

Request for LOMR

Villages at Sierra Ranch

06-09-B002P

KB Home
5655 Badura Avenue
Las Vegas, Nevada 89118

SCI #17619

Stanley Consultants, Inc.

5820 South Eastern Avenue, Suite 200

Las Vegas, Nevada 89119

Phone: (702) 369-9396



Stanley Consultants INC.

A Stanley Group Company
Engineering, Environmental and Construction Services - Worldwide



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February 6, 2006

Stephen E. Casmus, P.E.
Development & Flood Control
City of North Las Vegas Public Works
2266 Civic Center Drive
North Las Vegas, Nevada 89030

RE: Request for Letter of Map Revision
Villages at Sierra Ranch, City of North Las Vegas, Nevada
CNLV: 14376 Stanley Job #: 17619
FEMA Case No.: 06-09-B002P

Mr. Casmus:

Stanley Consultants received a comment letter from FEMA concerning the LOMR request, dated November 10, 2005. This response is within the 90-days required by FEMA. A copy of this letter and accompanying material will be submitted directly to Sacha Tohme at Michael Baker, Jr. and others listed for courtesy copies.

The following are the comments from FEMA, and the responses from Stanley Consultants:

Comment 1: Your request affects the City of North Las Vegas. Please provide community acknowledgement in the form of a letter stating that the City of North Las Vegas has reviewed the revision request and understands the effects of the revision on flooding conditions in the community, or the enclosed copy of Application/Certification Form 1, entitled "Overview & Concurrence Form" (copy enclosed), signed by a city official.

Response 1: Form 1 signed by Stephen E. Casmus, P.E. of the City of North Las Vegas, dated 11/30/05 is included.

Comment 2: Your request also affects the unincorporated areas of Clark County. Please provide community acknowledgment in the form of a letter station that Clark County has reviewed the revision request and understands the effects of the revision on flooding conditions in the community, or the enclosed copy of Form 1, signed by a county official.

Response 2. Form 1 signed by Todd Myers, P.E. of Clark County Unincorporated, dated 10/04/05 is included.

Comment 3: Because the LOMR request for the Villages at Sierra Ranch development has been submitted before the LOMR for Case No. 04-09-0152R, the revised boundary delineations of the Special Flood Hazard Area (SFHA), the area that would be inundated by the flood having a 1-percent chance of being equaled or exceeded in any given year (base flood), must tie into the currently effective SFHA boundary delineations. Please submit a hydraulic model and a topographic map, certified by a registered professional engineer, in which the revised SFHA boundary delineations tie into the currently effective SFHA boundary delineations at the upstream end of the revision.

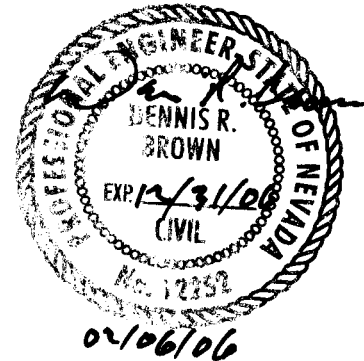
Response 3. Additional survey was obtained along Tropical Parkway and around the existing elementary and middle schools showing the improvements since the aerial photography was taken. Additional sections, 31, 30, 27.3, 27.2 and 27.1 were interpolated from the survey information. Sections 29, 28 and 27 within the CLOMR, Case No. 04-09-0152R were updated to reflect the surveyed sections. A lateral weir was placed on the right bank to reflect field conditions. The results show the water surface remains within the roadway. The resulting HEC-RAS model, topographic maps and updated annotated FIRM Map are included for your review.

If there are any questions or additional information that is necessary, please contact our office at (702) 369-9396.

Sincerely,

Dennis R. Brown, P.E.
Senior Engineer

CC: Sacha Tohme, Michael Baker, Jr
Kevin Eubanks, P.E., CCRFCD
Todd Myers, P.E., Clark County (courtesy copy)



**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 480287	City of Katy Harris County	TX TX	480301 48201C	0005D 0220G	02/08/83 09/28/90
32007	City of North Las Vegas	NV	32003C	1769E	9/27/02

2. Flooding Source: Unnamed tributary to the Las Vegas Wash

3. Project Name/Identifier: Villages at Sierra Ranch

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: \$3800

☐ No, Attach Explanation

Please see the FEMA Web site at http://www.fema.gov/fhm/fm_fees.shtml 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: Dennis R. Brown

Company: Stanley Consultants

Mailing Address:

5820 S. Eastern Ave. Suite 200
Las Vegas, NV 89119

Daytime Telephone No.:

702-369-9396

Fax No.:

702-369-9793

E-Mail Address: BrownDennis@stanleygroup.com

Signature of Requester (required):

Dennis R. Brown

Date:

10/04/05

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:

Todd Myers, PE, ~~Senior Civil Engineer~~ **PRINCIPAL ENGINEER**

Telephone No.:

702 455-4856

Community Name:

Clark County ~~Public Works~~ **UNINCORPORATED**

Community Official's Signature (required):

Todd Myers

Date:

10/17/05

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:

Dennis R. Brown

License No.:

CE NV 12252

Expiration Date:

12/31/2006

Company Name:

Stanley Consultants

Telephone No.:

702-369-9396 (765-6314)

Fax No.:

702-369-9793

Signature:

Dennis R. Brown

Date:

10/04/05

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)

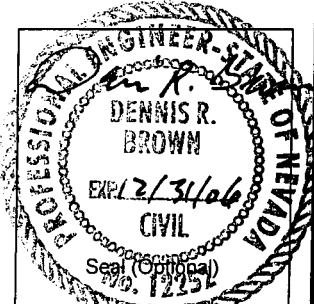
New or revised coastal elevations

☐ Coastal Structures Form (Form 5)

Addition/revision of coastal structure

☐ Alluvial Fan Flooding Form (Form 6)

Flood control measures on alluvial fans



10/04/05

**FEDERAL EMERGENCY MANAGEMENT AGENCY
OVERVIEW & CONCURRENCE FORM**

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- ☐ Alluvial fan ☐ Lakes ☐ Other (Attach Description)
- Structures: ☒ Channelization ☐ Levee/Floodwall ☐ Bridge/Culvert
- ☐ Dam ☐ Fill ☐ Other, Attach Description

C. REVIEW FEE

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Name: Dennis R. Brown, PE

Company: Stanley Consultants

Mailing Address:

5820 S. Eastern Ave, Suite 100
Las Vegas, NV 89119

Daytime Telephone No.:

702-36-9396

Fax No.:

702-369-9793

E-Mail Address: BrownDennis@Stanleygroup.com

Signature of Requester (required):

Dennis R. Brown

Date:

10/04/2005

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:

Stephen Casmus, PE, Flood Control/Drainage

Telephone No.:

(702) 633-1912

Community Name:

City of North Las Vegas

Community Official's Signature (required):

Stephen E Casmus

Date:

11/30/05

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:

Dennis R. Brown

License No.:

CE NV 12252

Expiration Date:

12/31/2006

Company Name:

Stanley Consultants

Telephone No.:

702-369-9396

Fax No.:

702-369-9793

Signature:

Dennis R. Brown

Date:

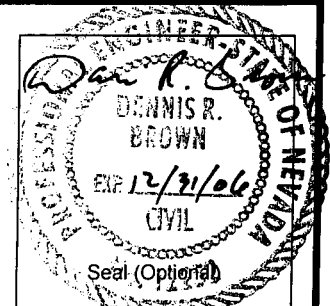
10/04/05

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Form Name and (Number)

Required if ...

- | | |
|---|---|
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| ☒ 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 |



HEC-RAS Version 3.1.3 May 2005
U.S. Army Corp of Engineers
Hydrologic Engineering Center
609 Second Street
Davis, California

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X      X XXXXXX   XXXX       XXXX       XX       XXXX
X      X X       X  X       X  X       X X       X
X      X X       X  X       X  X       X  X       X
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X      X X       X      X  X       X  X       X
X      X X       X  X       X  X       X  X       X
X      X XXXXXX   XXXX       X  X       X  X       XXXXX

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PROJECT DATA

Project Title: FEMA LOMR 9-13-05
Project File : villages_lomr.prj
Run Date and Time: 1/30/2006 10:53:25 AM

Project in English units

Project Description:

Villages at Sierra Ranches-FEMA LOMR

PLAN DATA

Plan Title: FEMA-LOMR

Plan File : q:\17619\dwg\drainage\LOMR\1st submittal\HECRAS\villages_lomr.p01

Geometry Title: improved sections-new_topo

Geometry File : q:\17619\dwg\drainage\LOMR\1st submittal\HECRAS\villages_lomr.g01

Flow Title : revised interim

Flow File : q:\17619\dwg\drainage\LOMR\1st submittal\HECRAS\villages_lomr.f09

Plan Summary Information:

Number of:	Cross Sections =	36	Multiple Openings =	0
	Culverts =	0	Inline Structures =	0
	Bridges =	0	Lateral Structures =	0

Computational Information

Water surface calculation tolerance	=	0.01
Critical depth calculation tolerance	=	0.01
Maximum number of iterations	=	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: Mixed Flow

FLOW DATA

Flow Title: revised interim

Flow File : q:\17619\dwg\drainage\LOMR\1st submittal\HECRAS\villages_lomr.f09

Flow Data (cfs)

River	Reach	RS	PF 1
RIVER-1	Reach-1	31	260
RIVER-1	Reach-1	27	274
RIVER-1	Reach-1	26	203
RIVER-1	Reach-1	21	161
RIVER-1	Reach-1	15	559
RIVER-1	Reach-1	10	747
RIVER-1	Reach-1	9	1467

Boundary Conditions

River	Reach	Profile	Upstream	Downstream
RIVER-1	Reach-1	PF 1	Normal S = 0.0144	Normal S = 0.01

GEOMETRY DATA

Geometry Title: improved sections-new_topo

Geometry File : q:\17619\dwg\drainage\LOMR\1st submittal\HECRAS\villages_lomr.g01

CROSS SECTION

RIVER: RIVER-1

REACH: Reach-1 RS: 31

INPUT

Description: upstream end

Station Elevation Data		num=		9					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2080.9	9.28	2078.4	14.28	2078.32	14.95	2077.81	50	2078.73
83.91	2077.86	84.51	2078.38	89.51	2078.5	89.52	2080		

Manning's n Values		num=		4			
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.03	9.28	.013	14.95	.016	83.91	.013

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	0	89.51		257	257	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2079.48	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.71	Wt. n-Val.		0.016	0.000
W.S. Elev (ft)	2078.77	Reach Len. (ft)	257.00	257.00	257.00
Crit W.S. (ft)	2078.98	Flow Area (sq ft)		38.41	0.00
E.G. Slope (ft/ft)	0.014405	Area (sq ft)		38.41	0.00
Q Total (cfs)	260.00	Flow (cfs)		260.00	0.00
Top Width (ft)	81.60	Top Width (ft)		81.60	
Vel Total (ft/s)	6.77	Avg. Vel. (ft/s)		6.77	0.13
Max Chl Dpth (ft)	0.96	Hydr. Depth (ft)		0.47	0.14

Conv. Total (cfs)	2166.3	Conv. (cfs)	2166.3	0.0
Length Wtd. (ft)	257.00	Wetted Per. (ft)	82.04	0.27
Min Ch El (ft)	2077.81	Shear (lb/sq ft)	0.42	
Alpha	1.00	Stream Power (lb/ft s)	2.85	
Frctn Loss (ft)		Cum Volume (acre-ft)	1.58	0.24
C & E Loss (ft)		Cum SA (acres)	2.08	0.46

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: RIVER-1
 REACH: Reach-1 RS: 30

INPUT

Description:

Station Elevation Data		num= 9							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2077.96	9.63	2075.46	14.63	2075.36	15.28	2074.88	50	2075.7
84.43	2074.72	85.06	2075.42	90.06	2075.5	90.07	2077		

Manning's n Values		num= 4					
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.03	9.63	.013	15.28	.016	84.43	.013

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	0	90.06		248	248	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2076.37	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.57	Wt. n-Val.		0.016	0.000
W.S. Elev (ft)	2075.80	Reach Len. (ft)	248.00	248.00	248.00
Crit W.S. (ft)	2075.95	Flow Area (sq ft)		42.82	0.00
E.G. Slope (ft/ft)	0.010040	Area (sq ft)		42.82	0.00
Q Total (cfs)	260.00	Flow (cfs)		260.00	0.00
Top Width (ft)	81.74	Top Width (ft)		81.74	
Vel Total (ft/s)	6.07	Avg. Vel. (ft/s)		6.07	0.11
Max Chl Dpth (ft)	1.08	Hydr. Depth (ft)		0.52	0.15
Conv. Total (cfs)	2594.8	Conv. (cfs)		2594.8	0.0
Length Wtd. (ft)	248.00	Wetted Per. (ft)		82.28	0.30
Min Ch El (ft)	2074.72	Shear (lb/sq ft)		0.33	
Alpha	1.00	Stream Power (lb/ft s)		1.98	
Frctn Loss (ft)	3.07	Cum Volume (acre-ft)	1.58	32.76	0.24
C & E Loss (ft)	0.04	Cum SA (acres)	2.08	52.36	0.46

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.

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: RIVER-1
 REACH: Reach-1 RS: 29

INPUT

Description: 04-09-0152R Section A-A - updated with survey data

Station Elevation Data		num= 12							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev

0	2077.3	.0001	2072.3	10	2072.1	15	2072.07	15.5	2072.07
15.50001	2071.57	50	2072.3	84.5	2071.57	84.5	2072.08	85	2072
90	2072.1	97	2073.3						

Manning's n Values num= 6

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.013	.0001	.027	10	.01315	50001	.016	84.5	.013
90	.035								

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	.0001	90		300	300		.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2073.15	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.75	Wt. n-Val.		0.016	0.035
W.S. Elev (ft)	2072.40	Reach Len. (ft)	300.00	300.00	300.00
Crit W.S. (ft)	2072.61	Flow Area (sq ft)		37.28	0.25
E.G. Slope (ft/ft)	0.017305	Area (sq ft)	0.00	37.28	0.25
Q Total (cfs)	260.00	Flow (cfs)		259.61	0.39
Top Width (ft)	91.72	Top Width (ft)		90.00	1.72
Vel Total (ft/s)	6.93	Avg. Vel. (ft/s)		6.96	1.54
Max Chl Dpth (ft)	0.82	Hydr. Depth (ft)		0.41	0.15
Conv. Total (cfs)	1976.5	Conv. (cfs)		1973.5	3.0
Length Wtd. (ft)	300.00	Wetted Per. (ft)		91.03	1.74
Min Ch El (ft)	2071.57	Shear (lb/sq ft)		0.44	0.16
Alpha	1.01	Stream Power (lb/ft s)		3.08	0.24
Frctn Loss (ft)	3.21	Cum Volume (acre-ft)	1.58	32.53	0.24
C & E Loss (ft)	0.02	Cum SA (acres)	2.08	51.87	0.45

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: RIVER-1
 REACH: Reach-1 RS: 28

INPUT

Description: 04-09-0152R Section A1-A1

Station	Elevation	Data	num=	12					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2073.2	.0001	2069.8	10	2067.3	15	2067.18	15.5	2067.18
15.5001	2066.68	50	2067.61	84.5	2067.3584	50001	2067.88	85	2067.88
90	2068	121	2067.68						

Manning's n Values num= 6

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.013	.0001	.03	10	.013	15.5001	.016	84.5	.013
90	.035								

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	.0001	90		213.18	209		.1	1
Right Levee	Station=	90	Elevation=	2068				

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2068.52	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.71	Wt. n-Val.		0.016	
W.S. Elev (ft)	2067.82	Reach Len. (ft)	213.18	209.00	209.00
Crit W.S. (ft)	2068.05	Flow Area (sq ft)		38.57	

E.G. Slope (ft/ft)	0.013753	Area (sq ft)	38.57
Q Total (cfs)	260.00	Flow (cfs)	260.00
Top Width (ft)	76.57	Top Width (ft)	76.57
Vel Total (ft/s)	6.74	Avg. Vel. (ft/s)	6.74
Max Chl Dpth (ft)	1.14	Hydr. Depth (ft)	0.50
Conv. Total (cfs)	2217.1	Conv. (cfs)	2217.1
Length Wtd. (ft)	209.00	Wetted Per. (ft)	77.62
Min Ch El (ft)	2066.68	Shear (lb/sq ft)	0.43
Alpha	1.00	Stream Power (lb/ft s)	2.88
Frctn Loss (ft)	4.61	Cum Volume (acre-ft)	1.58 32.27 0.24
C & E Loss (ft)	0.01	Cum SA (acres)	2.08 51.30 0.45

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.

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: RIVER-1
 REACH: Reach-1 RS: 27.3

INPUT

Description:

Station Elevation Data		num=	7
Sta	Elev	Sta	Elev
12.57	2066.46	17.9	2065.44
90.08	2065.75	115.17	2067.72

Manning's n Values		num=	4
Sta	n Val	Sta	n Val
12.57	.03	17.9	.016
84.56	.013	90.08	.03

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	12.57	90.08		200	200	198	.1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2066.65	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.37	Wt. n-Val.		0.016	0.030
W.S. Elev (ft)	2066.28	Reach Len. (ft)	200.00	200.00	198.00
Crit W.S. (ft)	2066.29	Flow Area (sq ft)		52.37	1.76
E.G. Slope (ft/ft)	0.004597	Area (sq ft)		52.37	1.76
Q Total (cfs)	260.00	Flow (cfs)		257.58	2.42
Top Width (ft)	83.25	Top Width (ft)		76.55	6.70
Vel Total (ft/s)	4.80	Avg. Vel. (ft/s)		4.92	1.38
Max Chl Dpth (ft)	1.10	Hydr. Depth (ft)		0.68	0.26
Conv. Total (cfs)	3834.9	Conv. (cfs)		3799.2	35.7
Length Wtd. (ft)	199.94	Wetted Per. (ft)		76.82	6.72
Min Ch El (ft)	2065.18	Shear (lb/sq ft)		0.20	0.08
Alpha	1.04	Stream Power (lb/ft s)		0.96	0.10
Frctn Loss (ft)	1.54	Cum Volume (acre-ft)	1.58	32.05	0.23
C & E Loss (ft)	0.33	Cum SA (acres)	2.08	50.93	0.43

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: RIVER-1
REACH: Reach-1 RS: 27.2

INPUT

Description:

Station Elevation Data		num=		8	
Sta	Elev	Sta	Elev	Sta	Elev
10.03	2065.91	17.44	2063.48	24.4	2064.37
75.04	2063.9	80.04	2064	125.26	2065.24

Manning's n Values		num=		4	
Sta	n Val	Sta	n Val	Sta	n Val
10.03	.03	24.4	.016	74.45	.013
				80.04	.03

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	10.03	80.04		162.68	166	161.02	.1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2065.21	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.65	Wt. n-Val.		0.017	0.030
W.S. Elev (ft)	2064.56	Reach Len. (ft)	162.68	166.00	161.02
Crit W.S. (ft)	2064.75	Flow Area (sq ft)		37.35	5.70
E.G. Slope (ft/ft)	0.012185	Area (sq ft)		37.35	5.70
Q Total (cfs)	260.00	Flow (cfs)		246.68	13.32
Top Width (ft)	86.28	Top Width (ft)		65.89	20.39
Vel Total (ft/s)	6.04	Avg. Vel. (ft/s)		6.60	2.34
Max Chl Dpth (ft)	1.18	Hydr. Depth (ft)		0.57	0.28
Conv. Total (cfs)	2355.4	Conv. (cfs)		2234.7	120.7
Length Wtd. (ft)	165.69	Wetted Per. (ft)		66.33	20.40
Min Ch El (ft)	2063.38	Shear (lb/sq ft)		0.43	0.21
Alpha	1.14	Stream Power (lb/ft s)		2.83	0.50
Frctn Loss (ft)	1.41	Cum Volume (acre-ft)	1.58	31.85	0.22
C & E Loss (ft)	0.03	Cum SA (acres)	2.08	50.61	0.37

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: RIVER-1
REACH: Reach-1 RS: 27.1

INPUT

Description:

Station Elevation Data		num=		8	
Sta	Elev	Sta	Elev	Sta	Elev
11.87	2064.46	19.54	2062.31	26.31	2063.06
78.71	2062.48	83.71	2062.6	122.71	2063.5

Manning's n Values		num=		4	
Sta	n Val	Sta	n Val	Sta	n Val
11.87	.03	26.31	.016	78.12	.013
				83.71	.03

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	11.87	83.71		152.46	154	158.62	.1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2063.71	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.43	Wt. n-Val.		0.016	0.030
W.S. Elev (ft)	2063.28	Reach Len. (ft)	152.46	154.00	158.62
Crit W.S. (ft)	2063.35	Flow Area (sq ft)		44.17	9.94
E.G. Slope (ft/ft)	0.006447	Area (sq ft)		44.17	9.94
Q Total (cfs)	260.00	Flow (cfs)		240.80	19.20
Top Width (ft)	96.97	Top Width (ft)		67.62	29.35
Vel Total (ft/s)	4.81	Avg. Vel. (ft/s)		5.45	1.93
Max Chl Dpth (ft)	1.28	Hydr. Depth (ft)		0.65	0.34
Conv. Total (cfs)	3238.1	Conv. (cfs)		2999.0	239.1
Length Wtd. (ft)	154.17	Wetted Per. (ft)		67.98	29.36
Min Ch El (ft)	2062.00	Shear (lb/sq ft)		0.26	0.14
Alpha	1.20	Stream Power (lb/ft s)		1.43	0.26
Frctn Loss (ft)	1.43	Cum Volume (acre-ft)	1.58	31.69	0.19
C & E Loss (ft)	0.06	Cum SA (acres)	2.08	50.35	0.28

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: RIVER-1
REACH: Reach-1 RS: 27

INPUT

Description: 04-09-0152R Section B updated with survey data

Station Elevation Data		num= 8							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
11.85	2062.66	20.02	2061.27	23.93	2062.15	49	2062.3	80.63	2060.81
81.23	2061.29	86.23	2061.39	187.8	2065				

Manning's n Values		num= 4							
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
11.85	.03	23.93	.016	80.63	.013	86.23	.03		

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	11.85	187.8		60	160	250	.1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2062.74	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.31	Wt. n-Val.		0.018	
W.S. Elev (ft)	2062.43	Reach Len. (ft)	60.00	160.00	250.00
Crit W.S. (ft)	2062.44	Flow Area (sq ft)		61.35	
E.G. Slope (ft/ft)	0.005700	Area (sq ft)		61.35	
Q Total (cfs)	274.00	Flow (cfs)		274.00	
Top Width (ft)	102.38	Top Width (ft)		102.38	
Vel Total (ft/s)	4.47	Avg. Vel. (ft/s)		4.47	
Max Chl Dpth (ft)	1.62	Hydr. Depth (ft)		0.60	
Conv. Total (cfs)	3629.4	Conv. (cfs)		3629.4	
Length Wtd. (ft)	160.00	Wetted Per. (ft)		102.80	
Min Ch El (ft)	2060.81	Shear (lb/sq ft)		0.21	
Alpha	1.00	Stream Power (lb/ft s)		0.95	
Frctn Loss (ft)	0.93	Cum Volume (acre-ft)	1.58	31.51	0.17
C & E Loss (ft)	0.04	Cum SA (acres)	2.08	50.05	0.23

CROSS SECTION

RIVER: RIVER-1
REACH: Reach-1

RS: 26

INPUT

Description:

Station Elevation Data									
Sta		Elev		Sta		Elev		Sta	
182	2063.6	217	2061.31	217.5	2061.31	217.5	2060.81	219	2060.94
252	2061.5	268.31	2061	278.09	2060.84	307.37	2060.9	310.99	2060.97
313.83	2061	317.24	2061.47	319.4	2061.72	322.1	2061.7	322.37	2061.62
325.25	2061.76	328.05	2062	333.94	2062.4	338.4	2062.72	341.78	2062.86
343.86	2063	350.86	2063.2	356	2063.4	372.95	2064	382.55	2064
386.42	2063.84	387.82	2063.7	391.15	2063.62	395.68	2063.62	396.58	2063.6
405.99	2063.8	409.47	2063.86	416.52	2063.93	422.32	2063.88	430.93	2063.94
435	2064	442.44	2064.21						

Manning's n Values

num=

4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
182	.027	217	.016	313.83	.027	382.55	.016

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	182	372.95		167.26	344.62	911.99	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2061.82	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.27	Wt. n-Val.		0.016	
W.S. Elev (ft)	2061.55	Reach Len. (ft)	167.26	344.62	911.99
Crit W.S. (ft)	2061.57	Flow Area (sq ft)		48.37	
E.G. Slope (ft/ft)	0.005651	Area (sq ft)		48.37	
Q Total (cfs)	203.00	Flow (cfs)		203.00	
Top Width (ft)	104.60	Top Width (ft)		104.60	
Vel Total (ft/s)	4.20	Avg. Vel. (ft/s)		4.20	
Max Chl Dpth (ft)	0.74	Hydr. Depth (ft)		0.46	
Conv. Total (cfs)	2700.5	Conv. (cfs)		2700.5	
Length Wtd. (ft)	344.62	Wetted Per. (ft)		105.16	
Min Ch El (ft)	2060.81	Shear (lb/sq ft)		0.16	
Alpha	1.00	Stream Power (lb/ft s)		0.68	
Frctn Loss (ft)	0.91	Cum Volume (acre-ft)	1.58	31.30	0.17
C & E Loss (ft)	0.01	Cum SA (acres)	2.08	49.67	0.23

CROSS SECTION

RIVER: RIVER-1
REACH: Reach-1

RS: 25

INPUT

Description:

Station Elevation Data									
Sta		Elev		Sta		Elev		Sta	
435.25	2061.4	470.25	2059.7	470.75	2059.7	470.75	2059.2	472.25	2059.37
505.25	2060.03	518.16	2059.55	522.32	2059.5	547.01	2059	563.32	2060
566.58	2061	573.66	2063	578.41	2064	584.82	2065	610.65	2066
626.11	2065.76	634.06	2065.68	644.08	2065.7	658.34	2065.68	660.62	2065.7
665.5	2065.6	670.65	2065.6	681.46	2065.7	688.86	2065.65	712.11	2065.64
739.51	2065.65	743.91	2065.64	787.6	2065.64	788.74	2065.6	795.3	2065.7
806.26	2065.67	823.22	2065.72	841.4	2066	858.38	2066	862.69	2066.06

Manning's n Values

num=

4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
435.25	.027	470.25	.016	563.32	.027	610.65	.016

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	435.25	610.65		217.73 402.96	1310.73	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2060.32	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.26	Wt. n-Val.		0.016	
W.S. Elev (ft)	2060.06	Reach Len. (ft)	217.73	402.96	1310.73
Crit W.S. (ft)	2060.06	Flow Area (sq ft)		49.75	
E.G. Slope (ft/ft)	0.004643	Area (sq ft)		49.75	
Q Total (cfs)	203.00	Flow (cfs)		203.00	
Top Width (ft)	100.76	Top Width (ft)		100.76	
Vel Total (ft/s)	4.08	Avg. Vel. (ft/s)		4.08	
Max Chl Dpth (ft)	1.06	Hydr. Depth (ft)		0.49	
Conv. Total (cfs)	2979.3	Conv. (cfs)		2979.3	
Length Wtd. (ft)	402.96	Wetted Per. (ft)		101.34	
Min Ch El (ft)	2059.00	Shear (lb/sq ft)		0.14	
Alpha	1.00	Stream Power (lb/ft s)		0.58	
Frctn Loss (ft)	1.88	Cum Volume (acre-ft)	1.58	30.92	0.17
C & E Loss (ft)	0.00	Cum SA (acres)	2.08	48.86	0.23

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: RIVER-1
REACH: Reach-1

RS: 24

INPUT

Description:

Station	Elevation	Data	num=	31
Sta	Elev	Sta	Elev	Sta
889.48	2058.9	924.48	2057.8	924.98
959.48	2057.94	970.26	2057.64	999.34
1015.63	2059	1019.28	2060	1030
1058.6	2060.82	1070.21	2061.2	1079.69
1106.93	2061.5	1116.35	2061.51	1129.37
1167.17	2062.13	1185.18	2062.13	1217.83
1264.47	2063			

Manning's n	Values	num=	3
Sta	n Val	Sta	n Val
889.48	.027	924.48	.016
		1014.39	.027

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	889.48	1030		133.28 268.48	1406.92	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2058.35	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.28	Wt. n-Val.		0.016	
W.S. Elev (ft)	2058.07	Reach Len. (ft)	133.28	268.48	1406.92
Crit W.S. (ft)	2058.09	Flow Area (sq ft)		48.07	

E.G. Slope (ft/ft)	0.005150	Area (sq ft)	48.07
Q Total (cfs)	203.00	Flow (cfs)	203.00
Top Width (ft)	98.59	Top Width (ft)	98.59
Vel Total (ft/s)	4.22	Avg. Vel. (ft/s)	4.22
Max Chl Dpth (ft)	1.07	Hydr. Depth (ft)	0.49
Conv. Total (cfs)	2828.7	Conv. (cfs)	2828.7
Length Wtd. (ft)	268.48	Wetted Per. (ft)	99.17
Min Ch El (ft)	2057.00	Shear (lb/sq ft)	0.16
Alpha	1.00	Stream Power (lb/ft s)	0.66
Frctn Loss (ft)	1.97	Cum Volume (acre-ft)	1.58 30.46 0.17
C & E Loss (ft)	0.00	Cum SA (acres)	2.08 47.94 0.23

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: RIVER-1
REACH: Reach-1

RS: 23

INPUT

Description:

Station Elevation Data		num=	25
Sta	Elev	Sta	Elev
1071.15	2056.3	1106.15	2054.8
1141.15	2055.35	1157.54	2054.62
1197.2	2056	1202.27	2057.02
1232.15	2057	1240.65	2057.28
1305.84	2061.7	1313.94	2062

Manning's n Values		num=	3
Sta	n Val	Sta	n Val
1071.15	.027	1106.15	.016

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1071.15	1208.19		90.37	188.5	1571.09	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2055.81	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.90	Wt. n-Val.		0.016	
W.S. Elev (ft)	2054.91	Reach Len. (ft)	90.37	188.50	1571.09
Crit W.S. (ft)	2055.20	Flow Area (sq ft)		26.66	
E.G. Slope (ft/ft)	0.020796	Area (sq ft)		26.66	
Q Total (cfs)	203.00	Flow (cfs)		203.00	
Top Width (ft)	63.68	Top Width (ft)		63.68	
Vel Total (ft/s)	7.61	Avg. Vel. (ft/s)		7.61	
Max Chl Dpth (ft)	0.91	Hydr. Depth (ft)		0.42	
Conv. Total (cfs)	1407.7	Conv. (cfs)		1407.7	
Length Wtd. (ft)	188.50	Wetted Per. (ft)		64.26	
Min Ch El (ft)	2054.00	Shear (lb/sq ft)		0.54	
Alpha	1.00	Stream Power (lb/ft s)		4.10	
Frctn Loss (ft)	2.47	Cum Volume (acre-ft)	1.58	30.23	0.17
C & E Loss (ft)	0.06	Cum SA (acres)	2.08	47.44	0.23

Warning: Divided flow computed for this cross-section.

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 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: RIVER-1
REACH: Reach-1 RS: 22

INPUT

Description:

Station Elevation Data		num=		23	
Sta	Elev	Sta	Elev	Sta	Elev
1233.62	2055.8	1268.62	2052.52	1269.12	2052.52
1303.62	2052.96	1336.62	2052.08	1338.12	2051.91
1361.48	2054	1364.76	2054	1381.24	2055
1408.68	2058	1420.73	2057.61	1439.71	2058.12
1485.97	2060.4	1491.95	2060.26	1538.55	2060.4

Manning's n Values		num=		4	
Sta	n Val	Sta	n Val	Sta	n Val
1233.62	.027	1268.62	.016	1361.48	.03
				1381.24	.027

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	1233.62	1408.68		71.82	66.75	2311.06	.1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2053.42	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.38	Wt. n-Val.		0.016	
W.S. Elev (ft)	2053.04	Reach Len. (ft)	71.82	66.75	2311.06
Crit W.S. (ft)	2053.11	Flow Area (sq ft)		40.96	
E.G. Slope (ft/ft)	0.007631	Area (sq ft)		40.96	
Q Total (cfs)	203.00	Flow (cfs)		203.00	
Top Width (ft)	84.58	Top Width (ft)		84.58	
Vel Total (ft/s)	4.96	Avg. Vel. (ft/s)		4.96	
Max Chl Dpth (ft)	1.13	Hydr. Depth (ft)		0.48	
Conv. Total (cfs)	2323.8	Conv. (cfs)		2323.8	
Length Wtd. (ft)	66.75	Wetted Per. (ft)		85.67	
Min Ch El (ft)	2051.91	Shear (lb/sq ft)		0.23	
Alpha	1.00	Stream Power (lb/ft s)		1.13	
Frctn Loss (ft)	2.23	Cum Volume (acre-ft)	1.58	30.09	0.17
C & E Loss (ft)	0.16	Cum SA (acres)	2.08	47.12	0.23

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 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: RIVER-1
REACH: Reach-1 RS: 21

INPUT

Description:

Station Elevation Data		num=		54	
Sta	Elev	Sta	Elev	Sta	Elev
1235.49	2055.5	1250.49	2051.28	1250.99	2051.28
				1250.99	2050.78
				1252.49	2050.91

1275.49	2051.08	1276.46	2051.78	1284.94	2053.19	1297.09	2052.4	1302.3	2053
1317.92	2054	1327.09	2054	1328.83	2055	1339.35	2055.41	1349.35	2054.7
1362.97	2057.14	1369.11	2057.5	1381.87	2059	1391.83	2059	1395.49	2057
1406.02	2057.5	1424.73	2058	1448.6	2060	1480.83	2060	1490.16	2058.84
1500.02	2058.92	1506.65	2058.46	1528.57	2057.61	1538.44	2056.94	1563.87	2056.83
1585.2	2056	1600.33	2054.86	1619.8	2054	1645.44	2054	1669.77	2053.3
1686.07	2053.66	1701.68	2053.44	1709.84	2054	1726.77	2054	1735.9	2053.49
1763.27	2053.7	1782.37	2053.61	1794.19	2053.87	1818.42	2054	1940.64	2054
1952.83	2053	1978.42	2053.05	2033.73	2053.59	2050.65	2054	2111.08	2054
2119.69	2055.23	2162.21	2055.7	2227.89	2056	2297.25	2056		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1235.49	.027	1250.49	.016	1275.49	.03

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	1235.49	1391.83		136.36	116.42	2116.99	.1 .3
Right Levee	Station=	1448.6	Elevation=	2060			

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2052.73	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.94	Wt. n-Val.		0.018	
W.S. Elev (ft)	2051.79	Reach Len. (ft)	136.36	116.42	2116.99
Crit W.S. (ft)	2052.08	Flow Area (sq ft)		20.66	
E.G. Slope (ft/ft)	0.013021	Area (sq ft)		20.66	
Q Total (cfs)	161.00	Flow (cfs)		161.00	
Top Width (ft)	27.81	Top Width (ft)		27.81	
Vel Total (ft/s)	7.79	Avg. Vel. (ft/s)		7.79	
Max Chl Dpth (ft)	1.01	Hydr. Depth (ft)		0.74	
Conv. Total (cfs)	1410.9	Conv. (cfs)		1410.9	
Length Wtd. (ft)	116.42	Wetted Per. (ft)		28.61	
Min Ch El (ft)	2050.78	Shear (lb/sq ft)		0.59	
Alpha	1.00	Stream Power (lb/ft s)		4.57	
Frctn Loss (ft)	0.63	Cum Volume (acre-ft)	1.58	30.04	0.17
C & E Loss (ft)	0.06	Cum SA (acres)	2.08	47.03	0.23

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 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.

Note: Manning's n values were composited to a single value in the main channel.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION

RIVER: RIVER-1
REACH: Reach-1

RS: 20

INPUT

Description:

Station	Elevation	Data	num=	45						
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	
1235.9	2054.7	1250.9	2050.17	1251.4	2050.17	1251.4	2049.67	1252.9	2049.84	
1275.9	2050.19	1287.01	2053	1292.27	2054	1300.3	2052	1304.54	2051.6	
1316	2052.4	1323.36	2052.6	1345.98	2052.2	1374.79	2053	1403.41	2052.88	
1431.47	2054	1441.46	2055.48	1463.39	2056.55	1476.9	2057.48	1488.59	2056	
1539.58	2054.4	1575.25	2054.29	1599.06	2054.41	1626.5	2054	1659.5	2052	
1696.39	2052	1702.25	2051.55	1713.11	2051.51	1730.85	2051.95	1759.8	2052	
1764.48	2050.6	1774.17	2050.4	1790.78	2050.74	1806.18	2050.79	1851.08	2051.32	

1891.1	2052	1937.65	2052	1959.39	2051.58	1991.89	2051.84	2020.92	2052.36
2060	2052.9	2067.24	2052.6	2075.23	2052.85	2105.85	2052.47	2132.98	2052.99

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1235.9	.027	1250.9	.016	1275.9	.03

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	1235.9	1476.9		164.84	178.05	2207.97	.1 .3
Right Levee	Station=	1476.9	Elevation=	2057.48			

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2051.54	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.54	Wt. n-Val.		0.019	
W.S. Elev (ft)	2051.00	Reach Len. (ft)	164.84	178.05	2207.97
Crit W.S. (ft)	2051.06	Flow Area (sq ft)		27.26	
E.G. Slope (ft/ft)	0.006792	Area (sq ft)		27.26	
Q Total (cfs)	161.00	Flow (cfs)		161.00	
Top Width (ft)	30.92	Top Width (ft)		30.92	
Vel Total (ft/s)	5.91	Avg. Vel. (ft/s)		5.91	
Max Chl Dpth (ft)	1.33	Hydr. Depth (ft)		0.88	
Conv. Total (cfs)	1953.6	Conv. (cfs)		1953.6	
Length Wtd. (ft)	178.05	Wetted Per. (ft)		31.66	
Min Ch El (ft)	2049.67	Shear (lb/sq ft)		0.37	
Alpha	1.00	Stream Power (lb/ft s)		2.16	
Frctn Loss (ft)	1.07	Cum Volume (acre-ft)	1.58	29.98	0.17
C & E Loss (ft)	0.12	Cum SA (acres)	2.08	46.95	0.23

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.

Note: Manning's n values were composited to a single value in the main channel.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION

RIVER: RIVER-1

REACH: Reach-1 RS: 19

INPUT

Description:

Station	Elevation	Data	num=	57
Sta	Elev	Sta	Elev	Sta
1178.59	2052.9	1193.59	2048.88	1194.09
1218.59	2048.87	1222.73	2050	1235.32
1264.03	2050.33	1280.35	2050.3	1292.39
1337.99	2050.3	1349.11	2051	1370.49
1430.32	2052	1446.33	2053.13	1455.05
1497.93	2052	1504.47	2051.68	1522.53
1606.92	2050	1608.98	2049.6	1614.86
1718.41	2050.15	1741.01	2050.55	1782.26
1840.64	2050.24	1843.2	2050.56	1856.62
1907.66	2049.8	1920.16	2050	1939.51
2004.02	2050.23	2019.48	2050	2025.45
2078.99	2052	2122.62	2052.39	

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1178.59	.03	1193.59	.016	1218.59	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
1178.59	2122.62	484.71	223.44 2373.65	.1	.3
Right Levee	Station= 1455.05	Elevation=	2053.2		

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2050.00	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.19	Wt. n-Val.		0.026	
W.S. Elev (ft)	2049.81	Reach Len. (ft)	484.71	223.44	2373.65
Crit W.S. (ft)	2049.67	Flow Area (sq ft)		46.29	
E.G. Slope (ft/ft)	0.006653	Area (sq ft)		46.29	
Q Total (cfs)	161.00	Flow (cfs)		161.00	
Top Width (ft)	72.61	Top Width (ft)		72.61	
Vel Total (ft/s)	3.48	Avg. Vel. (ft/s)		3.48	
Max Chl Dpth (ft)	1.43	Hydr. Depth (ft)		0.64	
Conv. Total (cfs)	1973.9	Conv. (cfs)		1973.9	
Length Wtd. (ft)	223.44	Wetted Per. (ft)		73.51	
Min Ch El (ft)	2048.38	Shear (lb/sq ft)		0.26	
Alpha	1.00	Stream Power (lb/ft s)		0.91	
Frctn Loss (ft)	1.83	Cum Volume (acre-ft)	1.58	29.83	0.17
C & E Loss (ft)	0.03	Cum SA (acres)	2.08	46.74	0.23

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.

Note: Manning's n values were composited to a single value in the main channel.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Note: Hydraulic jump has occurred between this cross section and the previous upstream section.

CROSS SECTION

RIVER: RIVER-1

REACH: Reach-1 RS: 18

INPUT

Description:

Station	Elevation	Data	num=	50
Sta	Elev	Sta	Elev	Sta
1333.19	2050.5	1348.19	2047.19	1348.69
1373.19	2047.36	1373.67	2047.19	1348.69
1412	2048	1437.62	2048	1439.96
1491.58	2047.7	1523.93	2047.98	1561.46
1618.99	2048.2	1651.55	2049.84	1664.51
1787.56	2048	1818.66	2048.57	1845.15
1899.31	2048.79	1935.73	2048.2	1962.88
2052.36	2047.9	2087.92	2047.83	2119.18
2171.74	2048.74	2220.73	2048	2242.6
2379.26	2050	2398.24	2050.5	2409.69

Manning's n Values

num=

4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
1333.19	.03	1348.19	.016	1373.19	.03	1664.51	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
1333.19	1664.51	185.4	214.27 2376.92	.1	.3
Right Levee	Station= 1588.67	Elevation=	2048.98		

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2048.14	Element	Left OB	Channel	Right OB
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Vel Head (ft)	0.09	Wt. n-Val.		0.028	
W.S. Elev (ft)	2048.05	Reach Len. (ft)	185.40	214.27	2376.92
Crit W.S. (ft)	2047.93	Flow Area (sq ft)		65.39	
E.G. Slope (ft/ft)	0.010315	Area (sq ft)		65.39	
Q Total (cfs)	161.00	Flow (cfs)		161.00	
Top Width (ft)	205.29	Top Width (ft)		205.29	
Vel Total (ft/s)	2.46	Avg. Vel. (ft/s)		2.46	
Max Chl Dpth (ft)	1.36	Hydr. Depth (ft)		0.32	
Conv. Total (cfs)	1585.2	Conv. (cfs)		1585.2	
Length Wtd. (ft)	214.27	Wetted Per. (ft)		206.53	
Min Ch El (ft)	2046.69	Shear (lb/sq ft)		0.20	
Alpha	1.00	Stream Power (lb/ft s)		0.50	
Frctn Loss (ft)	1.76	Cum Volume (acre-ft)	1.58	29.54	0.17
C & E Loss (ft)	0.01	Cum SA (acres)	2.08	46.03	0.23

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.

Note: Manning's n values were composited to a single value in the main channel.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION

RIVER: RIVER-1

REACH: Reach-1 RS: 17

INPUT

Description:

Station Elevation Data		num= 51		Sta Elev		Sta Elev		Sta Elev		Sta Elev	
1412.39	2049	1427.39	2045.45	1427.89	2045.45	1427.89	2044.95	1429.39	2045.08		
1452.39	2045.55	1464.51	2045.86	1496.27	2046.03	1555.18	2046	1635.94	2046.4		
1663.1	2046.29	1681.59	2046.4	1695.11	2046.2	1720.8	2046.17	1731.61	2046.32		
1750.53	2046	1805.84	2046	1848.8	2045.5	1871.42	2045.36	1879.26	2045.5		
1893.14	2045.2	1910.7	2045.7	1936.16	2045.17	1955.54	2045.55	1958.46	2046		
1988.08	2046	2000.35	2047.64	2010.38	2048	2021	2048	2030.12	2047.18		
2034.5	2046	2055.97	2046.94	2075.75	2048	2086.5	2048	2094.14	2047.58		
2113.51	2047.5	2134.55	2048.1	2171.07	2048.32	2195.36	2048.7	2205.74	2048.64		
2207.31	2048.3	2232.51	2048	2245.32	2048	2264.67	2049.14	2279.76	2049.73		
2287.61	2049.62	2292.6	2048.93	2298.39	2048.8	2318.51	2049.57	2344.91	2050		
2360.81	2050										

Manning's n Values

Sta n Val		Sta n Val		Sta n Val		Sta n Val	
1412.39	.03	1427.39	.016	1452.39	.03	2021	.03

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	1412.39	2021		202.21	259.99	1937.08	
Right Levee		Station=	1635.94	Elevation=	2046.4		

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2046.39	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.		0.028	
W.S. Elev (ft)	2046.31	Reach Len. (ft)	202.21	259.99	1937.08
Crit W.S. (ft)	2046.19	Flow Area (sq ft)		72.46	
E.G. Slope (ft/ft)	0.006704	Area (sq ft)		72.46	
Q Total (cfs)	161.00	Flow (cfs)		161.00	
Top Width (ft)	193.62	Top Width (ft)		193.62	
Vel Total (ft/s)	2.22	Avg. Vel. (ft/s)		2.22	

Max Chl Dpth (ft)	1.36	Hydr. Depth (ft)	0.37		
Conv. Total (cfs)	1966.3	Conv. (cfs)	1966.3		
Length Wtd. (ft)	259.99	Wetted Per. (ft)	194.23		
Min Ch El (ft)	2044.95	Shear (lb/sq ft)	0.16		
Alpha	1.00	Stream Power (lb/ft s)	0.35		
Frctn Loss (ft)	2.30	Cum Volume (acre-ft)	1.58	29.20	0.17
C & E Loss (ft)	0.02	Cum SA (acres)	2.08	45.05	0.23

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.

Note: Manning's n values were composited to a single value in the main channel.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION

RIVER: RIVER-1

REACH: Reach-1

RS: 16

INPUT

Description:

Station Elevation Data		num= 43							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1043.12	2046.8	1058.12	2043.41	1058.62	2043.41	1058.62	2042.91	1060.12	2043.04
1083.12	2043.41	1100.41	2044.16	1115.5	2044	1135.35	2043	1147.34	2043
1166.4	2044	1191.04	2044.11	1219.1	2044	1338.06	2044	1366.56	2043.83
1407.76	2043.7	1429.27	2044	1454.83	2044	1474.65	2043.8	1496.41	2043.99
1540.94	2043.91	1560.26	2044	1572.08	2045.19	1576.6	2045.23	1580.91	2046
1591.86	2046	1593.99	2045.73	1608.53	2046	1622.22	2044.42	1634.98	2044
1656.54	2044.13	1686.39	2043.97	1710.7	2044.27	1716.65	2044	1735.3	2044
1745.04	2044.19	1755.6	2044	1792.96	2044	1797.37	2044.2	1810.59	2044
1891	2044	1941.47	2044.9	1972.53	2045.6				

Manning's n Values		num= 3	
Sta	n Val	Sta	n Val
1043.12	.03	1058.12	.016
1083.12	.03		

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
1043.12	1972.53	200.1	266.06	2049.12	.1	.3	
Right Levee	Station= 1192.48	Elevation= 2044.15					

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2044.07	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.25	Wt. n-Val.		0.026	
W.S. Elev (ft)	2043.82	Reach Len. (ft)	200.10	266.06	2049.12
Crit W.S. (ft)	2043.82	Flow Area (sq ft)		40.48	
E.G. Slope (ft/ft)	0.012191	Area (sq ft)		40.48	
Q Total (cfs)	161.00	Flow (cfs)		161.00	
Top Width (ft)	80.25	Top Width (ft)		80.25	
Vel Total (ft/s)	3.98	Avg. Vel. (ft/s)		3.98	
Max Chl Dpth (ft)	0.91	Hydr. Depth (ft)		0.50	
Conv. Total (cfs)	1458.2	Conv. (cfs)		1458.2	
Length Wtd. (ft)	266.06	Wetted Per. (ft)		80.85	
Min Ch El (ft)	2042.91	Shear (lb/sq ft)		0.38	
Alpha	1.00	Stream Power (lb/ft s)		1.52	
Frctn Loss (ft)	1.22	Cum Volume (acre-ft)	1.58	28.86	0.17
C & E Loss (ft)	0.01	Cum SA (acres)	2.08	44.23	0.23

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.

Note: Manning's n values were composited to a single value in the main channel.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION

RIVER: RIVER-1
 REACH: Reach-1 RS: 15

INPUT

Description:

Station Elevation Data		num=		55	
Sta	Elev	Sta	Elev	Sta	Elev
593.28	2042.84	750.32	2041.99	850.32	2041.12
978.02	2041.78	990.58	2041.37	1009.07	2041.71
1033.1	2041.96	1044.05	2041.7	1065.31	2041.92
1090	2041.5	1105	2041.5	1109.82	2041.76
1171.51	2042.88	1187.96	2042.3	1201.46	2042
1278.29	2042.16	1298.58	2042.25	1305.79	2042.75
1388.41	2042.39	1397.72	2042	1417.19	2042
1471.25	2042.2	1502.47	2042.55	1504.53	2042.28
1536.69	2042.5	1562.8	2042.18	1569.84	2042.3
1655.48	2042.21	1668.14	2042.04	1691.32	2042
1731.15	2042.1	1754.56	2042.2	1769.25	2042.07
				1789.79	2042.26
				1858.47	2043.84

Manning's n Values		num=		2	
Sta	n Val	Sta	n Val		
593.28	.016	950.32	.03		

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
593.28	1858.47		184.5	231.19	2292.4	.1	.3

Ineffective Flow		num=		1	
Sta L	Sta R	Elev	Permanent		
593.28	810.32	2043	F		

Right Levee Station= 1109.82 Elevation= 2041.76

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2041.91	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.61	Wt. n-Val.		0.016	
W.S. Elev (ft)	2041.30	Reach Len. (ft)	184.50	231.19	2292.40
Crit W.S. (ft)	2041.49	Flow Area (sq ft)		89.14	
E.G. Slope (ft/ft)	0.007214	Area (sq ft)		89.14	
Q Total (cfs)	559.00	Flow (cfs)		559.00	
Top Width (ft)	131.29	Top Width (ft)		131.29	
Vel Total (ft/s)	6.27	Avg. Vel. (ft/s)		6.27	
Max Chl Dpth (ft)	1.50	Hydr. Depth (ft)		0.68	
Conv. Total (cfs)	6581.6	Conv. (cfs)		6581.6	
Length Wtd. (ft)	231.19	Wetted Per. (ft)		131.33	
Min Ch El (ft)	2039.80	Shear (lb/sq ft)		0.31	
Alpha	1.00	Stream Power (lb/ft s)		1.92	
Frctn Loss (ft)	2.13	Cum Volume (acre-ft)	1.58	28.47	0.17
C & E Loss (ft)	0.04	Cum SA (acres)	2.08	43.58	0.23

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.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Note: Program found supercritical flow starting at this cross section.

CROSS SECTION

RIVER: RIVER-1

REACH: Reach-1 RS: 14

INPUT

Description:

Station Elevation Data		num= 64							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
732.86	2041.4	747.86	2039.23	748.36	2039.23	748.36	2038.73	749.86	2038.86
772.86	2039.4	782.83	2039.52	791.98	2040	796.38	2039.51	808.34	2040
812.92	2039.33	821.34	2039.54	837.33	2041	842.52	2043	852.56	2043.36
871.94	2041	875.06	2040	929.99	2039.67	945.48	2039.72	964.93	2039.37
984.46	2039.88	1018.14	2039.9	1065.34	2039.7	1101.23	2039.71	1131.78	2040.2
1165.9	2039.9	1176.46	2040.46	1205.21	2040.58	1220.79	2040	1249.44	2041.38
1256.9	2041.54	1295.45	2040	1360.36	2039.78	1369.01	2040.1	1388.88	2040.04
1413.84	2039.7	1431.03	2040	1470	2040.05	1489.19	2039.87	1542.79	2040
1608.56	2042	1646.01	2042	1693.32	2040.97	1708.56	2040.99	1725.83	2040.49
1737.65	2040.5	1782.4	2041.4	1799.39	2041.2	1815.84	2040.4	1830.39	2040.5
1848.7	2039.89	1877.79	2039.83	1887.35	2040.22	1929.54	2041.4	1934.55	2041
1954.53	2041.29	1965.93	2041.16	2002.79	2042.63	2006.02	2042.17	2037.15	2042.1
2072.08	2042.4	2105.03	2042	2135.97	2042	2141.48	2041.8		

Manning's n Values		num= 4					
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
732.86	.03	747.86	.016	772.86	.03	2002.79	.03

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	732.86	2002.79		183.4	251.14	2249.62	.1 .3
Right Levee	Station= 1254.87		Elevation= 2041.59				

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2040.35	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.20	Wt. n-Val.		0.024	
W.S. Elev (ft)	2040.15	Reach Len. (ft)	183.40	251.14	2249.62
Crit W.S. (ft)	2040.15	Flow Area (sq ft)		155.52	
E.G. Slope (ft/ft)	0.009571	Area (sq ft)		155.52	
Q Total (cfs)	559.00	Flow (cfs)		559.00	
Top Width (ft)	381.64	Top Width (ft)		381.64	
Vel Total (ft/s)	3.59	Avg. Vel. (ft/s)		3.59	
Max Chl Dpth (ft)	1.42	Hydr. Depth (ft)		0.41	
Conv. Total (cfs)	5714.0	Conv. (cfs)		5714.0	
Length Wtd. (ft)	251.14	Wetted Per. (ft)		382.40	
Min Ch El (ft)	2038.73	Shear (lb/sq ft)		0.24	
Alpha	1.00	Stream Power (lb/ft s)		0.87	
Frctn Loss (ft)	1.79	Cum Volume (acre-ft)	1.58	27.82	0.17
C & E Loss (ft)	0.03	Cum SA (acres)	2.08	42.22	0.23

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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
Note: Hydraulic jump has occurred between this cross section and the previous upstream section.

CROSS SECTION

RIVER: RIVER-1
REACH: Reach-1 RS: 13

INPUT

Description:

Station Elevation Data		num= 74									
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
571.03	2038.9	586.03	2037.97	586.53	2037.97	586.53	2037.47	588.03	2037.6		
611.03	2037.78	622.9	2038.44	652.92	2038	658.84	2038	672.99	2038.4		
686.54	2038.21	691.86	2037.72	698.89	2038	703.23	2037	710.57	2037		
714.52	2038	739.26	2038.47	772.32	2038	791.21	2038	836.91	2038.13		
862.14	2038	896.21	2038	902.46	2038.14	965.71	2037.96	993.88	2038		
1013.25	2037.82	1021.27	2038	1047.05	2037.99	1071.15	2037.75	1085.5	2037.92		
1114.04	2037.86	1142.79	2038.5	1180.11	2038	1202.69	2038.4	1215.42	2038.14		
1252.93	2037.96	1266.78	2038	1305.18	2037.9	1337.94	2038.09	1378.32	2037.91		
1441.87	2038.14	1457.72	2038	1485.79	2038.3	1499.29	2038.57	1500.95	2038.41		
1518.01	2038.28	1519	2038.6	1527.37	2038.11	1535.05	2038	1549.1	2038.51		
1563.54	2038.49	1565.82	2038.2	1589.7	2038.94	1607.59	2040	1617.62	2042		
1645.13	2042	1660.03	2040	1677.85	2038.6	1688.35	2038.29	1698.2	2038.74		
1713.1	2038.5	1745.35	2037.6	1778.18	2037.79	1783.86	2038	1844.35	2038		
1895.11	2039.67	1903.19	2040	1915.9	2040	1929.25	2039.44	1943.88	2039.52		
1976.88	2039.4	2016.05	2040	2042.18	2040.1	2057.57	2040.05				

Manning's n Values		num= 4							
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
571.03	.03	586.03	.016	611.03	.03	1903.19	.03		

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	571.03	1903.19		207.95	343.21	2179.82	.1 .3
Right Levee	Station= 1142.79		Elevation= 2038.5				

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2038.53	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.		0.027	
W.S. Elev (ft)	2038.45	Reach Len. (ft)	207.95	343.21	2179.82
Crit W.S. (ft)	2038.32	Flow Area (sq ft)		239.91	
E.G. Slope (ft/ft)	0.005511	Area (sq ft)		239.91	
Q Total (cfs)	559.00	Flow (cfs)		559.00	
Top Width (ft)	558.80	Top Width (ft)		558.80	
Vel Total (ft/s)	2.33	Avg. Vel. (ft/s)		2.33	
Max Chl Dpth (ft)	1.44	Hydr. Depth (ft)		0.43	
Conv. Total (cfs)	7529.7	Conv. (cfs)		7529.7	
Length Wtd. (ft)	343.21	Wetted Per. (ft)		559.64	
Min Ch El (ft)	2037.00	Shear (lb/sq ft)		0.15	
Alpha	1.00	Stream Power (lb/ft s)		0.34	
Frctn Loss (ft)	2.51	Cum Volume (acre-ft)	1.58	26.68	0.17
C & E Loss (ft)	0.01	Cum SA (acres)	2.08	39.51	0.23

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.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION

RIVER: RIVER-1

REACH: Reach-1

RS: 12

INPUT

Description:

Station	Elevation	Data	num=	75
Sta	Elev	Sta	Elev	Sta
451.16	2036.1	466.16	2034.89	466.66
491.16	2035.16	497.41	2035.1	510.37
545.06	2034.6	557.47	2034.42	563.49
622.64	2035.66	633.37	2036.21	640.47
672.5	2036.27	690.85	2036.41	712.02
801.06	2035.88	806.12	2036	865.86
951.95	2036	962.2	2035.82	975.21
1090.24	2035.69	1128.72	2035.62	1156.72
1264.83	2035.65	1276.62	2035.85	1279.11
1323.77	2035.83	1338.53	2036.07	1354.38
1392.11	2036.22	1420.26	2036.2	1440.5
1516.41	2035.9	1544.73	2035.91	1557.81
1603.33	2036	1615.5	2036	1650.97
1689.42	2035.59	1717.76	2036	1765.09
1821.84	2036.76	1843.72	2036.9	1876.71

Manning's n Values

num=

3

Sta	n Val	Sta	n Val
451.16	.03	466.16	.016
		491.16	.03

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	451.16	1921.35	229.98	279.95	1953.63	.1	.3
Right Levee	Station=	1338.05	Elevation=	2036.07			

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2036.00	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.19	Wt. n-Val.		0.024	
W.S. Elev (ft)	2035.81	Reach Len. (ft)	229.98	279.95	1953.63
Crit W.S. (ft)	2035.81	Flow Area (sq ft)		159.84	
E.G. Slope (ft/ft)	0.010208	Area (sq ft)		159.84	
Q Total (cfs)	559.00	Flow (cfs)		559.00	
Top Width (ft)	421.63	Top Width (ft)		421.63	
Vel Total (ft/s)	3.50	Avg. Vel. (ft/s)		3.50	
Max Chl Dpth (ft)	1.42	Hydr. Depth (ft)		0.38	
Conv. Total (cfs)	5532.6	Conv. (cfs)		5532.6	
Length Wtd. (ft)	279.95	Wetted Per. (ft)		422.23	
Min Ch El (ft)	2034.39	Shear (lb/sq ft)		0.24	
Alpha	1.00	Stream Power (lb/ft s)		0.84	
Frctn Loss (ft)	2.22	Cum Volume (acre-ft)	1.58	25.10	0.17
C & E Loss (ft)	0.00	Cum SA (acres)	2.08	35.65	0.23

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.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION

RIVER: RIVER-1
 REACH: Reach-1

RS: 11

INPUT

Description:

Station Elevation Data		num=	85								
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
228.16	2034.7	228.16	2033.8	243.16	2032.34	243.66	2032.34	243.66	2031.84		
245.16	2031.97	268.16	2032.32	285.42	2033.2	295.1	2033	310.35	2032		
312.46	2032	320.83	2033	325.82	2034	343.07	2034	385.89	2033		
408.73	2033.03	468.15	2033.24	485.3	2033.66	494.79	2033.69	509.43	2033.51		
521.63	2033.46	532.69	2033.6	545.83	2033.41	562.33	2033.55	595.37	2033.72		
605.2	2034	659.16	2034	663.19	2033.89	666.55	2033.51	693.12	2033.4		
704.35	2033.43	713.44	2033.62	731.74	2033.43	751.82	2033.55	764.35	2033.94		
773.33	2034.01	805.73	2033.75	813.3	2033.63	820.69	2033.7	830.91	2034		
881.06	2034	910.5	2033.71	920.35	2033.46	928.46	2033.64	955.75	2033.6		
988.43	2033.73	1005.83	2033.64	1011.32	2033.76	1048.53	2033.69	1066.09	2033.8		
1074.88	2033.76	1108.95	2033.98	1121.72	2033.99	1151.35	2033.7	1167.72	2033.82		
1188.06	2033.83	1191.79	2034	1236.12	2034.03	1261.28	2033.95	1273.34	2034.02		
1301.97	2034	1314.79	2034.3	1343.41	2034.28	1363.22	2034	1376.57	2034		
1384.32	2033.87	1398.61	2033.96	1408.09	2033.77	1421.38	2033.8	1445.51	2033.83		
1451.33	2034	1483.49	2034	1499.78	2033.8	1504.55	2033.91	1522.19	2033.93		
1545.16	2033.7	1560.9	2033.8	1570.68	2033.7	1580.82	2033.87	1605.3	2034		
1636.1	2035.04	1646.38	2035.2	1662.87	2036	1702.66	2036	1712.69	2036.2		

Manning's n Values

num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
228.16	.03	243.16	.016	268.16	.03	1662.87	.03

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	228.16	1662.87		156.73	186.29	1629.42	.1
Right Levee	Station=	1191.79	Elevation=	2034			.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2033.78	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.21	Wt. n-Val.		0.022	
W.S. Elev (ft)	2033.57	Reach Len. (ft)	156.73	186.29	1629.42
Crit W.S. (ft)	2033.57	Flow Area (sq ft)		151.21	
E.G. Slope (ft/ft)	0.006325	Area (sq ft)		151.21	
Q Total (cfs)	559.00	Flow (cfs)		559.00	
Top Width (ft)	357.93	Top Width (ft)		357.93	
Vel Total (ft/s)	3.70	Avg. Vel. (ft/s)		3.70	
Max Chl Dpth (ft)	1.73	Hydr. Depth (ft)		0.42	
Conv. Total (cfs)	7029.1	Conv. (cfs)		7029.1	
Length Wtd. (ft)	186.29	Wetted Per. (ft)		358.69	
Min Ch El (ft)	2031.84	Shear (lb/sq ft)		0.17	
Alpha	1.00	Stream Power (lb/ft s)		0.62	
Frctn Loss (ft)	0.87	Cum Volume (acre-ft)	1.58	24.10	0.17
C & E Loss (ft)	0.03	Cum SA (acres)	2.08	33.14	0.23

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 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.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION

RIVER: RIVER-1

REACH: Reach-1

RS: 10

INPUT

Description:

Station Elevation Data		num=	98								
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
16.94	2035	16.94	2031.69	31.75	2031.35	46.75	2030.66	47.25	2030.66		
47.25	2030.16	48.75	2030.29	71.75	2031.18	75.12	2033	87.36	2033		
88.06	2033.34	98.87	2033.9	107.23	2033.82	113.75	2033.6	136.72	2033.96		
140.45	2033.79	146.6	2033	160.38	2032.65	183.22	2032.36	220.49	2032.19		
228.85	2032.4	251	2032.56	259.75	2032.57	285	2032.29	326.15	2032.27		
328.36	2032.32	353.61	2032.27	362.92	2032.3	376.07	2032.15	388.38	2032.25		
398.86	2032.19	416.44	2032.4	453.25	2032.7	481.26	2032.7	493.51	2032.3		
512.02	2032.48	532.16	2032.9	555.54	2033.16	565.02	2033.13	581.88	2032.72		
602.65	2032.43	619.72	2032	622.05	2031.74	641.46	2032.28	651.85	2032.23		
654.67	2032.1	669.88	2032	681.01	2032.04	684.93	2032.21	710.25	2032.4		
732.15	2032.3	741.21	2032.4	756.87	2032	777.88	2032.4	795.03	2032.45		
823.19	2032	827.53	2032	855.41	2032.27	884.16	2032.34	901.3	2032.27		
918.83	2032.33	954.47	2032.06	981.29	2032.23	984.5	2032.39	997.16	2032.43		
1023.58	2032.32	1024.86	2032.42	1037.7	2032.45	1047.7	2032.37	1067.83	2032.4		
1077.91	2032.28	1084.22	2032	1126.6	2032	1136.78	2032.12	1143.51	2032		
1153.66	2033.4	1186.47	2032	1224.49	2032.36	1238.18	2032	1244.74	2032.04		
1248.45	2032.3	1261.77	2032.4	1282.27	2032	1289.2	2032	1306.76	2032.3		
1313.93	2032.65	1329.37	2032.78	1335.22	2032.64	1346.57	2032.57	1399.49	2032		
1428.7	2032	1437.6	2032.62	1450.45	2034	1472.4	2035.01	1478.11	2035.17		
1490.82	2035.29	1509.26	2035.16	1512.89	2034.88						

Manning's n Values

num=

4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
16.94	.03	46.75	.016	71.75	.03	1490.82	.03

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	31.75	1490.82		469.55	229.09	1906.7	.1	.3

Ineffective Flow

num=

1

Sta L	Sta R	Elev	Permanent
16.94	31.75	2035	F

Right Levee Station= 1153.66 Elevation= 2033.4

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2032.63	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.11	Wt. n-Val.		0.023	
W.S. Elev (ft)	2032.52	Reach Len. (ft)	469.55	229.09	1906.70
Crit W.S. (ft)	2032.48	Flow Area (sq ft)		285.28	
E.G. Slope (ft/ft)	0.003806	Area (sq ft)	14.83	285.28	
Q Total (cfs)	747.00	Flow (cfs)		747.00	
Top Width (ft)	878.08	Top Width (ft)	14.81	863.27	
Vel Total (ft/s)	2.62	Avg. Vel. (ft/s)		2.62	
Max Chl Dpth (ft)	2.36	Hydr. Depth (ft)		0.33	
Conv. Total (cfs)	12109.1	Conv. (cfs)		12109.1	
Length Wtd. (ft)	229.09	Wetted Per. (ft)		864.27	
Min Ch El (ft)	2030.16	Shear (lb/sq ft)		0.08	
Alpha	1.00	Stream Power (lb/ft s)		0.21	
Frctn Loss (ft)	1.88	Cum Volume (acre-ft)	1.55	23.17	0.17
C & E Loss (ft)	0.01	Cum SA (acres)	2.05	30.53	0.23

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.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION

RIVER: RIVER-1
REACH: Reach-1

RS: 9

INPUT

Description:

Station	Elevation	Data	num=	101						
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	
0	2030.7	7.42	2030.69	57.36	2030.3	81.46	2030.18	81.78	2030.6	
89.22	2030.6	95.11	2030.25	114.06	2030.05	116.45	2030.16	131.42	2030.02	
153.47	2030.15	184.78	2030.7	193.74	2030.95	243.33	2032	280.77	2032	
297.23	2030	311.41	2029.76	314.54	2030.3	344.39	2030.63	350.51	2029.88	
362.24	2030	371.44	2031.3	379.79	2032	407.6	2030.39	407.81	2030	
414.43	2030	446.34	2029.75	470.29	2030	475.67	2031	490.76	2030.73	
513.3	2030.2	527.6	2030.19	564.78	2030.67	567.34	2031.19	569.02	2030.5	
581.33	2030.73	592.6	2030.75	618	2031.08	626.4	2031.1	641.18	2030.8	
660.41	2030.95	664.73	2030.6	686.54	2030.79	699.44	2030.7	714.89	2030.37	
720.42	2030	752.01	2030	780.55	2030.09	781.09	2030	797.14	2030.2	
808.09	2030.16	834.27	2030.24	855.83	2030.16	885.15	2030.5	896.95	2030.94	
908.35	2031.05	919.5	2030.89	930.22	2030.39	935.2	2030.4	954.47	2031.9	
962.08	2031.64	986.69	2030	996.57	2029.88	1050.31	2029.58	1067.57	2029.7	
1073.12	2029.9	1108.29	2029.9	1130.92	2030.1	1166.58	2030.31	1187.92	2030.3	
1210.68	2030.2	1228.54	2030.23	1257.34	2030.2	1278.41	2030.09	1314.83	2030.05	
1354.84	2030.15	1380.7	2030	1412.66	2030	1418.1	2029.63	1431.42	2029.85	
1450.38	2029.9	1465.66	2029.71	1479.83	2029.8	1487.62	2029.67	1497.72	2029.71	
1550.87	2030.12	1574.92	2030.08	1583.4	2030	1621.27	2030.54	1656.21	2030	
1668.29	2030.82	1684.76	2031.07	1687.44	2031.2	1708.55	2031.22	1715.86	2031	
1746.11	2030.4	1761.73	2030.2	1800.89	2029.87	1808.78	2029.72	1822.42	2029.8	
1830.25	2030									

Manning's n Values		num=	9						
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.03	379.79	.016	470.29	.03	475.67	.5	513.3	.03
618	.5	660.41	.03	720.42	.016	834.27	.03		

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	280.77	1687.44		100	170		.1	.3
Left Levee	Station=	619.47		Elevation=	2031.09			
Right Levee	Station=	1621.27		Elevation=	2030.54			

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2030.74	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.23	Wt. n-Val.			
W.S. Elev (ft)	2030.50	Reach Len. (ft)	100.00	170.00	260.00
Crit W.S. (ft)	2030.50	Flow Area (sq ft)		378.85	
E.G. Slope (ft/ft)	0.014099	Area (sq ft)		378.85	
Q Total (cfs)	1467.00	Flow (cfs)		1467.00	
Top Width (ft)	825.09	Top Width (ft)		825.09	
Vel Total (ft/s)	3.87	Avg. Vel. (ft/s)		3.87	
Max Chl Dpth (ft)	0.92	Hydr. Depth (ft)		0.46	
Conv. Total (cfs)	12354.7	Conv. (cfs)		12354.7	
Length Wtd. (ft)	170.00	Wetted Per. (ft)		825.17	
Min Ch El (ft)	2029.58	Shear (lb/sq ft)		0.40	

Alpha	1.00	Stream Power (lb/ft s)		1.56	
Frctn Loss (ft)	1.25	Cum Volume (acre-ft)	1.47	21.42	0.17
C & E Loss (ft)	0.03	Cum SA (acres)	1.97	26.09	0.23

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.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION

RIVER: RIVER-1

REACH: Reach-1 RS: 8

INPUT

Description:

Station	Elevation	Data	num=	250						
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	
0	2030.6	.37	2030.61	4.21	2030.63	8.92	2030.63	14.7	2030.62	
21.7	2030.6	30.12	2030.54	39.84	2030.47	55.74	2030.35	74.44	2030.2	
88.08	2030.1	101.06	2030	102.34	2029.95	102.43	2029.95	110.95	2029.69	
117.06	2029.5	121.59	2029.41	125.3	2029.34	128.72	2029.29	132.14	2029.25	
135.6	2029.2	139.13	2029.2	142.76	2029.19	146.65	2029.19	151.01	2029.21	
156.09	2029.2	161.96	2029.3	168.66	2029.39	185.29	2029.65	205.75	2030	
254.37	2031.8	260.47	2032	273.25	2032	280.69	2032	280.95	2031.92	
289.58	2030	290.85	2029.86	293.89	2029.68	297.8	2029.53	302.62	2029.41	
305.22	2029.4	307.85	2029.32	310.49	2029.28	312.68	2029.64	333.25	2029.88	
337.39	2029.3	341.83	2029.38	346.02	2029.43	349.8	2029.48	352.96	2029.54	
355.35	2029.6	357.8	2029.78	360.84	2030	360.86	2030	369	2031.6	
370.95	2032	377.54	2031.55	380.18	2031.4	381.67	2031.35	383.26	2031.31	
384.91	2031.3	386.42	2031.27	387.56	2031.27	394.62	2031.48	399.45	2031.77	
402.77	2032	406.1	2031.88	438.13	2030.6	450.62	2030.11	453.28	2030	
468.01	2029.8	480.63	2029.7	491.63	2029.61	501.41	2029.53	515.64	2029.44	
522.09	2029.4	527.13	2029.43	528.41	2029.4	531.81	2029.37	544.56	2029.35	
566.32	2029.3	578.82	2029.34	585.37	2029.34	589.61	2029.36	615.16	2029.51	
623.94	2029.5	630.64	2029.56	636.87	2029.59	643.11	2029.6	646.69	2029.6	
648.2	2029.6	649.54	2029.59	653.8	2029.56	655.66	2029.55	660.35	2029.56	
662.42	2029.5	672.01	2029.51	678.57	2029.49	681.57	2029.41	689.23	2029.31	
691.37	2029.2	692.56	2029.22	693.89	2029.22	697.52	2029.22	703.61	2029.23	
720.88	2029.3	727.96	2029.27	735.84	2029.25	740.16	2029.26	756.37	2029.28	
777.45	2030	777.68	2030	779.04	2030.71	781.93	2032	782.05	2032.14	
783.6	2033.4	784.62	2034	785.45	2034.51	786.28	2034.76	787.76	2034.88	
791.74	2035.3	793.66	2035.09	794.58	2034.8	804.06	2034.1	804.36	2034.04	
804.79	2034	807.03	2033.07	811.76	2032.43	812.47	2032.19	814.32	2032	
819.92	2030.6	820.9	2030.31	822.76	2030	833.86	2030	837.63	2030	
843.88	2030	850.68	2030	851.12	2030	927.43	2030	929.19	2030	
929.75	2030	931.3	2030	978.74	2028.48	979.27	2028.48	979.71	2028.48	
980.73	2028.5	983.42	2028.43	984.71	2028.41	988.94	2028.44	989.38	2028.45	
989.8	2028.5	990.74	2028.46	991.68	2028.46	993.39	2028.45	994.07	2028.45	
997.38	2028.5	1001.59	2028.5	1006.68	2028.57	1008.85	2028.57	1019.28	2028.56	
1031.9	2028.5	1035.29	2028.5	1038.93	2028.53	1040.17	2028.56	1040.46	2028.59	
1042.65	2028.7	1045.54	2028.65	1057.54	2028.61	1065.04	2028.43	1068.78	2028.41	
1081.83	2028.4	1083.68	2028.33	1104.64	2028	1128.04	2028	1137.5	2028	

1169.13	2028	1171.6	2028	1179.27	2028	1216.04	2028.05	1251.15	2028.1
1271.64	2028.1	1289.31	2028.14	1307.89	2028.16	1310.71	2028.15	1311.25	2028.14
1313.22	2028.1	1316.45	2028.11	1318.79	2028.1	1328.5	2028.08	1334.56	2028.05
1348.71	2028	1354.52	2028	1361.07	2028	1371.81	2028	1417.16	2028
1424.33	2028	1427.89	2028	1429.99	2028	1432.57	2028	1433.97	2028
1437.38	2028	1437.88	2028	1463.36	2028	1463.79	2028	1468.39	2028
1471.42	2028	1475.89	2028	1482.67	2028	1513.67	2028	1519.47	2028
1521.24	2028	1535.14	2028.26	1535.78	2028.26	1626.26	2029.13	1628.39	2029.14
1629.31	2029.1	1629.6	2029.14	1629.88	2029.18	1629.93	2029.22	1630.01	2029.32
1630.56	2029.3	1631.49	2029.33	1632.06	2029.32	1632.66	2029.31	1634.4	2029.28
1636.9	2029.2	1640.51	2029.2	1648.16	2029.13	1654.27	2029.08	1655.55	2029.06
1656.81	2029	1671.4	2028.77	1674.6	2028.69	1676.63	2028.62	1678.31	2028.54
1679.4	2028.5	1680.69	2028.23	1684.45	2028.09	1687.58	2028	1688.88	2028
1692.55	2028	1710.8	2028	1713.05	2028	1717.99	2028	1763.62	2027.42
1769.56	2027.4	1778.11	2027.43	1780.12	2027.42	1787.99	2027.33	1790.17	2027.31

Manning's n Values		num= 4	
Sta	n Val	Sta	n Val
0	.03	406.1	.016
		480.63	.03
		927.43	.03

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	791.74	1630.56		178.08	177.35	176.89	.1 .3
Right Levee	Station= 1632.74		Elevation=		2029.3		

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2029.12	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.13	Wt. n-Val.		0.030	
W.S. Elev (ft)	2029.00	Reach Len. (ft)	178.08	177.35	176.89
Crit W.S. (ft)	2028.73	Flow Area (sq ft)		514.31	
E.G. Slope (ft/ft)	0.004529	Area (sq ft)		514.31	
Q Total (cfs)	1467.00	Flow (cfs)		1467.00	
Top Width (ft)	649.68	Top Width (ft)		649.68	
Vel Total (ft/s)	2.85	Avg. Vel. (ft/s)		2.85	
Max Chl Dpth (ft)	1.69	Hydr. Depth (ft)		0.79	
Conv. Total (cfs)	21798.9	Conv. (cfs)		21798.9	
Length Wtd. (ft)	177.35	Wetted Per. (ft)		649.72	
Min Ch El (ft)	2028.00	Shear (lb/sq ft)		0.22	
Alpha	1.00	Stream Power (lb/ft s)		0.64	
Frctn Loss (ft)	1.30	Cum Volume (acre-ft)	1.47	19.68	0.17
C & E Loss (ft)	0.01	Cum SA (acres)	1.97	23.21	0.23

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.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION

RIVER: RIVER-1
 REACH: Reach-1 RS: 7

INPUT

Description:

Station	Elevation	Data	num= 319
Sta	Elev	Sta	Elev
0	2027.9	5.1	2027.92
7.86	2027.9	8.15	2027.94
9.11	2027.9	9.3	2027.94

10.52	2027.9	11.01	2027.92	12.35	2027.91	13.12	2027.9	13.84	2027.9
14.52	2027.9	16.36	2027.86	17.2	2027.85	18.42	2027.84	37.94	2027.73
56.01	2027.6	72.07	2027.5	107.89	2027.2	116.79	2027.12	124.29	2027.06
130.32	2027	134.92	2027	138.39	2026.99	140.94	2026.99	142.75	2027.01
144.06	2027	146.2	2027.11	150.01	2027.31	151.32	2027.4	151.66	2027.66
152.1	2028	154.91	2028.06	168.04	2028.36	177.3	2028.54	184.31	2028.65
190.06	2028.7	195.28	2028.71	218.23	2028.55	225.81	2028.51	227.13	2028.52
234.86	2028.5	236.27	2028.48	243.37	2028.49	244.82	2028.46	246.01	2028.43
246.8	2028.4	247.8	2028.27	248.33	2028.21	248.68	2028.17	248.95	2028.15
249.31	2028.1	249.75	2028.13	249.99	2028.12	250.22	2028.12	250.47	2028.12
250.67	2028.1	252.54	2028.17	252.92	2028.12	253.32	2028.13	253.7	2028.13
254.05	2028.1	254.34	2028.14	254.55	2028.15	254.78	2028.16	255.06	2028.18
255.27	2028.2	256.7	2028.25	258.84	2028.34	260.8	2028.43	266.04	2028.73
270.68	2029	280.72	2029.51	283.29	2029.54	290.51	2030	292.93	2030.2
296.36	2030.4	298.98	2030.43	301.94	2030.49	307.67	2030.57	319.28	2030.69
332.08	2030.6	332.33	2030.46	334.27	2030.32	338.45	2030.17	345.33	2030
345.57	2030	382.89	2028.61	390.63	2028.44	393.03	2028.35	420.1	2028.03
420.47	2028	422.92	2028	448.99	2027.9	449.85	2027.89	459.78	2027.86
461.07	2027.8	471.29	2027.8	473.1	2027.78	493.33	2027.64	496.14	2027.62
505.61	2027.6	522.25	2027.45	529.7	2027.43	543.63	2027.41	547.27	2027.38
572.08	2027.4	575.68	2027.36	596.34	2027.38	607.43	2027.34	619.32	2027.35
629.85	2027.3	634.8	2027.29	638.8	2027.27	643.26	2027.24	647.64	2027.23
660.4	2027.1	665.64	2027.11	670.26	2027.07	674.98	2027.03	687.41	2026.98
693.82	2027	705.75	2026.96	712.36	2027.01	717.52	2026.99	723.1	2026.97
729.12	2027	735.3	2027	747.18	2027	759.03	2027	778.21	2027.15
792.46	2027.1	799.6	2027.19	807.21	2027.22	810.49	2027.22	813.02	2027.22
815.03	2027.2	819.41	2027.15	820.32	2027.1	821.55	2027.1	824.17	2027.1
826.11	2027.1	827.69	2027.12	829.24	2027.14	837.64	2027.26	840.86	2027.28
851.75	2027.3	861.41	2027.36	864.9	2027.37	867.56	2027.37	870.61	2027.37
873.85	2027.4	883.36	2027.33	884.72	2027.34	887.46	2027.33	889.93	2027.33
895.86	2027.4	897.67	2027.36	899.48	2027.36	901.34	2027.35	903.29	2027.34
905.42	2027.3	916.78	2027.15	920.63	2027.1	924.79	2027.05	925.43	2027.05
929.84	2027	931.75	2027	937.61	2026.93	939.11	2026.93	940.28	2026.93
941.05	2026.9	942.02	2027	944.19	2027.05	947.89	2027.08	951	2027.03
952.49	2027	957.5	2027	959.48	2027	961.95	2027.01	964.1	2027.02
966.77	2027.1	971.57	2027.14	973.75	2027.11	975.72	2027.13	977.63	2027.13
979.89	2027.1	982.4	2027.11	984.94	2027.1	987.45	2027.08	993.12	2027.1
995.62	2027.1	1000.28	2027.1	1004.6	2027.03	1008.56	2027.07	1009.53	2027.04
1010.08	2027	1010.15	2026.9	1023.65	2026.71	1028.93	2026.7	1030.56	2026.7
1032.71	2026.7	1034.02	2026.71	1034.92	2026.72	1036.43	2026.74	1037.98	2026.75
1039.61	2026.7	1044.65	2026.73	1054.01	2026.74	1064.4	2026.77	1069.71	2026.79
1083.9	2026.9	1085.81	2026.87	1088.02	2026.87	1090.08	2026.87	1092.88	2026.88
1095.16	2026.9	1098.38	2026.91	1102.47	2026.93	1104.11	2026.93	1110.9	2026.97
1113.97	2027	1117.06	2027	1122.18	2027.06	1128.47	2027.15	1130.19	2027.17
1132.29	2027.2	1134.84	2027.21	1137.56	2027.23	1145.89	2027.27	1152.05	2027.31
1155.48	2027.3	1157.13	2027.34	1158.7	2027.35	1160.22	2027.35	1161.71	2027.35
1164.89	2027.3	1168.75	2027.32	1173.35	2027.29	1178.09	2027.26	1182.38	2027.21
1184.99	2027.2	1188.35	2027.15	1192.41	2027.12	1196.93	2027.09	1201.65	2027.06
1204.76	2027.1	1208.22	2027.06	1212.97	2027.07	1225.57	2027.1	1229.66	2027.08
1242.34	2027.1	1249.91	2027.08	1262.79	2027.12	1274.05	2027.09	1289.9	2027.14
1297.81	2027.1	1314.5	2027.18	1318.44	2027.18	1336.75	2027.25	1340.36	2027.25
1350.6	2027.3	1354.87	2027.34	1360.57	2027.35	1362.92	2027.35	1364.88	2027.35
1370.46	2027.3	1386.1	2027.41	1409.62	2027.5	1436.5	2027.61	1461.97	2027.72
1474.98	2028	1483.54	2028	1492.76	2028	1492.87	2028	1492.96	2028
1499.13	2028	1503.93	2028	1525.69	2028	1533.79	2028	1537.51	2028
1556.71	2028	1564.18	2028	1565.67	2028	1575.01	2028	1629.28	2027.12
1632	2027.1	1633.72	2027.13	1634.57	2027.12	1645.48	2026.92	1651.83	2027.05
1652.48	2027.1	1653.92	2027.08	1692.17	2026	1693.49	2026	1718.79	2025.7
1730.65	2026.7	1730.81	2026.73	1743.96	2025.88	1744.87	2025.86	1751.58	2025.7
1752.32	2025.7	1752.59	2025.65	1752.61	2025.63	1770.12	2025.41	1771.53	2025.41
1773.56	2025.4	1774.03	2025.41	1775.9	2025.39	1776.41	2025.38		

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.03	345.33	.016	393.03	.03	889.93	.03

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
345.33 1564.18 206.3 173.32 203.74 .1 .3
Left Levee Station= 324.15 Elevation= 2031
Right Levee Station= 1522.12 Elevation= 2028.05

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2027.81	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.19	Wt. n-Val.		0.030	
W.S. Elev (ft)	2027.62	Reach Len. (ft)	206.30	173.32	203.74
Crit W.S. (ft)	2027.59	Flow Area (sq ft)		424.53	
E.G. Slope (ft/ft)	0.013927	Area (sq ft)		424.53	
Q Total (cfs)	1467.00	Flow (cfs)		1467.00	
Top Width (ft)	943.68	Top Width (ft)		943.68	
Vel Total (ft/s)	3.46	Avg. Vel. (ft/s)		3.46	
Max Chl Dpth (ft)	2.24	Hydr. Depth (ft)		0.45	
Conv. Total (cfs)	12430.8	Conv. (cfs)		12430.8	
Length Wtd. (ft)	173.32	Wetted Per. (ft)		943.76	
Min Ch El (ft)	2026.70	Shear (lb/sq ft)		0.39	
Alpha	1.00	Stream Power (lb/ft s)		1.35	
Frctn Loss (ft)	1.96	Cum Volume (acre-ft)	1.47	17.77	0.17
C & E Loss (ft)	0.02	Cum SA (acres)	1.97	19.97	0.23

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.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION

RIVER: RIVER-1

REACH: Reach-1 RS: 6

INPUT

Description:

Station	Elevation	Data	num=	290						
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	
0	2026.7	.83	2026.67	10.87	2026.57	18.23	2026.49	27.95	2026.4	
55	2026.2	70.27	2026.07	77.35	2026	78.93	2025.91	79.8	2025.75	
143.2	2025.4	156.3	2025.56	164.87	2025.68	179.58	2025.95	182.32	2026	
183.42	2026.6	184.3	2026.96	187.79	2028	191.57	2029.53	192.56	2029.91	
192.85	2030	193.72	2030.44	196.71	2032	201.26	2032	201.44	2032	
201.57	2032	208.01	2030	211.81	2028.9	215.05	2028	222.52	2027.86	
226.9	2027.7	228	2027.65	241	2027.4	244.72	2027.39	249.75	2027.35	
255.85	2027.3	262.51	2027.21	287.85	2026.99	295.06	2026.9	306.49	2026.81	
319.1	2026.7	333.59	2026.55	380.84	2026	386.88	2025.86	394.39	2025.71	
409.53	2025.5	410.45	2025.48	417.34	2025.38	423.54	2025.29	429.25	2025.23	
434.7	2025.2	440.17	2025.15	445.89	2025.12	463.74	2025.09	477.36	2025.04	
481.92	2025	487.15	2025.02	493.55	2025.03	501.53	2025.05	510.53	2025.07	
519.54	2025.1	554.97	2025.27	567.23	2025.36	576.88	2025.43	580.17	2025.45	
589.18	2025.5	591.97	2025.52	594.01	2025.54	596.1	2025.56	597.27	2025.58	
599.03	2025.6	600.27	2025.6	601.66	2025.61	603.06	2025.62	603.69	2025.62	
604.29	2025.6	604.88	2025.62	605.5	2025.62	606.12	2025.62	607.35	2025.61	
609.91	2025.6	611.35	2025.56	612.99	2025.55	615	2025.54	617.36	2025.53	
622.14	2025.5	627.18	2025.51	638.87	2025.56	641.06	2025.56	641.98	2025.56	
656.47	2025.6	657.17	2025.62	681.43	2025.7	681.93	2025.7	708.77	2025.8	
709.13	2025.8	709.9	2025.81	710.71	2025.81	711.79	2025.83	712.12	2025.83	
712.44	2025.8	712.74	2025.84	713.04	2025.84	713.35	2025.84	713.68	2025.84	

714.06	2025.8	714.95	2025.84	716.49	2025.84	717	2025.84	717.5	2025.84
717.97	2025.8	719.64	2025.84	720.49	2025.84	720.95	2025.84	721.42	2025.84
721.9	2025.8	722.37	2025.84	722.82	2025.83	723.27	2025.83	724.09	2025.82
724.86	2025.8	726.11	2025.79	727.13	2025.78	727.74	2025.77	728.43	2025.76
737.31	2025.8	738	2025.77	745.12	2025.78	753.8	2025.77	754.51	2025.77
764.03	2025.8	764.84	2025.75	791.26	2025.67	798.08	2025.65	804.11	2025.64
820.39	2025.7	825.8	2025.73	830.88	2025.74	834.53	2025.74	835.31	2025.74
836.62	2025.7	838.31	2025.73	843.74	2025.7	846.52	2025.68	851.69	2025.66
853.84	2025.6	856.21	2025.63	862.3	2025.57	868.52	2025.49	889.05	2025.19
893.12	2025.1	896.8	2025.08	900.08	2025.05	903	2025.03	905.79	2025.02
908.69	2025	915.07	2025.03	920.54	2025.05	925.37	2025.08	935.48	2025.15
938.73	2025.2	944.34	2025.22	946.85	2025.26	951.16	2025.35	957.4	2025.58
959.88	2025.7	963.64	2025.75	969.15	2025.85	976.04	2025.95	976.28	2025.95
976.57	2026	980.43	2026	998.21	2026.08	1014.43	2026.19	1023.47	2026.24
1027.8	2026.3	1031.96	2026.28	1035.97	2026.28	1039.89	2026.28	1048.25	2026.25
1058.43	2026.2	1070.55	2026.14	1083.03	2026.05	1087.37	2026	1116.19	2024.9
1135.42	2024	1169.32	2022.55	1171.08	2022.48	1171.29	2022.47	1171.35	2022.47
1171.42	2022.5	1171.45	2022.47	1171.48	2022.47	1171.51	2022.47	1171.53	2022.47
1171.55	2022.5	1171.58	2022.47	1171.62	2022.47	1171.67	2022.47	1171.71	2022.47
1171.83	2022.5	1172.06	2022.48	1221.79	2024	1227.07	2024.16	1228.81	2024.17
1229.94	2024.2	1230.61	2024.18	1237.33	2024.31	1257.59	2024.71	1269.63	2024.92
1274.47	2025	1278.67	2025.06	1282.42	2025.11	1290.19	2025.19	1305.34	2025.5
1313.48	2025.6	1332.79	2026	1333.47	2026.01	1343.09	2026.11	1373.53	2026.31
1378.26	2026.3	1382.07	2026.38	1387.51	2026.45	1393.17	2026.61	1394.62	2026.66
1395.86	2026.7	1397.49	2026.7	1399.53	2026.7	1401.97	2026.69	1404.73	2026.66
1407.71	2026.6	1414.75	2026.38	1424.49	2026.06	1426.79	2026	1442.12	2024.78
1444.57	2024.8	1446.75	2024.79	1448.47	2024.84	1457.85	2024.41	1460.92	2024.3
1461.61	2024.3	1461.96	2024.25	1462.06	2024.26	1463.12	2024.29	1463.68	2024.3
1464.45	2024.3	1465.54	2024.31	1467.25	2024.31	1468.85	2024.32	1469.35	2024.33
1470.37	2024.4	1471.05	2024.39	1471.9	2024.4	1476.53	2024.45	1481.67	2024.5
1491.96	2024.6	1500.81	2024.81	1502.81	2024.81	1513.87	2025.02	1521.53	2025.17
1523.49	2025.2	1526.72	2025.27	1528.07	2025.3	1529	2025.34	1529.99	2025.41
1530.12	2025.4	1530.4	2025.44	1530.93	2025.45	1535.29	2025.47	1537.4	2025.48
1538.07	2025.5	1538.46	2025.49	1541.48	2025.49	1541.89	2025.49	1542.64	2025.5
1544	2025.5	1544.33	2025.56	1544.71	2025.57	1545.14	2025.57	1545.64	2025.58
1546.87	2025.6	1548.45	2025.59	1550.26	2025.59	1552.02	2025.59	1552.79	2025.59
1553.44	2025.6	1553.99	2025.58	1554.92	2025.56	1556.48	2025.51	1557.38	2025.49

Manning's n Values		num=	4
Sta	n Val	Sta	n Val
0	.03	179.58	.016
		228	.03
		791.26	.03

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	215.05	1393.17		280.15	237.84	195.6	.1	.3
Left Levee	Station=	828.32	Elevation=	2025.85				
Right Levee	Station=	1401.77	Elevation=	2026.64				

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2025.84	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.38	Wt. n-Val.		0.030	
W.S. Elev (ft)	2025.46	Reach Len. (ft)	280.15	237.84	195.60
Crit W.S. (ft)	2025.32	Flow Area (sq ft)		298.36	
E.G. Slope (ft/ft)	0.009322	Area (sq ft)		298.36	
Q Total (cfs)	1467.00	Flow (cfs)		1467.00	
Top Width (ft)	286.04	Top Width (ft)		286.04	
Vel Total (ft/s)	4.92	Avg. Vel. (ft/s)		4.92	
Max Chl Dpth (ft)	2.99	Hydr. Depth (ft)		1.04	
Conv. Total (cfs)	15193.8	Conv. (cfs)		15193.8	
Length Wtd. (ft)	237.84	Wetted Per. (ft)		286.20	
Min Ch El (ft)	2022.47	Shear (lb/sq ft)		0.61	
Alpha	1.00	Stream Power (lb/ft s)		2.98	
Frctn Loss (ft)	2.81	Cum Volume (acre-ft)	1.47	16.33	0.17

C & E Loss (ft) 0.01 Cum SA (acres) 1.97 17.52 0.23

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.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION

RIVER: RIVER-1

REACH: Reach-1 RS: 5

INPUT

Description:

Station		Elevation Data		num= 266									
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2022	11.3	2022	41.32	2022.71	51.09	2022.92	56.32	2023.02				
73.1	2023.3	99.25	2023.77	111.12	2023.95	115.44	2023.98	116.79	2024				
119.66	2024	121.71	2024	132.51	2024	135.95	2024	145.04	2024				
160.63	2023.8	164.52	2023.83	169.09	2023.85	174.27	2023.85	175.46	2023.86				
175.75	2023.9	176.33	2023.87	176.64	2023.87	177	2023.87	177.42	2023.86				
177.92	2023.9	178.54	2023.85	179.3	2023.84	180.21	2023.83	183.64	2023.77				
190.59	2023.7	192.34	2023.7	200.83	2023.63	209.58	2023.53	212.58	2023.49				
221.01	2023.4	224.96	2023.33	232.53	2023.23	238.88	2023.13	243.67	2023.1				
253.98	2022.9	259	2022.93	266.8	2022.79	272.19	2022.68	274.32	2022.63				
276.22	2022.6	278.04	2022.57	279.9	2022.54	281.91	2022.52	284.09	2022.51				
286.46	2022.5	289	2022.5	294.2	2022.5	298.69	2022.5	300.38	2022.51				
301.63	2022.5	302.72	2022.52	306.67	2022.6	312.15	2022.72	314.98	2022.78				
328.44	2023	335.33	2023.13	342.67	2023.29	356.18	2023.66	368.87	2024				
377.46	2024.07	383.49	2024.12	390.18	2024.16	396.98	2024.2	400.02	2024.2				
402.89	2024.22	405.75	2024.22	408.71	2024.22	411.73	2024.21	417.62	2024.2				
429.87	2024.04	433.74	2024	439.17	2023.9	449.53	2023.74	452.56	2023.8				
463.28	2023.66	473.24	2023.6	475.17	2023.61	477.05	2023.62	479.19	2023.6				
497.62	2023.54	514.4	2023.47	521.93	2023.44	524.94	2023.44	527.6	2023.4				
530.02	2023.45	532.38	2023.47	537.64	2023.55	544.15	2023.68	556.43	2024				
556.78	2024	560.65	2024.05	564.37	2024.09	567.96	2024.12	571.48	2024.1				
575.12	2024.16	579.1	2024.17	583.55	2024.18	593.87	2024.17	611.82	2024.1				
617.78	2024.13	623.5	2024.12	628.92	2024.12	648.16	2024.16	657.84	2024.2				
663.02	2024.18	668.37	2024.17	673.76	2024.16	679.08	2024.13	684.26	2024.1				
689.23	2024.07	697.26	2024	698.83	2023.94	698.94	2023.94	709.07	2023.5				
710.43	2023.6	710.82	2023.61	711.39	2023.61	712.2	2023.6	722.57	2023.5				
731.14	2023.33	752.76	2022.88	760.63	2022.71	763.59	2022.65	766.11	2022.6				
768.3	2022.58	770.3	2022.56	772.19	2022.56	779.72	2022.58	785.43	2022.5				
786.99	2022.53	792.64	2022.48	795.09	2022.47	805.27	2022.42	808	2022.4				
821.1	2022.38	827.32	2022.32	841.07	2022.34	853.81	2022.36	856.5	2022.3				
862.03	2022.35	863.78	2022.33	865.52	2022.32	867.38	2022.32	869.3	2022.3				
873.09	2022.32	878.95	2022.35	884.99	2022.35	907.58	2022.53	912.43	2022.5				
917.62	2022.54	938.26	2022.69	944.71	2022.71	953.33	2022.75	974.01	2022.9				
984.31	2022.93	990.63	2022.96	994.96	2022.98	999.93	2022.98	1002.6	2023				
1005.43	2022.96	1008.45	2022.94	1015.22	2022.87	1031.72	2022.65	1034.1	2022.7				
1044.73	2022.53	1057.15	2022.41	1058.48	2022.41	1059.82	2022.4	1090.66	2022.2				
1109.69	2022	1124.29	2021.82	1134.05	2021.74	1151.85	2021.66	1157.62	2021.7				
1161.31	2021.68	1164.53	2021.7	1167.86	2021.67	1170.66	2021.64	1175.03	2021.5				
1182.6	2021.28	1185.15	2021.21	1188.12	2021.16	1191.63	2021.12	1195.37	2021.1				
1199.41	2021.06	1203.73	2021.04	1208.59	2021.04	1221.26	2021.06	1233.26	2021.1				
1241.92	2021.11	1251.23	2021.3	1251.45	2021.33	1254.49	2021.36	1268.77	2021.4				
1277.08	2021.58	1278.17	2021.66	1289.91	2022	1290.64	2022	1293.89	2022				
1314.87	2022	1317.05	2022.39	1334.78	2022.64	1342.41	2022.74	1349.58	2022.8				
1356.36	2022.9	1368.84	2023.03	1381.63	2023.14	1384.01	2023.17	1385.92	2023.2				
1391.04	2023.31	1393.05	2023.35	1397.16	2023.41	1399.02	2023.44	1400.83	2023.5				

1402.73	2023.48	1406.87	2023.52	1412.44	2023.56	1419.35	2023.62	1421.81	2023.6
1422.67	2023.64	1423.39	2023.64	1424.09	2023.64	1424.77	2023.64	1425.46	2023.6
1426.2	2023.62	1427.48	2023.57	1428.48	2023.53	1430.04	2023.45	1431.61	2023.3
1433.28	2023.22	1434.6	2023.16	1436.26	2023.09	1438.19	2023.03	1440.26	2023
1442.32	2022.94	1450.44	2023.05	1455.49	2023.13	1457.51	2023.17	1459.06	2023.2
1460.62	2023.33	1461.99	2023.7	1462.95	2023.86	1464.28	2024	1465.43	2024
1468.77	2024	1469.22	2023.97	1470.04	2023.45	1470.3	2023.26	1470.89	2023.2
1474.51	2023.33	1492.62	2024	1493.91	2024.05	1495.32	2024.1	1496.93	2024.1
1498.79	2024.17	1500.92	2024.19	1506.17	2024.22	1512.88	2024.23	1520.57	2024.2
1527.98	2024.24								

Manning's n Values		num= 3	
Sta	n Val	Sta	n Val
0	.016	73.1	.03
		766.11	.03

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	145.04	1527.98		218.12	151.74	126.69	.1 .3
Left Levee	Station=	414.16		Elevation=	2024.22		
Right Levee	Station=	1461.95		Elevation=	2023.97		

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2023.02	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.34	Wt. n-Val.		0.030	
W.S. Elev (ft)	2022.69	Reach Len. (ft)	218.12	151.74	126.69
Crit W.S. (ft)	2022.69	Flow Area (sq ft)		315.41	
E.G. Slope (ft/ft)	0.015446	Area (sq ft)		315.41	
Q Total (cfs)	1467.00	Flow (cfs)		1467.00	
Top Width (ft)	483.87	Top Width (ft)		483.87	
Vel Total (ft/s)	4.65	Avg. Vel. (ft/s)		4.65	
Max Chl Dpth (ft)	1.65	Hydr. Depth (ft)		0.65	
Conv. Total (cfs)	11803.7	Conv. (cfs)		11803.7	
Length Wtd. (ft)	151.74	Wetted Per. (ft)		483.94	
Min Ch El (ft)	2021.04	Shear (lb/sq ft)		0.63	
Alpha	1.00	Stream Power (lb/ft s)		2.92	
Frctn Loss (ft)	0.78	Cum Volume (acre-ft)	1.47	14.66	0.17
C & E Loss (ft)	0.07	Cum SA (acres)	1.97	15.42	0.23

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.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION

RIVER: RIVER-1
 REACH: Reach-1 RS: 4

INPUT

Description:

Station Elevation Data		num= 199	
Sta	Elev	Sta	Elev
0	2020	24.65	2020
		27.61	2020
		31.05	2020
		31.26	2020

32.49	2020	32.62	2020.05	32.72	2020.05	32.78	2020.04	32.81	2020.04
36.66	2020.1	57.19	2020.41	155.74	2022	158.86	2022.1	172.11	2022.51
176.98	2022.6	181.13	2022.75	184.82	2022.82	188.33	2022.87	191.93	2022.9
195.76	2022.9	203.63	2022.94	214.26	2022.98	214.92	2023	240.37	2022.81
242.29	2022.5	245.38	2022.09	246.41	2022	250.91	2021.59	268.58	2020.09
276.66	2019.4	278.65	2019.25	282.23	2019.03	283.72	2018.96	284.43	2018.94
285.2	2018.9	287.05	2018.92	290.96	2018.95	295.97	2019.01	306.29	2019.17
310.98	2019.2	329.64	2020.6	330.59	2020.77	341.84	2021.8	344.24	2022
345.26	2022	353.26	2022.2	356.07	2022.23	360.16	2022.25	365.97	2022.25
373.15	2022.2	384.47	2022.18	391.37	2022.12	394.2	2022.07	396.44	2022.02
396.86	2022	408.13	2020.21	409.47	2020	414.51	2019.94	419.76	2019.9
424.93	2019.9	434.06	2019.84	444.01	2019.84	448.32	2019.86	450.63	2019.9
451.02	2020	462.58	2020.58	467.78	2020.78	473.87	2021.05	478.04	2021.15
482.36	2021.3	485.36	2021.4	487.65	2021.45	497.88	2021.5	499.81	2021.52
506.7	2021.5	516.1	2021.48	517.69	2021.46	528.2	2021.41	529.84	2021.41
539.16	2021.3	544.61	2021.37	547.79	2021.33	549.69	2021.34	551.75	2021.35
555.17	2021.3	560.77	2021.24	567.91	2021.07	577.05	2020.95	580.49	2020.85
591.78	2020.7	594.99	2020.64	600.47	2020.6	605.23	2020.59	610.3	2020.44
614.57	2020.5	618.95	2020.32	619.9	2020.3	620.68	2020.28	621.3	2020.27
621.77	2020.3	622.13	2020.26	622.68	2020.26	623.8	2020.29	624.14	2020.29
624.58	2020.3	625.12	2020.29	650.55	2020.47	657.34	2020.41	663.18	2020.44
669.49	2020.5	683.41	2020.47	687.14	2020.45	688.86	2020.44	690.44	2020.43
693.14	2020.4	696.54	2020.42	700.09	2020.43	721.74	2020.43	725.14	2020.43
726.65	2020.4	728.13	2020.44	734.4	2020.5	744.59	2020.49	748.16	2020.49
774.98	2020.3	778.72	2020.35	794.63	2020.2	797.75	2020.24	811.73	2020
814.63	2020	815.1	2019.96	842.14	2019.63	846.64	2019.66	848.75	2019.67
849.46	2019.7	850.01	2019.67	851.44	2019.63	852.29	2019.62	853.58	2019.6
855.28	2019.6	857.27	2019.56	874.88	2019.4	877.62	2019.38	891.18	2019.27
894.28	2019.3	905.2	2019.19	911.1	2019.18	933.52	2019.05	939.02	2019.06
946.61	2019	949.75	2019	952.47	2019	958.51	2019.02	978.58	2019.14
983.59	2019.2	988.45	2019.18	1012.66	2019.32	1018.67	2019.36	1036.73	2019.47
1041.44	2019.5	1055.42	2019.61	1083.93	2019.84	1084.46	2019.85	1099.82	2019.99
1100.48	2020	1127.37	2020.7	1132.94	2020.91	1144.02	2021.31	1156.25	2021.7
1164.02	2022	1174.33	2022.09	1197.17	2022.28	1225.15	2022.5	1234.97	2022.58
1238.42	2022.6	1241.28	2022.61	1244.05	2022.61	1246.77	2022.6	1249.49	2022.57
1252.45	2022.5	1257.49	2022.35	1261.43	2022.2	1265.37	2022	1270.22	2021.68
1277.66	2021.1	1280.48	2020.89	1281.79	2020.83	1289.63	2020.98	1291.44	2021.39
1294.13	2022	1298.94	2022.16	1304.48	2022.33	1306.75	2022.39	1308.75	2022.43
1310.92	2022.5	1313.68	2022.49	1343.59	2022.57	1351.69	2022.6		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.03	240.37	.03	1238.42	.03

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	240.37	1238.42		170.71	179.58	192.83	
Left Levee	Station=	393.36	Elevation=	2022.05			
Right Levee	Station=	1245.13	Elevation=	2022.59			

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2020.98	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.09	Wt. n-Val.		0.030	
W.S. Elev (ft)	2020.89	Reach Len. (ft)	170.71	179.58	192.83
Crit W.S. (ft)	2020.37	Flow Area (sq ft)		599.05	
E.G. Slope (ft/ft)	0.002557	Area (sq ft)		599.05	
Q Total (cfs)	1467.00	Flow (cfs)		1467.00	
Top Width (ft)	619.53	Top Width (ft)		619.53	
Vel Total (ft/s)	2.45	Avg. Vel. (ft/s)		2.45	
Max Chl Dpth (ft)	1.99	Hydr. Depth (ft)		0.97	
Conv. Total (cfs)	29009.4	Conv. (cfs)		29009.4	
Length Wtd. (ft)	179.85	Wetted Per. (ft)		619.68	
Min Ch El (ft)	2018.90	Shear (lb/sq ft)		0.15	

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.03	193.96	.03	797.06	.03

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff	Contr.	Expan.
193.96	797.06	204.55	267.88	331.41	.1	.3	
Left Levee	Station=	387.17	Elevation=	2024.02			
Right Levee	Station=	1053.1	Elevation=	2021.95			

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2020.49	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.19	Wt. n-Val.		0.030	0.030
W.S. Elev (ft)	2020.30	Reach Len. (ft)	204.55	267.88	331.41
Crit W.S. (ft)	2019.61	Flow Area (sq ft)		398.16	28.00
E.G. Slope (ft/ft)	0.002730	Area (sq ft)		398.16	28.00
Q Total (cfs)	1467.00	Flow (cfs)		1407.60	59.40
Top Width (ft)	286.73	Top Width (ft)		249.21	37.52
Vel Total (ft/s)	3.44	Avg. Vel. (ft/s)		3.54	2.12
Max Chl Dpth (ft)	2.30	Hydr. Depth (ft)		1.60	0.75
Conv. Total (cfs)	28075.5	Conv. (cfs)		26938.8	1136.8
Length Wtd. (ft)	257.54	Wetted Per. (ft)		249.40	37.72
Min Ch El (ft)	2018.00	Shear (lb/sq ft)		0.27	0.13
Alpha	1.03	Stream Power (lb/ft s)		0.96	0.27
Frctn Loss (ft)	1.31	Cum Volume (acre-ft)	1.47	11.01	0.11
C & E Loss (ft)	0.03	Cum SA (acres)	1.97	11.71	0.14

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.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION

RIVER: RIVER-1
REACH: Reach-1

RS: 2

INPUT

Description:

Station	Elevation	Data	num=	229						
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	
0	2017.5	14.82	2017.65	16.15	2017.61	24.75	2017.73	25.82	2017.69	
35.33	2017.8	36.88	2017.78	37.96	2017.75	60.05	2017.99	60.08	2017.99	
60.13	2018	60.82	2018	80.55	2018.32	93	2018.67	102.32	2019.04	
107.61	2019.2	109.44	2019.38	110.73	2019.47	111.69	2019.54	112.1	2019.58	
113.34	2019.6	114.44	2019.63	116.38	2019.57	119.42	2019.5	128	2019.34	
141.38	2019.1	174.39	2018.35	190.5	2018	199.13	2018	199.85	2018	
200.6	2018	232.82	2018	235.48	2018	239.98	2018	241.93	2018	
243.88	2018	245.96	2018	248.32	2018	251.11	2018	258.86	2018	
284.05	2018	309.03	2018	318.79	2018	332.09	2018	346.75	2019.24	
353.17	2020	358.73	2020	367.62	2020	372.65	2018.94	377.04	2018	
381.26	2017.7	381.63	2017.69	382.05	2017.68	408.03	2016	437.27	2014.66	
441.41	2014.6	443.68	2014.53	445.83	2014.46	473.93	2014.17	474.95	2014.04	
475.35	2014	475.83	2013.93	476.43	2013.89	477.17	2013.86	478.1	2013.84	
479.22	2013.8	482.05	2013.84	487.54	2013.88	493.46	2013.93	494.61	2013.95	
495.58	2014	496.32	2013.99	497.35	2014.06	503.33	2014.73	507.61	2015.17	
515.72	2015.9	524.82	2016.72	537.3	2018	538.5	2018.23	539.21	2018.28	
545.7	2019.3	547.82	2019.15	560	2020	588.74	2018.59	590.5	2018.61	
591.84	2018.6	593.25	2018.55	600.95	2018.04	601.07	2018.04	601.69	2018	

605.17	2017.9	632.99	2017.13	642.86	2016.87	647.92	2016.74	651	2016.66
653.23	2016.6	659.29	2016.5	661.99	2016.45	662.41	2016.44	662.75	2016.44
663.61	2016.4	664.9	2016.42	665.88	2016.41	666.22	2016.41	666.49	2016.4
666.7	2016.4	666.95	2016.39	667.03	2016.38	667.08	2016.38	667.15	2016.38
667.36	2016.4	667.78	2016.39	667.9	2016.39	667.96	2016.39	668.75	2016.39
668.87	2016.4	669.69	2016.44	670.06	2016.45	670.55	2016.47	671.24	2016.49
673.41	2016.5	680.17	2016.69	691.54	2016.94	735.85	2017.94	738.29	2018
738.55	2018.1	747.16	2020	757.49	2020.19	775.28	2020.49	781.62	2020.6
803.2	2020.7	803.4	2020.6	804.2	2020.56	805.69	2020.54	807.95	2020.53
814.23	2020.6	820.07	2020.63	833.85	2020.76	840.79	2020.83	845.15	2020.88
854.9	2021.1	859	2021.12	862.33	2021.15	863.46	2021.16	865.57	2021.1
870.55	2021	876.05	2020.89	878.39	2020.85	881.14	2020.8	883.55	2020.83
896.5	2020.7	900.54	2020.65	904.86	2020.56	909.1	2020.44	912.85	2020.28
916.18	2020.1	916.9	2020	943.71	2019.3	970.3	2018.59	977.56	2018.39
992.65	2018	1023.42	2018	1030.85	2018	1038.65	2018	1045.85	2018
1046.5	2018	1046.51	2018	1050.25	2018.03	1053.92	2018.08	1061.38	2018.26
1070.35	2018.5	1073.35	2018.65	1077.67	2018.93	1083.63	2018.75	1090.63	2018.57
1100.25	2018.4	1105.26	2018.28	1110.35	2018.23	1111.1	2018.22	1113.82	2018.2
1114.64	2018.2	1114.95	2018.18	1115.22	2018.18	1115.46	2018.18	1115.7	2018.19
1115.96	2018.2	1116.56	2018.22	1118.86	2018.36	1119.48	2018.39	1120.16	2018.42
1124.61	2018.4	1125.28	2018.44	1126.07	2018.46	1138.88	2018.64	1139.88	2018.66
1143.48	2018.7	1144.69	2018.72	1146.78	2018.75	1151.36	2018.8	1155.15	2018.8
1158.42	2018.8	1164.17	2018.66	1174.55	2018.35	1175.4	2018.33	1176.41	2018.3
1189.58	2018	1196.44	2017.64	1204.06	2017.19	1208.35	2016.84	1213.8	2016
1220.57	2014.5	1223.62	2014.16	1225.29	2014	1229.73	2014	1232.18	2014
1251.79	2015.1	1255.73	2015.29	1258.51	2015.42	1260.44	2015.5	1261.81	2015.55
1262.9	2015.6	1263.88	2015.6	1266.93	2015.61	1267.98	2015.61	1268.94	2015.62
1286.12	2016	1299.96	2016.15	1309.54	2016.26	1317.13	2016.38		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.03	659.29	.03	1317.13	.03

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	659.29	1317.13		420	390	370	.1 .3
Left Levee	Station=		560.62	Elevation=		2020.04	
Right Levee	Station=		1074.78	Elevation=		2018.93	

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2019.15	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.50	Wt. n-Val.	0.030	0.030	
W.S. Elev (ft)	2018.64	Reach Len. (ft)	420.00	390.00	370.00
Crit W.S. (ft)	2018.64	Flow Area (sq ft)	85.82	174.56	
E.G. Slope (ft/ft)	0.012616	Area (sq ft)	85.82	174.56	
Q Total (cfs)	1467.00	Flow (cfs)	538.47	928.53	
Top Width (ft)	258.21	Top Width (ft)	71.62	186.59	
Vel Total (ft/s)	5.63	Avg. Vel. (ft/s)	6.27	5.32	
Max Chl Dpth (ft)	4.84	Hydr. Depth (ft)	1.20	0.94	
Conv. Total (cfs)	13060.8	Conv. (cfs)	4794.0	8266.8	
Length Wtd. (ft)	395.51	Wetted Per. (ft)	71.66	186.71	
Min Ch El (ft)	2014.00	Shear (lb/sq ft)	0.94	0.74	
Alpha	1.02	Stream Power (lb/ft s)	5.92	3.92	
Frctn Loss (ft)	4.01	Cum Volume (acre-ft)	1.27	9.25	
C & E Loss (ft)	0.08	Cum SA (acres)	1.80	10.37	

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.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION

RIVER: RIVER-1

REACH: Reach-1

RS: 1.75

INPUT

Description:

Station Elevation		Data		num=	199										
Sta	Elev	Sta	Elev			Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2012.9	25.11	2012.82			26.51	2012.83	37.56	2012.59	38.5	2012.59				
61.34	2012.1	61.79	2012.11			67.15	2012	68.17	2011.94	73.17	2011.65				
76.65	2011.5	77.87	2011.44			78.9	2011.42	80.99	2011.44	83.28	2011.55				
86.61	2012	110.22	2012.39			121.98	2012.58	129.97	2012.69	135.66	2012.76				
139.98	2012.8	143.51	2012.8			152.88	2012.77	160.45	2012.75	166.35	2012.89				
170.4	2012.9	179.58	2013.1			186.54	2013.24	203.01	2013.44	209.13	2013.57				
216.25	2013.7	223.37	2013.77			225.32	2013.8	230.76	2013.84	234.06	2013.84				
235.45	2013.8	249.06	2014			254.89	2014	257.76	2014	263.19	2014				
265.99	2014	315.69	2012.26			319.65	2012.17	320.87	2012.14	329.91	2012				
332.87	2012	340.46	2011.96			352.85	2011.94	363.61	2011.94	368.14	2011.94				
371.83	2012	374.75	2011.97			376.8	2012	384.05	2012.06	407.73	2012.31				
421.39	2012.5	427.45	2012.51			432.93	2012.55	437.81	2012.57	442.17	2012.58				
449.91	2012.5	456.66	2012.48			463.63	2012.34	469.22	2012.23	473.13	2012.18				
473.5	2012.2	477.73	2012.15			482.06	2012.14	482.39	2012.14	486.71	2012.15				
487.14	2012.2	487.56	2012.15			487.89	2012.14	488.23	2012.12	488.35	2012.12				
488.51	2012.1	488.68	2012.11			488.86	2012.11	489.01	2012.11	489.29	2012.12				
490.25	2012.2	491.05	2012.19			492.46	2012.24	495.11	2012.32	500.89	2012.4				
503.29	2012.5	509.93	2012.6			513.55	2012.71	518.19	2012.83	530.05	2013.12				
535.31	2013.2	547.13	2013.56			551.52	2013.61	553.39	2013.65	556.73	2013.71				
560.4	2013.7	561.56	2013.73			562.9	2013.78	563.3	2013.79	563.72	2013.8				
564.61	2013.8	565.82	2013.83			566.11	2013.83	566.74	2013.83	567.19	2013.83				
567.73	2013.8	568.33	2013.83			568.99	2013.82	571.52	2013.77	572.48	2013.76				
573.38	2013.7	579.91	2013.67			580.85	2013.66	581.57	2013.67	582.58	2013.69				
583.1	2013.7	583.82	2013.7			584.88	2013.69	586.37	2013.68	588.4	2013.65				
591.15	2013.6	599.11	2013.46			608.7	2013.27	613.93	2013.17	627.5	2012.97				
633.28	2012.9	657.89	2012.49			664.27	2012.39	667.27	2012.33	668.25	2012.31				
669.15	2012.3	669.99	2012.29			670.8	2012.29	671.58	2012.29	675.25	2012.31				
679.46	2012.3	684.34	2012.35			688.16	2012.33	693.61	2012.36	712.92	2012.4				
719.86	2012.4	726.38	2012.37			739.68	2012.24	743.39	2012.27	755.51	2012.12				
761.66	2012	762	2012			789.86	2011.75	794.6	2011.71	798.93	2011.69				
803.14	2011.7	807.38	2011.68			816.16	2011.7	826.68	2011.74	841.16	2011.82				
859.29	2011.9	859.6	2011.92			870.07	2012	884.6	2012.97	893.79	2014				
900.59	2014.7	910.96	2016			917.09	2016.11	924.91	2016.23	929.31	2016.27				
933.91	2016.3	938.48	2016.32			942.89	2016.32	947.15	2016.3	951.28	2016.27				
959.44	2016.1	959.97	2016.14			967.23	2016	976.72	2015.19	984.12	2014.79				
991.83	2014.4	995.8	2014.17			997.59	2014	1002.38	2014	1011.02	2014				
1013.37	2014	1017.04	2014			1027.11	2012.85	1032.61	2012	1079.57	2012				
1079.68	2012	1079.69	2012			1081.84	2012.1	1084.48	2012.18	1087.46	2012.23				
1094.04	2012.3	1097.31	2012.31			1100.28	2012.34	1102.69	2012.38	1106.54	2012.59				
1108.34	2012.6	1111.12	2012.65			1114.88	2012.67	1118.13	2012.68						

Manning's n Values

num=

3

Sta	n Val	Sta	n Val	Sta	n Val
0	.03	257.76	.03	938.48	.03

Bank	Sta: Left	Right	Lengths: Left	Channel	Right	Coeff	Contr.	Expan.
	257.76	938.48	464.44	469.5	488.11	.1		.3
Left Levee	Station=		265.49	Elevation=		2014.05		

CROSS SECTION OUTPUT Profile #PF 1

Warning: Divided flow computed for this cross-section.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

RIVER: RIVER-1
REACH: Reach-1 RS: 1.5

Description:

Station	Elevation	Data	num=	183						
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	
0	2007.9	.81	2007.86	7.21	2007.88	12.54	2007.92	16.86	2007.98	
17.32	2008	21.85	2008.3	49.98	2010	58.38	2010.62	63.58	2010.96	
66.2	2011.1	73.6	2011.32	74.35	2011.35	75.15	2011.36	75.97	2011.37	
76.8	2011.4	77.64	2011.36	78.58	2011.33	79.74	2011.27	81.48	2011.14	
94.26	2010	95.74	2009.79	109.17	2008	123.34	2006.53	127.91	2006	
134.11	2006	149.07	2006	232.83	2007.55	244.8	2007.77	246.83	2007.81	
249.36	2007.9	250.18	2007.86	250.82	2007.87	251.35	2007.88	251.81	2007.88	
252.26	2007.9	252.69	2007.89	253.09	2007.89	253.48	2007.89	253.82	2007.89	
254.1	2007.9	254.64	2007.87	254.88	2007.86	255.19	2007.85	255.53	2007.85	
258.83	2008	290.56	2008.31	302.23	2008.45	338.61	2008.34	338.76	2008.26	
340.19	2008.2	343.33	2008.13	347.61	2008.1	352.1	2008.08	355.98	2008.09	
359.2	2008.1	371.68	2008.3	378.35	2008.4	380.24	2008.41	381.62	2008.4	
383.12	2008.3	384.37	2008.17	386.85	2008.07	390.14	2008	392.37	2007.97	
402.56	2007.9	418.77	2007.76	426.35	2007.71	427.37	2007.7	434.85	2007.61	
436.22	2007.6	439.36	2007.61	439.98	2007.61	440.67	2007.61	441.6	2007.6	
446.64	2007.5	449.14	2007.49	451.81	2007.46	454.28	2007.43	489.24	2006.96	
498.78	2006.8	502.22	2006.76	505.37	2006.72	508.51	2006.69	516.8	2006.63	
518.95	2006.6	520.87	2006.6	522.6	2006.58	527	2006.51	528.3	2006.48	
529.57	2006.5	530.87	2006.46	532.12	2006.45	533.23	2006.45	534.12	2006.45	
534.85	2006.5	536.06	2006.48	538.09	2006.53	540.16	2006.6	542.83	2006.69	
546.48	2006.8	551.91	2007.07	555.27	2007.22	560.85	2007.39	561.96	2007.37	
571.47	2007.6	574.18	2007.62	579.74	2007.75	581.61	2007.75	586.94	2007.88	
587.25	2007.9	587.52	2007.88	592.64	2007.96	592.73	2007.96	597.35	2007.96	
597.65	2008	597.7	2007.97	597.75	2007.97	597.79	2007.97	597.92	2007.97	
597.98	2008	598.03	2007.96	603.08	2007.87	603.22	2007.87	608.37	2007.72	
621	2007.2	624.14	2007.05	629.42	2006.88	633	2006.8	634.23	2006.77	

635.22	2006.8	636.03	2006.76	636.71	2006.76	637.84	2006.78	645.57	2006.98
650.75	2007.1	668.87	2007.85	673.07	2008	692.05	2009.16	706.65	2010
710.03	2010.2	719.37	2010.76	721.71	2010.9	723.47	2011.08	724.02	2011.23
724.26	2011.3	724.63	2011.3	725.12	2011.33	725.73	2011.35	726.46	2011.36
727.33	2011.4	728.37	2011.38	729.58	2011.39	732.16	2011.39	733.39	2011.39
735.91	2011.4	738.82	2011.34	740.39	2011.32	742.01	2011.3	743.68	2011.27
745.39	2011.2	756.15	2010.83	780.5	2010	822.97	2008.94	856.49	2008
860.13	2007.3	862.5	2006.99	868.85	2006.16	870.16	2006	875.35	2005.95
880.42	2005.9	884.59	2005.89	887.86	2005.89	890.37	2005.92	892.03	2006
900.64	2006.5	902.77	2006.56	904.93	2006.63	907.16	2006.68	909.67	2006.71
912.65	2006.7	920.55	2006.71	923.8	2006.7				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.03	489.24	.03	923.8	.03

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	489.24	923.8		450	600		.1	.3
Left Levee	Station=	307.52	Elevation=	2008.48				
Right Levee	Station=	761.06	Elevation=	2010.64				

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2008.73	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.43	Wt. n-Val.	0.030	0.030	
W.S. Elev (ft)	2008.30	Reach Len. (ft)	450.00	600.00	690.00
Crit W.S. (ft)	2008.30	Flow Area (sq ft)	81.47	205.42	
E.G. Slope (ft/ft)	0.011176	Area (sq ft)	81.47	205.42	
Q Total (cfs)	1467.00	Flow (cfs)	329.36	1137.64	
Top Width (ft)	327.78	Top Width (ft)	139.05	188.73	
Vel Total (ft/s)	5.11	Avg. Vel. (ft/s)	4.04	5.54	
Max Chl Dpth (ft)	2.41	Hydr. Depth (ft)	0.59	1.09	
Conv. Total (cfs)	13877.0	Conv. (cfs)	3115.5	10761.4	
Length Wtd. (ft)	583.16	Wetted Per. (ft)	139.08	188.84	
Min Ch El (ft)	2005.89	Shear (lb/sq ft)	0.41	0.76	
Alpha	1.05	Stream Power (lb/ft s)	1.65	4.20	
Frctn Loss (ft)	6.16	Cum Volume (acre-ft)	0.42	3.58	
C & E Loss (ft)	0.03	Cum SA (acres)	0.72	3.66	

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.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION

RIVER: RIVER-1
 REACH: Reach-1 RS: 1

INPUT

Description:

Station	Elevation Data	num=	128
Sta	Elev	Sta	Elev
0	2004.5	1.38	2004.48
20.04	2004.21	29.34	2004.09
38.97	2004		

67.37	2003.5	70.43	2003.5	71.43	2003.49	72.39	2003.48	74.7	2003.4
82.17	2003.1	94.5	2002.66	111.34	2002	121.33	2001.82	127.12	2001.76
141.62	2001.5	152.42	2001.36	166.59	2001.11	175.09	2000.94	180.66	2000.83
182.85	2000.8	184.83	2000.77	188.58	2000.73	199.64	2000.64	204.69	2000.6
213.05	2000.5	219.39	2000.46	222.79	2000.43	224.08	2000.42	225.09	2000.41
225.83	2000.4	226.36	2000.4	227.12	2000.41	228.08	2000.42	230.29	2000.48
231.38	2000.5	232.92	2000.54	236	2000.58	237.97	2000.61	240.75	2000.69
241.9	2000.7	243.27	2000.75	244.93	2000.77	247.71	2000.73	249.45	2000.76
252.18	2000.7	255.86	2000.77	266.99	2000.73	273.49	2000.76	278.41	2000.74
283.5	2000.7	285.22	2000.67	298.85	2000.45	299.62	2000.45	304.79	2000.37
305.39	2000.4	310.37	2000.32	310.89	2000.31	315.53	2000.3	316.07	2000.28
317.09	2000.2	317.92	2000.2	318.35	2000.17	320.06	2000.12	320.27	2000.12
320.88	2000.1	321.03	2000.1	321.17	2000.1	321.32	2000.1	321.46	2000.1
321.59	2000.1	321.7	2000.1	321.91	2000.1	322.15	2000.1	322.28	2000.1
322.75	2000.1	323.52	2000.13	324.53	2000.15	325	2000.16	325.46	2000.17
327.99	2000.3	328.68	2000.28	329.46	2000.3	330.36	2000.32	336.03	2000.36
337.13	2000.4	338.45	2000.41	365.99	2002	368.83	2002	369.68	2002
371.91	2002	393.1	2001.48	396.54	2001.51	400.63	2001.53	410.13	2001.57
429.65	2001.6	434.01	2001.6	438.11	2001.62	442.1	2001.64	446.19	2001.68
450.63	2001.7	455.43	2001.83	462.82	2002	463.3	2002.03	499.76	2002.4
502.34	2002.4	504.15	2002.41	506.1	2002.44	507.33	2002.52	508.1	2002.57
508.69	2002.6	509.53	2002.6	510.79	2002.61	512.66	2002.61	515.29	2002.61
518.66	2002.6	522.72	2002.58	527.43	2002.55	532.61	2002.5	537.98	2002.45
543.26	2002.4	548.26	2002.31	552.72	2002.23	562.87	2002	575.23	2001.69
588.19	2001.4	594.27	2001.17	596.86	2001.11				

Manning's n Values		num= 3	
Sta	n Val	Sta	n Val
0	.03	72.39	.03
		522.72	.03

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	72.39	522.72		0	0		.1	.3
Right Levee		Station=	512.39	Elevation=	2002.63			

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2002.32	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.34	Wt. n-Val.		0.030	
W.S. Elev (ft)	2001.98	Reach Len. (ft)			
Crit W.S. (ft)	2001.88	Flow Area (sq ft)		314.06	
E.G. Slope (ft/ft)	0.010003	Area (sq ft)		314.06	
Q Total (cfs)	1467.00	Flow (cfs)		1467.00	
Top Width (ft)	342.92	Top Width (ft)		342.92	
Vel Total (ft/s)	4.67	Avg. Vel. (ft/s)		4.67	
Max Chl Dpth (ft)	1.88	Hydr. Depth (ft)		0.92	
Conv. Total (cfs)	14667.5	Conv. (cfs)		14667.5	
Length Wtd. (ft)		Wetted Per. (ft)		343.01	
Min Ch El (ft)	2000.10	Shear (lb/sq ft)		0.57	
Alpha	1.00	Stream Power (lb/ft s)		2.67	
Frctn Loss (ft)		Cum Volume (acre-ft)			
C & E Loss (ft)		Cum SA (acres)			

Warning: Divided flow computed for this cross-section.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

SUMMARY OF MANNING'S N VALUES

River:RIVER-1

Reach	River Sta.	n1	n2	n3	n4	n5	n6	n7	n8	n9
Reach-1	31	.03	.013	.016	.013					
Reach-1	30	.03	.013	.016	.013					
Reach-1	29	.013	.027	.013	.016	.013	.035			
Reach-1	28	.013	.03	.013	.016	.013	.035			
Reach-1	27.3	.03	.016	.013	.03					
Reach-1	27.2	.03	.016	.013	.03					
Reach-1	27.1	.03	.016	.013	.03					
Reach-1	27	.03	.016	.013	.03					
Reach-1	26	.027	.016	.027	.016					
Reach-1	25	.027	.016	.027	.016					
Reach-1	24	.027	.016	.027						
Reach-1	23	.027	.016	.027						
Reach-1	22	.027	.016	.03	.027					
Reach-1	21	.027	.016	.03						
Reach-1	20	.027	.016	.03						
Reach-1	19	.03	.016	.03						
Reach-1	18	.03	.016	.03	.03					
Reach-1	17	.03	.016	.03	.03					
Reach-1	16	.03	.016	.03						
Reach-1	15	.016	.03							
Reach-1	14	.03	.016	.03	.03					
Reach-1	13	.03	.016	.03	.03					
Reach-1	12	.03	.016	.03						
Reach-1	11	.03	.016	.03	.03					
Reach-1	10	.03	.016	.03	.03					
Reach-1	9	.03	.016	.03	.5	.03	.5	.03	.016	.03
Reach-1	8	.03	.016	.03	.03					
Reach-1	7	.03	.016	.03	.03					
Reach-1	6	.03	.016	.03	.03					
Reach-1	5	.016	.03	.03						
Reach-1	4	.03	.03	.03						
Reach-1	3	.03	.03	.03						
Reach-1	2	.03	.03	.03						
Reach-1	1.75	.03	.03	.03						
Reach-1	1.5	.03	.03	.03						
Reach-1	1	.03	.03	.03						

SUMMARY OF REACH LENGTHS

River: RIVER-1

Reach	River Sta.	Left	Channel	Right
Reach-1	31	257	257	257
Reach-1	30	248	248	248
Reach-1	29	300	300	300
Reach-1	28	213.18	209	209
Reach-1	27.3	200	200	198
Reach-1	27.2	162.68	166	161.02
Reach-1	27.1	152.46	154	158.62
Reach-1	27	60	160	250
Reach-1	26	167.26	344.62	911.99
Reach-1	25	217.73	402.96	1310.73
Reach-1	24	133.28	268.48	1406.92
Reach-1	23	90.37	188.5	1571.09
Reach-1	22	71.82	66.75	2311.06
Reach-1	21	136.36	116.42	2116.99
Reach-1	20	164.84	178.05	2207.97

Reach-1	19	484.71	223.44	2373.65
Reach-1	18	185.4	214.27	2376.92
Reach-1	17	202.21	259.99	1937.08
Reach-1	16	200.1	266.06	2049.12
Reach-1	15	184.5	231.19	2292.4
Reach-1	14	183.4	251.14	2249.62
Reach-1	13	207.95	343.21	2179.82
Reach-1	12	229.98	279.95	1953.63
Reach-1	11	156.73	186.29	1629.42
Reach-1	10	469.55	229.09	1906.7
Reach-1	9	100	170	260
Reach-1	8	178.08	177.35	176.89
Reach-1	7	206.3	173.32	203.74
Reach-1	6	280.15	237.84	195.6
Reach-1	5	218.12	151.74	126.69
Reach-1	4	170.71	179.58	192.83
Reach-1	3	204.55	267.88	331.41
Reach-1	2	420	390	370
Reach-1	1.75	464.44	469.5	488.11
Reach-1	1.5	450	600	690
Reach-1	1	0	0	0

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS

River: RIVER-1

Reach	River Sta.	Contr.	Expan.
Reach-1	31	.1	.3
Reach-1	30	.1	.3
Reach-1	29	.1	.3
Reach-1	28	.1	1
Reach-1	27.3	.1	.3
Reach-1	27.2	.1	.3
Reach-1	27.1	.1	.3
Reach-1	27	.1	.3
Reach-1	26	.1	.3
Reach-1	25	.1	.3
Reach-1	24	.1	.3
Reach-1	23	.1	.3
Reach-1	22	.1	.3
Reach-1	21	.1	.3
Reach-1	20	.1	.3
Reach-1	19	.1	.3
Reach-1	18	.1	.3
Reach-1	17	.1	.3
Reach-1	16	.1	.3
Reach-1	15	.1	.3
Reach-1	14	.1	.3
Reach-1	13	.1	.3
Reach-1	12	.1	.3
Reach-1	11	.1	.3
Reach-1	10	.1	.3
Reach-1	9	.1	.3
Reach-1	8	.1	.3
Reach-1	7	.1	.3
Reach-1	6	.1	.3
Reach-1	5	.1	.3
Reach-1	4	.1	.3
Reach-1	3	.1	.3

Reach-1	2	.1	.3
Reach-1	1.75	.1	.3
Reach-1	1.5	.1	.3
Reach-1	1	.1	.3

Profile Output Table - Standard Table 1

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Reach-1	31	PF 1	260.00	2077.81	2078.77	2078.98	2079.48	0.014405	6.77	38.41	81.60	1.74
Reach-1	30	PF 1	260.00	2074.72	2075.80	2075.95	2076.37	0.010040	6.07	42.82	81.74	1.48
Reach-1	29	PF 1	260.00	2071.57	2072.40	2072.61	2073.15	0.017305	6.96	37.53	91.72	1.91
Reach-1	28	PF 1	260.00	2066.68	2067.82	2068.05	2068.52	0.013753	6.74	38.57	76.57	1.67
Reach-1	27.3	PF 1	260.00	2065.18	2066.28	2066.29	2066.65	0.004597	4.92	54.13	83.25	1.05
Reach-1	27.2	PF 1	260.00	2063.38	2064.56	2064.75	2065.21	0.012185	6.60	43.05	86.28	1.55
Reach-1	27.1	PF 1	260.00	2062.00	2063.28	2063.35	2063.71	0.006447	5.45	54.11	96.97	1.19
Reach-1	27	PF 1	274.00	2060.81	2062.43	2062.44	2062.74	0.005700	4.47	61.35	102.38	1.02
Reach-1	26	PF 1	203.00	2060.81	2061.55	2061.57	2061.82	0.005651	4.20	48.37	104.60	1.09
Reach-1	25	PF 1	203.00	2059.00	2060.06	2060.06	2060.32	0.004643	4.08	49.75	100.76	1.02
Reach-1	24	PF 1	203.00	2057.00	2058.07	2058.09	2058.35	0.005150	4.22	48.07	98.59	1.07
Reach-1	23	PF 1	203.00	2054.00	2054.91	2055.20	2055.81	0.020796	7.61	26.66	63.68	2.07
Reach-1	22	PF 1	203.00	2051.91	2053.04	2053.11	2053.42	0.007631	4.96	40.96	84.58	1.26
Reach-1	21	PF 1	161.00	2050.78	2051.79	2052.08	2052.73	0.013021	7.79	20.66	27.81	1.59
Reach-1	20	PF 1	161.00	2049.67	2051.00	2051.06	2051.54	0.006792	5.91	27.26	30.92	1.11
Reach-1	19	PF 1	161.00	2048.38	2049.81	2049.67	2050.00	0.006653	3.48	46.29	72.61	0.77
Reach-1	18	PF 1	161.00	2046.69	2048.05	2047.93	2048.14	0.010315	2.46	65.39	205.29	0.77
Reach-1	17	PF 1	161.00	2044.95	2046.31	2046.19	2046.39	0.006704	2.22	72.46	193.62	0.64
Reach-1	16	PF 1	161.00	2042.91	2043.82	2043.82	2044.07	0.012191	3.98	40.48	80.25	0.99
Reach-1	15	PF 1	559.00	2039.80	2041.30	2041.49	2041.91	0.007214	6.27	89.14	131.29	1.34
Reach-1	14	PF 1	559.00	2038.73	2040.15	2040.15	2040.35	0.009571	3.59	155.52	381.64	0.99
Reach-1	13	PF 1	559.00	2037.00	2038.45	2038.32	2038.53	0.005511	2.33	239.91	558.80	0.63
Reach-1	12	PF 1	559.00	2034.39	2035.81	2035.81	2036.00	0.010208	3.50	159.84	421.63	1.00
Reach-1	11	PF 1	559.00	2031.84	2033.57	2033.57	2033.78	0.006325	3.70	151.21	357.93	1.00
Reach-1	10	PF 1	747.00	2030.16	2032.52	2032.48	2032.63	0.003806	2.62	285.28	878.08	0.80
Reach-1	9	PF 1	1467.00	2029.58	2030.50	2030.50	2030.74	0.014099	3.87	378.85	825.09	1.01
Reach-1	8	PF 1	1467.00	2028.00	2029.00	2028.73	2029.12	0.004529	2.85	514.31	649.68	0.56
Reach-1	7	PF 1	1467.00	2026.70	2027.62	2027.59	2027.81	0.013927	3.46	424.53	943.68	0.91
Reach-1	6	PF 1	1467.00	2022.47	2025.46	2025.32	2025.84	0.009322	4.92	298.36	286.04	0.85
Reach-1	5	PF 1	1467.00	2021.04	2022.69	2022.69	2023.02	0.015446	4.65	315.41	483.87	1.02
Reach-1	4	PF 1	1467.00	2018.90	2020.89	2020.37	2020.98	0.002557	2.45	599.05	619.53	0.44
Reach-1	3	PF 1	1467.00	2018.00	2020.30	2019.61	2020.49	0.002730	3.54	426.16	286.73	0.49
Reach-1	2	PF 1	1467.00	2014.00	2018.64	2018.64	2019.15	0.012616	5.32	260.38	258.21	0.97
Reach-1	1.75	PF 1	1467.00	2011.68	2013.02	2012.88	2013.24	0.008342	3.83	383.21	492.19	0.76
Reach-1	1.5	PF 1	1467.00	2005.89	2008.30	2008.30	2008.73	0.011176	5.54	286.89	327.78	0.94
Reach-1	1	PF 1	1467.00	2000.10	2001.98	2001.88	2002.32	0.010003	4.67	314.06	342.92	0.86

ERRORS WARNINGS AND NOTES

Errors Warnings and Notes for Plan : LOMR

River: RIVER-1 Reach: Reach-1 RS: 31 Profile: PF 1

Note: Manning's n values were composited to a single value in the main channel.

River: RIVER-1 Reach: Reach-1 RS: 30 Profile: PF 1

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.

Note: Manning's n values were composited to a single value in the main channel.

River: RIVER-1 Reach: Reach-1 RS: 29 Profile: PF 1

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.

River: RIVER-1 Reach: Reach-1 RS: 28 Profile: PF 1
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.
Note: Manning's n values were composited to a single value in the main channel.

River: RIVER-1 Reach: Reach-1 RS: 27.3 Profile: PF 1
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.

River: RIVER-1 Reach: Reach-1 RS: 27.2 Profile: PF 1
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.

River: RIVER-1 Reach: Reach-1 RS: 27.1 Profile: PF 1
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.

River: RIVER-1 Reach: Reach-1 RS: 25 Profile: PF 1
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.

River: RIVER-1 Reach: Reach-1 RS: 24 Profile: PF 1
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.

River: RIVER-1 Reach: Reach-1 RS: 23 Profile: PF 1
Warning: Divided flow computed for this cross-section.
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 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.

River: RIVER-1 Reach: Reach-1 RS: 22 Profile: PF 1
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 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.

River: RIVER-1 Reach: Reach-1 RS: 21 Profile: PF 1
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 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.
Note: Manning's n values were composited to a single value in the main channel.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: RIVER-1 Reach: Reach-1 RS: 20 Profile: PF 1
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.
Note: Manning's n values were composited to a single value in the main channel.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: RIVER-1 Reach: Reach-1 RS: 19 Profile: PF 1
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.
Note: Manning's n values were composited to a single value in the main channel.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
Note: Hydraulic jump has occurred between this cross section and the previous upstream section.

River: RIVER-1 Reach: Reach-1 RS: 18 Profile: PF 1

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.

Note: Manning's n values were composited to a single value in the main channel.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: RIVER-1 Reach: Reach-1 RS: 17 Profile: PF 1

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.

Note: Manning's n values were composited to a single value in the main channel.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: RIVER-1 Reach: Reach-1 RS: 16 Profile: PF 1

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.

Note: Manning's n values were composited to a single value in the main channel.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: RIVER-1 Reach: Reach-1 RS: 15 Profile: PF 1

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.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Note: Program found supercritical flow starting at this cross section.

River: RIVER-1 Reach: Reach-1 RS: 14 Profile: PF 1

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.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Note: Hydraulic jump has occurred between this cross section and the previous upstream section.

River: RIVER-1 Reach: Reach-1 RS: 13 Profile: PF 1

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.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: RIVER-1 Reach: Reach-1 RS: 12 Profile: PF 1

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.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: RIVER-1 Reach: Reach-1 RS: 11 Profile: PF 1

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 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.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: RIVER-1 Reach: Reach-1 RS: 10 Profile: PF 1

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.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: RIVER-1 Reach: Reach-1 RS: 9 Profile: PF 1

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.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: RIVER-1 Reach: Reach-1 RS: 8 Profile: PF 1

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.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: RIVER-1 Reach: Reach-1 RS: 7 Profile: PF 1

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.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: RIVER-1 Reach: Reach-1 RS: 6 Profile: PF 1

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.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: RIVER-1 Reach: Reach-1 RS: 5 Profile: PF 1

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.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: RIVER-1 Reach: Reach-1 RS: 4 Profile: PF 1

Warning: Divided flow computed for this cross-section.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: RIVER-1 Reach: Reach-1 RS: 3 Profile: PF 1

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.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: RIVER-1 Reach: Reach-1 RS: 2 Profile: PF 1

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.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: RIVER-1 Reach: Reach-1 RS: 1.75 Profile: PF 1

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.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: RIVER-1 Reach: Reach-1 RS: 1.5 Profile: PF 1

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.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

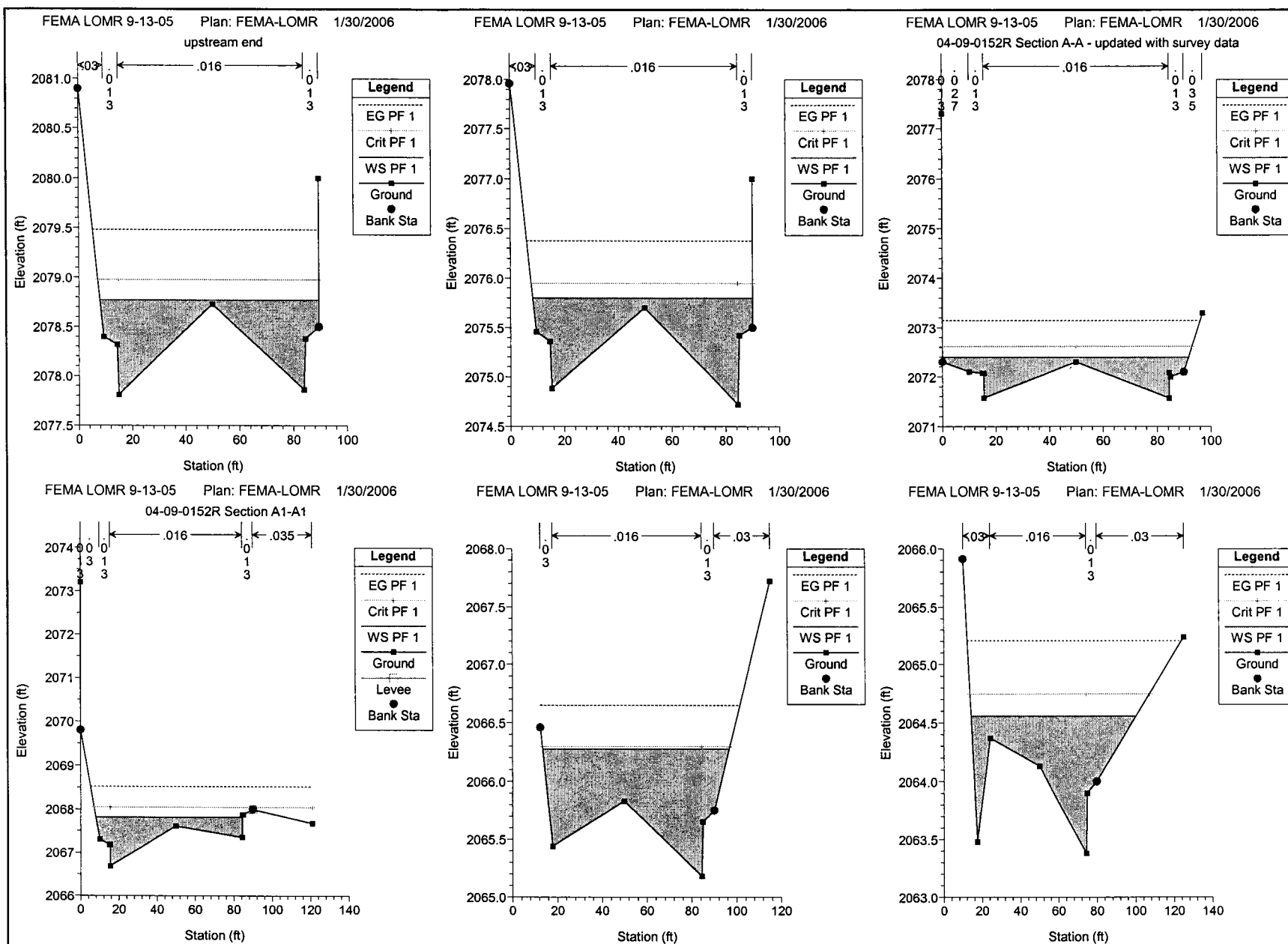
River: RIVER-1 Reach: Reach-1 RS: 1 Profile: PF 1

Warning: Divided flow computed for this cross-section.

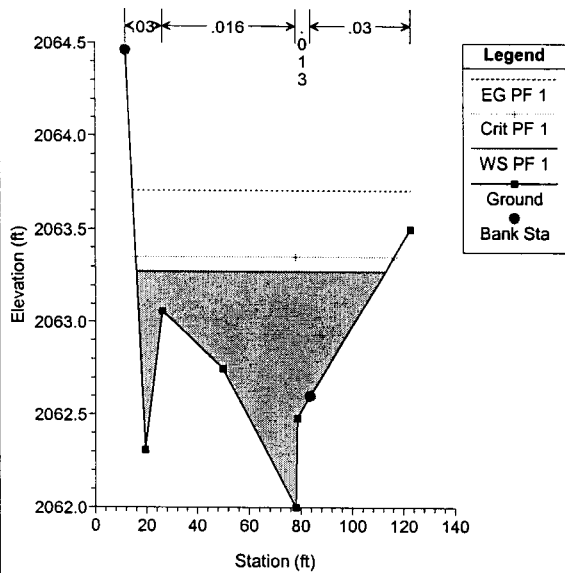
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

HEC-RAS Plan: LOMR River: RIVER-1 Reach: Reach-1 Profile: PF 1

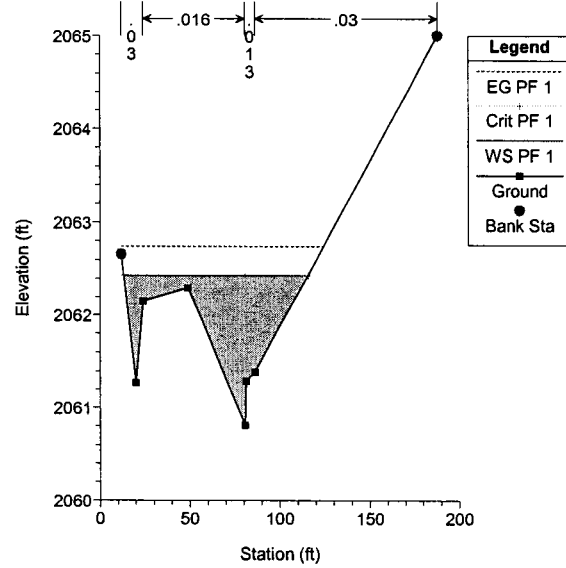
Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Reach-1	31	PF 1	260.00	2077.81	2078.77	2078.98	2079.48	0.014405	6.77	38.41	81.60	1.74
Reach-1	30	PF 1	260.00	2074.72	2075.80	2075.95	2076.37	0.010040	6.07	42.82	81.74	1.48
Reach-1	29	PF 1	260.00	2071.57	2072.40	2072.61	2073.15	0.017305	6.96	37.53	91.72	1.91
Reach-1	28	PF 1	260.00	2066.68	2067.82	2068.05	2068.52	0.013753	6.74	38.57	76.57	1.67
Reach-1	27.3	PF 1	260.00	2065.18	2066.28	2066.29	2066.65	0.004597	4.92	54.13	83.25	1.05
Reach-1	27.2	PF 1	260.00	2063.38	2064.56	2064.75	2065.21	0.012185	6.60	43.05	86.28	1.55
Reach-1	27.1	PF 1	260.00	2062.00	2063.28	2063.35	2063.71	0.006447	5.45	54.11	96.97	1.19
Reach-1	27	PF 1	274.00	2060.81	2062.43	2062.44	2062.74	0.005700	4.47	61.35	102.38	1.02
Reach-1	26	PF 1	203.00	2060.81	2061.55	2061.57	2061.82	0.005651	4.20	48.37	104.60	1.09
Reach-1	25	PF 1	203.00	2059.00	2060.06	2060.06	2060.32	0.004643	4.08	49.75	100.76	1.02
Reach-1	24	PF 1	203.00	2057.00	2058.07	2058.09	2058.35	0.005150	4.22	48.07	98.59	1.07
Reach-1	23	PF 1	203.00	2054.00	2054.91	2055.20	2055.81	0.020796	7.61	26.66	63.68	2.07
Reach-1	22	PF 1	203.00	2051.91	2053.04	2053.11	2053.42	0.007631	4.96	40.96	84.58	1.26
Reach-1	21	PF 1	161.00	2050.78	2051.79	2052.08	2052.73	0.013021	7.79	20.66	27.81	1.59
Reach-1	20	PF 1	161.00	2049.67	2051.00	2051.06	2051.54	0.006792	5.91	27.26	30.92	1.11
Reach-1	19	PF 1	161.00	2048.38	2049.81	2049.67	2050.00	0.006653	3.48	46.29	72.61	0.77
Reach-1	18	PF 1	161.00	2046.69	2048.05	2047.93	2048.14	0.010315	2.46	65.39	205.29	0.77
Reach-1	17	PF 1	161.00	2044.95	2046.31	2046.19	2046.39	0.006704	2.22	72.46	193.62	0.64
Reach-1	16	PF 1	161.00	2042.91	2043.82	2043.82	2044.07	0.012191	3.98	40.48	80.25	0.99
Reach-1	15	PF 1	559.00	2039.80	2041.30	2041.49	2041.91	0.007214	6.27	89.14	131.29	1.34
Reach-1	14	PF 1	559.00	2038.73	2040.15	2040.15	2040.35	0.009571	3.59	155.52	381.64	0.99
Reach-1	13	PF 1	559.00	2037.00	2038.45	2038.32	2038.53	0.005511	2.33	239.91	558.80	0.63
Reach-1	12	PF 1	559.00	2034.39	2035.81	2035.81	2036.00	0.010208	3.50	159.84	421.63	1.00
Reach-1	11	PF 1	559.00	2031.84	2033.57	2033.57	2033.78	0.006325	3.70	151.21	357.93	1.00
Reach-1	10	PF 1	747.00	2030.16	2032.52	2032.48	2032.63	0.003806	2.62	285.28	878.08	0.80
Reach-1	9	PF 1	1467.00	2029.58	2030.50	2030.50	2030.74	0.014099	3.87	378.85	825.09	1.01
Reach-1	8	PF 1	1467.00	2028.00	2029.00	2028.73	2029.12	0.004529	2.85	514.31	649.68	0.56
Reach-1	7	PF 1	1467.00	2026.70	2027.62	2027.59	2027.81	0.013927	3.46	424.53	943.68	0.91
Reach-1	6	PF 1	1467.00	2022.47	2025.46	2025.32	2025.84	0.009322	4.92	298.36	286.04	0.85
Reach-1	5	PF 1	1467.00	2021.04	2022.69	2022.69	2023.02	0.015446	4.65	315.41	483.87	1.02
Reach-1	4	PF 1	1467.00	2018.90	2020.89	2020.37	2020.98	0.002557	2.45	599.05	619.53	0.44
Reach-1	3	PF 1	1467.00	2018.00	2020.30	2019.61	2020.49	0.002730	3.54	426.16	286.73	0.49
Reach-1	2	PF 1	1467.00	2014.00	2018.64	2018.64	2019.15	0.012616	5.32	260.38	258.21	0.97
Reach-1	1.75	PF 1	1467.00	2011.68	2013.02	2012.88	2013.24	0.008342	3.83	383.21	492.19	0.76
Reach-1	1.5	PF 1	1467.00	2005.89	2008.30	2008.30	2008.73	0.011176	5.54	286.89	327.78	0.94
Reach-1	1	PF 1	1467.00	2000.10	2001.98	2001.88	2002.32	0.010003	4.67	314.06	342.92	0.86



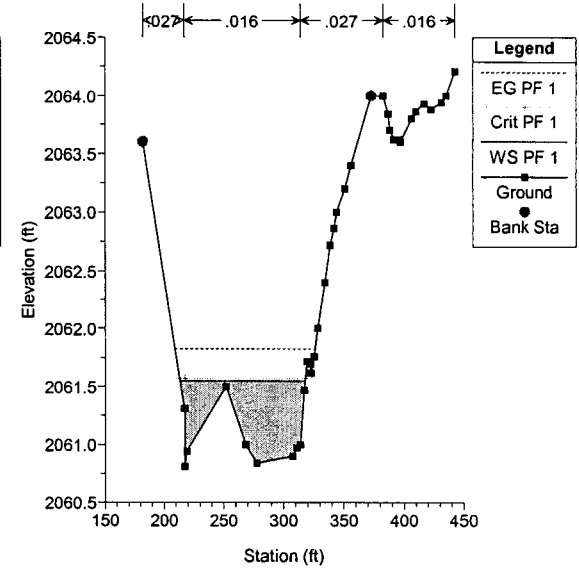
FEMA LOMR 9-13-05 Plan: FEMA-LOMR 1/30/2006



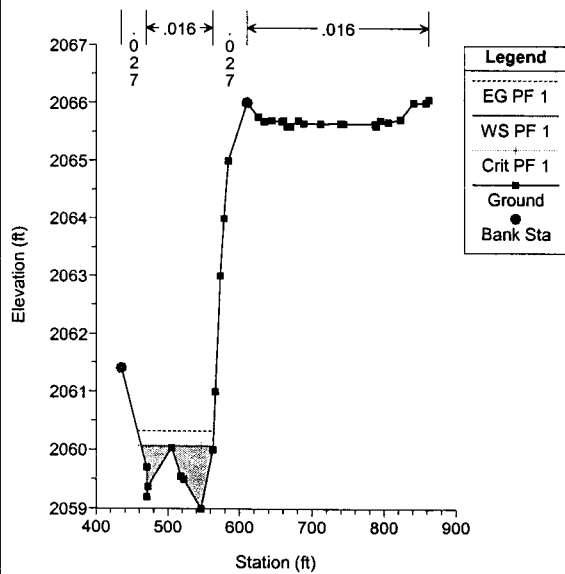
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04-09-0152R Section B updated with survey data



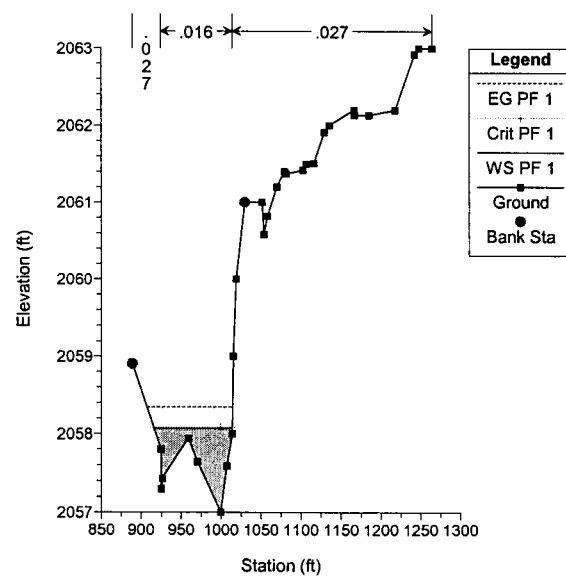
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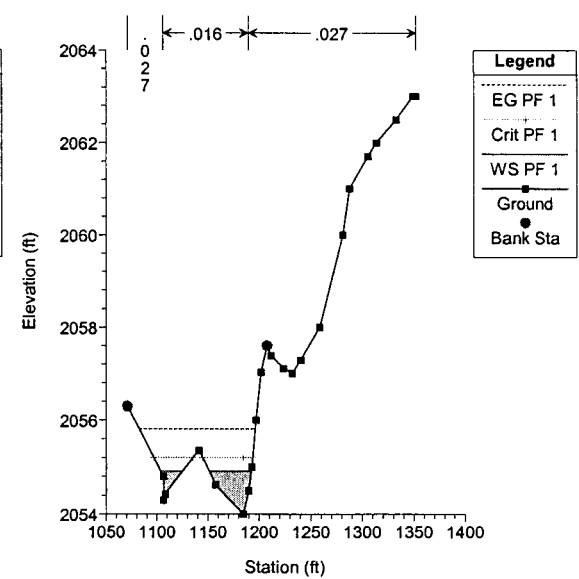
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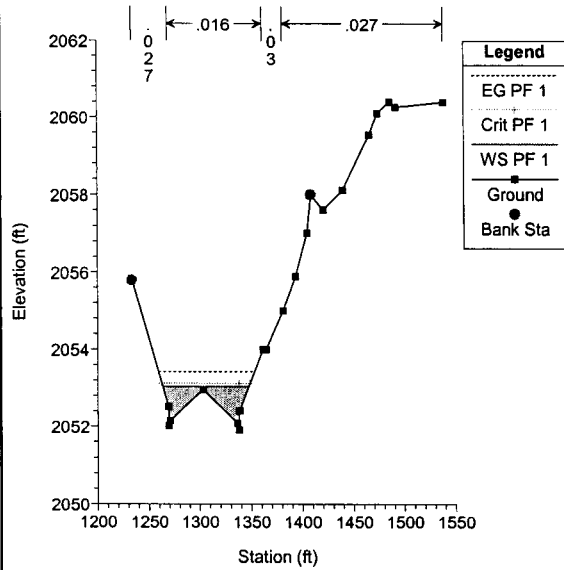
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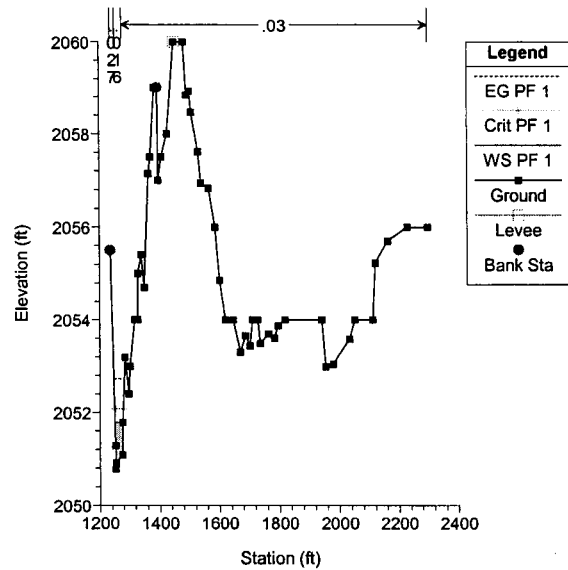
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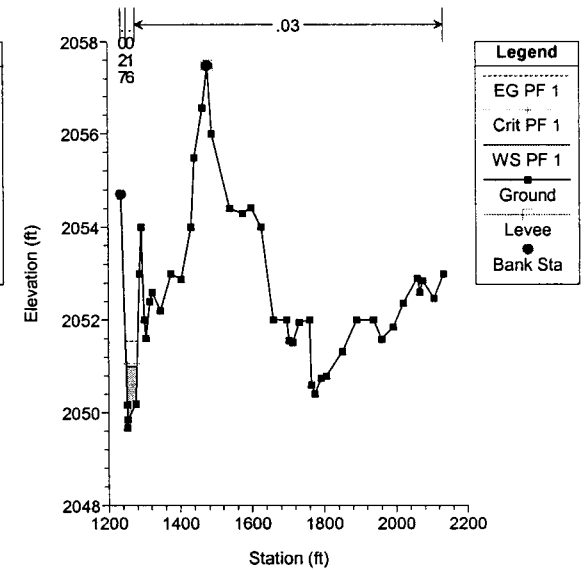
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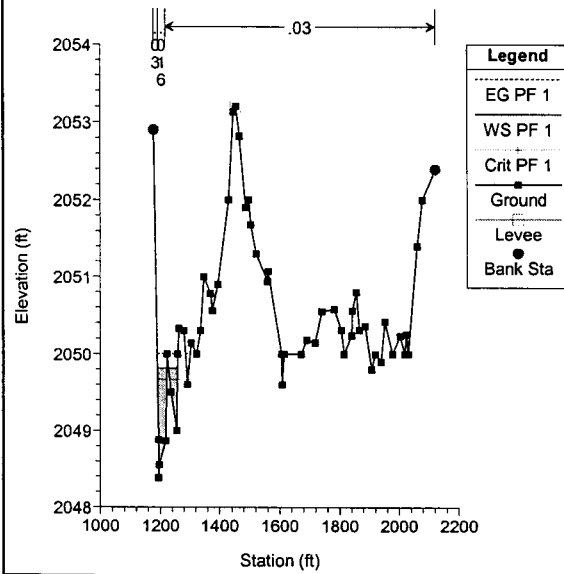
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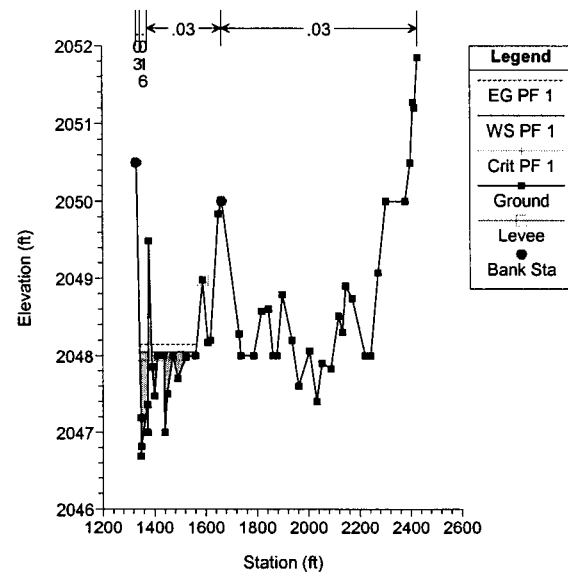
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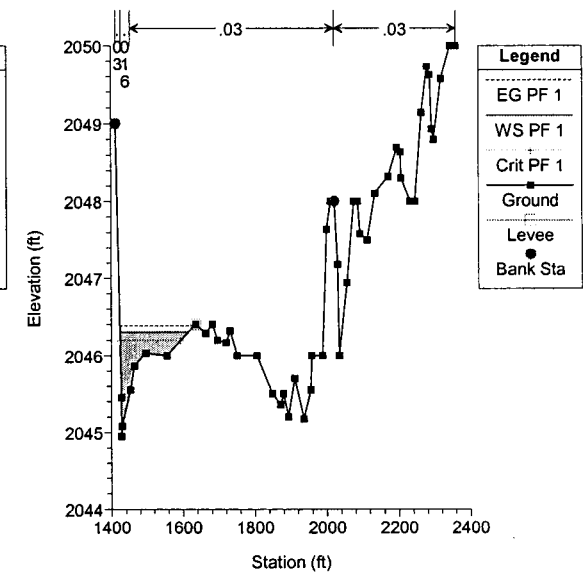
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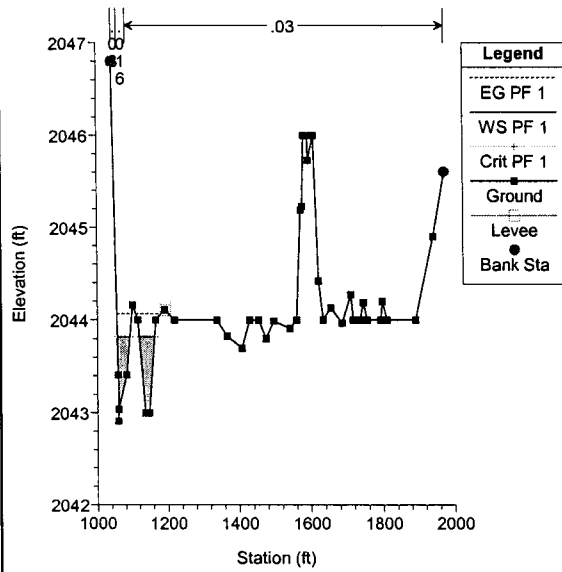
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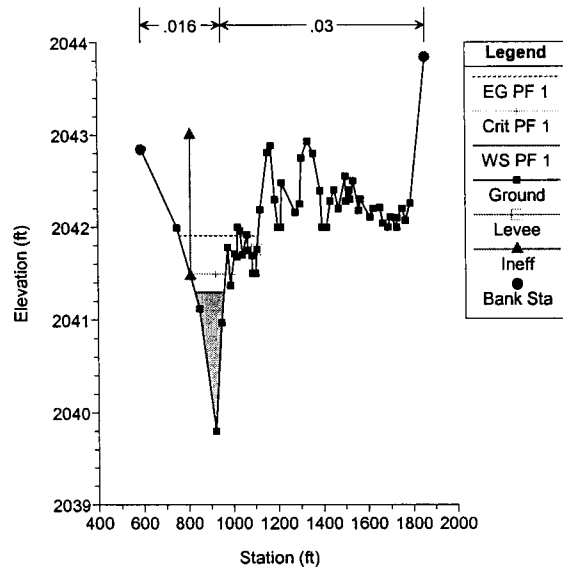
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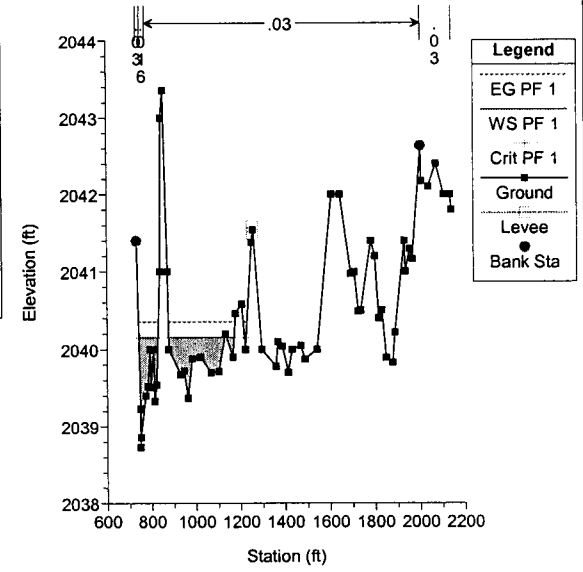
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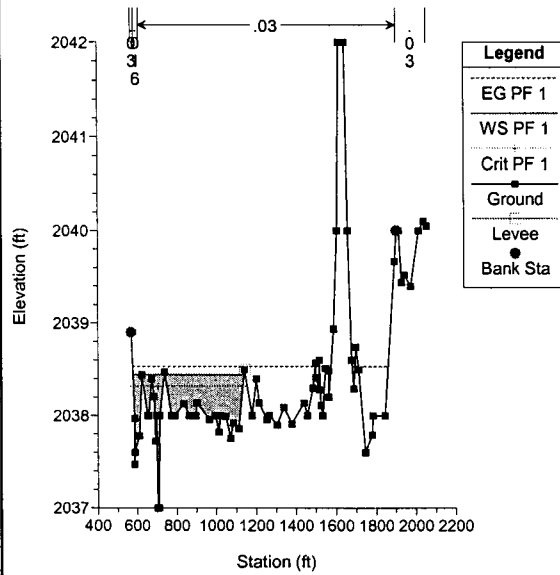
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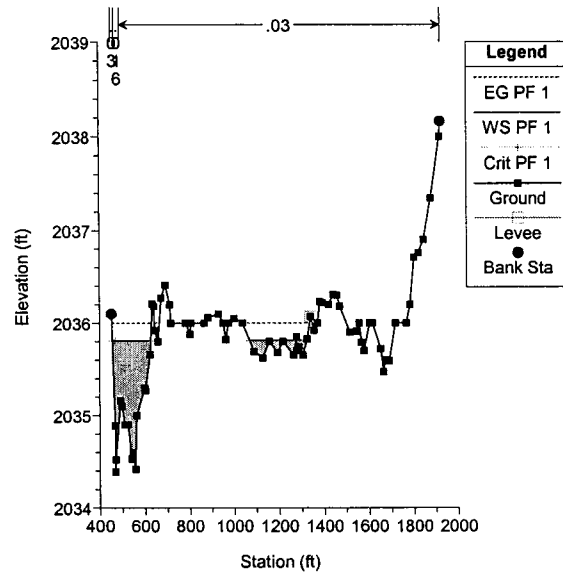
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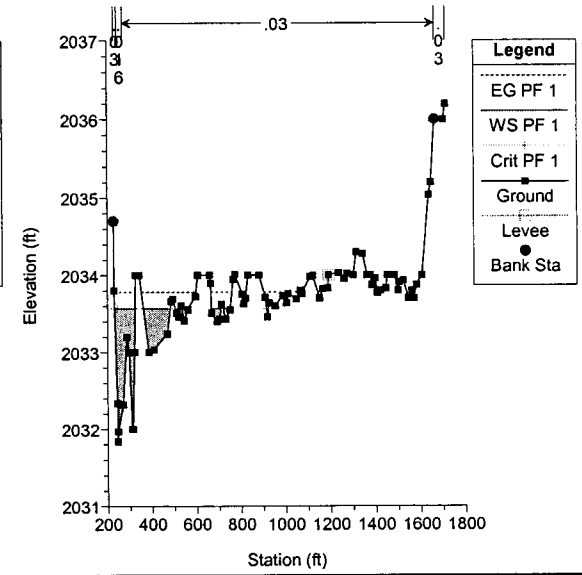
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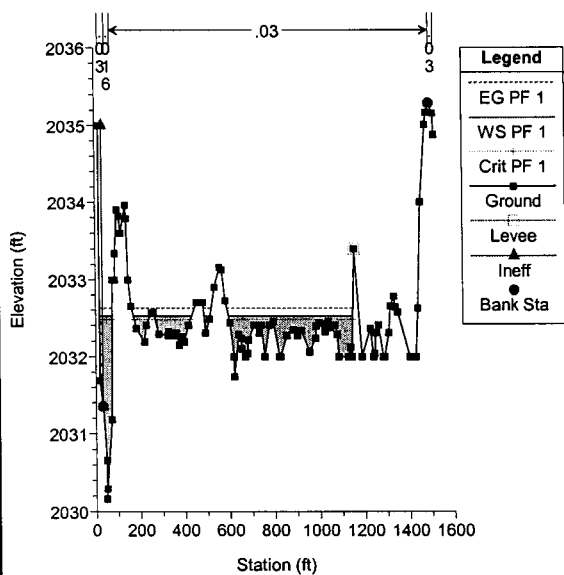
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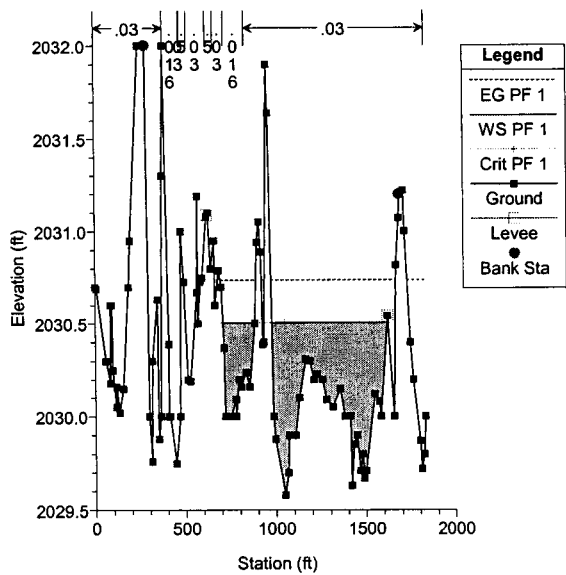
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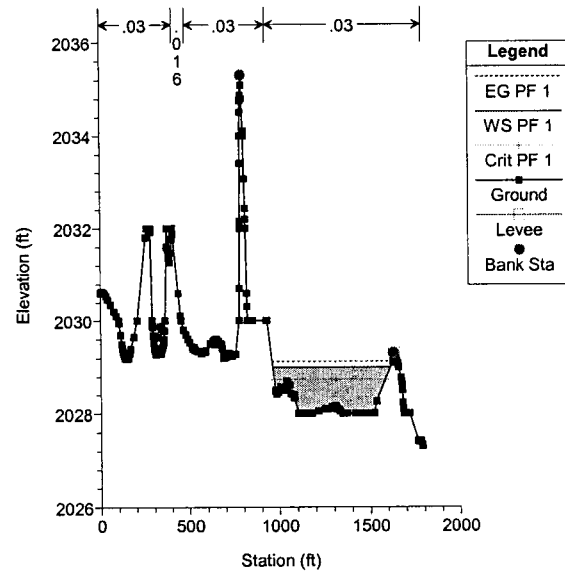
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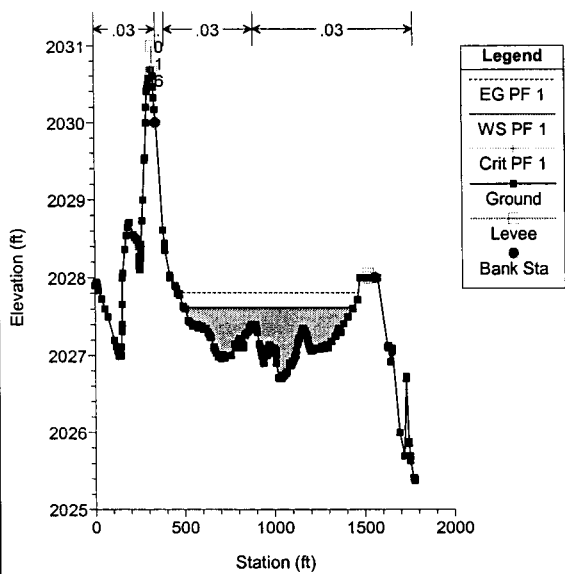
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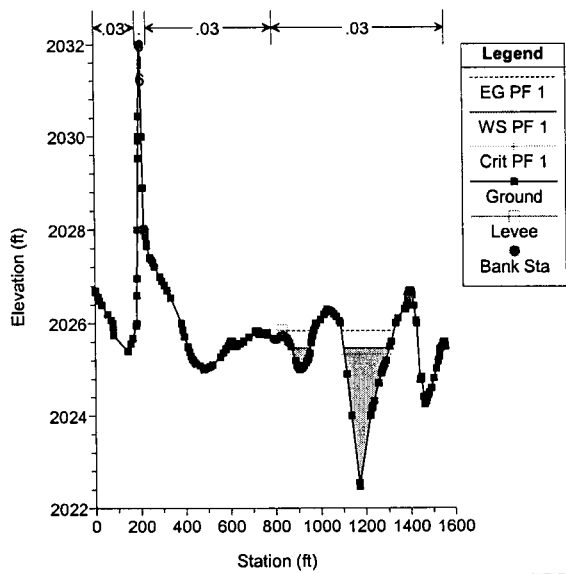
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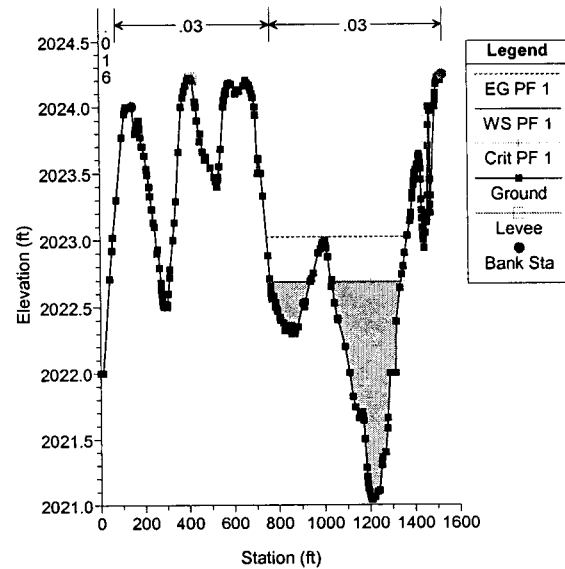
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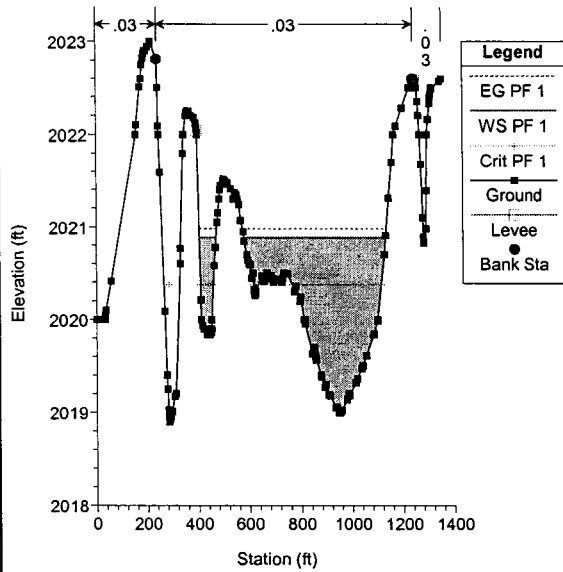
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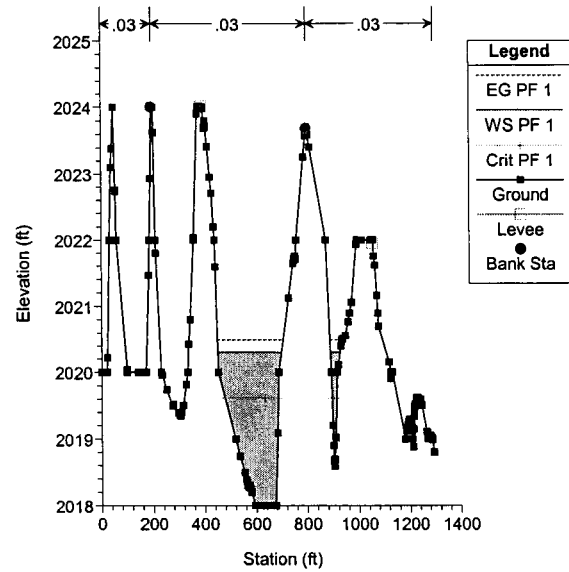
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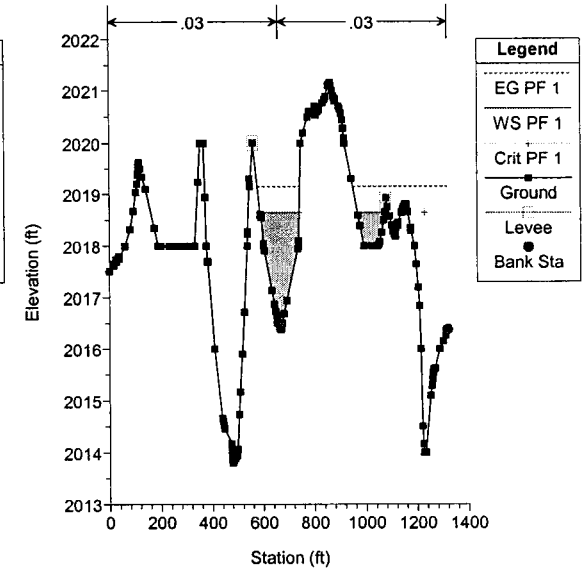
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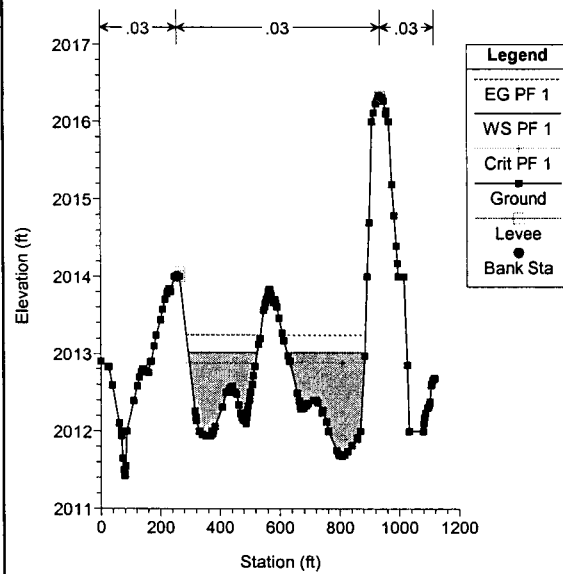
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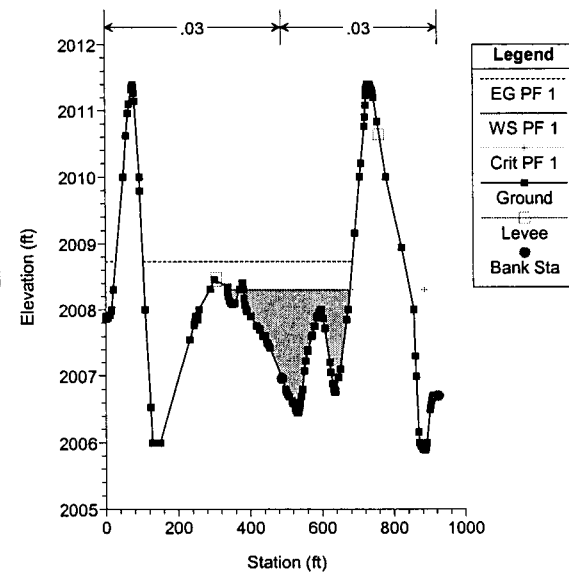
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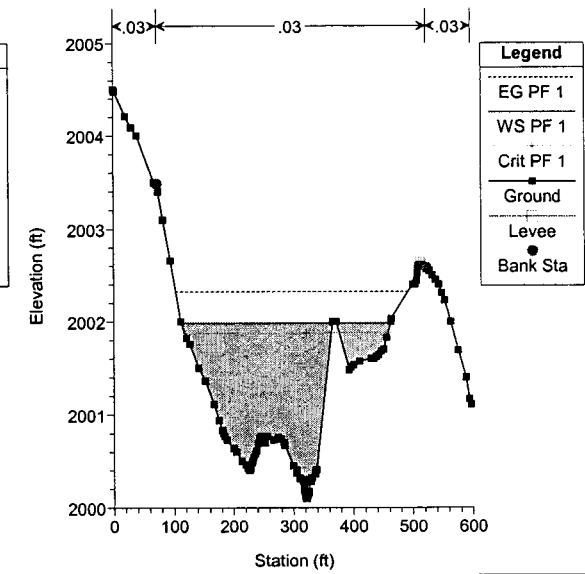
FEMA LOMR 9-13-05 Plan: FEMA-LOMR 1/30/2006



FEMA LOMR 9-13-05 Plan: FEMA-LOMR 1/30/2006



FEMA LOMR 9-13-05 Plan: FEMA-LOMR 1/30/2006

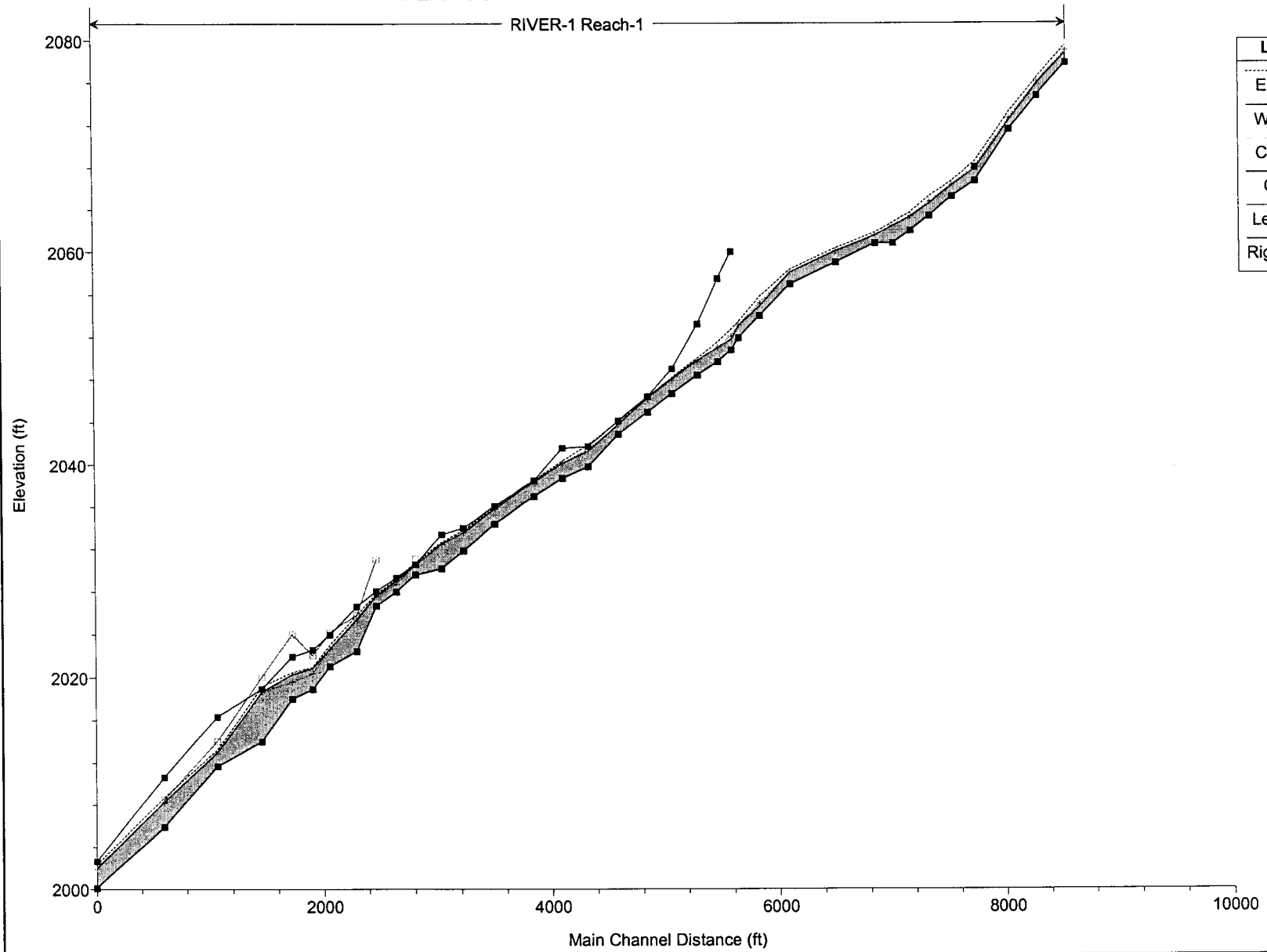


FEMA LOMR 9-13-05 Plan: FEMA-LOMR 1/30/2006

RIVER-1 Reach-1

Legend

EG PF 1
WS PF 1
Crit PF 1
Ground
Left Levee
Right Levee





NATIONAL FLOOD INSURANCE PROGRAM

FEMA NATIONAL SERVICE PROVIDER

November 10, 2005

RECEIVED

NOV 17 2005

Mr. Dennis R. Brown, P.E.
Senior Engineer
Stanley Consultants, Inc.
5820 South Eastern Avenue, Suite 200
Las Vegas, NV 89119

IN REPLY REFER TO STANLEY CONSULTANTS
Case No.: 06-09-B002P
Communities: City of North Las Vegas and
Clark County, NV
Community Nos.: 320007 and 320003

316-AD

Dear Mr. Brown:

This responds to your request dated October 4, 2005, that the Department of Homeland Security's Federal Emergency Management Agency (FEMA) issue a revision to the Flood Insurance Rate Map (FIRM) for Clark County, Nevada and Incorporated Areas. Pertinent information about the request is listed below

Identifier:	Villages at Sierra Wash
Flooding Source:	Unnamed Tributary to Las Vegas Wash
FIRM Panel(s) Affected:	32003C1769 E

The data required to complete our review, which must be submitted within 90 days of the date of this letter, are listed on the enclosed summary.

If we do not receive the required data within 90 days, we will suspend our processing of your request. Any data submitted after 90 days will be treated as an original submittal and will be subject to all submittal/payment procedures, including the flat review and processing fee for requests of this type established by the current fee schedule. A copy of the notice summarizing the current fee schedule, which was published in the *Federal Register*, is enclosed for your information.

FEMA receives a very large volume of requests and cannot maintain inactive requests for an indefinite period of time. In addition, as a result of the aftermath of recent hurricanes, many FEMA employees have been deployed to assist in disaster relief efforts. Therefore, we are unable to grant extensions for the submission of required data/fee for revision requests. If a requester is informed by letter that additional data are required to complete our review of a request, the data/fee **must** be submitted within 90 days of the date of the letter. Any fees already paid will be forfeited for any request for which the requested data are not received within 90 days.

We will continue to work expeditiously to review all submittals in accordance with National Flood Insurance Program (NFIP) regulations, and will aim to meet the regulatory timeframe for the review of all requests. However, requesters should be aware that delays may occur in the review process because of the current emergency situation. We appreciate the patience and cooperation of all requesters as FEMA assists in hurricane relief efforts.

3601 Eisenhower Avenue, Alexandria, VA 22304-6425 PH: 1-877-FEMA MAP FX: 703.960.9125

The Mapping on Demand Team, under contract with the Federal Emergency Management Agency, is the National Service Provider for the National Flood Insurance Program

If you have general questions about your request, FEMA policy, or the NFIP, 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, Mr. Sacha Tohme, CFM, who may be reached at (703) 960-8800, ext. 3028.

Sincerely,



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

Enclosures

cc: Mr. Lenny Badger, P.E., CFM
Manager, Development and Flood Control
Department of Public Works
City of North Las Vegas

Mr. Todd Myers, P.E.
Principal Engineer
Civil Engineering Division
Department of Development Services
Clark County

Mr. Kevin L. Eubanks, P.E., CFM
Assistant General Manager
Clark County Regional Flood
Control District



NATIONAL FLOOD INSURANCE PROGRAM

FEMA NATIONAL SERVICE PROVIDER

Summary of Additional Data Required to Support a Letter of Map Revision (LOMR)

Case No.: 06-09-B002P

Requester: Mr. Dennis R. Brown, P.E.

Communities: City of North Las Vegas and
Clark County, NV

Community Nos.: 320007 and 320003

The issues listed below must be addressed before we can continue the review of your request.

1. Your request affects the City of North Las Vegas. Please provide community acknowledgment in the form of a letter stating that the City of North Las Vegas has reviewed the revision request and understands the effects of the revision on flooding conditions in the community, or the enclosed copy of Application/Certification Form 1, entitled "Overview & Concurrence Form," signed by a city official.
2. Your request also affects the unincorporated areas of Clark County. Please provide community acknowledgment in the form of a letter stating that Clark County has reviewed the revision request and understands the effects of the revision on flooding conditions in the community, or the enclosed copy of Form 1, signed by a county official.
3. Because the LOMR request for the Villages at Sierra Ranch development has been submitted before the LOMR for Case No. 04-09-0152R, the revised boundary delineations of the Special Flood Hazard Area (SFHA), the area that would be inundated by the flood having a 1-percent chance of being equaled or exceeded in any given year (base flood), must tie into the currently effective SFHA boundary delineations. Please submit a hydraulic model and a topographic map, certified by a registered professional engineer, in which the revised SFHA boundary delineations tie into the currently effective SFHA boundary delineations at the upstream end of the revision.

Please send the required data directly 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.



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 October 30, 2005, or later and supersedes the fee schedule that was established on September 1, 2002.

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 Revisions (PMRs).

Based on our review of actual cost data for Fiscal Years 2004 and 2005, 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	\$4,400
Request based on levee, berm, or other structural measure	\$5,000

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	\$4,400
Request based on levee, berm, or other structural measure	\$6,000
Request based on as-built information submitted as follow-up to CLOMR	\$4,000

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

FEMA has revised the initial fee for requests for CLOMRs and LOMRs based on structural measures on alluvial fans to \$5,600. 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 (\$60 per hour) will 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.

**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 480287	City of Katy Harris County	TX TX	480301 48201C	0005D 0220G	02/08/83 09/28/90

2. Flooding Source:

3 Project Name/Identifier:

4. FEMA zone designations affected: (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:	Company:	
Mailing Address:	Daytime Telephone No.:	Fax No.:
	E-Mail Address:	
Signature of Requester (required):		Date:

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:		Telephone No.:
Community Name:	Community Official's Signature (required):	Date:

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:	License No.:	Expiration Date:
Company Name:	Telephone No.:	Fax No.:
Signature:		Date:

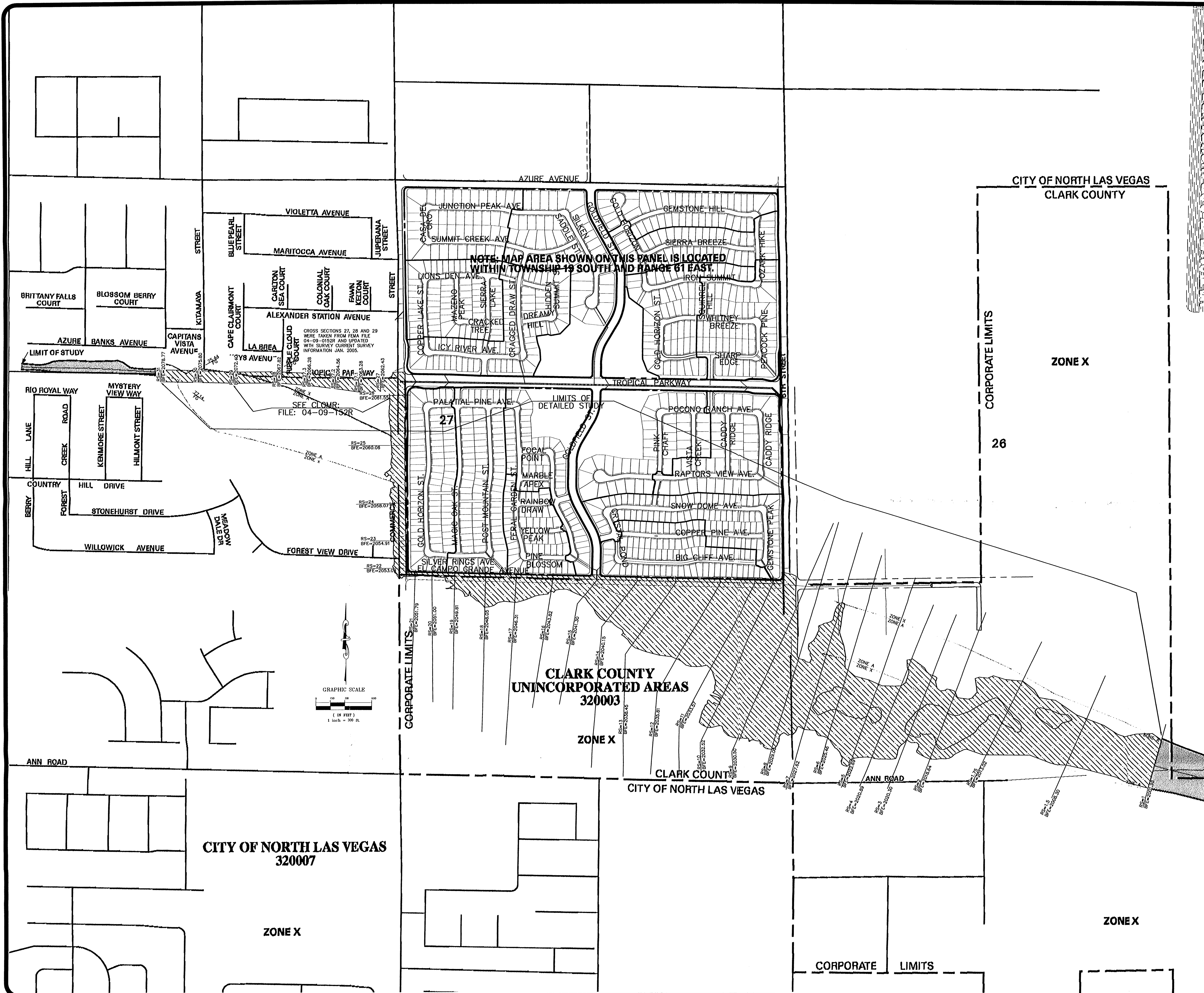
Ensure the forms that are appropriate to your revision request are included in your submittal.

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 |

Seal (Optional)



FIRM
FLOOD INSURANCE RATE MAP
CLARK COUNTY,
NEVADA AND
INCORPORATED AREAS

PANEL 1789 OF 4090

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

COMMUNITY	NUMBER	PANEL	SUFFIX
NORTH LAS VEGAS, CITY OF	320007	1789	E
CLARK COUNTY	320008	1789	E
UNINCORPORATED AREAS			

Notice to User: The Map Number shown below should be used when placing trap orders; the Community Number shown above should be used on insurance applications for the subject community.

MAP NUMBER
32003C1769 E
MAP REVISED:
SEPTEMBER 27, 2002

Federal Emergency Management Agency

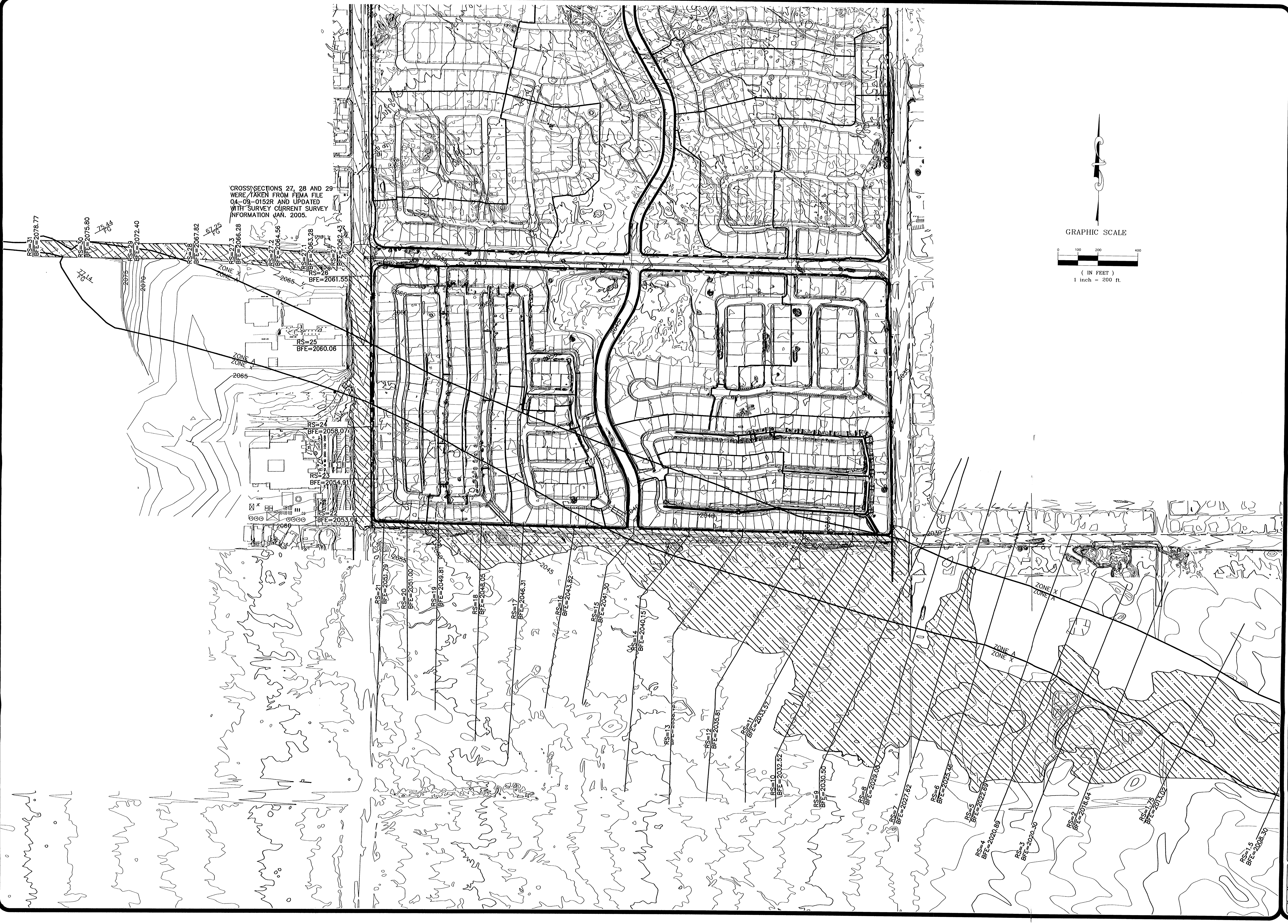
SCALE (H): 1" = 200'
SCALE (V):
DRAWN BY: HM
CHECKED BY: DRB
DATE: 2/02/06

5820 S. Eastern Avenue, Suite 200
Las Vegas, Nevada 89119
www.stanleygroup.com



VILLAGES AT SIERRA RANCH
ANNOTATED FEMA FLOOD ZONE MAP
FIGURE 5 (LOMR SUBMITTAL)

SHEET
1 OF 1 SHEETS
SOT PROJECT No.
17619 (PREV 16980)
HTE No.



STANLEY CONSULTANTS INC.

5820 S. Eastern Avenue, Suite 200
Las Vegas, Nevada 89119
(702) 368-9386 Fax (702) 368-9793
www.stanleygroup.com

ENGINEER

DENNIS R. BROWN

EXP. 12/31/06

NO. 111932

CIVIL

4/20/06

SCALE (H): 1" = 210'

SCALE (V):

DRAWN BY: HM

CHECKED BY: DRB

DATE: 9/26/2005

SHEET

OF SHEETS

SCI PROJECT No.
17619 (PREV. 16980)

HTE No.

NORTH LAS VEGAS

NEVADA