Federal Emergency Management Agency

Washington, D.C. 20472

OCT 20 2004

LOMR# 04-08-0587P Rich
Black Squirrel - Hargler Ranch, Tricore
6/22/04

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

The Honorable Chuck Brown
Chairman, El Paso County
Board of Commissioners
27 Vermijo Avenue
Colorado Springs, CO 80903-2208

IN REPLY REFER TO:
Case No.: 04-08-0587P
Community Name: El Paso County, CO
Community No.: 080059
Effective Date of This Revision: FEB 16 2005

Dear Mr. Brown:

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

Additional documents are enclosed which 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 for your community. If you have any technical questions regarding this LOMR, please contact the Director, Federal Insurance and Mitigation Division of the Department of Homeland Security's Federal Emergency Management Agency (FEMA) in Denver, Colorado, at (303) 235-4830, 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 website at http://www.fema.gov/nfip.

Sincerely,

Kevin C. Long, CFM, Project Engineer
Hazard Identification Section
Mitigation Division
Emergency Preparedness
and Response Directorate

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

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

cc: Mr. Kevin Stilson, P.E., CFM
Regional Floodplain Administrator
Pikes Peak Regional Building Department

Mr. Richard L Schindler, P.E.
Senior Project Manager
Tri-Core Engineering, LLC

 | Issue Date: OCT 20 2004 | Effective Date: FEB 16 2005 | Case No.: 04-08-0587P | LOMR-APP

Federal Emergency Management Agency

Washington, D.C. 20472

LETTER OF MAP REVISION DETERMINATION DOCUMENT

COMMUNITY AND REVISION INFORMATION		PROJECT DESCRIPTION	BASIS OF REQUEST
COMMUNITY	El Paso County Colorado (Unincorporated Areas)	NO PROJECT	HYDROLOGIC ANALYSIS HYDRAULIC ANALYSIS NEW TOPOGRAPHIC DATA
	COMMUNITY NO.: 080059		
IDENTIFIER	Santa Fe Springs – Haegler Ranch Drainage Basin Letter of Map Revision	APPROXIMATE LATITUDE & LONGITUDE: 38.947, -104.543 SOURCE: USGS QUADRANGLE DATUM: NAD 83	
FLOODING SOURCE(S) & REVISED REACH(ES)	Haegler Ranch Tributary 2 – from approximately 310 feet upstream to approximately 3,140 feet upstream of the confluence with Geick Ranch West Tributary Haegler Ranch Tributary 3 – from approximately 8, 100 feet downstream to approximately 400 feet upstream of Curtis Road Haegler Ranch Tributary 4 – from approximately 4, 100 feet downstream to approximately 400 feet upstream of Curtis Road		

SUMMARY OF REVISIONS

	Haegler Ranch Tributary 2		Haegler Ranch Tributary 3		Haegler Ranch Tributary 4	
Effective Flooding:	Zone A	No BFEs*	Zone A	No BFEs*	Zone A	No BFEs*
Revised Flooding:	Zone AE	BFEs	Zone AE	BFEs	Zone AE	BFEs
Increases:	YES	YES	YES	YES	YES	YES
Decreases:	YES	NONE	YES	NONE	YES	NONE

* BFEs – Base Flood Elevations

ANNOTATED MAPPING ENCLOSURES	ANNOTATED STUDY ENCLOSURES
TYPE: FIRM* NO.: 08041C0575 F Date: March 17, 1997	DATE OF EFFECTIVE FLOOD INSURANCE STUDY REPORT: August 23, 1999 PROFILES: 367P through 370P SUMMARY OF DISCHARGES TABLE: 3

* FIRM – Flood Insurance Rate Map; ** FBFM – Flood Boundary and Floodway Map; *** FHBM – Flood Hazard Boundary Map

DETERMINATION

This document provides the determination from the Department of Homeland Security's Federal Emergency Management Agency (FEMA) regarding a request for a Letter of Map Revision (LOMR) for the area described above. Using the information submitted, we have determined that a revision to the flood hazards depicted in the Flood Insurance Study (FIS) report and/or National Flood Insurance Program (NFIP) map is warranted. This document revises the effective NFIP map, as indicated in the attached documentation. Please use the enclosed annotated map panels revised by this LOMR for floodplain management purposes and for all flood insurance policies and renewals in your community.

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 1-877-336-2677 (1-877-FEMA MAP) or by letter addressed to the LOMR Depot, 3601 Eisenhower Avenue, Alexandria, VA 22304. Additional information about the NFIP is available on our website at http://www.fema.gov/nfip.

Kevin C Long

Kevin C. Long, CFM, Project Engineer
Hazard Identification Section
Mitigation Division
Emergency Preparedness and Response Directorate

102929 101104080587 102IAC

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 report 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.

COMMUNITY REMINDERS

We based this determination on the 1-percent-annual-chance discharges computed in the submitted hydrologic model. Future development of projects upstream could cause increased discharges, which could cause increased flood hazards. A comprehensive restudy of your community's flood hazards would consider the cumulative effects of development on discharges and could, therefore, indicate that greater flood hazards exist in this area.

Your community must regulate all proposed floodplain development and ensure that permits required by Federal and/or State/Commonwealth law have been obtained. State/Commonwealth 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/Commonwealth 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.

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Washington, D.C. 20472

LETTER OF MAP REVISION
DETERMINATION DOCUMENT (CONTINUED)

COMMUNITY INFORMATION (CONTINUED)

We have designated a Consultation Coordination Officer (CCO) to assist your community. The CCO will be the primary liaison between your community and FEMA. For information regarding your CCO, please contact:

Mr. Robert Ives
Acting Director, Federal Insurance and Mitigation Division
Federal Emergency Management Agency, Region VIII
Denver Federal Center, Building 710
P.O. Box 25267
Denver, CO 80225-0267
(303) 235-4830

STATUS OF THE COMMUNITY NFIP MAPS

We will not physically revise and republish the FIRM and FIS report for your community to reflect the modifications made by this LOMR at this time. When changes to the previously cited FIRM panel and FIS report warrant physical revision and republication in the future, we will incorporate the modifications made by this LOMR at that time.

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 1-877-336-2677 (1-877-FEMA MAP) or by letter addressed to the LOMR Depot, 3601 Eisenhower Avenue, Alexandria, VA 22304. Additional information about the NFIP is available on our website at http://www.fema.gov/nfip.

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Emergency Preparedness and Response Directorate

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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 has elapsed and we have resolved any appeals that we receive during this appeal period. Until this LOMR is effective, the revised BFEs presented in this LOMR may be changed.

A notice of changes will be published in the *Federal Register*. This information also will be published in your local newspaper on or about the dates listed below.

LOCAL NEWSPAPER
Name: *El Paso County News*
Dates: 11/10/2004 11/17/2004

PUBLIC NOTIFICATION

FLOODING SOURCE	LOCATION OF REFERENCED ELEVATION	BFE (FEET NGVD) EFFECTIVE	BFE (FEET NGVD) REVISED	MAP PANEL NUMBER(S)
Haegler Ranch Tributary 2	Approximately 310 feet upstream of confluence with Geick Ranch West Tributary	None	6,735	08041C0575 F
	Approximately 3,140 feet upstream of confluence with Geick Ranch West Tributary	None	6,779	08041C0575 F
Haegler Ranch Tributary 3	Approximately 8,100 feet downstream of Curtis Road	None	6,672	08041C0575 F
	Approximately 300 feet upstream of Curtis Road	None	6,769	08041C0575 F
Haegler Ranch Tributary 4	Approximately 4,000 feet downstream of Curtis Road	None	6,688	08041C0575 F
	Approximately 300 feet upstream of Curtis Road	None	6,758	08041C0575 F

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 1-877-336-2677 (1-877-FEMA MAP) or by letter addressed to the LOMR Depot, 3601 Eisenhower Avenue, Alexandria, VA 22304. Additional information about the NFIP is available on our website at http://www.fema.gov/nfip.

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Kevin C. Long, CFM, Project Engineer
Hazard Identification Section
Mitigation Division
Emergency Preparedness and Response Directorate

102929 101104080587 102IAC

CHANGES ARE MADE IN DETERMINATIONS OF BASE FLOOD ELEVATIONS FOR THE UNINCORPORATED AREAS OF EL PASO COUNTY, COLORADO, UNDER THE NATIONAL FLOOD INSURANCE PROGRAM

On March 17, 1997, the Department of Homeland Security's Federal Emergency Management Agency identified Special Flood Hazard Areas (SFHAs) in the unincorporated areas of El Paso County, Colorado, 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-percent chance of being equaled or exceeded in any given year (base 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 new hydrologic, hydraulic, and topographic data for Haegler Ranch Tributary 2 from approximately 310 feet upstream to approximately 3,140 feet upstream of the confluence with Geick Ranch West Tributary; for Haegler Ranch Tributary 3 from approximately 8,100 feet downstream to approximately 400 feet upstream of Curtis Road; and for Haegler Ranch Tributary 4 from approximately 4,100 feet downstream to approximately 400 feet upstream of Curtis Road. This has resulted in increases and decreases in SFHA width and increased BFEs for the above-mentioned tributaries. The table below indicates existing and modified BFEs for selected locations along the affected lengths of the flooding source(s) cited above.

Location	Existing BFE (feet)*	Modified BFE (feet)*
Haegler Ranch Tributary 2:		
Approximately 310 feet upstream of confluence with Geick Ranch West Tributary	None	6,735
Approximately 3,140 feet upstream of confluence with Geick Ranch West Tributary	None	6,779
Haegler Ranch Tributary 3:		
Approximately 8,100 feet downstream of Curtis Road	None	6,672
Approximately 300 feet upstream of Curtis Road	None	6,769
Haegler Ranch Tributary 4:		
Approximately 4,000 feet downstream of Curtis Road	None	6,688
Approximately 300 feet upstream of Curtis Road	None	6,758

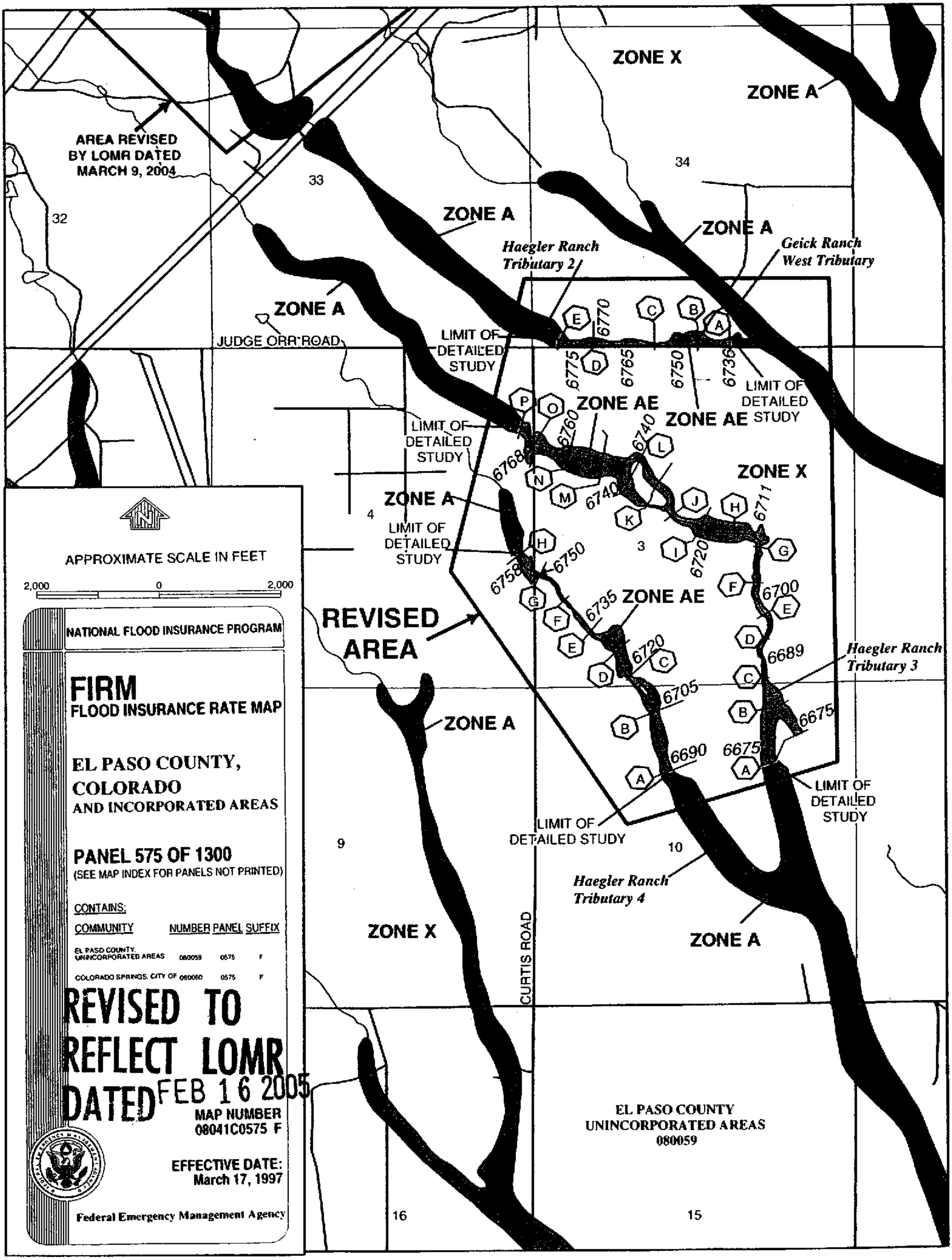
*National Geodetic Vertical Datum, rounded to nearest whole foot

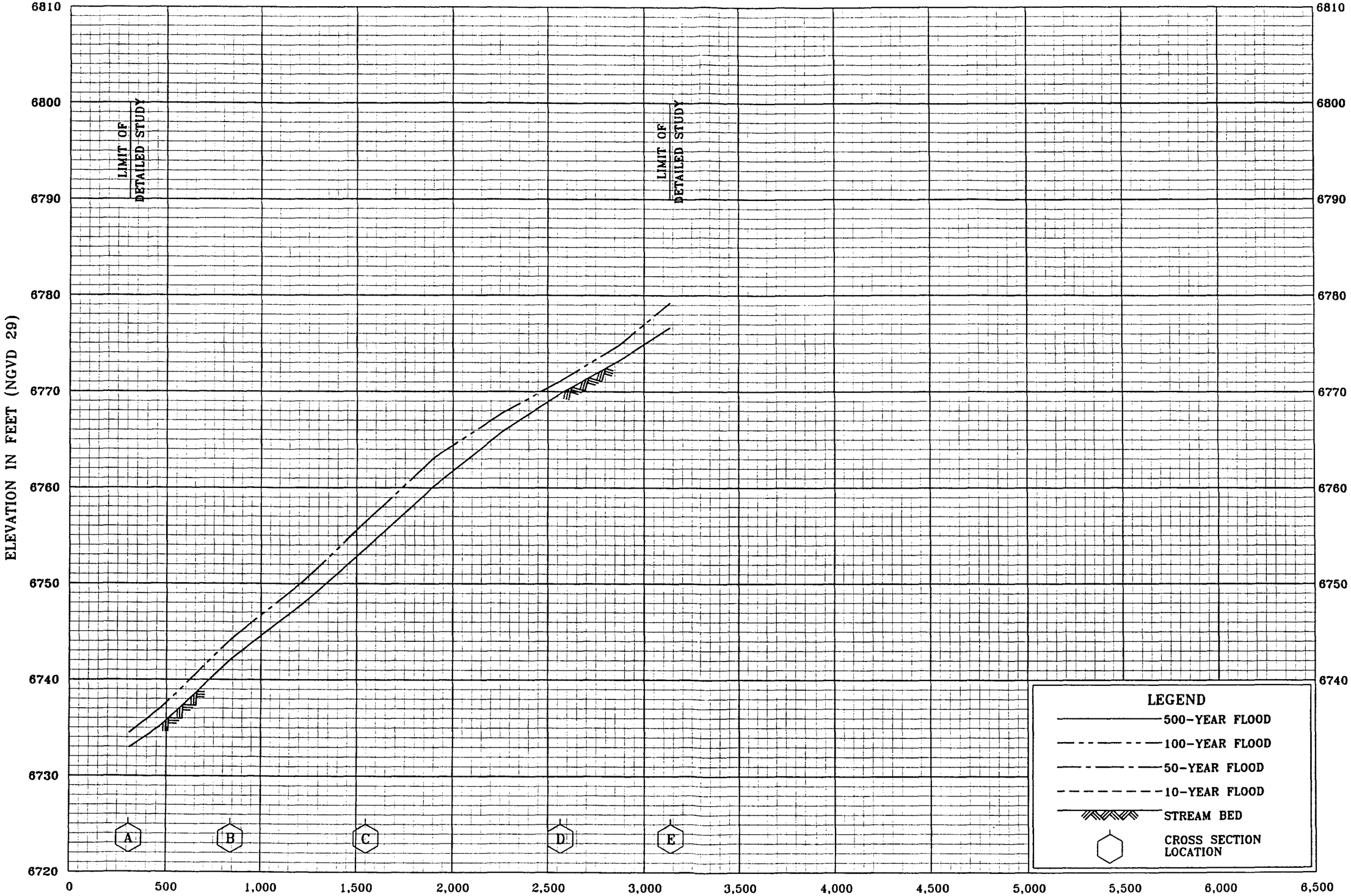
Under the above-mentioned Acts of 1968 and 1973, the Mitigation Division must develop criteria for floodplain management. To participate in the National Flood Insurance Program (NFIP), the community must use the modified BFEs to administer the floodplain management measures of the NFIP. These modified 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 on notice that until the 90-day period elapses, the Mitigation Division's determination to modify the BFEs may itself be changed.

Any person having knowledge or wishing to comment on these changes should immediately notify:

The Honorable Chuck Brown
Chairman, El Paso County
Board of Commissioners
27 Vermijo Avenue
Colorado Springs, CO 80903-2208


ZONE X
ZONE A
AREA REVISED
BY LOMR DATED
MARCH 9, 2004
33
34
32
ZONE A
ZONE A
Haegler Ranch
Tributary 2
Geick Ranch
West Tributary
ZONE A
JUDGE ORR ROAD
LIMIT OF
DETAILED
STUDY
6770
6775
6765
6750
6736
LIMIT OF
DETAILED STUDY
ZONE AE
ZONE AE
LIMIT OF
DETAILED
STUDY
6760
6740
6768
ZONE X
ZONE A
4
LIMIT OF
DETAILED
STUDY
6740
6711
3
6720
6758
6750
6735
ZONE AE
6700
REVISED
AREA
6720
6689
Haegler Ranch
Tributary 3
ZONE A
6705
6675
6690
6675
LIMIT OF
DETAILED STUDY
9
10
Haegler Ranch
Tributary 4
ZONE X
ZONE A
CURTIS ROAD
16
15
EL PASO COUNTY
UNINCORPORATED AREAS
080059
APPROXIMATE SCALE IN FEET
2,000
0
2,000
NATIONAL FLOOD INSURANCE PROGRAM
FIRM
FLOOD INSURANCE RATE MAP
EL PASO COUNTY,
COLORADO
AND INCORPORATED AREAS
PANEL 575 OF 1300
(SEE MAP INDEX FOR PANELS NOT PRINTED)
CONTAINS:
COMMUNITY
NUMBER
PANEL
SUFFIX
EL PASO COUNTY, UNINCORPORATED AREAS
080059
0575
F
COLORADO SPRINGS, CITY OF
080060
0575
F
REVISED TO
REFLECT LOMR
DATED FEB 16 2005
MAP NUMBER
08041C0575 F
EFFECTIVE DATE:
March 17, 1997
Federal Emergency Management Agency



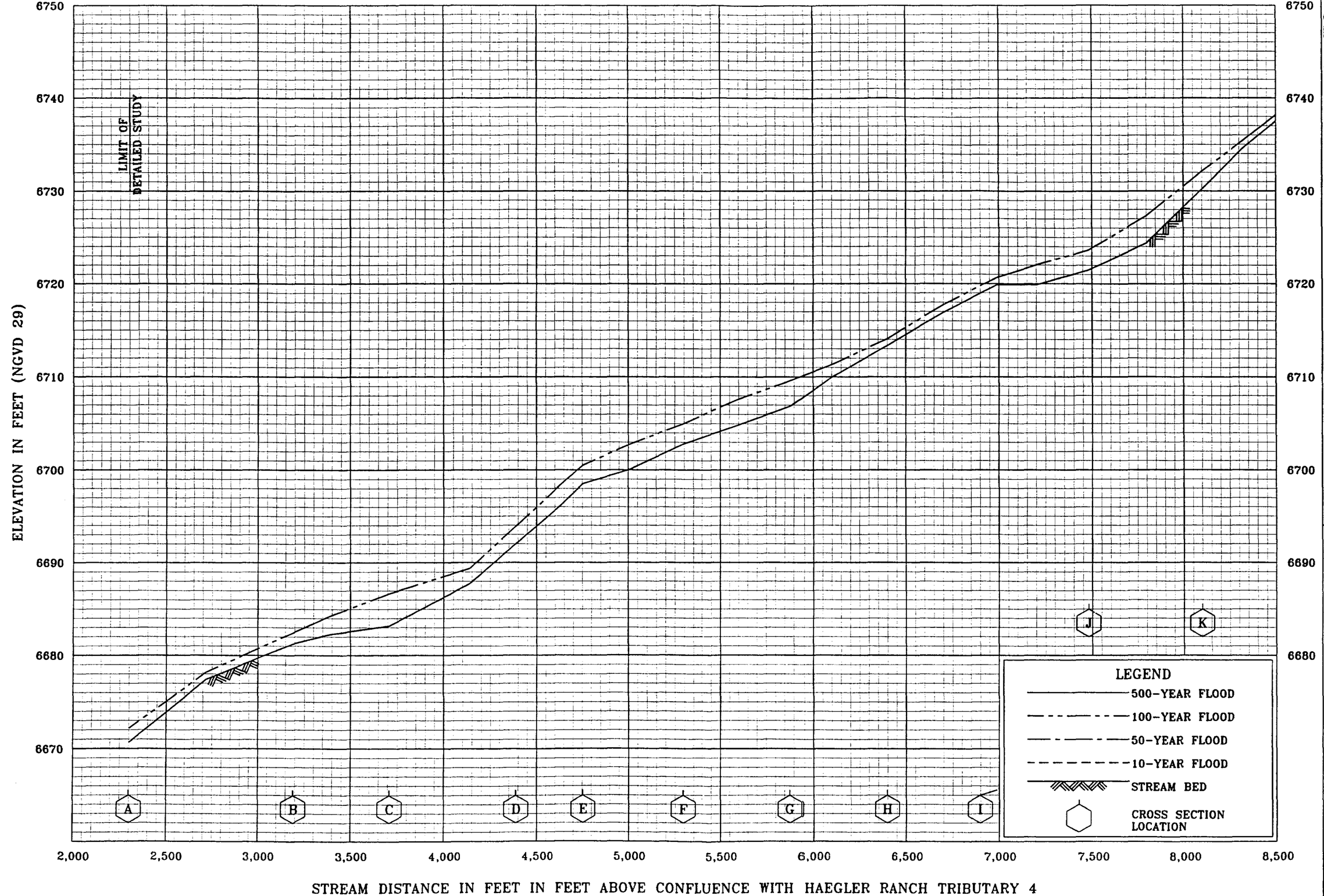
FLOOD PROFILES

REVISED TO REFLECT LOMR DATED FEB 16 2005

HAEGLER RANCH TRIBUTARY 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

EL PASO COUNTY, CO
AND INCORPORATED AREAS



FLOOD PROFILES

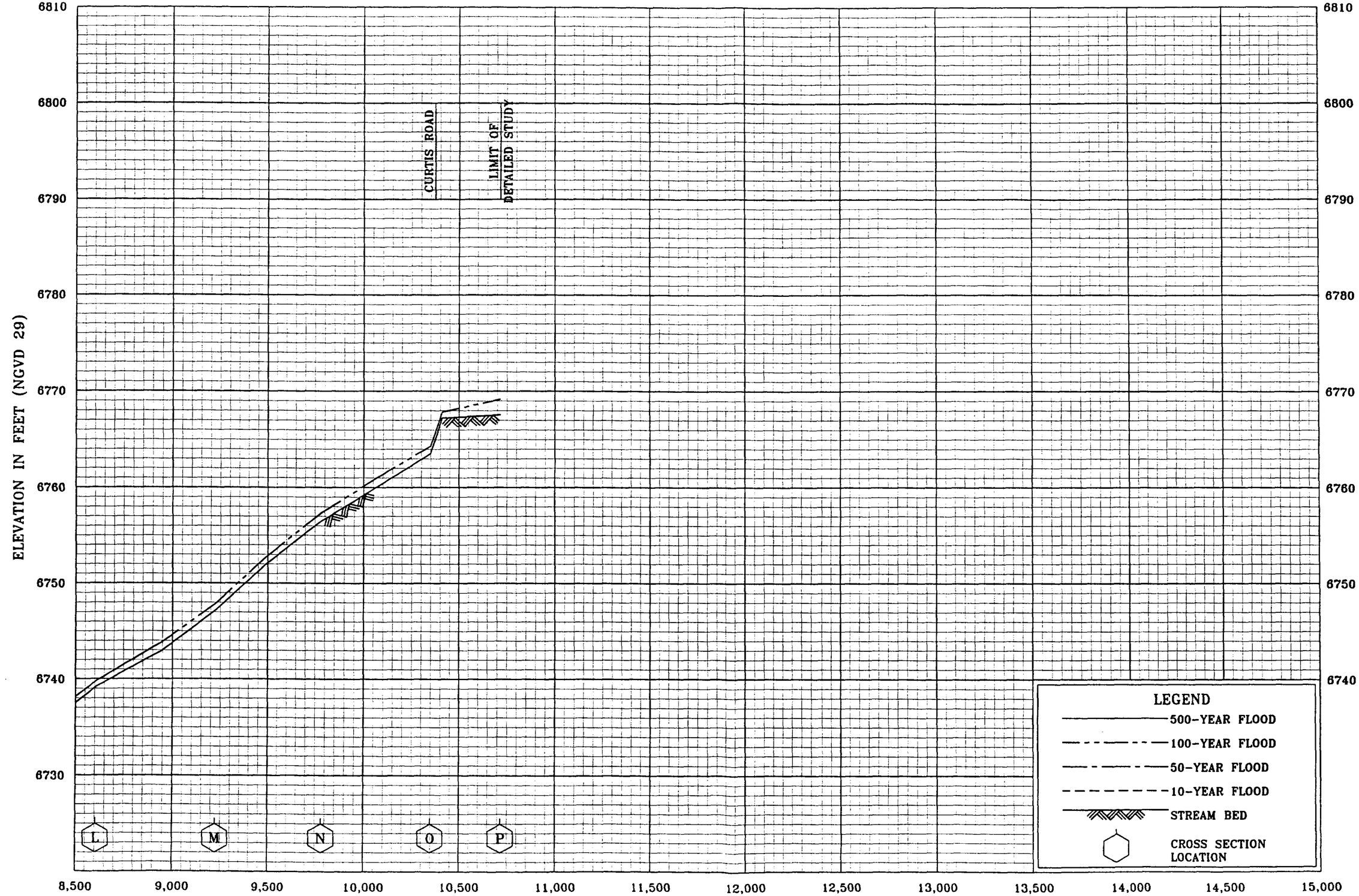
HAEGLER RANCH TRIBUTARY 3

REVISED TO REFLECT LOMR DATED FEB 16 2005

FEDERAL EMERGENCY MANAGEMENT AGENCY

EL PASO COUNTY, CO
AND INCORPORATED AREAS

368P



FLOOD PROFILES

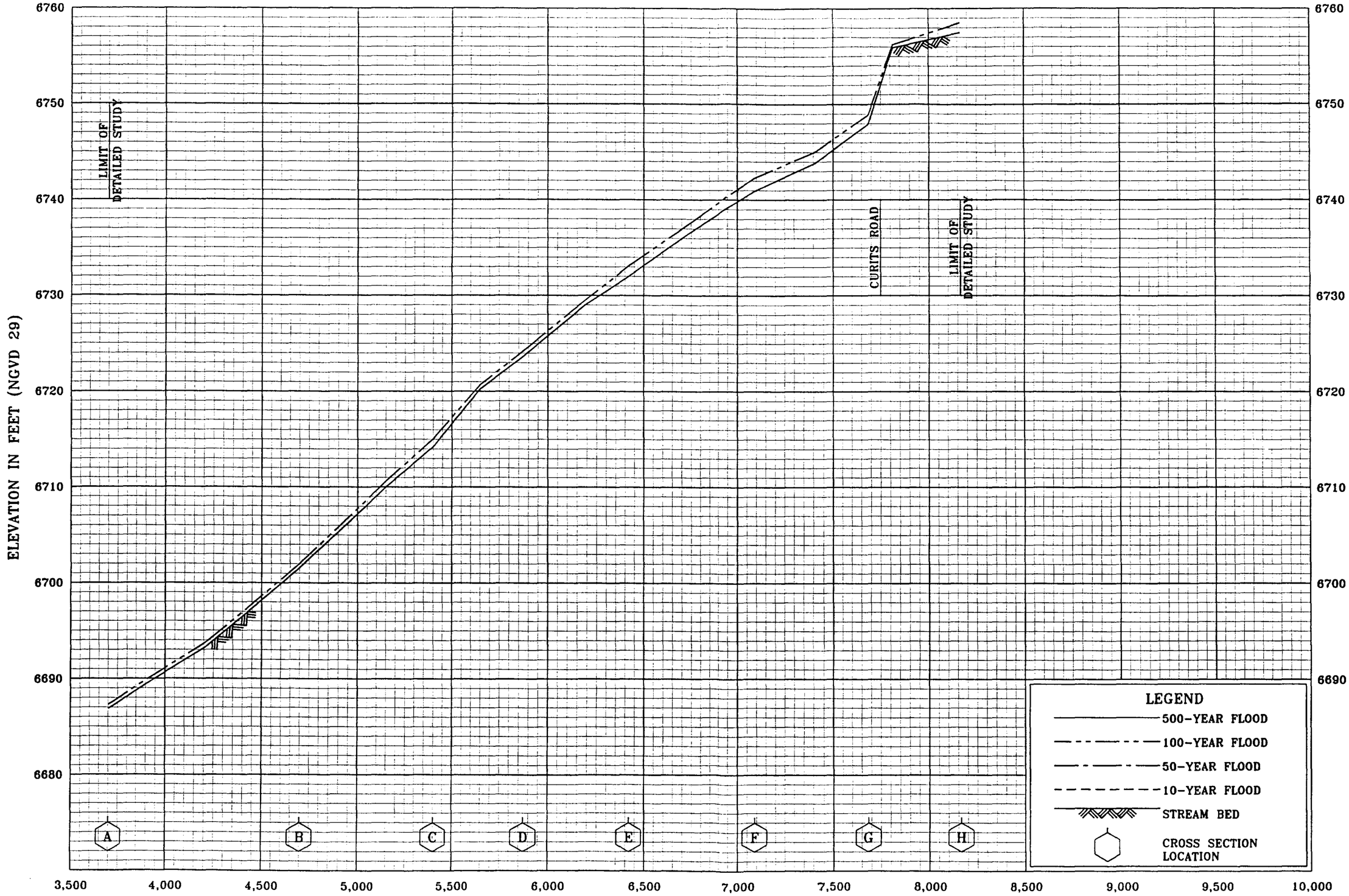
HAEGLER RANCH TRIBUTARY

REVISED TO REFLECT LOMR DATED FEB 16 2005

FEDERAL EMERGENCY MANAGEMENT AGENCY

EL PASO COUNTY, CO
AND INCORPORATED AREAS

369P



FLOOD PROFILES

REVISED TO REFLECT LOMR DATED FEB 16 2005

HAEGLER RANCH TRIBUTARY 4

FEDERAL EMERGENCY MANAGEMENT AGENCY

EL PASO COUNTY, CO
AND INCORPORATED AREAS

370P

Table 3. Summary of Discharges

Flooding Source and Location	Drainage Area (square miles)	Peak Discharges (cubic feet per second) 10-Year	50-Year	100-Year	500-Year
Haegler Ranch Tributary 2 At the confluence with Geick Ranch West Tributary	1.47	—[1]	—[1]	592	—[1]
Haegler Ranch Tributary 3 At approximately 2,300 feet upstream of the confluence with Haegler Ranch Tributary 4	1.09	—[1]	—[1]	505	—[1]
Haegler Ranch Tributary 4 At approximately 3,700 feet upstream of the confluence with Haegler Ranch Tributary 3	0.60	—[1]	—[1]	130	—[1]

1 Data Not Available

REVISED TO
REFLECT LOMR
DATED FEB 16 2005

Federal Emergency Management Agency

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OCT 20 2004

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

The Honorable Chuck Brown
Chairman, El Paso County
Board of Commissioners
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IN REPLY REFER TO:
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Sincerely,

Kevin C. Long, CFM, Project Engineer
Hazard Identification Section
Mitigation Division
Emergency Preparedness
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For: Doug Bellomo, P.E., CFM, Chief
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Mitigation Division
Emergency Preparedness
and Response Directorate

List of Enclosures:
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Annotated Flood Insurance Rate Map
Annotated Flood Insurance Study Report

cc: Mr. Kevin Stilson, P.E., CFM
Regional Floodplain Administrator
Pikes Peak Regional Building Department

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COMMUNITY	El Paso County Colorado (Unincorporated Areas) COMMUNITY NO.: 080059	NO PROJECT	HYDROLOGIC ANALYSIS HYDRAULIC ANALYSIS NEW TOPOGRAPHIC DATA
IDENTIFIER	Santa Fe Springs – Haegler Ranch Drainage Basin Letter of Map Revision	APPROXIMATE LATITUDE & LONGITUDE: 38.947, -104.543 SOURCE: USGS QUADRANGLE DATUM: NAD 83	
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Revised Flooding:	Zone AE	BFEs	Zone AE	BFEs	Zone AE	BFEs
Increases:	YES	YES	YES	YES	YES	YES
Decreases:	YES	NONE	YES	NONE	YES	NONE

* BFEs – Base Flood Elevations

ANNOTATED MAPPING ENCLOSURES

TYPE: FIRM* NO.: 08041C0575 F Date: March 17, 1997

ANNOTATED STUDY ENCLOSURES

DATE OF EFFECTIVE FLOOD INSURANCE STUDY REPORT: August 23, 1999
PROFILES: 367P through 370P
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LETTER OF MAP REVISION
DETERMINATION DOCUMENT (CONTINUED)

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Federal Emergency Management Agency

Washington, D.C. 20472

LETTER OF MAP REVISION
DETERMINATION DOCUMENT (CONTINUED)

COMMUNITY INFORMATION (CONTINUED)

We have designated a Consultation Coordination Officer (CCO) to assist your community. The CCO will be the primary liaison between your community and FEMA. For information regarding your CCO, please contact:

Mr. Robert Ives
Acting Director, Federal Insurance and Mitigation Division
Federal Emergency Management Agency, Region VIII
Denver Federal Center, Building 710
P.O. Box 25267
Denver, CO 80225-0267
(303) 235-4830

STATUS OF THE COMMUNITY NFIP MAPS

We will not physically revise and republish the FIRM and FIS report for your community to reflect the modifications made by this LOMR at this time. When changes to the previously cited FIRM panel and FIS report warrant physical revision and republication in the future, we will incorporate the modifications made by this LOMR at that time.

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 1-877-336-2677 (1-877-FEMA MAP) or by letter addressed to the LOMR Depot, 3601 Eisenhower Avenue, Alexandria, VA 22304. Additional information about the NFIP is available on our website at http://www.fema.gov/nfip.

Kevin C Long

Kevin C. Long, CFM, Project Engineer
Hazard Identification Section
Mitigation Division
Emergency Preparedness and Response Directorate

102929 101104080587 102IAC

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 has elapsed and we have resolved any appeals that we receive during this appeal period. Until this LOMR is effective, the revised BFEs presented in this LOMR may be changed.

A notice of changes will be published in the *Federal Register*. This information also will be published in your local newspaper on or about the dates listed below.

LOCAL NEWSPAPER Name: *El Paso County News*
Dates: 11/10/2004 11/17/2004

PUBLIC NOTIFICATION

FLOODING SOURCE	LOCATION OF REFERENCED ELEVATION	BFE (FEET NGVD) EFFECTIVE	BFE (FEET NGVD) REVISED	MAP PANEL NUMBER(S)
Haegler Ranch Tributary 2	Approximately 310 feet upstream of confluence with Geick Ranch West Tributary	None	6,735	08041C0575 F
	Approximately 3,140 feet upstream of confluence with Geick Ranch West Tributary	None	6,779	08041C0575 F
Haegler Ranch Tributary 3	Approximately 8,100 feet downstream of Curtis Road	None	6,672	08041C0575 F
	Approximately 300 feet upstream of Curtis Road	None	6,769	08041C0575 F
Haegler Ranch Tributary 4	Approximately 4,000 feet downstream of Curtis Road	None	6,688	08041C0575 F
	Approximately 300 feet upstream of Curtis Road	None	6,758	08041C0575 F

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 1-877-336-2677 (1-877-FEMA MAP) or by letter addressed to the LOMR Depot, 3601 Eisenhower Avenue, Alexandria, VA 22304. Additional information about the NFIP is available on our website at http://www.fema.gov/nfip.

Kevin C. Long

Kevin C. Long, CFM, Project Engineer
Hazard Identification Section
Mitigation Division
Emergency Preparedness and Response Directorate

102929 101104080587 102IAC

CHANGES ARE MADE IN DETERMINATIONS OF BASE FLOOD ELEVATIONS FOR THE UNINCORPORATED AREAS OF EL PASO COUNTY, COLORADO, UNDER THE NATIONAL FLOOD INSURANCE PROGRAM

On March 17, 1997, the Department of Homeland Security's Federal Emergency Management Agency identified Special Flood Hazard Areas (SFHAs) in the unincorporated areas of El Paso County, Colorado, 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-percent chance of being equaled or exceeded in any given year (base 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 new hydrologic, hydraulic, and topographic data for Haegler Ranch Tributary 2 from approximately 310 feet upstream to approximately 3,140 feet upstream of the confluence with Geick Ranch West Tributary; for Haegler Ranch Tributary 3 from approximately 8,100 feet downstream to approximately 400 feet upstream of Curtis Road; and for Haegler Ranch Tributary 4 from approximately 4,100 feet downstream to approximately 400 feet upstream of Curtis Road. This has resulted in increases and decreases in SFHA width and increased BFEs for the above-mentioned tributaries. The table below indicates existing and modified BFEs for selected locations along the affected lengths of the flooding source(s) cited above.

Location	Existing BFE (feet)*	Modified BFE (feet)*
Haegler Ranch Tributary 2:		
Approximately 310 feet upstream of confluence with Geick Ranch West Tributary	None	6,735
Approximately 3,140 feet upstream of confluence with Geick Ranch West Tributary	None	6,779
Haegler Ranch Tributary 3:		
Approximately 8,100 feet downstream of Curtis Road	None	6,672
Approximately 300 feet upstream of Curtis Road	None	6,769
Haegler Ranch Tributary 4:		
Approximately 4,000 feet downstream of Curtis Road	None	6,688
Approximately 300 feet upstream of Curtis Road	None	6,758

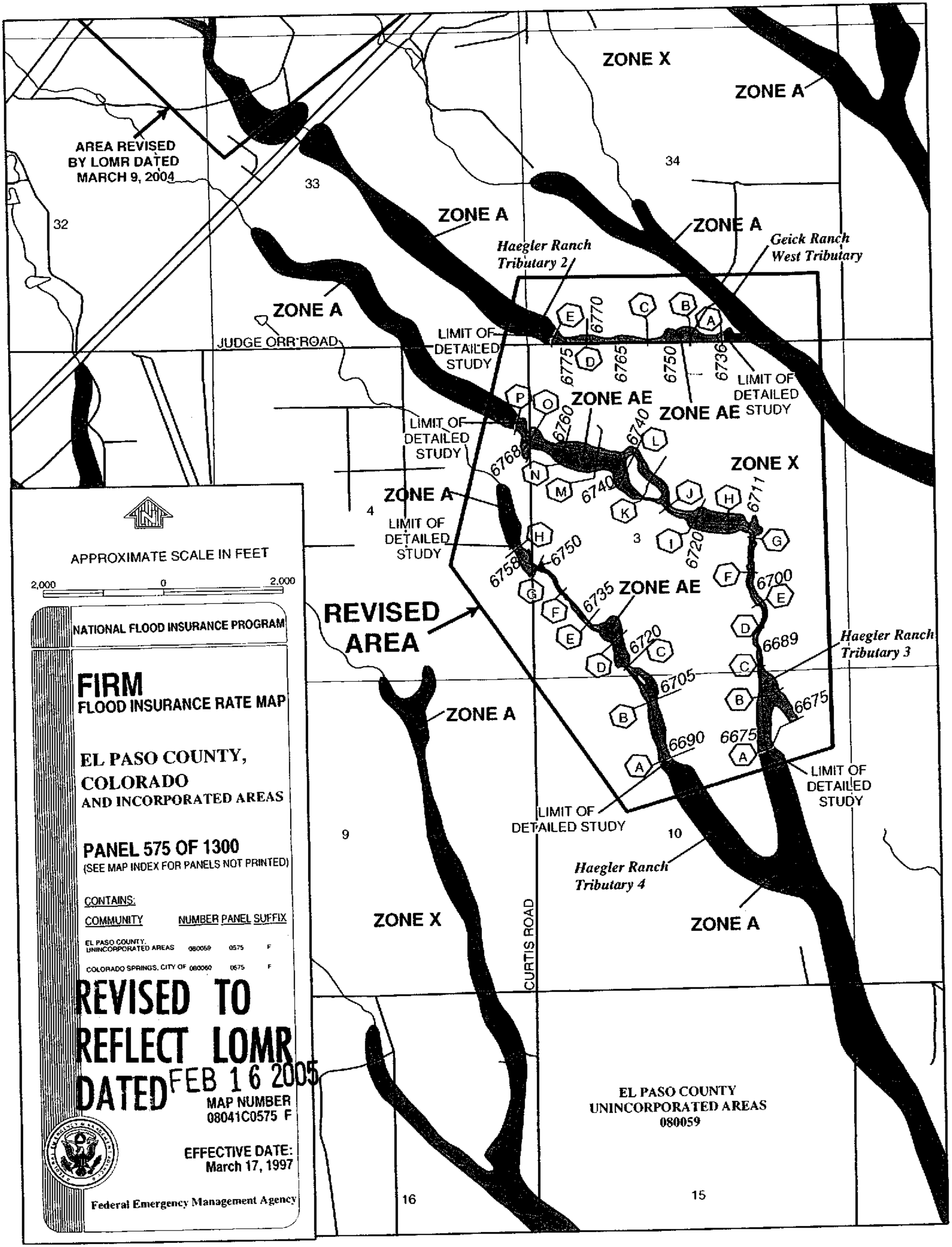
*National Geodetic Vertical Datum, rounded to nearest whole foot

Under the above-mentioned Acts of 1968 and 1973, the Mitigation Division must develop criteria for floodplain management. 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 on notice that until the 90-day period elapses, the Mitigation Division's determination to modify the BFEs may itself be changed.

Any person having knowledge or wishing to comment on these changes should immediately notify:

The Honorable Chuck Brown
Chairman, El Paso County
Board of Commissioners
27 Vermijo Avenue
Colorado Springs, CO 80903-2208



APPROXIMATE SCALE IN FEET

2,000 0 2,000

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

EL PASO COUNTY, COLORADO
AND INCORPORATED AREAS

PANEL 575 OF 1300
(SEE MAP INDEX FOR PANELS NOT PRINTED)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
EL PASO COUNTY, UNINCORPORATED AREAS	080059	0575	F
COLORADO SPRINGS, CITY OF	080060	0575	F

REVISED TO REFLECT LOMR DATED FEB 16 2005

MAP NUMBER
08041C0575 F

EFFECTIVE DATE:
March 17, 1997

Federal Emergency Management Agency

Table 3. Summary of Discharges

Flooding Source and Location	Drainage Area (square miles)	Peak Discharges (cubic feet per second) 10-Year	50-Year	100-Year	500-Year
Haegler Ranch Tributary 2 At the confluence with Geick Ranch West Tributary	1.47	__1	__1	592	__1
Haegler Ranch Tributary 3 At approximately 2,300 feet upstream of the confluence with Haegler Ranch Tributary 4	1.09	__1	__1	505	__1
Haegler Ranch Tributary 4 At approximately 3,700 feet upstream of the confluence with Haegler Ranch Tributary 3	0.60	__1	__1	130	__1

1 Data Not Available

REVISED TO
REFLECT LOMR
DATED FEB 16 2005

Federal Emergency Management Agency

Washington, D.C. 20472

FEE SCHEDULE FOR PROCESSING REQUESTS FOR MAP CHANGES

This notice contains the fee schedule for processing certain types of requests for changes to National Flood Insurance Program (NFIP) maps. The fee schedule allows FEMA to further reduce the expenses to the NFIP by more fully recovering the costs associated with processing conditional and final map change requests. The fee schedule for map changes is effective for all requests dated September 1, 2002, or later and supersedes the fee schedule that was established on June 1, 2000.

To develop the fee schedule for conditional and final map change requests, FEMA evaluated the actual costs of reviewing and processing requests for Conditional Letters of Map Amendment (CLOMAs), Conditional Letters of Map Revision – based on Fill (CLOMR-Fs), Conditional Letters of Map Revision (CLOMRs), Letters of Map Revision – based on Fill (LOMR-Fs), Letters of Map Revision (LOMRs), and Physical Map Revision (PMRs).

Based on our review of actual cost data for Fiscal Years 2000 and 2001, FEMA has established the following review and processing fees, which are to be submitted with all requests that are not otherwise exempted under 44 CFR 72.5.

Fee Schedule for Requests for CLOMAs, CLOMR-Fs, and LOMR-Fs

Request for single-lot/single-structure CLOMA and CLOMR-F	$500
Request for single-lot/single structure LOMR-F	$425
Request for single-lot/single-structure LOMR-F based on as-built information (CLOMR-F previously issued by us)	$325
Request for multiple-lot/multiple-structure CLOMA	$700
Request for multiple-lot/multiple-structure CLOMR-F and LOMR-F	$800
Request for multiple-lot/multiple-structure LOMR-F based on as-built information (CLOMR-F previously issued)	$700

Fee Schedule for Requests for CLOMRs

Request based on new hydrology, bridge, culvert, channel, or combination of any of these	$4,000
Request based on levee, berm, or other structural measure	$4,500

Fee Schedule for Requests for LOMRs and PMRs

Requesters must submit the review and processing fees shown below with requests for LOMRs and PMRs that are not based on structural measures or alluvial fans.

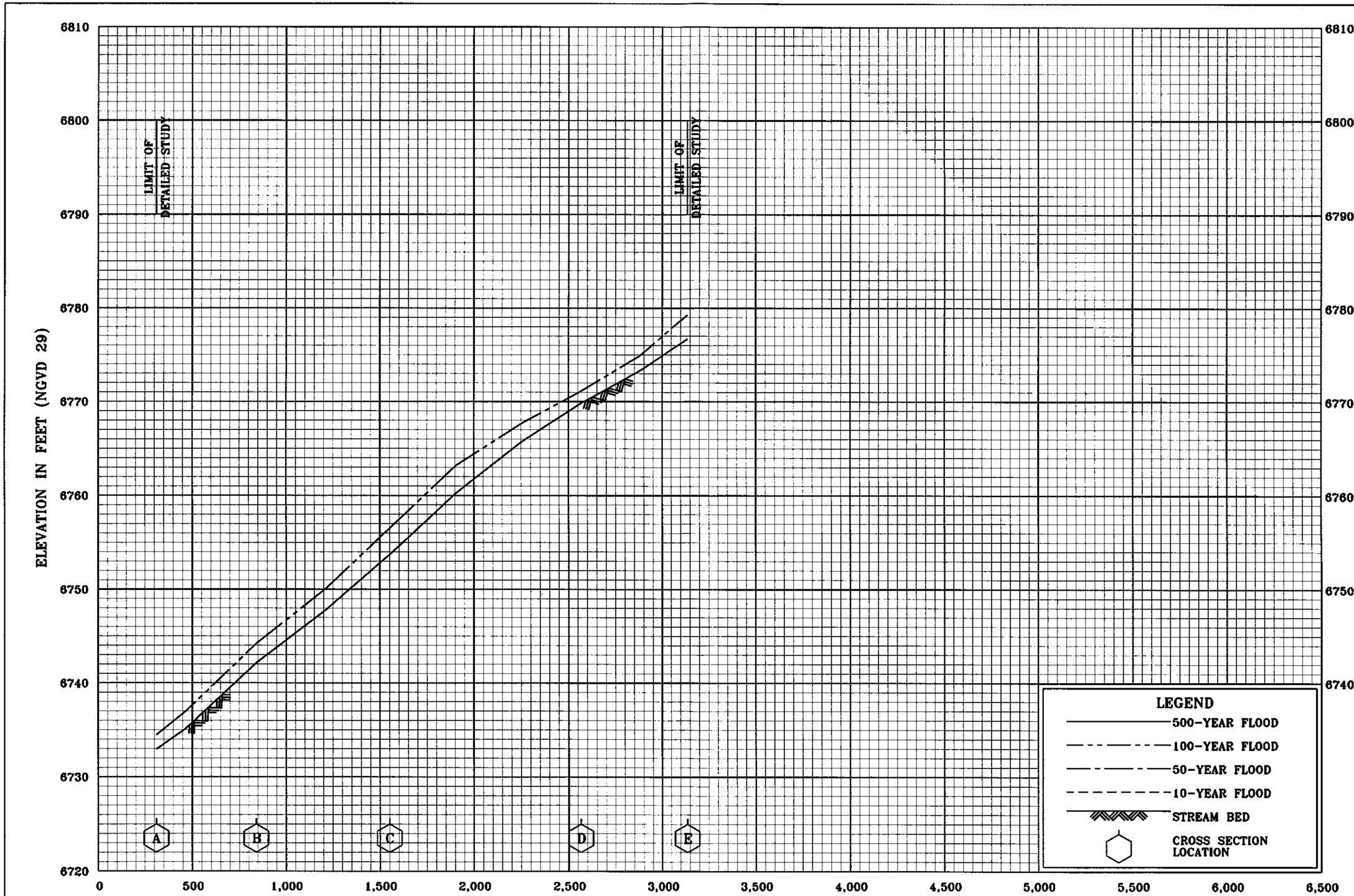
Request based on bridge, culvert, channel, or combination thereof	$4,200
Request based on levee, berm, or other structural measure	$6,000
Request based on as-built information submitted as follow-up to CLOMR	$3,800

Fees for CLOMRs, LOMRs, and PMRs Based on Structural Measures on Alluvial Fans

FEMA has maintained $5,000 as the initial fee for requests for CLOMRs and LOMRs based on structural measures on alluvial fans. FEMA will also continue to recover the remainder of the review and processing costs by invoicing the requester before issuing a determination letter, consistent with current practice. The prevailing private-sector labor rate charged to FEMA ($50 per hour) will continue to be used to calculate the total reimbursable fees.

Payment Submission Requirements

Requesters must make fee payments for non-exempt requests before we render services. This payment must be in the form of a check or money order or by credit card payment. Please make all checks and money orders in U.S. funds payable to the *National Flood Insurance Program.* We will deposit all fees collected to the National Flood Insurance Fund, which is the source of funding for providing this service.



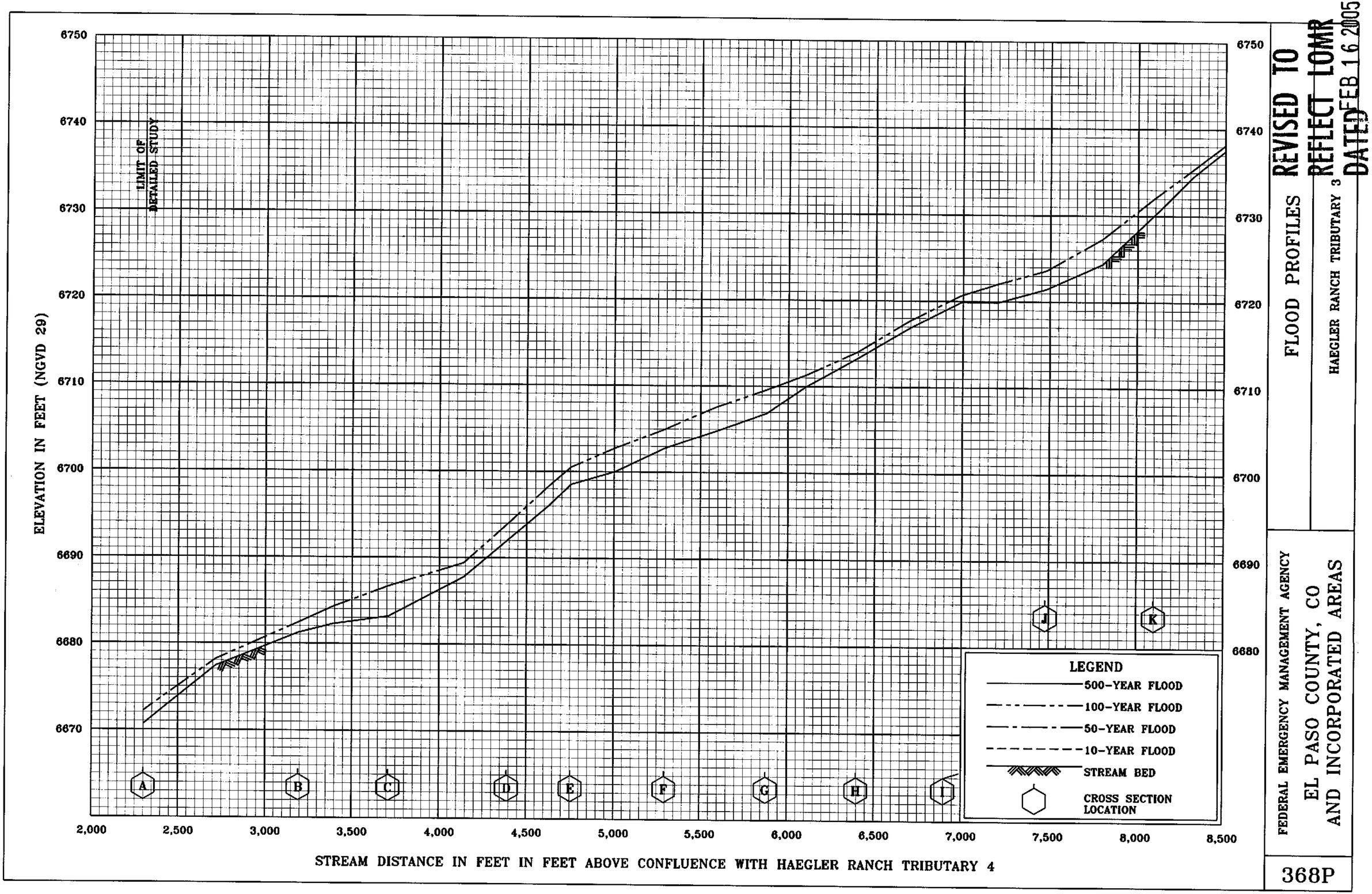
FLOOD PROFILES

HAEGLER RANCH TRIBUTARY 2

REVISED TO REFLECT LOMR DATED FEB 16 2005

FEDERAL EMERGENCY MANAGEMENT AGENCY

EL PASO COUNTY, CO
AND INCORPORATED AREAS



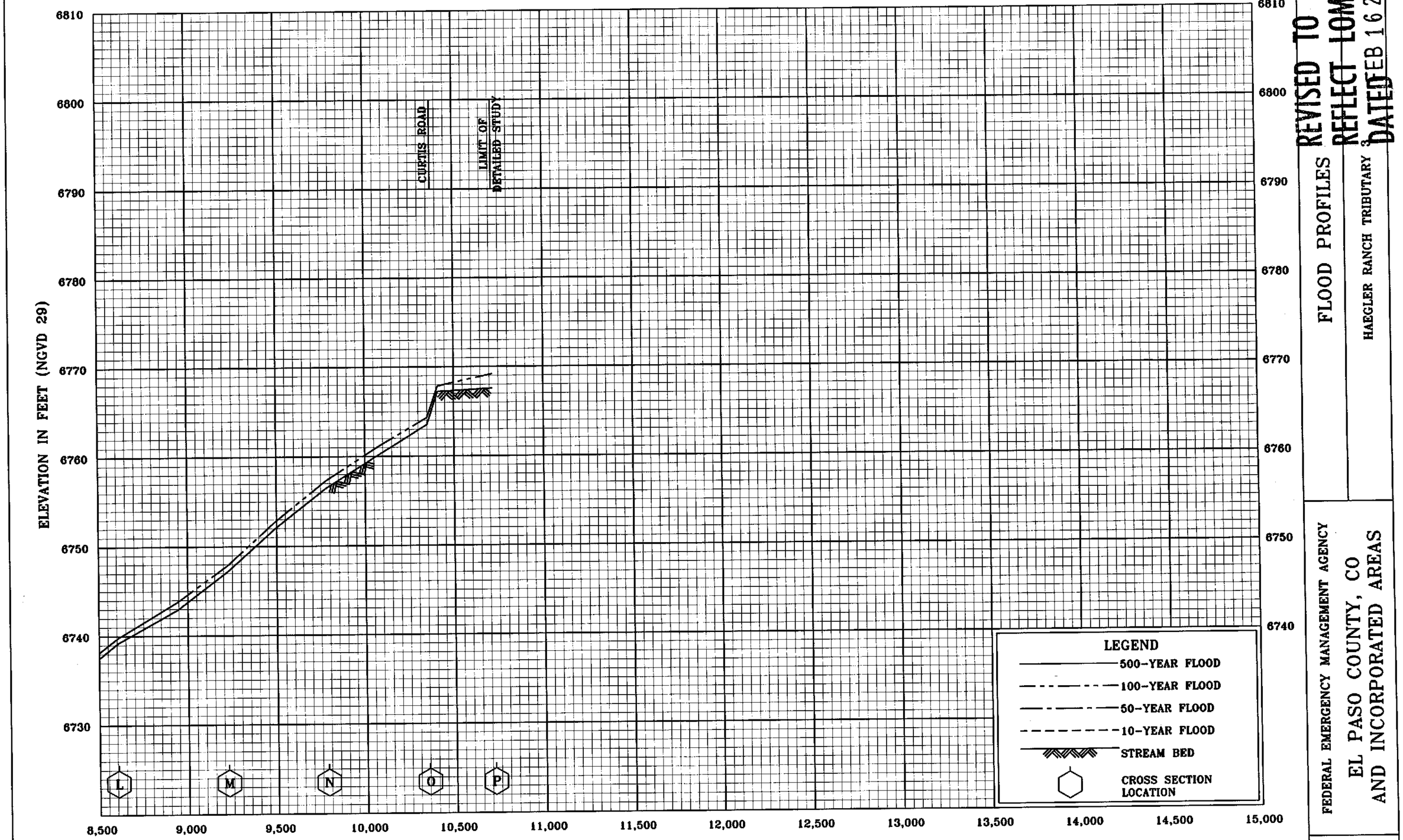
FLOOD PROFILES

HAEGLER RANCH TRIBUTARY 3

REVISED TO REFLECT LOMR DATED FEB 16 2005

FEDERAL EMERGENCY MANAGEMENT AGENCY

EL PASO COUNTY, CO
AND INCORPORATED AREAS



REVISED TO REFLECT LOMR DATED FEB 16 2005

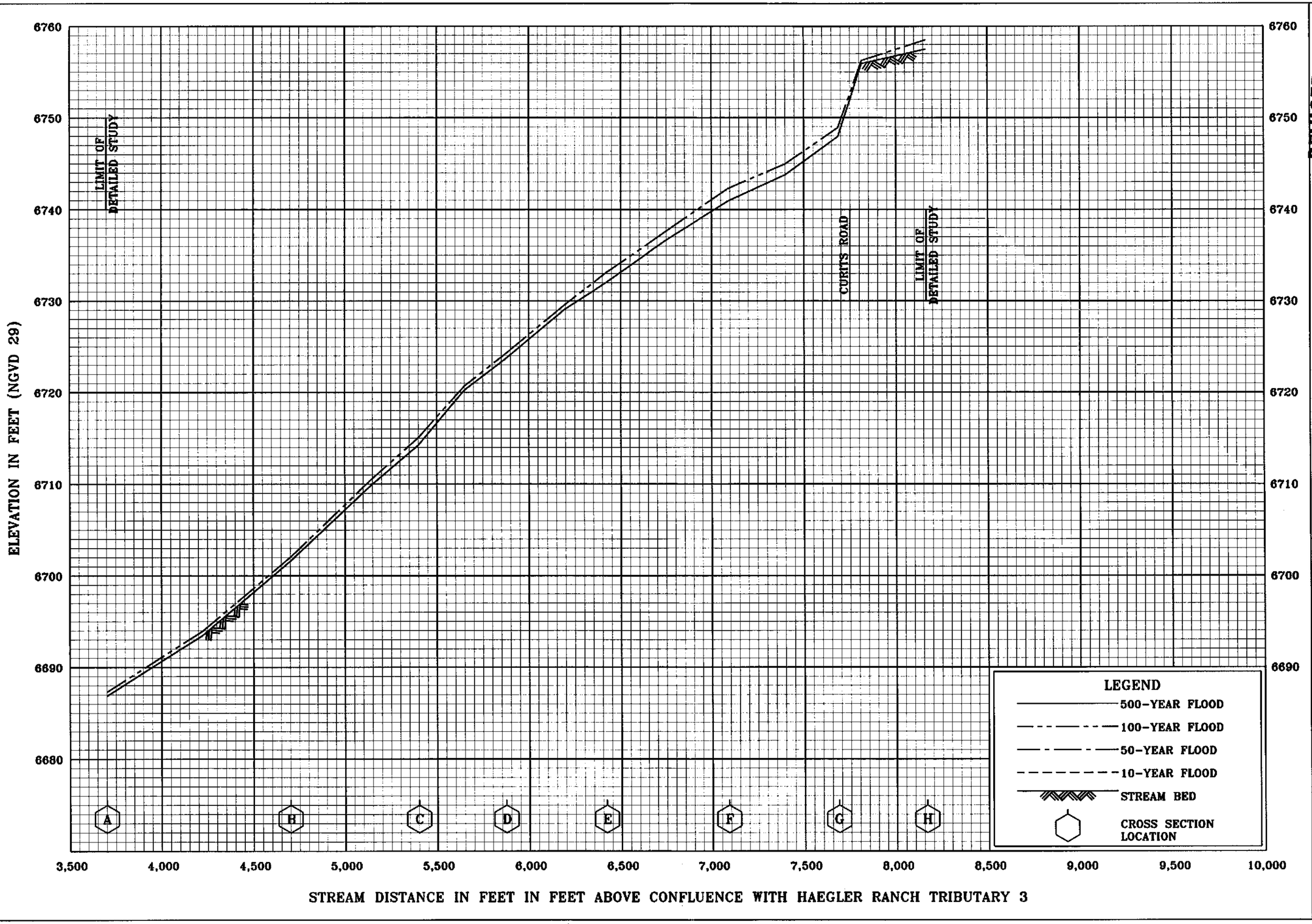
FLOOD PROFILES

HAEGLER RANCH TRIBUTARY 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

EL PASO COUNTY, CO
AND INCORPORATED AREAS

369P



FLOOD PROFILES

HAEGLER RANCH TRIBUTARY 4

REVISED TO REFLECT LOMR DATED FEB 16 2005

FEDERAL EMERGENCY MANAGEMENT AGENCY

EL PASO COUNTY, CO
AND INCORPORATED AREAS

370P

NATIONAL FLOOD INSURANCE PROGRAM

FEMA MAP COORDINATION CONTRACTOR

RECEIVED
JUL - 6 2004
BY:

June 30, 2004

Mr. Richard L. Schindler, P.E.
Senior Project Manager
Tri-Core Engineering, LLC
5526 North Academy Boulevard, Suite 204
Colorado Springs, CO 80918

IN REPLY REFER TO:
Case No.: 04-08-0587P
Community: El Paso County, CO
Community No.: 080059

316-ACK.FEX

Dear Mr. Schindler:

This responds to your request dated June 22, 2004, that the Department of Homeland Security's Federal Emergency Management Agency (FEMA) issue a revision to the Flood Insurance Rate Map (FIRM) for El Paso County, Colorado and Incorporated Areas. Pertinent information about the request is listed below.

Identifier:	Santa Fe Springs – Haegler Ranch Drainage Basin Letter of Map Revision
Flooding Source:	unnamed tributaries to Black Squirrel Creek
FIRM Panel(s) Affected:	08041C0575 F

As you may know, FEMA has implemented a procedure to recover costs associated with reviewing and processing requests for modifications to published flood information and maps. However, because your request is based on flood hazard information meant to improve upon that shown on the flood map or within the flood study, and does not partially or wholly incorporate manmade modifications within the Special Flood Hazard Area, the area subject to inundation by the base (1-percent-annual-chance, or 100-year) flood, no fees will be assessed for our review.

We have completed an inventory of the items you submitted. We have received the required data to begin a detailed technical review of your request. If additional data are required, we will inform you within 60 days of the date of this letter.

Please direct questions concerning your request to us at the address shown at the bottom of this page. For identification purposes, please include the case number referenced above on all correspondence.

If you have general questions about your request, FEMA policy, or the National Flood Insurance Program, please call the FEMA Map Assistance Center, toll free, at 1-877-FEMA MAP (1-877-336-2627). If you have specific questions concerning your request, please call the Revisions Coordinator for your State, Ms. Lauren Clem, who may be reached at (703) 960-8800, ext. 3016.

Sincerely,

Sheila M. Norlin
National LOMC Manager
Michael Baker Jr., Inc.

cc: Mr. Kevin Stilson, P.E., CFM
Regional Floodplain Administrator
Pikes Peak Regional Building Department

Mr. Ray O'Sullivan

3601 Eisenhower Avenue, Alexandria, Virginia 22304-6425 PH: 703.960.8800 FX: 703.960.9125

SANTA FE SPRINGS
LETTER OF MAP REVISION

FOR

HAEGLER RANCH DRAINAGE BASIN

EL PASO COUNTY, COLORADO

June, 2004

Prepared for:

Realty Development Services
25 North Tejon, Suite 300
Colorado Springs, Colorado 80903

Prepared by:

Tri-Core Engineering, LLC
5526 N. Academy Blvd., Suite 204
Colorado Springs, CO 80918
(719) 264-1560

Project No. 6005.0001

TRI-CORE ENGINEERING

TRI-CORE ENGINEERING

5526 N. Academy, Suite 204
Colorado Springs, CO 80918
Telephone: (719) 264-1560
Fax: (719) 264-1193
E-mail: rschindler@tricore2.com

Date: June 21, 2004

Submitted Via:	
Courier	☒
1st Class Mail	☐
Federal Express Tel No.:	☐
Other:	☐

LETTER OF TRANSMITTAL

Company:	Regional Floodplain
Address:	101 W. Costilla Street Colorado Springs, CO 80903
Attn:	**Kevin Stilson**
Project No.	6005.0001
Project Name:	Santa Fe Springs

TRANSMITTED FOR:

☐ Your Information	☐ Your Review	☐ Your File
☒ Your Approval	☐ Your Action	☐ As Requested

ENCLOSURES:

Qty	Item	Description
5		LOMR Application and Report

REMARKS:

Kevin,

Attached are five LOMR reports for you to sign. Please keep one of the copies that have the CD in the back of the report. Please let me know when I can pick these up and where to send them at FEMA. Thanks for your help and good luck on moving your offices.

Please call me if you have any questions.

Rich

Cc: File –

Signed: _____

Project Manager

P:\6005\0001\LOMR\6-22-04-stilson-trsmtl.doc 06/21/04

TABLE OF CONTENTS

1.0 INTRODUCTION 2

2.0 LETTER OF MAP REVISION CRITERIA 2

3.0 EXISTING HYDROLOGICAL CONDITIONS 3

4.0 HYDRAULIC SUMMARY 6

5.0 CONCLUSIONS 6

APPENDIX A

FIGURE NO. 1 - VICINITY MAP

DATUM INFORMATION

PICTURES

FEMA MT-2, FORM 1 & 2

APPENDIX B

HYDROLOGY CALCULATIONS

APPENDIX C

HYDRAULIC CALCULATIONS

BACK POCKET

EXHIBIT 1 – HYDROLOGIC SUBBASIN MAP

EXHIBIT 2 – REVISED FLOOD INSURANCE RATE MAP

EXHIBITS 3-6 – 100-YEAR FLOOD PROFILES AND FLOODPLAIN

CD of HEC Computer Models and CAD files

TRI-CORE ENGINEERING

1.0 INTRODUCTION

The following report and supporting documentation is being submitted to the Federal Emergency Management Agency (FEMA) for a Letter of Map Revision (LOMR) request for Flood Insurance Rate Map (FIRM Panel 08041CO575F) dated March 17, 1997. This LOMR request has been prepared in conformance with the Regional Floodplain Administrators Office and FEMA guidelines and requirements. The flooding sources are un-named tributaries to the Black Squirrel Creek which are located within the Haegler Ranch Drainage Basin in El Paso County, Colorado. The floodplains for the flooding sources contained within the study area are currently mapped as Zone 'A' floodplain. The existing Zone 'A' floodplain within the study area does not have established base flood elevations, floodway, or 500-year floodplain boundaries.

2.0 LOCATION AND DESCRIPTION

The subject property known as Santa Fe Springs and related study area is located in unincorporated El Paso County, Colorado, within Sections 3 and 10, Township 13 South, Range 64 West of the Sixth Principal Meridian. The property is bounded on the north by Judge Orr Road and the west by Curtis Road. See ***Figure 1*** in Appendix A.

The property owner of Santa Fe Springs intends to develop portions of the study area as a commercial and residential development. Current El Paso County Subdivision Regulations and National Flood Insurance Program regulations require proposed development to restudy the Zone 'A' floodplain boundary using more detailed methods and information. The drainageways are presently unimproved natural watercourses that are not encroached by fill or structures. A limited study has been prepared as part of this LOMR which include base flood elevations, boundaries and profiles for the 100-year storm frequency adjacent to and within the subject property.

The portions of the un-named tributaries within Haegler Ranch Drainage basin that are subject to this LOMR are located adjacent to Judge Orr Road and extend south approximately 6,800 feet. See ***Exhibit 2***. These segments were studied using approximate methods by FEMA and are shown on FIRM Panel 08041CO575F. A limited hydraulic analysis was performed to determine the 100-year base flood elevation.

3.0 PREVIOUS FLOODPLAIN STUDIES

There are no previous floodplain studies for the study area within Santa Fe Springs. Upstream of Santa Fe Springs, approximately 6,000 feet, a LOMR request was submitted to and approved by FEMA for the Haegler Ranch Drainage Basin per FEMA Case No. 04-08-0012P, known as Fourway Ranch.

4.0 MAPPING

For the hydrology portion of this LOMR, the working map was produced using the Falcon, Colorado USGS Quadrangle Map (20-foot contours).

For the hydraulic portion of this LOMR, the working map was produced using topography compiled from aerial photographs at a scale of one-inch to 200-feet and a contour interval of 2-feet in December, 2002. The topography used in the LOMR was compiled using the National Geodetic Vertical Datum (NGVD) of 1929.

5.0 HYDROLOGY

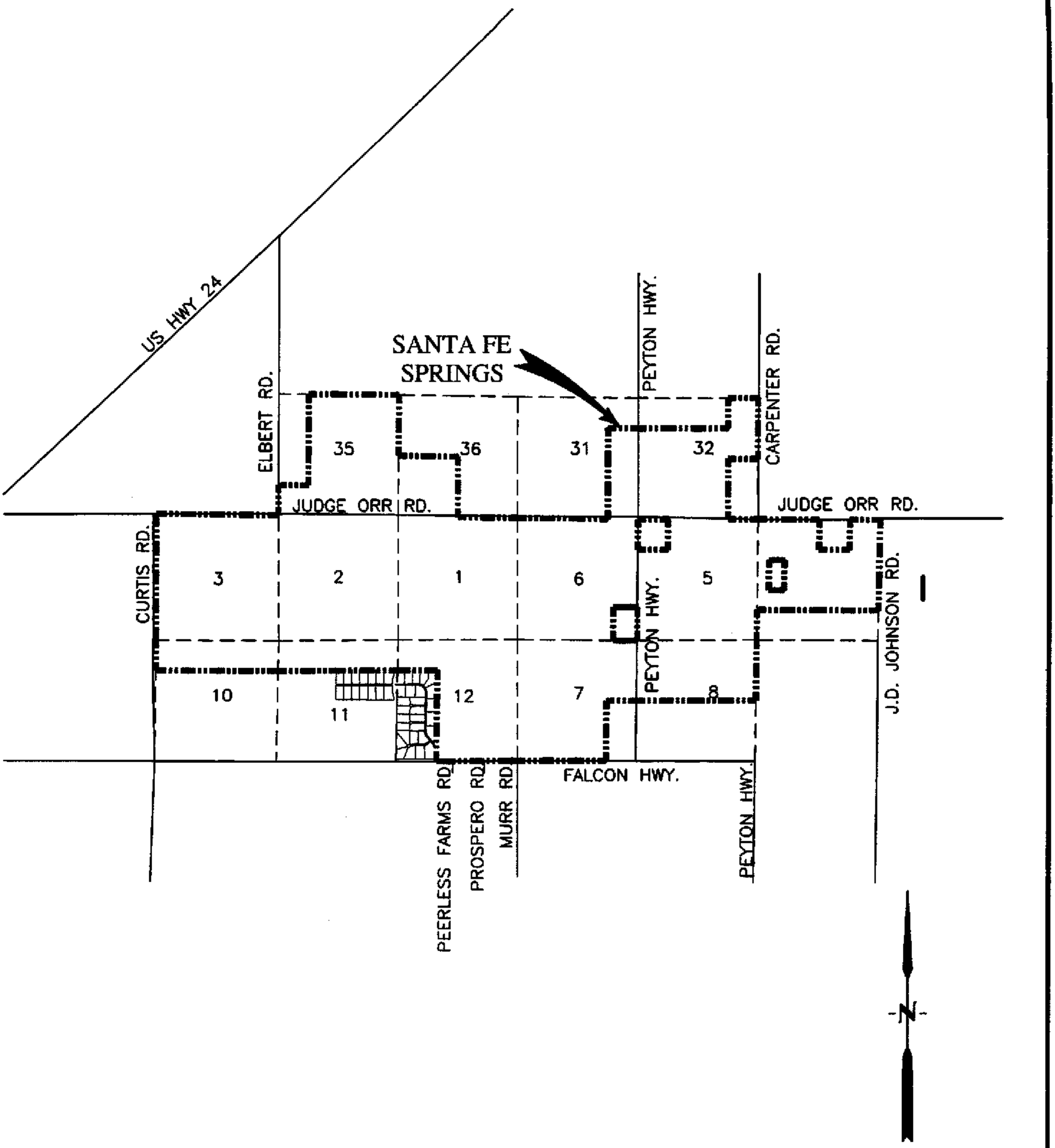
The U.S. Army Corps of Engineers Flood Hydrograph package was used to develop the 100-year peak discharge data. Input for the hydrologic analysis consists of hydrologic data from a previously approved LOMR request (FEMA Case No. 04-08-0012P, Fourway Ranch) and data from USGS Quadrangle maps. See ***Appendix B*** for additional hydrologic analysis data including Time of Concentration analysis. Presented in ***Exhibit 1***, in the Back Pocket, is the drainage basins delineated for the hydrologic analysis. Also included in ***Exhibit 1***, is the 100-year peak discharge values used in the LOMR hydraulic analysis.

6.0 HYDRAULICS

The 100-year flood profiles for this LOMR request were determined using the U.S. Army Corps of Engineers HEC-RAS Water Surface Profile program. Cross-sectional data was derived from the map data described in Section 4. Roughness values were determined using field observations in association with the City of Colorado Springs/El Paso County Storm Drainage Criteria Manual. A total of 58 cross-sections have been compiled for the hydraulic analysis. ***Exhibits 3 through 6*** detail the cross-section location and related information. Additional hydraulic information can be found in ***Appendix C.***

At several of the cross-sections within the study area a critical depth assumption was used to produce the 100-year base flood elevation. This will result in a more conservative flood depth compared to using super-critical calculations for the flood depth.

The annotated FIRM Panel 08041CO575F showing the effective and revised effective floodplain boundaries within Santa Fe Springs is presented in ***Exhibit 2*** in the map pocket of this report. The 100-year floodplain boundaries and base flood elevations for the revised effective condition is presented in ***Exhibits 3 through 6*** in the map pocket of this report.



TRI-CORE
ENGINEERING
5526 N. ACADEMY BLVD, SUITE 204
COLORADO SPRINGS, CO 80918
PHONE (719) 264-1560
FAX (719) 264-1193
CONTACT: RICHARD L. SCHINDLER, P.E.

VICINITY MAP

SANTA FE SPRINGS - HAEGLER RANCH DRAINAGE BASIN LOMR
EL PASO COUNTY, COLORADO

SCALE:	DATE:	FIGURE NO.
1"=5000'	JUNE 4, 2004	FIGURE 1

UNITED
PLANNING &
ENGINEERING

planners • consultants • engineers • landscape architects • surveyors
(719) 597-9900 Fax (719) 597-9905

June 16, 2004

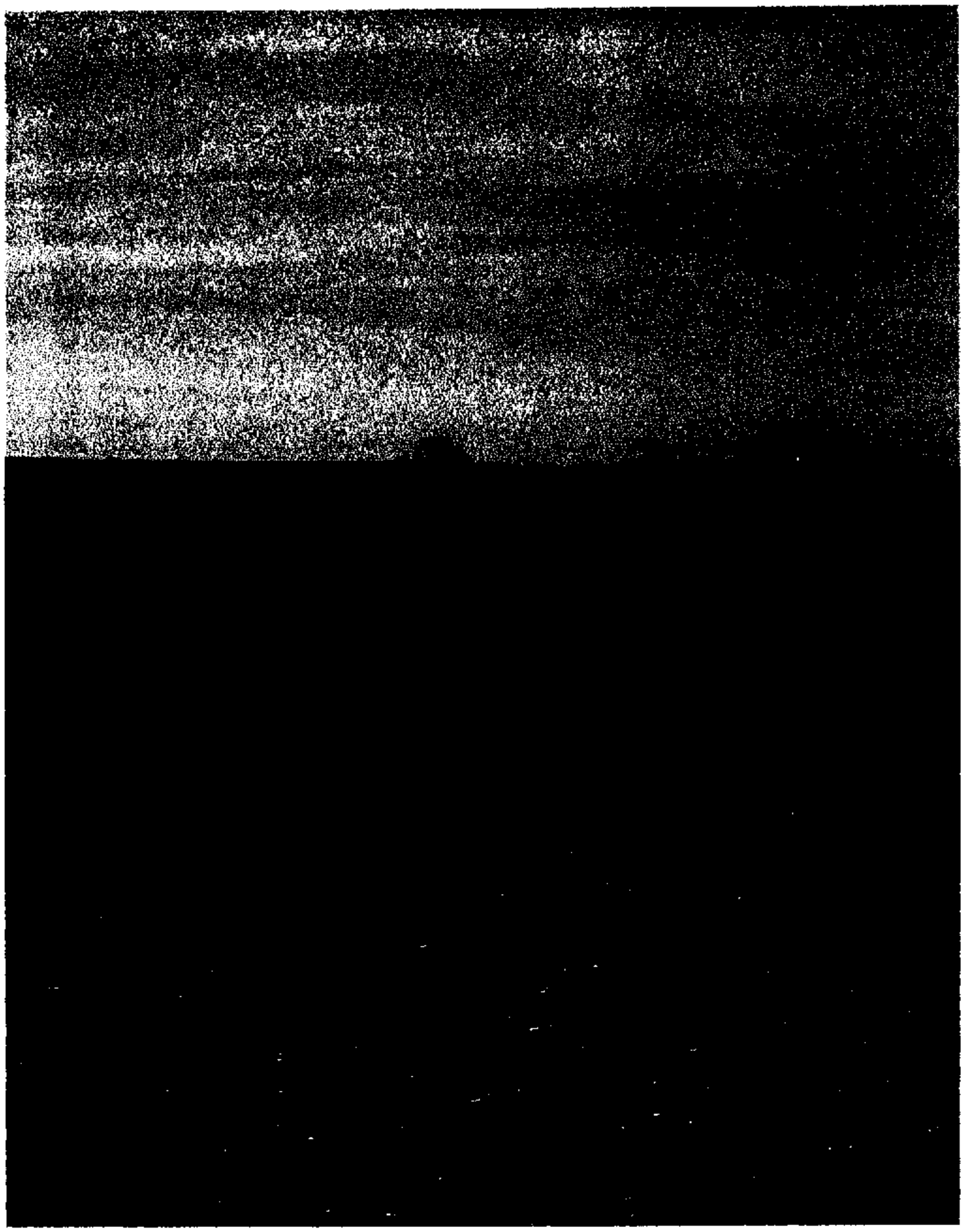
Rich Schindler
Tricore Engineering
5526 N. Academy Blvd # 206
Colorado Springs, CO. 80918

The Vertical Datum on the Santa Fe Springs Project was based on U.S.G.S. Brass Cap 11AJK (1953) 1929 Datum, Elevation 5752.112, located at the Southeast Corner of Section 12, Township 15 South, Range 63 west of the 6th P.M., El Paso County, Colorado.

Sincerely,
U.P.& E.

Tommy L. Keith
President

4575 GALLEY ROAD, SUITE 200, COLORADO SPRINGS, CO 80915



VIEW: Standing on Curtis Road looking east at Reach No. H9

NOTE: Typical vegetation within Santa Fe Springs consists of grazed pasture land with sparse vegetation

FEDERAL EMERGENCY MANAGEMENT AGENCY

OVERVIEW & CONCURRENCE FORM

O.M.B No. 3067-0148
Expires September 30, 2005

PAPERWORK BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 1 hour per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing, reviewing, and submitting the form. You are not required to respond to this collection of information unless a valid OMB control number appears in the upper right corner of this form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, SW, Washington DC 20472, Paperwork Reduction Project (3067-0148). Submission of the form is required to obtain or retain benefits under the National Flood Insurance Program. **Please do not send your completed survey to the above address.**

A. REQUESTED RESPONSE FROM FEMA

This request is for a (check one):

☐ CLOMR: A letter from FEMA commenting on whether a proposed project, if built as proposed, would justify a map revision, or proposed hydrology changes (See 44 CFR Ch. 1, Parts 60, 65 & 72).

☒ LOMR: A letter from FEMA officially revising the current NFIP map to show the changes to floodplains, regulatory floodway or flood elevations. (See Parts 60 & 65 of the NFIP Regulations.)

B. OVERVIEW

1. The NFIP map panel(s) affected for all impacted communities is (are):

Community No.	Community Name	State	Map No.	Panel No.	Effective Date
Ex: 480301	City of Katy	TX	480301	0005D	02/08/83
480287	Harris County	TX	48201C	0220G	09/28/90
080059	Unincorporated Areas El Paso county	CO	08041C	0575F	03/17/97

2. Flooding Source: Un-named tributaries to Black Squirrel Creek

3. Project Name/Identifier: Santa Fe Springs-Haegler Ranch Drainage Basin LOMR

4. FEMA zone designations affected: A (choices: A, AH, AO, A1-A30, A99, AE, AR, V, V1-V30, VE, B, C, D, X)

5. Basis for Request and Type of Revision:

a. The basis for this revision request is (check all that apply)

☐ Physical Change ☒ Improved Methodology/Data

☐ Regulatory Floodway Revision ☐ Other (Attach Description)

Note: A photograph and narrative description of the area of concern is not required, but is very helpful during review.

b. The area of revision encompasses the following types of flooding and structures (check all that apply)

Types of Flooding:	☒ Riverine	☐ Coastal	☐ Shallow Flooding (e.g., Zones AO and AH)
	☐ Alluvial fan	☐ Lakes	☐ Other (Attach Description)
Structures:	☐ Channelization	☐ Levee/Floodwall	☐ Bridge/Culvert
	☐ Dam	☐ Fill	☐ Other, Attach Description

C. REVIEW FEE

Has the review fee for the appropriate request category been included? ☐ Yes Fee amount: $_____

☒ No, Attach Explanation

Please see the FEMA Web site at http://www.fema.gov/fhm/frm_fees.shtm for Fee Amounts and Exemptions.

D. SIGNATURE

All documents submitted in support of this request are correct to the best of my knowledge. I understand that any false statement may be punishable by fine or imprisonment under Title 18 of the United States Code, Section 1001.

Name: Ray O'Sullivan	Company: Realty Development Services	
Mailing Address: 25 North Tejon Street, Suite 300 Colorado Springs, CO 80903	Daytime Telephone No.: 719-227-1022	Fax No.: 719-227-1025
	E-Mail Address: ROSullivan@rds-colorado.com	
Signature of Requester (required):		Date: 6-17-04

As the community official responsible for floodplain management, I hereby acknowledge that we have received and reviewed this Letter of Map Revision (LOMR) or conditional LOMR request. Based upon the community's review, we find the completed or proposed project meets or is designed to meet all of the community floodplain management requirements, including the requirement that no fill be placed in the regulatory floodway, and that all necessary Federal, State, and local permits have been, or in the case of a conditional LOMR, will be obtained. In addition, we have determined that the land and any existing or proposed structures to be removed from the SFHA are or will be reasonably safe from flooding as defined in 44CFR 65.2(c), and that we have available upon request by FEMA, all analyses and documentation used to make this determination.

Community Official's Name and Title: Kevin Sfilson Regional Floodplain Engineer		Telephone No.: (719) 327-2906
Community Name: El Paso County	Community Official's Signature (required):	Date: 6/22/04

CERTIFICATION BY REGISTERED PROFESSIONAL ENGINEER AND/OR LAND SURVEYOR

This certification is to be signed and sealed by a licensed land surveyor, registered professional engineer, or architect authorized by law to certify elevation information. All documents submitted in support of this request are correct to the best of my knowledge. I understand that any false statement may be punishable by fine or imprisonment under Title 18 of the United States Code, Section 1001.

Certifier's Name: Richard L. Schindler	License No.: Colorado No. 33997	Expiration Date: 9/30/2005
Company Name: Tri-Core Engineering	Telephone No.: 719.264.1560	Fax No.: 719.264.1193
Signature:		Date: 6-21-04

Ensure the forms that are appropriate to your revision request are included in your submittal.

Form Name and (Number)	Required if ...
☒ Riverine Hydrology and Hydraulics Form (Form 2)	New or revised discharges or water-surface elevations
☐ Riverine Structures Form (Form 3)	Channel is modified, addition/revision of bridge/culverts, addition/revision of levee/floodwall, addition/revision of dam
☐ Coastal Analysis Form (Form 4)	New or revised coastal elevations
☐ Coastal Structures Form (Form 5)	Addition/revision of coastal structure
☐ Alluvial Fan Flooding Form (Form 6)	Flood control measures on alluvial fans

COLORADO REGISTERED PROFESSIONAL ENGINEER RICHARD LEO SCHINDLER 33997 Seal (Optional)

FEDERAL EMERGENCY MANAGEMENT AGENCY

RIVERINE HYDROLOGY & HYDRAULICS FORM

O.M.B No. 3067-0148
Expires September 30, 2005

PAPERWORK REDUCTION ACT

Public reporting burden for this form is estimated to average 3 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing, reviewing, and submitting the form. You are not required to respond to this collection of information unless a valid OMB control number appears in the upper right corner of this form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, SW, Washington DC 20472, Paperwork Reduction Project (3067-0148). Submission of the form is required to obtain or retain benefits under the National Flood Insurance Program. **Please do not send your completed survey to the above address.**

Flooding Source: Un-Named Tributaries to Black Squirrel Creek
Note: Fill out one form for each flooding source studied

A. HYDROLOGY

1. Reason for New Hydrologic Analysis (check all that apply)

☐ Not revised (skip to section 2) ☒ No existing analysis ☐ Improved data
☐ Alternative methodology ☐ Proposed Conditions (CLOMR) ☐ Changed physical condition of watershed

2. Comparison of Representative 1%-Annual-Chance Discharges

Location	Drainage Area (Sq. Mi.)	FIS (cfs)	Revised (cfs)

3. Methodology for New Hydrologic Analysis (check all that apply)

☐ Statistical Analysis of Gage Records ☒ Precipitation/Runoff Model HEC-1 [TR-20, HEC-1, HEC-HMS etc.]
☐ Regional Regression Equations ☐ Other (please attach description)

Please enclose all relevant models in digital format, maps, computations (including computation of parameters) and documentation to support the new analysis. The document, "Numerical Models Accepted by FEMA for NFIP Usage" lists the models accepted by FEMA. This document can be found at: http://www.fema.gov/fhm/en_modl.shtm.

4. Review/Approval of Analysis

If your community requires a regional, state, or federal agency to review the hydrologic analysis, please attach evidence of approval/review.

5. Impacts of Sediment Transport on Hydrology

Was sediment transport considered? ☐ Yes ☒ No If yes, then fill out Section F (Sediment Transport) of Form 3. If No, then attach your explanation for why sediment transport was not considered.

B. HYDRAULICS

1. Reach to be Revised

	Description	Cross Section	Water-Surface Elevations (ft.) Effective	Proposed/Revised
Downstream Limit				
Upstream Limit				

2. Hydraulic Method Used

Hydraulic Analysis HEC-RAS [HEC-2 , HEC-RAS, Other (Attach description)]

B. HYDRAULICS (CONTINUED)

3. Pre-Submittal Review of Hydraulic Models

FEMA has developed two review programs, CHECK-2 and CHECK-RAS, to aid in the review of HEC-2 and HEC-RAS hydraulic models, respectively. These review programs verify that the hydraulic estimates and assumptions in the model data are in accordance with NFIP requirements, and that the data are comparable with the assumptions and limitations of HEC-2/HEC-RAS. CHECK-2 and CHECK-RAS identify areas of potential error or concern. These tools do not replace engineering judgment. CHECK-2 and CHECK-RAS can be downloaded from http://www.fema.gov/fhm/frm_soft.shtm. We recommend that you review your HEC-2 and HEC-RAS models with CHECK-2 and CHECK-RAS. If you disagree with a message, please attach an explanation of why the message is not valid in this case. Review of your submittal and resolution of valid modeling discrepancies will result in reduced review time.

HEC-2/HEC-RAS models reviewed with CHECK-2/CHECK-RAS? ☐ Yes ☒ No

4. Models Submitted

Duplicate Effective Model*	Natural File Name:		Floodway File Name:
Corrected Effective Model*	Natural File Name:		Floodway File Name:
Existing or Pre-Project Conditions Model	Natural File Name:	6005_0001.prj	Floodway File Name:
Revised or Post-Project Conditions Model	Natural File Name:		Floodway File Name:
Other - (attach description)	Natural File Name:		Floodway File Name:

*Not required for revisions to approximate 1%-annual-chance floodplains (Zone A) – for details, refer to the corresponding section of the instructions.

The document "Numerical Models Accepted by FEMA for NFIP Usage" lists the models accepted by FEMA. This document can be found at: http://www.fema.gov/fhm/en_modl.shtm.

C. MAPPING REQUIREMENTS

A certified topographic map must be submitted showing the following information (where applicable): the boundaries of the effective, existing, and proposed conditions 1%-annual-chance floodplain (for approximate Zone A revisions) or the boundaries of the 1%- and 0.2%-annual-chance floodplains and regulatory floodway (for detailed Zone AE, AO, and AH revisions); location and alignment of all cross sections with stationing control indicated; stream, road, and other alignments (e.g., dams, levees, etc.); current community easements and boundaries; boundaries of the requester's property; certification of a registered professional engineer registered in the subject State; location and description of reference marks; and the referenced vertical datum (NGVD, NAVD, etc.).

Note that the boundaries of the existing or proposed conditions floodplains and regulatory floodway to be shown on the revised FIRM and/or FBFM must tie-in with the effective floodplain and regulatory floodway boundaries. **Please attach a copy of the effective FIRM and/or FBFM,** annotated to show the boundaries of the revised 1%- and 0.2%-annual-chance floodplains and regulatory floodway that tie-in with the boundaries of the effective 1%- and 0.2%-annual-chance floodplain and regulatory floodway at the upstream and downstream limits of the area of revision.

D. COMMON REGULATORY REQUIREMENTS

1. For CLOMR requests, do Base Flood Elevations (BFEs) increase? ☐ Yes ☐ No

For CLOMR requests, if either of the following is true, please submit evidence of compliance with Section 65.12 of the NFIP regulations:
- The proposed project encroaches upon a regulatory floodway and would result in increases above 0.00 foot.
- The proposed project encroaches upon a SFHA with BFEs established and would result in increases above 1.00 foot.

2. Does the request involve the placement or proposed placement of fill? ☐ Yes ☐ No

If Yes, the community must be able to certify that the area to be removed from the special flood hazard area, to include any structures or proposed structures, meets all of the standards of the local floodplain ordinances, and is reasonably safe from flooding in accordance with the NFIP regulations set forth at 44 CFR 60.3(a)(3), 65.5(a)(4), and 65.6(a)(14). Please see the MT-2 instructions for more information.

3. For LOMR requests, is the regulatory floodway being revised? ☐ Yes ☒ No

If Yes, attach evidence of regulatory floodway revision notification. As per Paragraph 65.7(b)(1) of the NFIP Regulations, notification is required for requests involving revisions to the regulatory floodway. (Not required for revisions to approximate 1%-annual-chance floodplains [studied Zone A designation] unless a regulatory floodway is being added. Elements and examples of regulatory floodway revision notification can be found in the MT-2 Form 2 Instructions.)

4. For LOMR requests, does this request require property owner notification and acceptance of BFE increases? ☐ Yes ☒ No

If Yes, please attach proof of property owner notification and acceptance (if available). Elements of and examples of property owner notification can be found in the MT-2 Form 2 Instructions.

TRI-CORE ENGINEERING

PROJECT NAME: Santa Fe Springs - Haegler Ranch Drainage Basin LOMR
PROJECT NUMBER: 6005
ENGINEER: RLS
DATE: 6/4/2004

EXISITING HYDROLOGY CONDITIONS

TIME OF CONCENTRATION CALCULATIONS

BASIN	HA	HA1	HA2	HA3	HA4	HA5	HA6	HA7	HA8	HB	OS1	OS2
AREA, A [ACRE]	238.7	200.3	66.9	187.9	115.7	329.6	196.5	125.1	11.8	498.0	218.5	59.4
SUB-BASIN LENGTH [MI]	0.79	1.20	0.59	1.03	0.79	1.63	0.94	0.62	0.20	1.99	0.96	0.55
CHANNEL ELEVATION CHANGE [FT]	55	117	65	65	60	110	125	90	27	152	145	50
H[1]	28	59	33	33	30	55	63	45	14	76	73	25
SUB-BASIN SLOPE [FT/FT]	0.0132	0.0185	0.0209	0.0120	0.0144	0.0128	0.0252	0.0275	0.0256	0.0145	0.0286	0.0172
TIME OF CONCENTRATION (MIN)[2]	33	40	22	42	32	59	29	21	9	65	29	23
LAG-TIME OF CONCENTRATION (MIN)[3]	20	24	13	25	19	35	18	12	5	39	17	14

[1] *Elevation difference between divide and outlet*
[2] $Tc=60(11.9L^3/H)^{0.385}$
[3] $Tc=60(11.9L^3/H)^{0.385} * 0.6$

```
1*****************************************
**************************************
 *                                       *                                       *
*
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *                                       *    U.S.
ARMY CORPS OF ENGINEERS     *
 *               MAY   1991              *                                       *
HYDROLOGIC ENGINEERING CENTER    *
 *            VERSION 4.0.1E             *                                       *
609 SECOND STREET          *
 *                                       *                                       *
DAVIS, CALIFORNIA 95616       *
 *  RUN DATE            TIME             *                                       *
(916) 551-1748            *
 *                                       *                                       *
*
 *****************************************
**************************************
```

```
X     X  XXXXXXX   XXXXX           X
X     X  X        X     X         XX
X     X  X        X               X
XXXXXXX  XXXX     X        XXXXX  X
X     X  X        X               X
X     X  X        X     X         X
X     X  XXXXXXX   XXXXX           XXX
```

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.

THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION

NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM


```
          LINE
ID.......1.......2.......3.......4.......5.......6.......7.......8.......9.....10

             1          ID     SANTA FE SPRINGS HEC-1 MODELING
             2          ID     TRI-CORE ENGINEERING - PROJECT 6005.0001
             3          ID     100 YEAR - STORM
             4          ID     HAEGLER DRAINAGE BASIN, EL PASO COUNTY COLORADO
             5          ID     24 HR STORM DURATION - TYPE IIa STORM
                        *DIAGRAM
             6          IT       5  1JAN94        0     250
             7          IO       5

             8          KK      H3
             9          KM   RUNOFF FROM SUBBASIN H3
            10          KO       0        0     0.0        0      22
            11          BA    0.27
            12          PB     4.4
            13          IN      15 01JAN94        0
                        * Type IIa Storm
            14          PC  0.0005  0.0015   0.003  0.0045   0.006   0.008    0.01   0.012  0.0143
0.0165
```

```
15          PC  0.0188   0.021  0.0233  0.0255  0.0278   0.032   0.039   0.046   0.053
0.06
16          PC   0.075     0.1     0.4     0.7   0.725    0.75   0.765    0.78    0.79
0.8
17          PC    0.81    0.82   0.825    0.83   0.835    0.84   0.845    0.85   0.855
0.86
18          PC  0.8638  0.8675  0.8713   0.875  0.8878  0.8825  0.8863    0.89  0.8938
0.8975
19          PC  0.9013   0.905  0.9083  0.9115  0.9148   0.918   0.921   0.924   0.927
0.93
20          PC  0.9325   0.935  0.9375    0.94  0.9425   0.945  0.9475    0.95  0.9525
0.955
21          PC  0.9575    0.96  0.9625   0.965  0.9675    0.97  0.9725   0.975  0.9775
0.98
22          PC  0.9813  0.9825  0.9838   0.985  0.9863  0.9875  0.9888    0.99  0.9913
0.9925
23          PC  0.9938   0.995  0.9963  0.9975  0.9988     1.0
24          LS     0.0    61.0     0.0
25          UD    0.44

26          KK     RH3   CNAME      H3
27          KM   ROUTED FLOW FROM SUB H3
28          KO       0       0     0.0       0      22
29          RK  5600.0   0.008    0.04             TRAP    20.0     1.0

30          KK      H5
31          KM   RUNOFF FROM SUBBASIN H5
32          KO       0       0     0.0       0      22
33          BA    0.48
34          PB     4.4
35          IN       15 01JAN94       0
            * Type IIa Storm
36          PC  0.0005  0.0015   0.003  0.0045   0.006   0.008    0.01   0.012  0.0143
0.0165
37          PC  0.0188   0.021  0.0233  0.0255  0.0278   0.032   0.039   0.046   0.053
0.06
38          PC   0.075     0.1     0.4     0.7   0.725    0.75   0.765    0.78    0.79
0.8
39          PC    0.81    0.82   0.825    0.83   0.835    0.84   0.845    0.85   0.855
0.86
40          PC  0.8638  0.8675  0.8713   0.875  0.8878  0.8825  0.8863    0.89  0.8938
0.8975
41          PC  0.9013   0.905  0.9083  0.9115  0.9148   0.918   0.921   0.924   0.927
0.93
42          PC  0.9325   0.935  0.9375    0.94  0.9425   0.945  0.9475    0.95  0.9525
0.955
43          PC  0.9575    0.96  0.9625   0.965  0.9675    0.97  0.9725   0.975  0.9775
0.98
44          PC  0.9813  0.9825  0.9838   0.985  0.9863  0.9875  0.9888    0.99  0.9913
0.9925
45          PC  0.9938   0.995  0.9963  0.9975  0.9988     1.0
46          LS     0.0    61.0     0.0
47          UD    0.43
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          LINE
ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

             48           KK   DPHG3   CNAME     HG3
             49           KO       0       0     0.0       0      22
             50           HC       2     0.0

             51           KK    RHG3   CNAME    RHG3
             52           KM   ROUTED FLOW FROM DP HG3
             53           KO       0       0     0.0       0      22
             54           RK  8500.0   0.017    0.04            TRAP    20.0     1.0

             55           KK      H1
             56           KM   RUNOFF FROM SUBBASIN H1
             57           KO       0       0     0.0       0      22
             58           BA    0.32
             59           PB     4.4
             60           IN      15 01JAN94       0
                          * Type IIa Storm
             61           PC  0.0005  0.0015   0.003  0.0045   0.006   0.008    0.01   0.012  0.0143
0.0165
             62           PC  0.0188   0.021  0.0233  0.0255  0.0278   0.032   0.039   0.046   0.053
0.06
             63           PC   0.075     0.1     0.4     0.7   0.725    0.75   0.765    0.78    0.79
0.8
             64           PC    0.81    0.82   0.825    0.83   0.835    0.84   0.845    0.85   0.855
0.86
             65           PC  0.8638  0.8675  0.8713   0.875  0.8878  0.8825  0.8863    0.89  0.8938
0.8975
             66           PC  0.9013   0.905  0.9083  0.9115  0.9148   0.918   0.921   0.924   0.927
0.93
             67           PC  0.9325   0.935  0.9375    0.94  0.9425   0.945  0.9475    0.95  0.9525
0.955
             68           PC  0.9575    0.96  0.9625   0.965  0.9675    0.97  0.9725   0.975  0.9775
0.98
             69           PC  0.9813  0.9825  0.9838   0.985  0.9863  0.9875  0.9888    0.99  0.9913
0.9925
             70           PC  0.9938   0.995  0.9963  0.9975  0.9988     1.0
             71           LS     0.0    61.0     0.0
             72           UD    0.29

             73           KK     RH1   CNAME     RH1
             74           KM   ROUTE FROM SUB H1 TO DP HG1
             75           KO       0       0     0.0       0      22
             76           RK  2600.0    0.01    0.04            TRAP    20.0     1.0

             77           KK      H2
             78           KM   RUNOFF FROM SUBBASIN H2
             79           KO       0       0     0.0       0      22
             80           BA    0.49
             81           PB     4.4
             82           IN      15 01JAN94       0
                          * Type IIa Storm
             83           PC  0.0005  0.0015   0.003  0.0045   0.006   0.008    0.01   0.012  0.0143
0.0165
             84           PC  0.0188   0.021  0.0233  0.0255  0.0278   0.032   0.039   0.046   0.053
0.06
             85           PC   0.075     0.1     0.4     0.7   0.725    0.75   0.765    0.78    0.79
0.8
             86           PC    0.81    0.82   0.825    0.83   0.835    0.84   0.845    0.85   0.855
0.86
             87           PC  0.8638  0.8675  0.8713   0.875  0.8878  0.8825  0.8863    0.89  0.8938
0.8975
             88           PC  0.9013   0.905  0.9083  0.9115  0.9148   0.918   0.921   0.924   0.927
0.93
```

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          LINE
ID.......1.......2.......3.......4.......5.......6.......7.......8.......9.......10

              95          KK      RH2    CNAME      RH2
              96          KM    ROUTE FROM SUB H2 TO DPHG1
              97          KO        0         0      0.0         0       22
              98          RK   2900.0      0.01     0.04                TRAP    20.0      1.0

              99          KK       H4
             100          KM    RUNOFF FROM SUBBASIN H4
             101          KO        0         0      0.0         0       22
             102          BA     0.17
             103          PB      4.4
             104          IN        15 01JAN94         0
                          * Type IIa Storm
             105          PC   0.0005    0.0015    0.003   0.0045    0.006    0.008     0.01    0.012   0.0143
0.0165
             106          PC   0.0188     0.021   0.0233   0.0255   0.0278    0.032    0.039    0.046    0.053
0.06
             107          PC    0.075       0.1      0.4      0.7    0.725     0.75    0.765     0.78     0.79
0.8
             108          PC     0.81      0.82    0.825     0.83    0.835     0.84    0.845     0.85    0.855
0.86
             109          PC   0.8638    0.8675   0.8713    0.875   0.8878   0.8825   0.8863     0.89   0.8938
0.8975
             110          PC   0.9013     0.905   0.9083   0.9115   0.9148    0.918    0.921    0.924    0.927
0.93
             111          PC   0.9325     0.935   0.9375     0.94   0.9425    0.945   0.9475     0.95   0.9525
0.955
             112          PC   0.9575      0.96   0.9625    0.965   0.9675     0.97   0.9725    0.975   0.9775
0.98
             113          PC   0.9813    0.9825   0.9838    0.985   0.9863   0.9875   0.9888     0.99   0.9913
0.9925
             114          PC   0.9938     0.995   0.9963   0.9975   0.9988      1.0
             115          LS     0.0      61.0       0.0
             116          UD    0.23

             117          KK    DPHG1    CNAME      RHG1
             118          KO        0         0      0.0         0       22
             119          HC        3       0.0

             120          KK       H6
             121          KM    RUNOFF FROM SUBBASIN H6
             122          KO        0         0      0.0         0       22
             123          BA    0.181
             124          PB      4.4
             125          IN        15 01JAN94         0
                          * Type IIa Storm
             126          PC   0.0005    0.0015    0.003   0.0045    0.006    0.008     0.01    0.012   0.0143
0.0165
             127          PC   0.0188     0.021   0.0233   0.0255   0.0278    0.032    0.039    0.046    0.053
0.06
             128          PC    0.075       0.1      0.4      0.7    0.725     0.75    0.765     0.78     0.79
0.8
             129          PC     0.81      0.82    0.825     0.83    0.835     0.84    0.845     0.85    0.855
0.86
             130          PC   0.8638    0.8675   0.8713    0.875   0.8878   0.9825   0.8863     0.89   0.8938
0.8975
             131          PC   0.9013     0.905   0.9083   0.9115   0.9148    0.918    0.921    0.924    0.927
0.93
             132          PC   0.9325     0.935   0.9375     0.94   0.9425    0.945   0.9475     0.95   0.9525
0.955
             133          PC   0.9575      0.96   0.9625    0.965   0.9675     0.97   0.9725    0.975   0.9775
0.98
             134          PC   0.9813    0.9825   0.9838    0.985   0.9863   0.9875   0.9888     0.99   0.9913
0.9925
```

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          LINE
ID.......1.......2.......3.......4.......5.......6.......7.......8.......9.....10

             138          KK   DPHG2    CNAME  RDPHG2
             139          KO       0        0     0.0        0      22
             140          HC       2      0.0

             141          KK  RDPHG2    CNAME   DPHG2
             142          KM   COMBINED FLOW FROM SUB H6 & DP HG1
             143          KO       0        0     0.0        0      22
             144          RK  1700.0    0.008    0.04             TRAP    20.0      1.0

             145          KK     HA1
             146          KM   RUNOFF FROM SUBBASIN HA1
             147          KO       0        0     0.0        0      22
             148          BA    0.31
             149          PB     4.4
             150          IN      15 01JAN94       0
                          * Type IIa Storm
             151          PC  0.0005   0.0015    0.003   0.0045    0.006    0.008     0.01    0.012   0.0143
0.0165
             152          PC  0.0188    0.021   0.0233   0.0255   0.0278    0.032    0.039    0.046    0.053
0.06
             153          PC   0.075      0.1      0.4      0.7    0.725     0.75    0.765     0.78     0.79
0.8
             154          PC    0.81     0.82    0.825     0.83    0.835     0.84    0.845     0.85    0.855
0.86
             155          PC  0.8638   0.8675   0.8713    0.875   0.8878   0.8825   0.8863     0.89   0.8938
0.8975
             156          PC  0.9013    0.905   0.9083   0.9115   0.9148    0.918    0.921    0.924    0.927
0.93
             157          PC  0.9325    0.935   0.9375     0.94   0.9425    0.945   0.9475     0.95   0.9525
0.955
             158          PC  0.9575     0.96   0.9625    0.965   0.9675     0.97   0.9725    0.975   0.9775
0.98
             159          PC  0.9813   0.9825   0.9838    0.985   0.9863   0.9875   0.9888     0.99   0.9913
0.9925
             160          PC  0.9938    0.995   0.9963   0.9975   0.9988      1.0
             161          LS    0.0     61.0      0.0
             162          UD    0.4

             163          KK     DP2    CNAME      DP2
             164          KO       0        0     0.0        0      22
             165          HC       2      0.0

             166          KK     DP2    CNAME      DP2
             167          KM   COMBINE FLOW FROM HA1 & DPHG2
             168          KO       0        0     0.0        0      22
             169          RK  5500.0     0.02     0.04             TRAP    20.0      1.0

             170          KK    RDP2    CNAME     RDP2
             171          KM   ROUTE FLOW FROM DP2
             172          KO       0        0     0.0        0      22
             173          RK  3380.0    0.015     0.04             TRAP    20.0      1.0

             174          KK      HB
             175          KM   RUNOFF FROM SUBBASIN HB
             176          KO       0        0     0.0        0      22
             177          BA    0.78
             178          PB     4.4
             179          IN      15 01JAN94       0
                          * Type IIa Storm
             180          PC  0.0005   0.0015    0.003   0.0045    0.006    0.008     0.01    0.012   0.0143
0.0165
             181          PC  0.0188    0.021   0.0233   0.0255   0.0278    0.032    0.039    0.046    0.053
0.06
```

```
          LINE
ID.......1.......2.......3.......4.......5.......6.......7.......8.......9.....10
             184          PC  0.8638  0.8675  0.8713   0.875  0.8878  0.8825  0.8863    0.89  0.8938
0.8975
             185          PC  0.9013   0.905  0.9083  0.9115  0.9148   0.918   0.921   0.924   0.927
0.93
             186          PC  0.9325   0.935  0.9375    0.94  0.9425   0.945  0.9475    0.95  0.9525
0.955
             187          PC  0.9575    0.96  0.9625   0.965  0.9675    0.97  0.9725   0.975  0.9775
0.98
             188          PC  0.9813  0.9825  0.9838   0.985  0.9863  0.9875  0.9888    0.99  0.9913
0.9925
             189          PC  0.9938   0.995  0.9963  0.9975  0.9988     1.0
             190          LS     0.0    61.0     0.0
             191          UD    0.65

             192          KK     DP3   CNAME     DP3
             193          KO       0       0     0.0       0      22
             194          HC       3     0.0

             195          KK     DP3   CNAME     DP3
             196          KM  COMBINE FLOWS FROM RDP2, RDPHG3 & HB
             197          KO       0       0     0.0       0      22
             198          RN     DP3

             199          KK     HA7
             200          KM                          RUNOFF FROM SUBBASIN HA7
             201          KO       0       0     0.0       0      22
             202          BA     0.2
             203          PB     4.4
             204          IN      15 01JAN94       0
                          * Type IIa Storm
             205          PC  0.0005  0.0015   0.003  0.0045   0.006   0.008    0.01   0.012  0.0143
0.0165
             206          PC  0.0188   0.021  0.0233  0.0255  0.0278   0.032   0.039   0.046  0.053
0.06
             207          PC   0.075     0.1     0.4     0.7   0.725    0.75   0.765    0.78   0.79
0.8
             208          PC    0.81    0.82   0.825    0.83   0.835    0.84   0.845    0.85  0.855
0.86
             209          PC  0.8638  0.8675  0.8713   0.875  0.8878  0.8825  0.8863    0.89  0.8938
0.8975
             210          PC  0.9013   0.905  0.9083  0.9115  0.9148   0.918   0.921   0.924   0.927
0.93
             211          PC  0.9325   0.935  0.9375    0.94  0.9425   0.945  0.9475    0.95  0.9525
0.955
             212          PC  0.9575    0.96  0.9625   0.965  0.9675    0.97  0.9725   0.975  0.9775
0.98
             213          PC  0.9813  0.9825  0.9838   0.985  0.9863  0.9875  0.9888    0.99  0.9913
0.9925
             214          PC  0.9938   0.995  0.9963  0.9975  0.9988     1.0
             215          LS     0.0    61.0     0.0
             216          UD     0.2

             217          KK    RHA7   CNAME     HA7
             218          KM                          ROUTED FLOW FROM SUB HA7 TO DP 9
             219          KO       0       0     0.0       0      22
             220          RK  2525.0  0.0107    0.04                TRAP    20.0     1.0

             221          KK     HA3
             222          KM                          RUNOFF FROM SUBBASIN HA3
             223          KO       1       0     0.0       0      22
             224          BA    0.29
             225          PB     4.4
             226          IN      15 01JAN94       0
                          * Type IIa Storm
```

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          LINE
ID.......1.......2.......3.......4.......5.......6.......7.......8.......9.....10

           232          PC  0.9013   0.905  0.9083  0.9115  0.9148   0.918   0.921   0.924   0.927
0.93
           233          PC  0.9325   0.935  0.9375    0.94  0.9425   0.945  0.9475    0.95  0.9525
0.955
           234          PC  0.9575    0.96  0.9625   0.965  0.9675    0.97  0.9725   0.975  0.9775
0.98
           235          PC  0.9813  0.9825  0.9838   0.985  0.9863  0.9875  0.9888    0.99  0.9913
0.9925
           236          PC  0.9938   0.995  0.9963  0.9975  0.9988     1.0
           237          LS     0.0    61.0     0.0
           238          UD    0.42

           239          KK    RDP7   CNAME     DP7
           240          KM                                                 ROUTE FLOW TO DP
7
           241          KO       0       0     0.0       0      22
           242          RN    RDP7

           243          KK     HA6
           244          KM                          RUNOFF FROM SUBBASIN HA6
           245          KO       0       0     0.0       0      22
           246          BA    0.31
           247          PB     4.4
           248          IN       15 01JAN94       0
                        * Type IIa Storm
           249          PC  0.0005  0.0015   0.003  0.0045   0.006   0.008    0.01   0.012  0.0143
0.0165
           250          PC  0.0188   0.021  0.0233  0.0255  0.0278   0.032   0.039   0.046   0.053
0.06
           251          PC   0.075     0.1     0.4     0.7   0.725    0.75   0.765    0.78    0.79
0.8
           252          PC    0.81    0.82   0.825    0.83   0.835    0.84   0.845    0.85   0.855
0.86
           253          PC  0.8638  0.8675  0.8713   0.875  0.8878  0.8825  0.8863    0.89  0.8938
0.8975
           254          PC  0.9013   0.905  0.9083  0.9115  0.9148   0.918   0.921   0.924   0.927
0.93
           255          PC  0.9325   0.935  0.9375    0.94  0.9425   0.945  0.9475    0.95  0.9525
0.955
           256          PC  0.9575    0.96  0.9625   0.965  0.9675    0.97  0.9725   0.975  0.9775
0.98
           257          PC  0.9813  0.9825  0.9838   0.985  0.9863  0.9875  0.9888    0.99  0.9913
0.9925
           258          PC  0.9938   0.995  0.9963  0.9975  0.9988     1.0
           259          LS     0.0    61.0     0.0
           260          UD     0.3

           261          KK     DP8   CNAME    RDP8
           262          KO       0       0     0.0       0      22
           263          HC       2     0.6

           264          KK    RDP8   CNAME     DP8
           265          KM                          COMBINED FLOW FROM DP 7 & SUB HA6
           266          KO       0       0     0.0       0      22
           267          RK  3220.0  0.0171    0.04            TRAP    20.0     1.0

           268          KK     HA8
           269          KM                          RUNOFF FROM SUBBASIN HA8
           270          KO       0       0     0.0       0      22
           271          BA    0.02
           272          PB     4.4
           273          IN       15 01JAN94       0
                        * Type IIa Storm
```

0.0165	274	PC	0.0005	0.0015	0.003	0.0045	0.006	0.008	0.01	0.012	0.0143
0.06	275	PC	0.0188	0.021	0.0233	0.0255	0.0278	0.032	0.039	0.046	0.053
0.8	276	PC	0.075	0.1	0.4	0.7	0.725	0.75	0.765	0.78	0.79
0.86	277	PC	0.81	0.82	0.825	0.83	0.835	0.84	0.845	0.85	0.855
0.8975	278	PC	0.8638	0.8675	0.8713	0.875	0.8878	0.8825	0.8863	0.89	0.8938
0.93	279	PC	0.9013	0.905	0.9083	0.9115	0.9148	0.918	0.921	0.924	0.927

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          LINE
ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

           280          PC  0.9325   0.935  0.9375    0.94  0.9425   0.945  0.9475    0.95  0.9525
0.955
           281          PC  0.9575    0.96  0.9625   0.965  0.9675    0.97  0.9725   0.975  0.9775
0.98
           282          PC  0.9813  0.9825  0.9838   0.985  0.9863  0.9875  0.9888    0.99  0.9913
0.9925
           283          PC  0.9938   0.995  0.9963  0.9975  0.9988     1.0
           284          LS     0.0    61.0     0.0
           285          UD    0.08

           286          KK     RHA8   CNAME      HA8
           287          KM                            ROUTED FLOW FROM SUB HA8 TO DP 9
           288          KO        0       0     0.0       0      22
           289          RK   3380.0  0.0148    0.04             TRAP    20.0     1.0

           290          KK      H7
           291          KM                            RUNOFF FROM SUBBASIN H7
           292          KO        0       0     0.0       0      22
           293          BA    0.154
           294          PB      4.4
           295          IN       15 01JAN94        0
                        * Type IIa Storm
           296          PC  0.0005  0.0015   0.003  0.0045   0.006   0.008    0.01   0.012  0.0143
0.0165
           297          PC  0.0188   0.021  0.0233  0.0255  0.0278   0.032   0.039   0.046  0.053
0.06
           298          PC   0.075     0.1     0.4     0.7   0.725    0.75   0.765    0.78   0.79
0.8
           299          PC    0.81    0.82   0.825    0.83   0.835    0.84   0.845    0.85  0.855
0.86
           300          PC  0.8638  0.8675  0.8713   0.875  0.8878  0.8825  0.8863    0.89  0.8938
0.8975
           301          PC  0.9013   0.905  0.9083  0.9115  0.9148   0.918   0.921   0.924  0.927
0.93
           302          PC  0.9325   0.935  0.9375    0.94  0.9425   0.945  0.9475    0.95  0.9525
0.955
           303          PC  0.9575    0.96  0.9625   0.965  0.9675    0.97  0.9725   0.975  0.9775
0.98
           304          PC  0.9813  0.9825  0.9838   0.985  0.9863  0.9875  0.9888    0.99  0.9913
0.9925
           305          PC  0.9938   0.995  0.9963  0.9975  0.9988     1.0
           306          LS     0.0    61.0     0.0
           307          UD    0.21

           308          KK      RH7   CNAME      H7
           309          KM                            RUNOFF FROM SUBBASIN H7
           310          KO        0       0     0.0       0      22
           311          RN      RH7

           312          KK      H8
           313          KM                            RUNOFF FROM SUBBASIN H8
           314          KO        0       0     0.0       0      22
           315          BA     0.29
           316          PB      4.4
           317          IN       15 01JAN94        0
                        * Type IIa Storm
           319          PC  0.0005  0.0015   0.003  0.0045   0.006   0.008    0.01   0.012  0.0143
0.0165
           319          PC  0.0188   0.021  0.0233  0.0255  0.0278   0.032   0.039   0.046  0.053
0.06
           320          PC   0.075     0.1     0.4     0.7   0.725    0.75   0.765    0.78   0.79
0.8
           321          PC    0.81    0.82   0.825    0.83   0.835    0.84   0.845    0.85  0.855
0.86
```

	322		PC	0.8638	0.8675	0.8713	0.875	0.8878	0.8825	0.8863	0.89	0.8938
0.8975												
	323		PC	0.9013	0.905	0.9083	0.9115	0.9148	0.918	0.921	0.924	0.927
0.93												
	324		PC	0.9325	0.935	0.9375	0.94	0.9425	0.945	0.9475	0.95	0.9525
0.955												
	325		PC	0.9575	0.96	0.9625	0.965	0.9675	0.97	0.9725	0.975	0.9775
0.98												
	326		PC	0.9813	0.9825	0.9838	0.985	0.9863	0.9875	0.9888	0.99	0.9913
0.9925												
	327		PC	0.9938	0.995	0.9963	0.9975	0.9988	1.0			
	328		LS	0.0	61.0	0.0						

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          LINE
ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
           329          UD    0.34

           330          KK   DPHG8   CNAME    RHG8
           331          KO       0       0     0.0       0      22
           332          HC       2   0.444

           333          KK    RHG8   CNAME   DPHG8
           334          KM                                COMBINED FLOW FROM SUB H8 & RH7
           335          KO       0       0     0.0       0      22
           336          RK  4200.0   0.008    0.04             TRAP    20.0     1.0

           337          KK      HA
           338          KM                                RUNOFF FROM SUBBASIN HA
           339          KO       0       0     0.0       0      22
           340          BA    0.37
           341          PB     4.4
           342          IN      15 01JAN94       0
                        * Type IIa Storm
           343          PC  0.0005  0.0015   0.003  0.0045   0.006   0.008    0.01   0.012  0.0143
0.0165
           344          PC  0.0188   0.021  0.0233  0.0255  0.0278   0.032   0.039   0.046   0.053
0.06
           345          PC   0.075     0.1     0.4     0.7   0.725    0.75   0.765    0.78    0.79
0.8
           346          PC    0.81    0.82   0.825    0.83   0.835    0.84   0.845    0.85   0.855
0.86
           347          PC  0.8638  0.8675  0.8713   0.875  0.8878  0.8825  0.8863    0.89  0.8938
0.8975
           348          PC  0.9013   0.905  0.9083  0.9115  0.9148   0.918   0.921   0.924   0.927
0.93
           349          PC  0.9325   0.935  0.9375    0.94  0.9425   0.945  0.9475    0.95  0.9525
0.955
           350          PC  0.9575    0.96  0.9625   0.965  0.9675    0.97  0.9725   0.975  0.9775
0.98
           351          PC  0.9813  0.9825  0.9838   0.985  0.9863  0.9875  0.9888    0.99  0.9913
0.9925
           352          PC  0.9938   0.995  0.9963  0.9975  0.9988     1.0
           353          LS    0.0    61.0     0.0
           354          UD    0.33

           355          KK     DP1   CNAME    RDP1
           356          KO       0       0     0.0       0      22
           357          HC       2   0.814

           358          KK    RDP1   CNAME     DP1
           359          KM                                COMBINED FLOW FROM DP HG8 & SUB HA
           360          KO       0       0     0.0       0      22
           361          RK  4280.0   0.011    0.04             TRAP    20.0     1.0

           362          KK     HA2
           363          KM                                RUNOFF FROM SUBBASIN HA2
           364          KO       0       0     0.0       0      22
           365          BA     0.1
           366          PB     4.4
           367          IN      15 01JAN94       0
                        * Type IIa Storm
           368          PC  0.0005  0.0015   0.003  0.0045   0.006   0.008    0.01   0.012  0.0143
0.0165
           369          PC  0.0188   0.021  0.0233  0.0255  0.0278   0.032   0.039   0.046   0.053
0.06
           370          PC   0.075     0.1     0.4     0.7   0.725    0.75   0.765    0.78    0.79
0.8
           371          PC    0.81    0.82   0.825    0.83   0.835    0.84   0.845    0.85   0.855
0.86
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          LINE
ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

            376          PC  0.9813  0.9825  0.9838   0.985  0.9863  0.9875  0.9888    0.99  0.9913
0.9925
            377          PC  0.9938   0.995  0.9963  0.9975  0.9988     1.0
            378          LS     0.0    61.0     0.0
            379          UD    0.22

            380          KK     DP4   CNAME    RDP4
            381          KO       0       0     0.0       0      22
            382          HC       2   0.914

            383          KK    RDP4   CNAME     DP4
            384          KM                             COMBINED FLOW FROM DP 1 & SUB HA2
            385          KO       0       0     0.0       0      22
            386          RK  2400.0   0.021    0.04            TRAP    20.0     1.0

            387          KK     HA4
            388          KM                             RUNOFF FROM SUBBASIN HA4
            389          KO       0       0     0.0       0      22
            390          BA    0.18
            391          PB     4.4
            392          IN      15 01JAN94       0
                         * Type IIa Storm
            393          PC  0.0005  0.0015   0.003  0.0045   0.006   0.008    0.01   0.012  0.0143
0.0165
            394          PC  0.0188   0.021  0.0233  0.0255  0.0278   0.032   0.039   0.046   0.053
0.06
            395          PC   0.075     0.1     0.4     0.7   0.725    0.75   0.765    0.78    0.79
0.8
            396          PC    0.81    0.82   0.825    0.83   0.835    0.84   0.845    0.85   0.855
0.86
            397          PC  0.8638  0.8675  0.8713   0.875  0.8878  0.8825  0.8863    0.89  0.8938
0.8975
            398          PC  0.9013   0.905  0.9083  0.9115  0.9148   0.918   0.921   0.924   0.927
0.93
            399          PC  0.9325   0.935  0.9375    0.94  0.9425   0.945  0.9475    0.95  0.9525
0.955
            400          PC  0.9575    0.96  0.9625   0.965  0.9675    0.97  0.9725   0.975  0.9775
0.98
            401          PC  0.9813  0.9825  0.9838   0.985  0.9863  0.9875  0.9888    0.99  0.9913
0.9925
            402          PC  0.9938   0.995  0.9963  0.9975  0.9988     1.0
            403          LS     0.0    61.0     0.0
            404          UD    0.32

            405          KK     DP5   CNAME    RDP5
            406          KO       0       0     0.0       0      22
            407          HC       2   1.094

            408          KK    RDP5   CNAME     DP5
            409          KM                             COMBINED FLOW FROM DP 4 & SUB HA4
            410          KO       0       0     0.0       0      22
            411          RK  2870.0  0.0139    0.04            TRAP    20.0     1.0

            412          KK     HA5
            413          KM                             RUNOFF FROM SUBBASIN HA5
            414          KO       0       0     0.0       0      22
            415          BA    0.52
            416          PB     4.4
            417          IN      15 01JAN94       0
                         * Type IIa Storm
            418          PC  0.0005  0.0015   0.003  0.0045   0.006   0.008    0.01   0.012  0.0143
0.0165
            419          PC  0.0188   0.021  0.0233  0.0255  0.0278   0.032   0.039   0.046   0.053
0.06
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          LINE
ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

          423          PC  0.9013   0.905  0.9083  0.9115  0.9148   0.918   0.921   0.924   0.927
0.93
          424          PC  0.9325   0.935  0.9375    0.94  0.9425   0.945  0.9475    0.95  0.9525
0.955
          425          PC  0.9575    0.96  0.9625   0.965  0.9675    0.97  0.9725   0.975  0.9775
0.98
          426          PC  0.9813  0.9825  0.9838   0.985  0.9863  0.9875  0.9888    0.99  0.9913
0.9925
          427          PC  0.9938   0.995  0.9963  0.9975  0.9988     1.0
          428          LS     0.0    61.0     0.0
          429          UD    0.58

          430          KK     DP6   CNAME    RDP6
          431          KO       0       0     0.0       0      22
          432          HC       2   1.614

          433          KK    RDP6   CNAME     DP6
          434          KM                          COMBINED FLOW FROM DP 5 & SUB HA5
          435          KO       0       0     0.0       0      22
          436          RK  5230.0    0.01    0.04            TRAP    20.0     1.0

          437          KK     OS2
          438          KM                          RUNOFF FROM SUBBASIN OS2
          439          KO       0       0     0.0       0      22
          440          BA    0.09
          441          PB     4.4
          442          IN       15 01JAN94       0
                       * Type IIa Storm
          443          PC  0.0005  0.0015   0.003  0.0045   0.006   0.008    0.01   0.012  0.0143
0.0165
          444          PC  0.0188   0.021  0.0233  0.0255  0.0278   0.032   0.039   0.046   0.053
0.06
          445          PC   0.075     0.1     0.4     0.7   0.725    0.75   0.765    0.78    0.79
0.8
          446          PC    0.81    0.82   0.825    0.83   0.835    0.84   0.845    0.85   0.855
0.86
          447          PC  0.8638  0.8675  0.8713   0.875  0.8878  0.8825  0.8863    0.89  0.8938
0.8975
          448          PC  0.9013   0.905  0.9083  0.9115  0.9148   0.918   0.921   0.924   0.927
0.93
          449          PC  0.9325   0.935  0.9375    0.94  0.9425   0.945  0.9475    0.95  0.9525
0.955
          450          PC  0.9575    0.96  0.9625   0.965  0.9675    0.97  0.9725   0.975  0.9775
0.98
          451          PC  0.9813  0.9825  0.9838   0.985  0.9863  0.9875  0.9888    0.99  0.9913
0.9925
          452          PC  0.9938   0.995  0.9963  0.9975  0.9988     1.0
          453          LS     0.0    61.0     0.0
          454          UD    0.23

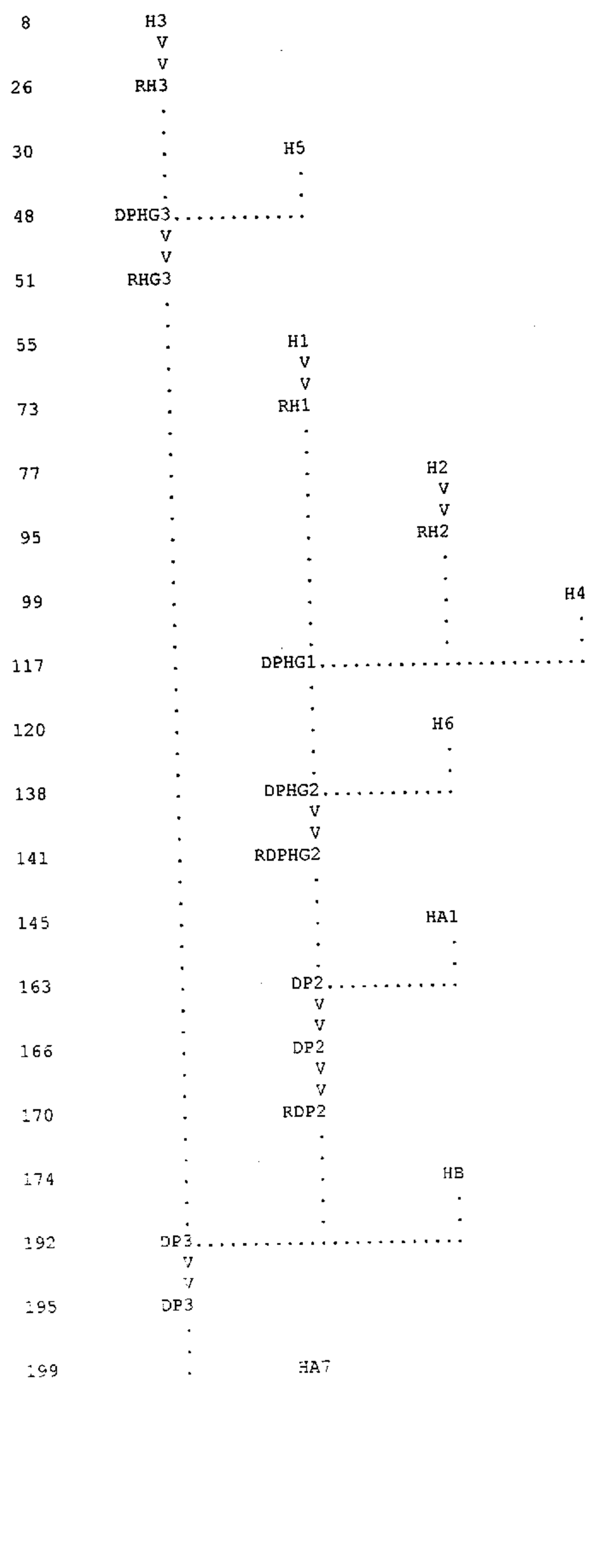
          455          KK     OS1
          456          KM                          RUNOFF FROM SUBBASIN OS1
          457          KO       0       0     0.0       0      22
          458          BA    0.34
          459          PB     4.4
          460          IN       15 01JAN94       0
                       * Type IIa Storm
          461          PC  0.0005  0.0015   0.003  0.0045   0.006   0.008    0.01   0.012  0.0143
0.0165
          462          PC  0.0188   0.021  0.0233  0.0255  0.0278   0.032   0.039   0.046   0.053
0.06
          463          PC   0.075     0.1     0.4     0.7   0.725    0.75   0.765    0.78    0.79
0.8
```

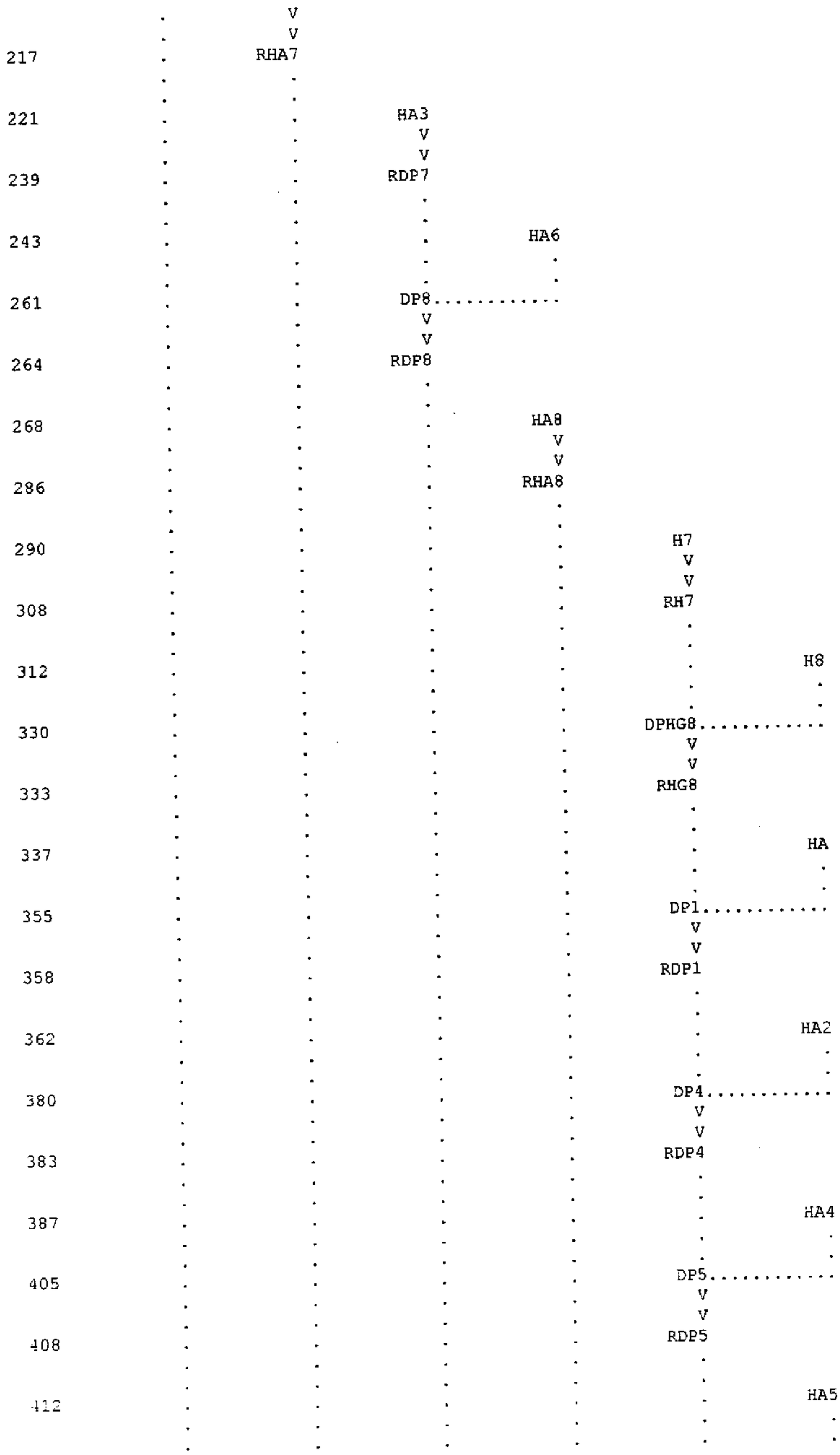
```
0.86
464     PC    0.81    0.82    0.825    0.83    0.835    0.84    0.845    0.85    0.855
0.8975
465     PC   0.8638  0.8675  0.8713   0.875   0.8878  0.8825  0.8863    0.89   0.8938
0.93
466     PC   0.9013   0.905  0.9083   0.9115  0.9148   0.918   0.921   0.924    0.927
0.955
467     PC   0.9325   0.935  0.9375    0.94  0.9425    0.945  0.9475    0.95   0.9525
0.98
468     PC   0.9575    0.96  0.9625    0.965 0.9675    0.97   0.9725   0.975   0.9775
0.9925
469     PC   0.9813  0.9825  0.9838    0.985 0.9863   0.9875  0.9888    0.99   0.9913
470     PC   0.9938   0.995  0.9963   0.9975 0.9988      1.0
471     LS      0.0    61.0     0.0
```

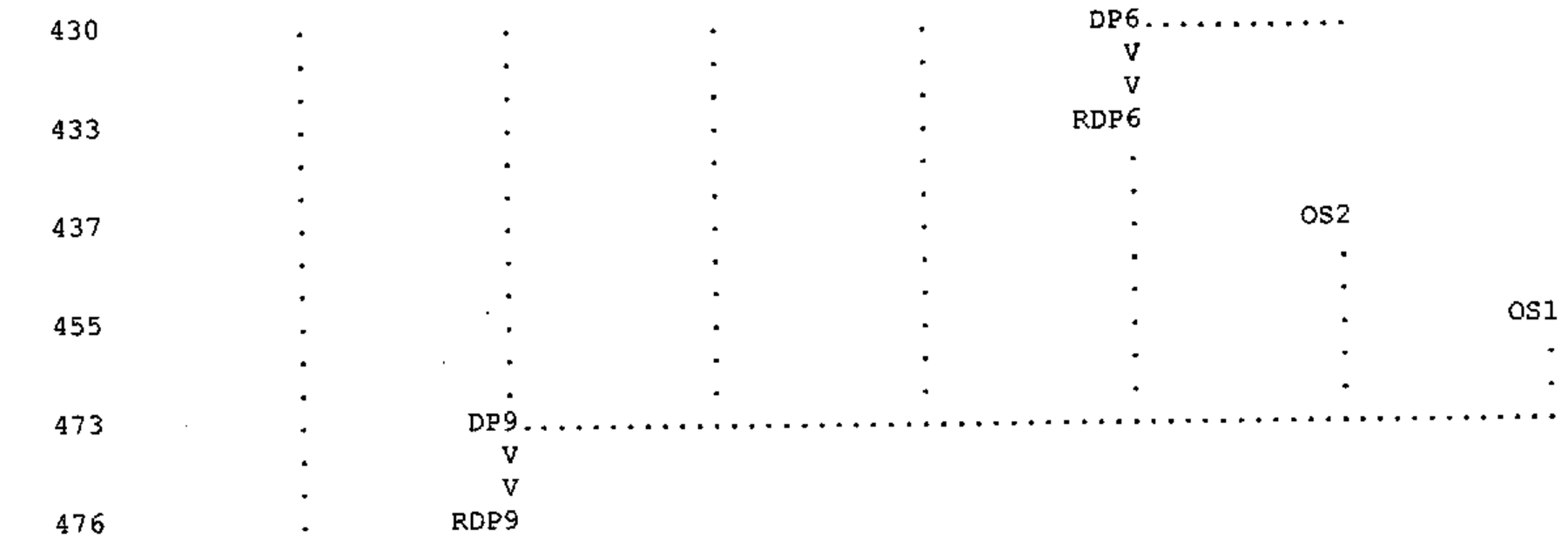
SCHEMATIC DIAGRAM OF STREAM NETWORK

(V) ROUTING (---->) DIVERSION OR PUMP FLOW

(.) CONNECTOR (<----) RETURN OF DIVERTED OR PUMPED FLOW




V
V
217
RHA7
221
HA3
V
V
239
RDP7
243
HA6
261
DP8
V
V
264
RDP8
268
HA8
V
V
286
RHA8
290
H7
V
V
308
RH7
312
H8
330
DPHG8
V
V
333
RHG8
337
HA
355
DP1
V
V
358
RDP1
362
HA2
380
DP4
V
V
383
RDP4
387
HA4
405
DP5
V
V
408
RDP5
412
HA5



(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
1*****************************************
*****************************************
 *                                       *                                       *
*
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *                                       *    U.S.
ARMY CORPS OF ENGINEERS     *
 *                MAY   1991             *                                       *
HYDROLOGIC ENGINEERING CENTER    *
 *             VERSION 4.0.1E            *                                       *
609 SECOND STREET           *
 *                                       *                                       *
DAVIS, CALIFORNIA 95616       *
 *  RUN DATE             TIME            *                                       *
(916) 551-1748              *
 *                                       *                                       *
*
 *****************************************
*****************************************
```

SANTA FE SPRINGS HEC-1 MODELING
TRI-CORE ENGINEERING - PROJECT 6005.0001
100 YEAR - STORM
HAEGLER DRAINAGE BASIN, EL PASO COUNTY COLORADO
24 HR STORM DURATION - TYPE IIa STORM

7 IO OUTPUT CONTROL VARIABLES

IPRNT	5	PRINT CONTROL
IPLOT	0	PLOT CONTROL
QSCAL	0.	HYDROGRAPH PLOT SCALE

IT HYDROGRAPH TIME DATA

NMIN	5	MINUTES IN COMPUTATION INTERVAL
IDATE	1JAN94	STARTING DATE
ITIME	0000	STARTING TIME
NQ,	250	NUMBER OF HYDROGRAPH ORDINATES
NDDATE	1JAN94	ENDING DATE
NDTIME	2045	ENDING TIME
ICENT	19	CENTURY MARK

COMPUTATION INTERVAL 0.08 HOURS
TOTAL TIME BASE 20.75 HOURS

ENGLISH UNITS

DRAINAGE AREA	SQUARE MILES
PRECIPITATION DEPTH	INCHES
LENGTH, ELEVATION	FEET
FLOW	CUBIC FEET PER SECOND
STORAGE VOLUME	ACRE-FEET
SURFACE AREA	ACRES

TEMPERATURE DEGREES FAHRENHEIT

*** *** *** *

*** ***

```
          **************
          *            *
48 KK     *     DPHG3  *        CNAME     HG3
          *            *
          **************

49 KO          OUTPUT CONTROL VARIABLES
                     IPRNT           5  PRINT CONTROL
                     IPLOT           0  PLOT CONTROL
                     QSCAL          0.  HYDROGRAPH PLOT SCALE
                     IPNCH           0  PUNCH COMPUTED HYDROGRAPH
                      IOUT          22  SAVE HYDROGRAPH ON THIS UNIT
                     ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                     ISAV2         250  LAST ORDINATE PUNCHED OR SAVED
                    TIMINT       0.083  TIME INTERVAL IN HOURS
```

*** ***

```
          **************
          *            *
51 KK     *      RHG3  *        CNAME     RHG3
          *            *
          **************

53 KO          OUTPUT CONTROL VARIABLES
                     IPRNT           5  PRINT CONTROL
                     IPLOT           0  PLOT CONTROL
                     QSCAL          0.  HYDROGRAPH PLOT SCALE
                     IPNCH           0  PUNCH COMPUTED HYDROGRAPH
                      IOUT          22  SAVE HYDROGRAPH ON THIS UNIT
                     ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                     ISAV2         250  LAST ORDINATE PUNCHED OR SAVED
                    TIMINT       0.083  TIME INTERVAL IN HOURS
```

*** ***

```
          **************
          *            *
55 KK     *        H1  *
          *            *
          **************

57 KO          OUTPUT CONTROL VARIABLES
                     IPRNT           5  PRINT CONTROL
                     IPLOT           0  PLOT CONTROL
                     QSCAL          0.  HYDROGRAPH PLOT SCALE
                     IPNCH           0  PUNCH COMPUTED HYDROGRAPH
                      IOUT          22  SAVE HYDROGRAPH ON THIS UNIT
                     ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                     ISAV2         250  LAST ORDINATE PUNCHED OR SAVED
                    TIMINT       0.083  TIME INTERVAL IN HOURS
```

*** *** *** *

```
          **************
          *            *
 99 KK    *        H4  *
          *            *
          **************

101 KO          OUTPUT CONTROL VARIABLES
                     IPRNT           5  PRINT CONTROL
                     IPLOT           0  PLOT CONTROL
                     QSCAL          0.  HYDROGRAPH PLOT SCALE
                     IPNCH           0  PUNCH COMPUTED HYDROGRAPH
                      IOUT          22  SAVE HYDROGRAPH ON THIS UNIT
                     ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                     ISAV2         250  LAST ORDINATE PUNCHED OR SAVED
                    TIMINT       0.083  TIME INTERVAL IN HOURS


 *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
*** *** *** *** *** *** ***

          **************
          *            *
 117 KK   *     DPHG1  *        CNAME    RHG1
          *            *
          **************

 118 KO          OUTPUT CONTROL VARIABLES
                     IPRNT           5  PRINT CONTROL
                     IPLOT           0  PLOT CONTROL
                     QSCAL          0.  HYDROGRAPH PLOT SCALE
                     IPNCH           0  PUNCH COMPUTED HYDROGRAPH
                      IOUT          22  SAVE HYDROGRAPH ON THIS UNIT
                     ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                     ISAV2         250  LAST ORDINATE PUNCHED OR SAVED
                    TIMINT       0.083  TIME INTERVAL IN HOURS


 *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
*** *** *** *** *** *** ***

          **************
          *            *
 120 KK   *        H6  *
          *            *
          **************

 122 KO          OUTPUT CONTROL VARIABLES
                     IPRNT           5  PRINT CONTROL
                     IPLOT           0  PLOT CONTROL
                     QSCAL          0.  HYDROGRAPH PLOT SCALE
                     IPNCH           0  PUNCH COMPUTED HYDROGRAPH
                      IOUT          22  SAVE HYDROGRAPH ON THIS UNIT
                     ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                     ISAV2         250  LAST ORDINATE PUNCHED OR SAVED
                    TIMINT       0.083  TIME INTERVAL IN HOURS


 *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
*** *** *** *** *** *** ***
```

```
                ***************
                *             *
138 KK          *     DPHG2   *        CNAME  RDPHG2
                *             *
                ***************

139 KO              OUTPUT CONTROL VARIABLES
                          IPRNT           5  PRINT CONTROL
                          IPLOT           0  PLOT CONTROL
                          QSCAL          0.  HYDROGRAPH PLOT SCALE
                          IPNCH           0  PUNCH COMPUTED HYDROGRAPH
                           IOUT          22  SAVE HYDROGRAPH ON THIS UNIT
                          ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                          ISAV2         250  LAST ORDINATE PUNCHED OR SAVED
                         TIMINT       0.083  TIME INTERVAL IN HOURS


 *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
*** *** *** *** *** *** ***

                ***************
                *             *
141 KK          *    RDPHG2   *        CNAME   DPHG2
                *             *
                ***************

143 KO              OUTPUT CONTROL VARIABLES
                          IPRNT           5  PRINT CONTROL
                          IPLOT           0  PLOT CONTROL
                          QSCAL          0.  HYDROGRAPH PLOT SCALE
                          IPNCH           0  PUNCH COMPUTED HYDROGRAPH
                           IOUT          22  SAVE HYDROGRAPH ON THIS UNIT
                          ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                          ISAV2         250  LAST ORDINATE PUNCHED OR SAVED
                         TIMINT       0.083  TIME INTERVAL IN HOURS


 *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
*** *** *** *** *** *** ***

                ***************
                *             *
145 KK          *       HA1   *
                *             *
                ***************

147 KO              OUTPUT CONTROL VARIABLES
                          IPRNT           5  PRINT CONTROL
                          IPLOT           0  PLOT CONTROL
                          QSCAL          0.  HYDROGRAPH PLOT SCALE
                          IPNCH           0  PUNCH COMPUTED HYDROGRAPH
                           IOUT          22  SAVE HYDROGRAPH ON THIS UNIT
                          ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                          ISAV2         250  LAST ORDINATE PUNCHED OR SAVED
                         TIMINT       0.083  TIME INTERVAL IN HOURS


 *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
*** *** *** *** *** *** ***

                ***************
                *             *
```

```
 163 KK      *       DP2  *        CNAME     DP2
             *            *
             **************

 164 KO           OUTPUT CONTROL VARIABLES
                       IPRNT           5  PRINT CONTROL
                       IPLOT           0  PLOT CONTROL
                       QSCAL          0.  HYDROGRAPH PLOT SCALE
                       IPNCH           0  PUNCH COMPUTED HYDROGRAPH
                        IOUT          22  SAVE HYDROGRAPH ON THIS UNIT
                       ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                       ISAV2         250  LAST ORDINATE PUNCHED OR SAVED
                      TIMINT       0.083  TIME INTERVAL IN HOURS



 *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
*** *** *** *** *** *** ***

             **************
             *            *
 166 KK      *       DP2  *        CNAME     DP2
             *            *
             **************

 168 KO           OUTPUT CONTROL VARIABLES
                       IPRNT           5  PRINT CONTROL
                       IPLOT           0  PLOT CONTROL
                       QSCAL          0.  HYDROGRAPH PLOT SCALE
                       IPNCH           0  PUNCH COMPUTED HYDROGRAPH
                        IOUT          22  SAVE HYDROGRAPH ON THIS UNIT
                       ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                       ISAV2         250  LAST ORDINATE PUNCHED OR SAVED
                      TIMINT       0.083  TIME INTERVAL IN HOURS



 *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
*** *** *** *** *** *** ***

             **************
             *            *
 170 KK      *      RDP2  *        CNAME    RDP2
             *            *
             **************

 172 KO           OUTPUT CONTROL VARIABLES
                       IPRNT           5  PRINT CONTROL
                       IPLOT           0  PLOT CONTROL
                       QSCAL          0.  HYDROGRAPH PLOT SCALE
                       IPNCH           0  PUNCH COMPUTED HYDROGRAPH
                        IOUT          22  SAVE HYDROGRAPH ON THIS UNIT
                       ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                       ISAV2         250  LAST ORDINATE PUNCHED OR SAVED
                      TIMINT       0.083  TIME INTERVAL IN HOURS



 *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
*** *** *** *** *** *** ***

             **************
             *            *
 174 KK      *        HB  *
             *            *
```

```
            **************

 176 KO          OUTPUT CONTROL VARIABLES
                       IPRNT           5  PRINT CONTROL
                       IPLOT           0  PLOT CONTROL
                       QSCAL          0.  HYDROGRAPH PLOT SCALE
                       IPNCH           0  PUNCH COMPUTED HYDROGRAPH
                        IOUT          22  SAVE HYDROGRAPH ON THIS UNIT
                       ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                       ISAV2         250  LAST ORDINATE PUNCHED OR SAVED
                      TIMINT       0.083  TIME INTERVAL IN HOURS



 *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
*** *** *** *** *** *** ***

            **************
            *            *
 192 KK     *       DP3  *        CNAME     DP3
            *            *
            **************

 193 KO          OUTPUT CONTROL VARIABLES
                       IPRNT           5  PRINT CONTROL
                       IPLOT           0  PLOT CONTROL
                       QSCAL          0.  HYDROGRAPH PLOT SCALE
                       IPNCH           0  PUNCH COMPUTED HYDROGRAPH
                        IOUT          22  SAVE HYDROGRAPH ON THIS UNIT
                       ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                       ISAV2         250  LAST ORDINATE PUNCHED OR SAVED
                      TIMINT       0.083  TIME INTERVAL IN HOURS



 *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
*** *** *** *** *** *** ***

            **************
            *            *
 195 KK     *       DP3  *        CNAME     DP3
            *            *
            **************

 197 KO          OUTPUT CONTROL VARIABLES
                       IPRNT           5  PRINT CONTROL
                       IPLOT           0  PLOT CONTROL
                       QSCAL          0.  HYDROGRAPH PLOT SCALE
                       IPNCH           0  PUNCH COMPUTED HYDROGRAPH
                        IOUT          22  SAVE HYDROGRAPH ON THIS UNIT
                       ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                       ISAV2         250  LAST ORDINATE PUNCHED OR SAVED
                      TIMINT       0.083  TIME INTERVAL IN HOURS



 *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
*** *** *** *** *** *** ***

            **************
            *            *
 199 KK     *       HA7  *
            *            *
            **************
```

201 KO OUTPUT CONTROL VARIABLES

IPRNT	5	PRINT CONTROL
IPLOT	0	PLOT CONTROL
QSCAL	0.	HYDROGRAPH PLOT SCALE
IPNCH	0	PUNCH COMPUTED HYDROGRAPH
IOUT	22	SAVE HYDROGRAPH ON THIS UNIT
ISAV1	1	FIRST ORDINATE PUNCHED OR SAVED
ISAV2	250	LAST ORDINATE PUNCHED OR SAVED
TIMINT	0.083	TIME INTERVAL IN HOURS

*** ***

217 KK RHA7 CNAME HA7

219 KO OUTPUT CONTROL VARIABLES

IPRNT	5	PRINT CONTROL
IPLOT	0	PLOT CONTROL
QSCAL	0.	HYDROGRAPH PLOT SCALE
IPNCH	0	PUNCH COMPUTED HYDROGRAPH
IOUT	22	SAVE HYDROGRAPH ON THIS UNIT
ISAV1	1	FIRST ORDINATE PUNCHED OR SAVED
ISAV2	250	LAST ORDINATE PUNCHED OR SAVED
TIMINT	0.083	TIME INTERVAL IN HOURS

*** ***

221 KK HA3

223 KO OUTPUT CONTROL VARIABLES

IPRNT	1	PRINT CONTROL
IPLOT	0	PLOT CONTROL
QSCAL	0.	HYDROGRAPH PLOT SCALE
IPNCH	0	PUNCH COMPUTED HYDROGRAPH
IOUT	22	SAVE HYDROGRAPH ON THIS UNIT
ISAV1	1	FIRST ORDINATE PUNCHED OR SAVED
ISAV2	250	LAST ORDINATE PUNCHED OR SAVED
TIMINT	0.083	TIME INTERVAL IN HOURS

226 IN TIME DATA FOR INPUT TIME SERIES

JXMIN	15	TIME INTERVAL IN MINUTES
JXDATE	1JAN94	STARTING DATE
JXTIME	0	STARTING TIME

SUBBASIN RUNOFF DATA

224 BA SUBBASIN CHARACTERISTICS

TAREA,	0.29	SUBBASIN AREA

PRECIPITATION DATA

225 PB

STORM	4.40	BASIN TOTAL PRECIPITATION

227 PI

INCREMENTAL PRECIPITATION PATTERN

0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.10	0.01	0.01	0.01	0.10	0.10	0.10	0.10	0.10
0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00

****

HYDROGRAPH AT STATION HA3

****

EXCESS	DA MON HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q	*	DA MON HRMN	ORD	RAIN	LOSS
	COMP Q						*				
0.00	1 JAN 0000 7.	1	0.00	0.00	0.00	0.	*	1 JAN 1025	126	0.01	0.00
0.00	1 JAN 0005 7.	2	0.00	0.00	0.00	0.	*	1 JAN 1030	127	0.01	0.00
0.00	1 JAN 0010 6.	3	0.00	0.00	0.00	0.	*	1 JAN 1035	128	0.01	0.00
0.00	1 JAN 0015 6.	4	0.00	0.00	0.00	0.	*	1 JAN 1040	129	0.01	0.00
0.00	1 JAN 0020 6.	5	0.00	0.00	0.00	0.	*	1 JAN 1045	130	0.01	0.00
0.01	1 JAN 0025 7.	6	0.00	0.00	0.00	0.	*	1 JAN 1050	131	0.02	0.01
0.01	1 JAN 0030 7.	7	0.00	0.00	0.00	0.	*	1 JAN 1055	132	0.02	0.01
0.01	1 JAN 0035 8.	8	0.00	0.00	0.00	0.	*	1 JAN 1100	133	0.02	0.01
0.00	1 JAN 0040 10.	9	0.00	0.00	0.00	0.	*	1 JAN 1105	134	-0.01	-0.01
0.00	1 JAN 0045 11.	10	0.00	0.00	0.00	0.	*	1 JAN 1110	135	-0.01	-0.01
0.00	1 JAN 0050 11.	11	0.00	0.00	0.00	0.	*	1 JAN 1115	136	-0.01	-0.01
0.00	1 JAN 0055 11.	12	0.00	0.00	0.00	0.	*	1 JAN 1120	137	0.01	0.00
0.00	1 JAN 0100 10.	13	0.00	0.00	0.00	0.	*	1 JAN 1125	138	0.01	0.00
0.00	1 JAN 0105 8.	14	0.00	0.00	0.00	0.	*	1 JAN 1130	139	0.01	0.00
0.00	1 JAN 0110 7.	15	0.00	0.00	0.00	0.	*	1 JAN 1135	140	0.01	0.00
0.00	1 JAN 0115 7.	16	0.00	0.00	0.00	0.	*	1 JAN 1140	141	0.01	0.00
0.00	1 JAN 0120 6.	17	0.00	0.00	0.00	0.	*	1 JAN 1145	142	0.01	0.00
0.00	1 JAN 0125 6.	18	0.00	0.00	0.00	0.	*	1 JAN 1150	143	0.01	0.00
0.00	1 JAN 0130 6.	19	0.00	0.00	0.00	0.	*	1 JAN 1155	144	0.01	0.00
0.00	1 JAN 0135 6.	20	0.00	0.00	0.00	0.	*	1 JAN 1200	145	0.01	0.00
0.00	1 JAN 0140 6.	21	0.00	0.00	0.00	0.	*	1 JAN 1205	146	0.01	0.00
0.00	1 JAN 0145 6.	22	0.00	0.00	0.00	0.	*	1 JAN 1210	147	0.01	0.00
0.00	1 JAN 0150 6.	23	0.00	0.00	0.00	0.	*	1 JAN 1215	148	0.01	0.00
0.00	1 JAN 0155 6.	24	0.00	0.00	0.00	0.	*	1 JAN 1220	149	0.01	0.00
0.00	1 JAN 0200 6.	25	0.00	0.00	0.00	0.	*	1 JAN 1225	150	0.01	0.00
0.00	1 JAN 0205 6.	26	0.00	0.00	0.00	0.	*	1 JAN 1230	151	0.01	0.00
0.00	1 JAN 0210 6.	27	0.00	0.00	0.00	0.	*	1 JAN 1235	152	0.01	0.00
0.00	1 JAN 0215 6.	28	0.00	0.00	0.00	0.	*	1 JAN 1240	153	0.01	0.00
0.00	1 JAN 0220 6.	29	0.00	0.00	0.00	0.	*	1 JAN 1245	154	0.01	0.00

0.00	1 JAN 0225 6.	30	0.00	0.00	0.00	0.	*	1 JAN 1250	155	0.00	0.00	
0.00	1 JAN 0230 6.	31	0.00	0.00	0.00	0.	*	1 JAN 1255	156	0.00	0.00	
0.00	1 JAN 0235 6.	32	0.00	0.00	0.00	0.	*	1 JAN 1300	157	0.00	0.00	
0.00	1 JAN 0240 6.	33	0.00	0.00	0.00	0.	*	1 JAN 1305	158	0.00	0.00	
0.00	1 JAN 0245 6.	34	0.00	0.00	0.00	0.	*	1 JAN 1310	159	0.00	0.00	
0.00	1 JAN 0250 6.	35	0.00	0.00	0.00	0.	*	1 JAN 1315	160	0.00	0.00	
0.00	1 JAN 0255 6.	36	0.00	0.00	0.00	0.	*	1 JAN 1320	161	0.00	0.00	
0.00	1 JAN 0300 6.	37	0.00	0.00	0.00	0.	*	1 JAN 1325	162	0.00	0.00	
0.00	1 JAN 0305 6.	38	0.00	0.00	0.00	0.	*	1 JAN 1330	163	0.00	0.00	
0.00	1 JAN 0310 6.	39	0.00	0.00	0.00	0.	*	1 JAN 1335	164	0.00	0.00	
0.00	1 JAN 0315 6.	40	0.00	0.00	0.00	0.	*	1 JAN 1340	165	0.00	0.00	
0.00	1 JAN 0320 6.	41	0.00	0.00	0.00	0.	*	1 JAN 1345	166	0.00	0.00	
0.00	1 JAN 0325 6.	42	0.00	0.00	0.00	0.	*	1 JAN 1350	167	0.00	0.00	
0.00	1 JAN 0330 6.	43	0.00	0.00	0.00	0.	*	1 JAN 1355	168	0.00	0.00	
0.00	1 JAN 0335 6.	44	0.01	0.01	0.00	0.	*	1 JAN 1400	169	0.00	0.00	
0.00	1 JAN 0340 6.	45	0.01	0.01	0.00	0.	*	1 JAN 1405	170	0.00	0.00	
0.00	1 JAN 0345 5.	46	0.01	0.01	0.00	0.	*	1 JAN 1410	171	0.00	0.00	
0.00	1 JAN 0350 5.	47	0.01	0.01	0.00	0.	*	1 JAN 1415	172	0.00	0.00	
0.00	1 JAN 0355 5.	48	0.01	0.01	0.00	0.	*	1 JAN 1420	173	0.00	0.00	
0.00	1 JAN 0400 5.	49	0.01	0.01	0.00	0.	*	1 JAN 1425	174	0.00	0.00	
0.00	1 JAN 0405 5.	50	0.01	0.01	0.00	0.	*	1 JAN 1430	175	0.00	0.00	
0.00	1 JAN 0410 5.	51	0.01	0.01	0.00	0.	*	1 JAN 1435	176	0.00	0.00	
0.00	1 JAN 0415 5.	52	0.01	0.01	0.00	0.	*	1 JAN 1440	177	0.00	0.00	
0.00	1 JAN 0420 5.	53	0.01	0.01	0.00	0.	*	1 JAN 1445	178	0.00	0.00	
0.00	1 JAN 0425 5.	54	0.01	0.01	0.00	0.	*	1 JAN 1450	179	0.00	0.00	
0.00	1 JAN 0430 5.	55	0.01	0.01	0.00	0.	*	1 JAN 1455	180	0.00	0.00	
0.00	1 JAN 0435 5.	56	0.01	0.01	0.00	0.	*	1 JAN 1500	181	0.00	0.00	
0.00	1 JAN 0440 5.	57	0.01	0.01	0.00	0.	*	1 JAN 1505	182	0.00	0.00	
0.00	1 JAN 0445 5.	58	0.01	0.01	0.00	0.	*	1 JAN 1510	183	0.00	0.00	
0.00	1 JAN 0450 5.	59	0.02	0.02	0.00	0.	*	1 JAN 1515	184	0.00	0.00	
0.00	1 JAN 0455 5.	60	0.02	0.02	0.00	0.	*	1 JAN 1520	185	0.00	0.00	
0.00	1 JAN 0500 5.	61	0.02	0.02	0.00	0.	*	1 JAN 1525	186	0.00	0.00	
0.00	1 JAN 0505 5.	62	0.04	0.04	0.00	0.	*	1 JAN 1530	187	0.00	0.00	
0.00	1 JAN 0510 5.	63	0.04	0.04	0.00	0.	*	1 JAN 1535	188	0.00	0.00	
0.00	1 JAN 0515 5.	64	0.04	0.04	0.00	0.	*	1 JAN 1540	189	0.00	0.00	

0.00	1 JAN 0520 4.	65	0.45	0.45	0.00	0.	*	1 JAN 1545	190	0.00	0.00
0.00	1 JAN 0525 4.	66	0.45	0.45	0.00	0.	*	1 JAN 1550	191	0.00	0.00
0.00	1 JAN 0530 4.	67	0.45	0.41	0.04	1.	*	1 JAN 1555	192	0.00	0.00
0.00	1 JAN 0535 4.	68	0.45	0.36	0.09	5.	*	1 JAN 1600	193	0.00	0.00
0.00	1 JAN 0540 4.	69	0.45	0.32	0.13	17.	*	1 JAN 1605	194	0.00	0.00
0.00	1 JAN 0545 4.	70	0.45	0.28	0.16	38.	*	1 JAN 1610	195	0.00	0.00
0.00	1 JAN 0550 4.	71	0.04	0.02	0.01	68.	*	1 JAN 1615	196	0.00	0.00
0.00	1 JAN 0555 4.	72	0.04	0.02	0.02	99.	*	1 JAN 1620	197	0.00	0.00
0.00	1 JAN 0600 4.	73	0.04	0.02	0.02	120.	*	1 JAN 1625	198	0.00	0.00
0.00	1 JAN 0605 4.	74	0.04	0.02	0.02	127.	*	1 JAN 1630	199	0.00	0.00
0.00	1 JAN 0610 4.	75	0.04	0.02	0.02	121.	*	1 JAN 1635	200	0.00	0.00
0.00	1 JAN 0615 4.	76	0.04	0.02	0.02	108.	*	1 JAN 1640	201	0.00	0.00
0.00	1 JAN 0620 4.	77	0.02	0.01	0.01	92.	*	1 JAN 1645	202	0.00	0.00
0.00	1 JAN 0625 4.	78	0.02	0.01	0.01	76.	*	1 JAN 1650	203	0.00	0.00
0.00	1 JAN 0630 4.	79	0.02	0.01	0.01	64.	*	1 JAN 1655	204	0.00	0.00
0.00	1 JAN 0635 4.	80	0.02	0.01	0.01	55.	*	1 JAN 1700	205	0.00	0.00
0.00	1 JAN 0640 4.	81	0.02	0.01	0.01	47.	*	1 JAN 1705	206	0.00	0.00
0.00	1 JAN 0645 4.	82	0.02	0.01	0.01	41.	*	1 JAN 1710	207	0.00	0.00
0.00	1 JAN 0650 4.	83	0.01	0.01	0.01	36.	*	1 JAN 1715	208	0.00	0.00
0.00	1 JAN 0655 4.	84	0.01	0.01	0.01	32.	*	1 JAN 1720	209	0.00	0.00
0.00	1 JAN 0700 4.	85	0.01	0.01	0.01	29.	*	1 JAN 1725	210	0.00	0.00
0.00	1 JAN 0705 4.	86	0.01	0.01	0.01	26.	*	1 JAN 1730	211	0.00	0.00
0.00	1 JAN 0710 4.	87	0.01	0.01	0.01	24.	*	1 JAN 1735	212	0.00	0.00
0.00	1 JAN 0715 4.	88	0.01	0.01	0.01	22.	*	1 JAN 1740	213	0.00	0.00
0.00	1 JAN 0720 4.	89	0.01	0.01	0.01	20.	*	1 JAN 1745	214	0.00	0.00
0.00	1 JAN 0725 4.	90	0.01	0.01	0.01	19.	*	1 JAN 1750	215	0.00	0.00
0.00	1 JAN 0730 5.	91	0.01	0.01	0.01	18.	*	1 JAN 1755	216	0.00	0.00
0.00	1 JAN 0735 5.	92	0.01	0.01	0.01	17.	*	1 JAN 1800	217	0.00	0.00
0.00	1 JAN 0740 5.	93	0.01	0.01	0.01	17.	*	1 JAN 1805	218	0.00	0.00
0.00	1 JAN 0745 5.	94	0.01	0.01	0.01	16.	*	1 JAN 1810	219	0.00	0.00
0.00	1 JAN 0750 5.	95	0.01	0.00	0.00	16.	*	1 JAN 1815	220	0.00	0.00
0.00	1 JAN 0755 5.	96	0.01	0.00	0.00	16.	*	1 JAN 1820	221	0.00	0.00
0.00	1 JAN 0800 5.	97	0.01	0.00	0.00	15.	*	1 JAN 1825	222	0.00	0.00
0.00	1 JAN 0805 5.	98	0.01	0.00	0.00	14.	*	1 JAN 1830	223	0.00	0.00
0.00	1 JAN 0810 5.	99	0.01	0.00	0.00	13.	*	1 JAN 1835	224	0.00	0.00

0.00	1 JAN 0815 5.	100	0.01	0.00	0.00	12.	*	1 JAN 1840	225	0.00	0.00
0.00	1 JAN 0820 5.	101	0.01	0.00	0.00	11.	*	1 JAN 1845	226	0.00	0.00
0.00	1 JAN 0825 5.	102	0.01	0.00	0.00	10.	*	1 JAN 1850	227	0.00	0.00
0.00	1 JAN 0830 5.	103	0.01	0.00	0.00	10.	*	1 JAN 1855	228	0.00	0.00
0.00	1 JAN 0835 5.	104	0.01	0.00	0.00	9.	*	1 JAN 1900	229	0.00	0.00
0.00	1 JAN 0840 5.	105	0.01	0.00	0.00	9.	*	1 JAN 1905	230	0.00	0.00
0.00	1 JAN 0845 5.	106	0.01	0.00	0.00	9.	*	1 JAN 1910	231	0.00	0.00
0.00	1 JAN 0850 5.	107	0.01	0.00	0.00	8.	*	1 JAN 1915	232	0.00	0.00
0.00	1 JAN 0855 5.	108	0.01	0.00	0.00	8.	*	1 JAN 1920	233	0.00	0.00
0.00	1 JAN 0900 5.	109	0.01	0.00	0.00	8.	*	1 JAN 1925	234	0.00	0.00
0.00	1 JAN 0905 5.	110	0.01	0.00	0.00	8.	*	1 JAN 1930	235	0.00	0.00
0.00	1 JAN 0910 5.	111	0.01	0.00	0.00	8.	*	1 JAN 1935	236	0.00	0.00
0.00	1 JAN 0915 5.	112	0.01	0.00	0.00	8.	*	1 JAN 1940	237	0.00	0.00
0.00	1 JAN 0920 5.	113	0.01	0.00	0.00	8.	*	1 JAN 1945	238	0.00	0.00
0.00	1 JAN 0925 5.	114	0.01	0.00	0.00	8.	*	1 JAN 1950	239	0.00	0.00
0.00	1 JAN 0930 4.	115	0.01	0.00	0.00	8.	*	1 JAN 1955	240	0.00	0.00
0.00	1 JAN 0935 4.	116	0.01	0.00	0.00	8.	*	1 JAN 2000	241	0.00	0.00
0.00	1 JAN 0940 4.	117	0.01	0.00	0.00	8.	*	1 JAN 2005	242	0.00	0.00
0.00	1 JAN 0945 4.	118	0.01	0.00	0.00	8.	*	1 JAN 2010	243	0.00	0.00
0.00	1 JAN 0950 3.	119	0.01	0.00	0.00	8.	*	1 JAN 2015	244	0.00	0.00
0.00	1 JAN 0955 3.	120	0.01	0.00	0.00	8.	*	1 JAN 2020	245	0.00	0.00
0.00	1 JAN 1000 3.	121	0.01	0.00	0.00	8.	*	1 JAN 2025	246	0.00	0.00
0.00	1 JAN 1005 3.	122	0.01	0.00	0.00	8.	*	1 JAN 2030	247	0.00	0.00
0.00	1 JAN 1010 3.	123	0.01	0.00	0.00	7.	*	1 JAN 2035	248	0.00	0.00
0.00	1 JAN 1015 3.	124	0.01	0.00	0.00	7.	*	1 JAN 2040	249	0.00	0.00
0.00	1 JAN 1020 3.	125	0.01	0.00	0.00	7.	*	1 JAN 2045	250	0.00	0.00
							*				

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TOTAL RAINFALL = 4.40, TOTAL LOSS = 3.36, TOTAL EXCESS = 1.04

	PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
				6-HR	24-HR	72-HR	20.75-HR
+	(CFS)	(HR)					
			(CFS)				
+	127.	6.08		25.	9.	9.	9.
			(INCHES)	0.786	1.030	1.030	1.030
			(AC-FT)	12.	16.	16.	16.

CUMULATIVE AREA = 0.29 SQ MI

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              **************
              *            *
239 KK        *      RDP7  *        CNAME     DP7
              *            *
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241 KO OUTPUT CONTROL VARIABLES

IPRNT	5	PRINT CONTROL
IPLOT	0	PLOT CONTROL
QSCAL	0.	HYDROGRAPH PLOT SCALE
IPNCH	0	PUNCH COMPUTED HYDROGRAPH
IOUT	22	SAVE HYDROGRAPH ON THIS UNIT
ISAV1	1	FIRST ORDINATE PUNCHED OR SAVED
ISAV2	250	LAST ORDINATE PUNCHED OR SAVED
TIMINT	0.083	TIME INTERVAL IN HOURS

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              **************
              *            *
243 KK        *       HA6  *
              *            *
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245 KO OUTPUT CONTROL VARIABLES

IPRNT	5	PRINT CONTROL
IPLOT	0	PLOT CONTROL
QSCAL	0.	HYDROGRAPH PLOT SCALE
IPNCH	0	PUNCH COMPUTED HYDROGRAPH
IOUT	22	SAVE HYDROGRAPH ON THIS UNIT
ISAV1	1	FIRST ORDINATE PUNCHED OR SAVED
ISAV2	250	LAST ORDINATE PUNCHED OR SAVED
TIMINT	0.083	TIME INTERVAL IN HOURS

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              **************
              *            *
261 KK        *       DP8  *        CNAME     RDP8
              *            *
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262 KO OUTPUT CONTROL VARIABLES

IPRNT	5	PRINT CONTROL
IPLOT	0	PLOT CONTROL
QSCAL	0.	HYDROGRAPH PLOT SCALE
IPNCH	0	PUNCH COMPUTED HYDROGRAPH
IOUT	22	SAVE HYDROGRAPH ON THIS UNIT
ISAV1	1	FIRST ORDINATE PUNCHED OR SAVED
ISAV2	250	LAST ORDINATE PUNCHED OR SAVED
TIMINT	0.083	TIME INTERVAL IN HOURS

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              **************
              *            *
290 KK        *         H7 *
              *            *
              **************

292 KO              OUTPUT CONTROL VARIABLES
                          IPRNT           5  PRINT CONTROL
                          IPLOT           0  PLOT CONTROL
                          QSCAL          0.  HYDROGRAPH PLOT SCALE
                          IPNCH           0  PUNCH COMPUTED HYDROGRAPH
                           IOUT          22  SAVE HYDROGRAPH ON THIS UNIT
                          ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                          ISAV2         250  LAST ORDINATE PUNCHED OR SAVED
                         TIMINT       0.083  TIME INTERVAL IN HOURS


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              *            *
308 KK        *        RH7 *        CNAME      H7
              *            *
              **************

310 KO              OUTPUT CONTROL VARIABLES
                          IPRNT           5  PRINT CONTROL
                          IPLOT           0  PLOT CONTROL
                          QSCAL          0.  HYDROGRAPH PLOT SCALE
                          IPNCH           0  PUNCH COMPUTED HYDROGRAPH
                           IOUT          22  SAVE HYDROGRAPH ON THIS UNIT
                          ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                          ISAV2         250  LAST ORDINATE PUNCHED OR SAVED
                         TIMINT       0.083  TIME INTERVAL IN HOURS


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              **************
              *            *
312 KK        *         H8 *
              *            *
              **************

314 KO              OUTPUT CONTROL VARIABLES
                          IPRNT           5  PRINT CONTROL
                          IPLOT           0  PLOT CONTROL
                          QSCAL          0.  HYDROGRAPH PLOT SCALE
                          IPNCH           0  PUNCH COMPUTED HYDROGRAPH
                           IOUT          22  SAVE HYDROGRAPH ON THIS UNIT
                          ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                          ISAV2         250  LAST ORDINATE PUNCHED OR SAVED
                         TIMINT       0.083  TIME INTERVAL IN HOURS


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            **************
            *            *
330 KK      *     DPHG8  *        CNAME    RHG8
            *            *
            **************

331 KO          OUTPUT CONTROL VARIABLES
                     IPRNT           5  PRINT CONTROL
                     IPLOT           0  PLOT CONTROL
                     QSCAL          0.  HYDROGRAPH PLOT SCALE
                     IPNCH           0  PUNCH COMPUTED HYDROGRAPH
                      IOUT          22  SAVE HYDROGRAPH ON THIS UNIT
                     ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                     ISAV2         250  LAST ORDINATE PUNCHED OR SAVED
                    TIMINT       0.083  TIME INTERVAL IN HOURS


 *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
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            **************
            *            *
333 KK      *      RHG8  *        CNAME    DPHG8
            *            *
            **************

335 KO          OUTPUT CONTROL VARIABLES
                     IPRNT           5  PRINT CONTROL
                     IPLOT           0  PLOT CONTROL
                     QSCAL          0.  HYDROGRAPH PLOT SCALE
                     IPNCH           0  PUNCH COMPUTED HYDROGRAPH
                      IOUT          22  SAVE HYDROGRAPH ON THIS UNIT
                     ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                     ISAV2         250  LAST ORDINATE PUNCHED OR SAVED
                    TIMINT       0.083  TIME INTERVAL IN HOURS


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            **************
            *            *
337 KK      *        HA  *
            *            *
            **************

339 KO          OUTPUT CONTROL VARIABLES
                     IPRNT           5  PRINT CONTROL
                     IPLOT           0  PLOT CONTROL
                     QSCAL          0.  HYDROGRAPH PLOT SCALE
                     IPNCH           0  PUNCH COMPUTED HYDROGRAPH
                      IOUT          22  SAVE HYDROGRAPH ON THIS UNIT
                     ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                     ISAV2         250  LAST ORDINATE PUNCHED OR SAVED
                    TIMINT       0.083  TIME INTERVAL IN HOURS


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355 KK      *       DP1   *        CNAME    RDP1
            *             *
            ***************

356 KO           OUTPUT CONTROL VARIABLES
                       IPRNT           5  PRINT CONTROL
                       IPLOT           0  PLOT CONTROL
                       QSCAL          0.  HYDROGRAPH PLOT SCALE
                       IPNCH           0  PUNCH COMPUTED HYDROGRAPH
                        IOUT          22  SAVE HYDROGRAPH ON THIS UNIT
                       ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                       ISAV2         250  LAST ORDINATE PUNCHED OR SAVED
                      TIMINT       0.083  TIME INTERVAL IN HOURS


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            ***************
            *             *
358 KK      *       RDP1  *        CNAME     DP1
            *             *
            ***************

360 KO           OUTPUT CONTROL VARIABLES
                       IPRNT           5  PRINT CONTROL
                       IPLOT           0  PLOT CONTROL
                       QSCAL          0.  HYDROGRAPH PLOT SCALE
                       IPNCH           0  PUNCH COMPUTED HYDROGRAPH
                        IOUT          22  SAVE HYDROGRAPH ON THIS UNIT
                       ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                       ISAV2         250  LAST ORDINATE PUNCHED OR SAVED
                      TIMINT       0.083  TIME INTERVAL IN HOURS


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            ***************
            *             *
362 KK      *       HA2   *
            *             *
            ***************

364 KO           OUTPUT CONTROL VARIABLES
                       IPRNT           5  PRINT CONTROL
                       IPLOT           0  PLOT CONTROL
                       QSCAL          0.  HYDROGRAPH PLOT SCALE
                       IPNCH           0  PUNCH COMPUTED HYDROGRAPH
                        IOUT          22  SAVE HYDROGRAPH ON THIS UNIT
                       ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                       ISAV2         250  LAST ORDINATE PUNCHED OR SAVED
                      TIMINT       0.083  TIME INTERVAL IN HOURS


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            ***************
            *             *
380 KK      *       DP4   *        CNAME     RDP4
            *             *
            ***************
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            **************

 381 KO           OUTPUT CONTROL VARIABLES
                        IPRNT           5  PRINT CONTROL
                        IPLOT           0  PLOT CONTROL
                        QSCAL          0.  HYDROGRAPH PLOT SCALE
                        IPNCH           0  PUNCH COMPUTED HYDROGRAPH
                         IOUT          22  SAVE HYDROGRAPH ON THIS UNIT
                        ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                        ISAV2         250  LAST ORDINATE PUNCHED OR SAVED
                       TIMINT       0.083  TIME INTERVAL IN HOURS



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            **************
            *            *
 383 KK     *      RDP4  *        CNAME     DP4
            *            *
            **************

 385 KO           OUTPUT CONTROL VARIABLES
                        IPRNT           5  PRINT CONTROL
                        IPLOT           0  PLOT CONTROL
                        QSCAL          0.  HYDROGRAPH PLOT SCALE
                        IPNCH           0  PUNCH COMPUTED HYDROGRAPH
                         IOUT          22  SAVE HYDROGRAPH ON THIS UNIT
                        ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                        ISAV2         250  LAST ORDINATE PUNCHED OR SAVED
                       TIMINT       0.083  TIME INTERVAL IN HOURS



 *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
*** *** *** *** *** *** ***

            **************
            *            *
 387 KK     *       HA4  *
            *            *
            **************

 389 KO           OUTPUT CONTROL VARIABLES
                        IPRNT           5  PRINT CONTROL
                        IPLOT           0  PLOT CONTROL
                        QSCAL          0.  HYDROGRAPH PLOT SCALE
                        IPNCH           0  PUNCH COMPUTED HYDROGRAPH
                         IOUT          22  SAVE HYDROGRAPH ON THIS UNIT
                        ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                        ISAV2         250  LAST ORDINATE PUNCHED OR SAVED
                       TIMINT       0.083  TIME INTERVAL IN HOURS



 *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
*** *** *** *** *** *** ***

            **************
            *            *
 405 KK     *       DP5  *        CNAME     RDP5
            *            *
            **************
```

```
 406 KO          OUTPUT CONTROL VARIABLES
                       IPRNT           5  PRINT CONTROL
                       IPLOT           0  PLOT CONTROL
                       QSCAL          0.  HYDROGRAPH PLOT SCALE
                       IPNCH           0  PUNCH COMPUTED HYDROGRAPH
                        IOUT          22  SAVE HYDROGRAPH ON THIS UNIT
                       ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                       ISAV2         250  LAST ORDINATE PUNCHED OR SAVED
                      TIMINT       0.083  TIME INTERVAL IN HOURS


 *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
*** *** *** *** *** *** ***

             **************
             *            *
 408 KK      *      RDP5  *        CNAME     DP5
             *            *
             **************

 410 KO          OUTPUT CONTROL VARIABLES
                       IPRNT           5  PRINT CONTROL
                       IPLOT           0  PLOT CONTROL
                       QSCAL          0.  HYDROGRAPH PLOT SCALE
                       IPNCH           0  PUNCH COMPUTED HYDROGRAPH
                        IOUT          22  SAVE HYDROGRAPH ON THIS UNIT
                       ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                       ISAV2         250  LAST ORDINATE PUNCHED OR SAVED
                      TIMINT       0.083  TIME INTERVAL IN HOURS


 *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
*** *** *** *** *** *** ***

             **************
             *            *
 412 KK      *       HA5  *
             *            *
             **************

 414 KO          OUTPUT CONTROL VARIABLES
                       IPRNT           5  PRINT CONTROL
                       IPLOT           0  PLOT CONTROL
                       QSCAL          0.  HYDROGRAPH PLOT SCALE
                       IPNCH           0  PUNCH COMPUTED HYDROGRAPH
                        IOUT          22  SAVE HYDROGRAPH ON THIS UNIT
                       ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                       ISAV2         250  LAST ORDINATE PUNCHED OR SAVED
                      TIMINT       0.083  TIME INTERVAL IN HOURS


 *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
*** *** *** *** *** *** ***

             **************
             *            *
 430 KK      *       DP6  *        CNAME     RDP6
             *            *
             **************

 431 KO          OUTPUT CONTROL VARIABLES
                       IPRNT           5  PRINT CONTROL
```

IPLOT	0	PLOT CONTROL
QSCAL	0.	HYDROGRAPH PLOT SCALE
IPNCH	0	PUNCH COMPUTED HYDROGRAPH
IOUT	22	SAVE HYDROGRAPH ON THIS UNIT
ISAV1	1	FIRST ORDINATE PUNCHED OR SAVED
ISAV2	250	LAST ORDINATE PUNCHED OR SAVED
TIMINT	0.083	TIME INTERVAL IN HOURS

*** ***

```
433 KK      **************
            *            *
            *      RDP6  *        CNAME     DP6
            *            *
            **************
```

435 KO OUTPUT CONTROL VARIABLES

IPRNT	5	PRINT CONTROL
IPLOT	0	PLOT CONTROL
QSCAL	0.	HYDROGRAPH PLOT SCALE
IPNCH	0	PUNCH COMPUTED HYDROGRAPH
IOUT	22	SAVE HYDROGRAPH ON THIS UNIT
ISAV1	1	FIRST ORDINATE PUNCHED OR SAVED
ISAV2	250	LAST ORDINATE PUNCHED OR SAVED
TIMINT	0.083	TIME INTERVAL IN HOURS

*** ***

```
437 KK      **************
            *            *
            *       OS2  *
            *            *
            **************
```

439 KO OUTPUT CONTROL VARIABLES

IPRNT	5	PRINT CONTROL
IPLOT	0	PLOT CONTROL
QSCAL	0.	HYDROGRAPH PLOT SCALE
IPNCH	0	PUNCH COMPUTED HYDROGRAPH
IOUT	22	SAVE HYDROGRAPH ON THIS UNIT
ISAV1	1	FIRST ORDINATE PUNCHED OR SAVED
ISAV2	250	LAST ORDINATE PUNCHED OR SAVED
TIMINT	0.083	TIME INTERVAL IN HOURS

*** ***

```
455 KK      **************
            *            *
            *       OS1  *
            *            *
            **************
```

457 KO OUTPUT CONTROL VARIABLES

IPRNT	5	PRINT CONTROL
IPLOT	0	PLOT CONTROL
QSCAL	0.	HYDROGRAPH PLOT SCALE

IPNCH	0	PUNCH COMPUTED HYDROGRAPH
IOUT	22	SAVE HYDROGRAPH ON THIS UNIT
ISAV1	1	FIRST ORDINATE PUNCHED OR SAVED
ISAV2	250	LAST ORDINATE PUNCHED OR SAVED
TIMINT	0.083	TIME INTERVAL IN HOURS

*** ***
*** *** *** *** *** *** ***

```
              **************
              *            *
473 KK        *       DP9  *        CNAME    RDP9
              *            *
              **************
```

474 KO OUTPUT CONTROL VARIABLES

IPRNT	5	PRINT CONTROL
IPLOT	0	PLOT CONTROL
QSCAL	0.	HYDROGRAPH PLOT SCALE
IPNCH	0	PUNCH COMPUTED HYDROGRAPH
IOUT	22	SAVE HYDROGRAPH ON THIS UNIT
ISAV1	1	FIRST ORDINATE PUNCHED OR SAVED
ISAV2	250	LAST ORDINATE PUNCHED OR SAVED
TIMINT	0.083	TIME INTERVAL IN HOURS

*** ***
*** *** *** *** *** *** ***

```
              **************
              *            *
476 KK        *       RDP9 *        CNAME     DP9
              *            *
              **************
```

478 KO OUTPUT CONTROL VARIABLES

IPRNT	5	PRINT CONTROL
IPLOT	0	PLOT CONTROL
QSCAL	0.	HYDROGRAPH PLOT SCALE
IPNCH	0	PUNCH COMPUTED HYDROGRAPH
IOUT	22	SAVE HYDROGRAPH ON THIS UNIT
ISAV1	1	FIRST ORDINATE PUNCHED OR SAVED
ISAV2	250	LAST ORDINATE PUNCHED OR SAVED
TIMINT	0.083	TIME INTERVAL IN HOURS

RUNOFF SUMMARY
FLOW IN CUBIC FEET PER SECOND
TIME IN HOURS, AREA IN SQUARE MILES

MAXIMUM STAGE +	TIME OF OPERATION MAX STAGE	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA
+	HYDROGRAPH AT	H3	113.	6.08	23.	9.	9.	0.27
+	ROUTED TO	RH3	111.	6.33	22.	9.	9.	0.27
+	HYDROGRAPH AT	H5	206.	6.08	41.	15.	15.	0.48
+	2 COMBINED AT	DPHG3	286.	6.25	62.	24.	24.	0.75
+	ROUTED TO	RHG3	283.	6.42	62.	24.	24.	0.75
+	HYDROGRAPH AT	H1	178.	5.92	27.	10.	10.	0.32
+	ROUTED TO	RH1	177.	6.00	27.	10.	10.	0.32
+	HYDROGRAPH AT	H2	179.	6.17	41.	16.	16.	0.49
+	ROUTED TO	RH2	178.	6.25	41.	16.	16.	0.49
+	HYDROGRAPH AT	H4	109.	5.92	15.	5.	5.	0.17
+	3 COMBINED AT	DPHG1	375.	6.08	82.	31.	31.	0.98
+	HYDROGRAPH AT	H6	107.	5.92	15.	6.	6.	0.18
+	2 COMBINED AT	DPHG2	465.	6.00	97.	37.	37.	1.16
+	ROUTED TO	RDPHG2	459.	6.08	97.	37.	37.	1.16
+	HYDROGRAPH AT	HA1	140.	6.08	26.	10.	10.	0.31
+	2 COMBINED AT	DP2	599.	6.08	123.	47.	47.	1.47
+	ROUTED TO	DP2	591.	6.17	122.	46.	46.	1.47
+	ROUTED TO	RDP2	582.	6.17	121.	46.	46.	1.47
+	HYDROGRAPH AT	HB	246.	6.33	65.	25.	25.	0.78
+	3 COMBINED AT	DP3	1059.	6.33	246.	95.	95.	3.00

		ROUTED TO						
+			DP3	1059.	6.33	246.	95.	95.	3.00
		HYDROGRAPH AT						
+			HA7	139.	5.83	17.	6.	6.	0.20
		ROUTED TO						
+			RHA7	136.	5.92	17.	6.	6.	0.20
		HYDROGRAPH AT						
+			HA3	127.	6.08	25.	9.	9.	0.29
		ROUTED TO						
+			RDP7	127.	6.08	25.	9.	9.	0.29
		HYDROGRAPH AT						
+			HA6	168.	5.92	26.	10.	10.	0.31
		2 COMBINED AT						
+			DP8	287.	6.00	51.	19.	19.	0.60
		ROUTED TO						
+			RDP8	282.	6.08	51.	19.	19.	0.60
		HYDROGRAPH AT						
+			HA8	20.	5.75	2.	1.	1.	0.02
		ROUTED TO						
+			RHA8	16.	6.00	2.	1.	1.	0.02
		HYDROGRAPH AT						
+			H7	103.	5.83	13.	5.	5.	0.15
		ROUTED TO						
+			RH7	103.	5.83	13.	5.	5.	0.15
		HYDROGRAPH AT						
+			H8	147.	6.00	25.	9.	9.	0.29
		2 COMBINED AT						
+			DPHG8	237.	5.92	38.	14.	14.	0.44
		ROUTED TO						
+			RHG8	228.	6.08	37.	14.	14.	0.44
		HYDROGRAPH AT						
+			HA	191.	6.00	31.	12.	12.	0.37
		2 COMBINED AT						
+			DP1	417.	6.00	68.	26.	26.	0.81
		ROUTED TO						
+			RDP1	415.	6.08	68.	26.	26.	0.81
		HYDROGRAPH AT						
+			HA2	65.	5.92	9.	3.	3.	0.10
		2 COMBINED AT						
+			DP4	451.	6.08	76.	29.	29.	0.91
		ROUTED TO						
+			RDP4	437.	6.17	76.	29.	29.	0.91
		HYDROGRAPH AT						
+			HA4	94.	6.00	15.	6.	6.	0.18
		2 COMBINED AT						
+			DP5	506.	6.17	91.	35.	35.	1.09
		ROUTED TO						
+			RDP5	503.	6.17	90.	35.	35.	1.09

	HYDROGRAPH AT							
+		HA5	178.	6.25	44.	17.	17.	0.52
	2 COMBINED AT							
+		DP6	676.	6.17	133.	51.	51.	1.61
	ROUTED TO							
+		RDP6	663.	6.25	133.	51.	51.	1.61
	HYDROGRAPH AT							
+		OS2	58.	5.92	8.	3.	3.	0.09
	HYDROGRAPH AT							
+		OS1	195.	5.92	29.	11.	11.	0.34
	6 COMBINED AT							
+		DP9	1056.	6.25	236.	91.	91.	2.86
	ROUTED TO							
+		RDP9	1056.	6.25	236.	91.	91.	2.86

1

SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
(FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)

ISTAQ	ELEMENT	DT	PEAK	TIME TO PEAK	VOLUME	INTERPOLATED TO COMPUTATION INTERVAL DT	PEAK	TIME TO PEAK	VOLUME
		(MIN)	(CFS)	(MIN)	(IN)	(MIN)	(CFS)	(MIN)	(IN)
RH3	MANE	5.00	111.96	379.07	1.02	5.00	110.73	380.00	1.01

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1483E+02 EXCESS=0.0000E+00 OUTFLOW=0.1465E+02 BASIN STORAGE=0.2218E+00 PERCENT ERROR= -0.3

RHG3	MANE	4.69	282.95	385.15	1.01	5.00	282.82	385.00	1.01

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4095E+02 EXCESS=0.0000E+00 OUTFLOW=0.4050E+02 BASIN STORAGE=0.5459E+00 PERCENT ERROR= -0.2

RH1	MANE	2.07	178.19	359.18	1.03	5.00	177.47	360.00	1.03

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1762E+02 EXCESS=0.0000E+00 OUTFLOW=0.1750E+02 BASIN STORAGE=0.9421E-01 PERCENT ERROR= 0.1

RH2	MANE	2.27	178.71	376.01	1.02	5.00	177.94	375.00	1.02

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2686E+02 EXCESS=0.0000E+00 OUTFLOW=0.2670E+02 BASIN STORAGE=0.1535E+00 PERCENT ERROR= 0.0

RDPHG2	MANE	1.08	464.66	362.28	1.02	5.00	459.20	365.00	1.02

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.6352E+02 EXCESS=0.0000E+00 OUTFLOW=0.6332E+02 BASIN STORAGE=0.1679E+00 PERCENT ERROR= 0.0

DP2 MANE 2.26 594.68 368.51 1.02 5.00 591.30 370.00
1.02

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.8033E+02 EXCESS=0.0000E+00 OUTFLOW=0.7985E+02 BASIN STORAGE=0.4840E+00 PERCENT ERROR= 0.0

RDP2 MANE 1.63 588.71 373.39 1.01 5.00 582.12 370.00
1.01

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.7970E+02 EXCESS=0.0000E+00 OUTFLOW=0.7935E+02 BASIN STORAGE=0.3572E+00 PERCENT ERROR= 0.0

RHA7 MANE 2.12 136.83 355.48 1.03 5.00 135.87 355.00
1.03

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1103E+02 EXCESS=0.0000E+00 OUTFLOW=0.1098E+02 BASIN STORAGE=0.6338E-01 PERCENT ERROR= -0.2

RDP8 MANE 1.84 284.59 363.13 1.03 5.00 282.44 365.00
1.03

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3299E+02 EXCESS=0.0000E+00 OUTFLOW=0.3282E+02 BASIN STORAGE=0.1503E+00 PERCENT ERROR= 0.1

RHA8 MANE 3.79 17.27 357.90 1.03 5.00 15.85 360.00
1.02

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1105E+01 EXCESS=0.0000E+00 OUTFLOW=0.1102E+01 BASIN STORAGE=0.2137E-01 PERCENT ERROR= -1.7

RHG8 MANE 3.26 235.54 361.79 1.02 5.00 228.29 365.00
1.02

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2444E+02 EXCESS=0.0000E+00 OUTFLOW=0.2425E+02 BASIN STORAGE=0.2092E+00 PERCENT ERROR= -0.1

RDP1 MANE 2.39 415.33 364.65 1.02 5.00 414.70 365.00
1.02

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4458E+02 EXCESS=0.0000E+00 OUTFLOW=0.4426E+02 BASIN STORAGE=0.3104E+00 PERCENT ERROR= 0.0

RDP4 MANE 1.21 447.19 367.93 1.02 5.00 436.56 370.00
1.02

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4981E+02 EXCESS=0.0000E+00 OUTFLOW=0.4965E+02 BASIN STORAGE=0.1608E+00 PERCENT ERROR= 0.0

RDP5 MANE 1.48 504.34 372.38 1.02 5.00 503.39 370.00
1.01

HEC-RAS Version 3.1.1 May 2003
U.S. Army Corp of Engineers
Hydrologic Engineering Center
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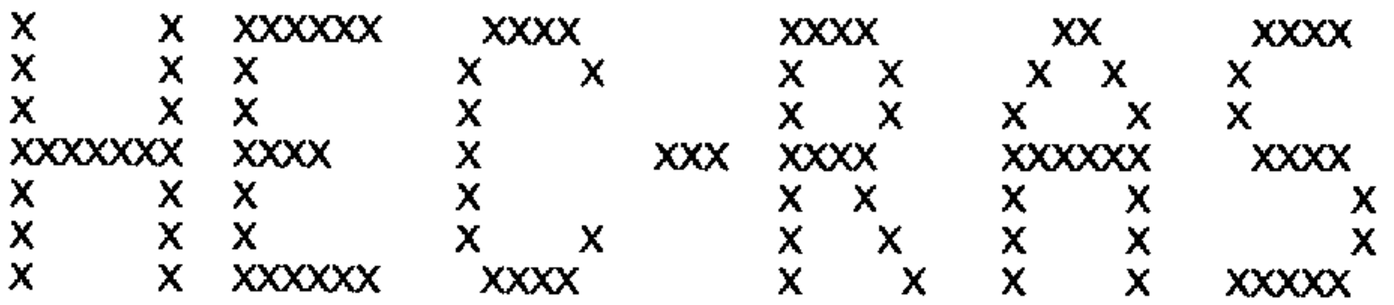
Davis, California 95616-4687
(916) 756-1104



PROJECT DATA
Project Title: Santa Fe Springs - Haegler DB. - Letter of Map Revision
Project File : 6005_0001.prj
Run Date and Time: 6/15/2004 10:22:34 AM

Project in English units

Project Description:
Santa Fe Springs LOMR for Haegler Ranch Zone A floodplain
lain

PLAN DATA

Plan Title: Plan 01
Plan File : P:\6005\0001\LOMR\6005_0001.p01

Geometry Title: 6005_0001
Geometry File : P:\6005\0001\LOMR\6005_0001.g01

Flow Title : ex-100yr
Flow File : P:\6005\0001\LOMR\6005_0001.f01

Plan Summary Information:

Number of:	Cross Sections	= 58	Mulitple Openings	=	0
	Culverts	= 0	Inline Structures	=	0
	Bridges	= 0	Lateral Structures	=	0

Computational Information

Water surface calculation tolerance	= 0.01
Critical depth calculaton tolerance	= 0.01
Maximum number of interations	= 20
Maximum difference tolerance	= 0.3
Flow tolerance factor	= 0.001

Computation Options
Critical depth computed only where necessary
Conveyance Calculation Method: At breaks in n values only
Friction Slope Method: Average Conveyance
Computational Flow Regime: Subcritical Flow

FLOW DATA

Flow Title: ex-100yr
Flow File : P:\6005\0001\LOMR\6005_0001.f01

Flow Data (cfs)

River	Reach	RS	PF 1
Trib.3 to Black	Reach No. H9	8015	130
Trib.2 to Black	Reach No. H8	12669	452
Trib.2 to Black	Reach No. H8	10137	505
Trib.1 to Black	Reach No. H7	3326	592

Boundary Conditions

River	Reach	Profile	Upstream
Downstream			
Trib.1 to Black	Reach No. H7	PF 1	Normal S = 0.014
Normal S = 0.017			
Trib.2 to Black	Reach No. H8	PF 1	Normal S = 0.013
Normal S = 0.005			
Trib.3 to Black	Reach No. H9	PF 1	Normal S = 0.014
Normal S = 0.016			

GEOMETRY DATA

Geometry Title: 6005_0001
Geometry File : P:\6005\0001\LOMR\6005_0001.g01

CROSS SECTION

RIVER: Trib.1 to Black
REACH: Reach No. H7 RS: 3326

INPUT
Description: Cross Section 45
Station Elevation Data num= 78

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6780	1.28	6780	2.96	6780	7.4	6780	38.31	6779.82
39.48	6779.82	40.1	6779.82	51.98	6779.76	57.71	6779.74	69.8	6779.72
71	6779.71	74.2	6779.7	79.75	6779.68	83.44	6779.66	87.22	6779.64
88.7	6779.63	98.89	6779.58	105.05	6779.55	110.99	6779.52	117.52	6779.5
121.66	6779.48	124.01	6779.47	132.61	6779.39	138.38	6779.36	144.59	6779.34
145.36	6779.33	1506	779.307	151.43	6779.3	152.25	6779.3	181.96	6779.19
191.41	6779.13	204.1	6779.03	208.83	6779	214.91	6778.98	220.66	6778.96
221.22	6778.95	227.64	6778.93	228.19	6778.93	231.42	6778.9	234.52	6778.88
235.57	6778.89	261.4	6778.89	266.03	6778.92	305.11	6778.96	317.9	6778.82
322.45	6778.76	323.5	6778.76	337	6778.53	337.86	6778.53	341.71	6778.53
342.24	6778.54	342.8	6778.54	343.36	6778.54	353.8	6778.27	363.1	6778
369.86	6777.01	371.7	6776.84	372.82	6776.78	373.06	6776.73	373.37	6776.69
373.61	6776.68	374.24	6776.67	374.53	6776.66	375.81	6776.66	377.23	6776.66

377.84 6776.67 378.06 6776.67 380.06 6776.68 380.18 6776.75 380.78 6776.86
388.45 6778 391.86 6778 393.07 6778.26 3986779.351 400.93 6780
401.56 6780 404.07 6780.97 419.34 6780.95

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.03	150	.03	398	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
150	398	340	260	265 .1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	6779.55	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.30	Wt. n-Val.		0.030
W.S. Elev (ft)	6779.25	Reach Len. (ft)	340.00	260.00
265.00				
Crit W.S. (ft)	6779.25	Flow Area (sq ft)		134.99
E.G. Slope (ft/ft)	0.016054	Area (sq ft)		134.99
Q Total (cfs)	592.00	Flow (cfs)		592.00
Top Width (ft)	230.75	Top Width (ft)		230.75
Vel Total (ft/s)	4.39	Avg. Vel. (ft/s)		4.39
Max Chl Dpth (ft)	2.59	Hydr. Depth (ft)		0.59
Conv. Total (cfs)	4672.3	Conv. (cfs)		4672.3
Length Wtd. (ft)	260.00	Wetted Per. (ft)		231.10
Min Ch El (ft)	6776.66	Shear (lb/sq ft)		0.59
Alpha	1.00	Stream Power (lb/ft s)		2.57
Frctn Loss (ft)	3.71	Cum Volume (acre-ft)		8.28
C & E Loss (ft)	0.03	Cum SA (acres)		10.07

Warning: The energy equation could not be balanced within the specified number of iterations. The
program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
depth, the calculated water surface came back below critical depth. This indicates that there is
not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Trib.1 to Black
REACH: Reach No. H7 RS: 3060

INPUT
Description: Cross Section 46
Station Elevation Data num= 90

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6778.93	9.72	6778.85	13.42	6778.85	19.58	6778.87	31.05	6778.86
43.89	6778.79	46.81	6778.77	48.2	6778.76	51.99	6778.72	62.83	6778.67
73.88	6778.6	75.39	6778.58	88.18	6778.48	91.54	6778.44	93.7	6778.42
115.16	6778.28	141.26	6778.03	141.36	6778.03	144.5	6778	149.65	6777.91
149.81	6777.91	164.51	6777.67	164.79	6777.66	167.39	6777.61	179.21	6777.35
188.52	6777.16	195.28	6777.08	199.26	6777	203.83	6776.91	207.79	6776.85
209.01	6776.85	240.33	6776	241.8	6776	244.92	6776	285.47	6776
285.52	6776	287.85	6776	288.8	6776	289.22	6776	290.95	6775.79
294.84	6775.47	3006	774.976	304.55	6774.54	312.07	6774	312.27	6773.99
313.7	6773.87	317.04	6773.76	317.75	6773.64	318	6773.63	318.41	6773.63
319.7	6773.62	320.16	6773.62	320.31	6773.62	326.39	6773.61	327.6	6773.66
328.85	6773.61	350.79	6773.38	352.89	6773.38	356.16	6773.36	357.24	6773.35
358.43	6773.33	359.93	6773.29	361.84	6773.27	363	6773.24	363.38	6773.24
366.63	6773.31	367.94	6773.3	369.2	6773.3	370.51	6773.3	371.3	6773.3
378.83	6774	379.01	6774	379.08	6774	381.91	6774.39	384.43	6774.62
388.19	6774.89	389.2	6774.98	3906	775.165	393.61	6776	393.73	6776
394.23	6776	399.68	6777.37	407.09	6777.4	408.18	6777.36	408.85	6777.41
409.77	6777.45	410.44	6777.46	412.91	6777.5	414.19	6777.51	415.66	6777.52

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.03	300	.03	390	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
300	390	320	310	320	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	6775.42	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.57	Wt. n-Val.		0.030
W.S. Elev (ft)	6774.85	Reach Len. (ft)	320.00	310.00
320.00				
Crit W.S. (ft)	6774.85	Flow Area (sq ft)		97.58
E.G. Slope (ft/ft)	0.012753	Area (sq ft)		97.58
Q Total (cfs)	592.00	Flow (cfs)		592.00
Top Width (ft)	86.26	Top Width (ft)		86.26
Vel Total (ft/s)	6.07	Avg. Vel. (ft/s)		6.07
Max Chl Dpth (ft)	1.61	Hydr. Depth (ft)		1.13
Conv. Total (cfs)	5242.2	Conv. (cfs)		5242.2
Length Wtd. (ft)	310.00	Wetted Per. (ft)		86.39
Min Ch El (ft)	6773.24	Shear (lb/sq ft)		0.90
Alpha	1.00	Stream Power (lb/ft s)		5.46
Frctn Loss (ft)	3.08	Cum Volume (acre-ft)		7.59

C & E Loss (ft) 0.08 Cum SA (acres) 9.12

Warning: The energy equation could not be balanced within the specified number of iterations. The
program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
depth, the calculated water surface came back below critical depth. This indicates that there is
not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

CROSS SECTION

RIVER: Trib.1 to Black
REACH: Reach No. H7 RS: 2745

INPUT
Description: Cross Section 47
Station Elevation Data num= 76

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6774.46	.66	6774.46	31.99	6774.22	32.52	6774.22	51.59	6774
53.52	6774	54.03	6774	54.29	6774	54.8	6774	59.05	6773.94
59.08	6773.94	75.94	6773.72	121.81	6773.54	131.12	6773.55	131.61	6773.56
144.22	6773.59	151.63	6773.62	153.69	6773.62	160.73	6773.63	168.11	6773.62
172.04	6773.63	213.02	6773.5	217.32	6773.49	219.37	6773.48	233.45	6773.43
238.87	6773.43	240.88	6773.43	243.72	6773.41	245.55	6773.4	251.57	6773.37
254.68	6773.38	257.19	6773.37	260.57	6772.41	260.6	6772	270	6771.26
275.33	6770.84	276.56	6770.74	279.65	6770.51	281.29	6770.38	281.74	6770.36
284.52	6770.16	284.94	6770.13	285.1	6770.12	285.62	6770.07	285.78	6770.05
285.85	6770.04	303.01	6770	316.43	6770.05	319.36	6770.06	329.19	6770
388.31	6770	390.09	6769.86	396.44	6769.79	397.02	6770	397.34	6770
397.68	6770	398.03	6770	404	6771.207	405.55	6771.52	407.23	6772
407.38	6772	408.58	6772.17	415.49	6773.23	416.05	6773.25	416.55	6773.25
423.18	6773.25	423.32	6773.29	423.64	6773.31	424.08	6773.32	425.09	6773.34
425.96	6773.36	429.69	6773.39	431.75	6773.4	433.89	6773.4	435.33	6773.4
436.45	6773.39								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.03	270	.03	404	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
270	404	310	310	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	6771.40	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.31	Wt. n-Val.		0.030
W.S. Elev (ft)	6771.09	Reach Len. (ft)	310.00	310.00
310.00				
Crit W.S. (ft)	6770.93	Flow Area (sq ft)		132.88

E.G. Slope (ft/ft)	0.007979	Area (sq ft)	132.88
Q Total (cfs)	592.00	Flow (cfs)	592.00
Top Width (ft)	131.31	Top Width (ft)	131.31
Vel Total (ft/s)	4.46	Avg. Vel. (ft/s)	4.46
Max Chl Dpth (ft)	1.30	Hydr. Depth (ft)	1.01
Conv. Total (cfs)	6627.3	Conv. (cfs)	6627.3
Length Wtd. (ft)	310.00	Wetted Per. (ft)	131.50
Min Ch El (ft)	6769.79	Shear (lb/sq ft)	0.50
Alpha	1.00	Stream Power (lb/ft s)	2.24
Frctn Loss (ft)	3.04	Cum Volume (acre-ft)	6.77
C & E Loss (ft)	0.03	Cum SA (acres)	8.35

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Trib.1 to Black
REACH: Reach No. H7 RS: 2436

INPUT
Description: Cross Section 48
Station Elevation Data num= 89

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6770.12	3.53	6770.11	3.77	6770.11	6.15	6770.1	36.86	6770.02
37.14	6770.02	42.49	6770	52.76	6769.93	61.56	6769.89	73.58	6769.83
78.91	6769.83	82.36	6769.8	96.39	6769.72	97.25	6769.71	101.38	6769.68
103.96	6769.65	106.75	6769.61	109.03	6769.58	112.96	6769.54	116.54	6769.48
121.37	6769.43	147.58	6769.09	151.78	6769.04	155.58	6769	159.74	6768.95
161.67	6768.93	163.92	6768.9	165.7	6768.88	187.74	6768.69	195.15	6768.71
202.07	6768.78	204.83	6768.75	205.55	6768.76	212.18	6768.7	213.24	6768.71
217.23	6768.69	222.22	6768.72	228.11	6768.69	233.53	6768.68	235.57	6768.69
236.82	6768.7	246.39	6768.8	247.46	6768.81	250.71	6768.82	251.16	6768.82
252.25	6768.73	252.66	6768.68	255.34	6768.21	257.14	6768	2626	767.748
292.44	6766.17	295.58	6766	295.67	6766	295.85	6765.99	298.25	6765.91
299.35	6765.82	299.69	6765.76	300.43	6765.75	300.56	6765.75	300.66	6765.75
301.23	6765.76	301.55	6765.77	311.46	6765.95	315.41	6766	318.45	6766
318.87	6766	318.89	6766	320.59	6766	321.48	6766.04	323.19	6766.15
328.3	6766.15	328.42	6766.15	328.57	6766.15	329.05	6766.15	329.12	6766.15
332.16	6766.6	333.36	6766.67	334.18	6766.75	338	6767.721	339.1	6768
340.15	6768	346.66	6769.43	353.8	6769.41	354.13	6769.51	356.4	6769.7
357.31	6769.73	361.9	6769.77	362.77	6769.78	363.37	6769.78		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.03	262	.03	338	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
262	338	350	350	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	6768.32	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.63	Wt. n-Val.		0.030
W.S. Elev (ft)	6767.69	Reach Len. (ft)	350.00	350.00
350.00				
Crit W.S. (ft)	6767.69	Flow Area (sq ft)		93.02
E.G. Slope (ft/ft)	0.012385	Area (sq ft)		93.02
Q Total (cfs)	592.00	Flow (cfs)		592.00
Top Width (ft)	74.76	Top Width (ft)		74.76
Vel Total (ft/s)	6.36	Avg. Vel. (ft/s)		6.36
Max Chl Dpth (ft)	1.94	Hydr. Depth (ft)		1.24
Conv. Total (cfs)	5319.5	Conv. (cfs)		5319.5
Length Wtd. (ft)	350.00	Wetted Per. (ft)		74.97
Min Ch El (ft)	6765.75	Shear (lb/sq ft)		0.96
Alpha	1.00	Stream Power (lb/ft s)		6.11
Frctn Loss (ft)	4.59	Cum Volume (acre-ft)		5.97
C & E Loss (ft)	0.04	Cum SA (acres)		7.61

Warning: The energy equation could not be balanced within the specified number of iterations. The
program selected the water surface that had the least amount of error between computed and
assumed values.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
depth, the calculated water surface came back below critical depth. This indicates that there is
not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Trib.1 to Black
REACH: Reach No. H7 RS: 2085

INPUT
Description: Cross Section 49
Station Elevation Data num= 78

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev

0	6764.05	7.78	6764.14	15.87	6764.21	16.43	6764.21	27.49	6764.3
27.98	6764.3	43.33	6764.41	44.37	6764.41	51.2	6764.44	59.53	6764.47
60.06	6764.48	66.58	6764.51	72.75	6764.53	83.38	6764.53	83.91	6764.53
93.88	6764.49	123.15	6764.04	123.21	6764.04	123.29	6764.04	125.16	6764
125.78	6764	126.64	6764	126.87	6764	129.82	6763.97	141.6	6763.83
153.2	6763.71	172.49	6763.54	173.98	6763.53	185.21	6763.44	192.05	6763.39
196.68	6763.36	205.67	6763.3	209.2	6763.27	210	6763.264	222.55	6763.17
226.1	6763.14	228.81	6763.12	231.28	6763.09	255.17	6762.96	258.17	6762.95
262.99	6762.91	264.38	6762.89	265.42	6762.87	265.49	6762.86	269.55	6762.81
275.97	6762.59	278.71	6762.53	284.04	6762.38	287.25	6762.26	288.73	6762.19
292.03	6762.08	294.02	6762	306.08	6760.93	308.19	6760.68	308.72	6760.63
310.35	6760.54	311.8	6760.48	312.73	6760.46	312.75	6760.46	313.2	6760.44
313.8	6760.43	318.27	6760.28	319.23	6760.25	320.1	6760.25	320.7	6760.27
321.28	6760.68	322.84	6760.69	322.86	6760.74	327	6761.836	327.62	6762
330.04	6762	330.82	6762.67	330.87	6762.95	332	6763.335	333.95	6764
335.31	6764	336.51	6764.64	341.41	6764.7				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.03	210	.03	332	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
210	332	355	355	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	6763.68	Element			
Vel Head (ft)	0.49	Wt. n-Val.		0.030	
W.S. Elev (ft)	6763.19	Reach Len. (ft)	355.00	355.00	355.00
Crit W.S. (ft)	6763.19	Flow Area (sq ft)		105.65	
E.G. Slope (ft/ft)	0.013906	Area (sq ft)		105.65	
Q Total (cfs)	592.00	Flow (cfs)		592.00	
Top Width (ft)	111.49	Top Width (ft)		111.49	
Vel Total (ft/s)	5.60	Avg. Vel. (ft/s)		5.60	
Max Chl Dpth (ft)	2.94	Hydr. Depth (ft)		0.95	
Conv. Total (cfs)	5020.2	Conv. (cfs)		5020.2	
Length Wtd. (ft)	355.00	Wetted Per. (ft)		112.43	
Min Ch El (ft)	6760.25	Shear (lb/sq ft)		0.82	
Alpha	1.00	Stream Power (lb/ft s)		4.57	
Frctn Loss (ft)	4.46	Cum Volume (acre-ft)		5.17	
C & E Loss (ft)	0.04	Cum SA (acres)		6.86	

Warning: The energy equation could not be balanced within the specified number of iterations. The
program used critical depth for the water surface and continued on with the

calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
depth, the calculated water surface came back below critical depth. This indicates that there is
not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Trib.1 to Black
REACH: Reach No. H7 RS: 1724

INPUT
Description: Cross Section 50
Station Elevation Data num= 113

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6758	20.24	6758	25.1	6758	33.78	6758	34.01	6758
35.11	6757.98	35.35	6757.98	35.46	6757.97	73.37	6757.37	78.45	6757.31
82.69	6757.27	98.65	6757.06	106.64	6756.99	107.01	6756.98	108.89	6756.99
138.62	6756.86	144.06	6756.86	145.83	6756.86	149.31	6756.85	154.78	6756.83
160.89	6756.84	162.28	6756.85	164.56	6756.85	201.99	6756.89	211.05	6756.88
216.38	6756.9	217.73	6756.9	219.42	6756.89	224.13	6756.9	225.34	6756.9
246.01	6757.05	249.71	6757.09	255.61	6757.11	263.64	6757.21	278.88	6757.19
281.96	6757.15	283.73	6757.17	288.01	6757.12	294.79	6757.18	298.32	6757.13
301.2	6757.16	304.27	6757.13	306.55	6757.14	308.32	6757.13	311.97	6757.13
318.43	6757.11	320.24	6757.09	328.46	6757.1	344.01	6756.89	345.12	6756.9
348.27	6756.88	356.32	6756.89	362.54	6756.94	371.66	6757.08	381.24	6757.14
388.98	6757.34	390.6	6757.38	392.06	6757.4	395.48	6757.47	396.76	6757.49
399.58	6757.54	401.45	6757.57	402.89	6757.58	405.53	6757.62	407.18	6757.64
407.76	6757.64	414.1	6757.69	415.68	6757.7	419.13	6757.73	429.49	6757.89
430.44	6757.9	433.31	6757.88	433.4	6757.88	433.59	6757.84	433.72	6757.82
434.05	6757.79	434.91	6757.66	437.56	6757.33	439.4	6757.2	4436	6756.684
447.78	6756	450.72	6755.66	460.87	6754.43	464.43	6754	466.46	6753.79
467.49	6753.73	467.55	6753.72	467.69	6753.72	467.93	6753.71	468.26	6753.7
468.99	6753.7	469.15	6753.7	469.3	6753.7	469.7	6753.7	470.09	6753.71
470.66	6753.73	476.65	6753.88	476.66	6753.93	476.97	6754	488.03	6755.75
489.34	6756	492	6756.695	496.73	6757.93	496.93	6757.96	497.03	6757.99
497.05	6757.99	497.06	6757.99	497.22	6757.98	497.24	6757.98	497.28	6757.98
498.08	6758	503.24	6758.06	510.44	6758.08				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.03	443	.03	492	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
443	492	335	335	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	6757.37	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.86	Wt. n-Val.		0.030
W.S. Elev (ft)	6756.51	Reach Len. (ft)	335.00	335.00
335.00				
Crit W.S. (ft)	6756.51	Flow Area (sq ft)		79.46
E.G. Slope (ft/ft)	0.011406	Area (sq ft)		79.46

Q Total (cfs)	592.00	Flow (cfs)	592.00
Top Width (ft)	47.09	Top Width (ft)	47.09
Vel Total (ft/s)	7.45	Avg. Vel. (ft/s)	7.45
Max Chl Dpth (ft)	2.81	Hydr. Depth (ft)	1.69
Conv. Total (cfs)	5543.3	Conv. (cfs)	5543.3
Length Wtd. (ft)	335.00	Wetted Per. (ft)	47.54
Min Ch El (ft)	6753.70	Shear (lb/sq ft)	1.19
Alpha	1.00	Stream Power (lb/ft s)	8.87
Frctn Loss (ft)	4.21	Cum Volume (acre-ft)	4.41
C & E Loss (ft)	0.17	Cum SA (acres)	6.22

Warning: The energy equation could not be balanced within the specified number of iterations. The
program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
depth, the calculated water surface came back below critical depth. This indicates that there is
not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Trib.1 to Black
REACH: Reach No. H7 RS: 1395

INPUT
Description: Cross Section 51
Station Elevation Data num= 108

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6752	1.26	6752	2.61	6752	3.29	6752	4.32	6752
7.8	6752	12.59	6752	12.78	6752	13.92	6752	52.72	6751.34
73.87	6751.01	84.56	6750.84	91.77	6750.73	94.72	6750.71	96.88	6750.7
98.01	6750.7	99.54	6750.69	113.79	6750.6	126.95	6750.59	131.27	6750.55
135.51	6750.57	139.84	6750.55	141.78	6750.56	143.96	6750.55	145.48	6750.55
146.61	6750.55	153.97	6750.54	161.55	6750.51	166.33	6750.49	169.47	6750.48
183.37	6750.36	191.07	6750.43	192.45	6750.41	193.01	6750.43	196.05	6750.4
196.43	6750.41	198.1	6750.4	198.3	6750.4	2106	750.255	230.65	6750
238.56	6750	246.3	6750	256.46	6750	261.43	6750	299.89	6749.71
312.44	6749.8	315.17	6749.83	316.54	6749.82	318.42	6749.83	318.86	6749.83
333.07	6749.86	333.57	6749.86	351.41	6749.99	352.87	6750	354.98	6750
358.21	6750	366.39	6750	371.31	6750	379.41	6750	379.98	6750
383.72	6749.96	384.43	6749.94	384.79	6749.93	384.88	6749.93	384.9	6749.93

384.99	6749.92	385.23	6749.88	385.25	6749.86	385.42	6749.82	385.49	6749.78
385.7	6749.74	386.47	6749.64	388.67	6749.39	396.47	6748.43	400.06	6748
401.68	6747.94	403.78	6747.88	404.42	6747.87	404.43	6747.87	404.57	6747.87
404.68	6747.87	405.27	6747.86	405.31	6747.86	405.35	6747.87	410.42	6748
414.69	6748	420.41	6748	425.31	6748	428.55	6748	436.48	6747.85
436.99	6748	444.3	6749.68	445.75	6750	446.56	6750	446.74	6750
448	6750.279	449.58	6750.63	470.07	6750.54	470.53	6750.56	471.29	6750.57
471.79	6750.57	472.63	6750.58	474.36	6750.58	475.3	6750.58	475.89	6750.58
476.17	6750.57	476.66	6750.57	476.96	6750.5				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.03	210	.03	448	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
210	448	375	375	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	6750.40	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.28	Wt. n-Val.		0.030
W.S. Elev (ft)	6750.12	Reach Len. (ft)	375.00	375.00
375.00				
Crit W.S. (ft)	6750.10	Flow Area (sq ft)		139.68
E.G. Slope (ft/ft)	0.013949	Area (sq ft)		139.68
Q Total (cfs)	592.00	Flow (cfs)		592.00
Top Width (ft)	226.07	Top Width (ft)		226.07
Vel Total (ft/s)	4.24	Avg. Vel. (ft/s)		4.24
Max Chl Dpth (ft)	2.27	Hydr. Depth (ft)		0.62
Conv. Total (cfs)	5012.5	Conv. (cfs)		5012.5
Length Wtd. (ft)	375.00	Wetted Per. (ft)		226.48
Min Ch El (ft)	6747.85	Shear (lb/sq ft)		0.54
Alpha	1.00	Stream Power (lb/ft s)		2.28
Frctn Loss (ft)	5.91	Cum Volume (acre-ft)		3.57
C & E Loss (ft)	0.00	Cum SA (acres)		5.17

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Trib.1 to Black
REACH: Reach No. H7 RS: 1015

INPUT
Description: Cross Section 52
Station Elevation Data num= 117

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6747.57	1.74	6747.55	35.8	6747.13	49.75	6746.98	52.02	6746.95
109.02	6746.12	117	6746.05	120.52	6746.01	121.37	6746	121.84	6746
122.08	6746	122.59	6746	123.49	6746	129.25	6745.92	129.83	6745.91
130.51	6745.9	152.72	6745.66	155.78	6745.62	161.04	6745.56	163.24	6745.53
170.34	6745.42	172.74	6745.39	175.45	6745.35	183.59	6745.22	186.2	6745.18
201.18	6744.95	203.57	6744.9	206.32	6744.86	212.04	6744.75	217.87	6744.67
242.52	6744.33	245	6744.29	255.66	6744.12	260.49	6744.12	261.09	6744.13
262.69	6744.11	263.05	6744.12	263.61	6744.13	265.32	6744.11	268.03	6744.1
268.45	6744.11	268.91	6744.12	283.02	6744.08	283.18	6744.08	283.3	6744.08
291.38	6744.09	291.67	6744.09	297.62	6744.13	301.38	6744.15	307.32	6744.14
313.87	6744.11	315	6744.12	326.14	6744.01	326.15	6744.01	330.08	6744
341.87	6743.98	341.88	6743.98	349.91	6743.95	349.94	6743.95	350.07	6743.95
362.83	6743.87	363.17	6743.87	372.31	6743.79	372.42	6743.79	380.71	6743.71
381.13	6743.71	388.03	6743.73	392.62	6743.67	405.91	6743.55	410.51	6743.51
411.1	6743.5	423.66	6743.42	427.7	6743.36	428.5	6743.35	435.49	6743.28
440.39	6743.23	446.65	6743.14	453.85	6743.08	454.86	6743.07	455.32	6743.06
459.59	6743.01	460	6743.007	462.43	6742.99	464.58	6742.97	465.22	6742.96
468.1	6742.89	468.77	6742.84	469.27	6742.79	470.09	6742.64	472.06	6742.46
476.14	6742.19	476.78	6742.16	479.55	6742.15	479.6	6742.15	479.73	6742.15
480.05	6742.13	480.19	6742.13	480.25	6742.13	480.4	6742.11	482.37	6742.11
484.82	6742.18	485.69	6742.22	486.18	6742.36	486.27	6742.22	486.39	6742.46
486.56	6742.51	491.26	6743.17	495.39	6744	495.93	6744	496.05	6744
496.18	6744	496.24	6744	499	6744.291	509.24	6745.37	515.05	6745.37
515.54	6745.35	524.31	6745.38						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.03	245	.03	499	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
245	499	380	380	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	6744.48	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.30	Wt. n-Val.		0.030
W.S. Elev (ft)	6744.18	Reach Len. (ft)	380.00	380.00
380.00				
Crit W.S. (ft)	6744.18	Flow Area (sq ft)		133.94
E.G. Slope (ft/ft)	0.017929	Area (sq ft)		133.94
Q Total (cfs)	592.00	Flow (cfs)		592.00
Top Width (ft)	245.77	Top Width (ft)		245.77
Vel Total (ft/s)	4.42	Avg. Vel. (ft/s)		4.42
Max Chl Dpth (ft)	2.07	Hydr. Depth (ft)		0.54
Conv. Total (cfs)	4421.2	Conv. (cfs)		4421.2
Length Wtd. (ft)	380.00	Wetted Per. (ft)		246.21
Min Ch El (ft)	6742.11	Shear (lb/sq ft)		0.61

Alpha	1.00	Stream Power (lb/ft s)	2.69
Frctn Loss (ft)	5.85	Cum Volume (acre-ft)	2.39
C & E Loss (ft)	0.02	Cum SA (acres)	3.14

Warning: The energy equation could not be balanced within the specified number of iterations. The
program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
depth, the calculated water surface came back below critical depth. This indicates that there is
not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Trib.1 to Black
REACH: Reach No. H7 RS: 630

INPUT
Description: Cross Section 53
Station Elevation Data num= 100

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6740.63	33.16	6740.04	33.24	6740.03	35.12	6740	65.32	6739.38
71.22	6739.25	97.74	6738.79	112.17	6738.52	117.51	6738.49	120.72	6738.49
121.45	6738.49	136.44	6738.57	138.87	6738.58	139.85	6738.59	146.27	6738.64
146.99	6738.64	157.24	6738.79	165.11	6738.85	166.13	6738.86	169.43	6738.89
170.5	6738.91	182	6738.98	185.77	6739.01	187.41	6739.02	191.56	6739.05
196.39	6739.07	206.57	6739.1	213.45	6739.12	216.33	6739.13	226.63	6739.17
242.33	6739.16	245.83	6739.18	250.42	6739.16	254.15	6739.16	259.13	6739.15
263.77	6739.13	265.47	6739.12	278.13	6739.09	279.97	6739.07	281.56	6739.06
283.26	6739.04	292.81	6738.97	307.23	6738.76	308.32	6738.75	316.2	6738.63
321.97	6738.53	322.42	6738.52	334.92	6738.32	335.76	6738.3	347.76	6738.1
350	6738.062	353.61	6738	355.38	6737.96	355.49	6737.95	355.73	6737.95
365	6737.709	376.53	6737.41	380.05	6737.35	395	6736.967	402.3	6736.78
406.24	6736.68	408.54	6736.62	422.35	6736.26	423.65	6736.22	432.44	6736
433.72	6735.97	435	6735.944	440.63	6735.83	449.69	6735.66	455.71	6735.56
456.55	6735.54	456.85	6735.52	458.83	6735.51	462.84	6735.46	463.1	6735.46
468.54	6735.28	469.08	6735.26	469.74	6735.21	470.13	6735.15	480.08	6735.04
480.81	6735.12	483.04	6735.14	483.6	6735.15	484.18	6735.14	489.78	6735.13
492.77	6736	492.86	6736	496.61	6736.63	498	6737.006	501.67	6738
502.01	6738	502.97	6738	507.43	6738.5	513.4	6739.34	520.58	6739.33
521.77	6739.37	523.02	6739.39	524.45	6739.41	525.06	6739.41	526.45	6739.41

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.03	395	.03	498	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
395	498	150	150	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

Element	Left OB	Channel
E.G. Elev (ft)	6737.40	
Right OB		
Vel Head (ft)	0.53	
Wt. n-Val.		0.030
W.S. Elev (ft)	6736.87	
Reach Len. (ft)	150.00	150.00
150.00		
Crit W.S. (ft)	6736.87	
Flow Area (sq ft)		101.57
E.G. Slope (ft/ft)	0.013355	
Area (sq ft)		101.57
Q Total (cfs)	592.00	
Flow (cfs)		592.00
Top Width (ft)	98.60	
Top Width (ft)		98.60
Vel Total (ft/s)	5.83	
Avg. Vel. (ft/s)		5.83
Max Chl Dpth (ft)	1.83	
Hydr. Depth (ft)		1.03
Conv. Total (cfs)	5122.7	
Conv. (cfs)		5122.7
Length Wtd. (ft)	150.00	
Wetted Per. (ft)		98.84
Min Ch El (ft)	6735.04	
Shear (lb/sq ft)		0.86
Alpha	1.00	
Stream Power (lb/ft s)		4.99
Frctn Loss (ft)	2.08	
Cum Volume (acre-ft)		1.37
C & E Loss (ft)	0.04	
Cum SA (acres)		1.63

Warning: The energy equation could not be balanced within the specified number of iterations. The
program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
depth, the calculated water surface came back below critical depth. This indicates that there is
not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Trib.1 to Black
REACH: Reach No. H7 RS: 480

INPUT
Description: Cross Section 54
Station Elevation Data num= 104

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6735.12	5.18	6735.69	7.54	6736	10.11	6736.95	14.29	6738
15.99	6738.89	18.24	6740	26.76	6740	27.69	6740.06	27.73	6740.06
27.9	6740	28.13	6739.9	28.75	6739.7	31.58	6738.8	32.32	6738.62
33.88	6738	34.68	6737.02	36.1	6736	39.12	6736	46.13	6736
47.02	6736	50.41	6736.96	52.57	6736.96	53.97	6736.86	55.98	6736.89
56.81	6736.83	57.24	6736	58.61	6736	59.57	6736	80.16	6735.64
95.8	6735.48	99.51	6735.45	101.69	6735.41	111.12	6735.32	120.21	6735.25

126.24	6735.17	128.32	6735.14	131.73	6735.09	134.19	6735.04	136.98	6735.01
139.69	6734.97	151.27	6734.85	154.06	6734.84	156.04	6734.81	158.12	6734.78
160.81	6734.76	162.48	6734.74	170	6734.59	199.5	6734	200.32	6734
205.81	6734	207.2	6734	207.64	6734	209.11	6734	210.81	6734
211.51	6734	246.86	6733.58	252.72	6733.54	257.41	6733.51	260.49	6733.5
271.57	6733.43	274.33	6733.41	280.59	6733.35	289.06	6733.33	289.44	6733.33
290.09	6733.31	291.66	6733.26	292.17	6733.24	296.47	6733.14	296.99	6733.13
301.63	6733.04	303.24	6733.05	304.34	6733.05	305.87	6733.03	309	6733.02
310.03	6733.02	310.51	6733.02	310.9	6733.01	311.69	6732.99	312.27	6732.97
313.17	6732.95	314.09	6732.92	314.11	6733.22	315.35	6733.29	315.5	6733.33
319.66	6734	319.78	6734	320.17	6734	320.62	6734	323	6734.617
324.44	6734.99	330.07	6736	330.45	6736	330.66	6736	336.26	6736.88
338.06	6737.28	338.55	6737.28	347.54	6737.23	347.71	6737.24	348.76	6737.27
349.66	6737.28	351.28	6737.29	353.14	6737.3	354.43	6737.3		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.03	170	.03	323	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
170	323	95	150	150	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	6734.86	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.41	Wt. n-Val.		0.030
W.S. Elev (ft)	6734.45	Reach Len. (ft)	95.00	150.00
150.00				
Crit W.S. (ft)	6734.45	Flow Area (sq ft)		115.89
E.G. Slope (ft/ft)	0.014447	Area (sq ft)		115.89
Q Total (cfs)	592.00	Flow (cfs)		592.00
Top Width (ft)	145.40	Top Width (ft)		145.40
Vel Total (ft/s)	5.11	Avg. Vel. (ft/s)		5.11
Max Chl Dpth (ft)	1.53	Hydr. Depth (ft)		0.80
Conv. Total (cfs)	4925.3	Conv. (cfs)		4925.3
Length Wtd. (ft)	150.00	Wetted Per. (ft)		145.81
Min Ch El (ft)	6732.92	Shear (lb/sq ft)		0.72
Alpha	1.00	Stream Power (lb/ft s)		3.66
Frctn Loss (ft)	1.46	Cum Volume (acre-ft)		0.99
C & E Loss (ft)	0.06	Cum SA (acres)		1.21

Warning: The energy equation could not be balanced within the specified number of iterations. The
program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance)

is less than
0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
depth, the calculated water surface came back below critical depth. This indicates that there is
not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Trib.1 to Black
REACH: Reach No. H7 RS: 330

INPUT
Description: Cross Section 55
Station Elevation Data num= 76

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6734	206	732.917	28.61	6732.45	32.75	6732.36	34.88	6732.33
35.92	6732.28	38.74	6732.28	40.43	6732.21	47.36	6732.23	47.8	6732.22
65.43	6732.16	65.95	6732.14	81.79	6732	84.29	6732	85.61	6732
89.6	6732	104.09	6732	113.81	6732	113.9	6732	113.99	6732
115.95	6732	116.13	6732	118.96	6732	119.61	6732	127.4	6732
130.78	6732	131.79	6732	136.08	6732	137.58	6732	139.07	6732
141.82	6732	142.29	6732	143.82	6732	165.13	6732	176.19	6731.83
178.11	6731.83	179.97	6731.82	181.68	6731.81	190.56	6731.74	192.06	6731.73
192.24	6731.73	193.22	6731.72	193.91	6731.71	195	6731.69	196.97	6731.66
197.36	6731.65	197.81	6731.64	198.15	6731.64	199.34	6731.62	201.51	6731.58
206.61	6731.44	210.38	6731.39	211.51	6731.38	212.28	6731.36	215.54	6731.26
216.25	6731.25	218.74	6731.21	221.58	6731.16	222.38	6731.52	222.8	6731.52
222.9	6731.52	222.95	6731.51	224.73	6731.98	224.78	6732	227.37	6732
229.08	6732	232.46	6732.83	233	6732.92	233.06	6732.93	237.13	6734
237.35	6734	243.54	6735.49	248.15	6735.48	249.06	6735.49	253.05	6735.51
254.55	6735.51								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.03	20	.03	233	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
20	233	227	160	160	.1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	6732.96	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.20	Wt. n-Val.		0.030
W.S. Elev (ft)	6732.76	Reach Len. (ft)	227.00	160.00
160.00				
Crit W.S. (ft)	6732.58	Flow Area (sq ft)		166.65
E.G. Slope (ft/ft)	0.006984	Area (sq ft)		166.65
Q Total (cfs)	592.00	Flow (cfs)		592.00
Top Width (ft)	209.35	Top Width (ft)		209.35

Vel Total (ft/s)	3.55	Avg. Vel. (ft/s)	3.55
Max Chl Dpth (ft)	1.60	Hydr. Depth (ft)	0.80
Conv. Total (cfs)	7083.9	Conv. (cfs)	7083.9
Length Wtd. (ft)	160.00	Wetted Per. (ft)	209.61
Min Ch El (ft)	6731.16	Shear (lb/sq ft)	0.35
Alpha	1.00	Stream Power (lb/ft s)	1.23
Frctn Loss (ft)	1.54	Cum Volume (acre-ft)	0.50
C & E Loss (ft)	0.03	Cum SA (acres)	0.60

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Trib.1 to Black
REACH: Reach No. H7 RS: 169

INPUT
Description: Cross Section 56
Station Elevation Data num= 41

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6731.42	26	6731.124	9.59	6730	9.66	6730	10.52	6730
11.83	6730	15.82	6730	19.15	6730	31.27	6730	32.83	6730
33.35	6729.98	34.91	6730	38.49	6730	39.18	6730	39.85	6730
47.53	6729.94	53.19	6730	55.55	6730	63.61	6730	68.75	6730
73.47	6730	74.71	6730	76.08	6730	76.55	6730	76.56	6730
79.35	6729.96	80.59	6730	89.02	6730	101.07	6730	111.83	6730
120.61	6730	123	6731.075	123.41	6731.26	125.01	6731.75	125.79	6732
133.05	6733.73	134.13	6734	135.73	6734	136.06	6734	137.31	6734.3
148.78	6734.285								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.03	2	.03	123	.03

Bank Sta: Left	Right	Coeff Contr.	Expan.
2	123	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	6731.40	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.47	Wt. n-Val.		0.030
W.S. Elev (ft)	6730.93	Reach Len. (ft)		

Crit W.S. (ft)	6730.93	Flow Area (sq ft)	108.00
E.G. Slope (ft/ft)	0.014041	Area (sq ft)	108.00
Q Total (cfs)	592.00	Flow (cfs)	592.00
Top Width (ft)	119.40	Top Width (ft)	119.40
Vel Total (ft/s)	5.48	Avg. Vel. (ft/s)	5.48
Max Chl Dpth (ft)	0.99	Hydr. Depth (ft)	0.90
Conv. Total (cfs)	4996.0	Conv. (cfs)	4996.0
Length Wtd. (ft)		Wetted Per. (ft)	119.67
Min Ch El (ft)	6729.94	Shear (lb/sq ft)	0.79
Alpha	1.00	Stream Power (lb/ft s)	4.34
Frctn Loss (ft)		Cum Volume (acre-ft)	
C & E Loss (ft)		Cum SA (acres)	

Warning: Slope too steep for slope area to converge during supercritical flow calculations (normal depth is
below critical depth). Water surface set to critical depth.

CROSS SECTION

RIVER: Trib.2 to Black
REACH: Reach No. H8 RS: 12669

INPUT
Description: Station 122+55 Cross Section No. 1
Station Elevation Data num= 60

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6772.61	22.61	6772	22.96	6772	26.44	6772	27.42	6772
27.67	6772	28.16	6771.99	137.98	6770	138.68	6770	141.19	6770
142.24	6770	148.75	6770	150.91	6770	154.98	6770	1736769.082	
174.21	6769.02	187.82	6768.37	189.46	6768.29	195.66	6768	195.79	6768
196.13	6768	196.16	6768	197.88	6768	203.26	6768	203.71	6768
204.17	6768	204.72	6768	205.14	6768	212.3	6767.85	250.99	6767.81
251.81	6767.56	256.23	6767.63	261.25	6767.67	300.27	6768	300.76	6768
301.82	6768	304.85	6768	305.36	6768	307.13	6768	323.3	6768
327.49	6768	332.35	6768.13	333.33	6768.16	334.19	6768.18	357.17	6768.82
360.59	6768.89	365.66	6769.02	369.03	6769.1	3706769.123		375.54	6769.25
388.56	6769.48	392.13	6769.55	413.18	6770	414.19	6770	414.74	6770
414.79	6770	422.64	6770.24	423.36	6770.24	438.11	6770	452.87	6770

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.03	173	.03	370	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
173	370	110	183	470	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	6769.10	Element	Left OB	Channel
Right OB Vel Head (ft)	0.10	Wt. n-Val.		0.030
W.S. Elev (ft)	6769.00	Reach Len. (ft)	110.00	183.00
470.00 Crit W.S. (ft)		Flow Area (sq ft)		178.06
E.G. Slope (ft/ft)	0.002871	Area (sq ft)		178.06
Q Total (cfs)	452.00	Flow (cfs)		452.00
Top Width (ft)	190.25	Top Width (ft)		190.25
Vel Total (ft/s)	2.54	Avg. Vel. (ft/s)		2.54
Max Chl Dpth (ft)	1.44	Hydr. Depth (ft)		0.94
Conv. Total (cfs)	8436.1	Conv. (cfs)		8436.1
Length Wtd. (ft)	183.00	Wetted Per. (ft)		190.33
Min Ch El (ft)	6767.56	Shear (lb/sq ft)		0.17
Alpha	1.00	Stream Power (lb/ft s)		0.43
Frctn Loss (ft)	1.10	Cum Volume (acre-ft)		24.80
C & E Loss (ft)	0.01	Cum SA (acres)		45.48

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Trib.2 to Black
REACH: Reach No. H8 RS: 12483

INPUT
Description: Cross Section 2
Station Elevation Data num= 39

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6772.47	23.87	6772.08	26.17	6772.01	28.29	6772	29.44	6772
29.6	6772	97.28	6770.72	110	6770.48	135.67	6770	135.88	6770
169.83	6769.65	184.92	6769.5	209.33	6769.24	246.45	6768.87	304.15	6768.28
326.35	6768.05	329.05	6768	329.68	6768	332.42	6768	335.25	6768
335.9	6768	350	6767.92	351.38	6767.92	365.67	6767.84	428.64	6767.51
491.5	6767.2	596.37	6767.43	696.04	6767.65	696.46	6767.65	696.88	6767.65
726.71	6767.59	739.69	6767.57	800	6767.83	815	6767.90	827.22	6767.96
827.92	6768	828.05	6768	828.32	6768	828.59	6768		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val

0	.03	350	.03	815	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
350	815	240	160	60 .1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	6767.99	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.17	Wt. n-Val.		0.030
W.S. Elev (ft)	6767.83	Reach Len. (ft)	240.00	160.00
60.00				
Crit W.S. (ft)	6767.83	Flow Area (sq ft)		137.93
E.G. Slope (ft/ft)	0.019854	Area (sq ft)		137.93
Q Total (cfs)	452.00	Flow (cfs)		452.00
Top Width (ft)	428.67	Top Width (ft)		428.67
Vel Total (ft/s)	3.28	Avg. Vel. (ft/s)		3.28
Max Chl Dpth (ft)	0.63	Hydr. Depth (ft)		0.32
Conv. Total (cfs)	3207.9	Conv. (cfs)		3207.9
Length Wtd. (ft)	160.00	Wetted Per. (ft)		428.68
Min Ch El (ft)	6767.20	Shear (lb/sq ft)		0.40
Alpha	1.00	Stream Power (lb/ft s)		1.31
Frctn Loss (ft)	2.21	Cum Volume (acre-ft)		24.14
C & E Loss (ft)	0.01	Cum SA (acres)		44.18

Warning: The energy equation could not be balanced within the specified number of iterations. The
program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
depth, the calculated water surface came back below critical depth. This indicates that there is
not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Trib.2 to Black
REACH: Reach No. H8 RS: 12319

INPUT
Description: Cross Section 3
Station Elevation Data num= 88

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6769.41	2.26	6769.36	20.96	6769.09	26.08	6769.08	28.45	6769.06
31.19	6769.05	33.18	6769.05	34.26	6769.04	35.82	6769.02	50.81	6768.97
61.29	6768.78	62.82	6768.76	65.23	6768.73	66.12	6768.71	69.53	6768.67
81.53	6768.5	86.98	6768.4	90.21	6768.35	93.06	6768.33	95.7	6768.29
132.46	6768	132.9	6768	138.72	6767.88	144.78	6767.79	146.34	6767.78
149.46	6767.72	150.99	6767.71	151.77	6767.7	155.9	6767.62	156.37	6767.61
170.37	6767.3	237.08	6766	237.43	6766	238.33	6766	270.92	6764.62
275	6764.449	285.71	6764	286.28	6764	286.99	6763.95	288.29	6763.89
289.12	6763.81	291.93	6763.71	297.14	6763.6	304.6	6763.54	315.86	6763.53
341.64	6763.85	344.34	6763.87	348.88	6763.88	414.73	6763.98	437.98	6763.93
473.95	6763.8	500.76	6763.89	503.19	6763.91	503.23	6763.91	503.37	6763.91
505.85	6763.94	566.1	6763.95	566.38	6763.95	566.43	6763.94	566.49	6763.94
566.52	6763.94	630.62	6763.96	631.59	6763.96	633.49	6763.97	636.71	6764
640.59	6764.31	642	6764.535	642.28	6764.58	668.79	6764.57	693.11	6764.96
697.09	6765.01	702.04	6765.09	704.42	6765.14	708.9	6765.23	713.24	6765.33
714.62	6765.36	718.21	6765.47	723.82	6765.6	724.78	6765.62	730.93	6765.68
731.47	6765.67	745.17	6765.67	764.13	6766	768.47	6766.23	788.15	6767.48
801.33	6767.45	820.7	6767.42	886.37	6767.61				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.03	275	.03	642	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
275	642	250	280	220 .1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	6764.45	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.13	Wt. n-Val.		0.030
W.S. Elev (ft)	6764.33	Reach Len. (ft)	250.00	280.00
220.00				
Crit W.S. (ft)	6764.25	Flow Area (sq ft)		157.80
E.G. Slope (ft/ft)	0.010147	Area (sq ft)		157.80
Q Total (cfs)	452.00	Flow (cfs)		452.00
Top Width (ft)	362.71	Top Width (ft)		362.71
Vel Total (ft/s)	2.86	Avg. Vel. (ft/s)		2.86
Max Chl Dpth (ft)	0.79	Hydr. Depth (ft)		0.44
Conv. Total (cfs)	4487.1	Conv. (cfs)		4487.1
Length Wtd. (ft)	280.00	Wetted Per. (ft)		362.75
Min Ch El (ft)	6763.53	Shear (lb/sq ft)		0.28
Alpha	1.00	Stream Power (lb/ft s)		0.79
Frctn Loss (ft)	3.01	Cum Volume (acre-ft)		23.60
C & E Loss (ft)	0.01	Cum SA (acres)		42.73

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Trib.2 to Black
REACH: Reach No. H8 RS: 12036

INPUT
Description: Cross Section 4
Station Elevation Data num= 106

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6763.14	2.75	6763.12	6.25	6763.1	10.06	6763.1	13.94	6763.09
19.48	6763.07	30.15	6763.01	33.27	6763.01	38.48	6762.98	39.54	6762.98
50.89	6762.97	54.21	6762.99	64.73	6763.02	66.26	6763.02	71.56	6763
80.55	6763	82.73	6763.01	88.8	6763.04	90.48	6763.05	98.93	6763.15
100.85	6763.16	109.33	6763.22	111.87	6763.24	116.53	6763.27	130.65	6763.35
132.38	6763.37	135.35	6763.39	145.47	6763.5	152.69	6763.57	157.94	6763.63
166.17	6763.68	168.17	6763.71	177.76	6763.75	193.44	6763.89	194.37	6763.9
202.29	6763.95	221.84	6763.79	224.71	6763.77	227.4	6763.74	248.87	6763.57
250.44	6763.56	251.22	6763.55	252.83	6763.53	254.85	6763.51	258.41	6763.5
263.97	6763.45	268.93	6763.37	269.65	6763.36	277.9	6763.2	279.02	6763.18
289.13	6762.95	290.96	6762.91	296.13	6762.83	309.08	6762.56	310.55	6762.53
311.88	6762.5	313.15	6762.48	319.62	6762.36	320.51	6762.34	321.45	6762.34
338.26	6762	369.8	6762	375.23	6761.63	375.44	6761.62	377.74	6761.48
379.74	6761.48	383.76	6761.22	385	6761.229	385.15	6761.23	385.83	6761.25
386.85	6761.3	393.68	6760.99	395.12	6760.93	402.58	6760.65	403.35	6760.62
404.56	6760.57	407.76	6760.49	419.59	6760.48	422.15	6760.46	437.14	6760.59
501.24	6760.45	503.05	6760.43	503.77	6760.42	509.1	6760.37	511.31	6760.35
516.41	6760.3	518.89	6760.28	532.01	6760.24	552.43	6760.74	559.34	6761.23
560	6761.238	561.9	6761.26	562.99	6761.33	566.08	6761.48	569.82	6761.64
571.28	6761.72	578.81	6762	634.62	6762	693.77	6763.01	714.38	6763.34
722.03	6763.47	751.5	6764	754.69	6764	829.62	6764.85	844.45	6764.96
851.38	6764.97								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.03	385	.03	560	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
385	560	260	300	360	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	6761.44	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.25	Wt. n-Val.		0.030
W.S. Elev (ft)	6761.19	Reach Len. (ft)	260.00	300.00
360.00				
Crit W.S. (ft)	6761.12	Flow Area (sq ft)		112.48
E.G. Slope (ft/ft)	0.011373	Area (sq ft)		112.48
Q Total (cfs)	452.00	Flow (cfs)		452.00
Top Width (ft)	169.47	Top Width (ft)		169.47
Vel Total (ft/s)	4.02	Avg. Vel. (ft/s)		4.02

Max Chl Dpth (ft)	0.95	Hydr. Depth (ft)	0.66
Conv. Total (cfs)	4238.4	Conv. (cfs)	4238.4
Length Wtd. (ft)	300.00	Wetted Per. (ft)	169.50
Min Ch El (ft)	6760.24	Shear (lb/sq ft)	0.47
Alpha	1.00	Stream Power (lb/ft s)	1.89
Frctn Loss (ft)	3.90	Cum Volume (acre-ft)	22.73
C & E Loss (ft)	0.03	Cum SA (acres)	41.01

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Trib.2 to Black
REACH: Reach No. H8 RS: 11728

INPUT
Description: Cross Section 5
Station Elevation Data num= 92

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6761.88	6.05	6761.67	6.36	6761.67	15.31	6761.4	38.54	6760.65
42.36	6760.56	47.17	6760.42	52.04	6760.35	68.9	6760.06	74.19	6760
78.37	6759.95	78.67	6759.95	78.83	6759.95	81.32	6759.91	82.11	6759.9
108.92	6759.63	112.65	6759.61	113.11	6759.6	134.33	6759.4	142.03	6759.33
144.76	6759.29	156.87	6759.26	160.56	6759.2	161.84	6759.2	165.05	6759.14
168.29	6759.12	169.8	6759.09	172.27	6759.07	177.39	6759.04	179.48	6759.01
184.65	6758.97	187.33	6758.93	195.82	6758.82	204.05	6758.74	205.99	6758.72
213.18	6758.65	215.48	6758.64	216.19	6758.63	237.09	6758	261.56	6758
278	6757.474	298.68	6756.81	301.81	6756.76	304.63	6756.75	306.95	6756.72
308.25	6756.72	316.73	6756.59	320.86	6756.55	323.42	6756.53	350.39	6756.76
353.84	6756.8	360.56	6756.75	363.26	6756.74	367.37	6756.72	371.17	6756.7
373.13	6756.69	463.6	6756.88	507.84	6757.17	509.48	6757.19	510.32	6757.19
512.26	6757.22	515.19	6757.22	517.91	6757.24	521.21	6757.25	523.25	6757.26
540.48	6757.27	541.56	6757.26	542.84	6757.27	547.82	6757.25	555.01	6757.25
560.65	6757.24	563.95	6757.24	573.01	6757.23	581.99	6757.26	590.69	6757.24
596.66	6757.22	660.83	6757.21	676	6757.435	679.02	6757.48	681.63	6757.51
712.51	6757.96	715.08	6758	715.13	6758	785.32	6759.17	792.52	6759.28
837.97	6760	845.61	6760	863.6	6760.37	867.86	6760.48	871.26	6760.54
885	6760.88	892.53	6761.06						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.03	278	.03	676	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
278	676	275	290	310	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	6757.52	Element	Left OB	Channel
Right OB				

Vel Head (ft)	0.15	Wt. n-Val.		0.030
W.S. Elev (ft)	6757.37	Reach Len. (ft)	275.00	290.00
310.00				
Crit W.S. (ft)	6757.33	Flow Area (sq ft)		144.41
E.G. Slope (ft/ft)	0.015017	Area (sq ft)		144.41
Q Total (cfs)	452.00	Flow (cfs)		452.00
Top Width (ft)	389.95	Top Width (ft)		389.95
Vel Total (ft/s)	3.13	Avg. Vel. (ft/s)		3.13
Max Chl Dpth (ft)	0.84	Hydr. Depth (ft)		0.37
Conv. Total (cfs)	3688.5	Conv. (cfs)		3688.5
Length Wtd. (ft)	290.00	Wetted Per. (ft)		389.97
Min Ch El (ft)	6756.53	Shear (lb/sq ft)		0.35
Alpha	1.00	Stream Power (lb/ft s)		1.09
Frctn Loss (ft)	4.62	Cum Volume (acre-ft)		21.84
C & E Loss (ft)	0.00	Cum SA (acres)		39.09

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Trib.2 to Black
REACH: Reach No. H8 RS: 11439

INPUT
Description: Cross Section 6
Station Elevation Data num= 92

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6755.92	1.33	6755.91	2.31	6755.89	4.71	6755.85	8.76	6755.81
9.68	6755.79	10.22	6755.78	28.51	6755.56	46.6	6755.32	57.99	6755.11
66.87	6755	69.97	6754.93	73.81	6754.86	79.28	6754.78	108.13	6754.14
116.32	6754	122.84	6754	165.23	6753.61	182.76	6753.5	187.67	6753.47
198.69	6753.41	199.07	6753.41	220.82	6753.3	227.24	6753.29	258.62	6753.22
277.04	6753.08	279.38	6753.06	282.05	6753.04	283.91	6753.02	290.16	6752.97
292.08	6752.95	293.25	6752.94	305	6752.857	316.05	6752.78	331.09	6752.62
335.41	6752.59	338.4	6752.57	347.72	6752.51	350.93	6752.49	353.53	6752.48
354.6	6752.47	360.2	6752.44	363.66	6752.43	378.26	6752.42	380.07	6752.41
396.56	6752.42	403.05	6752.41	441	6752.42	459.01	6752.1	461.39	6752
548.65	6752.12	557.31	6752.19	557.91	6752.19	564.33	6752.26	565.68	6752.26
580.41	6752.37	581.16	6752.36	586.11	6752.4	596.16	6752.44	596.6	6752.44
604.95	6752.45	612.26	6752.49	613.35	6752.5	614.71	6752.5	618.71	6752.53
665.77	6752.66	673.7	6752.64	677.22	6752.64	677.91	6752.64	681.19	6752.63
685.43	6752.63	697.85	6752.67	716.05	6752.72	718.33	6752.74	721.12	6752.75
745.47	6752.72	752.63	6752.67	762.04	6752.72	790.81	6752.73	798	6752.847
865.31	6753.94	866.93	6753.97	868.81	6754	868.98	6754	955.56	6755.04
959.83	6755.08	968.7	6755.16	978.38	6755.23	1031.9	6755.99	1037.46	6756

1075.94 6756.59 1082.88 6756.7

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.03	305	.03	798	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
305	798	268	270	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	6752.90	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.14	Wt. n-Val.		0.030
W.S. Elev (ft)	6752.76	Reach Len. (ft)	268.00	270.00
300.00				
Crit W.S. (ft)	6752.74	Flow Area (sq ft)		150.66
E.G. Slope (ft/ft)	0.016944	Area (sq ft)		150.66
Q Total (cfs)	452.00	Flow (cfs)		452.00
Top Width (ft)	474.63	Top Width (ft)		474.63
Vel Total (ft/s)	3.00	Avg. Vel. (ft/s)		3.00
Max Chl Dpth (ft)	0.76	Hydr. Depth (ft)		0.32
Conv. Total (cfs)	3472.4	Conv. (cfs)		3472.4
Length Wtd. (ft)	270.00	Wetted Per. (ft)		474.63
Min Ch El (ft)	6752.00	Shear (lb/sq ft)		0.34
Alpha	1.00	Stream Power (lb/ft s)		1.01
Frctn Loss (ft)	4.84	Cum Volume (acre-ft)		20.86
C & E Loss (ft)	0.01	Cum SA (acres)		36.21

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Trib.2 to Black
REACH: Reach No. H8 RS: 11164

INPUT
Description: Cross Section 7
Station Elevation Data num= 117

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6756	13.7	6756	35.13	6755.57	57.99	6755.12	110.39	6754.06
114.28	6754	114.54	6754	114.57	6754	134.13	6753.75	136.15	6753.71
141.35	6753.62	160.65	6753.33	167.95	6753.21	188.03	6752.89	192.24	6752.83
195.14	6752.79	200.35	6752.71	204.76	6752.65	208.18	6752.59	214.02	6752.52

226.26	6752.38	239.37	6752.21	255.22	6752	255.72	6752	262.04	6751.88
262.46	6751.86	279.59	6751.5	281.09	6751.47	299.48	6751.14	307.69	6750.97
314.82	6750.82	348	6750	351.22	6749.87	351.61	6749.85	352.16	6749.83
359.17	6749.51	363.95	6749.28	400	6748.037	401.07	6748	403.01	6747.96
403.05	6747.96	403.92	6747.96	403.96	6747.96	415.51	6747.8	433.92	6747.6
445.13	6747.52	449.51	6747.5	453.67	6747.46	460.62	6747.4	465.07	6747.37
469.93	6747.37	485.42	6748	547.15	6747.81	585.33	6747.37	595.44	6747.38
619.1	6747.4	620.02	6747.4	623.11	6747.38	632.35	6747.43	659.94	6747.39
662.05	6747.37	668.86	6747.39	672.4	6747.34	704.64	6747.17	708.23	6747.17
744.86	6747.38	747.74	6747.39	751.76	6747.43	755.92	6747.45	768.93	6747.59
774.99	6747.65	778.97	6747.7	804.71	6747.89	823.53	6748	824.62	6748.01
825	6748.011	827.87	6748.02	856.23	6748.14	922.43	6748.08	927.15	6748.15
942.56	6748.36	943.46	6748.37	959.26	6748.6	963.06	6748.64	977.45	6748.83
987.61	6748.94	1019.02	6749.26	1023.44	6749.27	1034.15	6749.39	1045.58	6749.55
1051.6	6749.6	1060.19	6749.69	1073.25	6749.86	1080.84	6749.96	1084.04	6750
1126.03	6750.35	1153.54	6750.54	1157.41	6750.59	1159.03	6750.6	1162.04	6750.63
1163.73	6750.65	1170.91	6750.73	1172.47	6750.75	1180.71	6750.85	1199.15	6750.98
1203.69	6751.03	1205.35	6751.04	1210.34	6751.09	1219.81	6751.19	1232.47	6751.3
1233.75	6751.33	1246.03	6751.41	1252.53	6751.51	1256.47	6751.55	1278.63	6751.72
1306.95	6752	1330.09	6752.1						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.03	400	.03	825	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
400	825	310	280	210	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	6748.05	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.20	Wt. n-Val.		0.030
W.S. Elev (ft)	6747.86	Reach Len. (ft)	310.00	280.00
210.00				
Crit W.S. (ft)	6747.86	Flow Area (sq ft)		127.39
E.G. Slope (ft/ft)	0.018972	Area (sq ft)		127.39
Q Total (cfs)	452.00	Flow (cfs)		452.00
Top Width (ft)	339.62	Top Width (ft)		339.62
Vel Total (ft/s)	3.55	Avg. Vel. (ft/s)		3.55
Max Chl Dpth (ft)	0.69	Hydr. Depth (ft)		0.38
Conv. Total (cfs)	3281.6	Conv. (cfs)		3281.6
Length Wtd. (ft)	280.00	Wetted Per. (ft)		339.64
Min Ch El (ft)	6747.17	Shear (lb/sq ft)		0.44
Alpha	1.00	Stream Power (lb/ft s)		1.58
Frctn Loss (ft)	3.88	Cum Volume (acre-ft)		20.00
C & E Loss (ft)	0.02	Cum SA (acres)		33.69

Warning: The energy equation could not be balanced within the specified number of iterations. The
program selected the water surface that had the least amount of error between computed and
assumed values.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
depth, the calculated water surface came back below critical depth. This indicates that there is
not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Trib.2 to Black
REACH: Reach No. H8 RS: 10878

INPUT
Description: Cross Section 8
Station Elevation Data num= 115

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6747.96	30.7	6747.85	34.6	6747.84	36.1	6747.84	40.68	6747.82
44.95	6747.8	46.71	6747.78	65.64	6747.44	67.95	6747.39	70.64	6747.36
73.48	6747.32	88.8	6746.96	92.82	6746.9	106.78	6746.55	113.61	6746.43
120.9	6746.25	121.96	6746.22	125.6	6746.15	131.97	6746	198.92	6744.73
202.56	6744.64	205.51	6744.6	212.77	6744.43	213.64	6744.41	218.6	6744.31
221.49	6744.25	224.15	6744.21	226.26	6744.18	235.05	6744	280	6743.788
309.71	6743.65	311.58	6743.63	317.04	6743.59	319.18	6743.56	320.35	6743.54
323.53	6743.47	329.74	6743.35	343.76	6743.26	344.05	6743.26	345.29	6743.25
352.1	6743.15	366.78	6743.44	369	6743.47	380.33	6743.6	381.68	6743.59
384.61	6743.61	386.97	6743.6	389.31	6743.61	413.87	6743.48	422.45	6743.39
424.48	6743.38	426.18	6743.37	432.77	6743.3	442.34	6743.24	449.31	6743.21
451.08	6743.2	461.43	6743.12	480.95	6742.91	489.76	6742.93	514.99	6742.99
525.31	6743.03	527.33	6743.03	528.95	6743.03	530.9	6743.04	550.72	6743.05
579.08	6743.31	593.49	6743.34	595.38	6743.38	596.83	6743.37	601.78	6743.44
602.38	6743.44	614.19	6743.61	614.62	6743.61	622.49	6743.74	626.25	6743.78
628.34	6743.81	630	6743.826	641.89	6743.94	642.31	6743.95	642.6	6743.95
645.79	6743.97	655.31	6744	655.32	6744	664.43	6743.97	677.07	6743.99
684.05	6744	820	6744.16	837.07	6744.18	857	6744.49	870.65	6744.68
874.28	6744.73	881.72	6744.84	887.26	6744.92	910.56	6745.23	928.36	6745.51
931.24	6745.54	935.55	6745.6	944.39	6745.73	945.76	6745.75	962.66	6746
969.01	6746.1	990.18	6746.42	991	6746.43	1002.4	6746.58	1008.04	6746.62
1017.49	6746.74	1029.03	6746.87	1031.55	6746.88	1038.65	6746.97	1040.74	6746.97
1062.88	6747.04	1069.45	6747.12	1083.5	6747.25	1085.71	6747.26	1096.02	6747.33

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.03	280	.03	630	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
280	630	310	285	150	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	6743.89	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.14	Wt. n-Val.		0.030

W.S. Elev (ft)	6743.75	Reach Len. (ft)	310.00	285.00
150.00				
Crit W.S. (ft)	6743.67	Flow Area (sq ft)		151.21
E.G. Slope (ft/ft)	0.010556	Area (sq ft)		151.21
Q Total (cfs)	452.00	Flow (cfs)		452.00
Top Width (ft)	335.84	Top Width (ft)		335.84
Vel Total (ft/s)	2.99	Avg. Vel. (ft/s)		2.99
Max Chl Dpth (ft)	0.84	Hydr. Depth (ft)		0.45
Conv. Total (cfs)	4399.4	Conv. (cfs)		4399.4
Length Wtd. (ft)	285.00	Wetted Per. (ft)		335.85
Min Ch El (ft)	6742.91	Shear (lb/sq ft)		0.30
Alpha	1.00	Stream Power (lb/ft s)		0.89
Frctn Loss (ft)	3.98	Cum Volume (acre-ft)		19.10
C & E Loss (ft)	0.00	Cum SA (acres)		31.52

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Trib.2 to Black
REACH: Reach No. H8 RS: 10590

INPUT
Description: Cross Section 9
Station Elevation Data num= 78

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6744	15.19	6744	100.91	6742.45	107.26	6742.38	110.74	6742.35
113.46	6742.32	116.75	6742.29	119.57	6742.27	146.4	6742	169.45	6741.64
170.22	6741.62	187.77	6741.31	195.42	6741.16	197.39	6741.14	213.81	6740.84
214.54	6740.83	215.57	6740.82	263.56	6740	271.12	6740	2776	739.853
285.99	6739.63	299.77	6739.4	302.69	6739.37	305.53	6739.33	306.35	6739.32
348.16	6739.37	353.54	6739.43	362.64	6739.55	363.3	6739.55	363.76	6739.55
377.79	6739.7	380.45	6739.7	386.66	6739.76	387.16	6739.76	387.53	6739.76
416.46	6740	419.86	6740.02	644.68	6739.93	686.21	6739.61	688.7	6739.6
689.11	6739.6	691.56	6739.61	693.51	6739.62	695.96	6739.6	696.51	6739.6
704.05	6739.62	735.74	6739.39	865.29	6739.44	925.69	6739.25	935.22	6739.22
937.89	6739.2	945.11	6739.19	949.55	6739.18	958.74	6739.19	959.87	6739.18
964.68	6739.21	971.46	6739.3	978.13	6739.4	982.48	6739.43	994.96	6739.63
996.37	6739.64	1010	6739.861	1011.81	6739.89	1012.05	6739.89	1018.7	6740
1038.09	6740.37	1042.83	6740.46	1064.08	6740.83	1073.34	6740.98	1078.99	6741.08
1093.39	6741.32	1101.5	6741.48	1130.52	6741.95	1131.01	6741.96	1131.42	6741.97
1131.59	6741.97	1133.37	6742	1142.03	6742.14				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val

0	.03	277	.03	1010	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
277	1010	240	245	285 .1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	6739.91	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.16	Wt. n-Val.		0.030
W.S. Elev (ft)	6739.75	Reach Len. (ft)	240.00	245.00
285.00				
Crit W.S. (ft)	6739.75	Flow Area (sq ft)		140.40
E.G. Slope (ft/ft)	0.019325	Area (sq ft)		140.40
Q Total (cfs)	452.00	Flow (cfs)		452.00
Top Width (ft)	439.11	Top Width (ft)		439.11
Vel Total (ft/s)	3.22	Avg. Vel. (ft/s)		3.22
Max Chl Dpth (ft)	0.57	Hydr. Depth (ft)		0.32
Conv. Total (cfs)	3251.5	Conv. (cfs)		3251.5
Length Wtd. (ft)	245.00	Wetted Per. (ft)		439.13
Min Ch El (ft)	6739.18	Shear (lb/sq ft)		0.39
Alpha	1.00	Stream Power (lb/ft s)		1.24
Frctn Loss (ft)	3.91	Cum Volume (acre-ft)		18.15
C & E Loss (ft)	0.00	Cum SA (acres)		28.98

Warning: The energy equation could not be balanced within the specified number of iterations. The
program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
depth, the calculated water surface came back below critical depth. This indicates that there is
not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Trib.2 to Black
REACH: Reach No. H8 RS: 10348

INPUT
Description: Cross Section 10

Station Elevation Data num= 151

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6739.17	.48	6739.17	2.98	6739.17	31.73	6739.23	34.34	6739.25
43.48	6739.25	44.84	6739.25	61.32	6739.33	70.67	6739.32	74.74	6739.3
84.17	6739.38	88.15	6739.42	90.52	6739.41	91.29	6739.42	91.92	6739.42
94.17	6739.42	95.37	6739.42	99.44	6739.43	100.62	6739.44	103.57	6739.43
104.68	6739.42	138.39	6739.29	138.76	6739.29	140.47	6739.28	142.2	6739.26
144.29	6739.24	150.31	6739.18	213.7	6738	214.89	6738	222.55	6738
228.99	6738	229.02	6738	229.19	6738	247.21	6737.55	249.15	6737.5
262.55	6737.19	265.04	6737.13	280.25	6736.69	301.42	6736.07	301.81	6736.06
303.72	6736	304.77	6735.97	304.8	6735.97	304.91	6735.97	317.71	6735.65
362.51	6734.79	363.59	6734.78	366.71	6734.74	372.57	6734.69	386.01	6734.63
388.4	6734.61	391.61	6734.59	395.55	6734.58	399.22	6734.58	404.72	6734.61
406.22	6734.6	417.47	6734.59	418.01	6734.6	419.74	6734.6	421.3	6734.62
421.69	6734.63	423.54	6734.69	428.45	6734.82	431.42	6734.89	435.2	6734.95
436.22	6734.96	440.38	6734.98	440.92	6734.99	454.05	6735	458.29	6735
463.84	6734.97	465.42	6734.98	471.99	6734.99	483.43	6735.11	485.04	6735.13
486.83	6735.16	488.06	6735.19	489.5	6735.25	494.4	6735.3	516.73	6735.38
521.09	6735.38	523.99	6735.38	528.24	6735.36	533.11	6735.39	555.58	6735.48
565.74	6735.6	567.72	6735.6	569.12	6735.63	589.47	6735.81	595.03	6735.9
595.18	6735.9	595.28	6735.9	601.79	6736	606.76	6736	612.37	6736
618.82	6736	620.66	6736	635.87	6736.08	645.03	6736.09	645.26	6736.08
646.26	6736.08	650.03	6736.09	650.37	6736.09	660.49	6736.12	708.96	6736.16
740.27	6736.08	741.06	6736.07	741.2	6736.07	751.12	6736.06	764.42	6736.03
772.75	6736	775.96	6735.98	775.97	6735.98	783.19	6735.93	784.23	6735.92
784.42	6735.92	786.69	6735.89	811.41	6735.66	817.41	6735.61	819.88	6735.56
822.88	6735.53	824.15	6735.51	824.8	6735.5	826.81	6735.47	827.49	6735.46
851.54	6735.12	852.52	6735.11	857.88	6735.06	858.89	6735.06	860.53	6735.04
861.53	6735.04	873.23	6735.03	873.81	6735.02	876	6735.02	877.09	6735
878.56	6735	883.4	6734.91	892.35	6734.77	910.87	6734.66	913.98	6734.66
914.84	6734.66	924.11	6734.72	935.86	6734.84	939.89	6734.86	946	6734.93
949.78	6734.95	956.48	6735.03	958.8	6735.06	1014.46	6736	1015.31	6736
1083.39	6736.98								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.03	301.42	.03	1015.31	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
301.42	1015.31	220	210	170	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	6735.54	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.16	Wt. n-Val.		0.030
W.S. Elev (ft)	6735.38	Reach Len. (ft)	220.00	210.00
170.00				
Crit W.S. (ft)	6735.32	Flow Area (sq ft)		140.19
E.G. Slope (ft/ft)	0.013404	Area (sq ft)		140.19
Q Total (cfs)	452.00	Flow (cfs)		452.00
Top Width (ft)	332.52	Top Width (ft)		332.52
Vel Total (ft/s)	3.22	Avg. Vel. (ft/s)		3.22
Max Chl Dpth (ft)	0.79	Hydr. Depth (ft)		0.42
Conv. Total (cfs)	3904.1	Conv. (cfs)		3904.1

Length Wtd. (ft)	210.00	Wetted Per. (ft)	332.55
Min Ch El (ft)	6734.58	Shear (lb/sq ft)	0.35
Alpha	1.00	Stream Power (lb/ft s)	1.14
Frctn Loss (ft)	3.08	Cum Volume (acre-ft)	17.36
C & E Loss (ft)	0.02	Cum SA (acres)	26.81

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Trib.2 to Black
REACH: Reach No. H8 RS: 10137

INPUT
Description: Cross Section 11
Station Elevation Data num= 184

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6735.84	3.35	6735.82	3.6	6735.81	4.89	6735.8	45.58	6735.6
50.18	6735.64	52.42	6735.66	52.73	6735.65	57.7	6735.69	58.85	6735.67
69.17	6735.71	69.47	6735.71	70.1	6735.7	81.69	6735.69	82.98	6735.69
84.12	6735.69	109.95	6735.72	118.69	6735.79	120.23	6735.8	122.46	6735.8
131.87	6735.82	139.59	6735.82	140.32	6735.83	141.15	6735.83	152.59	6735.8
153.96	6735.8	165.04	6735.75	171.56	6735.76	172.18	6735.76	182.79	6735.82
183.07	6735.83	185.98	6735.83	186.23	6735.84	187.83	6735.85	201.28	6735.83
217.21	6735.94	217.65	6735.94	229.06	6736	229.09	6736	229.64	6736
240.55	6736	249.45	6736	249.67	6736	253.12	6735.96	253.69	6735.95
253.77	6735.95	259.22	6735.86	260.15	6735.84	262.9	6735.8	265.14	6735.75
269.11	6735.64	276.29	6735.48	280.86	6735.35	319.98	6734.16	323.43	6734.07
323.74	6734.06	325.4	6734	327.56	6733.9	365.25	6732	386.43	6731.02
393.91	6730.74	397.41	6730.65	398.96	6730.6	402.09	6730.49	402.82	6730.5
403.5	6730.47	403.72	6730.45	403.95	6730.39	404.38	6730.34	404.52	6730.18
406.04	6730.19	407.27	6730.21	407.7	6730.22	409.39	6730.3	410.61	6730.37
410.82	6730.39	419.61	6730.65	421.6	6730.92	421.81	6730.96	421.94	6731.11
422.51	6731.11	430.94	6731.05	432.14	6731.1	440.61	6731.21	443.61	6731.23
459.58	6731.7	461.05	6731.73	468.12	6731.85	479.49	6731.98	482.13	6732
482.53	6732	482.78	6732	490.78	6732.08	491.17	6732.08	495.94	6732.14
496.9	6732.16	498.71	6732.2	522.93	6732.44	527.53	6732.48	528.69	6732.5
532.25	6732.55	534.3	6732.59	538.7	6732.66	542.24	6732.73	546.12	6732.81
548.22	6732.85	555.81	6732.96	557.93	6733.01	565.04	6733.12	566.91	6733.17
575.76	6733.28	577.3	6733.32	579.2	6733.36	582.74	6733.42	588.5	6733.41
589.68	6733.43	602.25	6733.54	605.46	6733.53	606.43	6733.53	613.89	6733.5
616.48	6733.48	627.35	6733.37	644.7	6733.29	645.02	6733.29	646.12	6733.28
649.52	6733.26	650.7	6733.26	651.5	6733.26	656.89	6733.23	658.86	6733.22
669.14	6733.2	669.96	6733.2	686.06	6733.14	689.51	6733.1	691.71	6733.09
711.86	6732.83	717.63	6732.84	718.21	6732.83	721.76	6732.84	722.65	6732.83
729.59	6732.8	732.06	6732.8	733.29	6732.8	754.45	6732.75	756.16	6732.74
794.23	6732	794.64	6732	798.95	6732	799.99	6732	800.45	6732
800.69	6732	800.74	6731.92	809.12	6731.83	811.21	6732	811.43	6732
811.52	6732	811.53	6732	812.34	6732	812.42	6732	812.56	6732
813.4	6732	816.92	6732	817.83	6732	820.34	6732.02	821.7	6732.06
821.75	6732.06	825.06	6732.14	839.61	6732.43	840.2	6732.45	842.86	6732.52

844.11 6732.56 845.2 6732.6 851.71 6732.73 860.9 6732.97 862.28 6733.02
862.41 6733.02 862.58 6733.03 864.14 6733.07 892.27 6734 892.29 6734
893.54 6734 893.58 6734 957.06 6734.91 970.75 6735.1

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.03	323.43	.03	864.14	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
323.43	864.14	325	300	220	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	6732.44	Element			
Vel Head (ft)	0.35	Wt. n-Val.		0.030	
W.S. Elev (ft)	6732.10	Reach Len. (ft)	325.00	300.00	220.00
Crit W.S. (ft)	6732.10	Flow Area (sq ft)		107.08	
E.G. Slope (ft/ft)	0.015958	Area (sq ft)		107.08	
Q Total (cfs)	505.00	Flow (cfs)		505.00	
Top Width (ft)	163.35	Top Width (ft)		163.35	
Vel Total (ft/s)	4.72	Avg. Vel. (ft/s)		4.72	
Max Chl Dpth (ft)	1.92	Hydr. Depth (ft)		0.66	
Conv. Total (cfs)	3997.7	Conv. (cfs)		3997.7	
Length Wtd. (ft)	300.00	Wetted Per. (ft)		163.63	
Min Ch El (ft)	6730.18	Shear (lb/sq ft)		0.65	
Alpha	1.00	Stream Power (lb/ft s)		3.07	
Frctn Loss (ft)	3.89	Cum Volume (acre-ft)		16.77	
C & E Loss (ft)	0.02	Cum SA (acres)		25.62	

Warning: The energy equation could not be balanced within the specified number of iterations. The
program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
depth, the calculated water surface came back below critical depth. This indicates that there is
not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Trib.2 to Black
REACH: Reach No. H8 RS: 9836

INPUT
Description: Cross Section 12
Station Elevation Data num= 113

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6732.46	15.41	6732.41	17.74	6732.39	48.11	6732	48.81	6732
58.73	6731.88	86.36	6731.71	88.11	6731.68	89.73	6731.65	92.08	6731.62
93.2	6731.6	95.62	6731.56	97.74	6731.53	104.17	6731.45	108.02	6731.37
110.28	6731.34	112.51	6731.32	113.61	6731.29	157.64	6730.53	186.39	6730.34
257.33	6730.55	260.55	6730.55	264.46	6730.57	282.98	6730.69	284.49	6730.7
286.57	6730.71	289.64	6730.72	365.58	6731.19	379.18	6731.16	384.55	6731.06
384.59	6731.02	384.71	6731.01	385.13	6731	386.2	6730.98	387.38	6730.4
387.46	6730.28	387.89	6730.22	388.85	6730.16	391.1	6730.08	393.16	6730
393.36	6730	414.61	6729.01	436.69	6728	4446	727.467	447.38	6727.22
464.4	6726	468.28	6725.57	469.56	6725.44	470.81	6725.36	472.98	6725.27
473.64	6725.23	475.62	6725.06	475.97	6725.02	476.15	6724.95	478.76	6724.36
480.95	6725.24	481.28	6725.28	488.36	6725.86	490.85	6726	502.99	6726.29
503.66	6726.3	504.35	6726.31	528.39	6726.66	535.23	6726.94	542.31	6727.02
549.53	6727.05	553.16	6727.07	555.21	6727.1	577.74	6727.37	583.8	6727.47
585.37	6727.49	590.77	6727.53	599.97	6727.68	603.71	6727.76	604.5	6727.76
605.48	6727.76	614.71	6728	620.48	6728.13	620.94	6728.14	624.02	6728.2
637.92	6728.38	642.24	6728.4	644.67	6728.41	653.78	6728.49	657.17	6728.49
692.82	6728.62	712.68	6728	715.48	6728	720.66	6728	726.53	6727.44
729.12	6727.23	735.23	6726.95	736.9	6726.91	739.9	6726.86	740.91	6726.83
748.94	6726.69	753.49	6726.95	763	6727.484	772.21	6728	773.65	6728
773.76	6728	785.27	6729.05	794.2	6730	817.61	6730.72	830.83	6731.11
857.67	6731.72	866.32	6731.94	870.36	6732	884.74	6732	888.56	6732.05
1044.14	6733.86	1050.52	6734	1056.35	6734.04				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.03	444	.03	763	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
444	763	300	320	220	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel
E.G. Elev (ft)	6727.58	Element		
Right OB				
Vel Head (ft)	0.28	Wt. n-Val.		0.030
W.S. Elev (ft)	6727.30	Reach Len. (ft)	300.00	320.00
220.00				
Crit W.S. (ft)	6727.20	Flow Area (sq ft)		118.64
E.G. Slope (ft/ft)	0.010748	Area (sq ft)		118.64
Q Total (cfs)	505.00	Flow (cfs)		505.00
Top Width (ft)	156.80	Top Width (ft)		156.80
Vel Total (ft/s)	4.26	Avg. Vel. (ft/s)		4.26
Max Chl Dpth (ft)	2.94	Hydr. Depth (ft)		0.76
Conv. Total (cfs)	4871.1	Conv. (cfs)		4871.1
Length Wtd. (ft)	320.00	Wetted Per. (ft)		157.21

Min Ch El (ft)	6724.36	Shear (lb/sq ft)	0.51
Alpha	1.00	Stream Power (lb/ft s)	2.16
Frctn Loss (ft)	3.50	Cum Volume (acre-ft)	15.99
C & E Loss (ft)	0.02	Cum SA (acres)	24.51

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Trib.2 to Black
REACH: Reach No. H8 RS: 9510

INPUT
Description: Cross Section 13
Station Elevation Data num= 74

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6727.79	3.05	6727.8	7.86	6727.81	9.8	6727.81	20.08	6727.81
21.1	6727.8	35.06	6727.88	35.6	6727.87	36.18	6727.86	41.91	6727.88
42.23	6727.88	54.94	6727.82	56.56	6727.79	57.87	6727.75	59.16	6727.68
60.13	6727.65	61.65	6727.6	62.93	6727.57	63.39	6727.56	64.97	6727.52
66.1	6727.49	70.88	6727.32	71.02	6727.31	76.16	6727.15	86.71	6726.75
91.38	6726.64	93.13	6726.59	96.3	6726.51	98.11	6726.48	99.16	6726.45
99.95	6726.45	100.37	6726.43	116.61	6726.41	126.61	6726.31	128.94	6726.24
134.91	6726.17	136.79	6726.13	141.25	6726	141.75	6726	146.84	6726
159.61	6725.79	160.99	6725.75	161.68	6725.73	163.68	6725.68	196.66	6724.21
199.8	6724.1	201.19	6724	202	6723.956	202.47	6723.93	216.7	6723.18
223.23	6723	247.83	6722	249.24	6721.77	250.45	6721.53	254.16	6721.49
254.67	6721.48	254.72	6721.46	254.78	6721.45	262.44	6722	264.82	6722
267.16	6722	297.99	6723.57	306	6723.997	306.06	6724	330.76	6725.26
345.15	6726	345.97	6726	371.38	6727.3	372.34	6727.34	384.24	6728
387.94	6728	401.88	6728.73	409.14	6729.07	425.35	6729.62		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.03	202	.03	306	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
202	306	135	275	380	.1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	6724.06	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.45	Wt. n-Val.		0.030
W.S. Elev (ft)	6723.61	Reach Len. (ft)	135.00	275.00
380.00				
Crit W.S. (ft)	6723.54	Flow Area (sq ft)		94.15
E.G. Slope (ft/ft)	0.011117	Area (sq ft)		94.15

Q Total (cfs)	505.00	Flow (cfs)	505.00
Top Width (ft)	90.32	Top Width (ft)	90.32
Vel Total (ft/s)	5.36	Avg. Vel. (ft/s)	5.36
Max Chl Dpth (ft)	2.16	Hydr. Depth (ft)	1.04
Conv. Total (cfs)	4789.5	Conv. (cfs)	4789.5
Length Wtd. (ft)	275.00	Wetted Per. (ft)	90.46
Min Ch El (ft)	6721.45	Shear (lb/sq ft)	0.72
Alpha	1.00	Stream Power (lb/ft s)	3.87
Frctn Loss (ft)	1.76	Cum Volume (acre-ft)	15.21
C & E Loss (ft)	0.08	Cum SA (acres)	23.61

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Trib.2 to Black
REACH: Reach No. H8 RS: 9209

INPUT
Description: Cross Section 14
Station Elevation Data num= 69

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6725.24	27.53	6724.95	50.47	6724.86	57.62	6724.87	58.77	6724.84
66.33	6724.88	68.55	6724.88	70.39	6724.88	78.12	6724.8	85.8	6724.81
87.52	6724.79	88.68	6724.79	99.58	6724.62	103.53	6724.64	105.55	6724.61
110.03	6724.55	112.58	6724.55	113.11	6724.56	115.38	6724.58	130.25	6724.38
132.55	6724.39	136.75	6724.35	190.46	6724.32	202.73	6724.43	2106	724.386
225.66	6724.29	226	6724.29	242.23	6724	242.57	6724	243.39	6723.99
263.19	6723.6	273.9	6723.44	280.04	6723.36	285.13	6723.25	289.93	6723.2
296.53	6723.07	306.25	6722.84	318.02	6722.58	321.71	6722.49	338.93	6722.16
341	6722.116	346.47	6722	355.92	6721.56	364.05	6721.25	388.39	6720
395.41	6719.88	406.46	6720	449.76	6721.39	469.16	6722	472	6722.107
478.46	6722.35	485.15	6722.59	495.24	6722.92	504.01	6723.25	507.7	6723.38
512.37	6723.55	527.31	6724	527.52	6724	556.94	6724.5	557.83	6724.5
565.52	6724.61	570.43	6724.64	580	6724.785	581	6724.8	589.89	6724.9
601.17	6724.99	614.39	6725.06	618.35	6725.11	665.52	6725.3		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.03	341	.03	472	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
341	472	300	215	170	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	6722.22	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.19	Wt. n-Val.		0.030
W.S. Elev (ft)	6722.03	Reach Len. (ft)	300.00	215.00
170.00				
Crit W.S. (ft)		Flow Area (sq ft)		144.08
E.G. Slope (ft/ft)	0.004151	Area (sq ft)		144.08
Q Total (cfs)	505.00	Flow (cfs)		505.00
Top Width (ft)	125.10	Top Width (ft)		125.10
Vel Total (ft/s)	3.50	Avg. Vel. (ft/s)		3.50
Max Chl Dpth (ft)	2.15	Hydr. Depth (ft)		1.15
Conv. Total (cfs)	7837.8	Conv. (cfs)		7837.8
Length Wtd. (ft)	215.00	Wetted Per. (ft)		125.18
Min Ch El (ft)	6719.88	Shear (lb/sq ft)		0.30
Alpha	1.00	Stream Power (lb/ft s)		1.05
Frctn Loss (ft)	1.42	Cum Volume (acre-ft)		14.45
C & E Loss (ft)	0.01	Cum SA (acres)		22.93

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Trib.2 to Black
REACH: Reach No. H8 RS: 8994

INPUT
Description: Cross Section 15
Station Elevation Data num= 47

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6723.94	44.37	6722.75	76.22	6722	88.25	6721.68	89.18	6721.66
119.76	6720.94	121.08	6720.93	130.98	6720.85	1356	720.812	147.45	6720.69
155.07	6720.53	160.13	6720.43	172.36	6720.36	179.28	6720.3	187.34	6720.2
192.33	6720.18	249.85	6720.3	333.07	6720.51	333.52	6720.51	335.56	6720.49
347.62	6720	356.27	6719.86	510.38	6720.23	516.78	6720.44	5286	720.801
552.24	6721.58	557.1	6721.73	566.69	6722	582.05	6722.13	594.38	6722.29
625.95	6722.46	627.29	6722.46	631.74	6722.48	632.47	6722.48	634.38	6722.5
658.03	6722.83	702.04	6723.47	720.26	6723.66	721.34	6723.67	728.07	6723.74
731.4	6723.77	733.71	6723.79	734.68	6723.79	737.02	6723.8	743.25	6723.83

763.09 6724 781.72 6724.07

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.03	135	.03	528	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
135	528	175	290	340 .1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	6720.80	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.15	Wt. n-Val.		0.030
W.S. Elev (ft)	6720.65	Reach Len. (ft)	175.00	290.00
340.00				
Crit W.S. (ft)	6720.59	Flow Area (sq ft)		161.80
E.G. Slope (ft/ft)	0.012120	Area (sq ft)		161.80
Q Total (cfs)	505.00	Flow (cfs)		505.00
Top Width (ft)	373.61	Top Width (ft)		373.61
Vel Total (ft/s)	3.12	Avg. Vel. (ft/s)		3.12
Max Chl Dpth (ft)	0.79	Hydr. Depth (ft)		0.43
Conv. Total (cfs)	4587.1	Conv. (cfs)		4587.1
Length Wtd. (ft)	290.00	Wetted Per. (ft)		373.63
Min Ch El (ft)	6719.86	Shear (lb/sq ft)		0.33
Alpha	1.00	Stream Power (lb/ft s)		1.02
Frctn Loss (ft)	2.94	Cum Volume (acre-ft)		13.70
C & E Loss (ft)	0.01	Cum SA (acres)		21.69

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Trib.2 to Black
REACH: Reach No. H8 RS: 8550

INPUT
Description: Cross Section 16
Station Elevation Data num= 48

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6719.89	7.44	6719.64	24.78	6719.08	33.7	6718.83	58.55	6718
656	6717.875	78.18	6717.62	130.42	6717.24	131.17	6717.24	150.2	6717.19
166.15	6717.22	207.28	6717.19	215.79	6717.12	226.18	6717.12	227.99	6717.1
234.49	6717.06	238.01	6717.05	244.73	6717.02	247.39	6717.01	248.46	6717

256.27	6716.96	263.21	6716.94	270.99	6716.95	285.96	6716.89	299.51	6716.87
308.17	6716.89	370.5	6717.3	371.41	6717.3	382.64	6717.43	383.47	6717.44
385.57	6717.46	391.51	6717.52	395.64	6717.55	397.31	6717.57	399.27	6717.58
403.03	6717.63	417.72	6717.8	420	6717.829	427.09	6717.92	428.11	6717.94
433.08	6718	434.11	6718	434.8	6718	435.19	6718	435.79	6718
437.3	6718	441.14	6718	447.16	6718				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.03	65	.03	420	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
65	420	305	302	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	6717.84	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.13	Wt. n-Val.		0.030
W.S. Elev (ft)	6717.71	Reach Len. (ft)	305.00	302.00
302.00				
Crit W.S. (ft)	6717.59	Flow Area (sq ft)		171.82
E.G. Slope (ft/ft)	0.008614	Area (sq ft)		171.82
Q Total (cfs)	505.00	Flow (cfs)		505.00
Top Width (ft)	336.08	Top Width (ft)		336.08
Vel Total (ft/s)	2.94	Avg. Vel. (ft/s)		2.94
Max Chl Dpth (ft)	0.84	Hydr. Depth (ft)		0.51
Conv. Total (cfs)	5441.2	Conv. (cfs)		5441.2
Length Wtd. (ft)	302.00	Wetted Per. (ft)		336.09
Min Ch El (ft)	6716.87	Shear (lb/sq ft)		0.27
Alpha	1.00	Stream Power (lb/ft s)		0.81
Frctn Loss (ft)	3.58	Cum Volume (acre-ft)		12.59
C & E Loss (ft)	0.01	Cum SA (acres)		19.33

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Trib.2 to Black
REACH: Reach No. H8 RS: 8400

INPUT
Description: Cross Section 17
Station Elevation Data num= 36

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6716	.63	6716	1.72	6715.97	606	6714.176	65.73	6714
72.9	6713.87	153.48	6713.29	156.14	6713.3	183.49	6713.38	183.81	6713.38
190.31	6713.4	204.74	6713.41	205.07	6713.41	209.6	6713.42	215.35	6713.47
236.91	6713.5	238.42	6713.5	241.53	6713.49	302.1	6713.58	302.54	6713.58
318.65	6713.71	339.02	6713.91	339.07	6713.91	342.53	6713.93	342.7	6713.93
361.33	6714	361.78	6714	362.19	6714.01	373.09	6714.03	373.64	6714.03
383.97	6714.04	384.16	6714.04	400	6714.105	403.59	6714.12	404.09	6714.12
406.06	6714.12								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.03	60	.03	400	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
60	400	371	293	250	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	6714.25	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.22	Wt. n-Val.		0.030
W.S. Elev (ft)	6714.03	Reach Len. (ft)	371.00	293.00
250.00				
Crit W.S. (ft)	6714.03	Flow Area (sq ft)		135.18
E.G. Slope (ft/ft)	0.017348	Area (sq ft)		135.18
Q Total (cfs)	505.00	Flow (cfs)		505.00
Top Width (ft)	311.93	Top Width (ft)		311.93
Vel Total (ft/s)	3.74	Avg. Vel. (ft/s)		3.74
Max Chl Dpth (ft)	0.74	Hydr. Depth (ft)		0.43
Conv. Total (cfs)	3834.2	Conv. (cfs)		3834.2
Length Wtd. (ft)	293.00	Wetted Per. (ft)		311.93
Min Ch El (ft)	6713.29	Shear (lb/sq ft)		0.47
Alpha	1.00	Stream Power (lb/ft s)		1.75
Frctn Loss (ft)	2.56	Cum Volume (acre-ft)		11.53
C & E Loss (ft)	0.01	Cum SA (acres)		17.09

Warning: The energy equation could not be balanced within the specified number of iterations. The
program selected the water surface that had the least amount of error between computed and
assumed values.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance)

is less than
0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
depth, the calculated water surface came back below critical depth. This indicates that there is
not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Trib.2 to Black
REACH: Reach No. H8 RS: 8100

INPUT
Description: Cross Section 18
Station Elevation Data num= 33

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6712	1.55	6712	1.66	6712	7.11	6711.95	8.91	6711.93
13.24	6711.88	13.72	6711.87	28	6711.48	57.02	6710.69	81.14	6710
83.98	6710	86.7	6710	87.06	6710	101.19	6710	102.06	6710
102.88	6710	120.98	6710	127.45	6710	131.04	6710	136.82	6710
137.63	6710	148.54	6710	148.7	6710.01	148.94	6710.01	158.1	6710.4
163.65	6710.54	180.44	6711.19	186.69	6711.39	193	6711.475	205.34	6711.64
219.27	6711.88	219.57	6711.88	220.84	6711.9				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.03	28	.03	193	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
28	193	339	226	115	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	6711.52	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.19	Wt. n-Val.		0.030
W.S. Elev (ft)	6711.33	Reach Len. (ft)	339.00	226.00
115.00				
Crit W.S. (ft)	6711.02	Flow Area (sq ft)		144.88
E.G. Slope (ft/ft)	0.005254	Area (sq ft)		144.88
Q Total (cfs)	505.00	Flow (cfs)		505.00
Top Width (ft)	151.41	Top Width (ft)		151.41
Vel Total (ft/s)	3.49	Avg. Vel. (ft/s)		3.49
Max Chl Dpth (ft)	1.33	Hydr. Depth (ft)		0.96
Conv. Total (cfs)	6966.9	Conv. (cfs)		6966.9
Length Wtd. (ft)	226.00	Wetted Per. (ft)		151.45
Min Ch El (ft)	6710.00	Shear (lb/sq ft)		0.31

Alpha	1.00	Stream Power (lb/ft s)	1.09
Frctn Loss (ft)	1.46	Cum Volume (acre-ft)	10.58
C & E Loss (ft)	0.03	Cum SA (acres)	15.53

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Trib.2 to Black
REACH: Reach No. H8 RS: 7850

INPUT
Description: cross section 18.5
Station Elevation Data num= 29

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6710.92	.31	6710.91	37.43	6710	38.19	6710	41.13	6710
55.39	6710	68.51	6710	75.95	6710	88.59	6710	93.01	6710
96	6709.773	105.64	6709.04	116.23	6708	118.03	6707.7	123.2	6706.85
124.37	6706.86	125.65	6706.86	134.79	6707.46	137	6707.51	139.02	6707.58
141.76	6707.82	144.51	6707.96	144.98	6708	149.9	6708.39	156.27	6708.87
166.36	6709.66	167	6709.707	171.02	6710	211.97	6710.65		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.03	96	.03	167	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
96	167	283	290	305	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	6710.04	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.47	Wt. n-Val.		0.030
W.S. Elev (ft)	6709.57	Reach Len. (ft)	283.00	290.00
305.00				
Crit W.S. (ft)	6709.35	Flow Area (sq ft)		91.72
E.G. Slope (ft/ft)	0.008100	Area (sq ft)		91.72
Q Total (cfs)	505.00	Flow (cfs)		505.00
Top Width (ft)	66.56	Top Width (ft)		66.56
Vel Total (ft/s)	5.51	Avg. Vel. (ft/s)		5.51
Max Chl Dpth (ft)	2.72	Hydr. Depth (ft)		1.38
Conv. Total (cfs)	5611.2	Conv. (cfs)		5611.2
Length Wtd. (ft)	290.00	Wetted Per. (ft)		66.82

Min Ch El (ft)	6706.85	Shear (lb/sq ft)	0.69
Alpha	1.00	Stream Power (lb/ft s)	3.82
Frctn Loss (ft)	2.12	Cum Volume (acre-ft)	9.97
C & E Loss (ft)	0.03	Cum SA (acres)	14.96

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Trib.2 to Black
REACH: Reach No. H8 RS: 7555

INPUT
Description: Cross Section 19
Station Elevation Data num= 32

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6710.01	.67	6710	4.35	6709.8	15.57	6709.21	33.45	6708
35.25	6708	35.45	6707.98	38	6707.771	59.54	6706	59.77	6705.99
61.64	6705.79	64.54	6705.58	64.8	6705.12	65.03	6705.06	65.06	6704.84
65.42	6704.81	65.45	6704.79	68.66	6704.77	68.9	6704.76	83.28	6706
92.39	6706	93.95	6706	96.63	6706	96.85	6706	97.85	6706
116.77	6707.37	121.02	6707.67	122	6707.743	125.47	6708	127.39	6708.06
150.9	6708.48	229.48	6710						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.03	38	.03	122	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
38	122	295	295	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	6707.90	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.37	Wt. n-Val.		0.030
W.S. Elev (ft)	6707.53	Reach Len. (ft)	295.00	295.00
295.00				
Crit W.S. (ft)	6707.22	Flow Area (sq ft)		104.16
E.G. Slope (ft/ft)	0.006603	Area (sq ft)		104.16
Q Total (cfs)	505.00	Flow (cfs)		505.00
Top Width (ft)	78.11	Top Width (ft)		78.11
Vel Total (ft/s)	4.85	Avg. Vel. (ft/s)		4.85
Max Chl Dpth (ft)	2.77	Hydr. Depth (ft)		1.33
Conv. Total (cfs)	6214.7	Conv. (cfs)		6214.7

Length Wtd. (ft)	295.00	Wetted Per. (ft)	78.78
Min Ch El (ft)	6704.76	Shear (lb/sq ft)	0.55
Alpha	1.00	Stream Power (lb/ft s)	2.64
Frctn Loss (ft)	2.48	Cum Volume (acre-ft)	9.32
C & E Loss (ft)	0.01	Cum SA (acres)	14.48

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Trib.2 to Black
REACH: Reach No. H8 RS: 7260

INPUT
Description: Cross Section 20
Station Elevation Data num= 28

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6709.04	11.43	6708.42	18.85	6708	38.76	6706.87	53.35	6706
60.18	6705.38	636	705.168	78.53	6704	87.77	6703.65	109.62	6702.77
110.14	6702.77	114.67	6703.21	114.89	6703.22	114.95	6703.25	116.1	6703.33
118.03	6703.41	127.51	6704	131.24	6704.14	143.88	6704.61	160	6705.193
182.29	6706	182.85	6706	184.4	6706.07	232.42	6708	236.5	6708
256.25	6708.34	256.72	6708.35	296.15	6708.9				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.03	63	.03	160	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
63	160	240	290	370	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	6705.40	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.46	Wt. n-Val.		0.030	
W.S. Elev (ft)	6704.94	Reach Len. (ft)	240.00	290.00	370.00
Crit W.S. (ft)	6704.86	Flow Area (sq ft)		92.82	
E.G. Slope (ft/ft)	0.011076	Area (sq ft)		92.82	
Q Total (cfs)	505.00	Flow (cfs)		505.00	
Top Width (ft)	86.91	Top Width (ft)		86.91	
Vel Total (ft/s)	5.44	Avg. Vel. (ft/s)		5.44	
Max Chl Dpth (ft)	2.17	Hydr. Depth (ft)		1.07	
Conv. Total (cfs)	4798.5	Conv. (cfs)		4798.5	

Length Wtd. (ft)	290.00	Wetted Per. (ft)	87.04
Min Ch El (ft)	6702.77	Shear (lb/sq ft)	0.74
Alpha	1.00	Stream Power (lb/ft s)	4.01
Frctn Loss (ft)	2.29	Cum Volume (acre-ft)	8.65
C & E Loss (ft)	0.04	Cum SA (acres)	13.92

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Trib.2 to Black
REACH: Reach No. H8 RS: 6943

INPUT
Description: Cross Section 21
Station Elevation Data num= 57

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6707.99	13.01	6707.45	14.51	6707.38	47.45	6706	57.54	6705.56
96.81	6704	118	6702.99	118.2	6702.98	122.38	6702.82	132.97	6702
137.7	6701.57	141.77	6701.39	144.45	6701.16	154.05	6700.88	154.3	6700.87
158.14	6700.2	158.62	6700.1	159.2	6700.05	160.09	6700.01	160.64	6700
161.04	6700	161.95	6700	162.7	6700.03	175.94	6700.9	190.82	6702
208	6703	216.61	6703.5	223.75	6704	236.4	6704.42	239.4	6704.5
248.42	6704.67	250.98	6704.71	280.38	6705.42	284.69	6705.47	287.33	6705.49
288.47	6705.51	297.25	6705.62	338.44	6705.84	339.69	6705.86	343.46	6705.88
345.32	6705.9	388.57	6706	403.1	6706.17	459.48	6706.43	460.38	6706.45
461.63	6706.46	465.06	6706.51	466.35	6706.53	469.39	6706.56	473.08	6706.6
493.36	6706.94	507.13	6707.15	520.08	6707.34	543.21	6707.67	552.82	6707.77
562.75	6707.92	564.88	6707.94						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.03	118	.03	208	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
118	208	235	250	265	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	6703.07	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.34	Wt. n-Val.		0.030
W.S. Elev (ft)	6702.73	Reach Len. (ft)	235.00	250.00
265.00				
Crit W.S. (ft)	6702.36	Flow Area (sq ft)		108.46
E.G. Slope (ft/ft)	0.005906	Area (sq ft)		108.46
Q Total (cfs)	505.00	Flow (cfs)		505.00

Top Width (ft)	79.95	Top Width (ft)	79.95
Vel Total (ft/s)	4.66	Avg. Vel. (ft/s)	4.66
Max Chl Dpth (ft)	2.73	Hydr. Depth (ft)	1.36
Conv. Total (cfs)	6571.1	Conv. (cfs)	6571.1
Length Wtd. (ft)	250.00	Wetted Per. (ft)	80.18
Min Ch El (ft)	6700.00	Shear (lb/sq ft)	0.50
Alpha	1.00	Stream Power (lb/ft s)	2.32
Frctn Loss (ft)	2.13	Cum Volume (acre-ft)	7.98
C & E Loss (ft)	0.01	Cum SA (acres)	13.37

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Trib.2 to Black
REACH: Reach No. H8 RS: 6687

INPUT
Description: Cross Section 22
Station Elevation Data num= 42

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6705.63	15	6704.602	18.97	6704.33	23.91	6704	25.77	6703.84
45.03	6702	62	6700.727	65.04	6700.5	73.2	6700	74.33	6700
75.62	6700	78.38	6700	80.22	6700	91.91	6699.76	95.02	6699.72
107.04	6699.53	110.09	6699.48	111.86	6699.43	113.18	6699.38	130.2	6698.53
130.37	6698.53	142.27	6699.54	147.16	6699.62	148.24	6699.64	152.49	6699.71
162.01	6699.91	166.86	6700	171.69	6700.33	178.88	6700.7	180	6700.745
181.87	6700.82	191.94	6701.32	193.09	6701.38	194.02	6701.44	196.36	6701.53
198.46	6701.7	207.03	6701.86	207.46	6701.89	208.19	6701.94	208.83	6702
250.16	6702	273.84	6702						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.03	62	.03	180	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
62	180	210	125	115	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	6700.93	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.43	Wt. n-Val.		0.030

W.S. Elev (ft)	6700.50	Reach Len. (ft)	210.00	125.00
115.00				
Crit W.S. (ft)	6700.50	Flow Area (sq ft)		96.29
E.G. Slope (ft/ft)	0.013405	Area (sq ft)		96.29
Q Total (cfs)	505.00	Flow (cfs)		505.00
Top Width (ft)	110.00	Top Width (ft)		110.00
Vel Total (ft/s)	5.24	Avg. Vel. (ft/s)		5.24
Max Chl Dpth (ft)	1.97	Hydr. Depth (ft)		0.88
Conv. Total (cfs)	4361.7	Conv. (cfs)		4361.7
Length Wtd. (ft)	125.00	Wetted Per. (ft)		110.10
Min Ch El (ft)	6698.53	Shear (lb/sq ft)		0.73
Alpha	1.00	Stream Power (lb/ft s)		3.84
Frctn Loss (ft)	1.60	Cum Volume (acre-ft)		7.39
C & E Loss (ft)	0.02	Cum SA (acres)		12.82

Warning: The energy equation could not be balanced within the specified number of iterations. The
program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
depth, the calculated water surface came back below critical depth. This indicates that there is
not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Trib.2 to Black
REACH: Reach No. H8 RS: 6505

INPUT
Description: Cross Section 23
Station Elevation Data num= 47

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6705.33	6.59	6704.7	12.15	6704	14.93	6703.59	22.72	6702
30.85	6700.36	33.77	6700	38.09	6699.21	41	6698.642	44.29	6698
52.52	6696.73	52.53	6696.74	53.82	6696.58	56.05	6696.34	56.89	6696.24
57.05	6696.22	59.25	6696.12	64.12	6696.11	76.67	6696.82	86.31	6697.3
88.42	6697.38	98.31	6698	110	6698.679	121.91	6699.37	123.54	6699.38
137.65	6699.56	165.75	6699.88	167.8	6699.93	168.48	6699.94	176.44	6700
179.5	6700	241.36	6700	252.51	6700.17	253.66	6700.18	265.49	6700.28
275.17	6700.37	277.06	6700.37	278.06	6700.38	279.32	6700.38	283.58	6700.45
285	6700.45	289.63	6700.54	290.84	6700.53	303.1	6700.75	308.39	6700.74
311.62	6700.78	314.2	6700.81						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.03	41	.03	110	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
41	110	270	240	220	.1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	6698.99	Element	Left OB	Channel
Right OB Vel Head (ft)	0.64	Wt. n-Val.		0.030
W.S. Elev (ft)	6698.36	Reach Len. (ft)	270.00	240.00
220.00 Crit W.S. (ft)	6698.36	Flow Area (sq ft)		78.73
E.G. Slope (ft/ft)	0.012247	Area (sq ft)		78.73
Q Total (cfs)	505.00	Flow (cfs)		505.00
Top Width (ft)	61.96	Top Width (ft)		61.96
Vel Total (ft/s)	6.41	Avg. Vel. (ft/s)		6.41
Max Chl Dpth (ft)	2.25	Hydr. Depth (ft)		1.27
Conv. Total (cfs)	4563.3	Conv. (cfs)		4563.3
Length Wtd. (ft)	240.00	Wetted Per. (ft)		62.19
Min Ch El (ft)	6696.11	Shear (lb/sq ft)		0.97
Alpha	1.00	Stream Power (lb/ft s)		6.21
Frctn Loss (ft)	2.92	Cum Volume (acre-ft)		7.14
C & E Loss (ft)	0.01	Cum SA (acres)		12.57

Warning: The energy equation could not be balanced within the specified number of iterations. The
program selected the water surface that had the least amount of error between computed and
assumed values.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
depth, the calculated water surface came back below critical depth. This indicates that there is
not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Trib.2 to Black
REACH: Reach No. H8 RS: 6256

INPUT
Description: Cross Section 24
Station Elevation Data num= 33

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6698	.09	6698	3.95	6698	9.74	6697.19	14.43	6696.52
18.15	6696	19.33	6695.81	21.57	6695.44	25.93	6694.75	30	6694.117
30.75	6694	32.91	6693.52	32.93	6693.51	36.1	6692.92	37.87	6692.7
40.77	6692.5	41.23	6692.48	42.78	6692.45	43.45	6692.42	43.84	6692.36
44.51	6692.1	46.84	6692	65	6692	69.04	6692	71.32	6692.26
84.69	6694	85	6694.053	91.21	6695.11	97.43	6696	108.38	6697.99
108.44	6698	113.74	6698	116.94	6698				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.03	30	.03	85	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
30	85	210	250	285	.1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	6694.61	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.72	Wt. n-Val.		0.030
W.S. Elev (ft)	6693.89	Reach Len. (ft)	210.00	250.00
285.00				
Crit W.S. (ft)	6693.89	Flow Area (sq ft)		74.16
E.G. Slope (ft/ft)	0.012050	Area (sq ft)		74.16
Q Total (cfs)	505.00	Flow (cfs)		505.00
Top Width (ft)	52.61	Top Width (ft)		52.61
Vel Total (ft/s)	6.81	Avg. Vel. (ft/s)		6.81
Max Chl Dpth (ft)	1.89	Hydr. Depth (ft)		1.41
Conv. Total (cfs)	4600.4	Conv. (cfs)		4600.4
Length Wtd. (ft)	250.00	Wetted Per. (ft)		52.91
Min Ch El (ft)	6692.00	Shear (lb/sq ft)		1.05
Alpha	1.00	Stream Power (lb/ft s)		7.18
Frctn Loss (ft)	2.98	Cum Volume (acre-ft)		6.72
C & E Loss (ft)	0.03	Cum SA (acres)		12.26

Warning: The energy equation could not be balanced within the specified number of iterations. The
program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set

equal to critical
depth, the calculated water surface came back below critical depth. This indicates that there is
not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Trib.2 to Black
REACH: Reach No. H8 RS: 6007

INPUT
Description: Cross Section 25
Station Elevation Data num= 39

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6694.08	1.2	6694	10	6693.49	12.59	6693.34	17.93	6693.2
18.44	6693.18	18.92	6693.17	40.83	6692	45.73	6692	46.44	6691.86
58.01	6690	59.22	6689.79	606	689.595	66.36	6688	68.71	6687.89
68.75	6687.78	69.25	6687.76	74.78	6688	83.61	6688	85.44	6688
90.16	6688	92.39	6688	98.12	6688	117.91	6688	120.58	6688.74
122.67	6689.38	1246	689.838	124.47	6690	126.43	6690.55	131.01	6692
133.18	6692.66	136.84	6694	145.52	6695.73	146.57	6696	148.54	6696
148.82	6696	148.99	6696	150.18	6696	150.52	6696		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.03	60	.03	124	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
60	124	440	430	420	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	6690.01	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.62	Wt. n-Val.		0.030
W.S. Elev (ft)	6689.39	Reach Len. (ft)	440.00	430.00
420.00				
Crit W.S. (ft)	6689.37	Flow Area (sq ft)		79.63
E.G. Slope (ft/ft)	0.011821	Area (sq ft)		79.63
Q Total (cfs)	505.00	Flow (cfs)		505.00
Top Width (ft)	61.86	Top Width (ft)		61.86
Vel Total (ft/s)	6.34	Avg. Vel. (ft/s)		6.34
Max Chl Dpth (ft)	1.63	Hydr. Depth (ft)		1.29
Conv. Total (cfs)	4644.7	Conv. (cfs)		4644.7
Length Wtd. (ft)	430.00	Wetted Per. (ft)		62.31
Min Ch El (ft)	6687.76	Shear (lb/sq ft)		0.94
Alpha	1.00	Stream Power (lb/ft s)		5.98
Frctn Loss (ft)	2.91	Cum Volume (acre-ft)		6.28
C & E Loss (ft)	0.09	Cum SA (acres)		11.93

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Trib.2 to Black
REACH: Reach No. H8 RS: 5570

INPUT
Description: Cross Section 26
Station Elevation Data num= 34

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6687.99	12.09	6687.69	42.72	6687.18	44.06	6687.16	486	686.812
57.19	6686	60.59	6684.99	62.13	6684.82	63.05	6684.75	70.88	6684
71.39	6684	73.81	6683.68	74.15	6683.6	75.63	6683.17	76.05	6683.25
76.2	6683.27	76.31	6683.32	76.4	6683.36	76.85	6683.4	77.95	6683.46
79.75	6683.52	82.6	6683.65	85.42	6683.8	88.58	6684	91.44	6684.48
93.43	6684.86	102.16	6686	114	6686.795	117.05	6687	127.84	6688
132.73	6688	136.82	6688	143.22	6688	147.2	6688		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.03	48	.03	114	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
48	114	330	322	340	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	6687.02	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.34	Wt. n-Val.		0.030
W.S. Elev (ft)	6686.68	Reach Len. (ft)	330.00	322.00
340.00				
Crit W.S. (ft)		Flow Area (sq ft)		107.90
E.G. Slope (ft/ft)	0.004382	Area (sq ft)		107.90
Q Total (cfs)	505.00	Flow (cfs)		505.00
Top Width (ft)	62.73	Top Width (ft)		62.73
Vel Total (ft/s)	4.68	Avg. Vel. (ft/s)		4.68
Max Chl Dpth (ft)	3.51	Hydr. Depth (ft)		1.72
Conv. Total (cfs)	7628.4	Conv. (cfs)		7628.4
Length Wtd. (ft)	322.00	Wetted Per. (ft)		63.27
Min Ch El (ft)	6683.17	Shear (lb/sq ft)		0.47

Alpha	1.00	Stream Power (lb/ft s)	2.18
Frctn Loss (ft)	2.51	Cum Volume (acre-ft)	5.35
C & E Loss (ft)	0.03	Cum SA (acres)	11.32

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Trib.2 to Black
REACH: Reach No. H8 RS: 5243

INPUT
Description: Cross Section 26.5
Station Elevation Data num= 60

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6686	.03	6686	4.64	6685.97	5.05	6685.95	8.05	6685.9
9.62	6685.85	17.51	6685.62	426	6684.539	54.21	6684	80.25	6684
85.56	6684	92.92	6684	100.61	6684	108.94	6684	170.21	6684
173.13	6684	184.58	6684	187.52	6684	207.62	6684	212.28	6683.96
214.14	6683.94	218.04	6683.87	231.26	6683.61	237.46	6683.48	242.25	6683.41
244.77	6683.35	245.76	6683.31	253.18	6683.11	255.11	6683.03	255.17	6682.97
255.87	6682.79	256.53	6682.77	257.16	6682.76	258.44	6682.74	261.17	6682.27
261.32	6682.27	261.89	6682.26	262.46	6682.26	279.52	6683.34	280.88	6683.37
285.65	6683.46	298.66	6683.67	309.73	6683.85	314.86	6683.91	322.25	6684
322.95	6684	333.8	6684.2	335	6684.22	3556	684.562	357.85	6684.61
362.4	6684.68	367.82	6684.77	429.01	6686	432.63	6686.07	432.81	6686.07
432.89	6686.07	447.17	6686.28	450.12	6686.31	451.17	6686.32	455.44	6686.38

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.03	42	.03	355	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
42	355	162	196	200 .1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	6684.48	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.23	Wt. n-Val.		0.030
W.S. Elev (ft)	6684.24	Reach Len. (ft)	162.00	196.00
200.00				
Crit W.S. (ft)	6684.24	Flow Area (sq ft)		130.32
E.G. Slope (ft/ft)	0.017594	Area (sq ft)		130.32
Q Total (cfs)	505.00	Flow (cfs)		505.00

Top Width (ft)	287.52	Top Width (ft)	287.52
Vel Total (ft/s)	3.88	Avg. Vel. (ft/s)	3.88
Max Chl Dpth (ft)	1.98	Hydr. Depth (ft)	0.45
Conv. Total (cfs)	3807.2	Conv. (cfs)	3807.2
Length Wtd. (ft)	196.00	Wetted Per. (ft)	287.67
Min Ch El (ft)	6682.26	Shear (lb/sq ft)	0.50
Alpha	1.00	Stream Power (lb/ft s)	1.93
Frctn Loss (ft)	1.66	Cum Volume (acre-ft)	4.47
C & E Loss (ft)	0.04	Cum SA (acres)	10.02

Warning: The energy equation could not be balanced within the specified number of iterations. The
program selected the water surface that had the least amount of error between computed and
assumed values.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
depth, the calculated water surface came back below critical depth. This indicates that there is
not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Trib.2 to Black
REACH: Reach No. H8 RS: 5050

INPUT
Description: Cross Section 27
Station Elevation Data num= 79

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6683.49	.83	6683.49	2.42	6683.48	9.31	6683.46	25.5	6683.43
32.08	6683.4	34.52	6683.38	37.46	6683.37	41.96	6683.35	44.1	6683.33
57.79	6683.16	756	682.744	76.81	6682.7	79.02	6682.66	101.79	6682
124.51	6682	144.04	6682	158.58	6681.89	163.49	6681.93	163.82	6681.93
164.18	6681.93	177.08	6682	177.09	6682	179.05	6682	182.85	6682
184.06	6682	186.79	6682	196.82	6681.99	196.86	6681.99	204.57	6681.94
212.23	6681.91	213.38	6681.92	217.86	6681.87	218.28	6681.87	219.37	6681.88
220.84	6681.86	222	6681.86	223.12	6681.87	246.82	6681.76	249.11	6681.78
251.64	6681.78	285.65	6681.78	288.42	6681.79	297.2	6681.82	298.07	6681.82
300.91	6681.83	301.46	6681.83	302.54	6681.84	312.96	6681.8	315.03	6681.79
318.23	6681.77	322.15	6681.73	325.72	6681.69	334.28	6681.55	342.51	6681.4
349.78	6681.25	350.3	6681.24	350.65	6681.24	352.15	6681.38	353.92	6681.43
355.19	6681.45	357.94	6681.48	412.36	6681.86	419.22	6681.95	419.57	6681.95
422.26	6681.98	424.31	6682	424.32	6682	424.48	6682	4606	682.716

491.94 6683.36 497.45 6683.44 504.61 6683.53 533.4 6683.76 537.29 6683.83
550.15 6683.93 556.49 6684 559.38 6684 569.86 6684.06

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.03	75	.03	460	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
75	460	229	474	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	6682.52	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.09	Wt. n-Val.		0.030
W.S. Elev (ft)	6682.43	Reach Len. (ft)	229.00	474.00
480.00				
Crit W.S. (ft)		Flow Area (sq ft)		208.39
E.G. Slope (ft/ft)	0.004944	Area (sq ft)		208.39
Q Total (cfs)	505.00	Flow (cfs)		505.00
Top Width (ft)	359.00	Top Width (ft)		359.00
Vel Total (ft/s)	2.42	Avg. Vel. (ft/s)		2.42
Max Chl Dpth (ft)	1.19	Hydr. Depth (ft)		0.58
Conv. Total (cfs)	7182.1	Conv. (cfs)		7182.1
Length Wtd. (ft)	474.00	Wetted Per. (ft)		359.02
Min Ch El (ft)	6681.24	Shear (lb/sq ft)		0.18
Alpha	1.00	Stream Power (lb/ft s)		0.43
Frctn Loss (ft)	4.18	Cum Volume (acre-ft)		3.71
C & E Loss (ft)	0.01	Cum SA (acres)		8.57

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Trib.2 to Black
REACH: Reach No. H8 RS: 4578

INPUT
Description: Cross Section 28
Station Elevation Data num= 112

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6679.08	2.36	6679.06	8.37	6679	12.55	6679	17.25	6678.98
19.95	6678.97	23.95	6678.95	31.11	6678.94	40.12	6678.87	49.45	6678.88
68.84	6678.83	76.75	6678.76	99.77	6678.51	103.02	6678.49	110.3	6678.37
112	6678.344	121.35	6678.2	123.74	6678.19	124.37	6678.18	132.75	6678.07
133.33	6678.06	138.92	6678	145.72	6678	150.12	6678	152.82	6678
159.77	6677.93	166.66	6677.94	166.86	6677.94	166.95	6677.94	171.91	6677.92
172.02	6677.92	194.56	6677.85	195.65	6677.85	196.03	6677.85	197.94	6677.85
198.17	6677.85	224.28	6677.75	225.2	6677.75	233.35	6677.75	245.65	6677.79
247.43	6677.8	250.29	6677.81	251.09	6677.81	281.26	6678	287.38	6678
291.99	6678	293.81	6678	308.58	6678.15	313.51	6678.19	314.22	6678.19
345.31	6678.29	346.27	6678.29	346.9	6678.29	348.82	6678.29	350.56	6678.3
357.46	6678.31	377.25	6678.48	378.04	6678.49	389.23	6678.54	394.16	6678.57
395.33	6678.58	400.09	6678.62	421.78	6678.66	425.84	6678.65	427.19	6678.65
451.66	6678.66	466.4	6678.61	467.05	6678.6	483.17	6678.58	485.65	6678.56
510.35	6678.5	532.95	6678.41	575.17	6678	579.67	6678	586.11	6678
590.02	6678	619.51	6678	629.71	6678	632.02	6678	639.76	6678
640.61	6678	642.99	6677.97	643.04	6677.97	643.65	6677.96	645.76	6677.93
665.14	6677.93	665.77	6677.93	666.02	6677.93	668.86	6677.91	680.46	6677.87
680.54	6677.87	680.78	6677.86	682.33	6677.85	683.07	6677.84	716.64	6677.57
722.51	6677.51	724.5	6677.5	729.93	6677.43	730.79	6677.43	785.96	6677.41
816.05	6677.99	816.46	6678	819.25	6678	828.44	6678	850	6678.341
851.17	6678.36	859.33	6678.4	871.18	6678.44	873.49	6678.46	881.38	6678.57
899.23	6678.64	904.59	6678.79						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.03	112	.03	850	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
112	850	361	416	440	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	6678.34	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.17	Wt. n-Val.		0.030
W.S. Elev (ft)	6678.17	Reach Len. (ft)	361.00	416.00
440.00				
Crit W.S. (ft)	6678.17	Flow Area (sq ft)		152.06
E.G. Slope (ft/ft)	0.019993	Area (sq ft)		152.06
Q Total (cfs)	505.00	Flow (cfs)		505.00
Top Width (ft)	465.62	Top Width (ft)		465.62
Vel Total (ft/s)	3.32	Avg. Vel. (ft/s)		3.32
Max Chl Dpth (ft)	0.75	Hydr. Depth (ft)		0.33
Conv. Total (cfs)	3571.5	Conv. (cfs)		3571.5
Length Wtd. (ft)	416.00	Wetted Per. (ft)		465.64
Min Ch El (ft)	6677.41	Shear (lb/sq ft)		0.41
Alpha	1.00	Stream Power (lb/ft s)		1.35
Frctn Loss (ft)	3.70	Cum Volume (acre-ft)		1.75

C & E Loss (ft) 0.03 Cum SA (acres) 4.08

Warning: The energy equation could not be balanced within the specified number of iterations. The
program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
depth, the calculated water surface came back below critical depth. This indicates that there is
not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Trib.2 to Black
REACH: Reach No. H8 RS: 4160

INPUT
Description: Cross Section 29
Station Elevation Data num= 136

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6673.33	7.5	6673.32	9.37	6673.3	11.48	6673.29	16.86	6673.24
24.09	6673.2	83.34	6672.45	84.64	6672.43	856	6672.427	93.79	6672.34
97.36	6672.27	98.31	6672.26	100.76	6672.23	102.36	6672.2	103.5	6672.19
104.18	6672.18	108.34	6672.14	130.99	6672.02	131.1	6672.02	133.4	6672
134.45	6672	135.78	6672	145.32	6671.88	145.89	6671.88	158.46	6671.77
180.31	6671.79	180.63	6671.79	193.67	6671.81	199.44	6671.84	203.35	6671.85
213.34	6672	220.04	6672	225.4	6672	2286	6672.042	232.12	6672.11
232.69	6672.12	252.57	6672.48	275.61	6672.78	284.55	6672.91	290.7	6672.97
303.7	6673.17	311.69	6673.28	315.57	6673.32	324.98	6673.39	353.8	6673.87
354	6673.88	354.22	6673.88	358.99	6673.94	359.66	6673.95	362.84	6673.98
364.09	6674	365.64	6674	367.12	6674	369.36	6674	371.45	6674.01
371.52	6674.02	371.69	6674.02	374.27	6674.05	374.58	6674.05	394.19	6674.36
410.58	6674.57	414.72	6674.62	421.66	6674.67	430.65	6674.7	442.26	6674.52
445.08	6674.48	463.47	6674.1	463.54	6674.1	468.6	6674	469.53	6674
480.78	6673.85	513.66	6673.76	516.53	6673.74	518.09	6673.73	522.78	6673.7
526.52	6673.67	536.18	6673.58	547.2	6673.5	555.86	6673.45	557.01	6673.45
559.03	6673.45	588.41	6673.38	596.63	6673.39	600.13	6673.37	602.59	6673.38
610.41	6673.3	625.58	6673.3	636.78	6673.23	647.44	6673.18	651.54	6673.15
657.07	6673.11	671.78	6672.98	676.43	6672.95	687.63	6672.89	690.98	6672.86
706.6	6672.8	737.4	6672.51	744.75	6672.42	777.46	6672.12	778.08	6672.12
790.44	6672	792.35	6672	793.82	6671.98	794	6671.98	799.49	6671.91
819.02	6672	819.77	6672	823.17	6672	830.92	6672	844.55	6671.92
845.43	6671.91	866.24	6671.72	868.12	6671.7	871.87	6671.64	872.47	6671.64
880.69	6671.53	887.41	6671.41	895.95	6671.26	911.96	6670.94	919.93	6670.81
936.82	6670.67	938.18	6670.66	939.56	6670.67	950.94	6670.75	952.61	6670.77
959.04	6670.85	967.64	6670.94	971.8	6671	976.5	6671.07	979.67	6671.1
998.42	6671.41	1024.7	6672	1030	6672.411	1036.69	6672.93	1048.84	6673.64
1048.89	6673.64								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.03	85	.03	1030	.03

Bank Sta: Left	Right	Coeff Contr.	Expan.
85	1030	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	6672.27	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.09	Wt. n-Val.		0.030
W.S. Elev (ft)	6672.18	Reach Len. (ft)		
Crit W.S. (ft)	6671.90	Flow Area (sq ft)		214.44
E.G. Slope (ft/ft)	0.004998	Area (sq ft)		214.44
Q Total (cfs)	505.00	Flow (cfs)		505.00
Top Width (ft)	388.79	Top Width (ft)		388.79
Vel Total (ft/s)	2.35	Avg. Vel. (ft/s)		2.35
Max Chl Dpth (ft)	1.52	Hydr. Depth (ft)		0.55
Conv. Total (cfs)	7143.1	Conv. (cfs)		7143.1
Length Wtd. (ft)		Wetted Per. (ft)		388.82
Min Ch El (ft)	6670.66	Shear (lb/sq ft)		0.17
Alpha	1.00	Stream Power (lb/ft s)		0.41
Frctn Loss (ft)		Cum Volume (acre-ft)		
C & E Loss (ft)		Cum SA (acres)		

Warning: Divided flow computed for this cross-section.

CROSS SECTION

RIVER: Trib.3 to Black
REACH: Reach No. H9 RS: 8015

INPUT
Description: Cross Section 31
Station Elevation Data num= 52

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6760.12	3.83	6760	23.6	6760	24.86	6760	30.21	6760
35.02	6760	95.95	6759.06	97.18	6759.07	98.24	6759.07	99.44	6759.08
102.3	6759.11	104.08	6759.11	148.74	6759.22	151.45	6759.21	158.78	6759.17
160.83	6759.16	195	6758.619	234.14	6758	235.15	6758	237.02	6758
238.9	6758	240.37	6758	241.49	6758	260.68	6757.5	283.85	6757.5
302.66	6758	325	6758.652	325.27	6758.66	327.21	6758.71	328.12	6758.73
331.19	6758.78	338.65	6758.91	349.82	6759.23	362.04	6759.51	373.4	6759.8
382.82	6759.92	383.61	6759.93	391.9	6759.96	392.02	6759.97	394.11	6760
421.34	6760.36	424.46	6760.4	425.48	6760.41	429.21	6760.48	433.17	6760.54

463.07 6761 465.86 6761.05 470.54 6761.12 484.88 6761.43 486.91 6761.46
489.03 6761.5 505.88 6761.97

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.03	195	.03	325	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
195	325	270	350	440 .1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	6758.57	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.06	Wt. n-Val.		0.030
W.S. Elev (ft)	6758.51	Reach Len. (ft)	270.00	350.00
440.00				
Crit W.S. (ft)		Flow Area (sq ft)		68.91
E.G. Slope (ft/ft)	0.002986	Area (sq ft)		68.91
Q Total (cfs)	130.00	Flow (cfs)		130.00
Top Width (ft)	118.41	Top Width (ft)		118.41
Vel Total (ft/s)	1.89	Avg. Vel. (ft/s)		1.89
Max Chl Dpth (ft)	1.01	Hydr. Depth (ft)		0.58
Conv. Total (cfs)	2379.0	Conv. (cfs)		2379.0
Length Wtd. (ft)	350.00	Wetted Per. (ft)		118.43
Min Ch El (ft)	6757.50	Shear (lb/sq ft)		0.11
Alpha	1.00	Stream Power (lb/ft s)		0.20
Frctn Loss (ft)	2.19	Cum Volume (acre-ft)		4.46
C & E Loss (ft)	0.01	Cum SA (acres)		13.26

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Trib.3 to Black
REACH: Reach No. H9 RS: 7640

INPUT
Description: Cross Section 32
Station Elevation Data num= 33

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
226.6	6757.73	231.76	6757.7	244.59	6757.61	320.55	6756.94	400	6756.257
414.77	6756.13	420.15	6756	433.98	6756	455.45	6755.97	500.17	6755.91
550.8	6755.98	564.68	6756	569.01	6756	570.22	6756.04	572.04	6756.12
580	6756.282	630.43	6757.31	638.75	6757.5	642.74	6757.58	643.67	6757.59
646.07	6757.6	650.92	6757.66	654.42	6757.47	655.55	6757.45	656.35	6757.48
658.94	6757.5	668.09	6757.55	669.15	6757.57	674.17	6757.85	675.71	6758
678.86	6758.4	692.41	6760	693.42	6760.07				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
226.6	.03	400	.03	580	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
400	580	190	130	90	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	6756.37	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.13	Wt. n-Val.		0.030
W.S. Elev (ft)	6756.25	Reach Len. (ft)	190.00	130.00
90.00				
Crit W.S. (ft)	6756.25	Flow Area (sq ft)		45.36
E.G. Slope (ft/ft)	0.020577	Area (sq ft)		45.36
Q Total (cfs)	130.00	Flow (cfs)		130.00
Top Width (ft)	177.06	Top Width (ft)		177.06
Vel Total (ft/s)	2.87	Avg. Vel. (ft/s)		2.87
Max Chl Dpth (ft)	0.34	Hydr. Depth (ft)		0.26
Conv. Total (cfs)	906.3	Conv. (cfs)		906.3
Length Wtd. (ft)	130.00	Wetted Per. (ft)		177.06
Min Ch El (ft)	6755.91	Shear (lb/sq ft)		0.33
Alpha	1.00	Stream Power (lb/ft s)		0.94
Frctn Loss (ft)	2.32	Cum Volume (acre-ft)		4.00
C & E Loss (ft)	0.02	Cum SA (acres)		12.07

Warning: The energy equation could not be balanced within the specified number of iterations. The
program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
depth, the calculated water surface came back below critical depth. This indicates that there is

not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Trib.3 to Black
REACH: Reach No. H9 RS: 7510

INPUT
Description: Cross Section 33
Station Elevation Data num= 64

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6754.78	22.82	6754.9	26.8	6754.87	29.92	6754.85	38.1	6754.9
72.45	6754	73	6754	80.44	6754	81.26	6754	85.21	6754
85.6	6754	106.18	6753.22	123.46	6752.68	138.32	6752.22	138.94	6752.2
140.22	6752.18	146.21	6752	148	6752	152.3	6752	159.47	6752
160.52	6752	168.89	6751.68	174.99	6751.61	181.5	6751.64	182.8	6751.56
183.69	6751.55	186.26	6751.35	189.86	6751.02	190.88	6750.96	201.98	6750
208.88	6749.46	2136	749.237	214.24	6749.17	217.99	6748.9	222.27	6748.7
235.54	6748	236.17	6748	236.58	6748	237.73	6747.99	238.88	6747.95
243.02	6747.93	247.99	6748	248.38	6748	248.46	6748	252.21	6748
253.2	6748	266.37	6749.05	267.56	6749.09	270	6749.279	279.31	6750
282.7	6750.21	295.64	6750.96	311.47	6752	315.43	6752	395.12	6753.46
419.06	6753.86	422.07	6754	428.28	6754.39	446.41	6756	457.37	6756.98
459.3	6757.25	462.61	6758	462.65	6758	462.88	6758.02		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.03	213	.03	270	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
213	270	310	285	260	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	6749.21	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.32	Wt. n-Val.		0.030
W.S. Elev (ft)	6748.89	Reach Len. (ft)	310.00	285.00
260.00				
Crit W.S. (ft)	6748.89	Flow Area (sq ft)		28.84
E.G. Slope (ft/ft)	0.015583	Area (sq ft)		28.84
Q Total (cfs)	130.00	Flow (cfs)		130.00
Top Width (ft)	46.27	Top Width (ft)		46.27
Vel Total (ft/s)	4.51	Avg. Vel. (ft/s)		4.51
Max Chl Dpth (ft)	0.96	Hydr. Depth (ft)		0.62
Conv. Total (cfs)	1041.4	Conv. (cfs)		1041.4
Length Wtd. (ft)	285.00	Wetted Per. (ft)		46.33
Min Ch El (ft)	6747.93	Shear (lb/sq ft)		0.61
Alpha	1.00	Stream Power (lb/ft s)		2.73
Frctn Loss (ft)	2.62	Cum Volume (acre-ft)		3.89

C & E Loss (ft) 0.04 Cum SA (acres) 11.74

Warning: The energy equation could not be balanced within the specified number of iterations. The
program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
depth, the calculated water surface came back below critical depth. This indicates that there is
not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Trib.3 to Black
REACH: Reach No. H9 RS: 7221

INPUT
Description: Cross Section 34
Station Elevation Data num= 51

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6751.81	65.1	6751.16	69.4	6751.15	70.61	6751.15	71.49	6751.15
110.71	6750.89	111.68	6750.89	124.29	6750.99	125.07	6751	126.14	6751
126.53	6750.94	126.71	6750.76	127.02	6750.69	128.06	6750.56	133.97	6750
138.38	6749.33	147.13	6748	162.52	6746.66	169.69	6746	176.19	6745.48
180	6745.104	191.19	6744	204.83	6743.77	209.62	6743.76	209.7	6743.76
213.47	6744	214.9	6744	215.17	6744	218.34	6744	232.61	6744.98
235	6745.125	249.43	6746	252.94	6746.32	257.37	6746.67	277.94	6748
278.83	6748.07	279.27	6748.11	290.26	6749.08	296	6749.52	298.71	6749.76
303.35	6750	328.76	6750.46	330.74	6750.49	332.07	6750.51	368.29	6751.46
379.7	6751.73	380.55	6751.75	388.21	6752	412.03	6753.16	418.41	6753.47
428.76	6753.95								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.03	180	.03	235	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
180	235	310	310	300	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	6745.11	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.17	Wt. n-Val.		0.030
W.S. Elev (ft)	6744.94	Reach Len. (ft)	310.00	310.00
300.00				
Crit W.S. (ft)	6744.71	Flow Area (sq ft)		39.62

E.G. Slope (ft/ft)	0.006059	Area (sq ft)	39.62
Q Total (cfs)	130.00	Flow (cfs)	130.00
Top Width (ft)	50.38	Top Width (ft)	50.38
Vel Total (ft/s)	3.28	Avg. Vel. (ft/s)	3.28
Max Chl Dpth (ft)	1.18	Hydr. Depth (ft)	0.79
Conv. Total (cfs)	1670.1	Conv. (cfs)	1670.1
Length Wtd. (ft)	310.00	Wetted Per. (ft)	50.46
Min Ch El (ft)	6743.76	Shear (lb/sq ft)	0.30
Alpha	1.00	Stream Power (lb/ft s)	0.97
Frctn Loss (ft)	2.56	Cum Volume (acre-ft)	3.67
C & E Loss (ft)	0.01	Cum SA (acres)	11.42

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Trib.3 to Black
REACH: Reach No. H9 RS: 6911

INPUT
Description: Cross Section 35
Station Elevation Data num= 50

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6746.09	9.74	6746	9.79	6746	16.8	6745.94	19.53	6745.91
31.45	6745.83	33.02	6745.81	39.9	6745.71	40.94	6745.68	42.16	6745.6
43.34	6745.55	44.41	6745.47	44.74	6745.45	45.84	6745.4	48.36	6745.28
49.78	6745.21	53.4	6744.99	55.51	6744.87	67.98	6744	80.98	6742.96
86	6742.562	88.91	6742.33	93.5	6742	100.51	6741.67	109.15	6741.28
114.18	6740.91	117.25	6741.12	117.91	6741.14	119.38	6741.21	120.34	6741.26
121.12	6741.31	122.77	6741.47	124.79	6741.62	127.31	6741.77	131.51	6742
137	6742.576	148.3	6743.76	148.96	6743.84	150.24	6744	150.76	6744.09
151.19	6744.11	152.35	6744.23	168.13	6746	179.04	6746.75	193.38	6747.4
202.62	6748	209.55	6748.19	235.72	6748.77	239.75	6748.89	251.06	6749.3

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.03	86	.03	137	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
86	137	340	350	360	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	6742.55	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.28	Wt. n-Val.		0.030

W.S. Elev (ft)	6742.27	Reach Len. (ft)	340.00	350.00
360.00				
Crit W.S. (ft)	6742.21	Flow Area (sq ft)		30.79
E.G. Slope (ft/ft)	0.011870	Area (sq ft)		30.79
Q Total (cfs)	130.00	Flow (cfs)		130.00
Top Width (ft)	44.42	Top Width (ft)		44.42
Vel Total (ft/s)	4.22	Avg. Vel. (ft/s)		4.22
Max Chl Dpth (ft)	1.36	Hydr. Depth (ft)		0.69
Conv. Total (cfs)	1193.2	Conv. (cfs)		1193.2
Length Wtd. (ft)	350.00	Wetted Per. (ft)		44.51
Min Ch El (ft)	6740.91	Shear (lb/sq ft)		0.51
Alpha	1.00	Stream Power (lb/ft s)		2.16
Frctn Loss (ft)	4.80	Cum Volume (acre-ft)		3.42
C & E Loss (ft)	0.01	Cum SA (acres)		11.09

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Trib.3 to Black
REACH: Reach No. H9 RS: 6562

INPUT
Description: Cross Section 36
Station Elevation Data num= 60

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6741.92	3.08	6741.88	27.8	6741.59	31.98	6741.54	101.54	6740.99
102.5	6741	104.06	6741	114.97	6740.84	115.98	6740.83	130.49	6740.59
132.12	6740.57	134.7	6740.53	140.91	6740.44	141.87	6740.43	142.75	6740.41
143.9	6740.39	145.34	6740.37	146.88	6740.36	147.44	6740.36	147.71	6740.35
147.75	6740.35	148.69	6740.31	152.37	6740.06	152.69	6740	163.11	6739
174.04	6738	175.3	6738	1806	737.718	187.79	6737.25	188.59	6737.21
189.04	6737.02	189.77	6736.96	190.34	6736.85	193.37	6736.68	194.29	6736.64
194.56	6736.62	195.05	6736.55	195.18	6736.54	196	6736.52	196.54	6736.52
204.86	6736.55	216.23	6736.96	216.94	6736.98	217.83	6736.99	219.4	6737
259.05	6737.57	259.36	6737.57	2656	737.712	270.8	6737.86	275.7	6738
282.73	6739	290.7	6740	328.16	6741.03	331.86	6741.1	350.9	6741.38
351.61	6741.39	369.95	6741.76	370.26	6741.76	370.58	6741.77	379.47	6741.93

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.03	180	.03	265	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
180	265	320	320	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	6737.73	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.23	Wt. n-Val.		0.030
W.S. Elev (ft)	6737.51	Reach Len. (ft)	320.00	320.00
320.00				
Crit W.S. (ft)	6737.49	Flow Area (sq ft)		33.92
E.G. Slope (ft/ft)	0.016045	Area (sq ft)		33.92
Q Total (cfs)	130.00	Flow (cfs)		130.00
Top Width (ft)	70.99	Top Width (ft)		70.99
Vel Total (ft/s)	3.83	Avg. Vel. (ft/s)		3.83
Max Chl Dpth (ft)	0.98	Hydr. Depth (ft)		0.48
Conv. Total (cfs)	1026.3	Conv. (cfs)		1026.3
Length Wtd. (ft)	320.00	Wetted Per. (ft)		71.07
Min Ch El (ft)	6736.52	Shear (lb/sq ft)		0.48
Alpha	1.00	Stream Power (lb/ft s)		1.83
Frctn Loss (ft)	4.46	Cum Volume (acre-ft)		3.16
C & E Loss (ft)	0.00	Cum SA (acres)		10.62

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Trib.3 to Black
REACH: Reach No. H9 RS: 6242

INPUT
Description: Cross Section 37
Station Elevation Data num= 59

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6737.61	11.17	6737.3	35.36	6736.63	54.26	6736.16	61.28	6736
64.43	6736	71.36	6736	98.76	6735.83	158.95	6735.83	173.41	6735.75
176.58	6735.73	187.55	6735.71	191.12	6735.71	193.82	6735.7	206.88	6735.34
210.58	6735.29	212.51	6735.25	220.05	6735.02	228.51	6734.75	237.88	6734.47
249.57	6734.04	250	6734.022	250.52	6734	262	6733.541	270	6733.221
300.04	6732.02	300.24	6732.01	300.73	6732	301.3	6732	301.3	6731.99
301.31	6731.99	301.32	6731.99	301.59	6732	301.91	6732	315.03	6732.33
318.46	6732.47	327.23	6732.75	333.51	6732.96	340	6733.219	359.61	6734
360	6734	412.91	6734.03	417.7	6734.1	423.01	6734.2	424.15	6734.22
429.51	6734.35	431.24	6734.41	435.82	6734.47	441.76	6734.61	445.12	6734.7
455.2	6735.01	462.82	6735.22	467.16	6735.34	488.36	6735.98	488.51	6735.99
488.67	6735.99	488.68	6735.99	488.96	6736	518.3	6736.98		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.03	270	.03	340	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
270	340	210	225	225	.1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	6733.28	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.22	Wt. n-Val.		0.030
W.S. Elev (ft)	6733.06	Reach Len. (ft)	210.00	225.00
225.00				
Crit W.S. (ft)	6733.00	Flow Area (sq ft)		34.87
E.G. Slope (ft/ft)	0.012213	Area (sq ft)		34.87
Q Total (cfs)	130.00	Flow (cfs)		130.00
Top Width (ft)	61.99	Top Width (ft)		61.99
Vel Total (ft/s)	3.73	Avg. Vel. (ft/s)		3.73
Max Chl Dpth (ft)	1.07	Hydr. Depth (ft)		0.56
Conv. Total (cfs)	1176.4	Conv. (cfs)		1176.4
Length Wtd. (ft)	225.00	Wetted Per. (ft)		62.03
Min Ch El (ft)	6731.99	Shear (lb/sq ft)		0.43
Alpha	1.00	Stream Power (lb/ft s)		1.60
Frctn Loss (ft)	3.58	Cum Volume (acre-ft)		2.90
C & E Loss (ft)	0.03	Cum SA (acres)		10.13

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Trib.3 to Black
REACH: Reach No. H9 RS: 6020

INPUT
Description: Cross Section 37.5
Station Elevation Data num= 53

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6733.93	5.9	6733.59	43.06	6732	57.88	6731.56	61.73	6731.47
65.26	6731.37	67.6	6731.31	72.62	6731.17	77.62	6731	81.46	6730.87
83.94	6730.8	88.73	6730.67	94.52	6730.45	126.39	6730	1456	729.685
156.47	6729.49	161.17	6729.43	164.52	6729.4	168.46	6729.35	173.26	6729.4
225.04	6729.4	236.85	6729.24	247.45	6729.26	263	6729.09	267.7	6729.08

275.1	6729.04	311.44	6729.28	313.41	6729.32	315.52	6729.32	317.68	6729.35
321.48	6729.37	323.74	6729.39	3406729.755		350.94	6730	436.1	6730
447.87	6730.41	449.55	6730.48	467.14	6731.05	478.39	6731.42	483.01	6731.58
492.59	6731.78	497.7	6731.75	501.13	6731.84	504.02	6731.84	518.21	6731.93
522.84	6732	522.93	6732	523.89	6732.02	524.05	6732.03	524.12	6732.03
548.77	6732.77	559.68	6733.17	564.42	6733.33				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.03	145	.03	340	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
145	340	400	310	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	6729.68	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.13	Wt. n-Val.		0.030
W.S. Elev (ft)	6729.55	Reach Len. (ft)	400.00	310.00
300.00				
Crit W.S. (ft)	6729.54	Flow Area (sq ft)		44.82
E.G. Slope (ft/ft)	0.021526	Area (sq ft)		44.82
Q Total (cfs)	130.00	Flow (cfs)		130.00
Top Width (ft)	177.74	Top Width (ft)		177.74
Vel Total (ft/s)	2.90	Avg. Vel. (ft/s)		2.90
Max Chl Dpth (ft)	0.51	Hydr. Depth (ft)		0.25
Conv. Total (cfs)	886.1	Conv. (cfs)		886.1
Length Wtd. (ft)	310.00	Wetted Per. (ft)		177.75
Min Ch El (ft)	6729.04	Shear (lb/sq ft)		0.34
Alpha	1.00	Stream Power (lb/ft s)		0.98
Frctn Loss (ft)	5.39	Cum Volume (acre-ft)		2.70
C & E Loss (ft)	0.01	Cum SA (acres)		9.52

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Trib.3 to Black
REACH: Reach No. H9 RS: 5705

INPUT
Description: Cross Section 38
Station Elevation Data num= 68

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6727.6	4.2	6727.54	7.6	6727.46	12.92	6727.32	20.45	6727.12
25.72	6727	29.63	6726.89	59.51	6726	78.45	6725.23	110	6724.38
124.14	6724	128.99	6724	137.22	6724	145.72	6724	150.67	6724
154.28	6724	175.28	6724	190.66	6724	193.85	6724	231.94	6723.66
232.46	6723.66	252.63	6723.8	256.83	6723.77	280.46	6723.93	280.67	6723.93
280.74	6723.93	288.88	6723.97	288.92	6723.97	293.96	6724	313.52	6724.11
332.66	6724.2	333.91	6724.21	334.8	6724.23	342.15	6724.27	357.46	6724.34
360	6724.365	360.51	6724.37	376.55	6724.47	383.81	6724.49	392.41	6724.54
396.4	6724.55	400.45	6724.58	409.67	6724.64	422.87	6724.68	433.61	6724.77
435.65	6724.78	438.71	6724.81	441.36	6724.83	457.27	6725.03	460.38	6725.07
469.74	6725.21	481.79	6725.31	489.16	6725.39	493.08	6725.42	501.83	6725.47
504.16	6725.48	506.19	6725.5	532.53	6725.58	535.95	6725.6	538.51	6725.61
541.85	6725.63	543.17	6725.64	544.36	6725.65	545.96	6725.64	597.52	6725.79
603.24	6725.79	603.52	6725.79	608.05	6725.84				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.03	110	.03	360	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
110	360	205	205	205 .1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	6724.28	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.09	Wt. n-Val.		0.030
W.S. Elev (ft)	6724.20	Reach Len. (ft)	205.00	205.00
205.00				
Crit W.S. (ft)	6724.16	Flow Area (sq ft)		54.65
E.G. Slope (ft/ft)	0.014326	Area (sq ft)		54.65
Q Total (cfs)	130.00	Flow (cfs)		130.00
Top Width (ft)	215.00	Top Width (ft)		215.00
Vel Total (ft/s)	2.38	Avg. Vel. (ft/s)		2.38
Max Chl Dpth (ft)	0.54	Hydr. Depth (ft)		0.25
Conv. Total (cfs)	1086.1	Conv. (cfs)		1086.1
Length Wtd. (ft)	205.00	Wetted Per. (ft)		215.00
Min Ch El (ft)	6723.66	Shear (lb/sq ft)		0.23
Alpha	1.00	Stream Power (lb/ft s)		0.54
Frctn Loss (ft)	3.49	Cum Volume (acre-ft)		2.34
C & E Loss (ft)	0.00	Cum SA (acres)		8.12

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Trib.3 to Black
REACH: Reach No. H9 RS: 5500

INPUT
Description: Cross Section 39
Station Elevation Data num= 109

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6724	3.56	6724	3.83	6724	5.16	6723.99	5.2	6723.99
15.1	6723.86	17.2	6723.86	22.42	6723.78	29.32	6723.71	36.16	6723.61
46.74	6723.54	49.13	6723.53	52.85	6723.48	59.45	6723.44	64.53	6723.42
68.64	6723.43	71.01	6723.43	77.27	6723.36	87.57	6723.31	98.28	6723.18
101.28	6723.15	113.4	6723.07	116.23	6723.04	122.7	6722.93	130.39	6722.83
137.97	6722.8	146.89	6722.74	157.77	6722.67	160.91	6722.65	164.61	6722.65
176.84	6722.59	181.8	6722.58	196.38	6722.48	208.65	6722.36	209.47	6722.36
210.95	6722.34	232.7	6722.19	246.45	6722	247.89	6722	260.05	6721.81
261.65	6721.79	265.14	6721.75	275.86	6721.57	281.4	6721.5	298.07	6721.23
320	6720.863	328.53	6720.72	330.79	6720.69	337.23	6720.58	347.48	6720.46
352.29	6720.38	361.82	6720.3	364.6	6720.27	367.06	6720.27	368.86	6720.26
373.09	6720.23	381.16	6720.25	383.81	6720.26	385.57	6720.25	387.1	6720.25
388.26	6720.25	393.53	6720.28	396.71	6720.32	412.75	6720.43	428.94	6720.5
431.41	6720.51	440.03	6720.58	447.64	6720.63	453.1	6720.68	473.4	6720.78
480.87	6720.78	486.41	6720.86	492.34	6720.83	500.36	6720.78	505.1	6720.75
506.57	6720.76	512.55	6720.7	525.62	6720.45	529.24	6720.36	531.95	6720.32
536.52	6720.34	537.25	6720.33	543.31	6720.29	545.11	6720.3	551.23	6720.29
552.18	6720.29	553.82	6720.3	555.5	6720.3	559.06	6720.35	560.99	6720.38
563.72	6720.44	564.73	6720.45	574.27	6720.71	576.52	6720.72	580.61	6720.74
585.34	6720.8	590	6720.898	598.18	6721.07	606.02	6721.11	611.75	6721.17
627.27	6721.46	638.63	6721.6	640.36	6721.61	652.3	6721.83	660.79	6722
663.8	6722.04	676.63	6722.16	681.18	6722.16	714.62	6722.15		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.03	320	.03	590	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
320	590	240	250	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	6720.79	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.13	Wt. n-Val.		0.030
W.S. Elev (ft)	6720.67	Reach Len. (ft)	240.00	250.00
250.00				
Crit W.S. (ft)	6720.67	Flow Area (sq ft)		45.51
E.G. Slope (ft/ft)	0.020526	Area (sq ft)		45.51
Q Total (cfs)	130.00	Flow (cfs)		130.00
Top Width (ft)	178.19	Top Width (ft)		178.19
Vel Total (ft/s)	2.86	Avg. Vel. (ft/s)		2.86
Max Chl Dpth (ft)	0.44	Hydr. Depth (ft)		0.26
Conv. Total (cfs)	907.4	Conv. (cfs)		907.4

Length Wtd. (ft)	250.00	Wetted Per. (ft)	178.20
Min Ch El (ft)	6720.23	Shear (lb/sq ft)	0.33
Alpha	1.00	Stream Power (lb/ft s)	0.93
Frctn Loss (ft)	4.57	Cum Volume (acre-ft)	2.11
C & E Loss (ft)	0.01	Cum SA (acres)	7.19

Warning: The energy equation could not be balanced within the specified number of iterations. The
program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
depth, the calculated water surface came back below critical depth. This indicates that there is
not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Trib.3 to Black
REACH: Reach No. H9 RS: 5250

INPUT
Description: Cross Section 39.5
Station Elevation Data num= 78

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6718.8	14.84	6718.64	32.44	6718.4	33.58	6718.39	41	6718.28
45.92	6718.23	48	6718.22	62.24	6718.03	64.06	6718	64.67	6718
70.89	6717.91	72.95	6717.87	113.78	6717.42	119.06	6717.4	121.95	6717.38
127.63	6717.33	141.22	6717.27	149.78	6717.26	158.59	6717.19	172.83	6717.13
195.29	6716.93	206.14	6716.85	211.38	6716.79	220.03	6716.74	250.37	6716.44
257.07	6716.41	265.89	6716.34	281.25	6716.21	285.79	6716.18	299.45	6716.1
311.55	6716	314.48	6715.98	314.54	6715.98	348.34	6715.85	350.02	6715.84
355.57	6715.85	391.73	6715.86	392.81	6715.82	399.67	6715.76	400.81	6715.71
408.12	6715.59	409.1	6715.55	415	6715.417	416.62	6715.38	417.54	6715.35
420.4	6715.27	420.77	6715.26	423.22	6715.17	427.78	6714.97	430.72	6714.87
433.42	6714.76	440.33	6714.54	442.44	6714.48	442.81	6714.46	448.25	6714.35
449.46	6714.32	450.23	6714.32	451.12	6714.3	453.89	6714.27	459.42	6714.24
463.02	6714.24	465.76	6714.25	466.17	6714.25	467.39	6714.26	467.66	6714.26
468.51	6714.27	468.93	6714.32	470.8	6714.42	473.55	6714.55	482.91	6714.93
484.34	6714.95	492.17	6715.33	494.37	6715.38	495	6715.411	506.82	6716
511.97	6716.5	527.98	6718	531.09	6718.21				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.03	415	.03	495	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
415	495	270	250	250	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	6715.32	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.26	Wt. n-Val.		0.030
W.S. Elev (ft)	6715.06	Reach Len. (ft)	270.00	250.00
250.00				
Crit W.S. (ft)	6715.06	Flow Area (sq ft)		31.71
E.G. Slope (ft/ft)	0.016403	Area (sq ft)		31.71
Q Total (cfs)	130.00	Flow (cfs)		130.00
Top Width (ft)	61.00	Top Width (ft)		61.00
Vel Total (ft/s)	4.10	Avg. Vel. (ft/s)		4.10
Max Chl Dpth (ft)	0.82	Hydr. Depth (ft)		0.52
Conv. Total (cfs)	1015.0	Conv. (cfs)		1015.0
Length Wtd. (ft)	250.00	Wetted Per. (ft)		61.04
Min Ch El (ft)	6714.24	Shear (lb/sq ft)		0.53
Alpha	1.00	Stream Power (lb/ft s)		2.18
Frctn Loss (ft)	4.23	Cum Volume (acre-ft)		1.89
C & E Loss (ft)	0.03	Cum SA (acres)		6.51

Warning: The energy equation could not be balanced within the specified number of iterations. The
program selected the water surface that had the least amount of error between computed and
assumed values.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
depth, the calculated water surface came back below critical depth. This indicates that there is
not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Trib.3 to Black
REACH: Reach No. H9 RS: 5000

INPUT
Description: Cross Section 40
Station Elevation Data num= 122

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6714.1	24.24	6714	25.27	6714	25.29	6714	28.68	6713.98
29.04	6713.97	29.45	6713.97	29.85	6713.96	70.61	6713.59	71.62	6713.57
73.94	6713.53	103.84	6713.15	115.53	6713	120.14	6712.96	129.94	6712.89
141.18	6712.76	143.25	6712.74	145.44	6712.72	152.26	6712.63	171.52	6712.54
176.85	6712.49	183.35	6712.47	186.03	6712.44	217.01	6712.26	219.63	6712.23

223.22	6712.22	230.66	6712.16	239.53	6712.13	241.37	6712.12	242.9	6712.13
243.37	6712.13	261.55	6712.09	273.25	6712	273.76	6712	273.81	6712
285.32	6711.95	285.54	6711.95	301.66	6711.94	308.74	6712	310.22	6712
314.95	6712	315.45	6712	315.58	6712	316.88	6712	317.36	6712
332.02	6712	346.2	6712	361.44	6711.7	366.94	6711.61	380.88	6711.35
402.63	6711	415	6710.852	418.47	6710.81	423.26	6710.76	429.37	6710.63
441.21	6710.32	447.99	6710.16	451.13	6710.11	453.43	6710.07	457.55	6710.01
460.22	6710	463.71	6710	464.79	6710	464.91	6710	464.92	6710
480.19	6710.13	481.36	6710.14	481.87	6710.15	482.67	6710.15	508.02	6710.54
514.12	6710.62	527.8	6710.73	530.89	6710.78	578.37	6710.83	589	6710.53
589.47	6710.54	590.12	6710.52	590.9	6710.5	593.04	6710.49	596.46	6710.44
597.2	6710.44	597.88	6710.42	600.09	6710.38	600.37	6710.37	601.28	6710.33
602.36	6710.26	602.48	6710.25	602.49	6710.22	604.03	6710.21	604.94	6710.2
605.87	6710.2	610.12	6710.23	615.92	6710.28	615.94	6710.28	616.09	6710.27
616.84	6710.26	617.2	6710.26	617.92	6710.26	629.04	6710.83	630	6710.875
634.11	6711.07	636.04	6711.11	639.05	6711.22	641.73	6711.29	643.15	6711.35
667.56	6711.83	668.05	6711.85	670.96	6711.94	674.18	6711.96	674.61	6711.97
678.14	6712	683.89	6712	687.03	6712	687.16	6712	692.2	6712.05
692.9	6712.06	712.44	6712.35	714.48	6712.37	726.84	6712.72	763	6714
772.3	6715.25	780.59	6715.97						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.03	415	.03	630	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
415	630	550	450	410	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	6710.78	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.15	Wt. n-Val.		0.030
W.S. Elev (ft)	6710.63	Reach Len. (ft)	550.00	450.00
410.00				
Crit W.S. (ft)	6710.63	Flow Area (sq ft)		41.46
E.G. Slope (ft/ft)	0.017443	Area (sq ft)		41.46
Q Total (cfs)	130.00	Flow (cfs)		130.00
Top Width (ft)	124.90	Top Width (ft)		124.90
Vel Total (ft/s)	3.14	Avg. Vel. (ft/s)		3.14
Max Chl Dpth (ft)	0.63	Hydr. Depth (ft)		0.33
Conv. Total (cfs)	984.3	Conv. (cfs)		984.3
Length Wtd. (ft)	450.00	Wetted Per. (ft)		124.95
Min Ch El (ft)	6710.00	Shear (lb/sq ft)		0.36
Alpha	1.00	Stream Power (lb/ft s)		1.13
Frctn Loss (ft)	8.43	Cum Volume (acre-ft)		1.68
C & E Loss (ft)	0.00	Cum SA (acres)		5.97

Warning: The energy equation could not be balanced within the specified number of iterations. The
program selected the water surface that had the least amount of error between computed and
assumed values.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
depth, the calculated water surface came back below critical depth. This indicates that there is
not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Trib.3 to Black
REACH: Reach No. H9 RS: 4537

INPUT
Description: Cross Section 41
Station Elevation Data num= 86

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6709.87	17.66	6708.92	37.57	6708	88.58	6707.26	174.94	6706
206.16	6704.77	229.33	6704	233	6704	256	6703.67	262.13	6703.64
274.61	6703.52	281.99	6703.46	285.05	6703.43	314.56	6703.19	324.57	6703.07
334.3	6702.92	337.92	6702.89	346.03	6702.79	350	6702.75	355.03	6702.7
362.93	6702.62	376.11	6702.51	379.73	6702.5	399.63	6702.33	400.32	6702.32
403.08	6702.3	427.03	6702.15	434.79	6702.07	440.09	6702	447.34	6701.89
479.96	6701.66	481.35	6701.65	485.62	6701.61	493.22	6701.59	515.4	6701.59
522.02	6701.62	525.82	6701.6	540.54	6701.61	541.54	6701.61	555.07	6701.77
557	6701.77	576.22	6701.97	576.45	6701.97	584.48	6702	587.83	6702.01
587.86	6702.01	587.96	6702.01	587.98	6702.01	588.03	6702.01	628.97	6702.25
633.3	6702.27	658.82	6702.4	662.67	6702.45	664.52	6702.47	674.54	6702.56
683.33	6702.71	687.31	6702.76	690	6702.805	690.91	6702.82	708.21	6703.08
717.71	6703.21	728.92	6703.45	729.99	6703.47	732.87	6703.52	734.38	6703.55
740.6	6703.66	741.88	6703.69	748.59	6703.78	751.16	6703.83	768.6	6704
773.49	6704.06	783.71	6704.09	784.68	6704.11	789.05	6704.16	790.44	6704.19
797.06	6704.3	803.69	6704.43	825.75	6704.86	829.13	6704.93	838.1	6705.07
850.51	6705.35	854.1	6705.44	860.55	6705.6	864.69	6705.71	876.85	6706
878.33	6706.05								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.03	350	.03	690	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
350	690	500	480	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	6702.17	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.14	Wt. n-Val.		0.030
W.S. Elev (ft)	6702.02	Reach Len. (ft)	500.00	480.00
480.00				
Crit W.S. (ft)	6702.02	Flow Area (sq ft)		42.91

E.G. Slope (ft/ft)	0.020197	Area (sq ft)	42.91
Q Total (cfs)	130.00	Flow (cfs)	130.00
Top Width (ft)	151.93	Top Width (ft)	151.93
Vel Total (ft/s)	3.03	Avg. Vel. (ft/s)	3.03
Max Chl Dpth (ft)	0.43	Hydr. Depth (ft)	0.28
Conv. Total (cfs)	914.8	Conv. (cfs)	914.8
Length Wtd. (ft)	480.00	Wetted Per. (ft)	151.93
Min Ch El (ft)	6701.59	Shear (lb/sq ft)	0.36
Alpha	1.00	Stream Power (lb/ft s)	1.08
Frctn Loss (ft)	6.74	Cum Volume (acre-ft)	1.24
C & E Loss (ft)	0.02	Cum SA (acres)	4.54

Warning: The energy equation could not be balanced within the specified number of iterations. The
program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
depth, the calculated water surface came back below critical depth. This indicates that there is
not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Trib.3 to Black
REACH: Reach No. H9 RS: 4060

INPUT
Description: Cross Section 42
Station Elevation Data num= 71

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6698.01	.67	6698	12.36	6697.74	16.62	6697.63	22.66	6697.48
35.57	6697.15	44.31	6696.9	62.9	6696.49	68.64	6696.32	80.99	6696
98.02	6695.67	103.13	6695.63	109.96	6695.53	119.24	6695.42	132.77	6695.31
146.99	6695.19	149.14	6695.16	162.72	6695.03	170.98	6694.94	184.43	6694.77
187.33	6694.73	194.75	6694.67	201.7	6694.57	206.35	6694.5	222.14	6694.41
228.92	6694.36	271.39	6694	272.35	6694	272.79	6694	273.45	6694
273.53	6694	274.61	6694	278.59	6694	281.37	6694	291.89	6694
293.16	6694	297.24	6694	300	6693.988	327.87	6693.87	329.06	6693.87
329.46	6693.87	333.4	6693.86	357.38	6693.81	359.97	6693.81	361.05	6693.8
383.84	6693.69	387.93	6693.67	388.49	6693.67	395.81	6693.62	396.66	6693.61
417.67	6693.51	428.93	6693.46	454	6693.44	455.73	6693.44	486.32	6693.49
514.91	6693.64	517.63	6693.64	518.02	6693.64	561.09	6694	570	6694.176
581.31	6694.4	584.32	6694.47	587.41	6694.55	590.79	6694.64	611.3	6695.35
614.2	6695.44	623.15	6695.76	629.3	6696	677.39	6697.52	691.32	6698
699.25	6698.45								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.03	300	.03	570	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
300	570	520	520	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	6693.98	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.07	Wt. n-Val.		0.030
W.S. Elev (ft)	6693.91	Reach Len. (ft)	520.00	520.00
520.00				
Crit W.S. (ft)		Flow Area (sq ft)		62.03
E.G. Slope (ft/ft)	0.010317	Area (sq ft)		62.03
Q Total (cfs)	130.00	Flow (cfs)		130.00
Top Width (ft)	230.73	Top Width (ft)		230.73
Vel Total (ft/s)	2.10	Avg. Vel. (ft/s)		2.10
Max Chl Dpth (ft)	0.47	Hydr. Depth (ft)		0.27
Conv. Total (cfs)	1279.9	Conv. (cfs)		1279.9
Length Wtd. (ft)	520.00	Wetted Per. (ft)		230.73
Min Ch El (ft)	6693.44	Shear (lb/sq ft)		0.17
Alpha	1.00	Stream Power (lb/ft s)		0.36
Frctn Loss (ft)	6.58	Cum Volume (acre-ft)		0.66
C & E Loss (ft)	0.00	Cum SA (acres)		2.43

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Trib.3 to Black
REACH: Reach No. H9 RS: 3530

INPUT
Description: Cross Section 43
Station Elevation Data num= 54

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
288.01	6687.98	288.14	6687.98	288.29	6687.98	318.2	6688	318.21	6688
318.23	6688	318.25	6688	335.25	6687.93	336.08	6687.93	343.15	6687.89
348.97	6687.87	370.26	6687.81	373.59	6687.8	381.13	6687.8	384.83	6687.79
385.04	6687.79	393.14	6687.74	394.97	6687.74	396.43	6687.74	400.82	6687.7
408.63	6687.66	4256	687.478	435.49	6687.36	437.7	6687.34	460.74	6687.2

462.8	6687.2	466.59	6687.15	486.29	6687.15	504.72	6687	509.55	6686.98
514.6	6686.96	535.06	6686.88	542.11	6686.87	550.57	6686.86	566.61	6686.86
580.75	6686.87	599.93	6687	611.63	6687.15	613.58	6687.16	6356	687.483
661.99	6687.89	662.99	6687.9	664.13	6687.9	664.39	6687.9	664.56	6687.9
669.6	6688	674.71	6688.23	711.92	6690	713.43	6690.05	718.86	6690.3
719.54	6690.33	749.6	6691.66	755.91	6692	761.35	6692.27		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
288.01	.03	425	.03	635	.03

Bank Sta: Left	Right	Coeff Contr.	Expan.
425	635	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	6687.40	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.11	Wt. n-Val.		0.030
W.S. Elev (ft)	6687.29	Reach Len. (ft)		
Crit W.S. (ft)	6687.27	Flow Area (sq ft)		48.92
E.G. Slope (ft/ft)	0.016011	Area (sq ft)		48.92
Q Total (cfs)	130.00	Flow (cfs)		130.00
Top Width (ft)	177.19	Top Width (ft)		177.19
Vel Total (ft/s)	2.66	Avg. Vel. (ft/s)		2.66
Max Chl Dpth (ft)	0.43	Hydr. Depth (ft)		0.28
Conv. Total (cfs)	1027.4	Conv. (cfs)		1027.4
Length Wtd. (ft)		Wetted Per. (ft)		177.19
Min Ch El (ft)	6686.86	Shear (lb/sq ft)		0.28
Alpha	1.00	Stream Power (lb/ft s)		0.73
Frctn Loss (ft)		Cum Volume (acre-ft)		
C & E Loss (ft)		Cum SA (acres)		

SUMMARY OF MANNING'S N VALUES

River:Trib.1 to Black

Reach	River Sta.	n1	n2	n3
Reach No. H7	3326	.03	.03	.03
Reach No. H7	3060	.03	.03	.03
Reach No. H7	2745	.03	.03	.03
Reach No. H7	2436	.03	.03	.03
Reach No. H7	2085	.03	.03	.03

Reach	River Sta.	n1	n2	n3
Reach No. H7	1724	.03	.03	.03
Reach No. H7	1395	.03	.03	.03
Reach No. H7	1015	.03	.03	.03
Reach No. H7	630	.03	.03	.03
Reach No. H7	480	.03	.03	.03
Reach No. H7	330	.03	.03	.03
Reach No. H7	169	.03	.03	.03

River:Trib.2 to Black

Reach	River Sta.	n1	n2	n3
Reach No. H8	12669	.03	.03	.03
Reach No. H8	12483	.03	.03	.03
Reach No. H8	12319	.03	.03	.03
Reach No. H8	12036	.03	.03	.03
Reach No. H8	11728	.03	.03	.03
Reach No. H8	11439	.03	.03	.03
Reach No. H8	11164	.03	.03	.03
Reach No. H8	10878	.03	.03	.03
Reach No. H8	10590	.03	.03	.03
Reach No. H8	10348	.03	.03	.03
Reach No. H8	10137	.03	.03	.03
Reach No. H8	9836	.03	.03	.03
Reach No. H8	9510	.03	.03	.03
Reach No. H8	9209	.03	.03	.03
Reach No. H8	8994	.03	.03	.03
Reach No. H8	8550	.03	.03	.03
Reach No. H8	8400	.03	.03	.03
Reach No. H8	8100	.03	.03	.03
Reach No. H8	7850	.03	.03	.03
Reach No. H8	7555	.03	.03	.03
Reach No. H8	7260	.03	.03	.03
Reach No. H8	6943	.03	.03	.03
Reach No. H8	6687	.03	.03	.03
Reach No. H8	6505	.03	.03	.03
Reach No. H8	6256	.03	.03	.03
Reach No. H8	6007	.03	.03	.03
Reach No. H8	5570	.03	.03	.03
Reach No. H8	5243	.03	.03	.03
Reach No. H8	5050	.03	.03	.03
Reach No. H8	4578	.03	.03	.03
Reach No. H8	4160	.03	.03	.03

River:Trib.3 to Black

Reach	River Sta.	n1	n2	n3
Reach No. H9	8015	.03	.03	.03
Reach No. H9	7640	.03	.03	.03
Reach No. H9	7510	.03	.03	.03
Reach No. H9	7221	.03	.03	.03
Reach No. H9	6911	.03	.03	.03
Reach No. H9	6562	.03	.03	.03
Reach No. H9	6242	.03	.03	.03
Reach No. H9	6020	.03	.03	.03
Reach No. H9	5705	.03	.03	.03
Reach No. H9	5500	.03	.03	.03
Reach No. H9	5250	.03	.03	.03
Reach No. H9	5000	.03	.03	.03
Reach No. H9	4537	.03	.03	.03

Reach No. H9	4060	.03	.03	.03
Reach No. H9	3530	.03	.03	.03

SUMMARY OF REACH LENGTHS

River: Trib.1 to Black

Reach	River Sta.	Left	Channel	Right
Reach No. H7	3326	340	260	265
Reach No. H7	3060	320	310	320
Reach No. H7	2745	310	310	310
Reach No. H7	2436	350	350	350
Reach No. H7	2085	355	355	355
Reach No. H7	1724	335	335	335
Reach No. H7	1395	375	375	375
Reach No. H7	1015	380	380	380
Reach No. H7	630	150	150	150
Reach No. H7	480	95	150	150
Reach No. H7	330	227	160	160
Reach No. H7	169			

River: Trib.2 to Black

Reach	River Sta.	Left	Channel	Right
Reach No. H8	12669	110	183	470
Reach No. H8	12483	240	160	60
Reach No. H8	12319	250	280	220
Reach No. H8	12036	260	300	360
Reach No. H8	11728	275	290	310
Reach No. H8	11439	268	270	300
Reach No. H8	11164	310	280	210
Reach No. H8	10878	310	285	150
Reach No. H8	10590	240	245	285
Reach No. H8	10348	220	210	170
Reach No. H8	10137	325	300	220
Reach No. H8	9836	300	320	220
Reach No. H8	9510	135	275	380
Reach No. H8	9209	300	215	170
Reach No. H8	8994	175	290	340
Reach No. H8	8550	305	302	302
Reach No. H8	8400	371	293	250
Reach No. H8	8100	339	226	115
Reach No. H8	7850	283	290	305
Reach No. H8	7555	295	295	295
Reach No. H8	7260	240	290	370
Reach No. H8	6943	235	250	265
Reach No. H8	6687	210	125	115
Reach No. H8	6505	270	240	220
Reach No. H8	6256	210	250	285
Reach No. H8	6007	440	430	420
Reach No. H8	5570	330	322	340
Reach No. H8	5243	162	196	200
Reach No. H8	5050	229	474	480
Reach No. H8	4578	361	416	440
Reach No. H8	4160			

River: Trib.3 to Black

Reach	River Sta.	Left	Channel	Right
Reach No. H9	8015	270	350	440
Reach No. H9	7640	190	130	90
Reach No. H9	7510	310	285	260
Reach No. H9	7221	310	310	300
Reach No. H9	6911	340	350	360
Reach No. H9	6562	320	320	320
Reach No. H9	6242	210	225	225
Reach No. H9	6020	400	310	300
Reach No. H9	5705	205	205	205
Reach No. H9	5500	240	250	250
Reach No. H9	5250	270	250	250
Reach No. H9	5000	550	450	410
Reach No. H9	4537	500	480	480
Reach No. H9	4060	520	520	520
Reach No. H9	3530			

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: Trib.1 to Black

Reach	River Sta.	Contr.	Expan.
Reach No. H7	3326	.1	.3
Reach No. H7	3060	.1	.3
Reach No. H7	2745	.1	.3
Reach No. H7	2436	.1	.3
Reach No. H7	2085	.1	.3
Reach No. H7	1724	.1	.3
Reach No. H7	1395	.1	.3
Reach No. H7	1015	.1	.3
Reach No. H7	630	.1	.3
Reach No. H7	480	.1	.3
Reach No. H7	330	.1	.3
Reach No. H7	169	.1	.3

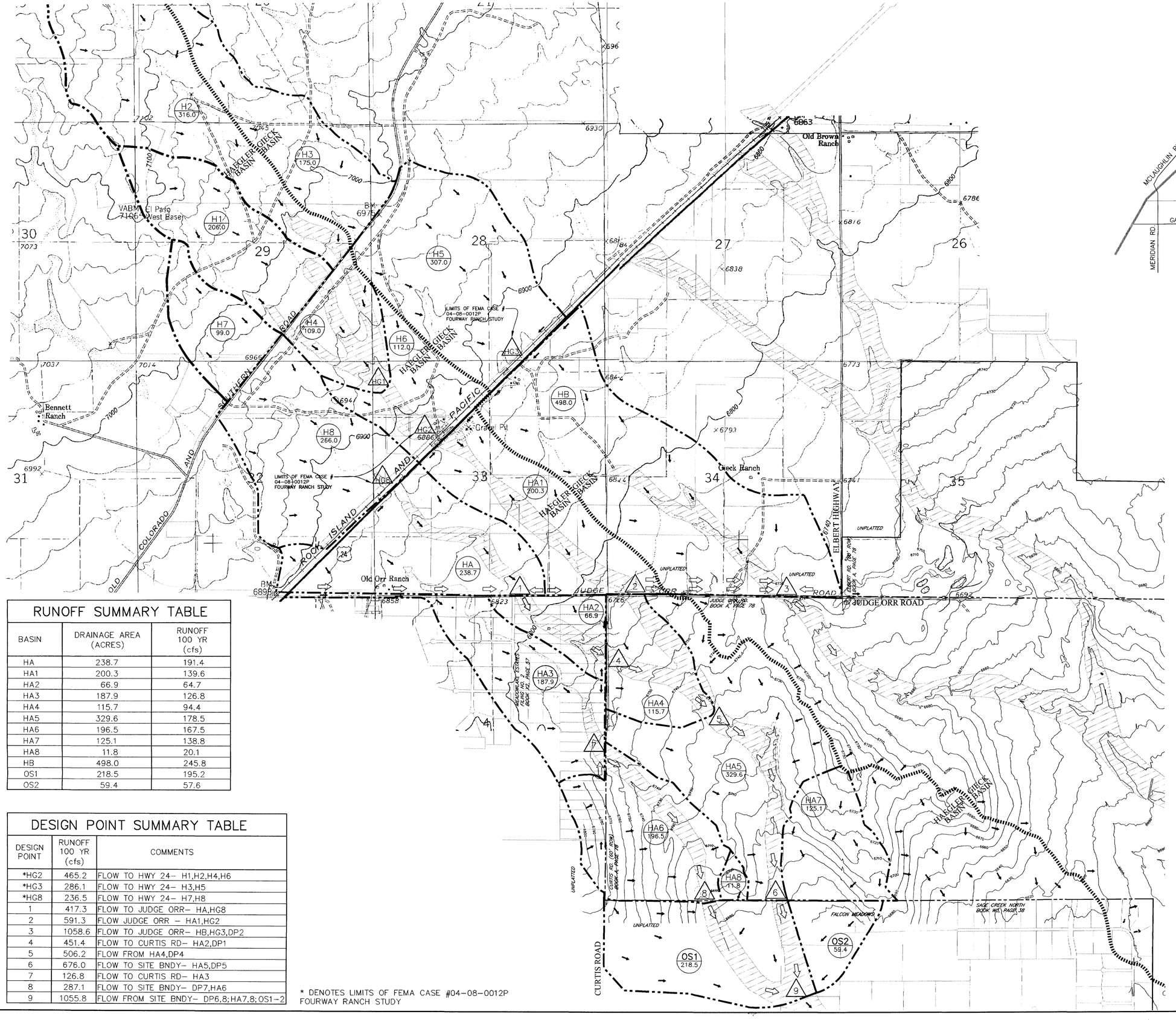
River: Trib.2 to Black

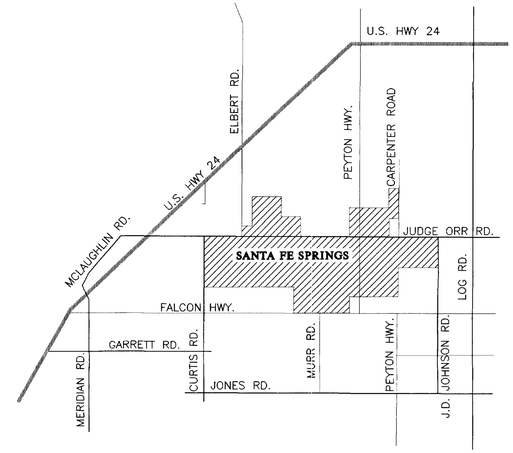
Reach	River Sta.	Contr.	Expan.
Reach No. H8	12669	.1	.3
Reach No. H8	12483	.1	.3
Reach No. H8	12319	.1	.3
Reach No. H8	12036	.1	.3
Reach No. H8	11728	.1	.3
Reach No. H8	11439	.1	.3
Reach No. H8	11164	.1	.3
Reach No. H8	10878	.1	.3
Reach No. H8	10590	.1	.3
Reach No. H8	10348	.1	.3
Reach No. H8	10137	.1	.3
Reach No. H8	9836	.1	.3
Reach No. H8	9510	.1	.3
Reach No. H8	9209	.1	.3
Reach No. H8	8994	.1	.3
Reach No. H8	8550	.1	.3

Reach No. H8	8400	.1	.3
Reach No. H8	8100	.1	.3
Reach No. H8	7850	.1	.3
Reach No. H8	7555	.1	.3
Reach No. H8	7260	.1	.3
Reach No. H8	6943	.1	.3
Reach No. H8	6687	.1	.3
Reach No. H8	6505	.1	.3
Reach No. H8	6256	.1	.3
Reach No. H8	6007	.1	.3
Reach No. H8	5570	.1	.3
Reach No. H8	5243	.1	.3
Reach No. H8	5050	.1	.3
Reach No. H8	4578	.1	.3
Reach No. H8	4160	.1	.3

River: Trib.3 to Black

Reach	River Sta.	Contr.	Expan.
Reach No. H9	8015	.1	.3
Reach No. H9	7640	.1	.3
Reach No. H9	7510	.1	.3
Reach No. H9	7221	.1	.3
Reach No. H9	6911	.1	.3
Reach No. H9	6562	.1	.3
Reach No. H9	6242	.1	.3
Reach No. H9	6020	.1	.3
Reach No. H9	5705	.1	.3
Reach No. H9	5500	.1	.3
Reach No. H9	5250	.1	.3
Reach No. H9	5000	.1	.3
Reach No. H9	4537	.1	.3
Reach No. H9	4060	.1	.3
Reach No. H9	3530	.1	.3





VICINTY MAP

1"=5000'

LEGEND

- EX. MAJOR CONTOUR 6420
- DRAINAGE BASIN BOUNDARY .....
- OVERLAND FLOW DIRECTION .....
- CHANNELIZED FLOW DIRECTION .....
- HAEGLER/GIECK BASIN BOUNDARY .....
- DESIGN POINT 1
- 100-YEAR FLOODPLAIN PER FIRM MAPS .....
- BASIN I.D. / BASIN AREA (Acres) — HA3 / 187.9

RUNOFF SUMMARY TABLE

BASIN	DRAINAGE AREA (ACRES)	RUNOFF 100 YR (cfs)
HA	238.7	191.4
HA1	200.3	139.6
HA2	66.9	64.7
HA3	187.9	126.8
HA4	115.7	94.4
HA5	329.6	178.5
HA6	196.5	167.5
HA7	125.1	138.8
HA8	11.8	20.1
HB	498.0	245.8
OS1	218.5	195.2
OS2	59.4	57.6

DESIGN POINT SUMMARY TABLE

DESIGN POINT	RUNOFF 100 YR (cfs)	COMMENTS
*HG2	465.2	FLOW TO HWY 24- H1,H2,H4,H6
*HG3	286.1	FLOW TO HWY 24- H3,H5
*HG8	236.5	FLOW TO HWY 24- H7,H8
1	417.3	FLOW TO JUDGE ORR- HA,HG8
2	591.3	FLOW JUDGE ORR - HA1,HG2
3	1058.6	FLOW TO JUDGE ORR- HB,HG3,DP2
4	451.4	FLOW TO CURTIS RD- HA2,DP1
5	506.2	FLOW FROM HA4,DP4
6	676.0	FLOW TO SITE BNDY- HA5,DP5
7	126.8	FLOW TO CURTIS RD- HA3
8	287.1	FLOW TO SITE BNDY- DP7,HA6
9	1055.8	FLOW FROM SITE BNDY- DP6,8;HA7,8;OS1-2

* DENOTES LIMITS OF FEMA CASE #04-08-0012P FOURWAY RANCH STUDY

GRAPHIC SCALE
1000 0 500 1000
1 inch = 1000 ft.

NO.	DESCRIPTION	REV BY	CKD BY	DATE
	REVISION			

TRI-CORE ENGINEERING
5526 N. ACADEMY BLVD., SUITE 204
COLORADO SPRINGS, CO 80918
PHONE (719) 264-1560
FAX (719) 264-1193

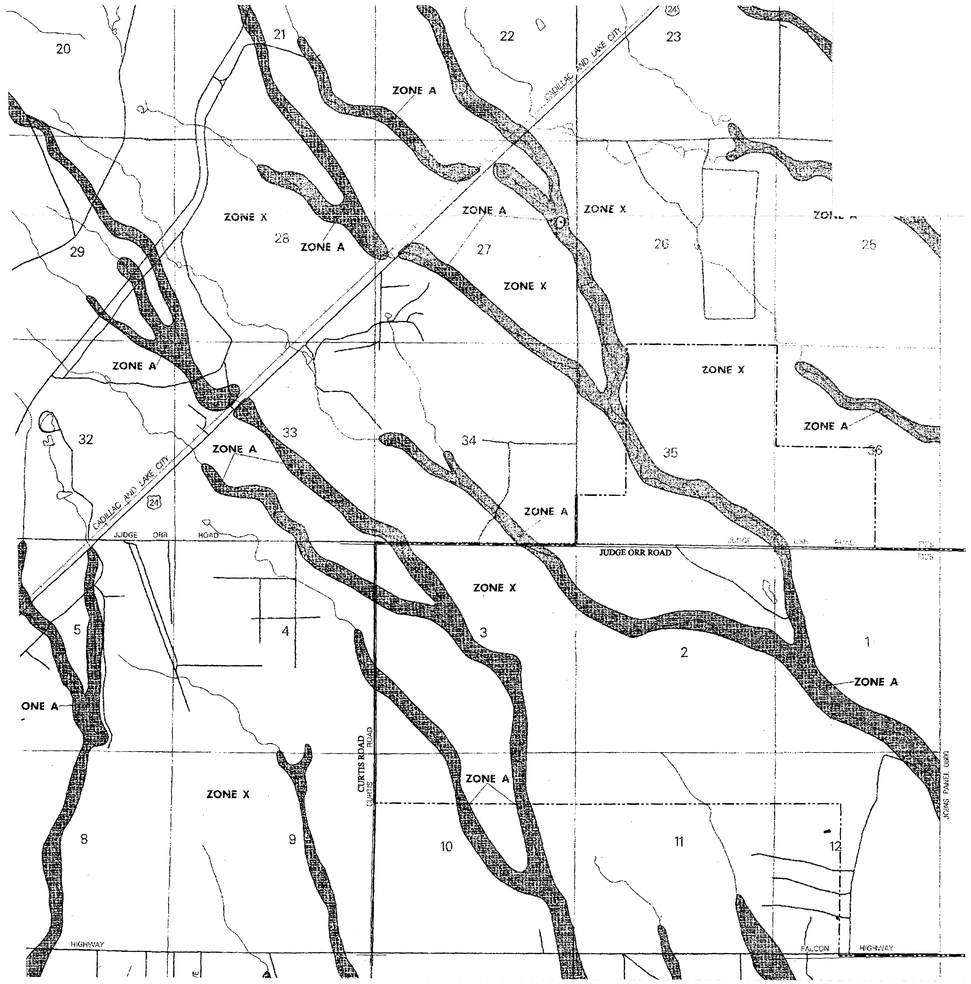
SCALE (H): 1"=1000'
SCALE (V): N/A
DRAWN BY: DMM
DESIGNED BY: RLS
CHECKED BY: RLS
DATE: 05/21/04

SANTA FE SPRINGS
HAEGLER RANCH DRAINAGE BASIN LOMR
EL PASO, COUNTY

REALTY DEVELOPMENT SERVICES
25 NORTH TEJON
SUITE 300

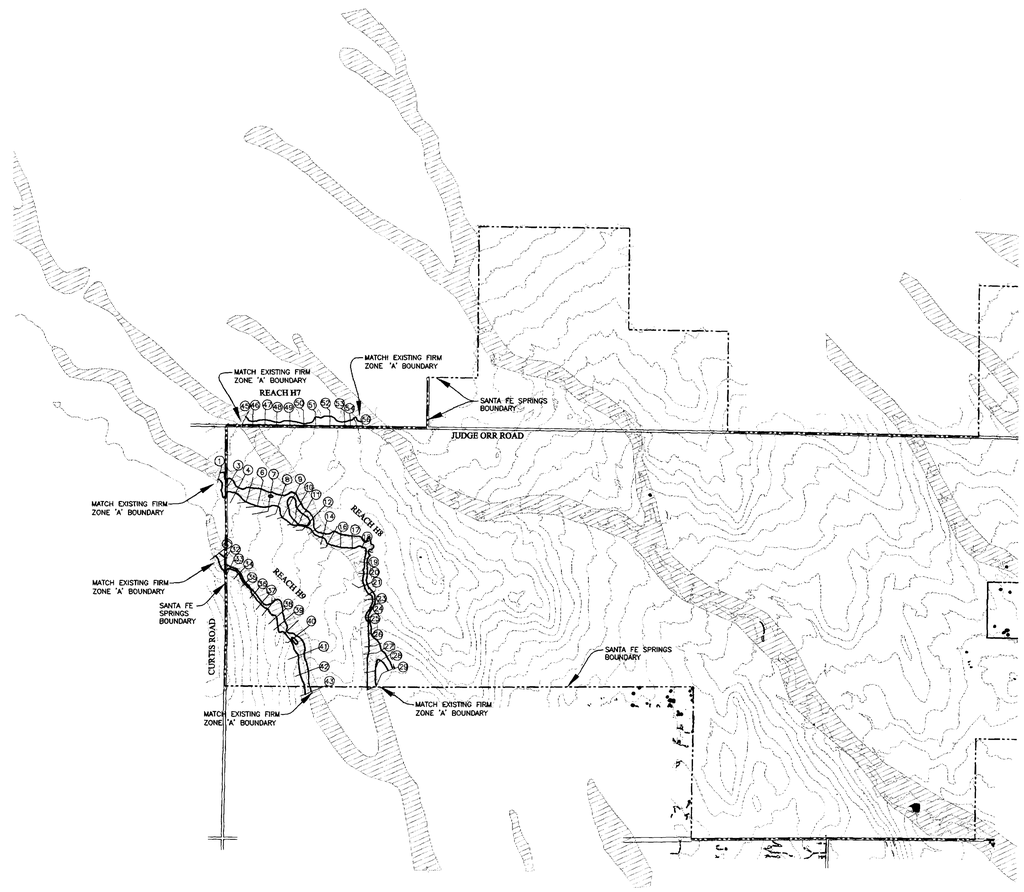
EXHIBIT 1
HYDROLOGIC SUBBASIN MAP

PROJECT NO. 6005-0001
FILENAME 01DR_HIST.DWG
DRAWING NO. EXH. 1



EFFECTIVE CONDITION

MAP PANEL NO. 0575F



REVISED EFFECTIVE CONDITION

APPROXIMATE SCALE IN FEET
2000 0 2000

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

EL PASO COUNTY, COLORADO AND INCORPORATED AREAS

PANEL 575 OF 1300
(SEE MAP INDEX FOR PANELS NOT PRINTED)

CONTAINS: COMMUNITY	NUMBER	PANEL	SUFFIX
COLORADO SPRINGS, CITY OF	080060	0575	F
EL PASO COUNTY, UNINCORPORATED AREAS	080059	0575	F

MAP NUMBER
08041C0575 F

EFFECTIVE DATE:
MARCH 17, 1997

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

GRAPHIC SCALE
2000 0 1000 2000
1 inch = 2000 ft

REVISION NO.	DESCRIPTION	REV BY	CKD BY	DATE

TRI-CORE ENGINEERING
5526 N. ACADEMY BLVD., SUITE 204
COLORADO SPRINGS, CO 80918
PHONE (719) 264-1560
FAX (719) 264-1193

SCALE (H): 1"=2000'
SCALE (V): N/A

DRAWN BY: DMM
DESIGNED BY: RLS
CHECKED BY: RLS

DATE: 05/21/04

SANTA FE SPRINGS
HAEGLER RANCH DRAINAGE BASIN LOMR
EL PASO, COUNTY

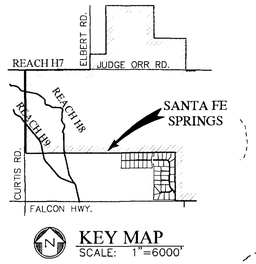
REALTY DEVELOPMENT SERVICES
25 NORTH TEJON
SUITE 300

EXHIBIT 2
REVISED FLOOD INSURANCE RATE MAP

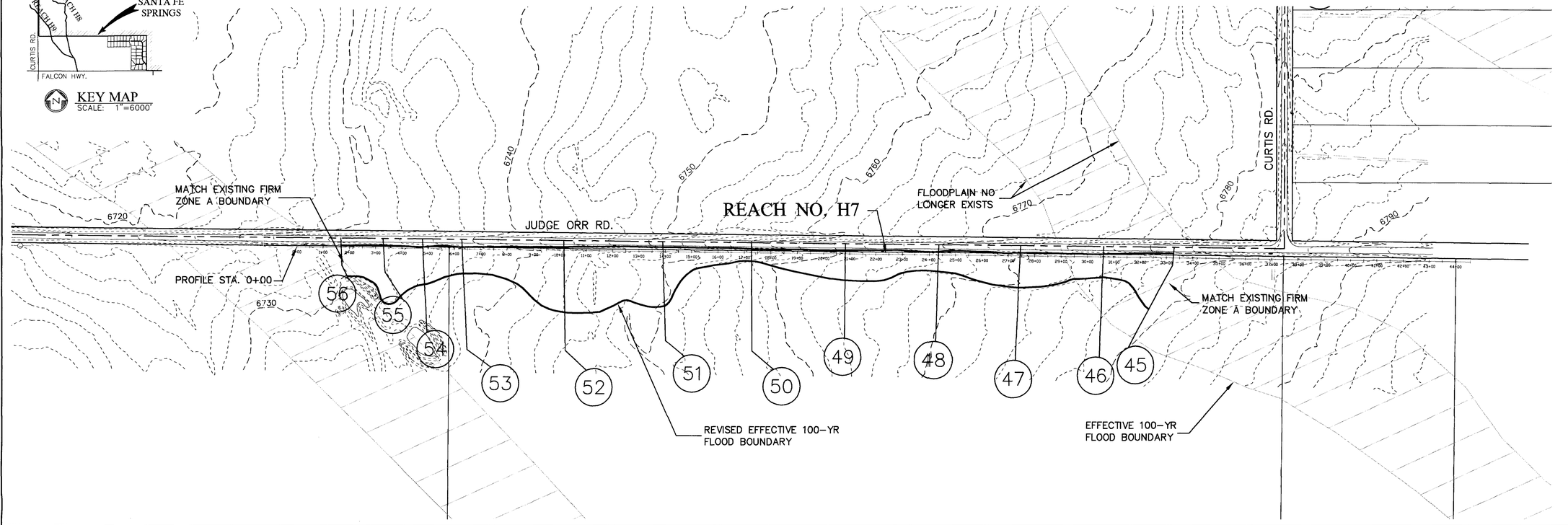
PROJECT NO.
6005-0001

FILENAME
RATE_MAP_LOMR.DWG

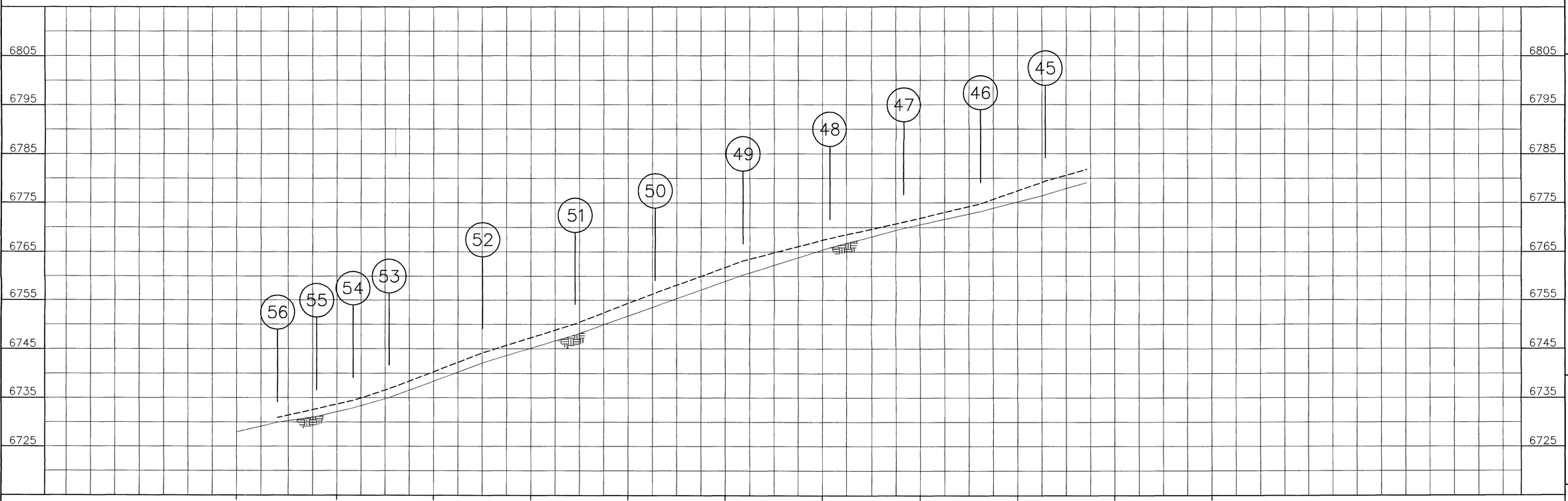
DRAWING NO.
EXH. 2



KEY MAP
SCALE: 1"=6000'



GRAPHIC SCALE
200 0 100 200
1 inch = 200 ft.



NO.	DESCRIPTION	REV BY	CKD BY	DATE
	REVISION			

TRI-CORE ENGINEERING
5526 N. ACADEMY BLVD., SUITE 204
COLORADO SPRINGS, CO 80918
PHONE (719) 264-1560
FAX (719) 264-1193

SCALE (H): 1"=200'
SCALE (V): 1"=10'
DRAWN BY: KMV
DESIGNED BY: RLS
CHECKED BY: RLS
DATE: 06/04/04

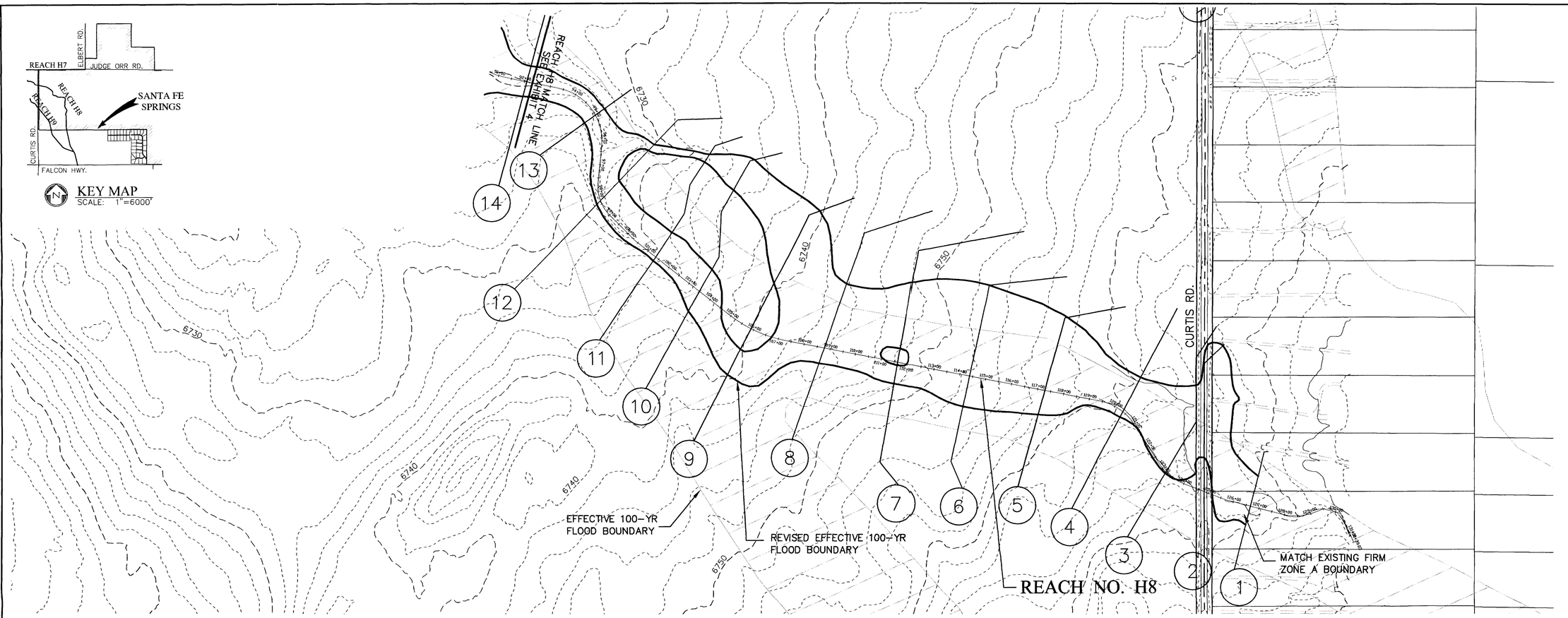
SANTA FE SPRINGS
HAEGLER RANCH DRAINAGE BASIN LOMR
EL PASO COUNTY

REALTY DEVELOPMENT SERVICES
25 NORTH TEJON, SUITE 300
COLORADO SPRINGS, CO 80903

EXHIBIT 3 100-YEAR FLOODPLAIN BOUNDARY & PROFILE WORKMAP

PROJECT NO.
6005.0001
FILENAME
PP-LOMR.DWG
DRAWING NO.
EXH. 3

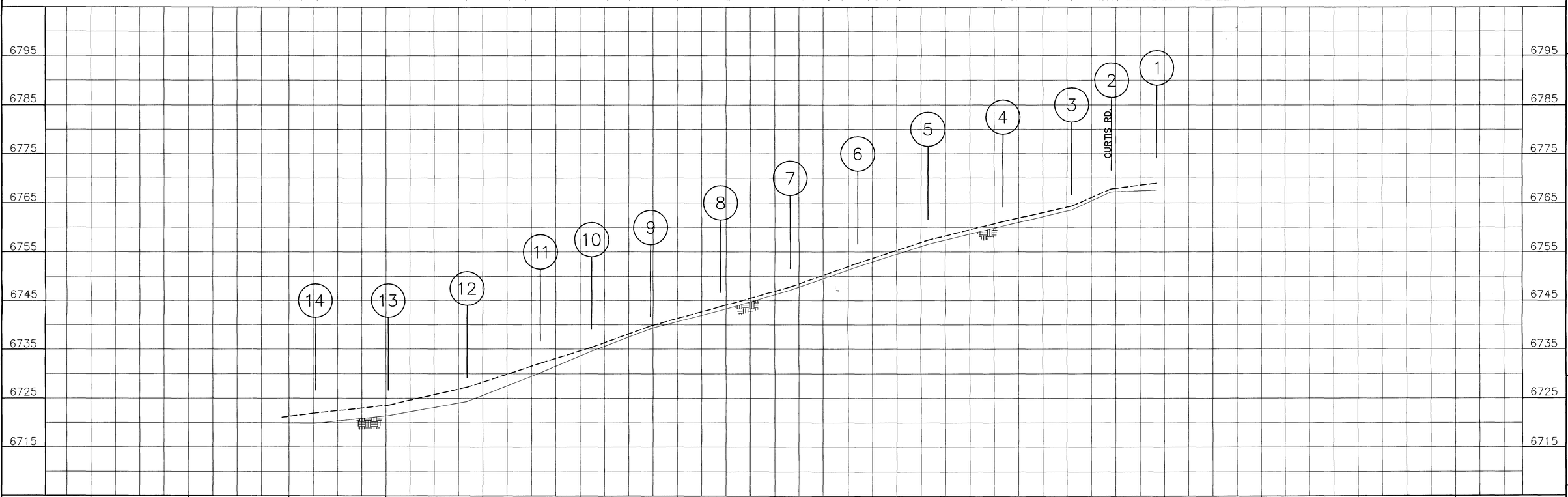
KEY MAP
SCALE: 1"=6000'



GRAPHIC SCALE
200 0 100 200
1 inch = 200 ft.

REVISION				
NO.	DESCRIPTION	REV BY	CKD BY	DATE

TRI-CORE ENGINEERING
5526 N. ACADEMY BLVD., SUITE 204
COLORADO SPRINGS, CO 80918
PHONE (719) 264-1560
FAX (719) 264-1193



SCALE (H): 1"=200'
SCALE (V): 1"=10'
DRAWN BY: KMV
DESIGNED BY: RLS
CHECKED BY: RLS
DATE: 06/04/04

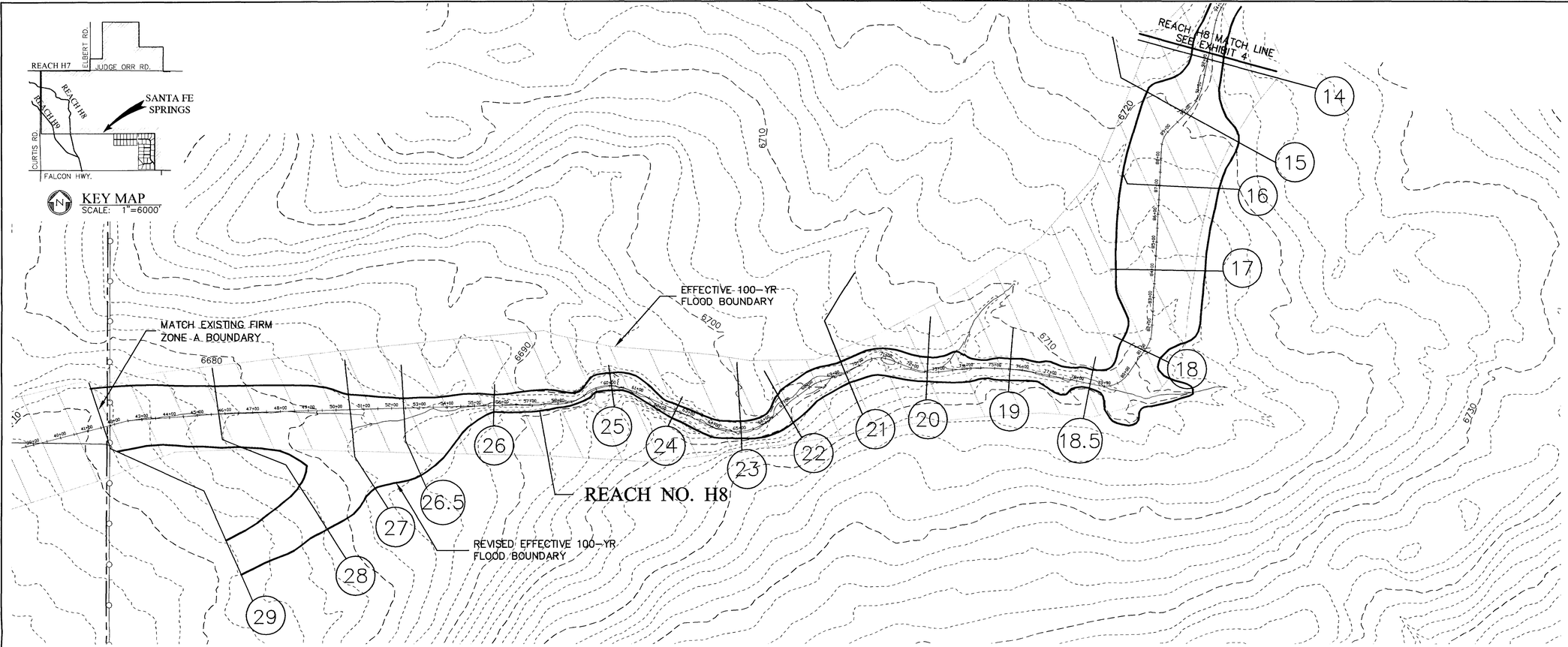
SANTA FE SPRINGS
HAEGLER RANCH DRAINAGE BASIN LOMR
EL PASO COUNTY

REALTY DEVELOPMENT SERVICES
25 NORTH TEJON, SUITE 300
COLORADO SPRINGS, CO 80903

EXHIBIT 4 100-YEAR FLOODPLAIN BOUNDARY & PROFILE WORKMAP

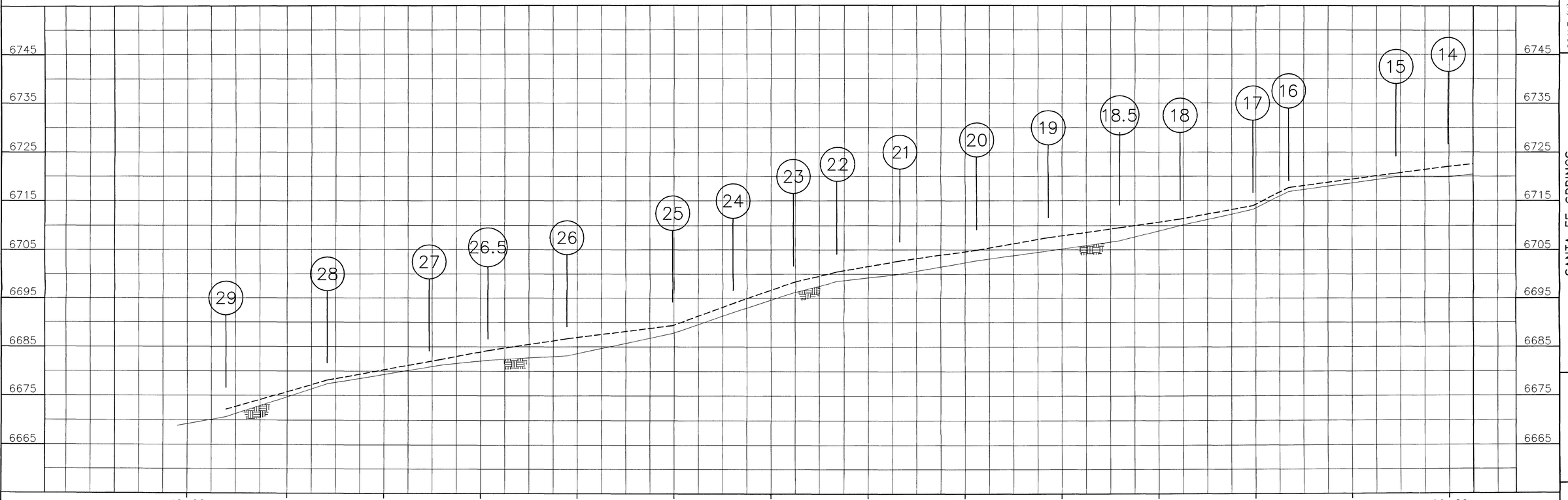
PROJECT NO.
6005.0001
FILENAME
PP-LOMR.DWG
DRAWING NO.
EXH. 4

KEY MAP
SCALE: 1"=6000'



N

GRAPHIC SCALE
200 0 100 200
1 inch = 200 ft.



NO.	DESCRIPTION	REVISION BY	CKD BY	DATE

TRI-CORE ENGINEERING
5526 N. ACADEMY BLVD., SUITE 204
COLORADO SPRINGS, CO 80918
PHONE (719) 264-1560
FAX (719) 264-1193

SCALE (H): 1"=200'
SCALE (V): 1"=10'
DRAWN BY: KMV
DESIGNED BY: RLS
CHECKED BY: RLS
DATE: 06/04/04

SANTA FE SPRINGS
HAEGLER RANCH DRAINAGE BASIN LOMR
EL PASO COUNTY

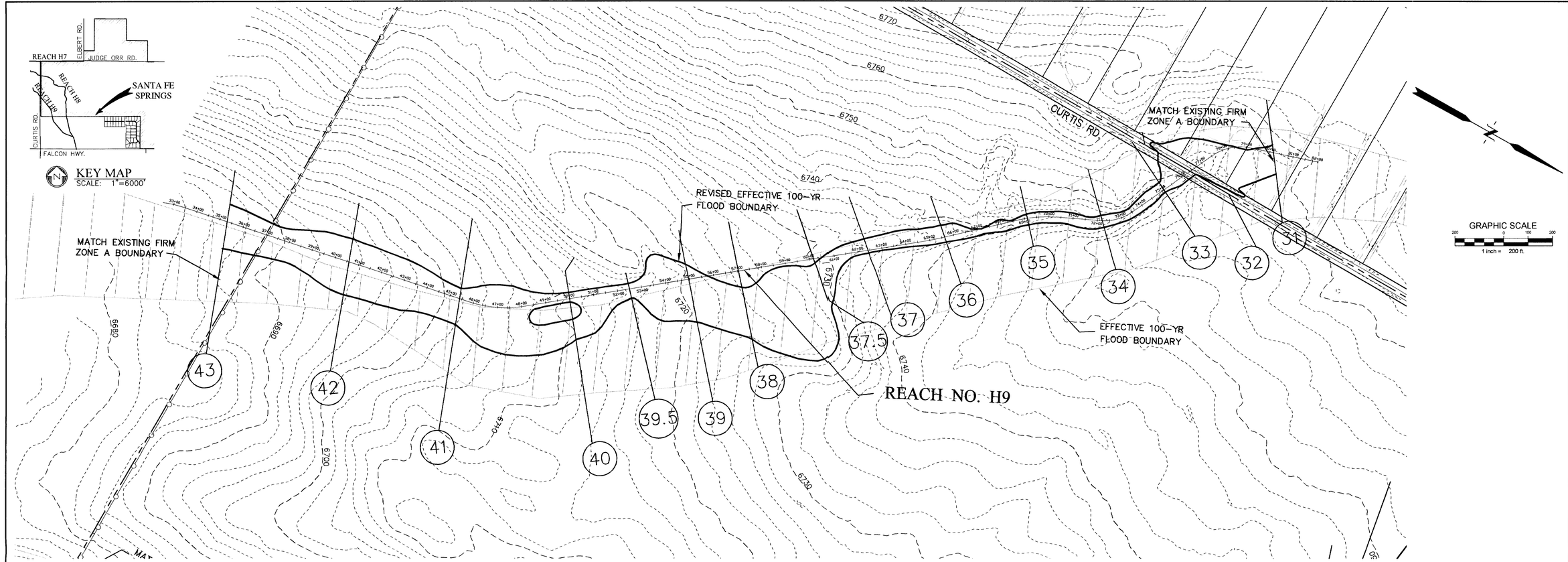
REALTY DEVELOPMENT SERVICES
25 NORTH TEJON, SUITE 300
COLORADO SPRINGS, CO 80903

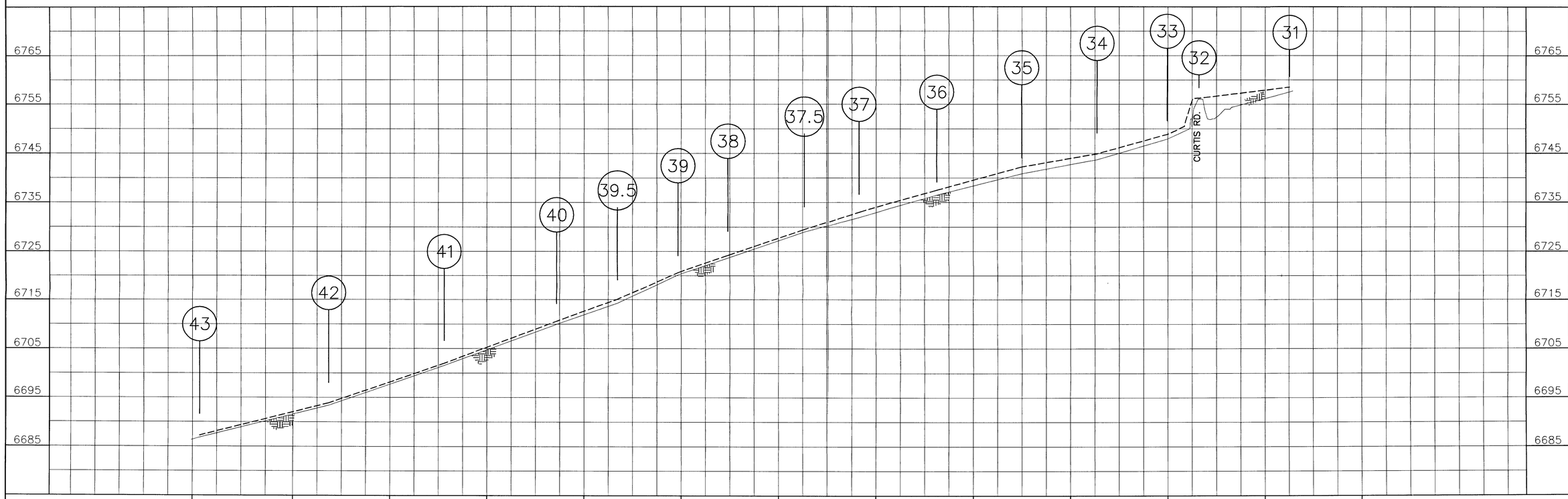
EXHIBIT 5 100-YEAR FLOODPLAIN BOUNDARY & PROFILE WORKMAP

PROJECT NO.
6005.0001

PP-LOMR.DWG

DRAWING NO.
EXH. 5





NO.	DESCRIPTION	REV BY	CKD BY	DATE
	REVISION			

TRI-CORE ENGINEERING
5526 N. ACADEMY BLVD., SUITE 204
COLORADO SPRINGS, CO 80918
PHONE (719) 264-1560
FAX (719) 264-1193

SCALE (H): 1"=200'
SCALE (V): 1"=10'

DRAWN BY: KMV
DESIGNED BY: RLS
CHECKED BY: RLS

DATE: 06/04/04

SANTA FE SPRINGS
HAEGLER RANCH DRAINAGE BASIN LOMR
EL PASO COUNTY

REALTY DEVELOPMENT SERVICES
25 NORTH TEJON, SUITE 300
COLORADO SPRINGS, CO 80903

EXHIBIT 6 100-YEAR FLOODPLAIN BOUNDARY & PROFILE WORKMAP

PROJECT NO.
6005.0001

PP-LOMR.DWG

DRAWING NO.
EXH. 6