.47	350.00
	6.100	2211.00	618.92	.10	3.50	.10	60.00	350.00
*	6.100	1213.00	617.65	-1.27	3.92	.00	67.52	350.00
	6.100	1951.00	618.58	.93	3.48	.00	126.70	350.00
	6.100	3065.00	619.47	.89	3.26	.00	211.72	350.00
	6.200	2210.00	620.34	.00	1.52	.00	48.60	240.00
	6.200	2211.00	620.53	.20	1.62	.20	48.60	240.00
	6.200	1213.00	618.88	-1.65	1.23	.00	48.60	240.00
	6.200	1951.00	620.02	1.14	1.44	.00	48.60	240.00
*	6.200	3065.00	621.51	1.49	2.04	.00	331.70	240.00
	6.300	2210.00	620.95	.00	.62	.00	48.60	48.00
*	6.300	2211.00	621.15	.20	.62	.20	48.60	48.00
	6.300	1213.00	618.88	-2.27	.00	.00	48.60	48.00
	6.300	1951.00	620.03	1.15	.01	.00	48.60	48.00
*	6.300	3065.00	623.14	3.11	1.62	.00	388.24	48.00

SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
6.400	2210.00	621.35	.00	.40	.00	83.41	62.00
6.400	2211.00	621.54	.19	.39	.19	83.00	62.00
6.400	1213.00	619.16	-2.38	.27	.00	69.21	62.00
6.400	1951.00	620.45	1.30	.42	.00	79.81	62.00
* 6.400	3065.00	622.98	2.52	-.16	.00	145.57	62.00
* 7.000	2210.00	625.61	.00	4.26	.00	79.81	420.00
* 7.000	2211.00	625.67	.06	4.13	.06	78.00	420.00
* 7.000	1213.00	624.27	-1.40	5.12	.00	55.08	420.00
* 7.000	1951.00	625.32	1.05	4.87	.00	74.50	420.00
* 7.000	3065.00	626.75	1.43	3.78	.00	134.90	420.00
* 8.100	2210.00	629.72	.00	4.11	.00	100.37	300.00
8.100	2211.00	630.00	.28	4.33	.28	39.00	300.00
* 8.100	1213.00	628.29	-1.71	4.01	.00	66.81	300.00
* 8.100	1951.00	629.37	1.08	4.05	.00	92.25	300.00
8.100	3065.00	630.41	1.04	3.65	.00	235.84	300.00
8.200	2210.00	631.18	.00	1.46	.00	39.00	195.00
8.200	2211.00	631.94	.77	1.94	.77	39.00	195.00
8.200	1213.00	629.55	-2.39	1.27	.00	39.00	195.00
8.200	1951.00	630.80	1.25	1.43	.00	39.00	195.00
* 8.200	3065.00	632.75	1.94	2.34	.00	210.00	195.00
8.300	2210.00	631.56	.00	.38	.00	39.00	28.00
8.300	2211.00	632.32	.77	.38	.77	39.00	28.00
8.300	1213.00	629.56	-2.76	.01	.00	39.00	28.00
8.300	1951.00	630.82	1.25	.01	.00	39.00	28.00
* 8.300	3065.00	633.66	2.85	.92	.00	210.00	28.00
* 8.400	2210.00	632.73	.00	1.17	.00	58.38	177.00
* 8.400	2211.00	633.23	.50	.91	.50	45.00	177.00
* 8.400	1213.00	630.89	-2.34	1.33	.00	48.99	177.00
* 8.400	1951.00	632.21	1.32	1.39	.00	55.27	177.00
* 8.400	3065.00	633.82	1.61	.16	.00	64.96	177.00
* 9.000	2210.00	637.79	.00	5.06	.00	71.02	300.00
* 9.000	2211.00	637.79	.00	4.56	.00	50.00	300.00
9.000	1213.00	636.02	-1.77	5.13	.00	42.20	300.00
* 9.000	1951.00	637.25	1.24	5.05	.00	62.38	300.00
* 9.000	3065.00	639.65	2.39	5.83	.00	173.68	300.00
* 10.000	2210.00	642.04	.00	4.25	.00	197.12	300.00
* 10.000	2211.00	642.69	.65	4.90	.65	56.10	300.00
* 10.000	1213.00	639.69	-3.00	3.67	.00	147.21	300.00
* 10.000	1951.00	641.53	1.84	4.27	.00	189.14	300.00
* 10.000	3065.00	643.27	1.74	3.62	.00	234.58	300.00

SECNO Q CWSEL DIFWSP DIFWSX DIFKWS TOPWID XLCH

*	11.000	2210.00	644.13	.00	2.09	.00	173.31	300.00
*	11.000	2211.00	644.88	.75	2.19	.75	50.00	300.00
*	11.000	1213.00	642.69	-2.19	3.00	.00	92.28	300.00
*	11.000	1951.00	643.66	.97	2.14	.00	151.80	300.00
*	11.000	3065.00	644.85	1.19	1.59	.00	177.82	300.00
*	12.000	2210.00	649.16	.00	5.03	.00	164.72	400.00
	12.000	2211.00	649.59	.42	4.71	.42	52.00	400.00
*	12.000	1213.00	648.04	-1.55	5.35	.00	142.82	400.00
*	12.000	1951.00	649.01	.97	5.35	.00	161.67	400.00
*	12.000	3065.00	650.00	.99	5.15	.00	181.36	400.00
	13.000	2210.00	650.70	.00	1.54	.00	176.46	170.00
	13.000	2211.00	651.31	.60	1.72	.60	64.84	170.00
*	13.000	1213.00	649.39	-1.91	1.36	.00	151.30	170.00
	13.000	1951.00	650.39	1.00	1.38	.00	171.39	170.00
	13.000	3065.00	651.59	1.20	1.58	.00	190.83	170.00
*	14.000	2210.00	654.59	.00	3.89	.00	162.52	230.00
	14.000	2211.00	655.59	1.00	4.29	1.00	75.00	230.00
*	14.000	1213.00	653.60	-1.99	4.21	.00	140.22	230.00
*	14.000	1951.00	654.36	.76	3.97	.00	157.32	230.00
*	14.000	3065.00	655.28	.92	3.70	.00	174.39	230.00

SUMMARY OF ERRORS AND SPECIAL NOTES

CAUTION	SECNO=	2.000	PROFILE= 1	CRITICAL DEPTH ASSUMED
CAUTION	SECNO=	2.000	PROFILE= 1	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION	SECNO=	2.000	PROFILE= 1	20 TRIALS ATTEMPTED TO BALANCE WSEL
WARNING	SECNO=	2.000	PROFILE= 2	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
CAUTION	SECNO=	2.000	PROFILE= 3	CRITICAL DEPTH ASSUMED
CAUTION	SECNO=	2.000	PROFILE= 3	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION	SECNO=	2.000	PROFILE= 3	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION	SECNO=	2.000	PROFILE= 4	CRITICAL DEPTH ASSUMED
CAUTION	SECNO=	2.000	PROFILE= 4	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION	SECNO=	2.000	PROFILE= 4	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION	SECNO=	2.000	PROFILE= 5	CRITICAL DEPTH ASSUMED
CAUTION	SECNO=	2.000	PROFILE= 5	MINIMUM SPECIFIC ENERGY
NOTE	SECNO=	3.100	PROFILE= 1	WSEL BASED ON X5 CARD
WARNING	SECNO=	3.100	PROFILE= 1	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
NOTE	SECNO=	3.100	PROFILE= 2	WSEL BASED ON X5 CARD
WARNING	SECNO=	3.100	PROFILE= 3	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING	SECNO=	3.100	PROFILE= 4	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING	SECNO=	3.100	PROFILE= 5	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
CAUTION	SECNO=	3.200	PROFILE= 1	CRITICAL DEPTH ASSUMED
CAUTION	SECNO=	3.200	PROFILE= 1	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION	SECNO=	3.200	PROFILE= 1	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION	SECNO=	3.200	PROFILE= 2	CRITICAL DEPTH ASSUMED
CAUTION	SECNO=	3.200	PROFILE= 2	MINIMUM SPECIFIC ENERGY
CAUTION	SECNO=	3.200	PROFILE= 3	CRITICAL DEPTH ASSUMED
CAUTION	SECNO=	3.200	PROFILE= 3	MINIMUM SPECIFIC ENERGY
CAUTION	SECNO=	3.200	PROFILE= 4	CRITICAL DEPTH ASSUMED
CAUTION	SECNO=	3.200	PROFILE= 4	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION	SECNO=	3.200	PROFILE= 4	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION	SECNO=	3.200	PROFILE= 5	CRITICAL DEPTH ASSUMED
CAUTION	SECNO=	3.200	PROFILE= 5	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION	SECNO=	3.200	PROFILE= 5	20 TRIALS ATTEMPTED TO BALANCE WSEL
WARNING	SECNO=	3.300	PROFILE= 1	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING	SECNO=	3.300	PROFILE= 2	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING	SECNO=	3.300	PROFILE= 3	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING	SECNO=	3.300	PROFILE= 4	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING	SECNO=	3.300	PROFILE= 5	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING	SECNO=	3.400	PROFILE= 1	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING	SECNO=	3.400	PROFILE= 2	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING	SECNO=	3.400	PROFILE= 3	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING	SECNO=	3.400	PROFILE= 4	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING	SECNO=	3.400	PROFILE= 5	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING	SECNO=	4.200	PROFILE= 1	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING	SECNO=	4.200	PROFILE= 2	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING	SECNO=	4.200	PROFILE= 3	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING	SECNO=	4.200	PROFILE= 4	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING	SECNO=	4.200	PROFILE= 5	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING	SECNO=	4.300	PROFILE= 1	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING	SECNO=	4.300	PROFILE= 2	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
CAUTION	SECNO=	4.300	PROFILE= 3	CRITICAL DEPTH ASSUMED
CAUTION	SECNO=	4.300	PROFILE= 3	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION	SECNO=	4.300	PROFILE= 3	20 TRIALS ATTEMPTED TO BALANCE WSEL

```
 WARNING SECNO=      4.300  PROFILE=  4  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
 WARNING SECNO=      4.300  PROFILE=  5  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

 WARNING SECNO=      4.400  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
 WARNING SECNO=      4.400  PROFILE=  3  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

 WARNING SECNO=      4.500  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
 WARNING SECNO=      4.500  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
 WARNING SECNO=      4.500  PROFILE=  3  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
 WARNING SECNO=      4.500  PROFILE=  4  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
 WARNING SECNO=      4.500  PROFILE=  5  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

 NOTE    SECNO=      4.600  PROFILE=  2  WSEL BASED ON X5 CARD
 WARNING SECNO=      4.600  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

 WARNING SECNO=      4.610  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
 WARNING SECNO=      4.610  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
 WARNING SECNO=      4.610  PROFILE=  3  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
 WARNING SECNO=      4.610  PROFILE=  4  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
 WARNING SECNO=      4.610  PROFILE=  5  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

 CAUTION SECNO=      5.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
 CAUTION SECNO=      5.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY
 CAUTION SECNO=      5.000  PROFILE=  2  CRITICAL DEPTH ASSUMED
 CAUTION SECNO=      5.000  PROFILE=  2  PROBABLE MINIMUM SPECIFIC ENERGY
 CAUTION SECNO=      5.000  PROFILE=  2  20 TRIALS ATTEMPTED TO BALANCE WSEL
 CAUTION SECNO=      5.000  PROFILE=  3  CRITICAL DEPTH ASSUMED
 CAUTION SECNO=      5.000  PROFILE=  3  MINIMUM SPECIFIC ENERGY
 CAUTION SECNO=      5.000  PROFILE=  4  CRITICAL DEPTH ASSUMED
 CAUTION SECNO=      5.000  PROFILE=  4  MINIMUM SPECIFIC ENERGY
 CAUTION SECNO=      5.000  PROFILE=  5  CRITICAL DEPTH ASSUMED
 CAUTION SECNO=      5.000  PROFILE=  5  PROBABLE MINIMUM SPECIFIC ENERGY
 CAUTION SECNO=      5.000  PROFILE=  5  20 TRIALS ATTEMPTED TO BALANCE WSEL

 WARNING SECNO=      6.100  PROFILE=  3  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

 WARNING SECNO=      6.200  PROFILE=  5  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

 CAUTION SECNO=      6.300  PROFILE=  2  MINIMUM SPECIFIC ENERGY
 WARNING SECNO=      6.300  PROFILE=  5  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

 WARNING SECNO=      6.400  PROFILE=  5  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

 CAUTION SECNO=      7.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
 CAUTION SECNO=      7.000  PROFILE=  1  PROBABLE MINIMUM SPECIFIC ENERGY
 CAUTION SECNO=      7.000  PROFILE=  1  20 TRIALS ATTEMPTED TO BALANCE WSEL
 CAUTION SECNO=      7.000  PROFILE=  2  CRITICAL DEPTH ASSUMED
 CAUTION SECNO=      7.000  PROFILE=  2  PROBABLE MINIMUM SPECIFIC ENERGY
1
    31MAR08      08:34:29                                                    PAGE   71

 CAUTION SECNO=      7.000  PROFILE=  2  20 TRIALS ATTEMPTED TO BALANCE WSEL
 CAUTION SECNO=      7.000  PROFILE=  3  CRITICAL DEPTH ASSUMED
 CAUTION SECNO=      7.000  PROFILE=  3  MINIMUM SPECIFIC ENERGY
 CAUTION SECNO=      7.000  PROFILE=  4  CRITICAL DEPTH ASSUMED
 CAUTION SECNO=      7.000  PROFILE=  4  PROBABLE MINIMUM SPECIFIC ENERGY
 CAUTION SECNO=      7.000  PROFILE=  4  20 TRIALS ATTEMPTED TO BALANCE WSEL
 CAUTION SECNO=      7.000  PROFILE=  5  CRITICAL DEPTH ASSUMED
 CAUTION SECNO=      7.000  PROFILE=  5  PROBABLE MINIMUM SPECIFIC ENERGY
 CAUTION SECNO=      7.000  PROFILE=  5  20 TRIALS ATTEMPTED TO BALANCE WSEL

 WARNING SECNO=      8.100  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
 WARNING SECNO=      8.100  PROFILE=  3  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
 WARNING SECNO=      8.100  PROFILE=  4  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

 WARNING SECNO=      8.200  PROFILE=  5  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

 WARNING SECNO=      8.300  PROFILE=  5  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

 WARNING SECNO=      8.400  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
 WARNING SECNO=      8.400  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
 WARNING SECNO=      8.400  PROFILE=  3  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
 WARNING SECNO=      8.400  PROFILE=  4  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
 WARNING SECNO=      8.400  PROFILE=  5  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

 CAUTION SECNO=      9.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
 CAUTION SECNO=      9.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY
 CAUTION SECNO=      9.000  PROFILE=  2  CRITICAL DEPTH ASSUMED
 CAUTION SECNO=      9.000  PROFILE=  2  MINIMUM SPECIFIC ENERGY
 CAUTION SECNO=      9.000  PROFILE=  4  CRITICAL DEPTH ASSUMED
 CAUTION SECNO=      9.000  PROFILE=  4  MINIMUM SPECIFIC ENERGY
 CAUTION SECNO=      9.000  PROFILE=  5  CRITICAL DEPTH ASSUMED
 CAUTION SECNO=      9.000  PROFILE=  5  MINIMUM SPECIFIC ENERGY

 WARNING SECNO=     10.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
 WARNING SECNO=     10.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
 WARNING SECNO=     10.000  PROFILE=  3  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
 WARNING SECNO=     10.000  PROFILE=  4  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
 WARNING SECNO=     10.000  PROFILE=  5  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

 CAUTION SECNO=     11.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
 CAUTION SECNO=     11.000  PROFILE=  1  MINIMUM SPECIFIC ENERGY
 WARNING SECNO=     11.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
 CAUTION SECNO=     11.000  PROFILE=  3  CRITICAL DEPTH ASSUMED
```

CAUTION SECNO= 11.000 PROFILE= 3 MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 11.000 PROFILE= 4 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 11.000 PROFILE= 4 MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 11.000 PROFILE= 5 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 11.000 PROFILE= 5 MINIMUM SPECIFIC ENERGY

WARNING SECNO= 12.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO= 12.000 PROFILE= 3 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO= 12.000 PROFILE= 4 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO= 12.000 PROFILE= 5 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO= 13.000 PROFILE= 3 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO= 14.000 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 14.000 PROFILE= 1 MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 14.000 PROFILE= 3 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 14.000 PROFILE= 3 MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 14.000 PROFILE= 4 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 14.000 PROFILE= 4 MINIMUM SPECIFIC ENERGY
WARNING SECNO= 14.000 PROFILE= 5 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

FLOODWAY DATA, East Fork Trib-4 Floods
PROFILE NO. 2

STATION	FLOODWAY WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WITHOUT FLOODWAY	DIFFERENCE
1.000	310.	1474.	3.3	603.2	602.2	1.0
2.000	185.	428.	5.2	604.1	603.2	.9
3.100	263.	793.	2.8	607.6	606.6	1.0
3.200	36.	175.	12.7	609.3	609.2	.1
3.300	36.	231.	9.6	610.9	610.8	.1
3.400	89.	492.	4.5	612.5	612.6	-.1
4.200	105.	492.	4.5	612.4	612.6	-.2
4.300	105.	321.	6.9	612.5	612.9	-.4
4.400	110.	428.	5.2	613.3	613.0	.3
4.500	105.	580.	3.8	613.3	613.0	.3
4.600	180.	743.	3.0	614.2	613.5	.7
4.610	180.	539.	4.1	614.5	614.1	.4
5.000	169.	283.	7.8	615.4	615.4	.0
6.100	60.	286.	7.7	618.9	618.8	.1
6.200	49.	285.	7.8	620.5	620.3	.2
6.300	49.	315.	7.0	621.2	621.0	.2
6.400	83.	399.	5.5	621.6	621.4	.2
7.000	78.	227.	9.7	625.7	625.6	.1
8.100	39.	231.	9.6	630.0	629.7	.3
8.200	39.	271.	8.2	632.0	631.2	.8
8.300	39.	286.	7.7	632.4	631.6	.8
8.400	45.	239.	9.2	633.2	632.7	.5
9.000	50.	225.	9.8	637.8	637.8	.0
10.000	56.	381.	5.8	642.7	642.0	.7
11.000	50.	245.	9.0	644.9	644.1	.8
12.000	52.	276.	8.0	649.6	649.2	.4
13.000	65.	332.	6.6	651.3	650.7	.6
14.000	75.	346.	6.4	655.6	654.6	1.0

FLOODWAY DATA, East Fork Trib-4 Floods
PROFILE NO. 3

STATION	FLOODWAY WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WITHOUT FLOODWAY	DIFFERENCE
1.000	682.	1367.	2.0	601.2	602.2	-1.0
2.000	58.	137.	8.8	601.7	603.2	-1.5
3.100	429.	628.	1.9	605.9	606.6	-.7
3.200	34.	116.	10.5	607.6	609.2	-1.6
3.300	36.	158.	7.7	608.8	610.8	-2.0
3.400	111.	292.	4.2	609.9	612.6	-2.7
4.200	99.	264.	4.6	609.8	612.6	-2.8
4.300	213.	244.	5.0	611.1	612.9	-1.8
4.400	346.	469.	2.6	611.9	613.0	-1.1
4.500	342.	669.	1.8	611.9	613.0	-1.1
4.600	200.	465.	2.6	612.3	613.5	-1.2
4.610	132.	314.	3.9	612.7	614.1	-1.4
5.000	50.	131.	9.3	613.7	615.4	-1.7
6.100	68.	219.	5.5	617.6	618.8	-1.2

6.200	49.	205.	5.9	618.9	620.3	-1.4
6.300	49.	205.	5.9	618.9	621.0	-2.1
6.400	69.	213.	5.7	619.2	621.4	-2.2
7.000	55.	132.	9.2	624.3	625.6	-1.3
8.100	67.	208.	5.8	628.3	629.7	-1.4
8.200	39.	178.	6.8	629.6	631.2	-1.6
8.300	39.	178.	6.8	629.6	631.6	-2.0
8.400	49.	136.	8.9	630.9	632.7	-1.8
9.000	42.	152.	8.0	636.0	637.8	-1.8
10.000	147.	281.	4.3	639.7	642.0	-2.3
11.000	92.	150.	8.1	642.7	644.1	-1.4
12.000	143.	290.	4.2	648.0	649.2	-1.2
13.000	151.	339.	3.6	649.4	650.7	-1.3
14.000	140.	267.	4.5	653.6	654.6	-1.0

1

FLOODWAY DATA, East Fork Trib-4 Floods
PROFILE NO. 4

STATION	FLOODWAY WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WITHOUT FLOODWAY	DIFFERENCE
1.000	788.	2133.	2.0	602.2	602.2	.0
2.000	258.	326.	6.0	603.0	603.2	-.2
3.100	435.	864.	2.3	606.4	606.6	-.2
3.200	36.	161.	12.2	608.9	609.2	-.3
3.300	36.	210.	9.3	610.3	610.8	-.5
3.400	394.	792.	2.5	611.9	612.6	-.7
4.200	348.	678.	2.9	611.9	612.6	-.7
4.300	375.	611.	3.2	612.3	612.9	-.6
4.400	382.	699.	2.8	612.5	613.0	-.5
4.500	381.	887.	2.2	612.5	613.0	-.5
4.600	335.	691.	2.8	613.2	613.5	-.3
4.610	197.	461.	4.2	613.7	614.1	-.4
5.000	162.	240.	8.1	615.1	615.4	-.3
6.100	127.	301.	6.5	618.6	618.8	-.2
6.200	49.	261.	7.5	620.0	620.3	-.3
6.300	49.	261.	7.5	620.0	621.0	-1.0
6.400	80.	310.	6.3	620.5	621.4	-.9
7.000	74.	200.	9.8	625.3	625.6	-.3
8.100	92.	294.	6.6	629.4	629.7	-.3
8.200	39.	226.	8.6	630.8	631.2	-.4
8.300	39.	227.	8.6	630.8	631.6	-.8
8.400	55.	205.	9.5	632.2	632.7	-.5
9.000	62.	216.	9.0	637.3	637.8	-.5
10.000	189.	602.	3.2	641.5	642.0	-.5
11.000	152.	268.	7.3	643.7	644.1	-.4
12.000	162.	437.	4.5	649.0	649.2	-.2
13.000	171.	501.	3.9	650.4	650.7	-.3
14.000	157.	380.	5.1	654.4	654.6	-.2

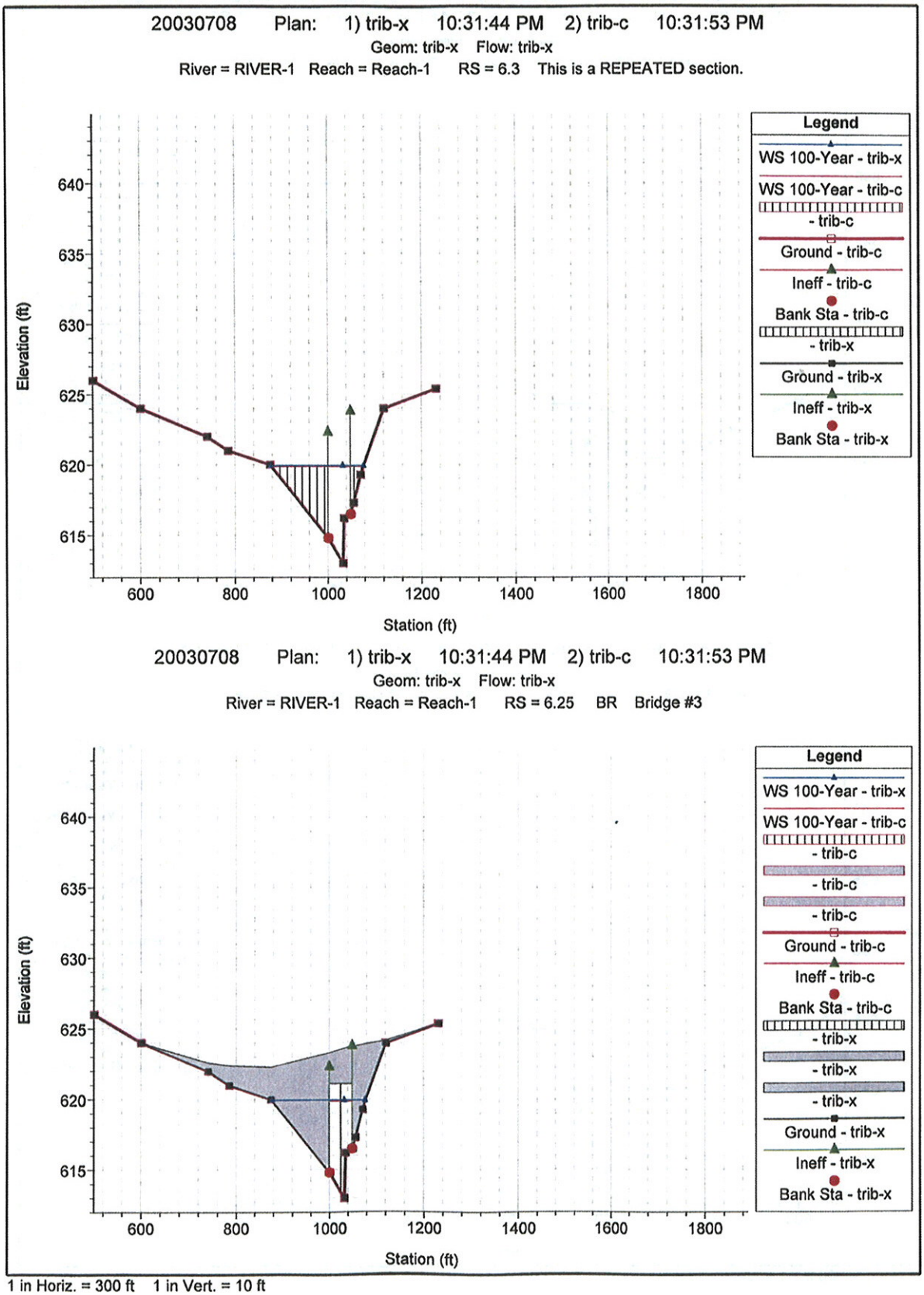
1

FLOODWAY DATA, East Fork Trib-4 Floods
PROFILE NO. 5

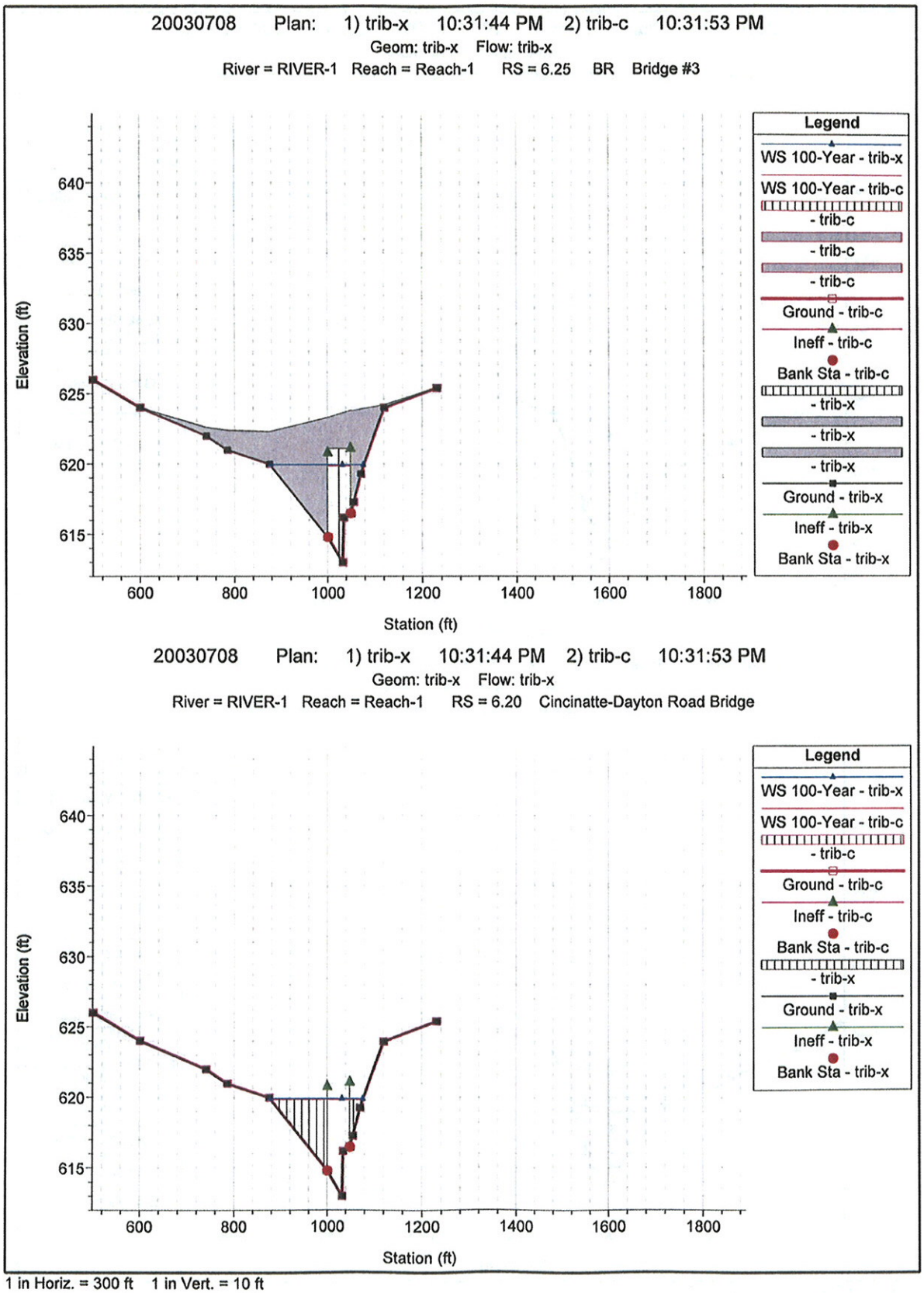
STATION	FLOODWAY WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WITHOUT FLOODWAY	DIFFERENCE
1.000	807.	2707.	2.4	602.9	602.2	.7
2.000	275.	501.	6.1	603.7	603.2	.5
3.100	444.	1221.	2.5	607.2	606.6	.6
3.200	431.	745.	4.1	610.1	609.2	.9
3.300	487.	2222.	1.4	613.3	610.8	2.5
3.400	422.	1345.	2.3	613.2	612.6	.6
4.200	407.	1200.	2.6	613.3	612.6	.7
4.300	416.	1119.	2.7	613.6	612.9	.7
4.400	420.	1158.	2.6	613.7	613.0	.7
4.500	418.	1341.	2.3	613.6	613.0	.6
4.600	486.	1137.	2.7	614.2	613.5	.7
4.610	359.	743.	4.1	614.7	614.1	.6
5.000	198.	418.	7.3	616.2	615.4	.8
6.100	212.	453.	6.8	619.5	618.8	.7
6.200	332.	1048.	2.9	621.5	620.3	1.2
6.300	388.	1486.	2.1	623.1	621.0	2.1
6.400	146.	552.	5.6	623.0	621.4	1.6
7.000	135.	338.	9.1	626.8	625.6	1.2
8.100	236.	452.	6.8	630.4	629.7	.7
8.200	210.	749.	4.1	632.7	631.2	1.5
8.300	210.	942.	3.3	633.7	631.6	2.1
8.400	65.	302.	10.2	633.8	632.7	1.1
9.000	174.	472.	6.5	639.6	637.8	1.8
10.000	235.	965.	3.2	643.3	642.0	1.3
11.000	178.	472.	6.5	644.9	644.1	.8

12.000	181.	608.	5.0	650.0	649.2	.8
13.000	191.	718.	4.3	651.6	650.7	.9
14.000	174.	533.	5.7	655.3	654.6	.7

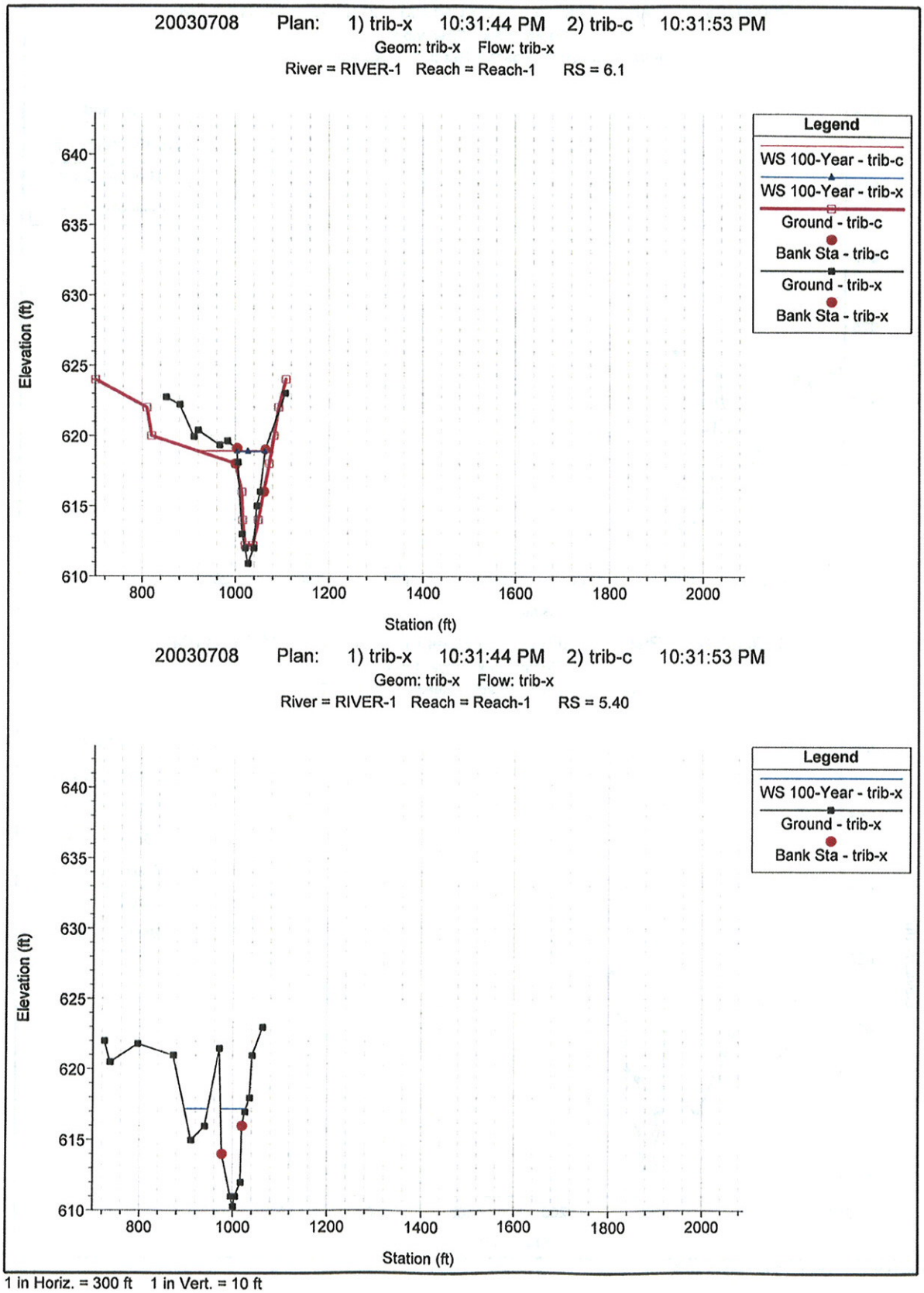
(BLANK PAGE)



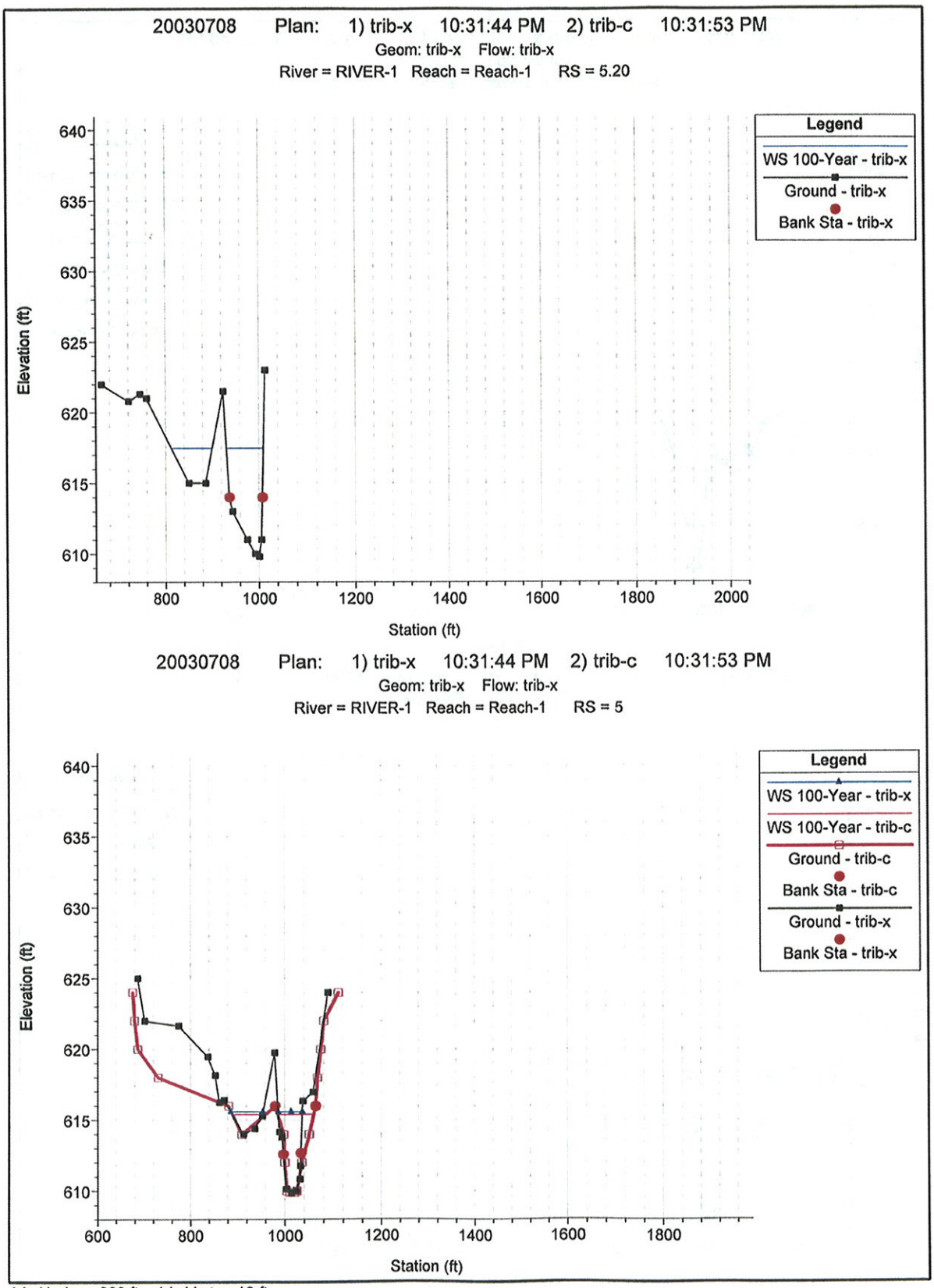
1 in Horiz. = 300 ft 1 in Vert. = 10 ft



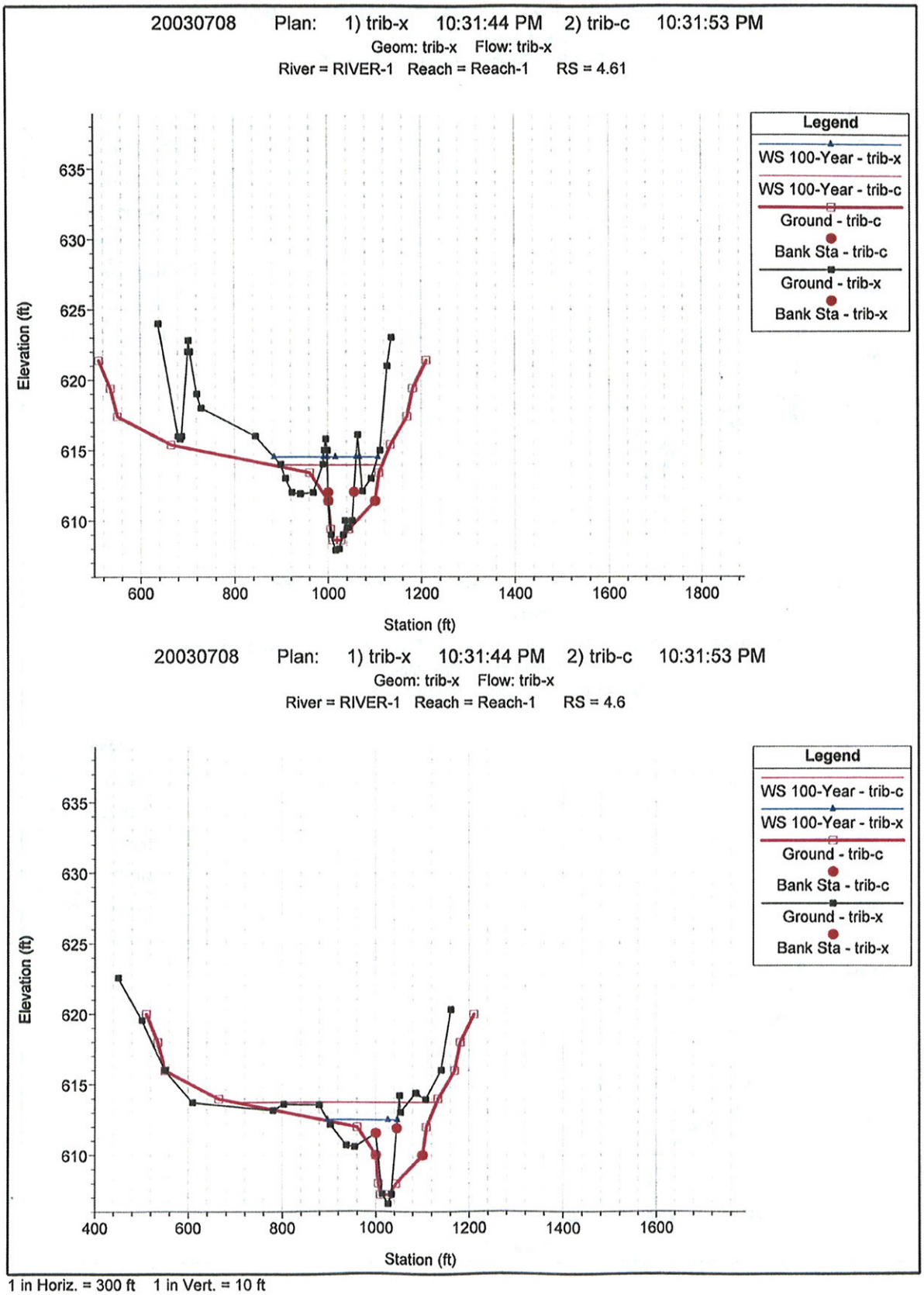
1 in Horiz. = 300 ft 1 in Vert. = 10 ft



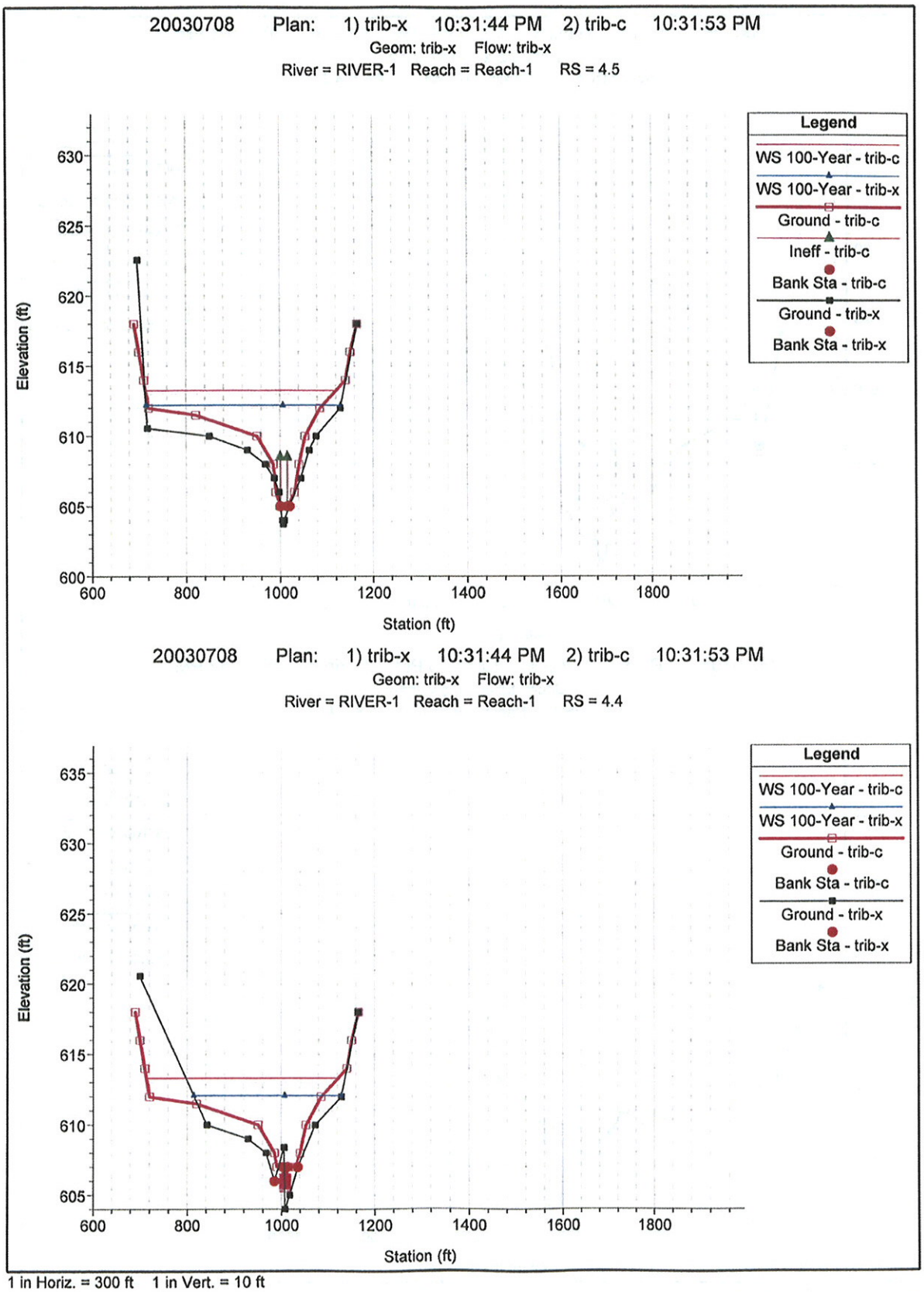
1 in Horiz. = 300 ft 1 in Vert. = 10 ft



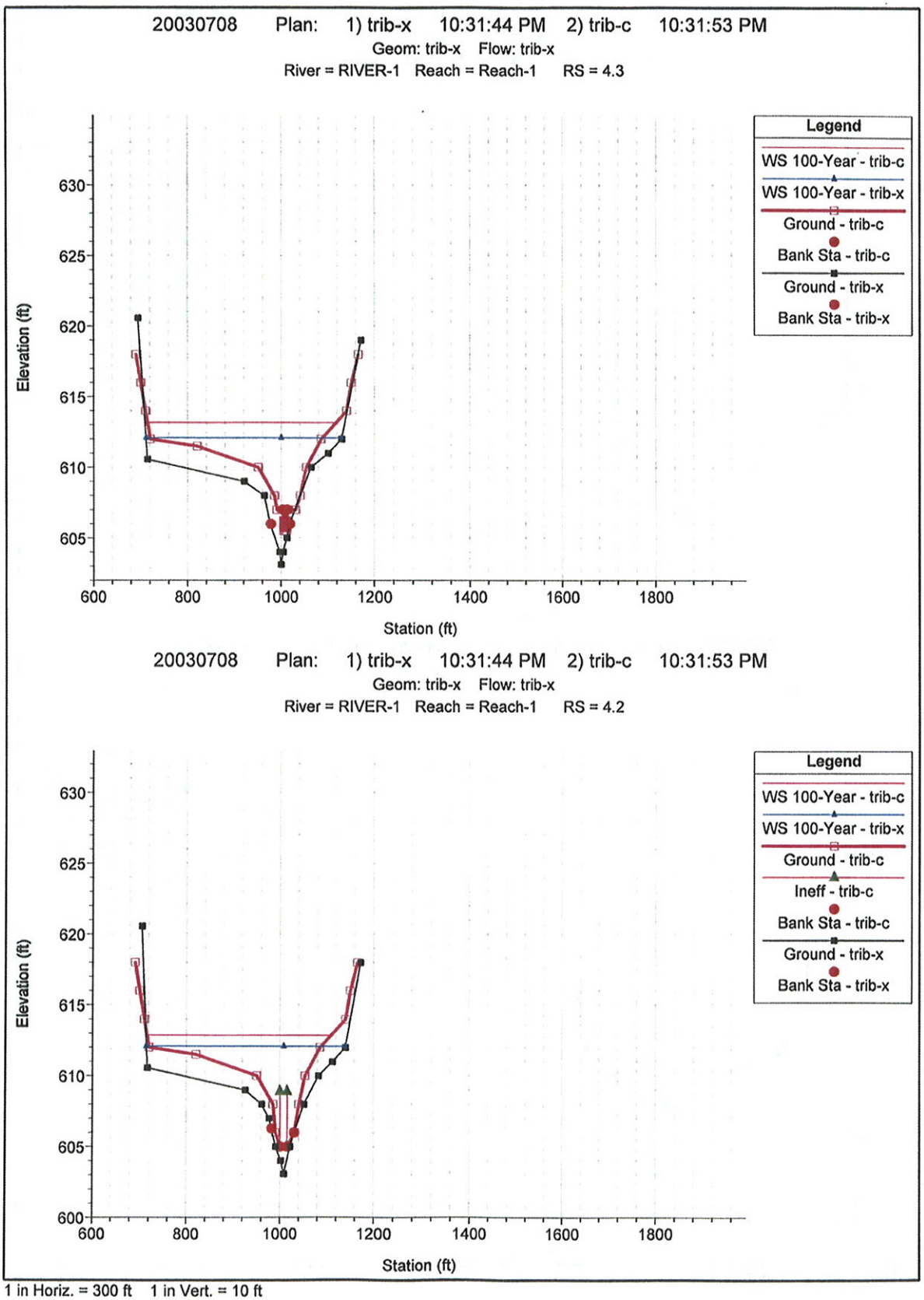
1 in Horiz. = 300 ft 1 in Vert. = 10 ft



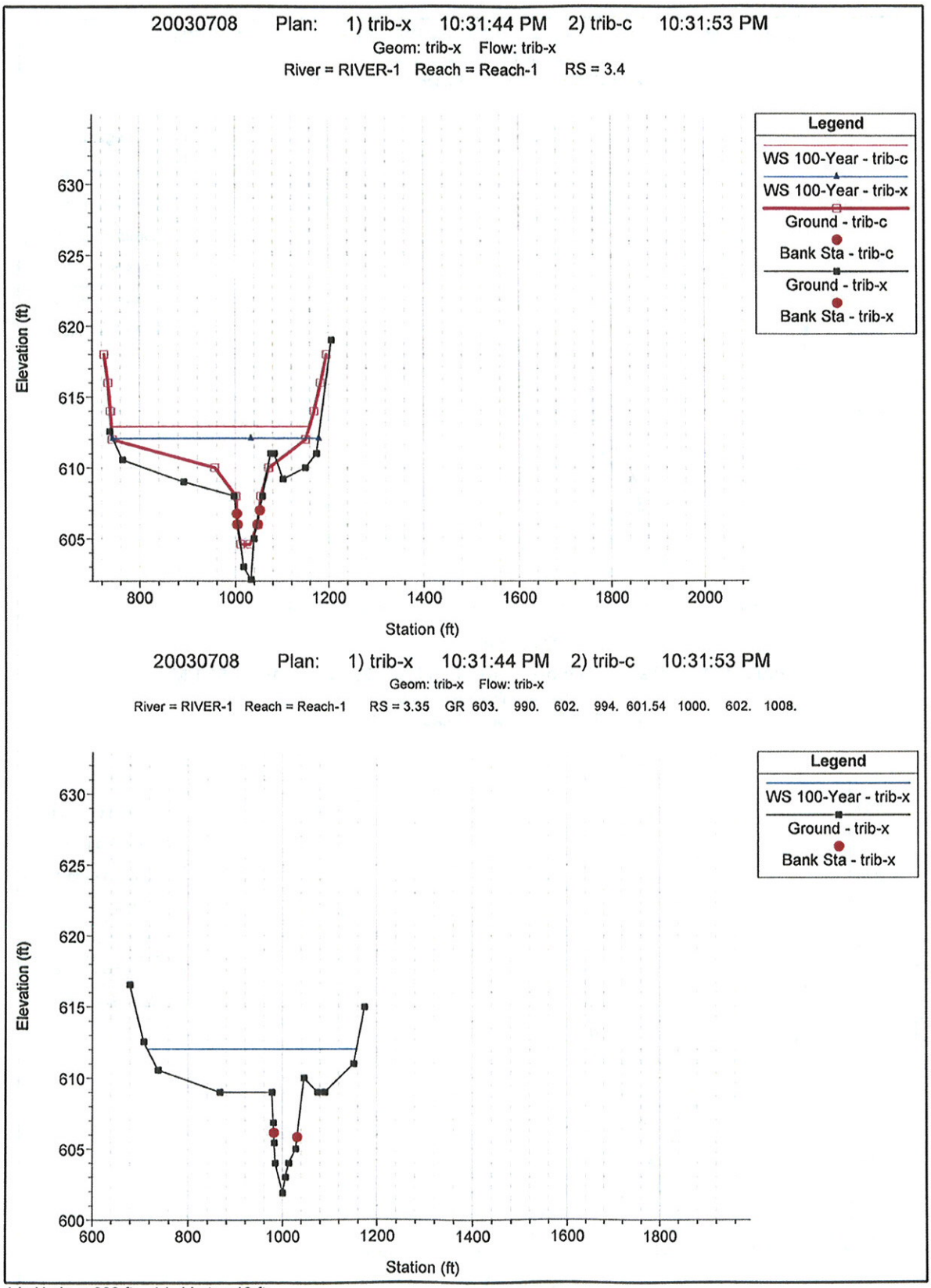
1 in Horiz. = 300 ft 1 in Vert. = 10 ft



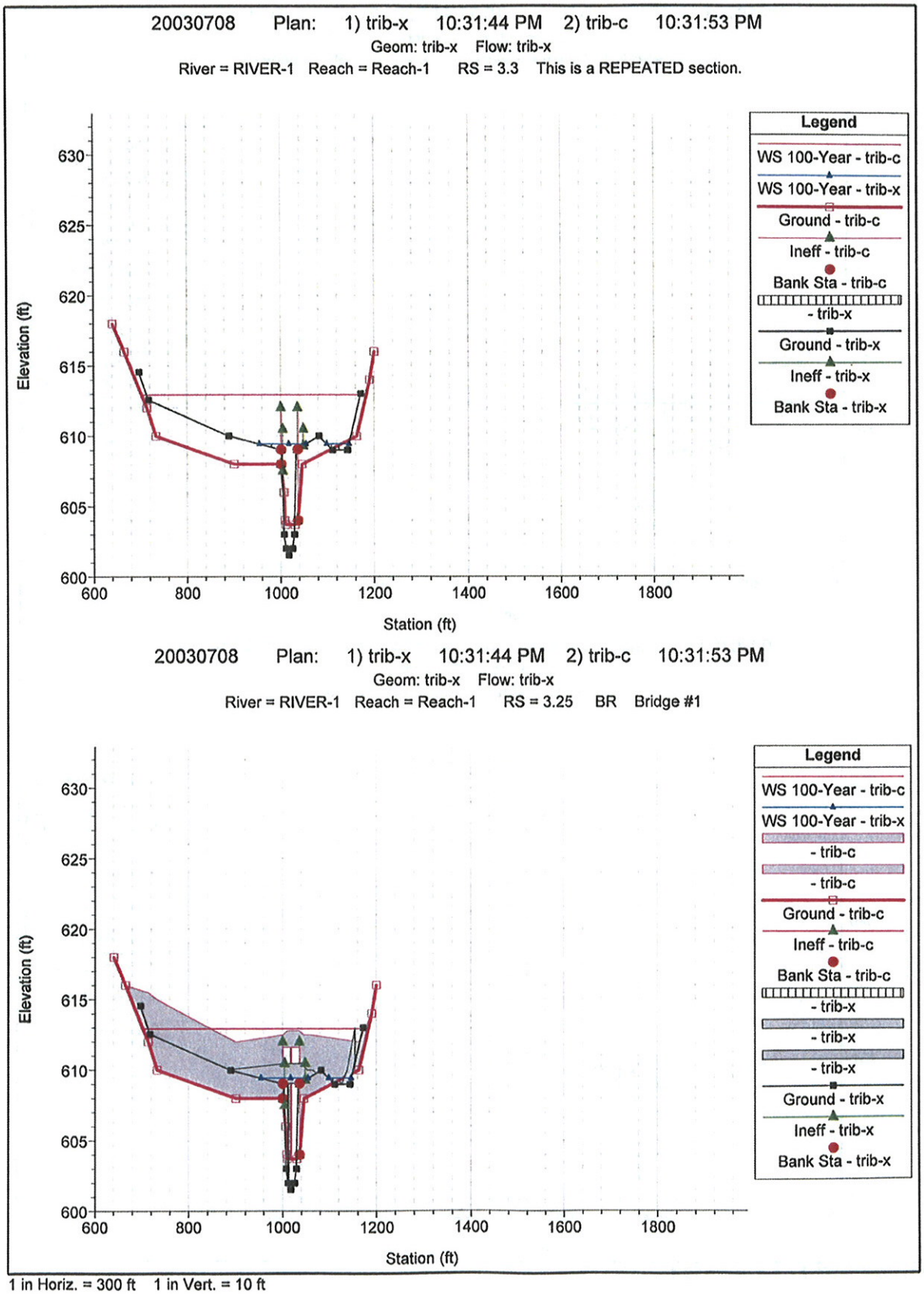
1 in Horiz. = 300 ft 1 in Vert. = 10 ft



1 in Horiz. = 300 ft 1 in Vert. = 10 ft



1 in Horiz. = 300 ft 1 in Vert. = 10 ft

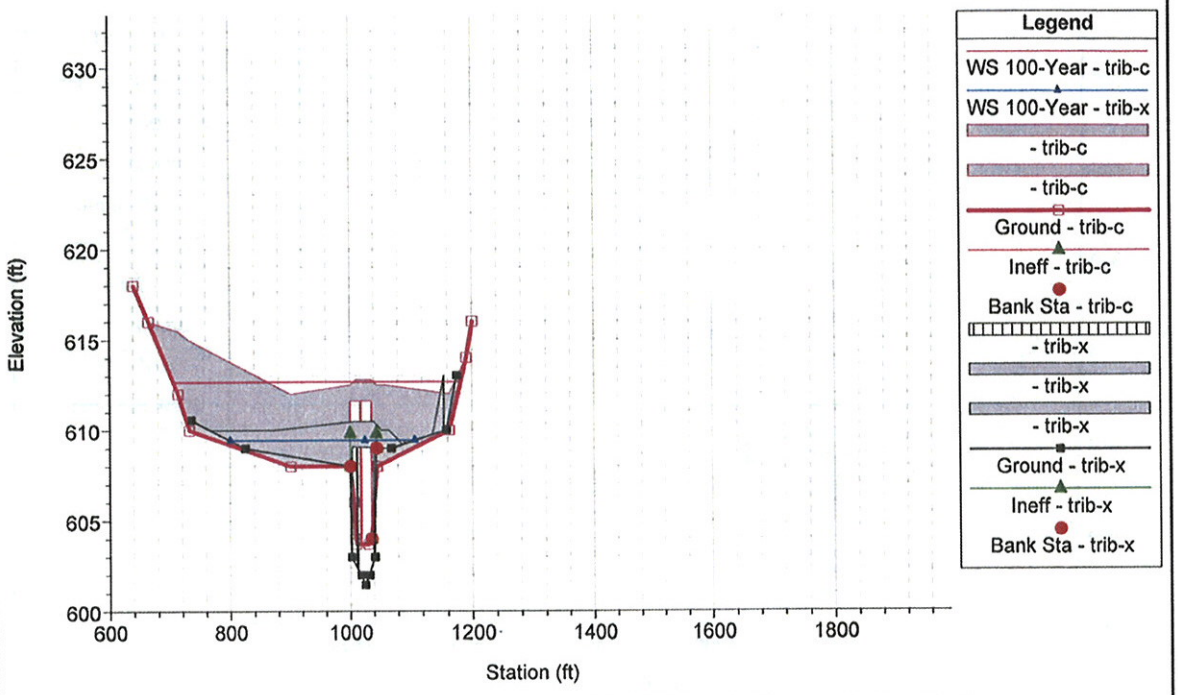


1 in Horiz. = 300 ft 1 in Vert. = 10 ft

20030708 Plan: 1) trib-x 10:31:44 PM 2) trib-c 10:31:53 PM

Geom: trib-x Flow: trib-x

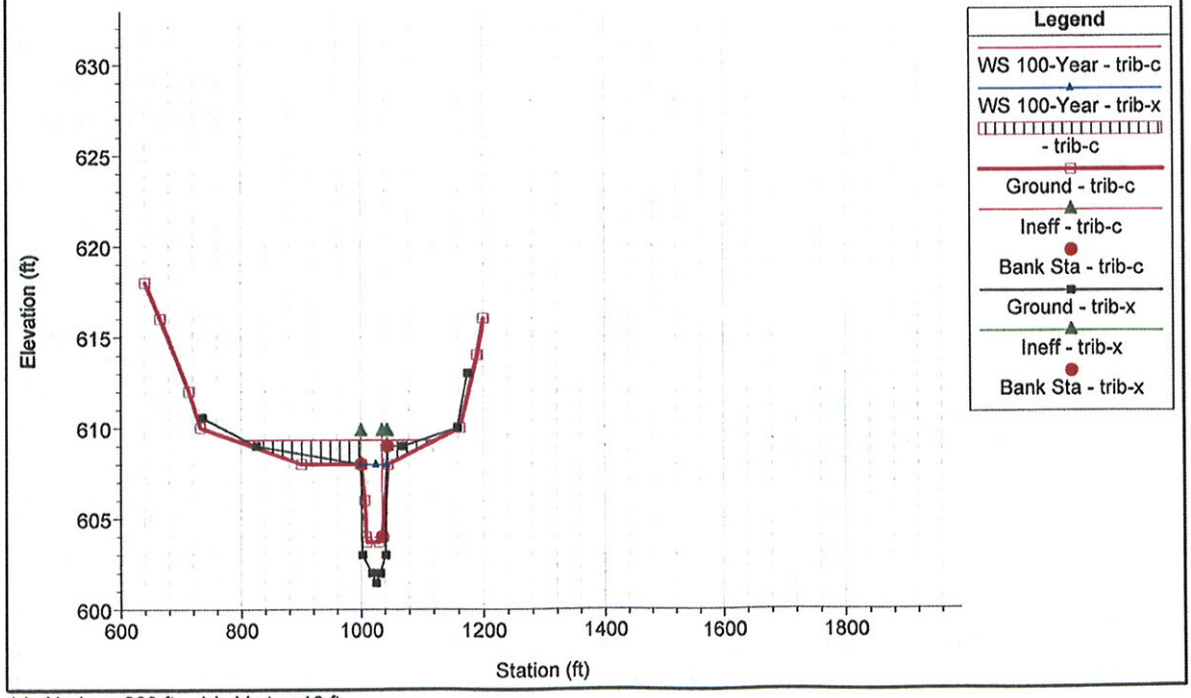
River = RIVER-1 Reach = Reach-1 RS = 3.25 BR Bridge #1



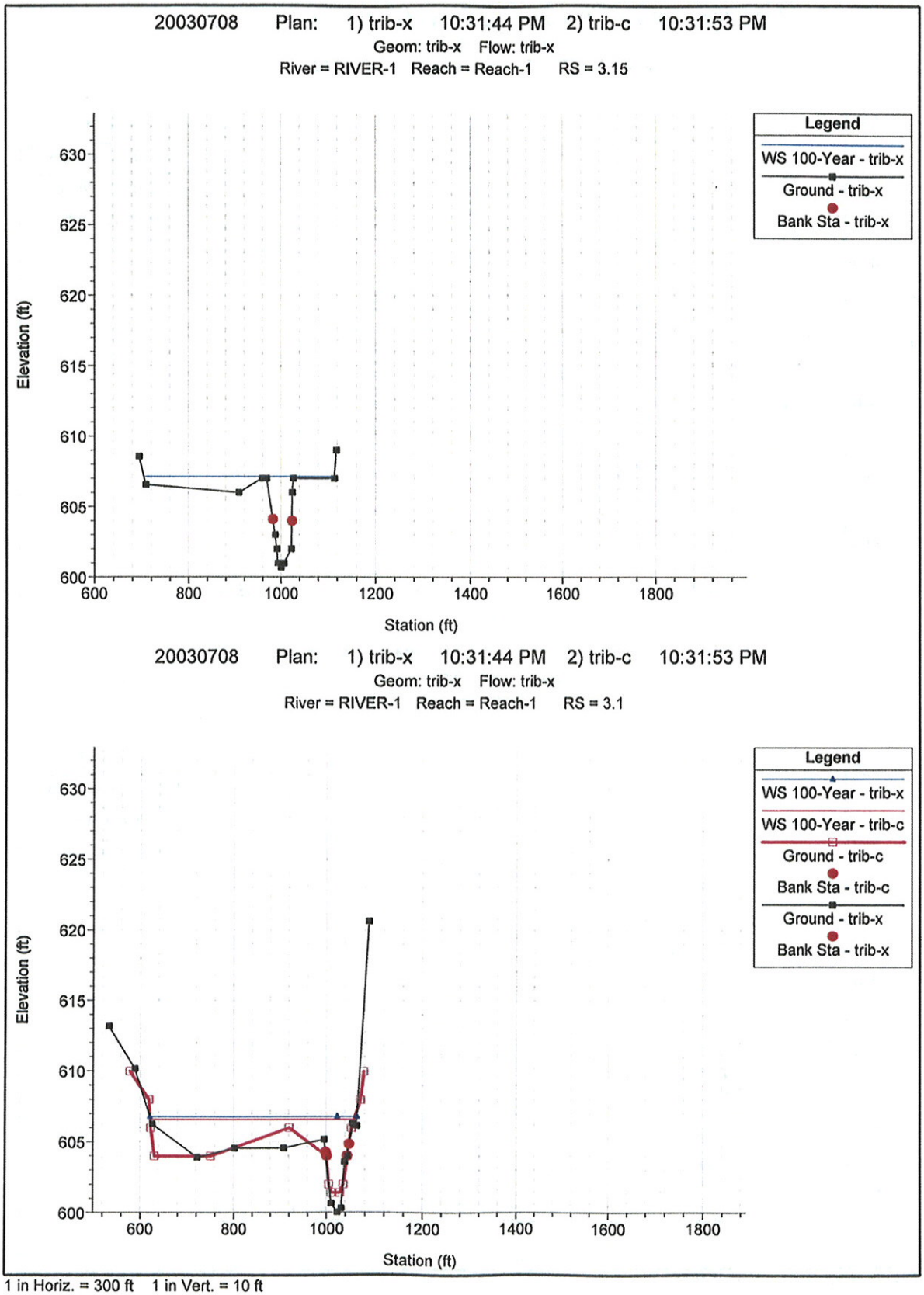
20030708 Plan: 1) trib-x 10:31:44 PM 2) trib-c 10:31:53 PM

Geom: trib-x Flow: trib-x

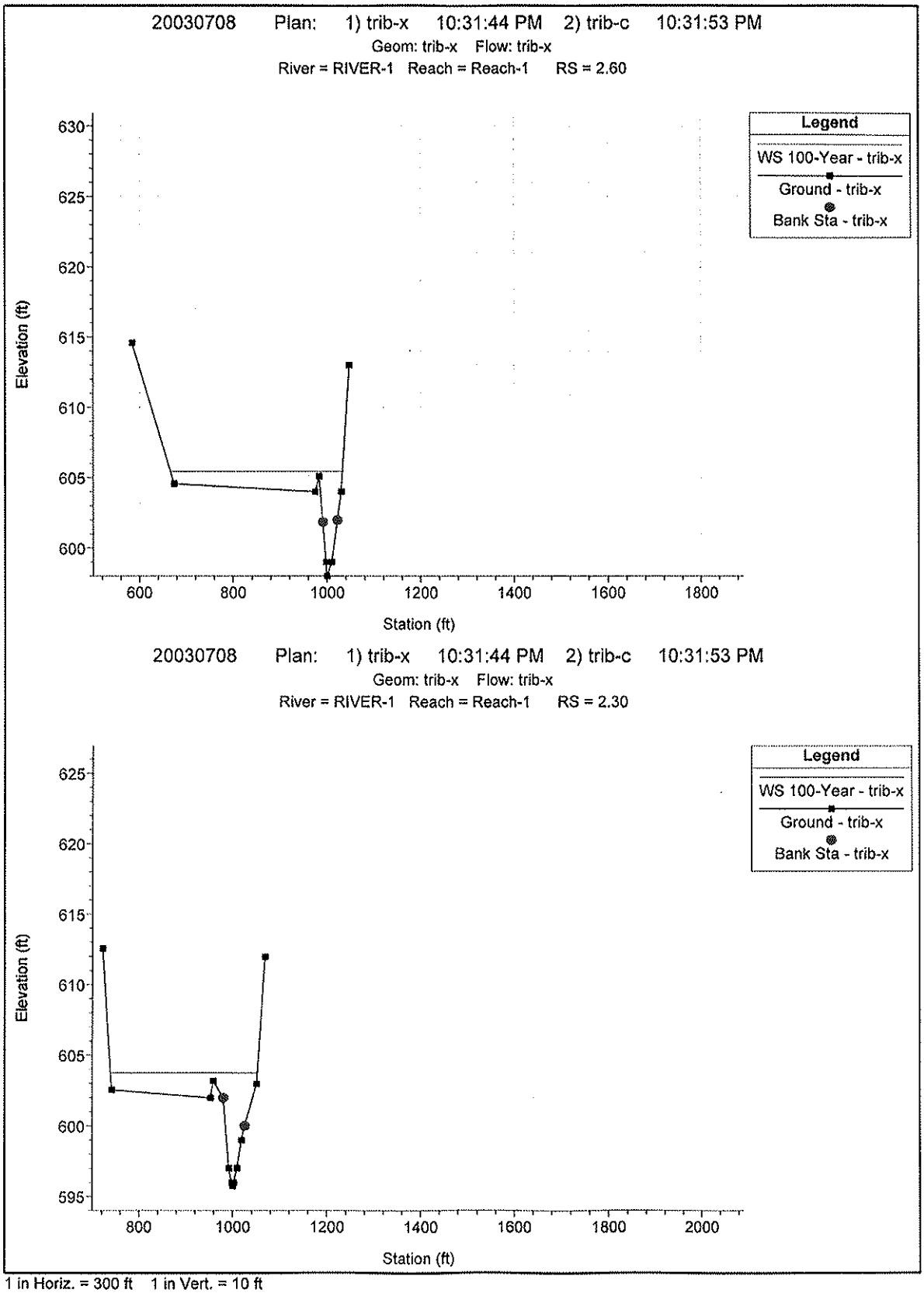
River = RIVER-1 Reach = Reach-1 RS = 3.2



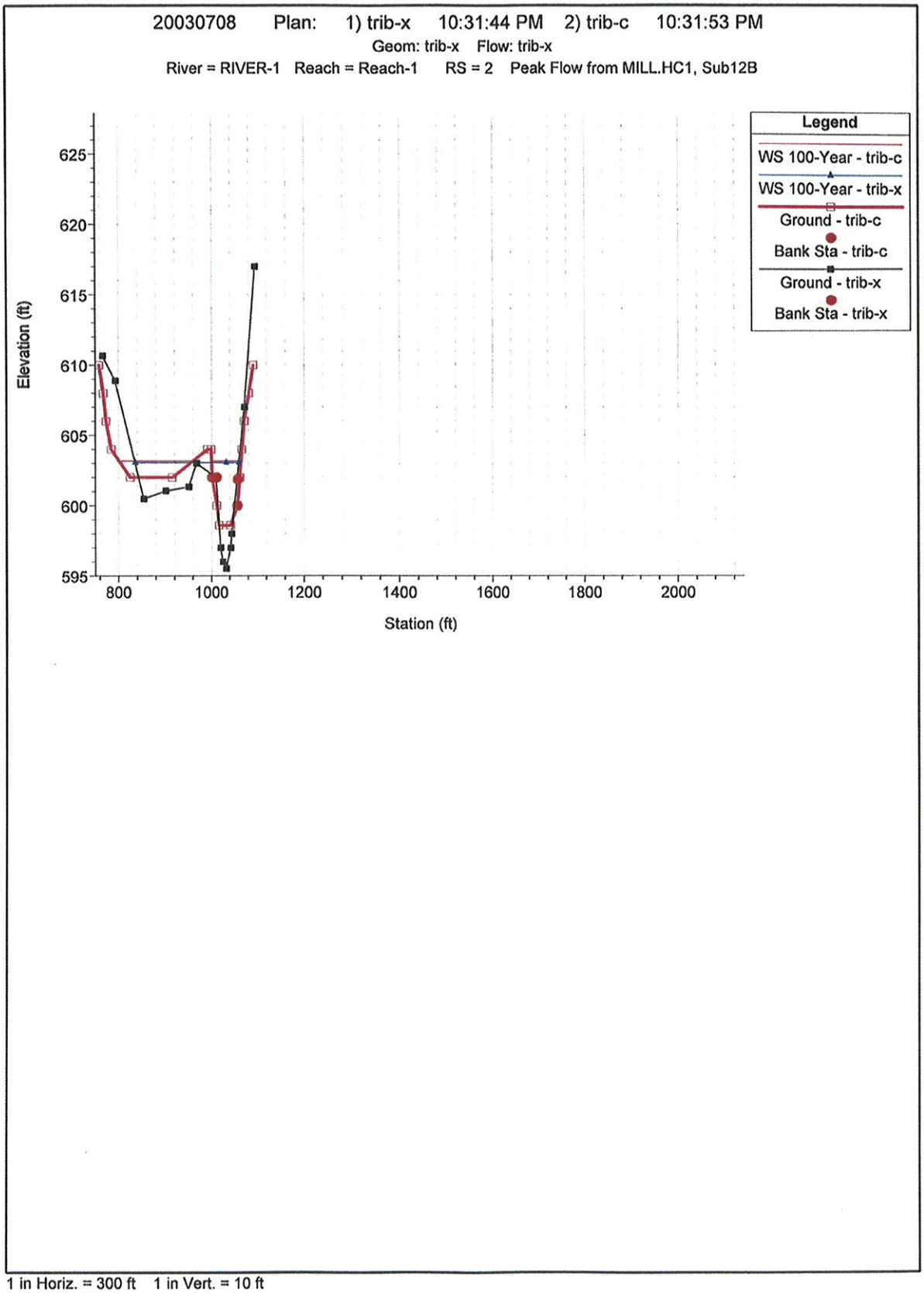
1 in Horiz. = 300 ft 1 in Vert. = 10 ft



1 in Horiz. = 300 ft 1 in Vert. = 10 ft



1 in Horiz. = 300 ft 1 in Vert. = 10 ft



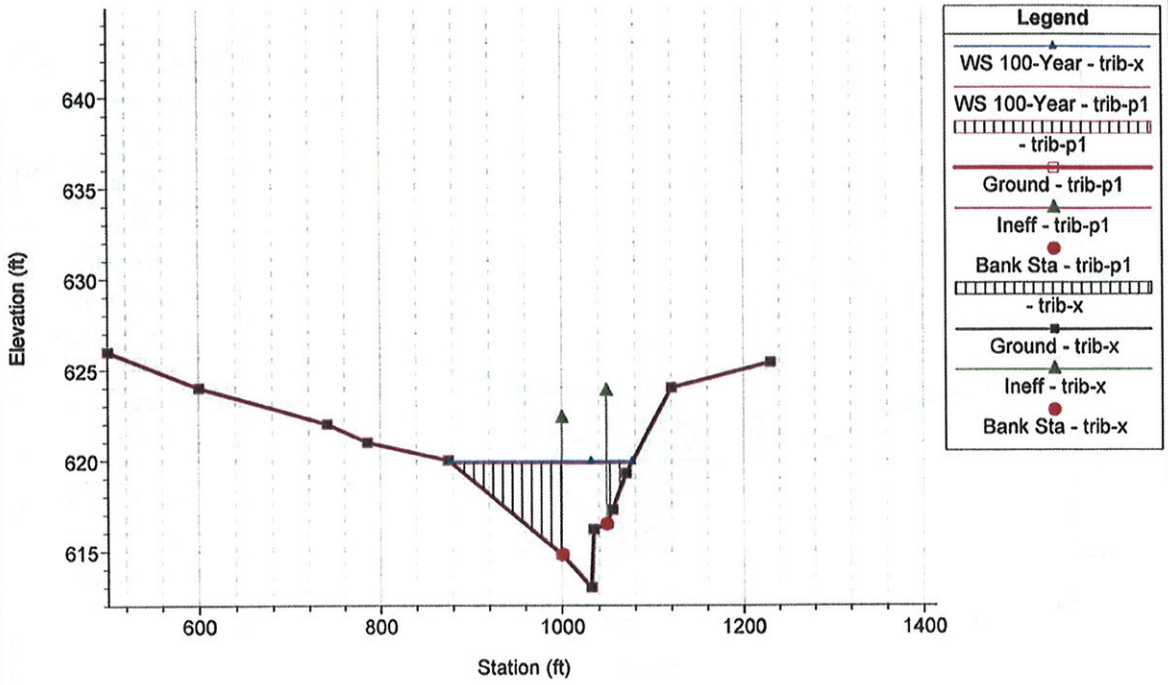
1 in Horiz. = 300 ft 1 in Vert. = 10 ft

(BLANK PAGE)

20030708 Plan: 1) trib-x 10:31:44 PM 2) trib-p1 10:31:55 PM

Geom: trib-x Flow: trib-x

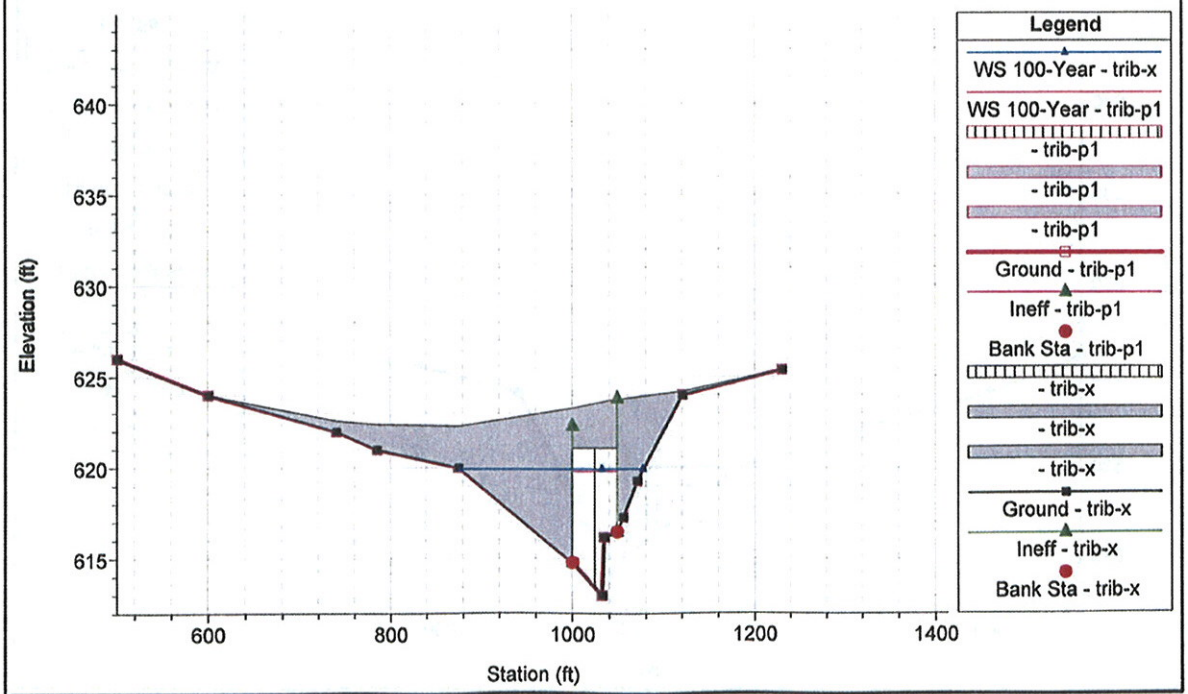
River = RIVER-1 Reach = Reach-1 RS = 6.3 This is a REPEATED section.



20030708 Plan: 1) trib-x 10:31:44 PM 2) trib-p1 10:31:55 PM

Geom: trib-x Flow: trib-x

River = RIVER-1 Reach = Reach-1 RS = 6.25 BR Bridge #3

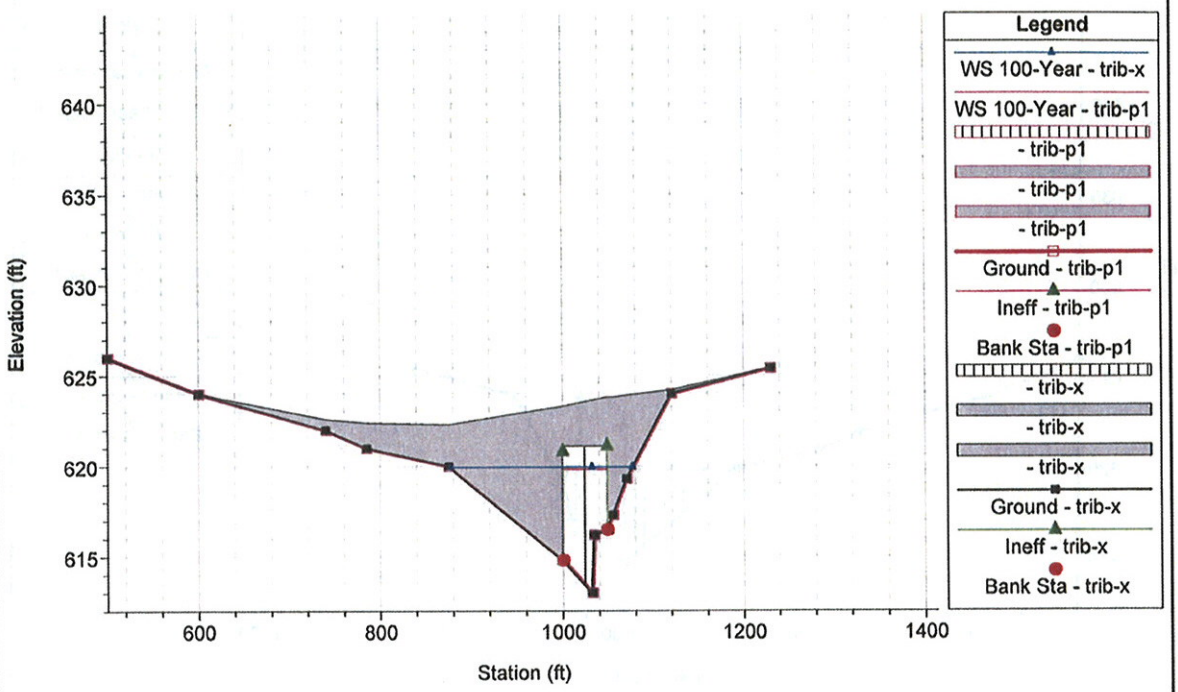


1 in Horiz. = 200 ft 1 in Vert. = 10 ft

20030708 Plan: 1) trib-x 10:31:44 PM 2) trib-p1 10:31:55 PM

Geom: trib-x Flow: trib-x

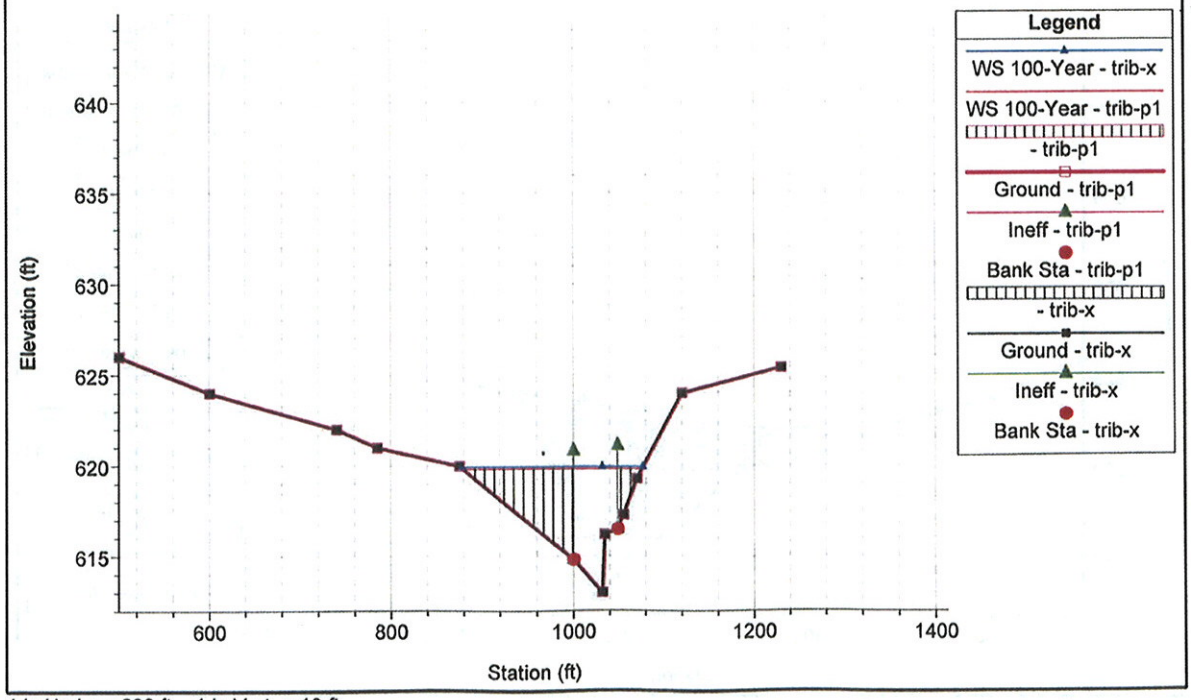
River = RIVER-1 Reach = Reach-1 RS = 6.25 BR Bridge #3



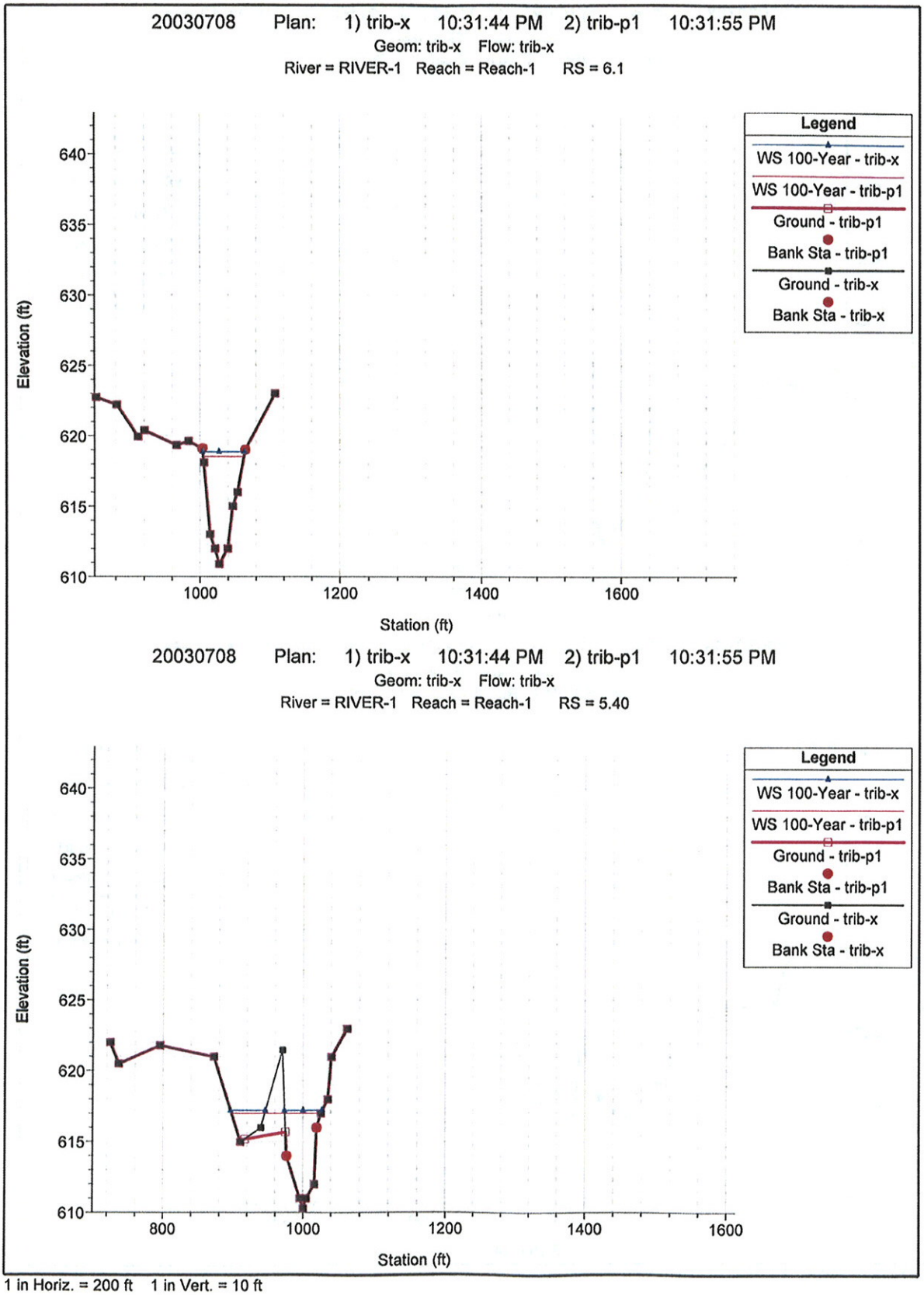
20030708 Plan: 1) trib-x 10:31:44 PM 2) trib-p1 10:31:55 PM

Geom: trib-x Flow: trib-x

River = RIVER-1 Reach = Reach-1 RS = 6.20 Cincinatte-Dayton Road Bridge



1 in Horiz. = 200 ft 1 in Vert. = 10 ft

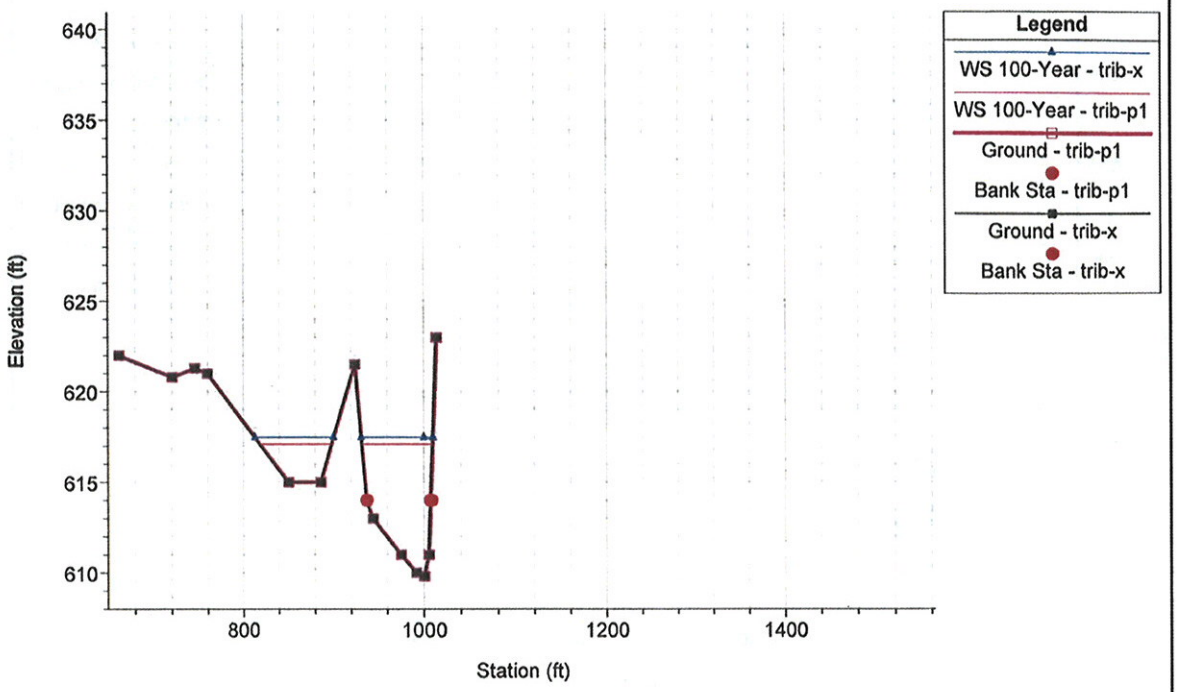


1 in Horiz. = 200 ft 1 in Vert. = 10 ft

20030708 Plan: 1) trib-x 10:31:44 PM 2) trib-p1 10:31:55 PM

Geom: trib-x Flow: trib-x

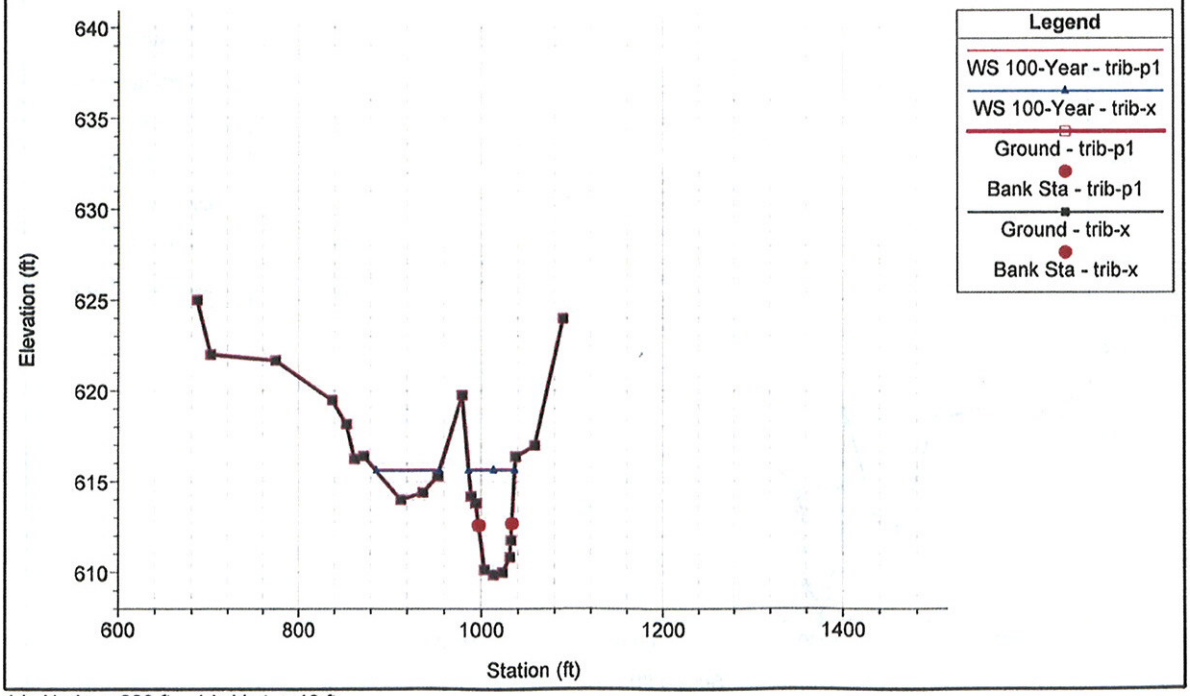
River = RIVER-1 Reach = Reach-1 RS = 5.20



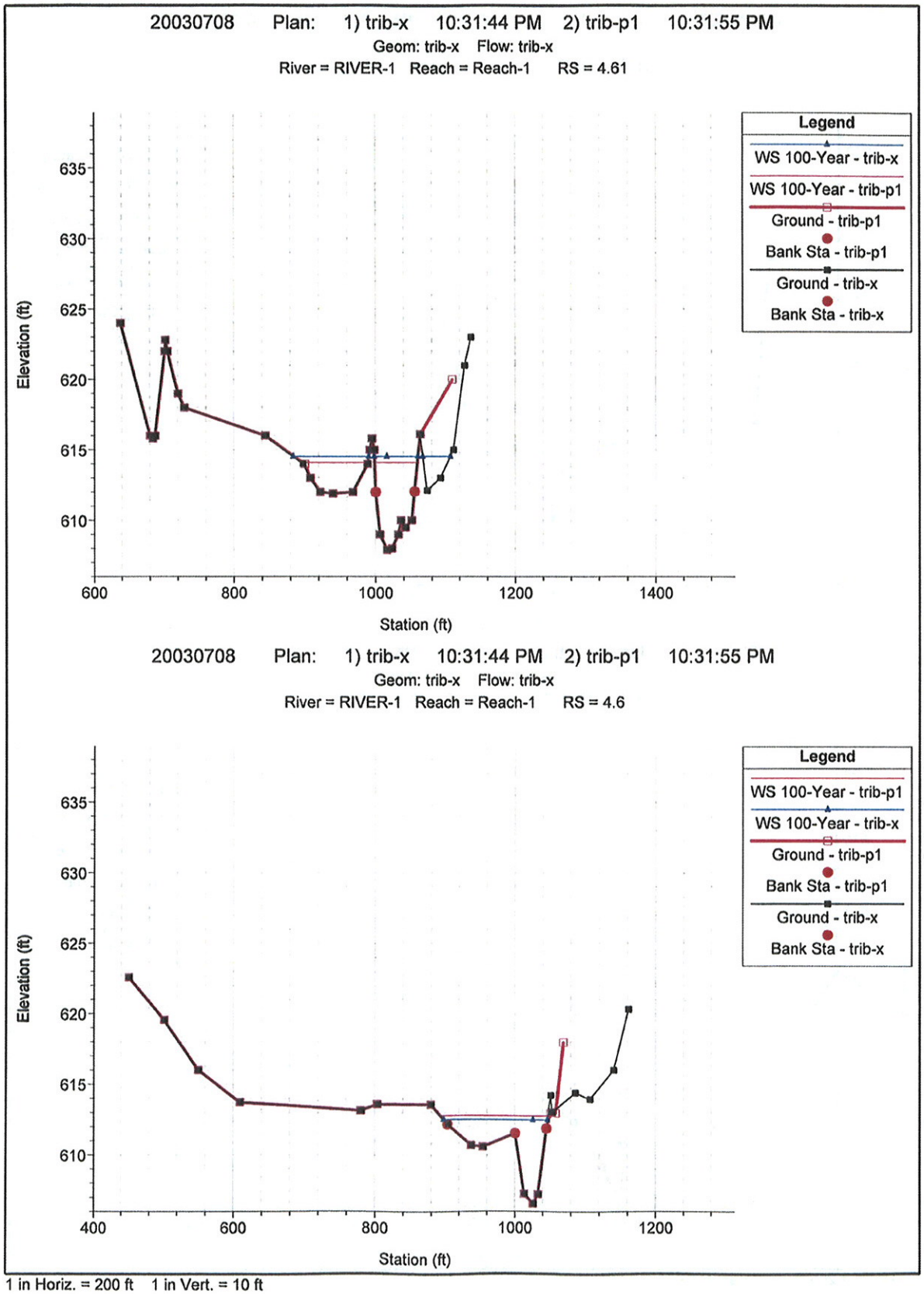
20030708 Plan: 1) trib-x 10:31:44 PM 2) trib-p1 10:31:55 PM

Geom: trib-x Flow: trib-x

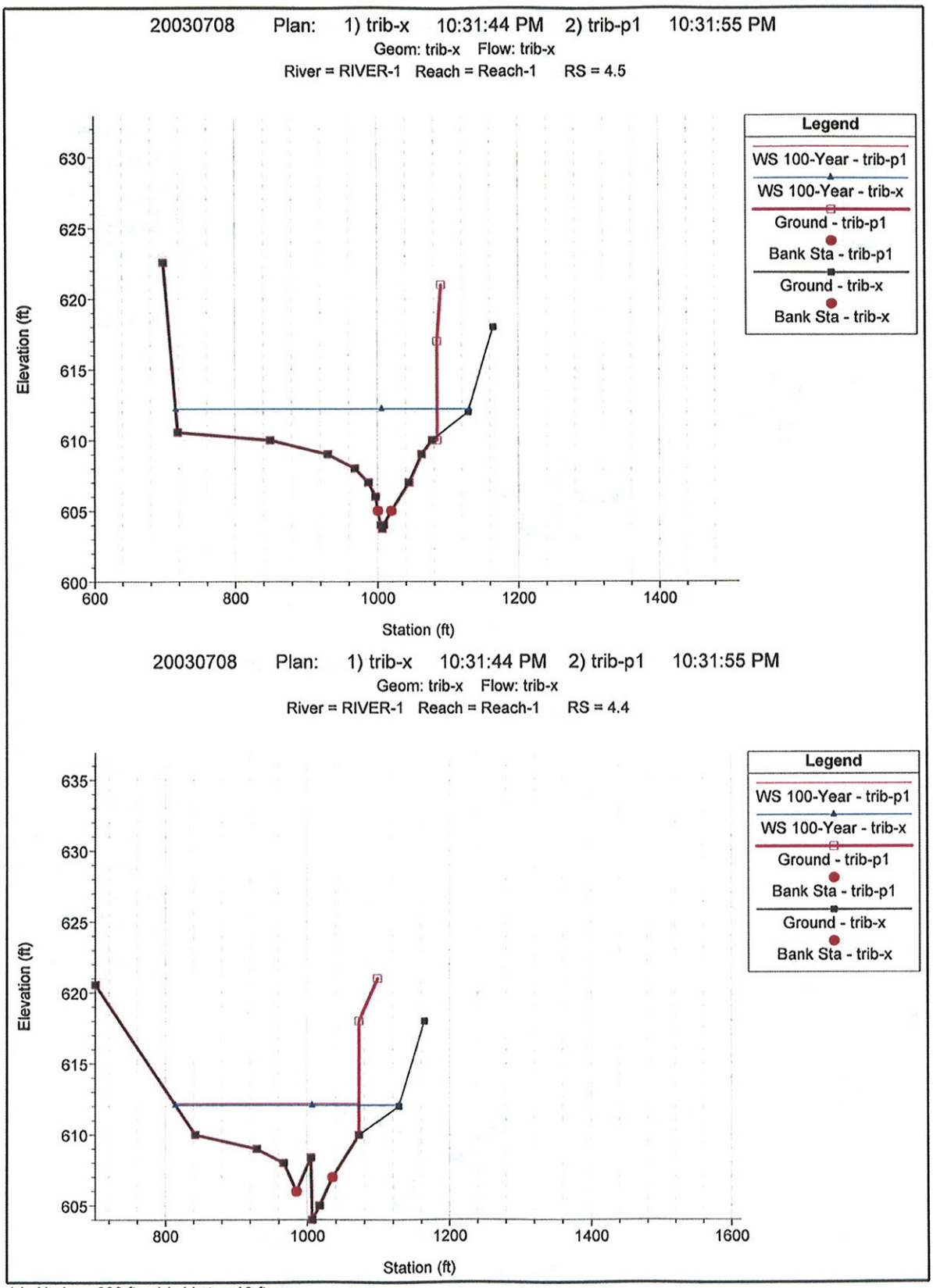
River = RIVER-1 Reach = Reach-1 RS = 5



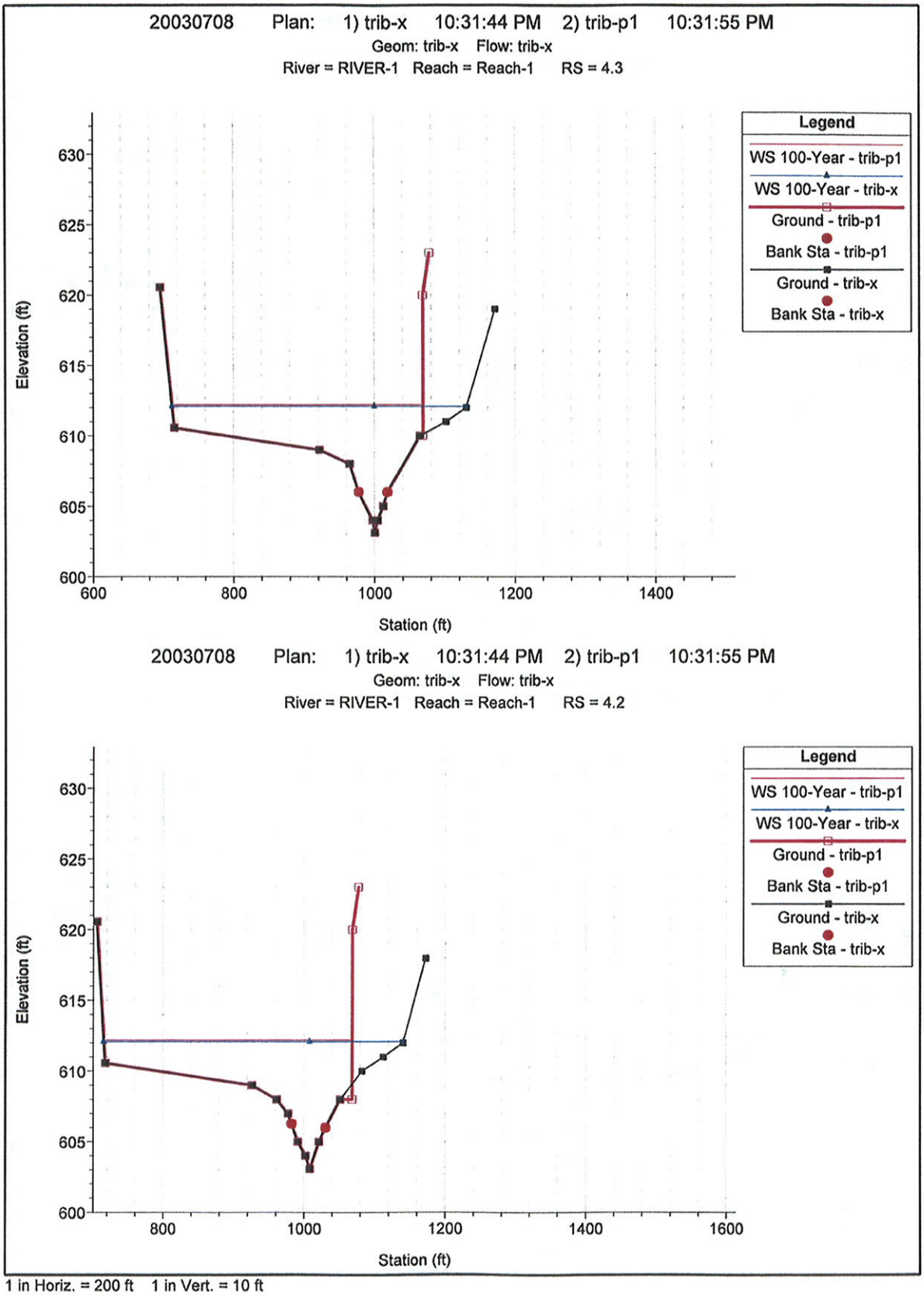
1 in Horiz. = 200 ft 1 in Vert. = 10 ft



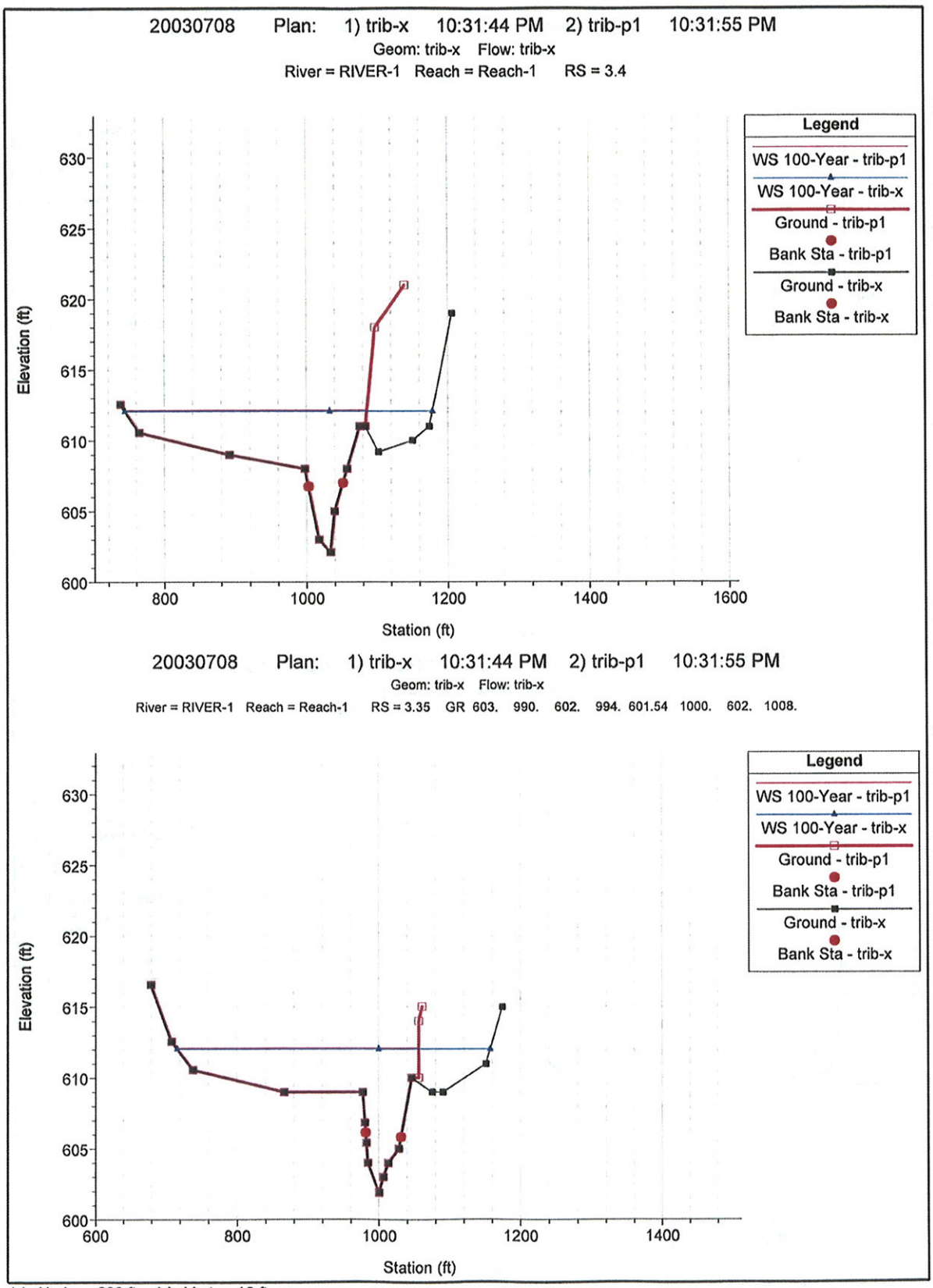
1 in Horiz. = 200 ft 1 in Vert. = 10 ft



1 in Horiz. = 200 ft 1 in Vert. = 10 ft



1 in Horiz. = 200 ft 1 in Vert. = 10 ft

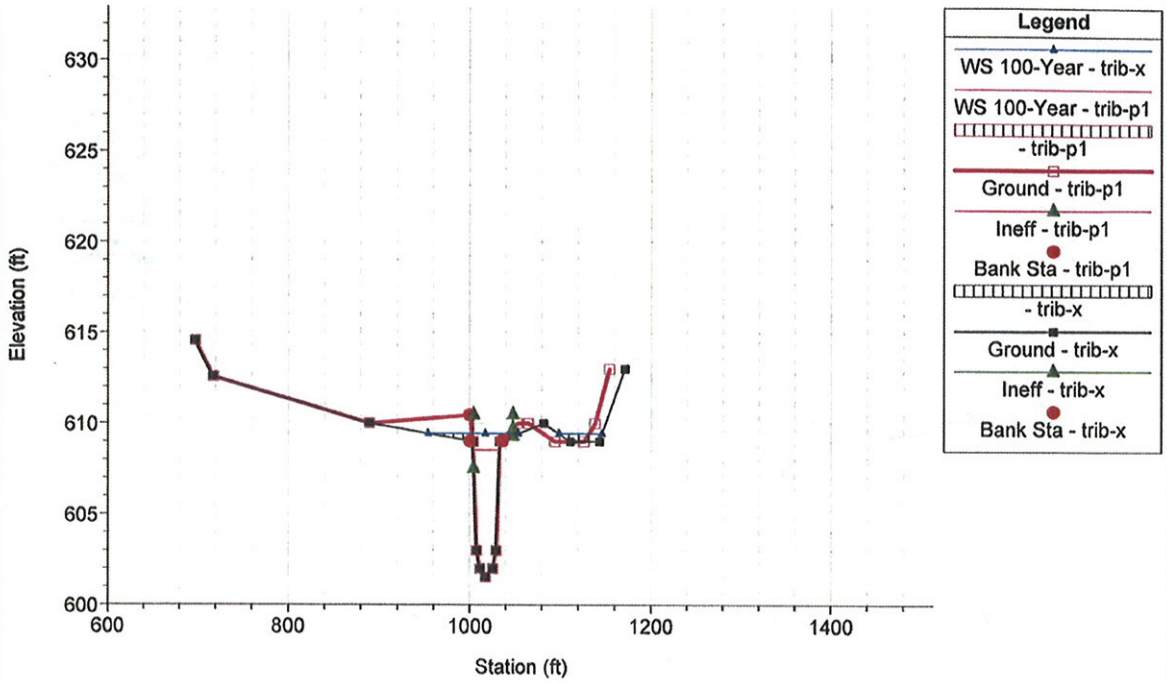


1 in Horiz. = 200 ft 1 in Vert. = 10 ft

20030708 Plan: 1) trib-x 10:31:44 PM 2) trib-p1 10:31:55 PM

Geom: trib-x Flow: trib-x

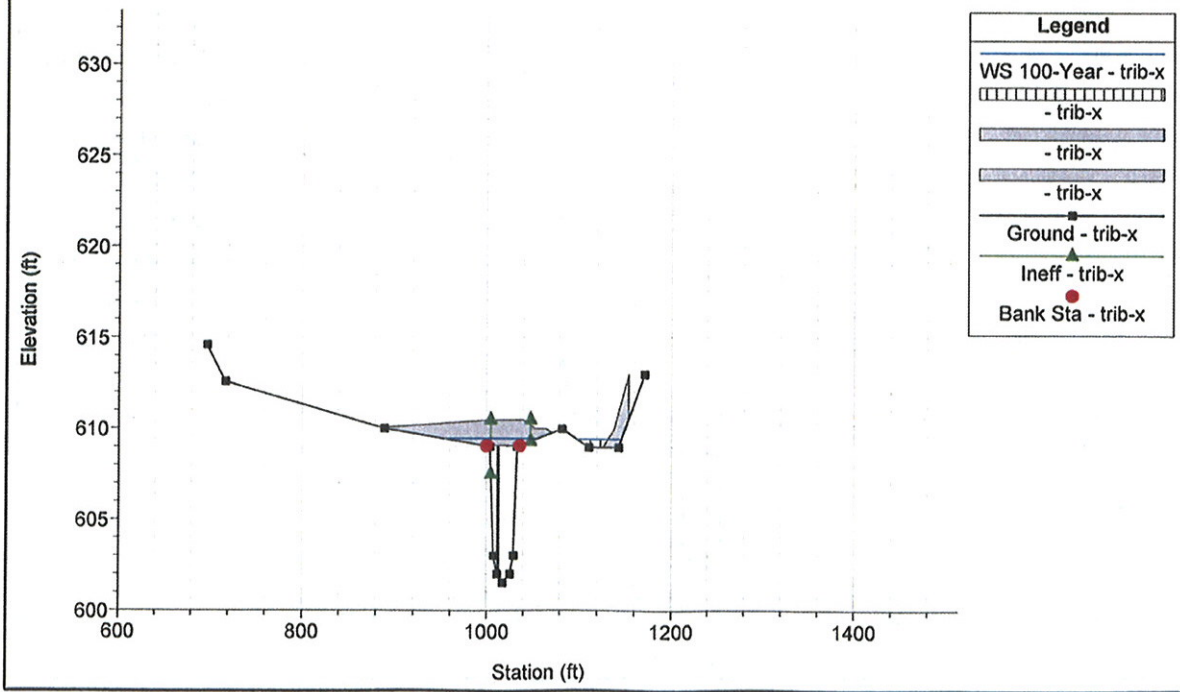
River = RIVER-1 Reach = Reach-1 RS = 3.3 This is a REPEATED section.



20030708 Plan: 1) trib-x 10:31:44 PM 2) trib-p1 10:31:55 PM

Geom: trib-x Flow: trib-x

River = RIVER-1 Reach = Reach-1 RS = 3.25 BR Bridge #1

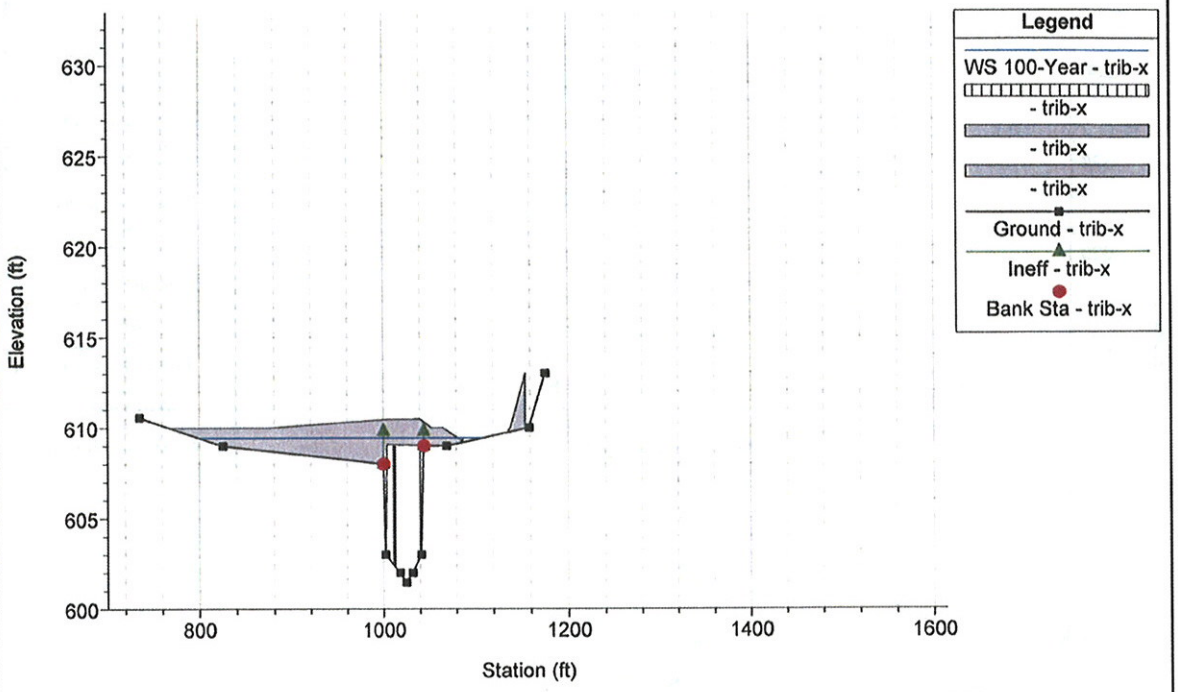


1 in Horiz. = 200 ft 1 in Vert. = 10 ft

20030708 Plan: 1) trib-x 10:31:44 PM 2) trib-p1 10:31:55 PM

Geom: trib-x Flow: trib-x

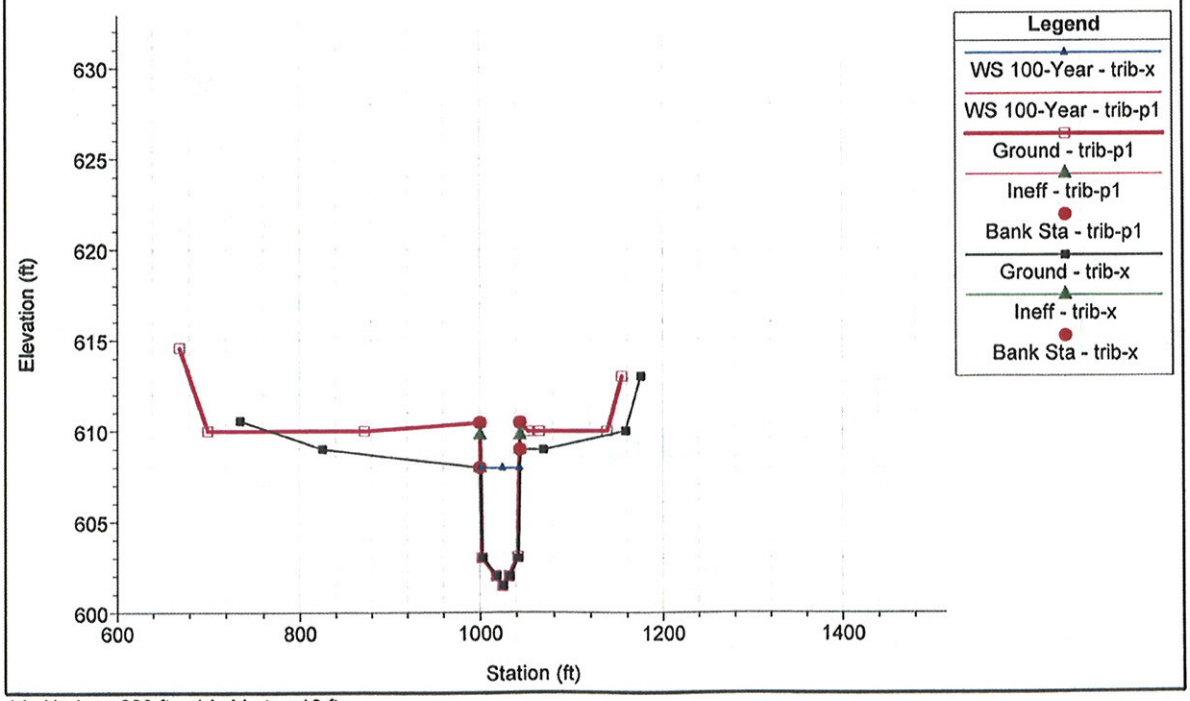
River = RIVER-1 Reach = Reach-1 RS = 3.25 BR Bridge #1



20030708 Plan: 1) trib-x 10:31:44 PM 2) trib-p1 10:31:55 PM

Geom: trib-x Flow: trib-x

River = RIVER-1 Reach = Reach-1 RS = 3.2

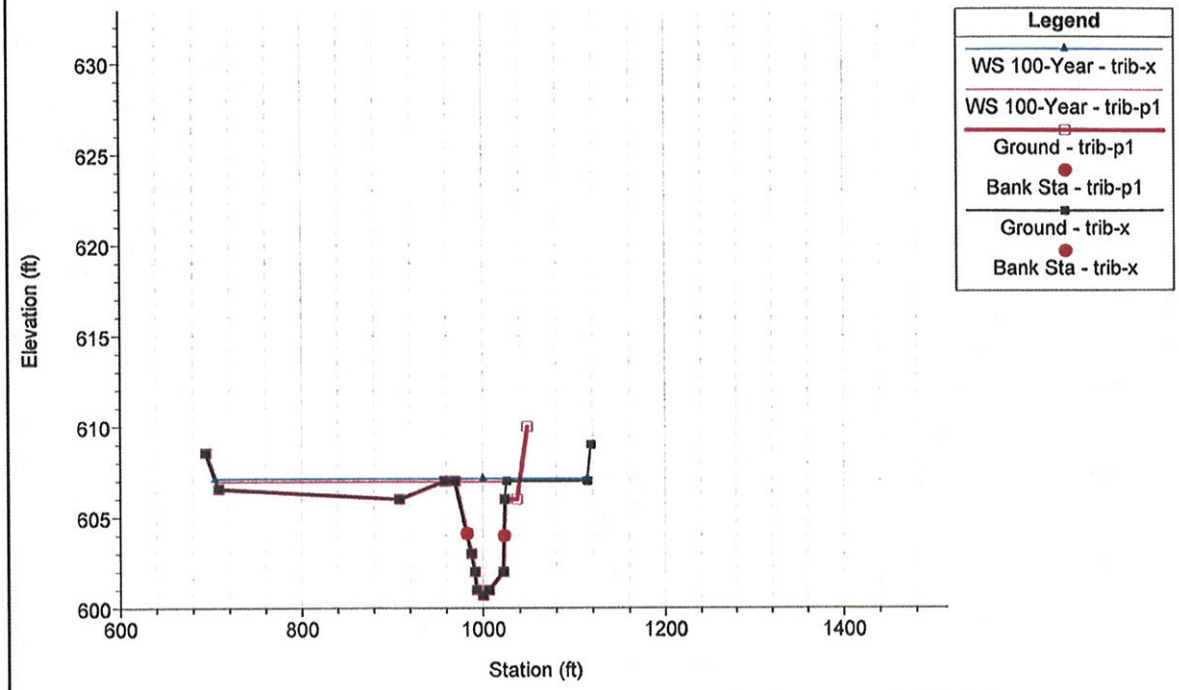


1 in Horiz. = 200 ft 1 in Vert. = 10 ft

20030708 Plan: 1) trib-x 10:31:44 PM 2) trib-p1 10:31:55 PM

Geom: trib-x Flow: trib-x

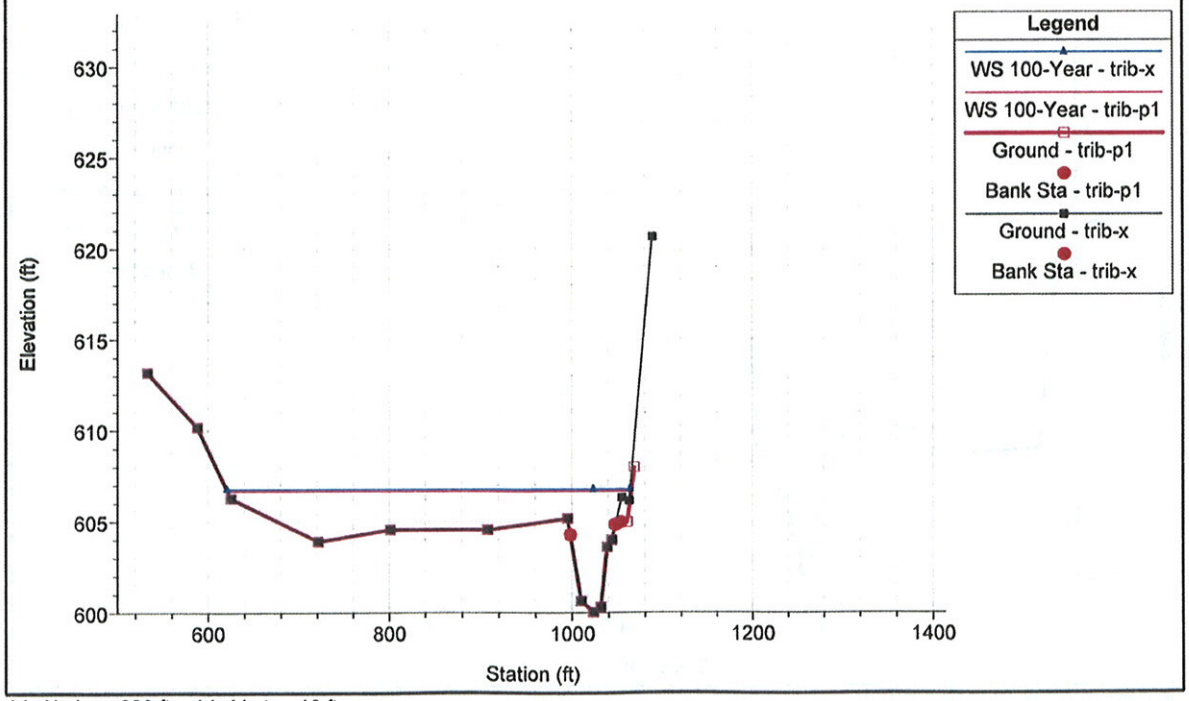
River = RIVER-1 Reach = Reach-1 RS = 3.15



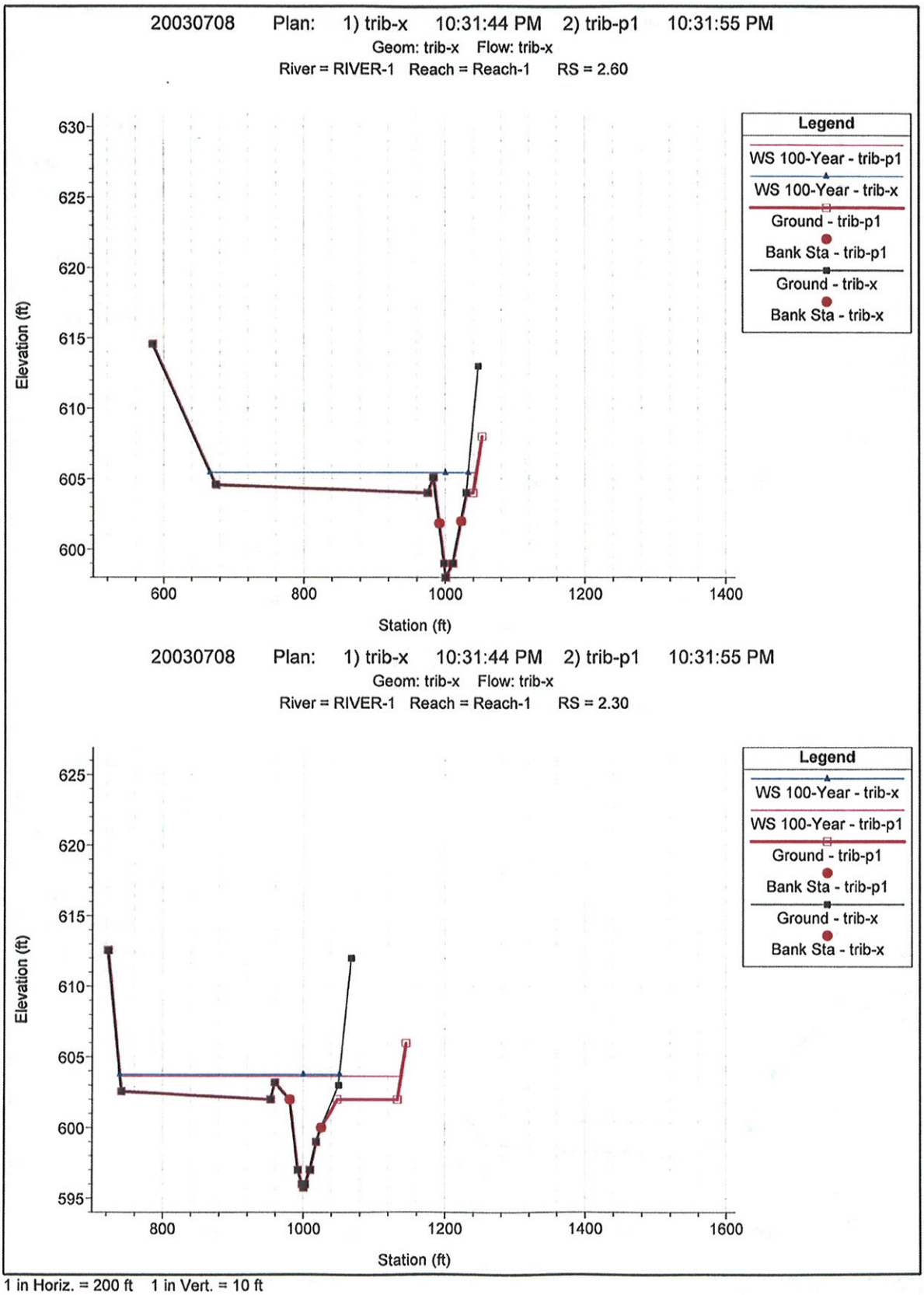
20030708 Plan: 1) trib-x 10:31:44 PM 2) trib-p1 10:31:55 PM

Geom: trib-x Flow: trib-x

River = RIVER-1 Reach = Reach-1 RS = 3.1



1 in Horiz. = 200 ft 1 in Vert. = 10 ft

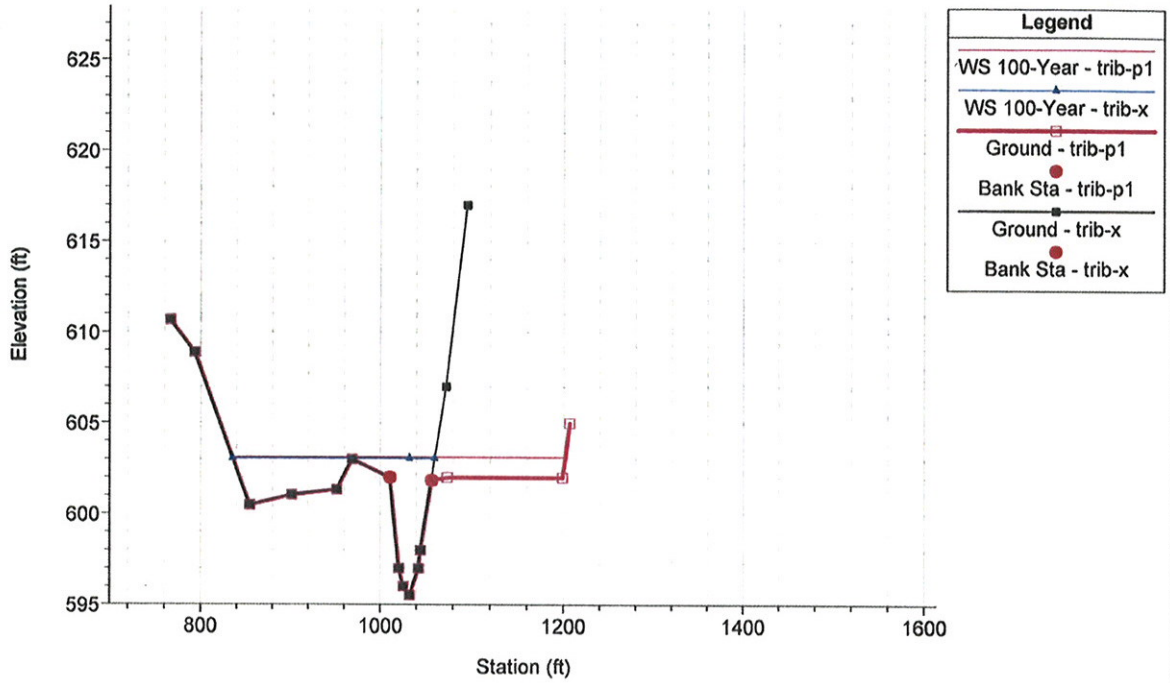


1 in Horiz. = 200 ft 1 in Vert. = 10 ft

20030708 Plan: 1) trib-x 10:31:44 PM 2) trib-p1 10:31:55 PM

Geom: trib-x Flow: trib-x

River = RIVER-1 Reach = Reach-1 RS = 2 Peak Flow from MILL.HC1, Sub12B



1 in Horiz. = 200 ft 1 in Vert. = 10 ft

APPENDIX:

C. HEC-RAS Analyses of East Fork Mill Creek
- Work Maps – Existing and Proposed (see Appendix B)
- Base Flood Elevations Sketch (see Appendix B)
- Flow Rate Computation for 2-Year Frequency Flood
- HEC-RAS Base Flood Profiles of Regulatory, Corrected-Effective, Existing, and Proposed Conditions
- HEC-RAS Summary of Converted Regulatory, Corrected-Effective, Existing, and Proposed Base Flood Profiles
- Cross-Sections Plots of Corrected-Effective and Existing Conditions
- Cross-Sections Plots of Existing and Proposed Conditions

East Fork of Mill Creek - downstream of confluence

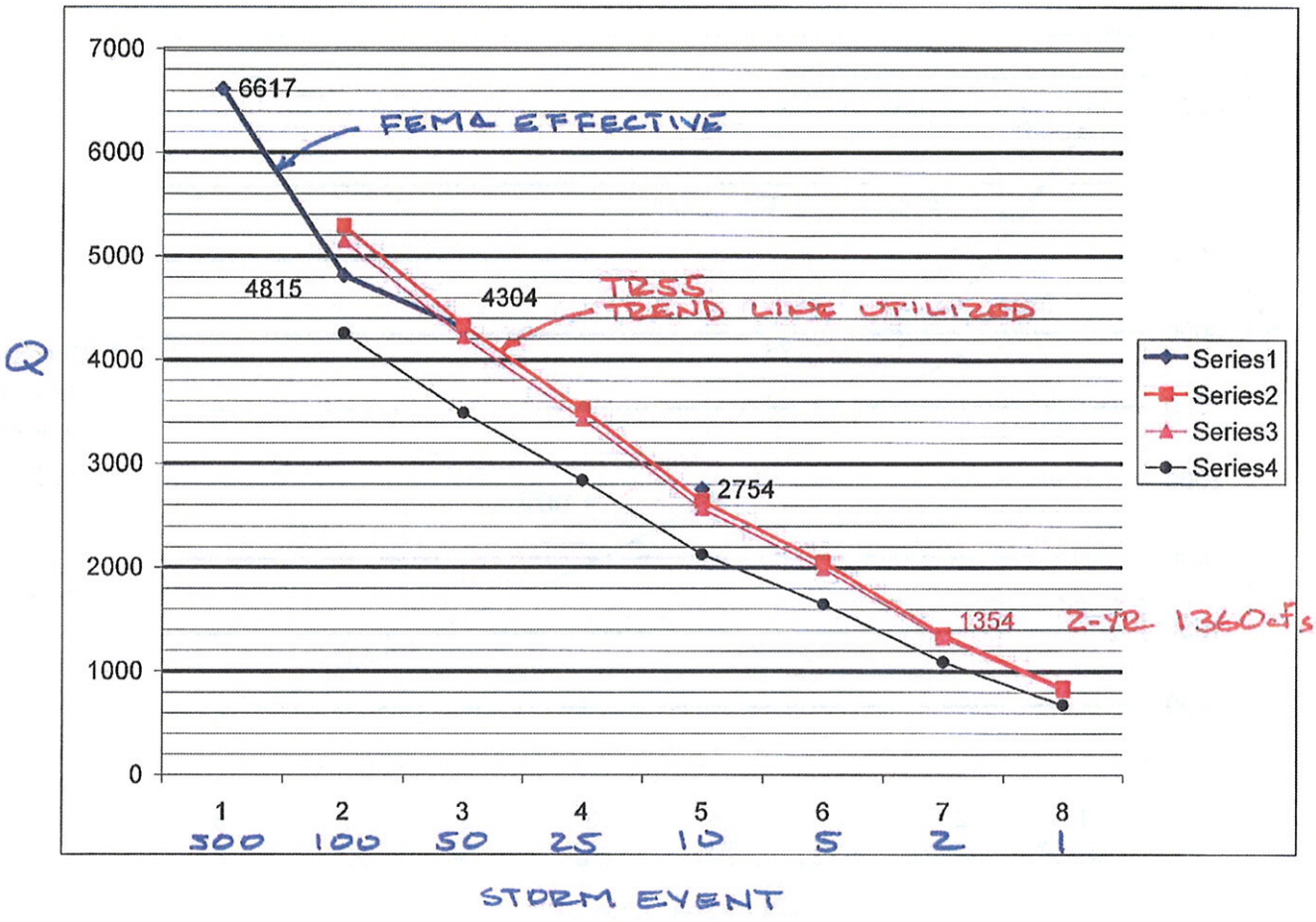
5/7/2008

Based on TR55 Graph of Typical Storm Events

Comparative Trend Lines for Storm Events to Predict 2-yr Event Compared to FEMA Model Effective Flows Flows

Various TR55 Graphs for Trend Lines

Storm Event	Q Effective	TR-55	Compared to Effective	TR-55	Compared to Effective	TR-55	Compared to Effective	
	cfs	cfs	%	cfs	%	cfs	%	
500	**6617**							
100	**4815**	5293	109.9%	5152	107.0%	4257	88.4%	5218
50	**4304**	4337	100.8%	4221	98.1%	3489	81.1%	4272
25		3523		3435		2839		3487
10	**2754**	2645	96.0%	2572	93.4%	2129	77.3%	2614
5		2057		1992		1645		2025
2		1354		1322		1091		1339
1		835		814		676		825



East Fork of Mill Creek - upstream of confluence

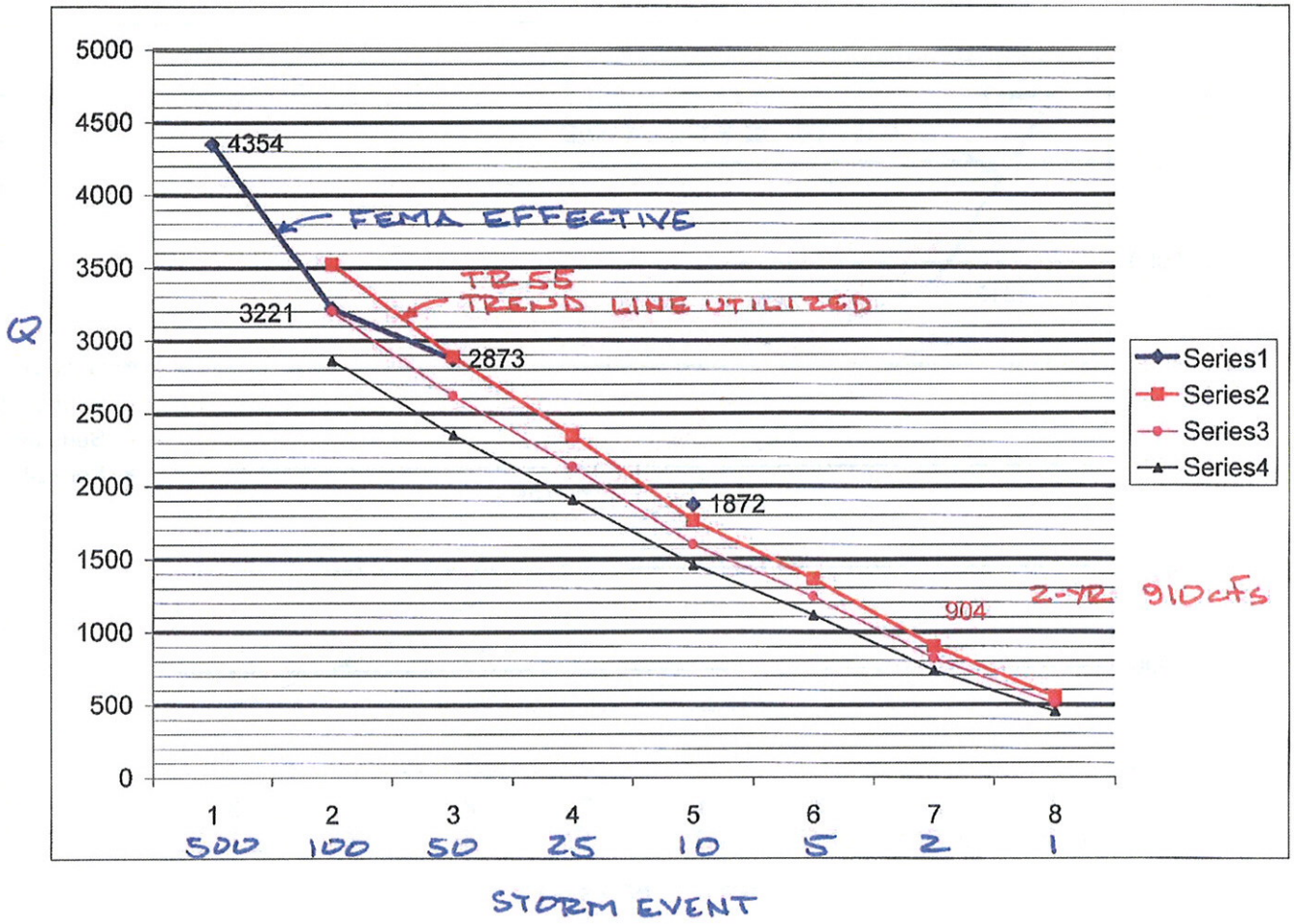
5/7/2008

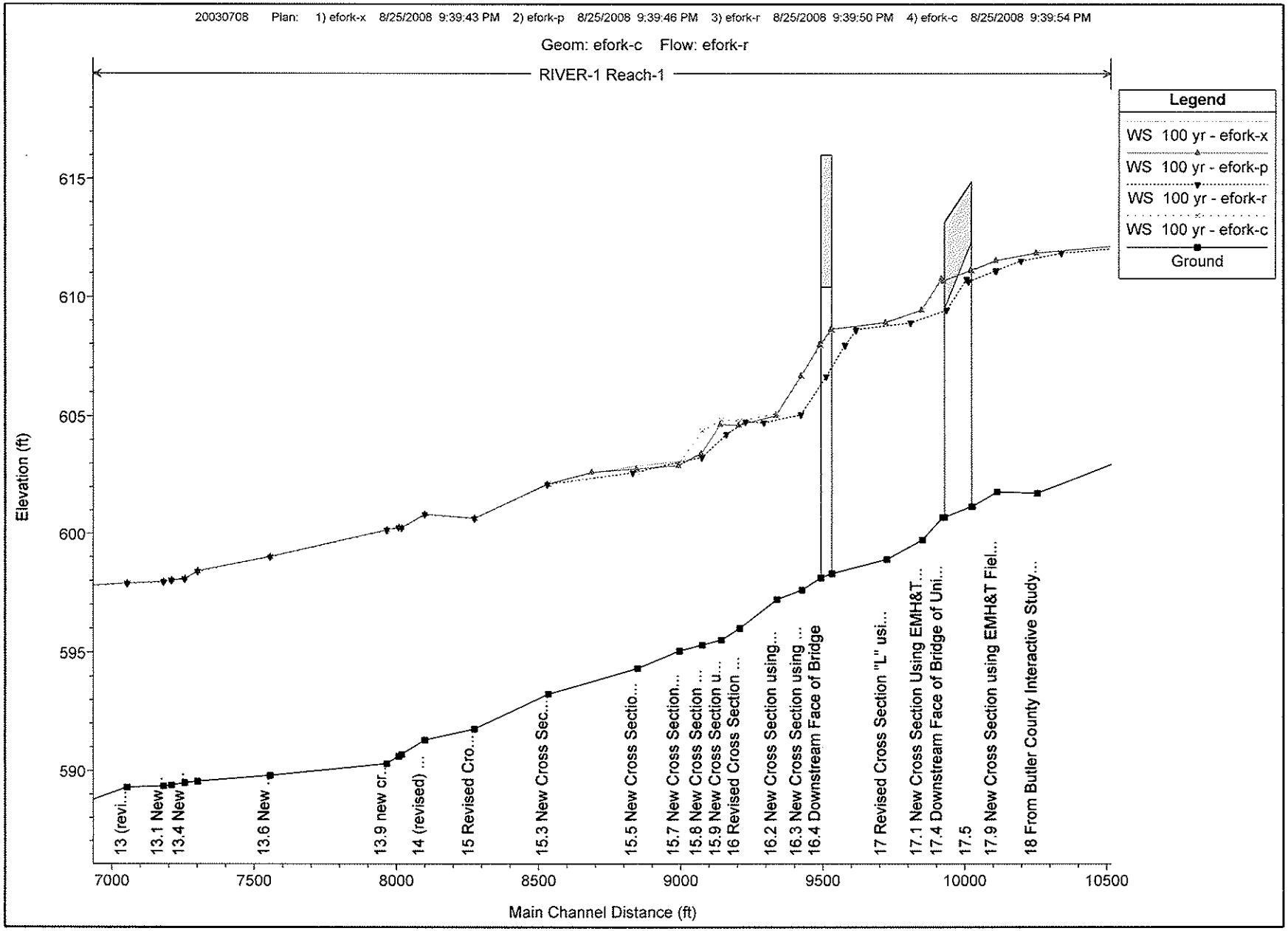
Based on TR55 Graph of Typical Storm Events

Comparative Trend Lines for Storm Events to Predict 2-yr Event Compared to FEMA Model Effective Flows Flows

Various TR55 Graphs for Trend Lines

Storm Event	Q Effective	TR-55	Compared to Effective	TR-55	Compared to Effective	TR-55	Compared to Effective
	cfs	cfs	%	cfs	%	cfs	%
500	**4354**						
100	**3221**	3527	109.5%	3204	99.5%	2865	88.9%
50	**2873**	2893	100.7%	2623	91.3%	2350	81.8%
25		2355		2137		1908	
10	**1872**	1768	94.4%	1603	85.6%	1461	78.0%
5		1366		1244		1114	
2		904		822		735	
1		557		507		454	





1 in Horiz. = 500 ft 1 in Vert. = 6 ft

HEC-RAS River: RIVER-1 Reach: Reach-1 Profile: 100 yr

Reach	River Sta	Profile	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Reach-1	5.2	100 yr	efork-x	2998.00	573.90	585.68	580.48	585.91	0.000607	4.22	1318.20	688.71	0.25
Reach-1	5.2	100 yr	efork-p	2998.00	573.90	585.68	580.48	585.91	0.000607	4.22	1318.20	688.71	0.25
Reach-1	5.2	100 yr	efork-c	2998.00	573.90	585.68	580.48	585.91	0.000607	4.22	1318.20	688.71	0.25
Reach-1	5.25			Bridge									
Reach-1	5.3	100 yr	efork-x	2998.00	573.90	586.14	580.45	586.31	0.000436	3.70	1671.39	825.47	0.21
Reach-1	5.3	100 yr	efork-p	2998.00	573.90	586.14	580.45	586.31	0.000436	3.70	1671.39	825.47	0.21
Reach-1	5.3	100 yr	efork-c	2998.00	573.90	586.14	580.45	586.31	0.000436	3.70	1671.39	825.47	0.21
Reach-1	5.4	100 yr	efork-x	2998.00	575.60	586.17		586.57	0.001383	5.36	1165.33	898.02	0.33
Reach-1	5.4	100 yr	efork-p	2998.00	575.60	586.17		586.57	0.001383	5.36	1165.33	898.02	0.33
Reach-1	5.4	100 yr	efork-c	2998.00	575.60	586.17		586.57	0.001383	5.36	1165.33	898.02	0.33
Reach-1	6	100 yr	efork-x	3220.00	576.60	587.69		588.37	0.003475	7.34	1087.76	670.62	0.49
Reach-1	6	100 yr	efork-p	3220.00	576.60	587.69		588.37	0.003475	7.34	1087.76	670.62	0.49
Reach-1	6	100 yr	efork-c	3220.00	576.60	587.69		588.37	0.003475	7.34	1087.76	670.62	0.49
Reach-1	7	100 yr	efork-x	4520.00	579.54	590.49		590.85	0.001533	6.31	2114.68	497.76	0.35
Reach-1	7	100 yr	efork-p	4520.00	579.54	590.49		590.85	0.001533	6.31	2114.68	497.76	0.35
Reach-1	7	100 yr	efork-c	4520.00	579.54	590.49		590.85	0.001533	6.31	2114.68	497.76	0.35
Reach-1	8	100 yr	efork-x	4845.00	580.00	591.25		591.35	0.000502	3.75	3886.53	681.40	0.21
Reach-1	8	100 yr	efork-p	4845.00	580.00	591.25		591.35	0.000502	3.75	3886.53	681.40	0.21
Reach-1	8	100 yr	efork-c	4845.00	580.00	591.25		591.35	0.000502	3.75	3886.53	681.40	0.21
Reach-1	9	100 yr	efork-x	4845.00	581.20	591.60		591.71	0.000709	4.45	4389.36	1213.57	0.25
Reach-1	9	100 yr	efork-p	4845.00	581.20	591.60		591.71	0.000709	4.45	4389.36	1213.57	0.25
Reach-1	9	100 yr	efork-c	4845.00	581.20	591.60		591.71	0.000709	4.45	4389.36	1213.57	0.25
Reach-1	10	100 yr	efork-x	4845.00	582.50	592.75		593.59	0.002830	8.69	1911.07	932.15	0.50
Reach-1	10	100 yr	efork-p	4845.00	582.50	592.75		593.59	0.002830	8.69	1911.07	932.15	0.50
Reach-1	10	100 yr	efork-c	4845.00	582.50	592.75		593.59	0.002830	8.69	1911.07	932.15	0.50
Reach-1	11	100 yr	efork-x	4845.00	583.20	594.28		594.97	0.003094	8.35	1545.29	626.01	0.49
Reach-1	11	100 yr	efork-p	4845.00	583.20	594.28		594.97	0.003094	8.35	1545.29	626.01	0.49
Reach-1	11	100 yr	efork-c	4845.00	583.20	594.28		594.97	0.003094	8.35	1545.29	626.01	0.49
Reach-1	12.1	100 yr	efork-x	4845.00	586.30	595.59		595.80	0.001201	5.07	2612.29	863.65	0.32
Reach-1	12.1	100 yr	efork-p	4845.00	586.30	595.59		595.80	0.001201	5.07	2612.29	863.65	0.32
Reach-1	12.1	100 yr	efork-c	4845.00	586.30	595.59		595.80	0.001201	5.07	2612.29	863.65	0.32
Reach-1	12.2	100 yr	efork-x	4845.00	586.40	595.77	595.21	596.40	0.002524	7.91	2341.33	1035.35	0.47
Reach-1	12.2	100 yr	efork-p	4845.00	586.40	595.77	595.21	596.40	0.002524	7.91	2341.33	1035.35	0.47
Reach-1	12.2	100 yr	efork-c	4845.00	586.40	595.77	595.21	596.40	0.002524	7.91	2341.33	1035.35	0.47
Reach-1	12.25			Bridge									
Reach-1	12.3	100 yr	efork-x	4845.00	586.40	596.22	594.19	596.83	0.001274	7.74	2810.47	1123.25	0.45
Reach-1	12.3	100 yr	efork-p	4845.00	586.40	596.22	594.19	596.83	0.001274	7.74	2810.47	1123.25	0.45
Reach-1	12.3	100 yr	efork-c	4845.00	586.40	596.22	594.19	596.83	0.001274	7.74	2810.47	1123.25	0.45
Reach-1	12.4	100 yr	efork-x	4845.00	587.20	597.07	596.02	597.20	0.001011	3.27	1739.71	833.55	0.25
Reach-1	12.4	100 yr	efork-p	4845.00	587.20	597.07	596.02	597.20	0.001011	3.27	1739.71	833.55	0.25
Reach-1	12.4	100 yr	efork-c	4845.00	587.20	597.07	596.02	597.20	0.001011	3.27	1739.71	833.55	0.25
Reach-1	12.5	100 yr	efork-x	4845.00	587.90	597.64		597.77	0.000822	4.38	2049.30	445.52	0.25
Reach-1	12.5	100 yr	efork-p	4845.00	587.90	597.64		597.77	0.000822	4.38	2049.30	445.52	0.25
Reach-1	12.5	100 yr	efork-c	4845.00	587.90	597.64		597.77	0.000822	4.38	2049.30	445.52	0.25
Reach-1	13	100 yr	efork-x	4845.00	589.30	597.88		598.13	0.001254	4.91	1393.25	292.59	0.32
Reach-1	13	100 yr	efork-p	4845.00	589.30	597.88		598.13	0.001254	4.91	1393.25	292.59	0.32
Reach-1	13	100 yr	efork-c	4845.00	589.30	597.88		598.13	0.001254	4.91	1393.25	292.59	0.32
Reach-1	13.1	100 yr	efork-x	4845.00	589.35	597.95		598.45	0.003298	6.92	1019.40	272.12	0.46
Reach-1	13.1	100 yr	efork-p	4845.00	589.35	597.95		598.45	0.003298	6.92	1019.40	272.12	0.46
Reach-1	13.1	100 yr	efork-c	4845.00	589.35	597.95		598.45	0.003298	6.92	1019.40	272.12	0.46
Reach-1	13.2	100 yr	efork-x	4845.00	589.39	598.01		598.55	0.002879	8.18	1157.55	267.83	0.50
Reach-1	13.2	100 yr	efork-p	4845.00	589.39	598.01		598.55	0.002879	8.18	1157.55	267.83	0.50
Reach-1	13.2	100 yr	efork-c	4845.00	589.39	598.01		598.55	0.002879	8.18	1157.55	267.83	0.50
Reach-1	13.4	100 yr	efork-x	4845.00	589.49	598.07		598.72	0.003235	8.68	1029.11	264.42	0.53
Reach-1	13.4	100 yr	efork-p	4845.00	589.49	598.07		598.72	0.003235	8.68	1029.11	264.42	0.53
Reach-1	13.4	100 yr	efork-c	4845.00	589.49	598.07		598.72	0.003235	8.68	1029.11	264.42	0.53
Reach-1	13.5	100 yr	efork-x	4845.00	589.55	598.39		598.88	0.002843	6.87	1043.86	268.28	0.47
Reach-1	13.5	100 yr	efork-p	4845.00	589.55	598.39		598.88	0.002843	6.87	1043.86	268.28	0.47
Reach-1	13.5	100 yr	efork-c	4845.00	589.55	598.39		598.88	0.002843	6.87	1043.86	268.28	0.47
Reach-1	13.6	100 yr	efork-x	4845.00	589.80	599.00		599.56	0.002383	7.22	982.95	220.20	0.45
Reach-1	13.6	100 yr	efork-p	4845.00	589.80	599.00		599.56	0.002383	7.22	982.95	220.20	0.45
Reach-1	13.6	100 yr	efork-c	4845.00	589.80	599.00		599.56	0.002383	7.22	982.95	220.20	0.45

HEC-RAS River: RIVER-1 Reach: Reach-1 Profile: 100 yr (Continued)

Reach	River Sta	Profile	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Reach-1	13.9	100 yr	efork-x	4845.00	590.30	600.14		600.75	0.003320	7.40	896.37	219.10	0.49
Reach-1	13.9	100 yr	efork-p	4845.00	590.30	600.14		600.75	0.003320	7.40	896.37	219.10	0.49
Reach-1	13.9	100 yr	efork-c	4845.00	590.30	600.14		600.75	0.003320	7.40	896.37	219.10	0.49
Reach-1	13.92	100 yr	efork-x	4845.00	590.61	600.25		600.87	0.002875	7.78	983.67	230.47	0.48
Reach-1	13.92	100 yr	efork-p	4845.00	590.61	600.25		600.87	0.002875	7.78	983.67	230.47	0.48
Reach-1	13.92	100 yr	efork-c	4845.00	590.61	600.25		600.87	0.002875	7.78	983.67	230.47	0.48
Reach-1	13.94	100 yr	efork-x	4845.00	590.69	600.23		600.92	0.002979	8.67	1015.51	239.02	0.50
Reach-1	13.94	100 yr	efork-p	4845.00	590.69	600.23		600.92	0.002979	8.67	1015.51	239.02	0.50
Reach-1	13.94	100 yr	efork-c	4845.00	590.69	600.23		600.92	0.002979	8.67	1015.51	239.02	0.50
Reach-1	14	100 yr	efork-x	4845.00	591.30	600.81		601.05	0.001048	4.80	1391.92	260.64	0.30
Reach-1	14	100 yr	efork-p	4845.00	591.30	600.81		601.05	0.001048	4.80	1391.92	260.64	0.30
Reach-1	14	100 yr	efork-c	4845.00	591.30	600.81		601.05	0.001048	4.80	1391.92	260.64	0.30
Reach-1	15	100 yr	efork-x	4845.00	591.76	600.64		601.61	0.004910	9.80	1284.60	309.78	0.62
Reach-1	15	100 yr	efork-p	4845.00	591.76	600.64		601.61	0.004910	9.80	1284.60	309.78	0.62
Reach-1	15	100 yr	efork-c	4845.00	591.76	600.64		601.61	0.004910	9.80	1284.60	309.78	0.62
Reach-1	15.3	100 yr	efork-x	3221.00	594.93	602.10	599.74	602.48	0.001874	5.71	1046.16	409.23	0.39
Reach-1	15.3	100 yr	efork-p	3221.00	594.93	602.10	599.74	602.48	0.001874	5.71	1046.16	409.23	0.39
Reach-1	15.3	100 yr	efork-c	3221.00	593.25	602.12	599.79	602.45	0.001661	5.66	1308.54	509.97	0.37
Reach-1	15.4	100 yr	efork-x	3221.00	596.33	602.58	601.26	602.79	0.002139	4.47	1318.61	580.52	0.35
Reach-1	15.4	100 yr	efork-p	3221.00	596.33	602.60	600.96	602.71	0.000967	3.02	1543.54	631.47	0.24
Reach-1	15.5	100 yr	efork-x	3221.00	596.00	602.88	600.86	603.04	0.001459	3.85	1375.89	572.78	0.29
Reach-1	15.5	100 yr	efork-p	3221.00	596.00	602.75	600.96	602.90	0.001377	3.68	1285.08	552.15	0.28
Reach-1	15.5	100 yr	efork-c	3221.00	594.33	602.62	600.84	603.16	0.002834	6.80	983.69	601.13	0.43
Reach-1	15.7	100 yr	efork-x	3221.00	595.05	603.06	602.41	603.28	0.001958	5.46	1347.77	633.29	0.36
Reach-1	15.7	100 yr	efork-p	3221.00	595.05	602.89	602.40	603.18	0.002552	6.14	1160.61	559.54	0.40
Reach-1	15.7	100 yr	efork-c	3221.00	595.05	603.03	603.03	604.30	0.007998	11.11	672.04	285.43	0.72
Reach-1	15.8	100 yr	efork-x	3221.00	595.30	603.39	603.39	604.55	0.008213	11.35	756.63	302.34	0.72
Reach-1	15.8	100 yr	efork-p	3221.00	595.30	603.39	603.39	604.55	0.008213	11.35	756.63	302.34	0.72
Reach-1	15.8	100 yr	efork-c	3221.00	595.30	604.37	603.39	604.91	0.003801	8.36	1040.50	323.49	0.50
Reach-1	15.9	100 yr	efork-x	3221.00	595.51	604.64		605.03	0.004602	8.62	897.91	163.09	0.51
Reach-1	15.9	100 yr	efork-p	3221.00	595.51	604.64		605.03	0.004602	8.62	897.92	163.09	0.51
Reach-1	15.9	100 yr	efork-c	3221.00	595.51	604.63		605.19	0.004152	8.30	929.37	163.84	0.48
Reach-1	16	100 yr	efork-x	3221.00	596.00	604.61		605.58	0.007567	10.97	651.19	140.73	0.70
Reach-1	16	100 yr	efork-p	3221.00	596.00	604.61		605.58	0.007567	10.97	651.20	140.73	0.70
Reach-1	16	100 yr	efork-c	3221.00	596.00	604.60		605.69	0.006754	10.54	678.30	141.60	0.66
Reach-1	16.2	100 yr	efork-x	3221.00	597.20	605.01		607.33	0.014705	13.38	380.16	109.25	0.91
Reach-1	16.2	100 yr	efork-p	3221.00	597.20	605.01		607.33	0.014703	13.38	380.17	109.25	0.91
Reach-1	16.2	100 yr	efork-c	3221.00	597.20	605.10		607.32	0.013879	13.12	390.00	109.72	0.89
Reach-1	16.3	100 yr	efork-x	3221.00	597.60	606.66	606.66	609.10	0.012130	13.81	369.12	83.74	0.88
Reach-1	16.3	100 yr	efork-p	3221.00	597.60	606.66	606.66	609.10	0.012130	13.81	369.12	83.74	0.88
Reach-1	16.3	100 yr	efork-c	3221.00	597.60	606.66	606.66	609.10	0.012130	13.81	369.12	83.74	0.88
Reach-1	16.4	100 yr	efork-x	3221.00	598.12	607.97	606.39	609.58	0.003560	11.12	416.22	69.71	0.64
Reach-1	16.4	100 yr	efork-p	3221.00	598.12	607.97	606.39	609.58	0.003560	11.12	416.22	69.71	0.64
Reach-1	16.4	100 yr	efork-c	3221.00	598.12	607.97	606.39	609.58	0.003560	11.12	416.21	69.71	0.64
Reach-1	16.6			Bridge									
Reach-1	16.8	100 yr	efork-x	3221.00	598.30	608.62	606.00	609.76	0.002497	9.68	500.39	73.94	0.54
Reach-1	16.8	100 yr	efork-p	3221.00	598.30	608.62	606.00	609.76	0.002497	9.68	500.39	73.94	0.54
Reach-1	16.8	100 yr	efork-c	3221.00	598.30	608.62	606.00	609.76	0.002497	9.68	500.38	73.94	0.54
Reach-1	17	100 yr	efork-x	3221.00	598.90	608.91		610.50	0.004022	10.74	343.43	53.81	0.64
Reach-1	17	100 yr	efork-p	3221.00	598.90	608.91		610.50	0.004022	10.74	343.43	53.81	0.64
Reach-1	17	100 yr	efork-c	3221.00	598.90	608.91		610.50	0.004023	10.74	343.42	53.81	0.64
Reach-1	17.1	100 yr	efork-x	3221.00	599.73	609.44	607.50	610.99	0.003647	10.44	348.99	52.47	0.62
Reach-1	17.1	100 yr	efork-p	3221.00	599.73	609.44	607.50	610.99	0.003647	10.44	348.99	52.47	0.62
Reach-1	17.1	100 yr	efork-c	3221.00	599.73	609.44	607.50	610.99	0.003647	10.44	348.99	52.47	0.62
Reach-1	17.4	100 yr	efork-x	3221.00	600.70	610.76		611.39	0.001090	6.40	503.16	57.00	0.38
Reach-1	17.4	100 yr	efork-p	3221.00	600.70	610.76		611.39	0.001090	6.40	503.16	57.00	0.38
Reach-1	17.4	100 yr	efork-c	3221.00	600.70	610.76		611.39	0.001090	6.40	503.16	57.00	0.38
Reach-1	17.5			Bridge									
Reach-1	17.6	100 yr	efork-x	3221.00	601.17	611.11	606.85	611.76	0.001081	6.47	497.87	58.07	0.38
Reach-1	17.6	100 yr	efork-p	3221.00	601.17	611.11	606.85	611.76	0.001081	6.47	497.87	58.07	0.38
Reach-1	17.6	100 yr	efork-c	3221.00	601.17	611.11	606.85	611.76	0.001081	6.47	497.87	58.07	0.38

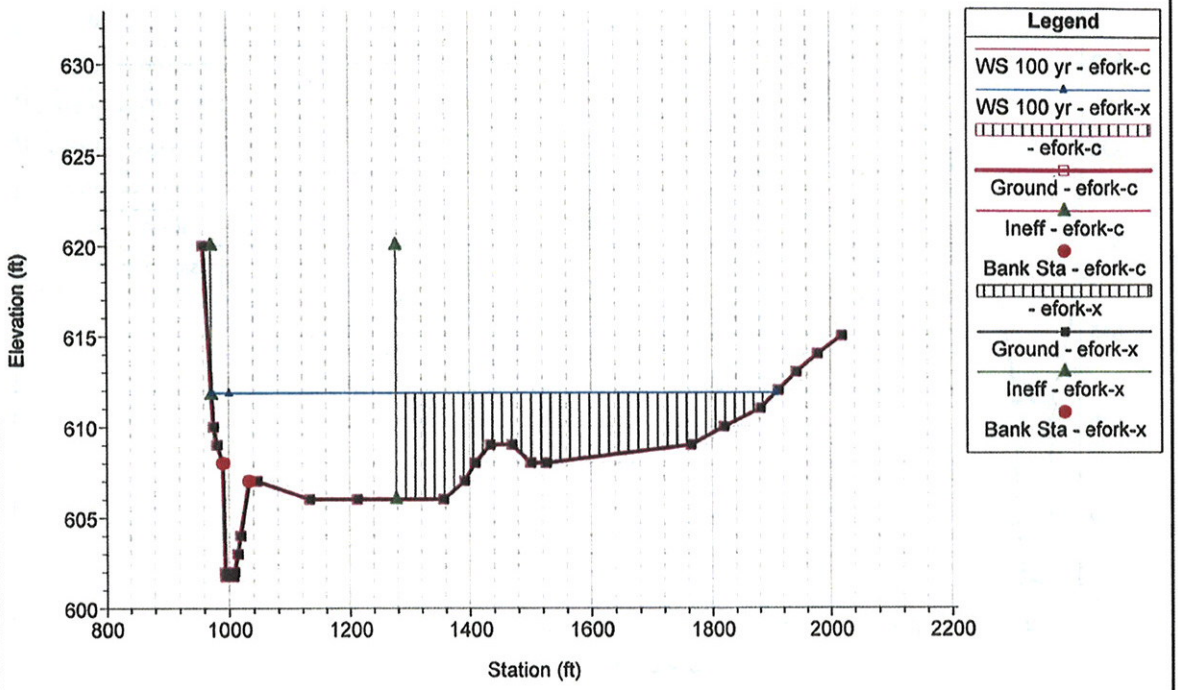
HEC-RAS River: RIVER-1 Reach: Reach-1 Profile: 100 yr (Continued)

Reach	River Sta	Profile	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Reach-1	17.9	100 yr	efork-x	3221.00	601.80	611.53	608.96	611.89	0.001254	6.27	806.35	181.37	0.37
Reach-1	17.9	100 yr	efork-p	3221.00	601.80	611.53	608.96	611.89	0.001254	6.27	806.35	181.37	0.37
Reach-1	17.9	100 yr	efork-c	3221.00	601.80	611.53	608.96	611.89	0.001254	6.27	806.35	181.37	0.37
Reach-1	18	100 yr	efork-x	3221.00	601.75	611.85	608.42	612.06	0.000874	4.85	1780.12	935.25	0.30
Reach-1	18	100 yr	efork-p	3221.00	601.75	611.85	608.42	612.06	0.000874	4.85	1780.12	935.25	0.30
Reach-1	18	100 yr	efork-c	3221.00	601.75	611.85	608.42	612.06	0.000874	4.85	1780.12	935.25	0.30
Reach-1	19	100 yr	efork-x	3221.00	603.70	612.29		612.40	0.000731	3.95	2919.31	741.67	0.25
Reach-1	19	100 yr	efork-p	3221.00	603.70	612.29		612.40	0.000731	3.95	2919.31	741.67	0.25
Reach-1	19	100 yr	efork-c	3221.00	603.70	612.29		612.40	0.000731	3.95	2919.31	741.67	0.25
Reach-1	19.5	100 yr	efork-x	3221.00	606.20	612.54		612.90	0.003487	7.07	1471.97	454.70	0.51
Reach-1	19.5	100 yr	efork-p	3221.00	606.20	612.54		612.90	0.003487	7.07	1471.97	454.70	0.51
Reach-1	19.5	100 yr	efork-c	3221.00	606.20	612.54		612.90	0.003487	7.07	1471.97	454.70	0.51
Reach-1	19.7	100 yr	efork-x	3221.00	607.25	613.39		613.90	0.004638	7.68	1165.27	368.05	0.58
Reach-1	19.7	100 yr	efork-p	3221.00	607.25	613.39		613.90	0.004638	7.68	1165.27	368.05	0.58
Reach-1	19.7	100 yr	efork-c	3221.00	607.25	613.39		613.90	0.004638	7.68	1165.27	368.05	0.58
Reach-1	19.85*	100 yr	efork-x	3221.00	607.47	613.55		614.49	0.007377	9.87	939.31	362.04	0.74
Reach-1	19.85*	100 yr	efork-p	3221.00	607.47	613.55		614.49	0.007377	9.87	939.31	362.04	0.74
Reach-1	19.85*	100 yr	efork-c	3221.00	607.47	613.55		614.49	0.007377	9.87	939.31	362.04	0.74
Reach-1	20	100 yr	efork-x	3221.00	607.70	613.91		615.28	0.009257	11.43	813.28	360.96	0.84
Reach-1	20	100 yr	efork-p	3221.00	607.70	613.91		615.28	0.009257	11.43	813.28	360.96	0.84
Reach-1	20	100 yr	efork-c	3221.00	607.70	613.91		615.28	0.009257	11.43	813.28	360.96	0.84
Reach-1	21	100 yr	efork-x	3221.00	611.00	618.88	617.31	619.23	0.002488	5.72	879.75	556.74	0.39
Reach-1	21	100 yr	efork-p	3221.00	611.00	618.88	617.31	619.23	0.002488	5.72	879.75	556.74	0.39
Reach-1	21	100 yr	efork-c	3221.00	611.00	618.88	617.31	619.23	0.002488	5.72	879.75	556.74	0.39
Reach-1	22.1	100 yr	efork-x	3221.00	611.40	619.58	617.59	620.37	0.004755	7.43	577.81	288.13	0.53
Reach-1	22.1	100 yr	efork-p	3221.00	611.40	619.58	617.59	620.37	0.004755	7.43	577.81	288.13	0.53
Reach-1	22.1	100 yr	efork-c	3221.00	611.40	619.58	617.59	620.37	0.004755	7.43	577.81	288.13	0.53
Reach-1	22.2	100 yr	efork-x	3221.00	614.00	620.73		621.66	0.003595	7.85	712.20	326.49	0.58
Reach-1	22.2	100 yr	efork-p	3221.00	614.00	620.73		621.66	0.003595	7.85	712.20	326.49	0.58
Reach-1	22.2	100 yr	efork-c	3221.00	614.00	620.73		621.66	0.003595	7.85	712.20	326.49	0.58
Reach-1	22.25			Bridge									
Reach-1	22.3	100 yr	efork-x	3221.00	614.00	620.78	619.38	621.86	0.004601	8.46	601.68	296.42	0.65
Reach-1	22.3	100 yr	efork-p	3221.00	614.00	620.78	619.38	621.86	0.004601	8.46	601.68	296.42	0.65
Reach-1	22.3	100 yr	efork-c	3221.00	614.00	620.78	619.38	621.86	0.004601	8.46	601.68	296.42	0.65
Reach-1	22.35	100 yr	efork-x	3221.00	614.60	621.10	621.10	622.50	0.010437	11.69	703.45	368.41	0.81
Reach-1	22.35	100 yr	efork-p	3221.00	614.60	621.10	621.10	622.50	0.010437	11.69	703.45	368.41	0.81
Reach-1	22.35	100 yr	efork-c	3221.00	614.60	621.10	621.10	622.50	0.010437	11.69	703.45	368.41	0.81
Reach-1	22.4	100 yr	efork-x	3221.00	614.90	621.96		623.08	0.006750	9.35	794.71	413.59	0.69
Reach-1	22.4	100 yr	efork-p	3221.00	614.90	621.96		623.08	0.006750	9.35	794.71	413.59	0.69
Reach-1	22.4	100 yr	efork-c	3221.00	614.90	621.96		623.08	0.006750	9.35	794.71	413.59	0.69
Reach-1	22.6	100 yr	efork-x	3221.00	617.00	623.51		624.02	0.003729	6.54	1072.07	504.58	0.47
Reach-1	22.6	100 yr	efork-p	3221.00	617.00	623.51		624.02	0.003729	6.54	1072.07	504.58	0.47
Reach-1	22.6	100 yr	efork-c	3221.00	617.00	623.51		624.02	0.003729	6.54	1072.07	504.58	0.47
Reach-1	23	100 yr	efork-x	3221.00	619.00	624.85		625.61	0.005313	8.14	1489.48	604.06	0.62
Reach-1	23	100 yr	efork-p	3221.00	619.00	624.85		625.61	0.005313	8.14	1489.48	604.06	0.62
Reach-1	23	100 yr	efork-c	3221.00	619.00	624.85		625.61	0.005313	8.14	1489.48	604.06	0.62
Reach-1	24	100 yr	efork-x	3221.00	623.20	629.25		630.46	0.009112	9.33	622.60	416.26	0.73
Reach-1	24	100 yr	efork-p	3221.00	623.20	629.25		630.46	0.009112	9.33	622.60	416.26	0.73
Reach-1	24	100 yr	efork-c	3221.00	623.20	629.25		630.46	0.009112	9.33	622.60	416.26	0.73

20030708 Plan: 1) efork-x 9:39:43 PM 2) efork-c 9:39:54 PM

Geom: efork-x Flow: efork-r

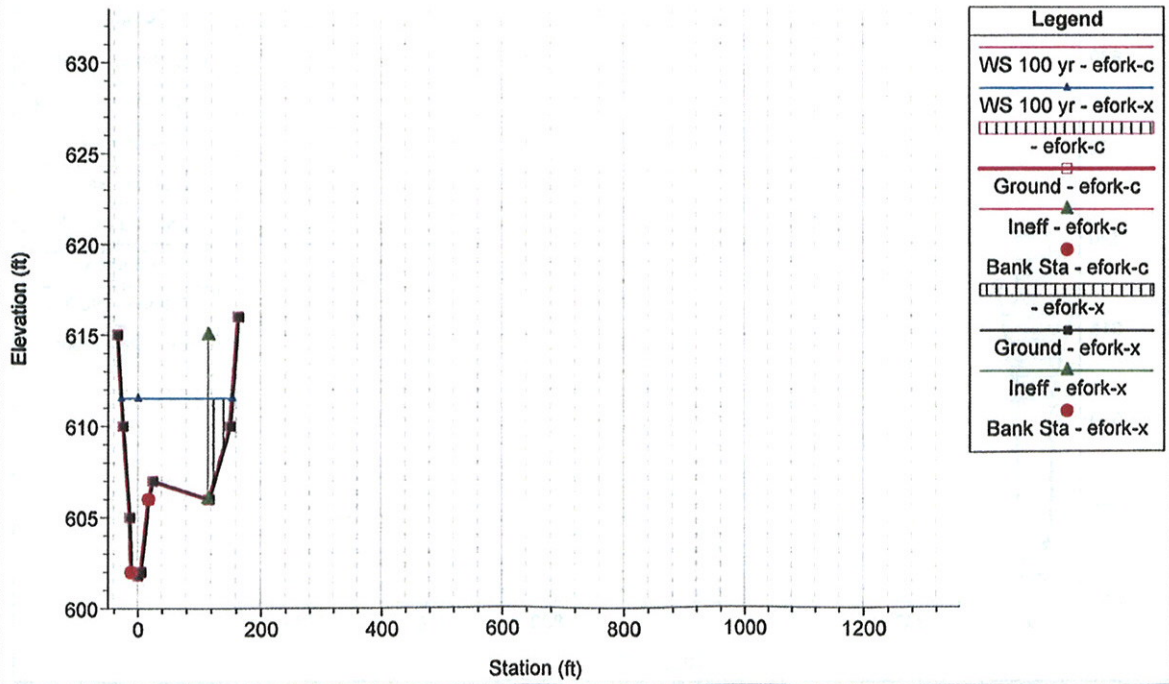
River = RIVER-1 Reach = Reach-1 RS = 18 From Butler County Interactive Study (1"= 400', 2' Topo)



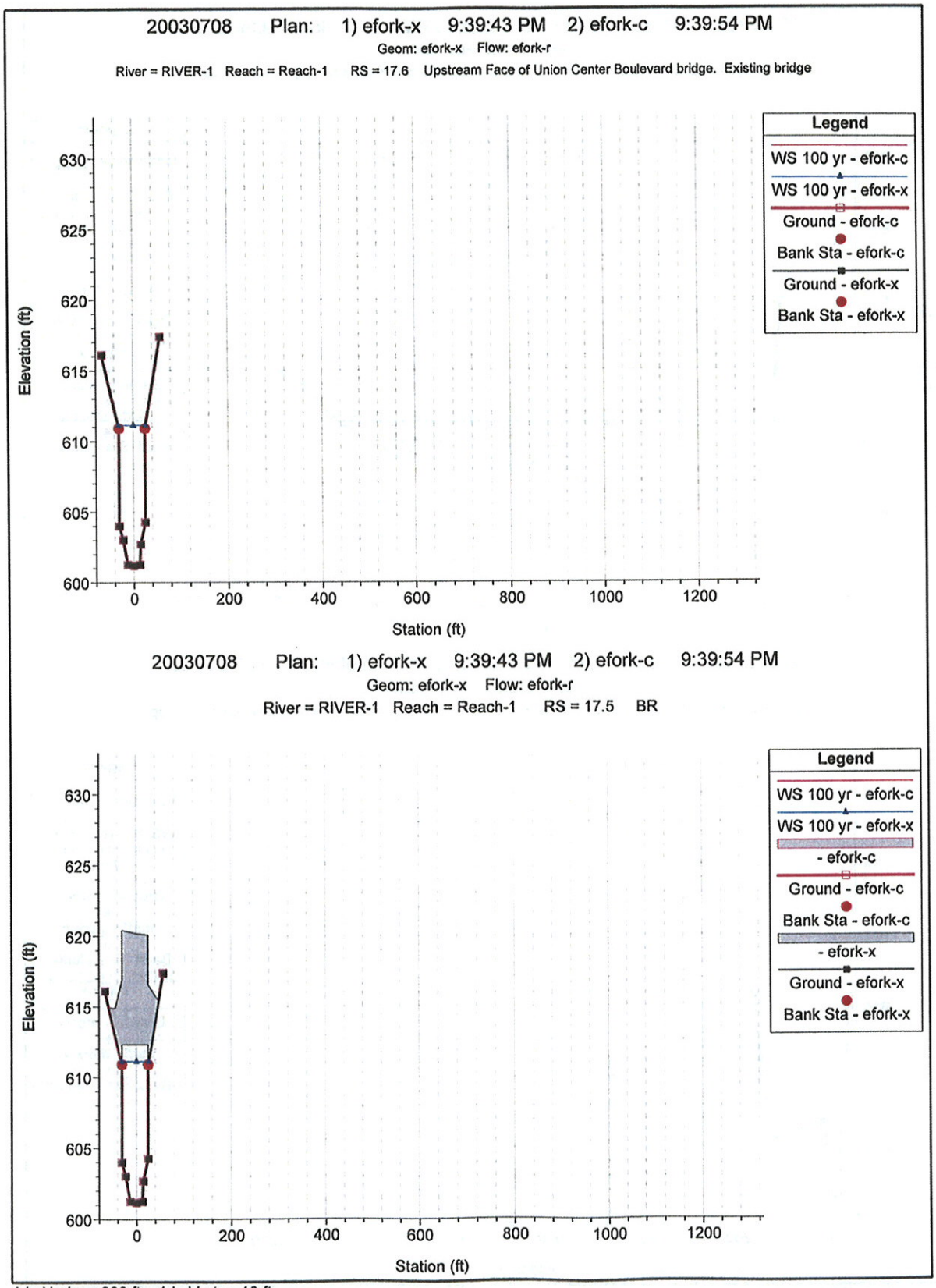
20030708 Plan: 1) efork-x 9:39:43 PM 2) efork-c 9:39:54 PM

Geom: efork-x Flow: efork-r

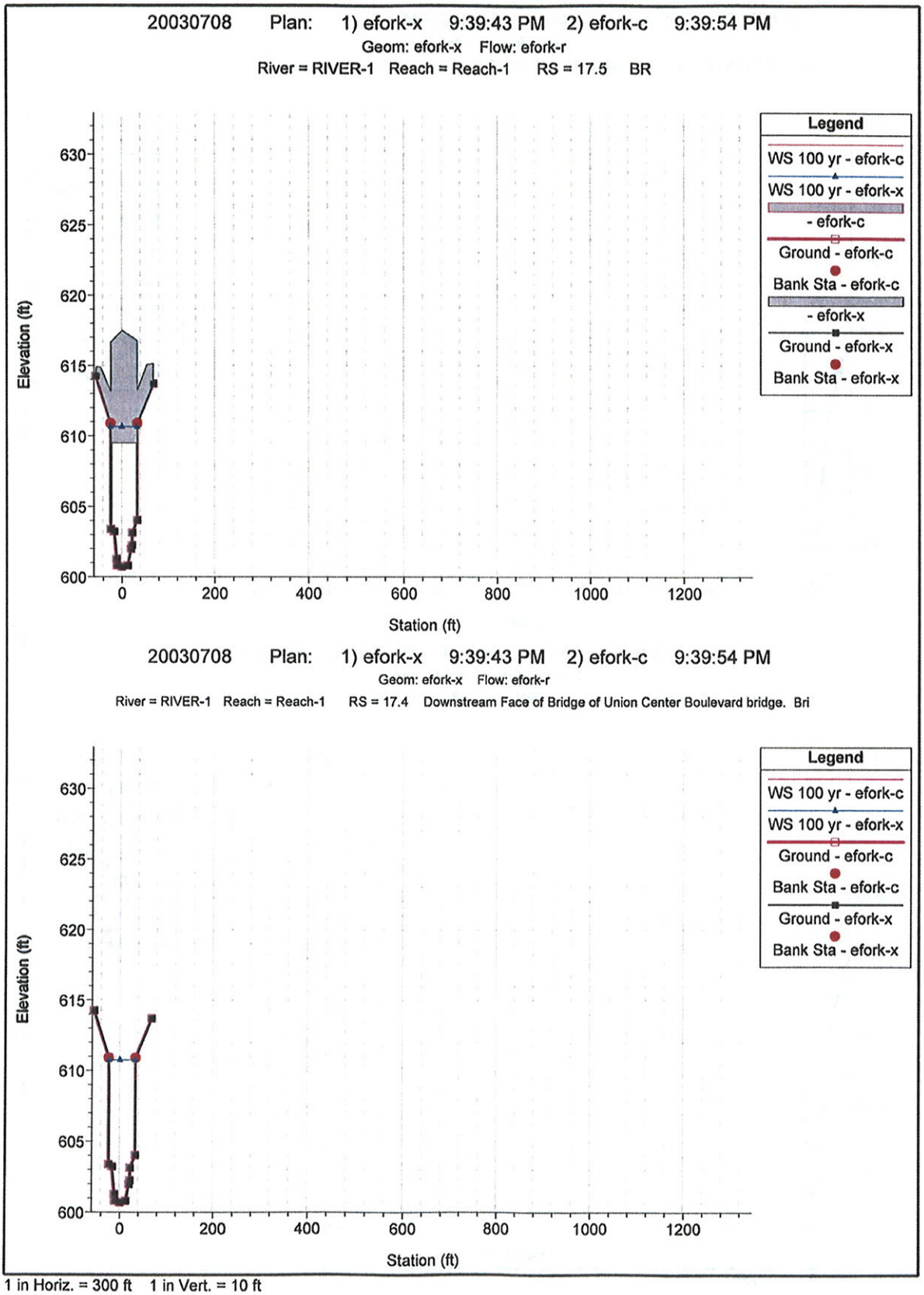
River = RIVER-1 Reach = Reach-1 RS = 17.9 New Cross Section using EMH&T Field Topo



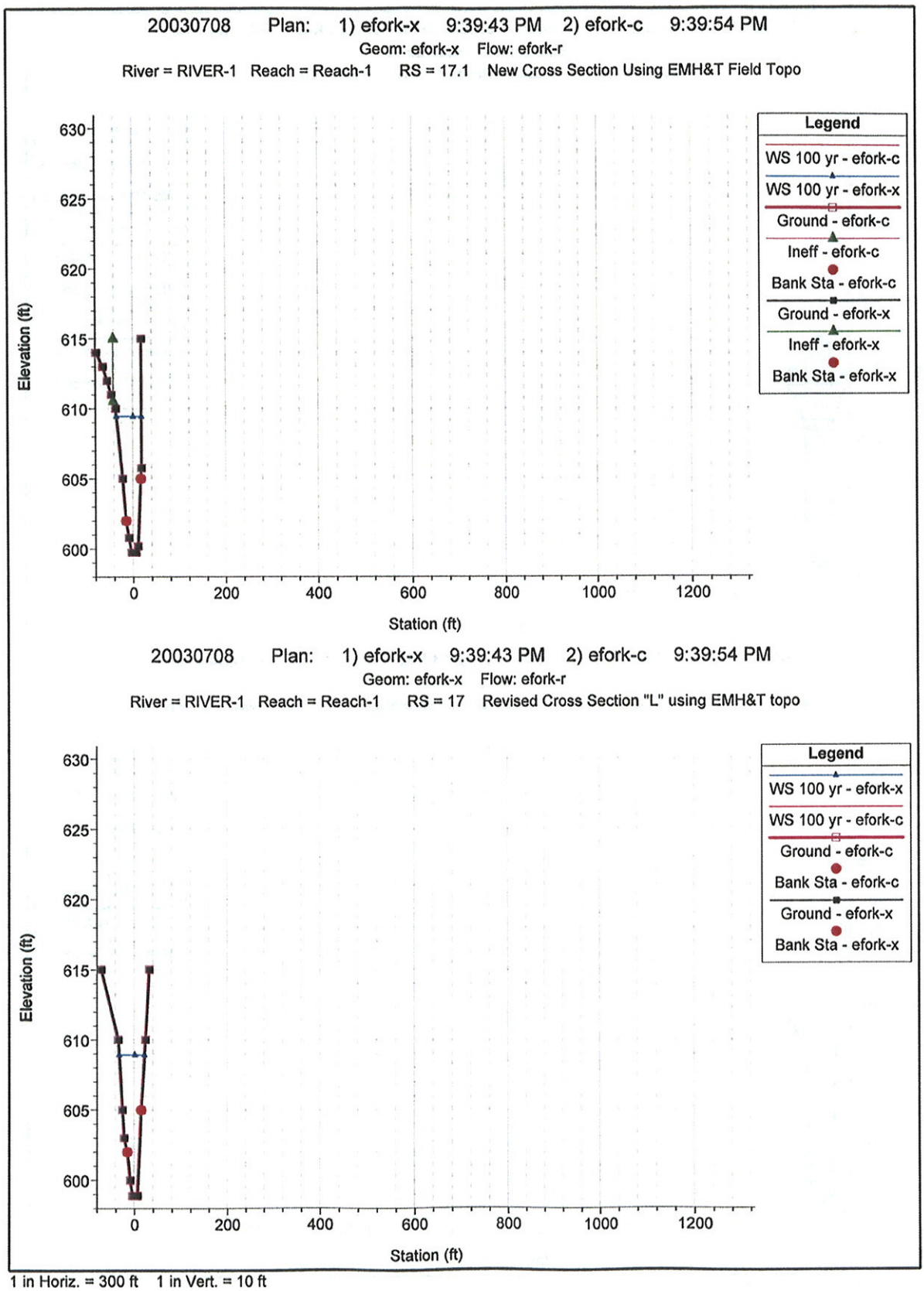
1 in Horiz. = 300 ft 1 in Vert. = 10 ft



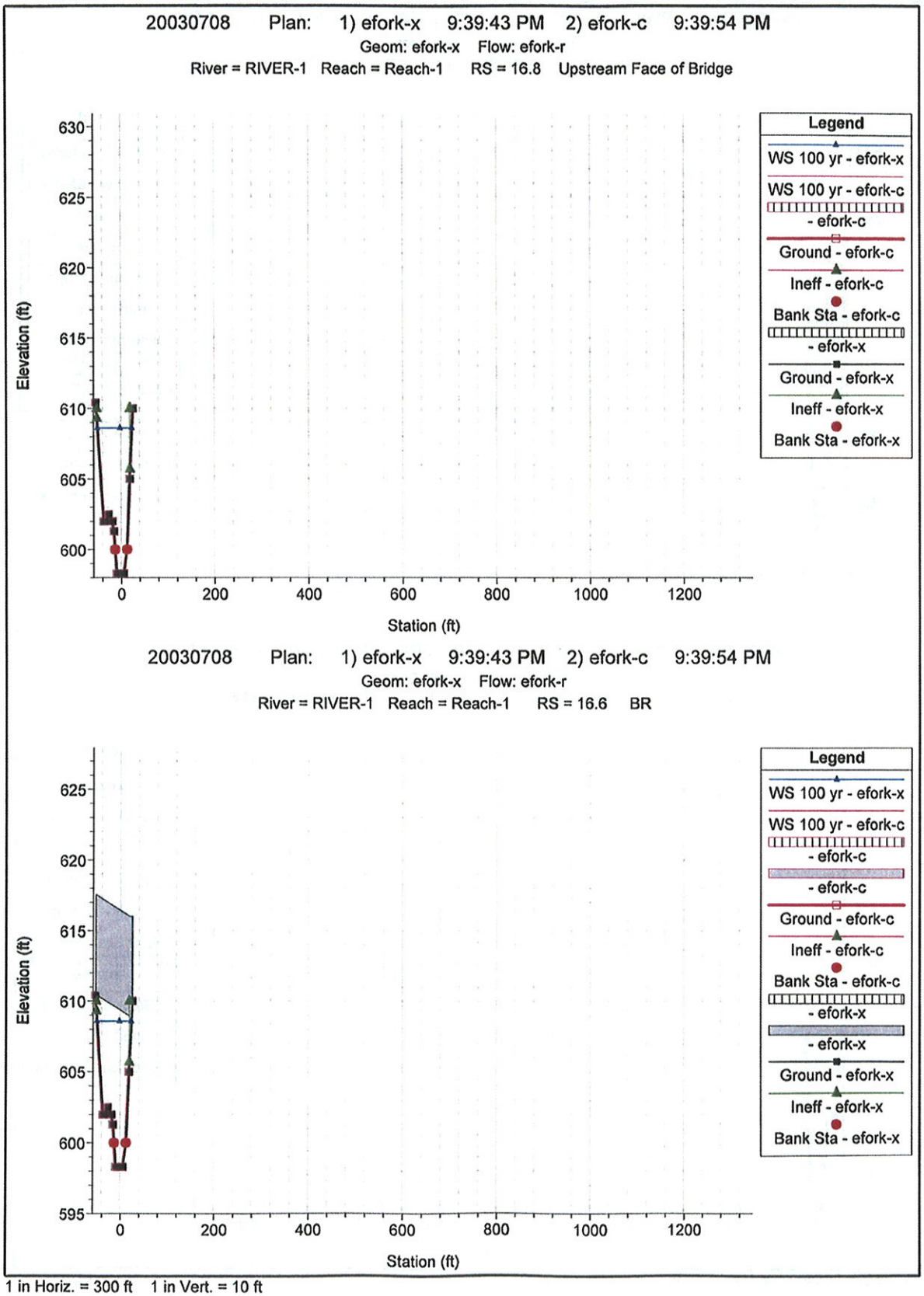
1 in Horiz. = 300 ft 1 in Vert. = 10 ft



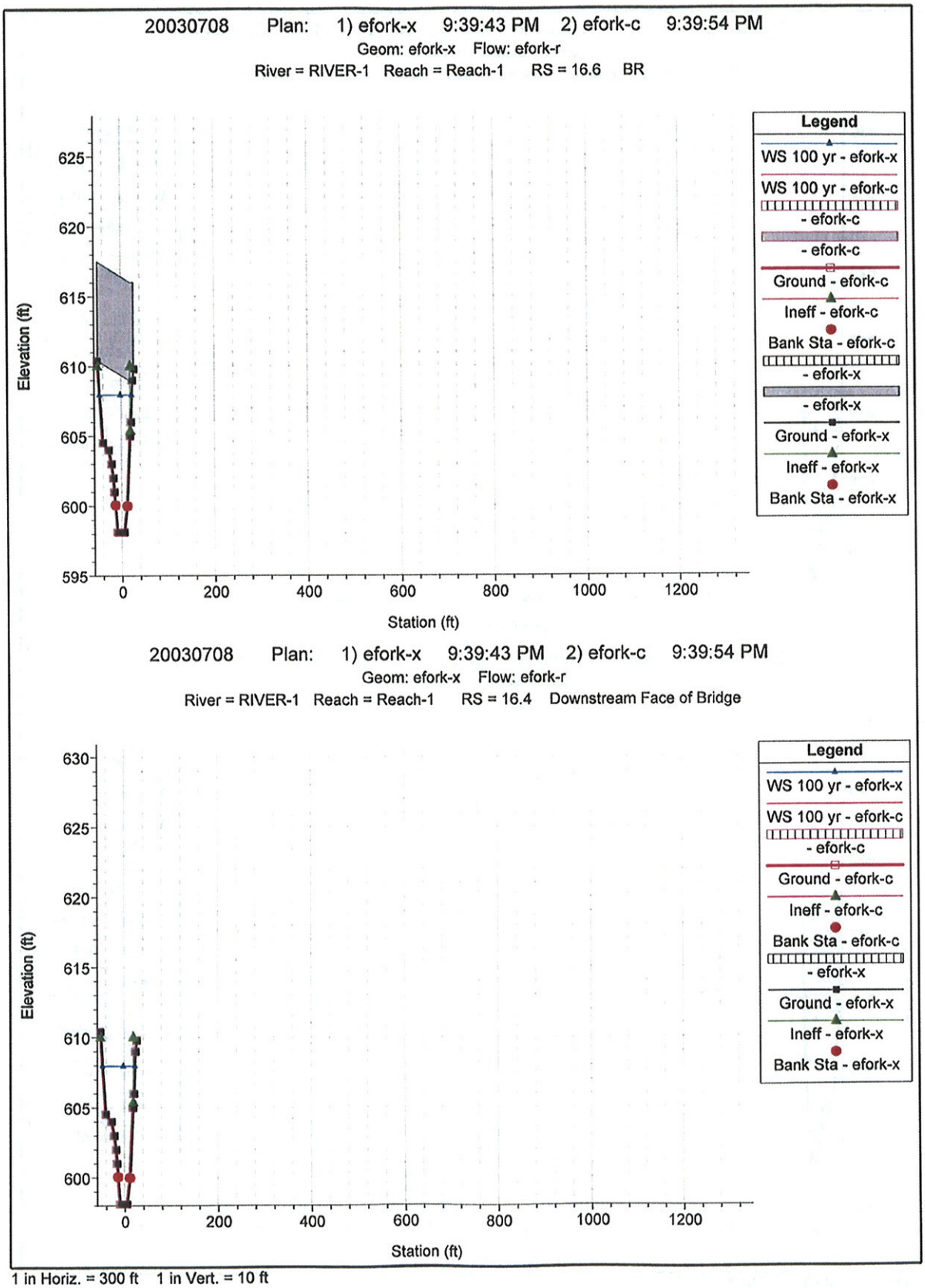
1 in Horiz. = 300 ft 1 in Vert. = 10 ft



1 in Horiz. = 300 ft 1 in Vert. = 10 ft



1 in Horiz. = 300 ft 1 in Vert. = 10 ft

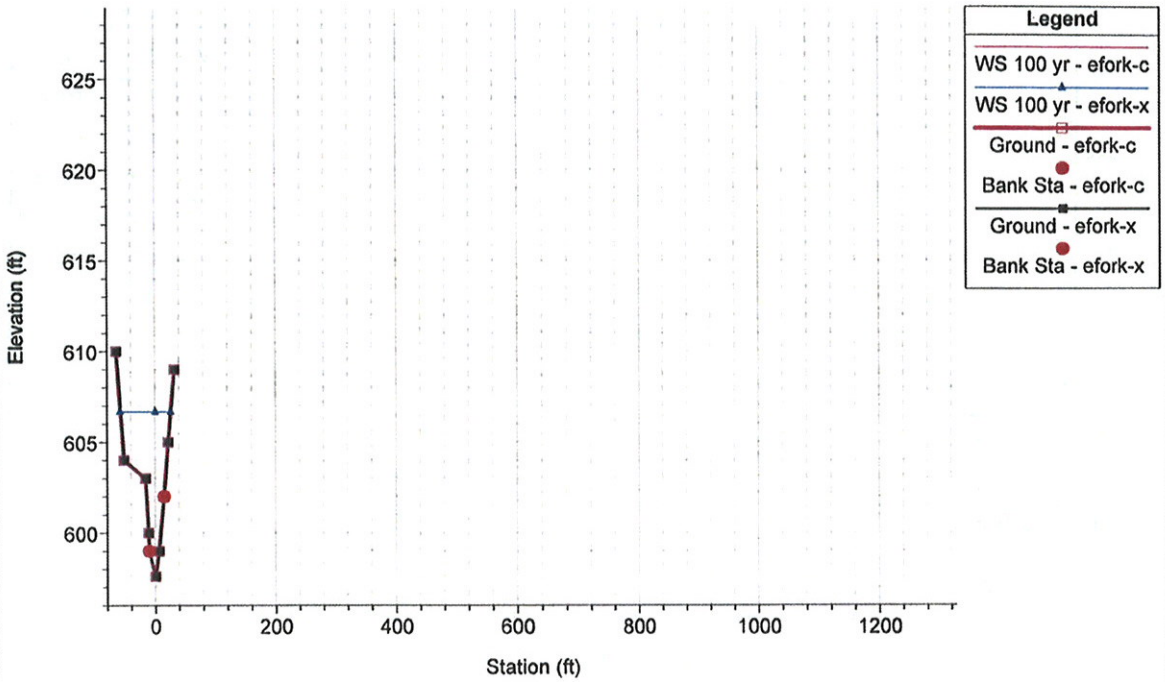


1 in Horiz. = 300 ft 1 in Vert. = 10 ft

20030708 Plan: 1) efork-x 9:39:43 PM 2) efork-c 9:39:54 PM

Geom: efork-x Flow: efork-r

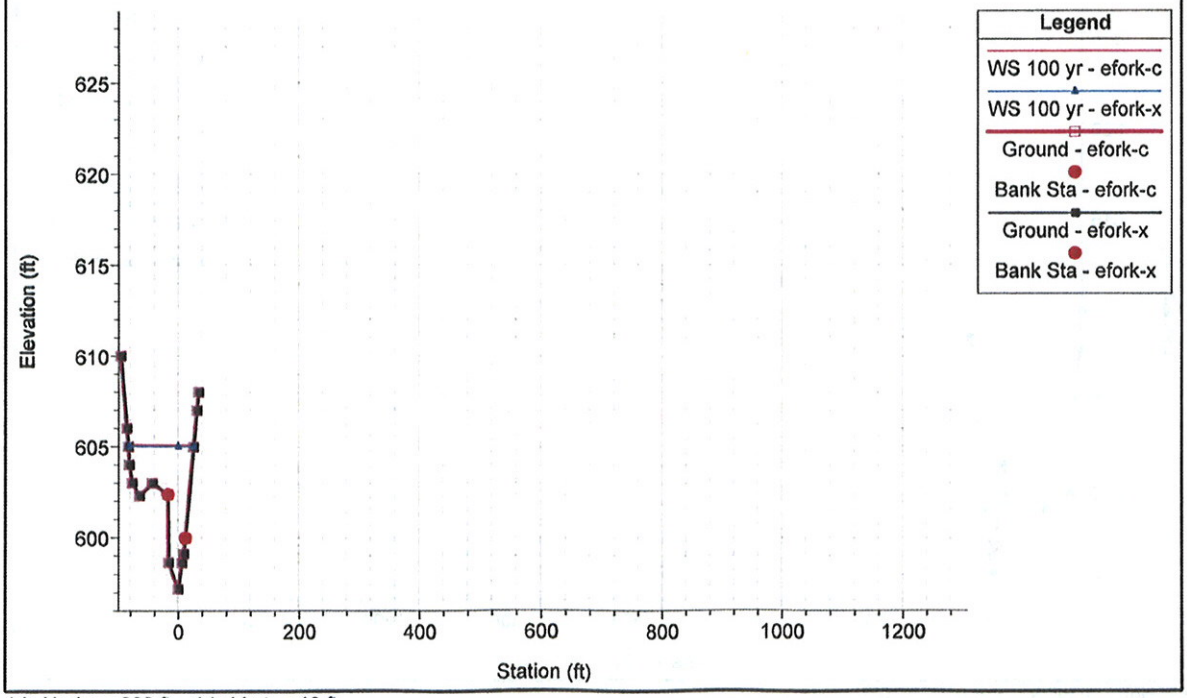
River = RIVER-1 Reach = Reach-1 RS = 16.3 New Cross Section using EMH&T field topo



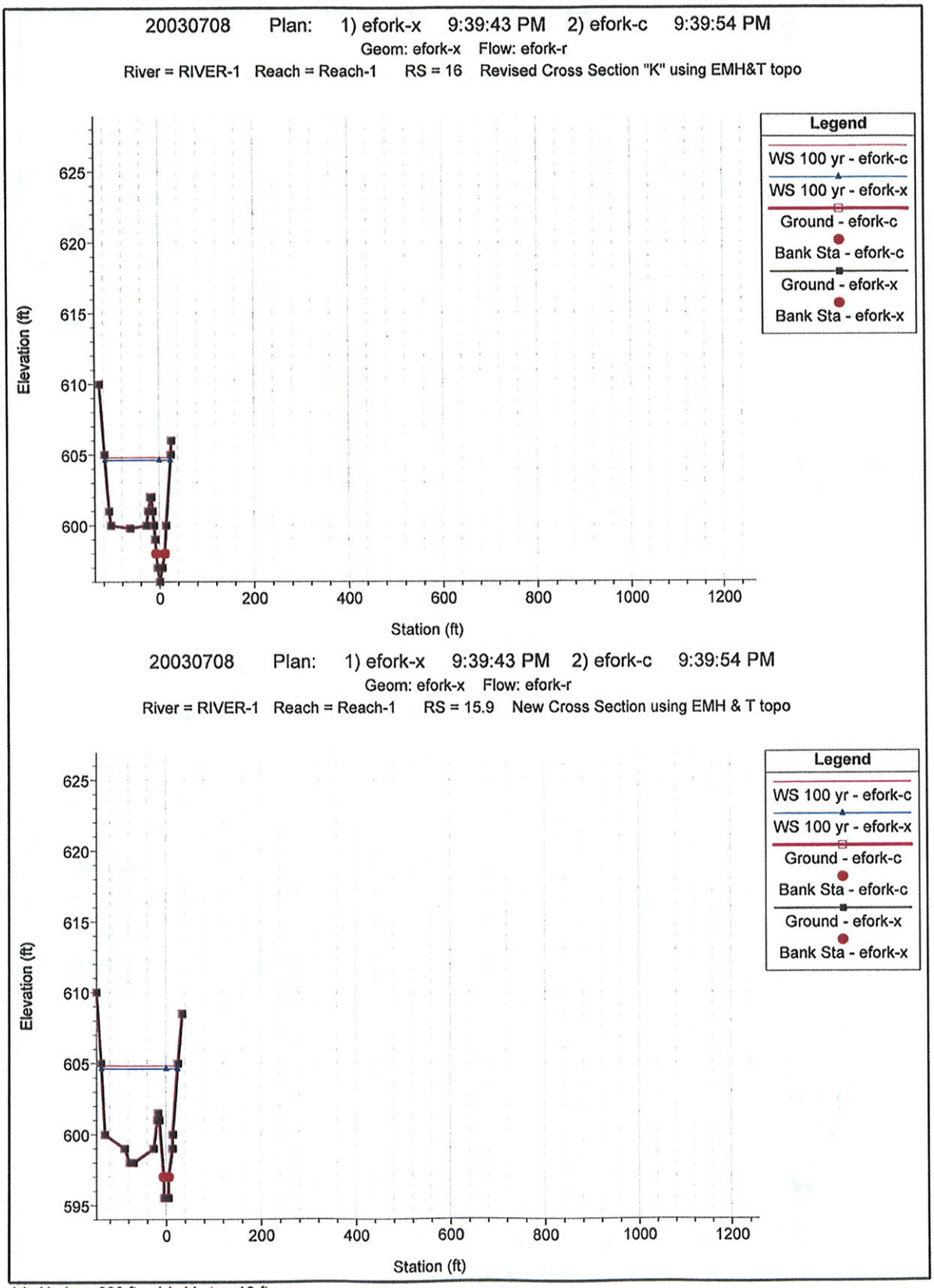
20030708 Plan: 1) efork-x 9:39:43 PM 2) efork-c 9:39:54 PM

Geom: efork-x Flow: efork-r

River = RIVER-1 Reach = Reach-1 RS = 16.2 New Cross Section using EMH & T field topo



1 in Horiz. = 300 ft 1 in Vert. = 10 ft

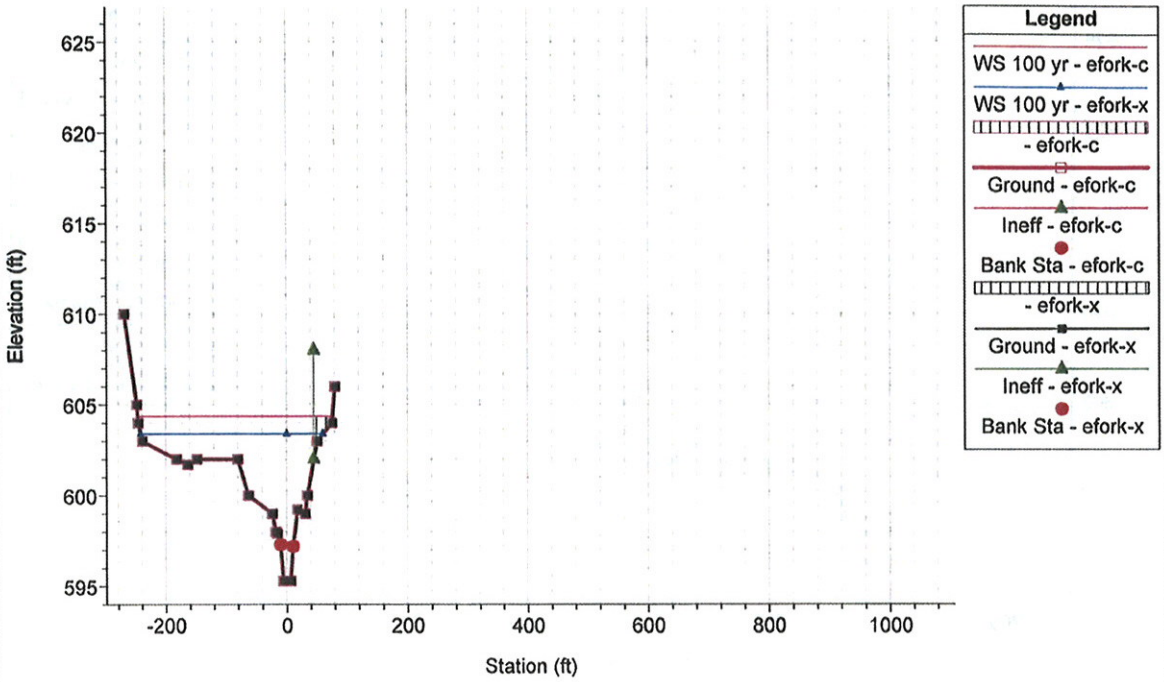


1 in Horiz. = 300 ft 1 in Vert. = 10 ft

20030708 Plan: 1) efork-x 9:39:43 PM 2) efork-c 9:39:54 PM

Geom: efork-x Flow: efork-r

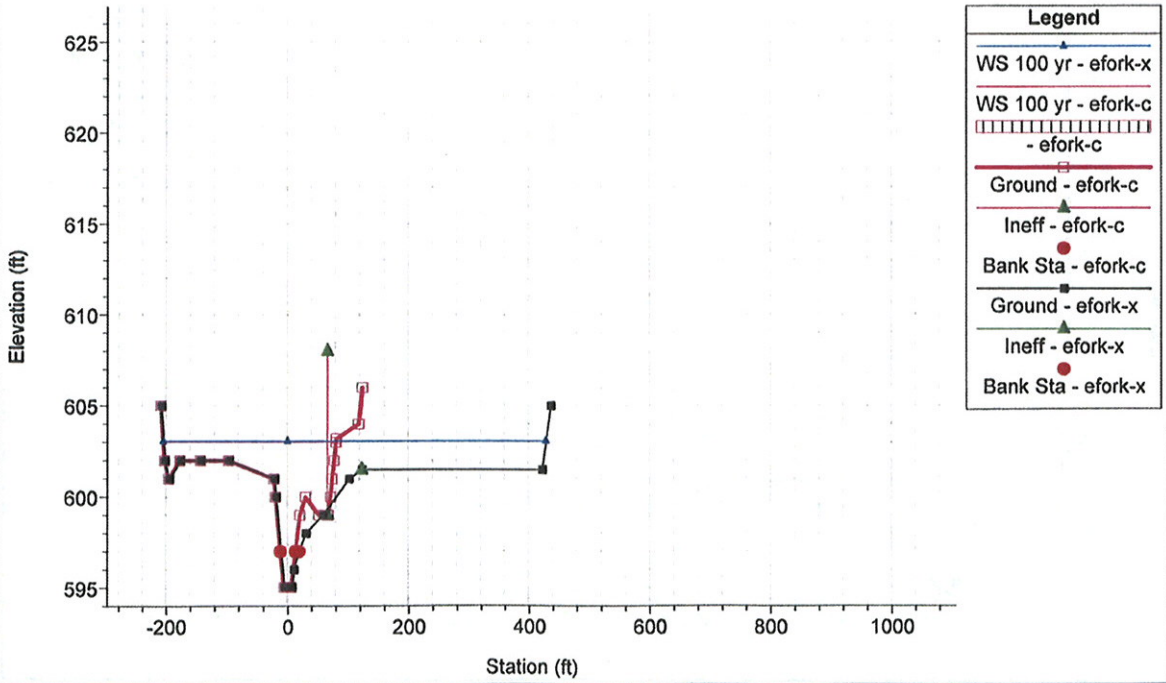
River = RIVER-1 Reach = Reach-1 RS = 15.8 New Cross Section Using EMH&T field topo



20030708 Plan: 1) efork-x 9:39:43 PM 2) efork-c 9:39:54 PM

Geom: efork-x Flow: efork-r

River = RIVER-1 Reach = Reach-1 RS = 15.7 New Cross Section using EMH & T topo

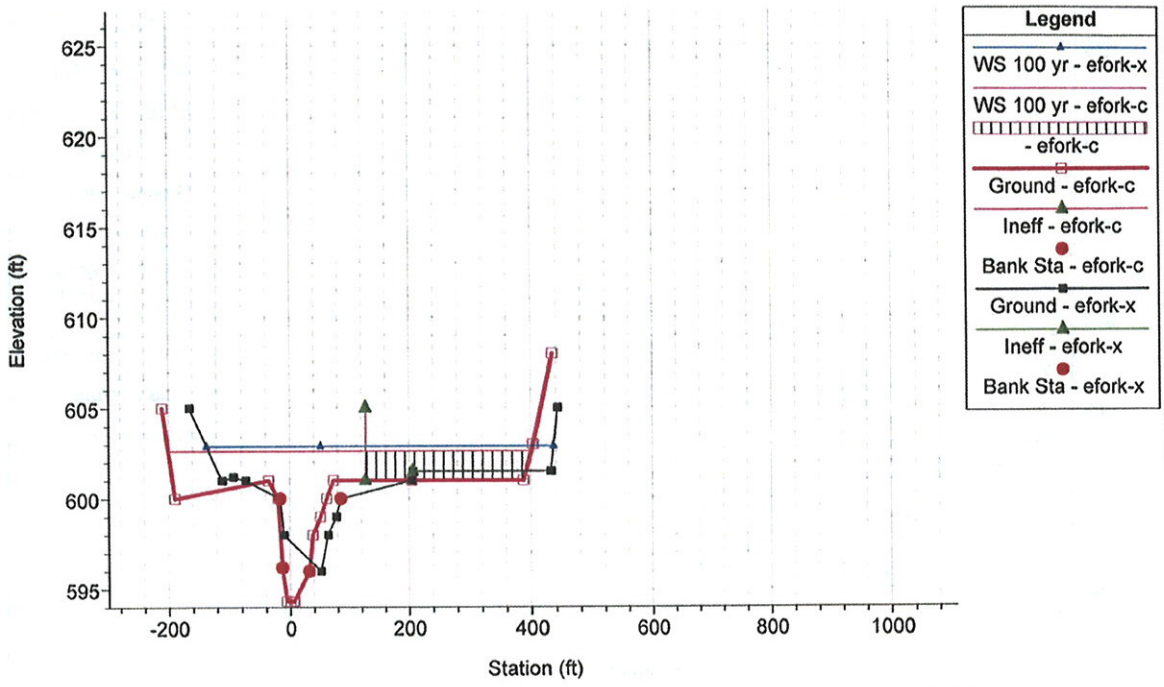


1 in Horiz. = 300 ft 1 in Vert. = 10 ft

20030708 Plan: 1) efork-x 9:39:43 PM 2) efork-c 9:39:54 PM

Geom: efork-x Flow: efork-r

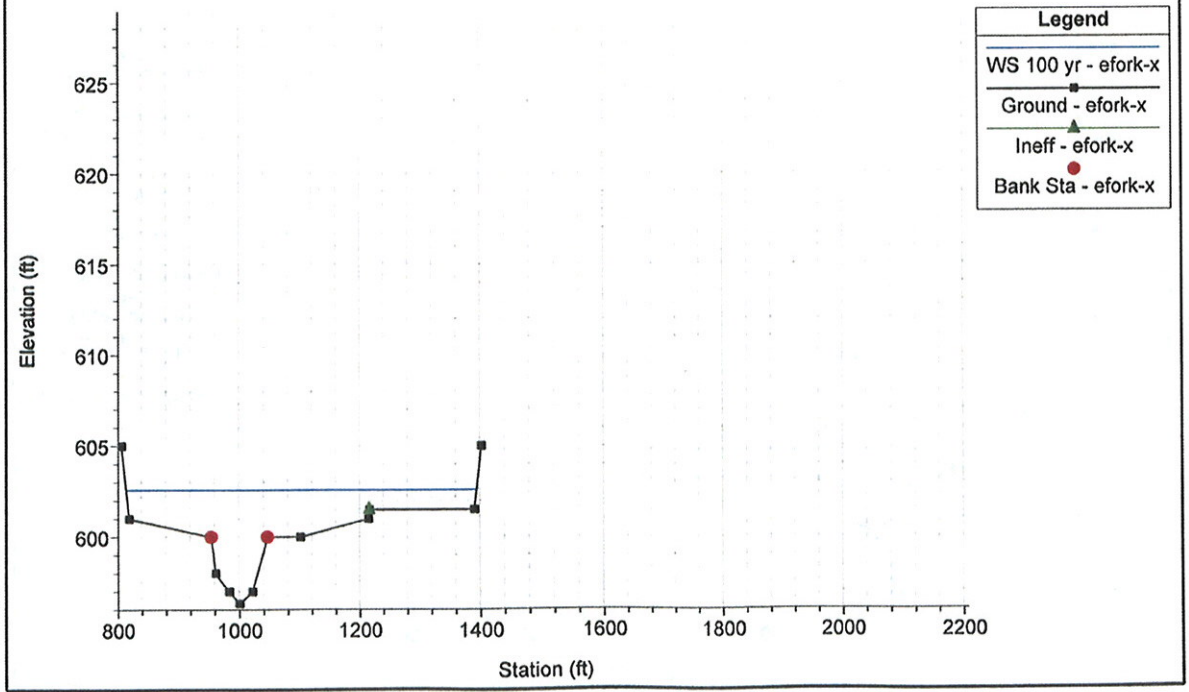
River = RIVER-1 Reach = Reach-1 RS = 15.5 New Cross Section Using EMH&T Field Topo



20030708 Plan: 1) efork-x 9:39:43 PM 2) efork-c 9:39:54 PM

Geom: efork-x Flow: efork-r

River = RIVER-1 Reach = Reach-1 RS = 15.4

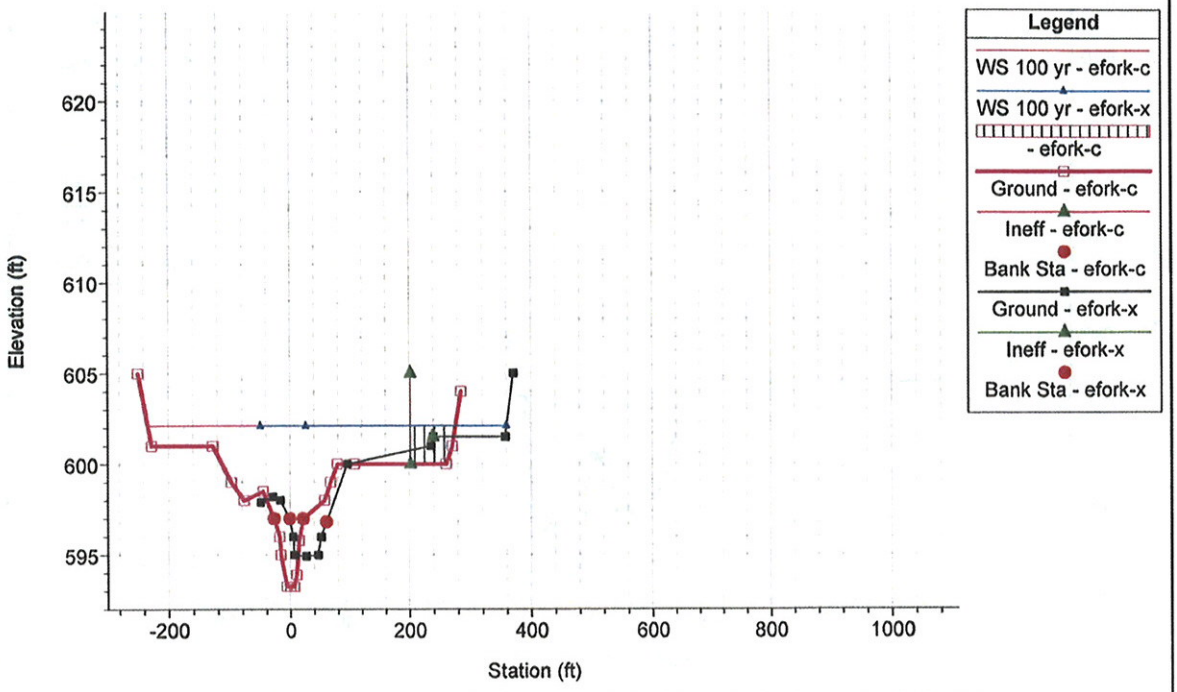


1 in Horiz. = 300 ft 1 in Vert. = 10 ft

20030708 Plan: 1) efork-x 9:39:43 PM 2) efork-c 9:39:54 PM

Geom: efork-x Flow: efork-r

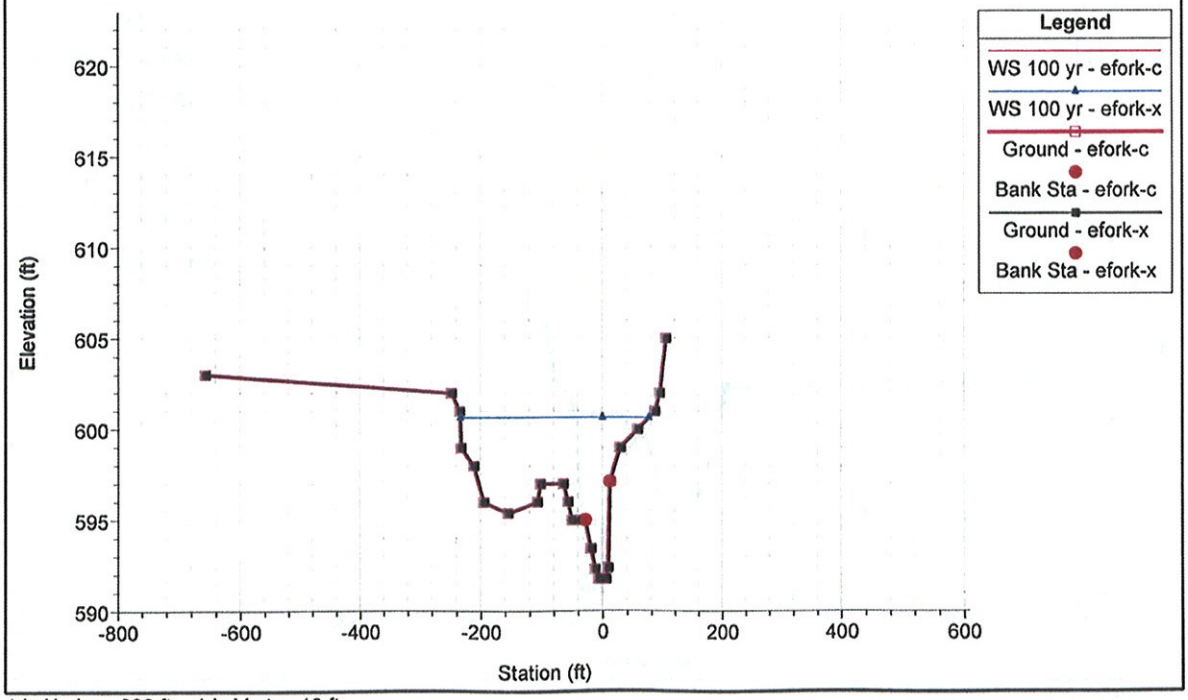
River = RIVER-1 Reach = Reach-1 RS = 15.3 New Cross Section using EMH&T Field topo



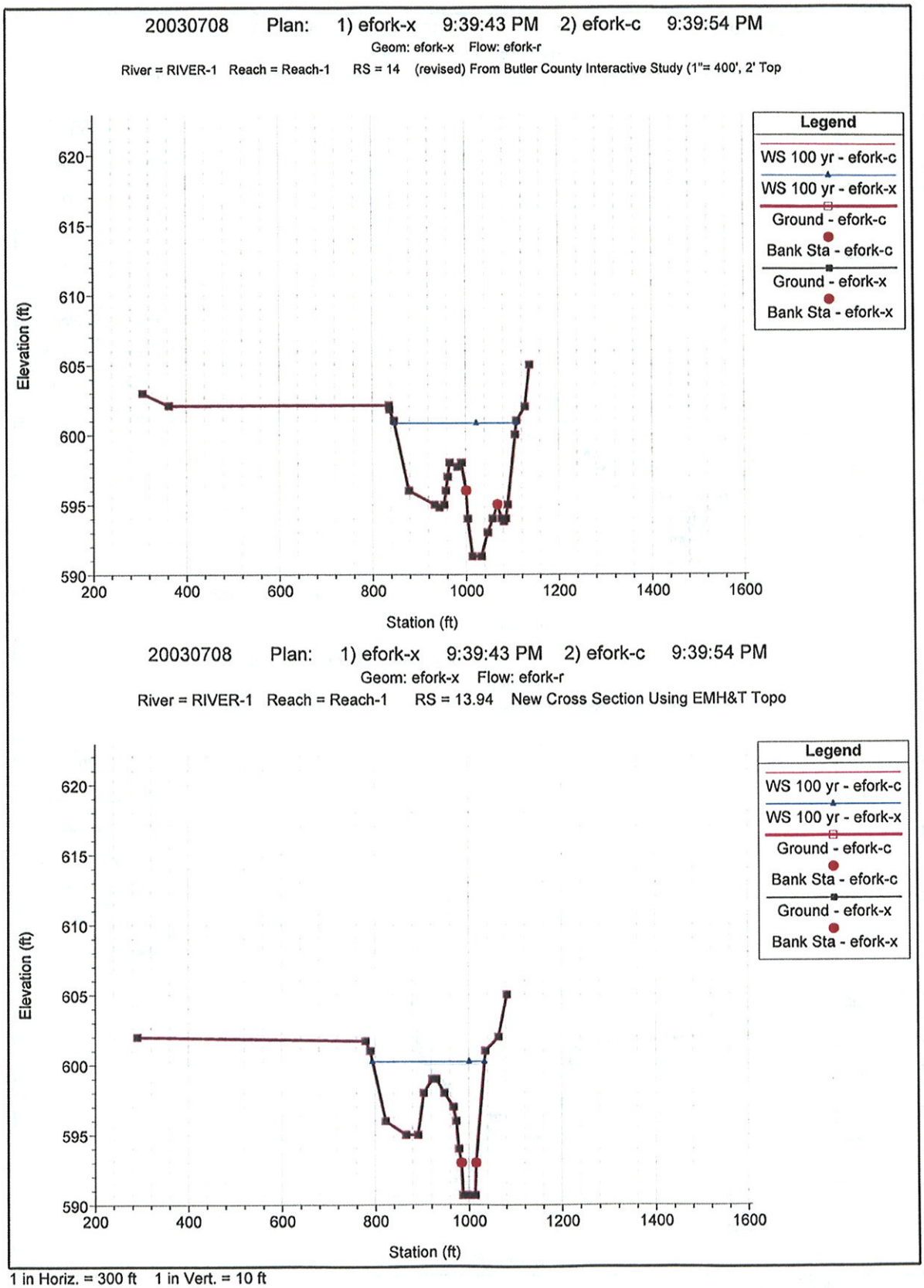
20030708 Plan: 1) efork-x 9:39:43 PM 2) efork-c 9:39:54 PM

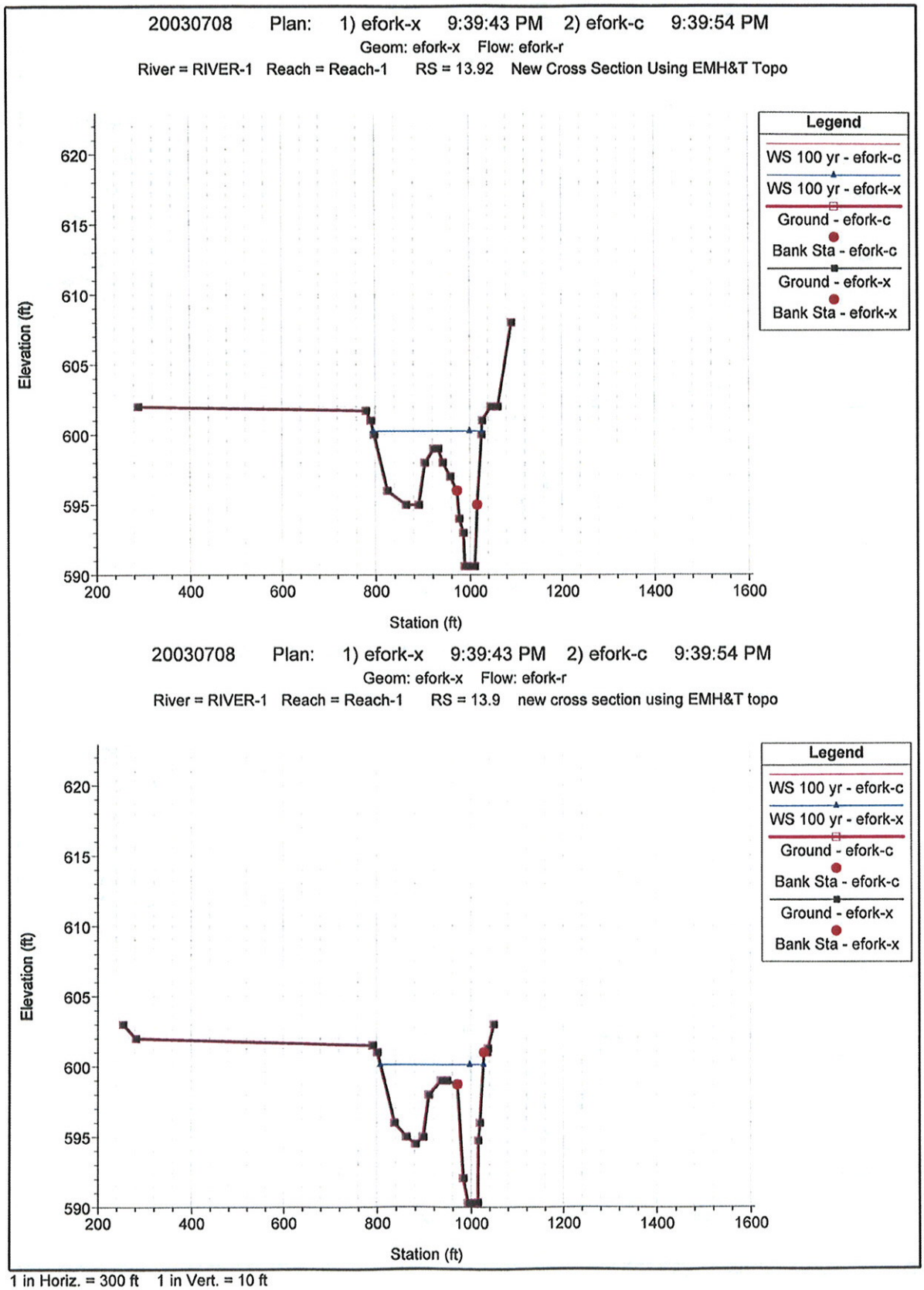
Geom: efork-x Flow: efork-r

River = RIVER-1 Reach = Reach-1 RS = 15 Revised Cross Section "J"

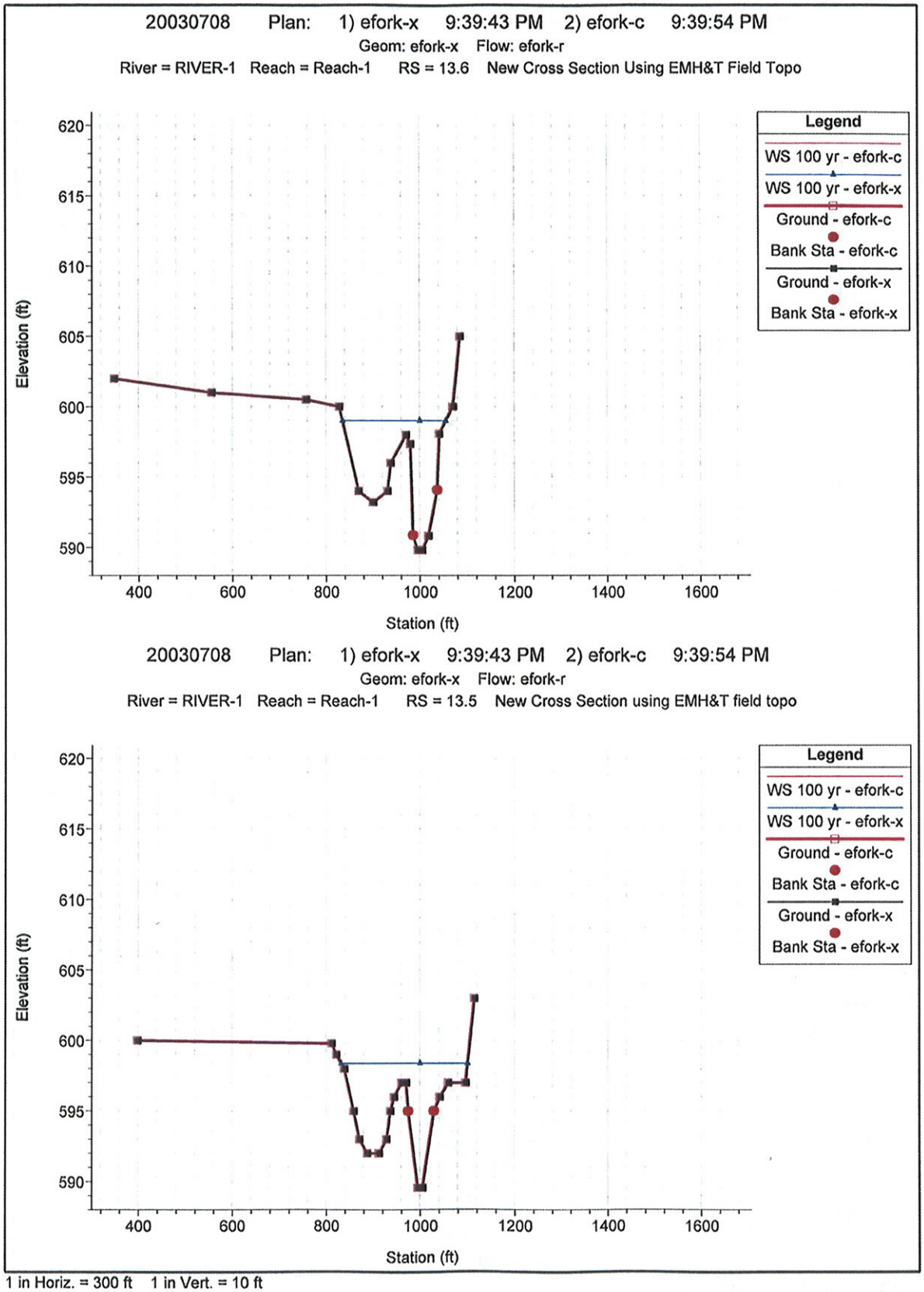


1 in Horiz. = 300 ft 1 in Vert. = 10 ft

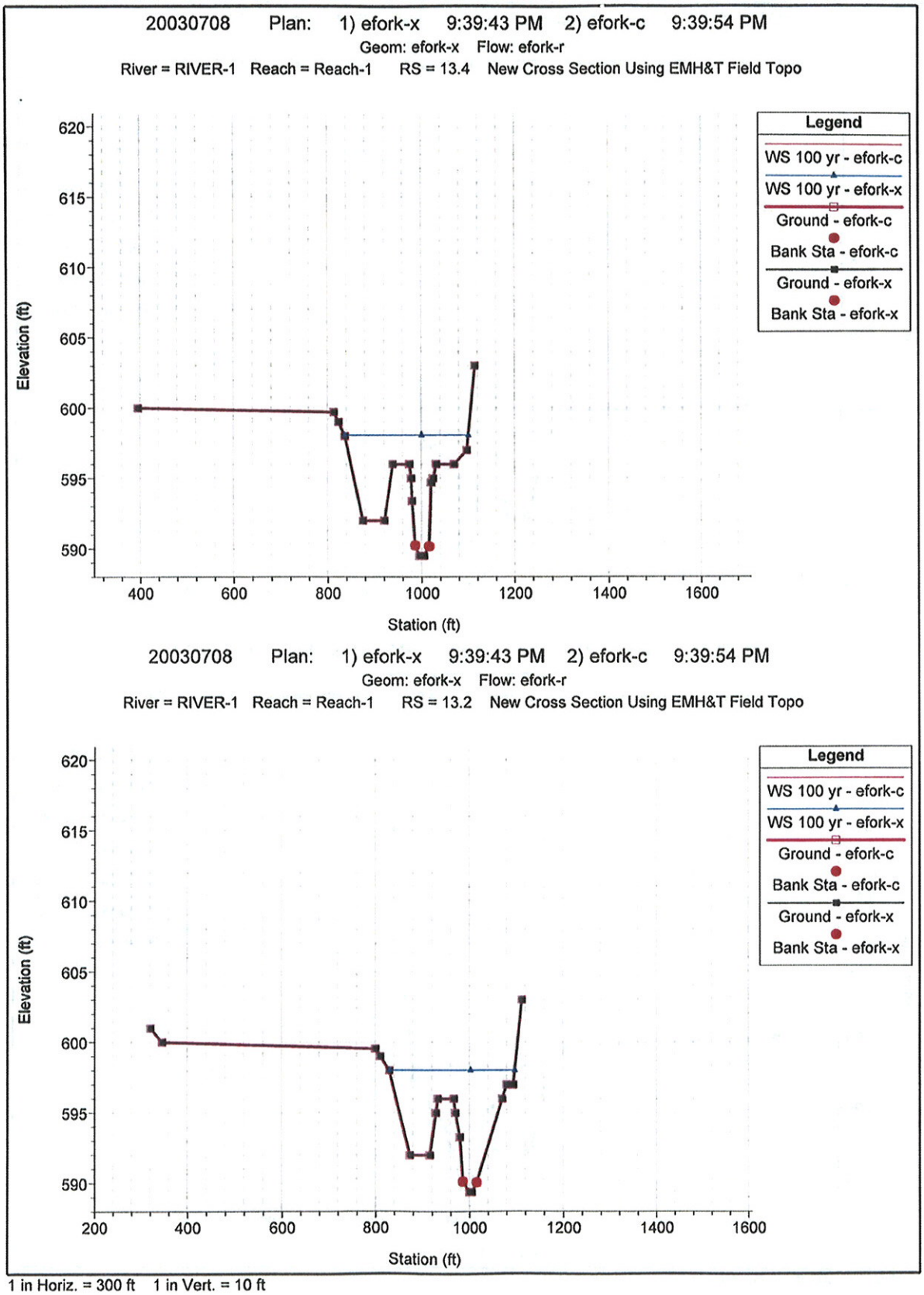

20030708 Plan: 1) efork-x 9:39:43 PM 2) efork-c 9:39:54 PM
Geom: efork-x Flow: efork-r
River = RIVER-1 Reach = Reach-1 RS = 14 (revised) From Butler County Interactive Study (1"= 400', 2' Top
Legend
WS 100 yr - efork-c
WS 100 yr - efork-x
Ground - efork-c
Bank Sta - efork-c
Ground - efork-x
Bank Sta - efork-x
Elevation (ft)
620
615
610
605
600
595
590
200
400
600
800
1000
1200
1400
1600
Station (ft)
20030708 Plan: 1) efork-x 9:39:43 PM 2) efork-c 9:39:54 PM
Geom: efork-x Flow: efork-r
River = RIVER-1 Reach = Reach-1 RS = 13.94 New Cross Section Using EMH&T Topo
Legend
WS 100 yr - efork-c
WS 100 yr - efork-x
Ground - efork-c
Bank Sta - efork-c
Ground - efork-x
Bank Sta - efork-x
Elevation (ft)
620
615
610
605
600
595
590
200
400
600
800
1000
1200
1400
1600
Station (ft)
1 in Horiz. = 300 ft 1 in Vert. = 10 ft



1 in Horiz. = 300 ft 1 in Vert. = 10 ft



1 in Horiz. = 300 ft 1 in Vert. = 10 ft

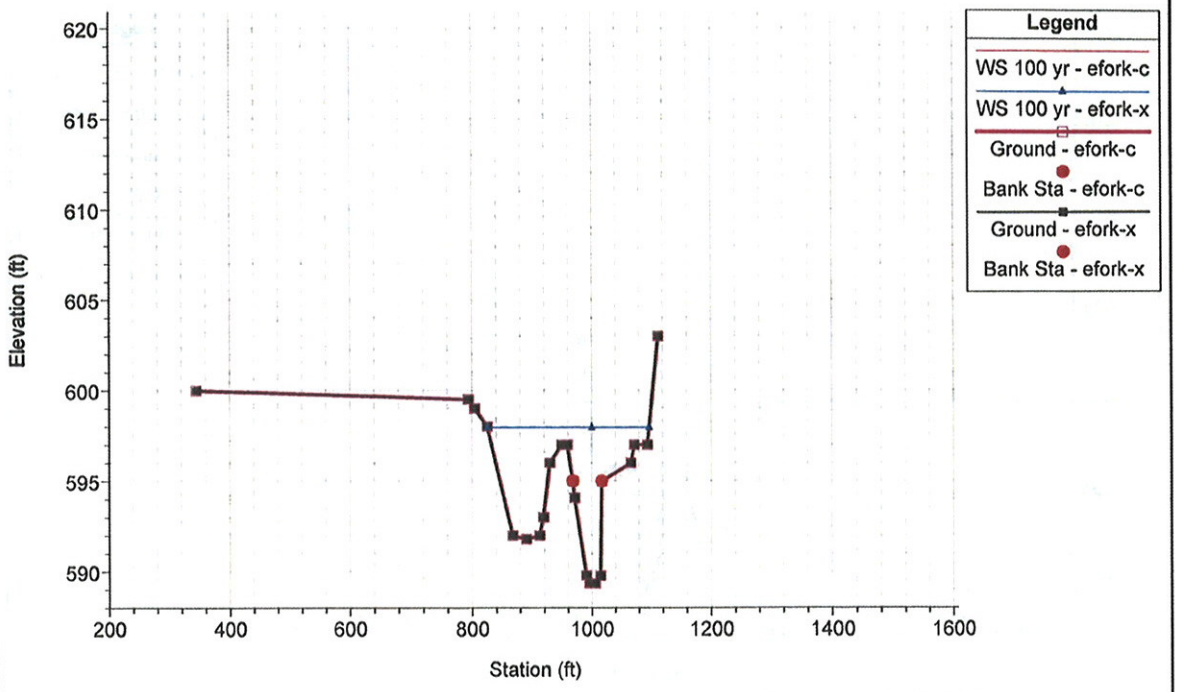


1 in Horiz. = 300 ft 1 in Vert. = 10 ft

20030708 Plan: 1) efork-x 9:39:43 PM 2) efork-c 9:39:54 PM

Geom: efork-x Flow: efork-r

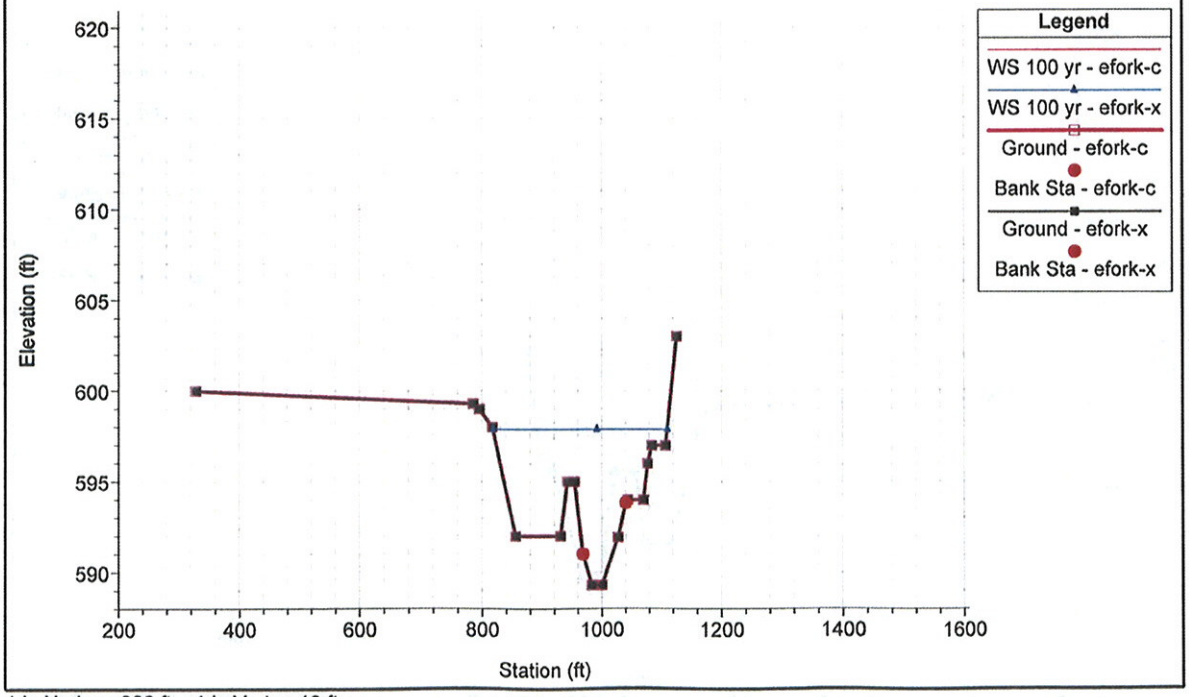
River = RIVER-1 Reach = Reach-1 RS = 13.1 New Cross Section Using EMH&T Field Topo



20030708 Plan: 1) efork-x 9:39:43 PM 2) efork-c 9:39:54 PM

Geom: efork-x Flow: efork-r

River = RIVER-1 Reach = Reach-1 RS = 13 (revised) From Butler County Interactive Study (1"= 400', 2' Top



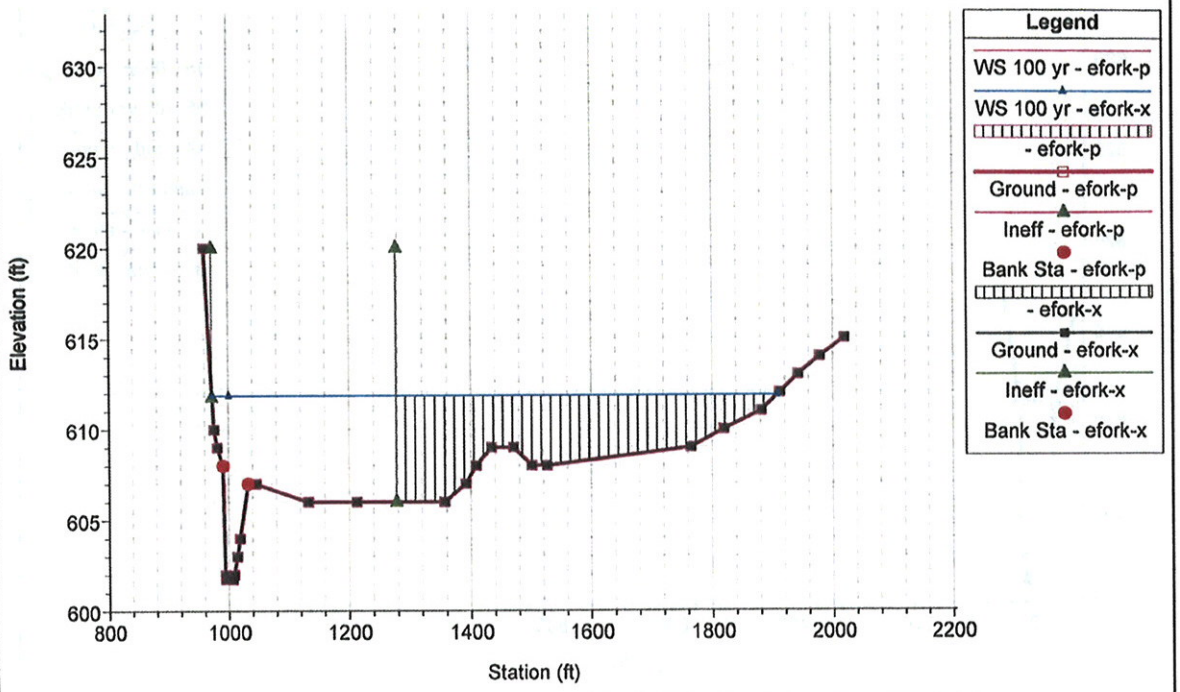
1 in Horiz. = 300 ft 1 in Vert. = 10 ft

(BLANK PAGE)

20030708 Plan: 1) efork-x 9:39:43 PM 2) efork-p 9:39:46 PM

Geom: efork-x Flow: efork-r

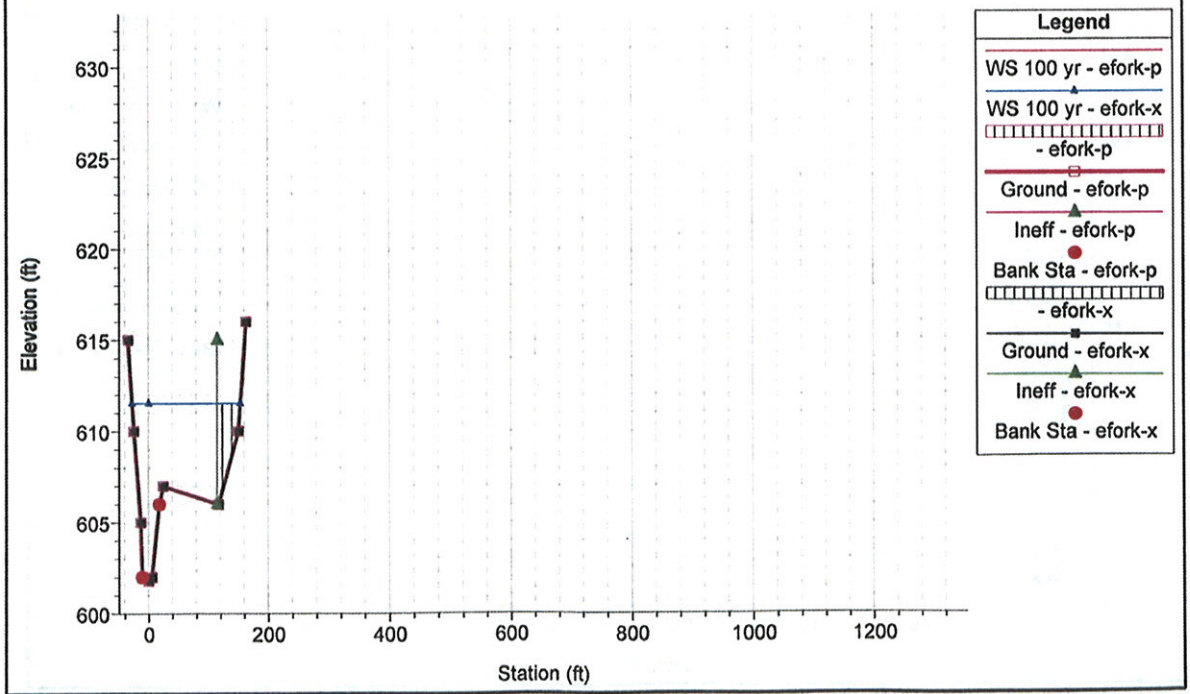
River = RIVER-1 Reach = Reach-1 RS = 18 From Butler County Interactive Study (1"= 400', 2' Topo)



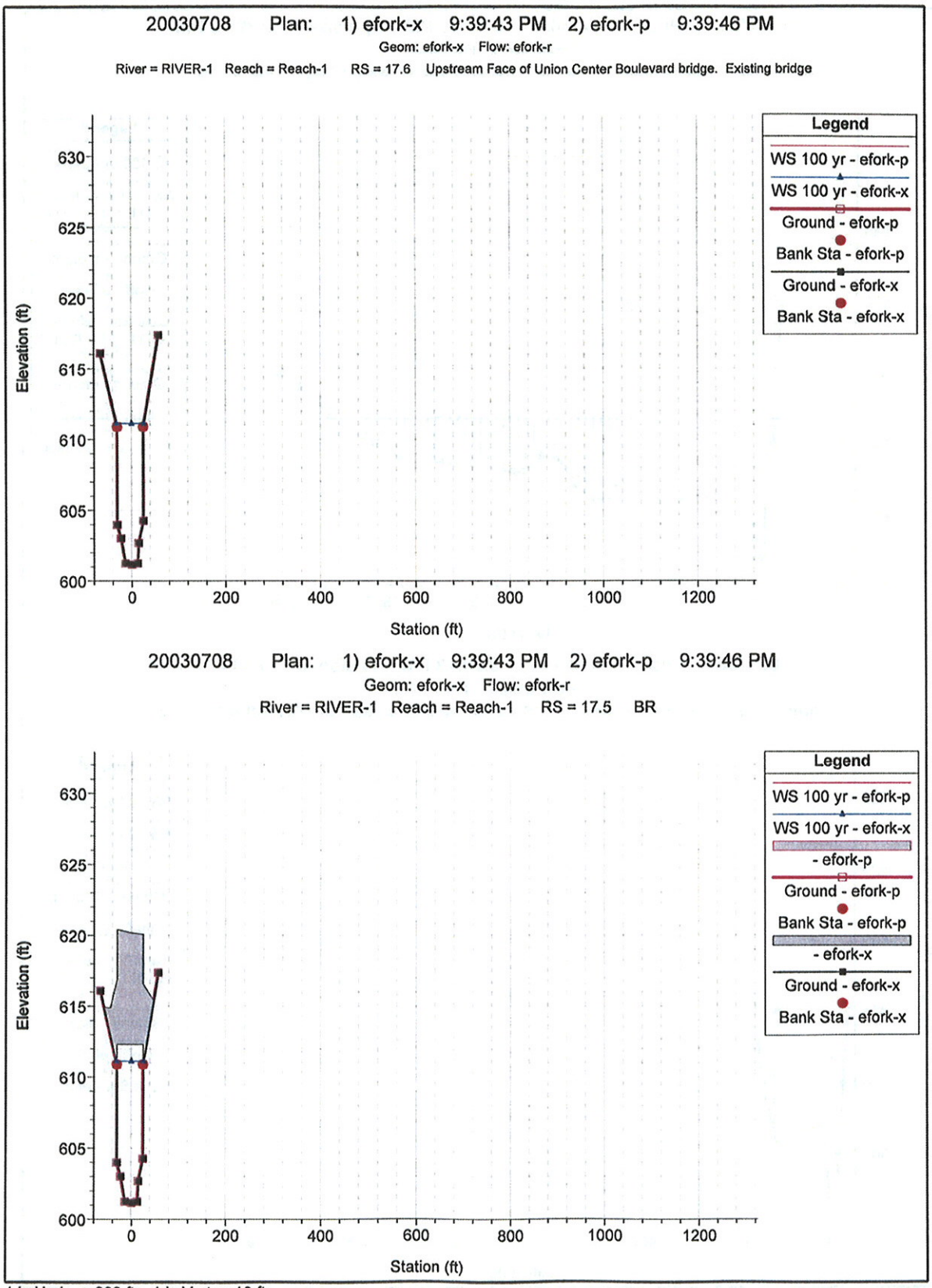
20030708 Plan: 1) efork-x 9:39:43 PM 2) efork-p 9:39:46 PM

Geom: efork-x Flow: efork-r

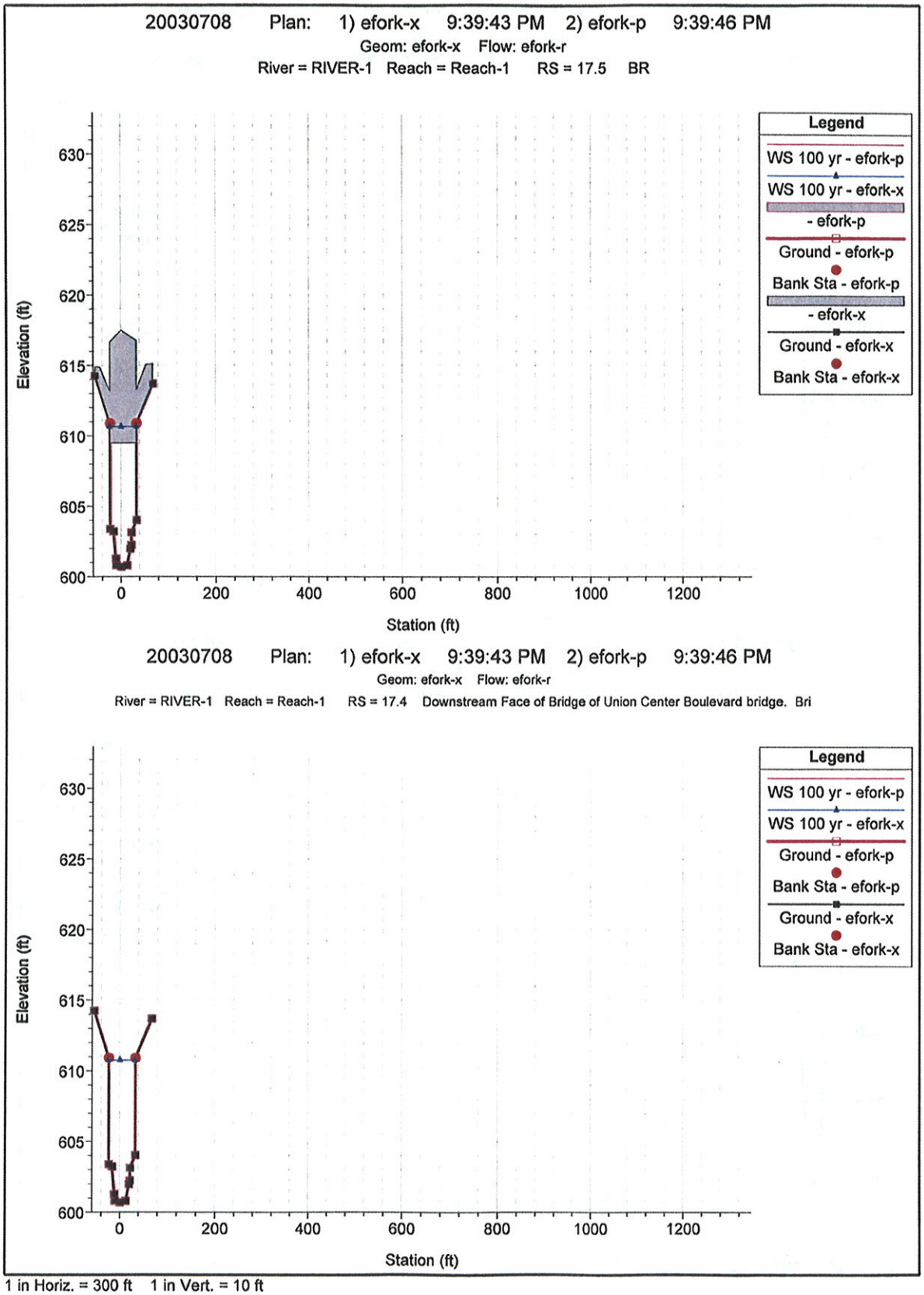
River = RIVER-1 Reach = Reach-1 RS = 17.9 New Cross Section using EMH&T Field Topo



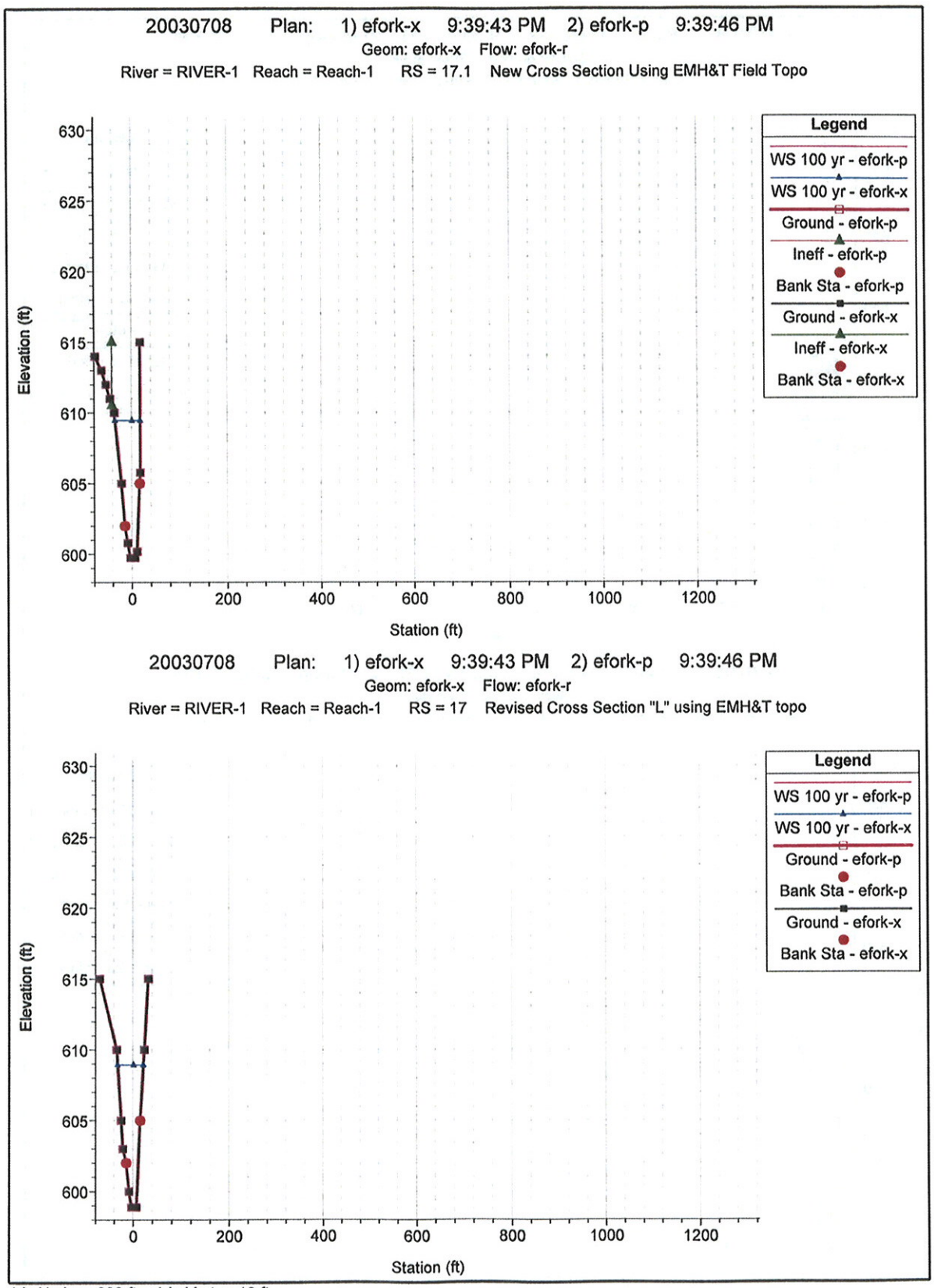
1 in Horiz. = 300 ft 1 in Vert. = 10 ft



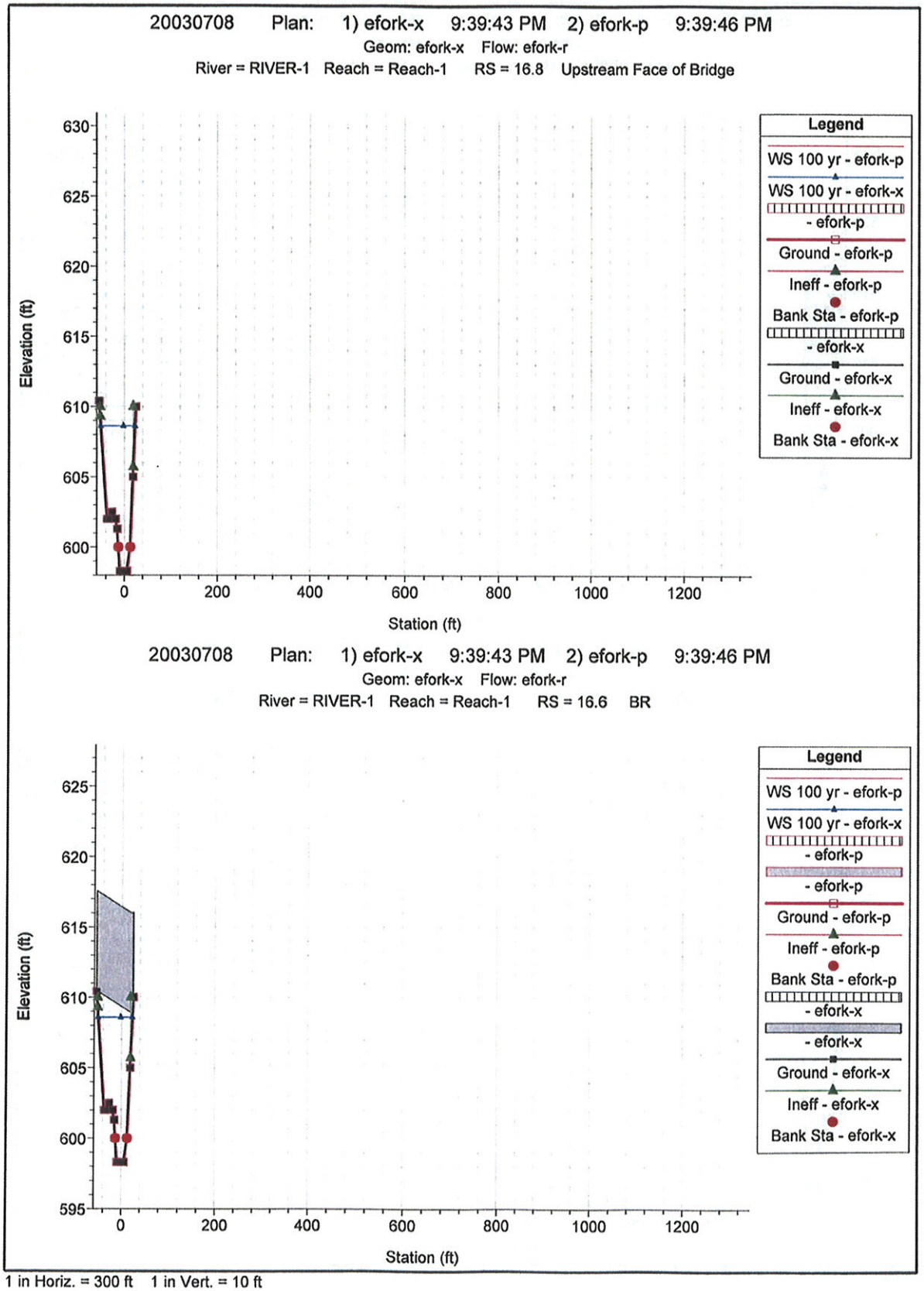
1 in Horiz. = 300 ft 1 in Vert. = 10 ft



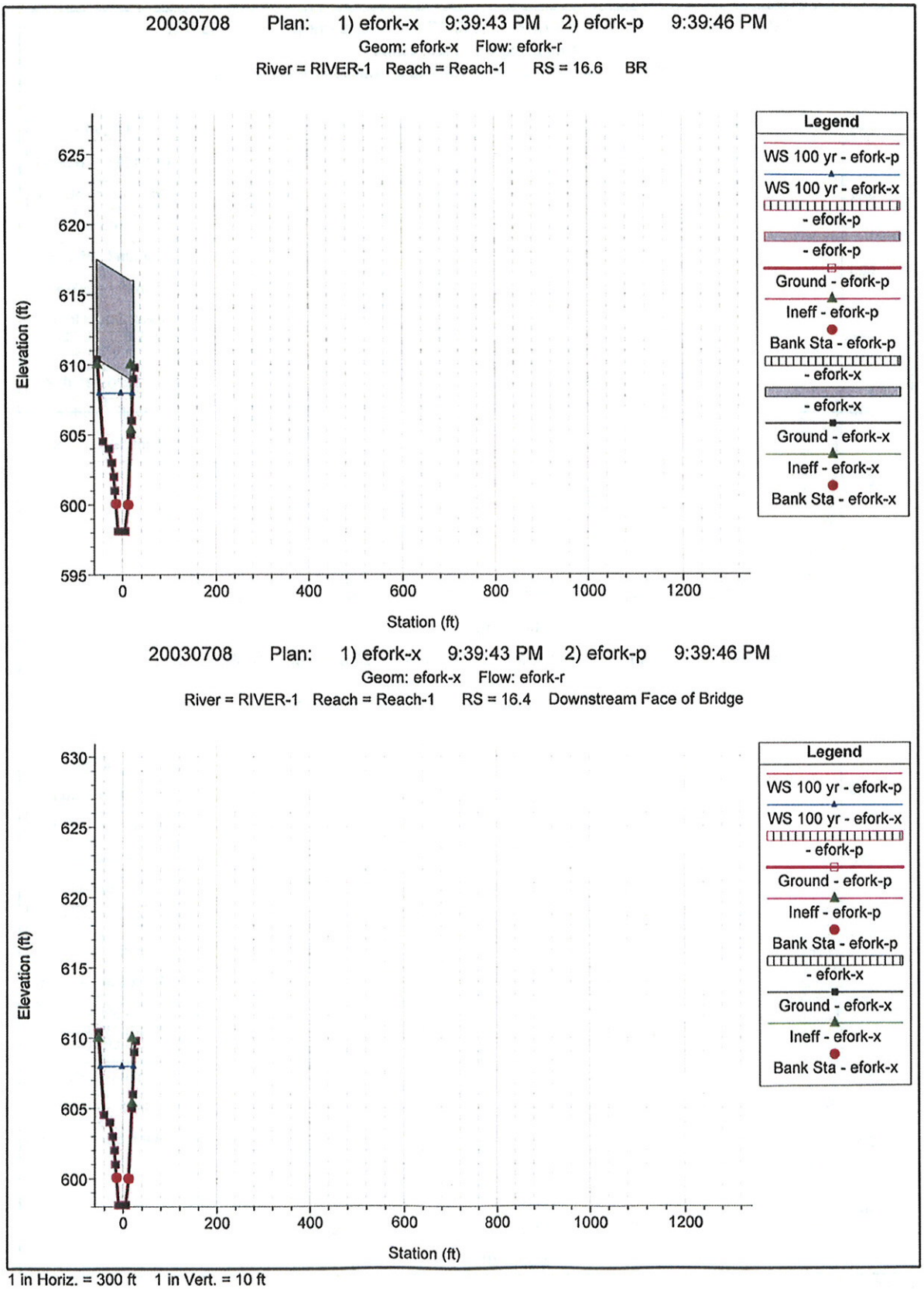
1 in Horiz. = 300 ft 1 in Vert. = 10 ft



1 in Horiz. = 300 ft 1 in Vert. = 10 ft



1 in Horiz. = 300 ft 1 in Vert. = 10 ft

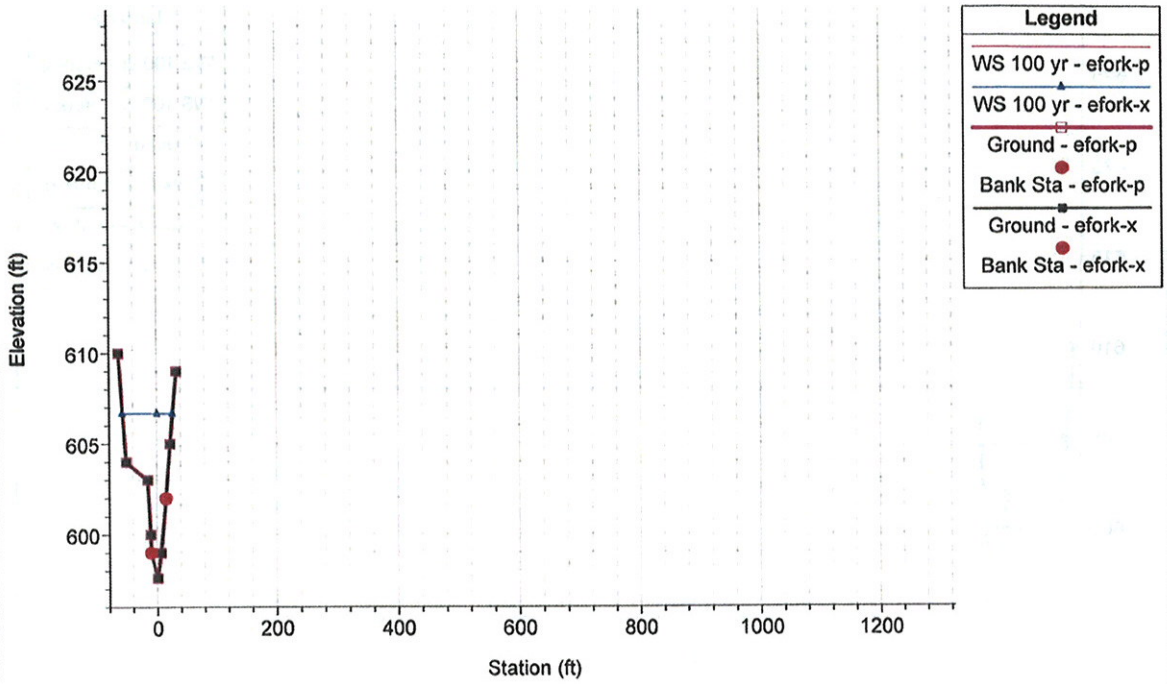


1 in Horiz. = 300 ft 1 in Vert. = 10 ft

20030708 Plan: 1) efork-x 9:39:43 PM 2) efork-p 9:39:46 PM

Geom: efork-x Flow: efork-r

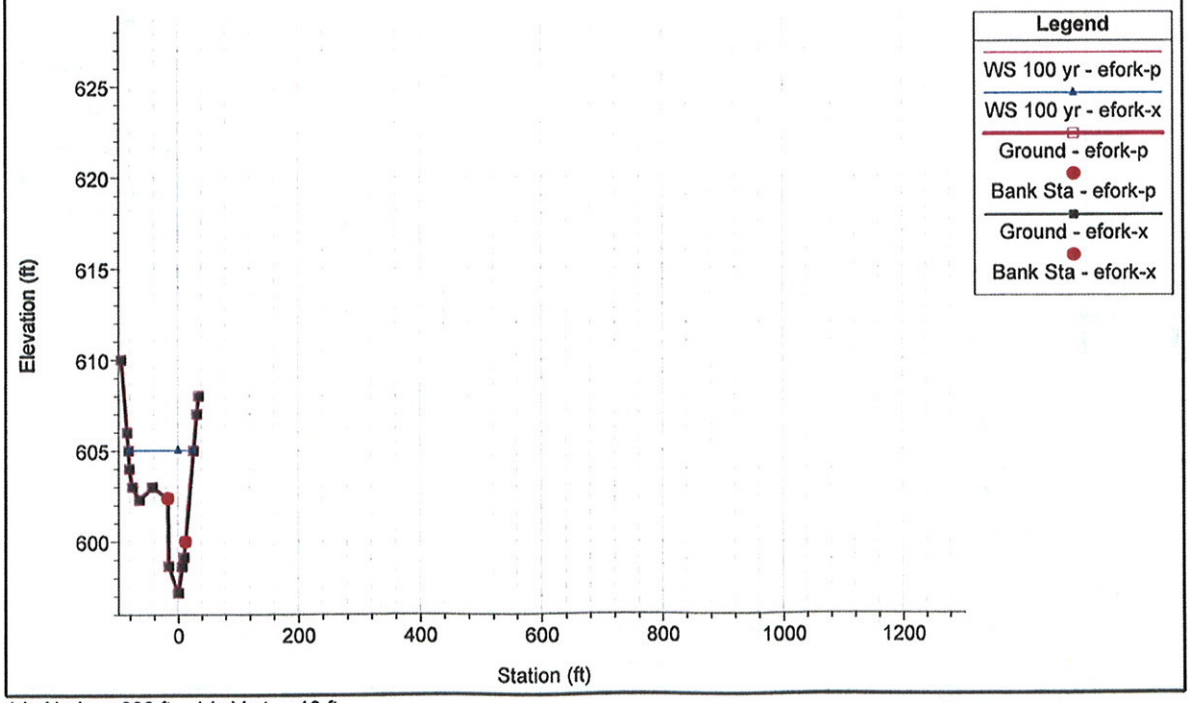
River = RIVER-1 Reach = Reach-1 RS = 16.3 New Cross Section using EMH&T field topo



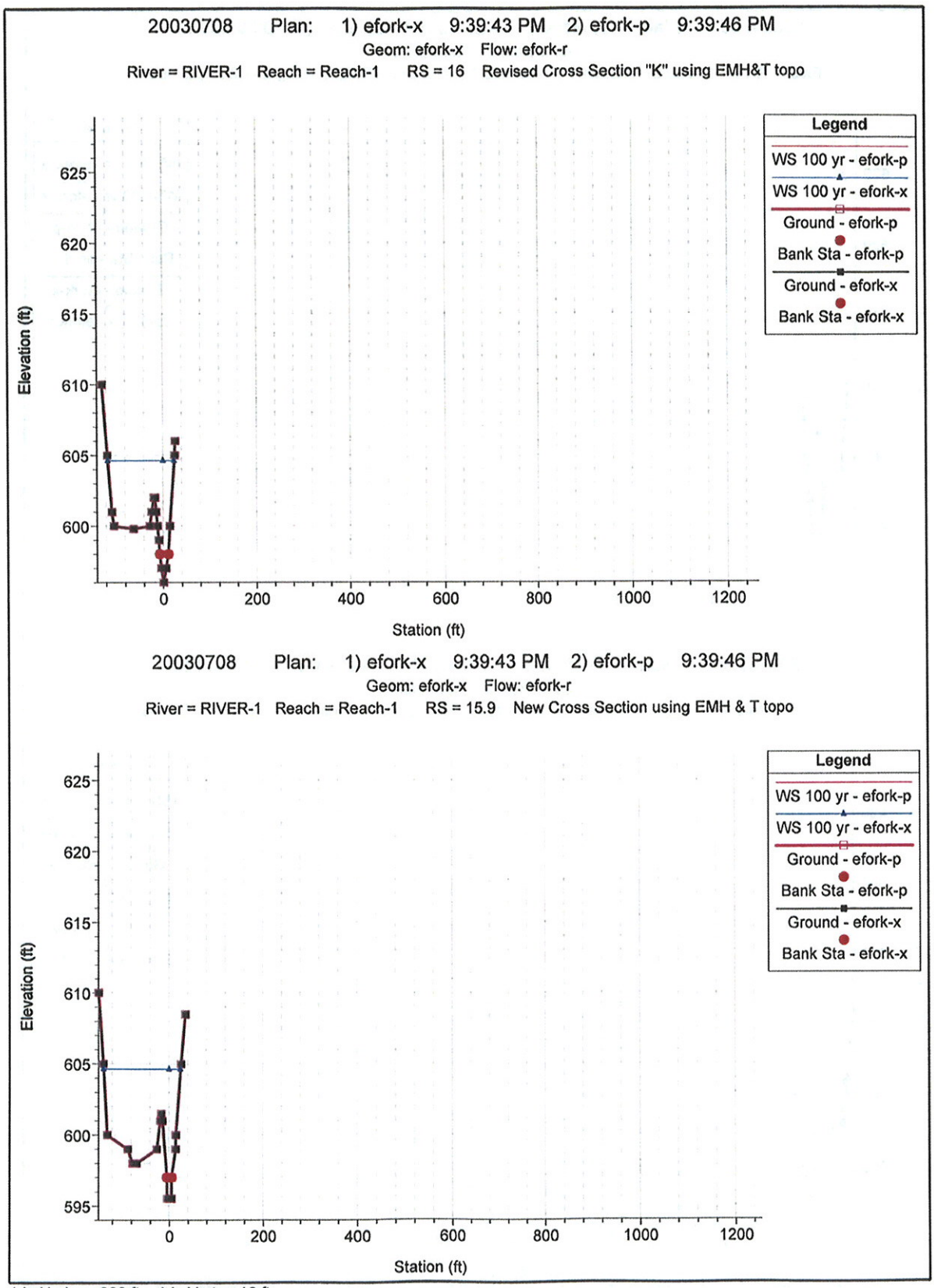
20030708 Plan: 1) efork-x 9:39:43 PM 2) efork-p 9:39:46 PM

Geom: efork-x Flow: efork-r

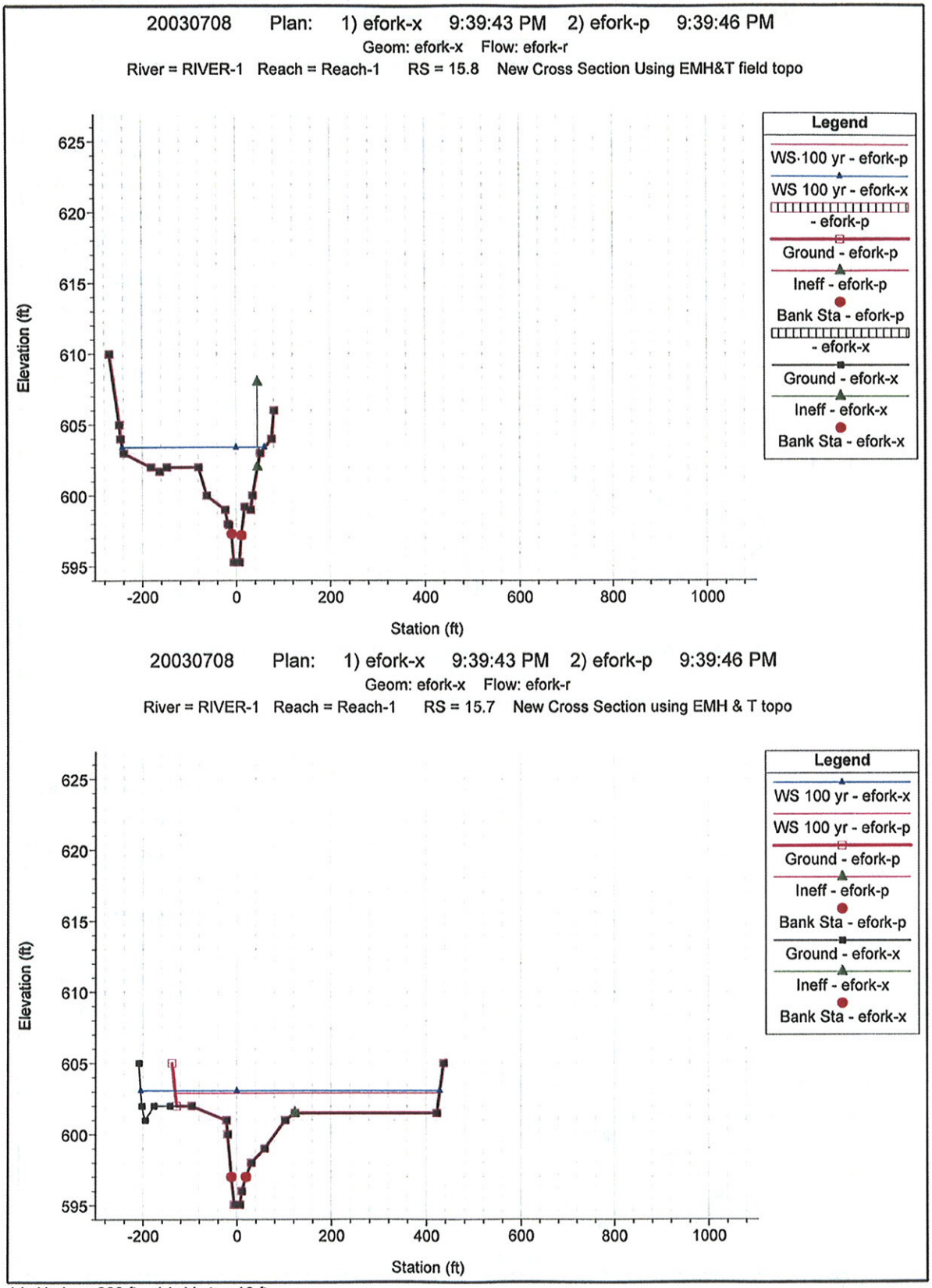
River = RIVER-1 Reach = Reach-1 RS = 16.2 New Cross Section using EMH & T field topo



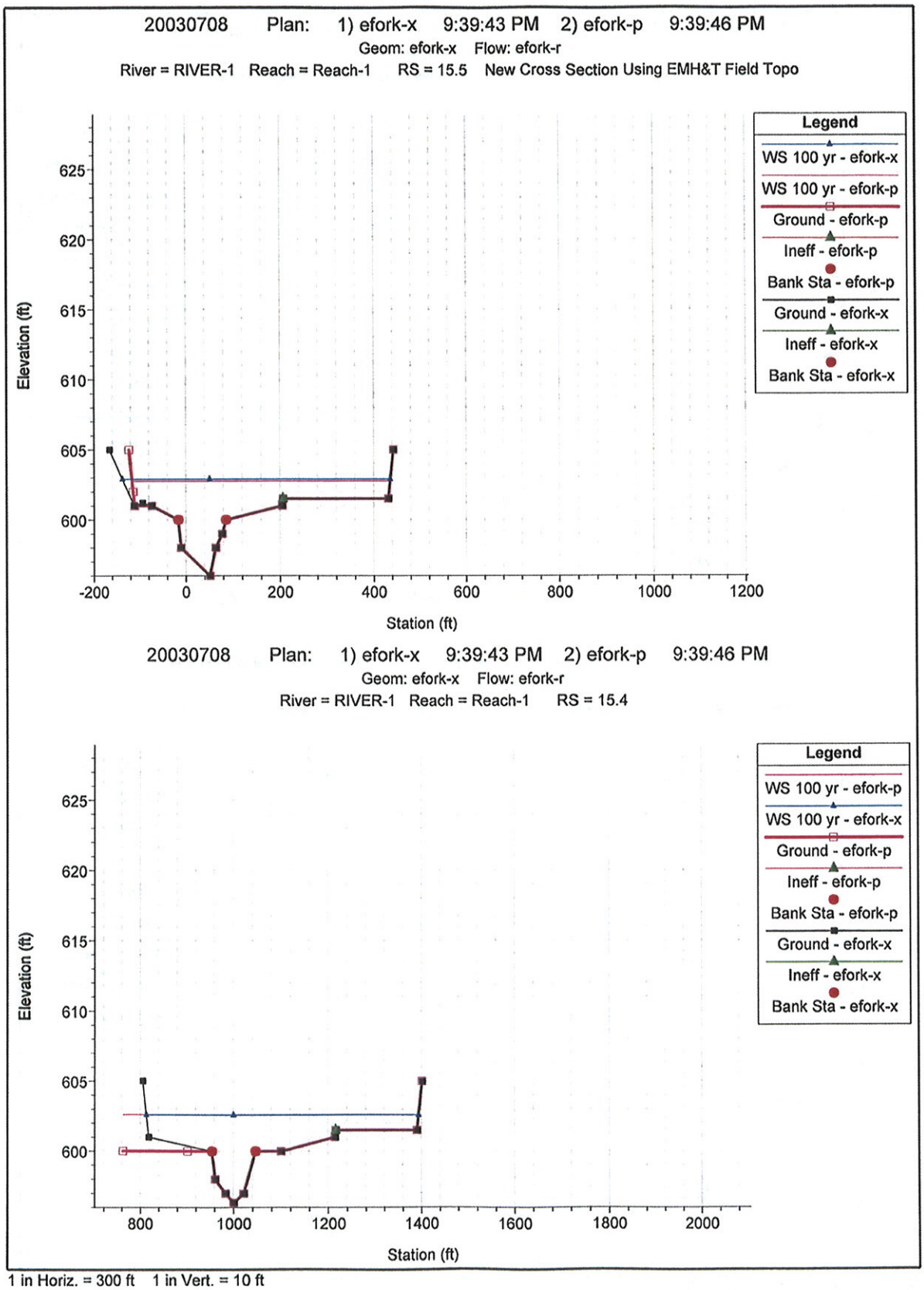
1 in Horiz. = 300 ft 1 in Vert. = 10 ft



1 in Horiz. = 300 ft 1 in Vert. = 10 ft



1 in Horiz. = 300 ft 1 in Vert. = 10 ft

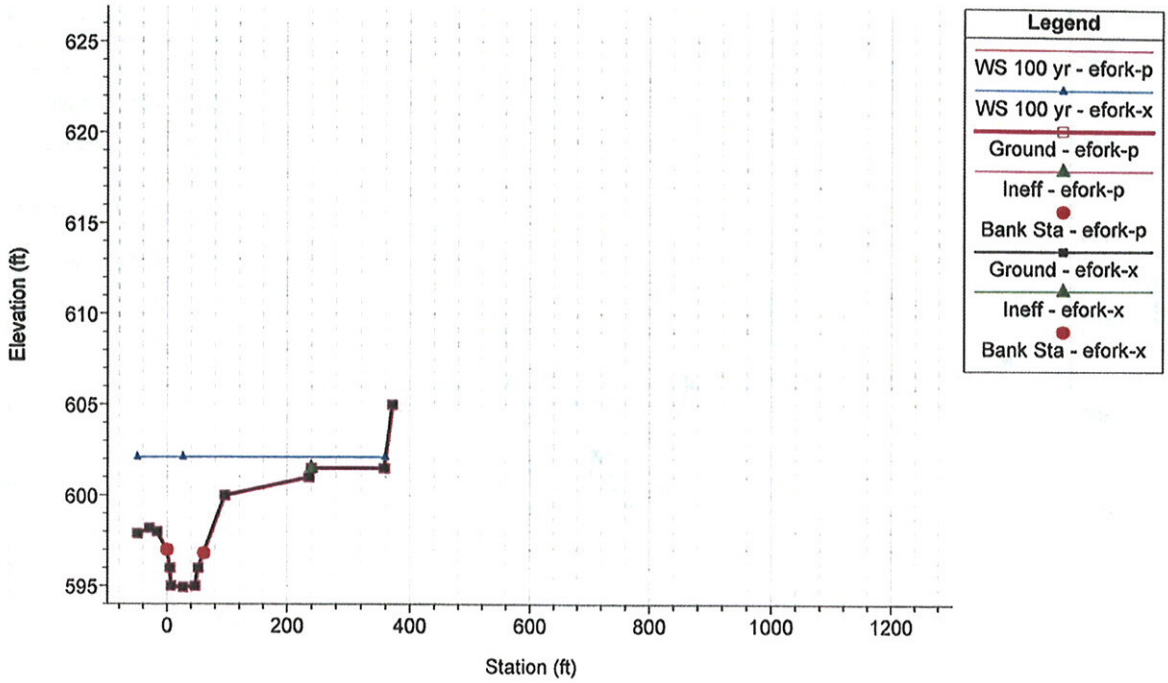


1 in Horiz. = 300 ft 1 in Vert. = 10 ft

20030708 Plan: 1) efork-x 9:39:43 PM 2) efork-p 9:39:46 PM

Geom: efork-x Flow: efork-r

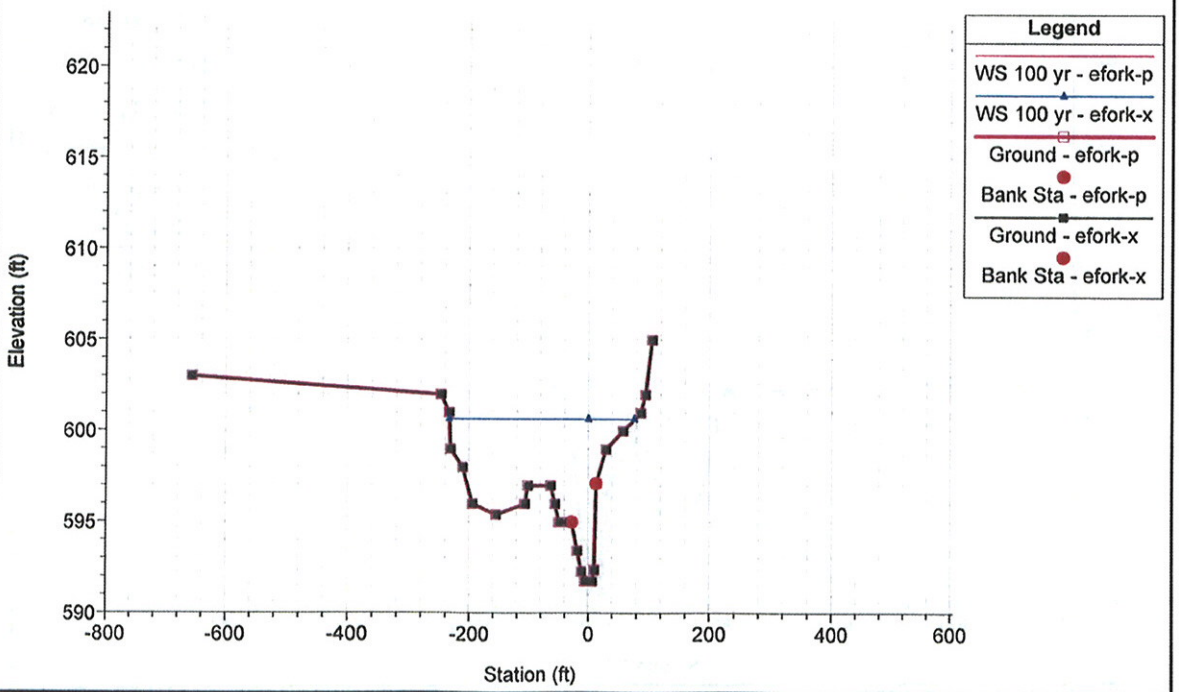
River = RIVER-1 Reach = Reach-1 RS = 15.3 New Cross Section using EMH&T Field topo



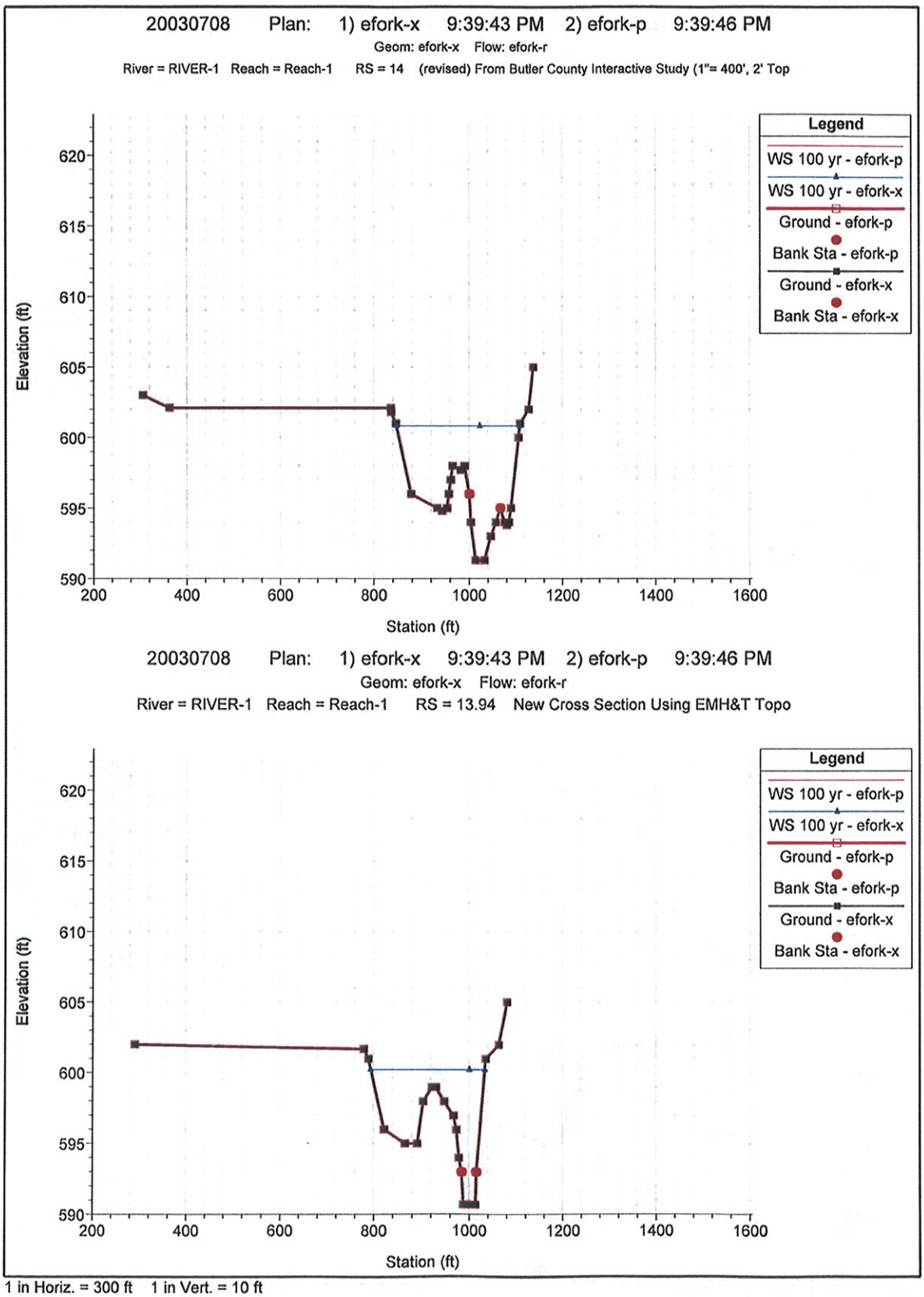
20030708 Plan: 1) efork-x 9:39:43 PM 2) efork-p 9:39:46 PM

Geom: efork-x Flow: efork-r

River = RIVER-1 Reach = Reach-1 RS = 15 Revised Cross Section "J"



1 in Horiz. = 300 ft 1 in Vert. = 10 ft

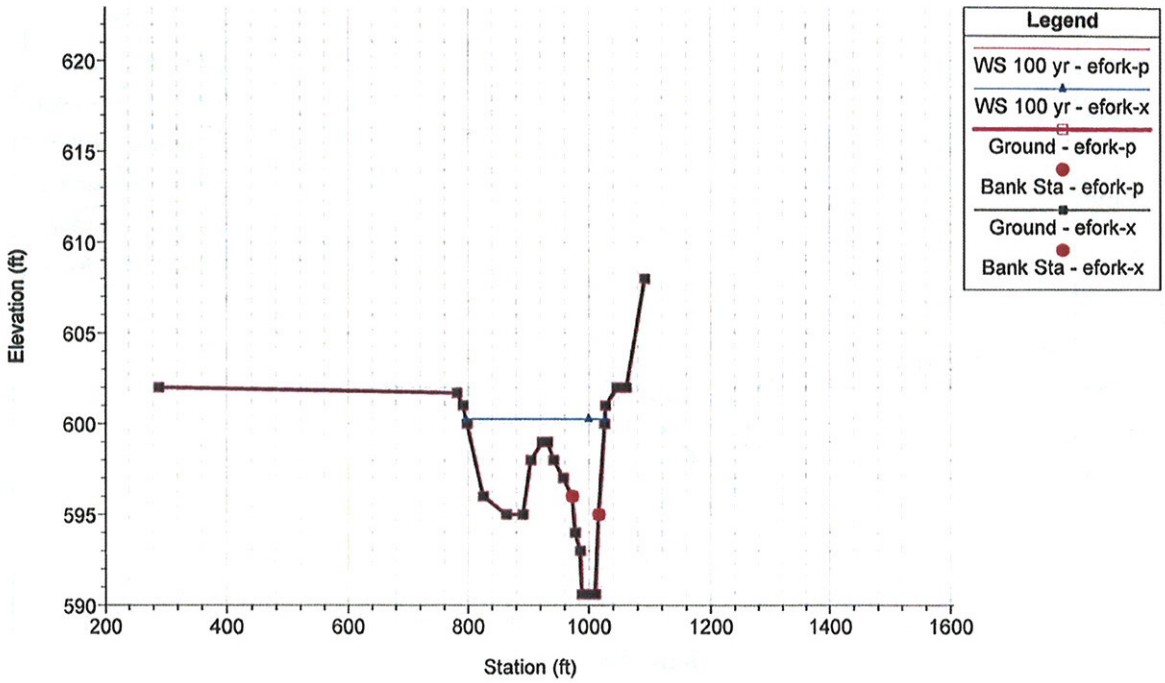


1 in Horiz. = 300 ft 1 in Vert. = 10 ft

20030708 Plan: 1) efork-x 9:39:43 PM 2) efork-p 9:39:46 PM

Geom: efork-x Flow: efork-r

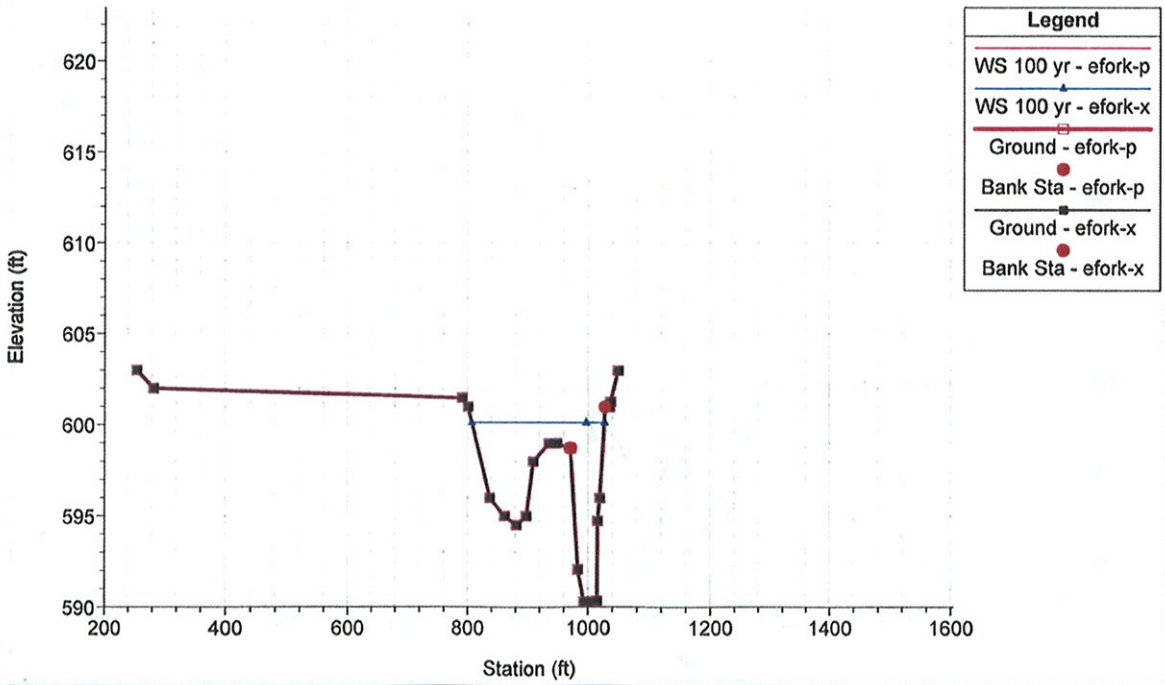
River = RIVER-1 Reach = Reach-1 RS = 13.92 New Cross Section Using EMH&T Topo



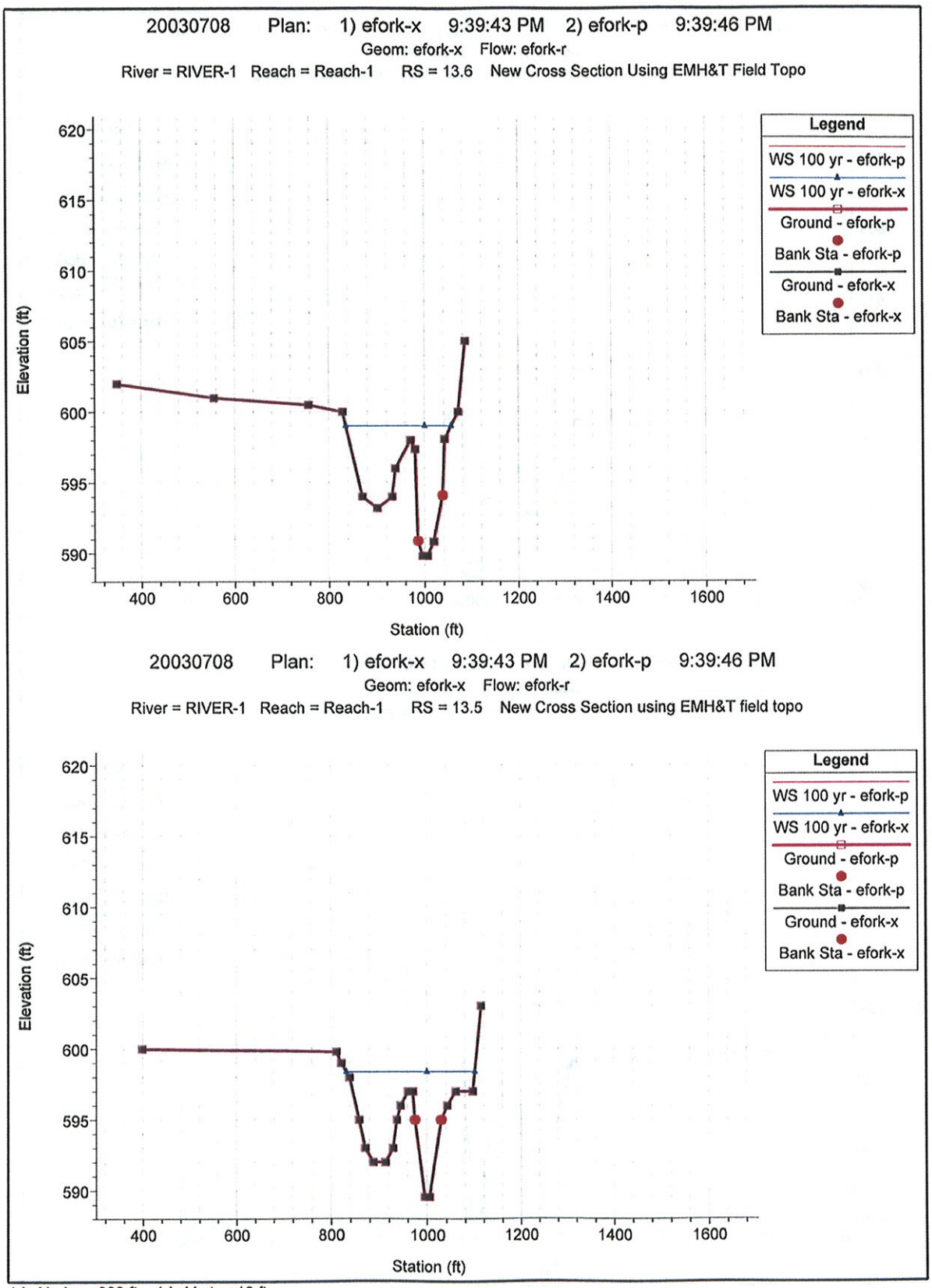
20030708 Plan: 1) efork-x 9:39:43 PM 2) efork-p 9:39:46 PM

Geom: efork-x Flow: efork-r

River = RIVER-1 Reach = Reach-1 RS = 13.9 new cross section using EMH&T topo



1 in Horiz. = 300 ft 1 in Vert. = 10 ft

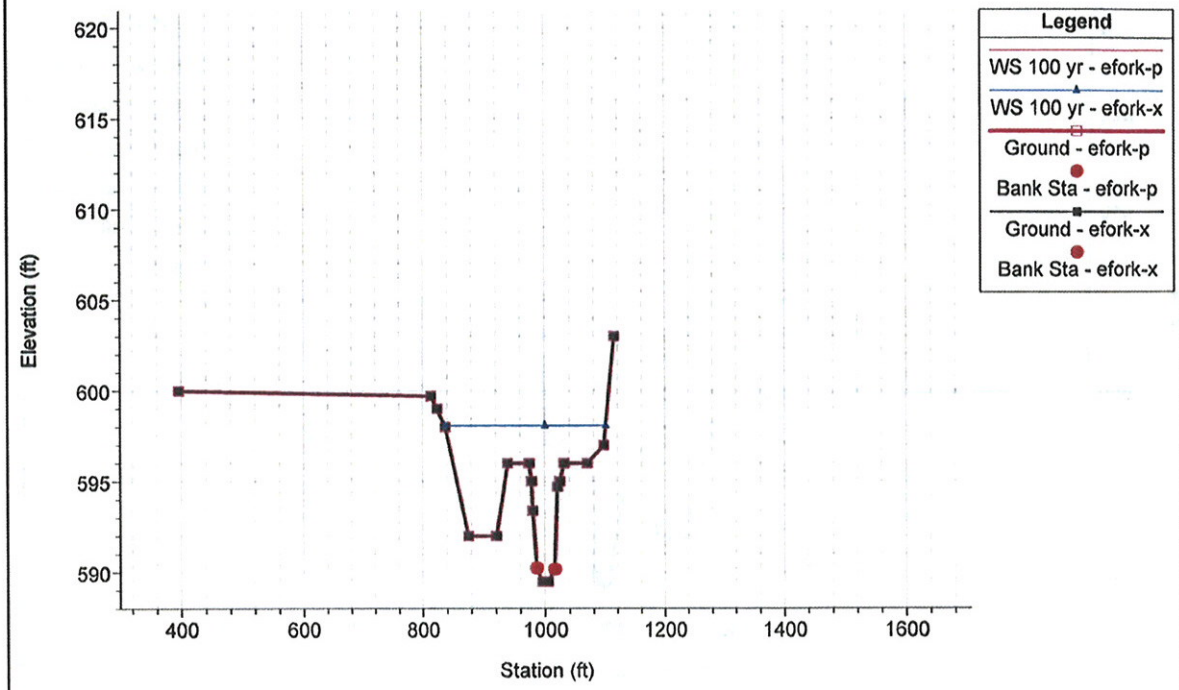


1 in Horiz. = 300 ft 1 in Vert. = 10 ft

20030708 Plan: 1) efork-x 9:39:43 PM 2) efork-p 9:39:46 PM

Geom: efork-x Flow: efork-r

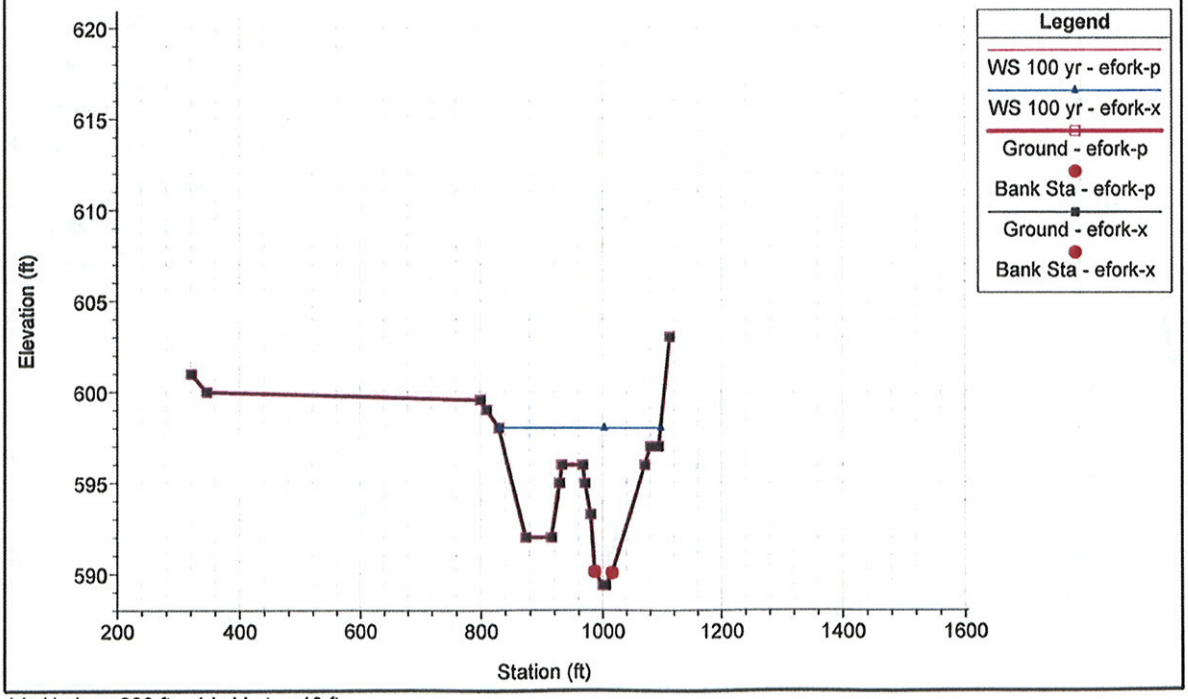
River = RIVER-1 Reach = Reach-1 RS = 13.4 New Cross Section Using EMH&T Field Topo



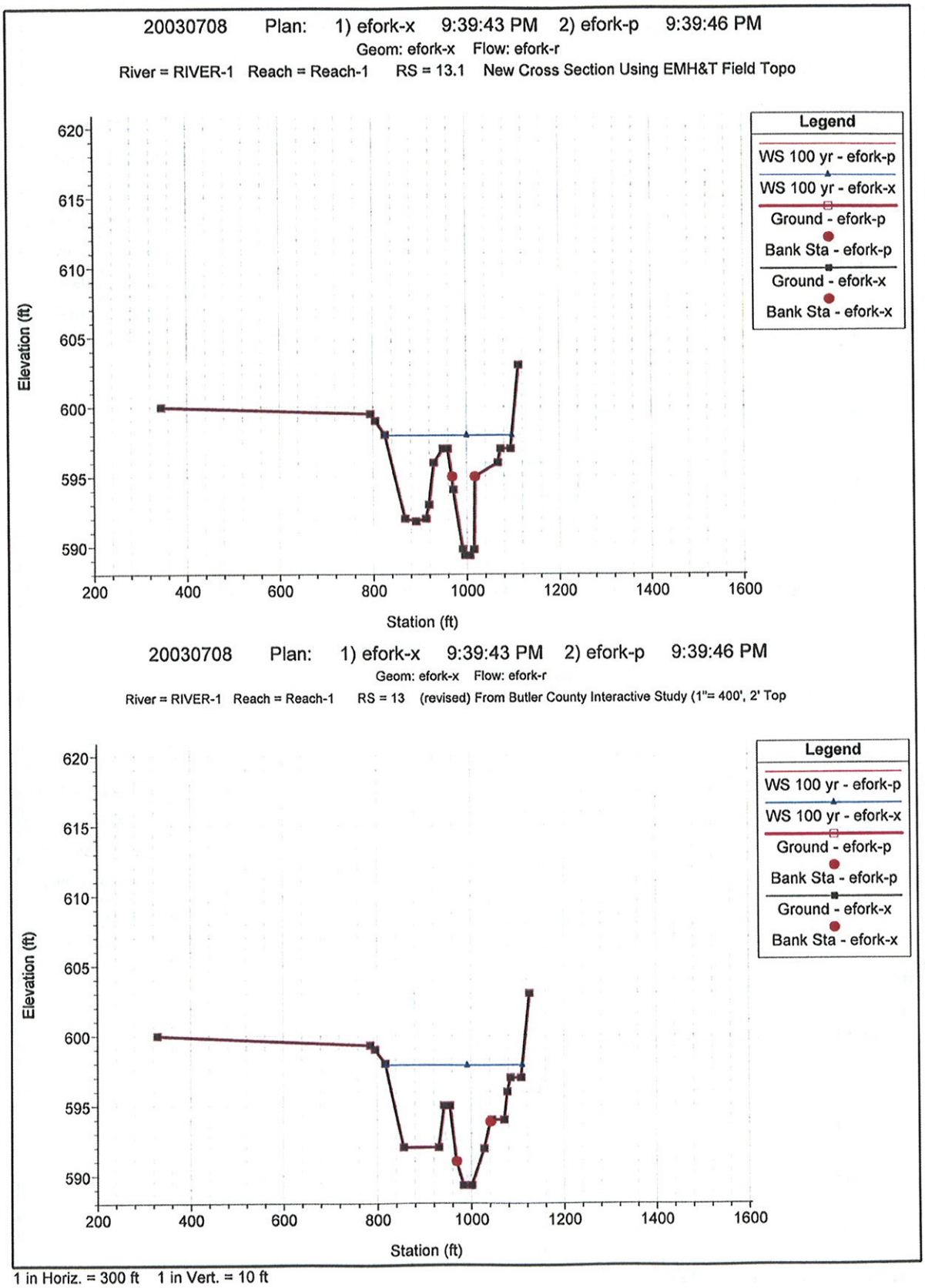
20030708 Plan: 1) efork-x 9:39:43 PM 2) efork-p 9:39:46 PM

Geom: efork-x Flow: efork-r

River = RIVER-1 Reach = Reach-1 RS = 13.2 New Cross Section Using EMH&T Field Topo



1 in Horiz. = 300 ft 1 in Vert. = 10 ft



1 in Horiz. = 300 ft 1 in Vert. = 10 ft

APPENDIX:

D. Floodplain Storage Computations

Henderson and Bodwell, L.L.P.

Centre Park of West Chester
CHF02
8/18/2008

Compensatory Floodplain Volume

Volume between Flood Surface and Ground

		Proposed Surface (ac-ft)		Existing Surface (ac-ft)		Differential (ac-ft)	
Phase 1	East Fork	16.5	-	15.8	=	0.7	
Phase 1	Tributary	46.6	-	45.7	=	0.9	
							1.7 ac-ft Net Gain Phase 1
Phase 2	Tributary	46.8	-	45.7	=	1.1	
							1.1 ac-ft Net Gain Phase 2

Volume differential is calculated between the existing flood surface and the ground for the existing conditions vs the proposed flood surface and proposed grades. These caclulations are for existing, phase 1 and phase 2 conditions.

There is a net increase in storage volume for the East Fork Ph 1, Tributary Ph 1 and a net total gain on the tributary at completion of the project.

The total net gain in flood storage volume is: 0.7 ac-ft East Fork + 2.0 ac-ft Tributary = 2.8 ac-ft for the Project

Therefore this meets the Butler County requirements.

EARTHWORK PARCEL 1

EARTHWORK PARCEL 1

EARTHWORK PARCEL 1

EARTHWORK PARCEL 2

EARTHWORK PARCEL 1

EARTHWORK PARCEL 2

EARTHWORK PARCEL 2

EARTHWORK PARCEL 2

EARTHWORK PARCEL 2

EARTHWORK PARCEL 2

EXISTING FLOODPLAIN (100-YR)

EXISTING FLOODPLAIN (100-YR)

17.0-L 608.9

16.0-K 604.6

15.9 604.6

15.8 603.4

15.7 603.1

15.5 602.6

15.4 602.6

15.3 602.1

15.0 600.6

14.0-J 600.8

13.0-I 597.9

2.00-A 603.1

2.30 603.8

2.60 605.4

3.10-B 606.8

3.20 608.0

3.30 609.1

3.40 612.1

3.5 601.1

3.3 612.1

4.20 612.1

4.30 612.1

4.40 612.1

4.50 612.0

4.60-C 612.5

4.61 614.5

5.00-D 615.6

5.10-E 618.9

5.20 617.5

5.30 619.9

5.40 617.2

6.20 618.9

CENTRE PARK OF WEST CHESTER

(CHF02)

EAST FORK EXISTING COMPENSATORY FLOOD VOLUME CUT/FILL MAP

08-18-08

0 50 100 200 300

HENDERSON AND BOOWELL, L.L.P.

EARTHWORK PARCEL 1

EARTHWORK PARCEL 1

EARTHWORK PARCEL 1

EARTHWORK PARCEL 2

EARTHWORK PARCEL 1

EARTHWORK PARCEL 2

EARTHWORK PARCEL 2

EARTHWORK PARCEL 2

EARTHWORK PARCEL 2

EARTHWORK PARCEL 2

17.0-L 608.9

16.0-K 604.6

15.9 604.6

15.8 603.4

15.7 602.9

15.5 602.8

15.4 602.6

15.3 602.1

15.0 600.6

14.0-J 600.8

13.0-I 597.9

2.00-A 603.1

2.30 603.6

2.60 605.4

3.10-B 606.7

3.15 607.0

3.20 608.0

3.30 608.5

3.35 612.1

3.40 612.2

4.20 612.2

4.30 612.2

4.40 612.2

4.50 612.2

4.60-C 612.8

4.61 614.1

5.00-D 615.7

5.20 617.1

5.40 617.0

6.10-E 618.5

6.30 619.8

6.20 619.8

CENTRE PARK OF WEST CHESTER

(CHF02)

EAST FORK PHASE 1
COMPENSATORY FLOOD VOLUME
CUT/FILL MAP

08-18-08

0 50 100 200 300

HENDERSON ANG BODWELL, L.L.P.

EARTHWORK PARCEL 1

EARTHWORK PARCEL 2

17.0-L 608.9

16.0-K 604.6

15.9 604.6

15.8 603.4

15.7 603.1

15.5 602.8

15.4 602.6

15.3 602.1

15.0 600.6

14.0-J 600.8

13.0-I 597.9

3.10-B 606.8

2.60 605.3

3.20 608.0

3.30 609.1

3.40 612.1

3.5 612.1

3.3 612.1

4.20 612.1

4.30 612.1

4.50 612.1

4.60-C 612.5

4.61 614.5

5.00-D 615.6

5.20 617.5

5.40 617.2

6.10-E 618.9

6.30 619.9

6.20 619.9

CENTRE PARK OF WEST CHESTER

(CHF02)

TRIB EXISTING COMPENSATORY FLOOD VOLUME CUT/FILL MAP

08-18-08

0 50 100 200 300

HENDERSON AND BODWELL, L.L.P.

EARTHWORK PARCEL 1

EARTHWORK PARCEL 1

EARTHWORK PARCEL 2

EARTHWORK PARCEL 2

EARTHWORK PARCEL 1

EARTHWORK PARCEL 2

EARTHWORK PARCEL 2

EARTHWORK PARCEL 2

EARTHWORK PARCEL 2

17.0-L 608.9

16.0-K 604.6

15.9 604.6

15.8 603.4

15.7 602.9

15.5 602.8

15.4 602.6

15.3 602.1

15.0 600.6

14.0-J 600.8

13.0-I 597.9

2.80 605.4

3.10-B 606.7

3.30 608.5

3.40 612.2

4.20 612.2

4.30 612.2

4.40 612.2

4.60-C 612.8

4.61 614.1

5.00-D 615.7

5.20 617.1

5.35 612.1

5.40 617.0

6.10-E 618.5

6.20 619.8

6.30 619.8

0 50 100 200 300

CENTRE PARK OF WEST CHESTER

(CHF02)

TRIB PHASE 1
COMPENSATORY FLOOD VOLUME
CUT/FILL MAP

08-18-08

HENDERSON AND BODWELL L.L.P.

APPENDIX:

E. Permit Application Form

APPENDIX:

F. CD-ROM