Salt River

Conditional Letter of Map Revision

Prepared for:

City of Phoenix
Floodplain Management
5th Floor
200 W. Washington St.
Phoenix, AZ 85003

Prepared by:

AZTEC
www.aztec.us TYPSA group

4561 E. McDowell Road
Phoenix, Arizona 85008
[602] 454-0402 Tel
[602] 454-0403 FAX

March 2014

Federal Emergency Management Agency

Washington, D.C. 20472

June 3, 2014

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

IN REPLY REFER TO:
Case No.: 14-09-0164R
Community Name: Maricopa County, AZ
Community No.: 040037

The Honorable Denny Barney
Chairman, Maricopa County Board of Supervisors
301 West Jefferson Street, 10th Floor
Phoenix, AZ 85003

Dear Mr. Barney:

We are providing our comments with the enclosed Conditional Letter of Map Revision (CLOMR) on a proposed project within your community that, if constructed as proposed, could revise the effective Flood Insurance Study report and Flood Insurance Rate Map for your community.

If you have any questions regarding the floodplain management regulations for your community, the National Flood Insurance Program (NFIP) in general, or technical questions regarding this CLOMR, please contact the Director, Mitigation Division of the Federal Emergency Management Agency (FEMA) Regional Office in Oakland, California, at (510) 627-7175, or the FEMA Map Information eXchange (FMIX) toll free at 1-877-336-2627 (1-877-FEMA MAP). Additional information about the NFIP is available on our website at http://www.fema.gov/nfip.

Sincerely,

Luis Rodriguez, P.E., Chief
Engineering Management Branch
Federal Insurance and Mitigation Administration

List of Enclosures:
Conditional Letter of Map Revision Comment Document

cc: The Honorable Greg Stanton
Mayor, City of Phoenix

Mr. Timothy S. Phillips, P.E.
Chief Engineer and General Manager
Maricopa County

Ms. Melody Moss
City of Phoenix

Ms. Sarah Smedley, P.E.
Project Manager
AZTEC Engineering

Federal Emergency Management Agency

Washington, D.C. 20472

CONDITIONAL LETTER OF MAP REVISION
COMMENT DOCUMENT

COMMUNITY INFORMATION		PROPOSED PROJECT DESCRIPTION	BASIS OF CONDITIONAL REQUEST
COMMUNITY	Maricopa County Arizona (Unincorporated Areas)	FILL	HYDRAULIC ANALYSIS NEW TOPOGRAPHIC DATA FLOODWAY
	COMMUNITY NO.: 040037		
IDENTIFIER	Avenida Rio Salado / Broadway Road	APPROXIMATE LATITUDE & LONGITUDE: 33.407, -112.139 SOURCE: Precision Mapping Streets DATUM: NAD 83	
AFFECTED MAP PANELS			
TYPE: FIRM* NO.: 04013C2195L DATE: October 16, 2013		* FIRM - Flood Insurance Rate Map	

FLOODING SOURCE(S) AND REACH DESCRIPTION

Salt River – from approximately 1,950 feet downstream of South 51st Avenue to approximately 2,310 feet downstream of South 19th Avenue

PROPOSED PROJECT DESCRIPTION

Flooding Source	Proposed Project	Location of Proposed Project
Salt River	Fill Placement	Along the south bank from just upstream of 51st Avenue to just downstream of 31st Avenue

SUMMARY OF IMPACTS TO FLOOD HAZARD DATA

Flooding Source	Effective Flooding	Proposed Flooding	Increases	Decreases
Salt River	Zone AE	Zone AE	Yes	Yes
	Zone AE	Zone A	Yes	Yes
	BFE*	BFE	Yes	Yes
	Floodway	Floodway	Yes	Yes

* BFEs - Base (1-percent-annual-chance) Flood Elevations

COMMENT

This document provides the Federal Emergency Management Agency's (FEMA's) comment regarding a request for a CLOMR for the project described above. This document is not a final determination; it only provides our comment on the proposed project in relation to the flood hazard information shown on the effective National Flood Insurance Program (NFIP) map. We reviewed the submitted data and the data used to prepare the effective flood hazard information for your community and determined that the proposed project meets the minimum floodplain management criteria of the NFIP. Your community is responsible for approving all floodplain development and for ensuring that all permits required by Federal or State/Commonwealth law have been received. State/Commonwealth, county, and community officials, based on their knowledge of local conditions and in the interest of safety, may set higher standards for construction in the Special Flood Hazard Area (SFHA), the area subject to inundation by the base flood. If the State/Commonwealth, county, or community has adopted more restrictive or comprehensive floodplain management criteria, these criteria take precedence over the minimum NFIP criteria.

This comment is based on the flood data presently available. If you have any questions about this document, please contact the FEMA Map Information eXchange (FMIX) toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMC Clearinghouse, 847 South Pickett Street, Alexandria, VA 22304. Additional Information about the NFIP is available on the FEMA website at http://www.fema.gov/business/nfip.

Luis Rodriguez, P.E., Chief
Engineering Management Branch
Federal Insurance and Mitigation Administration

132942 PT202.BKR.14090164R.H20 104

Federal Emergency Management Agency

Washington, D.C. 20472

CONDITIONAL LETTER OF MAP REVISION
COMMENT DOCUMENT (CONTINUED)

OTHER COMMUNITIES AFFECTED BY THIS CONDITIONAL REQUEST

CID Number: 040051 **Name:** City of Phoenix, Arizona

AFFECTED MAP PANELS

TYPE: FIRM*	NO.: 04013C2195L	DATE: October 16, 2013
TYPE: FIRM*	NO.: 04013C2215L	DATE: October 16, 2013

This comment is based on the flood data presently available. If you have any questions about this document, please contact the FEMA Map Information eXchange (FMIX) toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMC Clearinghouse, 847 South Pickett Street, Alexandria, VA 22304. Additional Information about the NFIP is available on the FEMA website at http://www.fema.gov/nfip.

Luis Rodriguez, P.E., Chief
Engineering Management Branch
Federal Insurance and Mitigation Administration

Federal Emergency Management Agency

Washington, D.C. 20472

CONDITIONAL LETTER OF MAP REVISION
COMMENT DOCUMENT (CONTINUED)

COMMUNITY INFORMATION

To determine the changes in flood hazards that will be caused by the proposed project, we compared the hydraulic modeling reflecting the proposed project (referred to as the proposed conditions model) to the hydraulic modeling used to prepare the Flood Insurance Study (FIS) (referred to as the effective model). If the effective model does not provide enough detail to evaluate the effects of the proposed project, an existing conditions model must be developed to provide this detail. This existing conditions model is then compared to the effective model and the proposed conditions model to differentiate the increases or decreases in flood hazards caused by more detailed modeling from the increases or decreases in flood hazards that will be caused by the proposed project.

The table below shows the changes in the BFEs:

BFE Comparison Table

Flooding Source: Salt River		BFE Change (feet)	Location of maximum change
Existing vs. Effective	Maximum increase	None	N/A
	Maximum decrease	4.3	Approximately 2,690 feet downstream of 35th Avenue
Proposed vs. Existing	Maximum increase	0.1	Approximately 4,730 feet upstream of 51st Avenue
	Maximum decrease	0.1	Approximately 2,830 feet downstream of 35th Avenue
Proposed vs. Effective	Maximum increase	None	N/A
	Maximum decrease	4.3	Approximately 2,690 feet downstream of 35th Avenue

Increases due to the proposed project that exceed those permitted under Paragraphs (c)(10) or (d)(3) of Section 60.3 of the NFIP regulations must adhere to Section 65.12 of the NFIP regulations. With this request, your community has complied with all requirements of Paragraph 65.12(a) of the NFIP regulations. Compliance with Paragraph 65.12(b) also is necessary before FEMA can issue a Letter of Map Revision when a community proposes to permit encroachments into the effective floodplain/regulatory floodway that will cause BFE increases in excess of those permitted under Paragraph 60.3(d)(3)/60.3(c)(10).

NFIP regulations Paragraph 60.3(b)(7) requires communities to ensure that the flood-carrying capacity within the altered or relocated portion of any watercourse is maintained. This provision is incorporated into your community's existing floodplain management ordinances; therefore, responsibility for maintenance of the altered or relocated watercourse, including any related appurtenances such as bridges, culverts, and other drainage structures, rests with your community. We may request that your community submit a description and schedule of maintenance activities necessary to ensure this requirement.

This comment is based on the flood data presently available. If you have any questions about this document, please contact the FEMA Map Information eXchange (FMIX) toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMC Clearinghouse, 847 South Pickett Street, Alexandria, VA 22304. Additional Information about the NFIP is available on the FEMA website at http://www.fema.gov/nfip.

Luis Rodriguez, P.E., Chief
Engineering Management Branch
Federal Insurance and Mitigation Administration

Federal Emergency Management Agency

Washington, D.C. 20472

CONDITIONAL LETTER OF MAP REVISION
COMMENT DOCUMENT (CONTINUED)

COMMUNITY INFORMATION (CONTINUED)

DATA REQUIRED FOR FOLLOW-UP LOMR

Upon completion of the project, your community must submit the data listed below and request that we make a final determination on revising the effective FIRM and FIS report. If the project is built as proposed and the data below are received, a revision to the FIRM and FIS report would be warranted.

• Form 1, entitled "Overview & Concurrence Form." Detailed application and certification forms must be used for requesting final revisions to the maps. Therefore, when the map revision request for the area covered by this letter is submitted, Form 1 must be included. If as-built conditions differ from the proposed plans, please submit new forms, which may be accessed at http://www.fema.gov/plan/prevent/fhm/dl_mt-2.shtm, or annotated copies of the previously submitted forms showing the revised information.

• Hydraulic analyses, for as-built conditions, of the base flood and the regulatory floodway, together with a topographic work map showing the revised floodplain and floodway boundary delineations. Please ensure that the revised information ties in with the current effective information at the downstream and upstream ends of the revised reach.

• An annotated copy of the FIRM, at the scale of the effective FIRM, that shows the revised floodplain and floodway boundary delineations shown on the submitted work map and how they tie into the floodplain and floodway boundary delineations shown on the current effective FIRM at the downstream and upstream ends of the revised reach

• As-built plans, certified by a registered professional engineer, of all proposed project element

• A copy of the public notice distributed by your community, stating its intent to revise the regulatory floodway, or a signed statement by your community that it has notified all affected property owners and affected adjacent jurisdictions

• Documentation of the notification to property owners who will be affected by any widening/shifting of the base floodplain and/or any BFE increases along the Salt River

• Evidence that your community has, prior to approval of the proposed encroachment, adopted floodplain management ordinances that incorporate the increased BFEs and revised floodway boundary delineations to reflect the post-project conditions, as stated in Paragraph 65.12(b)

This comment is based on the flood data presently available. If you have any questions about this document, please contact the FEMA Map Information eXchange (FMIX) toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMC Clearinghouse, 847 South Pickett Street, Alexandria, VA 22304. Additional Information about the NFIP is available on the FEMA website at http://www.fema.gov/nfip.

Luis Rodriguez, P.E., Chief
Engineering Management Branch
Federal Insurance and Mitigation Administration

Federal Emergency Management Agency

Washington, D.C. 20472

CONDITIONAL LETTER OF MAP REVISION
COMMENT DOCUMENT (CONTINUED)

COMMUNITY INFORMATION (CONTINUED)

• A letter stating that your community will adopt and enforce the modified regulatory floodway, OR, if the State/Commonwealth has jurisdiction over either the regulatory floodway or its adoption by your community, a copy of your community's letter to the appropriate State/Commonwealth agency notifying it of the modification to the regulatory floodway and a copy of the letter from that agency stating its approval of the modification

• FEMA's fee schedule for reviewing and processing requests for conditional and final modifications to published flood information and maps may be accessed at http://www.fema.gov/plan/prevent/fhm/frm_fees.shtm. The fee at the time of the map revision submittal must be received before we can begin processing the request. Payment of this fee can be made through a check or money order, made payable in U.S. funds to the National Flood Insurance Program, or by credit card (Visa or MasterCard only). Please forward the payment, along with the revision application, to the following address:

LOMC Clearinghouse
847 South Pickett Street
Alexandria, VA 22304

After receiving appropriate documentation to show that the project has been completed, FEMA will initiate a revision to the FIRM and FIS report. Because the flood hazard information (i.e., base flood elevations, base flood depths, SFHAs, zone designations, and/or regulatory floodways) will change as a result of the project, a 90-day appeal period will be initiated for the revision, during which community officials and interested persons may appeal the revised flood hazard information based on scientific or technical data.

This comment is based on the flood data presently available. If you have any questions about this document, please contact the FEMA Map Information eXchange (FMIX) toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMC Clearinghouse, 847 South Pickett Street, Alexandria, VA 22304. Additional Information about the NFIP is available on the FEMA website at http://www.fema.gov/nfip.

Luis Rodriguez, P.E., Chief
Engineering Management Branch
Federal Insurance and Mitigation Administration

Federal Emergency Management Agency

Washington, D.C. 20472

CONDITIONAL LETTER OF MAP REVISION
COMMENT DOCUMENT (CONTINUED)

COMMUNITY INFORMATION (CONTINUED)

COMMUNITY REMINDERS

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

Mr. Jeff Lusk
Acting Director, Mitigation Division
Federal Emergency Management Agency, Region IX
1111 Broadway Street, Suite 1200
Oakland, CA 94607-4052
(510) 627-7175

This comment is based on the flood data presently available. If you have any questions about this document, please contact the FEMA Map Information eXchange (FMIX) toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMC Clearinghouse, 847 South Pickett Street, Alexandria, VA 22304. Additional Information about the NFIP is available on the FEMA website at http://www.fema.gov/nfip.

Luis Rodriguez, P.E., Chief
Engineering Management Branch
Federal Insurance and Mitigation Administration

Federal Emergency Management Agency

Washington, D.C. 20472

June 3, 2014

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

IN REPLY REFER TO:
Case No.: 14-09-0164R
Community Name: City of Phoenix, AZ
Community No.: 040051

The Honorable Greg Stanton
Mayor, City of Phoenix
200 West Washington Street, 11th floor
Phoenix, AZ 85003

Dear Mayor Stanton:

We are providing our comments with the enclosed Conditional Letter of Map Revision (CLOMR) on a proposed project within your community that, if constructed as proposed, could revise the effective Flood Insurance Study report and Flood Insurance Rate Map for your community.

If you have any questions regarding the floodplain management regulations for your community, the National Flood Insurance Program (NFIP) in general, or technical questions regarding this CLOMR, please contact the Director, Mitigation Division of the Federal Emergency Management Agency (FEMA) Regional Office in Oakland, California, at (510) 627-7175, or the FEMA Map Information eXchange (FMIX) toll free at 1-877-336-2627 (1-877-FEMA MAP). Additional information about the NFIP is available on our website at http://www.fema.gov/nfip.

Sincerely,

Luis Rodriguez, P.E., Chief
Engineering Management Branch
Federal Insurance and Mitigation Administration

List of Enclosures:
Conditional Letter of Map Revision Comment Document

cc: The Honorable Denny Barney
Chairman, Maricopa County Board of Supervisors

Mr. Husan Mushtaq
Floodplain Administrator
City of Phoenix

Ms. Melody Moss
City of Phoenix

Ms. Sarah Smedley, P.E.
Project Manager
AZTEC Engineering

Federal Emergency Management Agency

Washington, D.C. 20472

CONDITIONAL LETTER OF MAP REVISION
COMMENT DOCUMENT

COMMUNITY INFORMATION		PROPOSED PROJECT DESCRIPTION	BASIS OF CONDITIONAL REQUEST
COMMUNITY	City of Phoenix Maricopa County Arizona	FILL	HYDRAULIC ANALYSIS NEW TOPOGRAPHIC DATA FLOODWAY
	COMMUNITY NO.: 040051		
IDENTIFIER	Avenida Rio Salado / Broadway Road	APPROXIMATE LATITUDE & LONGITUDE: 33.407, -112.139 SOURCE: Precision Mapping Streets DATUM: NAD 83	

AFFECTED MAP PANELS			
TYPE: FIRM*	NO.: 04013C2195L	DATE: October 16, 2013	* FIRM - Flood Insurance Rate Map
TYPE: FIRM*	NO.: 04013C2215L	DATE: October 16, 2013	

FLOODING SOURCE(S) AND REACH DESCRIPTION

Salt River – from approximately 1,950 feet downstream of South 51st Avenue to approximately 2,310 feet downstream of South 19th Avenue

PROPOSED PROJECT DESCRIPTION

Flooding Source	Proposed Project	Location of Proposed Project
Salt River	Fill Placement	Along the south bank from just upstream of 51st Avenue to just downstream of 31st Avenue

SUMMARY OF IMPACTS TO FLOOD HAZARD DATA

Flooding Source	Effective Flooding	Proposed Flooding	Increases	Decreases
Salt River	Zone AE	Zone AE	Yes	Yes
	Zone AE	Zone A	Yes	Yes
	BFE*	BFE	Yes	Yes
	Floodway	Floodway	Yes	Yes

* BFEs - Base (1-percent-annual-chance) Flood Elevations

COMMENT

This document provides the Federal Emergency Management Agency's (FEMA's) comment regarding a request for a CLOMR for the project described above. This document is not a final determination; it only provides our comment on the proposed project in relation to the flood hazard information shown on the effective National Flood Insurance Program (NFIP) map. We reviewed the submitted data and the data used to prepare the effective flood hazard information for your community and determined that the proposed project meets the minimum floodplain management criteria of the NFIP. Your community is responsible for approving all floodplain development and for ensuring that all permits required by Federal or State/Commonwealth law have been received. State/Commonwealth, county, and community officials, based on their knowledge of local conditions and in the interest of safety, may set higher standards for construction in the Special Flood Hazard Area (SFHA), the area subject to inundation by the base flood. If the State/Commonwealth, county, or community has adopted more restrictive or comprehensive floodplain management criteria, these criteria take precedence over the minimum NFIP criteria.

This comment is based on the flood data presently available. If you have any questions about this document, please contact the FEMA Map Information eXchange (FMIX) toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMC Clearinghouse, 847 South Pickett Street, Alexandria, VA 22304. Additional Information about the NFIP is available on the FEMA website at http://www.fema.gov/business/nfip.

Luis Rodriguez, P.E., Chief
Engineering Management Branch
Federal Insurance and Mitigation Administration

Federal Emergency Management Agency

Washington, D.C. 20472

CONDITIONAL LETTER OF MAP REVISION
COMMENT DOCUMENT (CONTINUED)

OTHER COMMUNITIES AFFECTED BY THIS CONDITIONAL REQUEST

CID Number: 040037 **Name:** Maricopa County, Arizona

AFFECTED MAP PANELS

TYPE: FIRM* NO.: 04013C2195L DATE: October 16, 2013

This comment is based on the flood data presently available. If you have any questions about this document, please contact the FEMA Map Information eXchange (FMIX) toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMC Clearinghouse, 847 South Pickett Street, Alexandria, VA 22304. Additional Information about the NFIP is available on the FEMA website at http://www.fema.gov/nfip.

Luis Rodriguez, P.E., Chief
Engineering Management Branch
Federal Insurance and Mitigation Administration

Federal Emergency Management Agency

Washington, D.C. 20472

CONDITIONAL LETTER OF MAP REVISION
COMMENT DOCUMENT (CONTINUED)

COMMUNITY INFORMATION

To determine the changes in flood hazards that will be caused by the proposed project, we compared the hydraulic modeling reflecting the proposed project (referred to as the proposed conditions model) to the hydraulic modeling used to prepare the Flood Insurance Study (FIS) (referred to as the effective model). If the effective model does not provide enough detail to evaluate the effects of the proposed project, an existing conditions model must be developed to provide this detail. This existing conditions model is then compared to the effective model and the proposed conditions model to differentiate the increases or decreases in flood hazards caused by more detailed modeling from the increases or decreases in flood hazards that will be caused by the proposed project.

The table below shows the changes in the BFEs:

BFE Comparison Table

Flooding Source: Salt River		BFE Change (feet)	Location of maximum change
Existing vs. Effective	Maximum increase	None	N/A
	Maximum decrease	4.3	Approximately 2,690 feet downstream of 35th Avenue
Proposed vs. Existing	Maximum increase	0.1	Approximately 4,730 feet upstream of 51st Avenue
	Maximum decrease	0.1	Approximately 2,830 feet downstream of 35th Avenue
Proposed vs. Effective	Maximum increase	None	N/A
	Maximum decrease	4.3	Approximately 2,690 feet downstream of 35th Avenue

Increases due to the proposed project that exceed those permitted under Paragraphs (c)(10) or (d)(3) of Section 60.3 of the NFIP regulations must adhere to Section 65.12 of the NFIP regulations. With this request, your community has complied with all requirements of Paragraph 65.12(a) of the NFIP regulations. Compliance with Paragraph 65.12(b) also is necessary before FEMA can issue a Letter of Map Revision when a community proposes to permit encroachments into the effective floodplain/regulatory floodway that will cause BFE increases in excess of those permitted under Paragraph 60.3(d)(3)/60.3(c)(10).

NFIP regulations Paragraph 60.3(b)(7) requires communities to ensure that the flood-carrying capacity within the altered or relocated portion of any watercourse is maintained. This provision is incorporated into your community's existing floodplain management ordinances; therefore, responsibility for maintenance of the altered or relocated watercourse, including any related appurtenances such as bridges, culverts, and other drainage structures, rests with your community. We may request that your community submit a description and schedule of maintenance activities necessary to ensure this requirement.

This comment is based on the flood data presently available. If you have any questions about this document, please contact the FEMA Map Information eXchange (FMIX) toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMC Clearinghouse, 847 South Pickett Street, Alexandria, VA 22304. Additional Information about the NFIP is available on the FEMA website at http://www.fema.gov/nfip.

Luis Rodriguez, P.E., Chief
Engineering Management Branch
Federal Insurance and Mitigation Administration

Federal Emergency Management Agency

Washington, D.C. 20472

CONDITIONAL LETTER OF MAP REVISION
COMMENT DOCUMENT (CONTINUED)

COMMUNITY INFORMATION (CONTINUED)

DATA REQUIRED FOR FOLLOW-UP LOMR

Upon completion of the project, your community must submit the data listed below and request that we make a final determination on revising the effective FIRM and FIS report. If the project is built as proposed and the data below are received, a revision to the FIRM and FIS report would be warranted.

• Form 1, entitled "Overview & Concurrence Form." Detailed application and certification forms must be used for requesting final revisions to the maps. Therefore, when the map revision request for the area covered by this letter is submitted, Form 1 must be included. If as-built conditions differ from the proposed plans, please submit new forms, which may be accessed at http://www.fema.gov/plan/prevent/fhm/dl_mt-2.shtm, or annotated copies of the previously submitted forms showing the revised information.

• Hydraulic analyses, for as-built conditions, of the base flood and the regulatory floodway, together with a topographic work map showing the revised floodplain and floodway boundary delineations. Please ensure that the revised information ties in with the current effective information at the downstream and upstream ends of the revised reach.

• An annotated copy of the FIRM, at the scale of the effective FIRM, that shows the revised floodplain and floodway boundary delineations shown on the submitted work map and how they tie into the floodplain and floodway boundary delineations shown on the current effective FIRM at the downstream and upstream ends of the revised reach

• As-built plans, certified by a registered professional engineer, of all proposed project element

• A copy of the public notice distributed by your community, stating its intent to revise the regulatory floodway, or a signed statement by your community that it has notified all affected property owners and affected adjacent jurisdictions

• Documentation of the notification to property owners who will be affected by any widening/shifting of the base floodplain and/or any BFE increases along the Salt River

• Evidence that your community has, prior to approval of the proposed encroachment, adopted floodplain management ordinances that incorporate the increased BFEs and revised floodway boundary delineations to reflect the post-project conditions, as stated in Paragraph 65.12(b)

This comment is based on the flood data presently available. If you have any questions about this document, please contact the FEMA Map Information eXchange (FMIX) toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMC Clearinghouse, 847 South Pickett Street, Alexandria, VA 22304. Additional Information about the NFIP is available on the FEMA website at http://www.fema.gov/nfip.

Luis Rodriguez, P.E., Chief
Engineering Management Branch
Federal Insurance and Mitigation Administration

Federal Emergency Management Agency

Washington, D.C. 20472

CONDITIONAL LETTER OF MAP REVISION
COMMENT DOCUMENT (CONTINUED)

COMMUNITY INFORMATION (CONTINUED)

• A letter stating that your community will adopt and enforce the modified regulatory floodway, OR, if the State/Commonwealth has jurisdiction over either the regulatory floodway or its adoption by your community, a copy of your community's letter to the appropriate State/Commonwealth agency notifying it of the modification to the regulatory floodway and a copy of the letter from that agency stating its approval of the modification

• FEMA's fee schedule for reviewing and processing requests for conditional and final modifications to published flood information and maps may be accessed at http://www.fema.gov/plan/prevent/fhm/frm_fees.shtm. The fee at the time of the map revision submittal must be received before we can begin processing the request. Payment of this fee can be made through a check or money order, made payable in U.S. funds to the National Flood Insurance Program, or by credit card (Visa or MasterCard only). Please forward the payment, along with the revision application, to the following address:

LOMC Clearinghouse
847 South Pickett Street
Alexandria, VA 22304

After receiving appropriate documentation to show that the project has been completed, FEMA will initiate a revision to the FIRM and FIS report. Because the flood hazard information (i.e., base flood elevations, base flood depths, SFHAs, zone designations, and/or regulatory floodways) will change as a result of the project, a 90-day appeal period will be initiated for the revision, during which community officials and interested persons may appeal the revised flood hazard information based on scientific or technical data.

This comment is based on the flood data presently available. If you have any questions about this document, please contact the FEMA Map Information eXchange (FMIX) toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMC Clearinghouse, 847 South Pickett Street, Alexandria, VA 22304. Additional Information about the NFIP is available on the FEMA website at http://www.fema.gov/nfip.

Luis Rodriguez, P.E., Chief
Engineering Management Branch
Federal Insurance and Mitigation Administration

Federal Emergency Management Agency

Washington, D.C. 20472

CONDITIONAL LETTER OF MAP REVISION
COMMENT DOCUMENT (CONTINUED)

COMMUNITY INFORMATION (CONTINUED)

COMMUNITY REMINDERS

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

Mr. Jeff Lusk
Acting Director, Mitigation Division
Federal Emergency Management Agency, Region IX
1111 Broadway Street, Suite 1200
Oakland, CA 94607-4052
(510) 627-7175

This comment is based on the flood data presently available. If you have any questions about this document, please contact the FEMA Map Information eXchange (FMIX) toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMC Clearinghouse, 847 South Pickett Street, Alexandria, VA 22304. Additional Information about the NFIP is available on the FEMA website at http://www.fema.gov/nfip.

Luis Rodriguez, P.E., Chief
Engineering Management Branch
Federal Insurance and Mitigation Administration

AZTEC
www.aztec.us TYPSA group

4561 East McDowell Road
Phoenix, AZ 85008-4505
[602] 454-0402
[602] 454-0403 Fax

Letter Of Transmittal

To: Lynn Thomas, PE
Flood Control District
2801 West Durango Street
Phoenix, AZ 85009

Date: March 14, 2014
Subject: **Salt River CLOMR**
Project: Avenida Rio Salado/Broadway Road

From: Sarah Smedley
Project Number: AZE1005

Method of Delivery:	U.S. Mail	X	Courier	To Be Picked Up	Hand Carry

We Are Sending You:	X	Attached		Under Separate Cover					
		Shop Drawings		Prints		Plans		Specifications		Submittal
		Change Order	X	Reports		Letter		Review Comments		CD

Quantity	Doc Date	Doc No.	Description
1			Salt River CLOMR Technical Data Notebook
1			Responses to FEMA Comments
1			Form for Signature

The above transmitted as follows:

____ For approval	____ Approved as submitted	____ Resubmit ___ copies for approval
____ For your use	____ Approved as noted	____ Submit ___ copies for distribution
____ As requested	____ Returned for corrections	____ Return for ___ corrected prints
____ Other	____ For review and comment	X Please sign and return one copy

Lynn,

Please find the attached CLOMR for the Avenida Rio Salado/Broadway Road project for your signature. The form that Tim needs to sign is included with this transmittal. A copy is included in the TDN as well. Please note that we need to resubmit to FEMA by April, 6, 2014.

If you have any questions or concerns with timing, feel free to call me.

Thanks,

Sarah Smedley, P.E.
Drainage Project Engineer

AZTEC Engineering | 4561 E. McDowell Road | Phoenix, AZ 85008
T: 602.454.0402 | D: 602.458.9269 | C: 602.799.4826 | F: 602.454.0403 | ssmedley@aztec.us

Visit us online at www.aztec.us

CC: (w/o Attachment) - AZE1005 file
R:\Phoenix\Projects\AZE1005-ARS_Programmanagement\Correspondence\Transmittals\20140314-Lynn Thomas_Saltriverclomr.Doc

Salt River
Conditional Letter of Map Revision

-Review Comments and Responses-

AZTEC reviewed the comments generated from the September 2013 Salt River CLOMR submittal and compiled a summary of those comments and AZTEC's responses/actions.

1. Our review revealed a negative surcharge at Cross Section 211.02 between the natural (unencroached) and encroached profiles of the existing and proposed conditions HEC-RAS hydraulic model for the Salt River. Please revise the floodway analysis to eliminate all negative surcharges, or explain why this is not necessary.

    - *Several attempts were made to try to eliminate the negative surcharge. This was not successful and in fact made the encroachments worse in other areas. The surcharge is only 0.01' and considered negligible.*

2. The base floodplain and floodway topwidths found in the submitted proposed conditions HEC-RAS hydraulic analysis for the Salt River do not match the approximate base floodplain topwidths shown on the topographic work map entitled, "Floodplain Delineation," prepared by AZTEC Engineering, dated September 2013 at the Cross Sections listed in the following table. Please make the necessary revisions to ensure that the base floodplain topwidths shown on the submitted topographic work maps match the topwidths found in the submitted HEC_RAS hydraulic analysis at all Cross Sections, or explain why this is not necessary.

    - *See table below for responses.*

Cross Section	Original Submittal				Revised		Responses
	Floodway Top Width		Floodplain Top Width		Floodplain Width	Floodway Width	
	Model	Map	Model	Map	Map	Map	
207.27	1047.92	1345	2578	2811	N/A	1047.9	Discrepancy in FP Limits on N side is due to the Cave Creek Confluence which is not included in this model. Limits were not changed in this area. FW modified based on comment. On S side, FP limits take into account a highpoint in river which causes divided flow, and limits were not modified. FW will be updated based on comment.
207.34	-	-	1811	2998	N/A	N/A	Discrepancy in FP Limits on N side is due to islands outside the FW. Limits were not changed in this area.
207.43	-	-	1660.29	3308	N/A	N/A	Discrepancy in measured FP limits is due to the Cave Creek confluence which is not modeled for this project. Limits were not changed in this area.
207.49	-	-	1888.8	2082	1888.8	N/A	FP limit revised on S side based on comment.
207.62	1527.81	1851	-	-	N/A	1527.8	FW limits revised based on comment.
207.71	1897.19	2142	-	-	N/A	1897.2	FW limits revised based on comment.
207.8	2213.06	3487	-	-	N/A	2213.1	FW limits revised based on comment to match HEC-RAS Model top width. However when measured in CAD on previous submittal FW measures 2490', 990' less than reported in comment.
207.9	3031.34	2918	-	-	N/A	3031.3	FW limits revised based on comment.
207.99	2678.71	2744	-	-	N/A	2678.7	FW limits revised based on comment.
208.95	1796.52	2068	-	-	N/A	1796.5	FW limits revised based on comment.
209.69	1857.57	1737	-	-	N/A	1857.6	FW limits revised based on comment.
210.07	-	-	2494.02	1349	2494	N/A	FP limit revised based on comment. However when measured in CAD on previous submittal FW measures 2598', 1249' more than reported in comment.
210.55	-	-	2211	3109	N/A	N/A	No revisions to FP at this section. In this location the FP sections were not re-cut. We used Topo obtained from 1999 in this area. We mapped the FP based on the water surface elevations which matched the effective FEMA FP. In this area the effective model X-sections do not match the effective mapping.
210.64	2411.4	1502	-	-	N/A	2411.4	FW limits revised based on comment. No revisions to FP at this section. In this location the FP sections were not re-cut. We used Topo obtained from 1999 in this area. We mapped the FP based on the water surface elevations which matched the effective FEMA FP. In this area the effective model X-sections do not match the effective mapping.
210.74	-	-	2357	2812	N/A	N/A	No revisions to FP at this section. In this location the FP sections were not re-cut. We used Topo obtained from 1999 in this area. We mapped the FP based on the water surface elevations which matched the effective FEMA FP. In this area the effective model X-sections do not match the effective mapping.
210.83	2249.58	1324	2457	2857	N/A	2249.6	FW limits revised based on comment. No revisions to FP at this section. In this location the FP sections were not re-cut. We used Topo obtained from 1999 in this area. We mapped the FP based on the water surface elevations which matched the effective FEMA FP. In this area the effective modfel X-sections do not match the effective mapping.
210.93	2095.87	1225	-	-	N/A	2095.9	FW limits revised based on comment. No revisions to FP at this section. In this location the FP sections were not re-cut. We used Topo obtained from 1999 in this area. We mapped the FP based on the water surface elevations which matched the effective FEMA FP. In this area the effective model X-sections do not match the effective mapping.
211.02	1662.88	1082	1797	2634	N/A	1662.9	FW limits revised based on comment. No revisions to FP at this section. In this location the FP sections were not re-cut. We used Topo obtained from 1999 in this area. We mapped the FP based on the water surface elevations which matched the effective FEMA FP. In this area the effective model X-sections do not match the effective mapping.

3. The downstream reach lengths shown in the submitted analysis at Cross Section 209.53, 209.69, and 207.27 do not match the approximate downstream reach lengths shown on the above-referenced topographic work map. Please make the appropriate changes, or explain why this is not necessary.

    - *Downstream reach lengths for Cross Sections 209.53, 209.69, and 207.27 were revised in the hydraulic models.*

4. Please submit an annotated FIRM at the scale of the effective FIRM showing the revised base floodplain and floodway boundaries delineated on the submitted work map and how they tie into the base floodplain and floodway boundaries shown on the effective FIRM at the downstream and upstream ends of the revised reach. New FIRMs became effective for Maricopa County on October 16, 2013. Please revise the annotated FIRMs to show the proposed changes on the current effective FIRMs.

    - *The annotated FIRMs were revised to show the proposed changes on the current effective FIRMs dated October 16, 2013.*

5. Our detailed review revealed increases in Base Flood Elevation (BFE) as a result of the proposed project. Please provide evidence that the project meets all requirements of Section 65.12 of the NFIP regulations, including but not limited to: documentation of individual legal notice to all affected property owners, explaining the effects of the proposed action on their property; certification that no structures are located in areas that would be affected by the increases in BFE; and an evaluation of alternatives which would not result in base flood elevation increases.

    - *There are a few sections where the BFE increased from existing to proposed conditions. These areas are contained with the banks of the Salt River and I certify that no structures are affected by this slight (0.11') increase. Letters will be sent to the property owners affected.*

6. Our review reveals that Maricopa County is affected by this revision. Please provide community acknowledgment in the form of a letter stating that Maricopa County has reviewed the revision request and understands the effects of the revision on flooding conditions in the community, or Application/Certification Form 1, entitled "Overview & Concurrence Form," signed by a community official from Maricopa County. If the area shown on the effective Flood Insurance Rate Map panel as within Maricopa County has been annexed by the City of Phoenix, please submit documentation of the annexation and an official corporate limits map for the City of Phoenix.

    - *Flood Control District of Maricopa County has reviewed the CLOMR TDN and an additional "Overview & Concurrence Form", signed by the District has been included.*

7. If the unincorporated areas of Maricopa County, AZ are being affected by this revision, this CLOMR request will be processed by FEMA only after FEMA receives documentation from the requestor that demonstrates compliance with the Endangered Species Act (ESA) for the affected areas of Maricopa County. The requestor must demonstrate ESA compliance by submitting to FEMA either an Incidental Take Permit, Incidental Take Statement, "not likely to adversely affect" determination from the National Marine Fisheries Service or the US Fish and Wildlife Service (collectively known as "the Services"), or an official letter from the Services concurring that the project has "No Effect" on listed species or critical habitat.

   If the project is likely to cause jeopardy or adverse modification to species, then FEMA may deny the Conditional LOMC request. Please see the enclosed guidance for additional information about the ESA and compliance requirements and for responses to frequently asked questions.

   - *The US Fish and Wildlife Service (USFWS) provided the City of Phoenix with the attached guidance entitled Endangered Species Act (ESA) Compliance with Section 7 & 9 in accordance with U.S. Fish and Wildlife Service. The guidance states that if the conditions below are met, USFWS believes a Letter of Map Change will not affect threatened, endangered, or proposes species, nor affect their designated or proposed critical habitat and that a "no effect" determination is appropriate. Following each condition is an explanation of how the condition is being met for the project.*

     - *The project is located entirely within the limits of the City of Phoenix, as depicted in the attached map.*
       Although there are county "islands" in the western portion of the project area, the project is located within the outer limits of the City of Phoenix.

     - *The Requestor has accessed the Service's Maricopa County species list for use as a reference to comply with these conditions.*
       The USFWS Maricopa County species list was reviewed by a qualified biologist during preparation of the following Biological Evaluation (BE) documents completed for the project:
       - *An August 28, 2009 BE completed as part of the project Environmental Assessment*
       - *A December 28, 2012 BE completed for construction between 7th Street and 51st Avenue*
       - *A February 19, 2014 BE update memorandum*

       It was determined through these documents that the project will have no effect to any species or habitat protected by the federal Endangered Species Act (ESA).

- *The Requestor has submitted a report generated by the Arizona Game and Fish Department Online Environmental Tool indicating that no threatened or endangered species, listed on the county list, or their critical habitats occur in the project vicinity.*
  No ESA-protected species or habitat are identified as occurring within 3 miles of the project vicinity in the attached Arizona Game and Fish Department online environmental review tool report (Access Date: February 17, 2014, Search ID: 20140217022506)

- *The Requestor has documented, in writing or photographs, that the project site does not contain habitat for California least tem, southwestern willow flycatcher, Yuma clapper rail, or yellow-billed cuckoo, based on habitat descriptions from the county species list.*
  These four species were evaluated by a qualified biologist during preparation of the August 28, 2009 BE, the December 28, 2012 BE, and the February 19, 2013 BE update memorandum. The project site does not contain habitat for California least tern, Southwestern willow flycatcher, Yuma clapper rail, or yellow-billed cuckoo. It was determined through the BE documents that the project will have no effect to any species or habitat protected by the federal Endangered Species Act (ESA).

  In addition, the project is funded by the Federal Highway Administration (FHWA), who is lead federal agency for ESA compliance purposes. FHWA has determined that the project will have no effect to any ESA-protected species or habitat. Therefore, no consultation with or concurrence from USFWS is required or necessary.

8. Effective January 13, 2010, the Federal Emergency Management Agency revised the fee schedule for reviewing and processing requests for conditional and final modifications to published flood information and maps. A copy of the notice summarizing the current fee schedule, which was published in the *Federal Register*, is available on the FEMA website at http://www.fema.gov/plan/prevent/fhm/frm_fees.shtm for you information. In accordance with this schedule, the fee for your request is $4400 and must be submitted before we can continue to process your request. Payment of this fee must be in the form of a check or money order, payable in U.S. funds to the National Flood Insurance Program, or a credit card payment (Visa or MasterCard only). For identification purposes, the case number referenced above must be included on the check or money order. We will not perform a detailed technical review of your request until we receive payment.

   - *This project is more than 50% Federally Fund and therefore is fee exempt.*

Salt River

Conditional Letter of Map Revision

Prepared for:

City of Phoenix
Floodplain Management
5th Floor
200 W. Washington St.
Phoenix, AZ 85003

EXPIRES 6/30/2016

Prepared by:

AZTEC
www.aztec.us TYPSA group

4561 E. McDowell Road
Phoenix, Arizona 85008
[602] 454-0402 Tel
[602] 454-0403 FAX

March 2014

TABLE OF CONTENTS

PAGE

1.0 INTRODUCTION
1.1 Purpose and Authorization of Study 1
1.2 Project Location 1
1.3 Floodplain History 1
1.3.1 Effective FIS 1

2.0 ABSTRACT AND FEMA FORMS 7
2.1 Study Documentation Abstract 7
2.2 FEMA Forms 8

3.0 SURVEY AND MAPPING INFORMATION 18
3.1 Field Survey Information 18
3.2 Topographic Mapping 18

4.0 HYDROLOGY 19
4.1 General 19

5.0 HYDRAULICS 20
5.1 Method Description 20
5.1.1 Duplicate Effective Model 20
5.1.2 Pre-Project Model 21
5.1.3 Post-Project Model 21
5.2 Work Study Maps & Annotated FIRM Panel 23
5.3 Parameter Estimation 23
5.3.1 Roughness Coefficients 23
5.3.2 Expansion and Contraction Coefficients 23
5.4 Cross Section Description 24
5.5 Modeling Considerations 24
5.5.1 Hydraulic Jump and Drop Analysis 24
5.5.2 Culverts and Bridges 24
5.5.3 Ineffective Flow Areas 24
5.6 Floodway Modeling 24
5.7 Special Problems 24
5.7.1 Error and Warning Messages 25
5.8 Final Results 25
5.8.1 HEC-RAS Files and Output 26

LIST OF FIGURES

Figure 1 Project Location Map 2
Figure 2 Site Map 3
Figure 3 Flood Insurance Rate Map 4

LIST OF TABLES

Table 1 Summary of Effective Discharges 19
Table 2 Comparison of Effective Models & Duplicate Effective Model 20
Table 3 Water Surface Elevation Comparison 21
Table 4 Water Surface Elevation Comparison in NAVD 88 25
Table 5 Summary of Project Files for LOMR Submittal 26

LIST OF EXHIBITS

Exhibit 1 Proposed Work Map
Exhibit 2 Annotated FIRM Panel

LIST OF APPENDICES

Appendix A Photographs ..... A
Appendix B Effective LOMR Documents ..... B
Appendix C Duplicate Effective Model C
Appendix D Pre-Project Model ..... D
Appendix E Post-Project Model ..... E
Appendix F Exhibits ..... F
Appendix G ESA Documents ..... G
Appendix H ARS/Broadway Road Improvement Plans ..... H
Appendix I Digital Files I

I.0 INTRODUCTION

1.1 Purpose and Authorization of Study

The purpose of this study is to obtain a Conditional Letter of Map Revision (CLOMR) for the floodplain/floodway for the Salt River from downstream of the 51st Avenue Bridge to upstream of the 35th Avenue Bridge. The CLOMR is based on a new topographic mapping of the river and proposed Avenida Rio Salado (ARS)/Broadway Road along the south bank. A portion of the proposed roadway embankment between 51st Avenue and 43rd Avenue extends into the river. Additionally, a new maintenance ramp will be constructed along the 31st Avenue alignment to the river bottom. No structures or crossings will be added with this project. There will be no revision to the existing hydrology.

This study and analysis was authorized by the Floodplain Management & Street Transportation Departments for the City of Phoenix.

1.2 Project Location

The project area is located in the City of Phoenix and unincorporated Maricopa County as shown in Figure 1. The project is within Sections 20, 21, 22, 23, 24, 27, 28, and 29, Township 1 North and Range 2 East. The site map is shown in Figure 2. The study reach is from downstream of 51st Avenue to upstream of 35th Avenue.

The project area is located within Zone AE of the FEMA Flood Insurance Rate Map (FIRM), Panel No. 04013C2195L and Panel No. 04013C2215L, dated October 16, 2013. Zone AE is defined as areas in which the "Base Flood Elevations determined." The floodway areas in Zone AE "is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual flood can be carried without substantial increase in flood heights, Base flood elevations determined." Figure 3 provides a copy of the FIRM Map for the project location.

1.3 Floodplain History

1.3.1 Effective FIS

In October 2010, AZTEC requested the effective models from FEMA to begin the CLOMR process. At this time we received the files from the 1999 Salt-Gila Floodplain Delineation Restudy, prepared by Michael Baker, Jr., Inc. for the Flood Control District of Maricopa County and a LOMR Case No. 08-09-1412P. The information from the LOMR was stamped as effective and dated November 28, 2008. At that time, the models associated with this LOMR were considered effective. In November 2010, an additional model was received for a LOMR study within the ARS reach, FEMA Case #08-09-1294. This model was stamped and dated effective April 23, 2009. Unfortunately, the later LOMR did not include the revised cross sections from the former LOMR. It was decided to use both of the LOMR models as effective and create one Duplicate Effective Model combining the

revised cross sections from each model. Additional information on the comparison of the two effective models to the duplicate effective model is included in Section 5. Documentation from the two LOMR cases is included in Appendix B.

Figure 1, Project Location Map

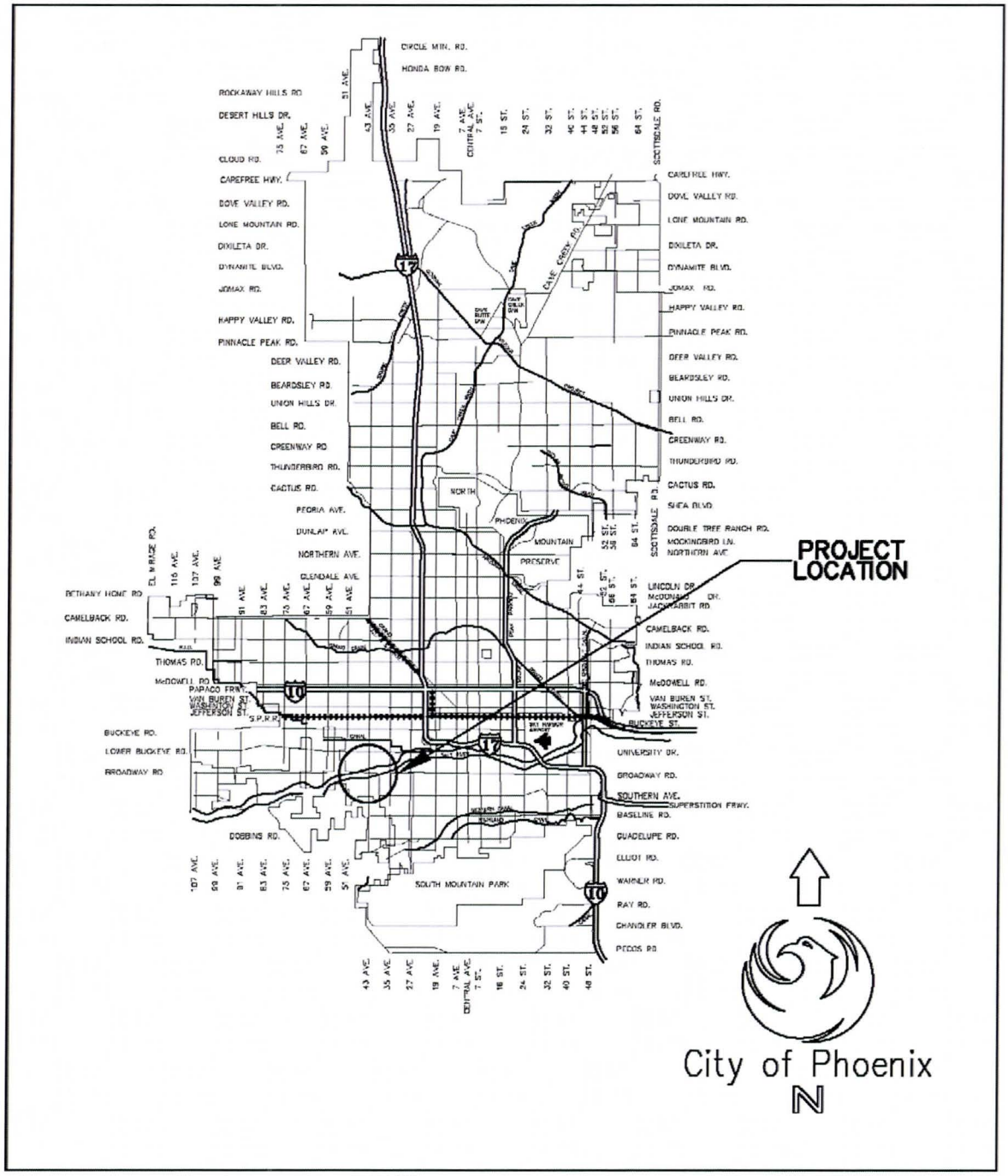
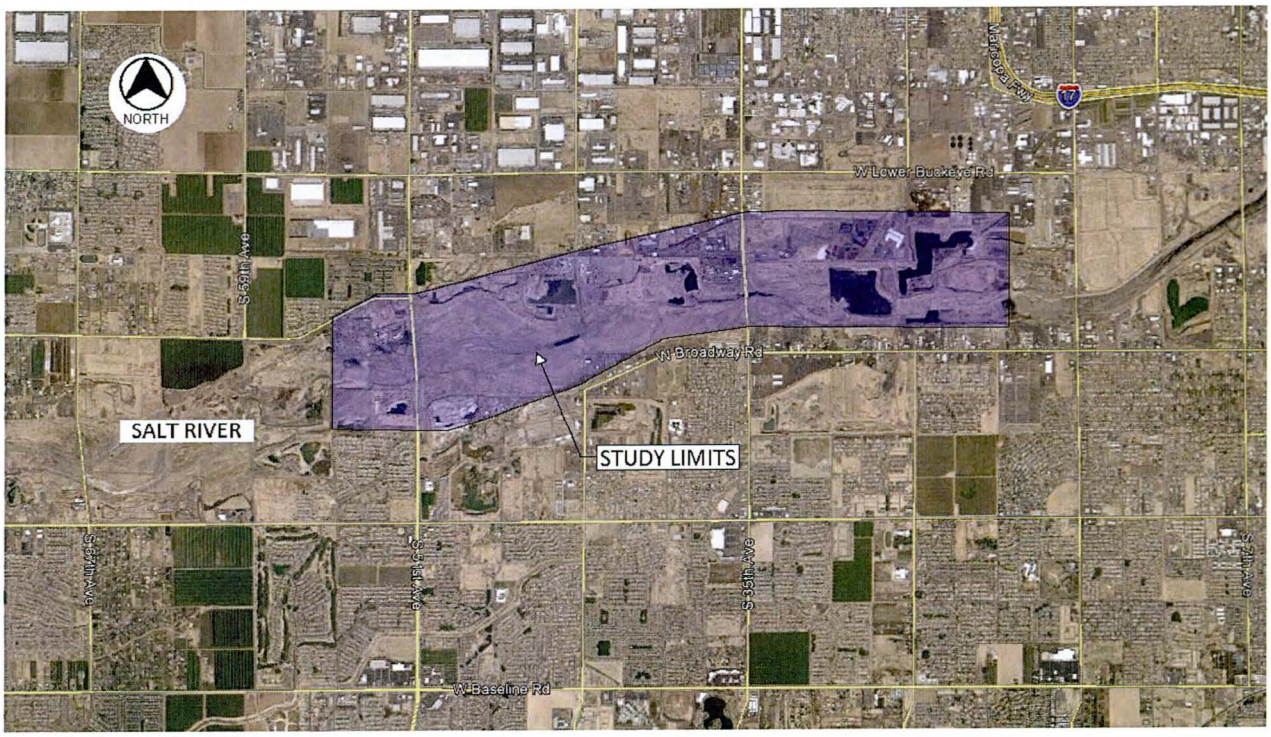


Figure 2, Site Map



2.2 FEMA Forms

Application for a Conditional Letter of Map Revision requires the use of the FEMA Form Series 086-0-27, MT-2 forms. The following is a list of the forms required for this submittal:

- MT-2, Form 1 – Overview & Concurrence Form.
- MT-2, Form 2 - Riverine Hydrology & Hydraulic Form.

The remainder of this section is comprised of the completed forms.

U.S. DEPARTMENT OF HOMELAND SECURITY
FEDERAL EMERGENCY MANAGEMENT AGENCY

OVERVIEW & CONCURRENCE FORM

O.M.B No. 1660-0016
Expires February 28, 2014

PAPERWORK BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 1 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing, reviewing, and submitting the form. You are not required to respond to this collection of information unless it displays a valid OMB control number. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, Department of Homeland Security, Federal Emergency Management Agency, 1800 South Bell Street, Arlington, VA 20958-3005, Paperwork Reduction Project (1660-0016). 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.**

PRIVACY ACT STATEMENT

AUTHORITY: The National Flood Insurance Act of 1968, Public Law 90-448, as amended by the Flood Disaster Protection Act of 1973, Public Law 93-234.

PRINCIPAL PURPOSE(S): This information is being collected for the purpose of determining an applicant's eligibility to request changes to National Flood Insurance Program (NFIP) Flood Insurance Rate Maps (FIRM).

ROUTINE USE(S): The information on this form may be disclosed as generally permitted under 5 U.S.C § 552a(b) of the Privacy Act of 1974, as amended. This includes using this information as necessary and authorized by the routine uses published in DHS/FEMA/NFIP/LOMA-1 National Flood Insurance Program (NFIP); Letter of Map Amendment (LOMA) February 15, 2006, 71 FR 7990.

DISCLOSURE: The disclosure of information on this form is voluntary; however, failure to provide the information requested may delay or prevent FEMA from processing a determination regarding a requested change to a (NFIP) Flood Insurance Rate Maps (FIRM).

A. REQUESTED RESPONSE FROM DHS-FEMA

This request is for a (check one):

☒ CLOMR: A letter from DHS-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 DHS-FEMA officially revising the current NFIP map to show the changes to floodplains, regulatory floodway or flood elevations. (See 44 CFR Ch. 1, Parts 60, 65 & 72)

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
Example: 480301	City of Katy	TX	48473C	0005D	02/08/83
480287	Harris County	TX	48201C	0220G	09/28/90
040037	Maricopa County	AZ	04013C	2195L	10/16/13
040051	City of Phoenix	AZ	04013C	2195L	10/16/13
040051	City of Phoenix	AZ	04013C	2215L	10/16/13

2. a. Flooding Source: Salt River

   b. Types of Flooding: ☒ Riverine ☐ Coastal ☐ Shallow Flooding (e.g., Zones AO and AH)
   ☐ Alluvial fan ☐ Lakes ☐ Other (Attach Description)

3. Project Name/Identifier: Avenida Rio Salado/Broadway Road

4. FEMA zone designations affected: AE (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 ☐ Base Map Changes
   ☐ Coastal Analysis ☐ Hydraulic Analysis ☐ Hydrologic Analysis ☐ Corrections
   ☐ Weir-Dam Changes ☐ Levee Certification ☐ Alluvial Fan Analysis ☐ Natural Changes
   ☒ New Topographic Data ☐ Other (Attach Description)

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

Flood Control District
of Maricopa County

INTEROFFICE MEMORANDUM

Date: March 19, 2014

To: Timothy S. Phillips, P.E., Chief Engineer & General Manager TSP

Via: Kelli A Sertich, AICP, CFM, Floodplain Mgmt. & Services Division Manager PTO

From: Lynn M. Thomas, P.E., CFM, Technical Review Branch Manager LMT

Subject: Avenida Rio Salado/Broadway Road (Conditional Letter of Map Revision Fill – City of Phoenix)

This is a request to sign a Community Overview & Concurrence Form for a public road project sponsored by the City of Phoenix as requested by FEMA. Mandar Nangare recommended that the TDN prepared by AZTEC addressed all FEMA's comments and that we should sign the attached form for submittal to FEMA.

Recommendation: Staff recommends **signing** the Community Acknowledgement Form for submittal to FEMA.

LMT/lt

2801 West Durango Street Phoenix, Arizona 85009 Phone: 602-506-1501 Fax: 602-372-6232

Website: www.fcd.maricopa.gov

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

Structures: ☐ Channelization ☐ Levee/Floodwall ☐ Dam ☐ Fill

6. ☒ Documentation of ESA compliance is submitted (required to initiate CLOMR review). Pl

C. REVIEW FEE

Has the review fee for the appropriate request category been included? ☒ ☐

Please see the DHS-FEMA Web site at http://www.fema.gov/plan/prevent/fhm/frm_fees.shtm f

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: Ms. Melody Moss	Company: City of Phoenix	
Mailing Address: 1034 East Madison Phoenix, AZ 85032	Daytime Telephone No.: 602-262-4055	Fax No.: 602-495-3670
	E-Mail Address: melody.moss@phoenix.gov	
Signature of Requester (required):	Date: 9/24/13	

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 requirements for when fill is 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. For Conditional LOMR requests, the applicant has documented Endangered Species Act (ESA) compliance to FEMA prior to FEMA's review of the Conditional LOMR application. For LOMR requests, I acknowledge that compliance with Sections 9 and 10 of the ESA has been achieved independently of FEMA's process. For actions authorized, funded, or being carried out by Federal or State agencies, documentation from the agency showing its compliance with Section 7(a)(2) of the ESA will be submitted. 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: Mr. Hasan Mushtaq/Floodplain Administrator	Community Name: City of Phoenix	
Mailing Address: 200 W. Washington St., 5th Floor Phoenix, AZ 85003	Daytime Telephone No.: 602-262-4026	Fax No.: 602-262-7322
	E-Mail Address: hasan.mushtaq@phoenix.gov	
Community Official's Signature (required):	Date: 09/25/2013	

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 data, hydrologic and hydraulic analysis, and any other supporting information as per NFIP regulations paragraph 65.2(b) and as described in the MT-2 Forms Instructions. 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: Sarah Smedley	License No.: 46632	Expiration Date: 06/30/16
Company Name: AZTEC Engineering	Telephone No.: 602-458-9269	Fax No.: 602-454-0403
Signature:	Date: 9/26/13 E-Mail Address: ssmedley@aztec.us	

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

Structures: ☐ Channelization ☐ Levee/Floodwall ☐ Bridge/Culvert ☐ Dam ☐ Fill ☐ Other (Attach Description)

6. ☒ Documentation of ESA compliance is submitted (required to initiate CLOMR review). Please refer to the instructions for more information.

C. REVIEW FEE

Has the review fee for the appropriate request category been included? ☒ Yes Fee amount: $ 0

☐ No, Attach Explanation

Please see the DHS-FEMA Web site at http://www.fema.gov/plan/prevent/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: Ms. Melody Moss	Company: City of Phoenix	
Mailing Address: 1034 East Madison Phoenix, AZ 85032	Daytime Telephone No.: 602-262-4055	Fax No.: 602-495-3670
	E-Mail Address: melody.moss@phoenix.gov	
Signature of Requester (required):	Date: 9/24/13	

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 requirements for when fill is 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. For Conditional LOMR requests, the applicant has documented Endangered Species Act (ESA) compliance to FEMA prior to FEMA's review of the Conditional LOMR application. For LOMR requests, I acknowledge that compliance with Sections 9 and 10 of the ESA has been achieved independently of FEMA's process. For actions authorized, funded, or being carried out by Federal or State agencies, documentation from the agency showing its compliance with Section 7(a)(2) of the ESA will be submitted. 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: Mr. Hasan Mushtaq/Floodplain Administrator	Community Name: City of Phoenix	
Mailing Address: 200 W. Washington St., 5th Floor Phoenix, AZ 85003	Daytime Telephone No.: 602-262-4026	Fax No.: 602-262-7322
	E-Mail Address: hasan.mushtaq@phoenix.gov	
Community Official's Signature (required):	Date: 09/25/2013	

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 data, hydrologic and hydraulic analysis, and any other supporting information as per NFIP regulations paragraph 65.2(b) and as described in the MT-2 Forms Instructions. 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: Sarah Smedley	License No.: 46632	Expiration Date: 06/30/16
Company Name: AZTEC Engineering	Telephone No.: 602-458-9269	Fax No.: 602-454-0403
Signature:	Date: 9/26/13 E-Mail Address: ssmedley@aztec.us	

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

Structures: ☐ Channelization ☐ Levee/Floodwall ☐ Bridge/Culvert ☐ Dam ☐ Fill ☐ Other (Attach Description)

6. ☒ Documentation of ESA compliance is submitted (required to initiate CLOMR review). Please refer to the instructions for more information.

C. REVIEW FEE

Has the review fee for the appropriate request category been included? ☒ Yes Fee amount: $____ ☐ No, Attach Explanation

Please see the DHS-FEMA Web site at http://www.fema.gov/plan/prevent/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: Ms. Melody Moss	Company: City of Phoenix	
Mailing Address: 1034 East Madison Phoenix, AZ 85032	Daytime Telephone No.: 602-262-4055	Fax No.: 602-495-3670
	E-Mail Address: melody.moss@phoenix.gov	
Signature of Requester (required):	Date: 3/12/14	

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 the community floodplain management requirements, including the requirements for when fill is 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. For Conditional LOMR requests, the applicant has documented Endangered Species Act (ESA) compliance to FEMA prior to FEMA's review of the Conditional LOMR application. For LOMR requests, I acknowledge that compliance with Sections 9 and 10 of the ESA has been achieved independently of FEMA's process. For actions authorized, funded, or being carried out by Federal or State agencies, documentation from the agency showing its compliance with Section 7(a)(2) of the ESA will be submitted. 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: Mr. Timothy S. Phillips, PE, Chief Engineer & General Manager	Community Name: Maricopa County	
Mailing Address: 2801 W. Durango Street Phoenix, AZ 85009	Daytime Telephone No.: 602-506-1501	Fax No.: 602-506-4601
	E-Mail Address: TimothyPhillips@mail.maricopa.gov	
Community Official's Signature (required):	Date: 3/20/14	

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 data, hydrologic and hydraulic analysis, and any other supporting information as per NFIP regulations paragraph 65.2(b) and as described in the MT-2 Forms Instructions. 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: Sarah Smedley	License No.: 46632	Expiration Date: 06/30/16	
Company Name: AZTEC Engineering	Telephone No.: 602-458-9269	Fax No.: 602-454-0403	
Signature:	Date: 3/12/14	E-Mail Address: ssmedley@aztec.us	

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)

U.S. DEPARTMENT OF HOMELAND SECURITY
FEDERAL EMERGENCY MANAGEMENT AGENCY

OVERVIEW & CONCURRENCE FORM

O.M.B No. 1660-0016
Expires February 28, 2014

PAPERWORK BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 1 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing, reviewing, and submitting the form. You are not required to respond to this collection of information unless it displays a valid OMB control number. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, Department of Homeland Security, Federal Emergency Management Agency, 1800 South Bell Street, Arlington, VA 20958-3005, Paperwork Reduction Project (1660-0016). 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.**

PRIVACY ACT STATEMENT

AUTHORITY: The National Flood Insurance Act of 1968, Public Law 90-448, as amended by the Flood Disaster Protection Act of 1973, Public Law 93-234.

PRINCIPAL PURPOSE(S): This information is being collected for the purpose of determining an applicant's eligibility to request changes to National Flood Insurance Program (NFIP) Flood Insurance Rate Maps (FIRM).

ROUTINE USE(S): The information on this form may be disclosed as generally permitted under 5 U.S.C § 552a(b) of the Privacy Act of 1974, as amended. This includes using this information as necessary and authorized by the routine uses published in DHS/FEMA/NFIP/LOMA-1 National Flood Insurance Program (NFIP); Letter of Map Amendment (LOMA) February 15, 2006, 71 FR 7990.

DISCLOSURE: The disclosure of information on this form is voluntary; however, failure to provide the information requested may delay or prevent FEMA from processing a determination regarding a requested change to a (NFIP) Flood Insurance Rate Maps (FIRM).

A. REQUESTED RESPONSE FROM DHS-FEMA

This request is for a (check one):

☒ CLOMR: A letter from DHS-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 DHS-FEMA officially revising the current NFIP map to show the changes to floodplains, regulatory floodway or flood elevations. (See 44 CFR Ch. 1, Parts 60, 65 & 72)

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
Example: 480301 480287	City of Katy Harris County	TX TX	48473C 48201C	0005D 0220G	02/08/83 09/28/90
040037 040051	Maricopa County City of Phoenix	AZ AZ	04013C 04013C	2195L 2195L	10/16/13 10/16/13
040051	City of Phoenix	AZ	04013C	2215L	10/16/13

2. a. Flooding Source: Salt River

   b. Types of Flooding: ☒ Riverine ☐ Coastal ☐ Shallow Flooding (e.g., Zones AO and AH)
   ☐ Alluvial fan ☐ Lakes ☐ Other (Attach Description)

3. Project Name/Identifier: Avenida Rio Salado/Broadway Road

4. FEMA zone designations affected: AE (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 ☐ Base Map Changes
   ☐ Coastal Analysis ☐ Hydraulic Analysis ☐ Hydrologic Analysis ☐ Corrections
   ☐ Weir-Dam Changes ☐ Levee Certification ☐ Alluvial Fan Analysis ☐ Natural Changes
   ☒ New Topographic Data ☐ 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 structures (check all that apply)

Structures: ☐ Channelization ☐ Levee/Floodwall ☐ Bridge/Culvert ☐ Dam ☐ Fill ☐ Other (Attach Description)

6. ☒ Documentation of ESA compliance is submitted (required to initiate CLOMR review). Please refer to the instructions for more information.

C. REVIEW FEE

Has the review fee for the appropriate request category been included? ☒ Yes Fee amount: $_____ ☐ No, Attach Explanation

Please see the DHS-FEMA Web site at http://www.fema.gov/plan/prevent/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: Ms. Melody Moss	Company: City of Phoenix	
Mailing Address: 1034 East Madison Phoenix, AZ 85032	Daytime Telephone No.: 602-262-4055	Fax No.: 602-495-3670
	E-Mail Address: melody.moss@phoenix.gov	
Signature of Requester (required): [signature]	Date: 3/12/14	

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 requirements for when fill is 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. For Conditional LOMR requests, the applicant has documented Endangered Species Act (ESA) compliance to FEMA prior to FEMA's review of the Conditional LOMR application. For LOMR requests, I acknowledge that compliance with Sections 9 and 10 of the ESA has been achieved independently of FEMA's process. For actions authorized, funded, or being carried out by Federal or State agencies, documentation from the agency showing its compliance with Section 7(a)(2) of the ESA will be submitted. 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: Mr. Hasan Mushtaq/Floodplain Administrator	Community Name: City of Phoenix	
Mailing Address: 200 W. Washington St., 5th Floor Phoenix, AZ 85003	Daytime Telephone No.: 602-262-4026	Fax No.: 602-262-7322
	E-Mail Address: hasan.mushtaq@phoenix.gov	
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 data, hydrologic and hydraulic analysis, and any other supporting information as per NFIP regulations paragraph 65.2(b) and as described in the MT-2 Forms Instructions. 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: Sarah Smedley	License No.: 46632	Expiration Date: 06/30/16	
Company Name: AZTEC Engineering	Telephone No.: 602-458-9269	Fax No.: 602-454-0403	
Signature: [signature]	Date: 3/12/14	E-Mail Address: ssmedley@aztec.us	

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)

U.S. DEPARTMENT OF HOMELAND SECURITY
FEDERAL EMERGENCY MANAGEMENT AGENCY

RIVERINE HYDROLOGY & HYDRAULICS FORM

O.M.B No. 1660-0016
Expires February 28, 2014

PAPERWORK BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 3.5 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing, reviewing, and submitting the form. You are not required to respond to this collection of information unless a valid OMB control number appears in the upper right corner of this form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, Department of Homeland Security, Federal Emergency Management Agency, 1800 South Bell Street, Arlington VA 20958-3005, Paperwork Reduction Project (1660-0016). 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.**

PRIVACY ACT STATEMENT

AUTHORITY: The National Flood Insurance Act of 1968, Public Law 90-448, as amended by the Flood Disaster Protection Act of 1973, Public Law 93-234.

PRINCIPAL PURPOSE(S): This information is being collected for the purpose of determining an applicant's eligibility to request changes to National Flood Insurance Program (NFIP) Flood Insurance Rate Maps (FIRM).

ROUTINE USE(S): The information on this form may be disclosed as generally permitted under 5 U.S.C § 552a(b) of the Privacy Act of 1974, as amended. This includes using this information as necessary and authorized by the routine uses published in DHS/FEMA/NFIP/LOMA-1 National Flood Insurance Program (NFIP); Letter of Map Amendment (LOMA) February 15, 2006, 71 FR 7990.

DISCLOSURE: The disclosure of information on this form is voluntary; however, failure to provide the information requested may delay or prevent FEMA from processing a determination regarding a requested change to a NFIP Flood Insurance Rate Maps (FIRM).

Flooding Source: Salt River

Note: Fill out one form for each flooding source studied

A. HYDROLOGY

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

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

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

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

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

☐ Statistical Analysis of Gage Records ☐ Precipitation/Runoff Model → Specify Model: _____
☐ Regional Regression Equations ☐ Other (please attach description)

Please enclose all relevant models in digital format, maps, computations (including computation of parameters), and documentation to support the new analysis.

4. Review/Approval of Analysis

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

5. Impacts of Sediment Transport on Hydrology

Is the hydrology for the revised flooding source(s) affected by sediment transport? ☐ Yes ☐ No

If yes, then fill out Section F (Sediment Transport) of Form 3. If No, then attach your explanation..

B. HYDRAULICS

1. Reach to be Revised

	Description	Cross Section	Water-Surface Elevations (ft.)	
			Effective	Proposed/Revised
Downstream Limit*	Section Q-Q	207.16	1009.8 (NAVD88)	1009.61 (NAVD88)
Upstream Limit*	Section Z-Z	211.12	1041.7 (NAVD88)	1041.56 (NAVD88)

*Proposed/Revised elevations must tie-into the Effective elevations within 0.5 foot at the downstream and upstream limits of revision.

2. Hydraulic Method/Model Used: HEC-RAS v 4.1.0

3. Pre-Submittal Review of Hydraulic Models*

DHS-FEMA has developed two review programs, CHECK-2 and CHECK-RAS, to aid in the review of HEC-2 and HEC-RAS hydraulic models, respectively. We recommend that you review your HEC-2 and HEC-RAS models with CHECK-2 and CHECK-RAS.

4.

Models Submitted	Natural Run		Floodway Run		Datum
Duplicate Effective Model*	File Name: DuplicateEffective	Plan Name: DupEff	File Name: DuplicateEffective	Plan Name: DupEff	NGVD 29
Corrected Effective Model*	File Name:	Plan Name:	File Name:	Plan Name:	
Existing or Pre-Project Conditions Model	File Name: Pre-Project	Plan Name: PrePrj	File Name: Pre-Project	Plan Name: PrePrj	NGVD 29
Revised or Post-Project Conditions Model	File Name: Post-Project	Plan Name: PostPrj	File Name: Post-Project	Plan Name: PostPrj	NGVD 29
Other - (attach description)	File Name:	Plan Name:	File Name:	Plan Name:	

* For details, refer to the corresponding section of the instructions.

☒ Digital Models Submitted? (Required)

C. MAPPING REQUIREMENTS

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

☒ Digital Mapping (GIS/CADD) Data Submitted (preferred)

Topographic Information: 1-foot contour interval topographic mapping

Source: Kenney Aerial Mapping Date: 9/24/2010

Accuracy: +/- 0.5 feet vertical & horizontal

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

☒ Annotated FIRM and/or FBFM (Required)

D. COMMON REGULATORY REQUIREMENTS*

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

   a. For CLOMR requests, if either of the following is true, please submit **evidence of compliance with Section 65.12 of the NFIP regulations**:

      - The proposed project encroaches upon a regulatory floodway and would result in increases above 0.00 foot compared to pre-project conditions.
      - The proposed project encroaches upon a SFHA with or without BFEs established and would result in increases above 1.00 foot compared to pre-project conditions.

   b. Does this LOMR request cause increase in the BFE and/or SFHA compared with the effective BFEs and/or SFHA? ☐ Yes ☒ No

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

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

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

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

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

4. For CLOMR requests, please submit documentation to FEMA and the community to show that you have complied with Sections 9 and 10 of the Endangered Species Act (ESA).

For actions authorized, funded, or being carried out by Federal or State agencies, please submit documentation from the agency showing its compliance with Section 7(a)(2) of the ESA. Please see the MT-2 instructions for more detail.

* Not inclusive of all applicable regulatory requirements. For details, see 44 CFR parts 60 and 65.

3.0 SURVEY AND MAPPING INFORMATION

3.1 Field Survey Information

Horizontal and vertical survey control for this project was performed by AZTEC and was conducted in September 2010. The survey was performed under the direct supervision of Alan D. Reece, R.L.S. (AZ RLS No. 25396). The survey work included establishment of a horizontal and vertical control network and placement of targets for aerial mapping.

3.2 Topographic Mapping

One-foot contour interval aerial mapping compiled to a horizontal scale accuracy of 1-inch equals 40-feet was created for this project. The flight date for the aerial topography was September 24, 2010 and was flown by Kenney Aerial.

The coordinate grid is based on the North American Datum of 1983 (NAD 83), Central Zone of Arizona State Plane Coordinate System, standard transverse Mercator projection, with a scale or origin point of X=0.0000, Y=0.0000, using a grid adjustment factor of 1.00016. Elevations in this report and in the HEC-RAS models are based upon the National Geodetic Vertical Datum of 1929 (NGVD 29). The conversion factor to the North American Vertical Datum of 1988 (NAVD 88) is +2.1'. Digital mapping data in CADD format has been included on the attached CD.

3.0 SURVEY AND MAPPING INFORMATION

3.1 Field Survey Information

Horizontal and vertical survey control for this project was performed by AZTEC and was conducted in September 2010. The survey was performed under the direct supervision of Alan D. Reece, R.L.S. (AZ RLS No. 25396). The survey work included establishment of a horizontal and vertical control network and placement of targets for aerial mapping.

3.2 Topographic Mapping

One-foot contour interval aerial mapping compiled to a horizontal scale accuracy of 1-inch equals 40-feet was created for this project. The flight date for the aerial topography was September 24, 2010 and was flown by Kenney Aerial.

The coordinate grid is based on the North American Datum of 1983 (NAD 83), Central Zone of Arizona State Plane Coordinate System, standard transverse Mercator projection, with a scale or origin point of X=0.0000, Y=0.0000, using a grid adjustment factor of 1.00016. Elevations in this report and in the HEC-RAS models are based upon the National Geodetic Vertical Datum of 1929 (NGVD 29). The conversion factor to the North American Vertical Datum of 1988 (NAVD 88) is +2.1'. Digital mapping data in CADD format has been included on the attached CD.

4.0 HYDROLOGY

4.1 General

No new hydrology was developed for this study. The effective peak discharges listed in the *Gila River Basin, Arizona, Section 7 Study for Modified Roosevelt Dam, Arizona, Hydrologic Evaluation of Water Control Plans, Salt River Project to Gila River at Gillespie Dam* (1996), prepared by the USACE, Los Angeles District, were used in the HEC-RAS model. The 100-year peak discharges for the subject reach of the Salt River are summarized in Table 1 below.

Table 1
Summary of Effective Discharges

Location	HEC-RAS Cross Section	Drainage Area (sq mi)	Peak 100-Yr Discharge (cfs)
At Central Avenue	213.25	12.831	166,000
At 67th Avenue	205.43	12.962	164,000

5.0 HYDRAULICS

5.1 Method Description

The U.S. Army Corps of Engineers computer program, HEC-RAS, version 4.0.0, released March 2008 was used to analyze the 100-year floodplain conditions along the Salt River and to develop the models for the project site. Three hydraulic models are included in this report: the Duplicate Effective Model, the Pre-Project Model, and the Post-Project Model.

5.1.1 Duplicate Effective Model

The duplicate effective model created for this project used the models from the two LOMR cases, #08-09-1412P and 08-09-1294P. The duplicate effective model is included in Appendix C. The duplicate model started with the model from Case #08-09-1412P, in which modifications to sections 209.33 to 209.98 where made based on revised mapping and improvement plans from the 35th Avenue Bridge. Modified cross sections 208.57 to 208.85 from LOMR case #08-09-1294P were added to create the duplicate effective model. Comparison of the two LOMR cases to the duplicate effective model is presented in Table 2. The bold numbers denote the cross sections that were modified in each case and were the elevations used as a comparison to the duplicate effective. As shown, there are no changes from each effective model to the duplicate effective model and therefore the duplicate effective model can be used as a comparison to the pre-project and post-project models.

Table 2
Comparison of Effective Models and Duplicate Effective Model

FEMA Cross Section	HEC-RAS Cross Section	Effective WSEL Case #08-09-1412P (ft)	Effective WSEL Case #08-09-1294P (ft)	Duplicate Effective WSEL (ft)
Q	207.16	1007.6	1007.6	1007.6
R	207.49	1012.1	1012.1	1012.1
S	207.90	1016.4	1016.4	1016.4
T	208.39	1020.4	1020.4	1020.4
U	208.75	1025.8	**1026.4**	1026.4
V	209.33	**1032.4**	1032.0	1032.4
W	209.69	**1034.4**	1035.9	1034.4
X	210.17	**1035.3**	1037.4	1035.3
Y	210.64	**1036.7**	1038.3	1036.6
Z	211.12	**1039.9**	1040.6	1039.9

5.1.2 Pre-Project Model

The pre-project model was created by revising the cross-sections from the duplicate effective model within the topographic area prepared by Kenney Aerial for this project. For the most part the cross-sections are in the same location and the geometry was updated based on the new topography. HEC-RAS cross section 207.53 was removed from the pre-project model because it fell directly on the 51st Avenue Bridge and was deemed unnecessary. FEMA cross section U was re-orientated based on the direction of flow and bank geometry.

The pre-project model ties back into the duplicate effective model at FEMA Section Q-Q just downstream of 51st Avenue on the downstream end and at FEMA Section Z-Z upstream of the 35th Avenue Bridge. The duplicate effective water surface elevations are 1007.63 and 1039.87, effectively and the pre-project water surface elevations are 1007.51 and 1039.46, effectively. Table 3 compares the results of the pre-project model to the duplicate effective model. The pre-project model is included in Appendix D.

5.1.3 Post-Project Model

The post-project model is an adjustment of the pre-project model. For the post-project model, the proposed Avenida Rio Salado/Broadway Road improvements were added to cross sections 207.49 to 209.42. From cross sections 208.10 to 208.48, the proposed roadway embankment encroaches into the river. The maximum increase to the water surface elevation from pre-project to post-project is 0.11 feet in the location of the roadway embankment encroachment. This increase is contained within the banks of the Salt River and there are no structures that are affected by this increase. The proposed improvements are presented on Exhibit 1 Proposed Work Map in Appendix F. The post-project model is included in Appendix E.

Table 3 compares the results of the duplicate effective model, the pre-project model, and the post-project model.

Table 3
Water Surface Elevation Comparison

FEMA Cross Section	HEC-RAS Cross Section	Distance (1) (mi)	Duplicate Effective WSEL (ft)	Pre-Project WSEL (ft)	Post-Project WSEL (ft)	Duplicate vs Post Elevation Difference (ft)
Q	207.16	7.725	1007.63	1007.51	1007.51	-0.12
	207.27		1008.39	1007.15	1007.15	-1.24
	207.34		1009.51	1007.56	1007.56	-1.95
	207.43		1010.99	1007.86	1007.86	-3.13

FEMA Cross Section	HEC-RAS Cross Section	Distance (1) (mi)	Duplicate Effective WSEL (ft)	Pre-Project WSEL (ft)	Post-Project WSEL (ft)	Duplicate vs Post Elevation Difference (ft)
	207.48		1011.97	1008.38	1008.38	-3.59
R	207.49	8.098	1012.07	1009.47	1009.47	-2.60
	207.53		1012.09	NA	NA	NA
	207.62		1012.76	1010.08	1010.08	-2.68
	207.71		1014.41	1010.85	1010.85	-3.56
	207.80		1015.41	1012.20	1012.20	-3.21
S	207.90	8.473	1016.38	1013.80	1013.80	-2.58
	207.99		1016.92	1014.47	1014.47	-2.45
	208.10		1018.03	1015.84	1015.82	-2.21
	208.19		1018.79	1016.79	1016.79	-2.00
	208.29		1019.52	1017.69	1017.77	-1.75
T	208.39	8.948	1020.44	1018.82	1018.93	-1.51
	208.48		1021.36	1019.72	1019.79	-1.57
	208.57		1021.05	1020.24	1020.28	-0.77
	208.67		1025.63	1022.72	1022.73	-2.90
U	208.75	9.324	1026.41	1024.13	1024.13	-2.28
	208.85		1027.11	1024.64	1024.64	-2.47
	208.95		1027.37	1025.58	1025.59	-1.78
	209.04		1030.45	1026.13	1026.13	-4.32
	209.14		1030.69	1026.70	1026.71	-3.98
	209.24		1031.35	1027.66	1027.66	-3.69
V	209.33	9.891	1032.38	1028.74	1028.74	-3.64
	209.42		1032.51	1028.88	1028.89	-3.62
	209.53		1032.62	1029.88	1029.88	-2.74
	209.54		1032.94	1030.22	1030.22	-2.72
	209.60		1034.21	1030.45	1030.45	-3.76
W	209.69	10.274	1034.41	1031.55	1031.55	-2.86
	209.79		1034.85	1032.25	1032.25	-2.60
	209.88		1034.93	1032.30	1032.30	-2.63
	209.98		1035.11	1032.58	1032.58	-2.53
	210.07		1035.08	1032.65	1032.58	-2.50
X	210.17	10.730	1035.29	1032.78	1032.77	-2.52
	210.26		1035.68	1033.53	1033.53	-2.15
	210.36		1035.87	1033.85	1033.85	-2.02
	210.46		1036.30	1034.53	1034.52	-1.78
	210.55		1035.92	1034.00	1034.00	-1.92

FEMA Cross Section	HEC-RAS Cross Section	Distance (1) (mi)	Duplicate Effective WSEL (ft)	Pre-Project WSEL (ft)	Post-Project WSEL (ft)	Duplicate vs Post Elevation Difference (ft)
Y	210.64	11.210	1036.64	1035.03	1035.03	-1.61
	210.74		1036.90	1035.65	1035.64	-1.26
	210.83		1037.40	1036.08	1036.07	-1.33
	210.93		1038.11	1037.32	1037.32	-0.79
	211.02		1038.44	1037.87	1037.87	-0.57
Z	211.12	11.691	1039.87	1039.46	1039.46	-0.41

Notes: (1) River Mile is distance upstream of the confluence with the Gila River.

5.2 Work Study Maps & Annotated FIRM Panel

A proposed work map and an annotated FIRM Panel are provided with this study. Exhibit 1 is the Proposed Work Map and Exhibit 2 is the Annotated FIRM Panel. These two exhibits are included in Appendix F.

5.3 Parameter Estimation

5.3.1 Roughness Coefficients

The Manning 'n' Coefficients used in this study are similar to those in previous studies to provide continuity and to reflect increased GR (ground) data available. Coefficients used were:

Feature	n
Roadways	0.015
Over banks	0.032 to 0.043
Natural wash bottom	0.032 to 0.043

The over banks in the study area have sparse vegetation, so there is no difference in the Manning's values.

5.3.2 Expansion and Contraction Coefficients

Coefficients for expansion and contraction of 0.1 and 0.3, respectively, were used throughout the study reach, except through the transition into the existing bridges. Coefficients for expansion and contraction of 0.3 and 0.5, respectively, were used through the transitions. Since there are no new structures crossing the river in this project, the expansion and contraction coefficients have not been modified.

5.4 Cross Section Description

New cross section data was generated for the portion of the Salt River along the proposed roadway improvements, from HEC-RAS cross section 207.17 to 209.98. Avenida Rio Salado/Broadway Road was added to cross sections 207.49 to 209.42 based on the final construction documents. These improvement plans have been included in Appendix H.

A new maintenance ramp to an improved storm drain outlet into the river was determined necessary after the aerial mapping for the project was completed. The ramp is located outside of the limits of the mapping at HEC-RAS cross section 210.07. Additional ground survey was obtained for the design of the ramp. The survey was limited to just the left bank of the river. The information was added to the HEC-RAS cross section in both the pre- and post-project models. The new ramp was added to the post-project model. The existing data points for this cross section were used outside of the limits of the new survey information. Construction plans for the maintenance ramp have been included in Appendix H.

5.5 Modeling Considerations

5.5.1 Hydraulic Jump and Drop Analysis

No significant hydraulic jumps occur in the study reach.

5.5.2 Culverts and Bridges

There are no culverts within the study reach. There are no new bridges within the study reach. All bridges have been modeled as they were in the original models.

5.5.3 Ineffective Flow Areas

Ineffective flow areas were set to model a one-to-one contraction of the flows into the existing bridges within the revised reach.

5.6 Floodway Modeling

Floodway encroachments are analyzed for the study reach for the 100-year flow of the revised model. Method Four was the encroachment type first used so that the water surface was increased by a maximum of one foot. The values where converted to Method One, to provide the exact left and right encroachment stations.

5.7 Special Problems

There are no special problems to report.

5.7.1 Errors and Warning Messages

There are no modeling error messages and the warnings primarily deal with the defaulting of calculations to critical depth and minimum specific energy.

5.8 Final Results

Results are presented in Table 3 in Section 5.1.3.

After the completion of the models and the first submittal of the CLOMR in September 2013, the Effective FIRM Panels were updated and the new map elevations converted to NAVD 1988. Updating the models was not required or recommended at this time. Provided below in Table 4 and on the Post Project Work Map is a comparison between the Post-Project water surface elevations converted to NAVD 88 and the new Effective water surface elevations from the updated FIS.

Table 4
Water Surface Elevation Comparison in NAVD 88

FEMA Cross Section	HEC-RAS Cross Section	Effective FIS WSEL NAVD 88 (ft)	Post-Project WSEL NGVD 29 (ft)	Post-Project WSEL NAVD 88 (ft)	FIS vs Post Elevation Difference NAVD 88 (ft)
Q	207.16	1009.80	1007.51	1009.61	-0.19
R	207.49	1014.20	1009.47	1011.57	-2.63
S	207.90	1018.40	1013.80	1015.90	-2.50
T	208.39	1022.60	1018.93	1021.03	-1.57
U	208.75	1028.50	1024.13	1026.23	-2.27
V	209.33	1034.60	1028.74	1030.84	-3.76
W	209.69	1037.40	1031.55	1033.65	-3.75
X	210.17	1036.50	1032.77	1034.87	-1.63
Y	210.64	1038.70	1035.03	1037.13	-1.57
Z	211.12	1041.70	1039.46	1041.56	-0.14

The 100-year water surface resulting from this study is delineated on Exhibit 3. Tabulation of the water surface elevations for the post-project conditions is shown in Table 3 and a printout of the post-project model is included in Appendix E. The water surface elevation at the upstream tie-in point is 1039.46, which is within 0.41' of the effective water surface elevation.

There were structures, including single family homes and commercial buildings, within the floodplain prior to this study. The result of this study has effectively removed these structures from the 100-year floodplain. No new structures have been added to the

floodplain. There is a small increase in the Base Flood Elevation (BFE) from the pre-project conditions to the post-project conditions where the roadway embankment encroaches the floodplain. There are no existing structures within this portion of the project. Property owners will be notified of these increase.

The area between the Salt River Floodplain and the Cave Creek Wash Floodplain has been identified in the effective mapping as Zone A, an area where no base flood elevations have been determined. Due to the results of this study, properties between these two flooding sources have been removed from the Salt River floodplain but may still see flooding from Cave Creek Wash. These areas have been identified as Proposed Zone A. Further studies of the Cave Creek Wash will be necessary to determine if these properties can be removed from special flood hazard areas.

5.8.1 HEC-RAS Files and Output

Table 5 provides a summary of the project files and associated plans for the HEC-RAS analysis. Detailed input and outputs for each of these plans are included in Appendices D, E, and F. Electronic files are included on CD in Appendix I.

Table 5
Summary of Project Files for CLOMR Submittal

Modeling Condition	HEC-RAS File Name	Appendix for Output
Duplicate Effective	DuplicateEffective.prj	D
Pre-Project Model	Pre-Project.prj	E
Post-Project Model	Post-Project.prj	F

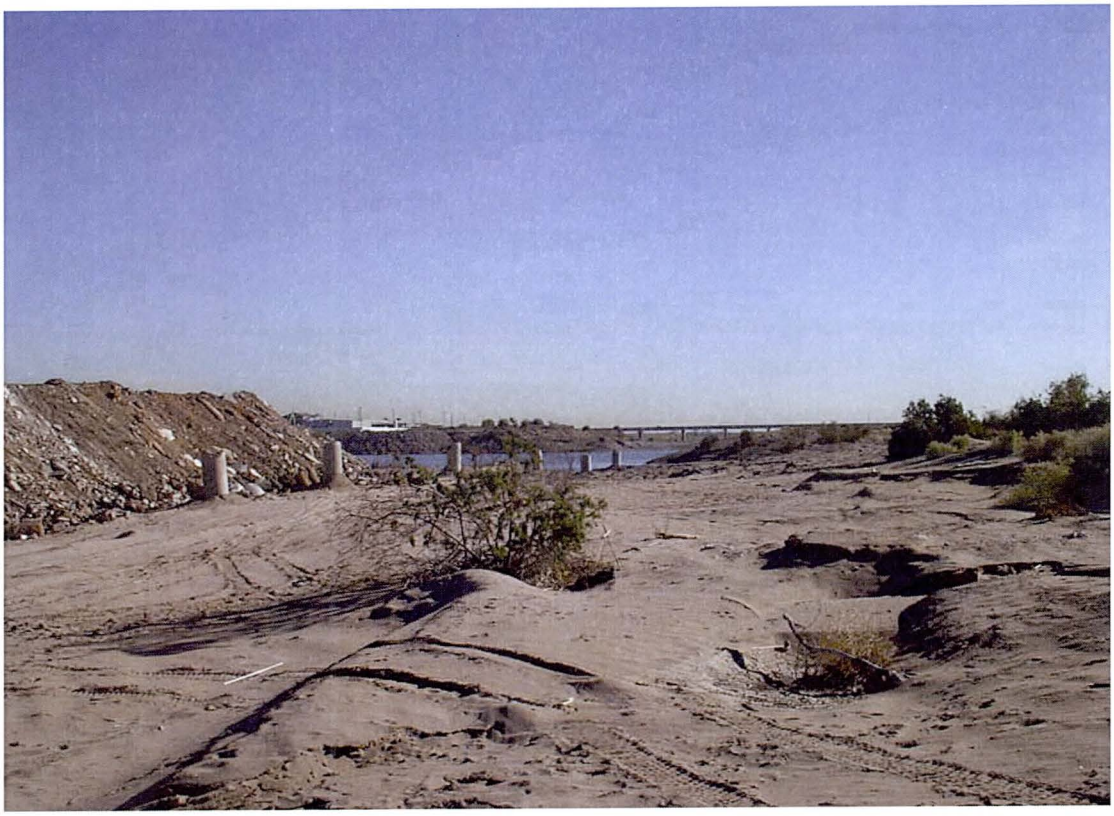
APPENDIX A

PHOTOGRAPHS

35th Ave Bridge Looking East

35th Ave Bridge Looking East

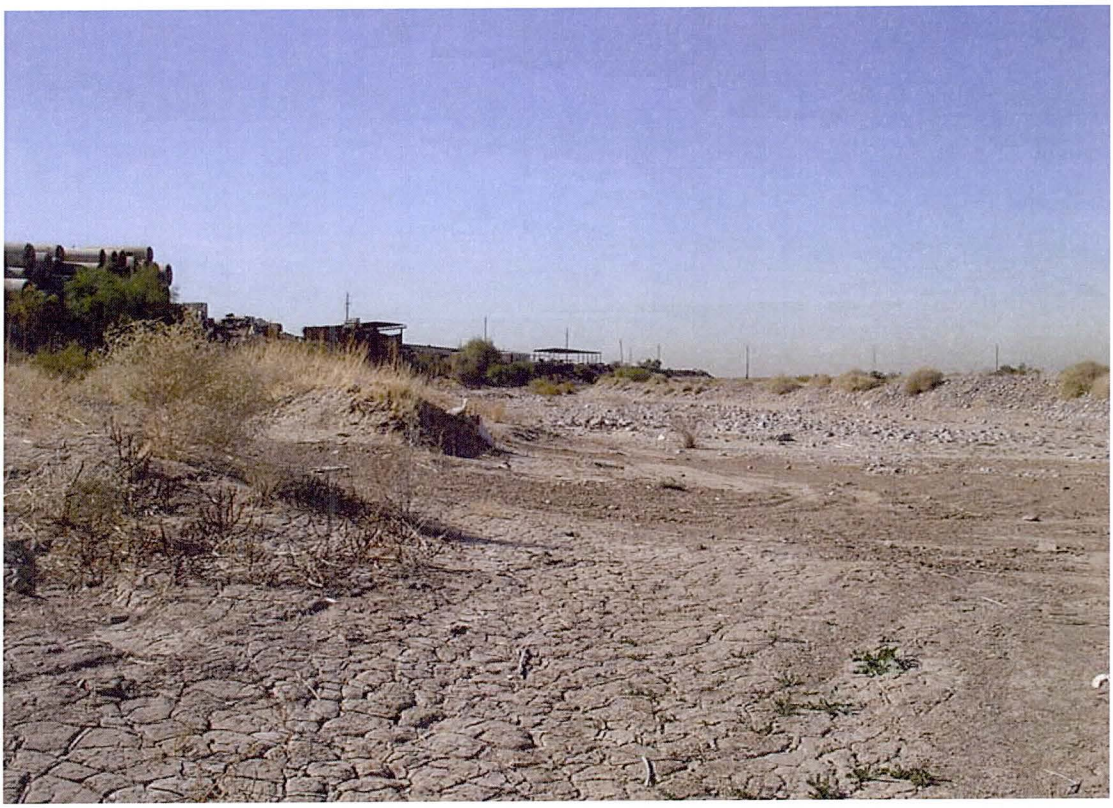
Mining Pit Standing Water (N. Side of Salt River)



River Bottom Looking East

River Bottom Looking Northwest

51st Ave Bridge Looking West



South Bank Near 43rd Ave Looking West

South Bank Near 43rd Ave Looking East

APPENDIX B

EFFECTIVE LOMR DOCUMENTS

Figure 3 - Flood Insurance Rate Map (Sheet 1 of 3)

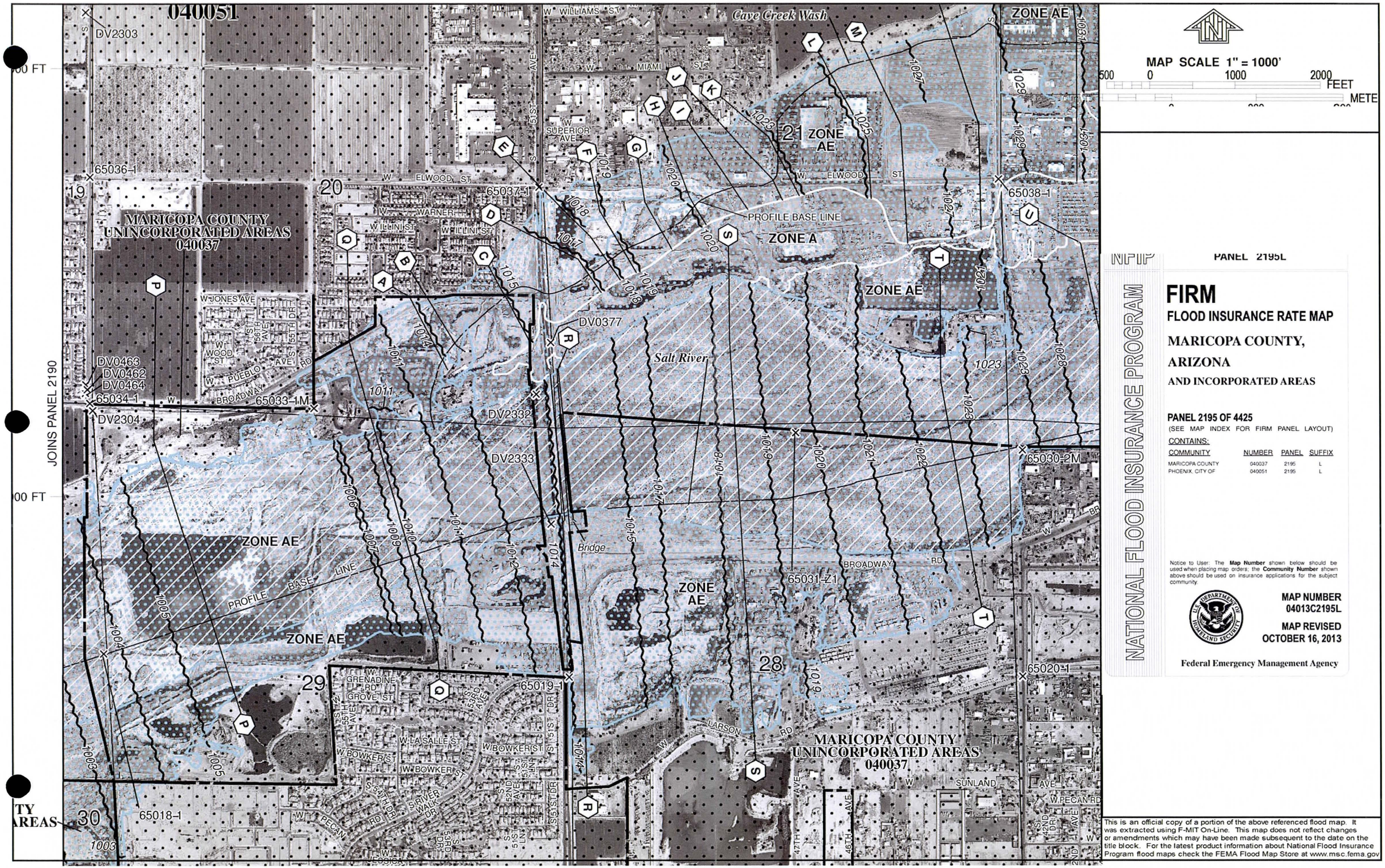


Figure 3 - Flood Insurance Rate Map (Sheet 2 of 3)

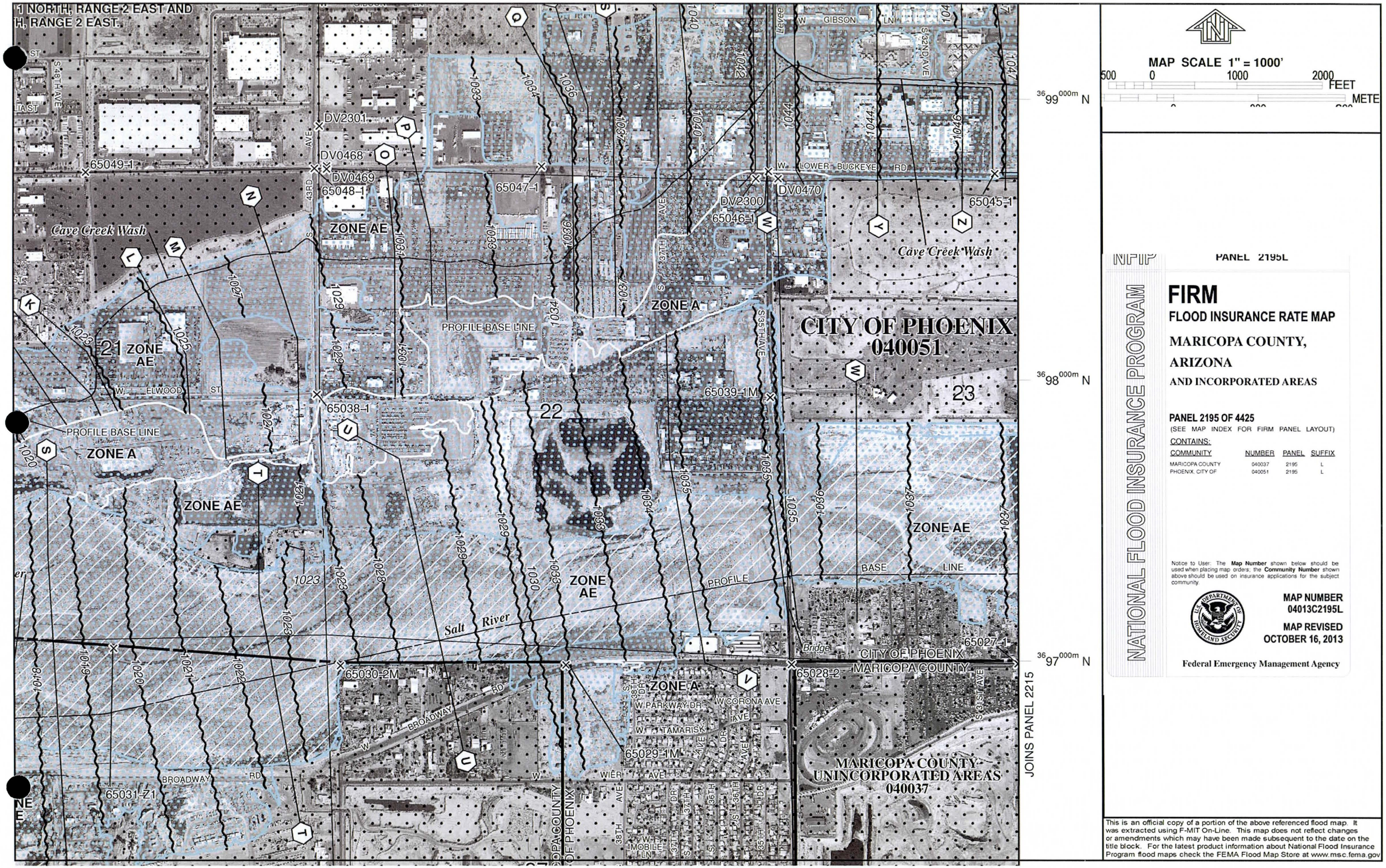
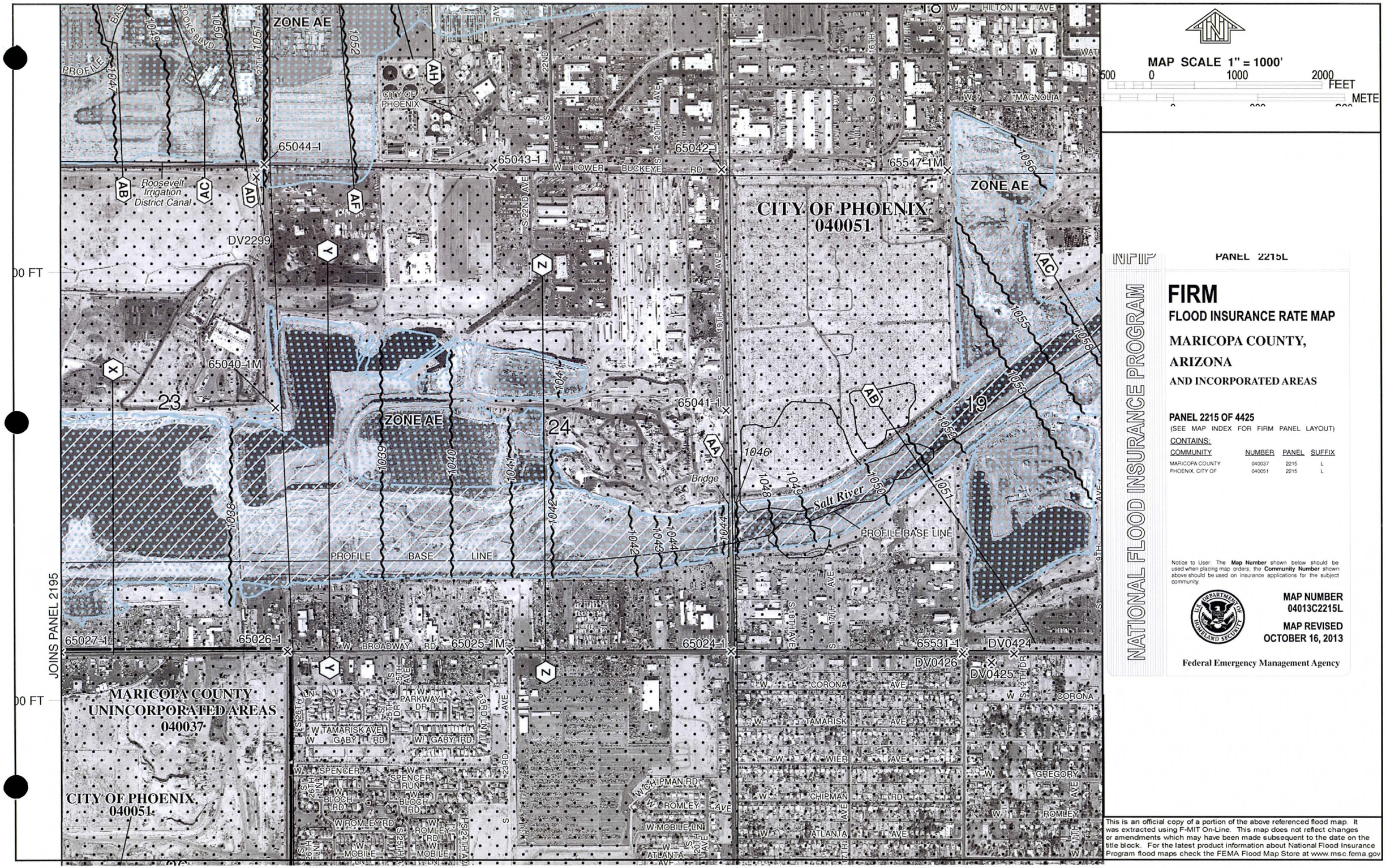


Figure 3 - Flood Insurance Rate Map (Sheet 3 of 3)



Federal Emergency Management Agency

Washington, D.C. 20472

LETTER OF MAP REVISION DETERMINATION DOCUMENT

COMMUNITY AND REVISION INFORMATION		PROJECT DESCRIPTION	BASIS OF REQUEST
COMMUNITY	City of Phoenix Maricopa County Arizona	BRIDGE	HYDRAULIC ANALYSIS NEW TOPOGRAPHIC DATA
	COMMUNITY NO.: 040051		
IDENTIFIER	LOMR for the Salt River Bridge at 35th Avenue	APPROXIMATE LATITUDE & LONGITUDE: 33.410, -112.120 SOURCE: Precision Mapping Streets DATUM: NAD 27	

ANNOTATED MAPPING ENCLOSURES			ANNOTATED STUDY ENCLOSURES
TYPE: FIRM*	NO.: 04013C2120 G	DATE: September 30, 2005	DATE OF EFFECTIVE FLOOD INSURANCE STUDY REPORT: September 30, 2005
TYPE: FIRM*	NO.: 04013C2140 G	DATE: September 30, 2005	PROFILE(S): 279P-281P FLOODWAY DATA TABLE: 5

Enclosures reflect changes to flooding sources affected by this revision.
* FIRM - Flood Insurance Rate Map; ** FBFM - Flood Boundary and Floodway Map; *** FHBM - Flood Hazard Boundary Map

FLOODING SOURCE(S) & REVISED REACH(ES)

Salt River - from approximately 1,100 feet downstream of 35th Avenue to approximately 1,200 feet downstream of 7th Avenue

SUMMARY OF REVISIONS

Flooding Source	Effective Flooding	Revised Flooding	Increases	Decreases
Salt River	Zone AE	Zone AE	NONE	YES
	Floodway	Floodway	YES	NONE
	BFEs*	BFEs	NONE	YES

* BFEs - Base Flood Elevations

DETERMINATION

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

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Assistance Center toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMR Depot, 3601 Eisenhower Avenue, Alexandria, VA 22304. Additional Information about the NFIP is available on our website at http://www.fema.gov/nfip.

Joshua A. Smith, CFM, Program Specialist
Engineering Management Branch
Mitigation Directorate

Federal Emergency Management Agency

Washington, D.C. 20472

LETTER OF MAP REVISION
DETERMINATION DOCUMENT (CONTINUED)

COMMUNITY INFORMATION

APPLICABLE NFIP REGULATIONS/COMMUNITY OBLIGATION

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

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

NFIP regulations Subparagraph 60.3(b)(7) requires communities to ensure that the flood-carrying capacity within the altered or relocated portion of any watercourse is maintained. This provision is incorporated into your community's existing floodplain management ordinances; therefore, responsibility for maintenance of the altered or relocated watercourse, including any related appurtenances such as bridges, culverts, and other drainage structures, rests with your community. We may request that your community submit a description and schedule of maintenance activities necessary to ensure this requirement.

COMMUNITY REMINDERS

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

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

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

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Assistance Center toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMR Depot, 3601 Eisenhower Avenue, Alexandria, VA 22304. Additional Information about the NFIP is available on our website at http://www.fema.gov/nfip.

Joshua A. Smith, CFM, Program Specialist
Engineering Management Branch
Mitigation Directorate

Federal Emergency Management Agency
Washington, D.C. 20472

LETTER OF MAP REVISION
DETERMINATION DOCUMENT (CONTINUED)

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

Ms. Sally M. Ziolkowski
Director, Mitigation Division
Federal Emergency Management Agency, Region IX
1111 Broadway Street, Suite 1200
Oakland, CA 94607-4052
(510) 627-7175

STATUS OF THE COMMUNITY NFIP MAPS

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

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Assistance Center toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMR Depot, 3601 Eisenhower Avenue, Alexandria, VA 22304. Additional Information about the NFIP is available on our website at http://www.fema.gov/nfip.

Joshua A. Smith, CFM, Program Specialist
Engineering Management Branch
Mitigation Directorate

Federal Emergency Management Agency

Washington, D.C. 20472

LETTER OF MAP REVISION
DETERMINATION DOCUMENT (CONTINUED)

PUBLIC NOTIFICATION OF REVISION

PUBLIC NOTIFICATION

FLOODING SOURCE	LOCATION OF REFERENCED ELEVATION	BFE (FEET NGVD 29)		MAP PANEL NUMBER(S)
		EFFECTIVE	REVISED	
Salt River	Approximately 300 feet upstream of 35th Avenue	1,035	1,034	04013C2120 G
	Just upstream of 27th Avenue	1,037	1,036	04013C2140 G

Within 90 days of the second publication in the local newspaper, any interested party may request that we reconsider this determination. Any request for reconsideration must be based on scientific or technical data. This revision is effective as of the date of this letter. However, until the 90-day period has elapsed, the revised BFEs presented in this LOMR may be changed.

A notice of changes will be published in the *Federal Register*. A short notice also will be published in your local newspaper on or about the dates listed below. Please refer to FEMA's website at https://www.floodmaps.fema.gov/fhm/Scripts/bfe_main.asp for a more detailed description of proposed BFE changes, which will be posted within a week of the date of this letter.

LOCAL NEWSPAPER Name: *The Arizona Business Gazette*
Dates: 12/11/08 12/18/08

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Assistance Center toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMR Depot, 3601 Eisenhower Avenue, Alexandria, VA 22304. Additional Information about the NFIP is available on our website at http://www.fema.gov/nfip.

Joshua A. Smith, CFM, Program Specialist
Engineering Management Branch
Mitigation Directorate

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					(FEET NGVD)			
Salt River								
A	0.284	5,175	53,136	3.7	949.0/948.3[2]	948.3	949.3	1.0
B	0.661	3,770	38,392	4.7	950.8/950.2[2]	950.2	951.1	0.9
C	1.139	3,940	33,793	4.9	954.1/953.8[2]	953.8	954.2	0.4
D	1.614	3,899	36,618	4.5	956.6/956.5[2]	956.5	956.7	0.2
E	2.087	3,383	29,242	5.6	960.4	960.4	960.5	0.1
F	2.553	3,626	26,811	6.1	963.3	963.3	963.4	0.1
G	3.042	2,943	23,417	7.0	967.7	967.7	967.8	0.1
H	3.549	2,458	22,950	7.2	971.5	971.5	971.9	0.4
I	4.038	2,912	24,568	6.7	975.9	975.9	976.3	0.4
J	4.512	2,051	14,478	11.3	977.7	977.7	978.0	0.3
K	4.978	1,654	17,123	9.6	986.4	986.4	986.4	0.0
L	5.437	1,542	22,409	7.3	990.2	990.2	990.4	0.2
M	5.911	1,563	22,084	7.4	993.6	993.6	994.0	0.4
N	6.313	2,402	25,689	6.5	995.1	995.1	995.8	0.7
O	6.787	2,542	21,235	7.8	999.8	999.8	1,000.7	0.9
P	7.262	2,353	27,986	5.9	1,003.3	1,003.3	1,004.3	1.0
Q	7.725	1,735	17,441	9.5	1,007.6	1,007.6	1,008.3	0.7
R	8.054	1,579	22,816	7.3	1,012.1	1,012.1	1,012.3	0.2
S	8.468	3,033	25,411	6.5	1,016.4	1,016.4	1,016.6	0.2
T	8.954	2,286	19,622	8.5	1,020.4	1,020.4	1,020.5	0.1
U	9.421	1,950	15,511	10.7	1,025.8	1,025.8	1,025.8	0.0
V	9.896	1,585	26,575	6.3	1,032.4	1,032.4	1,032.7	0.3
W	10.262	1,671	24,934	6.7	1,034.4	1,034.4	1,034.6	0.2
X	10.730	1,975	26,979	6.2	1,035.3	1,035.3	1,035.6	0.3
Y	11.210	1,479	19,037	8.7	1,036.7	1,036.7	1,036.7	0.0
Z	11.691	1,081	20,618	8.1	1,039.9	1,039.9	1,040.4	0.5

Revised Area

[1]Miles above confluence with Gila River [2]River side/land side

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

MARICOPA COUNTY, AZ AND INCORPORATED AREAS

FLOODWAY DATA

REVISED TO REFLECT LOMR EFFECTIVE: November 28, 2008

SALT RIVER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					(FEET NGVD)			
Salt River (Cont'd)								
AA	12.139	526	10,482	15.8	1,043.5	1,043.5	1,043.7	0.2
AB	12.580	550	11,564	14.4	1,048.6	1,048.6	1,048.6	0.1
AC	13.059	558	9,738	17.1	1,056.2	1,056.2	1,056.3	0.1
AD	13.409	636	11,740	14.1	1,063.5	1,063.5	1,063.6	0.1
AE	13.809	880	19,319	8.8	1,068.0	1,068.0	1,068.0	0.0
AF	14.141	852	13,541	12.5	1,069.2	1,069.2	1,069.2	0.0
AG	14.520	745	15,305	11.0	1,074.2	1,074.2	1,074.2	0.0
AH	14.900	900	22,831	7.4	1,076.9	1,076.9	1,076.9	0.0
AI	15.337	1,054	17,199	9.8	1,078.1	1,078.1	1,078.1	0.0
AJ	15.750	594	9,383	18.0	1,081.9	1,081.9	1,081.9	0.0
AK	16.223	890	14,237	11.9	1,088.3	1,088.3	1,088.3	0.0
AL	16.515	907	11,465	14.7	1,093.7	1,093.7	1,093.7	0.0
AM	16.990	947	14,614	11.6	1,098.9	1,098.9	1,098.9	0.0
AN	17.328	897	16,768	10.1	1,103.1	1,103.1	1,103.1	0.0
AO	17.802	999	14,340	11.8	1,107.2	1,107.2	1,107.2	0.0
AP	18.273	824	11,392	14.8	1,111.7	1,111.7	1,111.7	0.0
AQ	18.750	1,035	14,553	11.6	1,118.2	1,118.2	1,118.2	0.0
AR	19.224	987	14,890	11.4	1,123.6	1,123.6	1,123.6	0.0
AS	19.553	1,027	14,367	11.8	1,127.8	1,127.8	1,127.8	0.0
AT	20.026	1,006	14,993	11.3	1,132.9	1,132.9	1,132.9	0.0
AU	20.547	907	13,097	12.9	1,139.7	1,139.7	1,139.7	0.0
AV	20.960	912	14,837	11.4	1,145.0	1,145.0	1,145.0	0.0
AW	21.435	906	15,058	11.2	1,149.4	1,149.4	1,149.4	0.0
AX	21.719	973	17,696	9.6	1,152.2	1,152.2	1,152.2	0.0
AY	22.015	929	13,822	12.4	1,154.6	1,154.6	1,154.6	0.0
AZ	22.503	1,012	16,481	10.4	1,159.0	1,159.0	1,159.0	0.0

Revised Area

[1]Miles above confluence with Gila River

REVISED TO
REFLECT LOMR
EFFECTIVE: November 28, 2008

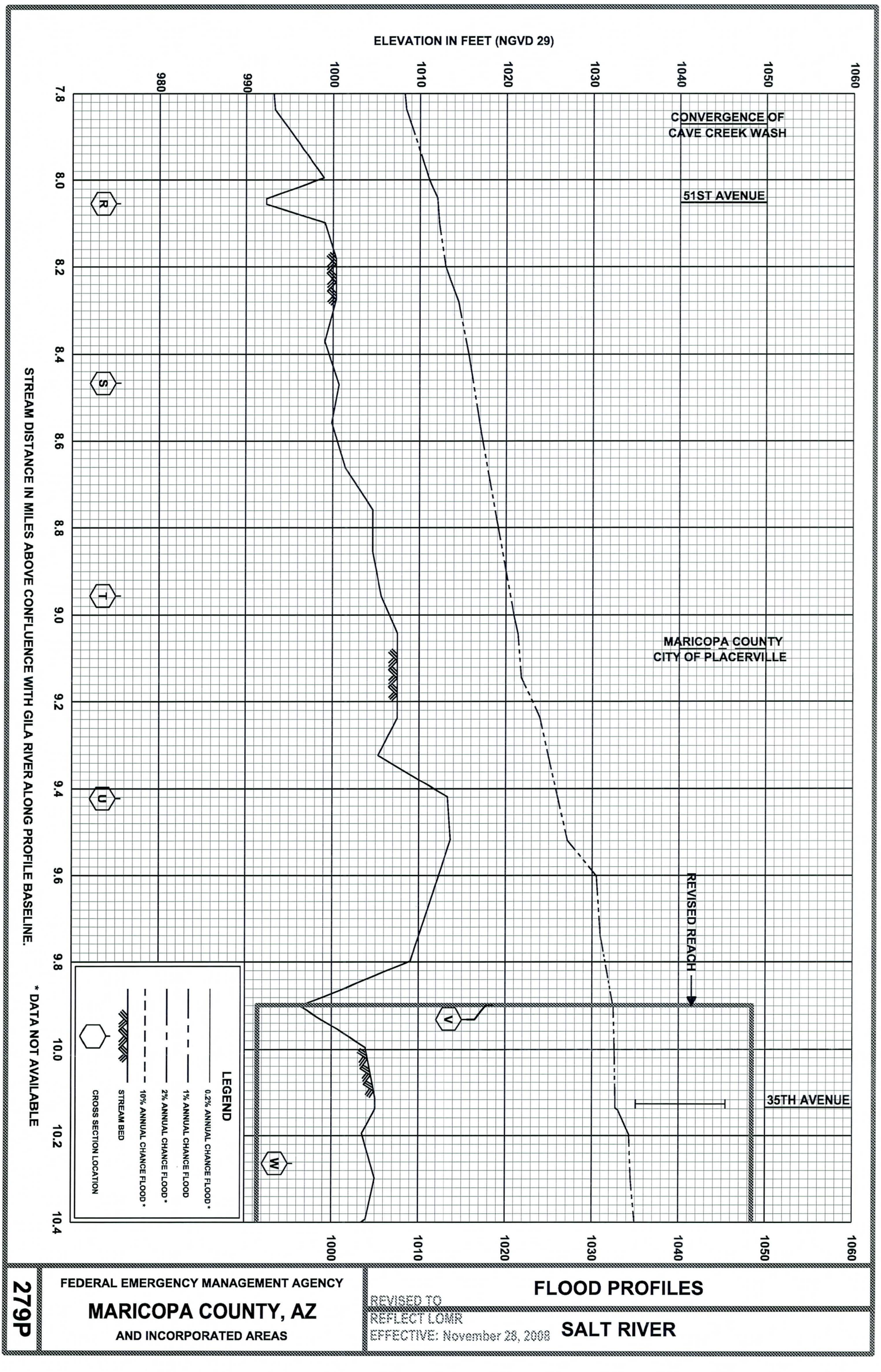
TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

MARICOPA COUNTY, AZ AND INCORPORATED AREAS

FLOODWAY DATA

SALT RIVER



FEDERAL EMERGENCY MANAGEMENT AGENCY

MARICOPA COUNTY, AZ

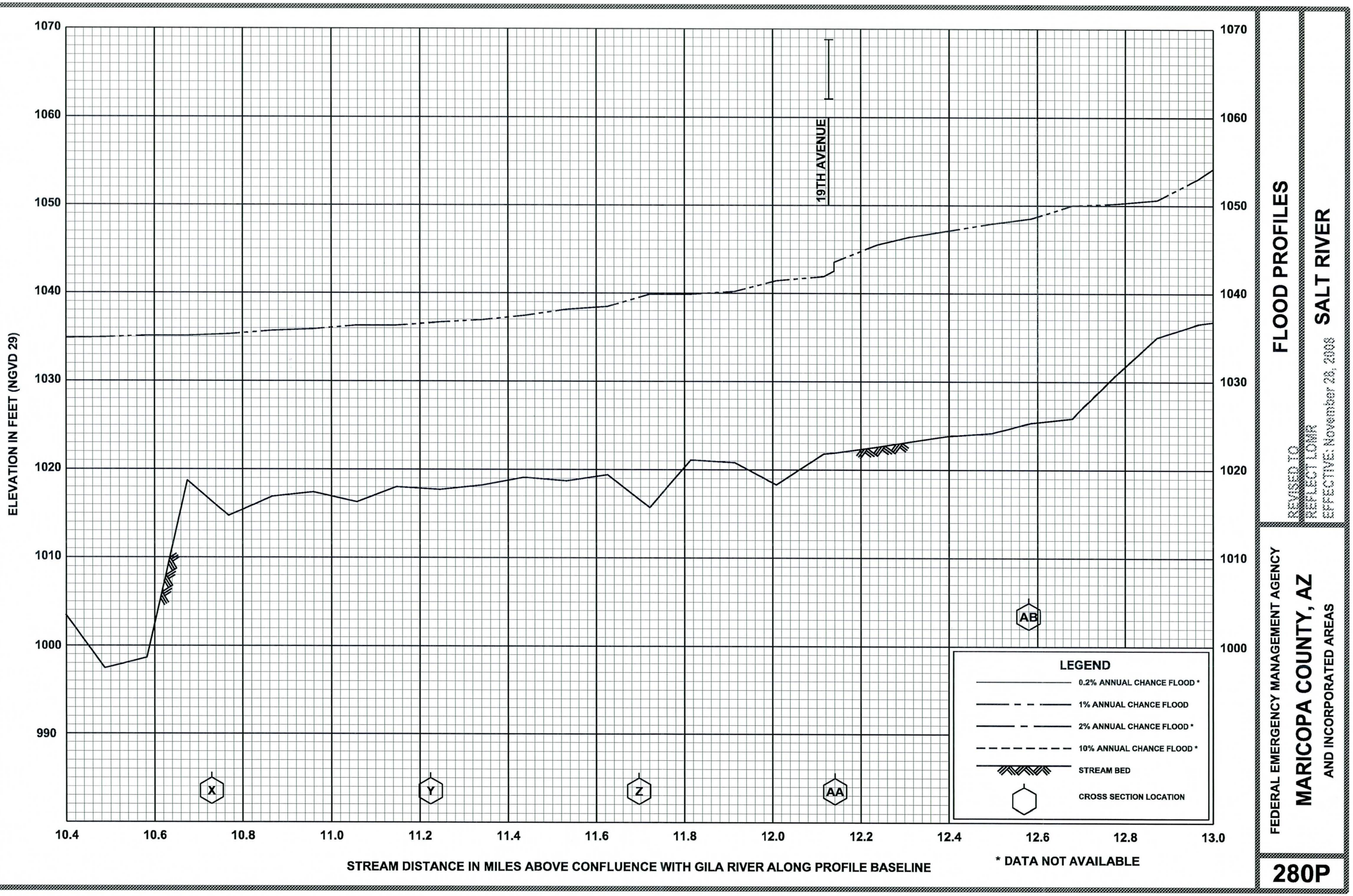
AND INCORPORATED AREAS

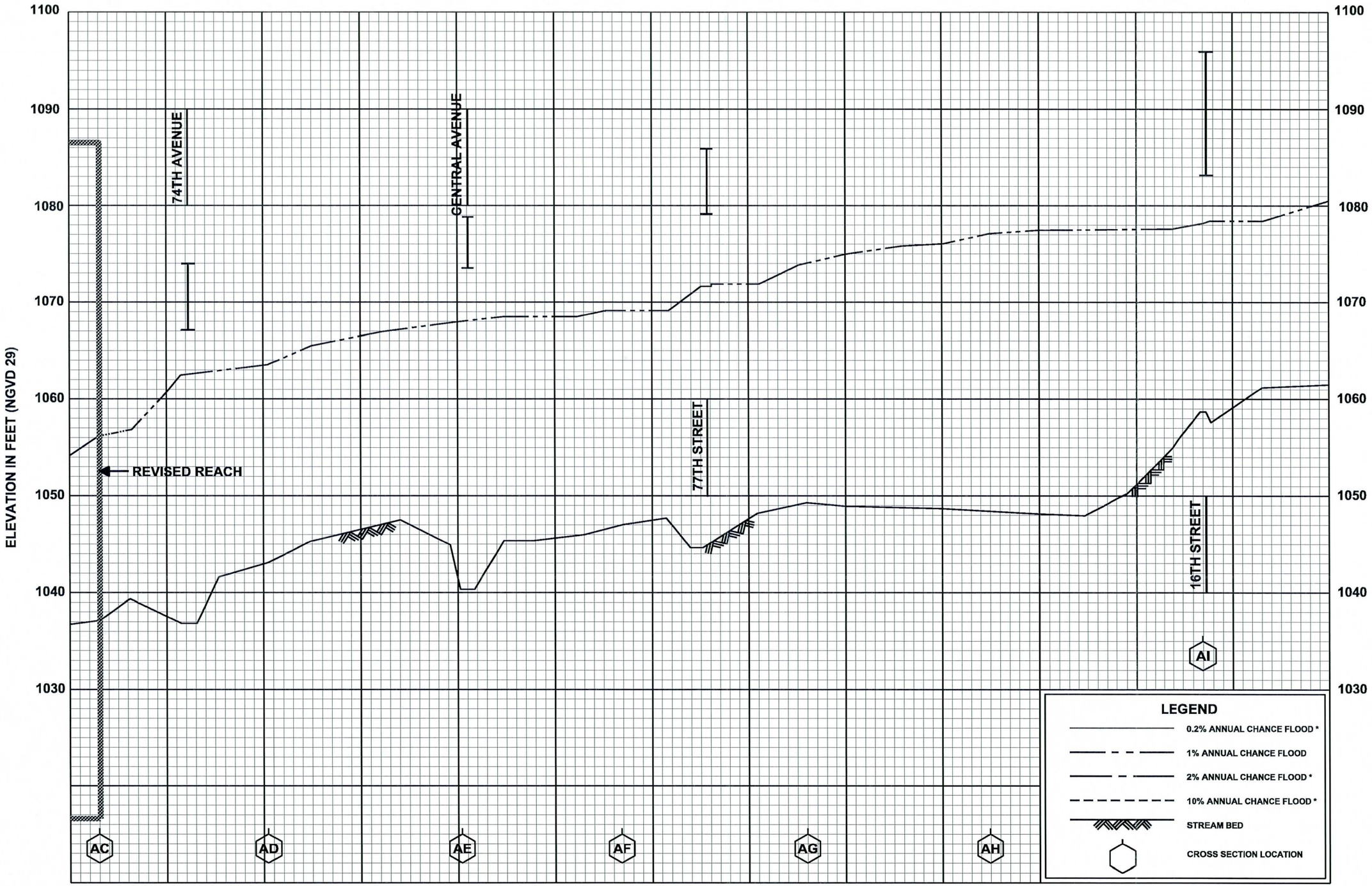
FLOOD PROFILES

REVISED TO REFLECT LOMR
EFFECTIVE: November 28, 2008

SALT RIVER

279P


1070
1060
1050
1040
1030
1020
1010
1000
990
ELEVATION IN FEET (NGVD 29)
19TH AVENUE
X
Y
Z
AA
AB
10.4
10.6
10.8
11.0
11.2
11.4
11.6
11.8
12.0
12.2
12.4
12.6
12.8
13.0
STREAM DISTANCE IN MILES ABOVE CONFLUENCE WITH GILA RIVER ALONG PROFILE BASELINE
LEGEND
0.2% ANNUAL CHANCE FLOOD *
1% ANNUAL CHANCE FLOOD
2% ANNUAL CHANCE FLOOD *
10% ANNUAL CHANCE FLOOD *
STREAM BED
CROSS SECTION LOCATION
* DATA NOT AVAILABLE
FLOOD PROFILES
SALT RIVER
REVISED TO REFLECT LOMR EFFECTIVE: November 28, 2008
FEDERAL EMERGENCY MANAGEMENT AGENCY
MARICOPA COUNTY, AZ
AND INCORPORATED AREAS
280P



FLOOD PROFILES

SALT RIVER

REVISED TO REFLECT LOMR
EFFECTIVE: November 28, 2008

FEDERAL EMERGENCY MANAGEMENT AGENCY

MARICOPA COUNTY, AZ

AND INCORPORATED AREAS

281P

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 2140G

FIRM
FLOOD INSURANCE RATE MAP

MARICOPA COUNTY,
ARIZONA
AND INCORPORATED AREAS

PANEL 2140 OF 4350
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)
CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
MARICOPA COUNTY	040037	2140	G
PHOENIX, CITY OF	040051	2140	G

REVISED TO
REFLECT LOMR
EFFECTIVE: November 28, 2008

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

MAP NUMBER
04013C2140G

EFFECTIVE DATE
SEPTEMBER 30, 2005

Federal Emergency Management Agency

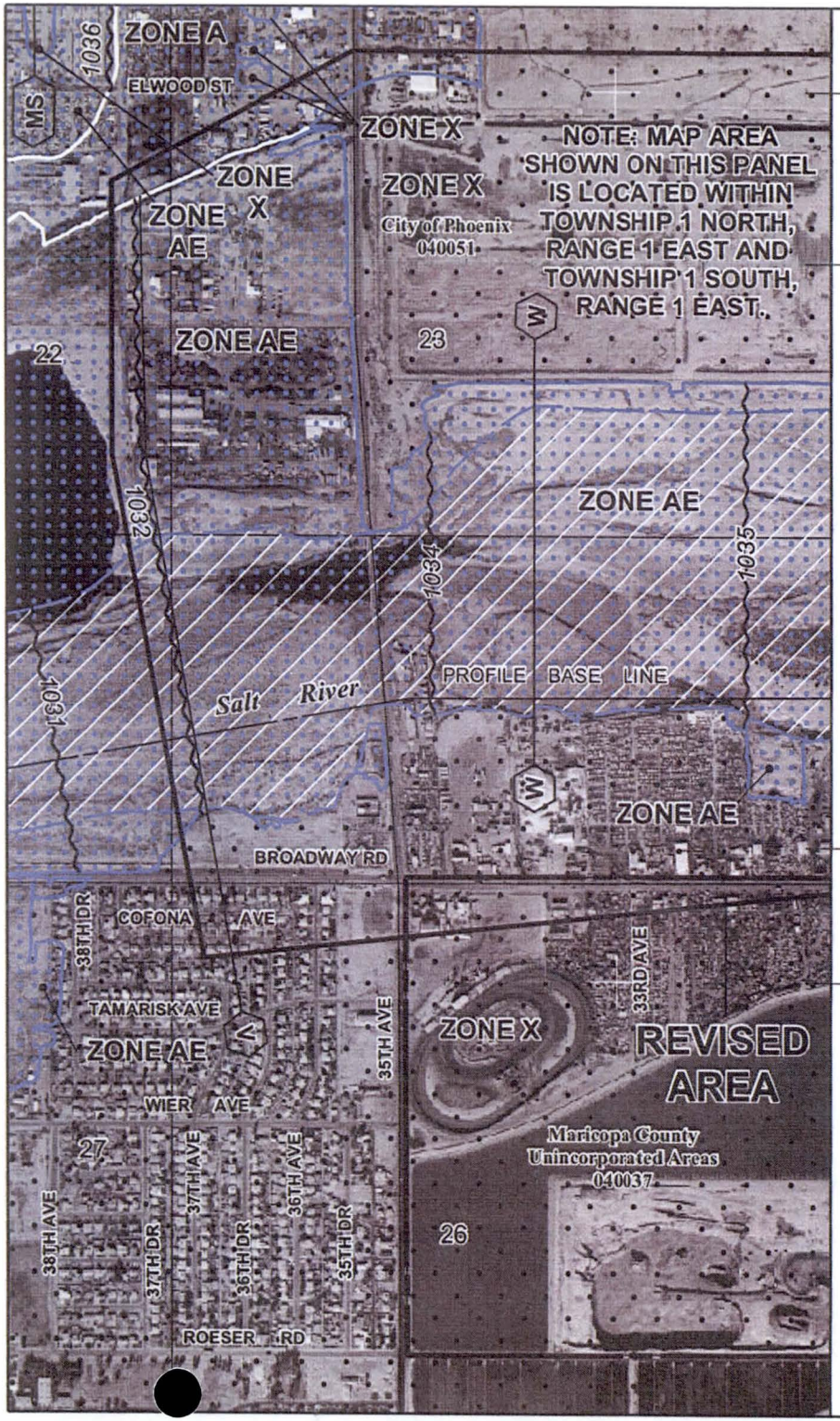
MAP SCALE 1" = 1000'
500 0 1000 FEET
300 0 300 METERS

Legend
- 1% annual chance (100-Year) Floodplain
- 1% annual chance (100-Year) Floodway
- 0.2% annual chance (500-Year) Floodplain

880000 FT

JOINS PANEL 2120

Maricopa County
Unincorporated Areas
040051



Legend

- 1% annual chance (100-Year) Floodplain
- 1% annual chance (100-Year) Floodway
- 0.2% annual chance (500-Year) Floodplain

MAP SCALE 1" = 1000'

500 0 1000 FEET

300 0 300 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 2120G

FIRM

FLOOD INSURANCE RATE MAP

MARICOPA COUNTY, ARIZONA AND INCORPORATED AREAS

PANEL 2120 OF 4350

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
MARICOPA COUNTY	040037	2120	G
PHOENIX, CITY OF	040051	2120	G

REVISED TO REFLECT LOMR EFFECTIVE: November 28, 2008

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

MAP NUMBER
04013C2120G

EFFECTIVE DATE
SEPTEMBER 30, 2005

Federal Emergency Management Agency

Federal Emergency Management Agency

Washington, D.C. 20472

LETTER OF MAP REVISION
DETERMINATION DOCUMENT

COMMUNITY AND REVISION INFORMATION		PROJECT DESCRIPTION	BASIS OF REQUEST
COMMUNITY	City of Phoenix Maricopa County Arizona	FILL	FLOODWAY HYDRAULIC ANALYSIS NEW TOPOGRAPHIC DATA
	COMMUNITY NO.: 040051		
IDENTIFIER	Shumway Property / APN# 105-69-009A	APPROXIMATE LATITUDE & LONGITUDE: 33.412, -112.148 SOURCE: USGS QUADRANGLE DATUM: NAD 83	

ANNOTATED MAPPING ENCLOSURES	ANNOTATED STUDY ENCLOSURES
TYPE: FIRM* NO.: 04013C2120 G DATE: September 30, 2005	DATE OF EFFECTIVE FLOOD INSURANCE STUDY: September 30, 2005 PROFILE(S): 279P FLOODWAY DATA TABLE: 5

Enclosures reflect changes to flooding sources affected by this revision.
* FIRM - Flood Insurance Rate Map; ** FBFM - Flood Boundary and Floodway Map; *** FHBM - Flood Hazard Boundary Map

FLOODING SOURCE(S) & REVISED REACH(ES)

Salt River - from approximately 5,280 feet upstream of 51st Avenue to approximately 7,870 feet upstream

SUMMARY OF REVISIONS

Flooding Source	Effective Flooding	Revised Flooding	Increases	Decreases
Salt River	BFEs*	BFEs	YES	YES
	Floodway	Floodway	NONE	YES
	Zone AE	Zone AE	NONE	YES

* BFEs - Base Flood Elevations

DETERMINATION

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

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Assistance Center toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMR Depot, 3601 Eisenhower Avenue, Alexandria, VA 22304. Additional Information about the NFIP is available on our website at http://www.fema.gov/nfip.

Dahlia Kasperski

Dahlia Kasperski, P.E., CFM, Program Specialist
Engineering Management Branch
Mitigation Directorate

Federal Emergency Management Agency

Washington, D.C. 20472

LETTER OF MAP REVISION
DETERMINATION DOCUMENT (CONTINUED)

OTHER COMMUNITIES AFFECTED BY THIS REVISION

CID Number: 040037 **Name:** Maricopa County, Arizona

AFFECTED MAP PANELS	AFFECTED PORTIONS OF THE FLOOD INSURANCE STUDY REPORT
TYPE: FIRM* NO.: 04013C2120 G DATE: September 30, 2005	DATE OF EFFECTIVE FLOOD INSURANCE STUDY: September 30, 2005 PROFILE(S): 279P FLOODWAY DATA TABLE: 5

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Assistance Center toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMR Depot, 3601 Eisenhower Avenue, Alexandria, VA 22304. Additional Information about the NFIP is available on our website at http://www.fema.gov/nfip.

Dahlia Kasperski

Dahlia Kasperski, P.E., CFM, Program Specialist
Engineering Management Branch
Mitigation Directorate

Federal Emergency Management Agency
Washington, D.C. 20472

LETTER OF MAP REVISION
DETERMINATION DOCUMENT (CONTINUED)

COMMUNITY INFORMATION

APPLICABLE NFIP REGULATIONS/COMMUNITY OBLIGATION

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

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

COMMUNITY REMINDERS

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

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

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

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Assistance Center toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMR Depot, 3601 Eisenhower Avenue, Alexandria, VA 22304. Additional Information about the NFIP is available on our website at http://www.fema.gov/nfip.

Dahlia Kasperski

Dahlia Kasperski, P.E., CFM, Program Specialist
Engineering Management Branch
Mitigation Directorate

Federal Emergency Management Agency

Washington, D.C. 20472

LETTER OF MAP REVISION
DETERMINATION DOCUMENT (CONTINUED)

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

Ms. Sally M. Ziolkowski
Director, Mitigation Division
Federal Emergency Management Agency, Region IX
1111 Broadway Street, Suite 1200
Oakland, CA 94607-4052
(510) 627-7175

STATUS OF THE COMMUNITY NFIP MAPS

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

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Assistance Center toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMR Depot, 3601 Eisenhower Avenue, Alexandria, VA 22304. Additional Information about the NFIP is available on our website at http://www.fema.gov/nfip.

Dahlia Kasperski

Dahlia Kasperski, P.E., CFM, Program Specialist
Engineering Management Branch
Mitigation Directorate

Federal Emergency Management Agency

Washington, D.C. 20472

LETTER OF MAP REVISION
DETERMINATION DOCUMENT (CONTINUED)

PUBLIC NOTIFICATION OF REVISION

PUBLIC NOTIFICATION

FLOODING SOURCE	LOCATION OF REFERENCED ELEVATION	BFE (FEET NGVD 29)		MAP PANEL NUMBER(S)
		EFFECTIVE	REVISED	
Salt River	Approximately 6,070 feet upstream of 51st Avenue	1,023	1,024	04013C2120 G
	Approximately 7,340 feet upstream of 51st Avenue	1,026	1,027	04013C2120 G

Within 90 days of the second publication in the local newspaper, a citizen may request that we reconsider this determination. Any request for reconsideration must be based on scientific or technical data. This revision is effective as of the date of this letter. However, until the 90-day period has elapsed, the revised BFEs presented in this LOMR may be changed.

A notice of changes will be published in the *Federal Register*. A short notice also will be published in your local newspaper on or about the dates listed below. Please refer to FEMA's website at https://www.floodmaps.fema.gov/fhm/Scripts/bfe_main.asp for a more detailed description of proposed BFE changes, which will be posted within a week of the date of this letter.

LOCAL NEWSPAPER Name: *Arizona Business Gazette*
Dates: 05/07/2009 05/14/2009

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Assistance Center toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMR Depot, 3601 Eisenhower Avenue, Alexandria, VA 22304. Additional Information about the NFIP is available on our website at http://www.fema.gov/nfip.

Dahlia Kasperski

Dahlia Kasperski, P.E., CFM, Program Specialist
Engineering Management Branch
Mitigation Directorate

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					(FEET NGVD)			
Salt River								
A	0.284	5,175	53,136	3.7	949.0/948.3[2]	948.3	949.3	1.0
B	0.661	3,770	38,392	4.7	950.8/950.2[2]	950.2	951.1	0.9
C	1.139	3,940	33,793	4.9	954.1/953.8[2]	953.8	954.2	0.4
D	1.614	3,899	36,618	4.5	956.6/956.5[2]	956.5	956.7	0.2
E	2.087	3,383	29,242	5.6	960.4	960.4	960.5	0.1
F	2.553	3,626	26,811	6.1	963.3	963.3	963.4	0.1
G	3.042	2,943	23,417	7.0	967.7	967.7	967.8	0.1
H	3.549	2,458	22,950	7.2	971.5	971.5	971.9	0.4
I	4.038	2,912	24,568	6.7	975.9	975.9	976.3	0.4
J	4.512	2,051	14,478	11.3	977.7	977.7	978.0	0.3
K	4.978	1,654	17,123	9.6	986.4	986.4	986.4	0.0
L	5.437	1,542	22,409	7.3	990.2	990.2	990.4	0.2
M	5.911	1,563	22,084	7.4	993.6	993.6	994.0	0.4
N	6.313	2,402	25,689	6.5	995.1	995.1	995.8	0.7
O	6.787	2,542	21,235	7.8	999.8	999.8	1,000.7	0.9
P	7.262	2,353	27,986	5.9	1,003.3	1,003.3	1,004.3	1.0
Q	7.725	1,735	17,441	9.5	1,007.6	1,007.6	1,008.3	0.7
R	8.054	1,579	22,816	7.3	1,012.1	1,012.1	1,012.3	0.2
S	8.468	3,033	25,411	6.5	1,016.4	1,016.4	1,016.6	0.2
T	8.954	2,286	19,622	8.5	1,020.4	1,020.4	1,020.5	0.1
U	9.323	1,549	18,880	8.8	1,026.4	1,026.4	1,026.4	0.0
V	9.896	1,593	18,829	8.8	1,032.0	1,032.0	1,032.3	0.3
W	10.263	1,875	25,614	6.5	1,035.9	1,035.9	1,036.1	0.2
X	10.736	1,980	31,047	5.4	1,037.4	1,037.4	1,037.7	0.3
Y	11.211	1,411	20,957	7.9	1,038.3	1,038.3	1,038.3	0.0
Z	11.687	1,112	21,561	7.7	1,040.6	1,040.6	1,041.3	0.7

Revised Data

[1]Miles above confluence with Gila River [2]River side/land side

TABLE 5

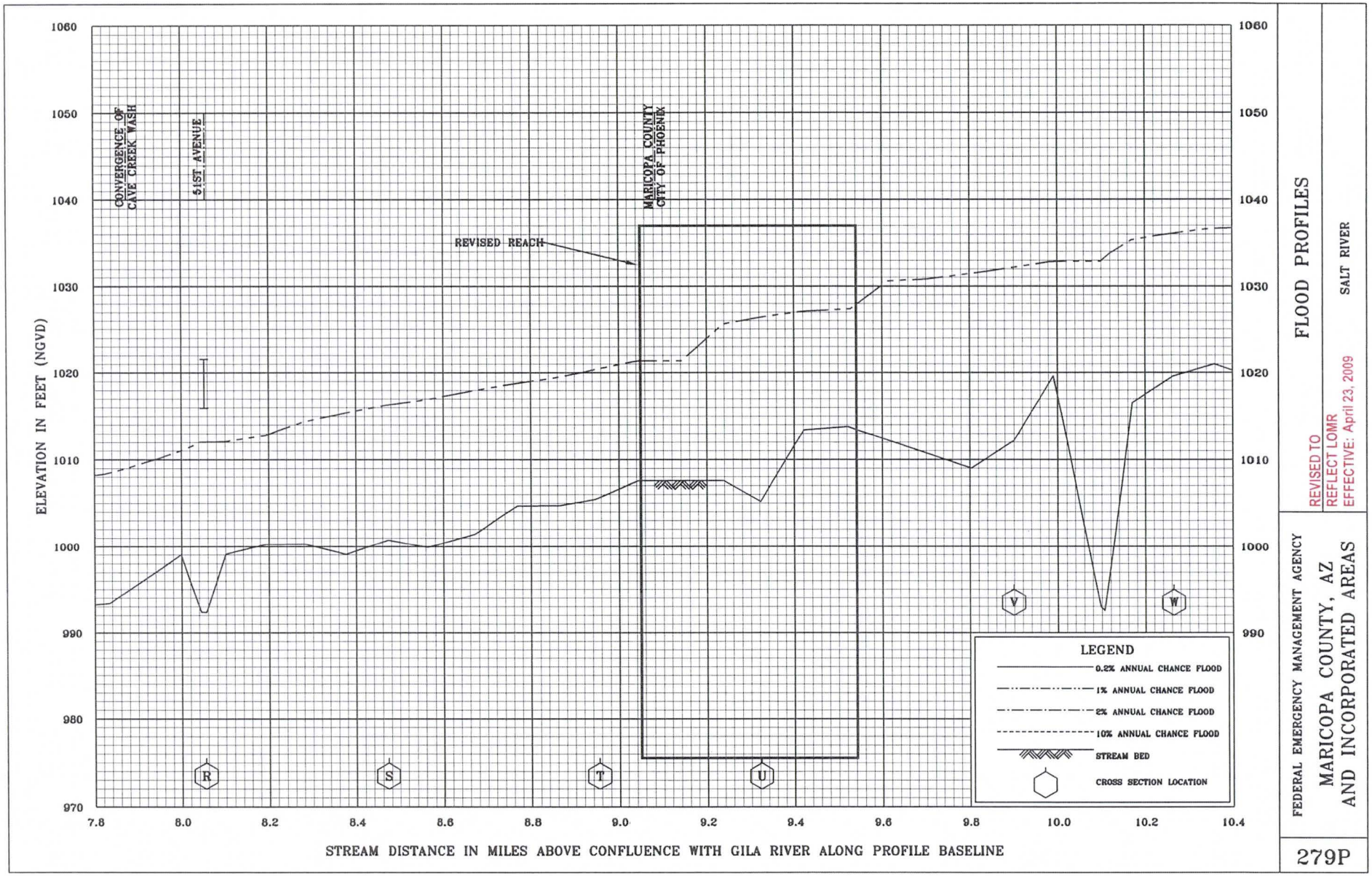
FEDERAL EMERGENCY MANAGEMENT AGENCY

MARICOPA COUNTY, AZ AND INCORPORATED AREAS

FLOODWAY DATA

REVISED TO REFLECT LOMR EFFECTIVE: April 23, 2009

SALT RIVER



FLOOD PROFILES

REVISED TO REFLECT LOMR EFFECTIVE: April 23, 2009

SALT RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

MARICOPA COUNTY, AZ AND INCORPORATED AREAS

279P

Legend

1% annual chance (100-Year) Floodplain

1% annual chance (100-Year) Floodway

0.2% annual chance (500-Year) Floodplain

MAP SCALE 1" = 1000'

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

MARICOPA COUNTY, ARIZONA AND INCORPORATED AREAS

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

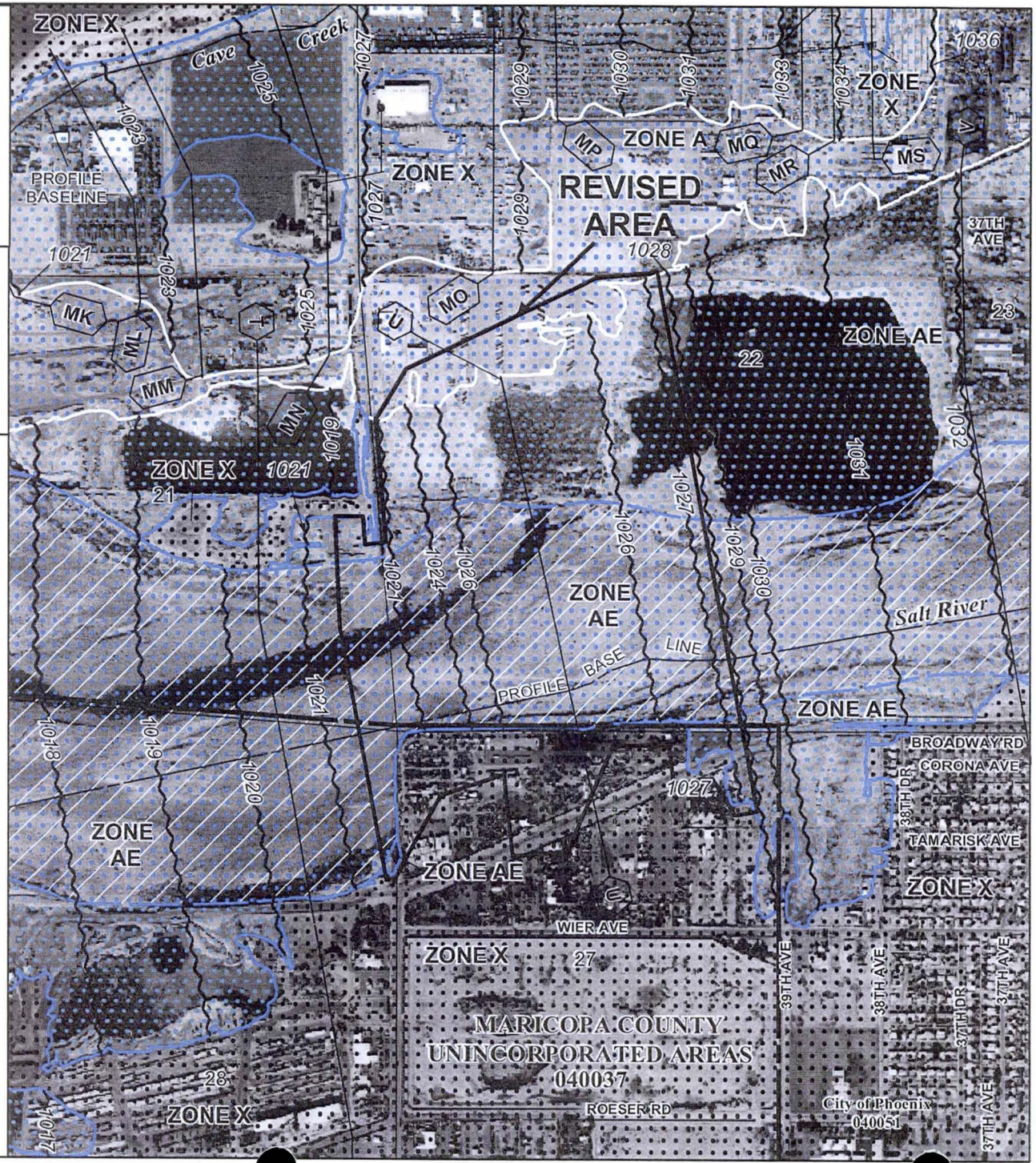
CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
MARICOPA COUNTY	040037	2120	G
PHOENIX, CITY OF	040051	2120	G

REVISED TO REFLECT LOMR EFFECTIVE: April 23, 2009

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

Federal Emergency Management Agency



APPENDIX C

DUPLICATE EFFECTIVE MODEL

HEC-RAS Plan: DupEff River: 1 Reach: 1

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
1	214.14	PF#1	169000.00	1048.70	1075.50	1062.66	1077.01	0.000804	9.84	17180.89	1312.52	0.36
1	214.14	PF#2	169000.00	1048.70	1075.51	1062.66	1077.01	0.000803	9.83	17184.88	726.86	0.36
1	214.04	PF#1	169000.00	1048.80	1075.04	1062.64	1076.58	0.000846	9.95	16977.45	813.60	0.36
1	214.04	PF#2	169000.00	1048.80	1075.05	1062.64	1076.59	0.000845	9.95	16981.83	733.89	0.36
1	213.95	PF#1	169000.00	1049.30	1074.16	1063.67	1076.05	0.001218	11.04	15307.12	777.40	0.43
1	213.95	PF#2	169000.00	1049.30	1074.16	1063.67	1076.06	0.001216	11.04	15312.49	745.19	0.43
1	213.85	PF#1	169000.00	1048.10	1071.66	1065.14	1075.08	0.002230	14.98	11764.97	1017.61	0.58
1	213.85	PF#2	169000.00	1048.10	1071.66	1065.14	1075.09	0.002229	14.98	11769.51	702.59	0.58
1	213.75	PF#1	169000.00	1044.60	1071.97	1060.91	1073.93	0.000919	11.25	15022.46	656.45	0.41
1	213.75	PF#2	169000.00	1044.60	1071.98	1060.91	1073.94	0.000918	11.25	15027.91	656.35	0.41
1	213.745		Bridge									
1	213.74	PF#1	169000.00	1044.60	1071.66	1060.91	1073.68	0.000958	11.40	14818.63	654.76	0.42
1	213.74	PF#2	169000.00	1044.60	1071.67	1060.91	1073.69	0.000957	11.40	14824.30	654.73	0.42
1	213.66	PF#1	169000.00	1047.60	1069.25	1063.62	1072.99	0.002199	15.51	10898.94	586.13	0.62
1	213.66	PF#2	169000.00	1047.60	1069.27	1063.62	1073.00	0.002194	15.50	10906.67	565.99	0.62
1	213.57	PF#1	169000.00	1046.70	1069.19	1063.08	1071.61	0.001831	12.49	13535.60	1275.10	0.55
1	213.57	PF#2	169000.00	1046.70	1069.20	1063.08	1071.62	0.001827	12.47	13548.71	852.16	0.55
1	213.47	PF#1	169000.00	1045.80	1068.60	1061.42	1070.60	0.001694	11.35	14886.30	1424.00	0.52
1	213.47	PF#2	169000.00	1045.80	1068.62	1061.42	1070.62	0.001691	11.34	14903.79	1023.12	0.52
1	213.38	PF#1	169000.00	1045.40	1068.60	1059.34	1069.81	0.000809	8.83	19139.19	1251.70	0.37
1	213.38	PF#2	169000.00	1045.40	1068.61	1059.34	1069.82	0.000810	8.82	19155.73	1101.75	0.37
1	213.33	PF#1	169000.00	1045.40	1068.57	1057.70	1069.53	0.000606	7.87	21480.53	1371.95	0.33
1	213.33	PF#2	169000.00	1045.40	1068.58	1057.70	1069.54	0.000608	7.86	21497.32	1185.62	0.33
1	213.26	PF#1	169000.00	1040.40	1068.16	1055.61	1069.32	0.000568	8.67	19493.06	881.25	0.32
1	213.26	PF#2	169000.00	1040.40	1068.17	1055.61	1069.34	0.000567	8.66	19505.43	881.21	0.32
1	213.255		Bridge									
1	213.25	PF#1	169000.00	1040.40	1067.95	1055.61	1069.14	0.000585	8.75	19310.07	880.24	0.33
1	213.25	PF#2	169000.00	1040.40	1067.96	1055.61	1069.15	0.000584	8.75	19322.76	880.24	0.33
1	213.21	PF#1	166000.00	1044.90	1067.99	1055.88	1069.03	0.000510	8.17	20358.92	1540.79	0.31
1	213.21	PF#2	166000.00	1044.90	1068.00	1055.88	1069.04	0.000528	8.17	20315.02	928.20	0.31
1	213.11	PF#1	166000.00	1047.60	1067.16	1058.35	1068.63	0.000913	9.73	17066.41	927.80	0.40
1	213.11	PF#2	166000.00	1047.60	1067.16	1058.35	1068.63	0.000912	9.72	17072.18	927.79	0.40
1	213.03	PF#1	166000.00	1046.70	1066.57	1058.30	1068.17	0.001032	10.14	16391.47	965.60	0.42
1	213.03	PF#2	166000.00	1046.70	1066.58	1058.30	1068.17	0.001031	10.13	16382.68	919.76	0.42
1	212.93	PF#1	166000.00	1045.40	1065.48	1058.04	1067.55	0.001316	11.53	14402.09	850.19	0.48
1	212.93	PF#2	166000.00	1045.40	1065.49	1058.04	1067.55	0.001314	11.52	14408.82	798.99	0.48
1	212.84	PF#1	166000.00	1043.10	1063.54	1057.57	1066.65	0.001930	14.14	11737.26	635.75	0.58
1	212.84	PF#2	166000.00	1043.10	1063.56	1057.57	1066.66	0.001926	14.13	11745.09	635.75	0.58
1	212.74	PF#1	166000.00	1041.60	1063.06	1055.53	1065.57	0.001465	12.71	13064.60	721.72	0.51
1	212.74	PF#2	166000.00	1041.60	1063.08	1055.53	1065.58	0.001462	12.70	13074.10	676.59	0.51
1	212.68	PF#1	166000.00	1036.90	1063.02	1052.69	1065.16	0.001030	11.74	14139.91	629.02	0.44
1	212.68	PF#2	166000.00	1036.90	1063.04	1052.69	1065.17	0.001028	11.73	14148.66	629.03	0.44
1	212.675		Bridge									
1	212.67	PF#1	166000.00	1036.90	1062.53	1052.69	1064.77	0.001102	12.00	13830.37	626.50	0.45
1	212.67	PF#2	166000.00	1036.90	1062.54	1052.69	1064.77	0.001101	12.00	13834.12	626.51	0.45
1	212.56	PF#1	166000.00	1039.30	1056.87	1055.74	1063.23	0.004887	20.23	8207.39	521.49	0.90
1	212.56	PF#2	166000.00	1039.30	1056.98	1055.74	1063.25	0.004781	20.09	8263.99	521.09	0.89
1	212.46	PF#1	166000.00	1037.20	1056.23	1052.77	1060.78	0.003034	17.11	9703.67	1555.15	0.72
1	212.46	PF#2	166000.00	1037.20	1056.29	1052.77	1060.80	0.003114	17.05	9738.10	557.66	0.72

HEC-RAS Plan: DupEff River: 1 Reach: 1 (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
1	212.37	PF#1	166000.00	1036.60	1053.09	1051.73	1058.81	0.004658	19.19	8651.10	573.58	0.87
1	212.37	PF#2	166000.00	1036.60	1053.10	1051.73	1058.81	0.004647	19.17	8657.61	573.63	0.87
1	212.27	PF#1	166000.00	1035.10	1050.68	1049.57	1056.35	0.005222	19.10	8689.03	2801.44	0.89
1	212.27	PF#2	166000.00	1035.10	1050.71	1049.57	1056.36	0.005192	19.07	8704.85	605.70	0.89
1	212.18	PF#1	166000.00	1030.80	1050.27	1045.89	1053.95	0.002685	15.41	10771.28	2341.16	0.66
1	212.18	PF#2	166000.00	1030.80	1050.30	1045.89	1053.97	0.002669	15.38	10791.50	627.68	0.65
1	212.08	PF#1	166000.00	1025.90	1050.06	1041.45	1052.68	0.001412	12.99	12782.71	2180.90	0.49
1	212.08	PF#2	166000.00	1025.90	1050.09	1041.45	1052.70	0.001405	12.97	12803.52	589.77	0.49
1	211.99	PF#1	166000.00	1025.39	1048.57	1041.17	1051.79	0.001817	14.39	11535.15	1310.55	0.55
1	211.99	PF#2	166000.00	1025.39	1048.62	1041.17	1051.82	0.001806	14.36	11560.38	549.74	0.55
1	211.89	PF#1	166000.00	1024.19	1047.95	1039.97	1050.86	0.001595	13.69	12125.97	564.78	0.52
1	211.89	PF#2	166000.00	1024.19	1048.01	1039.97	1050.90	0.001583	13.66	12154.99	564.94	0.52
1	211.79	PF#1	166000.00	1023.84	1047.10	1039.26	1050.02	0.001613	13.71	12111.00	1186.74	0.52
1	211.79	PF#2	166000.00	1023.84	1047.16	1039.26	1050.06	0.001599	13.67	12145.65	567.77	0.52
1	211.71	PF#1	166000.00	1023.19	1046.38	1038.56	1049.29	0.001615	13.70	12118.89	637.47	0.52
1	211.71	PF#2	166000.00	1023.19	1046.45	1038.56	1049.34	0.001599	13.65	12158.51	569.33	0.52
1	211.64	PF#1	166000.00	1022.58	1045.49	1038.24	1048.61	0.001773	14.16	11720.96	835.81	0.55
1	211.64	PF#2	166000.00	1022.58	1045.57	1038.24	1048.66	0.001751	14.11	11767.87	562.02	0.54
1	211.54	PF#1	166000.00	1021.90	1043.53	1038.07	1047.48	0.002272	15.95	10410.75	525.50	0.63
1	211.54	PF#2	166000.00	1021.90	1043.66	1038.07	1047.56	0.002226	15.84	10478.70	525.86	0.63
1	211.525		Bridge									
1	211.51	PF#1	166000.00	1021.80	1041.88	1037.98	1046.51	0.002923	17.26	9616.05	521.31	0.71
1	211.51	PF#2	166000.00	1021.80	1042.12	1037.98	1046.63	0.002807	17.05	9738.69	521.98	0.70
1	211.41	PF#1	166000.00	1018.30	1041.42		1044.81	0.001948	14.79	11221.50	565.86	0.59
1	211.41	PF#2	166000.00	1018.30	1041.69		1044.99	0.001869	14.59	11375.19	567.44	0.57
1	211.31	PF#1	166000.00	1020.80	1040.20	1037.24	1043.59	0.003137	14.78	11234.25	821.06	0.70
1	211.31	PF#2	166000.00	1020.80	1040.63	1037.24	1043.81	0.002845	14.33	11585.76	823.96	0.67
1	211.21	PF#1	166000.00	1021.10	1039.45	1035.55	1041.89	0.002343	12.54	13237.48	989.51	0.60
1	211.21	PF#2	166000.00	1021.10	1040.04	1035.55	1042.28	0.002037	12.01	13818.43	991.82	0.57
1	211.12	PF#1	166000.00	1015.70	1039.87	1029.88	1040.93	0.000644	8.29	20026.95	1060.56	0.34
1	211.12	PF#2	166000.00	1015.70	1040.41	1029.88	1041.42	0.000587	8.06	20608.32	1081.14	0.32
1	211.02	PF#1	166000.00	1019.40	1038.44	1032.11	1040.38	0.001433	11.22	15256.11	1310.75	0.49
1	211.02	PF#2	166000.00	1019.40	1039.06	1032.12	1040.91	0.001298	10.92	15277.02	1005.42	0.47
1	210.93	PF#1	166000.00	1018.70	1038.11	1034.18	1039.54	0.001361	10.24	19460.52	2668.95	0.47
1	210.93	PF#2	166000.00	1018.70	1038.16	1033.38	1040.16	0.001720	11.53	15120.02	1173.11	0.53
1	210.83	PF#1	166000.00	1019.10	1037.40	1032.21	1038.86	0.001318	10.23	19536.87	2260.41	0.46
1	210.83	PF#2	166000.00	1019.10	1037.36	1031.99	1039.30	0.001616	11.31	15485.58	1303.30	0.51
1	210.74	PF#1	166000.00	1018.20	1036.90	1029.79	1038.25	0.001002	9.51	19824.06	2325.61	0.41
1	210.74	PF#2	166000.00	1018.20	1037.01	1029.51	1038.51	0.001066	9.85	17018.50	1365.70	0.42
1	210.64	PF#1	166000.00	1017.70	1036.64	1029.00	1037.70	0.000835	8.61	22697.83	2997.54	0.37
1	210.64	PF#2	166000.00	1017.70	1036.65	1029.00	1037.94	0.000956	9.21	19007.99	1479.19	0.40
1	210.55	PF#1	166000.00	1018.00	1035.92	1028.55	1037.21	0.001015	9.17	19327.74	2363.76	0.41
1	210.55	PF#2	166000.00	1018.00	1036.18	1028.55	1037.43	0.000970	9.04	19351.21	1743.43	0.40
1	210.46	PF#1	166000.00	1016.30	1036.30	1025.05	1036.70	0.000315	5.06	32809.68	2068.39	0.21
1	210.46	PF#2	166000.00	1016.30	1036.55	1025.05	1036.94	0.000304	4.99	33290.61	1905.27	0.21
1	210.36	PF#1	166000.00	1017.40	1035.87	1027.55	1036.46	0.000542	6.21	26745.71	1908.19	0.29
1	210.36	PF#2	166000.00	1017.40	1036.14	1027.55	1036.72	0.000509	6.09	27269.74	1909.31	0.28
1	210.26	PF#1	166000.00	1016.90	1035.68	1026.47	1036.19	0.000463	5.72	29013.43	1943.97	0.26
1	210.26	PF#2	166000.00	1016.90	1035.97	1026.47	1036.46	0.000435	5.61	29570.83	1945.53	0.25
1	210.17	PF#1	166000.00	1014.70	1035.29	1027.95	1035.91	0.000609	6.31	26319.87	2187.11	0.30

HEC-RAS Plan: DupEff River: 1 Reach: 1 (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
1	210.17	PF#2	166000.00	1014.70	1035.61	1027.95	1036.20	0.000565	6.16	26940.91	1975.40	0.29
1	210.07	PF#1	166000.00	1018.70	1035.08	1026.32	1035.59	0.000543	5.78	29128.99	2347.69	0.26
1	210.07	PF#2	166000.00	1018.70	1035.40	1026.28	1035.90	0.000526	5.74	29207.43	2015.00	0.26
1	209.98	PF#1	166000.00	998.62	1035.11	1019.92	1035.39	0.000164	4.32	39949.28	2495.85	0.17
1	209.98	PF#2	166000.00	998.62	1035.39	1019.88	1035.70	0.000177	4.49	36985.45	1842.97	0.18
1	209.88	PF#1	166000.00	997.42	1034.93	1018.36	1035.29	0.000201	4.89	34725.63	1828.99	0.20
1	209.88	PF#2	166000.00	997.42	1035.19	1018.32	1035.60	0.000216	5.10	32558.83	1650.94	0.20
1	209.79	PF#1	166000.00	1003.93	1034.85	1019.46	1035.18	0.000207	4.68	35815.89	2274.68	0.19
1	209.79	PF#2	166000.00	1003.93	1035.09	1019.65	1035.48	0.000234	4.97	33396.39	1686.12	0.20
1	209.69	PF#1	166000.00	1004.96	1034.41	1021.44	1035.00	0.000504	6.17	26927.41	2254.04	0.28
1	209.69	PF#2	166000.00	1004.96	1034.58	1021.87	1035.27	0.000612	6.67	24896.48	1666.72	0.30
1	209.6	PF#1	166000.00	1003.48	1034.21	1022.79	1034.75	0.000344	6.21	28592.34	2390.29	0.25
1	209.6	PF#2	166000.00	1003.48	1034.26	1023.22	1034.98	0.000430	6.96	24606.78	1328.11	0.28
1	209.54	PF#1	166000.00	1005.00	1032.94	1026.10	1034.51	0.000808	12.15	18920.65	1093.87	0.41
1	209.54	PF#2	166000.00	1005.00	1033.17	1026.10	1034.73	0.000796	12.13	18832.48	1050.00	0.40
1	209.535		Bridge									
1	209.53	PF#1	166000.00	1005.00	1032.62	1026.09	1034.25	0.000855	12.41	18565.73	1093.87	0.42
1	209.53	PF#2	166000.00	1005.00	1032.84	1026.10	1034.48	0.000840	12.37	18495.38	1050.00	0.41
1	209.42	PF#1	166000.00	1003.87	1032.51	1024.61	1033.34	0.000757	7.34	22651.20	3449.86	0.35
1	209.42	PF#2	166000.00	1003.87	1032.77	1024.61	1033.57	0.000713	7.20	23049.24	1636.60	0.34
1	209.33	PF#1	166000.00	996.31	1032.38	1021.18	1032.99	0.000445	6.32	26675.06	6734.89	0.27
1	209.33	PF#2	166000.00	996.31	1032.63	1021.18	1033.24	0.000432	6.26	26537.57	1585.47	0.27
1	209.24	PF#1	166000.00	1008.90	1031.35	1026.11	1032.58	0.001239	9.36	20160.96	3668.36	0.44
1	209.24	PF#2	166000.00	1008.90	1031.34	1026.15	1032.80	0.001403	9.95	18055.99	1637.72	0.47
1	209.14	PF#1	166000.00	1010.60	1030.69	1025.89	1031.94	0.001275	9.50	20412.75	3553.73	0.45
1	209.14	PF#2	166000.00	1010.60	1030.60	1026.05	1032.06	0.001458	10.11	18577.89	1899.79	0.48
1	209.04	PF#1	166000.00	1012.20	1030.45	1023.93	1031.32	0.000816	8.02	24080.08	4633.32	0.37
1	209.04	PF#2	166000.00	1012.20	1030.39	1023.99	1031.35	0.000885	8.33	22691.72	1980.00	0.38
1	208.95	PF#1	166000.00	1013.80	1027.37	1027.01	1030.35	0.003774	14.37	13413.33	3710.50	0.77
1	208.95	PF#2	166000.00	1013.80	1027.38	1027.00	1030.36	0.003762	14.35	13433.12	2058.96	0.77
1	208.85	PF#1	166000.00	1013.40	1027.11	1024.13	1028.51	0.002038	9.75	17958.04	3049.03	0.54
1	208.85	PF#2	166000.00	1013.40	1027.11	1024.11	1028.51	0.002037	9.75	17971.29	1945.66	0.54
1	208.75	PF#1	166000.00	1005.20	1026.41	1021.31	1027.61	0.001289	8.80	18870.67	2854.08	0.44
1	208.75	PF#2	166000.00	1005.20	1026.42	1021.31	1027.62	0.001294	8.79	18880.31	1548.90	0.44
1	208.67	PF#1	166000.00	1007.60	1025.63	1021.02	1026.96	0.001614	9.25	17964.56	3257.49	0.48
1	208.67	PF#2	166000.00	1007.60	1025.64	1021.02	1026.97	0.001615	9.25	17944.12	1585.22	0.48
1	208.57	PF#1	166000.00	1007.60	1021.05	1021.05	1025.15	0.007401	16.25	10216.43	1588.16	1.00
1	208.57	PF#2	166000.00	1007.60	1021.05	1021.05	1025.15	0.007440	16.25	10216.43	1241.44	1.00
1	208.48	PF#1	166000.00	1007.60	1021.36	1017.86	1022.45	0.001742	8.36	19846.45	2170.30	0.49
1	208.48	PF#2	166000.00	1007.60	1021.38	1017.86	1022.46	0.001731	8.35	19884.46	2170.30	0.49
1	208.39	PF#1	166000.00	1005.60	1020.44	1017.33	1021.56	0.002009	8.49	19556.29	2917.06	0.51
1	208.39	PF#2	166000.00	1005.60	1020.47	1017.33	1021.58	0.001987	8.46	19622.28	2285.85	0.51
1	208.29	PF#1	166000.00	1004.70	1019.52	1016.25	1020.55	0.001814	8.14	20401.30	2550.03	0.49
1	208.29	PF#2	166000.00	1004.70	1019.57	1016.25	1020.59	0.001783	8.09	20508.57	2381.47	0.49
1	208.19	PF#1	166000.00	1004.70	1018.79	1014.91	1019.66	0.001564	7.49	22151.56	2675.20	0.46
1	208.19	PF#2	166000.00	1004.70	1018.85	1014.91	1019.71	0.001524	7.44	22325.38	2664.02	0.45
1	208.1	PF#1	166000.00	1001.40	1018.03	1014.27	1018.84	0.001569	7.22	22976.38	3169.18	0.46
1	208.1	PF#2	166000.00	1001.40	1018.12	1014.27	1018.91	0.001506	7.14	23258.76	2944.81	0.45
1	207.99	PF#1	166000.00	999.90	1016.92	1013.04	1017.87	0.001846	7.82	21224.66	3550.63	0.49
1	207.99	PF#2	166000.00	999.90	1017.08	1013.04	1018.00	0.001749	7.66	21661.21	2749.34	0.48

HEC-RAS Plan: DupEff River: 1 Reach: 1 (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
1	207.9	PF#1	166000.00	1000.80	1016.38	1012.13	1017.07	0.001248	6.69	24842.12	3677.94	0.41
1	207.9	PF#2	166000.00	1000.80	1016.58	1012.13	1017.24	0.001158	6.53	25415.12	3016.31	0.40
1	207.8	PF#1	166000.00	999.10	1015.41	1011.92	1016.32	0.001667	7.69	21970.15	4717.03	0.47
1	207.8	PF#2	166000.00	999.10	1015.66	1011.92	1016.54	0.001544	7.53	22032.87	2617.43	0.46
1	207.71	PF#1	166000.00	1000.30	1014.41	1011.60	1015.43	0.001884	8.24	20770.72	3875.76	0.50
1	207.71	PF#2	166000.00	1000.30	1014.58	1011.48	1015.67	0.001904	8.39	19789.24	2344.11	0.51
1	207.62	PF#1	166000.00	1000.20	1012.76	1010.44	1014.28	0.002780	9.99	17277.21	4261.97	0.61
1	207.62	PF#2	166000.00	1000.20	1012.98	1010.38	1014.53	0.002696	10.01	16602.68	1962.23	0.61
1	207.53	PF#1	166000.00	999.10	1012.09	1008.07	1013.25	0.001487	8.78	19697.37	4480.19	0.47
1	207.53	PF#2	166000.00	999.10	1012.25	1007.97	1013.51	0.001553	9.01	18428.21	1672.10	0.48
1	207.49	PF#1	166000.00	992.20	1012.07	1004.75	1012.92	0.000745	7.40	22425.83	3807.67	0.35
1	207.49	PF#2	166000.00	992.20	1012.33	1004.75	1013.15	0.000702	7.27	22830.88	1579.37	0.34
1	207.485		Bridge									
1	207.48	PF#1	166000.00	992.20	1011.97	1004.75	1012.83	0.000763	7.46	22259.18	3764.82	0.35
1	207.48	PF#2	166000.00	992.20	1012.22	1004.75	1013.05	0.000720	7.33	22660.16	1578.87	0.34
1	207.43	PF#1	166000.00	999.00	1010.99	1007.63	1012.48	0.002056	9.80	16943.05	3420.35	0.54
1	207.43	PF#2	166000.00	999.00	1011.34	1007.63	1012.73	0.001848	9.47	17535.23	1686.77	0.52
1	207.34	PF#1	166000.00	995.90	1009.51	1006.72	1011.35	0.002647	10.88	15262.63	3294.41	0.61
1	207.34	PF#2	166000.00	995.90	1010.15	1006.72	1011.77	0.002156	10.21	16265.80	1568.77	0.56
1	207.27	PF#1	166000.00	993.30	1008.39	1006.08	1010.28	0.002803	10.35	15197.74	2021.75	0.62
1	207.27	PF#2	166000.00	993.30	1009.39	1006.07	1010.93	0.002031	9.44	16777.84	1617.90	0.54
1	207.16	PF#1	166000.00	992.70	1007.63	1004.57	1008.85	0.001702	9.42	19339.72	2937.65	0.50
1	207.16	PF#2	166000.00	992.70	1008.33	1005.08	1009.81	0.001825	10.16	17450.59	1734.50	0.52
1	207.07	PF#1	166000.00	992.80	1004.30	1004.30	1007.37	0.005272	15.04	12709.44	2121.27	0.86
1	207.07	PF#2	166000.00	992.80	1004.74	1004.74	1008.25	0.005422	15.68	11728.65	1710.74	0.88
1	206.97	PF#1	166000.00	981.70	1003.73	995.22	1004.80	0.000773	8.53	21352.60	2153.01	0.36
1	206.97	PF#2	166000.00	981.70	1004.63	995.22	1005.77	0.000760	8.62	19950.52	1567.64	0.36
1	206.88	PF#1	166000.00	981.80	1003.59	993.27	1004.41	0.000528	7.55	24354.50	2551.40	0.31
1	206.88	PF#2	166000.00	981.80	1004.48	993.27	1005.39	0.000533	7.71	22622.29	1800.86	0.31
1	206.79	PF#1	166000.00	981.80	1003.43	992.85	1004.13	0.000488	6.93	26343.78	3026.51	0.29
1	206.79	PF#2	166000.00	981.80	1004.34	992.85	1005.10	0.000478	7.08	24760.10	1934.31	0.29
1	206.7	PF#1	166000.00	981.80	1003.32	994.04	1003.85	0.000441	6.03	29831.77	3518.68	0.27
1	206.7	PF#2	166000.00	981.80	1004.25	994.04	1004.82	0.000429	6.14	27986.52	2093.13	0.27
1	206.6	PF#1	166000.00	981.80	1002.90	996.86	1003.56	0.000710	6.91	26877.21	3305.80	0.33
1	206.6	PF#2	166000.00	981.80	1003.79	996.68	1004.54	0.000695	7.14	24927.56	2185.35	0.33
1	206.51	PF#1	166000.00	981.80	1002.02	998.52	1003.04	0.001348	8.99	22111.25	4076.37	0.45
1	206.51	PF#2	166000.00	981.80	1002.84	999.19	1004.02	0.001341	9.36	20116.29	2060.75	0.46
1	206.41	PF#1	166000.00	982.50	1001.41	997.88	1002.32	0.001436	8.71	23370.94	3862.05	0.46
1	206.41	PF#2	166000.00	982.50	1002.21	998.36	1003.30	0.001435	9.12	20569.79	2190.50	0.47
1	206.32	PF#1	166000.00	982.80	1000.76	997.04	1001.56	0.001495	8.05	24553.57	3961.10	0.46
1	206.32	PF#2	166000.00	982.80	1001.56	997.90	1002.55	0.001498	8.50	21191.37	2377.93	0.47
1	206.22	PF#1	166000.00	983.00	999.83	996.54	1000.70	0.001855	8.54	24922.30	3819.75	0.52
1	206.22	PF#2	166000.00	983.00	1000.69	996.71	1001.72	0.001734	8.70	21236.13	2441.77	0.51
1	206.13	PF#1	166000.00	984.60	998.84		999.71	0.002097	8.44	24241.50	3610.69	0.52
1	206.13	PF#2	166000.00	984.60	999.43		1000.66	0.002539	9.44	19323.79	2386.31	0.57
1	206.03	PF#1	166000.00	984.50	997.19	995.40	998.47	0.002920	10.04	20468.71	3627.33	0.61
1	206.03	PF#2	166000.00	984.50	997.37	995.41	999.15	0.003548	11.22	16111.43	2131.13	0.67
1	205.94	PF#1	166000.00	981.00	996.28	992.36	997.17	0.001782	8.09	23804.66	3972.87	0.48
1	205.94	PF#2	166000.00	981.00	996.85	992.30	997.71	0.001519	7.77	22932.78	2567.00	0.45

HEC-RAS Plan: DupEff River: 1 Reach: 1 (Continued)

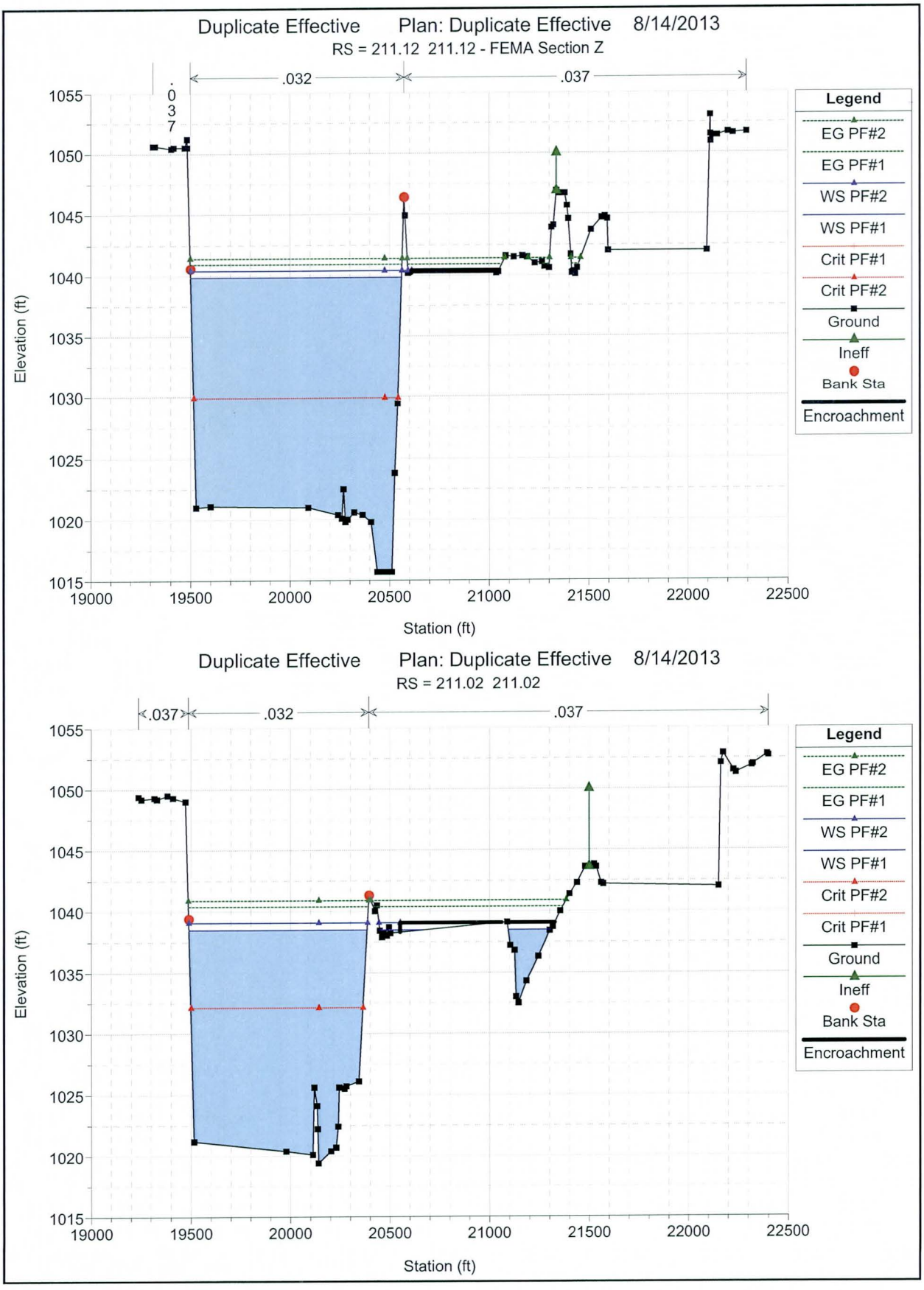
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
1	205.84	PF#1	166000.00	979.50	995.78	991.10	996.43	0.001006	6.80	27802.52	3933.88	0.38
1	205.84	PF#2	166000.00	979.50	996.39	991.10	997.06	0.000928	6.78	25657.05	2435.70	0.36
1	205.75	PF#1	166000.00	973.90	995.10	989.59	995.78	0.001766	6.71	25677.68	3323.85	0.37
1	205.75	PF#2	166000.00	973.90	995.83	989.59	996.48	0.001497	6.46	25689.44	2402.30	0.35
1	205.62	PF#1	166000.00	976.00	994.55	988.70	995.07	0.000680	5.99	30115.70	4036.31	0.31
1	205.62	PF#2	166000.00	976.00	995.25	988.65	995.85	0.000671	6.18	26878.39	2234.10	0.31
1	205.52	PF#1	166000.00	975.90	994.29	987.07	994.75	0.000496	5.67	33142.23	4244.89	0.28
1	205.52	PF#2	166000.00	975.90	994.95	987.28	995.53	0.000543	6.12	27121.18	2019.90	0.29
1	205.43	PF#1	166000.00	976.10	994.00	986.93	994.50	0.000544	6.04	31497.11	3841.68	0.29
1	205.43	PF#2	166000.00	976.10	994.53	986.96	995.24	0.000647	6.76	24572.45	1842.37	0.33
1	205.4	PF#1	164000.00	975.50	993.99	984.67	994.40	0.000362	5.41	35918.39	4097.71	0.24
1	205.4	PF#2	164000.00	975.50	994.56	984.67	995.10	0.000413	5.90	27793.38	1747.80	0.26
1	205.34	PF#1	164000.00	975.57	993.64	986.68	994.20	0.001005	6.45	29523.69	7348.85	0.30
1	205.34	PF#2	164000.00	975.57	993.98	986.65	994.85	0.001336	7.53	22084.53	1562.96	0.35
1	205.25	PF#1	164000.00	973.40	993.26	985.26	993.82	0.000623	6.64	30541.15	4512.59	0.28
1	205.25	PF#2	164000.00	973.40	993.49	985.16	994.34	0.000817	7.64	22668.13	1482.30	0.32
1	205.15	PF#1	164000.00	973.10	991.76	987.66	993.21	0.002039	10.40	19449.29	3049.28	0.49
1	205.15	PF#2	164000.00	973.10	992.25	987.65	993.69	0.001819	10.06	17454.60	1445.00	0.47
1	205.06	PF#1	164000.00	970.50	990.85	984.95	992.22	0.001875	9.62	18539.88	2210.68	0.47
1	205.06	PF#2	164000.00	970.50	991.36	984.95	992.79	0.001795	9.65	17328.48	1435.30	0.46
1	204.97	PF#1	164000.00	973.30	990.56	984.97	991.30	0.001134	7.35	24819.05	3736.09	0.36
1	204.97	PF#2	164000.00	973.30	990.76	985.05	991.87	0.001485	8.49	19457.05	1516.30	0.42
1	204.87	PF#1	164000.00	968.10	990.19	982.94	990.80	0.000767	6.60	27860.69	3635.74	0.31
1	204.87	PF#2	164000.00	968.10	990.37	982.85	991.20	0.000942	7.37	22409.55	1542.20	0.34
1	204.78	PF#1	164000.00	967.60	990.01	980.93	990.45	0.000477	5.68	31874.88	4837.51	0.25
1	204.78	PF#2	164000.00	967.60	990.13	980.78	990.77	0.000611	6.47	25928.85	1620.43	0.28
1	204.68	PF#1	164000.00	971.40	989.36	982.91	990.10	0.000903	7.28	24862.56	3375.81	0.33
1	204.68	PF#2	164000.00	971.40	989.32	982.81	990.31	0.001151	8.21	21000.50	1586.28	0.38
1	204.61	PF#1	164000.00	972.60	988.59	983.53	989.64	0.001360	8.79	20900.84	7282.60	0.41
1	204.61	PF#2	164000.00	972.60	988.62	983.47	989.78	0.001462	9.12	19542.28	1602.90	0.42
1	204.53	PF#1	164000.00	972.70	987.68	982.99	988.93	0.001814	9.22	18844.19	4061.16	0.46
1	204.53	PF#2	164000.00	972.70	987.68	982.94	989.03	0.001919	9.48	18005.97	1610.90	0.47
1	204.42	PF#1	164000.00	971.40	986.40	982.76	987.76	0.002432	9.40	17715.45	2778.70	0.51
1	204.42	PF#2	164000.00	971.40	986.38	982.73	987.81	0.002531	9.57	17129.48	1653.57	0.52
1	204.34	PF#1	164000.00	969.30	985.28	981.45	986.65	0.002470	9.39	17462.96	2452.20	0.52
1	204.34	PF#2	164000.00	969.30	985.29	981.45	986.66	0.002469	9.38	17480.30	1701.99	0.52
1	204.25	PF#1	164000.00	969.22	980.90	980.90	984.46	0.007742	15.13	10836.44	1993.93	1.00
1	204.25	PF#2	164000.00	969.22	980.89	980.89	984.46	0.007809	15.17	10810.89	1516.99	1.00
1	204.15	PF#1	164000.00	966.00	981.17	975.82	982.09	0.001058	7.72	21240.76	2149.48	0.40
1	204.15	PF#2	164000.00	966.00	981.18	975.82	982.11	0.001059	7.71	21274.63	1831.89	0.40
1	204.05	PF#1	164000.00	965.00	980.27	976.80	981.39	0.001759	8.49	19320.37	2116.76	0.50
1	204.05	PF#2	164000.00	965.00	980.29	976.80	981.41	0.001744	8.47	19370.37	2116.76	0.49
1	203.96	PF#1	164000.00	964.10	977.71	976.71	979.86	0.005220	11.77	13938.65	2225.53	0.80
1	203.96	PF#2	164000.00	964.10	977.98	976.71	979.97	0.004601	11.33	14478.25	2050.76	0.75
1	203.86	PF#1	164000.00	962.30	977.81	971.84	978.53	0.000902	6.82	24032.73	2201.58	0.36
1	203.86	PF#2	164000.00	962.30	978.06	971.84	978.75	0.000838	6.67	24588.83	2191.78	0.35
1	203.77	PF#1	164000.00	963.30	977.43	971.58	978.06	0.000873	6.37	25746.39	2518.56	0.35
1	203.77	PF#2	164000.00	963.30	977.72	971.58	978.32	0.000799	6.19	26473.99	2511.27	0.34
1	203.67	PF#1	164000.00	962.30	976.93	971.58	977.61	0.000940	6.66	25646.21	3648.91	0.37
1	203.67	PF#2	164000.00	962.30	977.23	971.58	977.89	0.000885	6.58	25407.91	2567.43	0.36

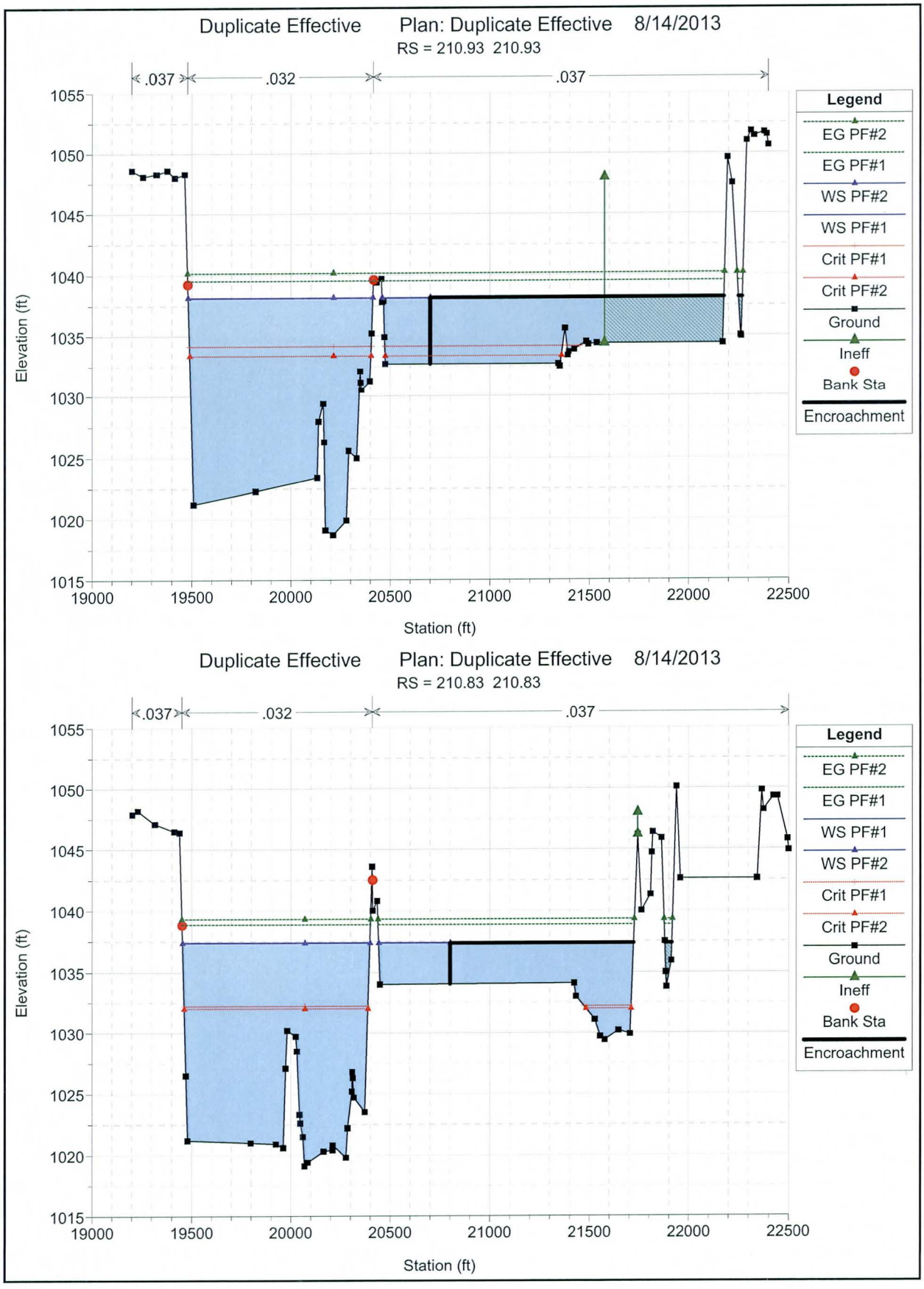
HEC-RAS Plan: DupEff River: 1 Reach: 1 (Continued)

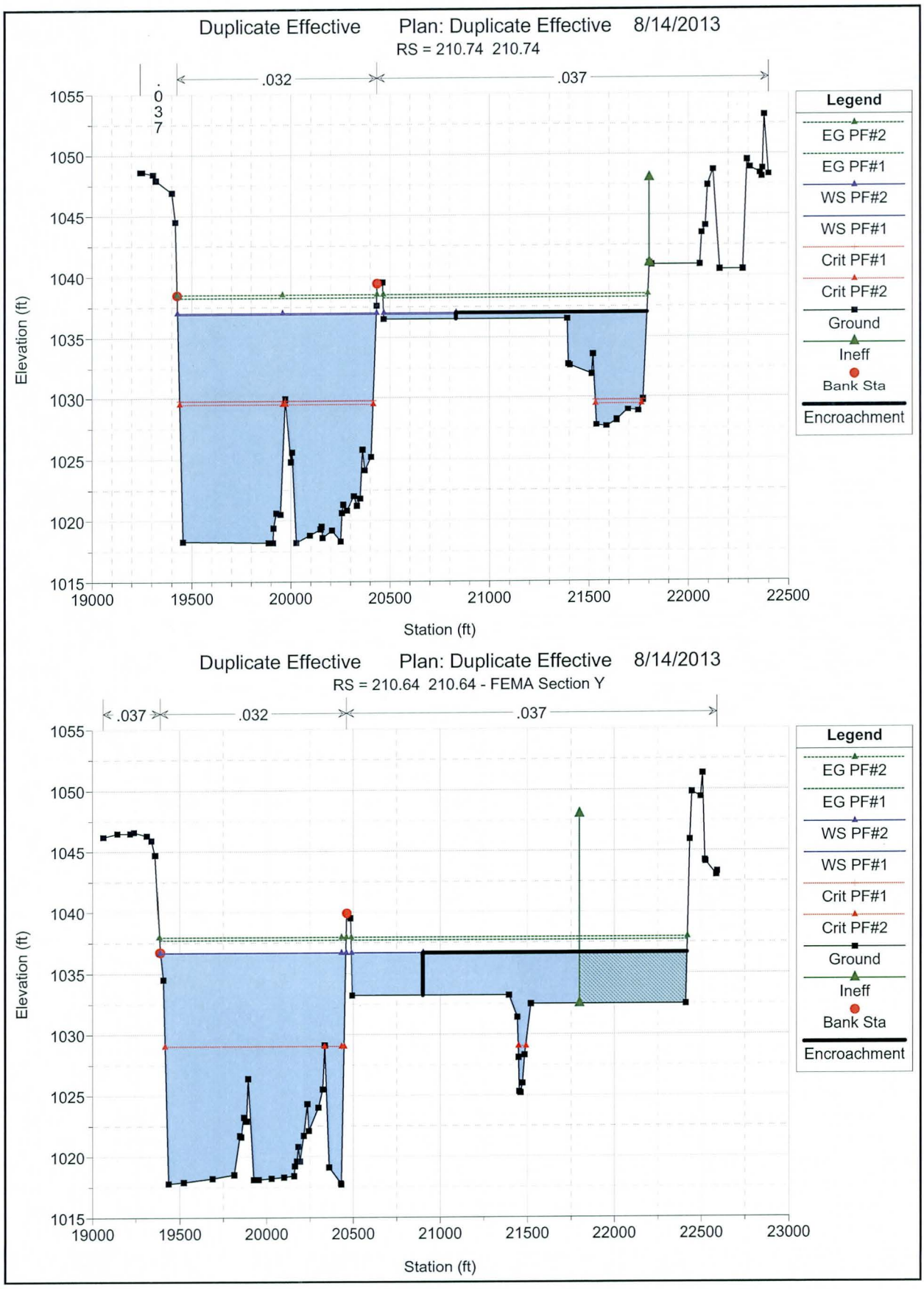
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
1	203.58	PF#1	164000.00	962.10	976.47	971.52	977.14	0.000945	6.64	25340.30	4630.96	0.37
1	203.58	PF#2	164000.00	962.10	976.81	971.52	977.46	0.000858	6.46	25597.65	2676.39	0.36
1	203.48	PF#1	164000.00	962.20	975.92	972.02	976.58	0.001248	6.66	25618.08	4863.77	0.41
1	203.48	PF#2	164000.00	962.20	976.25	971.97	976.94	0.001196	6.68	24567.80	2911.71	0.40
1	203.39	PF#1	164000.00	959.90	975.23	971.15	975.93	0.001331	6.81	24862.43	4207.76	0.42
1	203.39	PF#2	164000.00	959.90	975.62	971.10	976.32	0.001254	6.69	24520.14	2930.05	0.41
1	203.29	PF#1	164000.00	960.70	974.46	970.77	975.20	0.001572	6.98	24302.16	4967.77	0.45
1	203.29	PF#2	164000.00	960.70	974.88	970.71	975.63	0.001478	6.94	23633.34	3009.26	0.44
1	203.19	PF#1	164000.00	956.70	973.59	970.04	974.28	0.001787	6.81	25046.62	3491.38	0.42
1	203.19	PF#2	164000.00	956.70	973.95	970.04	974.74	0.001849	7.13	23041.46	2689.14	0.43
1	203.09	PF#1	164000.00	958.70	972.42	969.19	973.25	0.002112	7.51	23337.60	3213.89	0.46
1	203.09	PF#2	164000.00	958.70	972.75	968.97	973.69	0.002162	7.79	21163.56	2475.85	0.46
1	202.99	PF#1	164000.00	959.20	971.50	967.56	972.24	0.001726	7.08	24615.47	3260.60	0.42
1	202.99	PF#2	164000.00	959.20	971.87	967.53	972.66	0.001673	7.15	22949.27	2457.50	0.41
1	202.9	PF#1	164000.00	956.50	970.92	966.33	971.52	0.001285	6.37	27288.47	3419.52	0.36
1	202.9	PF#2	164000.00	956.50	971.28	966.26	971.95	0.001315	6.59	24881.66	2511.71	0.37
1	202.8	PF#1	164000.00	956.40	970.32	965.61	970.84	0.001157	5.94	29050.37	3577.40	0.34
1	202.8	PF#2	164000.00	956.40	970.64	965.52	971.25	0.001223	6.25	26258.33	2620.78	0.35
1	202.69	PF#1	164000.00	953.70	969.50	965.26	970.12	0.001416	6.45	27011.89	3716.99	0.37
1	202.69	PF#2	164000.00	953.70	969.79	965.27	970.49	0.001483	6.73	24379.59	2553.41	0.38
1	202.59	PF#1	164000.00	953.70	968.55	964.73	969.23	0.001710	6.76	25201.38	3795.64	0.40
1	202.59	PF#2	164000.00	953.70	968.77	964.70	969.56	0.001832	7.10	23099.83	2606.65	0.42
1	202.48	PF#1	164000.00	952.50	967.66	963.72	968.30	0.001617	6.64	26503.22	3830.22	0.40
1	202.48	PF#2	164000.00	952.50	967.77	963.79	968.54	0.001789	7.04	23415.23	2826.14	0.42
1	202.37	PF#1	164000.00	954.60	966.79	962.77	967.38	0.001487	6.30	27725.82	4026.46	0.39
1	202.37	PF#2	164000.00	954.60	966.82	963.06	967.52	0.001673	6.70	24843.07	3165.40	0.41
1	202.29	PF#1	164000.00	955.50	966.51	961.30	966.88	0.000809	4.90	34227.32	4327.50	0.29
1	202.29	PF#2	164000.00	955.50	966.59	961.30	966.97	0.000812	4.93	33283.39	3605.60	0.29
1	202.18	PF#1	164000.00	950.00	965.70	961.75	966.23	0.001545	5.88	28639.20	4356.13	0.38
1	202.18	PF#2	164000.00	950.00	965.77	961.75	966.31	0.001559	5.94	27619.54	3692.06	0.38
1	202.09	PF#1	164000.00	950.00	964.09	961.98	965.01	0.003848	7.74	21594.75	4052.05	0.57
1	202.09	PF#2	164000.00	950.00	964.16	961.95	965.09	0.003803	7.75	21163.39	3682.20	0.57
1	201.99	PF#1	164000.00	948.70	963.29	958.65	963.87	0.001252	6.13	27234.15	5331.46	0.38
1	201.99	PF#2	164000.00	948.70	963.38	958.65	963.96	0.001241	6.12	26811.01	3219.77	0.37
1	201.9	PF#1	164000.00	947.20	962.94	957.27	963.35	0.000785	5.15	31873.70	5241.54	0.31
1	201.9	PF#2	164000.00	947.20	963.05	957.27	963.45	0.000756	5.08	32284.29	3830.97	0.31
1	201.81	PF#1	164000.00	946.00	962.64	955.84	962.99	0.000619	4.79	34251.95	5916.44	0.28
1	201.81	PF#2	164000.00	946.00	962.75	955.84	963.10	0.000597	4.73	34684.20	3650.46	0.27
1	201.71	PF#1	164000.00	946.00	961.87	958.21	962.46	0.001826	6.22	26658.13	8308.19	0.40
1	201.71	PF#2	164000.00	946.00	961.98	958.21	962.58	0.001807	6.24	26277.29	3415.69	0.40
1	201.62	PF#1	164000.00	945.60	961.15	956.72	961.66	0.001385	5.78	28773.37	7614.80	0.35
1	201.62	PF#2	164000.00	945.60	961.28	956.72	961.80	0.001343	5.74	28552.62	3241.81	0.34
1	201.52	PF#1	164000.00	940.90	960.41	955.39	960.87	0.001854	5.50	30263.04	8984.51	0.33
1	201.52	PF#2	164000.00	940.90	960.53	955.39	961.02	0.001898	5.61	29242.62	3382.85	0.34
1	201.43	PF#1	164000.00	941.30	959.46	954.87	960.01	0.001619	5.99	27971.80	6526.99	0.37
1	201.43	PF#2	164000.00	941.30	959.60	954.87	960.15	0.001604	6.00	27334.01	3288.24	0.37
1	201.33	PF#1	164000.00	943.00	958.44	954.88	959.06	0.002024	6.40	26135.11	5745.25	0.41
1	201.33	PF#2	164000.00	943.00	958.60	954.88	959.23	0.001959	6.36	25785.53	3307.45	0.40
1	201.24	PF#1	164000.00	943.00	957.46	953.61	958.06	0.001852	6.23	26885.10	6935.04	0.40
1	201.24	PF#2	164000.00	943.00	957.66	953.61	958.26	0.001790	6.21	26420.07	3500.08	0.40

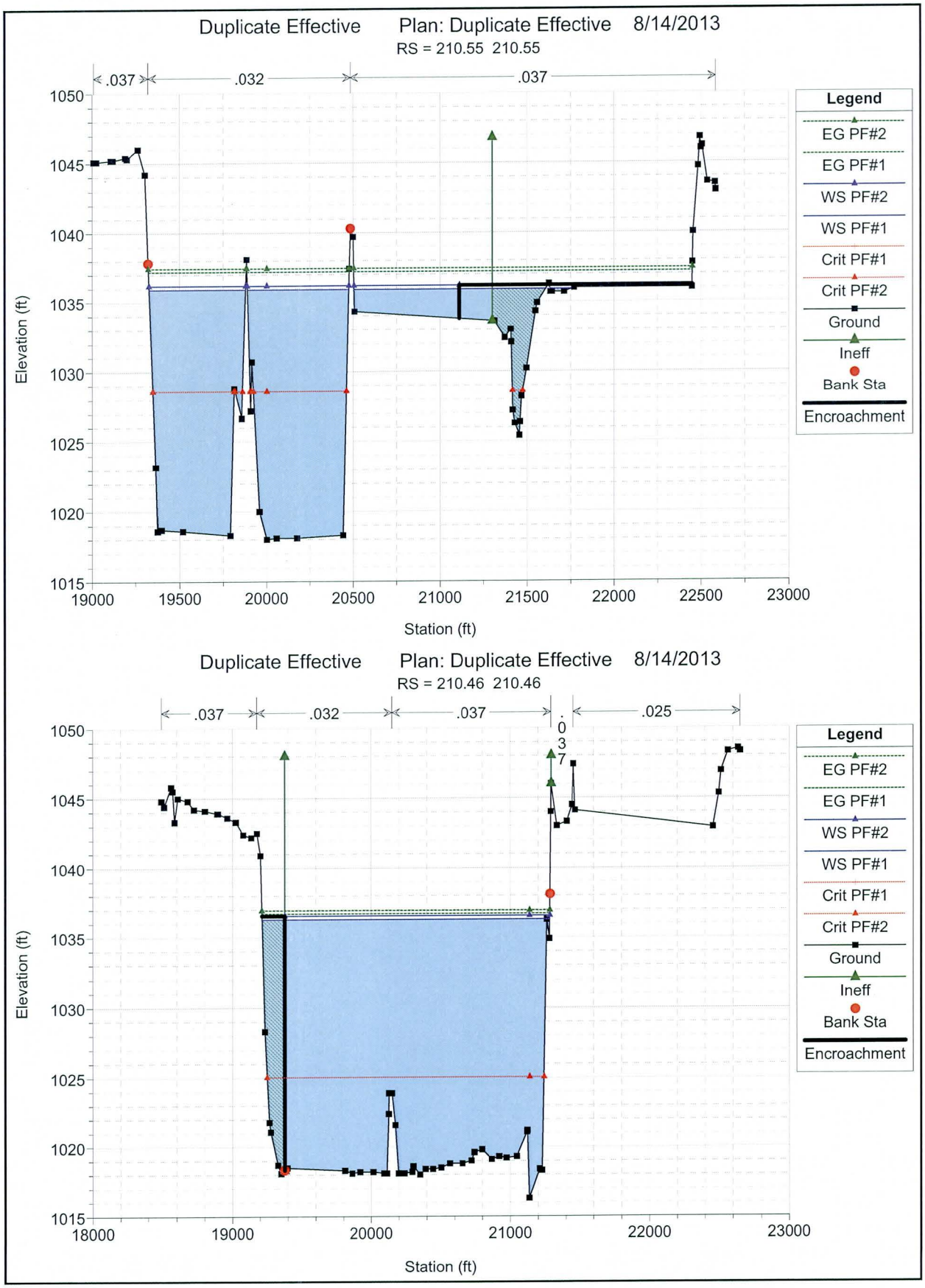
HEC-RAS Plan: DupEff River: 1 Reach: 1 (Continued)

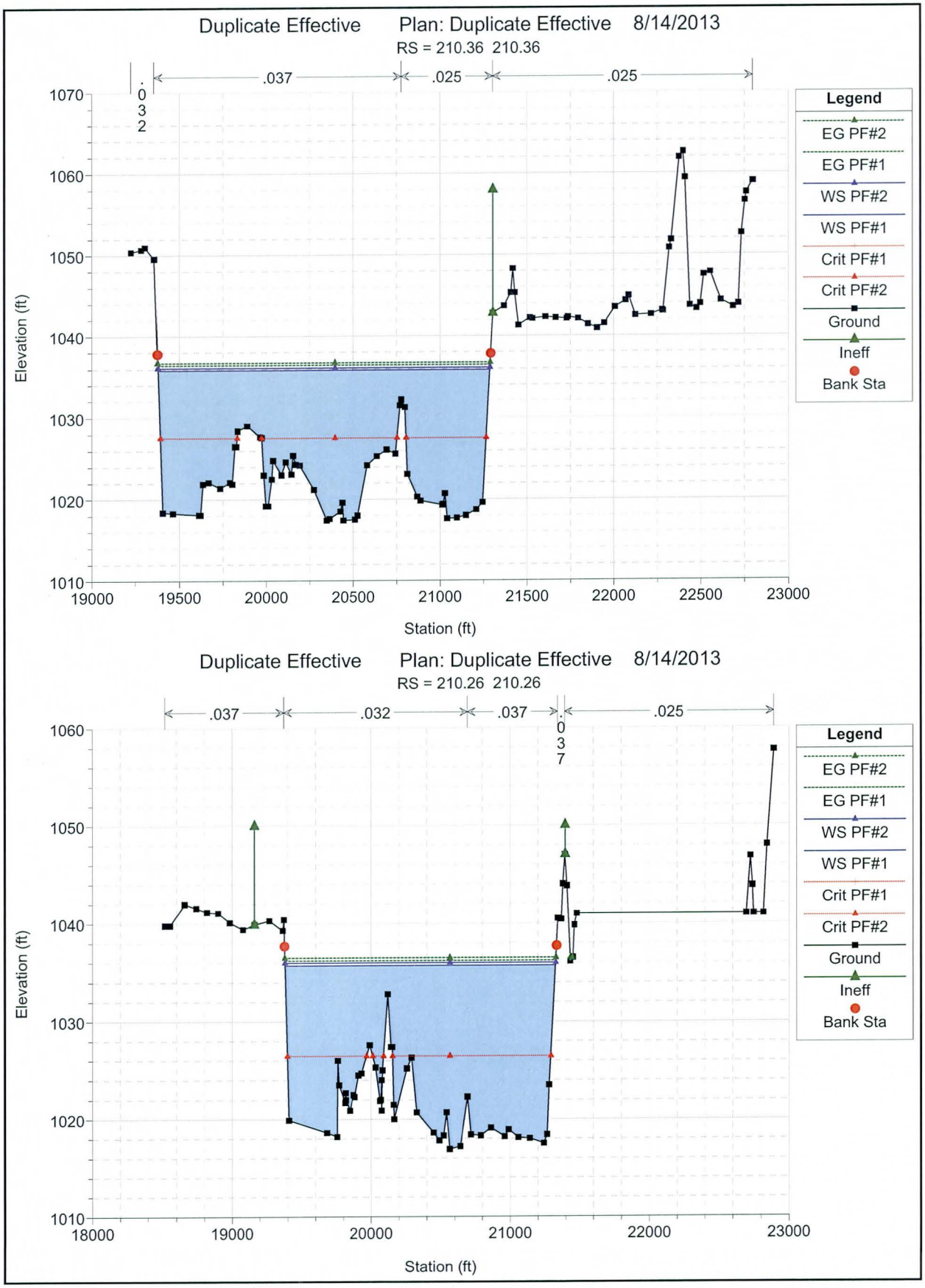
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
1	201.14	PF#1	164000.00	940.40	956.91	952.08	957.32	0.001090	5.20	32069.34	8631.33	0.31
1	201.14	PF#2	164000.00	940.40	957.15	952.08	957.55	0.001017	5.10	32150.13	3680.58	0.30
1	201.05	PF#1	164000.00	941.50	956.49	950.99	956.80	0.000974	4.50	37110.44	9249.94	0.26
1	201.05	PF#2	164000.00	941.50	956.74	950.99	957.06	0.000928	4.48	36618.90	3898.52	0.26
1	200.95	PF#1	164000.00	939.80	956.09	949.86	956.38	0.000668	4.33	39057.14	10045.22	0.25
1	200.95	PF#2	164000.00	939.80	956.38	949.86	956.66	0.000629	4.27	38407.73	4001.09	0.24
1	200.86	PF#1	164000.00	938.50	955.63	949.69	955.94	0.001346	4.48	37607.63	11080.59	0.27
1	200.86	PF#2	164000.00	938.50	955.94	949.69	956.24	0.001276	4.46	36762.91	4032.00	0.26
1	200.77	PF#1	164000.00	936.90	955.02	949.21	955.35	0.000950	4.62	36840.73	11449.90	0.28
1	200.77	PF#2	164000.00	936.90	955.38	949.21	955.70	0.000875	4.52	36283.86	4122.20	0.27
1	200.67	PF#1	164000.00	939.80	954.42	948.98	954.80	0.001288	4.96	33784.71	10368.24	0.30
1	200.67	PF#2	164000.00	939.80	954.84	948.98	955.20	0.001158	4.82	34281.14	4009.30	0.28
1	200.58	PF#1	164000.00	937.60	953.76	948.29	954.14	0.001313	5.04	33541.77	10091.02	0.30
1	200.58	PF#2	164000.00	937.60	954.23	948.29	954.60	0.001187	4.91	33793.59	3940.00	0.28
1	200.49	PF#1	164000.00	936.90	953.28	946.97	953.59	0.000940	4.59	37370.44	10978.11	0.26
1	200.49	PF#2	164000.00	936.90	953.77	946.97	954.10	0.000893	4.59	36178.07	3791.00	0.25
1	200.39	PF#1	164000.00	937.00	952.89	946.26	953.17	0.000739	4.35	39814.10	11315.74	0.24
1	200.39	PF#2	164000.00	937.00	953.40	946.26	953.70	0.000702	4.37	38317.51	3741.00	0.23
1	200.3	PF#1	179750.00	937.70	952.12	947.18	952.61	0.001603	5.79	36487.07	9118.91	0.34
1	200.3	PF#2	179750.00	937.70	952.73	947.17	953.18	0.001382	5.57	36217.73	3683.53	0.31
1	200.2	PF#1	179750.00	937.00	951.10	946.78	951.67	0.002027	6.37	35619.57	11857.73	0.37
1	200.2	PF#2	179750.00	937.00	951.83	946.77	952.38	0.001732	6.15	34725.75	3629.00	0.35
1	200.1	PF#1	179750.00	934.50	950.19	945.22	950.66	0.001730	5.74	37659.50	11254.10	0.32
1	200.1	PF#2	179750.00	934.50	951.11	945.22	951.53	0.001392	5.36	38392.25	3770.00	0.29
1	200	PF#1	179750.00	933.40	949.74	944.16	950.01	0.000864	4.29	44537.34	11193.60	0.24
1	200	PF#2	179750.00	933.40	950.70	944.16	950.98	0.000792	4.23	42550.11	4100.00	0.23
1	199.91	PF#1	179750.00	932.10	949.39	943.36	949.60	0.000668	3.83	50254.95	10846.61	0.22
1	199.91	PF#2	179750.00	932.10	950.39	943.36	950.61	0.000573	3.75	48102.12	4530.00	0.20
1	199.82	PF#1	179750.00	931.20	948.90	943.28	949.09	0.002007	3.30	51778.97	10752.57	0.19
1	199.82	PF#2	179750.00	931.20	949.90	943.25	950.14	0.002185	3.68	47698.04	4780.00	0.20

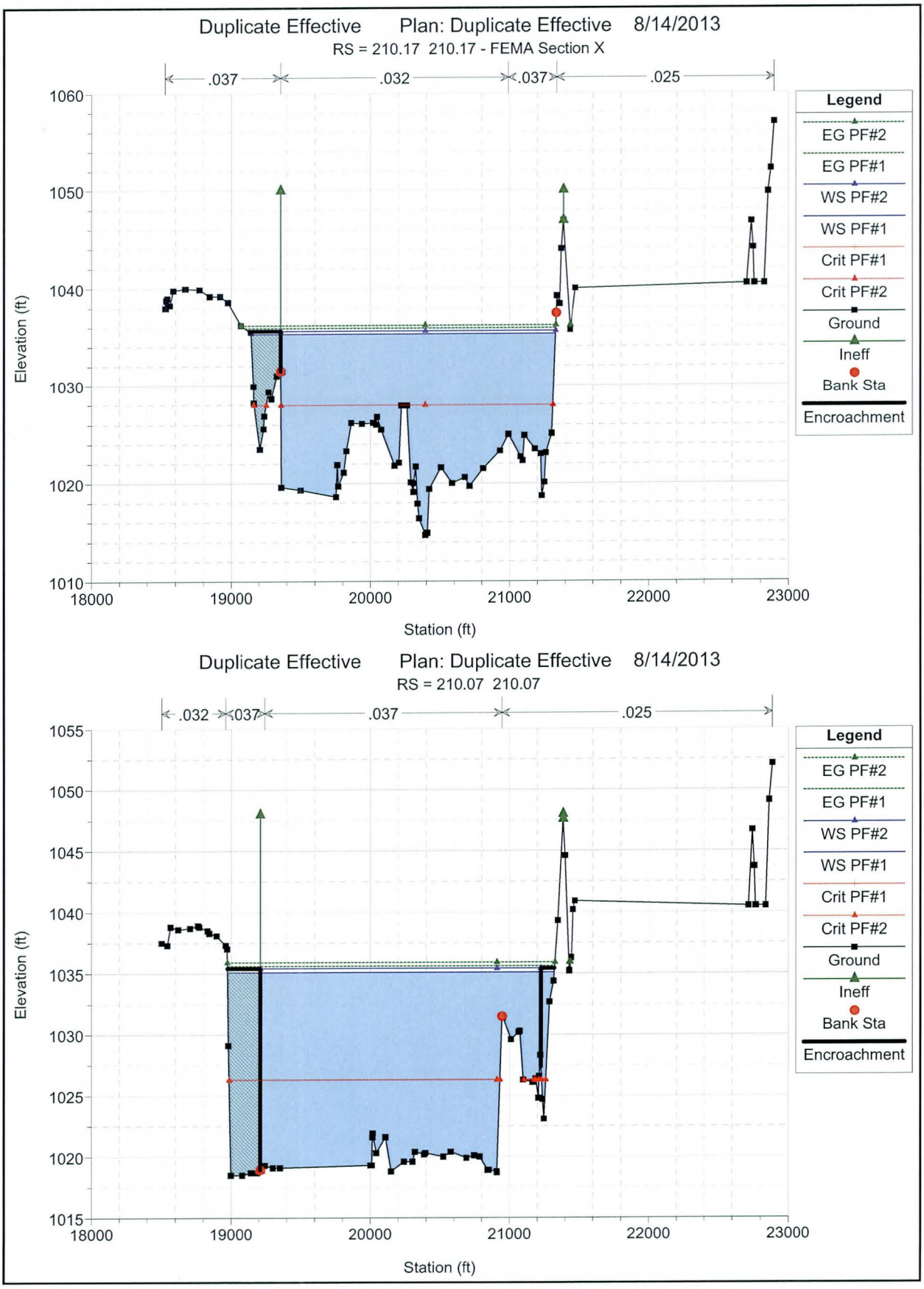

Duplicate Effective Plan: Duplicate Effective 8/14/2013
RS = 211.12 211.12 - FEMA Section Z
.037
.032
.037
Elevation (ft)
Station (ft)
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment
Duplicate Effective Plan: Duplicate Effective 8/14/2013
RS = 211.02 211.02
.037
.032
.037
Elevation (ft)
Station (ft)
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#2
Crit PF#1
Ground
Ineff
Bank Sta
Encroachment

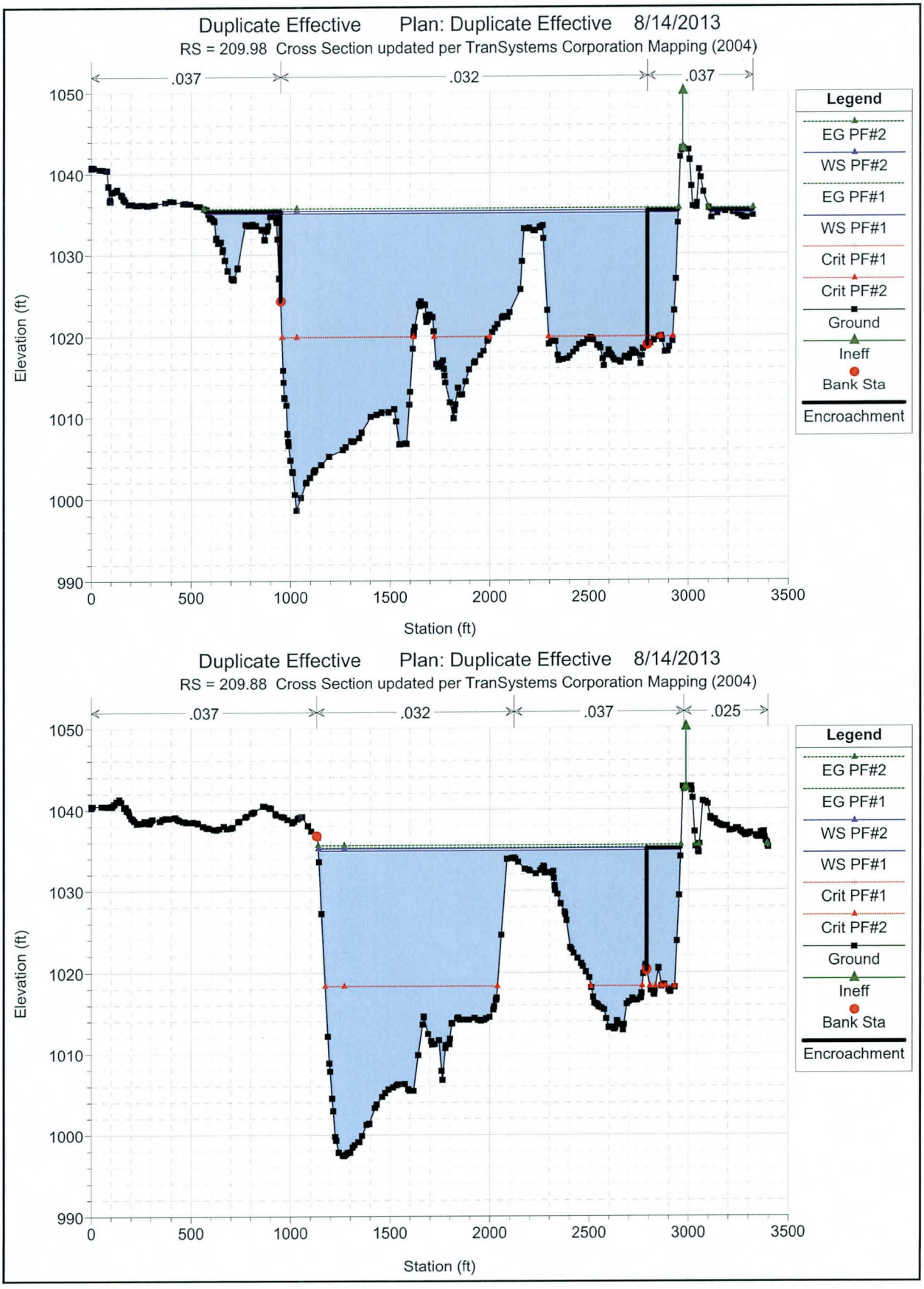

Duplicate Effective
Plan: Duplicate Effective
8/14/2013
RS = 210.93 210.93
.037
.032
.037
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment
Elevation (ft)
Station (ft)
1055
1050
1045
1040
1035
1030
1025
1020
1015
19000
19500
20000
20500
21000
21500
22000
22500
Duplicate Effective
Plan: Duplicate Effective
8/14/2013
RS = 210.83 210.83
.037
.032
.037
Legend
EG PF#2
EG PF#1
WS PF#1
WS PF#2
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment
Elevation (ft)
Station (ft)
1055
1050
1045
1040
1035
1030
1025
1020
1015
19000
19500
20000
20500
21000
21500
22000
22500

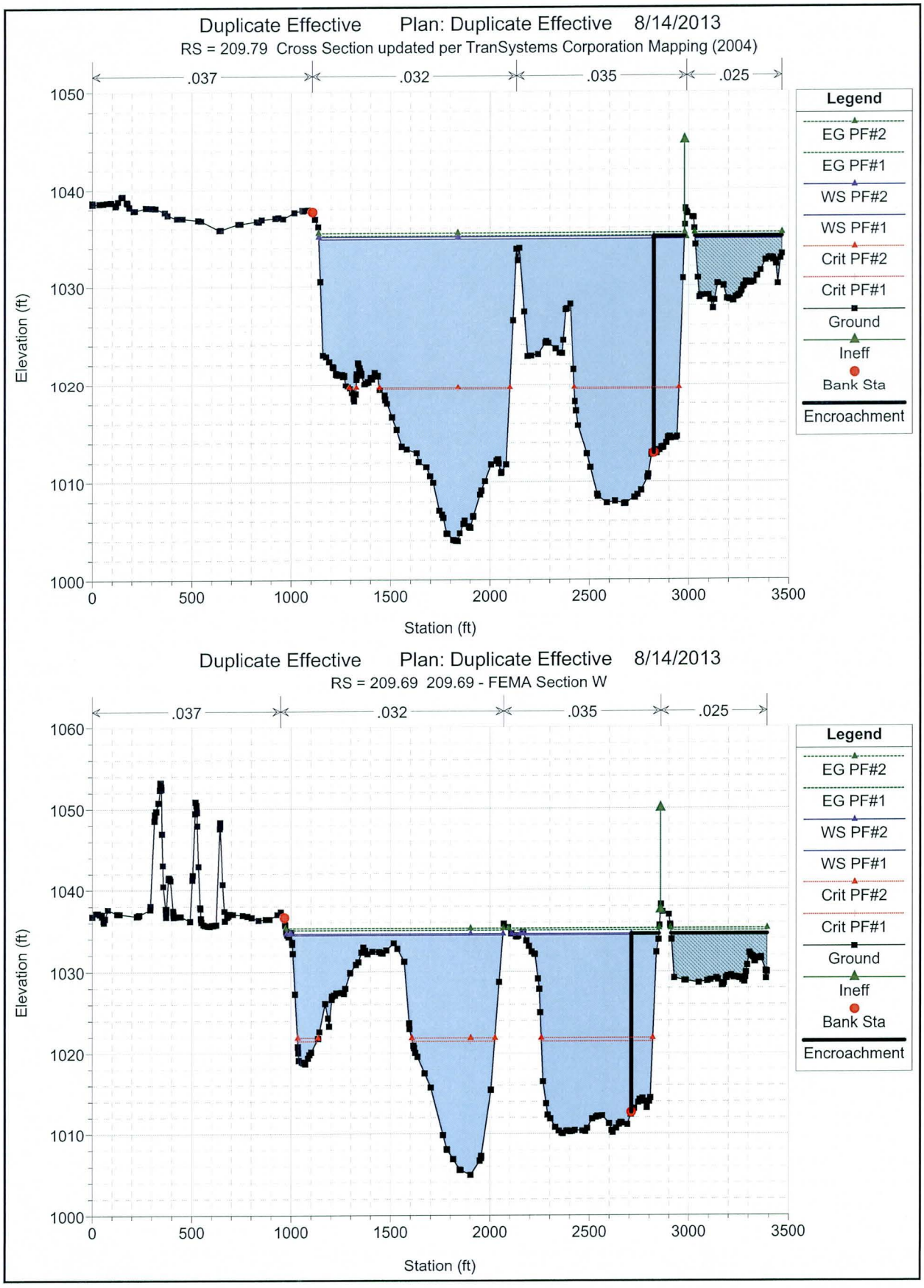

Duplicate Effective Plan: Duplicate Effective 8/14/2013
RS = 210.74 210.74
.037
.032
.037
Elevation (ft)
Station (ft)
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment
Duplicate Effective Plan: Duplicate Effective 8/14/2013
RS = 210.64 210.64 - FEMA Section Y
.037
.032
.037
Elevation (ft)
Station (ft)
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment

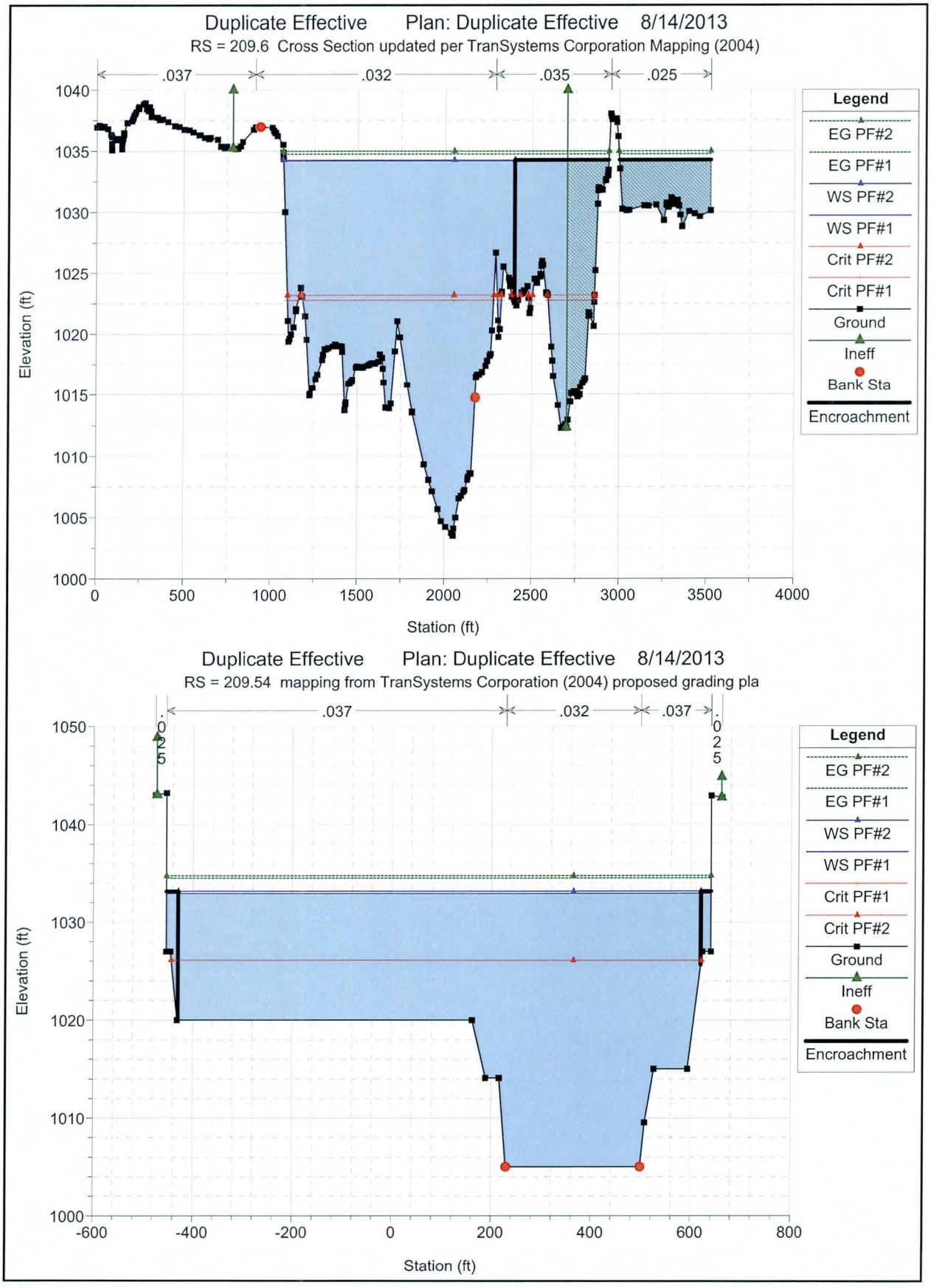

Duplicate Effective
Plan: Duplicate Effective
8/14/2013
RS = 210.55 210.55
.037
.032
.037
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment
Elevation (ft)
Station (ft)
1050
1045
1040
1035
1030
1025
1020
1015
19000
19500
20000
20500
21000
21500
22000
22500
23000
Duplicate Effective
Plan: Duplicate Effective
8/14/2013
RS = 210.46 210.46
.037
.032
.037
.037
.025
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment
Elevation (ft)
Station (ft)
1050
1045
1040
1035
1030
1025
1020
1015
18000
19000
20000
21000
22000
23000

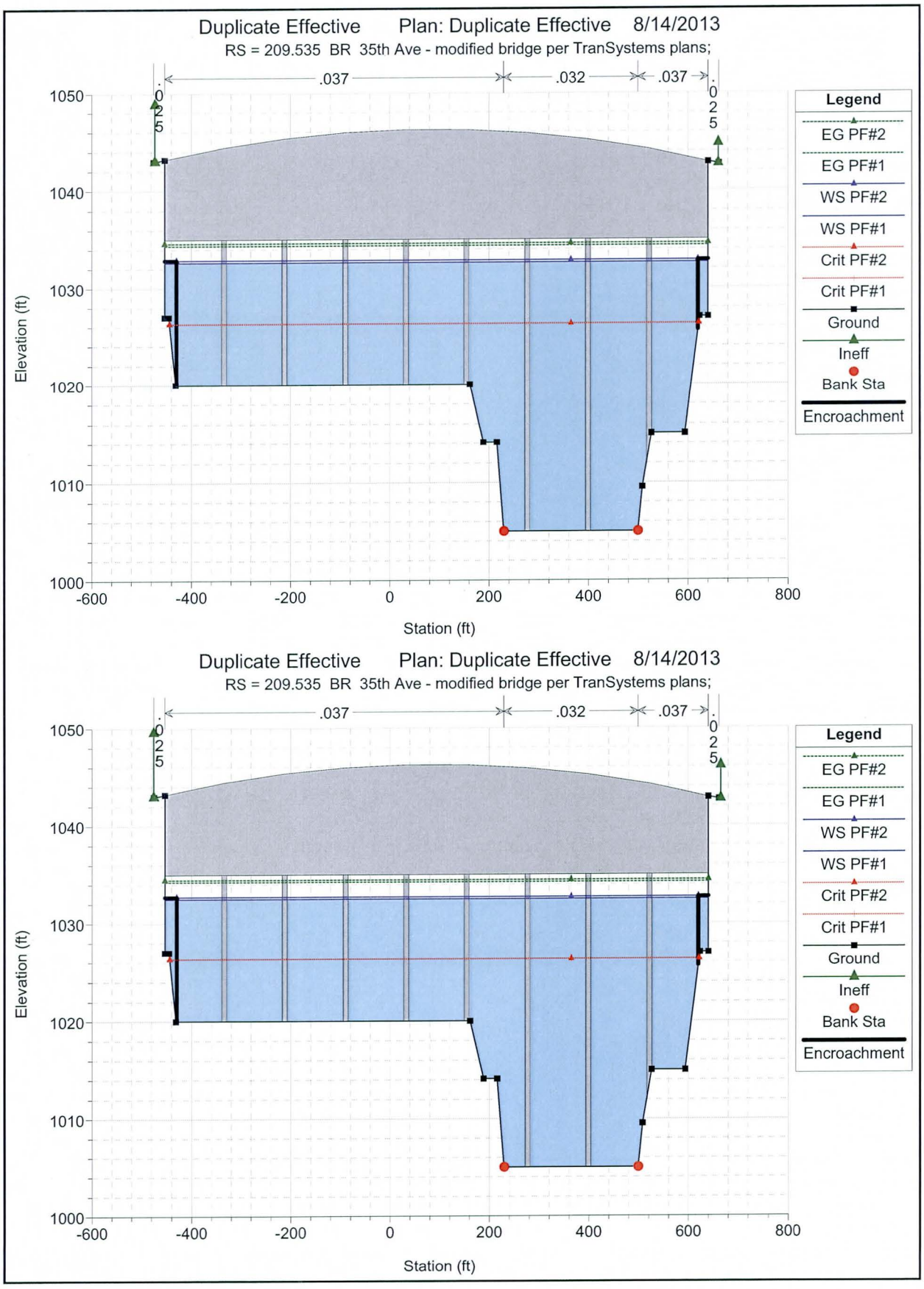

Duplicate Effective
Plan: Duplicate Effective 8/14/2013
RS = 210.36 210.36
.037
.025
.025
.032
Elevation (ft)
Station (ft)
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Duplicate Effective
Plan: Duplicate Effective 8/14/2013
RS = 210.26 210.26
.037
.032
.037
.025
Elevation (ft)
Station (ft)
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta

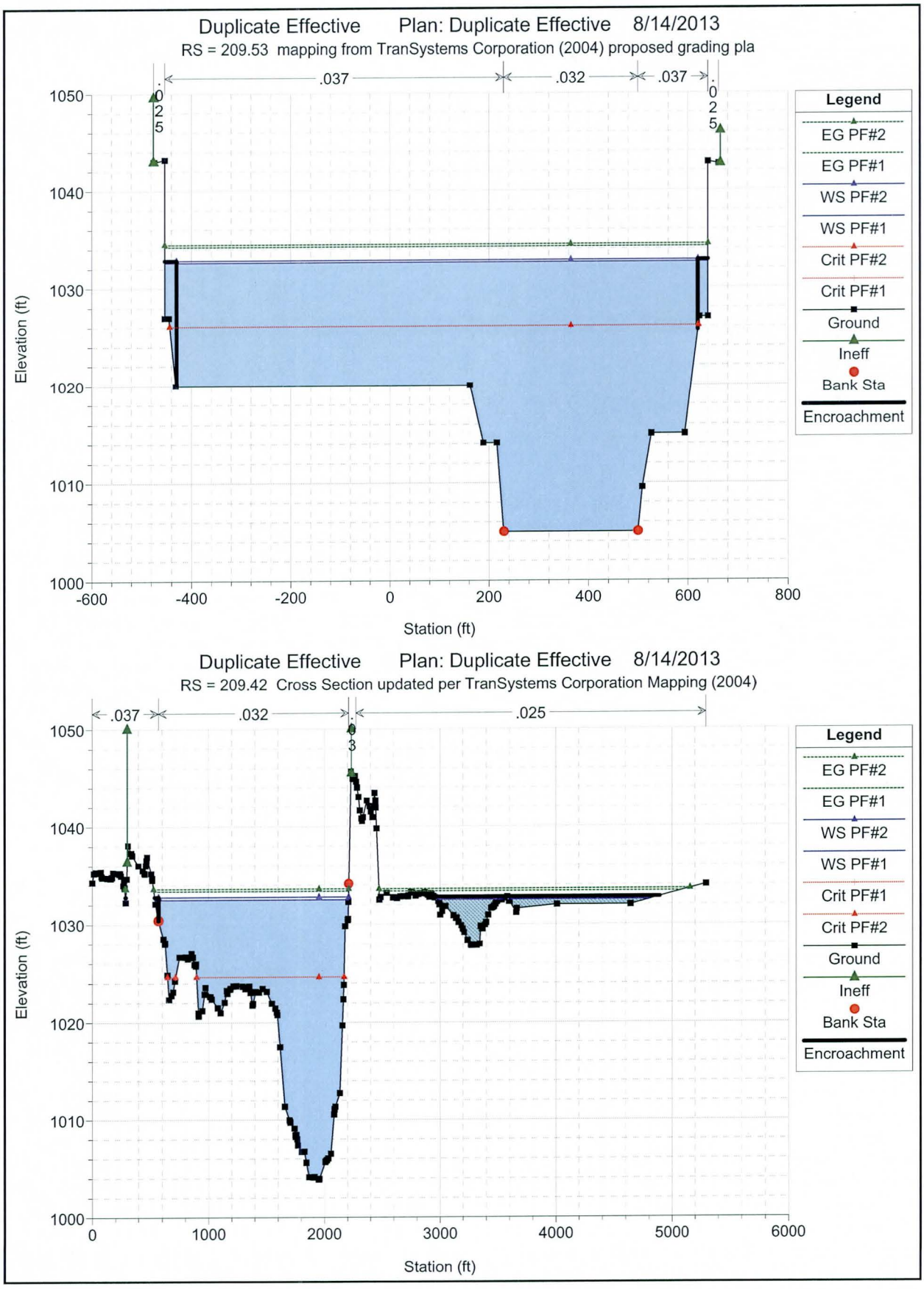

Duplicate Effective Plan: Duplicate Effective 8/14/2013
RS = 210.17 210.17 - FEMA Section X
.037
.032
.037
.025
Elevation (ft)
Station (ft)
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment
Duplicate Effective Plan: Duplicate Effective 8/14/2013
RS = 210.07 210.07
.032
.037
.037
.025
Elevation (ft)
Station (ft)
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment

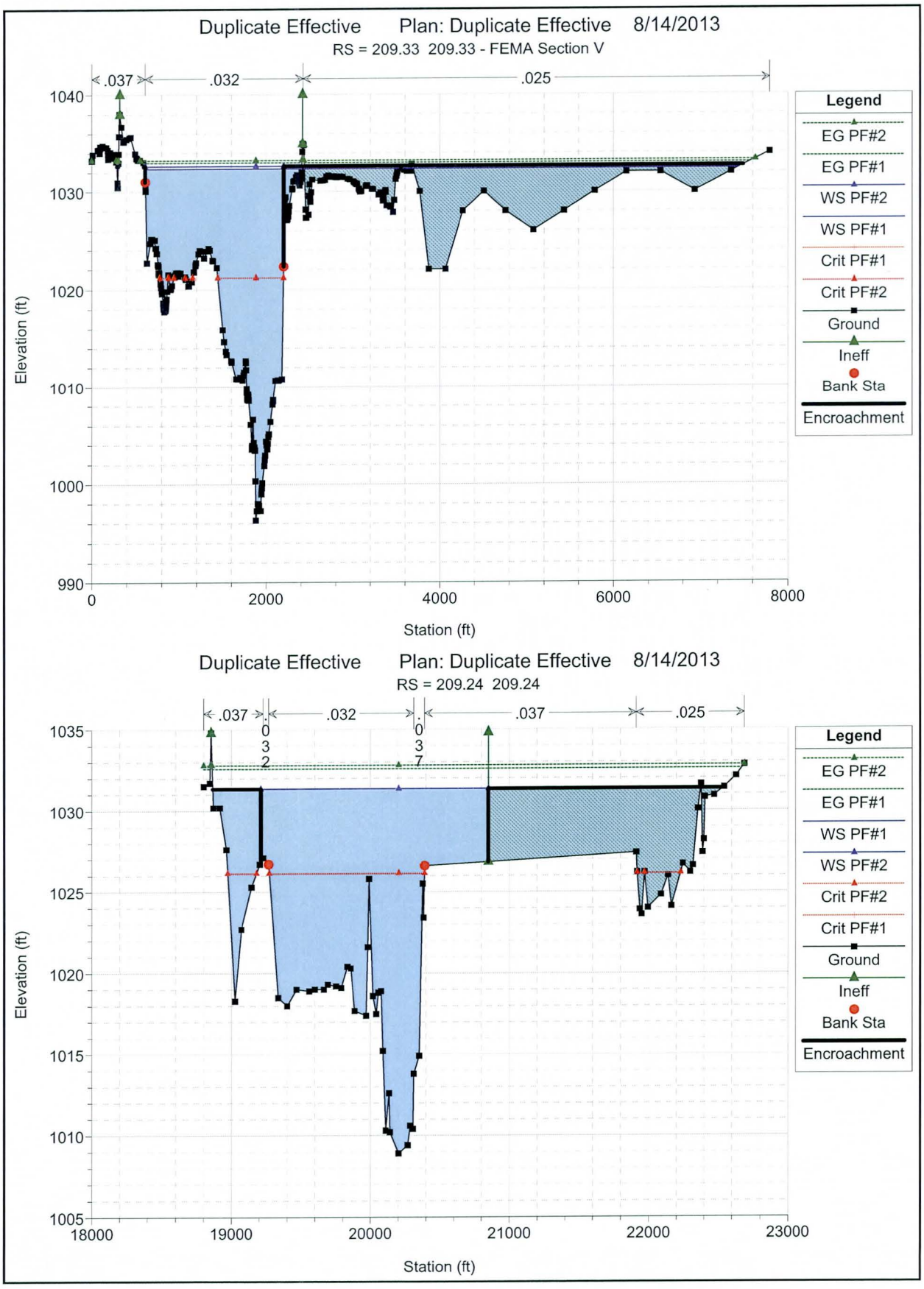

Duplicate Effective Plan: Duplicate Effective 8/14/2013
RS = 209.98 Cross Section updated per TranSystems Corporation Mapping (2004)
.037
.032
.037
Elevation (ft)
Station (ft)
Legend
EG PF#2
WS PF#2
EG PF#1
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment
Duplicate Effective Plan: Duplicate Effective 8/14/2013
RS = 209.88 Cross Section updated per TranSystems Corporation Mapping (2004)
.037
.032
.037
.025
Elevation (ft)
Station (ft)
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment

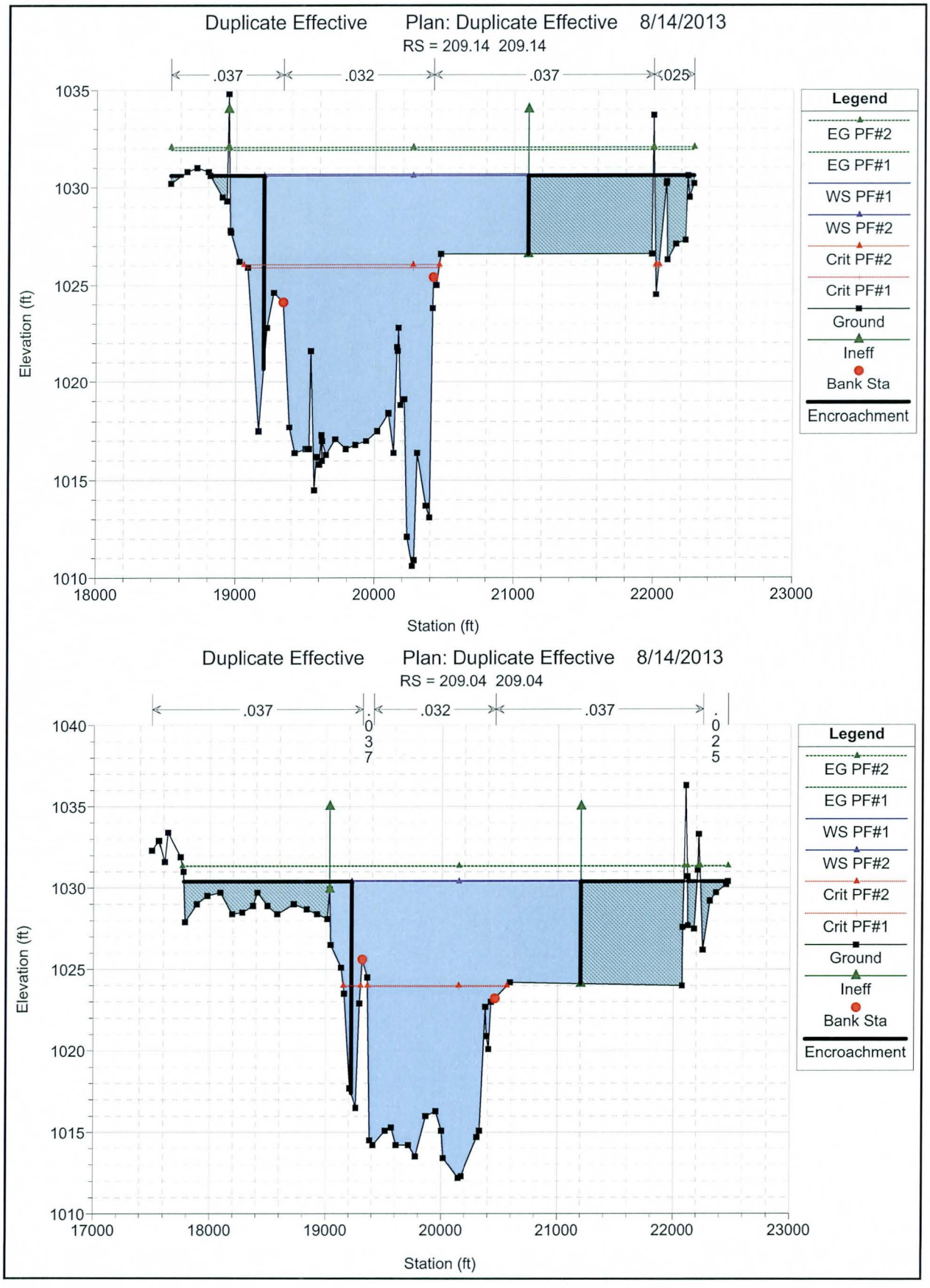

Duplicate Effective Plan: Duplicate Effective 8/14/2013
RS = 209.79 Cross Section updated per TranSystems Corporation Mapping (2004)
.037
.032
.035
.025
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#2
Crit PF#1
Ground
Ineff
Bank Sta
Encroachment
Elevation (ft)
Station (ft)
Duplicate Effective Plan: Duplicate Effective 8/14/2013
RS = 209.69 209.69 - FEMA Section W
.037
.032
.035
.025
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#2
Crit PF#1
Ground
Ineff
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

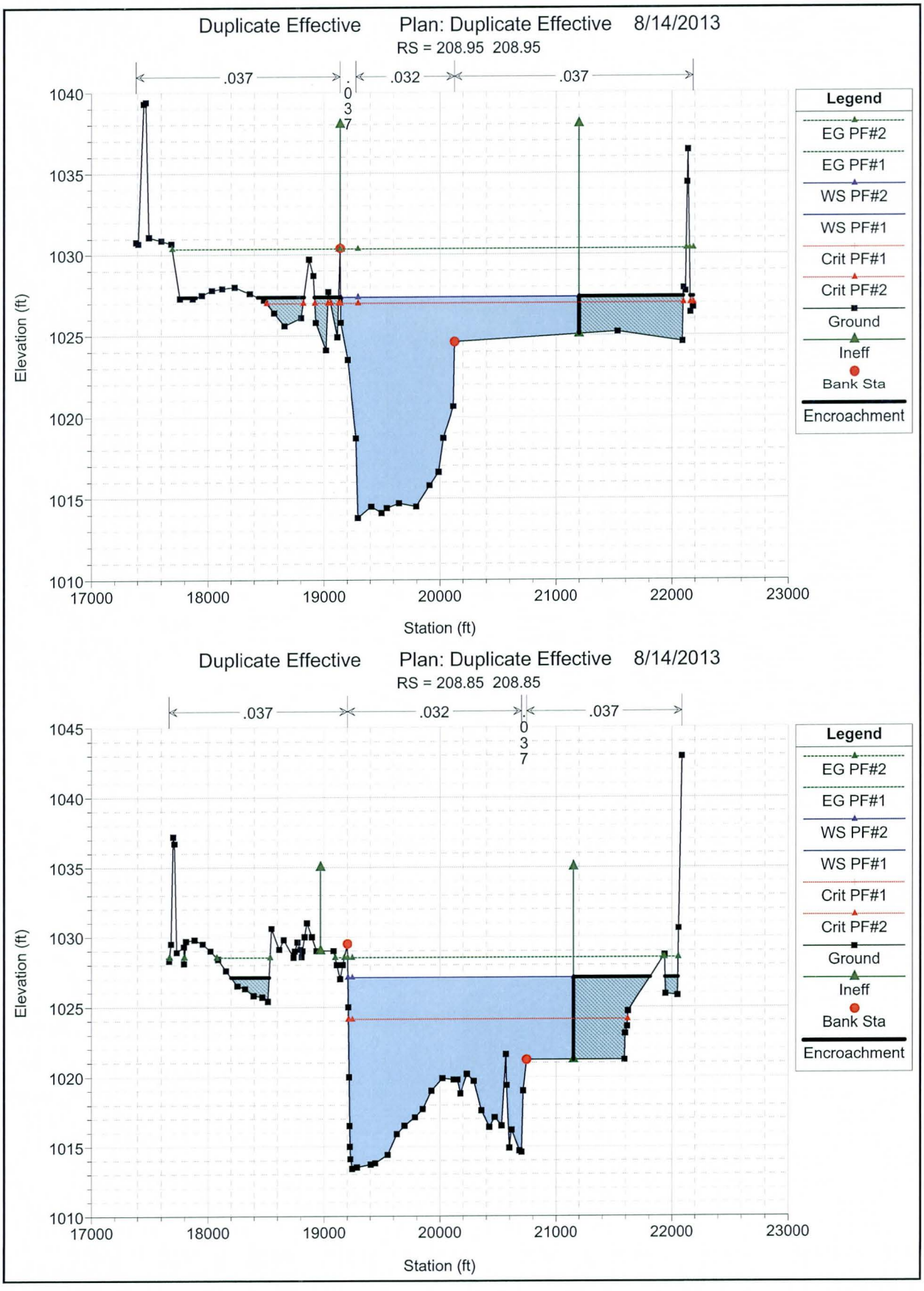

Duplicate Effective Plan: Duplicate Effective 8/14/2013
RS = 209.6 Cross Section updated per TranSystems Corporation Mapping (2004)
.037
.032
.035
.025
Elevation (ft)
Station (ft)
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#2
Crit PF#1
Ground
Ineff
Bank Sta
Encroachment
Duplicate Effective Plan: Duplicate Effective 8/14/2013
RS = 209.54 mapping from TranSystems Corporation (2004) proposed grading pla
.037
.032
.037
.025
.025
Elevation (ft)
Station (ft)
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment

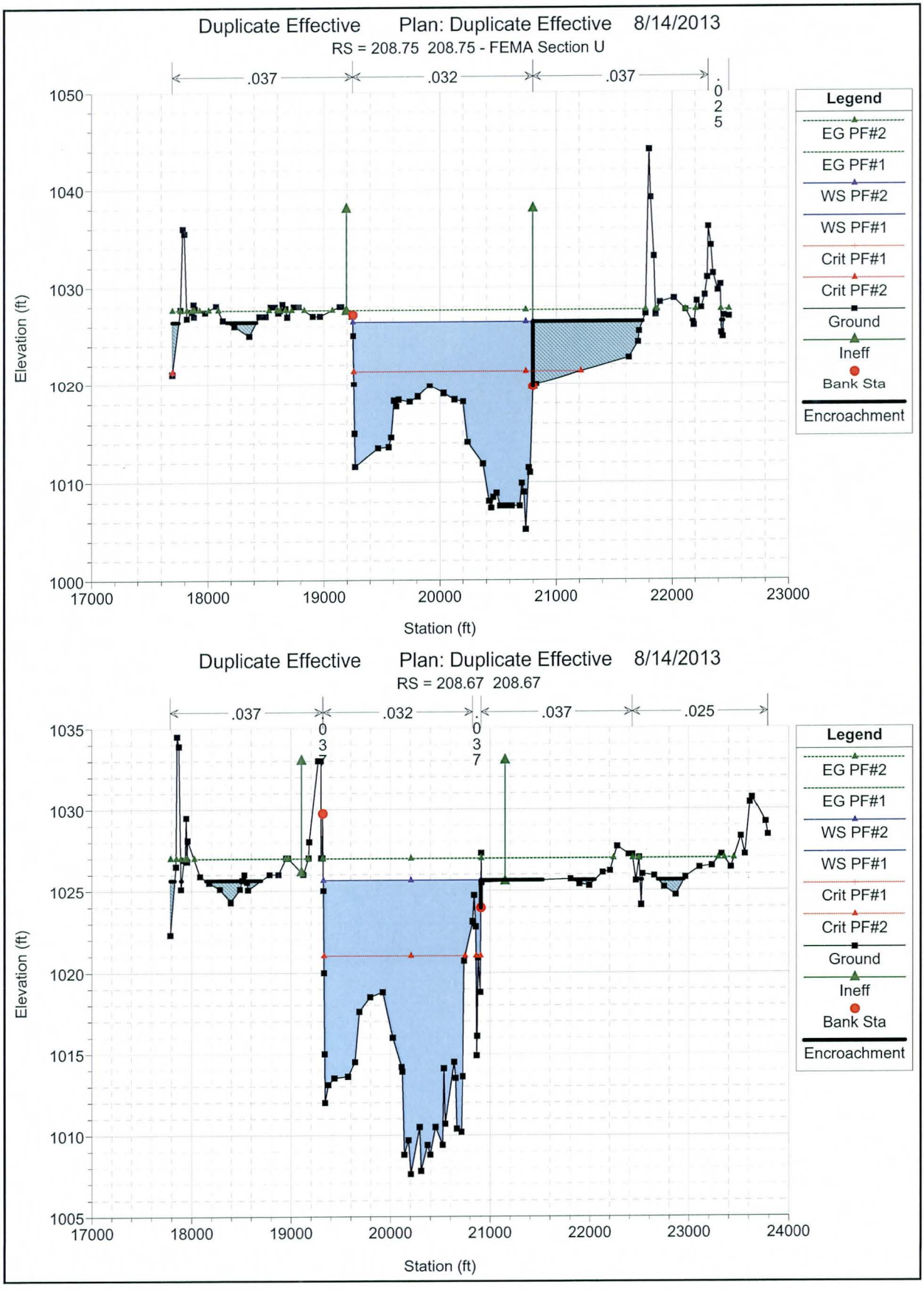

Duplicate Effective Plan: Duplicate Effective 8/14/2013
RS = 209.535 BR 35th Ave - modified bridge per TranSystems plans;
.037
.032
.037
.025
.025
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#2
Crit PF#1
Ground
Ineff
Bank Sta
Encroachment
Elevation (ft)
Station (ft)
1050
1040
1030
1020
1010
1000
-600
-400
-200
0
200
400
600
800
Duplicate Effective Plan: Duplicate Effective 8/14/2013
RS = 209.535 BR 35th Ave - modified bridge per TranSystems plans;
.037
.032
.037
.025
.025
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#2
Crit PF#1
Ground
Ineff
Bank Sta
Encroachment
Elevation (ft)
Station (ft)
1050
1040
1030
1020
1010
1000
-600
-400
-200
0
200
400
600
800

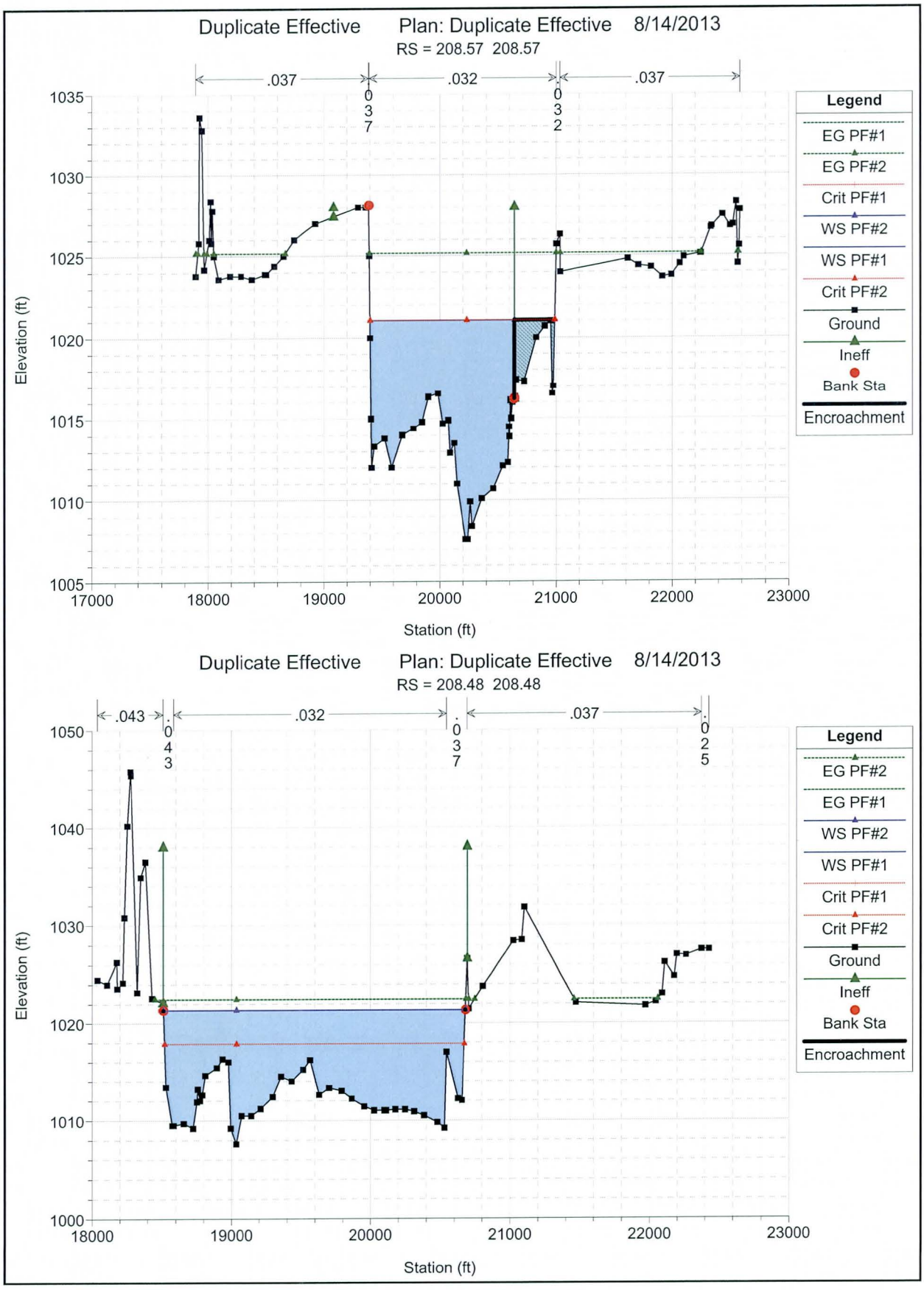

Duplicate Effective Plan: Duplicate Effective 8/14/2013
RS = 209.53 mapping from TranSystems Corporation (2004) proposed grading pla
.037
.032
.037
.025
.025
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#2
Crit PF#1
Ground
Ineff
Bank Sta
Encroachment
Elevation (ft)
Station (ft)
1050
1040
1030
1020
1010
1000
-600
-400
-200
0
200
400
600
800
Duplicate Effective Plan: Duplicate Effective 8/14/2013
RS = 209.42 Cross Section updated per TranSystems Corporation Mapping (2004)
.037
.032
.025
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment
Elevation (ft)
Station (ft)
1050
1040
1030
1020
1010
1000
0
1000
2000
3000
4000
5000
6000

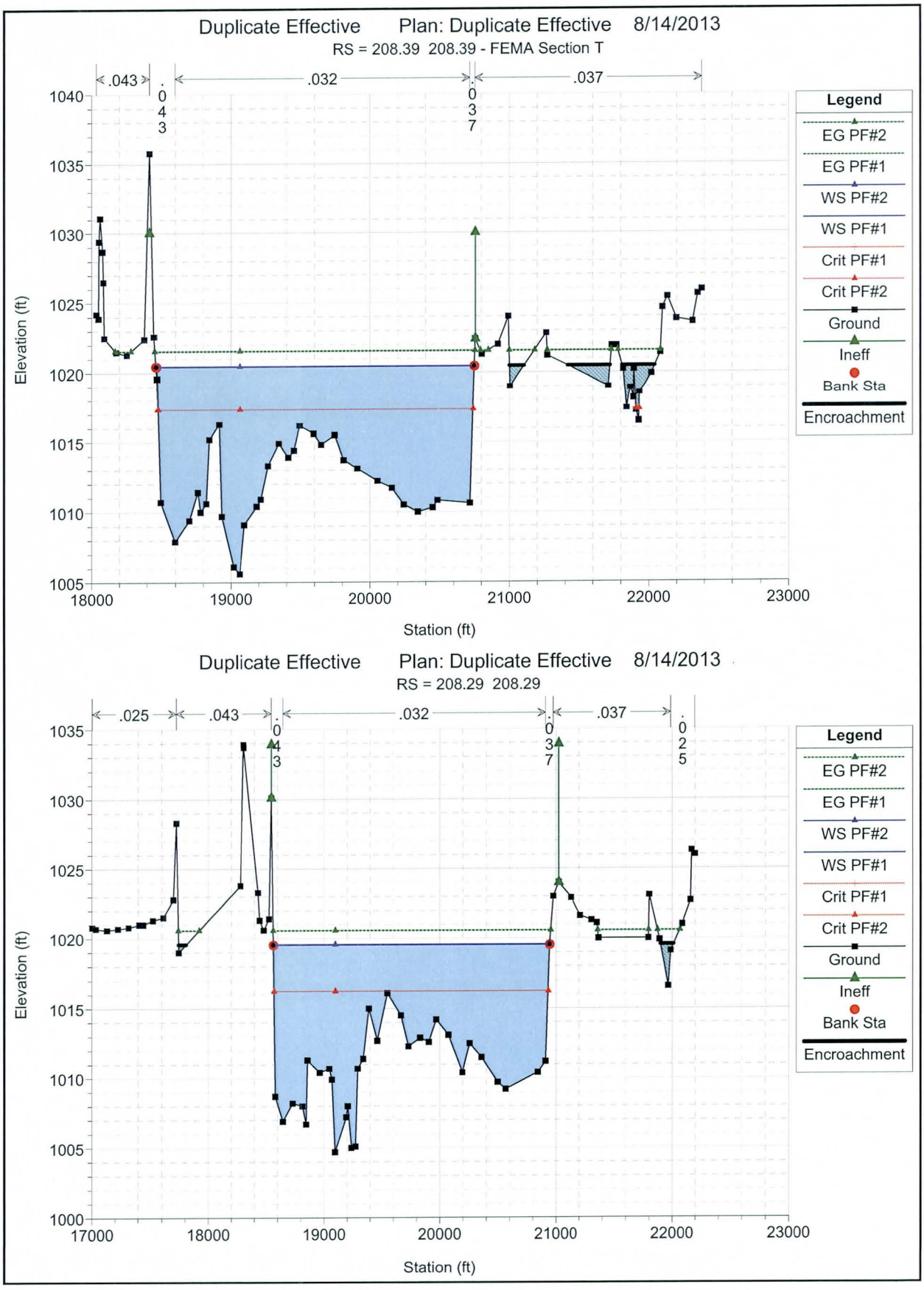

Duplicate Effective Plan: Duplicate Effective 8/14/2013
RS = 209.33 209.33 - FEMA Section V
.037
.032
.025
Elevation (ft)
Station (ft)
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment
Duplicate Effective Plan: Duplicate Effective 8/14/2013
RS = 209.24 209.24
.037
.032
.037
.025
Elevation (ft)
Station (ft)
Legend
EG PF#2
EG PF#1
WS PF#1
WS PF#2
Crit PF#2
Crit PF#1
Ground
Ineff
Bank Sta
Encroachment

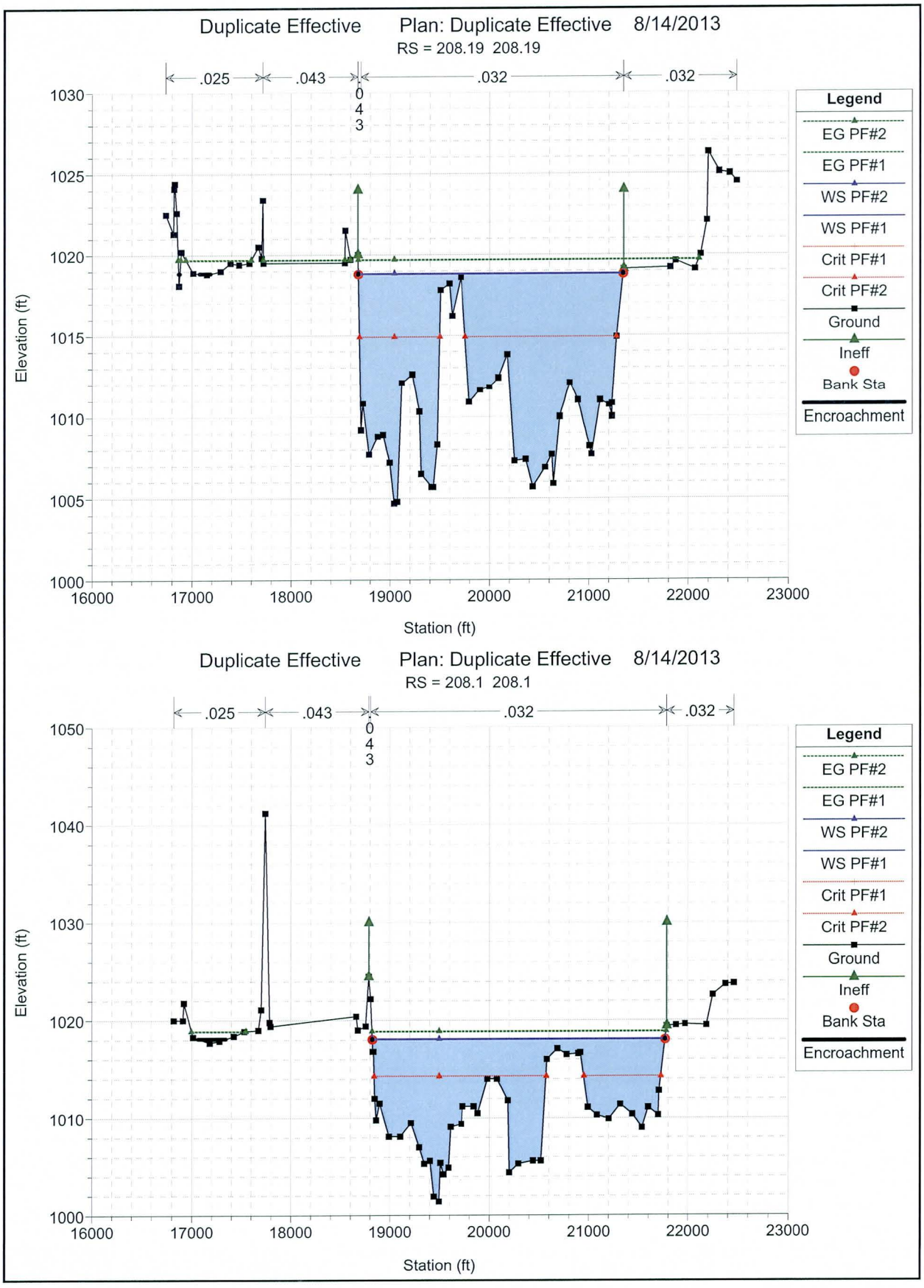

Duplicate Effective Plan: Duplicate Effective 8/14/2013
RS = 209.14 209.14
.037
.032
.037
.025
Elevation (ft)
Station (ft)
Legend
EG PF#2
EG PF#1
WS PF#1
WS PF#2
Crit PF#2
Crit PF#1
Ground
Ineff
Bank Sta
Encroachment
Duplicate Effective Plan: Duplicate Effective 8/14/2013
RS = 209.04 209.04
.037
.037
.032
.037
.025
Elevation (ft)
Station (ft)
Legend
EG PF#2
EG PF#1
WS PF#1
WS PF#2
Crit PF#2
Crit PF#1
Ground
Ineff
Bank Sta
Encroachment

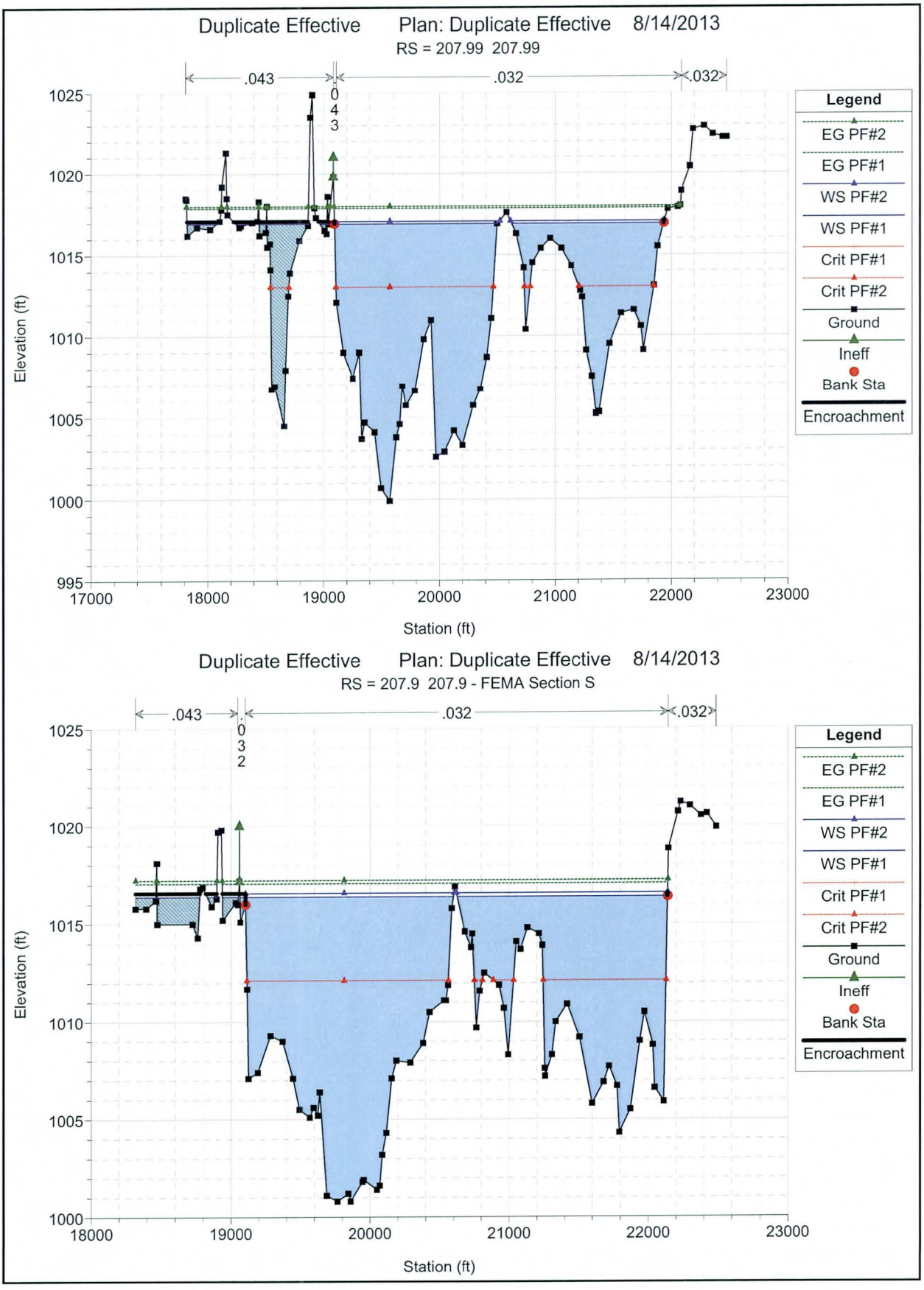

Duplicate Effective
Plan: Duplicate Effective
8/14/2013
RS = 208.95 208.95
.037
.037
.032
.037
Elevation (ft)
Station (ft)
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment
Duplicate Effective
Plan: Duplicate Effective
8/14/2013
RS = 208.85 208.85
.037
.032
.037
Elevation (ft)
Station (ft)
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment

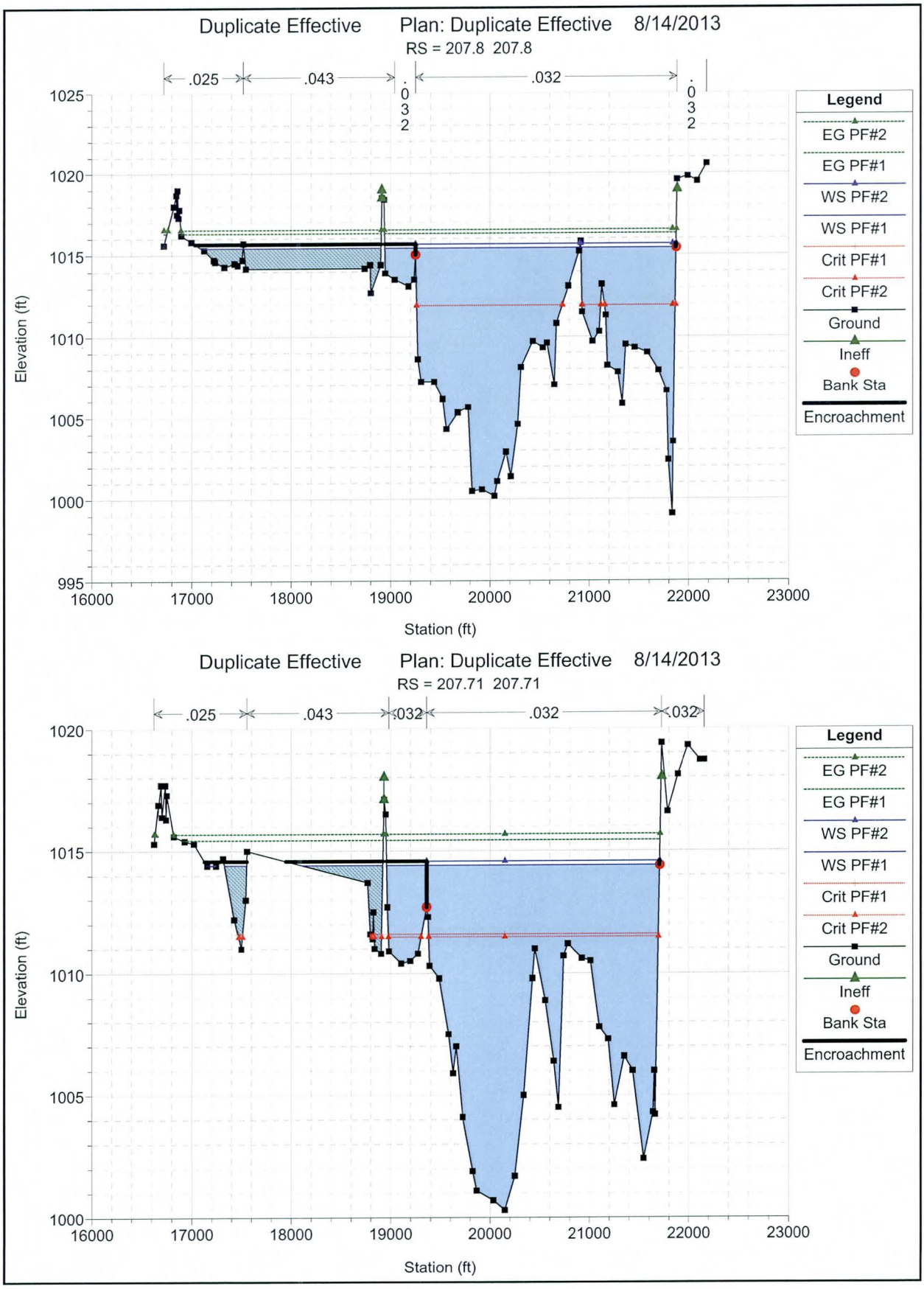

Duplicate Effective Plan: Duplicate Effective 8/14/2013
RS = 208.75 208.75 - FEMA Section U
.037
.032
.037
.025
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment
Elevation (ft)
Station (ft)
Duplicate Effective Plan: Duplicate Effective 8/14/2013
RS = 208.67 208.67
.037
.032
.037
.025
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

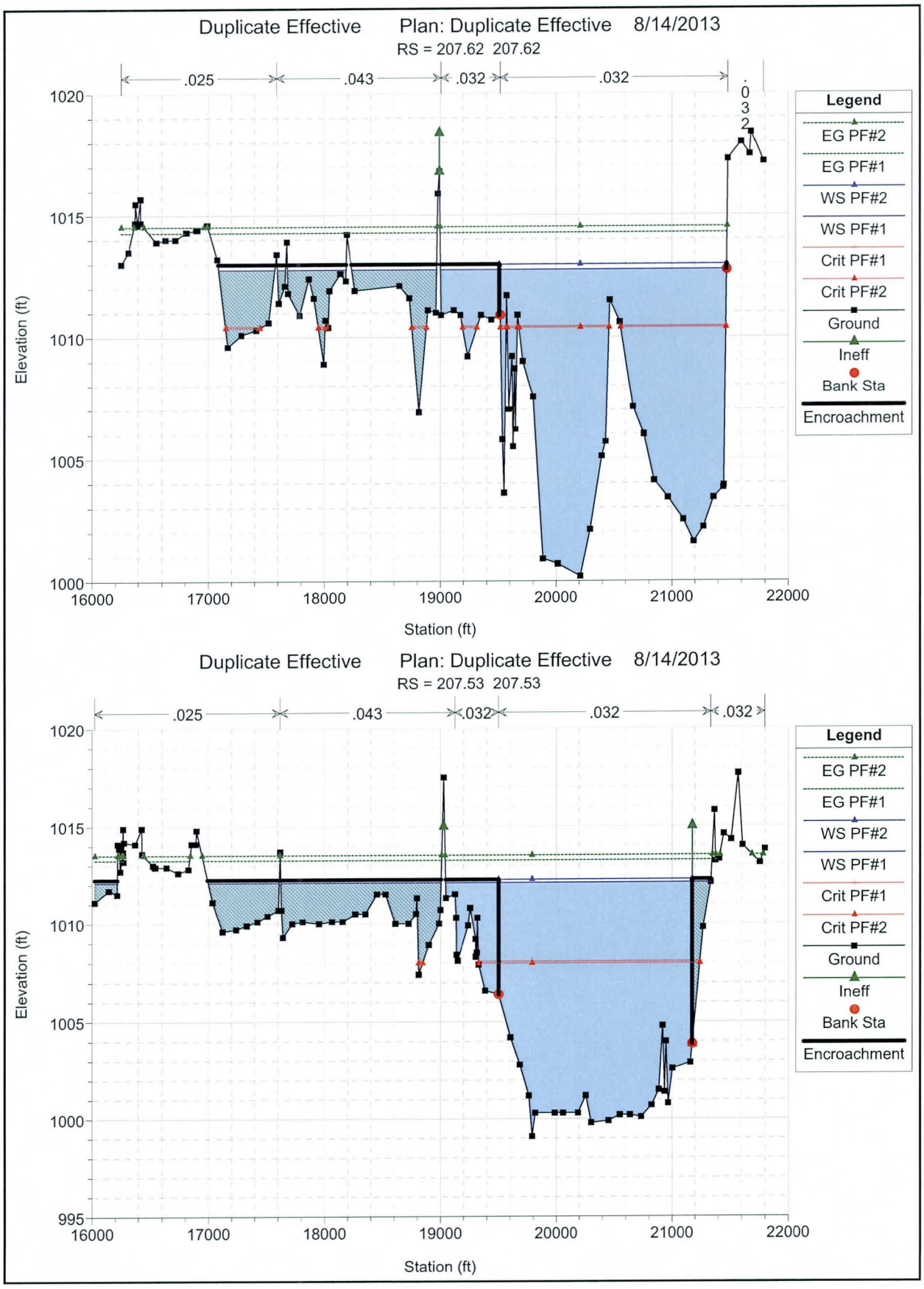

Duplicate Effective
Plan: Duplicate Effective
8/14/2013
RS = 208.57 208.57
.037
.032
.037
.037
.032
Elevation (ft)
Station (ft)
Legend
EG PF#1
EG PF#2
Crit PF#1
WS PF#2
WS PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment
Duplicate Effective
Plan: Duplicate Effective
8/14/2013
RS = 208.48 208.48
.043
.032
.037
.043
.037
.025
Elevation (ft)
Station (ft)
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment

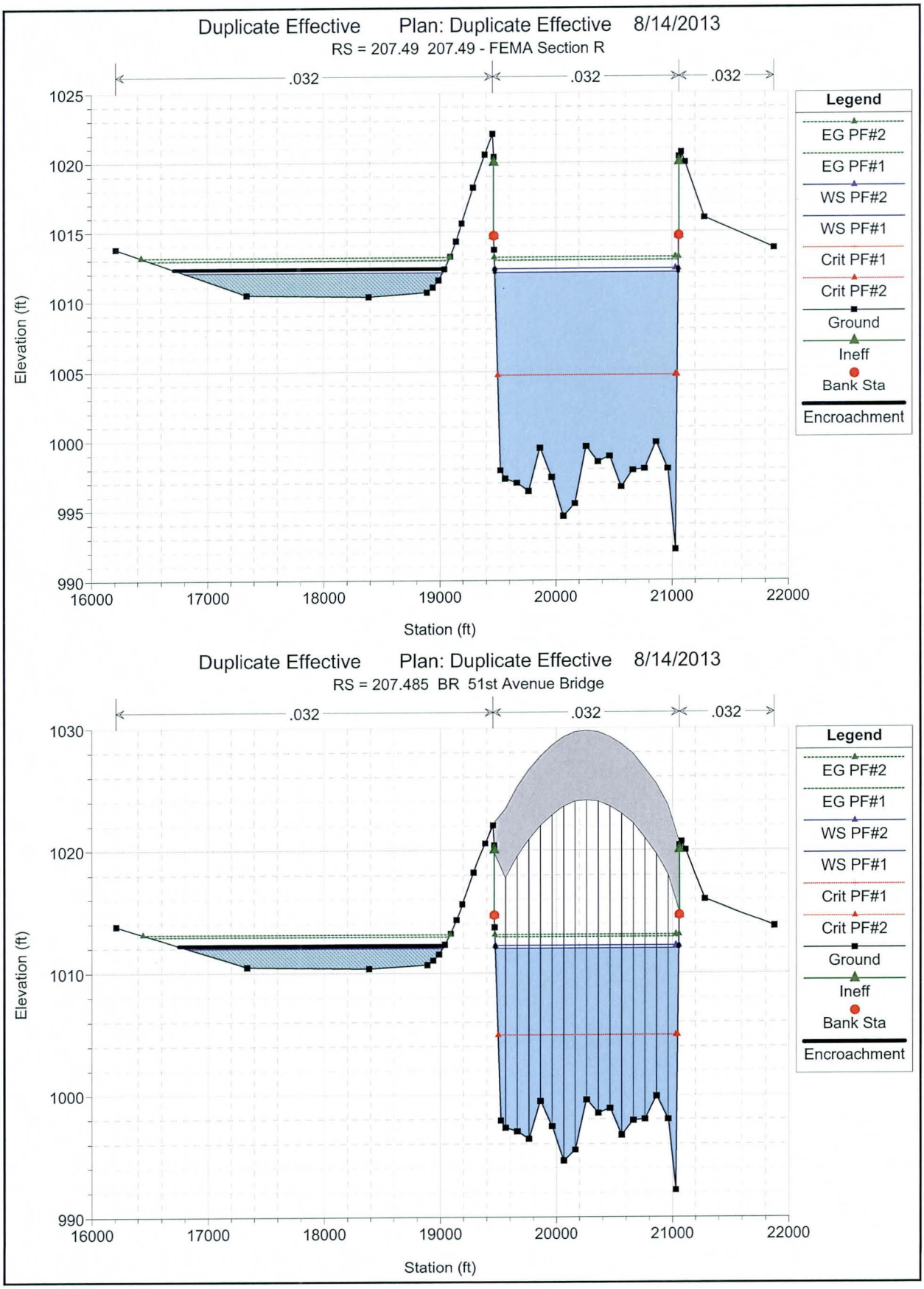

Duplicate Effective Plan: Duplicate Effective 8/14/2013
RS = 208.39 208.39 - FEMA Section T
.043
.032
.037
.043
.037
Elevation (ft)
Station (ft)
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment
Duplicate Effective Plan: Duplicate Effective 8/14/2013
RS = 208.29 208.29
.025
.043
.032
.037
.043
.037
.025
Elevation (ft)
Station (ft)
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment

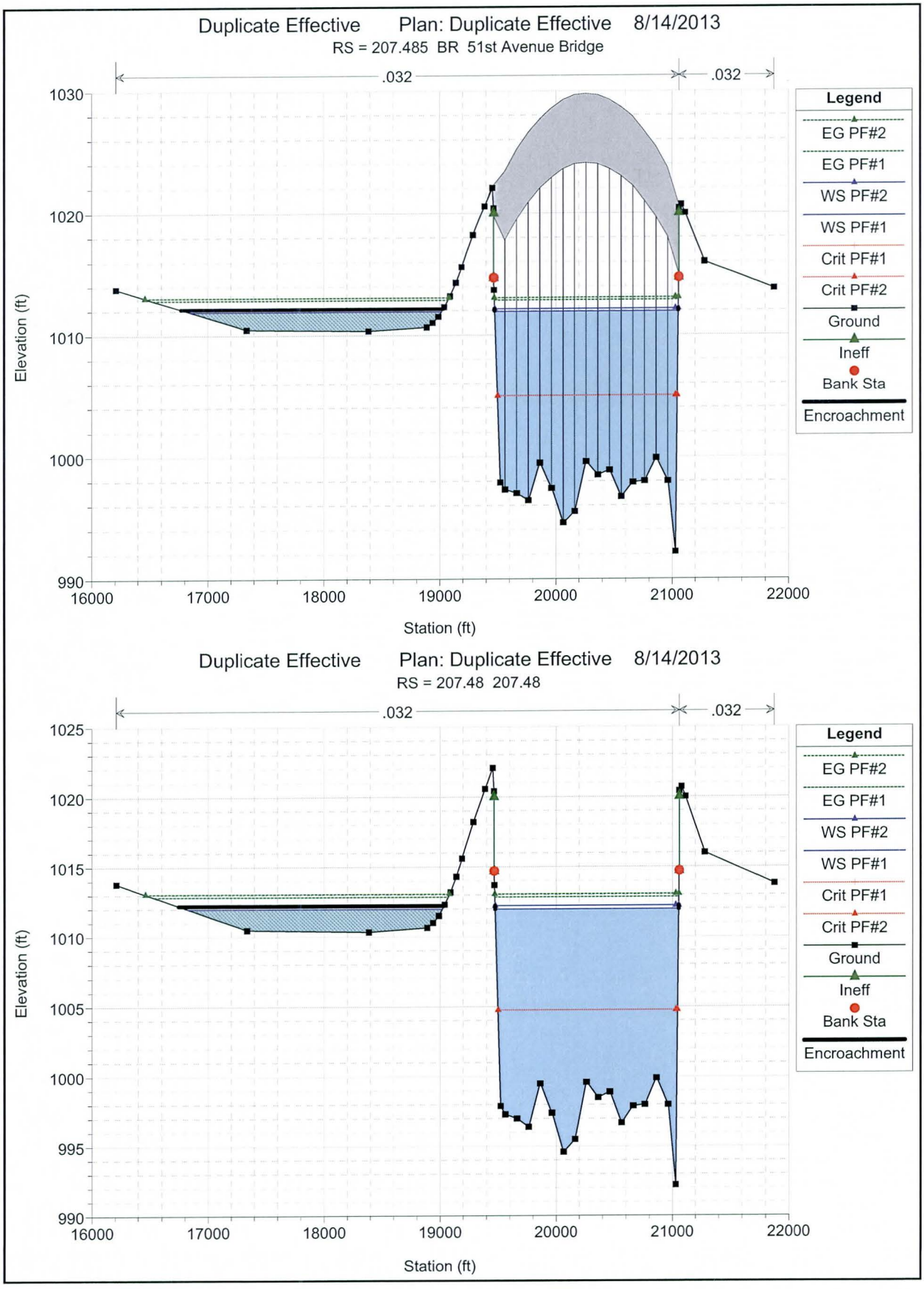

Duplicate Effective
Plan: Duplicate Effective
8/14/2013
RS = 208.19 208.19
.025
.043
.032
.032
0
4
3
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment
Elevation (ft)
Station (ft)
1030
1025
1020
1015
1010
1005
1000
16000
17000
18000
19000
20000
21000
22000
23000
Duplicate Effective
Plan: Duplicate Effective
8/14/2013
RS = 208.1 208.1
.025
.043
.032
.032
0
4
3
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment
Elevation (ft)
Station (ft)
1050
1040
1030
1020
1010
1000
16000
17000
18000
19000
20000
21000
22000
23000

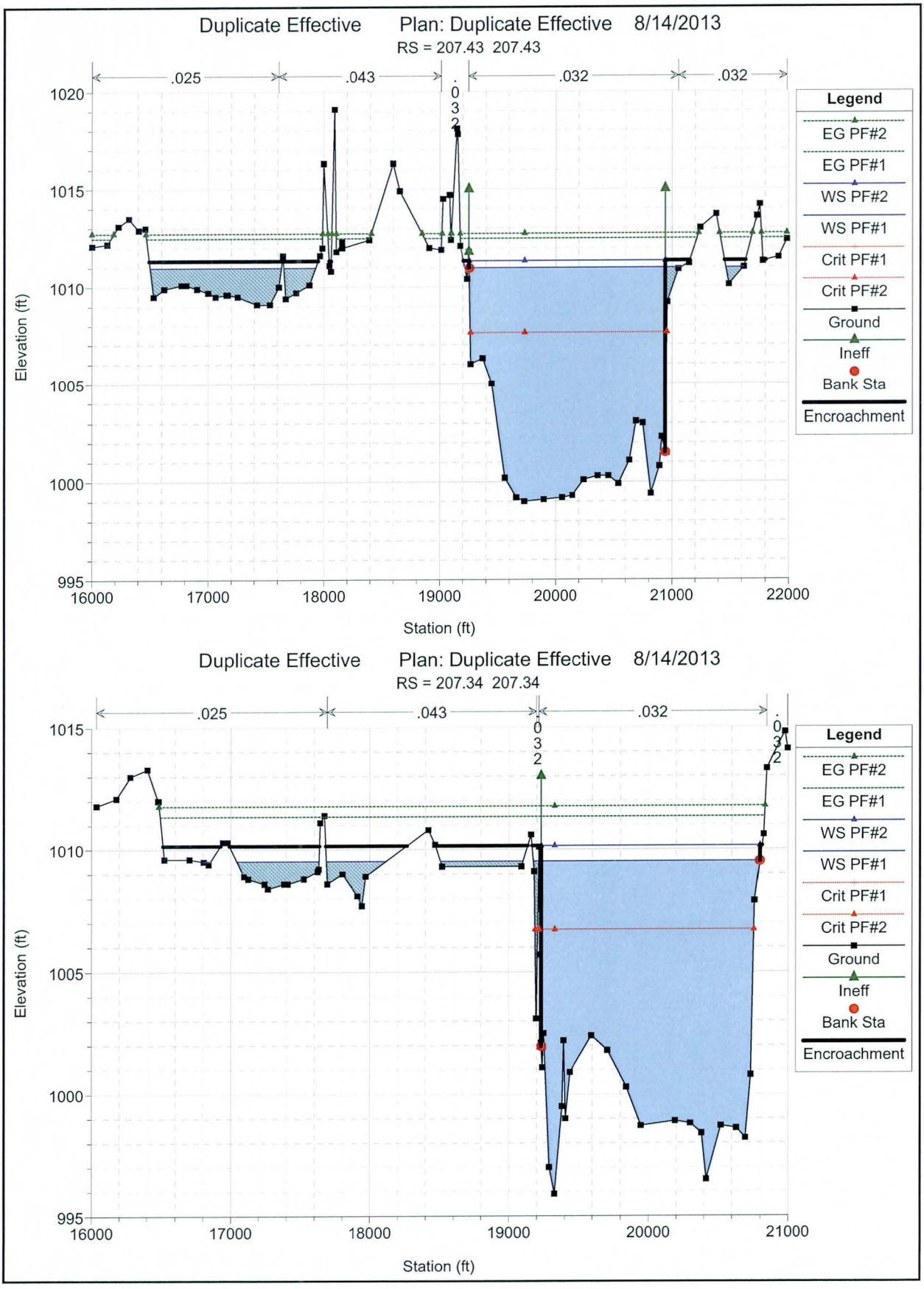

Duplicate Effective Plan: Duplicate Effective 8/14/2013
RS = 207.99 207.99
.043
.032
.032
0
4
3
Elevation (ft)
Station (ft)
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment
Duplicate Effective Plan: Duplicate Effective 8/14/2013
RS = 207.9 207.9 - FEMA Section S
.043
.032
.032
0
3
2
Elevation (ft)
Station (ft)
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment

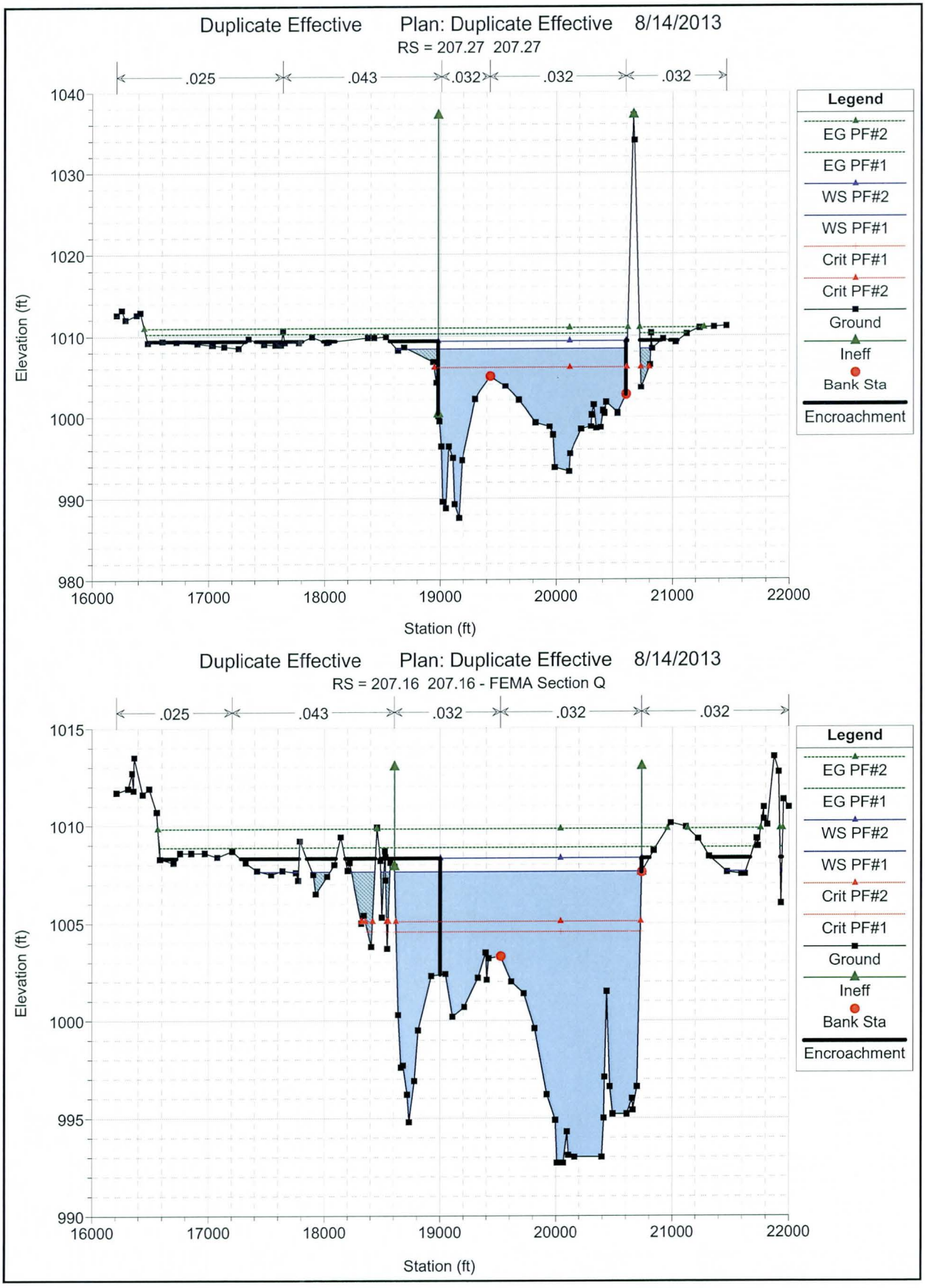

Duplicate Effective
Plan: Duplicate Effective
8/14/2013
RS = 207.8 207.8
.025
.043
.032
.032
Elevation (ft)
Station (ft)
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment
Duplicate Effective
Plan: Duplicate Effective
8/14/2013
RS = 207.71 207.71
.025
.043
.032
.032
.032
Elevation (ft)
Station (ft)
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment


Duplicate Effective
Plan: Duplicate Effective 8/14/2013
RS = 207.62 207.62
.025
.043
.032
.032
.032
Elevation (ft)
Station (ft)
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment
Duplicate Effective
Plan: Duplicate Effective 8/14/2013
RS = 207.53 207.53
.025
.043
.032
.032
.032
Elevation (ft)
Station (ft)
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment


Duplicate Effective Plan: Duplicate Effective 8/14/2013
RS = 207.49 207.49 - FEMA Section R
.032
.032
.032
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment
Elevation (ft)
Station (ft)
Duplicate Effective Plan: Duplicate Effective 8/14/2013
RS = 207.485 BR 51st Avenue Bridge
.032
.032
.032
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment
Elevation (ft)
Station (ft)


Duplicate Effective Plan: Duplicate Effective 8/14/2013
RS = 207.485 BR 51st Avenue Bridge
.032
.032
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment
Elevation (ft)
1030
1020
1010
1000
990
16000
17000
18000
19000
20000
21000
22000
Station (ft)
Duplicate Effective Plan: Duplicate Effective 8/14/2013
RS = 207.48 207.48
.032
.032
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment
Elevation (ft)
1025
1020
1015
1010
1005
1000
995
990
16000
17000
18000
19000
20000
21000
22000
Station (ft)


Duplicate Effective
Plan: Duplicate Effective
8/14/2013
RS = 207.43 207.43
.025
.043
.032
.032
1020
1015
1010
1005
1000
995
16000
17000
18000
19000
20000
21000
22000
Elevation (ft)
Station (ft)
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment
Duplicate Effective
Plan: Duplicate Effective
8/14/2013
RS = 207.34 207.34
.025
.043
.032
1015
1010
1005
1000
995
16000
17000
18000
19000
20000
21000
Elevation (ft)
Station (ft)
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment


Duplicate Effective Plan: Duplicate Effective 8/14/2013
RS = 207.27 207.27
.025
.043
.032
.032
.032
1040
1030
1020
1010
1000
990
980
Elevation (ft)
16000
17000
18000
19000
20000
21000
22000
Station (ft)
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment
Duplicate Effective Plan: Duplicate Effective 8/14/2013
RS = 207.16 207.16 - FEMA Section Q
.025
.043
.032
.032
.032
1015
1010
1005
1000
995
990
Elevation (ft)
16000
17000
18000
19000
20000
21000
22000
Station (ft)
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#2
Crit PF#1
Ground
Ineff
Bank Sta
Encroachment

HEC-RAS Version 4.0.0 March 2008
U.S. Army Corps of Engineers
Hydrologic Engineering Center
609 Second Street
Davis, California

```
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
XXXXXXX  XXXX     X       XXX  XXXX     XXXXXX    XXXX
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
```

****

PROJECT DATA
Project Title: Duplicate Effective
Project File : DuplicateEffective.prj
Run Date and Time: 8/23/2013 10:22:56 AM

Project in English units

Project Description:
City of Phoenix ARS (AZTEC project No AZE1005)
Salt River Effective model -
Received from FEMA for LOMR case no. 08-09-1412P
Salt River Effective model -
Received from FEMA for LOMR case no.
08-09-1294P

==========
Used the model obtained from LOMR 08-09-1412P which modified
sections 209.33 to 209.98 based on TranSystems mapping and grading plans and
Modified cross section 208.57, 208.67, 208.75 & 208.85 based on LOMR
08-09-1294P to create the Duplicate Effective Model

S.Smedley 12/01/10

****

PLAN DATA

Plan Title: Duplicate Effective
Plan File : R:\Phoenix\Projects\AZE1005-ARS_ProgramManagement\Technical\Drainage\HEC-RAS\Duplicate Effective Model\DuplicateEffective.p01

Geometry Title: Salt River Reach 3 - Duplicate Effective
Geometry File : R:\Phoenix\Projects\AZE1005-ARS_ProgramManagement\Technical\Drainage\HEC-RAS\Duplicate Effective Model\DuplicateEffective.g02

Flow Title : Reach 3 - Floodway
Flow File   : R:\Phoenix\Projects\AZE1005-ARS_ProgramManagement\Technical\Drainage\HEC-RAS\Duplicate Effective Model\DuplicateEffective.f01

Plan Summary Information:
Number of: Cross Sections = 161 Multiple Openings = 0
Culverts = 0 Inline Structures = 0
Bridges = 6 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: Subcritical Flow

Encroachment Data
Equal Conveyance = True
Left Offset = 0
Right Offset = 0

River = 1 Reach = 1

RS	Profile	Method	Value1	Value2
214.14	PF#2		119654.9720381.83	
214.04	PF#2		119637.8820371.77	
213.95	PF#2		119586.5420331.73	
213.85	PF#2		119618.3320320.92	
213.75	PF#2		1	1964120297.35
213.74	PF#2		119641.87	20296.6
213.66	PF#2		119687.5720253.56	
213.57	PF#2		1 19484.520336.66	
213.47	PF#2		1 19243.320266.42	
213.38	PF#2		1 19346.120447.85	
213.33	PF#2		1 19328.920514.52	
213.26	PF#2		119497.1820378.39	
213.255	PF#2		119497.3720378.09	
213.25	PF#2		119497.5520377.79	
213.21	PF#2		1 19490.3	20418.5
213.11	PF#2		119616.8820544.67	
213.03	PF#2		1	1967220591.83
212.93	PF#2		119690.7620489.75	
212.84	PF#2		1 19711.520347.25	
212.74	PF#2		119690.61	20367.2
212.68	PF#2		119501.07	20130.1
212.675	PF#2		119492.8920137.19	

212.67	PF#2	119502.3320128.84
212.56	PF#2	119731.0520252.14
212.46	PF#2	119743.34 20301
212.37	PF#2	119744.0620320.69
212.27	PF#2	119715.2520330.35
212.18	PF#2	119706.8520334.57
212.08	PF#2	119681.09 20270.9
211.99	PF#2	119699.7720249.64
211.89	PF#2	119685.7520250.74
211.79	PF#2	119649.87 20217.7
211.71	PF#2	119628.4320197.84
211.64	PF#2	1 19657.7 20219.8
211.54	PF#2	119603.6520129.64
211.51	PF#2	119615.1920137.39
211.41	PF#2	1 19638.120206.06
211.31	PF#2	119531.2120356.09
211.21	PF#2	119528.7520521.25
211.12	PF#2	119498.47 20610
211.02	PF#2	119487.12 20550
210.93	PF#2	119479.13 20700
210.83	PF#2	119450.42 20800
210.74	PF#2	119426.13 20830
210.64	PF#2	1 19388.6 20900
210.55	PF#2	119322.17 21110
210.46	PF#2	1 19377 21284
210.36	PF#2	119375.1721291.16
210.26	PF#2	119377.08 21331.8
210.17	PF#2	1 19354.621334.72
210.07	PF#2	1 19210 21225
209.98	PF#2	1 949.7 2792.67
209.88	PF#2	1 1130.44 2789.02
209.79	PF#2	1 1105.89 2823.47
209.69	PF#2	1 965.68 2711.24
209.6	PF#2	1 937.97 2400
209.54	PF#2	1 -430 620
209.535	PF#2	1 -430 620
209.53	PF#2	1 -430 620
209.42	PF#2	1 571.09 2210.07
209.33	PF#2	1 615.66 2201.13
209.24	PF#2	119212.28 20850
209.14	PF#2	119200.21 21100
209.04	PF#2	1 19220 21200
208.95	PF#2	119141.04 21200
208.85	PF#2	1 19199.7 21150
208.75	PF#2	1 19192.9 20799.2
208.67	PF#2	119118.2220908.11
208.57	PF#2	119087.13 20640
208.48	PF#2	118510.5620680.86
208.39	PF#2	118462.9420748.79
208.29	PF#2	1 18562.620944.07
208.19	PF#2	118679.18 21343.2
208.1	PF#2	118822.3721767.18
207.99	PF#2	119093.0321934.42
207.9	PF#2	1 19104.722137.55
207.8	PF#2	1 19249.521871.22
207.71	PF#2	1 1936021704.11
207.62	PF#2	1 19510.121472.33
207.53	PF#2	1 19502.9 21175
207.49	PF#2	119473.7821053.15
207.48	PF#2	119474.1421053.01
207.43	PF#2	119253.23 20940
207.34	PF#2	1 1923020798.77
207.27	PF#2	1 18980 20597.9
207.16	PF#2	1 19000 20734.5
207.07	PF#2	118857.5720748.18
206.97	PF#2	1 18850 20800
206.88	PF#2	118838.93 20800
206.79	PF#2	118806.0120895.15
206.7	PF#2	118784.84 21138.8
206.6	PF#2	118675.5821066.25
206.51	PF#2	118561.35 20622.1
206.41	PF#2	118494.7120685.21
206.32	PF#2	118476.9420854.87
206.22	PF#2	1 1843520977.29
206.13	PF#2	1 1837020914.89
206.03	PF#2	1 18320 20772.6
205.94	PF#2	1 18200 20767
205.84	PF#2	1 18100 20535.7
205.75	PF#2	1 18048 20450.3
205.62	PF#2	1 18216 20450.1
205.52	PF#2	1 18591.6 20611.5
205.43	PF#2	1 18917.5 20770.4
205.4	PF#2	1 19020 20767.8
205.34	PF#2	1 1918020742.96
205.25	PF#2	1 19300 20782.3
205.15	PF#2	1 19385 20830
205.06	PF#2	1 19470 20905.3
204.97	PF#2	1 19445 20961.3
204.87	PF#2	1 19410 20952.2
204.78	PF#2	1 1921020830.43
204.68	PF#2	1 1896020546.37
204.61	PF#2	1 18880 20482.9
204.53	PF#2	1 18885 20495.9
204.42	PF#2	1 19025.420679.03
204.34	PF#2	1 1910020814.38
204.25	PF#2	1 1930020817.18
204.15	PF#2	1 1920021031.89
204.05	PF#2	118963.7821080.54
203.96	PF#2	118736.54 20787.3
203.86	PF#2	118542.4920734.27
203.77	PF#2	118232.4120743.68
203.67	PF#2	1 1813020697.43
203.58	PF#2	1 1802520701.39
203.48	PF#2	1 17932.620844.31
203.39	PF#2	1 17970.821036.47
203.29	PF#2	1 18065.621074.86

```
203.19  PF#2                    1 18262.120951.24
203.09  PF#2                    1   1843020905.85
202.99  PF#2                    1 18469.4 20926.9
202.9   PF#2                    1 18455.620967.31
202.8   PF#2                    1 18390.821011.58
202.69  PF#2                    1 18377.821080.23
202.59  PF#2                    1 18416.7 21190.4
202.48  PF#2                    1   18360 21302.7
202.37  PF#2                    1   1827021577.77
202.29  PF#2                    1 18197.4   21803
202.18  PF#2                    1 18139.721936.54
202.09  PF#2                    1 18212.921936.96
201.99  PF#2                    1 18235.121861.56
201.9   PF#2                    117992.63 21823.6
201.81  PF#2                    117952.4821801.08
201.71  PF#2                    118112.81 21528.5
201.62  PF#2                    118235.69 21477.5
201.52  PF#2                    118008.55 21391.4
201.43  PF#2                    118053.86 21342.1
201.33  PF#2                    118074.35 21381.8
201.24  PF#2                    118069.92   21570
201.14  PF#2                    118040.42   21721
201.05  PF#2                    117950.48   21849
200.95  PF#2                    117952.91   21954
200.86  PF#2                    1   18000   22032
200.77  PF#2                    1 17828.8   21951
200.67  PF#2                    1   17640 21649.3
200.58  PF#2                    1   17510   21450
200.49  PF#2                    1   17380   21171
200.39  PF#2                    1   17300   21041
200.3   PF#2                    1   17205   20896
200.2   PF#2                    1   17115   20744
200.1   PF#2                    1   17030   20800
200     PF#2                    1   16950   21050
199.91  PF#2                    1   16800   21330
199.82  PF#2                    1   16870   21650

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

FLOW DATA

Flow Title: Reach 3 - Floodway
Flow File : R:\Phoenix\Projects\AZE1005-ARS_ProgramManagement\Technical\Drainage\HEC-RAS\Duplicate Effective Model\DuplicateEffective.f01

Flow Data (cfs)
****************************************************************************
* River          Reach          RS      *          PF#1          PF#2 *
* 1              1              214.14  *        169000        169000 *
* 1              1              213.21  *        166000        166000 *
* 1              1              205.4   *        164000        164000 *
* 1              1              200.3   *        179750        179750 *
****************************************************************************

Boundary Conditions
*****************************************************************************************************************
* River          Reach          Profile         *          Upstream                Downstream    *
*****************************************************************************************************************
* 1              1              PF#1            *                             Known WS = 948.9 *
* 1              1              PF#2            *                             Known WS = 949.9 *
*****************************************************************************************************************

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

GEOMETRY DATA

Geometry Title: Salt River Reach 3 - Duplicate Effective
Geometry File : R:\Phoenix\Projects\AZE1005-ARS_ProgramManagement\Technical\Drainage\HEC-RAS\Duplicate Effective
Model\DuplicateEffective.g02

CROSS SECTION


RIVER: 1
REACH: 1                RS: 214.14

INPUT
Description: 214.14
Station Elevation Data    num=      96
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
****************************************************************************
 18555.4  1082.6 18577.7  1082.5 18586.5  1082.5 18650.6    1082 18678.8  1082.1
 18707.4  1081.7 18729.5    1082 18771.6  1082.1 18793.7  1081.8   18836  1080.9
 18859.7  1080.3 18935.6  1078.9 19050.6  1077.2 19056.7  1077.2 19059.9  1077.1
 19062.9  1076.9 19063.3    1077 19067.8  1077.1 19071.9  1077.1 19078.2  1077.1
 19188.3  1078.1 19249.7  1079.4 19290.2  1080.1 19298.1  1080.2 19313.1  1080.4
 19327.5  1080.7 19358.6  1080.6 19391.6  1080.5 19412.8  1080.3 19520.8  1077.9
 19554.8  1077.5 19580.2  1077.3 19610.8  1076.5 19651.9  1076.7 19697.7  1058.7
 19715.9  1051.7 19732.8  1050.2 19750.7  1048.7 20032.7    1049 20292.3  1049.2
 20350.9  1065.9 20388.3  1077.5 20405.5  1075.6   20406  1075.6 20439.7  1075.6
 20637.3  1075.5 20899.6  1075.4 20920.6  1075.5 20941.8  1075.4 20947.4  1075.5
   20962  1075.5   20980  1075.4 20989.9  1075.4 21074.1  1075.4 21119.6  1075.7
 21168.7  1076.8   21222  1076.6 21326.8  1076.2 21327.4  1076.2 21342.2    1075
 21390.6    1075 21428.8    1075 21455.3  1075.3 21502.1  1076.4 21502.4  1076.2
 21505.4  1076.4 21551.9  1077.5 21591.8  1077.6 21726.3  1078.4 21759.2  1078.5
 21766.3  1078.3 21792.4  1078.4 21884.6  1078.9   22013  1079.1 22034.3  1079.5
 22101.6  1079.7 22156.1  1080.1 22201.4    1080 22204.6  1079.9 22217.3  1080.5
   22235  1081.3 22238.1  1081.3 22264.5    1081 22267.7  1080.9 22269.4  1080.7
 22269.9  1080.6 22272.4  1080.4 22280.3  1079.8 22341.9  1080.2   22431  1080.6
 22501.3  1081.2 22591.2  1081.8 22602.9    1082 22619.7    1083 22686.6  1082.9
 22710.3  1082.5

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
 18555.4     .04 19651.9    .035 20388.3     .04
```

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       19651.9 20388.3              475  510.51     570             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 18555.4 19651.9    1082       F
 20388.3 22710.3    1082       F

CROSS SECTION OUTPUT  Profile #PF#1
*************************************************************************************************
* E.G. Elev (ft)         * 1077.01  * Element                * Left OB *  Channel * Right OB *
* Vel Head (ft)          *    1.50  * Wt. n-Val.            *         *    0.035 *          *
* W.S. Elev (ft)         * 1075.50  * Reach Len. (ft)       *  475.00 *  510.51  *  570.00  *
* Crit W.S. (ft)         * 1062.66  * Flow Area (sq ft)     *         *17180.89  *          *
* E.G. Slope (ft/ft)     *0.000804  * Area (sq ft)          *         *17180.89  *   83.10  *
* Q Total (cfs)          *169000.00  * Flow (cfs)           *         *169000.00  *         *
* Top Width (ft)         * 1312.52  * Top Width (ft)        *         *  726.91  *  585.60  *
* Vel Total (ft/s)       *    9.84  * Avg. Vel. (ft/s)      *         *    9.84  *          *
* Max Chl Dpth (ft)      *   26.80  * Hydr. Depth (ft)      *         *   23.64  *          *
* Conv. Total (cfs)      *5961484.0  * Conv. (cfs)          *         *5961484.0  *         *
* Length Wtd. (ft)       *  510.51  * Wetted Per. (ft)      *         *  735.31  *          *
* Min Ch El (ft)         * 1048.70  * Shear (lb/sq ft)      *         *    1.17  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *         *   11.53  *          *
* Frctn Loss (ft)        *    0.42  * Cum Volume (acre-ft)  * 9467.46 *35647.09  * 3148.44  *
* C & E Loss (ft)        *    0.00  * Cum SA (acres)        * 2206.08 * 3246.48  * 1055.25  *
*************************************************************************************************

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.

CROSS SECTION OUTPUT  Profile #PF#2
*************************************************************************************************
* E.G. Elev (ft)         * 1077.01  * Element                * Left OB *  Channel * Right OB *
* Vel Head (ft)          *    1.50  * Wt. n-Val.            *         *    0.035 *          *
* W.S. Elev (ft)         * 1075.51  * Reach Len. (ft)       *  475.00 *  510.51  *  570.00  *
* Crit W.S. (ft)         * 1062.66  * Flow Area (sq ft)     *         *17184.88  *          *
* E.G. Slope (ft/ft)     *0.000803  * Area (sq ft)          *         *17184.88  *          *
* Q Total (cfs)          *169000.00  * Flow (cfs)           *         *169000.00  *         *
* Top Width (ft)         *  726.86  * Top Width (ft)        *         *  726.86  *          *
* Vel Total (ft/s)       *    9.83  * Avg. Vel. (ft/s)      *         *    9.83  *          *
* Max Chl Dpth (ft)      *   26.81  * Hydr. Depth (ft)      *         *   23.64  *          *
* Conv. Total (cfs)      *5963943.0  * Conv. (cfs)          *         *5963943.0  *         *
* Length Wtd. (ft)       *  510.51  * Wetted Per. (ft)      *         *  735.29  *          *
* Min Ch El (ft)         * 1048.70  * Shear (lb/sq ft)      *         *    1.17  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *         *   11.52  *          *
* Frctn Loss (ft)        *    0.42  * Cum Volume (acre-ft)  * 1430.28 *36629.85  *  355.97  *
* C & E Loss (ft)        *    0.00  * Cum SA (acres)        *  223.80 * 3252.09  *   77.43  *
*************************************************************************************************

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

CROSS SECTION


RIVER: 1
REACH: 1                 RS: 214.04

INPUT
Description: 214.04
Station Elevation Data    num=      96
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*************************************************************************************
  19072.9  1079.7 19093.4  1080.3 19132.2  1080.8 19189.9  1082.5 19193.8  1082.6
  19198.4  1082.5 19239.2    1081 19288.1  1081.2 19324.4  1080.7 19371.7  1079.1
  19395.9  1078.4 19428.8    1078 19449.6  1077.2 19490.6  1077.5 19513.1  1077.7
  19544.1  1077.9 19555.9  1077.7 19588.8  1076.5 19610.7  1075.7 19613.2  1075.7
  19632.1  1075.8 19635.6  1075.8 19636.8  1075.4 19702.8    1053 19711.2  1052.5
  19718.8  1052.3 19726.8  1051.2 19735.4  1048.8 20175.7    1049 20286.6    1049
  20298.5  1052.8 20376.6  1076.5 20387.2  1075.5 20390.3  1075.2 20574.2    1076
  20667.2  1076.1 20825.6  1075.6 20839.5  1075.5 20839.8  1075.5 20855.8    1073
  20864.2  1073.4 20909.3  1072.6 20914.5  1072.6 20915.6  1072.9 20928.6    1077
  20951.8    1077 20990.8  1076.9 20996.8  1076.9 21016.8  1077.3 21040.9  1077.5
  21130.4  1077.3 21234.3  1076.9 21246.3  1076.9 21256.8  1076.2 21294.9  1076.5
  21366.4  1076.6 21461.4  1076.5 21539.2  1076.3 21557.9  1076.3 21565.1  1076.3
  21586.9  1076.6 21607.7  1076.8 21639.2  1077.1 21662.1  1077.5 21690.5  1078.1
  21711.2  1078.3 21774.8  1078.5 21799.9  1079.2 21800.4  1079.3 21942.9  1079.4
    21971  1079.3 22001.7  1079.3 22020.7  1079.3 22177.7  1078.3 22203.1  1078.1
  22217.2  1078.1 22226.8    1078 22231.1    1078 22238.5    1078   22248  1077.8
  22357.9  1076.9 22384.7  1077.9 22394.1  1078.2 22399.6  1078.1 22400.9  1078.1
  22428.8  1077.9 22430.1  1077.9 22450.6  1078.2 22542.8  1078.3   22554  1078.5
  22667.1  1079.2 22667.7  1079.3 22717.7  1081.1 22725.6  1081.1 22727.3  1081.2
  22747.1    1084

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*************************************************
  19072.9     .04 19636.8    .035 20376.6     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       19636.8 20376.6              495  493.12     480             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 19072.9 19636.8    1083       F
 20376.6 22747.1    1083       F

CROSS SECTION OUTPUT  Profile #PF#1
*************************************************************************************************
* E.G. Elev (ft)         * 1076.58  * Element                * Left OB *  Channel * Right OB *
* Vel Head (ft)          *    1.54  * Wt. n-Val.            *         *    0.035 *          *
* W.S. Elev (ft)         * 1075.04  * Reach Len. (ft)       *  495.00 *  493.12  *  480.00  *
* Crit W.S. (ft)         * 1062.64  * Flow Area (sq ft)     *         *16977.45  *          *
* E.G. Slope (ft/ft)     *0.000846  * Area (sq ft)          *         *16977.45  *  143.39  *
* Q Total (cfs)          *169000.00  * Flow (cfs)           *         *169000.00  *         *
* Top Width (ft)         *  813.60  * Top Width (ft)        *         *  733.94  *   79.66  *
```

```
                                                                    DuplicateEffective
* Vel Total (ft/s)       *    9.95  * Avg. Vel. (ft/s)          *          *    9.95  *          *
* Max Chl Dpth (ft)      *   26.24  * Hydr. Depth (ft)          *          *   23.13  *          *
* Conv. Total (cfs)      *5809707.0  * Conv. (cfs)              *          *5809707.0  *          *
* Length Wtd. (ft)       *  493.12  * Wetted Per. (ft)          *          *  741.89  *          *
* Min Ch El (ft)         * 1048.80  * Shear (lb/sq ft)          *          *    1.21  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s)    *          *   12.03  *          *
* Frctn Loss (ft)        *    0.50  * Cum Volume (acre-ft)      * 9467.46  *35446.93  * 3146.95  *
* C & E Loss (ft)        *    0.04  * Cum SA (acres)            * 2206.08  * 3237.92  * 1050.89  *
*****************************************************************************************************

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.

CROSS SECTION OUTPUT  Profile #PF#2
*****************************************************************************************************
* E.G. Elev (ft)         * 1076.59  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    1.54  * Wt. n-Val.              *          *    0.035  *          *
* W.S. Elev (ft)         * 1075.05  * Reach Len. (ft)        *  495.00  *  493.12  *  480.00  *
* Crit W.S. (ft)         * 1062.64  * Flow Area (sq ft)      *          *16981.83  *          *
* E.G. Slope (ft/ft)     *0.000845  * Area (sq ft)           *          *16981.83  *          *
* Q Total (cfs)          *169000.00  * Flow (cfs)            *          *169000.00  *          *
* Top Width (ft)         *  733.89  * Top Width (ft)         *          *  733.89  *          *
* Vel Total (ft/s)       *    9.95  * Avg. Vel. (ft/s)       *          *    9.95  *          *
* Max Chl Dpth (ft)      *   26.25  * Hydr. Depth (ft)       *          *   23.14  *          *
* Conv. Total (cfs)      *5812338.0  * Conv. (cfs)           *          *5812338.0  *          *
* Length Wtd. (ft)       *  493.12  * Wetted Per. (ft)       *          *  741.87  *          *
* Min Ch El (ft)         * 1048.80  * Shear (lb/sq ft)       *          *    1.21  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *   12.02  *          *
* Frctn Loss (ft)        *    0.50  * Cum Volume (acre-ft)   * 1430.28  *36429.64  *  355.97  *
* C & E Loss (ft)        *    0.04  * Cum SA (acres)         *  223.80  * 3243.53  *   77.43  *
*****************************************************************************************************

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

CROSS SECTION


RIVER: 1
REACH: 1                 RS: 213.95

INPUT
Description: 213.95 - FEMA Section AG
Station Elevation Data    num=     96
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*********************************************************************************************
 19012.2  1082.3 19071.8  1081.2 19072.8  1081.2 19073.5  1081.2 19172.6    1080
 19176.1  1079.9   19177  1079.9 19191.6  1079.8 19233.8  1079.1 19245.6  1079.2
 19283.7  1079.1   19366  1078.5 19459.9  1077.8 19508.7  1075.2   19510  1075.1
 19510.4  1075.2 19511.8  1075.3 19534.7  1076.7 19583.1  1074.4 19622.2  1071.5
 19627.4  1072.4 19631.4  1072.9 19699.3  1056.7   19729  1049.4 19783.8  1049.5
 20255.4  1049.3 20277.7  1056.5 20337.1  1075.9 20360.3  1074.9 20361.6  1074.8
 20403.2  1074.5 20653.5  1075.3 20691.9  1075.3   20740  1075.5   20772  1075.4
 20775.5  1075.1 20784.4  1073.9 20808.5  1074.1 20840.9  1074.4 20844.2  1074.5
 20853.7  1075.1   20870  1074.8   20875  1074.6 20914.9  1075.6 20922.3  1075.7
 20949.7  1076.5 20960.6  1076.8 20964.2  1076.9 20966.3  1078.4   20973  1080.1
 21108.8  1079.4 21171.4  1079.5 21176.1  1079.5   21183  1079.7 21200.9  1076.8
 21203.1  1076.6 21232.6  1076.3 21271.1    1076 21272.6    1076 21274.1    1076
 21377.7  1076.7 21386.9  1076.7 21400.8  1076.7 21470.9  1077.6 21502.4  1077.7
   21528  1077.6   21534  1077.9 21534.2  1077.9   21537    1078 21542.7  1077.4
 21542.9  1077.8 21554.1  1077.4 21695.2  1077.7 21731.7  1077.2 21736.1  1076.3
 21743.3  1075.1   21752  1076.3 21753.2  1076.5 21753.7  1076.6 21759.1  1078.6
 21760.3  1079.1 21763.3  1079.6 21764.1  1079.5 21772.7  1079.3 21784.7  1079.3
 21791.6  1079.5 21806.1  1079.6 21832.6  1079.8 21918.1  1079.8 21918.4  1080.2
 22000.8  1079.8   22342  1078.4 22351.4  1078.4 22362.3  1078.4 22373.8  1078.7
 22391.3  1078.7

Manning's n Values        num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
*************************************************
 19012.2     .04 19534.7     .035 20337.1     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.    Expan.
      19534.7 20337.1             500  504.25     500             .1         .3
Ineffective Flow     num=       2
  Sta L    Sta R     Elev  Permanent
 19012.2 19534.7   1082.3       F
 20337.1 22391.3   1082.3       F

CROSS SECTION OUTPUT  Profile #PF#1
*****************************************************************************************************
* E.G. Elev (ft)         * 1076.05  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    1.89  * Wt. n-Val.              *          *    0.035  *          *
* W.S. Elev (ft)         * 1074.16  * Reach Len. (ft)        *  500.00  *  504.25  *  500.00  *
* Crit W.S. (ft)         * 1063.67  * Flow Area (sq ft)      *          *15307.12  *          *
* E.G. Slope (ft/ft)     *0.001218  * Area (sq ft)           *          *15307.12  *    4.17  *
* Q Total (cfs)          *169000.00  * Flow (cfs)            *          *169000.00  *          *
* Top Width (ft)         *  777.40  * Top Width (ft)         *          *  745.37  *   32.04  *
* Vel Total (ft/s)       *   11.04  * Avg. Vel. (ft/s)       *          *   11.04  *          *
* Max Chl Dpth (ft)      *   24.86  * Hydr. Depth (ft)       *          *   20.54  *          *
* Conv. Total (cfs)      *4843418.0  * Conv. (cfs)           *          *4843418.0  *          *
* Length Wtd. (ft)       *  504.21  * Wetted Per. (ft)       *          *  752.31  *          *
* Min Ch El (ft)         * 1049.30  * Shear (lb/sq ft)       *          *    1.55  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *   17.07  *          *
* Frctn Loss (ft)        *    0.81  * Cum Volume (acre-ft)   * 9467.46  *35264.19  * 3146.14  *
* C & E Loss (ft)        *    0.15  * Cum SA (acres)         * 2206.08  * 3229.55  * 1050.28  *
*****************************************************************************************************

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

CROSS SECTION OUTPUT  Profile #PF#2
```

DuplicateEffective

* E.G. Elev (ft)	* 1076.06	* Element	*	Left OB	*	Channel	*	Right OB	*
* Vel Head (ft)	* 1.89	* Wt. n-Val.	*		*	0.035	*		*
* W.S. Elev (ft)	* 1074.16	* Reach Len. (ft)	*	500.00	*	504.25	*	500.00	*
* Crit W.S. (ft)	* 1063.67	* Flow Area (sq ft)	*		*	15312.49	*		*
* E.G. Slope (ft/ft)	*0.001216	* Area (sq ft)	*		*	15312.49	*		*
* Q Total (cfs)	*169000.00	* Flow (cfs)	*		*	169000.00	*		*
* Top Width (ft)	* 745.19	* Top Width (ft)	*		*	745.19	*		*
* Vel Total (ft/s)	* 11.04	* Avg. Vel. (ft/s)	*		*	11.04	*		*
* Max Chl Dpth (ft)	* 24.86	* Hydr. Depth (ft)	*		*	20.55	*		*
* Conv. Total (cfs)	*4846870.0	* Conv. (cfs)	*		*	4846870.0	*		*
* Length Wtd. (ft)	* 504.21	* Wetted Per. (ft)	*		*	752.16	*		*
* Min Ch El (ft)	* 1049.30	* Shear (lb/sq ft)	*		*	1.55	*		*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*		*	17.05	*		*
* Frctn Loss (ft)	* 0.81	* Cum Volume (acre-ft)	*	1430.28	*	36246.84	*	355.97	*
* C & E Loss (ft)	* 0.15	* Cum SA (acres)	*	223.80	*	3235.16	*	77.43	*

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). 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: 1
REACH: 1 RS: 213.85

INPUT
Description: 213.85
Station Elevation Data num= 96

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
17827.8	1078.7	17849.3	1078.5	17962.5	1078	17983.6	1077.8	18087.6	1077.7
18117.7	1077.6	18209	1077.4	18245.6	1077.6	18313.2	1077.9	18389.3	1078.8
18415.4	1078.8	18437.5	1078.2	18449	1078.3	18463.7	1078.2	18513.6	1077.6
18548.9	1077.6	18753.1	1077.6	18798.9	1077.6	18834.2	1077.6	18917.4	1077
19257.5	1075.3	19264.9	1075.1	19293.5	1075.6	19308	1069.8	19333.3	1060.1
19342.5	1063.1	19360.7	1068.8	19366.6	1068.9	19391	1069.1	19423.4	1069.4
19453.2	1068.8	19469.5	1068.4	19505	1067.4	19506.5	1067.3	19507.3	1067.3
19507.8	1067.3	19547.4	1067.3	19584.5	1067.6	19698.5	1068	19698.6	1068
19700.1	1067.8	19706.3	1067	19707.5	1066.9	19732.9	1066.7	19742.3	1067
19770.4	1067.6	19785.4	1067.6	19789.2	1066.5	19853.9	1048.1	19906.4	1048.1
20083.9	1048.2	20249.9	1048.3	20313.2	1069.1	20328.7	1074.2	20334.9	1074.2
20586	1074.1	20640.3	1074.2	20781.1	1074.5	20824.2	1074.1	20842	1073.7
20852.3	1073.7	20870.3	1073.9	20934.9	1073.8	20979.5	1074.4	21111.7	1075.1
21125.5	1075	21144.4	1074.8	21152.1	1075.1	21185.5	1076.2	21224.6	1075.6
21230.8	1075.4	21246.8	1077.2	21248.3	1077.3	21269	1076.4	21270.4	1076.3
21272.5	1076.3	21337.9	1076.3	21381.5	1076.2	21384.6	1076.3	21498.8	1077.1
21503.7	1077.1	21545.5	1077.1	21557.5	1077.1	21587	1077.2	21625.9	1077.3
21671.9	1077.5	21707.6	1077.4	21723.9	1077.4	21767.4	1077.3	21770.2	1077.3
21773.6	1077.4	21774.6	1077.4	21801.1	1079.6	21831.2	1078.8	21907.4	1079.1
21970.5	1078.8								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
17827.8	.04	19785.4	.035	20328.7	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19785.4	20328.7	521 520.04	541	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
17827.8	19618.33	1078	F
20328.7	21970.5	1078	F

CROSS SECTION OUTPUT Profile #PF#1

* E.G. Elev (ft)	* 1075.08	* Element	*	Left OB	*	Channel	*	Right OB	*
* Vel Head (ft)	* 3.43	* Wt. n-Val.	*	0.040	*	0.035	*		*
* W.S. Elev (ft)	* 1071.66	* Reach Len. (ft)	*	521.00	*	520.04	*	541.00	*
* Crit W.S. (ft)	* 1065.14	* Flow Area (sq ft)	*	694.18	*	11070.79	*		*
* E.G. Slope (ft/ft)	*0.002230	* Area (sq ft)	*	1959.01	*	11070.79	*		*
* Q Total (cfs)	*169000.00	* Flow (cfs)	*	3146.51	*	165853.50	*		*
* Top Width (ft)	* 1017.61	* Top Width (ft)	*	482.04	*	535.57	*		*
* Vel Total (ft/s)	* 14.36	* Avg. Vel. (ft/s)	*	4.53	*	14.98	*		*
* Max Chl Dpth (ft)	* 23.56	* Hydr. Depth (ft)	*	4.16	*	20.67	*		*
* Conv. Total (cfs)	*3578540.0	* Conv. (cfs)	*	66626.8	*	3511913.0	*		*
* Length Wtd. (ft)	* 520.05	* Wetted Per. (ft)	*	167.15	*	542.03	*		*
* Min Ch El (ft)	* 1048.10	* Shear (lb/sq ft)	*	0.58	*	2.84	*		*
* Alpha	* 1.07	* Stream Power (lb/ft s)	*	2.62	*	42.60	*		*
* Frctn Loss (ft)	* 0.71	* Cum Volume (acre-ft)	*	9456.22	*	35111.52	*	3146.12	*
* C & E Loss (ft)	* 0.44	* Cum SA (acres)	*	2203.31	*	3222.13	*	1050.09	*

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

CROSS SECTION OUTPUT Profile #PF#2

* E.G. Elev (ft)	* 1075.09	* Element	*	Left OB	*	Channel	*	Right OB	*
* Vel Head (ft)	* 3.43	* Wt. n-Val.	*	0.040	*	0.035	*		*
* W.S. Elev (ft)	* 1071.66	* Reach Len. (ft)	*	521.00	*	520.04	*	541.00	*
* Crit W.S. (ft)	* 1065.14	* Flow Area (sq ft)	*	695.26	*	11074.25	*		*
* E.G. Slope (ft/ft)	*0.002229	* Area (sq ft)	*	695.26	*	11074.25	*		*
* Q Total (cfs)	*169000.00	* Flow (cfs)	*	3105.07	*	165894.90	*		*
* Top Width (ft)	* 702.59	* Top Width (ft)	*	167.07	*	535.52	*		*
* Vel Total (ft/s)	* 14.36	* Avg. Vel. (ft/s)	*	4.47	*	14.98	*		*
* Max Chl Dpth (ft)	* 23.56	* Hydr. Depth (ft)	*	4.16	*	20.68	*		*

```
                                                                    DuplicateEffective
* Conv. Total (cfs)       *3579632.0  * Conv. (cfs)                  * 65769.3  *3513862.0  *          *
* Length Wtd. (ft)        *  520.05   * Wetted Per. (ft)           *  171.10  *  542.00   *          *
* Min Ch El (ft)          * 1048.10   * Shear (lb/sq ft)           *    0.57  *    2.84   *          *
* Alpha                   *    1.07   * Stream Power (lb/ft s)     *    2.53  *   42.59   *          *
* Frctn Loss (ft)         *    0.71   * Cum Volume (acre-ft)      * 1426.29  *36094.12   *  355.97  *
* C & E Loss (ft)         *    0.44   * Cum SA (acres)            *  222.84  * 3227.74   *   77.43  *
*********************************************************************************************************

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

CROSS SECTION


RIVER: 1
REACH: 1                 RS: 213.75

INPUT
Description: 213.75
Station Elevation Data    num=      28
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*********************************************************************************************
   18435     1076    19470     1076    19600     1080 19633.4 1080.84 19633.5 1074.13
 19633.6  1073.5 19636.5  1073.5    19709 1048.55    19764     1047 19769.5     1047
 19834.5 1047.15    19899  1046.6    19904  1046.6    19959     1047    20034 1044.61
   20039  1044.6    20104    1045    20169  1045.5    20174  1045.5 20240.5 1049.35
   20302  1073.8    20305  1073.8 20305.1  1074.8 20305.2  1081.5    20340     1080
   20490     1076    20925     1075    21465     1076

Manning's n Values        num=       3
     Sta    n Val      Sta    n Val      Sta    n Val
*************************************************
   18435     .037 19633.5     .032 20305.1     .037

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.    Expan.
       19633.5 20305.1               125  116.36     120             .1       .3
Ineffective Flow     num=       2
   Sta L    Sta R     Elev  Permanent
   18435 19633.5 1074.13         F
 20305.1    21465  1074.8         F

CROSS SECTION OUTPUT  Profile #PF#1
*********************************************************************************************************
* E.G. Elev (ft)          * 1073.93  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    1.97  * Wt. n-Val.              *          *   0.032  *          *
* W.S. Elev (ft)          * 1071.97  * Reach Len. (ft)        *    0.10  *    0.10  *    0.10  *
* Crit W.S. (ft)          * 1060.91  * Flow Area (sq ft)      *          *15022.46  *          *
* E.G. Slope (ft/ft)      *0.000919  * Area (sq ft)           *          *15022.46  *          *
* Q Total (cfs)           *169000.00  * Flow (cfs)            *          *169000.00  *          *
* Top Width (ft)          *  656.45  * Top Width (ft)         *          *  656.45  *          *
* Vel Total (ft/s)        *   11.25  * Avg. Vel. (ft/s)       *          *   11.25  *          *
* Max Chl Dpth (ft)       *   27.37  * Hydr. Depth (ft)       *          *   22.88  *          *
* Conv. Total (cfs)       *5575129.0  * Conv. (cfs)           *          *5575129.0  *          *
* Length Wtd. (ft)        *    0.10  * Wetted Per. (ft)       *          *  664.87  *          *
* Min Ch El (ft)          * 1044.60  * Shear (lb/sq ft)       *          *    1.30  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *   14.58  *          *
* Frctn Loss (ft)         *          * Cum Volume (acre-ft)   * 9444.51  *34955.76  * 3146.12  *
* C & E Loss (ft)         *          * Cum SA (acres)         * 2200.43  * 3215.02  * 1050.09  *
*********************************************************************************************************

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

CROSS SECTION OUTPUT  Profile #PF#2
*********************************************************************************************************
* E.G. Elev (ft)          * 1073.94  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    1.96  * Wt. n-Val.              *          *   0.032  *          *
* W.S. Elev (ft)          * 1071.98  * Reach Len. (ft)        *    0.10  *    0.10  *    0.10  *
* Crit W.S. (ft)          * 1060.91  * Flow Area (sq ft)      *          *15027.91  *          *
* E.G. Slope (ft/ft)      *0.000918  * Area (sq ft)           *          *15027.91  *          *
* Q Total (cfs)           *169000.00  * Flow (cfs)            *          *169000.00  *          *
* Top Width (ft)          *  656.35  * Top Width (ft)         *          *  656.35  *          *
* Vel Total (ft/s)        *   11.25  * Avg. Vel. (ft/s)       *          *   11.25  *          *
* Max Chl Dpth (ft)       *   27.38  * Hydr. Depth (ft)       *          *   22.90  *          *
* Conv. Total (cfs)       *5578780.0  * Conv. (cfs)           *          *5578780.0  *          *
* Length Wtd. (ft)        *    0.10  * Wetted Per. (ft)       *          *  664.82  *          *
* Min Ch El (ft)          * 1044.60  * Shear (lb/sq ft)       *          *    1.30  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *   14.56  *          *
* Frctn Loss (ft)         *          * Cum Volume (acre-ft)   * 1422.13  *35938.31  *  355.97  *
* C & E Loss (ft)         *          * Cum SA (acres)         *  221.84  * 3220.63  *   77.43  *
*********************************************************************************************************

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

BRIDGE


RIVER: 1
REACH: 1                 RS: 213.745

INPUT
Description: 7th Street Bridge
Distance from Upstream XS =       .1
Deck/Roadway Width        =    115.36
Weir Coefficient          =       2.6
Upstream  Deck/Roadway Coordinates
    num=       8
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
*****************************************************************************
```

```
                                                                    DuplicateEffective
 19633.4 1080.84 1074.13 19633.5 1080.84 1074.13   19764 1084.56 1077.81
   19899 1085.96 1079.23   20039 1085.95  1079.2   20174 1084.45  1077.7
   20305 1081.53 1074.82 20305.2  1081.5 1074.82

Upstream Bridge Cross Section Data
Station Elevation Data    num=      28
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
   18435    1076   19470    1076   19600    1080 19633.4 1080.84 19633.5 1074.13
 19633.6  1073.5 19636.5  1073.5   19709 1048.55   19764    1047 19769.5    1047
 19834.5 1047.15   19899  1046.6   19904  1046.6   19959    1047   20034 1044.61
   20039  1044.6   20104    1045   20169  1045.5   20174  1045.5 20240.5 1049.35
   20302  1073.8   20305  1073.8 20305.1  1074.8 20305.2  1081.5   20340    1080
   20490    1076   20925    1075   21465    1076

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
   18435    .037 19633.5    .032 20305.1    .037

Bank Sta: Left   Right    Coeff Contr.   Expan.
       19633.5 20305.1            .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
   18435 19633.5 1074.13       F
 20305.1   21465  1074.8       F

Downstream  Deck/Roadway Coordinates
    num=       8
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
*********************************************************************************
 19633.4 1080.84 1074.13 19633.5 1080.84 1074.13   19764 1084.56 1077.81
   19899 1085.96 1079.23   20039 1085.95  1079.2   20174 1084.45  1077.7
   20305 1081.53 1074.82 20305.2  1081.5 1074.82

Downstream Bridge Cross Section Data
Station Elevation Data    num=      28
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
   18435    1076   19470    1076   19600    1080 19633.4 1080.84 19633.5 1074.13
 19633.6  1073.5 19636.5  1073.5   19709 1048.55   19764    1047 19769.5    1047
 19834.5 1047.15   19899  1046.6   19904  1046.6   19959    1047   20034 1044.61
   20039  1044.6   20104    1045   20169  1045.5   20174  1045.5 20240.5 1049.35
   20302  1073.8   20305  1073.8 20305.1  1074.8 20305.2  1081.5   20340    1080
   20490    1076   20925    1075   21465    1076

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
   18435    .037 19633.5    .032 20305.1    .037

Bank Sta: Left   Right    Coeff Contr.   Expan.
       19633.5 20305.1            .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
   18435 19633.5 1074.13       F
 20305.1   21465  1074.8       F

Upstream Embankment side slope              =         horiz. to 1.0 vertical
Downstream Embankment side slope            =         horiz. to 1.0 vertical
Maximum allowable submergence for weir flow =      .95
Elevation at which weir flow begins         =
Energy head used in spillway design         =
Spillway height used in design              =
Weir crest shape                            = Broad Crested

Number of Piers =  4

Pier Data
Pier Station     Upstream= 19766.5    Downstream= 19766.5
Upstream     num=       2
    Width   Elev    Width   Elev
*********************************
        5    1047        5 1077.88
Downstream     num=       2
    Width   Elev    Width   Elev
*********************************
        5    1047        5 1077.88

Pier Data
Pier Station     Upstream= 19901.5    Downstream= 19901.5
Upstream     num=       2
    Width   Elev    Width   Elev
*********************************
        5  1046.6        5  1079.2
Downstream     num=       2
    Width   Elev    Width   Elev
*********************************
        5  1046.6        5  1079.2

Pier Data
Pier Station     Upstream= 20036.5    Downstream= 20036.5
Upstream     num=       2
    Width   Elev    Width   Elev
*********************************
        5  1044.6        5  1079.2
Downstream     num=       2
    Width   Elev    Width   Elev
*********************************
        5  1044.6        5  1079.2

Pier Data
Pier Station     Upstream= 20171.5    Downstream= 20171.5
Upstream     num=       2
    Width   Elev    Width   Elev
*********************************
```

```
      5  1045.5       5  1077.7
Downstream       num=       2
   Width    Elev     Width    Elev
*********************************
      5  1045.5       5  1077.7

Number of Bridge Coefficient Sets =  1

Low Flow Methods and Data
      Energy
      Momentum               Cd   =     1.2
      Yarnell                KVal =    1.05
Selected Low Flow Methods = Highest Energy Answer

High Flow Method
      Energy Only

Additional Bridge Parameters
      Add Friction component to Momentum
      Add Weight component to Momentum
      Class B flow critical depth computations use critical depth
         inside the bridge at the upstream end
      Criteria to check for pressure flow = Upstream energy grade line

BRIDGE OUTPUT  Profile #PF#1
*************************************************************************************************
* E.G. US. (ft)           *    1073.93  * Element                *Inside BR US *Inside BR DS *
* W.S. US. (ft)           *    1071.97  * E.G. Elev (ft)         *    1073.86  *    1073.68  *
* Q Total (cfs)           *  169000.00  * W.S. Elev (ft)         *    1071.70  *    1071.48  *
* Q Bridge (cfs)          *  169000.00  * Crit W.S. (ft)         *    1061.26  *    1061.26  *
* Q Weir (cfs)            *             * Max Chl Dpth (ft)      *      27.10  *      26.88  *
* Weir Sta Lft (ft)       *             * Vel Total (ft/s)       *      11.80  *      11.91  *
* Weir Sta Rgt (ft)       *             * Flow Area (sq ft)      *   14327.87  *   14190.25  *
* Weir Submerg            *             * Froude # Chl           *       0.44  *       0.44  *
* Weir Max Depth (ft)     *             * Specif Force (cu ft)   *  236120.50  *  233627.70  *
* Min El Weir Flow (ft)   *    1075.01  * Hydr Depth (ft)        *      22.56  *      22.39  *
* Min El Prs (ft)         *    1079.23  * W.P. Total (ft)        *     849.45  *     846.46  *
* Delta EG (ft)           *       0.26  * Conv. Total (cfs)      *  4375788.0  *  4316097.0  *
* Delta WS (ft)           *       0.31  * Top Width (ft)         *     634.96  *     633.79  *
* BR Open Area (sq ft)    *   18211.62  * Frctn Loss (ft)        *             *             *
* BR Open Vel (ft/s)      *      11.91  * C & E Loss (ft)        *             *             *
* Coef of Q               *             * Shear Total (lb/sq ft) *       1.57  *       1.60  *
* Br Sel Method           *  Momentum   * Power Total (lb/ft s)  *      18.53  *      19.11  *
*************************************************************************************************

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

BRIDGE OUTPUT  Profile #PF#2
*************************************************************************************************
* E.G. US. (ft)           *    1073.94  * Element                *Inside BR US *Inside BR DS *
* W.S. US. (ft)           *    1071.98  * E.G. Elev (ft)         *    1073.86  *    1073.69  *
* Q Total (cfs)           *  169000.00  * W.S. Elev (ft)         *    1071.70  *    1071.49  *
* Q Bridge (cfs)          *  169000.00  * Crit W.S. (ft)         *    1061.26  *    1061.26  *
* Q Weir (cfs)            *             * Max Chl Dpth (ft)      *      27.10  *      26.89  *
* Weir Sta Lft (ft)       *             * Vel Total (ft/s)       *      11.79  *      11.90  *
* Weir Sta Rgt (ft)       *             * Flow Area (sq ft)      *   14333.29  *   14195.82  *
* Weir Submerg            *             * Froude # Chl           *       0.44  *       0.44  *
* Weir Max Depth (ft)     *             * Specif Force (cu ft)   *  236219.40  *  233727.90  *
* Min El Weir Flow (ft)   *    1081.09  * Hydr Depth (ft)        *      22.57  *      22.40  *
* Min El Prs (ft)         *    1079.23  * W.P. Total (ft)        *     849.57  *     846.58  *
* Delta EG (ft)           *       0.26  * Conv. Total (cfs)      *  4378146.0  *  4318510.0  *
* Delta WS (ft)           *       0.31  * Top Width (ft)         *     635.01  *     633.84  *
* BR Open Area (sq ft)    *   18185.24  * Frctn Loss (ft)        *             *             *
* BR Open Vel (ft/s)      *      11.90  * C & E Loss (ft)        *             *             *
* Coef of Q               *             * Shear Total (lb/sq ft) *       1.57  *       1.60  *
* Br Sel Method           *  Momentum   * Power Total (lb/ft s)  *      18.50  *      19.09  *
*************************************************************************************************

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

CROSS SECTION


RIVER: 1
REACH: 1                 RS: 213.74

INPUT
Description: 213.74
Station Elevation Data     num=      28
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*************************************************************************************
    18435     1076    19470     1076    19600     1080 19633.4 1080.84 19633.5 1074.13
 19633.6   1073.5 19636.5   1073.5    19709 1048.55    19764     1047 19769.5     1047
 19834.5 1047.15    19899   1046.6    19904   1046.6    19959     1047    20034 1044.61
    20039   1044.6    20104     1045    20169   1045.5    20174   1045.5 20240.5 1049.35
    20302   1073.8    20305   1073.8 20305.1   1074.8 20305.2   1081.5    20340     1080
    20490     1076    20925     1075    21465     1076

Manning's n Values         num=       3
     Sta    n Val      Sta    n Val      Sta    n Val
*********************************************
    18435     .037 19633.5     .032 20305.1     .037

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.    Expan.
       19633.5 20305.1              391  373.47     361             .1         .3
Ineffective Flow     num=       2
    Sta L    Sta R    Elev  Permanent
    18435 19633.5 1074.13       F
 20305.1    21465  1074.8       F
```

CROSS SECTION OUTPUT Profile #PF#1

E.G. Elev (ft)	1073.68	Element	Left OB	Channel	Right OB
Vel Head (ft)	2.02	Wt. n-Val.		0.032	
W.S. Elev (ft)	1071.66	Reach Len. (ft)	391.00	373.47	361.00
Crit W.S. (ft)	1060.91	Flow Area (sq ft)		14818.63	
E.G. Slope (ft/ft)	0.000958	Area (sq ft)		14818.63	
Q Total (cfs)	169000.00	Flow (cfs)		169000.00	
Top Width (ft)	654.76	Top Width (ft)		654.76	
Vel Total (ft/s)	11.40	Avg. Vel. (ft/s)		11.40	
Max Chl Dpth (ft)	27.06	Hydr. Depth (ft)		22.63	
Conv. Total (cfs)	5459470.0	Conv. (cfs)		5459470.0	
Length Wtd. (ft)	373.47	Wetted Per. (ft)		663.07	
Min Ch El (ft)	1044.60	Shear (lb/sq ft)		1.34	
Alpha	1.00	Stream Power (lb/ft s)		15.25	
Frctn Loss (ft)	0.52	Cum Volume (acre-ft)	9444.51	34917.66	3146.12
C & E Loss (ft)	0.17	Cum SA (acres)	2200.43	3213.32	1050.09

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

CROSS SECTION OUTPUT Profile #PF#2

E.G. Elev (ft)	1073.69	Element	Left OB	Channel	Right OB
Vel Head (ft)	2.02	Wt. n-Val.		0.032	
W.S. Elev (ft)	1071.67	Reach Len. (ft)	391.00	373.47	361.00
Crit W.S. (ft)	1060.91	Flow Area (sq ft)		14824.30	
E.G. Slope (ft/ft)	0.000957	Area (sq ft)		14824.30	
Q Total (cfs)	169000.00	Flow (cfs)		169000.00	
Top Width (ft)	654.73	Top Width (ft)		654.73	
Vel Total (ft/s)	11.40	Avg. Vel. (ft/s)		11.40	
Max Chl Dpth (ft)	27.07	Hydr. Depth (ft)		22.64	
Conv. Total (cfs)	5462967.0	Conv. (cfs)		5462967.0	
Length Wtd. (ft)	373.47	Wetted Per. (ft)		663.07	
Min Ch El (ft)	1044.60	Shear (lb/sq ft)		1.34	
Alpha	1.00	Stream Power (lb/ft s)		15.23	
Frctn Loss (ft)	0.52	Cum Volume (acre-ft)	1422.13	35900.20	355.97
C & E Loss (ft)	0.17	Cum SA (acres)	221.84	3218.93	77.43

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

CROSS SECTION

RIVER: 1
REACH: 1 RS: 213.66

INPUT
Description: 213.66
Station Elevation Data num= 96

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
17026.7	1076.4	17035.9	1076.4	17047	1076.4	17057.3	1076.5	17212.3	1077.3
17306.5	1077.8	17311.3	1077.7	17325.2	1077.3	17326.2	1077.3	17343.4	1077.3
17442.9	1076.7	17474.5	1076.6	17571	1076	17573.6	1076	17595.6	1076.1
17610	1076.1	17705.1	1075	17741.5	1075.1	17947.8	1075.4	17953.1	1075.5
18038.8	1075.4	18185.8	1075.6	18234.4	1076.1	18300.9	1076.4	18318.8	1076.5
18414	1075.5	18414.6	1075.5	18415.1	1075.5	18415.7	1075.5	18448.6	1075.8
18455.1	1075.4	18472.5	1073.3	18527.9	1073.3	18683	1073	18718.7	1073
18832.1	1073.3	18873.8	1073.2	18878.4	1072.9	18881.8	1072.9	18892.6	1074.2
18901.3	1075.2	19033.1	1075.2	19131.6	1074.9	19140.9	1074.8	19157.1	1074.8
19235.1	1073.7	19291.4	1073.4	19291.9	1073.4	19292.2	1073.4	19391.8	1069.9
19418.5	1069.7	19442.4	1069.3	19496.9	1070	19532.6	1070.6	19537.6	1070.2
19543	1070.6	19572.3	1071.8	19605.3	1068.7	19616.1	1068.2	19621.3	1069.8
19633.2	1073.3	19663.1	1073.7	19675.2	1073.6	19689.7	1068.5	19748.8	1047.6
19750.4	1047.6	20010.7	1047.7	20194.9	1047.9	20235	1062.5	20260.3	1071.7
20270.2	1073.7	20288.3	1076.6	20297.7	1078.3	20387.2	1078.5	20416.3	1078.5
20457.1	1078.5	20464.9	1076.1	20469.4	1075.3	20825.5	1074.4	20828.5	1074.4
20828.8	1074.4	20830.9	1074.4	20837.2	1074.9	20839.2	1074.9	20870.3	1074.9
20871.4	1074.9	20872.6	1074.6	20872.8	1074.7	20900.8	1074.1	20901.5	1074
20908.4	1073.9	20912.4	1073.9	20915.4	1074	20927	1075.1	20951.2	1077.5
20999.4	1077.6								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
17026.7	.037	19675.2	.032	20297.7	.037

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
19675.2 20297.7 490 491.08 495 .1 .3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
17026.7	19675.2	1078.5	F
20297.7	20999.4	1078.5	F

CROSS SECTION OUTPUT Profile #PF#1

E.G. Elev (ft)	1072.99	Element	Left OB	Channel	Right OB
Vel Head (ft)	3.73	Wt. n-Val.		0.032	
W.S. Elev (ft)	1069.25	Reach Len. (ft)	490.00	491.08	495.00
Crit W.S. (ft)	1063.62	Flow Area (sq ft)		10898.94	
E.G. Slope (ft/ft)	0.002199	Area (sq ft)	12.11	10898.94	
Q Total (cfs)	169000.00	Flow (cfs)		169000.00	
Top Width (ft)	586.13	Top Width (ft)	20.11	566.02	
Vel Total (ft/s)	15.51	Avg. Vel. (ft/s)		15.51	

```
                                                                    DuplicateEffective
* Max Chl Dpth (ft)       *   21.65  * Hydr. Depth (ft)        *          *   19.26  *          *
* Conv. Total (cfs)       *3604114.0  * Conv. (cfs)            *          *3604114.0  *          *
* Length Wtd. (ft)        *  491.08  * Wetted Per. (ft)        *          *  573.50  *          *
* Min Ch El (ft)          * 1047.60  * Shear (lb/sq ft)        *          *    2.61  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *   40.45  *          *
* Frctn Loss (ft)         *    0.98  * Cum Volume (acre-ft)   * 9444.45  *34807.41  * 3146.12  *
* C & E Loss (ft)         *    0.39  * Cum SA (acres)         * 2200.34  * 3208.09  * 1050.09  *
*****************************************************************************************************

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 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 OUTPUT  Profile #PF#2
*****************************************************************************************************
* E.G. Elev (ft)          * 1073.00  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    3.73  * Wt. n-Val.            *          *   0.032  *          *
* W.S. Elev (ft)          * 1069.27  * Reach Len. (ft)       *  490.00  *  491.08  *  495.00  *
* Crit W.S. (ft)          * 1063.62  * Flow Area (sq ft)     *          *10906.67  *          *
* E.G. Slope (ft/ft)      *0.002194  * Area (sq ft)          *          *10906.67  *          *
* Q Total (cfs)           *169000.00  * Flow (cfs)           *          *169000.00  *          *
* Top Width (ft)          *  565.99  * Top Width (ft)        *          *  565.99  *          *
* Vel Total (ft/s)        *   15.50  * Avg. Vel. (ft/s)      *          *   15.50  *          *
* Max Chl Dpth (ft)       *   21.67  * Hydr. Depth (ft)      *          *   19.27  *          *
* Conv. Total (cfs)       *3608339.0  * Conv. (cfs)          *          *3608339.0  *          *
* Length Wtd. (ft)        *  491.08  * Wetted Per. (ft)      *          *  573.51  *          *
* Min Ch El (ft)          * 1047.60  * Shear (lb/sq ft)      *          *    2.60  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *   40.36  *          *
* Frctn Loss (ft)         *    0.98  * Cum Volume (acre-ft)   * 1422.13  *35789.89  *  355.97  *
* C & E Loss (ft)         *    0.39  * Cum SA (acres)         *  221.84  * 3213.70  *   77.43  *
*****************************************************************************************************

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.
Note:    Multiple critical depths were found at this location.  The critical depth with the lowest, valid,
         water surface was used.

CROSS SECTION


RIVER: 1
REACH: 1                 RS: 213.57

INPUT
Description: 213.57 - FEMA Section AF
Station Elevation Data    num=      96
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*****************************************************************************
 17508.1  1075.8 17669.7    1076 17677.2    1076 17679.4    1076 17681.9  1075.9
 17685.3  1075.9 17879.1  1077.7 17883.6  1077.7 17891.2  1077.7 17899.7  1077.7
 17907.2  1077.7 18293.4  1077.1 18302.2  1077.1 18305.6  1077.2   18335  1077.2
 18409.4  1076.8 18482.1    1076 18487.1  1075.3 18493.2  1074.6 18496.9  1074.6
   18674  1073.2   18717    1073 18743.5  1072.8 18755.4  1072.8   18802  1072.6
 18832.6  1072.6 18934.4  1072.7 18941.7  1072.7   18977    1069 18979.3  1068.7
 18979.7  1068.7 18981.1  1068.6 19032.8  1069.7 19078.3  1069.3 19123.5    1069
 19190.3  1068.3 19211.6  1068.4 19212.3  1068.4   19245  1068.5 19287.9    1069
 19318.4  1068.9 19384.7  1069.1 19398.3  1068.6 19484.5  1068.5 19514.1  1067.2
 19542.6  1063.6   19548  1062.9   19575  1062.8 19586.3  1062.5 19595.5  1063.8
 19603.2  1064.4 19612.3  1065.2 19617.4  1064.5 19668.9  1061.9 19672.3  1061.7
 19674.3  1061.7 19711.7  1060.1   19720  1057.4 19743.1  1047.9 20035.4    1047
 20123.9  1046.7 20135.8  1048.3 20147.5  1050.1 20202.7  1051.3 20261.3  1052.3
 20286.6    1053 20301.2  1052.6 20302.5  1052.5 20345.5  1073.5 20347.7  1074.6
 20347.8  1074.6 20348.2  1074.6 20373.8  1075.7 20384.8  1075.5 20390.6  1075.6
 20426.7  1075.7 20435.9  1075.7 20452.6  1075.3 20481.8  1075.4 20485.6  1075.2
 20501.3  1076.7   20634    1076 20804.5  1073.3 20853.6  1072.8 20858.1  1072.8
 20865.8  1073.1 20870.9    1073 20902.9  1071.5 20922.6  1075.2 20923.6  1075.4
 20925.3  1075.3 20936.8  1075.1 20950.5  1074.7 21085.5  1074.8 21211.9  1075.1
 21311.2  1074.8

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*************************************************
 17508.1    .037 19484.5    .032 20373.8    .037

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       19484.5 20373.8             650  500.37     390             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 17508.1 19484.5  1077.7       F
 20373.8 21311.2  1077.7       F

CROSS SECTION OUTPUT  Profile #PF#1
*****************************************************************************************************
* E.G. Elev (ft)          * 1071.61  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    2.42  * Wt. n-Val.            *          *   0.032  *          *
* W.S. Elev (ft)          * 1069.19  * Reach Len. (ft)       *  650.00  *  500.37  *  390.00  *
* Crit W.S. (ft)          * 1063.08  * Flow Area (sq ft)     *          *13535.60  *          *
* E.G. Slope (ft/ft)      *0.001831  * Area (sq ft)          *  189.41  *13535.60  *          *
* Q Total (cfs)           *169000.00  * Flow (cfs)           *          *169000.00  *          *
* Top Width (ft)          * 1275.10  * Top Width (ft)        *  422.92  *  852.17  *          *
* Vel Total (ft/s)        *   12.49  * Avg. Vel. (ft/s)      *          *   12.49  *          *
* Max Chl Dpth (ft)       *   22.49  * Hydr. Depth (ft)      *          *   15.88  *          *
* Conv. Total (cfs)       *3949740.0  * Conv. (cfs)          *          *3949740.0  *          *
* Length Wtd. (ft)        *  500.37  * Wetted Per. (ft)      *          *  859.23  *          *
* Min Ch El (ft)          * 1046.70  * Shear (lb/sq ft)      *          *    1.80  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *   22.48  *          *
* Frctn Loss (ft)         *    0.88  * Cum Volume (acre-ft)   * 9443.32  *34669.68  * 3146.12  *
* C & E Loss (ft)         *    0.13  * Cum SA (acres)         * 2197.85  * 3200.10  * 1050.09  *
*****************************************************************************************************
```

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 OUTPUT Profile #PF#2

E.G. Elev (ft)	1071.62	Element	Left OB	Channel	Right OB	
Vel Head (ft)	2.42	Wt. n-Val.		0.032		
W.S. Elev (ft)	1069.20	Reach Len. (ft)	650.00	500.37	390.00	
Crit W.S. (ft)	1063.08	Flow Area (sq ft)		13548.71		
E.G. Slope (ft/ft)	0.001827	Area (sq ft)		13548.71		
Q Total (cfs)	169000.00	Flow (cfs)		169000.00		
Top Width (ft)	852.16	Top Width (ft)		852.16		
Vel Total (ft/s)	12.47	Avg. Vel. (ft/s)		12.47		
Max Chl Dpth (ft)	22.50	Hydr. Depth (ft)		15.90		
Conv. Total (cfs)	3953934.0	Conv. (cfs)		3953934.0		
Length Wtd. (ft)	500.37	Wetted Per. (ft)		859.94		
Min Ch El (ft)	1046.70	Shear (lb/sq ft)		1.80		
Alpha	1.00	Stream Power (lb/ft s)		22.41		
Frctn Loss (ft)	0.88	Cum Volume (acre-ft)	1422.13	35652.04	355.97	
C & E Loss (ft)	0.13	Cum SA (acres)	221.84	3205.71	77.43	

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION

RIVER: 1
REACH: 1 RS: 213.47

INPUT
Description: 213.47
Station Elevation Data num= 96

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
17897	1072.3	17950.9	1072.3	17955.5	1073.1	17972.5	1074.8	18140.3	1074.1
18179.1	1074.1	18193.1	1074	18207.9	1073.9	18257.4	1074	18402.2	1073.7
18450.1	1073.2	18519.9	1072.6	18592.3	1071.7	18600.6	1071.6	18625.8	1071.9
18741.5	1071.7	18784.9	1071.7	18805.1	1070.7	18823.4	1069.4	18880.6	1067
18888.4	1066.7	18938.9	1066.6	18942.7	1066.6	18948.4	1066.6	18970.5	1067.2
19008	1068.2	19008.9	1068.2	19041.7	1068.5	19057.6	1068.6	19057.8	1068.6
19058.1	1068.6	19060.2	1068.6	19154.7	1068.1	19202.4	1067.9	19243.3	1067
19289	1066	19306.6	1065.6	19313.9	1065.3	19357.8	1064.8	19392.5	1064.4
19420.7	1063.8	19432.7	1063.5	19483.4	1062	19493.9	1061.7	19499.6	1061.8
19534.7	1062.6	19536.4	1062.5	19585.4	1061.2	19586.6	1061.2	19587.5	1061.2
19588.9	1061.1	19593.6	1060.6	19689.9	1051.5	19699.6	1050.5	19735.3	1047
19807.1	1046.8	19827.4	1046.8	19970.4	1046.6	19993.9	1046.3	20037.8	1046.2
20146.5	1045.8	20205.3	1048.7	20214.8	1049.3	20219.4	1049	20220.8	1048.9
20255.2	1063.1	20274.2	1072.4	20283.3	1072.6	20341.6	1072.5	20362.6	1072.6
20428.7	1074.9	20446.8	1074.9	20469.6	1074.9	20474.3	1074.9	20476.7	1075
20483.2	1074.9	20484.1	1074.9	20486.3	1074.9	20488.6	1074.7	20489.3	1074.7
20515.7	1073.2	20526.3	1073.3	20537.5	1073.5	20540.5	1073.4	20545	1073.8
20567.4	1075.2	20569.1	1075.4	20578.4	1075	20619.2	1074.5	20621.6	1074.4
20649.8	1074	20700.8	1074	20735.1	1074.2	20751.5	1074.5	20765.2	1074.8
20783.9	1075.1								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
17897	.037	19243.3	.032	20274.2	.037

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
19243.3 20274.2 500 493.66 485 .1 .3
Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
17897	19243.3	1075.4	F
20274.2	20783.9	1075.4	F

CROSS SECTION OUTPUT Profile #PF#1

E.G. Elev (ft)	1070.60	Element	Left OB	Channel	Right OB	
Vel Head (ft)	2.00	Wt. n-Val.		0.032		
W.S. Elev (ft)	1068.60	Reach Len. (ft)	500.00	493.66	485.00	
Crit W.S. (ft)	1061.42	Flow Area (sq ft)		14886.30		
E.G. Slope (ft/ft)	0.001694	Area (sq ft)	342.03	14886.30		
Q Total (cfs)	169000.00	Flow (cfs)		169000.00		
Top Width (ft)	1424.00	Top Width (ft)	400.86	1023.14		
Vel Total (ft/s)	11.35	Avg. Vel. (ft/s)		11.35		
Max Chl Dpth (ft)	22.80	Hydr. Depth (ft)		14.55		
Conv. Total (cfs)	4106424.0	Conv. (cfs)		4106424.0		
Length Wtd. (ft)	493.66	Wetted Per. (ft)		1028.11		
Min Ch El (ft)	1045.80	Shear (lb/sq ft)		1.53		
Alpha	1.00	Stream Power (lb/ft s)		17.38		
Frctn Loss (ft)	0.56	Cum Volume (acre-ft)	9439.35	34506.44	3146.12	
C & E Loss (ft)	0.24	Cum SA (acres)	2191.70	3189.33	1050.09	

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

CROSS SECTION OUTPUT Profile #PF#2

E.G. Elev (ft)	1070.62	Element	Left OB	Channel	Right OB	
Vel Head (ft)	2.00	Wt. n-Val.		0.032		
W.S. Elev (ft)	1068.62	Reach Len. (ft)	500.00	493.66	485.00	
Crit W.S. (ft)	1061.42	Flow Area (sq ft)		14903.79		

				DuplicateEffective		
* E.G. Slope (ft/ft)	*0.001691	* Area (sq ft)	*	*14903.79	*	*
* Q Total (cfs)	*169000.00	* Flow (cfs)	*	*169000.00	*	*
* Top Width (ft)	* 1023.12	* Top Width (ft)	*	* 1023.12	*	*
* Vel Total (ft/s)	* 11.34	* Avg. Vel. (ft/s)	*	* 11.34	*	*
* Max Chl Dpth (ft)	* 22.82	* Hydr. Depth (ft)	*	* 14.57	*	*
* Conv. Total (cfs)	*4110138.0	* Conv. (cfs)	*	*4110138.0	*	*
* Length Wtd. (ft)	* 493.66	* Wetted Per. (ft)	*	* 1029.73	*	*
* Min Ch El (ft)	* 1045.80	* Shear (lb/sq ft)	*	* 1.53	*	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 17.32	*	*
* Frctn Loss (ft)	* 0.56	* Cum Volume (acre-ft)	* 1422.13	*35488.63	* 355.97	*
* C & E Loss (ft)	* 0.24	* Cum SA (acres)	* 221.84	* 3194.94	* 77.43	*

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

CROSS SECTION

RIVER: 1
REACH: 1 RS: 213.38

INPUT
Description: 213.38
Station Elevation Data num= 96

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
17634.6	1070.7	17652.1	1070.7	17729.5	1071.2	17747.9	1072.2	17763.8	1073.1
17893.9	1073.4	17976.4	1073.1	18006.5	1072.7	18006.7	1072.7	18008	1072.7
18197.8	1072.8	18341.3	1071.5	18390.9	1071.3	18419.4	1070.9	18420.4	1070.9
18423.8	1070.9	18431	1071	18656.8	1070.5	18735	1070.6	18756.6	1070.9
18796.6	1071.1	18974.7	1070.8	19012.6	1070.8	19073.3	1070.8	19129.4	1069.7
19192.7	1068.9	19195.5	1068.8	19196.5	1068.5	19204.6	1068.3	19213.9	1068.2
19225.5	1067.5	19242.1	1066.8	19303.8	1064.4	19303.9	1064.4	19304.2	1064.4
19346.1	1064.6	19365.3	1061.2	19365.5	1061.2	19401.7	1061	19405.7	1060.8
19411.2	1060.6	19452.9	1058.9	19499.7	1059.7	19523.7	1060.4	19526.3	1060.4
19530.8	1060.5	19534.1	1060.4	19575.5	1058.6	19625.5	1054.4	19648.5	1052.9
19678.5	1053.7	19684.4	1053.8	19732.6	1049.4	19735.1	1049.2	19761.4	1050.8
19767.8	1050.7	19771.9	1050.2	19796.5	1046.2	19864.4	1045.8	20277.6	1045.7
20311.6	1045.6	20311.7	1045.4	20329.1	1049.4	20361.7	1051.6	20363.3	1052.8
20364.3	1052.8	20374	1053.5	20405.3	1054.8	20417	1056.5	20434.2	1065
20473	1075.2	20473.5	1075.2	20515.6	1074.3	20532	1073.2	20533.3	1073
20535.9	1073	20539.6	1072.9	20569.9	1072.5	20578	1072.1	20607.5	1072.2
20652.6	1074	20655.9	1074.1	20722.7	1075.3	20793.4	1076	20804.4	1076.4
20831.2	1076.4	20834	1075.7	20842.3	1072.9	20845.3	1072.1	20848.9	1072.1
20860.3	1072.3	20875.9	1072.3	20895.1	1072.4	20963.7	1072.4	20982.3	1071.9
20996.7	1072.4								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
17634.6	.037	19346.1	.032	20473	.037

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19346.1	20473	210 290.06	395	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
17634.6	19346.1	1076.4	F
20473	20996.7	1076.4	F

CROSS SECTION OUTPUT Profile #PF#1

* E.G. Elev (ft)	* 1069.81	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 1.21	* Wt. n-Val.	*	* 0.032	* *
* W.S. Elev (ft)	* 1068.60	* Reach Len. (ft)	* 210.00	* 290.06	* 395.00 *
* Crit W.S. (ft)	* 1059.34	* Flow Area (sq ft)	*	*19139.19	* *
* E.G. Slope (ft/ft)	*0.000809	* Area (sq ft)	* 395.62	*19139.19	* *
* Q Total (cfs)	*169000.00	* Flow (cfs)	*	*169000.00	* *
* Top Width (ft)	* 1251.70	* Top Width (ft)	* 149.92	* 1101.78	* *
* Vel Total (ft/s)	* 8.83	* Avg. Vel. (ft/s)	*	* 8.83	* *
* Max Chl Dpth (ft)	* 23.20	* Hydr. Depth (ft)	*	* 17.37	* *
* Conv. Total (cfs)	*5943323.0	* Conv. (cfs)	*	*5943323.0	* *
* Length Wtd. (ft)	* 290.06	* Wetted Per. (ft)	*	* 1106.71	* *
* Min Ch El (ft)	* 1045.40	* Shear (lb/sq ft)	*	* 0.87	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 7.71	* *
* Frctn Loss (ft)	* 0.20	* Cum Volume (acre-ft)	* 9435.12	*34313.64	* 3146.12 *
* C & E Loss (ft)	* 0.07	* Cum SA (acres)	* 2188.54	* 3177.29	* 1050.09 *

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

CROSS SECTION OUTPUT Profile #PF#2

* E.G. Elev (ft)	* 1069.82	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 1.21	* Wt. n-Val.	*	* 0.032	* *
* W.S. Elev (ft)	* 1068.61	* Reach Len. (ft)	* 210.00	* 290.06	* 395.00 *
* Crit W.S. (ft)	* 1059.34	* Flow Area (sq ft)	*	*19155.73	* *
* E.G. Slope (ft/ft)	*0.000810	* Area (sq ft)	*	*19155.73	* *
* Q Total (cfs)	*169000.00	* Flow (cfs)	*	*169000.00	* *
* Top Width (ft)	* 1101.75	* Top Width (ft)	*	* 1101.75	* *
* Vel Total (ft/s)	* 8.82	* Avg. Vel. (ft/s)	*	* 8.82	* *
* Max Chl Dpth (ft)	* 23.21	* Hydr. Depth (ft)	*	* 17.39	* *
* Conv. Total (cfs)	*5937578.0	* Conv. (cfs)	*	*5937578.0	* *
* Length Wtd. (ft)	* 290.06	* Wetted Per. (ft)	*	* 1110.71	* *
* Min Ch El (ft)	* 1045.40	* Shear (lb/sq ft)	*	* 0.87	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 7.70	* *
* Frctn Loss (ft)	* 0.20	* Cum Volume (acre-ft)	* 1422.13	*35295.63	* 355.97 *
* C & E Loss (ft)	* 0.07	* Cum SA (acres)	* 221.84	* 3182.90	* 77.43 *

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

water surface was used.

CROSS SECTION

RIVER: 1
REACH: 1 RS: 213.33

INPUT
Description: 213.33
Station Elevation Data num= 96

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
17662.6	1072.6	17668	1072.6	17677	1072.6	17679.2	1072.7	17685.5	1072.7
17890.3	1072	17891.3	1072	17919.8	1071.9	18055.2	1071.9	18114.9	1071.9
18241.8	1071.2	18279.3	1070.9	18302.9	1070.9	18305.8	1070.8	18316.6	1070.7
18337.3	1070.5	18464.8	1070.6	18565.2	1070.8	18644.2	1071	18654.1	1071
18680.7	1070.7	18888.5	1070	18954.5	1069.6	19002.1	1069.7	19091.3	1069
19104.2	1069	19104.4	1069	19107.7	1069	19109.5	1068.5	19112.3	1067.7
19112.4	1067.7	19123.4	1067.3	19136.1	1067.1	19144.4	1069.1	19147.5	1069.9
19163.9	1070.3	19173.4	1070.7	19184.4	1069.5	19203.3	1068.1	19209.7	1067.1
19222.7	1066	19244.2	1064.1	19272.3	1063	19328.9	1063.5	19336.9	1063.4
19344.3	1063.4	19367.2	1062.3	19389	1062	19396.3	1061.9	19416.7	1061.3
19418.1	1060.9	19453.8	1059.7	19472.5	1059.2	19476.7	1057.5	19530.4	1058.7
19538.8	1058.7	19541	1058.6	19590	1056.9	19629.4	1054.2	19644.5	1053.7
19671.3	1051.4	19710.3	1047.2	19715.9	1046.8	19755.6	1046.4	19757.3	1046.3
19759.3	1046.3	19761.3	1046.3	19780.3	1046.2	20358.7	1045.4	20444.8	1048.7
20449.3	1048.9	20508	1066.2	20514.9	1068.7	20553.2	1069.1	20640.2	1069.7
20662.5	1069.4	20704	1068.4	20729.7	1068.7	20782.7	1069.1	20784.7	1069.2
20789.1	1069.5	20821.1	1071.4	20854.7	1073	20856.9	1073.1	20859.1	1073.1
20896	1072.7	20902.1	1072.7	20919.8	1072.5	20932.4	1072.6	20967.3	1072.5
21012.3	1072.8	21051.5	1073	21059.7	1073	21066	1073.1	21092.4	1073
21244.4	1073.1								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
17662.6	.037	19328.9	.032	20514.9	.037

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
19328.9 20514.9 266 316.41 426 .1 .3
Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
17662.6	19328.9	1073.1	F
20640.2	21244.4	1073.1	F

CROSS SECTION OUTPUT Profile #PF#1

E.G. Elev (ft)	1069.53	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.96	Wt. n-Val.		0.032	
W.S. Elev (ft)	1068.57	Reach Len. (ft)	266.00	316.41	426.00
Crit W.S. (ft)	1057.70	Flow Area (sq ft)		21480.53	
E.G. Slope (ft/ft)	0.000606	Area (sq ft)	586.65	21480.53	1.81
Q Total (cfs)	169000.00	Flow (cfs)		169000.00	
Top Width (ft)	1371.95	Top Width (ft)	164.87	1185.64	21.44
Vel Total (ft/s)	7.87	Avg. Vel. (ft/s)		7.87	
Max Chl Dpth (ft)	23.17	Hydr. Depth (ft)		18.12	
Conv. Total (cfs)	6865352.0	Conv. (cfs)		6865352.0	
Length Wtd. (ft)	316.41	Wetted Per. (ft)		1189.56	
Min Ch El (ft)	1045.40	Shear (lb/sq ft)		0.68	
Alpha	1.00	Stream Power (lb/ft s)		5.37	
Frctn Loss (ft)	0.19	Cum Volume (acre-ft)	9432.75	34178.39	3146.11
C & E Loss (ft)	0.02	Cum SA (acres)	2187.78	3169.67	1050.00

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.

CROSS SECTION OUTPUT Profile #PF#2

E.G. Elev (ft)	1069.54	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.96	Wt. n-Val.		0.032	
W.S. Elev (ft)	1068.58	Reach Len. (ft)	266.00	316.41	426.00
Crit W.S. (ft)	1057.70	Flow Area (sq ft)		21497.32	
E.G. Slope (ft/ft)	0.000608	Area (sq ft)		21497.32	
Q Total (cfs)	169000.00	Flow (cfs)		169000.00	
Top Width (ft)	1185.62	Top Width (ft)		1185.62	
Vel Total (ft/s)	7.86	Avg. Vel. (ft/s)		7.86	
Max Chl Dpth (ft)	23.18	Hydr. Depth (ft)		18.13	
Conv. Total (cfs)	6854778.0	Conv. (cfs)		6854778.0	
Length Wtd. (ft)	316.41	Wetted Per. (ft)		1194.64	
Min Ch El (ft)	1045.40	Shear (lb/sq ft)		0.68	
Alpha	1.00	Stream Power (lb/ft s)		5.37	
Frctn Loss (ft)	0.19	Cum Volume (acre-ft)	1422.13	35160.28	355.97
C & E Loss (ft)	0.02	Cum SA (acres)	221.84	3175.28	77.43

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

CROSS SECTION

RIVER: 1
REACH: 1 RS: 213.26

INPUT
Description: 213.26
Station Elevation Data num= 45

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
17300	1071.7	17670	1072	17850	1073.6	18250	1075.5	19180	1078.2
19488.1	1078.1	19488.2	1072.97	19495.2	1069.2	19517.2	1057.5	19564.2	1055.45
19584.2	1051.3	19586.9	1051	19589.4	1051	19638.2	1048.1	19686.9	1047.3
19689.4	1047.3	19704.2	1047.2	19743.2	1042.2	19786.9	1042.15	19789.4	1042.2

```
                                                                    DuplicateEffective
 19838.2  1042.8 19871.7  1042.9 19886.9 1043.85 19889.4  1043.8 19938.2  1044.1
 19986.9  1042.7 19989.4  1042.7 20038.2  1042.3 20086.9 1042.85 20089.4  1042.8
 20121.7  1043.3 20171.2 1041.05 20188.2  1040.9 20189.4  1040.9 20223.2  1040.4
 20248.7  1042.2 20286.9  1043.4 20289.4  1043.4 20307.7 1044.35 20382.7  1069.6
 20387.9  1070.4 20387.9  1072.9   20388 1078.19   20790  1078.3   21330  1075.5

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   17300    .037 19488.2    .032 20387.9    .037

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       19488.2 20387.9               155  152.22     155             .1      .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
   17300 19488.2 1072.97       F
 20387.9   21330  1070.4       F

CROSS SECTION OUTPUT  Profile #PF#1
*****************************************************************************************************
* E.G. Elev (ft)         * 1069.32  * Element                * Left OB *  Channel * Right OB *
* Vel Head (ft)          *    1.17  * Wt. n-Val.             *         *    0.032 *          *
* W.S. Elev (ft)         * 1068.16  * Reach Len. (ft)        *    0.10 *     0.10 *     0.10 *
* Crit W.S. (ft)         * 1055.61  * Flow Area (sq ft)      *         *19493.06  *          *
* E.G. Slope (ft/ft)     *0.000568  * Area (sq ft)           *         *19493.06  *          *
* Q Total (cfs)          *169000.00  * Flow (cfs)            *         *169000.00  *          *
* Top Width (ft)         *  881.25  * Top Width (ft)        *         *  881.25  *          *
* Vel Total (ft/s)       *    8.67  * Avg. Vel. (ft/s)      *         *    8.67  *          *
* Max Chl Dpth (ft)      *   27.76  * Hydr. Depth (ft)      *         *   22.12  *          *
* Conv. Total (cfs)      *7091407.0  * Conv. (cfs)          *         *7091407.0  *          *
* Length Wtd. (ft)       *    0.10  * Wetted Per. (ft)      *         *  888.93  *          *
* Min Ch El (ft)         * 1040.40  * Shear (lb/sq ft)      *         *    0.78  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *         *    6.74  *          *
* Frctn Loss (ft)        *          * Cum Volume (acre-ft)  * 9430.96  *34029.58  * 3146.10  *
* C & E Loss (ft)        *          * Cum SA (acres)        * 2187.28  * 3162.16  * 1049.89  *
*****************************************************************************************************

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

CROSS SECTION OUTPUT  Profile #PF#2
*****************************************************************************************************
* E.G. Elev (ft)         * 1069.34  * Element                * Left OB *  Channel * Right OB *
* Vel Head (ft)          *    1.17  * Wt. n-Val.             *         *    0.032 *          *
* W.S. Elev (ft)         * 1068.17  * Reach Len. (ft)        *    0.10 *     0.10 *     0.10 *
* Crit W.S. (ft)         * 1055.61  * Flow Area (sq ft)      *         *19505.43  *          *
* E.G. Slope (ft/ft)     *0.000567  * Area (sq ft)           *         *19505.43  *          *
* Q Total (cfs)          *169000.00  * Flow (cfs)            *         *169000.00  *          *
* Top Width (ft)         *  881.21  * Top Width (ft)        *         *  881.21  *          *
* Vel Total (ft/s)       *    8.66  * Avg. Vel. (ft/s)      *         *    8.66  *          *
* Max Chl Dpth (ft)      *   27.77  * Hydr. Depth (ft)      *         *   22.13  *          *
* Conv. Total (cfs)      *7098897.0  * Conv. (cfs)          *         *7098897.0  *          *
* Length Wtd. (ft)       *    0.10  * Wetted Per. (ft)      *         *  888.94  *          *
* Min Ch El (ft)         * 1040.40  * Shear (lb/sq ft)      *         *    0.78  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *         *    6.73  *          *
* Frctn Loss (ft)        *          * Cum Volume (acre-ft)  * 1422.13  *35011.36  *  355.97  *
* C & E Loss (ft)        *          * Cum SA (acres)        *  221.84  * 3167.77  *   77.43  *
*****************************************************************************************************

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

BRIDGE


RIVER: 1
REACH: 1                  RS: 213.255

INPUT
Description: Central Avenue Bridge
Distance from Upstream XS =       .1
Deck/Roadway Width        =    151.22
Weir Coefficient          =       2.6
Upstream  Deck/Roadway Coordinates
    num=       11
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
*************************************************************************
 19488.1  1078.1 1072.97 19488.2 1078.14 1072.97 19586.9  1078.5 1073.28
 19686.9 1078.86 1073.64 19786.9 1079.15 1073.93 19886.9 1079.37  1074.2
 19989.4 1079.38  1074.2 20086.9 1079.13 1073.93 20188.2 1078.89  1073.7
 20286.9 1078.53 1073.32   20388 1078.19 1072.98

Upstream Bridge Cross Section Data
Station Elevation Data    num=      45
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
*********************************************************************************
   17300  1071.7    17670    1072    17850  1073.6    18250  1075.5    19180  1078.2
 19488.1  1078.1 19488.2 1072.97 19495.2  1069.2 19517.2  1057.5 19564.2 1055.45
 19584.2  1051.3 19586.9    1051 19589.4    1051 19638.2  1048.1 19686.9  1047.3
 19689.4  1047.3 19704.2  1047.2 19743.2  1042.2 19786.9 1042.15 19789.4  1042.2
 19838.2  1042.8 19871.7  1042.9 19886.9 1043.85 19889.4  1043.8 19938.2  1044.1
 19986.9  1042.7 19989.4  1042.7 20038.2  1042.3 20086.9 1042.85 20089.4  1042.8
 20121.7  1043.3 20171.2 1041.05 20188.2  1040.9 20189.4  1040.9 20223.2  1040.4
 20248.7  1042.2 20286.9  1043.4 20289.4  1043.4 20307.7 1044.35 20382.7  1069.6
 20387.9  1070.4 20387.9  1072.9   20388 1078.19   20790  1078.3   21330  1075.5

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   17300    .037 19488.2    .032 20387.9    .037

Bank Sta: Left   Right    Coeff Contr.   Expan.
       19488.2 20387.9             .1      .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
   17300 19488.2 1072.97       F
```

```
 20387.9   21330  1070.4        F

Downstream  Deck/Roadway Coordinates
    num=         11
     Sta Hi Cord Lo Cord      Sta Hi Cord Lo Cord      Sta Hi Cord Lo Cord
*****************************************************************************
 19488.1  1078.1 1072.97 19488.2 1078.14 1072.97 19586.9  1078.5 1073.28
 19686.9 1078.86 1073.64 19786.9 1079.15 1073.93 19886.9 1079.37  1074.2
 19989.4 1079.38  1074.2 20086.9 1079.13 1073.93 20188.2 1078.89  1073.7
 20286.9 1078.53 1073.32   20388 1078.19 1072.98

Downstream Bridge Cross Section Data
Station Elevation Data    num=      45
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
*****************************************************************************************
   17300  1071.7   17670    1072   17850  1073.6   18250  1075.5   19180  1078.2
 19488.1  1078.1 19488.2 1072.97 19495.2  1069.2 19517.2  1057.5 19564.2 1055.45
 19584.2  1051.3 19586.9    1051 19589.4    1051 19638.2  1048.1 19686.9  1047.3
 19689.4  1047.3 19704.2  1047.2 19743.2  1042.2 19786.9 1042.15 19789.4  1042.2
 19838.2  1042.8 19871.7  1042.9 19886.9 1043.85 19889.4  1043.8 19938.2  1044.1
 19986.9  1042.7 19989.4  1042.7 20038.2  1042.3 20086.9 1042.85 20089.4  1042.8
 20121.7  1043.3 20171.2 1041.05 20188.2  1040.9 20189.4  1040.9 20223.2  1040.4
 20248.7  1042.2 20286.9  1043.4 20289.4  1043.4 20307.7 1044.35 20382.7  1069.6
 20387.9  1070.4 20387.9  1072.9   20388 1078.19   20790  1078.3   21330  1075.5

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*************************************************
   17300    .037 19488.2    .032 20387.9    .037

Bank Sta: Left   Right    Coeff Contr.   Expan.
      19488.2 20387.9            .1        .3
Ineffective Flow     num=        2
   Sta L   Sta R    Elev  Permanent
   17300 19488.2 1072.97        F
 20387.9   21330  1070.4        F

Upstream Embankment side slope              =         horiz. to 1.0 vertical
Downstream Embankment side slope            =         horiz. to 1.0 vertical
Maximum allowable submergence for weir flow =     .95
Elevation at which weir flow begins         =
Energy head used in spillway design         =
Spillway height used in design              =
Weir crest shape                            = Broad Crested

Number of Piers =  8

Pier Data
Pier Station     Upstream=19588.15    Downstream=19588.15
Upstream     num=        2
    Width   Elev    Width   Elev
*********************************
      2.5    1051     2.5 1073.28
Downstream     num=        2
    Width   Elev    Width   Elev
*********************************
      2.5    1051     2.5 1073.28

Pier Data
Pier Station     Upstream=19688.15    Downstream=19688.15
Upstream     num=        2
    Width   Elev    Width   Elev
*********************************
      2.5  1047.3     2.5  1073.7
Downstream     num=        2
    Width   Elev    Width   Elev
*********************************
      2.5  1047.3     2.5  1073.7

Pier Data
Pier Station     Upstream=19788.15    Downstream=19788.15
Upstream     num=        2
    Width   Elev    Width   Elev
*********************************
      2.5 1042.15     2.5  1073.9
Downstream     num=        2
    Width   Elev    Width   Elev
*********************************
      2.5 1042.15     2.5  1073.9

Pier Data
Pier Station     Upstream=19888.15    Downstream=19888.15
Upstream     num=        2
    Width   Elev    Width   Elev
*********************************
      2.5  1043.8     2.5  1074.2
Downstream     num=        2
    Width   Elev    Width   Elev
*********************************
      2.5  1043.8     2.5  1074.2

Pier Data
Pier Station     Upstream=19988.15    Downstream=19988.15
Upstream     num=        2
    Width   Elev    Width   Elev
*********************************
      2.5  1042.7     2.5  1074.2
Downstream     num=        2
    Width   Elev    Width   Elev
*********************************
      2.5  1042.7     2.5  1074.2

Pier Data
Pier Station     Upstream=20088.15    Downstream=20088.15
Upstream     num=        2
    Width   Elev    Width   Elev
```

```
*********************************
     2.5  1042.8     2.5  1073.9
Downstream     num=        2
    Width   Elev    Width   Elev
*********************************
     2.5  1042.8     2.5  1073.9

Pier Data
Pier Station     Upstream=20189.45    Downstream=20189.45
Upstream     num=        2
    Width   Elev    Width   Elev
*********************************
     2.5  1040.9     2.5  1073.7
Downstream     num=        2
    Width   Elev    Width   Elev
*********************************
     2.5  1040.9     2.5  1073.7

Pier Data
Pier Station     Upstream=20288.15    Downstream=20288.15
Upstream     num=        2
    Width   Elev    Width   Elev
*********************************
     2.5  1043.4     2.5  1073.3
Downstream     num=        2
    Width   Elev    Width   Elev
*********************************
     2.5  1043.4     2.5  1073.3

Number of Bridge Coefficient Sets =  1

Low Flow Methods and Data
       Energy
       Momentum              Cd   =     1.2
       Yarnell               KVal =    1.05
Selected Low Flow Methods = Highest Energy Answer

High Flow Method
       Energy Only

Additional Bridge Parameters
       Add Friction component to Momentum
       Add Weight component to Momentum
       Class B flow critical depth computations use critical depth
          inside the bridge at the upstream end
       Criteria to check for pressure flow = Upstream energy grade line

BRIDGE OUTPUT  Profile #PF#1
*************************************************************************************************
* E.G. US. (ft)          *    1069.32  * Element                *Inside BR US *Inside BR DS *
* W.S. US. (ft)          *    1068.16  * E.G. Elev (ft)         *    1069.29  *    1069.14  *
* Q Total (cfs)          *  169000.00  * W.S. Elev (ft)         *    1068.05  *    1067.88  *
* Q Bridge (cfs)         *  169000.00  * Crit W.S. (ft)         *    1055.83  *    1055.83  *
* Q Weir (cfs)           *             * Max Chl Dpth (ft)      *      27.65  *      27.48  *
* Weir Sta Lft (ft)      *             * Vel Total (ft/s)       *       8.93  *       9.00  *
* Weir Sta Rgt (ft)      *             * Flow Area (sq ft)      *   18925.37  *   18778.97  *
* Weir Submerg           *             * Froude # Chl           *       0.34  *       0.34  *
* Weir Max Depth (ft)    *             * Specif Force (cu ft)   *  270196.80  *  267354.20  *
* Min El Weir Flow (ft)  *    1072.98  * Hydr Depth (ft)        *      21.99  *      21.84  *
* Min El Prs (ft)        *    1074.20  * W.P. Total (ft)        *    1248.98  *    1245.37  *
* Delta EG (ft)          *       0.19  * Conv. Total (cfs)      *  5381226.0  *  5322311.0  *
* Delta WS (ft)          *       0.21  * Top Width (ft)         *     860.74  *     859.92  *
* BR Open Area (sq ft)   *   23844.87  * Frctn Loss (ft)        *              *             *
* BR Open Vel (ft/s)     *       9.00  * C & E Loss (ft)        *              *             *
* Coef of Q              *             * Shear Total (lb/sq ft) *       0.93  *       0.95  *
* Br Sel Method          *   Momentum  * Power Total (lb/ft s)  *       8.33  *       8.54  *
*************************************************************************************************

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

BRIDGE OUTPUT  Profile #PF#2
*************************************************************************************************
* E.G. US. (ft)          *    1069.34  * Element                *Inside BR US *Inside BR DS *
* W.S. US. (ft)          *    1068.17  * E.G. Elev (ft)         *    1069.30  *    1069.15  *
* Q Total (cfs)          *  169000.00  * W.S. Elev (ft)         *    1068.07  *    1067.90  *
* Q Bridge (cfs)         *  169000.00  * Crit W.S. (ft)         *    1055.83  *    1055.83  *
* Q Weir (cfs)           *             * Max Chl Dpth (ft)      *      27.67  *      27.50  *
* Weir Sta Lft (ft)      *             * Vel Total (ft/s)       *       8.92  *       8.99  *
* Weir Sta Rgt (ft)      *             * Flow Area (sq ft)      *   18937.56  *   18791.46  *
* Weir Submerg           *             * Froude # Chl           *       0.34  *       0.34  *
* Weir Max Depth (ft)    *             * Specif Force (cu ft)   *  270434.70  *  267595.70  *
* Min El Weir Flow (ft)  *    1078.18  * Hydr Depth (ft)        *      22.00  *      21.85  *
* Min El Prs (ft)        *    1074.20  * W.P. Total (ft)        *    1249.28  *    1245.67  *
* Delta EG (ft)          *       0.19  * Conv. Total (cfs)      *  5386143.0  *  5327335.0  *
* Delta WS (ft)          *       0.21  * Top Width (ft)         *     860.81  *     859.99  *
* BR Open Area (sq ft)   *   23784.88  * Frctn Loss (ft)        *              *             *
* BR Open Vel (ft/s)     *       8.99  * C & E Loss (ft)        *              *             *
* Coef of Q              *             * Shear Total (lb/sq ft) *       0.93  *       0.95  *
* Br Sel Method          *   Momentum  * Power Total (lb/ft s)  *       8.31  *       8.52  *
*************************************************************************************************

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

CROSS SECTION


RIVER: 1
REACH: 1                RS: 213.25

INPUT
```

Description: 213.25 - FEMA Section AE
Station Elevation Data num= 45

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
17300	1071.7	17670	1072	17850	1073.6	18250	1075.5	19180	1078.2
19488.1	1078.1	19488.2	1072.97	19495.2	1069.2	19517.2	1057.5	19564.2	1055.45
19584.2	1051.3	19586.9	1051	19589.4	1051	19638.2	1048.1	19686.9	1047.3
19689.4	1047.3	19704.2	1047.2	19743.2	1042.2	19786.9	1042.15	19789.4	1042.2
19838.2	1042.8	19871.7	1042.9	19886.9	1043.85	19889.4	1043.8	19938.2	1044.1
19986.9	1042.7	19989.4	1042.7	20038.2	1042.3	20086.9	1042.85	20089.4	1042.8
20121.7	1043.3	20171.2	1041.05	20188.2	1040.9	20189.4	1040.9	20223.2	1040.4
20248.7	1042.2	20286.9	1043.4	20289.4	1043.4	20307.7	1044.35	20382.7	1069.6
20387.9	1070.4	20387.9	1072.9	20388	1078.19	20790	1078.3	21330	1075.5

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
17300	.037	19488.2	.032	20387.9	.037

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19488.2	20387.9	121	123.36	121	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
17300	19488.2	1072.97	F
20387.9	21330	1070.4	F

CROSS SECTION OUTPUT Profile #PF#1

E.G. Elev (ft)	1069.14	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.19	Wt. n-Val.		0.032	
W.S. Elev (ft)	1067.95	Reach Len. (ft)	121.00	123.36	121.00
Crit W.S. (ft)	1055.61	Flow Area (sq ft)		19310.07	
E.G. Slope (ft/ft)	0.000585	Area (sq ft)		19310.07	
Q Total (cfs)	169000.00	Flow (cfs)		169000.00	
Top Width (ft)	880.24	Top Width (ft)		880.24	
Vel Total (ft/s)	8.75	Avg. Vel. (ft/s)		8.75	
Max Chl Dpth (ft)	27.55	Hydr. Depth (ft)		21.94	
Conv. Total (cfs)	6986536.0	Conv. (cfs)		6986536.0	
Length Wtd. (ft)	123.36	Wetted Per. (ft)		887.84	
Min Ch El (ft)	1040.40	Shear (lb/sq ft)		0.79	
Alpha	1.00	Stream Power (lb/ft s)		6.95	
Frctn Loss (ft)	0.07	Cum Volume (acre-ft)	9430.96	33963.70	3146.10
C & E Loss (ft)	0.05	Cum SA (acres)	2187.28	3159.16	1049.89

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

CROSS SECTION OUTPUT Profile #PF#2

E.G. Elev (ft)	1069.15	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.19	Wt. n-Val.		0.032	
W.S. Elev (ft)	1067.96	Reach Len. (ft)	121.00	123.36	121.00
Crit W.S. (ft)	1055.61	Flow Area (sq ft)		19322.76	
E.G. Slope (ft/ft)	0.000584	Area (sq ft)		19322.76	
Q Total (cfs)	169000.00	Flow (cfs)		169000.00	
Top Width (ft)	880.24	Top Width (ft)		880.24	
Vel Total (ft/s)	8.75	Avg. Vel. (ft/s)		8.75	
Max Chl Dpth (ft)	27.56	Hydr. Depth (ft)		21.95	
Conv. Total (cfs)	6994050.0	Conv. (cfs)		6994050.0	
Length Wtd. (ft)	123.36	Wetted Per. (ft)		887.87	
Min Ch El (ft)	1040.40	Shear (lb/sq ft)		0.79	
Alpha	1.00	Stream Power (lb/ft s)		6.94	
Frctn Loss (ft)	0.07	Cum Volume (acre-ft)	1422.13	34945.43	355.97
C & E Loss (ft)	0.05	Cum SA (acres)	221.84	3164.77	77.43

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

CROSS SECTION

RIVER: 1
REACH: 1 RS: 213.21

INPUT
Description: 213.21

Right Channel Bank Station Interpolated
Station Elevation Data num= 96

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
18330.9	1072.8	18364	1072.8	18412.8	1073.1	18447.9	1073	18475.1	1072.3
18506.2	1072	18530.5	1071.1	18588.6	1070	18604.7	1069.8	18607.3	1070
18638.6	1069.9	18645.2	1070	18646.8	1070	18647	1070	18648.3	1070
18679.6	1070.4	18691	1070.2	18696.8	1070.3	18826.1	1070.2	18853.1	1069.7
18879.8	1069.1	18990	1068.8	19004.3	1068.6	19030.8	1069	19071.8	1069.5
19171.4	1069.4	19189.5	1069.4	19238.8	1069.2	19251.2	1070	19253.8	1070
19283.8	1069	19284.7	1069	19384	1068.2	19385.3	1068.1	19387.8	1068.1
19391.2	1068.1	19421.7	1067.9	19486.6	1066.6	19490.3	1065.6	19518.8	1054.9
19533.4	1049	19535.9	1049.5	19545.6	1052	19551.4	1054.2	19576.8	1051.8
19595.9	1047.4	19611.2	1046.8	19618.6	1046.7	19619.1	1046.6	19626.3	1045.5
19627	1045.3	19697	1045.2	19802.7	1045.1	20377.2	1044.9	20380.6	1045
20387.2	1045.1	20389.8	1045.1	20418.5	1045.3	20484.9	1046.3	20500.9	1046.4
20506.4	1046.3	20545.8	1046.4	20547	1046.4	20573.1	1046	20581	1046
20584	1054.4	20584.6	1058.9	20634.9	1062.9	20654.9	1064.2	20663	1064.8
20687	1065.1	20732.3	1064.9	20749.5	1065.1	20761.2	1066	20787.8	1066.2
20803.3	1066.3	20840	1066.3	20853.8	1066.3	20900.8	1066.8	20929.7	1067.2
20948.4	1067.8	20957.7	1070.3	20963.6	1072.1	20965.8	1071.9	20972.5	1072.2
20980.1	1072.5	21025.3	1072.2	21041.7	1072.4	21049	1072.4	21083	1072.6
21094.6	1072.7	21137.7	1072.7	21224.3	1073.6	21258.5	1074.2	21274.1	1074.3
21278.4	1074.5								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val

```
*********************************************
 18330.9    .037 19490.3    .032 20418.5    .037

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      19490.3 20418.5               450  531.57     745            .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 18330.9 19253.8    1074       F
 20418.5 21278.4    1074       F

CROSS SECTION OUTPUT  Profile #PF#1
*****************************************************************************************************
* E.G. Elev (ft)         * 1069.03  * Element                * Left OB *  Channel * Right OB *
* Vel Head (ft)          *    1.04  * Wt. n-Val.             *   0.037 *   0.032 *          *
* W.S. Elev (ft)         * 1067.99  * Reach Len. (ft)       *  450.00 *  531.57 *  745.00  *
* Crit W.S. (ft)         * 1055.88  * Flow Area (sq ft)     *   55.46 *20303.46 *          *
* E.G. Slope (ft/ft)     *0.000510  * Area (sq ft)          *   55.46 *20303.46 * 4648.82  *
* Q Total (cfs)          *166000.00  * Flow (cfs)           *   38.71 *165961.30 *          *
* Top Width (ft)         * 1540.79  * Top Width (ft)        *   81.99 *  928.20 *  530.60  *
* Vel Total (ft/s)       *    8.15  * Avg. Vel. (ft/s)      *    0.70 *    8.17 *          *
* Max Chl Dpth (ft)      *   23.09  * Hydr. Depth (ft)      *    0.68 *   21.87 *          *
* Conv. Total (cfs)      *7351368.0  * Conv. (cfs)          *  1714.1 *7349654.0 *          *
* Length Wtd. (ft)       *  531.56  * Wetted Per. (ft)      *   82.14 *  932.81 *          *
* Min Ch El (ft)         * 1044.90  * Shear (lb/sq ft)     *    0.02 *    0.69 *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *    0.02 *    5.66 *          *
* Frctn Loss (ft)        *    0.36  * Cum Volume (acre-ft)  * 9430.88 *33907.61 * 3139.64  *
* C & E Loss (ft)        *    0.04  * Cum SA (acres)        * 2187.17 * 3156.60 * 1049.15  *
*****************************************************************************************************

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

CROSS SECTION OUTPUT  Profile #PF#2
*****************************************************************************************************
* E.G. Elev (ft)         * 1069.04  * Element                * Left OB *  Channel * Right OB *
* Vel Head (ft)          *    1.04  * Wt. n-Val.             *          *   0.032 *          *
* W.S. Elev (ft)         * 1068.00  * Reach Len. (ft)       *  450.00  *  531.57 *  745.00  *
* Crit W.S. (ft)         * 1055.88  * Flow Area (sq ft)     *          *20315.02 *          *
* E.G. Slope (ft/ft)     *0.000528  * Area (sq ft)          *          *20315.02 *          *
* Q Total (cfs)          *166000.00  * Flow (cfs)           *          *166000.00 *          *
* Top Width (ft)         *  928.20  * Top Width (ft)        *          *  928.20 *          *
* Vel Total (ft/s)       *    8.17  * Avg. Vel. (ft/s)      *          *    8.17 *          *
* Max Chl Dpth (ft)      *   23.10  * Hydr. Depth (ft)      *          *   21.89 *          *
* Conv. Total (cfs)      *7227547.0  * Conv. (cfs)          *          *7227547.0 *          *
* Length Wtd. (ft)       *  531.57  * Wetted Per. (ft)      *          *  957.91 *          *
* Min Ch El (ft)         * 1044.90  * Shear (lb/sq ft)     *          *    0.70 *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *    5.71 *          *
* Frctn Loss (ft)        *    0.36  * Cum Volume (acre-ft)  * 1422.13  *34889.31 *  355.97  *
* C & E Loss (ft)        *    0.04  * Cum SA (acres)        *  221.84  * 3162.21 *   77.43  *
*****************************************************************************************************

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

CROSS SECTION


RIVER: 1
REACH: 1                 RS: 213.11

INPUT
Description: 213.11
Station Elevation Data    num=      85
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
 17566.5  1070.1 17705.4  1071.3 17742.2  1071.6 17814.3  1070.1 17888.9  1069.6
 17929.2  1069.8 17996.1  1072.7 18084.9  1073.4 18245.7  1073.1 18304.6  1073.3
 18312.5  1071.8 18319.5  1069.3 18320.2  1069.1 18324.7  1069.1 18353.4  1069.6
 18382.1  1068.8   18390  1068.3 18395.2  1069.2 18399.3  1071.7 18472.2  1071.2
 18480.8  1071.2 18492.7  1070.4 18507.8    1070 18517.1  1069.2 18520.7  1069.6
   18584  1071.9 18596.8  1072.2   18606  1072.4 18609.2  1072.4 18753.6    1072
 18759.6  1071.8 18769.2  1073.7 18780.8  1075.5 18785.7    1075 18793.4  1074.4
 18863.8  1073.8 18931.9  1074.1 18960.3  1074.3 18976.4  1074.4 19015.9    1075
 19047.7    1075 19171.5  1072.4 19275.4    1071   19456  1071.1 19523.2  1069.3
   19575  1067.9 19589.1  1068.3 19601.9  1071.4 19606.1  1072.1 19616.1  1067.5
 19661.3  1047.6 20012.6  1047.6 20486.9  1047.9 20586.5  1081.1 20599.1    1086
 20638.9  1086.2 20743.9  1086.8 20798.9  1087.3   20849  1087.5 20878.6  1087.6
 20889.5  1087.8 20899.2  1087.8   20922  1087.5 21000.4  1087.3 21062.3  1085.9
 21080.5  1084.4 21100.6  1083.3 21131.5    1083 21372.7  1078.3 21390.1  1077.6
 21449.7  1073.9 21464.1  1073.6 21478.8  1073.9 21484.8  1073.8 21573.7  1073.9
 21602.4  1073.9 21694.6  1073.6 21800.6  1072.4 21943.2  1070.8 22180.4  1070.9
 22217.7    1071 22268.3  1071.4 22474.2  1073.6 22486.2  1076.3 22488.2    1077

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*************************************************
 17566.5    .037 19606.1    .032 20599.1    .037

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      19606.1 20599.1               425  459.38     565            .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 17566.5 18780.8  1087.8       F
 20599.1 22488.2  1087.8       F

CROSS SECTION OUTPUT  Profile #PF#1
*****************************************************************************************************
* E.G. Elev (ft)         * 1068.63  * Element                * Left OB *  Channel * Right OB *
* Vel Head (ft)          *    1.47  * Wt. n-Val.             *          *   0.032 *          *
* W.S. Elev (ft)         * 1067.16  * Reach Len. (ft)       *  425.00  *  459.38 *  565.00  *
* Crit W.S. (ft)         * 1058.35  * Flow Area (sq ft)     *          *17066.41 *          *
* E.G. Slope (ft/ft)     *0.000913  * Area (sq ft)          *          *17066.41 *          *
* Q Total (cfs)          *166000.00  * Flow (cfs)           *          *166000.00 *          *
* Top Width (ft)         *  927.80  * Top Width (ft)        *          *  927.80 *          *
* Vel Total (ft/s)       *    9.73  * Avg. Vel. (ft/s)      *          *    9.73 *          *
* Max Chl Dpth (ft)      *   19.56  * Hydr. Depth (ft)      *          *   18.39 *          *
```

```
                                                                    DuplicateEffective
* Conv. Total (cfs)      *5493675.0  * Conv. (cfs)                   *          *5493675.0  *          *
* Length Wtd. (ft)       *  459.38  * Wetted Per. (ft)              *          *  935.04  *          *
* Min Ch El (ft)         * 1047.60  * Shear (lb/sq ft)              *          *    1.04  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s)        *          *   10.12  *          *
* Frctn Loss (ft)        *    0.45  * Cum Volume (acre-ft)         * 9430.60  *33679.59  * 3099.89  *
* C & E Loss (ft)        *    0.01  * Cum SA (acres)               * 2186.74  * 3145.27  * 1044.62  *
*****************************************************************************************************

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

CROSS SECTION OUTPUT  Profile #PF#2
*****************************************************************************************************
* E.G. Elev (ft)         * 1068.63  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    1.47  * Wt. n-Val.              *          *    0.032  *          *
* W.S. Elev (ft)         * 1067.16  * Reach Len. (ft)         *  425.00  *  459.38  *  565.00  *
* Crit W.S. (ft)         * 1058.35  * Flow Area (sq ft)       *          *17072.18  *          *
* E.G. Slope (ft/ft)     *0.000912  * Area (sq ft)            *          *17072.18  *          *
* Q Total (cfs)          *166000.00  * Flow (cfs)              *          *166000.00  *          *
* Top Width (ft)         *  927.79  * Top Width (ft)          *          *  927.79  *          *
* Vel Total (ft/s)       *    9.72  * Avg. Vel. (ft/s)        *          *    9.72  *          *
* Max Chl Dpth (ft)      *   19.56  * Hydr. Depth (ft)        *          *   18.40  *          *
* Conv. Total (cfs)      *5496745.0  * Conv. (cfs)             *          *5496745.0  *          *
* Length Wtd. (ft)       *  459.38  * Wetted Per. (ft)        *          *  935.04  *          *
* Min Ch El (ft)         * 1047.60  * Shear (lb/sq ft)        *          *    1.04  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s)  *          *   10.11  *          *
* Frctn Loss (ft)        *    0.44  * Cum Volume (acre-ft)    * 1422.13  *34661.19  *  355.97  *
* C & E Loss (ft)        *    0.01  * Cum SA (acres)          *  221.84  * 3150.88  *   77.43  *
*****************************************************************************************************

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

CROSS SECTION


RIVER: 1
REACH: 1                 RS: 213.03

INPUT
Description: 213.03
Station Elevation Data    num=      97
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*************************************************************************************
  16056.5   1068.9  16069.1   1068.8  16071.5   1068.8  16197.1   1069.2  16383.9     1070
    16409     1070  16413.8     1070  16414.4     1070  16428.8     1070  16501.9   1070.2
    16550   1070.3  16603.1   1070.5  16734.3   1069.9    16759   1069.9  16800.6   1069.5
  16821.1   1069.8  16943.1   1070.1  16956.6   1070.5  16985.9   1070.6  17193.9   1070.8
  17238.8   1069.8  17263.2   1069.3  17296.6   1068.7  17461.4   1069.1  17486.5   1069.2
  17576.5   1069.4  17728.6   1070.6  17908.4     1072  17938.3   1071.6  17974.7   1070.1
  17987.3   1069.9  18028.7   1068.5  18086.7   1069.1  18107.5   1068.9  18113.8   1068.9
  18246.2   1068.5  18370.2   1068.2  18382.5   1068.2    18389   1068.3  18394.9   1068.3
    18496   1070.4  18502.4   1070.5  18521.4   1070.6  18643.8     1071  18700.9   1071.3
  18708.1   1071.2  18723.6   1071.3  18831.5   1070.9  18846.4   1070.8  18847.1   1070.8
  18848.3   1070.8  18969.8   1071.4  19007.8   1071.8  19178.9   1073.7  19181.7   1073.7
  19324.1   1073.1  19588.8   1066.9  19627.1     1066  19640.5   1066.2  19662.1   1067.2
  19666.3   1067.8  19672.11066.574  19703.2     1060  19755.3   1050.7  19776.1   1048.9
  19807.6   1047.8  19807.9   1047.8  19808.6   1047.8  19883.7   1046.8  19936.5   1046.7
  19974.6   1046.7  20168.5   1046.8  20481.5   1047.5  20531.6   1047.5  20536.3   1047.6
  20551.1  1052.62 0591.831066.575  20595.4   1067.8  20639.6     1083  20645.8     1085
  20668.5   1085.5  20744.1   1085.4  20806.7   1086.1  20879.4     1082  20936.8   1078.5
  20990.3   1075.5  21125.9   1073.2  21137.8   1072.9  21183.6   1072.1    21221     1072
  21240.8   1071.7  21303.4   1071.3  21328.8   1071.1  21394.9   1071.7  21406.3   1071.8
    21439   1071.7  21481.2   1071.9

Manning's n Values        num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
*************************************************
  16056.5    .037  19672.1    .03220591.83    .037

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      19672.120591.83              475     495     525             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 16056.5 19178.9  1086.1       F
 20645.8 21481.2  1086.1       F

CROSS SECTION OUTPUT  Profile #PF#1
*****************************************************************************************************
* E.G. Elev (ft)         * 1068.17  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    1.60  * Wt. n-Val.              *   0.037  *   0.032  *          *
* W.S. Elev (ft)         * 1066.57  * Reach Len. (ft)         *  475.00  *  495.00  *  525.00  *
* Crit W.S. (ft)         * 1058.30  * Flow Area (sq ft)       *   14.85  *16376.62  *          *
* E.G. Slope (ft/ft)     *0.001032  * Area (sq ft)            *   14.85  *16376.62  *          *
* Q Total (cfs)          *166000.00  * Flow (cfs)              *    9.03  *165991.00  *          *
* Top Width (ft)         *  965.60  * Top Width (ft)          *   45.87  *  919.72  *          *
* Vel Total (ft/s)       *   10.13  * Avg. Vel. (ft/s)        *    0.61  *   10.14  *          *
* Max Chl Dpth (ft)      *   19.87  * Hydr. Depth (ft)        *    0.32  *   17.81  *          *
* Conv. Total (cfs)      *5167811.0  * Conv. (cfs)             *   281.1  *5167530.0  *          *
* Length Wtd. (ft)       *  495.00  * Wetted Per. (ft)        *   45.89  *  924.49  *          *
* Min Ch El (ft)         * 1046.70  * Shear (lb/sq ft)        *    0.02  *    1.14  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s)  *    0.01  *   11.57  *          *
* Frctn Loss (ft)        *    0.57  * Cum Volume (acre-ft)    * 9430.52  *33503.25  * 3099.89  *
* C & E Loss (ft)        *    0.05  * Cum SA (acres)          * 2186.52  * 3135.53  * 1044.62  *
*****************************************************************************************************

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.

CROSS SECTION OUTPUT  Profile #PF#2
*****************************************************************************************************
* E.G. Elev (ft)         * 1068.17  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    1.59  * Wt. n-Val.              *          *   0.032  *          *
* W.S. Elev (ft)         * 1066.58  * Reach Len. (ft)         *  475.00  *  495.00  *  525.00  *
* Crit W.S. (ft)         * 1058.30  * Flow Area (sq ft)       *          *16382.68  *          *
```

				Duplicate	Effective	
E.G. Slope (ft/ft)	0.001031	Area (sq ft)		0.00	16382.68	
Q Total (cfs)	166000.00	Flow (cfs)			166000.00	
Top Width (ft)	919.76	Top Width (ft)		0.03	919.73	
Vel Total (ft/s)	10.13	Avg. Vel. (ft/s)			10.13	
Max Chl Dpth (ft)	19.88	Hydr. Depth (ft)			17.81	
Conv. Total (cfs)	5170676.0	Conv. (cfs)			5170676.0	
Length Wtd. (ft)	495.00	Wetted Per. (ft)			924.50	
Min Ch El (ft)	1046.70	Shear (lb/sq ft)			1.14	
Alpha	1.00	Stream Power (lb/ft s)			11.55	
Frctn Loss (ft)	0.57	Cum Volume (acre-ft)	1422.13	34484.78	355.97	
C & E Loss (ft)	0.05	Cum SA (acres)	221.84	3141.14	77.43	

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

CROSS SECTION

RIVER: 1
REACH: 1 RS: 212.93

INPUT
Description: 212.93

Left and Right Channel Bank Stations Interpolated
Station Elevation Data num= 93

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
18913.7	1067.5	18940.6	1066.4	18961.6	1067.4	18996.4	1069.5	19034.7	1069.3
19121.7	1070.2	19158.8	1070.2	19269.6	1071.2	19362.4	1070.3	19381.3	1070.6
19412.2	1072.5	19420.1	1072.9	19430.8	1073.3	19436.5	1073.5	19633.3	1068.7
19645	1068.3	19645.7	1068.4	19645.9	1068.4	19653.4	1069	19673.1	1070.5
19690.76	1065.485	19697.4	1063.6	19757.3	1046.7	19779.3	1046.4	19826.6	1046.3
19850.5	1046.5	19924.2	1047.4	19928.9	1047.5	19929.5	1047.4	19958.7	1045.5
20129.7	1045.4	20271.7	1045.6	20345.4	1045.6	20426.9	1045.52	0489.75	1065.484
20489.8	1065.5	20498.7	1068.1	20501.4	1068	20587.1	1066.5	20637	1066.5
20655.9	1066.4	20685.9	1065.7	20749.1	1064.9	20804.3	1071.3	20847	1074.9
20872.4	1075.1	20941	1074.1	20990.9	1073	21005.7	1072.8	21075.3	1071.3
21079.7	1071.2	21083	1071.2	21113	1071.3	21246.3	1072.7	21249.5	1072.8
21261.8	1072.9	21268.5	1072.9	21332.8	1073.1	21571.4	1072.7	21590.1	1072.7
21815.9	1071.3	21853.1	1071.3	21982.5	1070.6	22017.6	1070.5	22314.9	1070
22499	1068.8	22548.8	1068.9	22568.2	1068.4	22648.5	1068.9	22948.3	1069.7
23054.9	1071.1	23121.6	1072	23140.9	1076.4	23143.5	1077.2	23151.2	1077.1
23159.2	1077	23162.2	1077.3	23171	1077.8	23179.9	1081.1	23202.7	1089.6
23248.6	1089.5	23303.8	1089.6	23327.8	1082.2	23331.1	1081	23333.2	1080.6
23345.9	1077.9	23350.9	1077.9	23361.3	1078.1	23377.6	1073.6	23386.3	1070.8
23389.2	1071	23392	1071.2	23394	1070.7				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
18913.7	.037	19690.76	.032	20489.75	.037

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19690.76	20489.75	495	501.9	535	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
18913.7	19673.1	1078	F
20498.7	23394	1078	F

CROSS SECTION OUTPUT Profile #PF#1

		Element	Left OB	Channel	Right OB
E.G. Elev (ft)	1067.55	Element			
Vel Head (ft)	2.06	Wt. n-Val.		0.032	
W.S. Elev (ft)	1065.48	Reach Len. (ft)	495.00	501.90	535.00
Crit W.S. (ft)	1058.04	Flow Area (sq ft)		14402.09	
E.G. Slope (ft/ft)	0.001316	Area (sq ft)		14402.09	14.96
Q Total (cfs)	166000.00	Flow (cfs)		166000.00	
Top Width (ft)	850.19	Top Width (ft)		798.99	51.20
Vel Total (ft/s)	11.53	Avg. Vel. (ft/s)		11.53	
Max Chl Dpth (ft)	20.08	Hydr. Depth (ft)		18.03	
Conv. Total (cfs)	4575514.0	Conv. (cfs)		4575514.0	
Length Wtd. (ft)	501.90	Wetted Per. (ft)		804.77	
Min Ch El (ft)	1045.40	Shear (lb/sq ft)		1.47	
Alpha	1.00	Stream Power (lb/ft s)		16.95	
Frctn Loss (ft)	0.79	Cum Volume (acre-ft)	9430.44	33328.37	3099.80
C & E Loss (ft)	0.10	Cum SA (acres)	2186.27	3125.76	1044.31

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

CROSS SECTION OUTPUT Profile #PF#2

		Element	Left OB	Channel	Right OB
E.G. Elev (ft)	1067.55	Element			
Vel Head (ft)	2.06	Wt. n-Val.		0.032	
W.S. Elev (ft)	1065.49	Reach Len. (ft)	495.00	501.90	535.00
Crit W.S. (ft)	1058.04	Flow Area (sq ft)		14408.82	
E.G. Slope (ft/ft)	0.001314	Area (sq ft)		14408.82	
Q Total (cfs)	166000.00	Flow (cfs)		166000.00	
Top Width (ft)	798.99	Top Width (ft)		798.99	
Vel Total (ft/s)	11.52	Avg. Vel. (ft/s)		11.52	
Max Chl Dpth (ft)	20.09	Hydr. Depth (ft)		18.03	
Conv. Total (cfs)	4579008.0	Conv. (cfs)		4579008.0	
Length Wtd. (ft)	501.90	Wetted Per. (ft)		804.79	
Min Ch El (ft)	1045.40	Shear (lb/sq ft)		1.47	
Alpha	1.00	Stream Power (lb/ft s)		16.92	
Frctn Loss (ft)	0.79	Cum Volume (acre-ft)	1422.13	34309.83	355.97
C & E Loss (ft)	0.10	Cum SA (acres)	221.84	3131.37	77.43

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). 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: 1
REACH: 1 RS: 212.84

INPUT
Description: 212.84 - FEMA Section AD

Left and Right Channel Bank Stations
Interpolated
Station Elevation Data num= 66

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
16284.9	1068.4	16487.1	1068.9	16606	1069.3	16985	1071.2	17015.9	1071.4
17038.7	1071.8	17089.2	1071.1	17339.8	1070.2	17519.4	1069.1	17554.9	1069.1
17652.7	1069	17900.6	1068.7	18109.2	1068.8	18133.9	1069	19053.9	1067.7
19203.8	1066	19229.6	1065.8	19232.1	1065.8	19238.5	1065.7	19242.2	1065.7
19244.8	1065.8	19286.8	1067.4	19292.2	1069.2	19450.5	1067.9	19498.7	1067.5
19560.8	1067	19586	1066.9	19671.4	1066.8	19692.2	1068.3	19695.5	1068.9
19711.5	1063.544	19765.4	1045.5	19772.2	1043.1	19790.5	1043.1	19811.3	1043.2
20298.7	1043.5	20314.2	1050.2	20347.25	1063.544	20367.7	1071.8	20367.9	1071.8
20405.2	1072.8	20416.8	1072.7	20424.4	1072.7	20490.9	1070.9	20522.9	1069.8
20629.8	1070.1	20679.7	1070.1	20767.5	1070.4	20793.1	1070.2	20818.2	1069.1
20874.5	1068.7	20940.7	1070.4	20979.1	1070.3	21186.4	1069.3	21242.6	1069.1
21449.2	1070.2	21488.8	1070.8	21502.4	1071	21582.5	1070.9	21684.9	1071.4
21805.3	1070.7	21883.6	1070.5	21943.6	1070.2	22187.5	1070.4	22226.7	1070.2
22398.2	1069.8								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
16284.9	.037	19711.5	.03	22034	7.25 .037

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
19711.5 20347.25 565 538.19 480 .1 .3
Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
16284.9	19695.5	1072.8	F
20367.7	22398.2	1072.8	F

CROSS SECTION OUTPUT Profile #PF#1

E.G. Elev (ft)	1066.65	Element	Left OB	Channel	Right OB
Vel Head (ft)	3.11	Wt. n-Val.		0.032	
W.S. Elev (ft)	1063.54	Reach Len. (ft)	565.00	538.19	480.00
Crit W.S. (ft)	1057.57	Flow Area (sq ft)		11737.26	
E.G. Slope (ft/ft)	0.001930	Area (sq ft)		11737.26	
Q Total (cfs)	166000.00	Flow (cfs)		166000.00	
Top Width (ft)	635.75	Top Width (ft)		635.75	
Vel Total (ft/s)	14.14	Avg. Vel. (ft/s)		14.14	
Max Chl Dpth (ft)	20.44	Hydr. Depth (ft)		18.46	
Conv. Total (cfs)	3778154.0	Conv. (cfs)		3778154.0	
Length Wtd. (ft)	538.19	Wetted Per. (ft)		643.08	
Min Ch El (ft)	1043.10	Shear (lb/sq ft)		2.20	
Alpha	1.00	Stream Power (lb/ft s)		31.11	
Frctn Loss (ft)	0.90	Cum Volume (acre-ft)	9430.44	33177.78	3099.71
C & E Loss (ft)	0.18	Cum SA (acres)	2186.27	3117.50	1043.99

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION OUTPUT Profile #PF#2

E.G. Elev (ft)	1066.66	Element	Left OB	Channel	Right OB
Vel Head (ft)	3.10	Wt. n-Val.		0.032	
W.S. Elev (ft)	1063.56	Reach Len. (ft)	565.00	538.19	480.00
Crit W.S. (ft)	1057.57	Flow Area (sq ft)		11745.09	
E.G. Slope (ft/ft)	0.001926	Area (sq ft)		11745.09	
Q Total (cfs)	166000.00	Flow (cfs)		166000.00	
Top Width (ft)	635.75	Top Width (ft)		635.75	
Vel Total (ft/s)	14.13	Avg. Vel. (ft/s)		14.13	
Max Chl Dpth (ft)	20.46	Hydr. Depth (ft)		18.47	
Conv. Total (cfs)	3782263.0	Conv. (cfs)		3782263.0	
Length Wtd. (ft)	538.19	Wetted Per. (ft)		643.10	
Min Ch El (ft)	1043.10	Shear (lb/sq ft)		2.20	
Alpha	1.00	Stream Power (lb/ft s)		31.04	
Frctn Loss (ft)	0.90	Cum Volume (acre-ft)	1422.13	34159.16	355.97
C & E Loss (ft)	0.18	Cum SA (acres)	221.84	3123.11	77.43

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION

RIVER: 1
REACH: 1 RS: 212.74

INPUT
Description: 212.74

DuplicateEffective

Left and Right Channel Bank Stations Interpolated
Station Elevation Data num= 70

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
15451.4	1067.1	15456.2	1067.3	15464.1	1067.8	15467.8	1068.3	15480.9	1067.9
15619.6	1066.5	15997.3	1067	16142.7	1066.6	16235	1067.1	16317.5	1067.4
16486.7	1067.9	16644.3	1068.2	16906.1	1067.7	17106.4	1067.8	17312.1	1069.3
17351.4	1069.8	17392.8	1069.3	17578.5	1067.9	17799	1066.9	17906.3	1067
18021.4	1067.4	18082.2	1066.6	18121.5	1067.1	18128.7	1067	19421.5	1067
19430.3	1070.5	19440.7	1074.4	19464.5	1074.9	19479.6	1075	19498.8	1064.8
19504.9	1062.5	19514.1	1062.5	19546.7	1062.8	19569.3	1066	19571.5	1066.5
19577.2	1066.5	19641.5	1067.1	19653.8	1066.8	19678.6	1067.3	19690.61	1063.061
19709.2	1056.5	19745.4	1042.1	19776.5	1041.9	20081.3	1041.6	20297.5	1041.8
20311.1	1046.1	20335	1053.3	20367.2	1063.063	20372.6	1064.7	20387.5	1069
20400.7	1069	20436.3	1069	20477.6	1068.5	20512.4	1068.7	20545.9	1068.9
20612.1	1068.9	20630.4	1069.2	20677.9	1069.9	20719.8	1069.6	20764.1	1069.6
20802.7	1069.4	20847.1	1068.9	20916.2	1069.1	20977.1	1068.7	21027.9	1068.8
21126.4	1069.4	21156	1069.5	21203.9	1069.2	21326.9	1068.9	21421.2	1069.1

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
15451.4	.03	19690.61	.032	20367.2	.037

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
19690.61 20367.2 296 242.17 66 .1 .3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
15451.4	19678.6	1074	F
20387.5	21421.2	1074	F

CROSS SECTION OUTPUT Profile #PF#1

E.G. Elev (ft)	1065.57	Element	Left OB	Channel / Right OB
Vel Head (ft)	2.51	Wt. n-Val.		0.032
W.S. Elev (ft)	1063.06	Reach Len. (ft)	296.00	242.17 / 66.00
Crit W.S. (ft)	1055.53	Flow Area (sq ft)		13064.60
E.G. Slope (ft/ft)	0.001465	Area (sq ft)	19.23	13064.60
Q Total (cfs)	166000.00	Flow (cfs)		166000.00
Top Width (ft)	721.72	Top Width (ft)	45.13	676.58
Vel Total (ft/s)	12.71	Avg. Vel. (ft/s)		12.71
Max Chl Dpth (ft)	21.46	Hydr. Depth (ft)		19.31
Conv. Total (cfs)	4336312.0	Conv. (cfs)		4336312.0
Length Wtd. (ft)	242.17	Wetted Per. (ft)		683.64
Min Ch El (ft)	1041.60	Shear (lb/sq ft)		1.75
Alpha	1.00	Stream Power (lb/ft s)		22.22
Frctn Loss (ft)	0.30	Cum Volume (acre-ft)	9430.32	33024.56 / 3099.71
C & E Loss (ft)	0.11	Cum SA (acres)	2185.98	3109.39 / 1043.99

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.

CROSS SECTION OUTPUT Profile #PF#2

E.G. Elev (ft)	1065.58	Element	Left OB	Channel / Right OB
Vel Head (ft)	2.50	Wt. n-Val.		0.032
W.S. Elev (ft)	1063.08	Reach Len. (ft)	296.00	242.17 / 66.00
Crit W.S. (ft)	1055.53	Flow Area (sq ft)		13074.10
E.G. Slope (ft/ft)	0.001462	Area (sq ft)		13074.10
Q Total (cfs)	166000.00	Flow (cfs)		166000.00
Top Width (ft)	676.59	Top Width (ft)		676.59
Vel Total (ft/s)	12.70	Avg. Vel. (ft/s)		12.70
Max Chl Dpth (ft)	21.48	Hydr. Depth (ft)		19.32
Conv. Total (cfs)	4341428.0	Conv. (cfs)		4341428.0
Length Wtd. (ft)	242.17	Wetted Per. (ft)		683.67
Min Ch El (ft)	1041.60	Shear (lb/sq ft)		1.75
Alpha	1.00	Stream Power (lb/ft s)		22.16
Frctn Loss (ft)	0.29	Cum Volume (acre-ft)	1422.13	34005.83 / 355.97
C & E Loss (ft)	0.11	Cum SA (acres)	221.84	3115.00 / 77.43

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

CROSS SECTION

RIVER: 1
REACH: 1 RS: 212.68

INPUT
Description: 212.68

Upstream face of 7th Avenue bridge
Station Elevation Data num= 34

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
18325	1064.2	19130.38	1068	19307.91	1072	19492.8	1073.03	19492.89	1066.21
19501.07	1063.02	319567.36	1037.2	19595.08	1037.5	19600.27	1037.5	19645.74	1037.8
19703.33	1037.88	19708.52	1037.88	19721.94	1039.1	19780.83	1037.6	19790.36	1040
19811.58	1039.4	19816.77	1039.4	19829.76	1037.2	19839.72	1038	19878.26	1039.3
19919.83	1037.5	19925.02	1037.5	19977.41	1036.9	20028.08	1038.1	20033.27	1038.1
20064.88	1037.5	20130.11	1063.02	20137.19	1065.8	20137.28	1072.66	20407.73	1072
20615.57	1068	20641.55	1067.6	20780.11	1068	21568.17	1069.3		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
18325	.03	19501.07	.032	20130.1	.037

```
                                                                    DuplicateEffective
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.    Expan.
      19501.07 20130.1              155  154.01     155            .1       .3
Ineffective Flow      num=        2
   Sta L    Sta R     Elev  Permanent
   1832519492.89 1066.21        F
20137.1921568.17  1065.8        F

CROSS SECTION OUTPUT  Profile #PF#1
*********************************************************************************************
* E.G. Elev (ft)         * 1065.16  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    2.14  * Wt. n-Val.             *          *   0.032  *          *
* W.S. Elev (ft)         * 1063.02  * Reach Len. (ft)        *    0.10  *    0.10  *    0.10  *
* Crit W.S. (ft)         * 1052.69  * Flow Area (sq ft)      *          *14139.91  *          *
* E.G. Slope (ft/ft)     *0.001030  * Area (sq ft)           *          *14139.91  *          *
* Q Total (cfs)          *166000.00  * Flow (cfs)            *          *166000.00  *          *
* Top Width (ft)         *  629.02  * Top Width (ft)         *          *  629.02  *          *
* Vel Total (ft/s)       *   11.74  * Avg. Vel. (ft/s)       *          *   11.74  *          *
* Max Chl Dpth (ft)      *   26.12  * Hydr. Depth (ft)       *          *   22.48  *          *
* Conv. Total (cfs)      *5173112.0  * Conv. (cfs)           *          *5173112.0  *          *
* Length Wtd. (ft)       *    0.10  * Wetted Per. (ft)       *          *  639.38  *          *
* Min Ch El (ft)         * 1036.90  * Shear (lb/sq ft)       *          *    1.42  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *   16.69  *          *
* Frctn Loss (ft)        *    0.00  * Cum Volume (acre-ft)   * 9430.25  *32948.94  * 3099.71  *
* C & E Loss (ft)        *    0.03  * Cum SA (acres)         * 2185.82  * 3105.76  * 1043.99  *
*********************************************************************************************

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

CROSS SECTION OUTPUT  Profile #PF#2
*********************************************************************************************
* E.G. Elev (ft)         * 1065.17  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    2.14  * Wt. n-Val.             *          *   0.032  *          *
* W.S. Elev (ft)         * 1063.04  * Reach Len. (ft)        *    0.10  *    0.10  *    0.10  *
* Crit W.S. (ft)         * 1052.69  * Flow Area (sq ft)      *          *14148.66  *          *
* E.G. Slope (ft/ft)     *0.001028  * Area (sq ft)           *          *14148.66  *          *
* Q Total (cfs)          *166000.00  * Flow (cfs)            *          *166000.00  *          *
* Top Width (ft)         *  629.03  * Top Width (ft)         *          *  629.03  *          *
* Vel Total (ft/s)       *   11.73  * Avg. Vel. (ft/s)       *          *   11.73  *          *
* Max Chl Dpth (ft)      *   26.14  * Hydr. Depth (ft)       *          *   22.49  *          *
* Conv. Total (cfs)      *5178275.0  * Conv. (cfs)           *          *5178275.0  *          *
* Length Wtd. (ft)       *    0.10  * Wetted Per. (ft)       *          *  639.41  *          *
* Min Ch El (ft)         * 1036.90  * Shear (lb/sq ft)       *          *    1.42  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *   16.66  *          *
* Frctn Loss (ft)        *          * Cum Volume (acre-ft)   * 1422.13  *33930.16  *  355.97  *
* C & E Loss (ft)        *          * Cum SA (acres)         *  221.84  * 3111.37  *   77.43  *
*********************************************************************************************

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

BRIDGE


RIVER: 1
REACH: 1                 RS: 212.675

INPUT
Description: 7th Avenue Bridge
Distance from Upstream XS =       .1
Deck/Roadway Width        =    153.01
Weir Coefficient          =       2.6
Upstream  Deck/Roadway Coordinates
    num=        11
     Sta Hi Cord Lo Cord      Sta Hi Cord Lo Cord      Sta Hi Cord Lo Cord
*********************************************************************************
   18325  1064.2  1064.219130.38     1068     106819307.91     1072     1072
 19492.8 1073.03 1073.0319492.89 1073.03 1066.2119595.08  1073.9 1067.07
19703.34 1074.35 1067.5219811.58 1074.48 1067.6419925.02 1074.24 1067.41
20033.27  1073.6 1066.7620137.19 1072.66 1065.84

Upstream Bridge Cross Section Data
Station Elevation Data    num=       34
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*********************************************************************************
   18325  1064.219130.38     106819307.91     1072 19492.8 1073.0319492.89 1066.21
19501.071063.02319567.36  1037.219595.08  1037.519600.27  1037.519645.74  1037.8
19703.33 1037.8819708.52 1037.8819721.94  1039.119780.83  1037.619790.36     1040
19811.58  1039.419816.77  1039.419829.76  1037.219839.72     103819878.26  1039.3
19919.83  1037.519925.02  1037.519977.41  1036.920028.08  1038.120033.27  1038.1
20064.88  1037.5 20130.11063.02520137.19  1065.820137.28 1072.6620407.73     1072
20615.57     106820641.55  1067.620780.11     106821568.17  1069.3

Manning's n Values        num=        3
     Sta    n Val      Sta    n Val      Sta    n Val
*************************************************
   18325     .03719501.07     .032 20130.1     .037

Bank Sta: Left   Right    Coeff Contr.    Expan.
      19501.07 20130.1             .1       .3
Ineffective Flow      num=        2
   Sta L    Sta R     Elev  Permanent
   1832519492.89 1066.21        F
20137.1921568.17  1065.8        F

Downstream  Deck/Roadway Coordinates
    num=        11
     Sta Hi Cord Lo Cord      Sta Hi Cord Lo Cord      Sta Hi Cord Lo Cord
*********************************************************************************
   18325  1064.2  1064.219130.38     1068     106819307.91     1072     1072
 19492.8 1073.03 1073.0319492.89 1073.03 1066.2119595.08  1073.9 1067.07
19703.34 1074.35 1067.5219811.58 1074.48 1067.6419925.02 1074.24 1067.41
20033.27  1073.6 1066.7620137.19 1072.66 1065.84

Downstream Bridge Cross Section Data
Station Elevation Data    num=       34
```

```
                                                                    DuplicateEffective
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
   18325  1064.219130.38    106819307.91    1072 19492.8 1073.0319492.89 1066.21
19502.331062.53319567.36  1037.219595.08  1037.519600.27  1037.519645.74  1037.8
19703.33 1037.8819708.52 1037.8819721.94  1039.119780.83  1037.619790.36    1040
19811.58  1039.419816.77  1039.419829.76  1037.219839.72    103819878.26  1039.3
19919.83  1037.519925.02  1037.519977.41  1036.920028.08  1038.120033.27  1038.1
20064.88  1037.520128.841062.53220137.19  1065.820137.28 1072.6620407.73    1072
20615.57    106820641.55  1067.620780.11    106821568.17  1069.3

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
   18325    .03719502.33    .03220128.84    .037

Bank Sta: Left   Right    Coeff Contr.   Expan.
     19502.3320128.84           .1        .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
   1832519492.89 1066.21       F
20137.1921568.17  1065.8       F

Upstream Embankment side slope              =         horiz. to 1.0 vertical
Downstream Embankment side slope            =         horiz. to 1.0 vertical
Maximum allowable submergence for weir flow =     .95
Elevation at which weir flow begins         =
Energy head used in spillway design         =
Spillway height used in design              =
Weir crest shape                            = Broad Crested

Number of Piers =  5

Pier Data
Pier Station     Upstream=19597.67    Downstream=19597.67
Upstream     num=        2
    Width   Elev    Width   Elev
*********************************
     4.8    1036     4.8    1068
Downstream     num=        2
    Width   Elev    Width   Elev
*********************************
     4.8    1036     4.8    1068

Pier Data
Pier Station     Upstream=19705.06    Downstream=19705.06
Upstream     num=        2
    Width   Elev    Width   Elev
*********************************
     4.8    1036     4.8    1068
Downstream     num=        2
    Width   Elev    Width   Elev
*********************************
     4.8    1036     4.8    1068

Pier Data
Pier Station     Upstream=19814.17    Downstream=19814.17
Upstream     num=        2
    Width   Elev    Width   Elev
*********************************
     4.8    1036     4.8    1068
Downstream     num=        2
    Width   Elev    Width   Elev
*********************************
     4.8    1036     4.8    1068

Pier Data
Pier Station     Upstream=19922.42    Downstream=19922.42
Upstream     num=        2
    Width   Elev    Width   Elev
*********************************
     4.8    1036     4.8    1068
Downstream     num=        2
    Width   Elev    Width   Elev
*********************************
     4.8    1036     4.8    1068

Pier Data
Pier Station     Upstream=20030.67    Downstream=20030.67
Upstream     num=        2
    Width   Elev    Width   Elev
*********************************
     4.8    1036     4.8    1068
Downstream     num=        2
    Width   Elev    Width   Elev
*********************************
     4.8    1036     4.8    1068

Number of Bridge Coefficient Sets =  1

Low Flow Methods and Data
       Energy
       Momentum              Cd   =     1.2
       Yarnell               KVal =    1.05
Selected Low Flow Methods = Highest Energy Answer

High Flow Method
       Energy Only

Additional Bridge Parameters
       Add Friction component to Momentum
       Add Weight component to Momentum
       Class B flow critical depth computations use critical depth
           inside the bridge at the upstream end
       Criteria to check for pressure flow = Upstream energy grade line

BRIDGE OUTPUT  Profile #PF#1
```

DuplicateEffective

* E.G. US. (ft)	* 1065.16	* Element	*Inside BR US	*Inside BR DS	*
* W.S. US. (ft)	* 1063.02	* E.G. Elev (ft)	* 1065.14	* 1064.84	*
* Q Total (cfs)	* 166000.00	* W.S. Elev (ft)	* 1062.75	* 1062.36	*
* Q Bridge (cfs)	* 166000.00	* Crit W.S. (ft)	* 1053.13	* 1053.12	*
* Q Weir (cfs)	*	* Max Chl Dpth (ft)	* 25.85	* 25.46	*
* Weir Sta Lft (ft)	*	* Vel Total (ft/s)	* 12.41	* 12.63	*
* Weir Sta Rgt (ft)	*	* Flow Area (sq ft)	* 13373.12	* 13142.99	*
* Weir Submerg	*	* Froude # Chl	* 0.46	* 0.48	*
* Weir Max Depth (ft)	*	* Specif Force (cu ft)	* 223159.50	* 219217.40	*
* Min El Weir Flow (ft)	* 1065.81	* Hydr Depth (ft)	* 22.16	* 21.85	*
* Min El Prs (ft)	* 1067.64	* W.P. Total (ft)	* 860.54	* 854.62	*
* Delta EG (ft)	* 0.40	* Conv. Total (cfs)	* 3867106.0	* 3774164.0	*
* Delta WS (ft)	* 0.49	* Top Width (ft)	* 603.60	* 601.64	*
* BR Open Area (sq ft)	* 16032.12	* Frctn Loss (ft)	* 0.29	* 0.00	*
* BR Open Vel (ft/s)	* 12.63	* C & E Loss (ft)	* 0.01	* 0.07	*
* Coef of Q	*	* Shear Total (lb/sq ft)	* 1.79	* 1.86	*
* Br Sel Method	*Energy only	* Power Total (lb/ft s)	* 22.19	* 23.46	*

Note: Momentum answer is not valid if the water surface is above the low chord or if there is weir flow. The momentum answer has been disregarded.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

BRIDGE OUTPUT Profile #PF#2

* E.G. US. (ft)	* 1065.17	* Element	*Inside BR US	*Inside BR DS	*
* W.S. US. (ft)	* 1063.04	* E.G. Elev (ft)	* 1065.07	* 1064.78	*
* Q Total (cfs)	* 166000.00	* W.S. Elev (ft)	* 1062.66	* 1062.28	*
* Q Bridge (cfs)	* 166000.00	* Crit W.S. (ft)	* 1053.13	* 1053.12	*
* Q Weir (cfs)	*	* Max Chl Dpth (ft)	* 25.76	* 25.38	*
* Weir Sta Lft (ft)	*	* Vel Total (ft/s)	* 12.46	* 12.68	*
* Weir Sta Rgt (ft)	*	* Flow Area (sq ft)	* 13321.77	* 13094.60	*
* Weir Submerg	*	* Froude # Chl	* 0.47	* 0.48	*
* Weir Max Depth (ft)	*	* Specif Force (cu ft)	* 222270.50	* 218402.60	*
* Min El Weir Flow (ft)	* 1072.75	* Hydr Depth (ft)	* 22.09	* 21.78	*
* Min El Prs (ft)	* 1067.64	* W.P. Total (ft)	* 859.22	* 853.37	*
* Delta EG (ft)	* 0.40	* Conv. Total (cfs)	* 3846322.0	* 3754689.0	*
* Delta WS (ft)	* 0.50	* Top Width (ft)	* 603.16	* 601.23	*
* BR Open Area (sq ft)	* 16000.11	* Frctn Loss (ft)	*	*	*
* BR Open Vel (ft/s)	* 12.68	* C & E Loss (ft)	*	*	*
* Coef of Q	*	* Shear Total (lb/sq ft)	* 1.80	* 1.87	*
* Br Sel Method	* Momentum	* Power Total (lb/ft s)	* 22.47	* 23.74	*

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

CROSS SECTION

RIVER: 1
REACH: 1 RS: 212.67

INPUT
Description: 212.67

Left and Right Channel Bank Stations Interpolated
Station Elevation Data num= 34

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
18325	1064.21	19130.38		106819307.91		1072	19492.8	1073.03	19492.89 1066.21
19502.33	1062.53	19567.36		1037.219595.08		1037.519600.27		1037.519645.74	1037.8
19703.33	1037.88	19708.52		1037.88	19721.94	1039.119780.83		1037.619790.36	1040
19811.58	1039.41	19816.77		1039.419829.76		1037.219839.72		103819878.26	1039.3
19919.83	1037.51	19925.02		1037.519977.41		1036.920028.08		1038.120033.27	1038.1
20064.88	1037.52	20128.84	1062.53	20137.19		1065.820137.28		1072.66	20407.73 1072
20615.57	106820641.55		1067.62	20780.11		106821568.17		1069.3	

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
18325	.03	19502.33		.03	20128.84 .037

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
19502.33 20128.84 481 557.08 901 .1 .3
Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
1832	519492.89	1066.21	F
20137.19	21568.17	1065.8	F

CROSS SECTION OUTPUT Profile #PF#1

* E.G. Elev (ft)	* 1064.77	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 2.24	* Wt. n-Val.	*	* 0.032	* *
* W.S. Elev (ft)	* 1062.53	* Reach Len. (ft)	* 481.00	* 557.08	* 901.00 *
* Crit W.S. (ft)	* 1052.69	* Flow Area (sq ft)	*	*13830.37	* *
* E.G. Slope (ft/ft)	*0.001102	* Area (sq ft)	*	*13830.37	* *
* Q Total (cfs)	*166000.00	* Flow (cfs)	*	*166000.00	* *
* Top Width (ft)	* 626.50	* Top Width (ft)	*	* 626.50	* *
* Vel Total (ft/s)	* 12.00	* Avg. Vel. (ft/s)	*	* 12.00	* *
* Max Chl Dpth (ft)	* 25.63	* Hydr. Depth (ft)	*	* 22.08	* *
* Conv. Total (cfs)	*4999902.0	* Conv. (cfs)	*	*4999902.0	* *
* Length Wtd. (ft)	* 557.08	* Wetted Per. (ft)	*	* 636.66	* *
* Min Ch El (ft)	* 1036.90	* Shear (lb/sq ft)	*	* 1.49	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 17.94	* *
* Frctn Loss (ft)	* 1.13	* Cum Volume (acre-ft)	* 9430.25	*32902.06	* 3099.71 *
* C & E Loss (ft)	* 0.41	* Cum SA (acres)	* 2185.82	* 3103.63	* 1043.99 *

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

CROSS SECTION OUTPUT Profile #PF#2

E.G. Elev (ft)	1064.77	Element	Left OB	Channel	Right OB	
Vel Head (ft)	2.24	Wt. n-Val.		0.032		
W.S. Elev (ft)	1062.54	Reach Len. (ft)	481.00	557.08	901.00	
Crit W.S. (ft)	1052.69	Flow Area (sq ft)		13834.12		
E.G. Slope (ft/ft)	0.001101	Area (sq ft)		13834.12		
Q Total (cfs)	166000.00	Flow (cfs)		166000.00		
Top Width (ft)	626.51	Top Width (ft)		626.51		
Vel Total (ft/s)	12.00	Avg. Vel. (ft/s)		12.00		
Max Chl Dpth (ft)	25.64	Hydr. Depth (ft)		22.08		
Conv. Total (cfs)	5002046.0	Conv. (cfs)		5002046.0		
Length Wtd. (ft)	557.08	Wetted Per. (ft)		636.69		
Min Ch El (ft)	1036.90	Shear (lb/sq ft)		1.49		
Alpha	1.00	Stream Power (lb/ft s)		17.93		
Frctn Loss (ft)	1.12	Cum Volume (acre-ft)	1422.13	33883.46	355.97	
C & E Loss (ft)	0.40	Cum SA (acres)	221.84	3109.24	77.43	

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

CROSS SECTION

RIVER: 1
REACH: 1 RS: 212.56

INPUT
Description: 212.56

Left and Right Channel Bank Stations Interpolated
Station Elevation Data num= 84

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
18526.6	1067.7	18605.6	1068.5	18672.9	1069.1	18686.4	1060	19108.7	1062.5
19147.3	1066.2	19151.5	1066.4	19161.7	1067.6	19184.3	1068.9	19238.8	1068.8
19249.1	1068.8	19264.6	1065	19289.8	1059.5	19333	1060.5	19374.1	1060.3
19381.8	1063.3	19405.9	1071.5	19420.1	1070.7	19427.9	1069.3	19436.8	1069
19464.9	1070.8	19474	1071.7	19488.9	1073.8	19506.5	1072.1	19530.4	1065.8
19539	1066.2	19604	1065.9	19607.1	1065.3	19613.7	1065.3	19619.1	1065.7
19619.8	1066.4	19637.7	1068	19655.3	1067.8	19692.8	1068.8	19731.05	1056.917
19757.5	1048.7	19785.4	1039.9	19929	1039.8	20217.8	1039.3	20252.14	1056.916
20264	1063	20269.6	1061.5	20279.7	1059.4	20318.1	1058.6	20372.9	1059.3
20398.1	1060.1	20425.6	1066.2	20438.5	1062.1	20445.5	1059.5	20451.6	1056.8
20575.6	1077.4	20581.9	1078.8	20601.9	1079.3	20671.6	1080.6	20698.7	1080.1
20732.1	1079.9	20755.7	1079.5	20791.2	1077.6	20834.9	1075.6	20892.5	1079.5
20896	1079.6	20938.4	1078.1	20958.4	1077.9	21004.8	1078.7	21029.1	1078.1
21101.8	1077.3	21144.7	1078.4	21165.1	1078.9	21203.3	1079.8	21236.8	1080.1
21329	1071.7	21351.9	1069.5	21384.8	1066.8	21396.7	1060	21632.6	1060
21640.1	1063.9	21686.7	1065.4	21688.1	1065.4	21734.9	1066.2	21757.8	1066.7
21833.3	1068.7	21846.1	1068.8	21931.4	1069.9	21952.1	1069		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
18526.6	.037	19731.05	.032	20252.14	.037

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19731.05	20252.14	495	502.71	525	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
18526.6	19692.8	1078	F
20301	21952.1	1078	F

CROSS SECTION OUTPUT Profile #PF#1

E.G. Elev (ft)	1063.23	Element	Left OB	Channel	Right OB	
Vel Head (ft)	6.35	Wt. n-Val.		0.032		
W.S. Elev (ft)	1056.87	Reach Len. (ft)	495.00	502.71	525.00	
Crit W.S. (ft)	1055.74	Flow Area (sq ft)		8207.39		
E.G. Slope (ft/ft)	0.004887	Area (sq ft)		8207.39	0.02	
Q Total (cfs)	166000.00	Flow (cfs)		166000.00		
Top Width (ft)	521.49	Top Width (ft)		520.87	0.62	
Vel Total (ft/s)	20.23	Avg. Vel. (ft/s)		20.23		
Max Chl Dpth (ft)	17.57	Hydr. Depth (ft)		15.76		
Conv. Total (cfs)	2374592.0	Conv. (cfs)		2374592.0		
Length Wtd. (ft)	502.71	Wetted Per. (ft)		527.71		
Min Ch El (ft)	1039.30	Shear (lb/sq ft)		4.75		
Alpha	1.00	Stream Power (lb/ft s)		95.97		
Frctn Loss (ft)	1.91	Cum Volume (acre-ft)	9430.25	32761.14	3099.71	
C & E Loss (ft)	0.54	Cum SA (acres)	2185.82	3096.29	1043.99	

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 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 OUTPUT Profile #PF#2

E.G. Elev (ft)	1063.25	Element	Left OB	Channel	Right OB
Vel Head (ft)	6.27	Wt. n-Val.		0.032	
W.S. Elev (ft)	1056.98	Reach Len. (ft)	495.00	502.71	525.00
Crit W.S. (ft)	1055.74	Flow Area (sq ft)		8263.99	
E.G. Slope (ft/ft)	0.004781	Area (sq ft)		8263.99	
Q Total (cfs)	166000.00	Flow (cfs)		166000.00	
Top Width (ft)	521.09	Top Width (ft)		521.09	
Vel Total (ft/s)	20.09	Avg. Vel. (ft/s)		20.09	
Max Chl Dpth (ft)	17.68	Hydr. Depth (ft)		15.86	
Conv. Total (cfs)	2400832.0	Conv. (cfs)		2400832.0	
Length Wtd. (ft)	502.71	Wetted Per. (ft)		528.08	
Min Ch El (ft)	1039.30	Shear (lb/sq ft)		4.67	
Alpha	1.00	Stream Power (lb/ft s)		93.82	
Frctn Loss (ft)	1.92	Cum Volume (acre-ft)	1422.13	33742.15	355.97
C & E Loss (ft)	0.53	Cum SA (acres)	221.84	3101.90	77.43

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION

RIVER: 1
REACH: 1 RS: 212.46

INPUT
Description: 212.46 - FEMA Section AC

Left and Right Channel Bank Stations

Interpolated Station Elevation Data num= 66

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
18753.5	1067.1	18827.8	1067.7	18877.5	1068.2	18898.4	1055	19357.3	1055.1
19382.1	1053.4	19409	1053.9	19429.7	1053.3	19445.8	1054.1	19481.5	1054.3
19531	1052.9	19550.5	1054.6	19656.6	1055	19684.4	1069.8	19700	1067.4
19714.7	1067.8	19743.34	1056.289	19787.6	1038.5	19877.7	1038.3	20214.4	1037.2
20270.9	1039.9	20290.3	1040.2	20301	1040.331	20380.4	1041.3	20415.6	1048.6
20422.7	1048.9	20436.9	1047.2	20446.3	1048.4	20484.2	1055.6	20494.5	1057
20510.9	1057.5	20553.9	1062.4	20563.5	1064	20616.9	1070.3	20661.5	1072.5
20691.8	1074.7	20705.2	1075.2	20771.8	1073.9	20836.5	1073.6	20841.8	1073.2
20893.4	1072.8	20932.3	1068.7	20999.5	1072.8	21028.4	1074	21091.5	1069.7
21143.4	1069.4	21187.1	1070.2	21222.4	1071.9	21234.8	1070.7	21242.4	1070.9
21265.3	1070.2	21277.9	1069.2	21302	1065.4	21326.5	1063.3	21392.1	1057.4
21427.4	1052.9	21482.8	1061.6	21523.6	1061.6	21591.7	1061.2	21609.9	1060.7
21657.5	1061.6	22674	1062	22695.3	1072.2	22728.6	1064.6	22746.1	1064.3
22917.1	1063.8								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
18753.5	.03	19743.34	.032	20301	.037

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
19743.34 20301 495 497.81 510 .1 .3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
18753.5	19684.4	1075.2	F
20301	22917.1	1075.2	F

CROSS SECTION OUTPUT Profile #PF#1

E.G. Elev (ft)	1060.78	Element	Left OB	Channel	Right OB
Vel Head (ft)	4.54	Wt. n-Val.		0.032	
W.S. Elev (ft)	1056.23	Reach Len. (ft)	495.00	497.81	510.00
Crit W.S. (ft)	1052.77	Flow Area (sq ft)		9703.67	
E.G. Slope (ft/ft)	0.003034	Area (sq ft)	1160.90	9703.67	2110.16
Q Total (cfs)	166000.00	Flow (cfs)		166000.00	
Top Width (ft)	1555.15	Top Width (ft)	762.46	557.52	235.17
Vel Total (ft/s)	17.11	Avg. Vel. (ft/s)		17.11	
Max Chl Dpth (ft)	19.03	Hydr. Depth (ft)		17.41	
Conv. Total (cfs)	3013623.0	Conv. (cfs)		3013623.0	
Length Wtd. (ft)	497.81	Wetted Per. (ft)		561.02	
Min Ch El (ft)	1037.20	Shear (lb/sq ft)		3.28	
Alpha	1.00	Stream Power (lb/ft s)		56.05	
Frctn Loss (ft)	1.85	Cum Volume (acre-ft)	9423.66	32657.79	3086.99
C & E Loss (ft)	0.12	Cum SA (acres)	2181.49	3090.07	1042.57

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 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 OUTPUT Profile #PF#2

E.G. Elev (ft)	1060.80	Element	Left OB	Channel	Right OB
Vel Head (ft)	4.51	Wt. n-Val.		0.032	
W.S. Elev (ft)	1056.29	Reach Len. (ft)	495.00	497.81	510.00
Crit W.S. (ft)	1052.77	Flow Area (sq ft)		9738.10	
E.G. Slope (ft/ft)	0.003114	Area (sq ft)		9738.10	
Q Total (cfs)	166000.00	Flow (cfs)		166000.00	
Top Width (ft)	557.66	Top Width (ft)		557.66	
Vel Total (ft/s)	17.05	Avg. Vel. (ft/s)		17.05	
Max Chl Dpth (ft)	19.09	Hydr. Depth (ft)		17.46	
Conv. Total (cfs)	2974752.0	Conv. (cfs)		2974752.0	

```
                                                                    DuplicateEffective
* Length Wtd. (ft)       *  497.81  * Wetted Per. (ft)       *          *  577.14  *          *
* Min Ch El (ft)         * 1037.20  * Shear (lb/sq ft)       *          *    3.28  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *   55.92  *          *
* Frctn Loss (ft)        *    1.87  * Cum Volume (acre-ft)   * 1422.13  *33638.27  *  355.97  *
* C & E Loss (ft)        *    0.12  * Cum SA (acres)         *  221.84  * 3095.68  *   77.43  *
*****************************************************************************************

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.
Note:    Multiple critical depths were found at this location.  The critical depth with the lowest, valid,
         water surface was used.

CROSS SECTION


RIVER: 1
REACH: 1                 RS: 212.37

INPUT
Description: 212.37

Left and Right Channel Bank Stations Interpolated
Station Elevation Data     num=      53
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*****************************************************************************
 18816.9  1066.3 18818.6  1066.2 18822.9  1066.3   18834  1066.3 18957.9    1066
 18989.9  1065.8   19000  1065.6 19036.9  1065.2 19054.2  1064.9 19092.2  1064.1
 19112.5  1063.4 19137.4  1064.7 19138.3  1064.8 19139.3  1064.8 19195.1  1066.9
 19209.3    1061 19668.8    1061 19681.7  1066.2 19684.6  1067.4 19684.8  1067.3
 19685.1  1067.2 19692.2  1064.6 19715.3    1065 19717.4  1065.1 19722.1  1063.2
19744.061053.778 19782.7  1037.2 19926.2  1036.9 20272.4  1037.1 20284.2  1036.6
 20285.4  1036.6 20288.8  1038.620320.691053.776 20338.6  1062.3 20338.7  1062.3
 20369.5  1065.2 20396.5  1069.4 20454.4  1070.1 20471.3  1070.1 20508.4    1061
 22070.8    1061 22075.2  1062.9 22088.8  1064.3 22125.1  1067.6 22147.7  1068.9
 22155.8  1069.3 22177.3  1071.8 22222.4  1065.3 22242.6  1063.6 22252.8  1063.9
 22275.2  1064.6 22382.7  1065.6 22407.8  1066.1

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
 18816.9    .03719744.06    .03220320.69    .037

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
     19744.0620320.69               500  495.84     485            .1       .3
Ineffective Flow      num=       2
   Sta L   Sta R    Elev  Permanent
 18816.9 19684.6    1070       F
 20396.5 22407.8    1070       F

CROSS SECTION OUTPUT  Profile #PF#1
*****************************************************************************************
* E.G. Elev (ft)         * 1058.81  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    5.72  * Wt. n-Val.             *          *    0.032  *          *
* W.S. Elev (ft)         * 1053.09  * Reach Len. (ft)        *  500.00  *  495.84  *  485.00  *
* Crit W.S. (ft)         * 1051.73  * Flow Area (sq ft)      *          * 8651.10  *          *
* E.G. Slope (ft/ft)     *0.004658  * Area (sq ft)           *          * 8651.10  *          *
* Q Total (cfs)          *166000.00  * Flow (cfs)           *          *166000.00  *          *
* Top Width (ft)         *  573.58  * Top Width (ft)        *          *  573.58  *          *
* Vel Total (ft/s)       *   19.19  * Avg. Vel. (ft/s)      *          *   19.19  *          *
* Max Chl Dpth (ft)      *   16.49  * Hydr. Depth (ft)      *          *   15.08  *          *
* Conv. Total (cfs)      *2432248.0  * Conv. (cfs)          *          *2432248.0  *          *
* Length Wtd. (ft)       *  495.84  * Wetted Per. (ft)      *          *  580.68  *          *
* Min Ch El (ft)         * 1036.60  * Shear (lb/sq ft)      *          *    4.33  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *   83.13  *          *
* Frctn Loss (ft)        *    2.44  * Cum Volume (acre-ft)   * 9417.06  *32552.91  * 3074.64  *
* C & E Loss (ft)        *    0.01  * Cum SA (acres)         * 2177.16  * 3083.61  * 1041.19  *
*****************************************************************************************

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 OUTPUT  Profile #PF#2
*****************************************************************************************
* E.G. Elev (ft)         * 1058.81  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    5.71  * Wt. n-Val.             *          *    0.032  *          *
* W.S. Elev (ft)         * 1053.10  * Reach Len. (ft)        *  500.00  *  495.84  *  485.00  *
* Crit W.S. (ft)         * 1051.73  * Flow Area (sq ft)      *          * 8657.61  *          *
* E.G. Slope (ft/ft)     *0.004647  * Area (sq ft)           *          * 8657.61  *          *
* Q Total (cfs)          *166000.00  * Flow (cfs)           *          *166000.00  *          *
* Top Width (ft)         *  573.63  * Top Width (ft)        *          *  573.63  *          *
* Vel Total (ft/s)       *   19.17  * Avg. Vel. (ft/s)      *          *   19.17  *          *
* Max Chl Dpth (ft)      *   16.50  * Hydr. Depth (ft)      *          *   15.09  *          *
* Conv. Total (cfs)      *2435146.0  * Conv. (cfs)          *          *2435146.0  *          *
* Length Wtd. (ft)       *  495.84  * Wetted Per. (ft)      *          *  580.73  *          *
* Min Ch El (ft)         * 1036.60  * Shear (lb/sq ft)      *          *    4.32  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *   82.93  *          *
* Frctn Loss (ft)        *    2.43  * Cum Volume (acre-ft)   * 1422.13  *33533.16  *  355.97  *
* C & E Loss (ft)        *    0.02  * Cum SA (acres)         *  221.84  * 3089.22  *   77.43  *
*****************************************************************************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.
Note:    Multiple critical depths were found at this location.  The critical depth with the lowest, valid,
         water surface was used.

CROSS SECTION


RIVER: 1
REACH: 1                 RS: 212.27

INPUT
```

Description: 212.27

Left and Right Channel Bank Stations Interpolated

```
Station Elevation Data    num=      95
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
 17693.1  1064.6 17697.9  1064.6 17734.8    1064 17740.4  1063.9 17785.6  1063.1
 17796.2  1063.1 17827.6  1062.5 17846.2  1062.4 17893.5  1062.2 18008.4  1061.5
 18061.8  1061.5 18108.5  1062.4 18180.8  1062.8 18221.3    1063 18239.7    1059
 18264.8  1054.5 18285.2    1054 18326.7  1048.1 18342.3  1046.2 18362.6  1053.4
 18380.3  1046.2 18395.3  1042.4 18405.4    1039 18415.2  1036.5 18431.2  1031.5
 18465.3  1023.5 18544.4  1025.1 18579.3  1015.6 18586.4  1013.2 18615.7    1013
 18649.7    1013 18693.4  1012.9 18782.3  1012.3 18931.2  1012.8 18976.1  1012.6
 18981.9  1012.7   19083  1012.1   19110  1012.1 19284.8  1012.2 19302.3  1012.4
 19314.3    1019 19342.1  1028.5 19385.1  1048.2 19442.6  1044.9 19457.4  1044.6
 19509.8  1062.9 19515.4    1063   19561  1063.7 19676.4  1065.419715.251052.334
 19754.6  1039.1 19765.4  1035.4 19935.2  1035.2 20003.5  1035.2 20097.2  1035.1
 20281.9  1035.120330.351052.334   20337  1054.7   20351  1059.5 20416.4  1037.6
   20457  1023.9 20721.5  1023.4 20766.6  1022.9 20810.1  1022.2 20848.4  1021.5
 20878.3  1023.7 20909.5  1025.8 20935.1  1026.2 20970.3  1026.8   20984  1027.2
 21016.1    1028 21073.4  1026.9 21105.5  1026.6 21138.2  1026.2 21189.1  1025.7
 21190.6  1025.7 21248.8  1040.7 21294.4  1051.5 21328.2  1059.6 21333.8  1060.2
 21373.3  1067.4 21415.5  1061.7 21426.9  1059.4 21439.1  1056.3 21473.7    1050
 21501.4  1044.9 21538.1  1038.9 21543.5  1037.9 21579.4  1046.2 21617.1  1054.3
 21626.5  1056.1 21660.7    1060 21745.2  1060.6 21930.8  1061.7 21968.2  1061.7

Manning's n Values        num=       3
     Sta   n Val      Sta   n Val     Sta   n Val
*********************************************
 17693.1    .04519715.25    .03320330.35     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      19715.2520330.35             510     495     475            .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 17693.1 19676.4  1065.4        F
   20351 21968.2  1059.5        F
```

CROSS SECTION OUTPUT Profile #PF#1

E.G. Elev (ft)	1056.35	Element	Left OB	Channel / Right OB
Vel Head (ft)	5.67	Wt. n-Val.		0.033
W.S. Elev (ft)	1050.68	Reach Len. (ft)	510.00	495.00 / 475.00
Crit W.S. (ft)	1049.57	Flow Area (sq ft)		8689.03
E.G. Slope (ft/ft)	0.005222	Area (sq ft)	34333.16	8689.03 / 22236.28
Q Total (cfs)	166000.00	Flow (cfs)		166000.00
Top Width (ft)	2801.44	Top Width (ft)	1151.95	605.55 / 1043.94
Vel Total (ft/s)	19.10	Avg. Vel. (ft/s)		19.10
Max Chl Dpth (ft)	38.58	Hydr. Depth (ft)		14.35
Conv. Total (cfs)	2297156.0	Conv. (cfs)		2297156.0
Length Wtd. (ft)	495.00	Wetted Per. (ft)		610.75
Min Ch El (ft)	1035.10	Shear (lb/sq ft)		4.64
Alpha	1.00	Stream Power (lb/ft s)		88.61
Frctn Loss (ft)	1.80	Cum Volume (acre-ft)	9220.02	32454.22 / 2950.85
C & E Loss (ft)	0.59	Cum SA (acres)	2170.55	3076.90 / 1035.38

```
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 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 OUTPUT Profile #PF#2

E.G. Elev (ft)	1056.36	Element	Left OB	Channel / Right OB
Vel Head (ft)	5.65	Wt. n-Val.		0.033
W.S. Elev (ft)	1050.71	Reach Len. (ft)	510.00	495.00 / 475.00
Crit W.S. (ft)	1049.57	Flow Area (sq ft)		8704.85
E.G. Slope (ft/ft)	0.005192	Area (sq ft)		8704.85
Q Total (cfs)	166000.00	Flow (cfs)		166000.00
Top Width (ft)	605.70	Top Width (ft)		605.70
Vel Total (ft/s)	19.07	Avg. Vel. (ft/s)		19.07
Max Chl Dpth (ft)	15.61	Hydr. Depth (ft)		14.37
Conv. Total (cfs)	2303734.0	Conv. (cfs)		2303734.0
Length Wtd. (ft)	495.00	Wetted Per. (ft)		610.91
Min Ch El (ft)	1035.10	Shear (lb/sq ft)		4.62
Alpha	1.00	Stream Power (lb/ft s)		88.08
Frctn Loss (ft)	1.79	Cum Volume (acre-ft)	1422.13	33434.34 / 355.97
C & E Loss (ft)	0.59	Cum SA (acres)	221.84	3082.50 / 77.43

```
Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.
Note:    Multiple critical depths were found at this location.  The critical depth with the lowest, valid,
         water surface was used.

CROSS SECTION


RIVER: 1
REACH: 1                 RS: 212.18

INPUT
Description: 212.18

Left and Right Channel Bank Stations Interpolated
```

DuplicateEffective

Station Elevation Data num= 87

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
16867.12	1065.21	6906.93	1063.9	117072.69	1063.6	217369.21	1062.4	817505.56	1062.52
17612.28	1062.9	17794.36	1062.3	317881.75	1062.5	817916.47	1062.3	217948.21	1065.69
18039.48	1010.8	18149.75	1011.6	918168.39	1016.6	418177.08	1014.6	18188	1020.06
18220.51	1027.2	18252.71	1039.3	418269.64	1041.1	618292.43	1036.7	18335.96	1016.75
18454.36	1016.2	18568.19	1014.7	218633.81	1016.1	118764.91	1017.4	618823.95	1017.09
19046.22	1017.7	19156.65	1019.3	719198.34	1018.4	419223.89	1018.4	919248.34	1016.23
19311.18	1015.1	19393.8	1012.98	19433	1012.5	219464.03	1021.8	119488.46	1011.1
19574.96	1010.6	19614.98	1037.4	219649.87	1059.81	19685.1	1058.8	119706.85	1050.309
19749.09	1033.8	19960.28	1030.8	20229.47	1031.7	20272.48	1032.6	720319.31	1039.88
20334.57	1050.3	0720340.72	1054.5	120354.62	1060.3	20472.17	1061.55	20523.7	1061.62
20551.86	1053.0	420622.11	1048.8	20687.56	1052.2	20928.11	1055.2	921136.97	1058.41
21257.08	1058.6	921362.76	1060.7	121646.22	1067.2	21858.08	1068.1	122054.43	1067.43
22158.98	1065.9	622243.23	1064.32	22279.9	1062.8	22295.67	1065.5	922307.88	1060.91
22324.63	1061.3	922394.01	1058.4	322480.34	1058.9	22555.28	1058.9	222720.83	1059.92
22855.27	1061.5	422949.17	1061.4	922974.76	1060	23021.3	1058.5	23070.19	1058.44
23114.11	1060.29	23152.9	1060.0	823260.95	1061.4	23486.25	1061.0	523586.41	1061.15
23621.07	1061.4	723789.79	1060.3	723929.16	1060.4	24034.7	1061.8	24176.57	1062.42
24281.11	1062.3	324460.33	1061.22						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
16867.12	.04	519706.85	.03	320334.57	.04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

	19706.8	520334.57		500	502.53	485	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
16867.12	19649.87	1068	F
20523.72	4460.33	1068	F

CROSS SECTION OUTPUT Profile #PF#1

E.G. Elev (ft)	1053.95	Element	Left OB	Channel	Right OB
Vel Head (ft)	3.69	Wt. n-Val.		0.033	
W.S. Elev (ft)	1050.27	Reach Len. (ft)	500.00	502.53	485.00
Crit W.S. (ft)	1045.89	Flow Area (sq ft)		10771.28	
E.G. Slope (ft/ft)	0.002685	Area (sq ft)	53197.46	10771.28	38.44
Q Total (cfs)	166000.00	Flow (cfs)		166000.00	
Top Width (ft)	2341.16	Top Width (ft)	1661.14	627.55	52.48
Vel Total (ft/s)	15.41	Avg. Vel. (ft/s)		15.41	
Max Chl Dpth (ft)	39.67	Hydr. Depth (ft)		17.16	
Conv. Total (cfs)	3203782.0	Conv. (cfs)		3203782.0	
Length Wtd. (ft)	502.53	Wetted Per. (ft)		634.45	
Min Ch El (ft)	1030.80	Shear (lb/sq ft)		2.85	
Alpha	1.00	Stream Power (lb/ft s)		43.85	
Frctn Loss (ft)	0.95	Cum Volume (acre-ft)	8707.61	32343.65	2829.40
C & E Loss (ft)	0.32	Cum SA (acres)	2154.08	3069.89	1029.40

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 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 OUTPUT Profile #PF#2

E.G. Elev (ft)	1053.97	Element	Left OB	Channel	Right OB
Vel Head (ft)	3.67	Wt. n-Val.		0.033	
W.S. Elev (ft)	1050.30	Reach Len. (ft)	500.00	502.53	485.00
Crit W.S. (ft)	1045.89	Flow Area (sq ft)		10791.50	
E.G. Slope (ft/ft)	0.002669	Area (sq ft)		10791.50	
Q Total (cfs)	166000.00	Flow (cfs)		166000.00	
Top Width (ft)	627.68	Top Width (ft)		627.68	
Vel Total (ft/s)	15.38	Avg. Vel. (ft/s)		15.38	
Max Chl Dpth (ft)	19.50	Hydr. Depth (ft)		17.19	
Conv. Total (cfs)	3213324.0	Conv. (cfs)		3213324.0	
Length Wtd. (ft)	502.53	Wetted Per. (ft)		634.59	
Min Ch El (ft)	1030.80	Shear (lb/sq ft)		2.83	
Alpha	1.00	Stream Power (lb/ft s)		43.58	
Frctn Loss (ft)	0.95	Cum Volume (acre-ft)	1422.13	33323.57	355.97
C & E Loss (ft)	0.32	Cum SA (acres)	221.84	3075.50	77.43

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION

RIVER: 1
REACH: 1 RS: 212.08

INPUT
Description: 212.08

Left and Right Channel Bank Stations Interpolated
Station Elevation Data num= 101

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
17052.4	1065.1	17093.98	1063.2	17330.91	1062.5	917423.14	1062.2	117562.97	1062.23
17854.31	10611	7952.67	1061.3	917989.42	1061.1	18003.9	1064.7	218053.78	1032.77
18092.97	1010.3	18121.67	1010.4	218204.85	1011.4	918218.51	1014.5	318400.47	1013.68
18430.19	1013.7	18591.23	1012.7	318717.39	1012.5	518827.36	1012.71	18982.9	1014.44
19125.21	1014.1	19158.95	1014.27	19197.5	1013.7	219237.59	1014.0	519246.24	1012.73
19261.95	1013.8	19287.74	1011.5	219294.56	1009.4	419377.18	1009.8	819458.03	1009.79

```
                                                                    DuplicateEffective
19560.86  1055.919603.52 1052.7719676.09 1052.9419681.091050.10619689.85 1045.14
19720.06 1031.7419729.83  1028.619835.59 1026.9819956.58 1026.4520018.74 1026.48
20046.86 1026.7120134.08  1025.920179.54 1025.9920234.17 1026.6520245.73 1033.13
20270.89  1050.120275.07 1052.9220290.81  1060.920335.45 1060.3720383.25 1044.65
20424.79 1044.3820442.88 1052.7920545.79  1055.720813.04 1061.3820956.27 1063.95
21082.72 1065.9821252.33 1068.1621359.98  1067.921436.79 1067.7621473.77 1066.77
21529.98 1066.4821607.29  1070.321676.41  1072.821730.28 1073.8421923.53 1073.03
22030.61 1073.7622091.57 1073.1322182.24  1073.622303.01 1072.0522453.89 1069.64
22595.45 1068.2222755.09 1066.8622966.16  1063.923129.47 1061.46 23222.4 1059.05
23255.36 1058.6423268.74 1055.5123278.67  1058.323295.59 1055.5423328.26  1058.3
23417.52  1058.423428.87  1058.123519.64  1059.323868.62 1059.1724082.28 1059.08
24280.77 1060.1224441.84 1061.9124594.59  1060.924688.74 1061.7424871.91 1061.24
 24970.8 1060.3325012.15 1058.2625172.94  1060.8 25399.4 1060.1425629.95 1059.85
25800.17 1059.4125815.84 1060.0725861.96  1079.725884.17 1080.2625963.83 1080.96
26004.82 1061.65

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
 17052.4    .04519681.09    .03320270.89     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      19681.0920270.89              510  519.85     475            .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 17052.419560.86    1078       F
 20290.826004.82    1078       F

CROSS SECTION OUTPUT  Profile #PF#1
*****************************************************************************************************
* E.G. Elev (ft)         * 1052.68  * Element                * Left OB *  Channel * Right OB *
* Vel Head (ft)          *    2.62  * Wt. n-Val.            *         *   0.033  *          *
* W.S. Elev (ft)         * 1050.06  * Reach Len. (ft)       *  510.00 *  519.85  *  475.00  *
* Crit W.S. (ft)         * 1041.45  * Flow Area (sq ft)     *         *12782.71  *          *
* E.G. Slope (ft/ft)     *0.001412  * Area (sq ft)          *53987.83  *12782.71  *  309.41  *
* Q Total (cfs)          *166000.00  * Flow (cfs)           *         *166000.00  *          *
* Top Width (ft)         * 2180.90  * Top Width (ft)       * 1521.04  *  589.65  *   70.20  *
* Vel Total (ft/s)       *   12.99  * Avg. Vel. (ft/s)     *         *   12.99  *          *
* Max Chl Dpth (ft)      *   40.62  * Hydr. Depth (ft)     *         *   21.68  *          *
* Conv. Total (cfs)      *4417610.0  * Conv. (cfs)         *         *4417610.0  *          *
* Length Wtd. (ft)       *  519.85  * Wetted Per. (ft)     *         *  601.17  *          *
* Min Ch El (ft)         * 1025.90  * Shear (lb/sq ft)     *         *    1.87  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *       *   24.34  *          *
* Frctn Loss (ft)        *    0.83  * Cum Volume (acre-ft)  * 8092.45 *32207.79  * 2827.46  *
* C & E Loss (ft)        *    0.06  * Cum SA (acres)        * 2135.82 * 3062.87  * 1028.72  *
*****************************************************************************************************

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

CROSS SECTION OUTPUT  Profile #PF#2
*****************************************************************************************************
* E.G. Elev (ft)         * 1052.70  * Element                * Left OB *  Channel * Right OB *
* Vel Head (ft)          *    2.61  * Wt. n-Val.            *         *   0.033  *          *
* W.S. Elev (ft)         * 1050.09  * Reach Len. (ft)       *  510.00 *  519.85  *  475.00  *
* Crit W.S. (ft)         * 1041.45  * Flow Area (sq ft)     *         *12803.52  *          *
* E.G. Slope (ft/ft)     *0.001405  * Area (sq ft)          *         *12803.52  *          *
* Q Total (cfs)          *166000.00  * Flow (cfs)           *         *166000.00  *          *
* Top Width (ft)         *  589.77  * Top Width (ft)       *         *  589.77  *          *
* Vel Total (ft/s)       *   12.97  * Avg. Vel. (ft/s)     *         *   12.97  *          *
* Max Chl Dpth (ft)      *   24.19  * Hydr. Depth (ft)     *         *   21.71  *          *
* Conv. Total (cfs)      *4428936.0  * Conv. (cfs)         *         *4428936.0  *          *
* Length Wtd. (ft)       *  519.85  * Wetted Per. (ft)     *         *  601.31  *          *
* Min Ch El (ft)         * 1025.90  * Shear (lb/sq ft)     *         *    1.87  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *       *   24.21  *          *
* Frctn Loss (ft)        *    0.82  * Cum Volume (acre-ft)  * 1422.13 *33187.47  *  355.97  *
* C & E Loss (ft)        *    0.06  * Cum SA (acres)        *  221.84 * 3068.47  *   77.43  *
*****************************************************************************************************

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  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: 1
REACH: 1                RS: 211.99

INPUT
Description: 211.99 - FEMA Section AB

Left and Right Channel Bank Stations
           Interpolated
Station Elevation Data    num=      97
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
17386.75    106217493.12 1060.3617883.55  1058.918026.04 1059.0818043.61 1064.43
18128.52  1011.918212.07 1010.04 18284.3 1009.4118375.77 1031.9918386.79 1034.99
18398.32  1031.618455.15 1010.4218634.29 1010.1518715.79 1026.1718726.98 1025.43
18746.82  1028.918793.14 1039.1118826.55 1047.2218835.49 1050.27 18880.3 1056.14
18928.65  1059.619023.07 1060.4719122.51 1058.69 19147.6 1056.9819172.92  1053.9
19222.57  1059.719306.36 1064.7519387.36 1066.2619419.32 1065.7319467.92  1063.3
19535.53  1055.9 19579.8  1052.519594.04 1050.0119626.09 1059.7519669.23 1060.17
19682.93  1052.119695.13  1051.719699.771048.63219734.91 1025.3919968.68 1025.66
 20018.4    102620129.78  1025.520175.87 1025.6620205.91  1027.820236.81 1047.09
20249.651048.632 20249.8 1048.6520268.39  1059.720319.37 1059.4520355.66 1049.61
20366.72 1051.1620380.34 1056.3120536.66  1059.720697.58 1062.9120861.07 1067.46
20969.05  1071.421086.46 1074.5421220.77  1077.821348.89 1078.3521519.24 1075.76
21606.23 1073.4221740.53 1069.1421834.91    106821936.77 1071.0222068.74 1077.26
22189.17 1082.4922398.45 1089.6222486.87  1090.322515.75 1089.9422616.83 1085.49
22698.81 1083.4322757.86 1080.0622899.81  1069.523059.97  1066.123300.96 1061.35
```

```
                                                                    DuplicateEffective
23457.95 1059.0923578.87 1055.29 23592.8  1052.823611.42  1057.123707.16 1057.71
23758.72 1057.8423837.72 1057.31   23902  1056.223950.13 1056.5724182.97 1056.91
24332.01 1056.0724582.04 1056.0124636.44    105924704.95 1057.5324865.28 1057.45
24966.74 1058.31 24996.3 1059.9325064.88  1059.825072.86 1059.0925171.62 1057.94
25224.27 1057.7525467.18 1058.61

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
17386.75    .04519699.77    .03320249.65     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      19699.7720249.65              740  489.19     710             .1      .3
Ineffective Flow      num=       2
   Sta L   Sta R    Elev  Permanent
17386.7519669.23    1078       F
 20268.325467.18    1078       F

CROSS SECTION OUTPUT  Profile #PF#1
*****************************************************************************************************
* E.G. Elev (ft)         * 1051.79  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    3.22  * Wt. n-Val.            *          *    0.033  *          *
* W.S. Elev (ft)         * 1048.57  * Reach Len. (ft)       *  740.00  *  489.19  *  710.00  *
* Crit W.S. (ft)         * 1041.17  * Flow Area (sq ft)     *          *11535.15  *          *
* E.G. Slope (ft/ft)     *0.001817  * Area (sq ft)          *22367.19  *11535.15  *          *
* Q Total (cfs)          *166000.00  * Flow (cfs)           *          *166000.00  *          *
* Top Width (ft)         * 1310.55  * Top Width (ft)       *  761.27  *  549.29  *          *
* Vel Total (ft/s)       *   14.39  * Avg. Vel. (ft/s)     *          *   14.39  *          *
* Max Chl Dpth (ft)      *   39.16  * Hydr. Depth (ft)     *          *   21.00  *          *
* Conv. Total (cfs)      *3893922.0  * Conv. (cfs)         *          *3893922.0  *          *
* Length Wtd. (ft)       *  489.19  * Wetted Per. (ft)     *          *  561.95  *          *
* Min Ch El (ft)         * 1025.39  * Shear (lb/sq ft)     *          *    2.33  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *        *   33.52  *          *
* Frctn Loss (ft)        *    0.83  * Cum Volume (acre-ft)  * 7645.47  *32062.68  * 2825.78  *
* C & E Loss (ft)        *    0.09  * Cum SA (acres)        * 2122.46  * 3056.07  * 1028.34  *
*****************************************************************************************************

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.

CROSS SECTION OUTPUT  Profile #PF#2
*****************************************************************************************************
* E.G. Elev (ft)         * 1051.82  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    3.20  * Wt. n-Val.            *          *    0.033  *          *
* W.S. Elev (ft)         * 1048.62  * Reach Len. (ft)       *  740.00  *  489.19  *  710.00  *
* Crit W.S. (ft)         * 1041.17  * Flow Area (sq ft)     *          *11560.38  *          *
* E.G. Slope (ft/ft)     *0.001806  * Area (sq ft)          *          *11560.38  *          *
* Q Total (cfs)          *166000.00  * Flow (cfs)           *          *166000.00  *          *
* Top Width (ft)         *  549.74  * Top Width (ft)       *          *  549.74  *          *
* Vel Total (ft/s)       *   14.36  * Avg. Vel. (ft/s)     *          *   14.36  *          *
* Max Chl Dpth (ft)      *   23.23  * Hydr. Depth (ft)     *          *   21.03  *          *
* Conv. Total (cfs)      *3905949.0  * Conv. (cfs)         *          *3905949.0  *          *
* Length Wtd. (ft)       *  489.19  * Wetted Per. (ft)     *          *  562.42  *          *
* Min Ch El (ft)         * 1025.39  * Shear (lb/sq ft)     *          *    2.32  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *        *   33.28  *          *
* Frctn Loss (ft)        *    0.83  * Cum Volume (acre-ft)  * 1422.13  *33042.09  *  355.97  *
* C & E Loss (ft)        *    0.09  * Cum SA (acres)        *  221.84  * 3061.67  *   77.43  *
*****************************************************************************************************

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

CROSS SECTION


RIVER: 1
REACH: 1                 RS: 211.89

INPUT
Description: 211.89

Left and Right Channel Bank Stations Interpolated
Station Elevation Data     num=      95
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*************************************************************************************
17673.64   1059.917830.52   1057.818075.45 1057.5918106.59 1061.3918156.21 1060.92
18181.64    105718268.15   1057.418570.49 1056.27 18656.7 1057.3718734.79  1059.4
18854.83   1058.1 18903.9 1058.6218933.75 1056.2618954.51  1054.319026.15 1059.53
19074.67   1064.519130.02 1067.6619166.92 1067.8219220.33 1064.2519291.97 1056.93
19339.05   1053.2 19355.5 1049.4119383.94 1051.7719506.58 1049.7319568.03 1052.09
19611.95   1052.419640.96 1059.4519668.79 1059.3319685.751048.02319719.16 1025.75
19877.45 1024.19   19996  1024.820046.95 1024.9420149.18 1025.3420215.53 1026.87
20231.37 1035.8620250.74 1048.0220268.71  1059.320317.76 1059.25 20347.9 1053.02
20357.11 1053.8720365.64 1057.4620503.92  1061.220587.79 1062.3220715.42 1064.82
20808.25 1066.4820898.25 1068.17 21050.2    107021240.42  1069.721365.85 1067.31
21444.39 1066.6721597.69 1066.8121747.36  1066.621837.61 1066.0122018.21 1062.79
22078.36 1061.7622206.84  1065.222377.75  1068.122579.85 1068.7522814.63 1068.78
22947.07 1067.96 23029.4 1068.0923191.51  1066.423528.26  1059.523662.78 1056.72
23775.83 1055.5423829.73 1054.1523844.87  1051.223876.82 1056.0923920.99    1057
23995.44 1056.4724052.85  1056.124082.77  1056.624140.98 1058.2724165.07 1058.25
24271.91 1056.4524411.05 1053.1724579.36  1053.324759.09 1054.04 24774.1 1055.28
24840.04 1057.6924883.78 1058.2624920.88  1055.825041.94 1055.2925284.44  1056.1
25336.01 1057.1325359.39 1058.3225402.51  1057.3 25726.4 1058.2326172.96 1058.11
 26295.6  1059.626333.92 1078.1726470.33  1078.826504.14  1058.926569.17 1059.94

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
17673.64    .04519685.75    .03320250.74     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      19685.7520250.74              507  527.46     640             .1      .3
Ineffective Flow      num=       2
   Sta L   Sta R    Elev  Permanent
17673.6419640.96    1068       F
```

20268.726569.17 1068 F

CROSS SECTION OUTPUT Profile #PF#1

E.G. Elev (ft)	1050.86	Element	Left OB	Channel	Right OB	
Vel Head (ft)	2.91	Wt. n-Val.		0.033		
W.S. Elev (ft)	1047.95	Reach Len. (ft)	507.00	527.46	640.00	
Crit W.S. (ft)	1039.97	Flow Area (sq ft)		12125.97		
E.G. Slope (ft/ft)	0.001595	Area (sq ft)		12125.97		
Q Total (cfs)	166000.00	Flow (cfs)		166000.00		
Top Width (ft)	564.78	Top Width (ft)		564.78		
Vel Total (ft/s)	13.69	Avg. Vel. (ft/s)		13.69		
Max Chl Dpth (ft)	23.76	Hydr. Depth (ft)		21.47		
Conv. Total (cfs)	4156215.0	Conv. (cfs)		4156215.0		
Length Wtd. (ft)	527.46	Wetted Per. (ft)		577.39		
Min Ch El (ft)	1024.19	Shear (lb/sq ft)		2.09		
Alpha	1.00	Stream Power (lb/ft s)		28.63		
Frctn Loss (ft)	0.85	Cum Volume (acre-ft)	7455.48	31929.82	2825.78	
C & E Loss (ft)	0.00	Cum SA (acres)	2115.99	3049.82	1028.34	

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

CROSS SECTION OUTPUT Profile #PF#2

E.G. Elev (ft)	1050.90	Element	Left OB	Channel	Right OB	
Vel Head (ft)	2.90	Wt. n-Val.		0.033		
W.S. Elev (ft)	1048.01	Reach Len. (ft)	507.00	527.46	640.00	
Crit W.S. (ft)	1039.97	Flow Area (sq ft)		12154.99		
E.G. Slope (ft/ft)	0.001583	Area (sq ft)		12154.99		
Q Total (cfs)	166000.00	Flow (cfs)		166000.00		
Top Width (ft)	564.94	Top Width (ft)		564.94		
Vel Total (ft/s)	13.66	Avg. Vel. (ft/s)		13.66		
Max Chl Dpth (ft)	23.81	Hydr. Depth (ft)		21.52		
Conv. Total (cfs)	4171896.0	Conv. (cfs)		4171896.0		
Length Wtd. (ft)	527.46	Wetted Per. (ft)		577.57		
Min Ch El (ft)	1024.19	Shear (lb/sq ft)		2.08		
Alpha	1.00	Stream Power (lb/ft s)		28.41		
Frctn Loss (ft)	0.84	Cum Volume (acre-ft)	1422.13	32908.93	355.97	
C & E Loss (ft)	0.00	Cum SA (acres)	221.84	3055.41	77.43	

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

CROSS SECTION

RIVER: 1
REACH: 1 RS: 211.79

INPUT
Description: 211.79

Left and Right Channel Bank Stations Interpolated
Station Elevation Data num= 85

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
18158.31	1058.1	18521.37	1057.9	218711.98	1053.2	918821.22	1049.9	719332.48	1038.9
19421.9	1034.7	19443.13	1034.6	819494.83	1031.4	519529.82	1033.8	919593.73	1053.47
19613.84	1059.2	19631.93	1059.1	219649.8	71047.1	8219683.64	1024.7	119868.29	1023.84
19990.11	1024.4	520071.01	1024.2	20181	1025.03	20210.4	1042.5	420217.7	11047.186
20234.96	1058.1	520266.77	1058.9	620288.34	1058.2	20317.07	1049.6	420327.91	1051.41
20334.62	1054.8	620544.02	1058.1	120748.52	1061.3	20960.89	1062.1	921136.74	1063.31
21355.67	1062.99	21514.2	1062.9	221680.46	1061.6	21736.21	1061.7	621809.47	1060.69
21912.92	1059.5	422164.31	1055.8	622183.26	1055.4	22365.65	1059.3	522456.33	1059.66
22607.29	1061.0	722697.85	1061.2	422757.13	106222	877.22	1061.9	822997.38	1061.21
23058.71	1061.6	923238.58	1060.2	923378.99	1059.6	23483.49	1059.3	723694.55	1056.44
23766.47	1056.3	523904.99	1053.8	723939.63	1052.5	23954.41	1049.7	323974.63	1054.92
24066.57	1057.0	124104.95	1055.7	224159.03	1054.9	24203.29	1053.77	24226.8	1054.13
24410.42	1054.11	24588.5	1054.8	124806.33	1056.9	24857.28	1056.9	224892.35	1056.25
24937.4	1056.2	724992.53	1057.9	125025.07	1054.5	25154.69	1054.6	325336.45	1057.87
25508.23	1059.0	125689.64	1058.1	825912.41	1058.8	26025.53	1058.4	626235.18	1058.51
26315.33	105826	360.96	1059.1	426386.48	1071.4	26401.46	1071.61	26423.9	1078.8
26526.56	1078.9	226547.02	1071.3	226569.39	1067.8	26599.18	1058.2	826670.85	1059.87

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
18158.31	.045	19649.87	.033	20217.71	.04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
19649.8 720217.71 680 450.74 290 .1 .3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
18158.31	19613.84	1068	F
20266.72	6670.85	1068	F

CROSS SECTION OUTPUT Profile #PF#1

E.G. Elev (ft)	1050.02	Element	Left OB	Channel	Right OB	
Vel Head (ft)	2.92	Wt. n-Val.		0.033		
W.S. Elev (ft)	1047.10	Reach Len. (ft)	680.00	450.74	290.00	
Crit W.S. (ft)	1039.26	Flow Area (sq ft)		12111.00		
E.G. Slope (ft/ft)	0.001613	Area (sq ft)	4252.35	12111.00		
Q Total (cfs)	166000.00	Flow (cfs)		166000.00		
Top Width (ft)	1186.74	Top Width (ft)	619.16	567.58		
Vel Total (ft/s)	13.71	Avg. Vel. (ft/s)		13.71		
Max Chl Dpth (ft)	23.26	Hydr. Depth (ft)		21.34		
Conv. Total (cfs)	4132806.0	Conv. (cfs)		4132806.0		
Length Wtd. (ft)	450.74	Wetted Per. (ft)		580.50		
Min Ch El (ft)	1023.84	Shear (lb/sq ft)		2.10		
Alpha	1.00	Stream Power (lb/ft s)		28.80		
Frctn Loss (ft)	0.73	Cum Volume (acre-ft)	7430.74	31783.08	2825.78	
C & E Loss (ft)	0.00	Cum SA (acres)	2112.39	3042.96	1028.34	

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.

CROSS SECTION OUTPUT Profile #PF#2

E.G. Elev (ft)	1050.06	Element	Left OB	Channel	Right OB	
Vel Head (ft)	2.90	Wt. n-Val.		0.033		
W.S. Elev (ft)	1047.16	Reach Len. (ft)	680.00	450.74	290.00	
Crit W.S. (ft)	1039.26	Flow Area (sq ft)		12145.65		
E.G. Slope (ft/ft)	0.001599	Area (sq ft)		12145.65		
Q Total (cfs)	166000.00	Flow (cfs)		166000.00		
Top Width (ft)	567.77	Top Width (ft)		567.77		
Vel Total (ft/s)	13.67	Avg. Vel. (ft/s)		13.67		
Max Chl Dpth (ft)	23.32	Hydr. Depth (ft)		21.39		
Conv. Total (cfs)	4151454.0	Conv. (cfs)		4151454.0		
Length Wtd. (ft)	450.74	Wetted Per. (ft)		580.73		
Min Ch El (ft)	1023.84	Shear (lb/sq ft)		2.09		
Alpha	1.00	Stream Power (lb/ft s)		28.53		
Frctn Loss (ft)	0.72	Cum Volume (acre-ft)	1422.13	32761.80	355.97	
C & E Loss (ft)	0.00	Cum SA (acres)	221.84	3048.56	77.43	

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

CROSS SECTION

RIVER: 1
REACH: 1 RS: 211.71

INPUT
Description: 211.71

Left and Right Channel Bank Stations Interpolated
Station Elevation Data num= 82

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
18356.24	1056.6	18403.32	1056.5	118836.53	1046.2	619011.11	1054.3	319170.81	1053.8
19462.94	1052.5	19478.82	1053.0	919497.62	1060.06	19533	1043.2	819551.37	1045.32
19595.29	1059	19611.46	1057.8	119628.43	1046.4	719661.32	1024.4	919846.96	1023.81
19928.43	1023.1	19998.17	1023.2	20045.76	1023.2	120158.51	1023.3	920197.84	1046.47
20216.14	1057.2	20266.22	1057.7	620314.99	1042.6	20325.03	1043.14	20337.2	1046.87
20568.24	1050.2	20851.05	1051.3	120962.88	1051.5	21206.35	1051.6	421388.45	1051.42
21419.92	1051.2	21727.44	1052.6	221848.61	1053.5	21981.25	1052.7	822130.55	1052.51
22220.26	1051.5	22459.24	1054.3	422578.82	1055.1	22876.18	1055.9	323025.66	1056.21
23117.46	1056.8	23238.24	1055.61	23357.2	1054.6	23446.32	1054.2	323535.13	1054.99
23685.75	1053.2	23748.15	1053.5	423836.62	1056.4	23904.67	1055.7	524029.98	1052.16
24046.15	1048.7	24064.65	1054.8	424297.11	1054.6	24417.85	1054.0	824709.66	1055.58
24914.5	1057.2	24949.53	1057.2	425042.76	1055.7	25080.42	1056.7	725117.12	1053.8
25243.64	1054.8	25321.41	1057.3	325361.74	105825	507.43	1059.54	25610.8	1058.49
25724.65	1059.9	25796.42	1060.0	825841.82	1059.6	25987.23	1060.3	26062.01	1060.39
26081.09	1058.8	26241.81	1058.1	126377.22	1057.1	26422.65	1058.2	926467.41	1067.88
26493.74	1078.7	26570.07	1078.7	926595.33	1080	26627.3	1065.29	26661.5	1058.87
26693.27	1058.2	26725.34	1059.01						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
18356.24	.04	519628.43	.03	320197.84	.04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
19628.4 320197.84 780 392.06 500 .1 .3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
18356.24	19595.3	1068	F
20266.2	26725.34	1068	F

CROSS SECTION OUTPUT Profile #PF#1

E.G. Elev (ft)	1049.29	Element	Left OB	Channel	Right OB	
Vel Head (ft)	2.91	Wt. n-Val.		0.033		
W.S. Elev (ft)	1046.38	Reach Len. (ft)	780.00	392.06	500.00	
Crit W.S. (ft)	1038.56	Flow Area (sq ft)		12118.89		
E.G. Slope (ft/ft)	0.001615	Area (sq ft)	50.42	12118.89	75.18	
Q Total (cfs)	166000.00	Flow (cfs)		166000.00		
Top Width (ft)	637.47	Top Width (ft)	35.63	569.11	32.74	
Vel Total (ft/s)	13.70	Avg. Vel. (ft/s)		13.70		
Max Chl Dpth (ft)	23.19	Hydr. Depth (ft)		21.29		
Conv. Total (cfs)	4130222.0	Conv. (cfs)		4130222.0		
Length Wtd. (ft)	392.06	Wetted Per. (ft)		581.99		
Min Ch El (ft)	1023.19	Shear (lb/sq ft)		2.10		
Alpha	1.00	Stream Power (lb/ft s)		28.76		
Frctn Loss (ft)	0.66	Cum Volume (acre-ft)	7397.15	31657.72	2825.53	
C & E Loss (ft)	0.02	Cum SA (acres)	2107.27	3037.08	1028.23	

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.

CROSS SECTION OUTPUT Profile #PF#2

E.G. Elev (ft)	1049.34	Element	Left OB	Channel	Right OB	
Vel Head (ft)	2.89	Wt. n-Val.		0.033		
W.S. Elev (ft)	1046.45	Reach Len. (ft)	780.00	392.06	500.00	
Crit W.S. (ft)	1038.56	Flow Area (sq ft)		12158.51		
E.G. Slope (ft/ft)	0.001599	Area (sq ft)		12158.51		
Q Total (cfs)	166000.00	Flow (cfs)		166000.00		
Top Width (ft)	569.33	Top Width (ft)		569.33		
Vel Total (ft/s)	13.65	Avg. Vel. (ft/s)		13.65		
Max Chl Dpth (ft)	23.25	Hydr. Depth (ft)		21.36		
Conv. Total (cfs)	4151491.0	Conv. (cfs)		4151491.0		

```
                                                                    DuplicateEffective
* Length Wtd. (ft)       *  392.06  * Wetted Per. (ft)        *          *  582.26  *          *
* Min Ch El (ft)         * 1023.19  * Shear (lb/sq ft)       *          *    2.08  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *   28.46  *          *
* Frctn Loss (ft)        *    0.66  * Cum Volume (acre-ft)   * 1422.13  *32636.05  *  355.97  *
* C & E Loss (ft)        *    0.02  * Cum SA (acres)         *  221.84  * 3042.67  *   77.43  *
*********************************************************************************************

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

CROSS SECTION


RIVER: 1
REACH: 1                 RS: 211.64

INPUT
Description: 211.63

Left and Right Channel Bank Stations Interpolated
Station Elevation Data    num=      74
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
18455.22  1055.618870.41 1054.6119083.17 1054.4919308.22 1054.2519426.55 1053.86
 19582.2  1054.119594.16 1050.2119604.79 1050.3319629.34 1057.4119639.51  1057.5
 19657.71045.60119689.19    102519804.58  1023.319911.42 1022.65 19986.5 1022.75
20036.19 1022.9320060.82  1023.620181.08 1022.5820196.63 1031.17 20219.81045.602
20238.13 1057.0220265.94 1057.5920288.34  1056.820321.05 1046.9420343.65 1039.08
20371.71 1043.95 20510.4 1045.0120712.01  1046.120789.36 1046.9121038.61 1047.48
21208.66 1048.1421454.04 1047.8221685.69  1048.521805.81 1048.0822092.18 1048.45
22242.98 1048.2222332.89 1048.1922513.12  1050.222770.05 1051.0723054.32  1051.7
23295.42 1051.6523472.95 1051.1123700.42  1052.523820.77 1054.7623926.54 1054.04
23949.21 1052.3623981.01 1052.4624008.88  1047.424037.13 1053.1124090.43 1054.01
24133.79 1054.5824302.75 1054.0624347.21  1053.624484.04    105424904.87 1055.84
 25102.6 1055.6325165.57 1054.9925293.65  1054.325400.67 1057.0625522.25 1059.22
25597.17 1058.4125713.85 1057.9825824.69  1060.625850.02 1060.9225980.05 1061.02
26040.31 1060.2826085.96 1060.1626115.36  1058.626378.37 1057.1726385.52 1058.22
26496.95 1078.6826605.38 1079.6726703.24  1058.126712.22 1058.41

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
18455.22     .045 19657.7     .033 20219.8     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       19657.7 20219.8             481  521.13     221            .1       .3
Ineffective Flow      num=       2
   Sta L   Sta R    Elev  Permanent
18455.2219639.51    1068       F
 20265.926712.22    1068       F

CROSS SECTION OUTPUT  Profile #PF#1
*********************************************************************************************
* E.G. Elev (ft)         * 1048.61  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    3.11  * Wt. n-Val.            *          *    0.033  *          *
* W.S. Elev (ft)         * 1045.49  * Reach Len. (ft)       *  481.00  *  521.13  *  221.00  *
* Crit W.S. (ft)         * 1038.24  * Flow Area (sq ft)     *          *11720.96  *          *
* E.G. Slope (ft/ft)     *0.001773  * Area (sq ft)          *          *11720.96  *  332.13  *
* Q Total (cfs)          *166000.00  * Flow (cfs)           *          *166000.00  *          *
* Top Width (ft)         *  835.81  * Top Width (ft)       *          *  561.75  *  274.05  *
* Vel Total (ft/s)       *   14.16  * Avg. Vel. (ft/s)     *          *   14.16  *          *
* Max Chl Dpth (ft)      *   22.91  * Hydr. Depth (ft)     *          *   20.86  *          *
* Conv. Total (cfs)      *3941953.0  * Conv. (cfs)         *          *3941953.0  *          *
* Length Wtd. (ft)       *  521.13  * Wetted Per. (ft)     *          *  574.20  *          *
* Min Ch El (ft)         * 1022.58  * Shear (lb/sq ft)     *          *    2.26  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *   32.01  *          *
* Frctn Loss (ft)        *    1.04  * Cum Volume (acre-ft)   * 7396.70  *31550.44  * 2823.19  *
* C & E Loss (ft)        *    0.08  * Cum SA (acres)         * 2106.96  * 3031.99  * 1026.47  *
*********************************************************************************************

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 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 OUTPUT  Profile #PF#2
*********************************************************************************************
* E.G. Elev (ft)         * 1048.66  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    3.09  * Wt. n-Val.            *          *    0.033  *          *
* W.S. Elev (ft)         * 1045.57  * Reach Len. (ft)       *  481.00  *  521.13  *  221.00  *
* Crit W.S. (ft)         * 1038.24  * Flow Area (sq ft)     *          *11767.87  *          *
* E.G. Slope (ft/ft)     *0.001751  * Area (sq ft)          *          *11767.87  *          *
* Q Total (cfs)          *166000.00  * Flow (cfs)           *          *166000.00  *          *
* Top Width (ft)         *  562.02  * Top Width (ft)       *          *  562.02  *          *
* Vel Total (ft/s)       *   14.11  * Avg. Vel. (ft/s)     *          *   14.11  *          *
* Max Chl Dpth (ft)      *   22.99  * Hydr. Depth (ft)     *          *   20.94  *          *
* Conv. Total (cfs)      *3966851.0  * Conv. (cfs)         *          *3966851.0  *          *
* Length Wtd. (ft)       *  521.13  * Wetted Per. (ft)     *          *  574.51  *          *
* Min Ch El (ft)         * 1022.58  * Shear (lb/sq ft)     *          *    2.24  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *   31.59  *          *
* Frctn Loss (ft)        *    1.03  * Cum Volume (acre-ft)   * 1422.13  *32528.38  *  355.97  *
* C & E Loss (ft)        *    0.08  * Cum SA (acres)         *  221.84  * 3037.58  *   77.43  *
*********************************************************************************************

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.
Note:    Multiple critical depths were found at this location.  The critical depth with the lowest, valid,
         water surface was used.

CROSS SECTION
```

```
RIVER: 1
REACH: 1                    RS: 211.54

INPUT
Description: 211.54 - FEMA Section AA
Station Elevation Data     num=       24
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
*********************************************************************************
   18557   105619498.08 1062.8819570.11  1056.919585.13  1056.719633.01  1023.1
19866.76  1021.920100.43  1023.220148.29  1056.820163.32    105720195.23  1056.3
 20223.6  1049.320265.59  1046.120326.25  1049.420339.59  1050.820360.21  1052.5
20374.03  1055.420382.33  1055.9 20385.6  1055.9 20412.1  1057.320434.96  1056.7
20443.92  1057.120456.54  1061.420479.34  1060.721248.52  1053.6

Manning's n Values         num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
************************************************
   18557    .03719498.08     .03220163.32     .037

Bank Sta: Left    Right     Lengths: Left Channel    Right      Coeff Contr.    Expan.
      19498.0820163.32                  125  125.49     120              .1       .3
Ineffective Flow       num=        2
   Sta L    Sta R     Elev  Permanent
   1855719498.08     1070        F
20163.3221248.52     1070        F

CROSS SECTION OUTPUT  Profile #PF#1
*************************************************************************************************
* E.G. Elev (ft)         * 1047.48  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    3.95  * Wt. n-Val.            *          *    0.032  *          *
* W.S. Elev (ft)         * 1043.53  * Reach Len. (ft)       *    0.10  *     0.10  *     0.10  *
* Crit W.S. (ft)         * 1038.07  * Flow Area (sq ft)     *          *10410.75  *          *
* E.G. Slope (ft/ft)     *0.002272  * Area (sq ft)          *          *10410.75  *          *
* Q Total (cfs)          *166000.00  * Flow (cfs)           *          *166000.00  *          *
* Top Width (ft)         *  525.50  * Top Width (ft)       *          *  525.50  *          *
* Vel Total (ft/s)       *   15.95  * Avg. Vel. (ft/s)     *          *   15.95  *          *
* Max Chl Dpth (ft)      *   21.63  * Hydr. Depth (ft)     *          *   19.81  *          *
* Conv. Total (cfs)      *3482746.0  * Conv. (cfs)         *          *3482746.0  *          *
* Length Wtd. (ft)       *    0.10  * Wetted Per. (ft)     *          *  538.38  *          *
* Min Ch El (ft)         * 1021.90  * Shear (lb/sq ft)     *          *    2.74  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *        *   43.73  *          *
* Frctn Loss (ft)        *    0.00  * Cum Volume (acre-ft)  * 7396.70  *31418.05  * 2822.35  *
* C & E Loss (ft)        *    0.09  * Cum SA (acres)        * 2106.96  * 3025.49  * 1025.77  *
*************************************************************************************************

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  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,
         energy was used.

CROSS SECTION OUTPUT  Profile #PF#2
*************************************************************************************************
* E.G. Elev (ft)         * 1047.56  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    3.90  * Wt. n-Val.            *          *    0.032  *          *
* W.S. Elev (ft)         * 1043.66  * Reach Len. (ft)       *    0.10  *     0.10  *     0.10  *
* Crit W.S. (ft)         * 1038.07  * Flow Area (sq ft)     *          *10478.70  *          *
* E.G. Slope (ft/ft)     *0.002226  * Area (sq ft)          *          *10478.70  *          *
* Q Total (cfs)          *166000.00  * Flow (cfs)           *          *166000.00  *          *
* Top Width (ft)         *  525.86  * Top Width (ft)       *          *  525.86  *          *
* Vel Total (ft/s)       *   15.84  * Avg. Vel. (ft/s)     *          *   15.84  *          *
* Max Chl Dpth (ft)      *   21.76  * Hydr. Depth (ft)     *          *   19.93  *          *
* Conv. Total (cfs)      *3518758.0  * Conv. (cfs)         *          *3518758.0  *          *
* Length Wtd. (ft)       *    0.10  * Wetted Per. (ft)     *          *  538.83  *          *
* Min Ch El (ft)         * 1021.90  * Shear (lb/sq ft)     *          *    2.70  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *        *   42.80  *          *
* Frctn Loss (ft)        *    0.00  * Cum Volume (acre-ft)  * 1422.13  *32395.31  *  355.97  *
* C & E Loss (ft)        *    0.09  * Cum SA (acres)        *  221.84  * 3031.07  *   77.43  *
*************************************************************************************************

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  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,
         energy was used.

BRIDGE


RIVER: 1
REACH: 1                    RS: 211.525

INPUT
Description: 19th Avenue Bridge
Distance from Upstream XS =       .1
Deck/Roadway Width        =   124.49
Weir Coefficient          =       2.6
Upstream  Deck/Roadway Coordinates
    num=       11
     Sta Hi Cord Lo Cord      Sta Hi Cord Lo Cord      Sta Hi Cord Lo Cord
*********************************************************************************
   18557    1056     105619498.08 1062.88 1062.8819498.08 1062.88 1056.33
19617.96  1065.1 1058.4319732.91  1067.4 1060.6819853.66 1068.72 1062.03
19974.41 1069.18 1062.5120095.16 1068.67 1061.9720215.91 1067.18 1060.46
20336.66 1064.77 1058.0320456.45  1061.4 1054.73

Upstream Bridge Cross Section Data
Station Elevation Data     num=       24
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
*********************************************************************************
   18557    105619498.08 1062.8819570.11  1056.919585.13  1056.719633.01  1023.1
19866.76  1021.920100.43  1023.220148.29  1056.820163.32    105720195.23  1056.3
 20223.6  1049.320265.59  1046.120326.25  1049.420339.59  1050.820360.21  1052.5
20374.03  1055.420382.33  1055.9 20385.6  1055.9 20412.1  1057.320434.96  1056.7
20443.92  1057.120456.54  1061.420479.34  1060.721248.52  1053.6

Manning's n Values         num=       3
```

```
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
   18557    .03719498.08    .03220163.32    .037

Bank Sta: Left   Right    Coeff Contr.   Expan.
      19498.0820163.32          .1       .3
Ineffective Flow     num=        2
   Sta L   Sta R    Elev  Permanent
   1855719498.08    1070       F
20163.3221248.52    1070       F

Downstream  Deck/Roadway Coordinates
    num=       11
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
*********************************************************************************
   18557    1056    105619498.08 1062.88 1062.8819498.08 1062.88 1056.33
19617.96  1065.1 1058.4319732.91  1067.4 1060.6819853.66 1068.72 1062.03
19974.41 1069.18 1062.5120095.16 1068.67 1061.9720215.91 1067.18 1060.46
20336.66 1064.77 1058.0320456.45  1061.4 1054.73

Downstream Bridge Cross Section Data
Station Elevation Data    num=      22
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
   18577    105619498.08 1062.8819510.11    105119579.82  1056.719594.75  1056.5
19642.62    102319876.38  1021.820110.04    102320157.91  1056.620172.93  1056.8
20204.85  1056.120210.17  1055.920249.54  1049.420344.26  1054.820347.44  1054.8
20366.65  1054.320380.75  1054.620418.55    105520428.15    105520456.54  1061.4
20479.34  1060.721248.52  1053.6

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
   18577    .03719579.82    .03220172.93    .037

Bank Sta: Left   Right    Coeff Contr.   Expan.
      19579.8220172.93          .1       .3
Ineffective Flow     num=        2
   Sta L   Sta R    Elev  Permanent
   1857719579.82  1056.7       F
20172.9321248.52  1056.8       F

Upstream Embankment side slope              =         horiz. to 1.0 vertical
Downstream Embankment side slope            =         horiz. to 1.0 vertical
Maximum allowable submergence for weir flow =     .95
Elevation at which weir flow begins         =
Energy head used in spillway design         =
Spillway height used in design              =
Weir crest shape                            = Broad Crested

Number of Piers =  7

Pier Data
Pier Station     Upstream=19615.06    Downstream=19615.06
Upstream     num=        2
    Width   Elev    Width   Elev
*********************************
     5.8  1046.9     5.8 1058.51
Downstream     num=        2
    Width   Elev    Width   Elev
*********************************
     5.8  1046.9     5.8 1058.51

Pier Data
Pier Station     Upstream=19735.81    Downstream=19735.81
Upstream     num=        2
    Width   Elev    Width   Elev
*********************************
     5.8    1022     5.8 1060.77
Downstream     num=        2
    Width   Elev    Width   Elev
*********************************
     5.8    1022     5.8 1060.77

Pier Data
Pier Station     Upstream=19856.56    Downstream=19856.56
Upstream     num=        2
    Width   Elev    Width   Elev
*********************************
     5.8 1020.85     5.8 1062.07
Downstream     num=        2
    Width   Elev    Width   Elev
*********************************
     5.8 1020.85     5.8 1062.07

Pier Data
Pier Station     Upstream=19977.31    Downstream=19977.31
Upstream     num=        2
    Width   Elev    Width   Elev
*********************************
     5.8 1028.55     5.8 1062.51
Downstream     num=        2
    Width   Elev    Width   Elev
*********************************
     5.8 1028.55     5.8 1062.51

Pier Data
Pier Station     Upstream=20098.06    Downstream=20098.06
Upstream     num=        2
    Width   Elev    Width   Elev
*********************************
     5.8 1033.84     5.8 1062.02
Downstream     num=        2
    Width   Elev    Width   Elev
*********************************
     5.8 1033.84     5.8 1062.02
```

```
Pier Data
Pier Station     Upstream=20218.81    Downstream=20218.81
Upstream     num=        2
    Width   Elev    Width   Elev
*********************************
     5.8 1039.95     5.8 1060.55
Downstream     num=        2
    Width   Elev    Width   Elev
*********************************
     5.8 1039.95     5.8 1060.55

Pier Data
Pier Station     Upstream=20339.56    Downstream=20339.56
Upstream     num=        2
    Width   Elev    Width   Elev
*********************************
     5.8 1045.78     5.8 1058.17
Downstream     num=        2
    Width   Elev    Width   Elev
*********************************
     5.8 1045.78     5.8 1058.17

Number of Bridge Coefficient Sets =  1

Low Flow Methods and Data
       Energy
       Momentum               Cd   =     1.2
       Yarnell                KVal =    1.05
Selected Low Flow Methods = Highest Energy Answer

High Flow Method
       Energy Only

Additional Bridge Parameters
       Add Friction component to Momentum
       Add Weight component to Momentum
       Class B flow critical depth computations use critical depth
           inside the bridge at the upstream end
       Criteria to check for pressure flow = Upstream energy grade line

BRIDGE OUTPUT  Profile #PF#1
*************************************************************************************************
* E.G. US. (ft)          *    1047.48  * Element                *Inside BR US *Inside BR DS *
* W.S. US. (ft)          *    1043.53  * E.G. Elev (ft)         *    1047.39  *    1046.75  *
* Q Total (cfs)          *  166000.00  * W.S. Elev (ft)         *    1042.53  *    1041.34  *
* Q Bridge (cfs)         *  166000.00  * Crit W.S. (ft)         *    1038.59  *    1038.44  *
* Q Weir (cfs)           *             * Max Chl Dpth (ft)      *      20.63  *      19.54  *
* Weir Sta Lft (ft)      *             * Vel Total (ft/s)       *      17.70  *      18.66  *
* Weir Sta Rgt (ft)      *             * Flow Area (sq ft)      *    9380.77  *    8894.33  *
* Weir Submerg           *             * Froude # Chl           *       0.72  *       0.78  *
* Weir Max Depth (ft)    *             * Specif Force (cu ft)   *  183437.40  *  178883.90  *
* Min El Weir Flow (ft)  *    1065.11  * Hydr Depth (ft)        *      19.00  *      17.97  *
* Min El Prs (ft)        *    1062.51  * W.P. Total (ft)        *     677.51  *     658.71  *
* Delta EG (ft)          *       0.97  * Conv. Total (cfs)      *  2511687.0  *  2341905.0  *
* Delta WS (ft)          *       1.65  * Top Width (ft)         *     493.62  *     495.01  *
* BR Open Area (sq ft)   *   19158.31  * Frctn Loss (ft)        *       0.58  *       0.00  *
* BR Open Vel (ft/s)     *      18.66  * C & E Loss (ft)        *       0.05  *       0.23  *
* Coef of Q              *             * Shear Total (lb/sq ft) *       3.78  *       4.24  *
* Br Sel Method          *Energy only  * Power Total (lb/ft s)  *      66.81  *      79.05  *
*************************************************************************************************

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  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,
         energy was used.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  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,
         energy was used.

BRIDGE OUTPUT  Profile #PF#2
*************************************************************************************************
* E.G. US. (ft)          *    1047.56  * Element                *Inside BR US *Inside BR DS *
* W.S. US. (ft)          *    1043.66  * E.G. Elev (ft)         *    1047.47  *    1046.86  *
* Q Total (cfs)          *  166000.00  * W.S. Elev (ft)         *    1042.69  *    1041.60  *
* Q Bridge (cfs)         *  166000.00  * Crit W.S. (ft)         *    1038.59  *    1038.44  *
* Q Weir (cfs)           *             * Max Chl Dpth (ft)      *      20.79  *      19.80  *
* Weir Sta Lft (ft)      *             * Vel Total (ft/s)       *      17.54  *      18.40  *
* Weir Sta Rgt (ft)      *             * Flow Area (sq ft)      *    9462.04  *    9023.69  *
* Weir Submerg           *             * Froude # Chl           *       0.71  *       0.76  *
* Weir Max Depth (ft)    *             * Specif Force (cu ft)   *  184204.20  *  179844.90  *
* Min El Weir Flow (ft)  *    1065.06  * Hydr Depth (ft)        *      19.15  *      18.22  *
* Min El Prs (ft)        *    1062.51  * W.P. Total (ft)        *     679.73  *     661.52  *
* Delta EG (ft)          *       0.93  * Conv. Total (cfs)      *  2542505.0  *  2392157.0  *
* Delta WS (ft)          *       1.54  * Top Width (ft)         *     494.09  *     495.38  *
* BR Open Area (sq ft)   *   18724.25  * Frctn Loss (ft)        *       0.56  *       0.00  *
* BR Open Vel (ft/s)     *      18.40  * C & E Loss (ft)        *       0.05  *       0.22  *
* Coef of Q              *             * Shear Total (lb/sq ft) *       3.70  *       4.10  *
* Br Sel Method          *Energy only  * Power Total (lb/ft s)  *      64.99  *      75.44  *
*************************************************************************************************

Note:    Multiple critical depths were found at this location.  The critical depth with the lowest, valid,
         energy was used.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  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,
         energy was used.

CROSS SECTION


RIVER: 1
REACH: 1                RS: 211.51

INPUT
```

Description: 211.51

Begin 19th Ave Landfill channelization

Station Elevation Data num= 22

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
18577	105619498.08	1062.8819510.11		105119579.82	1056.719594.75	1056.5			
19642.62	102319876.38	1021.820110.04		102320157.91	1056.620172.93	1056.8			
20204.85	1056.120210.17	1055.920249.54		1049.420344.26	1054.820347.44	1054.8			
20366.65	1054.320380.75	1054.620418.55		105520428.15	105520456.54	1061.4			
20479.34	1060.721248.52	1053.6							

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
18577	.03719579.82	.03220172.93	.037		

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

19579.8220172.93	541	562.88	606	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
1857719579.82	1056.7	F	
20172.9321248.52	1056.8	F	

CROSS SECTION OUTPUT Profile #PF#1

E.G. Elev (ft)	1046.51	Element	Left OB	Channel	Right OB
Vel Head (ft)	4.63	Wt. n-Val.		0.032	
W.S. Elev (ft)	1041.88	Reach Len. (ft)	541.00	562.88	606.00
Crit W.S. (ft)	1037.98	Flow Area (sq ft)		9616.05	
E.G. Slope (ft/ft)	0.002923	Area (sq ft)		9616.05	
Q Total (cfs)	166000.00	Flow (cfs)		166000.00	
Top Width (ft)	521.31	Top Width (ft)		521.31	
Vel Total (ft/s)	17.26	Avg. Vel. (ft/s)		17.26	
Max Chl Dpth (ft)	20.08	Hydr. Depth (ft)		18.45	
Conv. Total (cfs)	3070642.0	Conv. (cfs)		3070642.0	
Length Wtd. (ft)	562.88	Wetted Per. (ft)		533.23	
Min Ch El (ft)	1021.80	Shear (lb/sq ft)		3.29	
Alpha	1.00	Stream Power (lb/ft s)		56.80	
Frctn Loss (ft)	1.33	Cum Volume (acre-ft)	7396.70	31391.72	2822.35
C & E Loss (ft)	0.37	Cum SA (acres)	2106.96	3024.06	1025.77

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION OUTPUT Profile #PF#2

E.G. Elev (ft)	1046.63	Element	Left OB	Channel	Right OB
Vel Head (ft)	4.51	Wt. n-Val.		0.032	
W.S. Elev (ft)	1042.12	Reach Len. (ft)	541.00	562.88	606.00
Crit W.S. (ft)	1037.98	Flow Area (sq ft)		9738.69	
E.G. Slope (ft/ft)	0.002807	Area (sq ft)		9738.69	
Q Total (cfs)	166000.00	Flow (cfs)		166000.00	
Top Width (ft)	521.98	Top Width (ft)		521.98	
Vel Total (ft/s)	17.05	Avg. Vel. (ft/s)		17.05	
Max Chl Dpth (ft)	20.32	Hydr. Depth (ft)		18.66	
Conv. Total (cfs)	3132976.0	Conv. (cfs)		3132976.0	
Length Wtd. (ft)	562.88	Wetted Per. (ft)		534.05	
Min Ch El (ft)	1021.80	Shear (lb/sq ft)		3.20	
Alpha	1.00	Stream Power (lb/ft s)		54.48	
Frctn Loss (ft)	1.28	Cum Volume (acre-ft)	1422.13	32368.67	355.97
C & E Loss (ft)	0.36	Cum SA (acres)	221.84	3029.65	77.43

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION

RIVER: 1
REACH: 1 RS: 211.41

INPUT
Description: 211.41

Left and Right Channel Bank Stations Interpolated
Station Elevation Data num= 98

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
18573.85	1055.518621.78	1056.6118655.14		1053.7918722.99	1053.2518902.93	1052.9			
19132.77	1051.619320.33	1050.8719480.47		1049.5819533.31	1047.7219566.92	1049.4			
19611.4	1046.919634.53	1044.0819638.09		1041.7819668.43	1022.1819702.69	1018.56			
19754.63	1019.6519786.92	1018.319889.98		1020.7419930.16	1020.8119994.45	1020.82			
20076.61	1020.9120167.45	1021.220192.38		1033.0120195.55	1039.3220206.061041.777				
20220.36	1045.1220236.46	1054.7820293.62		105620331.24	1065.2220351.37	1065.23			
20357.03	1066.6220414.04	1056.96 20436.1		1062.220445.88	1058.7420504.13	1060.74			
20521.21	1060.7920557.16	1066.5820578.69		1061.620603.37	1060.3620654.05	1060.04			
20689.25	1058.2320722.97	1060.5820735.67		1057.720828.84	1057.0620846.13	1057.59			
20898.33	1070.2520938.86	1063.6420980.02		106321017.32	1057.9221060.66	1055.82			

```
                                                                    DuplicateEffective
21097.07 1055.5321119.44 1056.16 21132.9  1055.121181.47  1054.221283.06  1053.8
21298.44 1058.2121320.94 1060.3521339.43  1062.821380.38 1060.3221406.09 1052.45
21459.74 1053.4821477.97 1059.9821533.47    106121555.62 1081.8121619.68 1081.91
21644.09  1080.121655.42 1076.4821707.29  1075.321720.18 1072.1521749.96 1071.27
21770.47 1076.9921793.84 1054.8221802.85  1056.121842.36    105621864.05 1053.48
21891.41 1052.6921905.23 1051.4321991.71  1051.822210.76 1052.0622373.03 1052.78
22531.21 1052.1722650.75 1052.0922819.43  1052.522919.43 1053.1423211.23 1053.67
23252.71 1054.2423349.12 1054.0823463.55  1053.123574.33 1051.7923680.61 1051.32
23891.22 1051.5624133.09 1051.4824212.43  1051.924237.65 1050.3224284.73 1050.32
24320.22    105124361.59 1050.58 24444.1    1052

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
18573.85    .03719638.09    .03220206.06    .037

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      19638.0920206.06               500  501.53     505            .1      .3

CROSS SECTION OUTPUT  Profile #PF#1
*****************************************************************************************************
* E.G. Elev (ft)         * 1044.81  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    3.40  * Wt. n-Val.             *          *   0.032  *          *
* W.S. Elev (ft)         * 1041.42  * Reach Len. (ft)       *  500.00  *  501.53  *  505.00  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)      *          *11221.50  *          *
* E.G. Slope (ft/ft)     *0.001948  * Area (sq ft)          *          *11221.50  *          *
* Q Total (cfs)          *166000.00  * Flow (cfs)           *          *166000.00  *          *
* Top Width (ft)         *  565.86  * Top Width (ft)        *          *  565.86  *          *
* Vel Total (ft/s)       *   14.79  * Avg. Vel. (ft/s)      *          *   14.79  *          *
* Max Chl Dpth (ft)      *   23.11  * Hydr. Depth (ft)      *          *   19.83  *          *
* Conv. Total (cfs)      *3761447.0  * Conv. (cfs)          *          *3761447.0  *          *
* Length Wtd. (ft)       *  501.53  * Wetted Per. (ft)      *          *  578.58  *          *
* Min Ch El (ft)         * 1018.30  * Shear (lb/sq ft)      *          *    2.36  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *   34.89  *          *
* Frctn Loss (ft)        *    1.22  * Cum Volume (acre-ft)   * 7396.70  *31257.09  * 2822.35  *
* C & E Loss (ft)        *    0.00  * Cum SA (acres)         * 2106.96  * 3017.04  * 1025.77  *
*****************************************************************************************************

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 OUTPUT  Profile #PF#2
*****************************************************************************************************
* E.G. Elev (ft)         * 1044.99  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    3.31  * Wt. n-Val.             *          *   0.032  *          *
* W.S. Elev (ft)         * 1041.69  * Reach Len. (ft)       *  500.00  *  501.53  *  505.00  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)      *          *11375.19  *          *
* E.G. Slope (ft/ft)     *0.001869  * Area (sq ft)          *          *11375.19  *          *
* Q Total (cfs)          *166000.00  * Flow (cfs)           *          *166000.00  *          *
* Top Width (ft)         *  567.44  * Top Width (ft)        *          *  567.44  *          *
* Vel Total (ft/s)       *   14.59  * Avg. Vel. (ft/s)      *          *   14.59  *          *
* Max Chl Dpth (ft)      *   23.39  * Hydr. Depth (ft)      *          *   20.05  *          *
* Conv. Total (cfs)      *3840224.0  * Conv. (cfs)          *          *3840224.0  *          *
* Length Wtd. (ft)       *  501.53  * Wetted Per. (ft)      *          *  580.27  *          *
* Min Ch El (ft)         * 1018.30  * Shear (lb/sq ft)      *          *    2.29  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *   33.37  *          *
* Frctn Loss (ft)        *    1.14  * Cum Volume (acre-ft)   * 1422.13  *32232.26  *  355.97  *
* C & E Loss (ft)        *    0.04  * Cum SA (acres)         *  221.84  * 3022.61  *   77.43  *
*****************************************************************************************************

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

CROSS SECTION


RIVER: 1
REACH: 1                RS: 211.31

INPUT
Description: 211.31

Left and Right Channel Bank Stations Interpolated
Station Elevation Data    num=      98
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
 19209.8    1054 19309.4  1053.9   19371  1052.4 19415.6    1052 19462.5  1051.5
 19496.2  1050.5 19510.1  1050.5 19528.9  1041.9 19531.21040.766 19571.7  1020.8
   19614  1021.1 19677.8  1021.1 19724.1  1021.3 19888.2    1022 19928.3  1022.1
 19954.9  1021.8 19973.9    1032 19980.4  1029.8 19994.7  1027.2   20059  1026.6
   20112  1026.2 20123.3    1028 20158.9  1030.9 20198.7  1033.6 20212.5  1034.3
 20267.3  1034.5 20269.1  1035.1 20281.8  1034.8 20323.2  1035.6 20338.5  1037.1
   20343    1038 20356.11040.765 20425.9  1055.5 20434.4  1057.4 20457.3    1049
   20499  1049.5 20549.5  1051.1 20551.5    1051 20571.1  1052.5 20575.3  1055.6
 20584.2  1059.5   20614  1060.7 20625.4    1057   20636  1051.6 20682.5  1051.6
 20692.1  1051.6 20699.2    1055 20718.1  1055.1 20723.4  1052.3 20725.3  1052.3
 20778.6  1052.4   20806  1052.5 20808.3  1053.2 20835.4  1052.5 20836.7  1052.2
 20884.1  1051.7   20893  1051.9 20922.6  1067.4 20930.4  1067.8   20944  1066.2
 20964.4  1055.2 20970.5  1050.2 21010.5  1050.3 21036.1    1052 21040.8  1052.7
   21082  1053.8 21083.4  1053.5 21093.1  1049.5 21124.5  1050.5 21134.6  1050.2
 21141.3  1051.6 21160.1  1051.2 21201.6  1048.9 21204.4  1049.1 21219.3  1052.5
 21236.3  1049.8 21240.9  1049.4 21293.9    1049 21338.4  1048.2 21394.2  1047.1
   21457  1046.7 21459.4  1046.7 21510.1  1046.2 21538.8  1046.8   21571  1046.8
 21576.7  1047.8 21607.4  1058.3 21626.3  1059.1 21651.1  1060.7 21661.7  1060.9
 21672.8    1062 21684.6  1057.7 21696.7  1051.4 21740.6  1053.4 21745.1  1054.1
 21754.3  1054.6 21757.7    1053   21786  1052.5

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
 19209.8    .037 19531.2    .032 20356.1    .037

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      19531.2 20356.1               540  523.28     460            .1      .3
Ineffective Flow     num=       1
   Sta L   Sta R    Elev  Permanent
```

20434.4 21786 1060 F

CROSS SECTION OUTPUT Profile #PF#1

* E.G. Elev (ft)	* 1043.59	* Element	*	Left OB	*	Channel	*	Right OB	*		
* Vel Head (ft)	* 3.39	* Wt. n-Val.	*		*	0.032	*		*		
* W.S. Elev (ft)	* 1040.20	* Reach Len. (ft)	*	540.00	*	523.28	*	460.00	*		
* Crit W.S. (ft)	* 1037.24	* Flow Area (sq ft)	*		*	11234.25	*		*		
* E.G. Slope (ft/ft)	*0.003137	* Area (sq ft)	*		*	11234.25	*		*		
* Q Total (cfs)	*166000.00	* Flow (cfs)	*		*	166000.00	*		*		
* Top Width (ft)	* 821.06	* Top Width (ft)	*		*	821.06	*		*		
* Vel Total (ft/s)	* 14.78	* Avg. Vel. (ft/s)	*		*	14.78	*		*		
* Max Chl Dpth (ft)	* 19.40	* Hydr. Depth (ft)	*		*	13.68	*		*		
* Conv. Total (cfs)	*2963673.0	* Conv. (cfs)	*		*	2963673.0	*		*		
* Length Wtd. (ft)	* 523.28	* Wetted Per. (ft)	*		*	829.63	*		*		
* Min Ch El (ft)	* 1020.80	* Shear (lb/sq ft)	*		*	2.65	*		*		
* Alpha	* 1.00	* Stream Power (lb/ft s)	*		*	39.19	*		*		
* Frctn Loss (ft)	* 1.41	* Cum Volume (acre-ft)	*	7396.70	*	31127.82	*	2822.35	*		
* C & E Loss (ft)	* 0.28	* Cum SA (acres)	*	2106.96	*	3009.06	*	1025.77	*		

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION OUTPUT Profile #PF#2

* E.G. Elev (ft)	* 1043.81	* Element	*	Left OB	*	Channel	*	Right OB	*		
* Vel Head (ft)	* 3.19	* Wt. n-Val.	*		*	0.032	*		*		
* W.S. Elev (ft)	* 1040.63	* Reach Len. (ft)	*	540.00	*	523.28	*	460.00	*		
* Crit W.S. (ft)	* 1037.24	* Flow Area (sq ft)	*		*	11585.76	*		*		
* E.G. Slope (ft/ft)	*0.002845	* Area (sq ft)	*		*	11585.76	*		*		
* Q Total (cfs)	*166000.00	* Flow (cfs)	*		*	166000.00	*		*		
* Top Width (ft)	* 823.96	* Top Width (ft)	*		*	823.96	*		*		
* Vel Total (ft/s)	* 14.33	* Avg. Vel. (ft/s)	*		*	14.33	*		*		
* Max Chl Dpth (ft)	* 19.83	* Hydr. Depth (ft)	*		*	14.06	*		*		
* Conv. Total (cfs)	*3112242.0	* Conv. (cfs)	*		*	3112242.0	*		*		
* Length Wtd. (ft)	* 523.28	* Wetted Per. (ft)	*		*	832.66	*		*		
* Min Ch El (ft)	* 1020.80	* Shear (lb/sq ft)	*		*	2.47	*		*		
* Alpha	* 1.00	* Stream Power (lb/ft s)	*		*	35.41	*		*		
* Frctn Loss (ft)	* 1.25	* Cum Volume (acre-ft)	*	1422.13	*	32100.08	*	355.97	*		
* C & E Loss (ft)	* 0.28	* Cum SA (acres)	*	221.84	*	3014.60	*	77.43	*		

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION

RIVER: 1
REACH: 1 RS: 211.21

INPUT
Description: 211.21

Left and Right Channel Bank Stations Interpolated
Station Elevation Data num= 88

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
19418.7	1050	19432.3	1049.9	19486.6	1051	19504.4	1050.9	19507.4	1051.4
19520	1044.7	19528.7	1040.2	16	19566	1021.1	19781.8	1021.6	19997.4	1022.1
20060.3	1022.2	20076.2	1032.8	20080	1035	20082.4	1032.7	20093.4	1024.4
20174.8	1026.6	20183.9	1027.6	20204.6	1029.5	20217.4	1030.4	20229.3	1030.7
20232.4	1030.9	20272.7	1031.9	20335.2	1032.6	20395.1	1032	20413.6	1031.7
20425.2	1031.3	20429.3	1031.7	20447.4	1035.2	20472.4	1032.1	20501.4	1030.2
20521.26	1040.2	16	20521.28	1040.2	26	20524.4	1041.8	20544	1051.9	20563.3	1064.6
20571.8	1065.7	20580.9	1066	20589.3	1061.5	20605.5	1058.5	20622.4	1060.1
20646.3	1062.6	20659.3	1063.4	20674.4	1064.8	20683.8	1065.5	20692.9	1064.2
20760.3	1066	20772	1068	20791.6	1063.6	20814.8	1059	20846.6	1053
20876.7	1045.5	20891.6	1044.9	20916.6	1044.2	20944.9	1044.5	20964.5	1044.9
21002.8	1046.7	21028.1	1048.6	21034.5	1044.8	21035.5	1044	21113.8	1044.6
21130.1	1044.6	21249.3	1044	21250	1044.1	21260.5	1047.3	21288	1046.8
21324.8	1046.7	21359.3	1046.9	21432.1	1048	21449.9	1048.7	21452.1	1049.4
21462.5	1051.8	21469.8	1052.8	21533.8	1052	21595.7	1051.9	21614.5	1051.8
21642.6	1057.9	21645.8	1056.1	21673.8	1046.4	21698	1040.9	21967.4	1041
21972	1044.7	21983.2	1052.6	21984.7	1051.9	21991.1	1050.7	21999	1051.3
22028.7	1051	22088.3	1051.4	22171	1051.7				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
19418.7	.037	19528.74	.032	20521.26	.037

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

19528.74	20521.26	495	493.11	475	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
20571.8	22171	1068	F

CROSS SECTION OUTPUT Profile #PF#1

* E.G. Elev (ft)	* 1041.89	* Element	*	Left OB	*	Channel	*	Right OB	*		
* Vel Head (ft)	* 2.44	* Wt. n-Val.	*		*	0.032	*		*		
* W.S. Elev (ft)	* 1039.45	* Reach Len. (ft)	*	495.00	*	493.11	*	475.00	*		
* Crit W.S. (ft)	* 1035.55	* Flow Area (sq ft)	*		*	13237.48	*		*		
* E.G. Slope (ft/ft)	*0.002343	* Area (sq ft)	*		*	13237.48	*		*		
* Q Total (cfs)	*166000.00	* Flow (cfs)	*		*	166000.00	*		*		
* Top Width (ft)	* 989.51	* Top Width (ft)	*		*	989.51	*		*		

```
                                                                    DuplicateEffective
* Vel Total (ft/s)       *   12.54  * Avg. Vel. (ft/s)       *          *   12.54  *          *
* Max Chl Dpth (ft)      *   18.35  * Hydr. Depth (ft)       *          *   13.38  *          *
* Conv. Total (cfs)      *3429417.0  * Conv. (cfs)           *          *3429417.0  *          *
* Length Wtd. (ft)       *  493.11  * Wetted Per. (ft)       *          * 1004.50  *          *
* Min Ch El (ft)         * 1021.10  * Shear (lb/sq ft)       *          *    1.93  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *   24.17  *          *
* Frctn Loss (ft)        *    0.55  * Cum Volume (acre-ft)   * 7396.70  *30980.83  * 2822.35  *
* C & E Loss (ft)        *    0.41  * Cum SA (acres)         * 2106.96  * 2998.18  * 1025.77  *
*********************************************************************************************

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

CROSS SECTION OUTPUT  Profile #PF#2
*********************************************************************************************
* E.G. Elev (ft)         * 1042.28  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    2.24  * Wt. n-Val.           *          *   0.032  *          *
* W.S. Elev (ft)         * 1040.04  * Reach Len. (ft)      *  495.00  *  493.11  *  475.00  *
* Crit W.S. (ft)         * 1035.55  * Flow Area (sq ft)    *          *13818.43  *          *
* E.G. Slope (ft/ft)     *0.002037  * Area (sq ft)         *          *13818.43  *          *
* Q Total (cfs)          *166000.00  * Flow (cfs)          *          *166000.00  *          *
* Top Width (ft)         *  991.82  * Top Width (ft)       *          *  991.82  *          *
* Vel Total (ft/s)       *   12.01  * Avg. Vel. (ft/s)     *          *   12.01  *          *
* Max Chl Dpth (ft)      *   18.94  * Hydr. Depth (ft)     *          *   13.93  *          *
* Conv. Total (cfs)      *3677597.0  * Conv. (cfs)         *          *3677597.0  *          *
* Length Wtd. (ft)       *  493.11  * Wetted Per. (ft)     *          * 1007.09  *          *
* Min Ch El (ft)         * 1021.10  * Shear (lb/sq ft)     *          *    1.75  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *   20.97  *          *
* Frctn Loss (ft)        *    0.49  * Cum Volume (acre-ft)   * 1422.13  *31947.49  *  355.97  *
* C & E Loss (ft)        *    0.37  * Cum SA (acres)         *  221.84  * 3003.69  *   77.43  *
*********************************************************************************************

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

CROSS SECTION


RIVER: 1
REACH: 1                RS: 211.12

INPUT
Description: 211.12 - FEMA Section Z

Left Channel Bank Station Interpolated
Station Elevation Data    num=      63
    Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
  19314  1050.6 19321.1  1050.6 19403.5  1050.4 19415.2  1050.5 19470.9  1050.5
 19482.5 1051.2 19483.7  1050.519498.46 1040.58 19527.6    1021 19600.2  1021.1
 20090.7    1021 20239.6  1020.4   20259  1020.1   20267  1022.5 20276.5  1019.8
 20287.8    1020 20321.5  1020.6 20364.3  1020.4 20406.5  1019.8 20438.1  1015.7
 20453.3 1015.7 20484.3  1015.7 20510.9  1015.7 20526.1  1023.8 20540.7  1029.4
 20572.2 1046.4 20577.1  1044.9 20591.9  1040.2 21035.6  1040.2 21045.7  1040.3
 21082.9 1041.6   21123  1041.5   21166  1041.6 21189.7  1041.5 21228.3    1041
 21264.3 1041.1 21277.3  1040.7 21299.3  1040.6 21311.7  1043.9 21321.5  1044.1
 21335.9 1046.9 21349.5  1046.7 21377.3  1046.7 21389.3  1045.7 21395.8  1044.6
   21409 1041.7 21414.3  1040.2 21431.9  1040.1 21441.7  1040.6 21511.5  1043.7
 21564.5 1044.7 21580.3  1044.8   21593  1044.6   21597    1042 22094.6    1042
 22111.5 1053.1 22112.9  1051.5 22113.7  1050.9   22123  1051.4 22146.6  1051.4
 22200.7 1051.7 22225.6  1051.6 22293.4  1051.7

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
   19314    .03719498.46    .032 20572.2    .037

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
     19498.46 20572.2             500  505.73     500            .1       .3
Ineffective Flow     num=       1
   Sta L   Sta R    Elev  Permanent
 21335.9 22293.4    1050       F

CROSS SECTION OUTPUT  Profile #PF#1
*********************************************************************************************
* E.G. Elev (ft)         * 1040.93  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    1.07  * Wt. n-Val.           *          *   0.032  *          *
* W.S. Elev (ft)         * 1039.87  * Reach Len. (ft)      *  500.00  *  505.73  *  500.00  *
* Crit W.S. (ft)         * 1029.88  * Flow Area (sq ft)    *          *20026.95  *          *
* E.G. Slope (ft/ft)     *0.000644  * Area (sq ft)         *          *20026.95  *          *
* Q Total (cfs)          *166000.00  * Flow (cfs)          *          *166000.00  *          *
* Top Width (ft)         * 1060.56  * Top Width (ft)       *          * 1060.56  *          *
* Vel Total (ft/s)       *    8.29  * Avg. Vel. (ft/s)     *          *    8.29  *          *
* Max Chl Dpth (ft)      *   24.17  * Hydr. Depth (ft)     *          *   18.88  *          *
* Conv. Total (cfs)      *6543288.0  * Conv. (cfs)         *          *6543288.0  *          *
* Length Wtd. (ft)       *  505.70  * Wetted Per. (ft)     *          * 1073.03  *          *
* Min Ch El (ft)         * 1015.70  * Shear (lb/sq ft)     *          *    0.75  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *    6.22  *          *
* Frctn Loss (ft)        *    0.47  * Cum Volume (acre-ft)   * 7396.70  *30792.55  * 2822.35  *
* C & E Loss (ft)        *    0.09  * Cum SA (acres)         * 2106.96  * 2986.58  * 1025.77  *
*********************************************************************************************

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

```
CROSS SECTION OUTPUT  Profile #PF#2
*********************************************************************************************
* E.G. Elev (ft)         * 1041.42  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    1.01  * Wt. n-Val.            *          *    0.032 *    0.037 *
* W.S. Elev (ft)         * 1040.41  * Reach Len. (ft)       *  500.00  *  505.73  *  500.00  *
* Crit W.S. (ft)         * 1029.88  * Flow Area (sq ft)     *          *20604.46  *    3.86  *
* E.G. Slope (ft/ft)     *0.000587  * Area (sq ft)          *          *20604.46  *    3.86  *
* Q Total (cfs)          *166000.00  * Flow (cfs)           *          *165998.70  *    1.30  *
* Top Width (ft)         * 1081.14  * Top Width (ft)        *          * 1062.38  *   18.76  *
* Vel Total (ft/s)       *    8.05  * Avg. Vel. (ft/s)      *          *    8.06  *    0.34  *
* Max Chl Dpth (ft)      *   24.71  * Hydr. Depth (ft)      *          *   19.39  *    0.21  *
* Conv. Total (cfs)      *6851806.0  * Conv. (cfs)          *          *6851753.0  *    53.5  *
* Length Wtd. (ft)       *  505.73  * Wetted Per. (ft)      *          * 1075.15  *   19.00  *
* Min Ch El (ft)         * 1015.70  * Shear (lb/sq ft)      *          *    0.70  *    0.01  *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *    5.66  *    0.00  *
* Frctn Loss (ft)        *    0.42  * Cum Volume (acre-ft)  * 1422.13  *31752.65  *  355.94  *
* C & E Loss (ft)        *    0.08  * Cum SA (acres)        *  221.84  * 2992.07  *   77.33  *
*********************************************************************************************

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

CROSS SECTION


RIVER: 1
REACH: 1                RS: 211.02

INPUT
Description: 211.02

Left Channel Bank Station Interpolated
Station Elevation Data    num=      58
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
   19239  1049.4 19253.3  1049.2 19318.8  1049.3   19330  1049.2 19381.9  1049.5
 19409.6  1049.3 19472.3    1049 19487.12 1039.375 19515.1  1021.2 19977.7  1020.4
 20111.7  1020.1 20119.2  1025.6 20133.2  1024.1 20136.2  1022.2   20140  1019.4
 20202.9  1020.4 20228.3  1020.7 20238.9  1022.4 20243.6  1025.6 20270.1  1025.5
 20279.9  1025.7 20343.8  1026.1 20394.3  1041.3 20424.2    1040   20434  1040.5
 20448.3  1038.4 20459.5  1037.9 20468.8  1038.2 20484.1    1038 20494.6  1038.7
 20501.7  1038.2 21087.6  1039.1 21102.9  1037.2 21124.7  1036.8 21132.2    1033
 21144.9  1032.5 21184.2  1034.3 21243.7  1036.3 21300.5  1038.4 21315.9  1038.7
 21353.2    1040 21399.5  1041.4   21439  1042.3   21480  1043.6 21514.7  1043.6
 21524.4  1043.8 21535.1  1043.6 21559.7  1042.3 21570.6  1042.2 22151.3    1042
 22163.4  1052.1 22174.7  1052.9 22226.3  1051.5 22239.2  1051.3   22318  1051.9
 22324.3    1052 22393.8  1052.8 22399.8  1052.7

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*************************************************
   19239    .03719487.12    .032 20394.3    .037

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
     19487.12 20394.3               485  493.19     495            .1       .3
Ineffective Flow     num=       1
   Sta L   Sta R    Elev  Permanent
   21500 22399.8    1050        F

CROSS SECTION OUTPUT  Profile #PF#1
*********************************************************************************************
* E.G. Elev (ft)         * 1040.38  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    1.94  * Wt. n-Val.            *          *    0.032 *    0.037 *
* W.S. Elev (ft)         * 1038.44  * Reach Len. (ft)       *  485.00  *  493.19  *  495.00  *
* Crit W.S. (ft)         * 1032.11  * Flow Area (sq ft)     *          *14638.78  *  617.33  *
* E.G. Slope (ft/ft)     *0.001433  * Area (sq ft)          *          *14638.78  *  617.33  *
* Q Total (cfs)          *166000.00  * Flow (cfs)           *          *164233.00  * 1767.03  *
* Top Width (ft)         * 1310.75  * Top Width (ft)        *          *  896.26  *  414.49  *
* Vel Total (ft/s)       *   10.88  * Avg. Vel. (ft/s)      *          *   11.22  *    2.86  *
* Max Chl Dpth (ft)      *   19.04  * Hydr. Depth (ft)      *          *   16.33  *    1.49  *
* Conv. Total (cfs)      *4385797.0  * Conv. (cfs)          *          *4339111.0  * 46685.8  *
* Length Wtd. (ft)       *  493.33  * Wetted Per. (ft)      *          *  907.67  *  415.65  *
* Min Ch El (ft)         * 1019.40  * Shear (lb/sq ft)      *          *    1.44  *    0.13  *
* Alpha                  *    1.05  * Stream Power (lb/ft s) *          *   16.18  *    0.38  *
* Frctn Loss (ft)        *    0.69  * Cum Volume (acre-ft)  * 7396.70  *30591.31  * 2818.80  *
* C & E Loss (ft)        *    0.15  * Cum SA (acres)        * 2106.96  * 2975.22  * 1023.39  *
*********************************************************************************************

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

CROSS SECTION OUTPUT  Profile #PF#2
*********************************************************************************************
* E.G. Elev (ft)         * 1040.91  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    1.85  * Wt. n-Val.            *          *    0.032 *    0.037 *
* W.S. Elev (ft)         * 1039.06  * Reach Len. (ft)       *  485.00  *  493.19  *  495.00  *
* Crit W.S. (ft)         * 1032.12  * Flow Area (sq ft)     *          *15190.01  *   87.01  *
* E.G. Slope (ft/ft)     *0.001298  * Area (sq ft)          *          *15190.01  *   87.01  *
* Q Total (cfs)          *166000.00  * Flow (cfs)           *          *165890.30  *  109.65  *
* Top Width (ft)         * 1005.42  * Top Width (ft)        *          *  899.24  *  106.18  *
* Vel Total (ft/s)       *   10.87  * Avg. Vel. (ft/s)      *          *   10.92  *    1.26  *
* Max Chl Dpth (ft)      *   19.66  * Hydr. Depth (ft)      *          *   16.89  *    0.82  *
* Conv. Total (cfs)      *4606872.0  * Conv. (cfs)          *          *4603829.0  *  3043.1  *
* Length Wtd. (ft)       *  493.22  * Wetted Per. (ft)      *          *  910.93  *  107.07  *
* Min Ch El (ft)         * 1019.40  * Shear (lb/sq ft)      *          *    1.35  *    0.07  *
* Alpha                  *    1.01  * Stream Power (lb/ft s) *          *   14.76  *    0.08  *
* Frctn Loss (ft)        *    0.73  * Cum Volume (acre-ft)  * 1422.13  *31544.86  *  355.42  *
```

DuplicateEffective

* C & E Loss (ft)	* 0.02	* Cum SA (acres)	* 221.84	* 2980.68	* 76.62	*

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.

CROSS SECTION

RIVER: 1
REACH: 1 RS: 210.93

INPUT
Description: 210.93

Left Channel Bank Station Interpolated
Station Elevation Data num= 50

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
19200.1	1048.6	19256.6	1048.1	19323.4	1048.3	19376.7	1048.6	19414.5	1048
19464.2	1048.3	19479.12	1039.255	19508.9	1021.2	19821.8	1022.3	20131.9	1023.4
20138.8	1028	20162.4	1029.4	20166.3	1026.3	20172.8	1019.1	20212	1018.7
20278.3	1019.9	20290	1025.6	20331.4	1025	20349.2	1032.1	20351.6	1031.2
20355.1	1030.5	20397.8	1031.3	20406.9	1035.2	20414.8	1039.6	20431.2	1039.4
20455.9	1039.7	20458.7	1037.8	20465.5	1037.9	20470.4	1034.9	20474.7	1032.7
21343.1	1032.7	21350.5	1032.5	21376.3	1035.6	21390.1	1033.4	21395.9	1033.7
21424.3	1033.9	21484.4	1034.5	21494.9	1034.3	21537	1034.4	22171.3	1034.4
22195.5	1049.6	22217.9	1047.5	22260.9	1035	22263.6	1034.9	22291.1	1051
22312.1	1051.8	22326.6	1051.4	22375.7	1051.7	22388.8	1051.5	22397.4	1050.6

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
19200.1	.037	19479.12	.032	20414.8	.037

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
19479.12 20414.8 505 505.14 505 .1 .3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
21576	22397.4	1048	F

CROSS SECTION OUTPUT Profile #PF#1

* E.G. Elev (ft)	* 1039.54	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 1.43	* Wt. n-Val.	*	* 0.032	* 0.037 *
* W.S. Elev (ft)	* 1038.11	* Reach Len. (ft)	* 505.00	* 505.14	* 505.00 *
* Crit W.S. (ft)	* 1034.18	* Flow Area (sq ft)	*	*13814.35	* 5646.17 *
* E.G. Slope (ft/ft)	*0.001361	* Area (sq ft)	*	*13814.35	* 7898.65 *
* Q Total (cfs)	*166000.00	* Flow (cfs)	*	*141396.70	*24603.29 *
* Top Width (ft)	* 2668.95	* Top Width (ft)	*	* 931.11	* 1737.83 *
* Vel Total (ft/s)	* 8.53	* Avg. Vel. (ft/s)	*	* 10.24	* 4.36 *
* Max Chl Dpth (ft)	* 19.41	* Hydr. Depth (ft)	*	* 14.84	* 5.05 *
* Conv. Total (cfs)	*4499064.0	* Conv. (cfs)	*	*3832246.0	*666817.9 *
* Length Wtd. (ft)	* 505.12	* Wetted Per. (ft)	*	* 946.05	* 1119.60 *
* Min Ch El (ft)	* 1018.70	* Shear (lb/sq ft)	*	* 1.24	* 0.43 *
* Alpha	* 1.27	* Stream Power (lb/ft s)	*	* 12.70	* 1.87 *
* Frctn Loss (ft)	* 0.68	* Cum Volume (acre-ft)	* 7396.70	*30430.24	* 2770.42 *
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	* 2106.96	* 2964.87	* 1011.16 *

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.

CROSS SECTION OUTPUT Profile #PF#2

* E.G. Elev (ft)	* 1040.16	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 2.00	* Wt. n-Val.	*	* 0.032	* 0.037 *
* W.S. Elev (ft)	* 1038.16	* Reach Len. (ft)	* 505.00	* 505.14	* 505.00 *
* Crit W.S. (ft)	* 1033.38	* Flow Area (sq ft)	*	*13860.73	* 1259.29 *
* E.G. Slope (ft/ft)	*0.001720	* Area (sq ft)	*	*13860.73	* 1259.29 *
* Q Total (cfs)	*166000.00	* Flow (cfs)	*	*159816.00	* 6184.00 *
* Top Width (ft)	* 1173.11	* Top Width (ft)	*	* 931.29	* 241.83 *
* Vel Total (ft/s)	* 10.98	* Avg. Vel. (ft/s)	*	* 11.53	* 4.91 *
* Max Chl Dpth (ft)	* 19.46	* Hydr. Depth (ft)	*	* 14.88	* 5.21 *
* Conv. Total (cfs)	*4002269.0	* Conv. (cfs)	*	*3853173.0	*149096.5 *
* Length Wtd. (ft)	* 505.14	* Wetted Per. (ft)	*	* 946.25	* 248.77 *
* Min Ch El (ft)	* 1018.70	* Shear (lb/sq ft)	*	* 1.57	* 0.54 *
* Alpha	* 1.07	* Stream Power (lb/ft s)	*	* 18.14	* 2.67 *
* Frctn Loss (ft)	* 0.84	* Cum Volume (acre-ft)	* 1422.13	*31380.41	* 347.77 *
* C & E Loss (ft)	* 0.02	* Cum SA (acres)	* 221.84	* 2970.32	* 74.64 *

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.

CROSS SECTION

RIVER: 1
REACH: 1 RS: 210.83

INPUT
Description: 210.83

Left Channel Bank Station Interpolated
Station Elevation Data num= 61

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
19202.3	1047.9	19230.6	1048.2	19316.1	1047.1	19412.4	1046.5	19438.4	1046.4
19450.41	1038.813	19469.9	1026.5	19479.2	1021.2	19797.6	1021	19923.9	1020.9
19961.4	1020.6	19972.9	1027.1	19981.7	1030.2	20023.7	1029.7	20030.1	1028.5
20042.7	1023.3	20047.1	1022.6	20060.1	1021.5	20068	1019.1	20084.8	1019.4
20164.7	1020.3	20209.2	1020.4	20210.1	1020.8	20276.6	1019.8	20285.1	1022.2

```
                                                                    DuplicateEffective
 20306.6  1025.2   20309  1026.8 20312.4  1026.3 20316.8  1024.7 20372.8  1023.5
 20408.7  1043.6 20410.4  1042.5   20412    1040 20434.3  1040.8 20448.6    1034
 21423.7  1034.1 21433.7    1033 21527.5  1031.1 21554.4  1029.7 21577.9  1029.4
 21646.5  1030.2 21704.4  1029.9 21742.9  1046.2 21761.3    1040 21807.2  1041.3
   21814  1044.7 21818.3  1046.4 21862.5  1045.9 21879.4  1037.5 21883.7    1035
 21887.9  1033.8 21911.6  1035.9 21937.9  1050.1 21957.5  1042.6 22341.8  1042.6
 22364.7  1049.8 22372.9  1048.2   22423  1049.3 22443.3  1049.3 22494.1  1045.8
 22499.7  1044.9

Manning's n Values         num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
*********************************************
 19202.3    .03719450.41    .032 20410.4    .037

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
     19450.41 20410.4                505  505.61     500             .1      .3
Ineffective Flow      num=        1
   Sta L   Sta R    Elev  Permanent
 21742.9 22499.7    1048       F

CROSS SECTION OUTPUT  Profile #PF#1
*****************************************************************************************************
* E.G. Elev (ft)         * 1038.86  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    1.46  * Wt. n-Val.             *          *    0.032  *    0.037  *
* W.S. Elev (ft)         * 1037.40  * Reach Len. (ft)        *  505.00  *  505.61  *  500.00  *
* Crit W.S. (ft)         * 1032.21  * Flow Area (sq ft)      *          * 14336.46  * 5200.41  *
* E.G. Slope (ft/ft)     *0.001318  * Area (sq ft)           *          * 14336.46  * 5280.35  *
* Q Total (cfs)          *166000.00  * Flow (cfs)            *          *146725.00  *19274.99  *
* Top Width (ft)         * 2260.41  * Top Width (ft)        *          *  944.97  * 1315.44  *
* Vel Total (ft/s)       *    8.50  * Avg. Vel. (ft/s)      *          *   10.23  *    3.71  *
* Max Chl Dpth (ft)      *   18.30  * Hydr. Depth (ft)      *          *   15.17  *    4.06  *
* Conv. Total (cfs)      *4572343.0  * Conv. (cfs)          *          *4041428.0  *530914.8  *
* Length Wtd. (ft)       *  505.17  * Wetted Per. (ft)      *          *  958.45  * 1283.06  *
* Min Ch El (ft)         * 1019.10  * Shear (lb/sq ft)      *          *    1.23  *    0.33  *
* Alpha                  *    1.30  * Stream Power (lb/ft s) *          *   12.60  *    1.24  *
* Frctn Loss (ft)        *    0.58  * Cum Volume (acre-ft)  * 7396.70  *30267.01  * 2694.02  *
* C & E Loss (ft)        *    0.03  * Cum SA (acres)        * 2106.96  * 2954.00  *  993.46  *
*****************************************************************************************************

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.

CROSS SECTION OUTPUT  Profile #PF#2
*****************************************************************************************************
* E.G. Elev (ft)         * 1039.30  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    1.94  * Wt. n-Val.             *          *    0.032  *    0.037  *
* W.S. Elev (ft)         * 1037.36  * Reach Len. (ft)        *  505.00  *  505.61  *  500.00  *
* Crit W.S. (ft)         * 1031.99  * Flow Area (sq ft)      *          * 14300.13  * 1185.46  *
* E.G. Slope (ft/ft)     *0.001616  * Area (sq ft)           *          * 14300.13  * 1185.46  *
* Q Total (cfs)          *166000.00  * Flow (cfs)            *          *161784.10  * 4215.89  *
* Top Width (ft)         * 1303.30  * Top Width (ft)        *          *  944.84  *  358.46  *
* Vel Total (ft/s)       *   10.72  * Avg. Vel. (ft/s)      *          *   11.31  *    3.56  *
* Max Chl Dpth (ft)      *   18.26  * Hydr. Depth (ft)      *          *   15.14  *    3.31  *
* Conv. Total (cfs)      *4129675.0  * Conv. (cfs)          *          *4024794.0  *104881.1  *
* Length Wtd. (ft)       *  505.54  * Wetted Per. (ft)      *          *  958.30  *  362.54  *
* Min Ch El (ft)         * 1019.10  * Shear (lb/sq ft)      *          *    1.51  *    0.33  *
* Alpha                  *    1.09  * Stream Power (lb/ft s) *          *   17.03  *    1.17  *
* Frctn Loss (ft)        *    0.66  * Cum Volume (acre-ft)  * 1422.13  *31217.12  *  333.60  *
* C & E Loss (ft)        *    0.13  * Cum SA (acres)        *  221.84  * 2959.44  *   71.16  *
*****************************************************************************************************

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.

CROSS SECTION


RIVER: 1
REACH: 1                 RS: 210.74

INPUT
Description: 210.74

Left Channel Bank Station Interpolated
Station Elevation Data    num=      63
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*************************************************************************************
 19243.9  1048.6 19252.9  1048.6 19306.8  1048.4 19320.5  1047.9 19400.4  1046.9
 19417.4  1044.519426.121038.473 19455.3  1018.3 19887.7  1018.2 19910.2  1018.2
 19912.1  1019.4 19926.7  1020.6 19947.1  1020.5 19971.2  1029.9 19999.5  1024.8
 20005.9  1025.6 20026.7  1018.2 20095.6  1018.8   20149  1019.3 20154.3  1019.5
 20159.1  1018.6 20206.5  1019.2 20250.3  1018.3 20256.9  1020.6 20263.3  1021.3
 20281.7  1020.8 20318.1    1022 20333.5  1021.2 20349.8  1021.8 20361.7  1025.8
 20373.2  1024.1 20404.6  1025.2 20432.5  1037.6 20433.7  1039.4 20462.4  1039.5
 20468.2  1036.5 21389.5  1036.5 21394.6  1032.8   21404  1032.7 21513.7    1032
 21520.3  1033.6 21537.2  1027.8 21587.9  1027.7 21638.9  1028.2 21695.6    1029
 21747.1  1028.9   21771  1029.8 21801.8    1041 21813.2  1040.9 22057.2  1040.9
 22066.5  1043.5 22085.1  1044.1 22096.2  1047.4 22123.7  1048.7 22156.7  1040.5
 22272.5  1040.5 22293.7  1049.5 22308.5  1048.9 22356.6  1048.4 22365.3  1048.1
   22369  1048.8 22377.5  1053.2 22399.8  1048.3

Manning's n Values         num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
*********************************************
 19243.9    .03719426.12    .032 20433.7    .037

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
     19426.12 20433.7                495  503.39     500             .1      .3
Ineffective Flow      num=        1
   Sta L   Sta R    Elev  Permanent
 21801.8 22399.8    1048       F

CROSS SECTION OUTPUT  Profile #PF#1
*****************************************************************************************************
```

DuplicateEffective

* E.G. Elev (ft)	* 1038.25	* Element	* Left OB	* Channel	* Right OB	*
* Vel Head (ft)	* 1.35	* Wt. n-Val.	*	* 0.032	* 0.037	*
* W.S. Elev (ft)	* 1036.90	* Reach Len. (ft)	* 495.00	* 503.39	* 500.00	*
* Crit W.S. (ft)	* 1029.79	* Flow Area (sq ft)	*	*16726.33	* 3097.74	*
* E.G. Slope (ft/ft)	*0.001002	* Area (sq ft)	*	*16726.33	* 3097.74	*
* Q Total (cfs)	*166000.00	* Flow (cfs)	*	*159070.40	* 6929.57	*
* Top Width (ft)	* 2325.61	* Top Width (ft)	*	* 1002.52	* 1323.09	*
* Vel Total (ft/s)	* 8.37	* Avg. Vel. (ft/s)	*	* 9.51	* 2.24	*
* Max Chl Dpth (ft)	* 18.70	* Hydr. Depth (ft)	*	* 16.68	* 2.34	*
* Conv. Total (cfs)	*5244781.0	* Conv. (cfs)	*	*5025840.0	*218940.3	*
* Length Wtd. (ft)	* 503.17	* Wetted Per. (ft)	*	* 1016.15	* 1326.83	*
* Min Ch El (ft)	* 1018.20	* Shear (lb/sq ft)	*	* 1.03	* 0.15	*
* Alpha	* 1.24	* Stream Power (lb/ft s)	*	* 9.79	* 0.33	*
* Frctn Loss (ft)	* 0.46	* Cum Volume (acre-ft)	* 7396.70	*30086.74	* 2645.94	*
* C & E Loss (ft)	* 0.09	* Cum SA (acres)	* 2106.96	* 2942.69	* 978.32	*

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.

CROSS SECTION OUTPUT Profile #PF#2

* E.G. Elev (ft)	* 1038.51	* Element	* Left OB	* Channel	* Right OB	*
* Vel Head (ft)	* 1.51	* Wt. n-Val.	*	* 0.032	* 0.037	*
* W.S. Elev (ft)	* 1037.01	* Reach Len. (ft)	* 495.00	* 503.39	* 500.00	*
* Crit W.S. (ft)	* 1029.51	* Flow Area (sq ft)	*	*16835.02	* 183.49	*
* E.G. Slope (ft/ft)	*0.001066	* Area (sq ft)	*	*16835.02	* 183.49	*
* Q Total (cfs)	*166000.00	* Flow (cfs)	*	*165847.40	* 152.58	*
* Top Width (ft)	* 1365.70	* Top Width (ft)	*	* 1002.92	* 362.78	*
* Vel Total (ft/s)	* 9.75	* Avg. Vel. (ft/s)	*	* 9.85	* 0.83	*
* Max Chl Dpth (ft)	* 18.81	* Hydr. Depth (ft)	*	* 16.79	* 0.51	*
* Conv. Total (cfs)	*5083538.0	* Conv. (cfs)	*	*5078865.0	* 4672.5	*
* Length Wtd. (ft)	* 503.35	* Wetted Per. (ft)	*	* 1016.60	* 363.41	*
* Min Ch El (ft)	* 1018.20	* Shear (lb/sq ft)	*	* 1.10	* 0.03	*
* Alpha	* 1.02	* Stream Power (lb/ft s)	*	* 10.86	* 0.03	*
* Frctn Loss (ft)	* 0.51	* Cum Volume (acre-ft)	* 1422.13	*31036.43	* 325.75	*
* C & E Loss (ft)	* 0.07	* Cum SA (acres)	* 221.84	* 2948.14	* 67.02	*

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.

CROSS SECTION

RIVER: 1
REACH: 1 RS: 210.64

INPUT
Description: 210.64 - FEMA Section Y
Station Elevation Data num= 56

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
19062.1	1046.2	19142.3	1046.5	19216.9	1046.5	19239.3	1046.6	19313.3	1046.3
19339.3	1045.9	19359.9	1044.7	19388.6	1036.7	19405.4	1034.5	19435.6	1017.8
19522.4	1017.9	19688	1018.2	19812.5	1018.5	19845.7	1021.7	19854.2	1021.6
19868.7	1023.2	19885.6	1022.9	19894.1	1026.4	19926.9	1018.1	19954	1018.1
20029.3	1018.2	20100.6	1018.3	20159.1	1018.4	20163.7	1019.2	20174.9	1019.6
20183.1	1020.8	20192.3	1019.6	20214.4	1021.7	20234.8	1024.3	20242.8	1022.1
20298.5	1024	20323.5	1025.5	20335	1029.1	20359.6	1019.1	20427.6	1017.8
20430.1	1017.7	20460.6	1039.9	20483.4	1039.5	20493.5	1033.2	21394.6	1033.2
21442.1	1031.4	21449.1	1028.1	21453.5	1025.3	21460.9	1025.2	21472.1	1026
21483.6	1028.3	21519.7	1032.5	22411.4	1032.5	22434.2	1045.9	22446.8	1049.8
22496.5	1049.4	22507.7	1051.3	22521	1044.2	22524.9	1044.1	22586.3	1043
22591.1	1043.3								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
19062.1	.037	19388.6	.032	20460.6	.037

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
19388.6 20460.6 520 515.29 495 .1 .3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
21800	22591.1	1048	F

CROSS SECTION OUTPUT Profile #PF#1

* E.G. Elev (ft)	* 1037.70	* Element	* Left OB	* Channel	* Right OB	*
* Vel Head (ft)	* 1.06	* Wt. n-Val.	*	* 0.032	* 0.037	*
* W.S. Elev (ft)	* 1036.64	* Reach Len. (ft)	* 520.00	* 515.29	* 495.00	*
* Crit W.S. (ft)	* 1029.00	* Flow Area (sq ft)	*	*17585.84	* 5111.99	*
* E.G. Slope (ft/ft)	*0.000835	* Area (sq ft)	*	*17585.84	* 7658.60	*
* Q Total (cfs)	*166000.00	* Flow (cfs)	*	*151331.50	*14668.52	*
* Top Width (ft)	* 2997.54	* Top Width (ft)	*	* 1067.08	* 1930.47	*
* Vel Total (ft/s)	* 7.31	* Avg. Vel. (ft/s)	*	* 8.61	* 2.87	*
* Max Chl Dpth (ft)	* 18.94	* Hydr. Depth (ft)	*	* 16.48	* 3.90	*
* Conv. Total (cfs)	*5743728.0	* Conv. (cfs)	*	*5236186.0	*507542.1	*
* Length Wtd. (ft)	* 514.20	* Wetted Per. (ft)	*	* 1083.06	* 1315.09	*
* Min Ch El (ft)	* 1017.70	* Shear (lb/sq ft)	*	* 0.85	* 0.20	*
* Alpha	* 1.28	* Stream Power (lb/ft s)	*	* 7.29	* 0.58	*
* Frctn Loss (ft)	* 0.47	* Cum Volume (acre-ft)	* 7396.70	*29888.48	* 2584.21	*
* C & E Loss (ft)	* 0.02	* Cum SA (acres)	* 2106.96	* 2930.73	* 959.65	*

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.

CROSS SECTION OUTPUT Profile #PF#2

* E.G. Elev (ft)	* 1037.94	* Element	* Left OB	* Channel	* Right OB	*
* Vel Head (ft)	* 1.29	* Wt. n-Val.	*	* 0.032	* 0.037	*

```
                                                                    DuplicateEffective
* W.S. Elev (ft)          * 1036.65  * Reach Len. (ft)          *  520.00  *  515.29  *  495.00  *
* Crit W.S. (ft)          * 1029.00  * Flow Area (sq ft)        *          *17595.74  * 1412.25  *
* E.G. Slope (ft/ft)      *0.000956  * Area (sq ft)             *          *17595.74  * 1412.25  *
* Q Total (cfs)           *166000.00  * Flow (cfs)              *           *162041.90  * 3958.07  *
* Top Width (ft)          * 1479.19  * Top Width (ft)          *          * 1067.16  *  412.03  *
* Vel Total (ft/s)        *    8.73  * Avg. Vel. (ft/s)        *          *    9.21  *    2.80  *
* Max Chl Dpth (ft)       *   18.95  * Hydr. Depth (ft)        *          *   16.49  *    3.43  *
* Conv. Total (cfs)       *5368837.0  * Conv. (cfs)            *           *5240824.0  *128013.4  *
* Length Wtd. (ft)        *  514.88  * Wetted Per. (ft)        *          * 1083.15  *  416.47  *
* Min Ch El (ft)          * 1017.70  * Shear (lb/sq ft)        *          *    0.97  *    0.20  *
* Alpha                   *    1.09  * Stream Power (lb/ft s) *          *    8.93  *    0.57  *
* Frctn Loss (ft)         *    0.50  * Cum Volume (acre-ft)    * 1422.13  *30837.48  *  316.59  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)          *  221.84  * 2936.17  *   62.57  *
*****************************************************************************************

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.

CROSS SECTION


RIVER: 1
REACH: 1                 RS: 210.55

INPUT
Description: 210.55

Left Channel Bank Station Interpolated
Station Elevation Data    num=      55
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*****************************************************************************
   19008  1045.1 19023.1  1045.1 19106.6  1045.2 19117.1  1045.2 19188.7  1045.4
 19198.2  1045.3 19263.2    1046 19303.5  1044.219322.161037.828   19365  1023.2
 19375.9  1018.6 19396.7  1018.7 19519.3  1018.6   19791  1018.3 19813.4  1028.8
 19857.3  1026.7 19886.1  1038.1 19909.3  1027.2 19915.5  1030.7 19959.6    1020
 20002.1    1018 20058.3  1018.1 20175.7  1018.1 20440.7  1018.3 20476.7  1037.4
 20483.2  1040.3 20500.3  1039.7 20507.6  1034.3 21313.5  1033.6 21372.5  1032.4
 21406.9    1033 21409.3  1032.1 21417.2  1027.2   21429  1026.3 21456.2  1025.4
 21459.3  1026.4 21468.1  1028.2 21496.9  1030.2 21548.3  1034.3 21557.5  1034.9
 21626.2  1036.3 21634.2  1035.7 21643.8  1035.7   21713  1035.7 21771.2    1036
 22449.6    1036 22451.9  1037.8 22455.6    1040 22484.4  1044.7 22494.2  1046.8
 22499.9    1046 22506.9  1046.2 22537.1  1043.6 22580.7  1043.5   22585    1043

Manning's n Values        num=       3
     Sta    n Val      Sta    n Val      Sta    n Val
*************************************************
   19008     .03719322.16     .032 20483.2     .037

Bank Sta: Left    Right     Lengths: Left Channel    Right      Coeff Contr.    Expan.
      19322.16 20483.2                  475  473.19     495             .1       .3
Ineffective Flow      num=       1
   Sta L    Sta R     Elev  Permanent
   21300    22585  1046.8        F

CROSS SECTION OUTPUT  Profile #PF#1
*****************************************************************************************
* E.G. Elev (ft)          * 1037.21  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    1.28  * Wt. n-Val.             *          *    0.032  *    0.037  *
* W.S. Elev (ft)          * 1035.92  * Reach Len. (ft)        *  475.00  *  473.19  *  495.00  *
* Crit W.S. (ft)          * 1028.55  * Flow Area (sq ft)      *          *17766.06  * 1561.68  *
* E.G. Slope (ft/ft)      *0.001015  * Area (sq ft)           *          *17766.06  * 2866.74  *
* Q Total (cfs)           *166000.00  * Flow (cfs)            *           *162866.20  * 3133.85  *
* Top Width (ft)          * 2363.76  * Top Width (ft)        *          * 1136.06  * 1227.70  *
* Vel Total (ft/s)        *    8.59  * Avg. Vel. (ft/s)      *          *    9.17  *    2.01  *
* Max Chl Dpth (ft)       *   17.92  * Hydr. Depth (ft)      *          *   15.64  *    1.97  *
* Conv. Total (cfs)       *5210137.0  * Conv. (cfs)          *           *5111777.0  * 98360.2  *
* Length Wtd. (ft)        *  473.40  * Wetted Per. (ft)      *          * 1151.83  *  795.13  *
* Min Ch El (ft)          * 1018.00  * Shear (lb/sq ft)      *          *    0.98  *    0.12  *
* Alpha                   *    1.12  * Stream Power (lb/ft s) *          *    8.96  *    0.25  *
* Frctn Loss (ft)         *    0.25  * Cum Volume (acre-ft)  * 7396.70  *29679.38  * 2524.40  *
* C & E Loss (ft)         *    0.27  * Cum SA (acres)        * 2106.96  * 2917.70  *  941.70  *
*****************************************************************************************

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

CROSS SECTION OUTPUT  Profile #PF#2
*****************************************************************************************
* E.G. Elev (ft)          * 1037.43  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    1.25  * Wt. n-Val.             *          *    0.032  *    0.037  *
* W.S. Elev (ft)          * 1036.18  * Reach Len. (ft)        *  475.00  *  473.19  *  495.00  *
* Crit W.S. (ft)          * 1028.55  * Flow Area (sq ft)      *          *18058.02  * 1293.19  *
* E.G. Slope (ft/ft)      *0.000970  * Area (sq ft)           *          *18058.02  * 1293.19  *
* Q Total (cfs)           *166000.00  * Flow (cfs)            *           *163325.00  * 2675.01  *
* Top Width (ft)          * 1743.43  * Top Width (ft)        *          * 1138.49  *  604.94  *
* Vel Total (ft/s)        *    8.58  * Avg. Vel. (ft/s)      *          *    9.04  *    2.07  *
* Max Chl Dpth (ft)       *   18.18  * Hydr. Depth (ft)      *          *   15.86  *    2.14  *
* Conv. Total (cfs)       *5330421.0  * Conv. (cfs)          *           *5244524.0  * 85897.0  *
* Length Wtd. (ft)        *  473.37  * Wetted Per. (ft)      *          * 1154.47  *  607.97  *
* Min Ch El (ft)          * 1018.00  * Shear (lb/sq ft)      *          *    0.95  *    0.13  *
* Alpha                   *    1.09  * Stream Power (lb/ft s) *          *    8.57  *    0.27  *
* Frctn Loss (ft)         *    0.24  * Cum Volume (acre-ft)  * 1422.13  *30626.60  *  301.22  *
* C & E Loss (ft)         *    0.26  * Cum SA (acres)        *  221.84  * 2923.13  *   56.79  *
*****************************************************************************************

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.
```

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

CROSS SECTION

RIVER: 1
REACH: 1 RS: 210.46

INPUT
Description: 210.46

Left and Right Channel Bank Stations Interpolated
Station Elevation Data num= 74

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
18491.3	1044.8	18509.6	1044.4	18559.8	1045.8	18571.1	1045.5	18584.8	1043.3
18607.7	1045	18678	1044.8	18723.7	1044.2	18801	1044.1	18803.4	1044.1
18891.1	1043.9	18897.1	1043.9	18962.7	1043.6	19022.5	1043.3	19024.4	1043.3
19078.3	1042.4	19136.1	1042.2	19176.5	1042.5	19201.9	1040.9	19233.8	1028.3
19266.3	1021.8	19276.2	1021.1	19328.5	1018.7	19351.6	1018.1	19377	1018.33
19395.8	1018.5	19810.2	1018.3	19863.8	1018.1	19922	1018.2	20015.9	1018.2
20094.1	1018.1	20114.1	1018.1	20127.6	1022.4	20129.6	1023.9	20150.4	1023.9
20174.1	1021.6	20197.2	1018.1	20239.9	1018.1	20295.4	1018.2	20303	1018.6
20351.5	1018	20390.4	1018.4	20443.9	1018.4	20502.8	1018.5	20565.4	1018.8
20656.3	1018.8	20722.5	1019	20743	1019.6	20798.1	1019.8	20867.2	1019.1
20920.3	1019.3	20973.2	1019.2	21047.3	1019.3	21120.7	1021.1	21123	1021.2
21136.1	1016.3	21211.7	1018.4	21228.5	1018.3	21261.8	1036.3	21280.4	1034.9
21284	1038.08	21290.7	1044	21292.3	1046	21334.2	1043	21405.2	1043.3
21443.5	1044.5	21454	1047.4	21465.5	1044.1	22456.6	1042.9	22498.8	1045.3
22515	1046.9	22564.7	1048.3	22637.2	1048.5	22652	1048.3		

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
18491.3	.037	19176.5	.032	20150.4	.037	21292.3	.037	21454	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19377	21284	520	522.28	505	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
18491.3	19377	1048	F
21292.3	22652	1048	F

CROSS SECTION OUTPUT Profile #PF#1

E.G. Elev (ft)	1036.70	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.40	Wt. n-Val.		0.035	
W.S. Elev (ft)	1036.30	Reach Len. (ft)	520.00	522.28	505.00
Crit W.S. (ft)	1025.05	Flow Area (sq ft)	2323.77	32809.68	
E.G. Slope (ft/ft)	0.000315	Area (sq ft)		32809.68	
Q Total (cfs)	166000.00	Flow (cfs)		166000.00	
Top Width (ft)	2068.39	Top Width (ft)	163.45	1904.94	
Vel Total (ft/s)	5.06	Avg. Vel. (ft/s)		5.06	
Max Chl Dpth (ft)	20.00	Hydr. Depth (ft)		17.22	
Conv. Total (cfs)	9356502.0	Conv. (cfs)		9356502.0	
Length Wtd. (ft)	522.28	Wetted Per. (ft)		1912.59	
Min Ch El (ft)	1016.30	Shear (lb/sq ft)		0.34	
Alpha	1.00	Stream Power (lb/ft s)		1.71	
Frctn Loss (ft)	0.21	Cum Volume (acre-ft)	7384.03	29404.68	2508.12
C & E Loss (ft)	0.02	Cum SA (acres)	2106.06	2901.19	934.73

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.

CROSS SECTION OUTPUT Profile #PF#2

E.G. Elev (ft)	1036.94	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.39	Wt. n-Val.		0.035	
W.S. Elev (ft)	1036.55	Reach Len. (ft)	520.00	522.28	505.00
Crit W.S. (ft)	1025.05	Flow Area (sq ft)		33290.61	
E.G. Slope (ft/ft)	0.000304	Area (sq ft)		33290.61	
Q Total (cfs)	166000.00	Flow (cfs)		166000.00	
Top Width (ft)	1905.27	Top Width (ft)		1905.27	
Vel Total (ft/s)	4.99	Avg. Vel. (ft/s)		4.99	
Max Chl Dpth (ft)	20.25	Hydr. Depth (ft)		17.47	
Conv. Total (cfs)	9515830.0	Conv. (cfs)		9515830.0	
Length Wtd. (ft)	522.28	Wetted Per. (ft)		1931.23	
Min Ch El (ft)	1016.30	Shear (lb/sq ft)		0.33	
Alpha	1.00	Stream Power (lb/ft s)		1.63	
Frctn Loss (ft)	0.20	Cum Volume (acre-ft)	1422.13	30347.70	293.87
C & E Loss (ft)	0.02	Cum SA (acres)	221.84	2906.60	53.36

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

CROSS SECTION

RIVER: 1
REACH: 1 RS: 210.36

INPUT
Description: 210.36

Left and Right Channel Bank Stations Interpolated
Station Elevation Data num= 99

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
19224.5	1050.4	19284.3	1050.7	19305	1051	19357.1	1049.61	9375.16	1037.787
19404.8	1018.4	19463.3	1018.3	19612.3	1018.1	19621.3	1018.1	19634.8	1021.9
19667.3	1022.1	19733.3	1021.4	19790.5	1022.1	19802.9	1021.9	19818.6	1026.5
19827	1026.5	19834.6	1028.4	19890.9	1029	19964.7	1027.7	19973.5	1027.6

```
                                                                  DuplicateEffective
 19985.2    1023 19997.6  1019.2 20010.7  1019.2 20032.2  1022.5 20039.2  1024.8
 20087.1    1023 20111.8  1024.6 20144.4  1023.1 20153.9  1025.4 20168.7  1024.3
 20191.7  1024.2 20273.6  1021.2 20346.9  1017.4 20363.5  1017.6 20425.8  1018.5
 20437.5  1019.6 20442.7  1017.4 20510.8  1017.5 20526.1    1018 20581.3  1024.2
 20636.5  1025.3 20692.9  1026.1 20742.9  1025.6 20769.6  1031.4 20776.7  1032.1
 20797.4  1031.2 20811.3  1023.1 20868.1  1020.3 20886.8  1019.8 21012.2  1019.3
 21017.9  1019.4   21027  1020.7 21039.6  1017.6 21095.8  1017.7 21149.8    1018
 21208.9  1018.7   21245  1019.621291.171037.78621291.23 1037.81 21303.9  1042.8
   21368  1043.7 21407.5  1045.3 21418.5  1048.3 21429.5  1045.3 21450.9  1041.3
 21516.4  1042.2 21531.8  1042.1 21606.4  1042.3 21664.8  1042.2 21728.4  1042.1
 21735.8  1042.3 21795.8  1042.1   21853  1041.4 21904.7  1040.9 21945.9  1041.5
 22007.4  1043.5 22067.8  1044.3 22085.5  1044.9 22124.1  1042.5 22213.9  1042.6
   22278  1043.1 22282.5    1043 22318.4  1050.8 22330.1  1051.8   22376  1061.9
 22399.2  1062.6 22410.6  1059.4 22438.3  1043.7   22476  1043.3 22498.2  1043.9
 22517.5  1047.5 22554.5  1047.8 22615.4  1044.3 22685.5  1043.5 22715.7  1043.9
 22733.2  1052.6 22752.7  1056.6 22761.2  1057.6 22797.5    1059

Manning's n Values        num=       4
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
*************************************************************
 19224.5    .032 19357.1    .037 20776.7    .025 21303.9    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
     19375.1621291.17             480  487.62     480            .1       .3
Ineffective Flow      num=       1
   Sta L   Sta R    Elev  Permanent
 21303.9 22797.5    1058       F

CROSS SECTION OUTPUT  Profile #PF#1
*****************************************************************************************************
* E.G. Elev (ft)         * 1036.46  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.60  * Wt. n-Val.             *          *   0.032  *          *
* W.S. Elev (ft)         * 1035.87  * Reach Len. (ft)        *  480.00  *  487.62  *  480.00  *
* Crit W.S. (ft)         * 1027.55  * Flow Area (sq ft)      *          *26745.71  *          *
* E.G. Slope (ft/ft)     *0.000542  * Area (sq ft)           *          *26745.71  *          *
* Q Total (cfs)          *166000.00  * Flow (cfs)            *          *166000.00  *          *
* Top Width (ft)         * 1908.19  * Top Width (ft)         *          * 1908.19  *          *
* Vel Total (ft/s)       *    6.21  * Avg. Vel. (ft/s)      *          *    6.21  *          *
* Max Chl Dpth (ft)      *   18.46  * Hydr. Depth (ft)      *          *   14.02  *          *
* Conv. Total (cfs)      *7131869.0  * Conv. (cfs)           *          *7131869.0  *          *
* Length Wtd. (ft)       *  487.62  * Wetted Per. (ft)      *          * 1924.89  *          *
* Min Ch El (ft)         * 1017.40  * Shear (lb/sq ft)      *          *    0.47  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *    2.92  *          *
* Frctn Loss (ft)        *    0.24  * Cum Volume (acre-ft)  * 7370.16  *29047.65  * 2508.12  *
* C & E Loss (ft)        *    0.03  * Cum SA (acres)        * 2105.09  * 2878.33  *  934.73  *
*****************************************************************************************************

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

CROSS SECTION OUTPUT  Profile #PF#2
*****************************************************************************************************
* E.G. Elev (ft)         * 1036.72  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.58  * Wt. n-Val.             *          *   0.032  *          *
* W.S. Elev (ft)         * 1036.14  * Reach Len. (ft)        *  480.00  *  487.62  *  480.00  *
* Crit W.S. (ft)         * 1027.55  * Flow Area (sq ft)      *          *27269.74  *          *
* E.G. Slope (ft/ft)     *0.000509  * Area (sq ft)           *          *27269.74  *          *
* Q Total (cfs)          *166000.00  * Flow (cfs)            *          *166000.00  *          *
* Top Width (ft)         * 1909.31  * Top Width (ft)         *          * 1909.31  *          *
* Vel Total (ft/s)       *    6.09  * Avg. Vel. (ft/s)      *          *    6.09  *          *
* Max Chl Dpth (ft)      *   18.74  * Hydr. Depth (ft)      *          *   14.28  *          *
* Conv. Total (cfs)      *7359590.0  * Conv. (cfs)           *          *7359590.0  *          *
* Length Wtd. (ft)       *  487.62  * Wetted Per. (ft)      *          * 1926.14  *          *
* Min Ch El (ft)         * 1017.40  * Shear (lb/sq ft)      *          *    0.45  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *    2.74  *          *
* Frctn Loss (ft)        *    0.23  * Cum Volume (acre-ft)  * 1422.13  *29984.65  *  293.87  *
* C & E Loss (ft)        *    0.03  * Cum SA (acres)        *  221.84  * 2883.73  *   53.36  *
*****************************************************************************************************

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

CROSS SECTION


RIVER: 1
REACH: 1                 RS: 210.26

INPUT
Description: 210.26

Left and Right Channel Bank Stations Interpolated
Station Elevation Data    num=      75
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*************************************************************************************
   18518  1039.8 18554.5  1039.8 18657.8    1042 18741.9  1041.6   18818  1041.2
 18898.6  1041.1 18982.3  1040.1 19077.8  1039.4   19162  1039.9 19268.1  1040.3
 19363.8  1039.3 19372.2  1040.419377.071037.672 19408.8  1019.9 19682.2  1018.6
 19755.3  1018.2 19759.5    1026   19769  1023.5 19813.4  1021.7   19816  1022.7
 19816.8    1022 19849.2  1020.9 19871.6  1022.5 19881.3  1022.3 19909.8  1024.5
 19932.2  1024.7 19991.1  1027.6 20032.1  1025.3 20063.9  1021.9 20070.8    1022
 20075.8    1024 20075.9  1020.9 20082.4    1025 20120.1  1032.8 20142.9  1027.4
 20152.1  1027.4   20162  1021.5 20166.1    1020 20257.3  1025.2 20290.7  1026.3
 20327.7  1020.7   20449  1018.6 20490.7  1017.8 20521.6  1018.3 20541.8  1020.7
 20564.4  1016.9 20641.9  1017.2 20694.8  1022.3 20718.8  1018.4 20789.5  1018.3
 20862.3  1019.1   20960  1018.2 20989.1  1018.9 21058.3  1018.1   21141    1018
 21241.8  1017.5 21265.8  1018.4 21280.3  1023.521331.821037.672 21342.1  1040.5
 21367.6  1040.4 21378.7    1044 21393.2    1047 21408.2  1043.8 21433.3  1036.1
 21453.3  1036.5 21462.7  1039.8 21481.6    1041 22697.5    1041 22726.9  1046.8
 22740.7  1043.8 22748.5    1041 22815.8    1041 22841.3    1048   22891  1057.7

Manning's n Values        num=       5
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
*************************************************************************************
   18518    .037 19372.2    .032 20694.8    .037 21342.1    .037 21393.2    .025
```

```
                                                                DuplicateEffective
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.    Expan.
      19377.0721331.82              505  512.65     520             .1        .3
Ineffective Flow      num=       2
   Sta L   Sta R    Elev  Permanent
   18518   19162    1050       F
 21393.2   22891    1050       F

CROSS SECTION OUTPUT  Profile #PF#1
*****************************************************************************************************
* E.G. Elev (ft)         * 1036.19  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.51  * Wt. n-Val.            *          *   0.034  *          *
* W.S. Elev (ft)         * 1035.68  * Reach Len. (ft)       *  505.00  *  512.65  *  520.00  *
* Crit W.S. (ft)         * 1026.47  * Flow Area (sq ft)     *          *29013.43  *          *
* E.G. Slope (ft/ft)     *0.000463  * Area (sq ft)          *          *29013.43  *          *
* Q Total (cfs)          *166000.00  * Flow (cfs)           *          *166000.00  *          *
* Top Width (ft)         * 1943.97  * Top Width (ft)        *          * 1943.97  *          *
* Vel Total (ft/s)       *    5.72  * Avg. Vel. (ft/s)      *          *    5.72  *          *
* Max Chl Dpth (ft)      *   18.78  * Hydr. Depth (ft)      *          *   14.92  *          *
* Conv. Total (cfs)      *7711693.0  * Conv. (cfs)          *          *7711693.0  *          *
* Length Wtd. (ft)       *  512.65  * Wetted Per. (ft)      *          * 1966.13  *          *
* Min Ch El (ft)         * 1016.90  * Shear (lb/sq ft)      *          *    0.43  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *    2.44  *          *
* Frctn Loss (ft)        *    0.27  * Cum Volume (acre-ft)  * 7370.16  *28735.56  * 2508.12  *
* C & E Loss (ft)        *    0.01  * Cum SA (acres)        * 2105.09  * 2856.77  *  934.73  *
*****************************************************************************************************

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

CROSS SECTION OUTPUT  Profile #PF#2
*****************************************************************************************************
* E.G. Elev (ft)         * 1036.46  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.49  * Wt. n-Val.            *          *   0.034  *          *
* W.S. Elev (ft)         * 1035.97  * Reach Len. (ft)       *  505.00  *  512.65  *  520.00  *
* Crit W.S. (ft)         * 1026.47  * Flow Area (sq ft)     *          *29570.83  *          *
* E.G. Slope (ft/ft)     *0.000435  * Area (sq ft)          *          *29570.83  *          *
* Q Total (cfs)          *166000.00  * Flow (cfs)           *          *166000.00  *          *
* Top Width (ft)         * 1945.53  * Top Width (ft)        *          * 1945.53  *          *
* Vel Total (ft/s)       *    5.61  * Avg. Vel. (ft/s)      *          *    5.61  *          *
* Max Chl Dpth (ft)      *   19.07  * Hydr. Depth (ft)      *          *   15.20  *          *
* Conv. Total (cfs)      *7955870.0  * Conv. (cfs)          *          *7955870.0  *          *
* Length Wtd. (ft)       *  512.65  * Wetted Per. (ft)      *          * 1967.80  *          *
* Min Ch El (ft)         * 1016.90  * Shear (lb/sq ft)      *          *    0.41  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *    2.29  *          *
* Frctn Loss (ft)        *    0.25  * Cum Volume (acre-ft)  * 1422.13  *29666.50  *  293.87  *
* C & E Loss (ft)        *    0.01  * Cum SA (acres)        *  221.84  * 2862.15  *   53.36  *
*****************************************************************************************************

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

CROSS SECTION


RIVER: 1
REACH: 1                  RS: 210.17

INPUT
Description: 210.17 - FEMA Section X


Right Channel Bank Station
            Interpolated
Station Elevation Data    num=      81
    Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*************************************************************************
 18525.7    1038 18530.7    1038 18532.2  1038.8 18540.9    1039 18542.7  1038.3
 18559.1  1038.3 18583.6  1039.8 18667.3    1040 18672.2    1040 18771.1  1039.9
 18843.2  1039.2 18918.6  1039.2 18975.6  1038.6 19067.9  1036.2 19141.4  1035.5
 19159.7  1029.9 19162.1  1028.2 19206.3  1023.5 19232.4  1025.6 19237.8  1026.9
 19267.8  1029.3 19288.9  1028.6 19327.1    1031 19354.6  1031.5 19359.6  1019.6
 19498.4  1019.3 19752.3  1018.6 19761.8  1021.9 19768.4  1019.7 19807.9  1021.1
 19826.4  1023.3 19861.6  1026.2 19939.7  1026.1 20019.7  1026.2 20040.5    1026
   20047  1026.8   20077  1025.5 20173.1  1021.8 20204.7  1022.1 20221.8  1027.9
 20260.5  1027.9 20289.3  1020.1 20308.5  1019.1   20310    1020 20324.5  1021.7
 20336.8  1017.9 20348.1  1016.4 20392.6  1014.7 20407.8  1014.9 20421.1  1019.4
 20505.4  1021.6 20584.7    1020 20677.5  1020.6   20713  1019.7 20811.2  1021.5
 20931.9  1023.3 20991.7    1025 21079.4  1022.7 21093.5  1022.3 21106.3  1024.9
 21181.2  1023.5   21223    1023   21231  1018.7 21249.3  1020.1 21260.4  1023.1
 21302.8  1025.121334.72 1037.43 21339.3  1039.2 21359.2  1038.4 21371.3    1044
 21385.9  1046.9 21435.8  1035.7 21473.1    1040 22703.8  1040.5 22737.6  1046.8
 22750.2  1044.1 22757.2  1040.5 22826.4  1040.5   22854  1049.8 22873.2  1052.2
 22897.3    1057

Manning's n Values        num=       4
    Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
*************************************************************
 18525.7    .037 19354.6    .032 20991.7    .037 21339.3    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.    Expan.
      19354.621334.72              505  497.78     495             .1        .3
Ineffective Flow      num=       2
   Sta L   Sta R    Elev  Permanent
 18525.7 19354.6    1050       F
 21385.9 22897.3    1050       F

CROSS SECTION OUTPUT  Profile #PF#1
*****************************************************************************************************
* E.G. Elev (ft)         * 1035.91  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.62  * Wt. n-Val.            *          *   0.033  *          *
* W.S. Elev (ft)         * 1035.29  * Reach Len. (ft)       *  505.00  *  497.78  *  495.00  *
* Crit W.S. (ft)         * 1027.95  * Flow Area (sq ft)     *          *26319.87  *          *
* E.G. Slope (ft/ft)     *0.000609  * Area (sq ft)          * 1479.59  *26319.87  *          *
* Q Total (cfs)          *166000.00  * Flow (cfs)           *          *166000.00  *          *
* Top Width (ft)         * 2187.11  * Top Width (ft)        *  212.52  * 1974.59  *          *
* Vel Total (ft/s)       *    6.31  * Avg. Vel. (ft/s)      *          *    6.31  *          *
```

```
                                                                    DuplicateEffective
* Max Chl Dpth (ft)      *   20.59  * Hydr. Depth (ft)       *          *   13.33  *          *
* Conv. Total (cfs)      *6728709.0  * Conv. (cfs)           *          *6728709.0  *          *
* Length Wtd. (ft)       *  497.68  * Wetted Per. (ft)       *          * 1991.56  *          *
* Min Ch El (ft)         * 1014.70  * Shear (lb/sq ft)       *          *    0.50  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *    3.17  *          *
* Frctn Loss (ft)        *    0.29  * Cum Volume (acre-ft)   * 7361.58  *28409.96  * 2508.12  *
* C & E Loss (ft)        *    0.03  * Cum SA (acres)         * 2103.86  * 2833.71  *  934.73  *
*********************************************************************************************

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

CROSS SECTION OUTPUT  Profile #PF#2
*********************************************************************************************
* E.G. Elev (ft)         * 1036.20  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.59  * Wt. n-Val.           *          *    0.033  *          *
* W.S. Elev (ft)         * 1035.61  * Reach Len. (ft)      *  505.00  *  497.78  *  495.00  *
* Crit W.S. (ft)         * 1027.95  * Flow Area (sq ft)    *          *26940.91  *          *
* E.G. Slope (ft/ft)     *0.000565  * Area (sq ft)         *          *26940.91  *          *
* Q Total (cfs)          *166000.00  * Flow (cfs)          *          *166000.00  *          *
* Top Width (ft)         * 1975.40  * Top Width (ft)       *          * 1975.40  *          *
* Vel Total (ft/s)       *    6.16  * Avg. Vel. (ft/s)     *          *    6.16  *          *
* Max Chl Dpth (ft)      *   20.91  * Hydr. Depth (ft)     *          *   13.64  *          *
* Conv. Total (cfs)      *6982102.0  * Conv. (cfs)         *          *6982102.0  *          *
* Length Wtd. (ft)       *  497.70  * Wetted Per. (ft)     *          * 1996.54  *          *
* Min Ch El (ft)         * 1014.70  * Shear (lb/sq ft)     *          *    0.48  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *    2.93  *          *
* Frctn Loss (ft)        *    0.27  * Cum Volume (acre-ft)   * 1422.13  *29333.96  *  293.87  *
* C & E Loss (ft)        *    0.03  * Cum SA (acres)         *  221.84  * 2839.08  *   53.36  *
*********************************************************************************************

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

CROSS SECTION


RIVER: 1
REACH: 1                RS: 210.07

INPUT
Description: 210.07

Left Channel Bank Station Interpolated
Station Elevation Data    num=      71
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
*********************************************************************************
 18501.7  1037.5 18541.3  1037.3 18564.5  1038.8 18619.1  1038.6 18704.2  1038.7
 18760.6  1038.9 18769.9  1038.8 18829.1  1038.5   18842  1038.3 18894.1  1038.1
 18959.6  1037.3 18970.3    1037 18978.8  1029.1 18997.2  1018.5 19080.1  1018.5
   19143  1018.7 19188.2  1018.7   192101018.946 19241.4  1019.3 19299.9  1019.1
 19351.1  1019.1 20002.2  1019.3 20010.8  1019.3 20015.9  1021.6 20017.6  1021.9
 20043.4  1020.3 20109.3  1021.6 20149.1  1018.8 20241.7  1019.6 20301.9  1019.6
 20319.7  1020.4 20385.2  1020.2   20395  1020.3 20523.6    1020   20576  1020.4
 20689.9  1019.9 20746.4  1020.1 20785.8    1020 20842.9  1018.9 20851.6  1018.9
 20907.6  1018.8 20909.5  1018.7 20945.5  1031.5 20951.8  1031.4 21011.2  1029.6
 21065.6  1030.2 21073.1  1030.3 21098.1  1026.3 21164.8  1026.1 21186.9  1026.4
 21207.2  1024.8 21212.4  1026.6 21220.7  1028.3 21237.2  1024.7 21246.8  1023.1
 21286.7  1032.7 21315.8  1034.4 21346.3  1039.3 21383.5  1047.6 21397.9  1044.6
 21428.3  1035.2 21444.5  1036.3 21455.5  1040.2   21470  1040.9 22716.5  1040.5
 22744.1  1046.7 22757.9  1043.7 22766.1  1040.5 22836.3  1040.5 22861.9  1049.1
 22885.1  1052.1

Manning's n Values        num=       4
     Sta   n Val      Sta   n Val      Sta   n Val      Sta   n Val
*************************************************************
 18501.7     .032 18959.6     .037 19241.4     .037 20945.5     .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.    Expan.
         19210 20945.5               495  490.15     505            .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 18501.7   19210    1048        F
 21383.5 22885.1    1048        F

CROSS SECTION OUTPUT  Profile #PF#1
*********************************************************************************************
* E.G. Elev (ft)         * 1035.59  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.51  * Wt. n-Val.           *          *    0.037 *    0.025 *
* W.S. Elev (ft)         * 1035.08  * Reach Len. (ft)      *  495.00  *  490.15  *  505.00  *
* Crit W.S. (ft)         * 1026.32  * Flow Area (sq ft)    *          *26671.91  * 2457.08  *
* E.G. Slope (ft/ft)     *0.000543  * Area (sq ft)         * 3733.47  *26671.91  * 2457.08  *
* Q Total (cfs)          *166000.00  * Flow (cfs)          *          *154129.50  *11870.45  *
* Top Width (ft)         * 2347.69  * Top Width (ft)       *  237.64  * 1735.50  *  374.55  *
* Vel Total (ft/s)       *    5.70  * Avg. Vel. (ft/s)     *          *    5.78  *    4.83  *
* Max Chl Dpth (ft)      *   16.58  * Hydr. Depth (ft)     *          *   15.37  *    6.56  *
* Conv. Total (cfs)      *7123192.0  * Conv. (cfs)         *          *6613821.0  *509370.5  *
* Length Wtd. (ft)       *  491.01  * Wetted Per. (ft)     *          * 1738.43  *  377.21  *
* Min Ch El (ft)         * 1018.70  * Shear (lb/sq ft)     *          *    0.52  *    0.22  *
* Alpha                  *    1.01  * Stream Power (lb/ft s) *          *    3.01  *    1.07  *
* Frctn Loss (ft)        *    0.13  * Cum Volume (acre-ft)   * 7331.37  *28107.18  * 2494.16  *
* C & E Loss (ft)        *    0.07  * Cum SA (acres)         * 2101.25  * 2812.51  *  932.60  *
*********************************************************************************************

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Note:    Multiple critical depths were found at this location.  The critical depth with the lowest, valid,
         water surface was used.

CROSS SECTION OUTPUT  Profile #PF#2
*********************************************************************************************
* E.G. Elev (ft)         * 1035.90  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.50  * Wt. n-Val.           *          *    0.037 *    0.025 *
* W.S. Elev (ft)         * 1035.40  * Reach Len. (ft)      *  495.00  *  490.15  *  505.00  *
* Crit W.S. (ft)         * 1026.28  * Flow Area (sq ft)    *          *27213.61  * 1993.82  *
* E.G. Slope (ft/ft)     *0.000526  * Area (sq ft)         *          *27213.61  * 1993.82  *
```

				DuplicateEffective	
* Q Total (cfs)	*166000.00	* Flow (cfs)	*	*156138.00	* 9861.98 *
* Top Width (ft)	* 2015.00	* Top Width (ft)	*	* 1735.50	* 279.50 *
* Vel Total (ft/s)	* 5.68	* Avg. Vel. (ft/s)	*	* 5.74	* 4.95 *
* Max Chl Dpth (ft)	* 16.70	* Hydr. Depth (ft)	*	* 15.68	* 7.13 *
* Conv. Total (cfs)	*7236885.0	* Conv. (cfs)	*	*6806945.0	*429939.8 *
* Length Wtd. (ft)	* 490.59	* Wetted Per. (ft)	*	* 1754.88	* 288.53 *
* Min Ch El (ft)	* 1018.70	* Shear (lb/sq ft)	*	* 0.51	* 0.23 *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 2.92	* 1.12 *
* Frctn Loss (ft)	* 0.14	* Cum Volume (acre-ft)	* 1422.13	*29024.54	* 282.54 *
* C & E Loss (ft)	* 0.06	* Cum SA (acres)	* 221.84	* 2817.88	* 51.77 *

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

CROSS SECTION

RIVER: 1
REACH: 1 RS: 209.98

INPUT
Description: Cross Section updated per TranSystems Corporation Mapping (2004)
Station Elevation Data num= 320

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	1040.68	.38	1040.75	.84	1040.78	2.14	1040.82	5.35	1040.83
12.48	1040.75	41.57	1040.56	56.66	1040.53	72.61	1040.46	78.01	1040.43
85.2	1038.49	91.98	1036.7	93.03	1036.76	93.93	1036.88	94.99	1036.59
96.37	1036.67	105.06	1037.78	119.1	1037.9	128.69	1038.1	148.19	1037.5
152.57	1037.41	152.65	1037.39	152.81	1037.41	152.92	1037.36	155.27	1037.32
160.63	1036.86	163.78	1036.96	169.85	1036.66	186.07	1036.26	195.52	1036.29
203.29	1036.3	206	1036.29	221.12	1036.16	230.53	1036.15	238.55	1036.15
253.38	1036.22	257.36	1036.22	259.97	1036.21	279.16	1036.08	285.88	1036.12
310.32	1036.18	317.45	1036.24	369.81	1036.48	394.15	1036.66	411.11	1036.63
458.57	1036.34	469.5	1036.4	480.02	1036.32	494.89	1036.32	526.57	1036.02
544.05	1035.98	564.19	1035.7	575.82	1035.61	577.99	1035.57	585.19	1035.03
589.24	1035.14	594.2	1034.5	596.93	1034.6	600.77	1034.53	603.96	1034.45
611.68	1034.3	614.4	1034.17	617.06	1034.09	624.58	1031.91	625.92	1032.1
634.82	1031.43	648.68	1031.58	657.13	1030.41	659.47	1030.66	668.45	1029.35
669.98	1029.35	682.13	1028.08	682.46	1028.04	702.38	1027.13	702.42	1027.13
702.49	1027.13	707.72	1026.99	711.74	1026.95	711.94	1026.96	713.69	1027.02
731.99	1028.3	732.69	1028.41	733.37	1028.44	774.02	1033.73	777.62	1033.66
780	1033.61	789.67	1033.67	791.84	1033.53	808.28	1033.79	809.37	1033.66
810.27	1033.59	822.28	1033.54	824.97	1033.61	825.2	1033.61	825.49	1033.6
853.53	1033.11	854.2	1033.08	855.52	1033.03	867.7	1031.87	870.42	1031.79
870.82	1031.8	880.21	1032.89	883.22	1033.15	887.54	1033.56	896.78	1034.72
901.48	1034.88	906.63	1035.16	911.16	1035.19	915.07	1035.33	921.24	1035.38
924.43	1034.93	926.6	1034.25	929.7	1033.93	933.37	1031.93	941.68	1027.16
941.76	1027.12	941.84	1027.07	949.7	1024.31	961.81	1015.83	964.44	1014.31
967.57	1012.36	970.2	1012.28	979.19	1011.42	984.15	1007.97	988.71	1007.04
990.39	1006.57	999.38	1004.75	1008.06	1003.39	1011.6	1003.26	1021.41	1000.56
1029.78	998.62	1051.95	1000.17	1077.28	1001.95	1080.2	1002.04	1096.92	1002.62
1115.88	1003.28	1119.83	1003.43	1124.53	1003.6	1153.64	1004.18	1192.48	1005.2
1192.91	1005.22	1193.19	1005.22	1261.21	1006.01	1275.78	1006.34	1303.29	1007.1
1310.67	1006.97	1319.44	1007.08	1344.58	1007.43	1357.83	1008.1	1402.63	1010.05
1431.52	1010.28	1456.81	1010.52	1491.8	1010.56	1519.79	1010.94	1529.47	1009.49
1546.19	1006.66	1550.36	1006.69	1575.27	1006.77	1581.89	1006.72	1595.33	1011.48
1599.29	1013.02	1612.63	1018.47	1616.83	1020.21	1618.08	1020.62	1622.32	1021.13
1644.29	1023.92	1647.87	1023.67	1651.52	1024.28	1666.75	1023.89	1673.99	1023.79
1678.15	1022.47	1680.88	1021.73	1685.19	1022.01	1688.14	1021.98	1692.2	1022.38
1696.02	1022.65	1708.55	1022.4	1712.17	1022.3	1717.45	1020.59	1730.14	1016.53
1738.27	1016.22	1740.86	1016.19	1752.01	1016.5	1753.49	1016.55	1754.11	1016.58
1756.38	1016.68	1763.68	1016.97	1767.79	1015.96	1771.79	1015.12	1775.18	1014.24
1798.11	1011.74	1817.62	1009.86	1821.77	1010.76	1825.81	1011.51	1838.63	1013.58
1840.74	1013.5	1851.04	1012.65	1861.87	1012.68	1879.11	1014.37	1896.39	1015.86
1921.14	1016.66	1924.63	1016.75	1926.92	1016.82	1953.1	1017.59	1968.8	1018.17
1988.54	1019.39	1992.88	1019.61	2012.55	1020.44	2025.38	1020.93	2038.37	1021.42
2060.87	1022.24	2065.95	1022.39	2071.2	1022.42	2088.02	1022.3	2099.31	1022.88
2153.33	1025.7	2161.47	1029.13	2171.27	1033.12	2187.61	1033.1	2197.34	1033.19
2218.32	1032.91	2223.38	1032.87	2224.65	1032.86	2226.15	1032.9	2250.63	1033.23
2254.33	1033.35	2265.02	1033.51	2268.42	1031.92	2288.31	1023.13	2297.24	1019.02
2315	1019.35	2329.62	1019.32	2340.88	1017.65	2346.47	1016.92	2354.08	1017.04
2365.42	1017.06	2390.03	1017.16	2401.67	1017.48	2419.35	1017.97	2436.2	1018.38
2451.67	1018.92	2470.07	1019.13	2473.56	1019.05	2493.37	1019.52	2507.36	1019.79
2512.65	1019.66	2521.19	1019.47	2541.11	1018.83	2548.66	1018.86	2550.53	1018.75
2556.75	1018.5	2567.94	1017.12	2574.88	1016.29	2587.42	1017.56	2598.27	1018.25
2605.01	1017.83	2609.79	1017.66	2615.31	1017.46	2622.7	1017.16	2628.29	1016.93
2642.03	1016.9	2654.28	1016.81	2658.24	1016.67	2678.17	1017.25	2681.85	1017.45
2685.04	1017.43	2698.14	1017.14	2699.78	1017.21	2700.95	1017.32	2706.51	1017.71
2716.76	1018.22	2720.89	1018.14	2722.94	1018.11	2731.59	1017.96	2736.67	1017.74
2758.4	1016.49	2765.16	1017.51	2770.56	1018.41	2787.81	1018.9	2792.67	1018.9
2806.29	1019.08	2825.22	1019.43	2850.71	1019.8	2861.26	1019.96	2865.72	1019.48
2880.65	1018	2883.89	1018.04	2894.48	1018.07	2902.57	1018.62	2919.19	1019.34
2927.68	1023.07	2936.19	1026.93	2946.26	1033.82	2958.02	1041.95	2964.72	1042.75
2967.49	1043.1	2974.5	1043	2999.58	1042.84	3005.84	1041.62	3006.42	1041.56
3015.44	1038.33	3022.09	1035.89	3037.07	1035.79	3041.29	1035.77	3042.8	1036.31
3053.61	1040.4	3061.36	1039.39	3075.1	1037.64	3102.07	1035.66	3115.31	1034.45
3145.53	1034.97	3185.42	1035.25	3223.02	1035.17	3228.61	1035.14	3230.73	1035.1
3249.46	1034.86	3267.52	1034.62	3280.82	1034.43	3291.4	1034.47	3324.3	1034.75

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.037	949.7	.032	2792.67	.037

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
949.7	2792.67	549.53	500.89	495.04	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
2971	3324.3	1050	F

CROSS SECTION OUTPUT Profile #PF#1

			DuplicateEffective		
* E.G. Elev (ft)	* 1035.39	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.28	* Wt. n-Val.	* 0.037	* 0.032	* 0.037 *
* W.S. Elev (ft)	* 1035.11	* Reach Len. (ft)	* 549.53	* 500.89	* 495.04 *
* Crit W.S. (ft)	* 1019.92	* Flow Area (sq ft)	* 1204.31	*36464.38	* 2280.59 *
* E.G. Slope (ft/ft)	*0.000164	* Area (sq ft)	* 1204.31	*36464.38	* 2336.35 *
* Q Total (cfs)	*166000.00	* Flow (cfs)	* 1428.91	*157667.70	* 6903.40 *
* Top Width (ft)	* 2495.85	* Top Width (ft)	* 346.55	* 1842.97	* 306.33 *
* Vel Total (ft/s)	* 4.16	* Avg. Vel. (ft/s)	* 1.19	* 4.32	* 3.03 *
* Max Chl Dpth (ft)	* 36.49	* Hydr. Depth (ft)	* 3.48	* 19.79	* 14.67 *
* Conv. Total (cfs)	*12960820.0	* Conv. (cfs)	*111565.5	*12310260.0	*538998.4 *
* Length Wtd. (ft)	* 500.82	* Wetted Per. (ft)	* 350.29	* 1860.11	* 159.74 *
* Min Ch El (ft)	* 998.62	* Shear (lb/sq ft)	* 0.04	* 0.20	* 0.15 *
* Alpha	* 1.05	* Stream Power (lb/ft s)	* 0.04	* 0.87	* 0.44 *
* Frctn Loss (ft)	* 0.09	* Cum Volume (acre-ft)	* 7303.31	*27751.96	* 2466.37 *
* C & E Loss (ft)	* 0.01	* Cum SA (acres)	* 2097.93	* 2792.38	* 928.65 *

Warning: Divided flow computed for this cross-section.
Warning: The cross-section end points had to be extended vertically for the computed water surface.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION OUTPUT Profile #PF#2

* E.G. Elev (ft)	* 1035.70	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.31	* Wt. n-Val.	*	* 0.032	* *
* W.S. Elev (ft)	* 1035.39	* Reach Len. (ft)	* 549.53	* 500.89	* 495.04 *
* Crit W.S. (ft)	* 1019.88	* Flow Area (sq ft)	*	*36985.45	* *
* E.G. Slope (ft/ft)	*0.000177	* Area (sq ft)	*	*36985.45	* *
* Q Total (cfs)	*166000.00	* Flow (cfs)	*	*166000.00	* *
* Top Width (ft)	* 1842.97	* Top Width (ft)	*	* 1842.97	* *
* Vel Total (ft/s)	* 4.49	* Avg. Vel. (ft/s)	*	* 4.49	* *
* Max Chl Dpth (ft)	* 36.77	* Hydr. Depth (ft)	*	* 20.07	* *
* Conv. Total (cfs)	*12481800.0	* Conv. (cfs)	*	*12481800.0	* *
* Length Wtd. (ft)	* 500.89	* Wetted Per. (ft)	*	* 1887.68	* *
* Min Ch El (ft)	* 998.62	* Shear (lb/sq ft)	*	* 0.22	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.97	* *
* Frctn Loss (ft)	* 0.10	* Cum Volume (acre-ft)	* 1422.13	*28663.35	* 270.98 *
* C & E Loss (ft)	* 0.01	* Cum SA (acres)	* 221.84	* 2797.74	* 50.15 *

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

CROSS SECTION

RIVER: 1
REACH: 1 RS: 209.88

INPUT
Description: Cross Section updated per TranSystems Corporation Mapping (2004)
Station Elevation Data num= 328

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	1040.27	.23	1040.47	6.09	1040.47	50.78	1040.47	64.08	1040.46
84.17	1040.41	95.3	1040.49	102.77	1040.43	106.47	1040.56	112.77	1040.72
115.53	1040.76	126.23	1041.08	139.95	1041.34	148.97	1041	163.51	1040.33
164.03	1040.35	165.09	1040.37	165.21	1040.34	166.12	1040.3	170.48	1040.41
170.64	1040.4	172.63	1040.28	177.01	1039.94	183.04	1039.97	187.91	1039.77
192.11	1039.45	200.35	1039.04	207.06	1038.94	210.68	1038.87	217.45	1038.67
230.27	1038.35	230.76	1038.33	249.06	1038.45	249.79	1038.39	260.4	1038.43
267.83	1038.67	271.23	1038.65	285.22	1038.52	291.58	1038.37	295.83	1038.54
298.24	1038.58	302.54	1038.76	308.07	1038.86	344.8	1038.65	355.04	1038.9
370.59	1039.02	380.45	1038.95	389.75	1038.98	412.15	1039.05	420.37	1039.1
431.17	1038.87	439.74	1038.75	458.08	1038.59	466.19	1038.61	473.95	1038.49
499.92	1038.47	509.49	1038.53	528.58	1038.44	533.87	1038.35	558.82	1038.01
560.08	1038	561.18	1037.98	577.13	1037.83	582.03	1037.8	588.32	1037.76
613.77	1037.62	627.53	1037.57	641.37	1037.7	663.46	1038.01	679.13	1037.69
698.06	1037.75	706.33	1037.87	707.44	1037.89	735.43	1038.54	739.44	1038.57
743.49	1038.65	773.37	1039.11	780.03	1039.25	803.62	1039.57	810.48	1039.67
817.87	1039.77	861.88	1040.45	868.29	1040.45	891.82	1040.29	896.57	1040.19
901.78	1040.19	923.11	1039.56	926.63	1039.38	954.47	1039.19	955.93	1039.17
966.66	1039.1	983.3	1038.79	984.71	1038.79	1007.78	1038.4	1017.74	1038.57
1034.27	1038.85	1038.22	1038.98	1044.03	1039.05	1052.17	1039.12	1057.18	1039.16
1086.68	1038.02	1102.65	1037.38	1130.44	1036.77	1135.15	1036.64	1141.34	1033.58
1154.03	1027.18	1186.32	1012.16	1194.16	1008.84	1198.27	1007.84	1207.92	1004.51
1213.27	1002.94	1223.45	999.77	1228.47	999.3	1241.19	997.82	1261.44	997.47
1268.43	997.42	1278.49	997.6	1286.21	997.79	1300.36	997.85	1311.87	998.45
1321.56	998.73	1341.54	999.09	1347.16	999.11	1359.73	999.89	1382.35	1001.25
1394.28	1001.34	1396.53	1001.39	1424.15	1003.33	1433.39	1003.75	1460.09	1004.69
1475.46	1005.17	1492.46	1005.6	1514.52	1005.86	1531.09	1006.11	1539.19	1006.24
1571.55	1006.29	1573.63	1006.26	1590.77	1005.64	1596.16	1005.44	1596.47	1005.44
1597.02	1005.44	1617.72	1005.45	1640.44	1009.86	1662.37	1013.6	1666.91	1014.51
1667.68	1014.62	1689.26	1012.44	1705.47	1011.58	1710.14	1011.16	1723.61	1011.22
1744.57	1011.69	1757.2	1007.9	1762.18	1006.79	1776.85	1010.71	1778.13	1011.08
1793.46	1011.19	1796.54	1011.18	1799.59	1011.87	1808.2	1013.73	1811.17	1013.81
1834.52	1014.36	1839.27	1014.48	1840.03	1014.5	1840.47	1014.5	1847.83	1014.19
1878.39	1014.19	1896.2	1014.19	1924.18	1014.43	1941.79	1014.16	1956.09	1014.06
1972.8	1014.17	1981.63	1014.37	1998.78	1014.53	2018.57	1015.47	2022.77	1015.84
2031.1	1016.65	2035.12	1016.91	2057.71	1024.56	2086.32	1033.89	2109.21	1033.98
2121.49	1034.04	2129.06	1033.9	2142	1033.53	2175.03	1032.67	2175.67	1032.65
2176.8	1032.64	2194.58	1032.56	2201.12	1032.4	2230.85	1032.07	2253.57	1032.47
2261.97	1032.74	2269.59	1032.94	2270.79	1033.03	2271.35	1032.88	2272.17	1032.71
2275.6	1032.14	2296.06	1032.26	2309.39	1032.15	2310.73	1032.09	2313.76	1032.25
2318.97	1032.4	2321.34	1031.52	2325.22	1030.57	2327.89	1029.98	2339.43	1029.53
2355.79	1028.4	2375.54	1027.37	2379.47	1027.07	2385.26	1026.32	2404.25	1023.02
2412.18	1022.78	2422.37	1022.31	2442.28	1021.69	2461.08	1021.05	2468.71	1020.72
2484.52	1020.08	2501.4	1019.39	2511.38	1018.16	2520.8	1016.99	2527.12	1016.26
2535.82	1016.17	2539.43	1016.15	2544.35	1016.01	2549.9	1015.78	2562.71	1015.65
2575.78	1015.45	2586.66	1014.32	2599.02	1013.24	2602.82	1013.19	2612.59	1013.28
2625.37	1013.06	2627.94	1013.04	2632.6	1013.21	2640.51	1014.07	2642.64	1013.71
2644.28	1013.76	2652.34	1013.58	2670.12	1012.9	2675.13	1013.6	2690.65	1016.15
2700.62	1016.44	2718.37	1016.82	2731.95	1016.58	2742.01	1016.62	2757.11	1016.84
2761.77	1016.95	2763.67	1017.46	2772.36	1019.85	2781.73	1020.67	2784.08	1020.88
2786.83	1020.51	2789.02	1020.28	2809.55	1017.8	2823.06	1017.42	2827.17	1017.27

```
                                                                    DuplicateEffective
  2830.3 1017.79 2848.37  1020.5 2863.27 1018.37 2863.78 1018.29 2864.03 1018.29
 2876.85 1018.53 2899.43 1017.87 2906.29 1017.59 2909.46 1017.69 2930.33 1018.18
 2941.53  1023.8 2952.33 1029.35 2959.18 1034.17 2970.84 1042.78  2976.1 1042.55
  2977.4 1042.47 2992.28 1042.64 3013.71  1042.8 3016.53 1042.31 3021.32 1041.38
 3031.87 1037.24 3036.49 1035.38 3049.38 1034.75 3052.14 1034.63 3055.69 1035.73
 3072.45    1041 3086.88 1040.87 3096.63 1040.63 3110.16 1039.02 3112.15 1038.87
 3114.19 1038.81 3127.28 1038.69 3134.01 1038.72 3143.44 1038.23 3145.22  1038.2
 3156.85 1038.07 3156.89 1038.07  3158.9 1038.05 3167.52 1037.94 3177.62 1037.86
 3177.68 1037.86 3178.84 1037.86 3193.08 1037.93 3193.63 1037.93 3207.45 1037.33
  3210.2 1037.34 3214.47 1037.39 3226.77 1037.41 3239.82 1037.62 3249.47 1037.64
 3260.98 1037.31 3264.32 1037.21 3272.45 1037.03 3283.44 1036.86 3286.06 1036.77
 3288.58 1036.76 3300.51 1036.87 3304.56 1036.98 3309.85 1037.09 3338.44 1036.74
 3343.63  1036.6 3347.13 1036.62 3349.72 1036.54  3351.4  1036.6 3362.29 1037.09
  3366.6 1037.17 3371.35 1036.68 3376.35 1037.22 3380.61 1036.51  3385.3 1036.08
  3392.4 1035.87 3394.14  1035.5 3397.96 1035.28

Manning's n Values          num=       4
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************************************
       0    .037 1130.44    .032 2121.49    .037  2977.4    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       1130.44 2789.02           504.67  500.86  499.29            .1       .3
Ineffective Flow      num=       1
   Sta L   Sta R    Elev  Permanent
    2987 3397.96    1050       F

CROSS SECTION OUTPUT  Profile #PF#1
*************************************************************************************************
* E.G. Elev (ft)         * 1035.29  * Element                * Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.36  * Wt. n-Val.            *         *    0.033  *    0.037  *
* W.S. Elev (ft)         * 1034.93  * Reach Len. (ft)       *  504.67 *  500.86  *  499.29  *
* Crit W.S. (ft)         * 1018.36  * Flow Area (sq ft)     *         *32124.59  * 2601.03  *
* E.G. Slope (ft/ft)     *0.000201  * Area (sq ft)          *         *32124.59  * 2602.17  *
* Q Total (cfs)          *166000.00  * Flow (cfs)           *         *157093.90  * 8906.08  *
* Top Width (ft)         * 1828.99  * Top Width (ft)       *         * 1650.41  *  178.58  *
* Vel Total (ft/s)       *    4.78  * Avg. Vel. (ft/s)     *         *    4.89  *    3.42  *
* Max Chl Dpth (ft)      *   37.51  * Hydr. Depth (ft)     *         *   19.46  *   15.19  *
* Conv. Total (cfs)      *11715260.0  * Conv. (cfs)        *         *11086720.0  *628536.1  *
* Length Wtd. (ft)       *  500.76  * Wetted Per. (ft)     *         * 1665.43  *  176.22  *
* Min Ch El (ft)         *  997.42  * Shear (lb/sq ft)     *         *    0.24  *    0.19  *
* Alpha                  *    1.02  * Stream Power (lb/ft s) *       *    1.18  *    0.63  *
* Frctn Loss (ft)        *    0.10  * Cum Volume (acre-ft)  * 7295.71 *27357.61  * 2438.31  *
* C & E Loss (ft)        *    0.01  * Cum SA (acres)        * 2095.74 * 2772.29  *  925.90  *
*************************************************************************************************

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.

CROSS SECTION OUTPUT  Profile #PF#2
*************************************************************************************************
* E.G. Elev (ft)         * 1035.60  * Element                * Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.40  * Wt. n-Val.            *         *    0.033  *           *
* W.S. Elev (ft)         * 1035.19  * Reach Len. (ft)       *  504.67 *  500.86  *  499.29  *
* Crit W.S. (ft)         * 1018.32  * Flow Area (sq ft)     *         *32558.83  *           *
* E.G. Slope (ft/ft)     *0.000216  * Area (sq ft)          *         *32558.83  *           *
* Q Total (cfs)          *166000.00  * Flow (cfs)           *         *166000.00  *           *
* Top Width (ft)         * 1650.94  * Top Width (ft)       *         * 1650.94  *           *
* Vel Total (ft/s)       *    5.10  * Avg. Vel. (ft/s)     *         *    5.10  *           *
* Max Chl Dpth (ft)      *   37.77  * Hydr. Depth (ft)     *         *   19.72  *           *
* Conv. Total (cfs)      *11288030.0  * Conv. (cfs)        *         *11288030.0  *           *
* Length Wtd. (ft)       *  500.86  * Wetted Per. (ft)     *         * 1680.94  *           *
* Min Ch El (ft)         *  997.42  * Shear (lb/sq ft)     *         *    0.26  *           *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *       *    1.33  *           *
* Frctn Loss (ft)        *    0.11  * Cum Volume (acre-ft)  * 1422.13 *28263.51  *  270.98  *
* C & E Loss (ft)        *    0.01  * Cum SA (acres)        *  221.84 * 2777.66  *   50.15  *
*************************************************************************************************

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

CROSS SECTION


RIVER: 1
REACH: 1                RS: 209.79

INPUT
Description: Cross Section updated per TranSystems Corporation Mapping (2004)
Station Elevation Data     num=      270
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
       0 1038.52     .16 1038.69    1.57 1038.53   35.18  1038.6   54.94 1038.62
   72.48 1038.68   91.59 1038.72   94.91 1038.68  116.31 1038.35  119.07 1038.47
  128.46  1038.8  145.69 1039.29  151.13 1039.35  172.31 1038.74  174.73 1038.71
  177.03 1038.63  185.13 1038.28  186.98 1038.21  207.03 1037.87  207.82 1037.85
  208.77 1037.86  215.32 1037.87  270.62 1038.16   302.6 1038.14  317.32  1038.1
   363.9 1037.69  377.09 1037.39  424.31 1037.05  452.29 1037.04  531.32 1036.87
  545.43  1036.8  638.29 1035.79   639.1 1035.79  644.83 1035.83  732.97 1036.47
  737.44 1036.46   739.8 1036.47  745.31 1036.48  827.11 1036.73  837.57 1036.66
  852.28 1036.91  921.28 1037.06  935.63 1037.13  959.27    1037 1016.17 1037.63
 1055.33 1037.89 1060.21 1037.79 1083.54  1037.9 1099.81 1037.83 1105.89 1037.69
 1119.72 1036.94  1135.4 1036.14 1145.97 1030.48 1159.42 1022.97 1174.88  1022.8
 1190.29  1022.3 1207.51  1021.8 1210.72 1021.74 1212.09 1021.71 1224.28  1021.1
 1230.78 1021.03 1239.33 1020.99 1243.64    1021 1249.43 1021.02 1254.22 1021.02
 1259.87 1020.89  1266.1 1020.91 1273.94 1019.93 1283.73 1019.79 1295.32 1019.56
 1305.02 1019.09 1313.21 1018.56 1316.98 1018.29 1317.06 1018.28 1325.17 1018.94
 1329.02  1020.6 1329.66 1020.79 1330.49 1021.06 1336.22 1022.17 1338.44 1022.03
 1344.04 1021.66 1347.38 1021.35 1348.05 1021.31 1350.86 1021.12 1353.36 1021.07
 1354.26 1020.99 1368.96 1020.04 1371.06 1020.07 1379.06 1020.17 1379.75 1020.18
 1386.35 1020.33 1388.94 1020.25 1400.96  1020.7  1402.5 1020.72 1405.31 1020.63
 1406.67 1020.61 1419.94 1021.17 1434.68 1020.91 1444.87 1019.35 1469.65 1018.79
 1472.59  1018.4 1481.56    1018 1507.27 1016.66 1529.95 1015.36 1555.83 1013.63
  1580.8 1013.35 1630.32 1012.98 1640.85 1012.07 1679.42 1011.55 1698.33  1010.6
 1713.68 1009.93 1744.59 1007.07 1757.74 1006.67 1764.21 1006.33 1781.15 1004.74
```

```
                                                                    DuplicateEffective
 1783.42  1004.7 1783.67  1004.7 1784.01 1004.69 1784.38 1004.69 1785.04 1004.68
 1813.36 1004.07  1821.3 1004.03 1828.35 1003.96 1836.71 1003.93 1847.58 1004.75
 1865.27  1005.7 1872.05 1006.05 1893.53 1005.46 1896.04 1005.38 1897.62 1005.35
 1902.24 1005.31  1915.5 1006.42 1917.06 1006.51 1950.54  1008.7 1956.34 1009.08
 1957.41 1009.13 1975.18 1010.07 2005.88  1011.8 2033.44 1012.16  2040.9 1012.32
  2043.3 1011.88 2055.71 1010.91 2057.75    1011 2081.02  1011.8 2115.57  1026.5
  2132.3 1033.81 2139.42 1032.65 2139.43 1032.64 2139.44 1032.65 2146.45 1033.91
 2171.22 1027.38 2188.57 1022.83 2206.69 1022.87 2240.98 1023.01 2277.82 1024.19
 2282.21 1024.36 2292.11 1024.16 2329.09 1023.58 2348.64 1023.16 2361.57 1023.13
 2367.18 1024.46 2379.78 1027.59  2385.1 1027.68 2403.41 1028.15 2418.98 1021.49
 2426.65 1018.19 2432.86 1017.22 2442.94 1015.76 2487.48  1012.9 2488.08 1012.86
 2505.09 1011.49 2539.49 1008.72 2542.21  1008.5 2543.35 1008.48  2587.7 1007.83
 2628.35    1008 2628.63 1008.01 2673.58 1007.75 2677.82 1007.75 2681.69  1007.8
 2725.57  1008.4 2728.31 1008.36  2740.9 1008.66  2760.3 1009.12 2792.01 1010.41
 2792.65 1010.43 2793.02 1010.48 2795.31 1010.77  2811.2 1012.75 2812.91 1012.95
 2823.47 1012.94 2834.67 1012.89 2836.63 1012.92 2841.99 1013.21 2848.77 1013.23
 2851.56 1013.25 2861.32 1013.46 2864.11 1013.52 2868.12 1013.48 2869.82 1013.48
 2871.87 1013.57 2886.27 1013.97 2894.75 1014.53 2903.18 1014.59 2909.21 1014.41
 2932.89 1014.48 2939.98  1014.6 2970.89 1030.77 2981.19  1036.3 2983.73 1037.91
 2983.94    1038 2989.67 1037.64 2992.97 1037.48 3018.68 1037.12 3025.05 1037.06
 3028.42 1035.94  3033.3 1034.24 3046.13  1030.8 3053.43 1028.82 3060.33 1029.01
 3090.98 1029.04 3099.33 1029.04 3107.82 1028.55 3121.72 1027.68 3129.35 1028.51
 3145.31 1030.22 3174.33 1030.01 3174.83    1030 3175.38 1029.96 3191.93 1028.67
 3197.41 1028.66 3203.05 1028.59 3211.11 1028.57 3221.57 1028.45 3222.24 1028.44
 3224.39 1028.46 3236.21 1028.83 3244.15 1028.88 3247.93 1028.95 3252.74 1029.04
 3256.15 1029.04 3262.73 1029.37  3265.9  1029.5 3273.25 1029.88 3277.66 1029.98
 3286.41 1030.39  3291.8 1030.38 3292.85 1030.38 3297.74 1030.29 3304.79 1030.22
 3313.11 1030.25 3324.45 1030.37 3341.02 1030.98 3358.22 1031.57 3383.88 1032.62
 3398.64  1032.8 3405.45 1032.86 3405.71 1032.86 3406.21 1032.86  3406.6 1032.86
 3410.77 1032.85 3413.35 1032.84 3415.21  1032.8 3420.31 1032.83 3421.57 1032.65
 3435.54 1032.53 3436.17 1032.24 3445.06 1030.18 3458.84 1032.82 3465.58 1033.26

Manning's n Values        num=       4
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************************************
       0    .037 1105.89    .032  2132.3    .035 2989.67    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       1105.89 2823.47           492.06  500.22  508.91             .1       .3
Ineffective Flow     num=       1
   Sta L   Sta R    Elev  Permanent
    2979 3465.58    1045          F

CROSS SECTION OUTPUT  Profile #PF#1
*************************************************************************************************
* E.G. Elev (ft)        * 1035.18  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)         *    0.33  * Wt. n-Val.           *          *   0.033  *   0.035  *
* W.S. Elev (ft)        * 1034.85  * Reach Len. (ft)      *  492.06  *  500.22  *  508.91  *
* Crit W.S. (ft)        * 1019.46  * Flow Area (sq ft)    *          *32978.41  * 2837.48  *
* E.G. Slope (ft/ft)    *0.000207  * Area (sq ft)         *          *32978.41  * 4815.33  *
* Q Total (cfs)         *166000.00  * Flow (cfs)          *          *154214.60  *11785.36  *
* Top Width (ft)        * 2274.68  * Top Width (ft)       *          * 1685.65  *  589.03  *
* Vel Total (ft/s)      *    4.63  * Avg. Vel. (ft/s)     *          *    4.68  *    4.15  *
* Max Chl Dpth (ft)     *   30.92  * Hydr. Depth (ft)     *          *   19.56  *   18.30  *
* Conv. Total (cfs)     *11536480.0  * Conv. (cfs)        *          *10717430.0  *819045.9  *
* Length Wtd. (ft)      *  500.90  * Wetted Per. (ft)     *          * 1699.92  *  160.05  *
* Min Ch El (ft)        * 1003.93  * Shear (lb/sq ft)     *          *    0.25  *    0.23  *
* Alpha                 *    1.00  * Stream Power (lb/ft s) *        *    1.17  *    0.95  *
* Frctn Loss (ft)       *    0.15  * Cum Volume (acre-ft)  * 7295.71  *26983.33  * 2395.80  *
* C & E Loss (ft)       *    0.03  * Cum SA (acres)        * 2095.74  * 2753.11  *  921.50  *
*************************************************************************************************

Warning: Divided flow computed for this cross-section.
Warning: The cross-section end points had to be extended vertically for the computed water surface.
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:    Multiple critical depths were found at this location.  The critical depth with the lowest, valid,
         water surface was used.

CROSS SECTION OUTPUT  Profile #PF#2
*************************************************************************************************
* E.G. Elev (ft)        * 1035.48  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)         *    0.38  * Wt. n-Val.           *          *   0.033  *          *
* W.S. Elev (ft)        * 1035.09  * Reach Len. (ft)      *  492.06  *  500.22  *  508.91  *
* Crit W.S. (ft)        * 1019.65  * Flow Area (sq ft)    *          *33396.39  *          *
* E.G. Slope (ft/ft)    *0.000234  * Area (sq ft)         *          *33396.39  *          *
* Q Total (cfs)         *166000.00  * Flow (cfs)          *          *166000.00  *          *
* Top Width (ft)        * 1686.12  * Top Width (ft)       *          * 1686.12  *          *
* Vel Total (ft/s)      *    4.97  * Avg. Vel. (ft/s)     *          *    4.97  *          *
* Max Chl Dpth (ft)     *   31.16  * Hydr. Depth (ft)     *          *   19.81  *          *
* Conv. Total (cfs)     *10862060.0  * Conv. (cfs)        *          *10862060.0  *          *
* Length Wtd. (ft)      *  500.22  * Wetted Per. (ft)     *          * 1722.60  *          *
* Min Ch El (ft)        * 1003.93  * Shear (lb/sq ft)     *          *    0.28  *          *
* Alpha                 *    1.00  * Stream Power (lb/ft s) *        *    1.41  *          *
* Frctn Loss (ft)       *    0.18  * Cum Volume (acre-ft)  * 1422.13  *27884.33  *  270.98  *
* C & E Loss (ft)       *    0.03  * Cum SA (acres)        *  221.84  * 2758.47  *   50.15  *
*************************************************************************************************

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

CROSS SECTION


RIVER: 1
REACH: 1                  RS: 209.69

INPUT
Description: 209.69 - FEMA Section W
Cross Section updated per TranSystems
          Corporation Mapping (2004)
Station Elevation Data    num=     299
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*********************************************************************************
```

```
                                                                                                DuplicateEffective
      0 1036.75   18.08 1037.13   27.01 1037.16   37.81    1037   47.97 1036.77
  48.34 1036.99   55.99 1036.22   58.68 1036.02   64.55 1036.49   78.83  1037.6
 124.78 1037.07  131.42 1037.02  137.63 1037.03  225.42 1036.77  229.88 1036.81
 231.92 1036.84  237.51 1036.92  292.61 1037.62  293.41 1037.84  293.85 1038.05
 314.32 1048.54  315.75 1049.26  315.89 1049.33  321.65  1049.7  333.76 1050.75
 340.61 1052.37  342.86 1053.08  343.63 1053.23  346.92 1052.74  347.11 1052.43
 349.73 1046.95   353.9 1043.04  356.31 1040.43  368.02 1037.71  369.48 1037.15
 370.83 1036.68  371.93 1037.33  372.72 1037.71  382.29 1041.32  384.05 1041.52
 388.96 1041.37  391.87 1041.16  405.42 1037.49  406.45 1037.29  407.35 1036.96
  408.1 1036.65  417.91 1036.71  437.65 1036.74  438.31 1036.74  438.59 1036.74
  439.8 1036.73  444.45 1036.74  491.48 1036.17  502.71 1041.23  504.45 1041.81
 516.44 1049.45  518.64 1050.86  523.26 1050.43  525.16 1049.81  525.83 1049.58
  527.5 1047.93  533.26  1042.9  542.36 1037.89  543.98 1037.69  545.54 1036.49
 548.12 1036.05   557.8 1035.75  565.29 1035.64  579.73 1035.56  589.81 1035.53
 599.61 1035.67  607.47 1035.61  615.41  1035.7  622.41 1035.73  640.62 1047.58
 641.82 1048.21  642.09  1048.3  642.32 1048.31  642.59 1048.23  643.35 1047.85
 655.14 1040.66  663.93  1037.4  666.36 1036.18  678.53 1036.66  684.64 1036.84
 689.15 1037.03  706.37 1036.99  755.68 1036.87  780.88 1036.77   802.2  1036.6
 836.54 1036.27  872.65 1036.39  891.57 1036.38  931.86 1036.97  947.85  1037.3
 948.93 1037.22  965.68 1036.58  969.83 1035.75  970.66 1035.63  975.67 1034.89
  977.6 1034.71  979.38  1034.6  981.18 1034.46  987.59 1034.23 1001.05 1034.76
 1004.8 1033.56 1005.52 1033.31 1008.41 1032.18 1020.01 1027.26 1034.85 1020.78
1036.46 1020.04 1038.51  1019.1    1053 1018.92 1059.92 1018.83 1062.93 1018.79
1071.44 1018.65 1084.75 1019.38 1092.72 1019.81 1101.03 1020.11 1136.14 1021.79
1142.52 1022.64 1171.41  1026.1 1185.18 1024.31 1191.22 1023.33 1204.25 1026.59
1205.84 1026.98 1214.98 1027.12  1220.7 1027.11 1226.92 1027.39 1251.37 1027.43
1264.69 1027.31 1272.02 1027.94 1296.22 1029.83 1296.45 1029.83 1298.03 1029.87
1327.01 1030.81 1339.19 1031.13 1354.62 1032.31 1363.56 1032.95 1372.84 1032.54
1384.31 1032.11 1408.72 1032.39 1409.01  1032.4 1443.19 1032.36 1452.75 1032.23
 1460.3 1032.21 1478.75 1032.56 1516.07 1033.43 1533.76 1032.76 1568.62  1031.2
1592.95 1023.72 1594.93    1023 1614.77 1020.93 1618.09 1020.64 1623.88 1020.04
   1635 1019.56 1671.06 1017.49 1701.63 1015.74 1763.43 1009.85 1782.19 1008.09
1783.87 1007.99 1813.91 1006.88 1846.96 1005.59 1849.74 1005.57 1853.33 1005.56
1902.92 1004.96  1949.1  1006.7 1955.65 1007.01 1956.77 1007.24  2005.5 1015.43
 2046.3 1028.74 2069.36 1035.81  2069.4 1035.82 2069.41 1035.82 2069.42 1035.82
2069.49 1035.82  2091.3 1035.39 2106.54 1034.61 2106.62 1034.61 2106.97  1034.6
2129.78 1034.28 2134.78 1034.23 2139.04 1034.31 2142.53 1034.35 2164.93  1034.8
2167.41 1034.78 2182.34 1033.74 2195.33 1033.07 2209.36 1032.38  2222.7 1032.13
2225.83 1032.07 2240.92 1029.14 2247.68 1027.86 2252.34    1025 2266.46 1016.46
2282.63 1013.75 2290.07 1012.34 2303.03 1011.87 2328.05 1010.82 2345.62 1010.35
2359.16 1010.09 2366.12 1010.02 2366.24 1010.02  2366.4 1010.02 2382.75 1010.31
2384.33 1010.31  2386.3 1010.32 2387.88 1010.38 2404.56 1010.24 2414.48 1010.31
2427.24 1010.43 2466.11 1010.35 2481.02 1010.27 2489.54 1010.67 2514.74 1011.84
2534.04 1012.05 2541.14  1012.2 2547.14 1012.12 2564.52 1012.24 2599.24 1011.25
2612.59 1010.41 2617.72 1010.17 2634.79 1010.68 2648.78 1011.18 2656.48 1011.39
2659.05 1011.39 2662.81 1011.33 2691.01 1011.13 2708.24 1012.39 2711.24 1012.65
2724.43 1013.15 2745.42 1013.88  2752.5 1014.26 2766.38 1014.41 2775.07 1014.02
2788.38 1013.23 2800.03 1014.01 2805.96 1014.44 2836.12 1032.31 2836.13 1032.32
2847.63 1033.87 2851.47 1035.63 2859.11  1038.2 2865.83  1037.3 2865.89 1037.29
2866.15 1037.29 2898.71 1036.93 2905.31 1035.75 2906.69 1035.57 2912.34 1033.88
2926.28 1029.23 2977.22 1028.92  2982.5 1028.92 2985.76  1028.9 3050.77 1028.65
3092.51 1028.85 3094.07 1028.87 3095.06 1028.87 3109.81 1028.99 3139.17 1029.21
3146.98 1029.03 3167.69 1028.31 3172.03 1028.39 3177.58  1028.6  3187.1  1029.2
3190.63 1029.18 3191.34 1029.26 3195.55 1029.44 3200.31 1029.45 3213.33 1029.55
3226.05 1029.29 3231.26 1029.35 3232.63 1029.33 3241.57 1029.31 3250.75 1029.25
3254.24 1029.22 3256.11 1029.19 3269.62 1028.95 3279.64 1028.75 3284.54 1029.33
3288.23  1029.9  3294.5 1030.75 3305.42 1032.23 3310.74 1031.94 3319.16 1031.82
3322.07 1031.73 3325.49 1031.66 3330.23 1031.17 3343.34 1031.56 3346.87 1031.58
3351.07 1031.56 3358.37  1031.6 3360.56 1031.69 3361.75 1031.53 3361.96 1031.53
3385.12 1030.03 3386.26 1029.15 3390.43 1029.95  3391.2    1030

Manning's n Values        num=       4
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
*************************************************************
       0    .037  947.85    .032 2069.36    .035 2859.11    .025

Bank Sta: Left   Right     Lengths: Left Channel   Right      Coeff Contr.   Expan.
       965.68 2711.24           500.2   544.5  694.57             .1       .3
Ineffective Flow      num=       1
   Sta L   Sta R     Elev  Permanent
    2857  3391.2     1050       F

CROSS SECTION OUTPUT  Profile #PF#1
*************************************************************************************************
* E.G. Elev (ft)          * 1035.00  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.59  * Wt. n-Val.            *          *    0.033  *   0.035  *
* W.S. Elev (ft)          * 1034.41  * Reach Len. (ft)       *  500.20  *  544.50  *  694.57  *
* Crit W.S. (ft)          * 1021.44  * Flow Area (sq ft)     *          *24620.09  * 2307.33  *
* E.G. Slope (ft/ft)      *0.000504  * Area (sq ft)          *          *24620.09  * 4639.95  *
* Q Total (cfs)           *166000.00  * Flow (cfs)           *          *151942.40  *14057.60  *
* Top Width (ft)          * 2254.04  * Top Width (ft)        *          * 1635.84  *  618.20  *
* Vel Total (ft/s)        *    6.16  * Avg. Vel. (ft/s)      *          *    6.17  *    6.09  *
* Max Chl Dpth (ft)       *   29.45  * Hydr. Depth (ft)      *          *   15.05  *   16.77  *
* Conv. Total (cfs)       *7393035.0  * Conv. (cfs)          *          *6766960.0  *626074.4  *
* Length Wtd. (ft)        *  565.41  * Wetted Per. (ft)      *          * 1650.09  *  142.80  *
* Min Ch El (ft)          * 1004.96  * Shear (lb/sq ft)      *          *    0.47  *    0.51  *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    2.90  *    3.10  *
* Frctn Loss (ft)         *    0.23  * Cum Volume (acre-ft)  * 7295.71  *26652.62  * 2340.56  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)        * 2095.74  * 2734.04  *  914.45  *
*************************************************************************************************

Warning: Divided flow computed for this cross-section.
Warning: The cross-section end points had to be extended vertically for the computed water surface.
Note:    Multiple critical depths were found at this location.  The critical depth with the lowest, valid,
         water surface was used.

CROSS SECTION OUTPUT  Profile #PF#2
*************************************************************************************************
* E.G. Elev (ft)          * 1035.27  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.69  * Wt. n-Val.            *          *    0.033  *          *
* W.S. Elev (ft)          * 1034.58  * Reach Len. (ft)       *  500.20  *  544.50  *  694.57  *
* Crit W.S. (ft)          * 1021.87  * Flow Area (sq ft)     *          *24896.48  *          *
* E.G. Slope (ft/ft)      *0.000612  * Area (sq ft)          *          *24896.48  *          *
* Q Total (cfs)           *166000.00  * Flow (cfs)           *          *166000.00  *          *
* Top Width (ft)          * 1666.72  * Top Width (ft)        *          * 1666.72  *          *
* Vel Total (ft/s)        *    6.67  * Avg. Vel. (ft/s)      *          *    6.67  *          *
```

				DuplicateEffective		
* Max Chl Dpth (ft)	* 29.62	* Hydr. Depth (ft)	*	* 14.94	*	*
* Conv. Total (cfs)	*6712772.0	* Conv. (cfs)	*	*6712772.0	*	*
* Length Wtd. (ft)	* 551.61	* Wetted Per. (ft)	*	* 1702.96	*	*
* Min Ch El (ft)	* 1004.96	* Shear (lb/sq ft)	*	* 0.56	*	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 3.72	*	*
* Frctn Loss (ft)	* 0.28	* Cum Volume (acre-ft)	* 1422.13	*27549.62	* 270.98	*
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	* 221.84	* 2739.22	* 50.15	*

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.

CROSS SECTION

RIVER: 1
REACH: 1 RS: 209.6

INPUT
Description: Cross Section updated per TranSystems Corporation Mapping (2004)
Station Elevation Data num= 314

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	1036.94	13.13	1037.09	35.4	1036.93	42.14	1037.02	62.75	1036.81
80.11	1036.35	84.47	1036.23	85.83	1036.19	85.84	1036.15	86.03	1035.58
86.15	1035.07	108.3	1035.89	115.07	1036.01	117.72	1035.96	143.85	1035.72
143.85	1035.31	143.89	1035.15	144.06	1035.22	144.2	1035.69	146.15	1035.79
150.76	1036	153.65	1036.31	155.1	1036.44	155.52	1036.47	173.49	1037.3
173.54	1037.3	174.31	1037.31	201.33	1037.45	205.96	1037.59	209.36	1037.7
212.78	1037.88	219.14	1038.03	224.53	1038.2	238.58	1038.46	241.57	1038.48
243.21	1038.62	268.05	1038.83	278.58	1038.95	286.08	1038.44	296.45	1038.29
297.77	1038.27	303.74	1038.62	311.74	1038.26	313.97	1037.8	348.5	1037.74
361.32	1037.54	368.48	1037.6	376.51	1037.59	406.72	1037.39	446.88	1037.05
471.45	1036.98	500.7	1036.76	528.82	1036.71	552.06	1036.54	586.94	1036.3
593.03	1036.31	618.45	1036.08	642.8	1035.97	650.54	1036.09	692.12	1035.93
710.73	1035.35	732.72	1035.23	745.41	1035.35	797.35	1035.18	810.26	1035.2
824.69	1035.38	837.74	1035.75	900.02	1036.75	912.46	1036.96	924.92	1036.96
937.97	1036.97	1007.76	1036.92	1015.56	1036.68	1020.51	1036.54	1023.15	1036.5
1026.88	1036.47	1036.88	1036.23	1068.93	1035.52	1070.45	1034.88	1070.93	1034.68
1071.73	1034.34	1080.95	1030.02	1100.19	1021.08	1103.62	1019.38	1108.7	1019.56
1110.02	1019.62	1117.66	1019.97	1132.58	1020.54	1145.09	1021.88	1146.16	1021.99
1147.32	1022.05	1174.38	1023.78	1180.69	1023.1	1198.85	1021.47	1207.45	1019.53
1224.71	1014.95	1227.51	1015.05	1243.18	1015.55	1259.79	1016.3	1270.34	1016.67
1297.89	1017.87	1302.5	1018.29	1311.94	1018.73	1319.79	1018.75	1333.21	1018.85
1356.89	1018.97	1371.27	1019.15	1379.98	1019.05	1389.63	1018.97	1399.68	1019.01
1408.76	1018.97	1409.46	1018.96	1410.95	1018.53	1426.62	1013.77	1430.86	1014.2
1432.61	1014.37	1448.08	1015.9	1456.17	1015.96	1462.43	1016.12	1467.13	1016.1
1471.86	1016.25	1490.55	1017.24	1496.97	1017.34	1528.03	1017.25	1530.84	1017.27
1535.13	1017.32	1560.42	1017.41	1569.61	1017.48	1577.34	1017.57	1588.76	1017.61
1596.03	1017.6	1602.24	1017.57	1621.07	1017.72	1629.55	1018.31	1641.44	1018.04
1645.69	1017.16	1650.49	1016.01	1662.37	1013.96	1662.44	1013.96	1662.46	1013.96
1662.5	1013.95	1683.72	1013.91	1692.66	1014.28	1715.54	1018.57	1728.51	1021.05
1743.77	1019.73	1786.04	1015.81	1814.33	1013.6	1882.73	1009.34	1909.42	1008.07
1930.4	1007.13	1962.92	1005.68	1982.06	1004.68	2007.74	1004.2	2042.33	1003.7
2049.39	1003.55	2049.65	1003.53	2049.97	1003.51	2050.19	1003.48	2053.55	1004.07
2064.95	1004.97	2083.98	1006.56	2096.1	1006.77	2111.08	1007.09	2115.74	1007.23
2117.52	1007.24	2133.57	1008.09	2135.88	1008.31	2146.7	1008.59	2148.8	1008.62
2150.04	1008.57	2153.29	1008.59	2175.61	1014.74	2181.1	1016.48	2186.93	1016.65
2198.05	1016.7	2199.07	1016.69	2215.46	1016.88	2235.66	1017.39	2244.67	1017.79
2259.53	1018.21	2264.96	1018.36	2272.02	1020.28	2292.42	1026.67	2292.54	1026.68
2292.63	1026.67	2292.78	1026.67	2306.01	1021.11	2308.72	1019.74	2316.03	1020.38
2316.05	1020.38	2316.07	1020.39	2316.08	1020.39	2316.1	1020.4	2327.73	1023.46
2335.67	1025.5	2335.73	1025.52	2335.76	1025.53	2336	1025.52	2366.83	1024.59
2370.54	1024.4	2373.96	1023.92	2383.42	1023.08	2395.77	1022.89	2401.08	1022.62
2410.38	1022.34	2421.08	1022.79	2440.47	1023.41	2446.4	1023.35	2447.97	1023.37
2453.73	1023.55	2473.17	1023.91	2479.34	1022.97	2485.44	1021.75	2486.91	1021.72
2491.13	1022.14	2514.28	1024.5	2518.4	1024.52	2528.28	1024.17	2547.01	1024.68
2548.12	1024.84	2548.46	1024.91	2553.72	1025.57	2553.98	1025.62	2554.78	1025.7
2557.29	1025.98	2562.66	1025.66	2580.34	1023.4	2583.36	1023.33	2589.33	1023.24
2611.06	1018.94	2617.05	1017.81	2622.59	1016.56	2650.12	1014.13	2669.03	1012.35
2669.52	1012.33	2669.85	1012.31	2682.01	1012.46	2692.25	1012.65	2694.03	1012.6
2695.96	1012.47	2699.48	1012.31	2699.7	1012.32	2700.08	1012.35	2706.2	1013
2720.84	1014.42	2725.55	1015.09	2740.46	1015.24	2745.49	1015.22	2755.58	1015.2
2759.61	1015	2762.69	1014.83	2767.69	1014.88	2776.81	1014.99	2780.12	1015.62
2792.64	1015.98	2801.77	1016.21	2807.39	1016.37	2825.53	1021.49	2826.62	1021.77
2831.19	1021.57	2854.98	1020.64	2858.03	1022.63	2859.37	1023.21	2863.19	1025.21
2876.6	1030.67	2879.06	1031.79	2880.1	1032.03	2889.81	1031.9	2901.67	1031.82
2902.36	1031.83	2902.64	1031.85	2920.11	1032.6	2922.79	1032.68	2932.52	1032.97
2934.22	1033.03	2935.5	1033.44	2948.9	1038.06	2952.61	1037.84	2956.44	1037.61
2966.22	1037.59	2980.9	1037.65	2983.52	1037.36	2991.01	1036.2	3001.3	1033.55
3015.1	1030.26	3039.96	1030.15	3054.54	1030.18	3140.48	1030.53	3150.96	1030.53
3163.72	1030.5	3208.71	1030.59	3252.82	1029.35	3253.78	1029.32	3267.23	1030.56
3269.13	1030.75	3275.49	1030.54	3279.52	1030.42	3280.97	1030.5	3296.28	1031.2
3302.64	1031.01	3313.45	1030.7	3317.94	1030.62	3322.93	1030.73	3331.95	1030.99
3339.39	1030.54	3340.16	1030.5	3347.45	1029.77	3357.33	1028.82	3358.85	1028.85
3399.02	1030.06	3430.86	1029.88	3460.86	1029.64	3523.32	1030.13		

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.037	912.46	.032	2292.42	.035	2952.61	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
937.97	2175.61	256	290	340.7	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
0	780	1040	F
2700	3523.32	1040	F

CROSS SECTION OUTPUT Profile #PF#1

* E.G. Elev (ft)	* 1034.75	* Element	* Left OB	* Channel	* Right OB	*
* Vel Head (ft)	* 0.55	* Wt. n-Val.	*	* 0.032	* 0.034	*
* W.S. Elev (ft)	* 1034.21	* Reach Len. (ft)	* 256.00	* 290.00	* 340.70	*
* Crit W.S. (ft)	* 1022.79	* Flow Area (sq ft)	*	*21539.74	* 7052.60	*

```
                                                                    DuplicateEffective
* E.G. Slope (ft/ft)     *0.000344  * Area (sq ft)            *          *21539.74  *12157.87  *
* Q Total (cfs)          *166000.00  * Flow (cfs)             *          *133805.10  *32194.94  *
* Top Width (ft)         * 2390.29  * Top Width (ft)          *          * 1103.60  * 1286.70  *
* Vel Total (ft/s)       *    5.81  * Avg. Vel. (ft/s)       *          *    6.21  *    4.56  *
* Max Chl Dpth (ft)      *   30.73  * Hydr. Depth (ft)       *          *   19.52  *   13.45  *
* Conv. Total (cfs)      *8951574.0  * Conv. (cfs)           *          *7215457.0  *1736117.0  *
* Length Wtd. (ft)       *  291.43  * Wetted Per. (ft)       *          * 1111.66  *  529.64  *
* Min Ch El (ft)         * 1003.48  * Shear (lb/sq ft)       *          *    0.42  *    0.29  *
* Alpha                  *    1.04  * Stream Power (lb/ft s) *          *    2.58  *    1.31  *
* Frctn Loss (ft)        *    0.15  * Cum Volume (acre-ft)   * 7295.71  *26364.12  * 2206.64  *
* C & E Loss (ft)        *    0.10  * Cum SA (acres)         * 2095.74  * 2716.92  *  899.26  *
*****************************************************************************************

Warning: Divided flow computed for this cross-section.
Warning: The cross-section end points had to be extended vertically for the computed water surface.
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:    Multiple critical depths were found at this location.  The critical depth with the lowest, valid,
         water surface was used.

CROSS SECTION OUTPUT  Profile #PF#2
*****************************************************************************************
* E.G. Elev (ft)          * 1034.98  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.72  * Wt. n-Val.            *          *    0.032  *    0.033  *
* W.S. Elev (ft)          * 1034.26  * Reach Len. (ft)       *  256.00  *  290.00  *  340.70  *
* Crit W.S. (ft)          * 1023.22  * Flow Area (sq ft)     *          *21600.36  * 3006.42  *
* E.G. Slope (ft/ft)      *0.000430  * Area (sq ft)          *          *21600.36  * 3006.42  *
* Q Total (cfs)           *166000.00  * Flow (cfs)           *          *150272.30  *15727.66  *
* Top Width (ft)          * 1328.11  * Top Width (ft)       *          * 1103.72  *  224.39  *
* Vel Total (ft/s)        *    6.75  * Avg. Vel. (ft/s)     *          *    6.96  *    5.23  *
* Max Chl Dpth (ft)       *   30.78  * Hydr. Depth (ft)     *          *   19.57  *   13.40  *
* Conv. Total (cfs)       *8007438.0  * Conv. (cfs)         *          *7248774.0  *758664.0  *
* Length Wtd. (ft)        *  288.91  * Wetted Per. (ft)     *          * 1111.79  *  239.74  *
* Min Ch El (ft)          * 1003.48  * Shear (lb/sq ft)     *          *    0.52  *    0.34  *
* Alpha                   *    1.02  * Stream Power (lb/ft s) *          *    3.63  *    1.76  *
* Frctn Loss (ft)         *    0.17  * Cum Volume (acre-ft)   * 1422.13  *27259.02  *  247.01  *
* C & E Loss (ft)         *    0.08  * Cum SA (acres)         *  221.84  * 2721.90  *   48.36  *
*****************************************************************************************

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  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: 1
REACH: 1                RS: 209.54

INPUT
Description: mapping from TranSystems Corporation (2004) proposed grading plans
Station Elevation Data    num=      17
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*************************************************************************************
 -474.84 1042.98 -453.59 1043.19 -453.58    1027 -445.58    1027 -431.58    1020
  161.45    1020  188.62  1014.1  215.79  1014.1  229.37    1005  498.77    1005
  507.83 1009.55  525.94    1015  593.85    1015  623.28    1027  640.28    1027
  640.29 1042.87  661.91 1042.69

Manning's n Values        num=       5
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
*************************************************************************************
 -474.84    .025 -453.58    .037  229.37    .032  498.77    .037  640.28    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.    Expan.
        229.37  498.77              116     116     116             .3        .5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 -474.84 -472.34 1048.87       F
  660.86  661.91 1044.79       F

CROSS SECTION OUTPUT  Profile #PF#1
*****************************************************************************************
* E.G. Elev (ft)          * 1034.51  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    1.56  * Wt. n-Val.            *   0.037  *    0.032  *    0.037  *
* W.S. Elev (ft)          * 1032.94  * Reach Len. (ft)       *   24.00  *   24.00  *   24.00  *
* Crit W.S. (ft)          * 1026.10  * Flow Area (sq ft)     * 9115.63  * 7527.38  * 2277.64  *
* E.G. Slope (ft/ft)      *0.000808  * Area (sq ft)          * 9115.63  * 7527.38  * 2277.64  *
* Q Total (cfs)           *166000.00  * Flow (cfs)           *58264.24  *91484.05  *16251.70  *
* Top Width (ft)          * 1093.87  * Top Width (ft)       *  682.95  *  269.40  *  141.51  *
* Vel Total (ft/s)        *    8.77  * Avg. Vel. (ft/s)     *    6.39  *   12.15  *    7.14  *
* Max Chl Dpth (ft)       *   27.94  * Hydr. Depth (ft)     *   13.35  *   27.94  *   16.09  *
* Conv. Total (cfs)       *5840043.0  * Conv. (cfs)         *2049793.0  *3218499.0  *571750.6  *
* Length Wtd. (ft)        *   24.00  * Wetted Per. (ft)     *  693.93  *  269.40  *  151.68  *
* Min Ch El (ft)          * 1005.00  * Shear (lb/sq ft)     *    0.66  *    1.41  *    0.76  *
* Alpha                   *    1.31  * Stream Power (lb/ft s) *    4.24  *   17.13  *    5.40  *
* Frctn Loss (ft)         *          * Cum Volume (acre-ft)   * 7268.93  *26267.36  * 2150.19  *
* C & E Loss (ft)         *          * Cum SA (acres)         * 2093.74  * 2712.35  *  893.67  *
*****************************************************************************************

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

CROSS SECTION OUTPUT  Profile #PF#2
*****************************************************************************************
* E.G. Elev (ft)          * 1034.73  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    1.57  * Wt. n-Val.            *   0.037  *    0.032  *    0.037  *
* W.S. Elev (ft)          * 1033.17  * Reach Len. (ft)       *   24.00  *   24.00  *   24.00  *
* Crit W.S. (ft)          * 1026.10  * Flow Area (sq ft)     * 9062.84  * 7587.60  * 2182.04  *
* E.G. Slope (ft/ft)      *0.000796  * Area (sq ft)          * 9062.84  * 7587.60  * 2182.04  *
* Q Total (cfs)           *166000.00  * Flow (cfs)           *57968.30  *92040.84  *15990.86  *
* Top Width (ft)          * 1050.00  * Top Width (ft)       *  659.37  *  269.40  *  121.23  *
* Vel Total (ft/s)        *    8.81  * Avg. Vel. (ft/s)     *    6.40  *   12.13  *    7.33  *
```

```
                                                                    DuplicateEffective
* Max Chl Dpth (ft)      *   28.16  * Hydr. Depth (ft)       *   13.74  *   28.16  *   18.00  *
* Conv. Total (cfs)      *5882311.0  * Conv. (cfs)           *2054142.0  *3261523.0  *566645.7  *
* Length Wtd. (ft)       *   24.00  * Wetted Per. (ft)       *  675.94  *  269.40  *  132.70  *
* Min Ch El (ft)         * 1005.00  * Shear (lb/sq ft)       *    0.67  *    1.40  *    0.82  *
* Alpha                  *    1.30  * Stream Power (lb/ft s) *    4.26  *   16.99  *    5.99  *
* Frctn Loss (ft)        *          * Cum Volume (acre-ft)   * 1395.50  *27161.86  *  226.72  *
* C & E Loss (ft)        *          * Cum SA (acres)         *  219.91  * 2717.33  *   47.01  *
*****************************************************************************************

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

BRIDGE


RIVER: 1
REACH: 1                RS: 209.535

INPUT
Description: 35th Ave - modified bridge per TranSystems plans;
Used Interim
            Finished grade per plans; the pier widths were doubled (plans=5ft;
            model=10ft) in order to model the debris accumulation.
Distance from Upstream XS =       24
Deck/Roadway Width        =       91
Weir Coefficient          =      2.6
Upstream  Deck/Roadway Coordinates
     num=       10
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
*****************************************************************************
  -453.59 1043.19    1035 -334.34 1044.42    1035 -212.09 1045.34    1035
   -89.84 1045.94    1035   32.41 1046.22    1035  154.66 1046.19    1035
   276.91 1045.85    1035  399.16 1045.19    1035  521.41 1044.21    1035
   640.29 1042.87    1035

Upstream Bridge Cross Section Data
Station Elevation Data    num=       17
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*********************************************************************************************
  -474.84 1042.98 -453.59 1043.19 -453.58    1027 -445.58    1027 -431.58    1020
   161.45    1020  188.62  1014.1  215.79  1014.1  229.37    1005  498.77    1005
   507.83 1009.55  525.94    1015  593.85    1015  623.28    1027  640.28    1027
   640.29 1042.87  661.91 1042.69

Manning's n Values        num=       5
     Sta    n Val      Sta    n Val      Sta    n Val      Sta    n Val      Sta    n Val
*************************************************************************************
  -474.84     .025 -453.58     .037  229.37     .032  498.77     .037  640.28     .025

Bank Sta: Left   Right    Coeff Contr.   Expan.
        229.37  498.77            .3        .5
Ineffective Flow     num=       2
    Sta L   Sta R    Elev  Permanent
  -474.84 -472.34 1048.87        F
   660.86  661.91 1044.79        F

Downstream  Deck/Roadway Coordinates
     num=       10
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
*****************************************************************************
  -453.59 1043.19    1035 -334.34 1044.42    1035 -212.09 1045.34    1035
   -89.84 1045.94    1035   32.41 1046.22    1035  154.66 1046.19    1035
   276.91 1045.85    1035  399.16 1045.19    1035  521.41 1044.21    1035
   640.29 1042.87    1035

Downstream Bridge Cross Section Data
Station Elevation Data    num=       17
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*********************************************************************************************
  -474.84 1042.98 -453.59 1043.19 -453.58    1027 -445.58    1027 -431.58    1020
   161.45    1020  188.62  1014.1  215.79  1014.1  229.37    1005  498.77    1005
   507.83 1009.55  525.94    1015  593.85    1015  623.28    1027  640.28    1027
   640.29 1042.87  661.91 1042.69

Manning's n Values        num=       5
     Sta    n Val      Sta    n Val      Sta    n Val      Sta    n Val      Sta    n Val
*************************************************************************************
  -474.84     .025 -453.58     .037  229.37     .032  498.77     .037  640.28     .025

Bank Sta: Left   Right    Coeff Contr.   Expan.
        229.37  498.77            .3        .5
Ineffective Flow     num=       2
    Sta L   Sta R    Elev  Permanent
  -474.84  -475.2 1049.55        F
   665.16  661.91 1046.07        F

Upstream Embankment side slope              =       0 horiz. to 1.0 vertical
Downstream Embankment side slope            =       0 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow =     .95
Elevation at which weir flow begins         =
Energy head used in spillway design         =
Spillway height used in design              =
Weir crest shape                            = Broad Crested

Number of Piers =  8

Pier Data
Pier Station     Upstream= -334.34    Downstream= -334.34
Upstream     num=       2
    Width   Elev    Width   Elev
*********************************
      10     990       10    1040
Downstream     num=       2
    Width   Elev    Width   Elev
*********************************
      10     990       10    1040
```

```
Pier Data
Pier Station     Upstream= -212.09    Downstream= -212.09
Upstream     num=        2
    Width   Elev    Width   Elev
**********************************
      10     990      10    1040
Downstream     num=        2
    Width   Elev    Width   Elev
**********************************
      10     990      10    1040

Pier Data
Pier Station     Upstream=  -89.84    Downstream=  -89.84
Upstream     num=        2
    Width   Elev    Width   Elev
**********************************
      10     990      10    1040
Downstream     num=        2
    Width   Elev    Width   Elev
**********************************
      10     990      10    1040

Pier Data
Pier Station     Upstream=   32.41    Downstream=   32.41
Upstream     num=        2
    Width   Elev    Width   Elev
**********************************
      10     990      10    1040
Downstream     num=        2
    Width   Elev    Width   Elev
**********************************
      10     990      10    1040

Pier Data
Pier Station     Upstream=  154.66    Downstream=  154.66
Upstream     num=        2
    Width   Elev    Width   Elev
**********************************
      10     990      10    1040
Downstream     num=        2
    Width   Elev    Width   Elev
**********************************
      10     990      10    1040

Pier Data
Pier Station     Upstream=  276.91    Downstream=  276.91
Upstream     num=        2
    Width   Elev    Width   Elev
**********************************
      10     990      10    1040
Downstream     num=        2
    Width   Elev    Width   Elev
**********************************
      10     990      10    1040

Pier Data
Pier Station     Upstream=  399.16    Downstream=  399.16
Upstream     num=        2
    Width   Elev    Width   Elev
**********************************
      10     990      10    1040
Downstream     num=        2
    Width   Elev    Width   Elev
**********************************
      10     990      10    1040

Pier Data
Pier Station     Upstream=  521.41    Downstream=  521.41
Upstream     num=        2
    Width   Elev    Width   Elev
**********************************
      10     990      10    1040
Downstream     num=        2
    Width   Elev    Width   Elev
**********************************
      10     990      10    1040

Number of Bridge Coefficient Sets =  1

Low Flow Methods and Data
       Energy
       Momentum               Cd   =     1.2
Selected Low Flow Methods = Momentum

High Flow Method
       Pressure and Weir flow
           Submerged Inlet Cd          =
           Submerged Inlet + Outlet Cd =      .8
           Max Low Cord                =    1035

Additional Bridge Parameters
       Add Friction component to Momentum
       Do not add Weight component to Momentum
       Class B flow critical depth computations use critical depth
          inside the bridge at the upstream end
       Criteria to check for pressure flow = Upstream energy grade line

BRIDGE OUTPUT  Profile #PF#1
*********************************************************************************************
* E.G. US. (ft)          *    1034.51  * Element               *Inside BR US *Inside BR DS *
* W.S. US. (ft)          *    1032.94  * E.G. Elev (ft)        *    1034.37  *    1034.25  *
* Q Total (cfs)          *  166000.00  * W.S. Elev (ft)        *    1032.64  *    1032.47  *
* Q Bridge (cfs)         *  166000.00  * Crit W.S. (ft)        *    1026.30  *    1026.29  *
* Q Weir (cfs)           *             * Max Chl Dpth (ft)     *      27.63  *      27.47  *
* Weir Sta Lft (ft)      *             * Vel Total (ft/s)      *       9.65  *       9.74  *
```

				DuplicateEffective	
* Weir Sta Rgt (ft)	*	* Flow Area (sq ft)	*	17210.91 *	17040.98 *
* Weir Submerg	*	* Froude # Chl	*	0.42 *	0.43 *
* Weir Max Depth (ft)	*	* Specif Force (cu ft)	*	221851.50 *	219560.00 *
* Min El Weir Flow (ft)	* 1042.71	* Hydr Depth (ft)	*	16.98 *	16.81 *
* Min El Prs (ft)	* 1035.00	* W.P. Total (ft)	*	1309.01 *	1305.95 *
* Delta EG (ft)	* 0.26	* Conv. Total (cfs)	*	4357145.0 *	4297493.0 *
* Delta WS (ft)	* 0.32	* Top Width (ft)	*	1013.87 *	1013.87 *
* BR Open Area (sq ft)	* 19608.95	* Frctn Loss (ft)	*	*	*
* BR Open Vel (ft/s)	* 9.74	* C & E Loss (ft)	*	*	*
* Coef of Q	*	* Shear Total (lb/sq ft)	*	1.19 *	1.22 *
* Br Sel Method	* Momentum	* Power Total (lb/ft s)	*	11.49 *	11.84 *

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

BRIDGE OUTPUT Profile #PF#2

* E.G. US. (ft)	* 1034.73	* Element	*Inside BR US	*Inside BR DS	*
* W.S. US. (ft)	* 1033.17	* E.G. Elev (ft)	* 1034.59	* 1034.47	*
* Q Total (cfs)	* 166000.00	* W.S. Elev (ft)	* 1032.86	* 1032.70	*
* Q Bridge (cfs)	* 166000.00	* Crit W.S. (ft)	* 1026.31	* 1026.31	*
* Q Weir (cfs)	*	* Max Chl Dpth (ft)	* 27.86	* 27.70	*
* Weir Sta Lft (ft)	*	* Vel Total (ft/s)	* 9.70	* 9.79	*
* Weir Sta Rgt (ft)	*	* Flow Area (sq ft)	* 17119.72	* 16962.24	*
* Weir Submerg	*	* Froude # Chl	* 0.42	* 0.43	*
* Weir Max Depth (ft)	*	* Specif Force (cu ft)	* 224523.30	* 222291.60	*
* Min El Weir Flow (ft)	* 1043.11	* Hydr Depth (ft)	* 17.65	* 17.49	*
* Min El Prs (ft)	* 1035.00	* W.P. Total (ft)	* 1255.57	* 1252.98	*
* Delta EG (ft)	* 0.26	* Conv. Total (cfs)	* 4403094.0	* 4346859.0	*
* Delta WS (ft)	* 0.32	* Top Width (ft)	* 970.00	* 970.00	*
* BR Open Area (sq ft)	* 19195.78	* Frctn Loss (ft)	*	*	*
* BR Open Vel (ft/s)	* 9.79	* C & E Loss (ft)	*	*	*
* Coef of Q	*	* Shear Total (lb/sq ft)	* 1.21	* 1.23	*
* Br Sel Method	* Momentum	* Power Total (lb/ft s)	* 11.73	* 12.06	*

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

CROSS SECTION

RIVER: 1
REACH: 1 RS: 209.53

INPUT
Description: mapping from TranSystems Corporation (2004) proposed grading plans
Station Elevation Data num= 17

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-474.84	1042.98	-453.59	1043.19	-453.58	1027	-445.58	1027	-431.58	1020
161.45	1020	188.62	1014.1	215.79	1014.1	229.37	1005	498.77	1005
507.83	1009.55	525.94	1015	593.85	1015	623.28	1027	640.28	1027
640.29	1042.87	661.91	1042.69						

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
-474.84	.025	-453.58	.037	229.37	.032	498.77	.037	640.28	.025

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
229.37 498.77 566 647 655 .3 .5

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
-474.84	-475.2	1049.55	F
665.16	661.91	1046.07	F

CROSS SECTION OUTPUT Profile #PF#1

* E.G. Elev (ft)	* 1034.25	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 1.63	* Wt. n-Val.	* 0.037	* 0.032	* 0.037 *
* W.S. Elev (ft)	* 1032.62	* Reach Len. (ft)	* 566.00	* 647.00	* 655.00 *
* Crit W.S. (ft)	* 1026.09	* Flow Area (sq ft)	* 8894.04	* 7439.97	* 2231.73 *
* E.G. Slope (ft/ft)	*0.000855	* Area (sq ft)	* 8894.04	* 7439.97	* 2231.73 *
* Q Total (cfs)	*166000.00	* Flow (cfs)	*57533.61	*92304.57	*16161.82 *
* Top Width (ft)	* 1093.87	* Top Width (ft)	* 682.95	* 269.40	* 141.51 *
* Vel Total (ft/s)	* 8.94	* Avg. Vel. (ft/s)	* 6.47	* 12.41	* 7.24 *
* Max Chl Dpth (ft)	* 27.62	* Hydr. Depth (ft)	* 13.02	* 27.62	* 15.77 *
* Conv. Total (cfs)	*5676541.0	* Conv. (cfs)	*1967421.0	*3156450.0	*552670.2 *
* Length Wtd. (ft)	* 633.34	* Wetted Per. (ft)	* 693.62	* 269.40	* 151.39 *
* Min Ch El (ft)	* 1005.00	* Shear (lb/sq ft)	* 0.68	* 1.47	* 0.79 *
* Alpha	* 1.32	* Stream Power (lb/ft s)	* 4.43	* 18.29	* 5.70 *
* Frctn Loss (ft)	* 0.51	* Cum Volume (acre-ft)	* 7246.77	*26248.87	* 2144.70 *
* C & E Loss (ft)	* 0.40	* Cum SA (acres)	* 2092.04	* 2711.68	* 893.32 *

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). 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, energy was used.

CROSS SECTION OUTPUT Profile #PF#2

* E.G. Elev (ft)	* 1034.48	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 1.63	* Wt. n-Val.	* 0.037	* 0.032	* 0.037 *
* W.S. Elev (ft)	* 1032.84	* Reach Len. (ft)	* 566.00	* 647.00	* 655.00 *
* Crit W.S. (ft)	* 1026.10	* Flow Area (sq ft)	* 8851.15	* 7501.11	* 2143.12 *
* E.G. Slope (ft/ft)	*0.000840	* Area (sq ft)	* 8851.15	* 7501.11	* 2143.12 *
* Q Total (cfs)	*166000.00	* Flow (cfs)	*57268.59	*92763.73	*15967.67 *
* Top Width (ft)	* 1050.00	* Top Width (ft)	* 659.37	* 269.40	* 121.23 *
* Vel Total (ft/s)	* 8.98	* Avg. Vel. (ft/s)	* 6.47	* 12.37	* 7.45 *

				DuplicateEffective		
* Max Chl Dpth (ft)	* 27.84	* Hydr. Depth (ft)	* 13.42	* 27.84	* 17.68	*
* Conv. Total (cfs)	*5726011.0	* Conv. (cfs)	*1975425.0	*3199796.0	*550789.6	*
* Length Wtd. (ft)	* 633.41	* Wetted Per. (ft)	* 675.61	* 269.40	* 132.38	*
* Min Ch El (ft)	* 1005.00	* Shear (lb/sq ft)	* 0.69	* 1.46	* 0.85	*
* Alpha	* 1.31	* Stream Power (lb/ft s)	* 4.45	* 18.07	* 6.33	*
* Frctn Loss (ft)	* 0.49	* Cum Volume (acre-ft)	* 1373.47	*27143.21	* 221.48	*
* C & E Loss (ft)	* 0.41	* Cum SA (acres)	* 218.27	* 2716.66	* 46.71	*

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). 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, energy was used.

CROSS SECTION

RIVER: 1
REACH: 1 RS: 209.42

INPUT
Description: Cross Section updated per TranSystems Corporation Mapping (2004)
Station Elevation Data num= 261

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	1034.29	13.95	1035.23	30.6	1035.36	34.2	1035.28	40.66	1035.34
43.54	1035.31	58.19	1035.26	73.11	1035.4	79.13	1034.92	85.28	1034.79
105.16	1034.78	128.62	1034.73	132.9	1034.75	156.09	1034.69	157.21	1034.69
158.1	1034.68	160.06	1034.68	160.67	1034.69	166.18	1034.85	167.34	1034.85
169.73	1034.81	178.72	1035.31	201.05	1035.25	210.87	1035.25	231.67	1035.25
233.12	1035.14	236.04	1035.16	240.22	1035.23	246.03	1034.98	266.86	1033.98
272.38	1034.56	273.11	1034.54	277.52	1033.77	287.54	1032.25	295.72	1034.67
308.45	1038.11	337.71	1037.32	342.25	1037.1	346.32	1037.06	399.81	1036.03
437.59	1035.53	450.62	1035.26	454.42	1035.18	462.99	1036.04	469.46	1036.56
474.85	1036.91	509.74	1035.21	517.9	1034.72	519.4	1034.52	547.09	1032.11
571.09	1030.41	610.96	1028.51	623.69	1027.98	625.8	1028.1	645.65	1024.85
660.16	1022.37	680.73	1022.79	695.8	1023.15	710.23	1024.25	750.12	1026.66
797.1	1026.65	801.31	1026.67	802.77	1026.65	821.28	1026.47	836.71	1026.6
853.16	1027.02	865.83	1026.64	878.1	1025.9	889.61	1025.75	890.58	1025.95
912.9	1020.98	913.31	1020.88	914.04	1020.67	915.41	1020.7	946.3	1021.22
965.99	1022.91	972.75	1023.6	1011.39	1022.68	1016.53	1022.66	1026.48	1022.4
1078.86	1021.51	1103.56	1020.99	1138.64	1022.07	1157.54	1023.27	1161.83	1022.98
1184.97	1023.4	1189.6	1023.49	1214.37	1023.73	1219.41	1023.74	1239.8	1023.75
1294.77	1023.7	1319.01	1023.45	1334.96	1023.61	1351.96	1023.71	1363.77	1023.06
1380.3	1021.78	1386.01	1021.94	1406.76	1023.11	1407.05	1023.17	1409.32	1023.11
1435.49	1023.09	1466.53	1023.46	1502.69	1023.18	1546.39	1021.96	1576.4	1021.46
1589.16	1021.04	1594.54	1020.78	1617.19	1017.47	1658.29	1011.37	1697.76	1009.98
1701.9	1009.84	1706.09	1009.72	1741.68	1009.11	1748.57	1008.42	1751.35	1008.26
1756.92	1008.46	1764.35	1008	1770.76	1007.36	1802.89	1006.68	1812.38	1006.68
1826.28	1006.72	1843.86	1005.6	1867.67	1004.13	1895.38	1004.11	1907.68	1004.08
1913.92	1004.16	1949.03	1003.88	1953.19	1003.87	1954.63	1003.89	1955.23	1003.91
1956.82	1003.98	2007.57	1005.68	2013.21	1005.79	2021.26	1005.87	2032.67	1006.02
2055.91	1006.49	2083.84	1010.54	2087.17	1011.06	2087.73	1011.11	2094.31	1011.35
2133.24	1012.72	2155.65	1019.69	2163.56	1022.38	2166.92	1023.84	2178.78	1029.79
2178.83	1029.82	2200.08	1030.43	2203.87	1030.53	2206.83	1032.28	2210.07	1034.12
2230.25	1045.65	2242.6	1044.92	2245.87	1044.86	2247.48	1044.9	2250.27	1044.9
2253.59	1045.08	2265.71	1045.18	2276.03	1044.59	2284.06	1044	2297.44	1043.03
2308.18	1041.64	2322.34	1040.81	2326.93	1040.54	2335.66	1040.94	2367.98	1042.66
2391.74	1042.11	2395.24	1042.03	2402.64	1041.52	2417.67	1040.94	2425.35	1042.01
2434.99	1043.45	2441.29	1042.69	2442.75	1042.53	2444.7	1041.93	2452.12	1039.79
2476.06	1032.49	2487.64	1032.75	2538.91	1033.17	2592.57	1032.72	2616.96	1032.7
2627.7	1032.64	2655.8	1032.8	2679.32	1032.83	2718.24	1032.83	2721.28	1032.81
2725.34	1032.9	2749.41	1033.26	2759.32	1033.16	2787.73	1032.88	2804.84	1033.02
2807.91	1033.02	2812.72	1033.03	2820.93	1033.11	2849.34	1033.09	2867.33	1033.2
2882.68	1033.06	2895.72	1032.96	2906.2	1032.77	2914.49	1033.07	2915.88	1033.12
2921.76	1033.05	2925.44	1033.01	2942.93	1032.82	2954.19	1032.69	2983.24	1032.35
2987.96	1032.32	2992.97	1032.2	2994.09	1031.99	3000.47	1030.92	3017.65	1031.3
3032.62	1031.8	3036.6	1031.84	3046.19	1031.83	3115.08	1030.86	3135.83	1030.62
3138.26	1030.62	3142.08	1030.59	3157.49	1030.19	3183.8	1029.85	3194.75	1029.52
3198.02	1029.43	3208.52	1029.13	3239.43	1028.33	3267.5	1027.88	3272.94	1027.8
3293.13	1027.87	3318.15	1027.82	3343.82	1027.96	3352.58	1029.75	3352.69	1029.77
3352.9	1029.82	3352.93	1029.82	3353.05	1029.82	3364.26	1029.49	3370.27	1029.49
3390.26	1029.93	3399.73	1030.16	3417.54	1030.91	3442.95	1031.61	3450.87	1031.66
3451.98	1031.67	3463.43	1031.73	3468.18	1031.83	3479.17	1032.03	3481.11	1032.08
3488.58	1032.27	3495.15	1032.33	3511.25	1032.53	3512.76	1032.53	3533.97	1032.45
3572.07	1032.64	3581.32	1032.75	3589.52	1032.66	3594.25	1032.35	3596.39	1032.31
3601.71	1032.3	3658.37	1031.14	3663.86	1031.58	4008.27	1032	4642.62	1032
5294.79	1034								

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.037	571.09	.032	2210.07	.03	2276.03	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
571.09	2210.07	522.18	501.19	560.6	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
0	302	1050	F
2233	5294.79	1050	F

CROSS SECTION OUTPUT Profile #PF#1

* E.G. Elev (ft)	* 1033.34	* Element	* Left OB	* Channel	* Right OB	*
* Vel Head (ft)	* 0.84	* Wt. n-Val.	* 0.037	* 0.032	*	*
* W.S. Elev (ft)	* 1032.51	* Reach Len. (ft)	* 522.18	* 501.19	* 560.60	*
* Crit W.S. (ft)	* 1024.61	* Flow Area (sq ft)	* 30.82	*22620.38	*	*
* E.G. Slope (ft/ft)	*0.000757	* Area (sq ft)	* 31.15	*22620.38	* 1879.59	*
* Q Total (cfs)	*166000.00	* Flow (cfs)	* 35.76	*165964.30	*	*
* Top Width (ft)	* 3449.86	* Top Width (ft)	* 31.12	* 1636.14	* 1782.61	*
* Vel Total (ft/s)	* 7.33	* Avg. Vel. (ft/s)	* 1.16	* 7.34	*	*
* Max Chl Dpth (ft)	* 28.64	* Hydr. Depth (ft)	* 1.08	* 13.83	*	*
* Conv. Total (cfs)	*6035340.0	* Conv. (cfs)	* 1300.1	*6034040.0	*	*
* Length Wtd. (ft)	* 501.37	* Wetted Per. (ft)	* 28.63	* 1642.88	*	*
* Min Ch El (ft)	* 1003.87	* Shear (lb/sq ft)	* 0.05	* 0.65	*	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	* 0.06	* 4.77	*	*

```
                                                                    DuplicateEffective
* Frctn Loss (ft)        *    0.29  * Cum Volume (acre-ft)    * 7188.78  *26025.63  * 2113.79  *
* C & E Loss (ft)        *    0.07  * Cum SA (acres)          * 2087.40  * 2697.53  *  878.85  *
*********************************************************************************************

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.

CROSS SECTION OUTPUT  Profile #PF#2
*********************************************************************************************
* E.G. Elev (ft)          * 1033.57  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.81  * Wt. n-Val.             *          *    0.032 *          *
* W.S. Elev (ft)          * 1032.77  * Reach Len. (ft)        *  522.18  *  501.19  *  560.60  *
* Crit W.S. (ft)          * 1024.61  * Flow Area (sq ft)      *          *23049.24  *          *
* E.G. Slope (ft/ft)      *0.000713  * Area (sq ft)           *          *23049.24  *          *
* Q Total (cfs)           *166000.00  * Flow (cfs)            *          *166000.00  *          *
* Top Width (ft)          * 1636.60  * Top Width (ft)        *          * 1636.60  *          *
* Vel Total (ft/s)        *    7.20  * Avg. Vel. (ft/s)      *          *    7.20  *          *
* Max Chl Dpth (ft)       *   28.90  * Hydr. Depth (ft)      *          *   14.08  *          *
* Conv. Total (cfs)       *6218621.0  * Conv. (cfs)          *          *6218621.0  *          *
* Length Wtd. (ft)        *  501.19  * Wetted Per. (ft)      *          * 1645.77  *          *
* Min Ch El (ft)          * 1003.87  * Shear (lb/sq ft)      *          *    0.62  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    4.49  *          *
* Frctn Loss (ft)         *    0.27  * Cum Volume (acre-ft)   * 1315.97  *26916.33  *  205.36  *
* C & E Loss (ft)         *    0.06  * Cum SA (acres)         *  213.99  * 2702.51  *   45.80  *
*********************************************************************************************

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

CROSS SECTION


RIVER: 1
REACH: 1                RS: 209.33

INPUT
Description: 209.33 - FEMA Section V
Cross Section updated per TranSystems
          Corporation Mapping (2004)
Station Elevation Data    num=     299
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*********************************************************************************************
       0 1033.23     9.28 1033.85    67.59 1034.31    76.29 1034.37    87.16 1034.02
   88.44 1034.02    90.97 1034.27    95.25 1034.49    97.58 1034.68   122.52 1034.77
  138.89 1034.64   164.56 1034.61    182.7 1034.34   185.83 1033.89   188.83 1033.39
  194.16   1033.6   211.38  1034.1   216.25 1033.75   218.76 1033.54   230.15  1033.6
  250.54 1033.94   261.84  1033.5   277.15 1033.46   280.01 1033.12   284.45 1033.52
  295.17     1031   297.37 1030.46   305.08 1032.99   308.41 1033.93   312.26 1035.75
  318.63 1038.04   338.18 1036.71   361.88 1035.18   366.78 1035.25   399.56 1035.44
  429.92 1035.56   447.82 1035.65   501.08 1033.95   515.32 1033.52   518.77 1033.44
  520.96 1033.43    532.1 1033.29   545.07 1033.28   550.44 1033.26   554.88 1033.27
  595.06 1033.05   615.66 1031.04   619.87 1030.58   621.01 1030.06    637.5  1022.7
   677.1 1024.71   684.12 1025.13   693.83 1025.14   720.18 1025.05   733.99 1024.21
  746.45 1023.65   760.29 1022.52   764.83 1022.34   769.36 1021.68   771.49 1021.54
  788.85 1020.64   793.84 1020.23   800.12 1019.85   804.23 1019.57   818.36 1018.65
  820.59 1018.32    822.5 1018.07   830.27 1017.75   832.72 1017.81   840.02 1017.86
  845.29 1017.91   847.96 1018.05   850.48 1018.32   853.78 1018.79   854.56 1018.77
  857.13 1019.03   864.44 1019.81   876.08 1021.46   899.77   1020.2   903.44 1020.01
  905.95 1020.12   907.58 1020.15   918.13 1020.44   948.09 1021.35   958.16 1021.48
  965.83 1021.65   982.55 1021.69   992.22 1021.38 1016.97 1021.63 1066.46 1021.26
1076.42 1021.07   1105.8 1020.37 1113.21 1020.41 1146.44 1020.81 1169.39 1021.76
1186.25   1022.4 1188.92   1022.5 1194.15 1022.71 1221.93   1023.6 1236.97 1023.95
1262.89 1023.87 1284.95 1023.17 1327.05 1023.89 1337.68 1024.18 1349.73 1023.99
1382.73 1022.93 1388.67 1022.88 1431.76 1022.19 1500.12 1015.89 1514.65 1014.64
1535.28 1013.68 1542.33 1013.35 1544.11 1013.33 1597.72   1012.7 1602.59 1012.55
1654.05 1010.85 1669.93 1010.82 1700.26     1011 1714.32 1010.97 1727.89  1010.7
1742.92 1011.23 1747.36 1011.51 1767.18   1012.7 1767.89 1012.51 1770.42 1011.77
1777.39 1009.82   1779.1 1009.37 1782.68 1009.06 1783.99 1008.76 1786.05 1008.63
1795.57 1009.17 1797.61 1008.93   1801.1 1008.56 1824.55 1006.15 1837.62   1003.8
1838.78 1003.59 1840.25 1003.97 1850.79 1006.66 1858.83 1004.29 1861.38 1003.73
1864.95 1003.77 1868.11 1003.51 1874.72 1003.45 1878.41 1000.33 1882.97   996.31
1894.86   997.27 1906.05     998  1919.2   997.82 1939.03   997.28 1946.03   998.99
1947.79   999.29     1952  999.63     1956 1000.13 1979.64 1001.89 1985.84 1002.52
1989.17 1002.95 2000.01  1004.4 2005.36 1004.02 2014.47 1003.59 2020.19 1004.18
2025.36 1004.85 2033.38 1005.14 2049.61 1006.44 2074.51 1008.15 2079.46 1008.47
2081.02   1008.6 2108.62 1010.66 2134.07 1010.71   2138.6 1010.67   2148.2 1010.73
2181.42 1010.81 2201.13   1022.3 2214.22 1029.21 2221.15 1029.43 2231.35 1028.17
2235.41 1027.78 2239.31 1027.07 2245.92 1027.26 2247.52 1027.19 2252.84 1027.46
2254.41 1027.48 2259.36 1027.98 2264.86 1028.55   2299.2   1030.2 2300.36 1030.25
2302.03 1030.35 2314.15 1031.05 2315.84 1031.07 2322.94 1031.14   2342.6 1031.52
2349.83 1031.44 2355.95 1031.72 2364.32 1031.31 2367.09 1031.31 2377.24 1030.95
 2378.4 1030.91 2383.41 1030.73 2384.58 1030.62 2394.07 1031.01 2402.28 1031.39
2403.62 1031.45 2405.33 1031.72 2407.36   1032.3 2414.23 1034.12 2417.54 1034.95
2424.21 1034.92 2430.56 1034.82 2454.18 1028.16  2456.8 1027.31 2461.45 1027.34
2486.18 1027.64 2493.33 1029.57 2498.17 1030.77 2505.12 1029.44 2508.51 1028.96
 2517.6 1029.93 2529.97 1031.26 2622.11 1031.12 2637.96 1031.16 2650.32 1031.14
2674.99 1031.22   2689.9 1031.57 2714.91 1031.67   2732.2 1031.54 2778.38 1031.59
2794.49 1031.51 2810.59 1031.48 2854.12 1031.57 2878.43 1031.52 2935.81 1031.33
2961.68 1031.28 3005.88 1031.07 3015.88 1030.95 3029.29 1030.86 3033.41 1030.82
3040.12 1030.79 3045.08 1030.77 3047.78 1030.75 3066.15 1030.29 3070.91 1030.23
3073.75 1030.13 3081.52 1029.97 3097.94 1030.02 3146.58 1030.52 3153.89 1030.61
3156.18 1030.64 3157.49 1030.65 3159.11 1030.65 3163.93 1030.65 3216.54 1030.26
3221.33 1030.24 3233.08   1030.2 3295.99 1029.66 3316.09 1029.87 3340.88 1029.36
3345.28 1029.06 3367.97 1029.98 3375.88 1030.13   3377.7 1029.93 3387.46 1028.55
3422.85 1028.55   3425.4 1028.47   3433.2   1028.4 3462.75 1027.88 3474.13   1029.1
3492.12 1031.29   3500.6 1031.61 3507.72   1031.9 3512.42 1032.08 3522.72 1032.41
3543.21 1032.48 3557.79 1032.53 3578.84 1032.52 3587.78 1032.26 3592.68   1032.2
 3602.5   1032.2 3618.19 1032.12 3632.46 1032.12 3667.58 1032.12 3668.46 1032.11
3672.96 1032.71 3673.72 1032.73 3674.53 1032.77 3675.28 1032.79 3675.37 1032.79
3768.01     1030 3873.98     1022 4064.75     1022 4266.25     1028  4509.1     1030
4756.15     1028 5076.44     1026 5429.17     1028 5785.07     1030 6148.28     1032
6538.72     1032 6935.43     1030 7354.12     1032 7788.93     1034

Manning's n Values        num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
```

```
**********************************************
      0    .037  615.66    .032 2424.21    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       615.66 2201.13           505.94  495.23  518.99            .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
       0     320    1040       F
    2419 7788.93    1040       F

CROSS SECTION OUTPUT  Profile #PF#1
*************************************************************************************************
* E.G. Elev (ft)         * 1032.99  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.62  * Wt. n-Val.           *   0.037  *   0.032  *   0.032  *
* W.S. Elev (ft)         * 1032.38  * Reach Len. (ft)       *  505.94  *  495.23  *  518.99  *
* Crit W.S. (ft)         * 1021.18  * Flow Area (sq ft)     *    9.13  *26127.26  *  538.68  *
* E.G. Slope (ft/ft)     *0.000445  * Area (sq ft)          *   22.35  *26127.26  *15068.58  *
* Q Total (cfs)          *166000.00  * Flow (cfs)           *    5.89  *165000.90  *  993.21  *
* Top Width (ft)         * 6734.89  * Top Width (ft)        *   27.56  * 1585.47  * 5121.87  *
* Vel Total (ft/s)       *    6.22  * Avg. Vel. (ft/s)     *    0.65  *    6.32  *    1.84  *
* Max Chl Dpth (ft)      *   36.06  * Hydr. Depth (ft)     *    0.67  *   16.48  *    2.61  *
* Conv. Total (cfs)      *7866844.0  * Conv. (cfs)         *   279.0  *7819496.0  * 47069.1  *
* Length Wtd. (ft)       *  496.25  * Wetted Per. (ft)     *   13.74  * 1596.74  *  208.68  *
* Min Ch El (ft)         *  996.31  * Shear (lb/sq ft)     *    0.02  *    0.45  *    0.07  *
* Alpha                  *    1.02  * Stream Power (lb/ft s) *  0.01  *    2.87  *    0.13  *
* Frctn Loss (ft)        *    0.35  * Cum Volume (acre-ft)  * 7188.46  *25745.19  * 2004.73  *
* C & E Loss (ft)        *    0.06  * Cum SA (acres)        * 2087.04  * 2678.99  *  834.43  *
*************************************************************************************************

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

CROSS SECTION OUTPUT  Profile #PF#2
*************************************************************************************************
* E.G. Elev (ft)         * 1033.24  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.61  * Wt. n-Val.           *          *   0.032  *          *
* W.S. Elev (ft)         * 1032.63  * Reach Len. (ft)       *  505.94  *  495.23  *  518.99  *
* Crit W.S. (ft)         * 1021.18  * Flow Area (sq ft)     *          *26537.57  *          *
* E.G. Slope (ft/ft)     *0.000432  * Area (sq ft)          *          *26537.57  *          *
* Q Total (cfs)          *166000.00  * Flow (cfs)           *          *166000.00  *          *
* Top Width (ft)         * 1585.47  * Top Width (ft)        *          * 1585.47  *          *
* Vel Total (ft/s)       *    6.26  * Avg. Vel. (ft/s)     *          *    6.26  *          *
* Max Chl Dpth (ft)      *   36.32  * Hydr. Depth (ft)     *          *   16.74  *          *
* Conv. Total (cfs)      *7985517.0  * Conv. (cfs)         *          *7985517.0  *          *
* Length Wtd. (ft)       *  495.89  * Wetted Per. (ft)     *          * 1608.67  *          *
* Min Ch El (ft)         *  996.31  * Shear (lb/sq ft)     *          *    0.45  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *         *    2.78  *          *
* Frctn Loss (ft)        *    0.35  * Cum Volume (acre-ft)  * 1315.97  *26631.07  *  205.36  *
* C & E Loss (ft)        *    0.09  * Cum SA (acres)        *  213.99  * 2683.97  *   45.80  *
*************************************************************************************************

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

CROSS SECTION


RIVER: 1
REACH: 1                 RS: 209.24

INPUT
Description: 209.24
Station Elevation Data    num=      65
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
*************************************************************************************
 18800.9  1031.5 18845.2  1031.7 18853.7  1034.8 18869.6  1030.2 18915.9  1030.2
 18963.2  1027.6 19026.2  1018.3 19072.6  1022.7 19145.5  1025.3 19204.5  1026.7
   19228  1027.1 19267.6  1026.7 19336.8  1018.5   19401    1018   19469    1019
 19559.6  1018.9 19600.3    1019 19664.3    1019 19693.2  1019.3 19751.6  1019.2
 19788.9  1019.1 19833.6  1020.4 19858.1  1020.3 19886.4  1017.7   19971  1017.4
 19982.5  1021.6 19990.5  1025.8 20018.6  1018.6 20042.8  1017.5 20058.4  1018.8
 20077.7  1018.9 20090.4  1015.2 20111.7  1010.3 20135.2  1012.6 20140.8  1010.2
 20203.6  1008.9 20268.9  1009.4   20288  1010.6 20307.3  1010.4   20312  1013.8
 20352.1  1014.9 20376.3  1025.5 20383.4  1023.4 20390.2  1026.6   21913  1027.4
 21918.5  1026.2 21937.9  1023.9 21950.8  1023.6 21971.5  1026.2   21995    1024
 22089.4  1024.8   22140    1026 22164.3  1024.1 22247.4  1026.7 22301.3  1026.2
 22321.1  1026.6 22357.4  1030.1 22379.9  1031.6 22389.9  1027.4 22399.6  1028.2
 22408.1  1030.8 22473.3  1030.9 22546.1  1031.4   22631  1032.1   22690  1032.8

Manning's n Values        num=       6
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
*************************************************************************************
 18800.9    .037   19228    .032 19267.6    .032   20312    .037 20390.2    .037
   21913    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       19267.6 20390.2           510     515     525            .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 18800.9 18853.7  1034.8       F
   20850   22690  1034.8       F

CROSS SECTION OUTPUT  Profile #PF#1
*************************************************************************************************
* E.G. Elev (ft)         * 1032.58  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    1.24  * Wt. n-Val.           *   0.037  *   0.032  *   0.037  *
* W.S. Elev (ft)         * 1031.35  * Reach Len. (ft)       *  510.00  *  515.00  *  525.00  *
```

```
                                                                    DuplicateEffective
* Crit W.S. (ft)         * 1026.11  * Flow Area (sq ft)       * 2335.14  *15698.65  * 2127.17  *
* E.G. Slope (ft/ft)     *0.001239  * Area (sq ft)            * 2335.14  *15698.65  * 9347.02  *
* Q Total (cfs)          *166000.00  * Flow (cfs)             *10786.24  *146865.80  * 8348.01  *
* Top Width (ft)         * 3668.36  * Top Width (ft)         *  401.96  * 1122.60  * 2143.79  *
* Vel Total (ft/s)       *    8.23  * Avg. Vel. (ft/s)       *    4.62  *    9.36  *    3.92  *
* Max Chl Dpth (ft)      *   22.45  * Hydr. Depth (ft)       *    5.81  *   13.98  *    4.63  *
* Conv. Total (cfs)      *4716374.0  * Conv. (cfs)           *306457.3  *4172734.0  *237182.8  *
* Length Wtd. (ft)       *  515.20  * Wetted Per. (ft)       *  403.16  * 1132.10  *  459.80  *
* Min Ch El (ft)         * 1008.90  * Shear (lb/sq ft)       *    0.45  *    1.07  *    0.36  *
* Alpha                  *    1.17  * Stream Power (lb/ft s) *    2.07  *   10.03  *    1.40  *
* Frctn Loss (ft)        *    0.65  * Cum Volume (acre-ft)   * 7174.77  *25507.43  * 1859.29  *
* C & E Loss (ft)        *    0.00  * Cum SA (acres)         * 2084.55  * 2663.60  *  791.14  *
*********************************************************************************************

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.

CROSS SECTION OUTPUT  Profile #PF#2
*********************************************************************************************
* E.G. Elev (ft)         * 1032.80  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    1.46  * Wt. n-Val.            *   0.033  *   0.032  *   0.037  *
* W.S. Elev (ft)         * 1031.34  * Reach Len. (ft)       *  510.00  *  515.00  *  525.00  *
* Crit W.S. (ft)         * 1026.15  * Flow Area (sq ft)     *  244.47  *15688.51  * 2123.01  *
* E.G. Slope (ft/ft)     *0.001403  * Area (sq ft)          *  244.47  *15688.51  * 2123.01  *
* Q Total (cfs)          *166000.00  * Flow (cfs)           * 1059.22  *156142.10  * 8798.69  *
* Top Width (ft)         * 1637.72  * Top Width (ft)       *   55.32  * 1122.60  *  459.80  *
* Vel Total (ft/s)       *    9.19  * Avg. Vel. (ft/s)     *    4.33  *    9.95  *    4.14  *
* Max Chl Dpth (ft)      *   22.44  * Hydr. Depth (ft)     *    4.42  *   13.98  *    4.62  *
* Conv. Total (cfs)      *4431403.0  * Conv. (cfs)         * 28276.1  *4168244.0  *234882.6  *
* Length Wtd. (ft)       *  515.50  * Wetted Per. (ft)     *   59.83  * 1132.10  *  464.30  *
* Min Ch El (ft)         * 1008.90  * Shear (lb/sq ft)     *    0.36  *    1.21  *    0.40  *
* Alpha                  *    1.11  * Stream Power (lb/ft s) *    1.55  *   12.08  *    1.66  *
* Frctn Loss (ft)        *    0.74  * Cum Volume (acre-ft) * 1314.55  *26391.03  *  192.72  *
* C & E Loss (ft)        *    0.00  * Cum SA (acres)       *  213.66  * 2668.58  *   43.06  *
*********************************************************************************************

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

CROSS SECTION


RIVER: 1
REACH: 1                 RS: 209.14

INPUT
Description: 209.14
Station Elevation Data    num=      61
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*************************************************************************
 18530.6  1030.2 18647.3  1030.8 18717.7    1031 18799.9  1030.8 18812.7  1030.6
   18900  1029.5 18932.6  1029.3 18944.6  1034.8 18957.8  1027.8 18961.9  1027.7
 19022.8  1026.2   19085  1025.9   19166  1017.5 19223.3  1022.8 19272.5  1024.6
 19338.9  1024.1 19386.4  1017.7 19425.6  1016.4 19503.5  1016.6 19527.4  1016.6
 19538.6  1021.6 19565.5  1014.5 19580.5  1016.2 19601.3  1015.8 19617.1  1017.3
 19620.4    1016 19621.3    1017 19649.1  1016.3 19715.5  1017.1   19791  1016.6
   19861  1016.8 19939.6    1017 20018.5  1017.5 20098.7  1018.4 20136.8  1016.4
   20159  1021.8 20163.8  1021.6 20169.1  1022.8   20184  1018.8 20211.5  1019.1
 20235.1  1012.1 20271.8  1010.6 20284.5  1010.9 20305.9  1016.4 20368.5  1013.7
 20394.9  1013.1 20413.2  1023.8 20418.3  1025.4 20439.5    1025 20471.6  1026.6
 21987.9  1026.6 21999.2  1033.7 22018.9  1024.5 22092.4  1030.2 22094.4  1030.3
 22100.9  1026.3 22162.2  1027.1 22231.7  1027.3 22248.2  1030.6   22261  1029.5
 22293.3  1030.2

Manning's n Values        num=       4
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
*************************************************************
 18530.6    .037 19338.9    .032 20418.3    .037 21999.2    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       19338.9 20418.3             500  504.56     485             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 18530.6 18944.6    1034        F
   21100 22293.3    1034        F

CROSS SECTION OUTPUT  Profile #PF#1
*********************************************************************************************
* E.G. Elev (ft)         * 1031.94  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    1.25  * Wt. n-Val.            *   0.037  *   0.032  *   0.037  *
* W.S. Elev (ft)         * 1030.69  * Reach Len. (ft)       *  500.00  *  504.56  *  485.00  *
* Crit W.S. (ft)         * 1025.89  * Flow Area (sq ft)     * 2633.35  *14935.83  * 2843.57  *
* E.G. Slope (ft/ft)     *0.001275  * Area (sq ft)          * 2757.01  *14935.83  * 7342.59  *
* Q Total (cfs)          *166000.00  * Flow (cfs)           *13537.12  *141896.50  *10566.40  *
* Top Width (ft)         * 3553.73  * Top Width (ft)       *  610.56  * 1079.40  * 1863.77  *
* Vel Total (ft/s)       *    8.13  * Avg. Vel. (ft/s)     *    5.14  *    9.50  *    3.72  *
* Max Chl Dpth (ft)      *   20.09  * Hydr. Depth (ft)     *    6.81  *   13.84  *    4.17  *
* Conv. Total (cfs)      *4648719.0  * Conv. (cfs)         *379097.8  *3973716.0  *295904.9  *
* Length Wtd. (ft)       *  502.51  * Wetted Per. (ft)     *  388.00  * 1089.05  *  681.74  *
* Min Ch El (ft)         * 1010.60  * Shear (lb/sq ft)     *    0.54  *    1.09  *    0.33  *
* Alpha                  *    1.21  * Stream Power (lb/ft s) *    2.78  *   10.37  *    1.23  *
* Frctn Loss (ft)        *    0.51  * Cum Volume (acre-ft) * 7144.96  *25326.34  * 1758.71  *
* C & E Loss (ft)        *    0.11  * Cum SA (acres)       * 2078.62  * 2650.58  *  766.99  *
*********************************************************************************************

Warning: Divided flow computed for this cross-section.
Warning: The cross-section end points had to be extended vertically for the computed water surface.
Note:    Multiple critical depths were found at this location.  The critical depth with the lowest, valid,
         water surface was used.

CROSS SECTION OUTPUT  Profile #PF#2
*********************************************************************************************
* E.G. Elev (ft)         * 1032.06  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    1.46  * Wt. n-Val.            *   0.037  *   0.032  *   0.037  *
* W.S. Elev (ft)         * 1030.60  * Reach Len. (ft)       *  500.00  *  504.56  *  485.00  *
```

				DuplicateEffective		
* Crit W.S. (ft)	* 1026.05	* Flow Area (sq ft)	* 959.08	*14837.40	* 2781.41	*
* E.G. Slope (ft/ft)	*0.001458	* Area (sq ft)	* 959.08	*14837.40	* 2781.41	*
* Q Total (cfs)	*166000.00	* Flow (cfs)	* 5094.29	*150058.70	*10847.02	*
* Top Width (ft)	* 1899.79	* Top Width (ft)	* 138.69	* 1079.40	* 681.70	*
* Vel Total (ft/s)	* 8.94	* Avg. Vel. (ft/s)	* 5.31	* 10.11	* 3.90	*
* Max Chl Dpth (ft)	* 20.00	* Hydr. Depth (ft)	* 6.92	* 13.75	* 4.08	*
* Conv. Total (cfs)	*4347684.0	* Conv. (cfs)	*133423.8	*3930167.0	*284092.8	*
* Length Wtd. (ft)	* 502.66	* Wetted Per. (ft)	* 148.76	* 1089.05	* 685.74	*
* Min Ch El (ft)	* 1010.60	* Shear (lb/sq ft)	* 0.59	* 1.24	* 0.37	*
* Alpha	* 1.18	* Stream Power (lb/ft s)	* 3.12	* 12.54	* 1.44	*
* Frctn Loss (ft)	* 0.56	* Cum Volume (acre-ft)	* 1307.51	*26210.58	* 163.16	*
* C & E Loss (ft)	* 0.15	* Cum SA (acres)	* 212.53	* 2655.56	* 36.18	*

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). 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: 1
REACH: 1 RS: 209.04

INPUT
Description: 209.04
Station Elevation Data num= 63

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
17502.1	1032.3	17560.1	1032.9	17609.7	1031.6	17636.5	1033.4	17744.6	1031.9
17770	1031	17784.7	1027.9	17886.2	1029	17976	1029.5	18087	1029.7
18189.2	1028.4	18278	1028.5	18371.6	1028.9	18408.2	1029.7	18494.9	1028.9
18579.6	1028.4	18720.8	1029	18831.6	1028.7	18921.3	1028.4	19009.8	1028.1
19029.7	1029.9	19039.2	1026.5	19129.8	1025.1	19156.1	1023.5	19206.7	1017.7
19260.8	1016.5	19291.9	1022.9	19315.3	1025.6	19358.3	1024.5	19381.5	1014.5
19410.3	1014.2	19515.9	1015.1	19568.7	1015.3	19609.7	1014.2	19715.7	1014.2
19776	1013.5	19864.4	1016	19951.2	1016.3	20000.4	1015.1	20015.4	1013.4
20144.8	1012.2	20171.9	1012.3	20307.8	1014.7	20330.1	1015.1	20379.3	1022.7
20387.8	1020.9	20406	1020.1	20427.2	1023	20461.4	1023.2	20591	1024.2
22074.8	1024	22077.6	1027.6	22104.8	1036.3	22120.5	1030.7	22123.6	1027.7
22179.3	1027.5	22209.6	1031.1	22217	1033.3	22254	1026.2	22313.5	1029.2
22366.7	1029.7	22453.1	1030.2	22468	1030.4				

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
17502.1	.037	19315.3	.037	19410.3	.032	20461.4	.037	22254	.025

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
19315.3 20461.4 495 493.26 500 .1 .3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
17502.1	19029.7	1035	F
21200	22468	1035	F

CROSS SECTION OUTPUT Profile #PF#1

* E.G. Elev (ft)	* 1031.32	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.87	* Wt. n-Val.	* 0.037	* 0.032	* 0.037 *
* W.S. Elev (ft)	* 1030.45	* Reach Len. (ft)	* 495.00	* 493.26	* 500.00 *
* Crit W.S. (ft)	* 1023.93	* Flow Area (sq ft)	* 2303.24	*17073.97	* 4702.87 *
* E.G. Slope (ft/ft)	*0.000816	* Area (sq ft)	* 4315.44	*17073.97	*10822.87 *
* Q Total (cfs)	*166000.00	* Flow (cfs)	*10578.41	*136892.90	*18528.71 *
* Top Width (ft)	* 4633.32	* Top Width (ft)	* 1542.67	* 1146.10	* 1944.55 *
* Vel Total (ft/s)	* 6.89	* Avg. Vel. (ft/s)	* 4.59	* 8.02	* 3.94 *
* Max Chl Dpth (ft)	* 18.25	* Hydr. Depth (ft)	* 8.06	* 14.90	* 6.37 *
* Conv. Total (cfs)	*5812813.0	* Conv. (cfs)	*370423.6	*4793571.0	*648819.0 *
* Length Wtd. (ft)	* 493.95	* Wetted Per. (ft)	* 287.40	* 1149.37	* 738.60 *
* Min Ch El (ft)	* 1012.20	* Shear (lb/sq ft)	* 0.41	* 0.76	* 0.32 *
* Alpha	* 1.18	* Stream Power (lb/ft s)	* 1.87	* 6.06	* 1.28 *
* Frctn Loss (ft)	* 0.75	* Cum Volume (acre-ft)	* 7104.37	*25140.95	* 1657.58 *
* C & E Loss (ft)	* 0.21	* Cum SA (acres)	* 2066.27	* 2637.69	* 745.79 *

Warning: Divided flow computed for this cross-section.
Warning: The cross-section end points had to be extended vertically for the computed water surface.
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: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION OUTPUT Profile #PF#2

* E.G. Elev (ft)	* 1031.35	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.96	* Wt. n-Val.	* 0.037	* 0.032	* 0.037 *
* W.S. Elev (ft)	* 1030.39	* Reach Len. (ft)	* 495.00	* 493.26	* 500.00 *
* Crit W.S. (ft)	* 1023.99	* Flow Area (sq ft)	* 1024.17	*17007.51	* 4660.04 *
* E.G. Slope (ft/ft)	*0.000885	* Area (sq ft)	* 1024.17	*17007.51	* 4660.04 *
* Q Total (cfs)	*166000.00	* Flow (cfs)	* 5443.86	*141657.50	*18898.60 *
* Top Width (ft)	* 1980.00	* Top Width (ft)	* 95.30	* 1146.10	* 738.60 *
* Vel Total (ft/s)	* 7.32	* Avg. Vel. (ft/s)	* 5.32	* 8.33	* 4.06 *
* Max Chl Dpth (ft)	* 18.19	* Hydr. Depth (ft)	* 10.75	* 14.84	* 6.31 *
* Conv. Total (cfs)	*5581269.0	* Conv. (cfs)	*183034.1	*4762824.0	*635410.8 *
* Length Wtd. (ft)	* 493.93	* Wetted Per. (ft)	* 109.10	* 1149.37	* 744.87 *
* Min Ch El (ft)	* 1012.20	* Shear (lb/sq ft)	* 0.52	* 0.82	* 0.35 *
* Alpha	* 1.16	* Stream Power (lb/ft s)	* 2.76	* 6.81	* 1.40 *
* Frctn Loss (ft)	* 0.79	* Cum Volume (acre-ft)	* 1296.12	*26026.15	* 121.73 *
* C & E Loss (ft)	* 0.20	* Cum SA (acres)	* 211.19	* 2642.67	* 28.27 *

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

CROSS SECTION

RIVER: 1
REACH: 1 RS: 208.95

INPUT
Description: 208.95
Station Elevation Data num= 47

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
17388.1	1030.8	17406	1030.7	17453.4	1039.3	17470.9	1039.4	17498	1031.1
17600.7	1030.9	17686	1030.7	17760.7	1027.3	17869.1	1027.3	17947.5	1027.5
18034.7	1027.8	18122.9	1027.9	18229.8	1028	18362.5	1027.6	18483.7	1027.2
18571	1026.4	18659.7	1025.6	18802.8	1026.1	18871.2	1029.7	18908.6	1028.7
18928.4	1025.8	19016.8	1024.1	19035.5	1027.7	19114.2	1024.9	19137.7	1030.4
19142.2	1025.8	19205.2	1023.5	19276.9	1018.7	19293.7	1013.8	19408.9	1014.5
19496.9	1014.1	19543	1014.4	19646.8	1014.7	19794.8	1014.5	19910.6	1015.8
19987.9	1016.6	20028.6	1018.7	20113.7	1020.6	20123.6	1024.6	21531.3	1025.2
22092	1024.6	22101.4	1027.9	22119.6	1027.7	22135	1034.4	22141.9	1036.4
22162.1	1026.4	22186	1026.7						

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
17388.1	.037	19137.7	.037	19276.9	.032	20123.6	.037

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
19137.7 20123.6 505 506.69 505 .1 .3
Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
17388.1	19137.7	1038	F
21200	22186	1038	F

CROSS SECTION OUTPUT Profile #PF#1

E.G. Elev (ft)	1030.35	Element	Left OB	Channel	Right OB
Vel Head (ft)	2.99	Wt. n-Val.		0.032	0.037
W.S. Elev (ft)	1027.37	Reach Len. (ft)	505.00	506.69	505.00
Crit W.S. (ft)	1027.01	Flow Area (sq ft)		10682.39	2730.95
E.G. Slope (ft/ft)	0.003774	Area (sq ft)	763.41	10682.39	4886.42
Q Total (cfs)	166000.00	Flow (cfs)		153466.20	12533.80
Top Width (ft)	3710.50	Top Width (ft)	725.44	982.93	2002.13
Vel Total (ft/s)	12.38	Avg. Vel. (ft/s)		14.37	4.59
Max Chl Dpth (ft)	13.57	Hydr. Depth (ft)		10.87	2.54
Conv. Total (cfs)	2702037.0	Conv. (cfs)		2498020.0	204016.8
Length Wtd. (ft)	506.55	Wetted Per. (ft)		985.36	1076.40
Min Ch El (ft)	1013.80	Shear (lb/sq ft)		2.55	0.60
Alpha	1.26	Stream Power (lb/ft s)		36.70	2.74
Frctn Loss (ft)	1.37	Cum Volume (acre-ft)	7075.51	24983.80	1567.42
C & E Loss (ft)	0.48	Cum SA (acres)	2053.38	2625.64	723.14

Warning: Divided flow computed for this cross-section.
Warning: The cross-section end points had to be extended vertically for the computed water surface.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION OUTPUT Profile #PF#2

E.G. Elev (ft)	1030.36	Element	Left OB	Channel	Right OB
Vel Head (ft)	2.98	Wt. n-Val.		0.032	0.037
W.S. Elev (ft)	1027.38	Reach Len. (ft)	505.00	506.69	505.00
Crit W.S. (ft)	1027.00	Flow Area (sq ft)		10691.79	2741.33
E.G. Slope (ft/ft)	0.003762	Area (sq ft)		10691.79	2741.33
Q Total (cfs)	166000.00	Flow (cfs)		153426.00	12574.00
Top Width (ft)	2058.96	Top Width (ft)		982.56	1076.40
Vel Total (ft/s)	12.36	Avg. Vel. (ft/s)		14.35	4.59
Max Chl Dpth (ft)	13.58	Hydr. Depth (ft)		10.88	2.55
Conv. Total (cfs)	2706599.0	Conv. (cfs)		2501582.0	205016.7
Length Wtd. (ft)	506.55	Wetted Per. (ft)		985.22	1078.72
Min Ch El (ft)	1013.80	Shear (lb/sq ft)		2.55	0.60
Alpha	1.26	Stream Power (lb/ft s)		36.57	2.74
Frctn Loss (ft)	1.37	Cum Volume (acre-ft)	1290.30	25869.32	79.26
C & E Loss (ft)	0.47	Cum SA (acres)	210.64	2630.62	17.86

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION

RIVER: 1
REACH: 1 RS: 208.85

INPUT
Description: 208.85
Edits per LOMR 08-09-1294P
Station Elevation Data num= 78

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
17667	1028.3	17683.4	1029.5	17702	1037.2	17712.6	1036.7	17732.2	1028.9
17793.4	1029.3	17794.3	1028.1	17811.4	1029.7	17884.4	1029.8	17954.5	1029.5

```
                                                                  DuplicateEffective
 18021.3    1029 18086.8  1028.4 18155.5  1027.6 18253.7  1026.5 18321.5  1026.3
 18395.4  1025.8 18469.1  1025.7   18517  1025.4 18547.8  1030.6 18614.6  1029.1
 18653.1  1029.8 18738.3 1028.53 18748.5 1028.97 18771.2 1029.63 18797.1  1029.1
 18806.7 1028.5618814.49    102918832.29    103018852.13    103118895.22    1030
18935.95    102919081.55    102919109.08    102819138.51    102719159.86    1028
19200.47  1029.519207.77    102519215.46    102019220.56  1016.519223.25    1015
 19228.4  1014.1 19243.7  1013.4 19285.7  1013.5 19404.4  1013.7 19442.3  1013.8
 19550.1  1014.4 19628.8  1015.9 19695.2  1016.5 19784.8  1017.1 19851.9  1017.7
 19926.2    1019 20020.7  1019.9 20118.1  1019.8 20148.7  1019.8 20176.3  1018.8
 20233.8  1020.2 20291.9  1019.7 20357.5  1017.6   20426  1016.4 20472.5  1017.1
 20530.5  1016.5 20568.5  1021.6 20573.6  1019.4   20598  1014.9 20615.5  1016.2
 20685.2  1014.7 20701.9  1014.6 20716.4    1019 20745.8  1021.2 21590.5  1021.2
 21595.5  1023.1 21612.9  1023.6 21620.3  1024.7 21935.6  1028.7   21943  1025.9
 22047.6  1025.8 22056.8  1030.6   22086  1042.9

Manning's n Values        num=       4
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************************************
   17667    .03719200.47    .032 20701.9    .037 20745.8    .037

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
     19200.47 20745.8              510  519.42     530            .1        .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
   17667 18968.7    1035       F
   21150   22086    1035       F

CROSS SECTION OUTPUT  Profile #PF#1
*************************************************************************************************
* E.G. Elev (ft)        * 1028.51  * Element                * Left OB *  Channel * Right OB *
* Vel Head (ft)         *    1.40  * Wt. n-Val.            *   0.037  *   0.032  *   0.037  *
* W.S. Elev (ft)        * 1027.11  * Reach Len. (ft)       *  510.00  *  519.42  *  530.00  *
* Crit W.S. (ft)        * 1024.13  * Flow Area (sq ft)     *    0.29  *15570.13  * 2387.62  *
* E.G. Slope (ft/ft)    *0.002038  * Area (sq ft)          *  326.02  *15570.13  * 5465.13  *
* Q Total (cfs)         *166000.00  * Flow (cfs)           *    0.07  *151854.00  *14145.93  *
* Top Width (ft)        * 3049.03  * Top Width (ft)       *  333.04  * 1541.45  * 1174.54  *
* Vel Total (ft/s)      *    9.24  * Avg. Vel. (ft/s)     *    0.26  *    9.75  *    5.92  *
* Max Chl Dpth (ft)     *   13.71  * Hydr. Depth (ft)     *    0.05  *   10.10  *    5.91  *
* Conv. Total (cfs)     *3676905.0  * Conv. (cfs)         *     1.7  *3363571.0  *313332.8  *
* Length Wtd. (ft)      *  519.87  * Wetted Per. (ft)     *    5.44  * 1547.23  *  404.20  *
* Min Ch El (ft)        * 1013.40  * Shear (lb/sq ft)     *    0.01  *    1.28  *    0.75  *
* Alpha                 *    1.05  * Stream Power (lb/ft s) *    0.00  *   12.49  *    4.45  *
* Frctn Loss (ft)       *    0.83  * Cum Volume (acre-ft)  * 7069.20  *24831.11  * 1507.42  *
* C & E Loss (ft)       *    0.06  * Cum SA (acres)        * 2047.24  * 2610.96  *  704.73  *
*************************************************************************************************

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.

CROSS SECTION OUTPUT  Profile #PF#2
*************************************************************************************************
* E.G. Elev (ft)        * 1028.51  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)         *    1.40  * Wt. n-Val.            *          *   0.032  *   0.037  *
* W.S. Elev (ft)        * 1027.11  * Reach Len. (ft)       *  510.00  *  519.42  *  530.00  *
* Crit W.S. (ft)        * 1024.11  * Flow Area (sq ft)     *          *15580.85  * 2390.44  *
* E.G. Slope (ft/ft)    *0.002037  * Area (sq ft)          *          *15580.85  * 2390.44  *
* Q Total (cfs)         *166000.00  * Flow (cfs)           *          *151968.30  *14031.68  *
* Top Width (ft)        * 1945.66  * Top Width (ft)       *          * 1541.46  *  404.20  *
* Vel Total (ft/s)      *    9.24  * Avg. Vel. (ft/s)     *          *    9.75  *    5.87  *
* Max Chl Dpth (ft)     *   13.71  * Hydr. Depth (ft)     *          *   10.11  *    5.91  *
* Conv. Total (cfs)     *3678330.0  * Conv. (cfs)         *          *3367407.0  *310922.7  *
* Length Wtd. (ft)      *  519.87  * Wetted Per. (ft)     *          * 1547.25  *  410.11  *
* Min Ch El (ft)        * 1013.40  * Shear (lb/sq ft)     *          *    1.28  *    0.74  *
* Alpha                 *    1.05  * Stream Power (lb/ft s) *          *   12.49  *    4.35  *
* Frctn Loss (ft)       *    0.83  * Cum Volume (acre-ft)  * 1290.30  *25716.52  *   49.51  *
* C & E Loss (ft)       *    0.06  * Cum SA (acres)        *  210.64  * 2615.94  *    9.27  *
*************************************************************************************************

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

CROSS SECTION


RIVER: 1
REACH: 1                 RS: 208.75

INPUT
Description: 208.75 - FEMA Section U
Edits per LOMR 08-09-1294P
Station Elevation Data    num=      90
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
 17694.2  1021.1 17763.9  1027.7   17785    1036 17797.3  1035.5 17818.9  1026.8
 17862.3  1027.5 17876.4  1028.3 17879.6    1027 17887.5  1027.8 17976.5  1027.4
 18069.6  1028.1 18129.1  1026.6 18227.5    1026 18358.7    1025 18444.7    1027
   18498    1027   18542    1028 18577.8    1028 18607.8 1027.35 18619.8  1027.6
 18643.2  1028.3 18668.9 1027.84 18684.6 1026.9318740.66    102818782.94    1028
18904.32    102718966.24    1027 19135.5    102819147.88    102819238.98    1027
 19249.3 1027.1319252.28    102519259.56    102019266.81    101519271.79  1011.6
 19469.4  1013.5 19559.7  1013.6   19581  1014.6 19605.6  1018.3 19624.1  1017.7
 19644.9  1018.4 19739.6  1018.2 19808.7  1018.7 19912.6  1019.8 20031.3    1019
 20124.1  1018.4 20199.4  1018.2 20239.9  1014.1 20370.8  1011.9   20423  1008.1
 20441.8  1007.4 20459.1  1008.5 20487.2  1008.9 20517.6  1007.6 20545.9  1007.6
 20574.1  1007.6 20616.3  1007.6 20685.5  1007.6 20704.1  1009.9 20720.5    1009
   20737  1005.2 20763.6  1011.5 20774.6    1011 20799.2  1019.7 20826.5    1020
   21626  1022.7   21706  1024.3 21714.3  1025.4   21770  1027.2 21800.9  1044.1
 21813.2  1039.1 21842.4  1033.1 21857.2  1027.1 21893.8  1028.4 22015.3  1028.8
 22117.6  1027.6 22189.1    1026 22214.4  1028.5 22251.7  1027.8 22282.9  1029.1
 22304.2  1030.9 22314.1  1036.1 22336.1  1034.2   22354  1031.3 22395.9  1029.6
 22417.9  1030.2 22426.2  1025.2 22438.2  1024.8   22447    1027 22490.7  1026.9

Manning's n Values        num=       4
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************************************
```

```
                                                                    DuplicateEffective
 17694.2    .037 19249.3    .032 20799.2    .037 22314.1    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       19249.3 20799.2             440  443.83     450            .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 17694.2 19192.9    1038       F
 20799.2 22490.7    1038       F

CROSS SECTION OUTPUT  Profile #PF#1
**********************************************************************************************
* E.G. Elev (ft)         * 1027.61  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    1.20  * Wt. n-Val.             *          *    0.032  *          *
* W.S. Elev (ft)         * 1026.41  * Reach Len. (ft)        *  440.00  *  443.83  *  450.00  *
* Crit W.S. (ft)         * 1021.31  * Flow Area (sq ft)      *          * 18870.67  *          *
* E.G. Slope (ft/ft)     *0.001289  * Area (sq ft)           *  325.59  * 18870.67  * 4516.46  *
* Q Total (cfs)          *166000.00  * Flow (cfs)            *          *166000.00  *          *
* Top Width (ft)         * 2854.08  * Top Width (ft)        *  315.69  * 1548.90  *  989.50  *
* Vel Total (ft/s)       *    8.80  * Avg. Vel. (ft/s)      *          *    8.80  *          *
* Max Chl Dpth (ft)      *   21.21  * Hydr. Depth (ft)      *          *   12.18  *          *
* Conv. Total (cfs)      *4623178.0  * Conv. (cfs)          *          *4623178.0  *          *
* Length Wtd. (ft)       *  443.83  * Wetted Per. (ft)      *          * 1557.13  *          *
* Min Ch El (ft)         * 1005.20  * Shear (lb/sq ft)      *          *    0.98  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *    8.58  *          *
* Frctn Loss (ft)        *    0.64  * Cum Volume (acre-ft)  * 7065.38  *24625.77  * 1446.70  *
* C & E Loss (ft)        *    0.01  * Cum SA (acres)        * 2043.45  * 2592.53  *  691.56  *
**********************************************************************************************

Warning: Divided flow computed for this cross-section.
Warning: The cross-section end points had to be extended vertically for the computed water surface.
Note:    Multiple critical depths were found at this location.  The critical depth with the lowest, valid,
         water surface was used.

CROSS SECTION OUTPUT  Profile #PF#2
**********************************************************************************************
* E.G. Elev (ft)         * 1027.62  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    1.20  * Wt. n-Val.             *          *    0.032  *          *
* W.S. Elev (ft)         * 1026.42  * Reach Len. (ft)        *  440.00  *  443.83  *  450.00  *
* Crit W.S. (ft)         * 1021.31  * Flow Area (sq ft)      *          * 18880.31  *          *
* E.G. Slope (ft/ft)     *0.001294  * Area (sq ft)           *          * 18880.31  *          *
* Q Total (cfs)          *166000.00  * Flow (cfs)            *          *166000.00  *          *
* Top Width (ft)         * 1548.90  * Top Width (ft)        *          * 1548.90  *          *
* Vel Total (ft/s)       *    8.79  * Avg. Vel. (ft/s)      *          *    8.79  *          *
* Max Chl Dpth (ft)      *   21.22  * Hydr. Depth (ft)      *          *   12.19  *          *
* Conv. Total (cfs)      *4613830.0  * Conv. (cfs)          *          *4613830.0  *          *
* Length Wtd. (ft)       *  443.83  * Wetted Per. (ft)      *          * 1563.86  *          *
* Min Ch El (ft)         * 1005.20  * Shear (lb/sq ft)      *          *    0.98  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *    8.58  *          *
* Frctn Loss (ft)        *    0.64  * Cum Volume (acre-ft)  * 1290.30  *25511.06  *   34.97  *
* C & E Loss (ft)        *    0.01  * Cum SA (acres)        *  210.64  * 2597.52  *    6.81  *
**********************************************************************************************

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

CROSS SECTION


RIVER: 1
REACH: 1                 RS: 208.67

INPUT
Description: 208.67
Edits per LOMR 08-09-1294P
Station Elevation Data    num=      98
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
**********************************************************************************************
 17786.1   1022.3 17843.6   1026.5 17855.3   1034.5 17872.2   1033.9 17892.4   1025.1
 17923.9   1026.9 17935.3   1026.9 17946.1   1029.5 17954.2   1026.8 17960.6   1028.1
 18085.3   1025.9 18175.8   1025.5 18284.1   1025.1    18393   1024.3 18487.3   1025.1
 18509.1 1025.64 18532.1     1026 18557.8 1025.54 18568.2 1025.06    18784     1026
 18872.6    102618951.11    102718970.13    102719123.78    102619176.25     1027
19183.07    102819272.43     1033 19298.9    103319302.29    102719314.92     1027
19317.06 1029.74 19323.8    102519330.74    102019337.72    101519341.93     1012
 19374.5   1013.1 19435.1   1013.5 19572.8   1013.6 19645.9   1014.5 19689.8   1017.6
 19797.8   1018.5 19923.6   1018.8 20022.9     1016 20112.6   1014.2 20119.4   1013.9
 20139.2   1008.8 20180.9   1009.7 20203.7   1007.6    20293   1010.5 20307.2   1007.8
   20372   1009.4 20399.2   1008.8 20452.2   1010.5 20523.1   1009.4 20536.1   1014.1
 20548.6   1010.7 20639.2   1014.5 20652.7   1013.5 20665.3   1010.4 20713.7   1010.2
 20725.6   1013.6 20738.6   1020.7    20826   1023.1 20841.3   1024.7 20857.6   1022.8
 20866.3   1014.9 20871.8   1016.1 20881.2   1020.9    20902   1018.820908.111023.942
 20912.1   1027.3 20915.2   1025.5 21808.2   1025.7 21897.3   1025.4 21995.2   1025.3
 22131.2   1026.1 22205.3   1026.2 22276.6   1027.7 22393.1   1027.2    22428   1027.2
 22464.1   1025.6 22496.5     1027 22518.1   1024.1 22529.5     1026    22649   1025.9
 22747.7   1025.2 22864.8   1024.7 22963.7   1025.8 23106.8   1026.4    23231   1026.5
 23328.6   1027.2 23422.1   1026.4 23522.3   1028.3 23562.9   1027.2 23612.4   1030.4
 23634.1   1030.7 23767.5   1029.2 23789.9   1028.4

Manning's n Values        num=       6
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
**********************************************************************************************
 17786.1    .03719317.06    .037 19323.8    .032    20826    .037 20912.1    .037
   22428    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
     19317.0620908.11             495  511.45     475            .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 17786.1 19102.8    1033       F
   21150 23789.9    1033       F

CROSS SECTION OUTPUT  Profile #PF#1
**********************************************************************************************
* E.G. Elev (ft)         * 1026.96  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    1.33  * Wt. n-Val.             *          *    0.032  *    0.037 *
* W.S. Elev (ft)         * 1025.63  * Reach Len. (ft)        *  495.00  *  511.45  *  475.00  *
```

				DuplicateEffective		
* Crit W.S. (ft)	* 1021.02	* Flow Area (sq ft)	*	*17937.73	* 26.84	*
* E.G. Slope (ft/ft)	*0.001614	* Area (sq ft)	* 353.80	*17937.73	* 234.89	*
* Q Total (cfs)	*166000.00	* Flow (cfs)	*	*165988.80	* 11.19	*
* Top Width (ft)	* 3257.49	* Top Width (ft)	* 566.60	* 1585.21	* 1105.68	*
* Vel Total (ft/s)	* 9.24	* Avg. Vel. (ft/s)	*	* 9.25	* 0.42	*
* Max Chl Dpth (ft)	* 18.03	* Hydr. Depth (ft)	*	* 11.32	* 0.11	*
* Conv. Total (cfs)	*4132509.0	* Conv. (cfs)	*	*4132230.0	* 278.5	*
* Length Wtd. (ft)	* 511.45	* Wetted Per. (ft)	*	* 1601.51	* 237.69	*
* Min Ch El (ft)	* 1007.60	* Shear (lb/sq ft)	*	* 1.13	* 0.01	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 10.44	* 0.00	*
* Frctn Loss (ft)	* 1.53	* Cum Volume (acre-ft)	* 7061.95	*24438.25	* 1422.16	*
* C & E Loss (ft)	* 0.28	* Cum SA (acres)	* 2038.99	* 2576.57	* 680.74	*

Warning: Divided flow computed for this cross-section.
Warning: The cross-section end points had to be extended vertically for the computed water surface.
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.
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 OUTPUT Profile #PF#2

* E.G. Elev (ft)	* 1026.97	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 1.33	* Wt. n-Val.	*	* 0.032	* *
* W.S. Elev (ft)	* 1025.64	* Reach Len. (ft)	* 495.00	* 511.45	* 475.00 *
* Crit W.S. (ft)	* 1021.02	* Flow Area (sq ft)	*	*17944.12	* *
* E.G. Slope (ft/ft)	*0.001615	* Area (sq ft)	*	*17944.12	* *
* Q Total (cfs)	*166000.00	* Flow (cfs)	*	*166000.00	* *
* Top Width (ft)	* 1585.22	* Top Width (ft)	*	* 1585.22	* *
* Vel Total (ft/s)	* 9.25	* Avg. Vel. (ft/s)	*	* 9.25	* *
* Max Chl Dpth (ft)	* 18.04	* Hydr. Depth (ft)	*	* 11.32	* *
* Conv. Total (cfs)	*4131094.0	* Conv. (cfs)	*	*4131094.0	* *
* Length Wtd. (ft)	* 511.45	* Wetted Per. (ft)	*	* 1603.21	* *
* Min Ch El (ft)	* 1007.60	* Shear (lb/sq ft)	*	* 1.13	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 10.44	* *
* Frctn Loss (ft)	* 1.54	* Cum Volume (acre-ft)	* 1290.30	*25323.46	* 34.97 *
* C & E Loss (ft)	* 0.28	* Cum SA (acres)	* 210.64	* 2581.55	* 6.81 *

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.
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: 1
REACH: 1 RS: 208.57

INPUT
Description: 208.57
Edits per LOMR 08-09-1294P
Station Elevation Data num= 83

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
17892.9	1023.8	17920.6	1025.8	17926.7	1033.6	17946	1032.8	17966.2	1024.2
18010.1	1026	18022	1028.4	18027.2	1025.8	18036.6	1027.8	18048.7	1025
18090.2	1023.6	18189.1	1023.8	18284.4	1023.8	18378.8	1023.6	18492.2	1023.9
18502.6	1023.9	18572.5	1024.4	18652.6	1025	18744.4	1026	18925.6	1027
19296.9	1028	19363.1	1028	19388.3	1028.13	19392.8	1025	19400.1	1020
19408.3	1015	19413.2	1012	19435.4	1013.3	19524.5	1013.8	19585.9	1012
19676.3	1014	19772.4	1014.4	19846.2	1014.8	19900.7	1016.3	19982.9	1016.5
20023.8	1014.7	20071.3	1014.9	20086.3	1012.9	20123	1013.5	20146	1011
20220.3	1007.6	20240.8	1007.6	20261.8	1009.9	20276.9	1008.4	20361	1010.1
20458.8	1010.7	20541.8	1012.1	20584.9	1012.3	20595.3	1014.5	20599.2	1013.9
20607.5	1016.1	20614.3	1015	20623.9	1016	206401	016.203	20647.7	1016.3
20654.4	1017.4	20724.7	1017.3	20827.2	1020	20901.1	1020.7	20951.9	1021
20965.4	1016.5	20974.8	1017	21000.4	1025.7	21032.4	1026.3	21033.8	1024
21616	1024.8	21707.7	1024.4	21817.1	1024.3	21913.4	1023.7	21991.5	1023.8
22065.5	1024.5	22100	1024.9	22243.4	1025.1	22248	1025.1	22334.2	1026.7
22341.3	1026.8	22434.5	1027.5	22499.8	1026.8	22523.2	1026.9	22552.2	1028.3
22565.8	1024.5	22577.9	1025.6	22585	1027.8				

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
17892.9	.037	19388.3	.037	19392.8	.032	21000.4	.032	21032.4	.037

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19388.3	20640	560	514.75	370	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
17892.9	19080.9	1028	F
20640	22585	1028	F

CROSS SECTION OUTPUT Profile #PF#1

* E.G. Elev (ft)	* 1025.15	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 4.10	* Wt. n-Val.	*	* 0.032	* *
* W.S. Elev (ft)	* 1021.05	* Reach Len. (ft)	* 560.00	* 514.75	* 370.00 *
* Crit W.S. (ft)	* 1021.05	* Flow Area (sq ft)	*	*10216.43	* *
* E.G. Slope (ft/ft)	*0.007401	* Area (sq ft)	*	*10216.43	* 729.51 *
* Q Total (cfs)	*166000.00	* Flow (cfs)	*	*166000.00	* *
* Top Width (ft)	* 1588.16	* Top Width (ft)	*	* 1241.44	* 346.72 *

```
                                                                    DuplicateEffective
* Vel Total (ft/s)       *   16.25  * Avg. Vel. (ft/s)       *          *   16.25  *          *
* Max Chl Dpth (ft)      *   13.45  * Hydr. Depth (ft)       *          *    8.23  *          *
* Conv. Total (cfs)      *1929565.0  * Conv. (cfs)           *          *1929565.0  *          *
* Length Wtd. (ft)       *  514.75  * Wetted Per. (ft)       *          * 1245.45  *          *
* Min Ch El (ft)         * 1007.60  * Shear (lb/sq ft)       *          *    3.79  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *   61.58  *          *
* Frctn Loss (ft)        *    1.63  * Cum Volume (acre-ft)   * 7059.94  *24272.97  * 1416.90  *
* C & E Loss (ft)        *    0.90  * Cum SA (acres)         * 2035.77  * 2559.97  *  672.82  *
*****************************************************************************************

Warning: The energy equation could not be balanced within the specified number of iterations.  The
         program used critical depth for the water surface and continued on with the calculations.
Warning: The 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.
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 OUTPUT  Profile #PF#2
*****************************************************************************************
* E.G. Elev (ft)         * 1025.15  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    4.10  * Wt. n-Val.            *          *   0.032  *          *
* W.S. Elev (ft)         * 1021.05  * Reach Len. (ft)       *  560.00  *  514.75  *  370.00  *
* Crit W.S. (ft)         * 1021.05  * Flow Area (sq ft)     *          *10216.43  *          *
* E.G. Slope (ft/ft)     *0.007440  * Area (sq ft)          *          *10216.43  *          *
* Q Total (cfs)          *166000.00  * Flow (cfs)           *          *166000.00  *          *
* Top Width (ft)         * 1241.44  * Top Width (ft)       *          * 1241.44  *          *
* Vel Total (ft/s)       *   16.25  * Avg. Vel. (ft/s)     *          *   16.25  *          *
* Max Chl Dpth (ft)      *   13.45  * Hydr. Depth (ft)     *          *    8.23  *          *
* Conv. Total (cfs)      *1924572.0  * Conv. (cfs)         *          *1924572.0  *          *
* Length Wtd. (ft)       *  514.75  * Wetted Per. (ft)     *          * 1250.30  *          *
* Min Ch El (ft)         * 1007.60  * Shear (lb/sq ft)     *          *    3.80  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *   61.66  *          *
* Frctn Loss (ft)        *    1.62  * Cum Volume (acre-ft)   * 1290.30  *25158.14  *   34.97  *
* C & E Loss (ft)        *    0.91  * Cum SA (acres)         *  210.64  * 2564.96  *    6.81  *
*****************************************************************************************

Warning: The energy equation could not be balanced within the specified number of iterations.  The
         program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The 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: 1
REACH: 1                RS: 208.48

INPUT
Description: 208.48
Station Elevation Data    num=      72
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*****************************************************************************
 18038.2  1024.5 18107.3    1024 18176.8  1026.3 18180.6  1023.6   18220  1024.2
 18231.5  1030.8   18253 1040.2 18276.7  1045.8 18279.2  1045.4 18325.3  1023.2
 18350.1  1034.9 18383.7 1036.5 18431.8  1022.6 18508.9 1022.1 18510.56 1021.363
 18528.5  1013.4 18574.3 1009.5   18585  1009.5 18656.1  1009.7 18723.8  1009.2
 18751.4  1011.9 18757.6 1013.2 18773.9    1012   18790  1012.6 18811.4  1014.6
   18894  1015.4 18935.3 1016.3 18976.7    1016 18993.7  1009.2 19033.2  1007.6
 19073.1  1010.5 19142.7 1010.5 19210.3  1011.2 19297.6  1012.4 19357.3  1014.5
 19432.9    1014 19515.6 1015.2 19565.3  1016.2 19630.9  1012.6 19702.1  1013.3
 19791.9    1013 19865.2 1012.2 19956.6  1011.4 20027.1    1011 20099.9    1011
 20112.3    1011 20178.6 1011.1 20248.4  1011.1 20312.8  1010.9 20383.8  1010.5
 20479.2  1009.8 20529.6 1009.2 20545.1    1017 20627.3  1012.2 20656.3    1012
20680.86 1021.362 20694.6 1026.6 20705.7  1021.5 20806.1  1023.8 21024.6  1028.4
   21084  1028.5 21102.7 1031.8 21472.3  1022.1 21971.9  1021.8 22046.1  1022.2
 22091.6    1023 22109.6 1026.2 22178.4  1024.8   22198    1027 22264.7  1026.9
   22377  1027.5   22430 1027.5

Manning's n Values        num=       6
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
*****************************************************************************
 18038.2    .043 18508.9    .043   18585    .032 20545.1    .037 20694.6    .037
   22377    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
     18510.56 20680.86          500  476.54     525             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 18038.2 18508.9    1038        F
 20694.6   22430    1038        F

CROSS SECTION OUTPUT  Profile #PF#1
*****************************************************************************************
* E.G. Elev (ft)         * 1022.45  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    1.09  * Wt. n-Val.            *          *   0.032  *          *
* W.S. Elev (ft)         * 1021.36  * Reach Len. (ft)       *  500.00  *  476.54  *  525.00  *
* Crit W.S. (ft)         * 1017.86  * Flow Area (sq ft)     *          *19846.45  *          *
* E.G. Slope (ft/ft)     *0.001742  * Area (sq ft)          *          *19846.45  *    0.00  *
```

```
                                                                    DuplicateEffective
* Q Total (cfs)          *166000.00  * Flow (cfs)                    *166000.00  *          *
* Top Width (ft)         * 2170.30  * Top Width (ft)          *      * 2170.30  *          *
* Vel Total (ft/s)       *    8.36  * Avg. Vel. (ft/s)       *      *    8.36  *          *
* Max Chl Dpth (ft)      *   13.76  * Hydr. Depth (ft)       *      *    9.14  *          *
* Conv. Total (cfs)      *3977183.0  * Conv. (cfs)            *     *3977183.0  *          *
* Length Wtd. (ft)       *  476.54  * Wetted Per. (ft)       *      * 2177.94  *          *
* Min Ch El (ft)         * 1007.60  * Shear (lb/sq ft)       *      *    0.99  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *      *    8.29  *          *
* Frctn Loss (ft)        *    0.89  * Cum Volume (acre-ft)   * 7059.94  *24095.34  * 1413.80  *
* C & E Loss (ft)        *    0.00  * Cum SA (acres)         * 2035.77  * 2539.81  *  671.35  *
*****************************************************************************************

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

CROSS SECTION OUTPUT  Profile #PF#2
*****************************************************************************************
* E.G. Elev (ft)         * 1022.46  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    1.08  * Wt. n-Val.              *          *    0.032  *          *
* W.S. Elev (ft)         * 1021.38  * Reach Len. (ft)        *  500.00  *  476.54  *  525.00  *
* Crit W.S. (ft)         * 1017.86  * Flow Area (sq ft)      *          *19884.46  *          *
* E.G. Slope (ft/ft)     *0.001731  * Area (sq ft)           *          *19884.46  *          *
* Q Total (cfs)          *166000.00  * Flow (cfs)             *         *166000.00  *          *
* Top Width (ft)         * 2170.30  * Top Width (ft)          *      * 2170.30  *          *
* Vel Total (ft/s)       *    8.35  * Avg. Vel. (ft/s)       *      *    8.35  *          *
* Max Chl Dpth (ft)      *   13.78  * Hydr. Depth (ft)       *      *    9.16  *          *
* Conv. Total (cfs)      *3989798.0  * Conv. (cfs)            *     *3989798.0  *          *
* Length Wtd. (ft)       *  476.54  * Wetted Per. (ft)       *      * 2177.97  *          *
* Min Ch El (ft)         * 1007.60  * Shear (lb/sq ft)       *      *    0.99  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *      *    8.24  *          *
* Frctn Loss (ft)        *    0.88  * Cum Volume (acre-ft)   * 1290.30  *24980.29  *   34.97  *
* C & E Loss (ft)        *    0.00  * Cum SA (acres)         *  210.64  * 2544.80  *    6.81  *
*****************************************************************************************

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

CROSS SECTION


RIVER: 1
REACH: 1                 RS: 208.39

INPUT
Description: 208.39 - FEMA Section T
Station Elevation Data     num=       72
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*****************************************************************************
 18033.7  1024.2 18048.9  1023.9 18052.4  1029.4 18060.9  1031.1 18078.5  1028.7
 18083.6  1026.5 18089.9  1022.5 18176.1  1021.5 18253.5  1021.3 18379.7  1022.4
 18417.8  1035.8   18447  1022.618462.941020.436 18469.1  1019.6 18494.4  1010.7
 18597.1  1007.9 18699.5  1009.4 18760.1  1011.4 18779.9    1010 18820.5  1010.6
 18843.1  1015.2 18914.5  1016.3 18932.1  1009.7 19018.2  1006.1 19063.1  1005.6
 19094.9  1009.1 19184.7  1010.4 19213.8  1010.9 19266.1  1013.3 19343.9  1014.9
 19411.9  1013.9 19452.4  1014.4 19493.3  1016.2 19593.6  1015.6 19647.5  1014.8
 19744.6  1015.5 19808.5  1013.7 19910.3  1013.1   20054  1012.2 20156.8  1011.7
 20242.7  1010.5 20343.9    1010 20449.6  1010.3 20484.4  1010.8 20718.2  1010.6
20748.791020.435 20754.9  1022.4 20802.7  1021.3 20917.8    1022 20992.6    1024
 21004.2    1019 21264.2  1022.8 21271.1  1021.2 21710.3    1019 21734.9  1021.9
 21769.9  1021.9 21817.5  1020.2 21841.4  1017.4 21869.1  1018.9 21889.9  1018.1
 21894.1  1020.2 21908.6  1017.2 21928.1  1016.5 21932.5  1018.5 22018.7  1019.9
 22082.6  1021.4 22098.4  1024.6   22134  1025.4   22198  1023.8 22317.1  1023.6
 22352.6  1025.6   22382  1025.9

Manning's n Values         num=        5
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
*****************************************************************************
 18033.7    .043 18417.8    .043 18597.1    .032 20718.2    .037 20754.9    .037

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      18462.9420748.79              505  512.19     480             .1       .3
Ineffective Flow     num=        2
   Sta L   Sta R    Elev  Permanent
 18033.7 18417.8    1030        F
 20754.9   22382    1030        F

CROSS SECTION OUTPUT  Profile #PF#1
*****************************************************************************************
* E.G. Elev (ft)         * 1021.56  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    1.12  * Wt. n-Val.              *          *    0.033  *          *
* W.S. Elev (ft)         * 1020.44  * Reach Len. (ft)        *  505.00  *  512.19  *  480.00  *
* Crit W.S. (ft)         * 1017.33  * Flow Area (sq ft)      *          *19556.29  *          *
* E.G. Slope (ft/ft)     *0.002009  * Area (sq ft)           *    0.00  *19556.29  *  657.28  *
* Q Total (cfs)          *166000.00  * Flow (cfs)             *         *166000.00  *          *
* Top Width (ft)         * 2917.06  * Top Width (ft)          *      * 2285.85  *  631.20  *
* Vel Total (ft/s)       *    8.49  * Avg. Vel. (ft/s)       *      *    8.49  *          *
* Max Chl Dpth (ft)      *   14.84  * Hydr. Depth (ft)       *      *    8.56  *          *
* Conv. Total (cfs)      *3703180.0  * Conv. (cfs)            *     *3703180.0  *          *
* Length Wtd. (ft)       *  512.19  * Wetted Per. (ft)       *      * 2291.23  *          *
* Min Ch El (ft)         * 1005.60  * Shear (lb/sq ft)       *      *    1.07  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *      *    9.09  *          *
* Frctn Loss (ft)        *    0.98  * Cum Volume (acre-ft)   * 7059.94  *23879.81  * 1409.84  *
* C & E Loss (ft)        *    0.03  * Cum SA (acres)         * 2035.77  * 2515.44  *  667.54  *
*****************************************************************************************

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 OUTPUT  Profile #PF#2
*****************************************************************************************
* E.G. Elev (ft)         * 1021.58  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    1.11  * Wt. n-Val.              *          *    0.033  *          *
```

```
                                                                  DuplicateEffective
* W.S. Elev (ft)         * 1020.47  * Reach Len. (ft)        *  505.00  *  512.19  *  480.00  *
* Crit W.S. (ft)         * 1017.33  * Flow Area (sq ft)      *          *19622.28  *          *
* E.G. Slope (ft/ft)     *0.001987  * Area (sq ft)           *          *19622.28  *          *
* Q Total (cfs)          *166000.00  * Flow (cfs)            *          *166000.00  *          *
* Top Width (ft)         * 2285.85  * Top Width (ft)        *          * 2285.85  *          *
* Vel Total (ft/s)       *    8.46  * Avg. Vel. (ft/s)      *          *    8.46  *          *
* Max Chl Dpth (ft)      *   14.87  * Hydr. Depth (ft)      *          *    8.58  *          *
* Conv. Total (cfs)      *3723944.0  * Conv. (cfs)          *          *3723944.0  *          *
* Length Wtd. (ft)       *  512.19  * Wetted Per. (ft)      *          * 2291.29  *          *
* Min Ch El (ft)         * 1005.60  * Shear (lb/sq ft)      *          *    1.06  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *    8.99  *          *
* Frctn Loss (ft)        *    0.96  * Cum Volume (acre-ft)  * 1290.30  *24764.19  *   34.97  *
* C & E Loss (ft)        *    0.03  * Cum SA (acres)        *  210.64  * 2520.42  *    6.81  *
*****************************************************************************************

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: 1
REACH: 1                RS: 208.29

INPUT
Description: 208.29
Station Elevation Data    num=      71
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*************************************************************************************
 17002.6  1020.8 17033.1  1020.7   17130  1020.6 17223.7  1020.7 17316.5  1020.8
   17410    1021 17443.4    1021 17527.8  1021.3 17612.8  1021.5   17700  1022.8
 17725.5  1028.3   17746    1019 18278.7  1023.8 18304.6  1033.9 18306.7  1033.7
 18430.1  1023.3 18444.4  1021.3   18480  1020.6 18525.3  1021.4 18545.4  1030.1
 18562.61019.523 18580.2  1008.7 18645.9  1006.9 18729.8  1008.2 18813.6    1008
 18846.3  1006.7 18858.5  1011.3   18964  1010.4 19046.3  1010.7   19068  1009.9
 19095.1  1004.7 19192.2  1007.2 19204.4    1008 19237.6    1005 19274.3  1005.1
 19293.9  1010.7 19341.5  1011.4 19389.6    1015 19461.9  1012.7 19548.6  1016.1
 19665.7  1014.5 19730.4  1012.3 19830.2  1012.9 19905.4  1012.6 19969.1  1014.2
 20073.7  1013.1 20194.6  1010.4 20258.7  1012.5 20359.4  1011.5 20498.8  1009.7
 20566.1  1009.2 20843.2  1010.4 20909.3  1011.220944.071019.521 20944.4  1019.6
   20975    1023 21021.7    1024 21130.5  1022.9 21208.2  1021.6 21306.6  1021.3
 21351.8  1021.1   21367    1020   21795    1020 21802.7  1023.1 21891.9  1019.9
 21966.6  1016.6 21987.4  1019.1 22088.4    1021 22160.2  1022.7 22169.6  1026.3
   22197    1026

Manning's n Values        num=       7
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
*************************************************************************************
 17002.6    .025 17725.5    .043 18545.4    .043 18645.9    .032 20909.3    .037
   20975    .037 21987.4    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      18562.620944.07              490  501.01     510             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 17002.6 18545.4  1033.9       F
 21021.7   22197  1033.9       F

CROSS SECTION OUTPUT  Profile #PF#1
*****************************************************************************************
* E.G. Elev (ft)         * 1020.55  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    1.03  * Wt. n-Val.            *          *    0.033  *          *
* W.S. Elev (ft)         * 1019.52  * Reach Len. (ft)       *  490.00  *  501.01  *  510.00  *
* Crit W.S. (ft)         * 1016.25  * Flow Area (sq ft)     *          *20401.30  *          *
* E.G. Slope (ft/ft)     *0.001814  * Area (sq ft)          *   15.45  *20401.30  *  136.21  *
* Q Total (cfs)          *166000.00  * Flow (cfs)           *          *166000.00  *          *
* Top Width (ft)         * 2550.03  * Top Width (ft)       *   59.14  * 2381.47  *  109.42  *
* Vel Total (ft/s)       *    8.14  * Avg. Vel. (ft/s)     *          *    8.14  *          *
* Max Chl Dpth (ft)      *   14.82  * Hydr. Depth (ft)     *          *    8.57  *          *
* Conv. Total (cfs)      *3897028.0  * Conv. (cfs)         *          *3897028.0  *          *
* Length Wtd. (ft)       *  501.01  * Wetted Per. (ft)     *          * 2388.32  *          *
* Min Ch El (ft)         * 1004.70  * Shear (lb/sq ft)     *          *    0.97  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *    7.87  *          *
* Frctn Loss (ft)        *    0.84  * Cum Volume (acre-ft)  * 7059.85  *23644.90  * 1405.47  *
* C & E Loss (ft)        *    0.05  * Cum SA (acres)        * 2035.43  * 2488.00  *  663.46  *
*****************************************************************************************

Warning: Divided flow computed for this cross-section.
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 OUTPUT  Profile #PF#2
*****************************************************************************************
* E.G. Elev (ft)         * 1020.59  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    1.02  * Wt. n-Val.            *          *    0.033  *          *
* W.S. Elev (ft)         * 1019.57  * Reach Len. (ft)       *  490.00  *  501.01  *  510.00  *
* Crit W.S. (ft)         * 1016.25  * Flow Area (sq ft)     *          *20508.57  *          *
* E.G. Slope (ft/ft)     *0.001783  * Area (sq ft)          *          *20508.57  *          *
* Q Total (cfs)          *166000.00  * Flow (cfs)           *          *166000.00  *          *
* Top Width (ft)         * 2381.47  * Top Width (ft)       *          * 2381.47  *          *
* Vel Total (ft/s)       *    8.09  * Avg. Vel. (ft/s)     *          *    8.09  *          *
* Max Chl Dpth (ft)      *   14.87  * Hydr. Depth (ft)     *          *    8.61  *          *
* Conv. Total (cfs)      *3931101.0  * Conv. (cfs)         *          *3931101.0  *          *
* Length Wtd. (ft)       *  501.01  * Wetted Per. (ft)     *          * 2388.41  *          *
* Min Ch El (ft)         * 1004.70  * Shear (lb/sq ft)     *          *    0.96  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *    7.74  *          *
* Frctn Loss (ft)        *    0.82  * Cum Volume (acre-ft)  * 1290.30  *24528.25  *   34.97  *
* C & E Loss (ft)        *    0.05  * Cum SA (acres)        *  210.64  * 2492.98  *    6.81  *
*****************************************************************************************

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: 1
REACH: 1 RS: 208.19

INPUT
Description: 208.19
Station Elevation Data num= 73

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
16738.4	1022.5	16814.9	1021.3	16821.2	1024.1	16826.8	1024.4	16846	1022.6
16869.2	1018.1	16892.4	1020.2	17011.8	1018.9	17149.6	1018.8	17287.4	1019
17387.1	1019.5	17473.6	1019.4	17580.5	1019.5	17670	1020.5	17703.3	1019.8
17715.2	1023.4	17720.4	1019.5	18540.1	1019.5	18545.5	1021.5	18598.6	1019.7
18675.6	102018679.181018.788			18707.5	1009.2	18726.3	1010.8	18788	1007.7
18875.7	1008.8	18927.6	1008.9	18995.2	1007.2	19040	1004.7	19071.5	1004.8
19117	1012.1	19221.7	1012.6	19293	1010.3	19310.2	1006.5	19415.1	1005.7
19433	1005.7	19473.9	1008.3	19506.7	1017.8	19594.5	1018.2	19623.8	1016.2
19711.7	1018.6	19793	1010.9	19904.1	1011.6	19997.4	1011.8	20089.1	1012.4
20178.1	1013.8	20250.4	1007.3	20363.1	1007.4	20433.4	1005.7	20559.2	1006.9
20626.2	1007.7	20641.6	1005.9	20704.7	1010	20807.3	1012.1	20891.1	1011
21007.8	1008.2	21027.6	1007.7	21114.3	1011	21201.9	1010.7	21231.6	1010
21232	1010.8	21278.3	1014.9	21343.21018.788		21348.4	1019.1	21818.1	1019.2
21871.3	1019.6	22068.3	1019.1	22125.4	1020	22187	1022.1	22200.2	1026.3
22310.7	1025.1	22415.4	1025	22486	1024.5				

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
16738.4	.025	17715.2	.043	18675.6	.043	18707.5	.032	21348.4	.032

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
18679.18 21343.2 550 514.57 505 .1 .3
Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
16738.4	18675.6	1024	F
21348.4	22486	1024	F

CROSS SECTION OUTPUT Profile #PF#1

		Left OB	Channel	Right OB
E.G. Elev (ft)	1019.66	Element			
Vel Head (ft)	0.87	Wt. n-Val.		0.032	
W.S. Elev (ft)	1018.79	Reach Len. (ft)	550.00	514.57	505.00
Crit W.S. (ft)	1014.91	Flow Area (sq ft)		22151.56	
E.G. Slope (ft/ft)	0.001564	Area (sq ft)	3.85	22151.56	0.00
Q Total (cfs)	166000.00	Flow (cfs)		166000.00	
Top Width (ft)	2675.20	Top Width (ft)	11.17	2664.02	0.02
Vel Total (ft/s)	7.49	Avg. Vel. (ft/s)		7.49	
Max Chl Dpth (ft)	14.09	Hydr. Depth (ft)		8.32	
Conv. Total (cfs)	4197702.0	Conv. (cfs)		4197702.0	
Length Wtd. (ft)	514.57	Wetted Per. (ft)		2670.29	
Min Ch El (ft)	1004.70	Shear (lb/sq ft)		0.81	
Alpha	1.00	Stream Power (lb/ft s)		6.07	
Frctn Loss (ft)	0.81	Cum Volume (acre-ft)	7059.74	23400.18	1404.67
C & E Loss (ft)	0.02	Cum SA (acres)	2035.03	2458.98	662.82

Warning: Divided flow computed for this cross-section.
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 OUTPUT Profile #PF#2

		Left OB	Channel	Right OB
E.G. Elev (ft)	1019.71	Element			
Vel Head (ft)	0.86	Wt. n-Val.		0.032	
W.S. Elev (ft)	1018.85	Reach Len. (ft)	550.00	514.57	505.00
Crit W.S. (ft)	1014.91	Flow Area (sq ft)		22325.38	
E.G. Slope (ft/ft)	0.001524	Area (sq ft)		22325.38	
Q Total (cfs)	166000.00	Flow (cfs)		166000.00	
Top Width (ft)	2664.02	Top Width (ft)		2664.02	
Vel Total (ft/s)	7.44	Avg. Vel. (ft/s)		7.44	
Max Chl Dpth (ft)	14.15	Hydr. Depth (ft)		8.38	
Conv. Total (cfs)	4252565.0	Conv. (cfs)		4252565.0	
Length Wtd. (ft)	514.57	Wetted Per. (ft)		2670.42	
Min Ch El (ft)	1004.70	Shear (lb/sq ft)		0.80	
Alpha	1.00	Stream Power (lb/ft s)		5.91	
Frctn Loss (ft)	0.78	Cum Volume (acre-ft)	1290.30	24281.92	34.97
C & E Loss (ft)	0.02	Cum SA (acres)	210.64	2463.97	6.81

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: 1
REACH: 1 RS: 208.1

INPUT
Description: 208.1
Station Elevation Data num= 69

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
16819.7	1020	16911.7	1020	16920.8	1021.8	17013.5	1018.3	17181.5	1017.7
17278.5	1017.9	17421.8	1018.4	17530.4	1018.9	17672.5	1019	17700.9	1021.1
17741	1041.2	17785.3	1019.8	17794.9	1019.4	18660.8	1020.4	18677.2	1019
18756.4	1019.4	18786.9	1024.5	18805.9	1022.218822.371		1018.025	18827.2	1016.8
18834.8	1016.8	18846	1012	18862.1	1009.8	18895.6	1011.5	18990.9	1008.1
19103.9	1008.1	19211.4	1009.5	19294.1	1007	19344.4	1005.3	19402.2	1005.6
19441.1	1001.9	19492.5	1001.4	19507.6	1005.4	19538.7	1004.2	19589.1	1004.9
19611.9	1009.1	19719.5	1009.4	19730.1	1011.2	19842.8	1011.2	19883.7	1010.5
19981.4	1014	20076.5	1014	20186.6	1011.8	20200.6	1004.4	20293.1	1005.3

```
                                                                    DuplicateEffective
   20440  1005.6 20518.6  1005.6 20579.1    1016 20684.7  1017.1 20777.7  1016.5
 20898.9  1016.6 20918.1  1016.7   20993  1011.1 21084.2  1010.3 21202.2  1009.9
 21318.2  1011.4 21438.8  1010.4 21535.9    1009 21597.7  1011.1 21698.8  1010.3
 21706.3  1012.821767.181018.025 21783.2  1019.4 21878.3  1019.5 21970.4  1019.6
 22184.8  1019.5 22249.1  1022.6 22375.9  1023.7   22460  1023.8

Manning's n Values         num=       5
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************************************************
 16819.7    .025   17741    .043 18786.9    .043 18805.9    .032 21783.2    .032

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
     18822.3721767.18             640  558.37     480            .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 16819.7 18786.9    1030       F
 21783.2   22460    1030       F

CROSS SECTION OUTPUT  Profile #PF#1
*********************************************************************************************
* E.G. Elev (ft)         * 1018.84  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.81  * Wt. n-Val.            *          *    0.032  *          *
* W.S. Elev (ft)         * 1018.03  * Reach Len. (ft)       *  640.00  *  558.37  *  480.00  *
* Crit W.S. (ft)         * 1014.27  * Flow Area (sq ft)     *          *22976.38  *          *
* E.G. Slope (ft/ft)     *0.001569  * Area (sq ft)          *   39.06  *22976.38  *    0.00  *
* Q Total (cfs)          *166000.00  * Flow (cfs)           *          *166000.00  *          *
* Top Width (ft)         * 3169.18  * Top Width (ft)       *  224.36  * 2944.81  *          *
* Vel Total (ft/s)       *    7.22  * Avg. Vel. (ft/s)     *          *    7.22  *          *
* Max Chl Dpth (ft)      *   16.63  * Hydr. Depth (ft)     *          *    7.80  *          *
* Conv. Total (cfs)      *4190911.0  * Conv. (cfs)         *          *4190911.0  *          *
* Length Wtd. (ft)       *  558.37  * Wetted Per. (ft)     *          * 2951.27  *          *
* Min Ch El (ft)         * 1001.40  * Shear (lb/sq ft)     *          *    0.76  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *        *    5.51  *          *
* Frctn Loss (ft)        *    0.95  * Cum Volume (acre-ft)  * 7059.47  *23133.64  * 1404.67  *
* C & E Loss (ft)        *    0.01  * Cum SA (acres)        * 2033.54  * 2425.86  *  662.82  *
*********************************************************************************************

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.

CROSS SECTION OUTPUT  Profile #PF#2
*********************************************************************************************
* E.G. Elev (ft)         * 1018.91  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.79  * Wt. n-Val.            *          *    0.032  *          *
* W.S. Elev (ft)         * 1018.12  * Reach Len. (ft)       *  640.00  *  558.37  *  480.00  *
* Crit W.S. (ft)         * 1014.27  * Flow Area (sq ft)     *          *23258.76  *          *
* E.G. Slope (ft/ft)     *0.001506  * Area (sq ft)          *          *23258.76  *          *
* Q Total (cfs)          *166000.00  * Flow (cfs)           *          *166000.00  *          *
* Top Width (ft)         * 2944.81  * Top Width (ft)       *          * 2944.81  *          *
* Vel Total (ft/s)       *    7.14  * Avg. Vel. (ft/s)     *          *    7.14  *          *
* Max Chl Dpth (ft)      *   16.72  * Hydr. Depth (ft)     *          *    7.90  *          *
* Conv. Total (cfs)      *4276917.0  * Conv. (cfs)         *          *4276917.0  *          *
* Length Wtd. (ft)       *  558.37  * Wetted Per. (ft)     *          * 2951.47  *          *
* Min Ch El (ft)         * 1001.40  * Shear (lb/sq ft)     *          *    0.74  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *        *    5.29  *          *
* Frctn Loss (ft)        *    0.91  * Cum Volume (acre-ft)  * 1290.30  *24012.68  *   34.97  *
* C & E Loss (ft)        *    0.01  * Cum SA (acres)        *  210.64  * 2430.84  *    6.81  *
*********************************************************************************************

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

CROSS SECTION


RIVER: 1
REACH: 1                 RS: 207.99

INPUT
Description: 207.99

Left and Right Channel Bank Stations Interpolated
Station Elevation Data    num=      98
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
 17809.3  1018.5 17815.5  1018.4 17825.2  1016.2 17906.9  1016.7 18020.3  1016.6
 18102.9  1017.1 18116.8  1017.8 18121.1  1019.2   18156  1021.3 18162.3  1018.5
 18168.8  1017.5 18272.9  1016.7 18288.2  1016.8 18385.1    1017 18430.3  1017.1
 18440.8  1018.3 18447.7  1016.2 18501.8  1016.4 18510.3    1018 18514.6  1015.5
 18538.2  1015.7 18541.7  1014.1 18552.7  1006.7 18579.2  1006.9 18660.4  1004.5
 18672.2  1007.9 18695.7  1012.5 18709.9  1013.9 18790.3  1015.9 18865.8  1016.8
 18884.7  1023.5 18901.5  1024.9 18919.6  1017.9 18933.3  1017.3   19008  1016.5
 19025.7  1016.3 19034.2  1018.6 19040.9  1016.9 19083.8  1019.819093.031016.923
 19108.5  1012.1 19169.3    1009   19252  1007.4   19308    1009 19330.7  1003.7
 19355.3  1004.7 19441.2  1004.1 19496.6  1000.7 19571.6   999.9 19628.3  1003.8
 19657.1  1004.6 19679.9  1006.9   19709  1005.7 19786.5  1006.6 19863.9  1009.8
 19926.2    1011 19969.4  1002.6 20043.2  1002.9 20123.4  1004.2 20199.1  1003.3
 20291.6  1005.7   20354  1006.7 20409.8  1008.7 20448.4  1011.1 20498.1  1016.9
   20579  1017.6 20660.5  1016.3 20726.3  1014.2 20743.2  1010.4 20801.5  1014.5
 20874.6  1015.4 20955.4    1016 21051.7  1015.4 21137.2  1014.3 21215.8  1012.8
 21233.3  1012.4 21267.9  1009.1 21316.4  1007.5 21351.9  1005.2 21379.5  1005.3
 21468.2  1009.5 21567.9  1011.4 21676.9  1011.6 21738.1  1010.6   21759  1009.1
 21849.9  1013.1   21881  1015.521934.421016.922 21967.4  1017.8 22054.7  1017.9
 22077.8    1018 22085.6  1018.9 22160.9  1020.4 22188.5  1022.7 22281.8  1022.9
 22357.5  1022.4   22442  1022.2 22476.6  1022.2

Manning's n Values         num=       4
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************************************
 17809.3    .043 19083.8    .043 19108.5    .032 22085.6    .032

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
     19093.0321934.42             475  482.29     500            .1       .3
Ineffective Flow     num=       1
   Sta L   Sta R    Elev  Permanent
```

DuplicateEffective

17809.3 19083.8 1021 F

CROSS SECTION OUTPUT Profile #PF#1

E.G. Elev (ft)	1017.87	Element	Left OB	Channel	Right OB	
Vel Head (ft)	0.95	Wt. n-Val.		0.032		
W.S. Elev (ft)	1016.92	Reach Len. (ft)	475.00	482.29	500.00	
Crit W.S. (ft)	1013.04	Flow Area (sq ft)		21224.66		
E.G. Slope (ft/ft)	0.001846	Area (sq ft)	1978.07	21224.66	0.00	
Q Total (cfs)	166000.00	Flow (cfs)		166000.00		
Top Width (ft)	3550.63	Top Width (ft)	829.67	2720.88	0.08	
Vel Total (ft/s)	7.82	Avg. Vel. (ft/s)		7.82		
Max Chl Dpth (ft)	17.02	Hydr. Depth (ft)		7.80		
Conv. Total (cfs)	3863648.0	Conv. (cfs)		3863648.0		
Length Wtd. (ft)	482.29	Wetted Per. (ft)		2725.43		
Min Ch El (ft)	999.90	Shear (lb/sq ft)		0.90		
Alpha	1.00	Stream Power (lb/ft s)		7.02		
Frctn Loss (ft)	0.73	Cum Volume (acre-ft)	7044.65	22850.34	1404.67	
C & E Loss (ft)	0.08	Cum SA (acres)	2025.80	2389.54	662.82	

Warning: Divided flow computed for this cross-section.
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 OUTPUT Profile #PF#2

E.G. Elev (ft)	1018.00	Element	Left OB	Channel	Right OB	
Vel Head (ft)	0.91	Wt. n-Val.		0.032		
W.S. Elev (ft)	1017.08	Reach Len. (ft)	475.00	482.29	500.00	
Crit W.S. (ft)	1013.04	Flow Area (sq ft)		21661.21		
E.G. Slope (ft/ft)	0.001749	Area (sq ft)		21661.21		
Q Total (cfs)	166000.00	Flow (cfs)		166000.00		
Top Width (ft)	2749.34	Top Width (ft)		2749.34		
Vel Total (ft/s)	7.66	Avg. Vel. (ft/s)		7.66		
Max Chl Dpth (ft)	17.18	Hydr. Depth (ft)		7.88		
Conv. Total (cfs)	3969111.0	Conv. (cfs)		3969111.0		
Length Wtd. (ft)	482.29	Wetted Per. (ft)		2754.22		
Min Ch El (ft)	999.90	Shear (lb/sq ft)		0.86		
Alpha	1.00	Stream Power (lb/ft s)		6.58		
Frctn Loss (ft)	0.68	Cum Volume (acre-ft)	1290.30	23724.78	34.97	
C & E Loss (ft)	0.07	Cum SA (acres)	210.64	2394.34	6.81	

Warning: Divided flow computed for this cross-section.
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: 1
REACH: 1 RS: 207.9

INPUT
Description: 207.9 - FEMA Section S

Right Channel Bank Station Interpolated
Station Elevation Data num= 89

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
18318.7	1015.8	18394.8	1015.8	18463.1	1016.2	18469.7	1018.1	18472.9	1015
18724.1	1015	18761.1	1014.3	18777.9	1016.8	18795.6	1016.9	18860.1	1015.9
18896.1	1016.3	18904.8	1019.7	18929.3	1019.8	18940.1	1015.2	19033.5	1016.1
19047.9	1016	19059.8	1017.2	19066.9	1015.1	19104.7	1016	19116.7	1011.7
19126.7	1007.1	19193.6	1007.4	19285	1009.3	19371.2	1009	19445.7	1007.1
19492.9	1005.5	19566.8	1005.1	19594	1005.6	19624.6	1005.2	19638.3	1006.4
19689	1001.1	19766	1000.8	19843.4	1001.2	19860.6	1000.8	19947.8	1001.8
19955.3	1001.9	20050.4	1001.4	20071.1	1001.6	20089.1	1003.2	20118.3	1004.3
20156	1007.1	20190.3	1008	20289.9	1007.9	20381.4	1008.9	20427.9	1010.5
20531.5	1011.1	20544.8	1011.1	20560.1	1011.9	20586.4	1015.8	20608.7	1016.9
20680.6	1014.6	20727.2	1013.8	20735.8	1014.5	20764.9	1009.7	20788.6	1011.6
20822.1	1012.5	20927.9	1011.9	20963	1010.7	20994.1	1008.3	21051.7	1014.1
21082.2	1013.7	21131.1	1014.8	21213.2	1014.5	21238.4	1013.9	21256.2	1007.6
21259.2	1007.2	21307.5	1008.3	21334.5	1010	21416.2	1010.9	21507.7	1009.2
21598.5	1005.8	21681.1	1006.9	21719.6	1007.7	21776.6	1006.7	21793.9	1004.3
21872.6	1005.5	21939.8	1009	21972.8	1010.5	22032.5	1008.8	22046.3	1006.6
22111	1005.9	22137.55	1016.374	22143.7	1018.8	22212.8	1020.7	22232.2	1021.2
22300.9	1021	22378.9	1020.5	22421.5	1020.6	22488.9	1019.9		

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
18318.7	.043	19047.9	.032	19104.7	.032	22143.7	.032

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
19104.7 22137.55 505 509.52 585 .1 .3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
18318.7	19059.8	1020	F

CROSS SECTION OUTPUT Profile #PF#1

E.G. Elev (ft)	1017.07	Element	Left OB	Channel	Right OB	
Vel Head (ft)	0.69	Wt. n-Val.	0.032	0.032		
W.S. Elev (ft)	1016.38	Reach Len. (ft)	505.00	509.52	585.00	
Crit W.S. (ft)	1012.13	Flow Area (sq ft)	34.04	24808.08		
E.G. Slope (ft/ft)	0.001248	Area (sq ft)	621.56	24808.08	0.00	
Q Total (cfs)	166000.00	Flow (cfs)	48.30	165951.70		
Top Width (ft)	3677.94	Top Width (ft)	672.01	3005.92		
Vel Total (ft/s)	6.68	Avg. Vel. (ft/s)	1.42	6.69		
Max Chl Dpth (ft)	15.58	Hydr. Depth (ft)	0.81	8.25		
Conv. Total (cfs)	4698084.0	Conv. (cfs)	1366.9	4696717.0		
Length Wtd. (ft)	509.50	Wetted Per. (ft)	42.31	3013.42		

```
                                                                    DuplicateEffective
* Min Ch El (ft)         * 1000.80  * Shear (lb/sq ft)        *    0.06  *    0.64  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *    0.09  *    4.29  *          *
* Frctn Loss (ft)        *    0.73  * Cum Volume (acre-ft)   * 7030.48  *22595.51  * 1404.67  *
* C & E Loss (ft)        *    0.02  * Cum SA (acres)         * 2017.61  * 2357.84  *  662.82  *
*****************************************************************************************

Warning: Divided flow computed for this cross-section.
Warning: The cross-section end points had to be extended vertically for the computed water surface.
Note:    Multiple critical depths were found at this location.  The critical depth with the lowest, valid,
         water surface was used.

CROSS SECTION OUTPUT  Profile #PF#2
*****************************************************************************************
* E.G. Elev (ft)         * 1017.24  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.66  * Wt. n-Val.            *          *    0.032  *          *
* W.S. Elev (ft)         * 1016.58  * Reach Len. (ft)       *  505.00  *  509.52  *  585.00  *
* Crit W.S. (ft)         * 1012.13  * Flow Area (sq ft)     *          *25415.12  *          *
* E.G. Slope (ft/ft)     *0.001158  * Area (sq ft)          *          *25415.12  *          *
* Q Total (cfs)          *166000.00  * Flow (cfs)           *          *166000.00  *          *
* Top Width (ft)         * 3016.31  * Top Width (ft)       *          * 3016.31  *          *
* Vel Total (ft/s)       *    6.53  * Avg. Vel. (ft/s)     *          *    6.53  *          *
* Max Chl Dpth (ft)      *   15.78  * Hydr. Depth (ft)     *          *    8.43  *          *
* Conv. Total (cfs)      *4877759.0  * Conv. (cfs)          *          *4877759.0  *          *
* Length Wtd. (ft)       *  509.52  * Wetted Per. (ft)     *          * 3024.60  *          *
* Min Ch El (ft)         * 1000.80  * Shear (lb/sq ft)     *          *    0.61  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *    3.97  *          *
* Frctn Loss (ft)        *    0.68  * Cum Volume (acre-ft)   * 1290.30  *23464.17  *   34.97  *
* C & E Loss (ft)        *    0.02  * Cum SA (acres)         *  210.64  * 2362.43  *    6.81  *
*****************************************************************************************

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.

CROSS SECTION


RIVER: 1
REACH: 1                RS: 207.8

INPUT
Description: 207.8

Right Channel Bank Station Interpolated
Station Elevation Data    num=      73
     Sta     Elev     Sta     Elev     Sta     Elev     Sta     Elev     Sta     Elev
*****************************************************************************
 16720.8  1015.6   16820    1018 16844.2  1018.7 16848.8  1017.5 16856.8    1019
 16867.4  1017.3 16875.2  1017.8   16895  1016.2 16996.6  1015.8 17124.1  1015.3
 17221.3  1014.7 17233.7  1014.6 17327.7  1014.3 17428.5  1014.5 17461.8  1014.4
   17509  1014.7 17520.5  1015.7 17546.1  1014.2 18739.7  1014.2 18794.2  1014.4
 18801.9  1012.7 18900.8  1014.4   18913  1018.5 18934.2  1018.4 18945.1  1013.9
 19039.6  1013.5 19178.5  1013.1   19235  1013.5 19249.5    1015 19270.9  1008.6
 19304.9  1007.2 19435.5  1007.2 19520.8  1006.1 19559.8  1004.3 19673.3  1005.3
 19780.3  1005.6 19820.2  1000.5 19919.9  1000.6 20045.1  1000.2   20073  1001.1
 20160.5  1002.9   20209  1001.4 20279.2  1004.6 20310.6  1008.1 20429.9  1009.7
 20529.9  1009.3 20571.6  1009.6 20646.2    1007 20667.3  1010.8 20787.7  1013.1
 20898.5  1015.2   20915  1015.8 20928.8  1011.5   21033  1009.7   21101  1010.3
 21126.1  1013.2 21165.5  1011.3 21182.3  1008.2 21287.6  1007.8 21332.6  1005.8
 21365.6  1009.5 21456.3  1009.3 21581.9    1009 21695.3  1007.9 21776.1  1006.6
 21795.3  1002.4 21834.5   999.1 21842.9  1003.521871.221015.405 21881.2  1019.6
 21991.4  1019.8 22085.9  1019.5   22180  1020.6

Manning's n Values        num=       5
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
*****************************************************************************
 16720.8    .025 17520.5    .043 19039.6    .032 19249.5    .032 21881.2    .032

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.    Expan.
       19249.521871.22              495   494.8     505             .1        .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 16720.8   18913    1019       F
 21881.2   22180    1019       F

CROSS SECTION OUTPUT  Profile #PF#1
*****************************************************************************************
* E.G. Elev (ft)         * 1016.32  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.91  * Wt. n-Val.            *   0.034  *   0.032  *          *
* W.S. Elev (ft)         * 1015.41  * Reach Len. (ft)       *  495.00  *  494.80  *  505.00  *
* Crit W.S. (ft)         * 1011.92  * Flow Area (sq ft)     *  593.22  *21376.93  *          *
* E.G. Slope (ft/ft)     *0.001667  * Area (sq ft)          * 2627.09  *21376.93  *    0.00  *
* Q Total (cfs)          *166000.00  * Flow (cfs)           *  1635.28  *164364.70  *          *
* Top Width (ft)         * 4717.03  * Top Width (ft)       * 2107.30  * 2609.72  *          *
* Vel Total (ft/s)       *    7.56  * Avg. Vel. (ft/s)     *    2.76  *    7.69  *          *
* Max Chl Dpth (ft)      *   16.31  * Hydr. Depth (ft)     *    1.93  *    8.19  *          *
* Conv. Total (cfs)      *4065865.0  * Conv. (cfs)          *  40053.1  *4025812.0  *          *
* Length Wtd. (ft)       *  494.80  * Wetted Per. (ft)     *  308.44  * 2617.28  *          *
* Min Ch El (ft)         *  999.10  * Shear (lb/sq ft)     *    0.20  *    0.85  *          *
* Alpha                  *    1.03  * Stream Power (lb/ft s) *    0.55  *    6.54  *          *
* Frctn Loss (ft)        *    0.88  * Cum Volume (acre-ft)   * 7011.65  *22325.40  * 1404.67  *
* C & E Loss (ft)        *    0.01  * Cum SA (acres)         * 2001.50  * 2325.00  *  662.82  *
*****************************************************************************************

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.

CROSS SECTION OUTPUT  Profile #PF#2
*****************************************************************************************
* E.G. Elev (ft)         * 1016.54  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.88  * Wt. n-Val.            *          *   0.032  *          *
* W.S. Elev (ft)         * 1015.66  * Reach Len. (ft)       *  495.00  *  494.80  *  505.00  *
* Crit W.S. (ft)         * 1011.92  * Flow Area (sq ft)     *          *22032.87  *          *
* E.G. Slope (ft/ft)     *0.001544  * Area (sq ft)          *          *22032.87  *          *
* Q Total (cfs)          *166000.00  * Flow (cfs)           *          *166000.00  *          *
```

				Duplicate	Effective		
* Top Width (ft)	* 2617.43	* Top Width (ft)	*	* 2617.43	*	*	
* Vel Total (ft/s)	* 7.53	* Avg. Vel. (ft/s)	*	* 7.53	*	*	
* Max Chl Dpth (ft)	* 16.56	* Hydr. Depth (ft)	*	* 8.42	*	*	
* Conv. Total (cfs)	*4224476.0	* Conv. (cfs)	*	*4224476.0	*	*	
* Length Wtd. (ft)	* 494.80	* Wetted Per. (ft)	*	* 2625.95	*	*	
* Min Ch El (ft)	* 999.10	* Shear (lb/sq ft)	*	* 0.81	*	*	
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 6.09	*	*	
* Frctn Loss (ft)	* 0.85	* Cum Volume (acre-ft)	* 1290.30	*23186.67	*	34.97	*
* C & E Loss (ft)	* 0.02	* Cum SA (acres)	* 210.64	* 2329.48	*	6.81	*

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.

CROSS SECTION

RIVER: 1
REACH: 1 RS: 207.71

INPUT
Description: 207.71

Right Channel Bank Station Interpolated
Station Elevation Data num= 69

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
16626.2	1015.3	16668.1	1016.9	16690.7	1017.7	16699.2	1016.4	16733.9	1017.7
16740.2	1016.3	16747.5	1017.3	16818.1	1015.6	16927.6	1015.4	17021	1015.3
17153.4	1014.4	17242.5	1014.4	17313.4	1014.7	17424.4	1012.2	17499	1011
17545	1013	17556.4	1015	18768.1	1013.7	18795	1011.6	18818.9	1011.4
18826.3	1012.5	18837.7	1011	18904.5	1010.8	18932.9	1017.1	18948.7	1016.5
18965.2	1012.7	18981.8	1010.9	19105.3	1010.4	19195.8	1010.5	19272.7	1010.8
19360	1012.7	19373.3	1012.3	19388.1	1010.3	19485.7	1009.8	19579.6	1007.5
19626	1005.9	19656.3	1007	19724.1	1004.1	19825	1001.9	19865.5	1001.1
20033.4	1000.7	20147.9	1000.3	20249.8	1001.7	20337.9	1005	20425.2	1009.8
20449	1011	20553.3	1008.9	20639.2	1006.4	20687.9	1004.5	20738.5	1010.7
20781.1	1011.2	20925.4	1010.6	21010.9	1010.5	21099.7	1007.8	21189.9	1007.3
21251.6	1004.6	21350.8	1006.6	21434.6	1006	21545.1	1002.4	21640.9	1004.3
21652.1	1006	21660.7	1004.2	21704.1	1014.399	21725.4	1019.4	21784.6	1016.6
21889.9	1018.1	21992.7	1019.3	22114.5	1018.7	22157	1018.7		

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
16626.2	.025	17556.4	.043	18981.8	.032	19360	.032	21725.4	.032

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
1936021704.11 485 487.91 485 .1 .3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
16626.2	18932.9	1018	F
21725.4	22157	1018	F

CROSS SECTION OUTPUT Profile #PF#1

* E.G. Elev (ft)	* 1015.43	* Element	* Left OB	* Channel	* Right OB	*
* Vel Head (ft)	* 1.03	* Wt. n-Val.	* 0.032	* 0.032	* 0.000	*
* W.S. Elev (ft)	* 1014.41	* Reach Len. (ft)	* 485.00	* 487.91	* 485.00	*
* Crit W.S. (ft)	* 1011.60	* Flow Area (sq ft)	* 1392.39	*19378.33	* 0.00	*
* E.G. Slope (ft/ft)	*0.001884	* Area (sq ft)	* 2488.16	*19378.33	* 0.00	*
* Q Total (cfs)	*166000.00	* Flow (cfs)	* 6418.99	*159581.00	* 0.00	*
* Top Width (ft)	* 3875.76	* Top Width (ft)	* 1531.62	* 2344.11	* 0.03	*
* Vel Total (ft/s)	* 7.99	* Avg. Vel. (ft/s)	* 4.61	* 8.24	* 0.05	*
* Max Chl Dpth (ft)	* 14.11	* Hydr. Depth (ft)	* 3.46	* 8.27	* 0.00	*
* Conv. Total (cfs)	*3823945.0	* Conv. (cfs)	*147866.7	*3676079.0	* 0.0	*
* Length Wtd. (ft)	* 487.81	* Wetted Per. (ft)	* 402.52	* 2346.83	* 0.03	*
* Min Ch El (ft)	* 1000.30	* Shear (lb/sq ft)	* 0.41	* 0.97	*	
* Alpha	* 1.03	* Stream Power (lb/ft s)	* 1.88	* 8.00	*	
* Frctn Loss (ft)	* 1.11	* Cum Volume (acre-ft)	* 6982.59	*22093.93	* 1404.67	*
* C & E Loss (ft)	* 0.05	* Cum SA (acres)	* 1980.83	* 2296.86	* 662.82	*

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 OUTPUT Profile #PF#2

* E.G. Elev (ft)	* 1015.67	* Element	* Left OB	* Channel	* Right OB	*
* Vel Head (ft)	* 1.09	* Wt. n-Val.	*	* 0.032	*	*
* W.S. Elev (ft)	* 1014.58	* Reach Len. (ft)	* 485.00	* 487.91	* 485.00	*
* Crit W.S. (ft)	* 1011.48	* Flow Area (sq ft)	*	*19789.24	*	*
* E.G. Slope (ft/ft)	*0.001904	* Area (sq ft)	*	*19789.24	*	*
* Q Total (cfs)	*166000.00	* Flow (cfs)	*	*166000.00	*	*
* Top Width (ft)	* 2344.11	* Top Width (ft)	*	* 2344.11	*	*
* Vel Total (ft/s)	* 8.39	* Avg. Vel. (ft/s)	*	* 8.39	*	*
* Max Chl Dpth (ft)	* 14.28	* Hydr. Depth (ft)	*	* 8.44	*	*
* Conv. Total (cfs)	*3804678.0	* Conv. (cfs)	*	*3804678.0	*	*
* Length Wtd. (ft)	* 487.91	* Wetted Per. (ft)	*	* 2348.90	*	*
* Min Ch El (ft)	* 1000.30	* Shear (lb/sq ft)	*	* 1.00	*	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 8.40	*	*
* Frctn Loss (ft)	* 1.10	* Cum Volume (acre-ft)	* 1290.30	*22949.14	* 34.97	*
* C & E Loss (ft)	* 0.05	* Cum SA (acres)	* 210.64	* 2301.30	* 6.81	*

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: 1
REACH: 1 RS: 207.62

INPUT
Description: 207.62

Right Channel Bank Station Interpolated
Station Elevation Data num= 85

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
16251.6	1013	16315.4	1013.5	16374.7	1014.7	16377.5	1015.5	16395.5	1014.6
16421.5	1015.7	16422	1014.7	16556.1	1013.9	16632.1	1014	16716.9	1014
16809.1	1014.3	16813.5	1014.3	16896.9	1014.4	16907.1	1014.4	16991.8	1014.6
17078.6	1013.2	17168.3	1009.6	17287	1010.1	17414.8	1010.3	17522.4	1010.6
17591.1	1013.4	17609.8	1011.4	17662	1012.1	17679.1	1013.9	17688.4	1011.8
17788.8	1010.9	17868.6	1012.4	17910.4	1011.6	17996.3	1008.9	18009.6	1010.7
18035.1	1010.4	18045.1	1011.9	18138.2	1012.6	18185.4	1012.3	18195	1014.2
18263.6	1011.9	18647.5	1012.1	18732.3	1011.6	18815.2	1006.9	18891.8	1011.1
18961.7	1011	18978.7	1015.9	18991.8	1016.8	19005.5	1010.9	19115.1	1011.1
19173.3	1010.9	19236.3	1009.2	19351.7	1010.9	19441.1	1010.7	19518.1	1010.9
19536.8	1005.8	19551.7	1003.6	19572.3	1011.7	19592.2	1007	19618.9	1009.2
19629.6	1005.5	19641.4	1008.7	19649.6	1006.2	19667.1	1010.9	19710.7	1009
19801.1	1007.5	19885.1	1000.9	20012.8	1000.7	20210.2	1000.2	20295.5	1002.1
20395.7	1005.1	20429.1	1005.7	20464.4	1011.5	20549.3	1010.6	20664.2	1007.1
20756.4	1006	20844.7	1004.1	20964.8	1003.4	21097.7	1002.5	21189.6	1001.6
21272.9	1002.2	21361.2	1003.4	21445.5	1003.8	21449.7	1003.92	1472.33	1012.741
21484	1017.3	21597.8	1018	21670.5	1017.5	21682.6	1018.4	21786	1017.2

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
16251.6	.025	17591.1	.043	19005.5	.032	19518.1	.032	21484	.032

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
19518.121472.33 460 465 515 .1 .3
Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
16251.6	18991.8	1018.4	F

CROSS SECTION OUTPUT Profile #PF#1

E.G. Elev (ft)	1014.28	Element	Left OB	Channel / Right OB
Vel Head (ft)	1.51	Wt. n-Val.	0.032	0.032 / 0.000
W.S. Elev (ft)	1012.76	Reach Len. (ft)	460.00	465.00 / 515.00
Crit W.S. (ft)	1010.44	Flow Area (sq ft)	1110.37	16166.84 / 0.00
E.G. Slope (ft/ft)	0.002780	Area (sq ft)	4019.42	16166.84 / 0.00
Q Total (cfs)	166000.00	Flow (cfs)	4529.82	161470.20 / 0.00
Top Width (ft)	4261.97	Top Width (ft)	2307.68	1954.23 / 0.05
Vel Total (ft/s)	9.61	Avg. Vel. (ft/s)	4.08	9.99 / 0.12
Max Chl Dpth (ft)	12.56	Hydr. Depth (ft)	2.15	8.27 / 0.01
Conv. Total (cfs)	3148584.0	Conv. (cfs)	85918.8	3062665.0 / 0.0
Length Wtd. (ft)	464.83	Wetted Per. (ft)	517.34	1961.92 / 0.06
Min Ch El (ft)	1000.20	Shear (lb/sq ft)	0.37	1.43
Alpha	1.06	Stream Power (lb/ft s)	1.52	14.28
Frctn Loss (ft)	0.92	Cum Volume (acre-ft)	6946.36	21894.86 / 1404.67
C & E Loss (ft)	0.11	Cum SA (acres)	1959.45	2272.79 / 662.82

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 OUTPUT Profile #PF#2

E.G. Elev (ft)	1014.53	Element	Left OB	Channel / Right OB
Vel Head (ft)	1.55	Wt. n-Val.	0.032	0.032
W.S. Elev (ft)	1012.98	Reach Len. (ft)	460.00	465.00 / 515.00
Crit W.S. (ft)	1010.38	Flow Area (sq ft)	16.70	16585.98
E.G. Slope (ft/ft)	0.002696	Area (sq ft)	16.70	16585.98
Q Total (cfs)	166000.00	Flow (cfs)	56.31	165943.70
Top Width (ft)	1962.23	Top Width (ft)	8.00	1954.23
Vel Total (ft/s)	10.00	Avg. Vel. (ft/s)	3.37	10.01
Max Chl Dpth (ft)	12.78	Hydr. Depth (ft)	2.09	8.49
Conv. Total (cfs)	3196970.0	Conv. (cfs)	1084.5	3195886.0
Length Wtd. (ft)	465.00	Wetted Per. (ft)	10.10	1962.16
Min Ch El (ft)	1000.20	Shear (lb/sq ft)	0.28	1.42
Alpha	1.00	Stream Power (lb/ft s)	0.94	14.24
Frctn Loss (ft)	0.93	Cum Volume (acre-ft)	1290.21	22745.42 / 34.97
C & E Loss (ft)	0.09	Cum SA (acres)	210.60	2277.23 / 6.81

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: 1
REACH: 1 RS: 207.53

INPUT
Description: 207.53

Right Channel Bank Station Interpolated
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
16022.7	1011.1	16143.3	1011.7	16215.8	1011.5	16221.1	1014.1	16232.7	1013.9
16241.1	1012.7	16266.4	1013.7	16266.5	1014.9	16268.8	1013.2	16273.6	1014.2
16372.5	1014.1	16429	1014.9	16432.3	1013.6	16526.5	1013	16542.7	1012.9
16638.5	1012.9	16738.7	1012.6	16828.5	1012.8	16854.4	1014.1	16891.5	1014.1

DuplicateEffective

16896.5	1014.8	17034.3	1011.1	17122	1009.6	17238.3	1009.7	17332.6	1009.9
17423.9	1010.1	17511.1	1010.4	17604.5	1010.7	17620.2	1013.7	17629.7	1010.7
17643.4	1009.3	17724	1010	17812.5	1010.1	17954	1010	18065.4	1010.1
18155.9	1010.1	18267.1	1010.5	18354.5	1010.5	18454.3	1011.5	18527.2	1011.5
18611.5	1010	18724.9	1010	18789.3	1010.5	18796.9	1011.3	18812.1	1007.4
18898.8	1008.9	18986.9	1010	18999.5	1010.7	19027.1	1017.5	19046.3	1011.3
19124.1	1011.5	19133.7	1010.3	19137.2	1008.4	19148.2	1008.1	19240.4	1009.9
19257.7	1010.8	19302.9	1009.2	19305.5	1008.3	19314.2	1008.5	19319	1010.3
19329.6	1007.9	19386.1	1006.6	19502.9	1006.4	19603.8	1004.2	19684.4	1002.8
19763.2	1001.2	19791	999.1	19817.3	1000.3	19986.4	1000.3	20057	1000.3
20190.1	1000.3	20256.8	1001.2	20303.8	999.8	20452.2	999.9	20549.1	1000.2
20636.9	1000.2	20732.4	1000.1	20823	1000.7	20885.5	1001.5	20917.4	1004.8
20933.9	1001.4	20947	1004	20965	1000.8	21002.6	1002.6	21159.7	1002.9
21175	1003.865	21269.1	1009.8	21336	1012.1	21366.8	1015.8	21376.8	1013.2
21407.7	1013.3	21446.9	1014.6	21511.1	1014.3	21572.1	1017.7	21609.7	1014
21754.4	1013.1	21798	1013.8						

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
16022.7	.025	17620.2	.043	19124.1	.032	19502.9	.032	21336	.032

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19502.9	21175	231	227	201	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
16022.7	19027.1	1015	F
21175	21798	1015	F

CROSS SECTION OUTPUT Profile #PF#1

E.G. Elev (ft)	1013.25	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.16	Wt. n-Val.	0.032	0.032	
W.S. Elev (ft)	1012.09	Reach Len. (ft)	231.00	227.00	201.00
Crit W.S. (ft)	1008.07	Flow Area (sq ft)	1538.28	18159.09	
E.G. Slope (ft/ft)	0.001487	Area (sq ft)	5537.93	18159.09	570.70
Q Total (cfs)	166000.00	Flow (cfs)	6641.27	159358.70	
Top Width (ft)	4480.19	Top Width (ft)	2647.44	1672.10	160.66
Vel Total (ft/s)	8.43	Avg. Vel. (ft/s)	4.32	8.78	
Max Chl Dpth (ft)	12.99	Hydr. Depth (ft)	3.35	10.86	
Conv. Total (cfs)	4305239.0	Conv. (cfs)	172242.4	4132996.0	
Length Wtd. (ft)	227.08	Wetted Per. (ft)	460.56	1673.42	
Min Ch El (ft)	999.10	Shear (lb/sq ft)	0.31	1.01	
Alpha	1.05	Stream Power (lb/ft s)	1.34	8.84	
Frctn Loss (ft)	0.23	Cum Volume (acre-ft)	6895.89	21711.64	1401.30
C & E Loss (ft)	0.09	Cum SA (acres)	1933.29	2253.43	661.87

Warning: Divided flow computed for this cross-section.
Warning: The cross-section end points had to be extended vertically for the computed water surface.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION OUTPUT Profile #PF#2

E.G. Elev (ft)	1013.51	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.26	Wt. n-Val.		0.032	
W.S. Elev (ft)	1012.25	Reach Len. (ft)	231.00	227.00	201.00
Crit W.S. (ft)	1007.97	Flow Area (sq ft)		18428.21	
E.G. Slope (ft/ft)	0.001553	Area (sq ft)		18428.21	
Q Total (cfs)	166000.00	Flow (cfs)		166000.00	
Top Width (ft)	1672.10	Top Width (ft)		1672.10	
Vel Total (ft/s)	9.01	Avg. Vel. (ft/s)		9.01	
Max Chl Dpth (ft)	13.15	Hydr. Depth (ft)		11.02	
Conv. Total (cfs)	4211741.0	Conv. (cfs)		4211741.0	
Length Wtd. (ft)	227.00	Wetted Per. (ft)		1687.66	
Min Ch El (ft)	999.10	Shear (lb/sq ft)		1.06	
Alpha	1.00	Stream Power (lb/ft s)		9.54	
Frctn Loss (ft)	0.23	Cum Volume (acre-ft)	1290.12	22558.54	34.97
C & E Loss (ft)	0.13	Cum SA (acres)	210.56	2257.87	6.81

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

CROSS SECTION

RIVER: 1
REACH: 1 RS: 207.49

INPUT
Description: 207.49 - FEMA Section R
Station Elevation Data num= 55

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
16210	1013.8	17338.3	1010.47	18388.3	1010.34	18888.3	1010.64	18938.3	1011
18988.3	1011.5	19038.3	1012.3	19088.3	1013.2	19138.3	1014.3	19188.3	1015.6
19288.3	1018.2	19388.3	1020.56	19455	1022.05	19465.2	1020.4	19465.3	1014.7
19468.2	1013.7	19522.3	997.9	19560.3	997.3	19564.3	997.3	19660.3	997
19664.3	997	19760.3	996.4	19764.3	996.4	19860.3	999.5	19864.3	999.5
19960.3	997.4	19964.3	997.4	20060.3	994.6	20064.3	994.6	20160.3	995.5
20164.3	995.5	20260.3	999.6	20264.3	999.6	20360.3	998.5	20364.3	998.5
20460.3	998.9	20464.3	998.9	20560.3	996.7	20564.3	996.7	20660.3	997.9
20664.3	997.9	20760.3	998	20764.3	998	20860.3	999.9	20864.3	999.9
20960.3	998	20964.3	998	21027.8	992.2	21056.5	1014.7	21059.4	1014.7
21059.5	1020.4	21080	1020.7	21115	1020	21280	1016	21875	1013.8

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
16210	.032	19455	.032	21059.4	.032

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

```
                                                                  DuplicateEffective
      19465.3 21059.4              50       54       35              .1       .3
Ineffective Flow      num=       2
   Sta L    Sta R     Elev  Permanent
   16210 19465.3     1020        F
 21059.4    21875     1020        F

CROSS SECTION OUTPUT  Profile #PF#1
*****************************************************************************************************
* E.G. Elev (ft)         * 1012.92  * Element                * Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.85  * Wt. n-Val.             *         *   0.032 *          *
* W.S. Elev (ft)         * 1012.07  * Reach Len. (ft)        *    0.10 *    0.10 *    0.10  *
* Crit W.S. (ft)         * 1004.75  * Flow Area (sq ft)      *         *22425.83 *          *
* E.G. Slope (ft/ft)     *0.000745  * Area (sq ft)           * 3088.62  *22425.83 *          *
* Q Total (cfs)          *166000.00  * Flow (cfs)            *         *166000.00  *          *
* Top Width (ft)         * 3807.67  * Top Width (ft)        * 2228.30  * 1579.37 *          *
* Vel Total (ft/s)       *    7.40  * Avg. Vel. (ft/s)      *         *    7.40 *          *
* Max Chl Dpth (ft)      *   19.87  * Hydr. Depth (ft)      *         *   14.20 *          *
* Conv. Total (cfs)      *6081966.0  * Conv. (cfs)          *         *6081966.0  *          *
* Length Wtd. (ft)       *    0.10  * Wetted Per. (ft)      *         * 1588.81 *          *
* Min Ch El (ft)         *  992.20  * Shear (lb/sq ft)      *         *    0.66 *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *         *    4.86 *          *
* Frctn Loss (ft)        *    0.00  * Cum Volume (acre-ft)  * 6873.02  *21605.90  * 1399.98  *
* C & E Loss (ft)        *    0.01  * Cum SA (acres)        * 1920.36  * 2244.96  *  661.50  *
*****************************************************************************************************

Warning: Divided flow computed for this cross-section.
Note:    Multiple critical depths were found at this location.  The critical depth with the lowest, valid,
         energy was used.

CROSS SECTION OUTPUT  Profile #PF#2
*****************************************************************************************************
* E.G. Elev (ft)         * 1013.15  * Element                * Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.82  * Wt. n-Val.             *         *   0.032 *          *
* W.S. Elev (ft)         * 1012.33  * Reach Len. (ft)        *    0.10 *    0.10 *    0.10  *
* Crit W.S. (ft)         * 1004.75  * Flow Area (sq ft)      *         *22830.88 *          *
* E.G. Slope (ft/ft)     *0.000702  * Area (sq ft)           *         *22830.88 *          *
* Q Total (cfs)          *166000.00  * Flow (cfs)            *         *166000.00  *          *
* Top Width (ft)         * 1579.37  * Top Width (ft)        *         * 1579.37 *          *
* Vel Total (ft/s)       *    7.27  * Avg. Vel. (ft/s)      *         *    7.27 *          *
* Max Chl Dpth (ft)      *   20.13  * Hydr. Depth (ft)      *         *   14.46 *          *
* Conv. Total (cfs)      *6264807.0  * Conv. (cfs)          *         *6264807.0  *          *
* Length Wtd. (ft)       *    0.10  * Wetted Per. (ft)      *         * 1589.33 *          *
* Min Ch El (ft)         *  992.20  * Shear (lb/sq ft)      *         *    0.63 *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *         *    4.58 *          *
* Frctn Loss (ft)        *          * Cum Volume (acre-ft)  * 1290.12  *22451.03  *   34.97  *
* C & E Loss (ft)        *          * Cum SA (acres)        *  210.56  * 2249.40 *    6.81  *
*****************************************************************************************************

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

BRIDGE


RIVER: 1
REACH: 1                 RS: 207.485

INPUT
Description: 51st Avenue Bridge
Distance from Upstream XS =       .1
Deck/Roadway Width        =    50.71
Weir Coefficient          =      2.6
Upstream  Deck/Roadway Coordinates
    num=       28
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
*************************************************************************
 17338.3 1010.47 1010.47 18388.3 1010.34 1010.34 18888.3 1010.64 1010.64
 18938.3    1011    1011 18988.3  1011.5  1011.5 19038.3  1012.3  1012.3
 19088.3  1013.2  1013.2 19138.3  1014.3  1014.3 19188.3  1015.6  1015.6
 19288.3  1018.2  1018.2 19388.3 1020.56 1020.56   19445 1022.05  1020.2
 19560.3  1023.4 1017.77 19660.3 1025.18 1019.47 19760.3 1026.58 1020.87
 19860.3 1027.68    1022 19960.3 1028.58 1022.87 20060.3 1029.28 1023.59
 20160.3 1029.68 1023.99 20260.3 1029.78 1024.09 20360.3 1029.68    1024
 20460.3 1029.28 1023.59 20560.3 1028.68 1023.01 20660.3 1027.88 1022.21
 20760.3 1026.68    1021 20860.3 1025.41 1019.67 20960.3 1023.68 1018.03
 21059.4  1020.6 1014.92

Upstream Bridge Cross Section Data
Station Elevation Data    num=      55
     Sta     Elev     Sta     Elev     Sta     Elev     Sta     Elev     Sta     Elev
*********************************************************************************
   16210  1013.8 17338.3 1010.47 18388.3 1010.34 18888.3 1010.64 18938.3    1011
 18988.3  1011.5 19038.3  1012.3 19088.3  1013.2 19138.3  1014.3 19188.3  1015.6
 19288.3  1018.2 19388.3 1020.56   19455 1022.05 19465.2  1020.4 19465.3  1014.7
 19468.2  1013.7 19522.3   997.9 19560.3   997.3 19564.3   997.3 19660.3     997
 19664.3     997 19760.3   996.4 19764.3   996.4 19860.3   999.5 19864.3   999.5
 19960.3   997.4 19964.3   997.4 20060.3   994.6 20064.3   994.6 20160.3   995.5
 20164.3   995.5 20260.3   999.6 20264.3   999.6 20360.3   998.5 20364.3   998.5
 20460.3   998.9 20464.3   998.9 20560.3   996.7 20564.3   996.7 20660.3   997.9
 20664.3   997.9 20760.3     998 20764.3     998 20860.3   999.9 20864.3   999.9
 20960.3     998 20964.3     998 21027.8   992.2 21056.5  1014.7 21059.4  1014.7
 21059.5  1020.4   21080  1020.7   21115    1020   21280    1016   21875  1013.8

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
   16210    .032   19455    .032 21059.4    .032

Bank Sta: Left   Right    Coeff Contr.   Expan.
      19465.3 21059.4           .1       .3
Ineffective Flow      num=       2
   Sta L    Sta R     Elev  Permanent
   16210 19465.3     1020        F
 21059.4    21875     1020        F

Downstream  Deck/Roadway Coordinates
```

num= 28

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
17338.3	1010.47	1010.47	18388.3	1010.34	1010.34	18888.3	1010.64	1010.64
18938.3	1011	1011	18988.3	1011.5	1011.5	19038.3	1012.3	1012.3
19088.3	1013.2	1013.2	19138.3	1014.3	1014.3	19188.3	1015.6	1015.6
19288.3	1018.2	1018.2	19388.3	1020.56	1020.56	19445	1022.05	1020.2
19560.3	1023.4	1017.77	19660.3	1025.18	1019.47	19760.3	1026.58	1020.87
19860.3	1027.68	1022	19960.3	1028.58	1022.87	20060.3	1029.28	1023.59
20160.3	1029.68	1023.99	20260.3	1029.78	1024.09	20360.3	1029.68	1024
20460.3	1029.28	1023.59	20560.3	1028.68	1023.01	20660.3	1027.88	1022.21
20760.3	1026.68	1021	20860.3	1025.41	1019.67	20960.3	1023.68	1018.03
21059.4	1020.6	1014.92						

Downstream Bridge Cross Section Data

Station Elevation Data num= 55

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
16210	1013.8	17338.3	1010.47	18388.3	1010.34	18888.3	1010.64	18938.3	1011
18988.3	1011.5	19038.3	1012.3	19088.3	1013.2	19138.3	1014.3	19188.3	1015.6
19288.3	1018.2	19388.3	1020.56	19455	1022.05	19465.2	1020.4	19465.3	1014.7
19468.2	1013.7	19522.3	997.9	19560.3	997.3	19564.3	997.3	19660.3	997
19664.3	997	19760.3	996.4	19764.3	996.4	19860.3	999.5	19864.3	999.5
19960.3	997.4	19964.3	997.4	20060.3	994.6	20064.3	994.6	20160.3	995.5
20164.3	995.5	20260.3	999.6	20264.3	999.6	20360.3	998.5	20364.3	998.5
20460.3	998.9	20464.3	998.9	20560.3	996.7	20564.3	996.7	20660.3	997.9
20664.3	997.9	20760.3	998	20764.3	998	20860.3	999.9	20864.3	999.9
20960.3	998	20964.3	998	21027.8	992.2	21056.5	1014.7	21059.4	1014.7
21059.5	1020.4	21080	1020.7	21115	1020	21280	1016	21875	1013.8

Manning's n Values num= 2

Sta	n Val	Sta	n Val
16210	.032	21059.4	.032

Bank Sta: Left Right Coeff Contr. Expan.

19465.3 21059.4 .1 .3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
16210	19465.3	1020	F
21059.4	21875	1020	F

Upstream Embankment side slope = horiz. to 1.0 vertical
Downstream Embankment side slope = horiz. to 1.0 vertical
Maximum allowable submergence for weir flow = .95
Elevation at which weir flow begins = 1010.34
Energy head used in spillway design =
Spillway height used in design =
Weir crest shape = Broad Crested

Number of Piers = 15

Pier Data
Pier Station Upstream= 19562.3 Downstream= 19562.3

Upstream num= 2

Width	Elev	Width	Elev
4	997.3	4	1017.8

Downstream num= 2

Width	Elev	Width	Elev
4	997.3	4	1017.8

Pier Data
Pier Station Upstream= 19662.3 Downstream= 19662.3

Upstream num= 2

Width	Elev	Width	Elev
4	997	4	1019.54

Downstream num= 2

Width	Elev	Width	Elev
4	997	4	1019.54

Pier Data
Pier Station Upstream= 19762.3 Downstream= 19762.3

Upstream num= 2

Width	Elev	Width	Elev
4	996.4	4	1020.94

Downstream num= 2

Width	Elev	Width	Elev
4	996.4	4	1020.94

Pier Data
Pier Station Upstream= 19862.3 Downstream= 19862.3

Upstream num= 2

Width	Elev	Width	Elev
4	999.5	4	1022

Downstream num= 2

Width	Elev	Width	Elev
4	999.5	4	1022

Pier Data
Pier Station Upstream= 19962.3 Downstream= 19962.3

Upstream num= 2

Width	Elev	Width	Elev
4	997.4	4	1022.9

Downstream num= 2

Width	Elev	Width	Elev
4	997.4	4	1022.9

Pier Data
Pier Station Upstream= 20062.3 Downstream= 20062.3
Upstream num= 2
Width	Elev	Width	Elev
4	994.6	4	1023.6

Downstream num= 2
Width	Elev	Width	Elev
4	994.6	4	1023.6

Pier Data
Pier Station Upstream= 20162.3 Downstream= 20162.3
Upstream num= 2
Width	Elev	Width	Elev
4	995.5	4	1024

Downstream num= 2
Width	Elev	Width	Elev
4	995.5	4	1024

Pier Data
Pier Station Upstream= 20262.3 Downstream= 20262.3
Upstream num= 2
Width	Elev	Width	Elev
4	999.6	4	1024.1

Downstream num= 2
Width	Elev	Width	Elev
4	999.6	4	1024.1

Pier Data
Pier Station Upstream= 20362.3 Downstream= 20362.3
Upstream num= 2
Width	Elev	Width	Elev
4	998.5	4	1024

Downstream num= 2
Width	Elev	Width	Elev
4	998.5	4	1024

Pier Data
Pier Station Upstream= 20462.3 Downstream= 20462.3
Upstream num= 2
Width	Elev	Width	Elev
4	998.9	4	1023.6

Downstream num= 2
Width	Elev	Width	Elev
4	998.9	4	1023.6

Pier Data
Pier Station Upstream= 20562.3 Downstream= 20562.3
Upstream num= 2
Width	Elev	Width	Elev
4	996.7	4	1023

Downstream num= 2
Width	Elev	Width	Elev
4	996.7	4	1023

Pier Data
Pier Station Upstream= 20662.3 Downstream= 20662.3
Upstream num= 2
Width	Elev	Width	Elev
4	997.9	4	1022.2

Downstream num= 2
Width	Elev	Width	Elev
4	997.9	4	1022.2

Pier Data
Pier Station Upstream= 20762.3 Downstream= 20762.3
Upstream num= 2
Width	Elev	Width	Elev
4	998	4	1021

Downstream num= 2
Width	Elev	Width	Elev
4	998	4	1021

Pier Data
Pier Station Upstream= 20862.3 Downstream= 20862.3
Upstream num= 2
Width	Elev	Width	Elev
4	999.9	4	1019.7

Downstream num= 2
Width	Elev	Width	Elev
4	999.9	4	1019.7

Pier Data
Pier Station Upstream= 20962.3 Downstream= 20962.3
Upstream num= 2
Width	Elev	Width	Elev
4	998	4	1018

```
Downstream     num=       2
    Width   Elev     Width   Elev
*********************************
       4     998        4    1018

Number of Bridge Coefficient Sets =  1

Low Flow Methods and Data
       Energy
       Momentum               Cd   =     1.2
       Yarnell                KVal =    1.05
Selected Low Flow Methods = Highest Energy Answer

High Flow Method
       Pressure and Weir flow
           Submerged Inlet Cd          =
           Submerged Inlet + Outlet Cd =      .8
           Max Low Cord                =

Additional Bridge Parameters
       Add Friction component to Momentum
       Add Weight component to Momentum
       Class B flow critical depth computations use critical depth
           inside the bridge at the upstream end
       Criteria to check for pressure flow = Upstream energy grade line

BRIDGE OUTPUT  Profile #PF#1
*************************************************************************************************
* E.G. US. (ft)           *    1012.92  * Element                *Inside BR US *Inside BR DS *
* W.S. US. (ft)           *    1012.07  * E.G. Elev (ft)         *    1012.91  *    1012.86  *
* Q Total (cfs)           *  166000.00  * W.S. Elev (ft)         *    1011.98  *    1011.92  *
* Q Bridge (cfs)          *  166000.00  * Crit W.S. (ft)         *    1004.93  *    1004.93  *
* Q Weir (cfs)            *             * Max Chl Dpth (ft)      *      19.78  *      19.71  *
* Weir Sta Lft (ft)       *             * Vel Total (ft/s)       *       7.75  *       7.78  *
* Weir Sta Rgt (ft)       *             * Flow Area (sq ft)      *   21426.50  *   21324.26  *
* Weir Submerg            *             * Froude # Chl           *       0.36  *       0.37  *
* Weir Max Depth (ft)     *             * Specif Force (cu ft)   *  194745.90  *  193498.40  *
* Min El Weir Flow (ft)   *    1014.71  * Hydr Depth (ft)        *      14.11  *      14.04  *
* Min El Prs (ft)         *    1024.09  * W.P. Total (ft)        *    1957.41  *    1955.04  *
* Delta EG (ft)           *       0.09  * Conv. Total (cfs)      *  4905047.0  *  4870028.0  *
* Delta WS (ft)           *       0.11  * Top Width (ft)         *    1518.95  *    1518.64  *
* BR Open Area (sq ft)    *   35958.82  * Frctn Loss (ft)        *       0.06  *       0.00  *
* BR Open Vel (ft/s)      *       7.78  * C & E Loss (ft)        *       0.00  *       0.02  *
* Coef of Q               *             * Shear Total (lb/sq ft) *       0.78  *       0.79  *
* Br Sel Method           *Energy only  * Power Total (lb/ft s)  *       6.06  *       6.16  *
*************************************************************************************************

Note:    Momentum answer is not valid if the water surface is above the low chord or if there is weir
         flow.  The momentum answer has been disregarded.
Note:    Multiple critical depths were found at this location.  The critical depth with the lowest, valid,
         energy was used.
Note:    Multiple critical depths were found at this location.  The critical depth with the lowest, valid,
         energy was used.

BRIDGE OUTPUT  Profile #PF#2
*************************************************************************************************
* E.G. US. (ft)           *    1013.15  * Element                *Inside BR US *Inside BR DS *
* W.S. US. (ft)           *    1012.33  * E.G. Elev (ft)         *    1013.11  *    1013.06  *
* Q Total (cfs)           *  166000.00  * W.S. Elev (ft)         *    1012.21  *    1012.15  *
* Q Bridge (cfs)          *  166000.00  * Crit W.S. (ft)         *    1004.93  *    1004.93  *
* Q Weir (cfs)            *             * Max Chl Dpth (ft)      *      20.01  *      19.95  *
* Weir Sta Lft (ft)       *             * Vel Total (ft/s)       *       7.62  *       7.66  *
* Weir Sta Rgt (ft)       *             * Flow Area (sq ft)      *   21773.59  *   21676.71  *
* Weir Submerg            *             * Froude # Chl           *       0.35  *       0.36  *
* Weir Max Depth (ft)     *             * Specif Force (cu ft)   *  199043.80  *  197835.10  *
* Min El Weir Flow (ft)   *    1020.81  * Hydr Depth (ft)        *      14.33  *      14.27  *
* Min El Prs (ft)         *    1024.09  * W.P. Total (ft)        *    1964.73  *    1962.26  *
* Delta EG (ft)           *       0.10  * Conv. Total (cfs)      *  5025672.0  *  4992637.0  *
* Delta WS (ft)           *       0.11  * Top Width (ft)         *    1519.37  *    1518.87  *
* BR Open Area (sq ft)    *   35895.22  * Frctn Loss (ft)        *             *             *
* BR Open Vel (ft/s)      *       7.66  * C & E Loss (ft)        *             *             *
* Coef of Q               *             * Shear Total (lb/sq ft) *       0.75  *       0.76  *
* Br Sel Method           *   Momentum  * Power Total (lb/ft s)  *       5.75  *       5.84  *
*************************************************************************************************

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

CROSS SECTION


RIVER: 1
REACH: 1                RS: 207.48

INPUT
Description: 207.48
Station Elevation Data    num=      55
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
   16210  1013.8 17338.3 1010.47 18388.3 1010.34 18888.3 1010.64 18938.3    1011
 18988.3  1011.5 19038.3  1012.3 19088.3  1013.2 19138.3  1014.3 19188.3  1015.6
 19288.3  1018.2 19388.3 1020.56   19455 1022.05 19465.2  1020.4 19465.3  1014.7
 19468.2  1013.7 19522.3   997.9 19560.3   997.3 19564.3   997.3 19660.3     997
 19664.3     997 19760.3   996.4 19764.3   996.4 19860.3   999.5 19864.3   999.5
 19960.3   997.4 19964.3   997.4 20060.3   994.6 20064.3   994.6 20160.3   995.5
 20164.3   995.5 20260.3   999.6 20264.3   999.6 20360.3   998.5 20364.3   998.5
 20460.3   998.9 20464.3   998.9 20560.3   996.7 20564.3   996.7 20660.3   997.9
 20664.3   997.9 20760.3     998 20764.3     998 20860.3   999.9 20864.3   999.9
 20960.3     998 20964.3     998 21027.8   992.2 21056.5  1014.7 21059.4  1014.7
 21059.5  1020.4   21080  1020.7   21115    1020   21280    1016   21875  1013.8

Manning's n Values        num=       2
     Sta   n Val     Sta   n Val
*********************************
```

```
   16210    .032 21059.4    .032

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       19465.3 21059.4             251  245.54     316            .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
   16210 19465.3    1020       F
 21059.4   21875    1020       F

CROSS SECTION OUTPUT  Profile #PF#1
*********************************************************************************************
* E.G. Elev (ft)         * 1012.83  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.86  * Wt. n-Val.            *          *    0.032  *          *
* W.S. Elev (ft)         * 1011.97  * Reach Len. (ft)       *  251.00  *  245.54  *  316.00  *
* Crit W.S. (ft)         * 1004.75  * Flow Area (sq ft)     *          * 22259.18  *          *
* E.G. Slope (ft/ft)     *0.000763  * Area (sq ft)          * 2855.70  * 22259.18  *          *
* Q Total (cfs)          *166000.00  * Flow (cfs)           *          *166000.00  *          *
* Top Width (ft)         * 3764.82  * Top Width (ft)       * 2185.95  * 1578.88  *          *
* Vel Total (ft/s)       *    7.46  * Avg. Vel. (ft/s)     *          *    7.46  *          *
* Max Chl Dpth (ft)      *   19.77  * Hydr. Depth (ft)     *          *   14.10  *          *
* Conv. Total (cfs)      *6008209.0  * Conv. (cfs)         *          *6008209.0  *          *
* Length Wtd. (ft)       *  245.54  * Wetted Per. (ft)     *          * 1588.27  *          *
* Min Ch El (ft)         *  992.20  * Shear (lb/sq ft)     *          *    0.67  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *        *    4.98  *          *
* Frctn Loss (ft)        *    0.29  * Cum Volume (acre-ft)  * 6872.91  *21579.37  * 1399.98  *
* C & E Loss (ft)        *    0.06  * Cum SA (acres)        * 1920.28  * 2243.08  *  661.50  *
*********************************************************************************************

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

CROSS SECTION OUTPUT  Profile #PF#2
*********************************************************************************************
* E.G. Elev (ft)         * 1013.05  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.83  * Wt. n-Val.            *          *    0.032  *          *
* W.S. Elev (ft)         * 1012.22  * Reach Len. (ft)       *  251.00  *  245.54  *  316.00  *
* Crit W.S. (ft)         * 1004.75  * Flow Area (sq ft)     *          * 22660.16  *          *
* E.G. Slope (ft/ft)     *0.000720  * Area (sq ft)          *          * 22660.16  *          *
* Q Total (cfs)          *166000.00  * Flow (cfs)           *          *166000.00  *          *
* Top Width (ft)         * 1578.87  * Top Width (ft)       *          * 1578.87  *          *
* Vel Total (ft/s)       *    7.33  * Avg. Vel. (ft/s)     *          *    7.33  *          *
* Max Chl Dpth (ft)      *   20.02  * Hydr. Depth (ft)     *          *   14.35  *          *
* Conv. Total (cfs)      *6188367.0  * Conv. (cfs)         *          *6188367.0  *          *
* Length Wtd. (ft)       *  245.54  * Wetted Per. (ft)     *          * 1588.77  *          *
* Min Ch El (ft)         *  992.20  * Shear (lb/sq ft)     *          *    0.64  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *        *    4.69  *          *
* Frctn Loss (ft)        *    0.27  * Cum Volume (acre-ft)  * 1290.12  *22424.07  *   34.97  *
* C & E Loss (ft)        *    0.06  * Cum SA (acres)        *  210.56  * 2247.51  *    6.81  *
*********************************************************************************************

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

CROSS SECTION


RIVER: 1
REACH: 1                 RS: 207.43

INPUT
Description: 207.43

Left and Right Channel Bank Stations Interpolated
Station Elevation Data    num=      79
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*************************************************************************************
   16001   1012.1 16131.4   1012.2 16228.7   1013.1 16320.3   1013.5 16407.2   1012.9
 16462.7     1013 16534.7   1009.5   16622   1009.9 16771.3   1010.1 16811.7   1010.1
 16903.6   1009.9 17000.5   1009.7 17064.3   1009.5 17157.6   1009.6   17168   1009.6
 17254.7   1009.5 17423.7   1009.1   17535   1009.1 17611.5     1010 17646.2   1011.6
 17670.8   1009.4 17760.3   1009.7 17874.6   1010.1 17964.8   1011.6 17984.9     1012
 17997.8   1016.3 18045.8   1011.1 18059.4   1010.8 18090.3   1019.1 18104.6   1011.8
 18153.8   1012.3 18156.2     1012 18391.4   1012.4 18596.1   1016.3 18654.3   1014.9
 18908.3     1012   19012   1011.9 19027.1   1014.5 19083.8   1014.7 19094.4   1012.4
 19147.4   1018.1 19153.2   1017.8 19176.4   1012.1 19237.2   1010.4 19250.8   1011.8
 19253.31010.962 19268.1     1006 19370.6   1006.3 19448.3     1005 19562.2   1000.2
 19660.1    999.2 19729.8      999 19896.9    999.1 20054.8    999.2 20143.1    999.3
 20241.9   1000.1 20361.6   1000.3 20453.3   1000.3 20539.4    999.9 20632.9   1001.1
 20689.8   1003.1 20747.1     1003   20818    999.4   20892   1000.8 20911.4   1002.3
   209401001.503 20940.1   1001.5 20958.5   1009.2 21053.7   1010.9 21146.5   1011.2
 21244.1     1013 21380.1   1013.7 21490.2   1010.1 21618.6     1011   21731   1013.6
 21751.5   1014.2 21777.8   1011.3 21912.6   1011.5   21985   1012.4

Manning's n Values        num=       5
     Sta    n Val      Sta    n Val      Sta    n Val      Sta    n Val      Sta    n Val
*************************************************************************************
   16001     .025 17611.5     .043   19012     .032 19250.8     .032 21053.7     .032

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       19253.3   20940             450     471     575            .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
   16001 19250.8    1015       F
   20940   21985    1015       F

CROSS SECTION OUTPUT  Profile #PF#1
*********************************************************************************************
```

			DuplicateEffective		
* E.G. Elev (ft)	* 1012.48	* Element	* Left OB	* Channel	* Right OB
* Vel Head (ft)	* 1.49	* Wt. n-Val.	* 0.000	* 0.032	*
* W.S. Elev (ft)	* 1010.99	* Reach Len. (ft)	* 450.00	* 471.00	* 575.00
* Crit W.S. (ft)	* 1007.63	* Flow Area (sq ft)	* 0.00	*16943.05	*
* E.G. Slope (ft/ft)	*0.002056	* Area (sq ft)	* 1799.98	*16943.05	* 263.09
* Q Total (cfs)	*166000.00	* Flow (cfs)	* 0.00	*166000.00	*
* Top Width (ft)	* 3420.35	* Top Width (ft)	* 1439.55	* 1686.70	* 294.10
* Vel Total (ft/s)	* 9.80	* Avg. Vel. (ft/s)	* 0.11	* 9.80	*
* Max Chl Dpth (ft)	* 11.99	* Hydr. Depth (ft)	* 0.01	* 10.05	*
* Conv. Total (cfs)	*3661078.0	* Conv. (cfs)	* 0.0	*3661078.0	*
* Length Wtd. (ft)	* 471.00	* Wetted Per. (ft)	* 0.08	* 1687.85	*
* Min Ch El (ft)	* 999.00	* Shear (lb/sq ft)	*	* 1.29	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 12.62	*
* Frctn Loss (ft)	* 1.09	* Cum Volume (acre-ft)	* 6859.50	*21468.88	* 1399.02
* C & E Loss (ft)	* 0.03	* Cum SA (acres)	* 1909.83	* 2233.87	* 660.43

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 OUTPUT Profile #PF#2

* E.G. Elev (ft)	* 1012.73	* Element	* Left OB	* Channel	* Right OB
* Vel Head (ft)	* 1.39	* Wt. n-Val.	* 0.032	* 0.032	*
* W.S. Elev (ft)	* 1011.34	* Reach Len. (ft)	* 450.00	* 471.00	* 575.00
* Crit W.S. (ft)	* 1007.63	* Flow Area (sq ft)	* 0.03	*17535.21	*
* E.G. Slope (ft/ft)	*0.001848	* Area (sq ft)	* 0.03	*17535.21	*
* Q Total (cfs)	*166000.00	* Flow (cfs)	* 0.01	*166000.00	*
* Top Width (ft)	* 1686.77	* Top Width (ft)	* 0.07	* 1686.70	*
* Vel Total (ft/s)	* 9.47	* Avg. Vel. (ft/s)	* 0.31	* 9.47	*
* Max Chl Dpth (ft)	* 12.34	* Hydr. Depth (ft)	* 0.36	* 10.40	*
* Conv. Total (cfs)	*3861824.0	* Conv. (cfs)	* 0.2	*3861824.0	*
* Length Wtd. (ft)	* 471.00	* Wetted Per. (ft)	* 0.43	* 1697.68	*
* Min Ch El (ft)	* 999.00	* Shear (lb/sq ft)	* 0.01	* 1.19	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	* 0.00	* 11.28	*
* Frctn Loss (ft)	* 0.94	* Cum Volume (acre-ft)	* 1290.12	*22310.78	* 34.97
* C & E Loss (ft)	* 0.02	* Cum SA (acres)	* 210.56	* 2238.31	* 6.81

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

CROSS SECTION

RIVER: 1
REACH: 1 RS: 207.34

INPUT
Description: 207.34

Left and Right Channel Bank Stations Interpolated
Station Elevation Data num= 65

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
16035.2	1011.8	16177.7	1012.1	16280.1	1013	16403.9	1013.3	16481.2	1012
16521.9	1009.6	16702.7	1009.6	16804.9	1009.5	16839.4	1009.4	16942.2	1010.3
16976.4	1010.3	17093.8	1008.9	17125.8	1008.8	17242.3	1008.6	17266.9	1008.4
17385.6	1008.6	17409.9	1008.6	17524	1008.8	17624.3	1009.1	17632.4	1009.2
17642.3	1011.1	17673.2	1011.4	17693.3	1008.6	17801.9	1009	17911.5	1008.1
17944	1007.7	17970.8	1008.9	18420.5	1010.8	18468.8	1010.2	18518.8	1009.3
19089.4	1009.3	19158.1	1010.6	19180.5	1009.1	19194.8	1003.1	19196.9	1003.1
19214.8	1010.1	19221.2	1005.7	19228.6	1002.1	192301001.961		19238.7	1001.1
19249	1002.5	19288.5	997	19326.4	995.9	19381	999.5	19392.5	1002.2
19404.7	999	19437.8	1000.9	19593.3	1002.4	19706.7	1001.8	19842	1000.3
19946.7	998.7	20191.8	998.9	20302.5	998.8	20382.5	998.4	20416.2	996.5
20521.3	998.7	20631.1	998.6	20696.7	998.2	20735.2	1000.8	20761.1	1007.9
20798.761	009.511	20824.2	1010.6	20847.7	1013.3	20977	1014.8	20997	1014.1

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
16035.2	.025	17693.3	.043	19196.9	.032	19214.8	.032	20847.7	.032

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
1923020798.76		370 393.75	530	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
16035.2	19230	1013	F

CROSS SECTION OUTPUT Profile #PF#1

* E.G. Elev (ft)	* 1011.35	* Element	* Left OB	* Channel	* Right OB
* Vel Head (ft)	* 1.84	* Wt. n-Val.	*	* 0.032	*
* W.S. Elev (ft)	* 1009.51	* Reach Len. (ft)	* 370.00	* 393.75	* 530.00
* Crit W.S. (ft)	* 1006.72	* Flow Area (sq ft)	*	*15262.63	*
* E.G. Slope (ft/ft)	*0.002647	* Area (sq ft)	* 1069.50	*15262.63	* 0.00
* Q Total (cfs)	*166000.00	* Flow (cfs)	*	*166000.00	*
* Top Width (ft)	* 3294.41	* Top Width (ft)	* 1725.65	* 1568.76	*
* Vel Total (ft/s)	* 10.88	* Avg. Vel. (ft/s)	*	* 10.88	*
* Max Chl Dpth (ft)	* 13.61	* Hydr. Depth (ft)	*	* 9.73	*
* Conv. Total (cfs)	*3226315.0	* Conv. (cfs)	*	*3226315.0	*
* Length Wtd. (ft)	* 389.43	* Wetted Per. (ft)	*	* 1571.38	*
* Min Ch El (ft)	* 995.90	* Shear (lb/sq ft)	*	* 1.61	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 17.46	*
* Frctn Loss (ft)	* 1.06	* Cum Volume (acre-ft)	* 6844.68	*21294.76	* 1397.29
* C & E Loss (ft)	* 0.01	* Cum SA (acres)	* 1893.49	* 2216.27	* 658.49

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 OUTPUT Profile #PF#2

E.G. Elev (ft)	1011.77	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.62	Wt. n-Val.		0.032	0.032
W.S. Elev (ft)	1010.15	Reach Len. (ft)	370.00	393.75	530.00
Crit W.S. (ft)	1006.72	Flow Area (sq ft)		16265.79	0.01
E.G. Slope (ft/ft)	0.002156	Area (sq ft)		16265.79	0.01
Q Total (cfs)	166000.00	Flow (cfs)		166000.00	0.00
Top Width (ft)	1568.77	Top Width (ft)		1568.76	
Vel Total (ft/s)	10.21	Avg. Vel. (ft/s)		10.21	0.10
Max Chl Dpth (ft)	14.25	Hydr. Depth (ft)		10.37	0.64
Conv. Total (cfs)	3575019.0	Conv. (cfs)		3575019.0	0.0
Length Wtd. (ft)	389.48	Wetted Per. (ft)		1579.57	0.65
Min Ch El (ft)	995.90	Shear (lb/sq ft)		1.39	0.00
Alpha	1.00	Stream Power (lb/ft s)		14.15	0.00
Frctn Loss (ft)	0.81	Cum Volume (acre-ft)	1290.12	22128.04	34.97
C & E Loss (ft)	0.02	Cum SA (acres)	210.56	2220.71	6.81

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

CROSS SECTION

RIVER: 1
REACH: 1 RS: 207.27

INPUT
Description: 207.27
Station Elevation Data num= 73

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
16209.3	1012.6	16252.8	1013.2	16284.2	1012	16383.8	1012.6	16415.5	1012.9
16480.2	1009.2	16601.8	1009.4	16722.1	1009.3	16901.6	1009.1	17028	1008.9
17034.7	1008.9	17132.7	1008.7	17256.4	1008.5	17345.1	1009.7	17477.8	1009
17574.2	1008.9	17623.2	1008.9	17640.8	1010.6	17654.3	1009.2	17776.8	1009.2
17890	1009.9	18017.7	1009.2	18033.8	1009.3	18373.9	1009.8	18428.4	1009.8
18529.9	1009.9	18634.4	1008.2	18686.7	1008.6	18936.9	1006.8	18965	1004.2
18981	1000.1	18990.9	999.5	19008.8	996.4	19021	989.6	19047.9	988.8
19072	996.4	19107.5	995	19123.5	989.3	19162.8	987.6	19190	994.7
19301.3	1002.1	19428.8	1005	19561.5	1003.7	19676.8	1002	19820.6	999.3
19940.6	998.8	19971.8	997.8	19986.7	993.8	20109.9	993.3	20119.1	995.5
20215.4	998.5	20300.7	998.8	20305.8	1000.2	20322.6	1001.4	20345.1	998.6
20382.4	998.7	20402.9	1000.7	20414.9	1000.4	20429.2	1001.7	20526.1	1000.4
20597.9	1002.6	20662.2	1037.1	20670.6	1034	20727.4	1003.5	20805.4	1006.4
20813.3	1010.3	20822.2	1008.4	20916.8	1009.6	21025	1009.2	21122.8	1010.2
21233.4	1010.9	21356.4	1011	21463	1011.1				

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
16209.3	.025	17640.8	.043	19008.8	.032	19428.8	.032	20597.9	.032

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
19428.8 20597.9 575 572.72 585 .1 .3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
16209.3	18980	1037.1	F
20662.2	21463	1037.1	F

CROSS SECTION OUTPUT Profile #PF#1

E.G. Elev (ft)	1010.28	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.89	Wt. n-Val.	0.032	0.032	0.032
W.S. Elev (ft)	1008.39	Reach Len. (ft)	575.00	572.72	585.00
Crit W.S. (ft)	1006.08	Flow Area (sq ft)	5058.19	10108.26	31.28
E.G. Slope (ft/ft)	0.002803	Area (sq ft)	5411.40	10108.26	326.22
Q Total (cfs)	166000.00	Flow (cfs)	61254.46	104601.90	143.64
Top Width (ft)	2021.75	Top Width (ft)	750.70	1169.10	101.95
Vel Total (ft/s)	10.92	Avg. Vel. (ft/s)	12.11	10.35	4.59
Max Chl Dpth (ft)	20.79	Hydr. Depth (ft)	11.27	8.65	2.90
Conv. Total (cfs)	3135219.0	Conv. (cfs)	1156905.0	1975602.0	2712.9
Length Wtd. (ft)	573.43	Wetted Per. (ft)	454.31	1170.60	12.26
Min Ch El (ft)	993.30	Shear (lb/sq ft)	1.95	1.51	0.45
Alpha	1.02	Stream Power (lb/ft s)	23.60	15.64	2.05
Frctn Loss (ft)	1.23	Cum Volume (acre-ft)	6817.15	21180.10	1395.30
C & E Loss (ft)	0.20	Cum SA (acres)	1882.97	2203.90	657.87

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 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 OUTPUT Profile #PF#2

E.G. Elev (ft)	1010.93	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.54	Wt. n-Val.	0.032	0.032	
W.S. Elev (ft)	1009.39	Reach Len. (ft)	575.00	572.72	585.00
Crit W.S. (ft)	1006.07	Flow Area (sq ft)	5505.19	11272.65	
E.G. Slope (ft/ft)	0.002031	Area (sq ft)	5505.19	11272.65	
Q Total (cfs)	166000.00	Flow (cfs)	59634.84	106365.20	
Top Width (ft)	1617.90	Top Width (ft)	448.80	1169.10	
Vel Total (ft/s)	9.89	Avg. Vel. (ft/s)	10.83	9.44	
Max Chl Dpth (ft)	21.79	Hydr. Depth (ft)	12.27	9.64	
Conv. Total (cfs)	3683406.0	Conv. (cfs)	1323249.0	2360157.0	
Length Wtd. (ft)	573.29	Wetted Per. (ft)	463.34	1177.39	
Min Ch El (ft)	993.30	Shear (lb/sq ft)	1.51	1.21	
Alpha	1.01	Stream Power (lb/ft s)	16.32	11.45	
Frctn Loss (ft)	1.10	Cum Volume (acre-ft)	1266.74	22003.58	34.97

```
                                                                    DuplicateEffective
* C & E Loss (ft)        *    0.02  * Cum SA (acres)          *  208.65  * 2208.33  *    6.81  *
*********************************************************************************************

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: 1
REACH: 1                  RS: 207.16

INPUT
Description: 207.16 - FEMA Section Q
Station Elevation Data    num=      96
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
 16210.1  1011.7 16309.9  1011.9 16344.7  1012.7 16358.1  1011.8 16364.1  1013.5
 16438.5  1011.6 16493.9  1011.9 16557.8  1010.7 16585.8  1008.3 16700.8  1008.1
 16756.6  1008.6 16852.6  1008.6   16969  1008.6   17076  1008.4 17204.5  1008.7
 17321.8  1008.1 17421.3  1007.7 17541.4  1007.5 17638.7  1007.7 17755.6  1007.6
 17773.4  1007.2 17787.5  1009.2 17904.3  1007.5   17925  1006.5 18023.9  1007.4
 18085.4    1008   18140  1009.4 18201.1  1007.7 18218.4  1008.1 18321.4    1005
 18342.3  1005.4 18407.3  1003.8 18456.1  1009.9 18484.8  1008.2 18498.7  1005.3
 18523.8  1008.7 18528.7  1008.4 18529.5  1007.2 18545.1  1003.7 18570.4  1008.1
 18605.9  1007.9 18638.7  1000.3 18663.3   997.6 18680.3   997.7   18717   996.2
 18733.2   994.8 18778.6   996.9 18811.7   999.5 18924.2  1002.3 19046.2  1002.4
   19107  1000.2 19209.6  1000.7 19329.8  1002.2 19395.2  1003.5 19404.5  1002.1
 19419.4  1003.2 19521.4  1003.3 19614.6    1002 19721.9  1001.4 19815.6   999.6
 19920.9   996.2 19994.2   994.9 20008.7   992.7 20062.5   992.7 20094.8   994.3
 20106.3   993.1 20160.3     993 20395.5     993   20413     995 20418.4   997.1
 20436.9  1001.5 20463.3   996.6 20488.6   995.2 20609.4   995.2 20655.2     996
 20660.9   995.4   20697   996.6 20734.5  1007.6 20838.6  1008.7 20985.3  1010.1
 21116.5  1009.9 21223.5  1009.3 21316.4  1008.4 21471.6  1007.6 21595.3  1007.5
   21624  1007.5 21725.6  1009.3 21731.8  1008.9 21782.9  1010.9   21783  1010.3
 21812.5    1010 21872.1  1013.5 21911.2  1012.7 21930.8    1006 21952.5  1011.3
   21998  1010.9

Manning's n Values        num=       5
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************************************************
 16210.1    .025 17204.5    .043 18605.9    .032 19521.4    .032 20734.5    .032

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       19521.4 20734.5               475  463.31     475             .1      .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 16210.1 18605.9    1013       F
 20734.5   21998    1013       F

CROSS SECTION OUTPUT  Profile #PF#1
*********************************************************************************************
* E.G. Elev (ft)         * 1008.85  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    1.21  * Wt. n-Val.             *   0.032  *   0.032  *          *
* W.S. Elev (ft)         * 1007.63  * Reach Len. (ft)        *  475.00  *  463.31  *  475.00  *
* Crit W.S. (ft)         * 1004.57  * Flow Area (sq ft)      * 6081.98  *13257.75  *          *
* E.G. Slope (ft/ft)     *0.001702  * Area (sq ft)           * 6715.11  *13257.75  *   24.21  *
* Q Total (cfs)          *166000.00  * Flow (cfs)            *41164.59  *124835.40  *          *
* Top Width (ft)         * 2937.65  * Top Width (ft)        * 1543.44  * 1213.10  *  181.11  *
* Vel Total (ft/s)       *    8.58  * Avg. Vel. (ft/s)      *    6.77  *    9.42  *          *
* Max Chl Dpth (ft)      *   14.93  * Hydr. Depth (ft)      *    6.65  *   10.93  *          *
* Conv. Total (cfs)      *4023740.0  * Conv. (cfs)          *997805.0  *3025935.0  *          *
* Length Wtd. (ft)       *  465.81  * Wetted Per. (ft)      *  915.82  * 1216.61  *          *
* Min Ch El (ft)         *  992.70  * Shear (lb/sq ft)      *    0.71  *    1.16  *          *
* Alpha                  *    1.06  * Stream Power (lb/ft s) *    4.78  *   10.90  *          *
* Frctn Loss (ft)        *    1.29  * Cum Volume (acre-ft)  * 6737.12  *21026.49  * 1392.95  *
* C & E Loss (ft)        *    0.19  * Cum SA (acres)        * 1867.83  * 2188.24  *  655.97  *
*********************************************************************************************

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

CROSS SECTION OUTPUT  Profile #PF#2
*********************************************************************************************
* E.G. Elev (ft)         * 1009.81  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    1.48  * Wt. n-Val.             *   0.032  *   0.032  *          *
* W.S. Elev (ft)         * 1008.33  * Reach Len. (ft)        *  475.00  *  463.31  *  475.00  *
* Crit W.S. (ft)         * 1005.08  * Flow Area (sq ft)      * 3349.65  *14100.94  *          *
* E.G. Slope (ft/ft)     *0.001825  * Area (sq ft)           * 3349.65  *14100.94  *          *
* Q Total (cfs)          *166000.00  * Flow (cfs)            *22785.48  *143214.50  *          *
* Top Width (ft)         * 1734.50  * Top Width (ft)        *  521.40  * 1213.10  *          *
* Vel Total (ft/s)       *    9.51  * Avg. Vel. (ft/s)      *    6.80  *   10.16  *          *
* Max Chl Dpth (ft)      *   15.63  * Hydr. Depth (ft)      *    6.42  *   11.62  *          *
* Conv. Total (cfs)      *3885416.0  * Conv. (cfs)          *533319.8  *3352096.0  *          *
* Length Wtd. (ft)       *  464.73  * Wetted Per. (ft)      *  527.58  * 1217.34  *          *
* Min Ch El (ft)         *  992.70  * Shear (lb/sq ft)      *    0.72  *    1.32  *          *
* Alpha                  *    1.05  * Stream Power (lb/ft s) *    4.92  *   13.41  *          *
* Frctn Loss (ft)        *    1.36  * Cum Volume (acre-ft)  * 1208.30  *21836.77  *   34.97  *
* C & E Loss (ft)        *    0.20  * Cum SA (acres)        *  202.25  * 2192.67  *    6.81  *
*********************************************************************************************

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.
```

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

CROSS SECTION

RIVER: 1
REACH: 1 RS: 207.07

INPUT
Description: 207.07

Right Channel Bank Station Interpolated
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
16445.4	1010.8	16477.5	1010.8	16492.9	1010.8	16495.3	1012.4	16612.3	1012.1
16706.3	1012.4	16731.4	1011.4	16754.5	1011.7	16775.6	1010.8	16823.5	1006
16897.1	1007.2	16996.9	1007.2	17084.4	1008.1	17118	1007.2	17130.1	1007.9
17215.3	1007.5	17296.8	1005.9	17391.8	1005.8	17473.1	1006.2	17581.5	1006.7
17688.2	1006.9	17793.8	1007.5	17860.3	1007.8	17918.6	1006.5	17937.7	1009.2
17950.5	1008.4	18054.6	1008.5	18145.7	1009.4	18249.2	1008.8	18339.2	1006.2
18409	1004.8	18416.3	1003.9	18490.8	1003.4	18511.6	998.8	18578.1	997.6
18602.7	998.8	18624	998.9	18705.2	1001.4	18768.4	1001.7	18825	999.3
18843.9	997.7	18938	998.1	19029.9	1000.3	19121	1004.5	19134.1	1007.4
19200.4	1009.2	19224.9	1008.7	19244.6	1006.5	19312.8	1004.4	19414.2	1003.2
19443.8	1001.8	19521.9	1001.9	19538.7	1003.4	19547.9	1003.2	19557.9	1004.4
19673.5	1001.7	19761.8	1001.1	19774.6	1001.9	19789.4	1004.7	19852.9	995.2
19935.8	993.4	19939.1	993.8	19945.4	992.8	19998	992.8	20099	992.9
20181.6	993	20237.1	993	20335	993.1	20381.8	993.2	20403	998.8
20417.1	996.1	20529.1	995.5	20635.3	995.9	20719.4	996.3	20720.5	998.7
20734.9	1003.5	20748.22	1004.3	20786.5	1006.6	20840.1	1007	20851.3	1007.9
20926.4	1009.4	21006.6	1009.9	21089.4	1010	21172.8	1009.7	21301.4	1008.9
21383.6	1008.7	21497.8	1007.9	21578.8	1007.1	21613.2	1007.3	21673.3	1011.2
21705.2	1010.3	21732.7	1013.7	21818.2	1013	21896.1	1014.4	21908.3	1013.5
21967.3	1014.4	21999.5	1014.1						

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
16445.4	.043	18490.8	.032	19789.4	.032	20926.4	.032

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19789.4	20748.22	510 514.11	520	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
16445.4	18145.7	1013	F
20926.4	21999.5	1013	F

CROSS SECTION OUTPUT Profile #PF#1

E.G. Elev (ft)	1007.37	Element	Left OB	Channel / Right OB
Vel Head (ft)	3.07	Wt. n-Val.	0.032	0.032
W.S. Elev (ft)	1004.30	Reach Len. (ft)	510.00	514.11 / 520.00
Crit W.S. (ft)	1004.30	Flow Area (sq ft)	3660.52	9048.91
E.G. Slope (ft/ft)	0.005272	Area (sq ft)	3660.52	9048.91 / 0.00
Q Total (cfs)	166000.00	Flow (cfs)	29886.06	136113.90
Top Width (ft)	2121.27	Top Width (ft)	1165.05	956.17 / 0.05
Vel Total (ft/s)	13.06	Avg. Vel. (ft/s)	8.16	15.04
Max Chl Dpth (ft)	11.50	Hydr. Depth (ft)	3.14	9.46
Conv. Total (cfs)	2286164.0	Conv. (cfs)	411592.9	1874571.0
Length Wtd. (ft)	513.60	Wetted Per. (ft)	1166.36	960.30
Min Ch El (ft)	992.80	Shear (lb/sq ft)	1.03	3.10
Alpha	1.16	Stream Power (lb/ft s)	8.43	46.65
Frctn Loss (ft)	0.83	Cum Volume (acre-ft)	6680.55	20907.86 / 1392.82
C & E Loss (ft)	0.60	Cum SA (acres)	1853.06	2176.70 / 654.98

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The 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.
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 OUTPUT Profile #PF#2

E.G. Elev (ft)	1008.25	Element	Left OB	Channel / Right OB
Vel Head (ft)	3.51	Wt. n-Val.	0.032	0.032
W.S. Elev (ft)	1004.74	Reach Len. (ft)	510.00	514.11 / 520.00
Crit W.S. (ft)	1004.74	Flow Area (sq ft)	2266.36	9462.29
E.G. Slope (ft/ft)	0.005422	Area (sq ft)	2266.36	9462.29
Q Total (cfs)	166000.00	Flow (cfs)	17617.19	148382.80
Top Width (ft)	1710.74	Top Width (ft)	751.96	958.78
Vel Total (ft/s)	14.15	Avg. Vel. (ft/s)	7.77	15.68
Max Chl Dpth (ft)	11.93	Hydr. Depth (ft)	3.01	9.87
Conv. Total (cfs)	2254410.0	Conv. (cfs)	239255.3	2015155.0
Length Wtd. (ft)	513.87	Wetted Per. (ft)	759.60	963.38
Min Ch El (ft)	992.80	Shear (lb/sq ft)	1.01	3.32
Alpha	1.13	Stream Power (lb/ft s)	7.85	52.14
Frctn Loss (ft)	0.83	Cum Volume (acre-ft)	1177.68	21711.46 / 34.97
C & E Loss (ft)	0.71	Cum SA (acres)	195.31	2181.12 / 6.81

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 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.
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: 1
REACH: 1 RS: 206.97

INPUT
Description: 206.97

Right Channel Bank Station Interpolated
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
16303.3	1009.9	16422	1010.3	16524.8	1010.6	16626.6	1010.6	16719.6	1011.3
16794.5	1009.6	16836.4	1004.7	16959	1004.6	17073.2	1004.7	17198.7	1004.8
17241.8	1005.5	17390.7	1004.8	17512.3	1005.1	17603.3	1005.3	17704.7	1005.3
17836.9	1005.5	17965	1005.2	18085.7	1005.8	18094.8	1005.9	18105	1008
18196	1007.4	18235.2	1007.2	18260.5	1005.9	18283.2	1007.6	18372.2	1006.3
18390.1	1005.1	18407.6	999.1	18518.7	997.7	18623.3	996.9	18669.1	995.6
18742.3	996.3	18834	1000.5	18925.1	1002.3	19025.7	1004.4	19072.3	1003.7
19086.7	1001.2	19181.7	1005.8	19197	1005.7	19217.7	1002.3	19234.5	1008.4
19316.9	1001.8	19405.1	1002.1	19456.4	1006.1	19566.5	1005.4	19666.3	1005.2
19736.5	1004.4	19776.5	998.7	19783.2	1000.5	19808.3	994.1	19822.1	992.8
19919.1	992.9	20108.8	993.1	20124.9	999	20128.8	998.6	20159.3	982.1
20170.6	981.8	20265.5	981.8	20360.8	981.8	20399.3	981.8	20400.1	981.8
20443.8	981.8	20457.3	981.8	20522.8	981.8	20543.7	981.8	20552.2	981.8
20558.1	981.8	20559.2	981.8	20645	981.8	20661.9	981.7	20684.6	981.8
20778.2	981.8	20792.8	981.8	20800	984.2432	20814.9	989.3	20826.8	991.9
20829.6	993.6	20832.1	993.2	20841.1	988	20882.9	981.8	20888	981.8
20995.1	981.8	21051.7	981.8	21053.6	981.8	21086.6	1009	21114.5	1010.4
21124.9	1008.4	21145.7	1009.1	21151.2	1011.2	21171.8	1014.5	21174	1009.3
21270.2	1009.8	21364.9	1009.2	21463.9	1009.1	21469.9	1008.9	21475.8	1010.8
21486.9	1008.5	21498	1009.8						

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
16303.3	.025	16719.6	.043	18407.6	.032	19736.5	.032	21086.6	.032

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19736.5	20800	480	491.78 480	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
20800	21498	1010	F

CROSS SECTION OUTPUT Profile #PF#1

E.G. Elev (ft)	1004.80	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.07	Wt. n-Val.	0.032	0.032	
W.S. Elev (ft)	1003.73	Reach Len. (ft)	480.00	491.78	480.00
Crit W.S. (ft)	995.22	Flow Area (sq ft)	3249.01	18103.59	
E.G. Slope (ft/ft)	0.000773	Area (sq ft)	3249.01	18103.59	5405.96
Q Total (cfs)	166000.00	Flow (cfs)	11555.59	154444.40	
Top Width (ft)	2153.01	Top Width (ft)	814.01	1058.80	280.21
Vel Total (ft/s)	7.77	Avg. Vel. (ft/s)	3.56	8.53	
Max Chl Dpth (ft)	22.03	Hydr. Depth (ft)	3.99	17.10	
Conv. Total (cfs)	5970014.0	Conv. (cfs)	415584.7	5554430.0	
Length Wtd. (ft)	490.90	Wetted Per. (ft)	815.73	1065.91	
Min Ch El (ft)	981.70	Shear (lb/sq ft)	0.19	0.82	
Alpha	1.13	Stream Power (lb/ft s)	0.68	6.99	
Frctn Loss (ft)	0.31	Cum Volume (acre-ft)	6640.10	20747.63	1360.55
C & E Loss (ft)	0.07	Cum SA (acres)	1841.47	2164.81	653.31

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.

CROSS SECTION OUTPUT Profile #PF#2

E.G. Elev (ft)	1005.77	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.14	Wt. n-Val.	0.032	0.032	
W.S. Elev (ft)	1004.63	Reach Len. (ft)	480.00	491.78	480.00
Crit W.S. (ft)	995.22	Flow Area (sq ft)	892.56	19057.96	
E.G. Slope (ft/ft)	0.000760	Area (sq ft)	892.56	19057.96	
Q Total (cfs)	166000.00	Flow (cfs)	1714.70	164285.30	
Top Width (ft)	1567.64	Top Width (ft)	504.14	1063.50	
Vel Total (ft/s)	8.32	Avg. Vel. (ft/s)	1.92	8.62	
Max Chl Dpth (ft)	22.93	Hydr. Depth (ft)	1.77	17.92	
Conv. Total (cfs)	6019868.0	Conv. (cfs)	62182.5	5957686.0	
Length Wtd. (ft)	491.63	Wetted Per. (ft)	509.11	1091.04	
Min Ch El (ft)	981.70	Shear (lb/sq ft)	0.08	0.83	
Alpha	1.06	Stream Power (lb/ft s)	0.16	7.15	
Frctn Loss (ft)	0.31	Cum Volume (acre-ft)	1159.19	21543.16	34.97
C & E Loss (ft)	0.07	Cum SA (acres)	187.95	2169.19	6.81

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.

CROSS SECTION

RIVER: 1

REACH: 1 RS: 206.88

INPUT
Description: 206.88

Right Channel Bank Station Interpolated
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
16205.8	1008.1	16348.5	1008.4	16441.8	1008.4	16531.3	1008.2	16598.3	1009.2
16605	1008.5	16606.3	1010.2	16696.6	1005.4	16819.2	1004.3	16908.4	1004.4
17006	1004.7	17092.4	1003.2	17182	1004	17323.7	1003.7	17415.5	1003.8
17503.8	1003.9	17603.8	1003.9	17703.9	1004.6	17815.8	1005.9	17930.5	1006.3
18057.4	1006.3	18152.5	1006	18216	1005.3	18267.1	1005.9	18292.7	1007.3
18373.6	999.7	18386.3	996.3	18470	995.7	18533.8	995.1	18593.4	996.7
18657.8	996.4	18748.4	998	18835.7	998.9	18932.3	1000.4	18993.2	1000.9
19018.7	1003.6	19101.5	1004	19119.7	1002.9	19166.7	1006	19168.3	1006.9
19251.9	1004.5	19258.4	1005	19341.6	1001.3	19360.8	1001.1	19415.8	1004.9
19507.2	1001.3	19566.3	1004.7	19645.5	1003.4	19728.8	1003.5	19781.8	993.3
19833	992.7	19942.2	993	19947.1	996.6	19996.5	982.3	20008.3	981.8
20016.1	981.8	20105.7	981.8	20143	981.8	20146.6	981.8	20221.6	981.8
20334.4	981.8	20459.7	981.8	20546.8	981.8	20641.2	981.8	20760.8	981.8
20800	981.8	20820.9	981.8	20832	984	20842.1	983.1	20850.4	981.8
20851.4	981.8	20928.6	981.8	20948.4	981.8	21002.4	999.3	21012.9	997
21041.1	997	21047.1	998.2	21081.4	998.4	21113.7	986.4	21142	981.7
21162.6	990	21181.8	991.8	21199.6	1001.3	21208.2	1003.8	21233.9	1006.9
21251.5	1012.2	21270.1	1006.2	21313.5	1006.5	21327.6	1009.1	21361.8	1011.6
21394.4	1008.9	21440.9	1009.7	21454	1011.6	21546.5	1009	21569.8	1012.6
21605	1009.6	21674.6	1010.5						

Manning's n Values num= 6

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
16205.8	.025	16696.6	.043	18386.3	.032	19728.8	.032	21251.5	.032
21605	.025								

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19728.8	20800	480 487.71	505	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
16205.8	18292.7	1007.3	F
20800	21674.6	1012	F

CROSS SECTION OUTPUT Profile #PF#1

E.G. Elev (ft)	1004.41	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.83	Wt. n-Val.	0.032	0.032	
W.S. Elev (ft)	1003.59	Reach Len. (ft)	480.00	487.71	505.00
Crit W.S. (ft)	993.27	Flow Area (sq ft)	4121.21	20233.29	
E.G. Slope (ft/ft)	0.000528	Area (sq ft)	4133.88	20233.29	6019.31
Q Total (cfs)	166000.00	Flow (cfs)	13323.00	152677.00	
Top Width (ft)	2551.40	Top Width (ft)	1072.74	1071.20	407.46
Vel Total (ft/s)	6.82	Avg. Vel. (ft/s)	3.23	7.55	
Max Chl Dpth (ft)	21.89	Hydr. Depth (ft)	4.09	18.89	
Conv. Total (cfs)	7226234.0	Conv. (cfs)	579970.7	6646263.0	
Length Wtd. (ft)	487.04	Wetted Per. (ft)	1008.30	1075.40	
Min Ch El (ft)	981.80	Shear (lb/sq ft)	0.13	0.62	
Alpha	1.15	Stream Power (lb/ft s)	0.44	4.68	
Frctn Loss (ft)	0.25	Cum Volume (acre-ft)	6599.42	20531.22	1297.60
C & E Loss (ft)	0.04	Cum SA (acres)	1831.08	2152.79	649.52

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.

CROSS SECTION OUTPUT Profile #PF#2

E.G. Elev (ft)	1005.39	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.91	Wt. n-Val.	0.032	0.032	
W.S. Elev (ft)	1004.48	Reach Len. (ft)	480.00	487.71	505.00
Crit W.S. (ft)	993.27	Flow Area (sq ft)	1430.58	21191.71	
E.G. Slope (ft/ft)	0.000533	Area (sq ft)	1430.58	21191.71	
Q Total (cfs)	166000.00	Flow (cfs)	2573.67	163426.30	
Top Width (ft)	1800.86	Top Width (ft)	729.66	1071.20	
Vel Total (ft/s)	7.34	Avg. Vel. (ft/s)	1.80	7.71	
Max Chl Dpth (ft)	22.68	Hydr. Depth (ft)	1.96	19.78	
Conv. Total (cfs)	7191503.0	Conv. (cfs)	111497.2	7080006.0	
Length Wtd. (ft)	487.55	Wetted Per. (ft)	735.78	1098.08	
Min Ch El (ft)	981.80	Shear (lb/sq ft)	0.06	0.64	
Alpha	1.09	Stream Power (lb/ft s)	0.12	4.95	
Frctn Loss (ft)	0.25	Cum Volume (acre-ft)	1146.39	21315.96	34.97
C & E Loss (ft)	0.05	Cum SA (acres)	181.15	2157.14	6.81

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.

CROSS SECTION

RIVER: 1
REACH: 1 RS: 206.79

INPUT
Description: 206.79

Right Channel Bank Station Interpolated
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
16211.1	1006.9	16286.9	1006.9	16364.1	1007.5	16379.7	1007.6	16449.9	1007.6
16525.2	1007.8	16538.6	1008.9	16619.3	1008.5	16666.4	1006.2	16699.6	1001.9
16769.7	1002.3	16840	1002.4	16905.7	1002.4	16989.2	1002.5	17055.4	1002.7
17133	1002.7	17230.9	1002.5	17245.4	1002.4	17322.6	1003	17404	1003.7

DuplicateEffective

17419.6	1003.8	17484.7	1004.3	17553	1004.8	17588.7	1004.8	17631.2	1003		
17670.6	1002.9	17748.9	1006.3	17834.7	1006.5	17871.1	1006.6	17919.1	1005.8		
17921.7	1005.2	17948.4	1004.4	18036.8	1004.9	18106	1004.9	18182.5	1004.5		
18301.7	1004.4	18337	1004.5	18378.4	997.7	18439.7	995.6	18517.1	995.3		
18604.7	996.5	18674.2	996.8	18740.3	995.7	18770.1	994.8	18841.6	996.3		
18882	997.5	18920.6	1006.8	19010.4	1005.9	19096.2	1003.2	19138.3	1000.6		
19186.5	1000.9	19206.9	1002.3	19281.9	1002	19360.7	1002.6	19391.1	1000		
19450.2	1002.2	19485	1002.5	19519.3	1004	19570	1004.1	19626.2	1001.8		
19645.2	1001.4	19653.2	1002.5	19663.1	1005.3	19671.5	1001	19690.4	994.6		
19711.8	993	19766	993.3	19929.9	994	19943.3	996.8	19952.4	996.3		
19962.3	992.6	19991	990.7	20007.7	991.1	20032.9	987.2	20042.3	985		
20082.5	982.2	20100.2	981.8	20136.1	981.8	20140	981.8	20180.6	981.8		
20309.2	981.8	20331	981.8	20390.5	981.8	20420.7	981.8	20422.7	981.8		
20425	981.8	20501.8	981.8	20576.6	981.8	20625.3	981.8	20832.1	981.8		
20847	981.8	20851.9	981.8	20865.4	988.82	0895.15	1003.436	20902.8	1007.2		
20935.6	1019.6	20986	1019.6								

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
16211.1	.025	16525.2	.043	18378.4	.032	19663.1	.032	20935.6	.032

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

19663.12	0895.15		495	489.96	520	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
16211.1	17871.1	1015	F

CROSS SECTION OUTPUT Profile #PF#1

E.G. Elev (ft)	1004.13	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.69	Wt. n-Val.	0.032	0.032	
W.S. Elev (ft)	1003.43	Reach Len. (ft)	495.00	489.96	520.00
Crit W.S. (ft)	992.85	Flow Area (sq ft)	4633.73	21710.05	
E.G. Slope (ft/ft)	0.000488	Area (sq ft)	5262.60	21710.05	
Q Total (cfs)	166000.00	Flow (cfs)	15594.29	150405.70	
Top Width (ft)	3026.51	Top Width (ft)	1798.11	1228.40	
Vel Total (ft/s)	6.30	Avg. Vel. (ft/s)	3.37	6.93	
Max Chl Dpth (ft)	21.63	Hydr. Depth (ft)	4.41	17.67	
Conv. Total (cfs)	7514464.0	Conv. (cfs)	705920.1	6808544.0	
Length Wtd. (ft)	490.43	Wetted Per. (ft)	1052.75	1236.91	
Min Ch El (ft)	981.80	Shear (lb/sq ft)	0.13	0.53	
Alpha	1.12	Stream Power (lb/ft s)	0.45	3.70	
Frctn Loss (ft)	0.23	Cum Volume (acre-ft)	6547.65	20296.42	1262.71
C & E Loss (ft)	0.05	Cum SA (acres)	1815.26	2139.91	647.16

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.

CROSS SECTION OUTPUT Profile #PF#2

E.G. Elev (ft)	1005.10	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.76	Wt. n-Val.	0.032	0.032	
W.S. Elev (ft)	1004.34	Reach Len. (ft)	495.00	489.96	520.00
Crit W.S. (ft)	992.85	Flow Area (sq ft)	1935.26	22824.84	
E.G. Slope (ft/ft)	0.000478	Area (sq ft)	1935.26	22824.84	
Q Total (cfs)	166000.00	Flow (cfs)	4403.95	161596.00	
Top Width (ft)	1934.31	Top Width (ft)	704.13	1230.18	
Vel Total (ft/s)	6.70	Avg. Vel. (ft/s)	2.28	7.08	
Max Chl Dpth (ft)	22.54	Hydr. Depth (ft)	2.75	18.55	
Conv. Total (cfs)	7590998.0	Conv. (cfs)	201387.9	7389610.0	
Length Wtd. (ft)	490.08	Wetted Per. (ft)	714.47	1239.81	
Min Ch El (ft)	981.80	Shear (lb/sq ft)	0.08	0.55	
Alpha	1.09	Stream Power (lb/ft s)	0.18	3.89	
Frctn Loss (ft)	0.22	Cum Volume (acre-ft)	1127.84	21069.55	34.97
C & E Loss (ft)	0.06	Cum SA (acres)	173.25	2144.26	6.81

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.

CROSS SECTION

RIVER: 1
REACH: 1 RS: 206.7

INPUT
Description: 206.7 - FEMA Section P
Station Elevation Data num= 96

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
16235.4	1006.6	16247.5	1006.6	16320.8	1007.1	16332.7	1007	16402.3	1007.2
16479.2	1008	16505.8	1007.5	16527.3	1008	16552.4	1002	16640.8	1001.4
16727.5	1001.8	16815.4	1001.7	16889.1	1001.5	16902.1	1001.5	16968.1	1001.2
17043.4	1001.3	17155	1000.9	17251.1	1001.1	17317.4	1002.1	17335.4	1002.3
17401.1	1002.9	17430.7	1003.1	17519.9	1003.5	17616.5	1003.3	17699.9	1004
17823.5	1005.8	17891.6	1004.8	17962.7	1005.6	18043.4	1006.2	18125.2	1006.2
18207.9	1005.3	18257.6	1003	18280.3	995.2	18285.8	995.2	18301.4	997.1
18329.6	998.9	18423.4	998.8	18488.5	996	18559.6	995.2	18629.1	994.8
18690.8	994.6	18728.6	993.3	18746.4	994.2	18779.5	994.4	18815.2	996.6
18848.2	1004.6	18945.8	1005	19021.2	1004.8	19092.1	1004.4	19150.1	1003.8
19192.4	1001.5	19285.5	1002.1	19293.9	1002.1	19370.4	999.7	19431.5	999.7
19468.9	1000.2	19510.1	1003.7	19543.9	1002.8	19624.5	994.6	19647.2	992.9
19711.3	993.2	19814.1	993.4	19871.2	993.4	19882.5	995.3	19901.9	992.6
19941.1	991.3	20015.4	991.6	20098.2	993.9	20143.5	994	20167.9	992.9
20185.2	1000.4	20197.8	994.4	20212.7	993.7	20259.6	993.7	20275.9	991.3
20314.8	981.8	20318.5	981.8	20393.8	981.8	20691.8	981.8	20713.3	981.8
20963.1	981.8	21002.8	981.8	21076.8	981.8	21102.7	981.8	21120	988.8
21131	999.6	21138.8	1004.7	21146.9	1002.8	21207	1004.5	21234.3	1006.1
21262.4	1006.4	21329	1008.1	21422.5	1007.5	21452.5	1018.4	21484.3	1017.2
21488	1018.6								

DuplicateEffective

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
16235.4	.025	16640.8	.043	18329.6	.032	19510.1	.032	21138.8	.032

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
19510.1 21138.8 500 500.23 500 .1 .3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
16235.4	18110	1015	F

CROSS SECTION OUTPUT Profile #PF#1

		Left OB	Channel	Right OB
E.G. Elev (ft)	1003.85	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.53	Wt. n-Val.	0.033	0.032	0.032
W.S. Elev (ft)	1003.32	Reach Len. (ft)	500.00	500.23	500.00
Crit W.S. (ft)	994.04	Flow Area (sq ft)	4836.21	*24990.17	5.40
E.G. Slope (ft/ft)	*0.000441	Area (sq ft)	6375.55	*24990.17	5.40
Q Total (cfs)	*166000.00	Flow (cfs)	*15339.89	*150658.00	2.14
Top Width (ft)	3518.68	Top Width (ft)	1885.60	1612.40	20.68
Vel Total (ft/s)	5.56	Avg. Vel. (ft/s)	3.17	6.03	0.40
Max Chl Dpth (ft)	21.52	Hydr. Depth (ft)	5.15	15.50	0.26
Conv. Total (cfs)	*7908733.0	Conv. (cfs)	*730837.9	*7177793.0	102.1
Length Wtd. (ft)	500.20	Wetted Per. (ft)	941.74	1624.44	20.75
Min Ch El (ft)	981.80	Shear (lb/sq ft)	0.14	0.42	0.01
Alpha	1.10	Stream Power (lb/ft s)	0.45	2.55	0.00
Frctn Loss (ft)	0.28	Cum Volume (acre-ft)	6481.52	*20033.78	1262.68
C & E Loss (ft)	0.01	Cum SA (acres)	1794.33	2123.94	647.04

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.

CROSS SECTION OUTPUT Profile #PF#2

		Left OB	Channel	Right OB
E.G. Elev (ft)	1004.82	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.58	Wt. n-Val.	0.032	0.032	
W.S. Elev (ft)	1004.25	Reach Len. (ft)	500.00	500.23	500.00
Crit W.S. (ft)	994.04	Flow Area (sq ft)	1493.50	*26493.02	
E.G. Slope (ft/ft)	*0.000429	Area (sq ft)	1493.50	*26493.02	
Q Total (cfs)	*166000.00	Flow (cfs)	3212.54	*162787.50	
Top Width (ft)	2093.13	Top Width (ft)	465.13	1628.01	
Vel Total (ft/s)	5.93	Avg. Vel. (ft/s)	2.15	6.14	
Max Chl Dpth (ft)	22.45	Hydr. Depth (ft)	3.21	16.27	
Conv. Total (cfs)	*8015485.0	Conv. (cfs)	*155121.0	*7860364.0	
Length Wtd. (ft)	500.22	Wetted Per. (ft)	475.87	1640.33	
Min Ch El (ft)	981.80	Shear (lb/sq ft)	0.08	0.43	
Alpha	1.05	Stream Power (lb/ft s)	0.18	2.66	
Frctn Loss (ft)	0.27	Cum Volume (acre-ft)	1108.36	*20792.19	34.97
C & E Loss (ft)	0.02	Cum SA (acres)	166.61	2128.18	6.81

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.

CROSS SECTION

RIVER: 1
REACH: 1 RS: 206.6

INPUT
Description: 206.6

Right Channel Bank Station Interpolated
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
15752.8	1005.9	15777	1004.9	15795.8	1006	15801	1003.8	15809.3	1007.3
15819.9	1006.1	15842.8	1009.5	15850.1	1008	15855.5	1009.8	15868.1	1009.5
15879.9	1006.9	15895.6	1008.4	15904.2	1005.4	15941.1	1007.3	16035.3	1006.2
16155.5	1005.7	16243.9	1005.6	16347.4	1004.9	16444.6	1004.9	16555.6	1004.8
16645	1004.4	16756.4	1003.6	16845.8	1003.1	16944.2	1003.4	17049.2	1002.3
17143.6	1001.7	17249.3	1001.2	17366.6	1001	17501.5	1003.7	17624.2	1003.7
17723.3	1004.1	17790.8	1004	17818	998.9	17847.9	1003.1	17937.7	1002.9
17956.2	1002.7	17971.4	998.8	17988.6	1001.2	18083.6	1001.7	18173.1	1001.7
18217.2	1001.9	18242.2	997.1	18334.4	996.5	18436.5	995	18542.1	993.8
18633.3	993.9	18742.2	997.5	18817.7	997.8	18852.6	1003.9	18965.8	1004.2
19055.2	1003.8	19184.3	1003.1	19243.2	1000	19325.9	998.4	19358	993.4
19395.9	993.2	19452.5	996.6	19546.1	997.7	19580.1	996.6	19611.2	993.1
19679	993.4	19778	993.3	19846.4	993.3	19854.8	995.6	19874.7	992.9
19953.8	992.1	20043.5	994.5	20146.1	995.4	20262.3	995.5	20371.5	995.1
20435.5	995.1	20475.7	981.8	20489.7	981.8	20608.9	981.8	20609	981.8
20738.4	981.8	20854.4	981.8	20866.2	981.8	20903.7	981.8	20931.2	981.8
20996	981.8	21003.4	981.8	21042	988.8	21050.2	995	21066.25	1002.898
21069.1	1004.3	21182.2	1006.4	21270.7	1006.8	21401.9	1007.6	21495.5	1008
21503.1	1008	21594.4	1008.1	21688	1008.4	21840.4	1008.8	21940.4	1009.3
21957.8	1009.5	21998	1007.2						

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
15752.8	.025	16944.2	.043	18334.4	.032	19546.1	.032	21069.1	.032

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
19546.121066.25 515 504.63 520 .1 .3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
15752.8	17847.9	1009	F

CROSS SECTION OUTPUT Profile #PF#1

		Left OB	Channel	Right OB
E.G. Elev (ft)	1003.56	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.66	Wt. n-Val.	0.033	0.032	

				Duplicate	Effective	
W.S. Elev (ft)	1002.90	Reach Len. (ft)	515.00	504.63	520.00	
Crit W.S. (ft)	996.86	Flow Area (sq ft)	6694.45	20182.76		
E.G. Slope (ft/ft)	0.000710	Area (sq ft)	7349.03	20182.76		
Q Total (cfs)	166000.00	Flow (cfs)	26458.02	139542.00		
Top Width (ft)	3305.80	Top Width (ft)	1785.65	1520.15		
Vel Total (ft/s)	6.18	Avg. Vel. (ft/s)	3.95	6.91		
Max Chl Dpth (ft)	21.10	Hydr. Depth (ft)	5.28	13.28		
Conv. Total (cfs)	6230824.0	Conv. (cfs)	993104.0	5237720.0		
Length Wtd. (ft)	507.00	Wetted Per. (ft)	1269.01	1527.59		
Min Ch El (ft)	981.80	Shear (lb/sq ft)	0.23	0.59		
Alpha	1.12	Stream Power (lb/ft s)	0.92	4.05		
Frctn Loss (ft)	0.48	Cum Volume (acre-ft)	6402.76	19774.40	1262.65	
C & E Loss (ft)	0.04	Cum SA (acres)	1773.26	2105.95	646.92	

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.

CROSS SECTION OUTPUT Profile #PF#2

E.G. Elev (ft)	1004.54	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.75	Wt. n-Val.	0.032	0.032	
W.S. Elev (ft)	1003.79	Reach Len. (ft)	515.00	504.63	520.00
Crit W.S. (ft)	996.68	Flow Area (sq ft)	3388.69	21538.87	
E.G. Slope (ft/ft)	0.000695	Area (sq ft)	3388.69	21538.87	
Q Total (cfs)	166000.00	Flow (cfs)	12208.77	153791.20	
Top Width (ft)	2185.35	Top Width (ft)	665.20	1520.15	
Vel Total (ft/s)	6.66	Avg. Vel. (ft/s)	3.60	7.14	
Max Chl Dpth (ft)	21.99	Hydr. Depth (ft)	5.09	14.17	
Conv. Total (cfs)	6298256.0	Conv. (cfs)	463216.7	5835039.0	
Length Wtd. (ft)	506.14	Wetted Per. (ft)	674.84	1528.48	
Min Ch El (ft)	981.80	Shear (lb/sq ft)	0.22	0.61	
Alpha	1.09	Stream Power (lb/ft s)	0.78	4.36	
Frctn Loss (ft)	0.48	Cum Volume (acre-ft)	1080.34	20516.39	34.97
C & E Loss (ft)	0.04	Cum SA (acres)	160.12	2110.11	6.81

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.

CROSS SECTION

RIVER: 1
REACH: 1 RS: 206.51

INPUT
Description: 206.51
Station Elevation Data num= 96

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
15913.8	1005.6	15956.7	1007.2	15960.5	1006.2	15969.2	1008	16053.6	1008.2
16067.4	1005.5	16150.9	1004.8	16244	1004.8	16317.6	1004.8	16358.5	1004.6
16454.2	1004.5	16463	1004.5	16544	1004.3	16655.6	1003.2	16728.4	1002.6
16756.4	1002.5	16830	1001.9	16942.4	1001.6	16965.9	1001.5	17053.8	1001.7
17131.5	1001.6	17218.7	1001.1	17306.1	1000.9	17382.1	1001.5	17467	1001.9
17537	1002.2	17549.6	1001.2	17642.5	1001.4	17732.1	999	17805.5	999.3
17867.7	1000	17906.8	1001.8	17982.4	1001.1	18024.8	1000	18113.4	1001
18197.5	1001.3	18210.2	1000.8	18235.8	995.8	18284.9	994.8	18353.6	996.2
18430.7	989.4	18472.3	992.6	18563.8	993.1	18633.6	994.5	18690.9	995.9
18720.1	998	18725.5	999	18780.9	997.9	18793	996.9	18839.1	995.7
18912.5	997.1	18936.6	997.3	18950.4	998.8	18982	1000.3	19017.4	998.8
19041	995.2	19046.4	993.8	19117.4	994.6	19184.9	992.6	19190.6	992.6
19209.6	996.5	19283.6	998.8	19380.8	997	19450	996.8	19458	996.8
19546.2	997.4	19586.4	996.5	19645.9	993.2	19653.5	993.3	19813.4	992.5
19869.8	992.3	19881.5	997.9	19911.8	995.3	19937.5	994.2	19964.8	991.9
19978.6	992.1	20019.7	990.5	20038.1	988.7	20070.3	987.9	20113.5	982.4
20192.5	982	20272.4	981.8	20353.1	981.8	20395.6	982.6	20485.4	993.1
20530.4	997	20546.7	997.4	20554.3	995.6	20599.9	998.6	20622.1	999.3
20634.8	998.6	20716.6	1000	20819.1	1001.3	20897.8	1001.5	20989.4	1002.8
21021	1008								

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
15913.8	.025	17218.7	.043	18235.8	.032	19546.2	.032	20622.1	.032

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19546.2	20622.1	495 496.45	500	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
15913.8	17700	1008	F
20615	21021	1008	F

CROSS SECTION OUTPUT Profile #PF#1

E.G. Elev (ft)	1003.04	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.02	Wt. n-Val.	0.032	0.032	
W.S. Elev (ft)	1002.02	Reach Len. (ft)	495.00	496.45	500.00
Crit W.S. (ft)	998.52	Flow Area (sq ft)	9128.32	12982.93	
E.G. Slope (ft/ft)	0.001348	Area (sq ft)	9628.89	13003.06	461.29
Q Total (cfs)	166000.00	Flow (cfs)	49265.64	116734.40	
Top Width (ft)	4076.37	Top Width (ft)	2687.89	1075.90	312.58
Vel Total (ft/s)	7.51	Avg. Vel. (ft/s)	5.40	8.99	
Max Chl Dpth (ft)	20.22	Hydr. Depth (ft)	4.94	12.15	
Conv. Total (cfs)	4521128.0	Conv. (cfs)	1341785.0	3179343.0	
Length Wtd. (ft)	495.96	Wetted Per. (ft)	1848.59	1072.00	
Min Ch El (ft)	981.80	Shear (lb/sq ft)	0.42	1.02	
Alpha	1.16	Stream Power (lb/ft s)	2.24	9.16	
Frctn Loss (ft)	0.69	Cum Volume (acre-ft)	6302.39	19582.18	1259.89
C & E Loss (ft)	0.03	Cum SA (acres)	1746.82	2090.91	645.05

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.

CROSS SECTION OUTPUT Profile #PF#2

E.G. Elev (ft)	1004.02	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.18	Wt. n-Val.	0.032	0.032	
W.S. Elev (ft)	1002.84	Reach Len. (ft)	495.00	496.45	500.00
Crit W.S. (ft)	999.19	Flow Area (sq ft)	6259.99	*13856.29	
E.G. Slope (ft/ft)	*0.001341	Area (sq ft)	6259.99	*13882.22	
Q Total (cfs)	*166000.00	Flow (cfs)	*36248.43	*129751.60	
Top Width (ft)	2060.75	Top Width (ft)	984.85	1075.90	
Vel Total (ft/s)	8.25	Avg. Vel. (ft/s)	5.79	9.36	
Max Chl Dpth (ft)	21.04	Hydr. Depth (ft)	6.36	12.96	
Conv. Total (cfs)	*4533739.0	Conv. (cfs)	*990005.6	*3543734.0	
Length Wtd. (ft)	496.07	Wetted Per. (ft)	995.97	1072.00	
Min Ch El (ft)	981.80	Shear (lb/sq ft)	0.53	1.08	
Alpha	1.11	Stream Power (lb/ft s)	3.05	10.13	
Frctn Loss (ft)	0.69	Cum Volume (acre-ft)	1023.30	*20311.22	34.97
C & E Loss (ft)	0.03	Cum SA (acres)	150.37	2095.07	6.81

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

CROSS SECTION

RIVER: 1
REACH: 1 RS: 206.41

INPUT
Description: 206.41

Right Channel Bank Station Interpolated
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
16072.3	1004.6	16106.4	1006.4	16110	1005.1	16145.4	1008.7	16171	1008.7
16201.9	1005.9	16207.2	1004	16245.8	1004.3	16311.3	1003.5	16339	1003.3
16410.7	1003.1	16479.2	1003.2	16504.4	1003.2	16587.4	1003	16660.5	1002.5
16723.1	1001.7	16801.8	1001.5	16828.5	1001.3	16901.2	1001.1	16957.6	1001.1
17046.4	1001	17111	1001.2	17185.4	1001	17248.3	1000.1	17325.6	999.8
17339.6	999.7	17404.5	999.4	17486.4	999.7	17508.2	999.5	17572.4	999.3
17623.9	997.5	17651.1	1000.3	17677.5	1000.2	17744.8	1000	17841.4	1000
17924.2	1000	17975.5	1001.6	18054.4	997.3	18144.7	995.9	18247.4	997.4
18279.8	997.6	18300.2	993.9	18302.9	992.5	18313.4	993.5	18405.6	991.3
18469.8	989.6	18495.7	988.3	18533.5	989.6	18556.8	987.7	18575.5	988.9
18582.4	987.8	18584.3	989.6	18620.5	992.5	18634.5	992.5	18697.7	996.9
18786	998.9	18861.4	999.4	18929.1	999.3	18999.1	996.6	19037	995.4
19069.4	992.6	19082.5	992.4	19169.3	990.8	19285.4	995	19369.2	996.5
19395.7	996.5	19466.6	996.5	19539.8	996.4	19622.9	997.3	19694.4	996.7
19720.5	996.5	19730.2	994.5	19748.7	992.6	19835.1	990.8	19895.8	991.8
19904.5	990.4	19996.1	990.2	20002.5	990.4	20015.5	997.7	20035	990
20091.8	991.6	20171.9	991.2	20269.1	991.6	20343.1	990.4	20356.9	990
20360	988.9	20373.3	988	20379.2	986.7	20421	985.4	20490.4	985.8
20544.3	985.8	20576.7	983.8	20636.9	982.5	20685.2	1001.4	16 20690.8	1003.6
20719.8	1001.5	20729	1007.4						

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
16072.3	.025	17185.4	.043	18300.2	.032	19622.9	.032	20690.8	.032

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
19622.920685.22 495 494.64 490 .1 .3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
16072.3	17111	1008	F

CROSS SECTION OUTPUT Profile #PF#1

E.G. Elev (ft)	1002.32	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.91	Wt. n-Val.	0.033	0.032	
W.S. Elev (ft)	1001.41	Reach Len. (ft)	495.00	494.64	490.00
Crit W.S. (ft)	997.88	Flow Area (sq ft)	*11582.17	*11788.77	
E.G. Slope (ft/ft)	*0.001436	Area (sq ft)	*11668.10	*11788.77	
Q Total (cfs)	*166000.00	Flow (cfs)	*63303.79	*102696.20	
Top Width (ft)	3862.05	Top Width (ft)	2799.74	1062.31	
Vel Total (ft/s)	7.10	Avg. Vel. (ft/s)	5.47	8.71	
Max Chl Dpth (ft)	18.91	Hydr. Depth (ft)	4.63	11.10	
Conv. Total (cfs)	*4380634.0	Conv. (cfs)	*1670546.0	*2710087.0	
Length Wtd. (ft)	494.78	Wetted Per. (ft)	2505.07	1070.20	
Min Ch El (ft)	982.50	Shear (lb/sq ft)	0.41	0.99	
Alpha	1.16	Stream Power (lb/ft s)	2.27	8.60	
Frctn Loss (ft)	0.72	Cum Volume (acre-ft)	6181.39	*19440.90	1257.25
C & E Loss (ft)	0.03	Cum SA (acres)	1715.64	2078.73	643.26

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.

CROSS SECTION OUTPUT Profile #PF#2

E.G. Elev (ft)	1003.30	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.09	Wt. n-Val.	0.032	0.032	
W.S. Elev (ft)	1002.21	Reach Len. (ft)	495.00	494.64	490.00
Crit W.S. (ft)	998.36	Flow Area (sq ft)	7928.85	*12640.94	
E.G. Slope (ft/ft)	*0.001435	Area (sq ft)	7928.85	*12640.94	
Q Total (cfs)	*166000.00	Flow (cfs)	*50717.68	*115282.30	
Top Width (ft)	2190.50	Top Width (ft)	1128.19	1062.31	
Vel Total (ft/s)	8.07	Avg. Vel. (ft/s)	6.40	9.12	
Max Chl Dpth (ft)	19.71	Hydr. Depth (ft)	7.03	11.90	
Conv. Total (cfs)	*4381569.0	Conv. (cfs)	*1338693.0	*3042876.0	
Length Wtd. (ft)	494.75	Wetted Per. (ft)	1143.59	1071.00	

```
                                                                    DuplicateEffective
* Min Ch El (ft)          *  982.50  * Shear (lb/sq ft)        *    0.62  *    1.06  *          *
* Alpha                   *    1.08  * Stream Power (lb/ft s) *    3.97  *    9.65  *          *
* Frctn Loss (ft)         *    0.73  * Cum Volume (acre-ft)   *  942.69  *20160.08  *   34.97  *
* C & E Loss (ft)         *    0.03  * Cum SA (acres)         *  138.36  * 2082.88  *    6.81  *
*****************************************************************************************

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

CROSS SECTION


RIVER: 1
REACH: 1                 RS: 206.32

INPUT
Description: 206.32 - FEMA Section O

Right Channel Bank Station Interpolated
Station Elevation Data    num=      97
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*****************************************************************************
 16817.7  1002.2 16831.7  1004.4 16847.7  1000.1   16903   997.6 16998.5   999.5
 17015.9   999.8 17073.2   995.7 17113.2   998.3 17193.6   998.2 17277.8   999.4
 17336.8   998.4 17343.9   998.8 17416.7   997.2   17461   999.1 17530.2    1000
   17612  1000.6 17634.8   999.5 17703.3  1001.3 17735.8  1000.4 17761.4   998.4
 17843.7   998.5 17853.7     998 17875.9   994.2 17903.4   993.9 17962.9   996.3
 18028.7   995.2 18096.2   993.6 18102.6   993.3 18134.8  1001.1 18154.4  1000.2
 18192.6  1000.1 18243.3   992.5 18301.4   992.6 18329.8   993.4 18404.3   989.6
 18429.4   987.7 18495.6   987.8 18512.7   986.5 18544.6   986.5   18577   989.5
   18647   992.5 18707.1   997.1 18782.1   996.8 18869.6   997.5   18885   997.8
 18895.7   996.8 18922.1   996.8 18939.9   995.3 18961.5   991.6 18990.7     990
 19055.1   991.9 19120.2   992.7 19199.6   995.3   19288   998.1 19351.7   998.3
 19433.6   998.5 19488.7   998.2 19527.8   996.5   19535   995.3 19546.5   994.9
 19619.6   996.5 19696.3   996.5 19801.3   996.5   19818     996 19830.1   994.5
 19917.7   993.3 19992.8   991.2 20076.4   989.2 20107.3     989 20181.4   989.5
 20194.5   994.9 20217.3   987.2 20265.3   989.9 20314.9   990.8 20362.4   989.9
 20372.9   988.8 20409.1   988.6   20435   986.4 20447.1   986.7 20565.6   989.2
 20589.2   986.1 20647.7   982.8 20703.3   983.2 20732.7   988.7 20805.2     991
 20816.2   997.6 20847.3   998.3 20854.91000.773 20855.6    1001 20889.3    1002
 20959.7  1001.8 20988.9  1002.7 21076.4  1002.8 21150.5  1002.8 21226.3  1002.8
 21295.2  1002.7   21368  1003.3

Manning's n Values        num=       5
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
*****************************************************************************
 16817.7    .043 18404.3    .032 19488.7    .032 20889.3    .032 20988.9    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       19488.7 20854.9             515  513.83     520             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 16817.7   17150    1004       F
 20899.3   21368    1004       F

CROSS SECTION OUTPUT  Profile #PF#1
*****************************************************************************************
* E.G. Elev (ft)          * 1001.56  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.80  * Wt. n-Val.            *   0.035  *   0.032  *          *
* W.S. Elev (ft)          * 1000.76  * Reach Len. (ft)       *  515.00  *  513.83  *  520.00  *
* Crit W.S. (ft)          *  997.04  * Flow Area (sq ft)     *11528.58  *13024.99  *          *
* E.G. Slope (ft/ft)      *0.001495  * Area (sq ft)          *12280.60  *13024.99  *          *
* Q Total (cfs)           *166000.00  * Flow (cfs)           *61169.30  *104830.70  *          *
* Top Width (ft)          * 3961.10  * Top Width (ft)       * 2594.93  * 1366.17  *          *
* Vel Total (ft/s)        *    6.76  * Avg. Vel. (ft/s)     *    5.31  *    8.05  *          *
* Max Chl Dpth (ft)       *   17.96  * Hydr. Depth (ft)     *    5.03  *    9.53  *          *
* Conv. Total (cfs)       *4293590.0  * Conv. (cfs)         *1582144.0  *2711446.0  *          *
* Length Wtd. (ft)        *  514.23  * Wetted Per. (ft)     * 2293.48  * 1372.18  *          *
* Min Ch El (ft)          *  982.80  * Shear (lb/sq ft)     *    0.47  *    0.89  *          *
* Alpha                   *    1.12  * Stream Power (lb/ft s) *    2.49  *    7.13  *          *
* Frctn Loss (ft)         *    0.85  * Cum Volume (acre-ft)   * 6045.31  *19300.02  * 1257.25  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)         * 1684.99  * 2064.94  *  643.26  *
*****************************************************************************************

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.

CROSS SECTION OUTPUT  Profile #PF#2
*****************************************************************************************
* E.G. Elev (ft)          * 1002.55  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.99  * Wt. n-Val.            *   0.032  *   0.032  *          *
* W.S. Elev (ft)          * 1001.56  * Reach Len. (ft)       *  515.00  *  513.83  *  520.00  *
* Crit W.S. (ft)          *  997.90  * Flow Area (sq ft)     * 7081.88  *14109.49  *          *
* E.G. Slope (ft/ft)      *0.001498  * Area (sq ft)          * 7081.88  *14109.49  *          *
* Q Total (cfs)           *166000.00  * Flow (cfs)           *46127.79  *119872.20  *          *
* Top Width (ft)          * 2377.93  * Top Width (ft)       * 1011.76  * 1366.17  *          *
* Vel Total (ft/s)        *    7.83  * Avg. Vel. (ft/s)     *    6.51  *    8.50  *          *
* Max Chl Dpth (ft)       *   18.76  * Hydr. Depth (ft)     *    7.00  *   10.33  *          *
* Conv. Total (cfs)       *4288577.0  * Conv. (cfs)         *1191702.0  *3096875.0  *          *
* Length Wtd. (ft)        *  514.13  * Wetted Per. (ft)     * 1026.57  * 1372.97  *          *
* Min Ch El (ft)          *  982.80  * Shear (lb/sq ft)     *    0.65  *    0.96  *          *
* Alpha                   *    1.04  * Stream Power (lb/ft s) *    4.20  *    8.17  *          *
* Frctn Loss (ft)         *    0.83  * Cum Volume (acre-ft)   *  857.40  *20008.20  *   34.97  *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)         *  126.21  * 2069.10  *    6.81  *
*****************************************************************************************

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

CROSS SECTION


RIVER: 1
REACH: 1                 RS: 206.22
```

```
INPUT
Description: 206.22

Right Channel Bank Station Interpolated
Station Elevation Data     num=      97
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
 16557.5  1004.3 16639.4    1004 16713.7  1003.6 16806.6  1001.8 16878.4     999
 16892.3   998.9 16946.1  1002.9 16955.9  1004.8 16975.7   997.5 16981.9   999.4
 16987.4   998.1 17046.8   996.8 17159.7     997 17260.1   998.5 17320.1   997.5
 17343.9   994.5 17380.4   994.5 17400.6   996.8   17408   996.8 17477.4   998.9
 17541.1   999.5 17596.5   998.4 17631.6   996.8 17724.8   998.9 17740.4   998.5
 17771.5   991.4 17846.4   992.8 17904.5   993.5   17940   995.6 18004.2   995.6
 18016.1   997.5 18035.4   995.9 18079.4   996.3 18103.6   997.7 18147.1   997.6
 18161.3   993.8 18238.9   993.7 18321.5   992.4 18333.6   991.4 18443.6   991.4
 18455.9   991.4 18507.4   994.4 18550.2   989.5 18634.4   989.6 18723.2   987.6
 18759.4   986.3 18833.1   991.5 18933.1   991.9 18987.8   992.5   19058   994.5
 19110.4   996.4 19138.8   999.5 19223.6  1000.6 19278.4  1001.5 19361.2  1000.2
 19370.9   998.6 19381.6  1000.1 19456.3   999.5 19512.1   996.4   19583   994.5
 19660.7   994.4 19691.9   994.4 19781.3   994.4 19826.6   994.4   19870   992.6
 19877.4   990.6 19912.2     990 20004.6   991.9   20079   991.3 20117.2   990.7
 20188.2   986.9   20282   986.7 20306.6   994.7 20332.7   985.9 20338.2   985.9
 20423.1   985.1 20525.8     983 20611.1   984.7 20700.7   989.7 20755.5   992.3
 20766.6   995.9 20807.8   996.5 20844.2   994.9 20887.6   996.6 20898.1   998.3
 20968.3     999 20974.6  999.120977.35999.8423 20990.9  1003.5 21017.9  1001.7
 21148.3  1002.6 21222.8  1003.1 21294.4  1003.3 21307.8  1003.3 21385.2  1003.5
 21467.9  1003.9   21480    1004

Manning's n Values         num=       4
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
*************************************************************
 16557.5    .043 19278.4    .043   19583    .032 20990.9    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       19278.420977.35              500  502.44     460            .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 16557.5 16955.9    1004        F
   21480   21480    1004        F

CROSS SECTION OUTPUT  Profile #PF#1
*********************************************************************************************
* E.G. Elev (ft)         * 1000.70  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.87  * Wt. n-Val.            *   0.043  *   0.032  *          *
* W.S. Elev (ft)         *  999.83  * Reach Len. (ft)       *  500.00  *  502.44  *  460.00  *
* Crit W.S. (ft)         *  996.54  * Flow Area (sq ft)     *11715.22  *13207.08  *          *
* E.G. Slope (ft/ft)     *0.001855  * Area (sq ft)          *11741.90  *13207.08  *          *
* Q Total (cfs)          *166000.00  * Flow (cfs)           *53201.89  *112798.10  *          *
* Top Width (ft)         * 3819.75  * Top Width (ft)       * 2242.04  * 1577.71  *          *
* Vel Total (ft/s)       *    6.66  * Avg. Vel. (ft/s)     *    4.54  *    8.54  *          *
* Max Chl Dpth (ft)      *   16.83  * Hydr. Depth (ft)     *    5.34  *    8.37  *          *
* Conv. Total (cfs)      *3853835.0  * Conv. (cfs)         *1235128.0  *2618707.0  *          *
* Length Wtd. (ft)       *  501.63  * Wetted Per. (ft)     * 2198.36  * 1582.28  *          *
* Min Ch El (ft)         *  983.00  * Shear (lb/sq ft)     *    0.62  *    0.97  *          *
* Alpha                  *    1.27  * Stream Power (lb/ft s) *    2.80  *    8.26  *          *
* Frctn Loss (ft)        *    0.99  * Cum Volume (acre-ft)  * 5903.31  *19145.30  * 1257.25  *
* C & E Loss (ft)        *    0.00  * Cum SA (acres)        * 1656.39  * 2047.58  *  643.26  *
*********************************************************************************************

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.

CROSS SECTION OUTPUT  Profile #PF#2
*********************************************************************************************
* E.G. Elev (ft)         * 1001.72  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    1.03  * Wt. n-Val.            *   0.043  *   0.032  *          *
* W.S. Elev (ft)         * 1000.69  * Reach Len. (ft)       *  500.00  *  502.44  *  460.00  *
* Crit W.S. (ft)         *  996.71  * Flow Area (sq ft)     * 6624.84  *14611.29  *          *
* E.G. Slope (ft/ft)     *0.001734  * Area (sq ft)          * 6624.84  *14611.29  *          *
* Q Total (cfs)          *166000.00  * Flow (cfs)           *38880.52  *127119.50  *          *
* Top Width (ft)         * 2441.77  * Top Width (ft)       *  794.27  * 1647.50  *          *
* Vel Total (ft/s)       *    7.82  * Avg. Vel. (ft/s)     *    5.87  *    8.70  *          *
* Max Chl Dpth (ft)      *   17.69  * Hydr. Depth (ft)     *    8.34  *    8.87  *          *
* Conv. Total (cfs)      *3986076.0  * Conv. (cfs)         *933618.8  *3052457.0  *          *
* Length Wtd. (ft)       *  501.89  * Wetted Per. (ft)     *  804.40  * 1652.99  *          *
* Min Ch El (ft)         *  983.00  * Shear (lb/sq ft)     *    0.89  *    0.96  *          *
* Alpha                  *    1.08  * Stream Power (lb/ft s) *    5.23  *    8.33  *          *
* Frctn Loss (ft)        *    1.04  * Cum Volume (acre-ft)  *  776.37  *19838.81  *   34.97  *
* C & E Loss (ft)        *    0.02  * Cum SA (acres)        *  115.53  * 2051.32  *    6.81  *
*********************************************************************************************

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.
Note:    Multiple critical depths were found at this location.  The critical depth with the lowest, valid,
         water surface was used.

CROSS SECTION


RIVER: 1
REACH: 1                 RS: 206.13

INPUT
Description: 206.13

Right Channel Bank Station Interpolated
Station Elevation Data     num=      97
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
 16722.1  1002.8 16785.1  1002.2 16877.3  1002.1 16908.3  1000.9 16979.6  1000.9
 17014.5  1000.3 17057.5   998.5 17070.3   997.5 17183.2   997.5 17222.6   994.5
 17342.3   992.1 17417.8   994.4 17490.8   994.6   17494   994.7 17613.2   996.3
 17668.4   995.8 17699.1   991.3 17790.1   992.3 17861.7   993.7 17934.2   993.6
 17996.1   993.2 18017.5   997.2 18080.8   996.1 18121.2   996.9 18147.1   992.3
```

```
                                                                    DuplicateEffective
 18166.8   991.3 18235.4   991.3 18302.6   991.3   18386   991.3 18421.8   989.5
   18432   988.4 18469.5   988.4 18475.1   989.5 18500.2   989.3 18504.2   988.4
 18568.5   987.1 18688.1   988.4 18765.4   989.5 18782.8   992.5 18860.9   996.5
   18915   999.2 18980.4   995.4 19020.4   994.5 19089.1   997.3 19153.9  1000.5
   19162  1001.6   19203  1003.8 19205.7  1003.2 19223.2    1003 19263.9  1000.5
   19294   999.3 19352.5   999.3 19369.3   998.5 19381.9   996.4 19450.5   995.7
 19547.3   995.6 19615.3   994.4 19675.1   990.6 19753.3   990.5 19774.8   990.4
 19852.5   988.3 19926.3   986.6 19938.1   987.1 19943.1   987.8   19956   986.6
   19959   986.7 20036.9   986.5 20105.4   986.3 20129.5   986.8 20164.8   990.8
 20183.5   987.1 20270.6   987.9 20276.8   988.6 20297.8   988.6 20342.4   987.5
 20366.8   987.4 20431.3   985.5 20458.7   984.6 20505.9   984.6 20523.1   985.6
 20557.7   986.6 20563.2   987.2   20637   987.5   20656   988.4 20660.4     988
   20685   996.6 20699.6     998 20710.6   997.6 20766.4   997.9 20788.2     997
 20848.3   996.7 20868.5     996 20903.4   995.720914.99998.8712 20934.1  1004.1
 20964.8  1000.3 20989.1  1000.6

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
 16722.1    .043   19203    .033 20934.1    .032

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        1920320914.99              490  483.44     540             .1      .3

CROSS SECTION OUTPUT  Profile #PF#1
*************************************************************************************************
* E.G. Elev (ft)         *  999.71  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.86  * Wt. n-Val.            *   0.043  *   0.033  *          *
* W.S. Elev (ft)         *  998.84  * Reach Len. (ft)       *  490.00  *  483.44  *  540.00  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)     *11343.04  *12898.46  *          *
* E.G. Slope (ft/ft)     *0.002097  * Area (sq ft)          *11343.04  *12898.46  *          *
* Q Total (cfs)          *166000.00  * Flow (cfs)           *57077.14  *108922.90  *          *
* Top Width (ft)         * 3610.69  * Top Width (ft)       * 2057.86  * 1552.83  *          *
* Vel Total (ft/s)       *    6.85  * Avg. Vel. (ft/s)     *    5.03  *    8.44  *          *
* Max Chl Dpth (ft)      *   14.24  * Hydr. Depth (ft)     *    5.51  *    8.31  *          *
* Conv. Total (cfs)      *3625268.0  * Conv. (cfs)         *1246506.0  *2378763.0  *          *
* Length Wtd. (ft)       *  485.81  * Wetted Per. (ft)     * 2060.23  * 1556.11  *          *
* Min Ch El (ft)         *  984.60  * Shear (lb/sq ft)     *    0.72  *    1.08  *          *
* Alpha                  *    1.18  * Stream Power (lb/ft s) *  3.63  *    9.16  *          *
* Frctn Loss (ft)        *    1.19  * Cum Volume (acre-ft)  * 5770.82  *18994.74  * 1257.25  *
* C & E Loss (ft)        *    0.04  * Cum SA (acres)        * 1631.71  * 2029.52  *  643.26  *
*************************************************************************************************

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

CROSS SECTION OUTPUT  Profile #PF#2
*************************************************************************************************
* E.G. Elev (ft)         * 1000.66  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    1.23  * Wt. n-Val.            *   0.043  *   0.033  *          *
* W.S. Elev (ft)         *  999.43  * Reach Len. (ft)       *  490.00  *  483.44  *  540.00  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)     * 5507.57  *13816.21  *          *
* E.G. Slope (ft/ft)     *0.002539  * Area (sq ft)          * 5507.57  *13816.21  *          *
* Q Total (cfs)          *166000.00  * Flow (cfs)           *35563.61  *130436.40  *          *
* Top Width (ft)         * 2386.31  * Top Width (ft)       *  762.20  * 1624.11  *          *
* Vel Total (ft/s)       *    8.59  * Avg. Vel. (ft/s)     *    6.46  *    9.44  *          *
* Max Chl Dpth (ft)      *   14.83  * Hydr. Depth (ft)     *    7.23  *    8.51  *          *
* Conv. Total (cfs)      *3294110.0  * Conv. (cfs)         * 705725.5  *2588384.0  *          *
* Length Wtd. (ft)       *  484.60  * Wetted Per. (ft)     *  771.32  * 1627.99  *          *
* Min Ch El (ft)         *  984.60  * Shear (lb/sq ft)     *    1.13  *    1.35  *          *
* Alpha                  *    1.07  * Stream Power (lb/ft s) *  7.31  *   12.70  *          *
* Frctn Loss (ft)        *    1.44  * Cum Volume (acre-ft)  *  706.74  *19674.86  *   34.97  *
* C & E Loss (ft)        *    0.06  * Cum SA (acres)        *  106.60  * 2032.45  *    6.81  *
*************************************************************************************************

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 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: 1
REACH: 1                RS: 206.03

INPUT
Description: 206.03
Station Elevation Data    num=      96
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
 16802.9  1002.4 16810.4    1002 16813.6  1000.9   16824  1002.4 16844.6  1000.6
 16890.3  1000.8 16957.6   998.6 16974.2   996.3   17051   996.3 17118.7     996
 17158.8   996.3 17238.1   994.4 17268.4   993.9 17337.7   992.2 17429.7   992.2
 17531.5   992.2 17538.3   993.5 17547.2   994.4 17602.5   996.5   17662   996.6
 17711.8   998.8 17753.6   997.9 17811.8   999.7 17868.4   998.8   17876   996.8
 17888.6   992.2 17921.7   991.3 17955.9   991.3 18046.3   991.3   18129   992.2
 18208.5   993.4 18309.7   993.6 18420.9   993.3 18447.9   989.4 18457.8   986.4
 18517.5   985.1 18549.4   986.9   18588     984 18644.4   992.4 18712.4   995.4
 18774.2   998.9   18830   995.4 18904.6   994.2 18908.3   994.2 18995.9   996.3
 19086.5  1000.5   19177  1002.9 19201.9  1004.4 19226.8  1002.9 19249.6  1003.2
 19274.5  1000.5 19281.8   998.5 19300.1   995.7 19315.7   994.3 19390.1   994.3
 19400.5   994.3 19413.5   991.2 19424.9   989.1 19482.5   986.8 19510.1   986.8
 19554.4   985.8 19658.8   985.8 19753.3   985.9 19822.1   985.9 19854.2   986.9
 19870.5   986.6 19902.2   987.2 19919.6   986.6 19994.1   987.8 20078.9   988.1
 20133.4   987.5 20176.6   991.9 20201.4   992.1 20216.4   992.9 20292.1   994.2
   20354     993 20378.4     992   20392   989.3 20410.4   989.1 20427.7   986.6
 20479.5   986.9   20548   985.1 20601.3   984.5 20610.2   984.8 20660.5   989.4
 20711.9   992.7 20772.6   995.4 20851.6   995.1 20876.8     995 20972.6   994.7
 21099.7   995.7 21122.5   995.9 21132.1   998.6 21160.4  1005.3 21175.8   999.9
 21184.2   999.9

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
```

```
*********************************************
 16802.9    .043 19201.9    .033 20772.6    .032

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       19201.9 20772.6              590   513.6     510            .1       .3
Ineffective Flow     num=       1
   Sta L   Sta R    Elev  Permanent
 16802.9   16900    1003        F

CROSS SECTION OUTPUT  Profile #PF#1
*****************************************************************************************************
* E.G. Elev (ft)         *  998.47  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    1.28  * Wt. n-Val.            *   0.043  *   0.033  *   0.032  *
* W.S. Elev (ft)         *  997.19  * Reach Len. (ft)       *  590.00  *  513.60  *  510.00  *
* Crit W.S. (ft)         *  995.40  * Flow Area (sq ft)     * 7301.57  *12448.57  *  718.57  *
* E.G. Slope (ft/ft)     *0.002920  * Area (sq ft)          * 7301.57  *12448.57  *  718.57  *
* Q Total (cfs)          *166000.00  * Flow (cfs)           *38067.28  *125045.60  * 2887.13  *
* Top Width (ft)         * 3627.33  * Top Width (ft)       * 1790.61  * 1482.23  *  354.48  *
* Vel Total (ft/s)       *    8.11  * Avg. Vel. (ft/s)     *    5.21  *   10.04  *    4.02  *
* Max Chl Dpth (ft)      *   13.19  * Hydr. Depth (ft)     *    4.08  *    8.40  *    2.03  *
* Conv. Total (cfs)      *3071777.0  * Conv. (cfs)         *704422.8  *2313929.0  * 53425.3  *
* Length Wtd. (ft)       *  528.46  * Wetted Per. (ft)     * 1793.59  * 1484.21  *  354.67  *
* Min Ch El (ft)         *  984.50  * Shear (lb/sq ft)     *    0.74  *    1.53  *    0.37  *
* Alpha                  *    1.25  * Stream Power (lb/ft s) *    3.87  *   15.36  *    1.48  *
* Frctn Loss (ft)        *    1.19  * Cum Volume (acre-ft)  * 5665.95  *18854.09  * 1252.79  *
* C & E Loss (ft)        *    0.12  * Cum SA (acres)        * 1610.07  * 2012.68  *  641.06  *
*****************************************************************************************************

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

CROSS SECTION OUTPUT  Profile #PF#2
*****************************************************************************************************
* E.G. Elev (ft)         *  999.15  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    1.78  * Wt. n-Val.            *   0.043  *   0.033  *          *
* W.S. Elev (ft)         *  997.37  * Reach Len. (ft)       *  590.00  *  513.60  *  510.00  *
* Crit W.S. (ft)         *  995.41  * Flow Area (sq ft)     * 3391.07  *12720.36  *          *
* E.G. Slope (ft/ft)     *0.003548  * Area (sq ft)          * 3391.07  *12720.36  *          *
* Q Total (cfs)          *166000.00  * Flow (cfs)           *23329.40  *142670.60  *          *
* Top Width (ft)         * 2131.13  * Top Width (ft)       *  647.70  * 1483.43  *          *
* Vel Total (ft/s)       *   10.30  * Avg. Vel. (ft/s)     *    6.88  *   11.22  *          *
* Max Chl Dpth (ft)      *   13.37  * Hydr. Depth (ft)     *    5.24  *    8.57  *          *
* Conv. Total (cfs)      *2786996.0  * Conv. (cfs)         *391680.3  *2395315.0  *          *
* Length Wtd. (ft)       *  524.67  * Wetted Per. (ft)     *  653.26  * 1487.40  *          *
* Min Ch El (ft)         *  984.50  * Shear (lb/sq ft)     *    1.15  *    1.89  *          *
* Alpha                  *    1.08  * Stream Power (lb/ft s) *    7.91  *   21.24  *          *
* Frctn Loss (ft)        *    1.16  * Cum Volume (acre-ft)  *  656.69  *19527.61  *   34.97  *
* C & E Loss (ft)        *    0.28  * Cum SA (acres)        *   98.67  * 2015.21  *    6.81  *
*****************************************************************************************************

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

CROSS SECTION


RIVER: 1
REACH: 1                RS: 205.94

INPUT
Description: 205.94
Station Elevation Data    num=      96
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*****************************************************************************************
 16903.8  1000.5 16909.4    1000 16920.9  1001.6 16972.5  1001.2 16975.5  1000.3
 16985.1  1001.6 17007.6   998.7 17082.9   996.3 17151.6   996.3   17234   996.3
 17267.9   996.3 17336.5   996.2   17426   996.4 17508.2   996.2 17592.3   996.3
 17688.9   994.4 17733.4     994 17754.7   991.9 17830.3   991.2   17928   993.4
 17928.3   993.4 18000.5   993.2 18041.8   993.1 18116.7   993.3 18216.4   993.4
 18279.7   991.1 18294.7   987.3 18302.5   986.7 18362.5   986.9 18376.8   985.1
 18407.6   986.2 18496.1   984.1 18565.5   985.4 18614.9   987.2 18629.5   988.4
 18642.1   988.5 18669.8   994.1 18756.5   994.7 18817.1   995.6 18869.8   993.4
 18916.1   992.8 18941.2   994.2 19004.1     991 19053.5   981.9 19123.4   981.8
 19199.3     982   19250   981.9 19337.5   981.5 19354.9   982.2 19448.6     985
 19535.3     985 19613.6   984.8 19703.6   985.4 19775.9   989.5 19831.1   990.2
 19926.3   989.4 19994.7   989.1 20082.6   988.9 20106.6   989.1 20111.2   988.5
 20149.5   990.4 20183.7   994.3   20237   990.7 20262.2   991.4 20291.7   989.3
   20345   989.3 20445.6   986.5 20507.2   982.5 20519.9   982.9 20520.2   982.1
 20569.1     981 20589.6     984   20612   989.6   20643   991.1 20662.1   992.9
 20686.6   992.8 20704.4   994.4   20767   996.6 20871.9   997.4 20903.2   996.9
 20938.8   991.7 20969.6   993.5 21038.9   995.4   21103   995.9 21150.3   993.9
 21195.3   994.9 21265.8   994.7 21288.8     994 21309.9   995.5 21385.6   995.9
 21402.4   995.6 21473.1   995.1 21527.7   994.8   21551   998.8 21641.3   999.1
   21683  1001.6

Manning's n Values        num=       4
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
*************************************************************
 16903.8    .043 18817.1    .033   20767    .032 20938.8    .037

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       18817.1   20767              505  506.69     510            .1       .3
Ineffective Flow     num=       1
   Sta L   Sta R    Elev  Permanent
   21215   21683     999        F

CROSS SECTION OUTPUT  Profile #PF#1
*****************************************************************************************************
```

DuplicateEffective

* E.G. Elev (ft)	* 997.17	* Element	* Left OB	* Channel	* Right OB *				
* Vel Head (ft)	* 0.89	* Wt. n-Val.	* 0.043	* 0.033	* 0.036 *				
* W.S. Elev (ft)	* 996.28	* Reach Len. (ft)	* 505.00	* 506.69	* 510.00 *				
* Crit W.S. (ft)	* 992.36	* Flow Area (sq ft)	* 6215.99	*17060.13	* 528.54 *				
* E.G. Slope (ft/ft)	*0.001782	* Area (sq ft)	* 6215.99	*17060.13	* 877.89 *				
* Q Total (cfs)	*166000.00	* Flow (cfs)	*26725.95	*137949.00	* 1325.10 *				
* Top Width (ft)	* 3972.87	* Top Width (ft)	* 1403.39	* 1940.66	* 628.82 *				
* Vel Total (ft/s)	* 6.97	* Avg. Vel. (ft/s)	* 4.30	* 8.09	* 2.51 *				
* Max Chl Dpth (ft)	* 15.28	* Hydr. Depth (ft)	* 4.43	* 8.79	* 1.72 *				
* Conv. Total (cfs)	*3932557.0	* Conv. (cfs)	*633140.5	*3268024.0	* 31391.7 *				
* Length Wtd. (ft)	* 506.47	* Wetted Per. (ft)	* 1404.90	* 1944.24	* 307.99 *				
* Min Ch El (ft)	* 981.00	* Shear (lb/sq ft)	* 0.49	* 0.98	* 0.19 *				
* Alpha	* 1.18	* Stream Power (lb/ft s)	* 2.12	* 7.89	* 0.48 *				
* Frctn Loss (ft)	* 0.66	* Cum Volume (acre-ft)	* 5574.41	*18680.13	* 1243.45 *				
* C & E Loss (ft)	* 0.07	* Cum SA (acres)	* 1588.44	* 1992.50	* 635.31 *				

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.

CROSS SECTION OUTPUT Profile #PF#2

* E.G. Elev (ft)	* 997.71	* Element	* Left OB	* Channel	* Right OB *				
* Vel Head (ft)	* 0.86	* Wt. n-Val.	* 0.043	* 0.033	* *				
* W.S. Elev (ft)	* 996.85	* Reach Len. (ft)	* 505.00	* 506.69	* 510.00 *				
* Crit W.S. (ft)	* 992.30	* Flow Area (sq ft)	* 4747.93	*18184.85	* *				
* E.G. Slope (ft/ft)	*0.001519	* Area (sq ft)	* 4747.93	*18184.85	* *				
* Q Total (cfs)	*166000.00	* Flow (cfs)	*24792.00	*141208.00	* *				
* Top Width (ft)	* 2567.00	* Top Width (ft)	* 617.10	* 1949.90	* *				
* Vel Total (ft/s)	* 7.24	* Avg. Vel. (ft/s)	* 5.22	* 7.77	* *				
* Max Chl Dpth (ft)	* 15.85	* Hydr. Depth (ft)	* 7.69	* 9.33	* *				
* Conv. Total (cfs)	*4259277.0	* Conv. (cfs)	*636120.4	*3623156.0	* *				
* Length Wtd. (ft)	* 506.48	* Wetted Per. (ft)	* 621.93	* 1953.74	* *				
* Min Ch El (ft)	* 981.00	* Shear (lb/sq ft)	* 0.72	* 0.88	* *				
* Alpha	* 1.06	* Stream Power (lb/ft s)	* 3.78	* 6.85	* *				
* Frctn Loss (ft)	* 0.59	* Cum Volume (acre-ft)	* 601.57	*19345.41	* 34.97 *				
* C & E Loss (ft)	* 0.06	* Cum SA (acres)	* 90.10	* 1994.97	* 6.81 *				

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

CROSS SECTION

RIVER: 1
REACH: 1 RS: 205.84

INPUT
Description: 205.84
Station Elevation Data num= 96

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
17154.7	999.5	17167.6	998.3	17173.7	999	17242.7	999.3	17319.2	999.3
17395.4	998.8	17445.8	998.6	17482.3	997.2	17534.1	997.5	17544.3	997.1
17572.5	997.3	17612.4	996.5	17644.3	993.7	17719.4	994.2	17735.7	993.6
17775	993.6	17842.8	992.3	17862.2	987.5	17958.9	987.6	17969.5	989.4
18029.4	989.1	18042.3	990.1	18085.3	986.5	18121.7	984.6	18194.4	985
18242.1	986.4	18267.7	987.9	18304.8	988.6	18343.6	988.3	18423.5	987.9
18487.6	987.3	18519.2	980.3	18575.4	985.3	18594.1	984.3	18599.2	983
18611.3	981.7	18624.5	979.5	18698.1	979.6	18782.8	980.6	18852.2	980.4
18868.5	982.8	18970.3	982.9	19086.6	984.3	19137.9	986	19161.5	987.5
19244.2	986.1	19262.6	985.8	19339.3	985.7	19420.2	986.1	19521.7	987.3
19606.4	989.5	19664.7	990.4	19734.4	992	19762.4	991.1	19876.6	990.8
19965.5	989.4	20028.7	988.2	20132.7	984.3	20147.5	983.5	20176	983
20199.7	984.8	20287.6	984.2	20364.3	982.3	20417.7	981.2	20446.2	981.5
20481.4	989.8	20508	994.7	20535.7	996	20575.3	996.4	20613.9	995.2
20691.5	994.7	20737.2	994.6	20809.8	995.7	20816.4	996	20875	995.1
20909.1	992.8	20953.5	994.7	21021.3	995.7	21074.7	995.5	21087.2	993.8
21126.7	992.2	21139.8	993.2	21222.1	993.7	21281.4	994.3	21334.2	993
21367.3	994.1	21398.1	992.4	21450.5	994.8	21460	991.6	21508.8	993.1
21563.2	993.7	21607.4	993.3	21622.3	993.7	21634.1	995.7	21671.2	996.7
21696	999.5								

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
17154.7	.043	18487.6	.043	18575.4	.032	20535.7	.032	20875	.037

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
18487.6 20535.7 495 496 480 .1 .3
Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
21450	21696	999	F

CROSS SECTION OUTPUT Profile #PF#1

* E.G. Elev (ft)	* 996.43	* Element	* Left OB	* Channel	* Right OB *				
* Vel Head (ft)	* 0.64	* Wt. n-Val.	* 0.043	* 0.033	* 0.036 *				
* W.S. Elev (ft)	* 995.78	* Reach Len. (ft)	* 495.00	* 496.00	* 480.00 *				
* Crit W.S. (ft)	* 991.10	* Flow Area (sq ft)	* 5827.68	*20747.91	* 1226.92 *				
* E.G. Slope (ft/ft)	*0.001006	* Area (sq ft)	* 5827.68	*20747.91	* 1697.20 *				
* Q Total (cfs)	*166000.00	* Flow (cfs)	*22730.35	*141072.70	* 2196.97 *				
* Top Width (ft)	* 3933.88	* Top Width (ft)	* 867.04	* 2043.50	* 1023.33 *				
* Vel Total (ft/s)	* 5.97	* Avg. Vel. (ft/s)	* 3.90	* 6.80	* 1.79 *				
* Max Chl Dpth (ft)	* 16.28	* Hydr. Depth (ft)	* 6.72	* 10.15	* 1.47 *				
* Conv. Total (cfs)	*5233237.0	* Conv. (cfs)	*716586.3	*4447390.0	* 69260.5 *				
* Length Wtd. (ft)	* 495.56	* Wetted Per. (ft)	* 868.21	* 2046.96	* 836.58 *				
* Min Ch El (ft)	* 979.50	* Shear (lb/sq ft)	* 0.42	* 0.64	* 0.09 *				
* Alpha	* 1.16	* Stream Power (lb/ft s)	* 1.64	* 4.33	* 0.16 *				
* Frctn Loss (ft)	* 0.65	* Cum Volume (acre-ft)	* 5504.60	*18460.23	* 1228.37 *				
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	* 1575.28	* 1969.33	* 625.63 *				

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.

CROSS SECTION OUTPUT Profile #PF#2

E.G. Elev (ft)	997.06	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.67	Wt. n-Val.	0.043	0.033	
W.S. Elev (ft)	996.39	Reach Len. (ft)	495.00	496.00	480.00
Crit W.S. (ft)	991.10	Flow Area (sq ft)	3668.58	*21988.48	
E.G. Slope (ft/ft)	*0.000928	Area (sq ft)	3668.58	*21988.48	
Q Total (cfs)	*166000.00	Flow (cfs)	*16967.54	*149032.50	
Top Width (ft)	* 2435.70	Top Width (ft)	387.60	* 2048.10	
Vel Total (ft/s)	6.47	Avg. Vel. (ft/s)	4.63	6.78	
Max Chl Dpth (ft)	16.89	Hydr. Depth (ft)	9.46	10.74	
Conv. Total (cfs)	*5449105.0	Conv. (cfs)	*556975.2	*4892130.0	
Length Wtd. (ft)	495.95	Wetted Per. (ft)	398.36	* 2051.95	
Min Ch El (ft)	979.50	Shear (lb/sq ft)	0.53	0.62	
Alpha	1.04	Stream Power (lb/ft s)	2.47	4.21	
Frctn Loss (ft)	0.58	Cum Volume (acre-ft)	552.78	*19111.76	34.97
C & E Loss (ft)	0.01	Cum SA (acres)	84.28	* 1971.72	6.81

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

CROSS SECTION

RIVER: 1
REACH: 1 RS: 205.75

INPUT
Description: 205.75
Station Elevation Data num= 96

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
17305.3	998.9	17323.7	996.7	17395.5	996.8	17486.9	996.4	17509.8	996.4
17581.1	996.2	17666.5	995.9	17680.3	996	17753.1	996.5	17853.4	996.5
17864.9	996.5	17966.3	996	18048	994.8	18136.2	989.8	18199.9	985.9
18204.5	985.7	18238.3	975.2	18303	975.1	18340.9	977.7	18362.6	983.3
18414.2	984.2	18425.5	978.9	18465.2	978.9	18482	983.4	18487.5	980.6
18502.7	981.5	18551.9	977.5	18634.1	978.7	18705.8	979.9	18783.7	983.6
18852.2	983.7	18938.1	983.3	19031.5	983.4	19132.6	984.5	19156	984.8
19231.1	986.4	19292.3	989.2	19362.3	991.3	19410.6	989.7	19510.1	990.4
19547	990.4	19564.3	991.1	19608.3	991.1	19685.9	990.7	19759.4	989.7
19806.7	989.9	19819.8	990.5	19830.2	990.2	19906.7	988.4	19984.6	988.8
20051.4	988.1	20065.4	987.5	20101.2	975.7	20131.5	973.9	20148.4	974.7
20183.3	981	20265.9	982.2	20296.1	983.6	20320.1	985.5	20338.8	985.9
20373.3	988.6	20450.3	990	20500.5	990.7	20583.6	992.4	20674.8	995.6
20691.1	996.1	20754.7	995.2	20833.9	994.8	20900.7	994.8	20927.8	993.3
20929.3	994.1	20943.9	991.9	20951.5	991.7	20989	994	21037.1	991.6
21060.1	993.2	21120.9	992.7	21131.3	991.3	21198.6	991.5	21306.4	993.9
21377	994.4	21386.2	994.7	21449.8	995	21502.3	995.3	21567.5	995.7
21648.1	996.3	21682	996.5	21789	996.8	21807.7	996.8	21902.8	997.4
21921	997.6	22001	997.7	22076.6	997.7	22142.9	997.7	22143.7	999
22145	998.9								

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
17305.3	.043	18048	.043	20583.6	.043	21131.3	.025

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
18048 20450.3 825 642 490 .1 .3
Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
21400	22145	999	F

CROSS SECTION OUTPUT Profile #PF#1

E.G. Elev (ft)	995.78	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.68	Wt. n-Val.	0.043	0.043	0.035
W.S. Elev (ft)	995.10	Reach Len. (ft)	825.00	642.00	490.00
Crit W.S. (ft)	989.59	Flow Area (sq ft)	2.98	*23920.56	* 1754.13
E.G. Slope (ft/ft)	*0.001766	Area (sq ft)	2.98	*23920.56	* 1765.56
Q Total (cfs)	*166000.00	Flow (cfs)	1.21	*160405.70	* 5593.08
Top Width (ft)	* 3323.85	Top Width (ft)	20.14	* 2402.30	901.40
Vel Total (ft/s)	6.46	Avg. Vel. (ft/s)	0.41	6.71	3.19
Max Chl Dpth (ft)	21.20	Hydr. Depth (ft)	0.15	9.96	2.10
Conv. Total (cfs)	*3950065.0	Conv. (cfs)	28.8	*3816946.0	*133090.7
Length Wtd. (ft)	634.92	Wetted Per. (ft)	20.15	* 2410.71	835.61
Min Ch El (ft)	973.90	Shear (lb/sq ft)	0.02	1.09	0.23
Alpha	1.05	Stream Power (lb/ft s)	0.01	7.34	0.74
Frctn Loss (ft)	0.66	Cum Volume (acre-ft)	* 5471.47	*18205.92	* 1209.29
C & E Loss (ft)	0.05	Cum SA (acres)	* 1570.24	* 1944.02	615.03

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

CROSS SECTION OUTPUT Profile #PF#2

E.G. Elev (ft)	996.48	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.65	Wt. n-Val.		0.043	
W.S. Elev (ft)	995.83	Reach Len. (ft)	825.00	642.00	490.00
Crit W.S. (ft)	989.59	Flow Area (sq ft)		*25689.44	
E.G. Slope (ft/ft)	*0.001497	Area (sq ft)		*25689.44	
Q Total (cfs)	*166000.00	Flow (cfs)		*166000.00	
Top Width (ft)	* 2402.30	Top Width (ft)		* 2402.30	
Vel Total (ft/s)	6.46	Avg. Vel. (ft/s)		6.46	
Max Chl Dpth (ft)	21.93	Hydr. Depth (ft)		10.69	
Conv. Total (cfs)	*4290733.0	Conv. (cfs)		*4290733.0	
Length Wtd. (ft)	642.00	Wetted Per. (ft)		* 2417.57	

								DuplicateEffective			
* Min Ch El (ft)	*	973.90	* Shear (lb/sq ft)	*		*	0.99	*			*
* Alpha	*	1.00	* Stream Power (lb/ft s)	*		*	6.42	*			*
* Frctn Loss (ft)	*	0.62	* Cum Volume (acre-ft)	*	531.94	*	18840.32	*	34.97	*	
* C & E Loss (ft)	*	0.02	* Cum SA (acres)	*	82.07	*	1946.38	*	6.81	*	

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

CROSS SECTION

RIVER: 1
REACH: 1 RS: 205.62

INPUT
Description: 205.62
Station Elevation Data num= 96

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
16987.1	998.1	17010.8	998	17131	997.7	17220.3	997.9	17312.3	997.2
17337.5	997.1	17349.7	993.8	17415.9	993.4	17452.1	994.5	17456	993.6
17462.6	995.4	17470.7	993.9	17481.8	995.3	17536.8	995.9	17541.4	995
17548.6	996.6	17570.5	992.9	17606.9	994.3	17705.6	994.3	17778.6	994
17854.3	993.6	17935.8	992.6	18000.5	991.8	18066.9	989.1	18154.7	990.1
18182.6	989.5	18216	991.5	18272.9	988.7	18345.5	987	18362.3	985.3
18364.3	986.4	18412.4	980.4	18471.7	977.8	18582.6	976.6	18682.4	977.6
18758.9	978.6	18831.8	982	18915	981.6	18928.4	981.8	18994.8	981.7
19088.8	983.1	19188.8	983.9	19260.2	983.8	19272.1	983.6	19307.3	987.6
19315.9	987.5	19391.2	986.5	19461.1	986.8	19526.5	987.3	19591.7	987.7
19623.7	987.9	19690.2	986.9	19701.7	986.9	19732.4	983.9	19808.3	985.5
19928.6	988.8	19968.4	987.6	20009.8	976	20075.5	976.6	20117.2	979
20204.9	979.7	20242.3	978.4	20253.8	980.5	20285.7	981	20339.5	984.7
20409.9	988.4	20450.1	989.3	20468.3	987	20504.3	986.9	20542.3	986
20605.7	986.7	20698.9	989.9	20708.2	990.1	20715.6	995	20780.9	994.9
20847	991.9	20932.4	991	21003.2	991.1	21102.3	991.6	21194.4	992
21286.6	992.7	21318.6	992.9	21388	993.6	21473.6	994.3	21596.5	994.7
21668.5	995	21758.9	995.6	21817	996.1	21920.7	996.9	21963.3	997.1
22043.7	997.1	22107.3	997.1	22215.9	997.1	22261	998.1	22277.9	997.6
22288.5	999.4								

Manning's n Values num= 6

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
16987.1	.025	17481.8	.043	18216	.043	18471.7	.032	20715.6	.032
20847	.025								

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
18216	20450.1	560	523	510 .1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
16987.1	17548.6	999.4	F
21480	22288.5	999.4	F

CROSS SECTION OUTPUT Profile #PF#1

* E.G. Elev (ft)	*	995.07	* Element	*	Left OB	*	Channel	*	Right OB	*	
* Vel Head (ft)	*	0.52	* Wt. n-Val.	*	0.043	*	0.033	*	0.030	*	
* W.S. Elev (ft)	*	994.55	* Reach Len. (ft)	*	560.00	*	523.00	*	510.00	*	
* Crit W.S. (ft)	*	988.70	* Flow Area (sq ft)	*	1396.51	*	25301.81	*	3417.37	*	
* E.G. Slope (ft/ft)	*	0.000680	* Area (sq ft)	*	1488.28	*	25301.81	*	3425.27	*	
* Q Total (cfs)	*	166000.00	* Flow (cfs)	*	2083.18	*	151545.10	*	12371.75	*	
* Top Width (ft)	*	4036.31	* Top Width (ft)	*	776.42	*	2234.10	*	1025.79	*	
* Vel Total (ft/s)	*	5.51	* Avg. Vel. (ft/s)	*	1.49	*	5.99	*	3.62	*	
* Max Chl Dpth (ft)	*	18.55	* Hydr. Depth (ft)	*	2.13	*	11.33	*	3.57	*	
* Conv. Total (cfs)	*	6366636.0	* Conv. (cfs)	*	79896.5	*	5812243.0	*	474496.4	*	
* Length Wtd. (ft)	*	523.01	* Wetted Per. (ft)	*	655.56	*	2237.69	*	957.78	*	
* Min Ch El (ft)	*	976.00	* Shear (lb/sq ft)	*	0.09	*	0.48	*	0.15	*	
* Alpha	*	1.11	* Stream Power (lb/ft s)	*	0.13	*	2.87	*	0.55	*	
* Frctn Loss (ft)	*	0.30	* Cum Volume (acre-ft)	*	5457.35	*	17843.20	*	1180.10	*	
* C & E Loss (ft)	*	0.02	* Cum SA (acres)	*	1562.69	*	1909.85	*	604.19	*	

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.

CROSS SECTION OUTPUT Profile #PF#2

* E.G. Elev (ft)	*	995.85	* Element	*	Left OB	*	Channel	*	Right OB	*	
* Vel Head (ft)	*	0.59	* Wt. n-Val.	*		*	0.033	*		*	
* W.S. Elev (ft)	*	995.25	* Reach Len. (ft)	*	560.00	*	523.00	*	510.00	*	
* Crit W.S. (ft)	*	988.65	* Flow Area (sq ft)	*		*	26878.39	*		*	
* E.G. Slope (ft/ft)	*	0.000671	* Area (sq ft)	*		*	26878.39	*		*	
* Q Total (cfs)	*	166000.00	* Flow (cfs)	*		*	166000.00	*		*	
* Top Width (ft)	*	2234.10	* Top Width (ft)	*		*	2234.10	*		*	
* Vel Total (ft/s)	*	6.18	* Avg. Vel. (ft/s)	*		*	6.18	*		*	
* Max Chl Dpth (ft)	*	19.25	* Hydr. Depth (ft)	*		*	12.03	*		*	
* Conv. Total (cfs)	*	6407340.0	* Conv. (cfs)	*		*	6407340.0	*		*	
* Length Wtd. (ft)	*	523.00	* Wetted Per. (ft)	*		*	2247.40	*		*	
* Min Ch El (ft)	*	976.00	* Shear (lb/sq ft)	*		*	0.50	*		*	
* Alpha	*	1.00	* Stream Power (lb/ft s)	*		*	3.10	*		*	
* Frctn Loss (ft)	*	0.31	* Cum Volume (acre-ft)	*	531.94	*	18452.94	*	34.97	*	
* C & E Loss (ft)	*	0.00	* Cum SA (acres)	*	82.07	*	1912.21	*	6.81	*	

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

CROSS SECTION

RIVER: 1
REACH: 1 RS: 205.52

```
INPUT
Description: 205.52
Station Elevation Data    num=      96
     Sta    Elev     Sta     Elev     Sta     Elev     Sta     Elev     Sta     Elev
*********************************************************************************
 17458.9   998.2 17496.2   998.1 17528.6   993.9   17537     994 17538.2   993.3
 17605.2   993.8 17611.5   994.9 17615.9   993.3 17622.8     995 17635.1   992.9
 17665.3     993 17698.1   994.2 17701.5   993.5 17707.3   995.3 17718.9     995
 17731.8   991.3 17820.7   991.9   17894   991.4 17966.9   990.6 18049.9   988.1
 18115.3   988.8 18176.3   990.1 18241.5     990 18289.2   989.7 18376.9   989.8
 18458.3   990.2 18560.9   990.7 18591.6   991.1 18628.8   988.9 18702.3   978.1
   18778   976.8 18843.9   975.9 18919.8   976.6 19003.3   977.9   19078     982
 19149.6   982.2 19216.6   981.8 19294.8   981.6 19381.8   980.6 19438.9   979.8
 19513.6   979.7 19597.1   981.3 19627.4   982.2 19649.8   981.4 19768.3   982.9
 19791.5   982.7 19851.9   983.6 19974.7   981.4 20083.4   978.3   20118   977.6
 20126.6   978.1 20161.7   976.5 20215.1   976.5 20237.4   983.2 20307.8   986.1
 20375.9   986.4 20411.3   986.8 20436.2   983.2 20454.8   985.7 20472.6   986.8
 20567.5   986.1 20573.3     986 20590.7   989.7 20611.5   992.8 20623.9   992.6
 20656.5   990.1 20672.2   990.7 20688.3   988.5 20695.2   989.1 20701.5   986.9
 20769.2   978.7 20789.2   977.6 20827.6   986.2 20844.7   988.1 20936.4   989.8
 21007.2   990.9 21024.7   991.2 21032.1   992.9 21046.7   990.6 21139.1   991.6
 21236.4     992 21330.9   992.2 21420.6   992.8 21530.8   993.2 21637.9   993.3
 21722.2   993.8   21801   994.3 21909.2   994.5 22026.9   995.2 22127.5   995.8
 22175.4   995.9 22246.4   996.2 22303.2   996.7   22383   996.1 22389.5   996.1
   22400   997.5

Manning's n Values        num=       5
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************************************************
 17458.9    .043 18591.6    .043 18628.8    .032 20611.5    .032 21032.1    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       18591.6 20611.5             430     470     400             .1      .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 17458.9   17650   998.2        F
   21400   22400   998.2        F

CROSS SECTION OUTPUT  Profile #PF#1
*********************************************************************************************************
* E.G. Elev (ft)          *  994.75  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.46  * Wt. n-Val.             *   0.043  *   0.032  *   0.031  *
* W.S. Elev (ft)          *  994.29  * Reach Len. (ft)        *  430.00  *  470.00  *  400.00  *
* Crit W.S. (ft)          *  987.07  * Flow Area (sq ft)      * 3557.10  *25803.02  * 3782.11  *
* E.G. Slope (ft/ft)      *0.000496  * Area (sq ft)           * 3641.27  *25803.02  * 4150.32  *
* Q Total (cfs)           *166000.00  * Flow (cfs)            * 6878.15  *146272.50  *12849.30  *
* Top Width (ft)          * 4244.89  * Top Width (ft)        * 1036.57  * 2019.90  * 1188.42  *
* Vel Total (ft/s)        *    5.01  * Avg. Vel. (ft/s)      *    1.93  *    5.67  *    3.40  *
* Max Chl Dpth (ft)       *   18.39  * Hydr. Depth (ft)      *    3.85  *   12.77  *    4.80  *
* Conv. Total (cfs)       *7454148.0  * Conv. (cfs)          *308860.0  *6568297.0  *576991.5  *
* Length Wtd. (ft)        *  462.67  * Wetted Per. (ft)      *  924.99  * 2023.22  *  791.15  *
* Min Ch El (ft)          *  975.90  * Shear (lb/sq ft)      *    0.12  *    0.39  *    0.15  *
* Alpha                   *    1.17  * Stream Power (lb/ft s) *    0.23  *    2.24  *    0.50  *
* Frctn Loss (ft)         *    0.24  * Cum Volume (acre-ft)  * 5424.37  *17536.40  * 1135.75  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)        * 1551.04  * 1884.32  *  591.23  *
*********************************************************************************************************

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.

CROSS SECTION OUTPUT  Profile #PF#2
*********************************************************************************************************
* E.G. Elev (ft)          *  995.53  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.58  * Wt. n-Val.             *          *   0.032  *          *
* W.S. Elev (ft)          *  994.95  * Reach Len. (ft)        *  430.00  *  470.00  *  400.00  *
* Crit W.S. (ft)          *  987.28  * Flow Area (sq ft)      *          *27121.18  *          *
* E.G. Slope (ft/ft)      *0.000543  * Area (sq ft)           *          *27121.18  *          *
* Q Total (cfs)           *166000.00  * Flow (cfs)            *          *166000.00  *          *
* Top Width (ft)          * 2019.90  * Top Width (ft)        *          * 2019.90  *          *
* Vel Total (ft/s)        *    6.12  * Avg. Vel. (ft/s)      *          *    6.12  *          *
* Max Chl Dpth (ft)       *   19.05  * Hydr. Depth (ft)      *          *   13.43  *          *
* Conv. Total (cfs)       *7126233.0  * Conv. (cfs)          *          *7126233.0  *          *
* Length Wtd. (ft)        *  470.00  * Wetted Per. (ft)      *          * 2029.21  *          *
* Min Ch El (ft)          *  975.90  * Shear (lb/sq ft)      *          *    0.45  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    2.77  *          *
* Frctn Loss (ft)         *    0.28  * Cum Volume (acre-ft)  *  531.94  *18128.76  *   34.97  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)        *   82.07  * 1886.68  *    6.81  *
*********************************************************************************************************

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

CROSS SECTION


RIVER: 1
REACH: 1                RS: 205.43

INPUT
Description: 205.43
Station Elevation Data    num=      96
     Sta    Elev     Sta     Elev     Sta     Elev     Sta     Elev     Sta     Elev
*********************************************************************************
 17577.6     999 17651.4     999 17676.6   993.3 17745.1   993.5 17753.8   994.9
 17756.2     993 17761.9   994.1 17779.1   992.9 17827.8   993.4   17837   994.7
   17842   993.6 17850.1   995.1 17856.3   994.6 17874.1   989.8 17945.8   990.5
 18015.5   989.2   18089   988.6 18171.5   988.1   18272     989 18345.2   989.6
 18417.8   988.9 18513.1   989.6 18555.5   988.8 18590.9   983.9 18653.7   980.2
 18675.6   981.9 18718.1   992.1   18755   996.2 18831.5     994 18917.5   994.6
   18981   993.6 18995.7   991.7 19013.2   983.5 19029.3   979.6   19078   977.3
 19159.1   977.1 19235.8     977 19329.8   976.7 19401.3   976.1 19408.1   977.1
 19408.2   976.1 19472.5   977.8 19481.8   976.1 19482.8   979.9 19504.5   976.3
 19572.1   976.7 19685.1   976.7   19752   976.5 19776.2   976.6 19871.8   985.4
 19922.1   984.5 19948.6   982.8 19969.8     979 19994.4   976.5 20009.7   976.5
```

DuplicateEffective

20115.4	976.5	20173.1	982	20198.5	982.2	20281.7	985.3	20371.1	985.5
20444.6	985.5	20542.7	985.9	20552.8	986	20628.8	985.9	20672.4	986.4
20739.7	988.8	20745.5	988.9	20770.4	996.3	20821.2	987.3	20830.8	986.4
20857.3	988.8	20888.7	988.5	20910.3	984	20959.4	986.1	21024	983.6
21078.8	987.2	21088.9	990.3	21171.4	991.7	21190.4	992.1	21193.4	991.5
21282.9	992	21368	992.7	21454.5	993.1	21528.9	993.3	21613.1	993.6
21695.1	993.6	21768.9	993.9	21849.3	994.3	21923.6	994.4	21927.2	994.4
21997.3	994.6	22016.9	994.6	22089.4	994.6	22155	995.4	22231.3	997.7
22285	998.6								

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
17577.6	.043	18917.5	.043	18981	.032	20770.4	.032	21088.9	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
18917.5	20770.4	175 171.89	125	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
17577.6	17800	999	F
21400	22285	999	F

CROSS SECTION OUTPUT Profile #PF#1

E.G. Elev (ft)	994.50	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.51	Wt. n-Val.	0.043	0.032	0.031
W.S. Elev (ft)	994.00	Reach Len. (ft)	175.00	171.89	125.00
Crit W.S. (ft)	986.93	Flow Area (sq ft)	4969.00	23600.69	2927.41
E.G. Slope (ft/ft)	0.000544	Area (sq ft)	5044.07	23600.69	3139.66
Q Total (cfs)	166000.00	Flow (cfs)	12628.18	142595.00	10776.84
Top Width (ft)	3841.68	Top Width (ft)	1030.23	1806.76	1004.68
Vel Total (ft/s)	5.27	Avg. Vel. (ft/s)	2.54	6.04	3.68
Max Chl Dpth (ft)	17.90	Hydr. Depth (ft)	5.45	13.06	4.75
Conv. Total (cfs)	7116273.0	Conv. (cfs)	541359.1	6112920.0	461993.6
Length Wtd. (ft)	169.60	Wetted Per. (ft)	915.10	1815.66	618.55
Min Ch El (ft)	976.10	Shear (lb/sq ft)	0.18	0.44	0.16
Alpha	1.18	Stream Power (lb/ft s)	0.47	2.67	0.59
Frctn Loss (ft)	0.07	Cum Volume (acre-ft)	5381.51	17269.88	1102.28
C & E Loss (ft)	0.03	Cum SA (acres)	1540.84	1863.67	581.16

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.

CROSS SECTION OUTPUT Profile #PF#2

E.G. Elev (ft)	995.24	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.71	Wt. n-Val.		0.032	
W.S. Elev (ft)	994.53	Reach Len. (ft)	175.00	171.89	125.00
Crit W.S. (ft)	986.96	Flow Area (sq ft)		24572.45	
E.G. Slope (ft/ft)	0.000647	Area (sq ft)		24572.45	
Q Total (cfs)	166000.00	Flow (cfs)		166000.00	
Top Width (ft)	1842.37	Top Width (ft)		1842.37	
Vel Total (ft/s)	6.76	Avg. Vel. (ft/s)		6.76	
Max Chl Dpth (ft)	18.43	Hydr. Depth (ft)		13.34	
Conv. Total (cfs)	6524281.0	Conv. (cfs)		6524281.0	
Length Wtd. (ft)	171.89	Wetted Per. (ft)		1851.35	
Min Ch El (ft)	976.10	Shear (lb/sq ft)		0.54	
Alpha	1.00	Stream Power (lb/ft s)		3.62	
Frctn Loss (ft)	0.09	Cum Volume (acre-ft)	531.94	17849.88	34.97
C & E Loss (ft)	0.05	Cum SA (acres)	82.07	1865.84	6.81

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

CROSS SECTION

RIVER: 1
REACH: 1 RS: 205.4

INPUT
Description: 205.4
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
17511.1	996.9	17519.9	996.9	17605.2	997.3	17609	997.3	17712.9	997.8
17756.7	992.2	17854.3	993.8	17914.6	991.3	17916.5	991.2	17968.9	990.2
18031	989.2	18084.1	988.8	18154.5	988.3	18213.4	988.3	18281.7	988.2
18304.7	988.2	18362.5	988.2	18388.7	988.6	18461.3	988.1	18529.4	988.4
18564.6	988.5	18633.4	988.7	18712.8	988.5	18774.2	988.2	18787.4	988.1
18843.8	987.9	18915.9	985.1	18943.3	984.3	19013.3	982.5	19020	982.2985
19079.8	980.5	19133	979.1	19154.8	978.5	19196.1	978.7	19231.1	977.1
19260.1	977.2	19291.7	976.5	19304.1	976.8	19364.1	975.5	19377.1	975.5
19436	975.7	19498.9	975.9	19564	975.7	19635.3	976.2	19694.9	976.3
19718.4	976.2	19774.1	976.1	19840.5	976	19902.9	976	19988.4	976
20047.6	976.1	20060.4	976.2	20120.1	976.4	20173.6	976.9	20230.4	977.5
20290.1	977.8	20348.4	979	20391.6	980.6	20448.9	982.1	20522.8	983.7
20592.3	985.3	20647.3	986.7	20692.4	987.2	20767.8	987.4	20829.1	987.4
20894.3	987.9	20922.5	988.1	20978.2	988.9	21055.7	989.4	21057.2	989.4
21142	989.4	21212	990.9	21270.2	991	21321.8	991.1	21338.9	991.2
21394.1	991.7	21407.6	991.9	21469.8	992.7	21547.3	993.5	21598.6	992.6
21619.5	993.7	21690.3	993.7	21721.2	993.7	21811.7	993.8	21872.4	994.2
21923.6	995.3	21941	995.5	22005.1	996.1	22017	996.2	22078.7	996.7
22181.1	997.7	22194.2	997.8	22249.3	998.6	22318.8	999	22386.3	999.2
22404.4	998.5	22455.6	999.3						

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
17511.1	.043	18843.8	.043	19079.8	.032	20767.8	.032

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19020	20767.8	305	315	370	.1	.3

```
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 17511.1   17800   999.3        F
   21450 22455.6   999.3        F
Blocked Obstructions     num=       1
   Sta L   Sta R    Elev
************************
 17511.1   19020     988

CROSS SECTION OUTPUT  Profile #PF#1
*********************************************************************************************
* E.G. Elev (ft)         *  994.40  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.41  * Wt. n-Val.             *   0.043  *   0.032  *   0.032  *
* W.S. Elev (ft)         *  993.99  * Reach Len. (ft)        *  305.00  *  315.00  *  370.00  *
* Crit W.S. (ft)         *  984.67  * Flow Area (sq ft)      * 6163.18  *26799.69  * 2955.52  *
* E.G. Slope (ft/ft)     *0.000362  * Area (sq ft)           * 6237.80  *26799.69  * 3171.98  *
* Q Total (cfs)          *164000.00  * Flow (cfs)           *11964.37  *145098.40  * 6937.21  *
* Top Width (ft)         * 4097.71  * Top Width (ft)        * 1277.30  * 1747.80  * 1072.61  *
* Vel Total (ft/s)       *    4.57  * Avg. Vel. (ft/s)      *    1.94  *    5.41  *    2.35  *
* Max Chl Dpth (ft)      *   18.49  * Hydr. Depth (ft)      *    5.05  *   15.33  *    4.33  *
* Conv. Total (cfs)      *8621961.0  * Conv. (cfs)          *629002.0  *7628250.0  *364709.5  *
* Length Wtd. (ft)       *  317.46  * Wetted Per. (ft)      * 1220.09  * 1753.75  *  682.23  *
* Min Ch El (ft)         *  975.50  * Shear (lb/sq ft)      *    0.11  *    0.35  *    0.10  *
* Alpha                  *    1.27  * Stream Power (lb/ft s) *    0.22  *    1.87  *    0.23  *
* Frctn Loss (ft)        *    0.18  * Cum Volume (acre-ft)  * 5358.84  *17170.44  * 1093.22  *
* C & E Loss (ft)        *    0.02  * Cum SA (acres)        * 1536.20  * 1856.66  *  578.18  *
*********************************************************************************************

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

CROSS SECTION OUTPUT  Profile #PF#2
*********************************************************************************************
* E.G. Elev (ft)         *  995.10  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.54  * Wt. n-Val.             *          *   0.032  *          *
* W.S. Elev (ft)         *  994.56  * Reach Len. (ft)        *  305.00  *  315.00  *  370.00  *
* Crit W.S. (ft)         *  984.67  * Flow Area (sq ft)      *          *27793.38  *          *
* E.G. Slope (ft/ft)     *0.000413  * Area (sq ft)           *          *27793.38  *          *
* Q Total (cfs)          *164000.00  * Flow (cfs)           *          *164000.00  *          *
* Top Width (ft)         * 1747.80  * Top Width (ft)        *          * 1747.80  *          *
* Vel Total (ft/s)       *    5.90  * Avg. Vel. (ft/s)      *          *    5.90  *          *
* Max Chl Dpth (ft)      *   19.06  * Hydr. Depth (ft)      *          *   15.90  *          *
* Conv. Total (cfs)      *8073093.0  * Conv. (cfs)          *          *8073093.0  *          *
* Length Wtd. (ft)       *  314.90  * Wetted Per. (ft)      *          * 1767.46  *          *
* Min Ch El (ft)         *  975.50  * Shear (lb/sq ft)      *          *    0.41  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *    2.39  *          *
* Frctn Loss (ft)        *    0.21  * Cum Volume (acre-ft)  *  531.94  *17746.57  *   34.97  *
* C & E Loss (ft)        *    0.03  * Cum SA (acres)        *   82.07  * 1858.76  *    6.81  *
*********************************************************************************************

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

CROSS SECTION


RIVER: 1
REACH: 1                RS: 205.34

INPUT
Description: 205.34 - FEMA Cross Section M
Station Elevation Data     num=     268
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*************************************************************************************
13687.27   990.713918.08  990.6813941.26   990.714074.31  990.7414097.95  990.77
 14379.8   991.214502.02  991.2714504.17  991.3214654.78  991.4514667.42  991.12
14692.66     99314709.75  992.96 14715.8  991.19   14721  993.2814723.16  993.14
14738.13   990.914750.87  991.8914755.59   992.514795.12   991.614806.23  991.16
14847.09   991.615017.82  991.6715028.83  991.05 15074.2   990.915389.93  990.38
15426.63   990.415457.08  991.7615497.69  991.9115548.79  991.7415599.83  990.06
15624.82   992.515632.81  992.1815645.65  991.2715655.09  992.7415660.02  991.59
 15665.1   993.615682.98  994.8415701.37  993.3215707.96  993.3215720.14  993.51
15863.53   993.415962.36  993.7816143.17   993.716302.48  993.5316434.69     994
16540.11   994.5 16630.9  994.0316710.83  993.4216732.11  994.2916741.14  994.53
16755.65   994.816763.06  993.9916780.42  993.7616789.57   993.416811.41  992.38
16945.01   992.917037.42  993.3817118.17   992.917138.04  992.7817279.36  992.27
17420.37   992.117527.98  992.75 17560.1  992.78 17728.5  991.3317729.54  991.26
17753.81   988.517789.02   988.817833.72   989.117845.57  991.9517853.64   990.8
17860.73     99217869.58    99217881.45  991.8417895.69  992.1317897.64  994.57
17904.21   994.517909.94  991.8217920.11  988.7917940.57  989.6117986.35  989.54
18002.56   989.718065.95  989.1618080.07  988.8318116.41  988.3818122.12  987.76
18187.93   987.418195.48  987.3618246.02  987.5818264.37  987.6418314.54  986.65
18327.91   986.818350.36  988.1118365.79  988.5818392.98  988.6518415.65  990.57
   18418     99118432.37  990.8218481.36  991.38 18548.7  990.7218596.12  990.95
 18645.9     99518660.36  994.9818676.98  995.0618724.18  991.4718772.07  990.61
18787.28   990.318822.48  988.85 18833.8  988.7918853.31  988.4818883.89  988.52
 18895.6   987.7 18912.2  992.1218970.58  990.1619022.37  991.3519035.55  989.07
19043.96   988.619066.14  988.56 19076.9  991.3319096.79  993.0719099.41  993.11
19116.55   988.419170.12   987.719232.28   987.219252.59  986.66 19258.9  986.61
19276.73   986.119284.34  985.9919293.57  985.3919297.05  984.9419318.57  978.71
 19328.6   976.919337.34    97619422.11  976.1819470.05  976.22 19524.9  976.33
19562.89   976.719632.66  976.0919705.72  976.4319754.05  976.6319843.53  976.95
19853.47     97719865.48   976.519880.46  976.3619890.89  975.8119912.96  977.83
 19933.5   976.919947.42   976.619979.26  976.26 20010.7  976.0820051.63  975.84
20062.33   975.720073.85  975.5720119.54  976.87 20199.2  978.2920212.26  978.81
20258.32   980.920264.39  980.66 20329.9  980.6420332.62  980.4120369.18  979.74
   20375   980.1 20380.1  980.6320381.06  981.0320388.75  983.0320395.38  983.51
20436.76   985.120502.38  985.6120525.59   985.520561.61  985.7420587.94  985.95
20626.14   985.820644.89  985.7420678.28  985.5520707.29  986.1820742.96     987
20746.96   986.620752.64  985.5420762.54  985.0520787.99  983.0120822.69  985.52
20836.01   987.120844.69  986.9620890.92  987.1920931.14  987.6220978.97  988.36
 21006.5   988.721057.23  989.3821083.41   989.721100.77  990.25 21161.6  990.89
```

```
                                                                    DuplicateEffective
21172.71     99121247.07  990.97 21252.7  990.9921266.22  990.7621277.98  990.73
21290.76   992.8   21299  991.1421333.63  991.1321435.22   991.221524.43  991.65
21554.31   991.6 21567.7  991.7221625.82   992.321657.32  992.4221684.03  992.58
21782.19   993.421851.31  993.7221863.14   993.921872.38  994.1621891.44  994.52
21949.81   994.621975.44  994.9221995.48  994.9122007.76  995.2522037.54  996.24
22051.44   996.622075.07  997.6322125.13  998.6122139.54  998.9522159.57  998.78
22179.58   998.822264.13   998.322280.55  998.0322353.16  997.9122369.37  997.91
22404.01     99822463.45  998.2722491.06   998.822531.57  998.5222560.64  998.76
22593.64   998.8 22617.2  999.0722646.25  999.1222676.56  998.9422686.88  999.19
22731.76  1000.522770.23 1000.7922779.44 1001.3422789.67 1000.9722824.65 1001.12
22886.17  1001.722901.04 1001.6722978.01 1002.0623003.78 1002.23 23080.5 1002.51
23154.45  1002.823270.34 1003.4323291.75 1003.5623364.66 1004.1223410.89 1004.31
23481.28  1004.623504.95 1004.7623548.34 1004.8523582.71 1004.8423645.08 1005.05
 23678.1  1005.223738.97 1005.2323762.47 1005.11 23813.7 1005.1223872.53 1005.28
23908.97  1005.423920.45 1005.5423934.72 1004.9423951.14 1004.4623976.71 1005.57
23998.12  1003.624004.04 1002.9424049.64 1002.74

Manning's n Values          num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
13687.27    .04318481.36    .04320931.14    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.    Expan.
     19284.3420742.96                 485     492     450           .1        .3
Ineffective Flow      num=       2
   Sta L    Sta R    Elev  Permanent
13687.27   17900    1000       F
   2140024049.64    1000       F

CROSS SECTION OUTPUT  Profile #PF#1
*************************************************************************************************
* E.G. Elev (ft)         *  994.20  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.57  * Wt. n-Val.             *   0.043  *   0.043  *   0.033  *
* W.S. Elev (ft)         *  993.64  * Reach Len. (ft)        *  485.00  *  492.00  *  450.00  *
* Crit W.S. (ft)         *  986.68  * Flow Area (sq ft)      * 5631.66  *20854.99  * 3037.04  *
* E.G. Slope (ft/ft)     *0.001005  * Area (sq ft)           *12323.51  *20854.99  * 3643.00  *
* Q Total (cfs)          *164000.00  * Flow (cfs)           *16574.24  *134496.80  *12928.94  *
* Top Width (ft)         * 7348.85  * Top Width (ft)        * 4799.29  * 1458.62  * 1090.94  *
* Vel Total (ft/s)       *    5.55  * Avg. Vel. (ft/s)      *    2.94  *    6.45  *    4.26  *
* Max Chl Dpth (ft)      *   18.07  * Hydr. Depth (ft)      *    4.29  *   14.30  *    4.62  *
* Conv. Total (cfs)      *5172262.0  * Conv. (cfs)          *522721.4  *4241786.0  *407755.4  *
* Length Wtd. (ft)       *  488.72  * Wetted Per. (ft)      * 1315.08  * 1460.47  *  657.80  *
* Min Ch El (ft)         *  975.57  * Shear (lb/sq ft)      *    0.27  *    0.90  *    0.29  *
* Alpha                  *    1.18  * Stream Power (lb/ft s) *    0.79  *    5.78  *    1.23  *
* Frctn Loss (ft)        *    0.38  * Cum Volume (acre-ft)  * 5293.86  *16998.13  * 1064.28  *
* C & E Loss (ft)        *    0.00  * Cum SA (acres)        * 1514.93  * 1845.07  *  568.99  *
*************************************************************************************************

Warning: Divided flow computed for this cross-section.
Warning: The cross-section end points had to be extended vertically for the computed water surface.
Note:    Multiple critical depths were found at this location.  The critical depth with the lowest, valid,
         water surface was used.

CROSS SECTION OUTPUT  Profile #PF#2
*************************************************************************************************
* E.G. Elev (ft)         *  994.85  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.87  * Wt. n-Val.             *   0.043  *   0.043  *          *
* W.S. Elev (ft)         *  993.98  * Reach Len. (ft)        *  485.00  *  492.00  *  450.00  *
* Crit W.S. (ft)         *  986.65  * Flow Area (sq ft)      *  729.56  *21354.97  *          *
* E.G. Slope (ft/ft)     *0.001336  * Area (sq ft)           *  729.56  *21354.97  *          *
* Q Total (cfs)          *164000.00  * Flow (cfs)           * 3238.55  *160761.50  *          *
* Top Width (ft)         * 1562.96  * Top Width (ft)        *  104.34  * 1458.62  *          *
* Vel Total (ft/s)       *    7.43  * Avg. Vel. (ft/s)      *    4.44  *    7.53  *          *
* Max Chl Dpth (ft)      *   18.41  * Hydr. Depth (ft)      *    6.99  *   14.64  *          *
* Conv. Total (cfs)      *4487226.0  * Conv. (cfs)          * 88610.4  *4398616.0  *          *
* Length Wtd. (ft)       *  491.57  * Wetted Per. (ft)      *  110.72  * 1467.45  *          *
* Min Ch El (ft)         *  975.57  * Shear (lb/sq ft)      *    0.55  *    1.21  *          *
* Alpha                  *    1.01  * Stream Power (lb/ft s) *    2.44  *    9.14  *          *
* Frctn Loss (ft)        *    0.51  * Cum Volume (acre-ft)  *  529.39  *17568.86  *   34.97  *
* C & E Loss (ft)        *    0.00  * Cum SA (acres)        *   81.71  * 1847.16  *    6.81  *
*************************************************************************************************

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

CROSS SECTION


RIVER: 1
REACH: 1                    RS: 205.25

INPUT
Description: 205.25
Station Elevation Data     num=      96
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*************************************************************************************
 16580.4      994 16657.1      994 16708.3    993.9 16776.5    993.6 16819.1    994.5
 16845.8    992.8 16892.9    992.2 16971.6    992.3 17154.1    993.1 17172.8    993.1
 17289.2    992.5 17431.5    991.8 17455.8    991.6 17644.6    992.5 17718.9    992.3
 17808.9    991.8 17842.7    989.1 17907.9    989.9 17920.6    992.1 17926.4    990.6
 17933.2    992.4 17964.3    990.4 17989.2    990.3 17999.1    987.6   18061    989.2
 18108.7    990.1   18179    988.3 18216.3      987 18244.2    987.5 18311.6    987.2
 18329.2    987.8 18392.2    987.8 18457.1    988.6 18493.2    989.2 18509.7    988.5
 18583.8      989 18614.2    989.1 18647.4      988 18708.8    987.6 18775.5    989.5
 18807.1      990 18886.3    989.2 18946.4      989 18990.4    988.1 19012.5    989.2
   19101  990.2 19156.3    989.9 19179.1    987.1 19186.7    985.4 19228.7    983.3
 19242.4      982 19306.5    983.4 19368.3    983.9 19442.9    983.5 19503.3    984.6
   19563  981.8 19581.1    985.9 19632.5    986.1 19671.9    987.3 19726.2    975.8
 19815.7    975.6 19878.1    976.2   19957    975.9   20042    975.5 20112.8    975.3
 20121.8    975.7 20160.5    973.8   20242    973.4 20260.5    974.6 20329.5      975
 20404.8    975.5 20471.4    978.3 20486.8    979.5 20522.9    977.9   20526    975.8
 20552.9    975.9 20584.6    974.1 20632.4    973.9   20697    975.7   20712    975.7
 20738.9    981.7 20741.5    980.7 20782.3    986.4 20848.1    987.4 20923.8    989.9
 21014.3    990.6 21121.3    991.6 21201.7    992.1 21283.6    992.1 21338.5    993.1
 21347.9    993.8 21358.2    992.2 21370.3    995.6 21409.5    995.7   21424    994.5
 21499.5    993.3
```

```
Manning's n Values          num=        4
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
*************************************************************
 16580.4    .025 18108.7    .037 19671.9    .037 20782.3    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        19671.9 20782.3             505     506     485            .1       .3
Ineffective Flow      num=        2
   Sta L   Sta R    Elev  Permanent
 16580.4   17950   995.7       F
 21347.9 21499.5   995.7       F

CROSS SECTION OUTPUT  Profile #PF#1
*****************************************************************************************
* E.G. Elev (ft)         *  993.82  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.57  * Wt. n-Val.             *   0.036  *   0.037  *   0.025  *
* W.S. Elev (ft)         *  993.26  * Reach Len. (ft)        *  505.00  *  506.00  *  485.00  *
* Crit W.S. (ft)         *  985.26  * Flow Area (sq ft)      *10028.25  *18998.26  * 1514.65  *
* E.G. Slope (ft/ft)     *0.000623  * Area (sq ft)           *11314.22  *18998.26  * 1520.24  *
* Q Total (cfs)          *164000.00  * Flow (cfs)           *33461.27  *126169.00  * 4369.76  *
* Top Width (ft)         * 4512.59  * Top Width (ft)        * 2833.29  * 1110.40  *  568.90  *
* Vel Total (ft/s)       *    5.37  * Avg. Vel. (ft/s)      *    3.34  *    6.64  *    2.89  *
* Max Chl Dpth (ft)      *   19.86  * Hydr. Depth (ft)      *    5.82  *   17.11  *    2.71  *
* Conv. Total (cfs)      *6571525.0  * Conv. (cfs)          *1340802.0  *5055625.0  *175097.6  *
* Length Wtd. (ft)       *  505.35  * Wetted Per. (ft)      * 1723.55  * 1113.81  *  558.39  *
* Min Ch El (ft)         *  973.40  * Shear (lb/sq ft)      *    0.23  *    0.66  *    0.11  *
* Alpha                  *    1.26  * Stream Power (lb/ft s) *    0.75  *    4.40  *    0.30  *
* Frctn Loss (ft)        *    0.52  * Cum Volume (acre-ft)  * 5162.27  *16773.07  * 1037.61  *
* C & E Loss (ft)        *    0.09  * Cum SA (acres)        * 1472.44  * 1830.56  *  560.42  *
*****************************************************************************************

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

CROSS SECTION OUTPUT  Profile #PF#2
*****************************************************************************************
* E.G. Elev (ft)         *  994.34  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.85  * Wt. n-Val.             *   0.037  *   0.037  *          *
* W.S. Elev (ft)         *  993.49  * Reach Len. (ft)        *  505.00  *  506.00  *  485.00  *
* Crit W.S. (ft)         *  985.16  * Flow Area (sq ft)      * 3415.04  *19253.09  *          *
* E.G. Slope (ft/ft)     *0.000817  * Area (sq ft)           * 3415.04  *19253.09  *          *
* Q Total (cfs)          *164000.00  * Flow (cfs)           *16866.33  *147133.70  *          *
* Top Width (ft)         * 1482.30  * Top Width (ft)        *  371.90  * 1110.40  *          *
* Vel Total (ft/s)       *    7.23  * Avg. Vel. (ft/s)      *    4.94  *    7.64  *          *
* Max Chl Dpth (ft)      *   20.09  * Hydr. Depth (ft)      *    9.18  *   17.34  *          *
* Conv. Total (cfs)      *5737392.0  * Conv. (cfs)          *590053.3  *5147338.0  *          *
* Length Wtd. (ft)       *  505.72  * Wetted Per. (ft)      *  382.69  * 1120.90  *          *
* Min Ch El (ft)         *  973.40  * Shear (lb/sq ft)      *    0.46  *    0.88  *          *
* Alpha                  *    1.05  * Stream Power (lb/ft s) *    2.25  *    6.70  *          *
* Frctn Loss (ft)        *    0.59  * Cum Volume (acre-ft)  *  506.31  *17339.53  *   34.97  *
* C & E Loss (ft)        *    0.06  * Cum SA (acres)        *   79.06  * 1832.65  *    6.81  *
*****************************************************************************************

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

CROSS SECTION


RIVER: 1
REACH: 1                    RS: 205.15

INPUT
Description: 205.15
Station Elevation Data     num=       96
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*************************************************************************
 18001.2      994 18008.5   992.8 18015.6   994.9 18038.3   990.9 18047.4   991.8
 18061.5    992.1 18077.6   991.6 18146.4   988.8 18170.1   988.9 18200.6   988.3
   18243    988.8 18269.7   988.5 18292.3   988.8 18341.7   989.8 18374.9   990.2
 18415.6    990.6 18438.3   991.1 18547.3     991 18558.8   991.1 18618.4   991.8
 18625.4    991.9 18687.7   991.3 18696.2   991.3 18745.4   991.4 18794.1   991.1
   18810    991.2 18866.4     991 18894.1   991.2 18920.9   990.7 18973.2   990.3
 19018.9    989.8 19055.8   989.7 19109.2   989.4 19141.8   988.8 19181.8   988.8
 19228.5    988.7 19285.2   989.2 19335.5   988.1 19346.3   987.8 19386.8   986.1
 19394.2    985.9 19440.1   984.4 19443.6   984.3   19490   983.7 19506.7   983.8
 19532.2    982.8 19587.2   983.3 19612.4   983.6 19619.1   984.1 19660.7   983.9
 19705.1    983.1 19747.1   983.7 19787.1   984.9 19805.2   976.8 19822.3   973.4
 19827.6    974.7 19829.5   974.2   19853   974.2 19880.4   973.6 19881.2   973.1
 19908.4      980 19918.9   982.2   19934   984.3 19978.1   984.9 20006.4   984.1
 20054.3    983.8 20064.2   983.5 20106.6     982 20110.7   981.8 20166.7     979
 20196.8    978.1 20246.3   976.6 20250.4   976.4 20298.9   975.4 20340.8   975.5
 20371.6    975.7 20436.2     974   20495   974.1 20608.2   975.2   20651   975.7
 20691.5    977.2 20705.2   979.5 20746.3   987.3 20793.1   987.9   20838   988.7
 20896.6    989.6 20910.7   990.1 20968.3   990.3   20999   990.6 21039.8   990.8
   21107    991.7 21127.2   991.3 21170.3   994.1 21206.9   995.7 21258.6   996.3
   21293    996.4

Manning's n Values          num=        4
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
*************************************************************
 18001.2    .025 18146.4    .037 19787.1    .037 20746.3    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        19787.1 20746.3             495  495.39     495            .1       .3
Ineffective Flow      num=        2
```

Sta L	Sta R	Elev	Permanent
18001.2	18061.5	995	F
21293	21293	996.4	F

CROSS SECTION OUTPUT Profile #PF#1

E.G. Elev (ft)	993.21	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.46	Wt. n-Val.	0.037	0.037	0.025
W.S. Elev (ft)	991.76	Reach Len. (ft)	495.00	495.39	495.00
Crit W.S. (ft)	987.66	Flow Area (sq ft)	5457.16	13249.56	742.57
E.G. Slope (ft/ft)	0.002039	Area (sq ft)	5462.93	13249.56	742.57
Q Total (cfs)	164000.00	Flow (cfs)	23077.22	137850.70	3072.08
Top Width (ft)	3049.28	Top Width (ft)	1702.17	959.20	387.91
Vel Total (ft/s)	8.43	Avg. Vel. (ft/s)	4.23	10.40	4.14
Max Chl Dpth (ft)	18.66	Hydr. Depth (ft)	3.23	13.81	1.91
Conv. Total (cfs)	3632205.0	Conv. (cfs)	511104.8	3053061.0	68039.3
Length Wtd. (ft)	495.35	Wetted Per. (ft)	1688.95	964.03	387.96
Min Ch El (ft)	973.10	Shear (lb/sq ft)	0.41	1.75	0.24
Alpha	1.32	Stream Power (lb/ft s)	1.74	18.20	1.01
Frctn Loss (ft)	0.97	Cum Volume (acre-ft)	5065.02	16585.77	1025.01
C & E Loss (ft)	0.02	Cum SA (acres)	1446.15	1818.54	555.09

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.

CROSS SECTION OUTPUT Profile #PF#2

E.G. Elev (ft)	993.69	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.44	Wt. n-Val.	0.037	0.037	0.025
W.S. Elev (ft)	992.25	Reach Len. (ft)	495.00	495.39	495.00
Crit W.S. (ft)	987.65	Flow Area (sq ft)	3367.91	13720.96	365.73
E.G. Slope (ft/ft)	0.001819	Area (sq ft)	3367.91	13720.96	365.73
Q Total (cfs)	164000.00	Flow (cfs)	23553.24	138039.00	2407.76
Top Width (ft)	1445.00	Top Width (ft)	402.10	959.20	83.70
Vel Total (ft/s)	9.40	Avg. Vel. (ft/s)	6.99	10.06	6.58
Max Chl Dpth (ft)	19.15	Hydr. Depth (ft)	8.38	14.30	4.37
Conv. Total (cfs)	3844879.0	Conv. (cfs)	552191.1	3236240.0	56448.5
Length Wtd. (ft)	495.36	Wetted Per. (ft)	408.28	964.03	87.40
Min Ch El (ft)	973.10	Shear (lb/sq ft)	0.94	1.62	0.48
Alpha	1.05	Stream Power (lb/ft s)	6.55	16.26	3.13
Frctn Loss (ft)	0.90	Cum Volume (acre-ft)	466.99	17148.02	32.93
C & E Loss (ft)	0.00	Cum SA (acres)	74.57	1820.63	6.35

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

CROSS SECTION

RIVER: 1
REACH: 1 RS: 205.06

INPUT
Description: 205.06
Station Elevation Data num= 129

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
17971	990.9	18065.3	988.6	18104.6	990.4	18115.6	988.2	18128.9	991.2
18143.2	991.5	18167.1	990.4	18222.4	988.9	18239	988.9	18268	988.1
18295.2	989	18314.3	988.5	18358.9	987.5	18410.5	986.7	18435.8	988.1
18478.4	994.2	18515	994	18541.2	993.6	18567.7	993	18668.2	993.4
18694.6	996.3	18716.8	994.1	18733	990.9	18773.1	991.2	18799	993.8
18844	996.4	18879.8	994	18912.8	991.3	18929.6	990.6	18948.8	990.9
18974.6	992.4	18989	991.8	18996.9	990.8	19026.5	996.8	19033.3	997.5
19038.3	998.5	19071.8	995.8	19078.5	994.1	19097.2	986.1	19133.8	987
19136.4	990.2	19142.8	992.6	19151.6	994.3	19202.7	994.1	19217.4	994.9
19226.3	988.3	19230.3	986.5	19252.3	985.8	19287.1	985.9	19329.2	986.2
19380.3	987.3	19388.1	987.3	19434.5	987.8	19445.1	987.8	19500.6	988.4
19538.9	988.7	19598.7	988.7	19648.7	990	19669.4	989.9	19722.7	988.3
19771.5	986.5	19803.6	986.4	19827.5	985.6	19841.3	984.7	19887	983.6
19904.2	973.1	19931.3	971.2	19981.6	971.1	19982.8	971.1	20027.4	970.5
20053.2	971.3	20073.5	976.1	20120.4	976.2	20137.3	976.4	20147.5	981
20155.4	983.6	20196	987.3	20208.9	986.1	20221.7	985.3	20253.8	981
20275.4	981	20301.5	975.4	20306.9	975.1	20315.2	975.1	20365	974.5
20425.5	974.6	20470.1	974.5	20497.9	974.4	20563.5	973.5	20601.9	973.2
20671.9	974	20850.2	976	20856.8	977.9	20880.3	977.7	20892.4	984.3
20905.3	990.8	20927.2	991.2	20971.3	992	21020.6	993	21062.7	993.2
21101.6	993.3	21146	993.7	21204.6	993.9	21256.1	994.5	21300.3	994.8
21336.3	994.9	21378.2	995	21414.7	995.2	21457.8	995.2	21484.8	995.4
21512.4	994.7	21514.5	995.9	21516.2	996.3	21518.9	995.5	21525.9	994.3
21532.1	994.6	21537.4	995.2	21546	995	21560.5	995.3	21575	995
21602.5	996.4	21628.8	996.3	21672.8	996.3	21709.9	996.5	21754.4	996.4
21826.9	996.1	21895.5	996.5	21951.4	996.6	21997.9	996.4		

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
17971	.037	19026.5	.037	19669.4	.037	20905.3	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19669.4	20905.3	505	505	530 .1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
17971	18080	998.5	F
21997.9	21997.9	998.5	F

CROSS SECTION OUTPUT Profile #PF#1

E.G. Elev (ft)	992.22	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.37	Wt. n-Val.	0.037	0.037	0.025
W.S. Elev (ft)	990.85	Reach Len. (ft)	505.00	505.00	530.00
Crit W.S. (ft)	984.95	Flow Area (sq ft)	2335.51	16204.32	0.06
E.G. Slope (ft/ft)	0.001875	Area (sq ft)	2466.89	16204.32	0.06

				DuplicateEffective	
* Q Total (cfs)	*164000.00	* Flow (cfs)	* 8135.07	*155864.90	* 0.01 *
* Top Width (ft)	* 2210.68	* Top Width (ft)	* 972.31	* 1235.90	* 2.47 *
* Vel Total (ft/s)	* 8.85	* Avg. Vel. (ft/s)	* 3.48	* 9.62	* 0.21 *
* Max Chl Dpth (ft)	* 20.35	* Hydr. Depth (ft)	* 2.70	* 13.11	* 0.02 *
* Conv. Total (cfs)	*3787357.0	* Conv. (cfs)	*187868.3	*3599489.0	* 0.3 *
* Length Wtd. (ft)	* 505.01	* Wetted Per. (ft)	* 870.33	* 1245.68	* 2.47 *
* Min Ch El (ft)	* 970.50	* Shear (lb/sq ft)	* 0.31	* 1.52	* 0.00 *
* Alpha	* 1.13	* Stream Power (lb/ft s)	* 1.09	* 14.65	* 0.00 *
* Frctn Loss (ft)	* 0.72	* Cum Volume (acre-ft)	* 5019.96	*16418.28	* 1020.79 *
* C & E Loss (ft)	* 0.19	* Cum SA (acres)	* 1430.95	* 1806.05	* 552.87 *

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

CROSS SECTION OUTPUT Profile #PF#2

* E.G. Elev (ft)	* 992.79	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 1.43	* Wt. n-Val.	* 0.037	* 0.037	* *
* W.S. Elev (ft)	* 991.36	* Reach Len. (ft)	* 505.00	* 505.00	* 530.00 *
* Crit W.S. (ft)	* 984.95	* Flow Area (sq ft)	* 491.43	*16837.05	* *
* E.G. Slope (ft/ft)	*0.001795	* Area (sq ft)	* 491.43	*16837.05	* *
* Q Total (cfs)	*164000.00	* Flow (cfs)	* 1508.81	*162491.20	* *
* Top Width (ft)	* 1435.30	* Top Width (ft)	* 199.40	* 1235.90	* *
* Vel Total (ft/s)	* 9.46	* Avg. Vel. (ft/s)	* 3.07	* 9.65	* *
* Max Chl Dpth (ft)	* 20.86	* Hydr. Depth (ft)	* 2.46	* 13.62	* *
* Conv. Total (cfs)	*3871248.0	* Conv. (cfs)	* 35615.7	*3835632.0	* *
* Length Wtd. (ft)	* 505.00	* Wetted Per. (ft)	* 202.71	* 1246.24	* *
* Min Ch El (ft)	* 970.50	* Shear (lb/sq ft)	* 0.27	* 1.51	* *
* Alpha	* 1.03	* Stream Power (lb/ft s)	* 0.83	* 14.61	* *
* Frctn Loss (ft)	* 0.82	* Cum Volume (acre-ft)	* 445.07	*16974.25	* 30.85 *
* C & E Loss (ft)	* 0.10	* Cum SA (acres)	* 71.15	* 1808.15	* 5.87 *

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

CROSS SECTION

RIVER: 1
REACH: 1 RS: 204.97

INPUT
Description: 204.97

Left Channel Bank Station Interpolated
Station Elevation Data num= 86

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
16000	993.3	16025.7	992.1	16060.7	991.7	16273.1	992.3	16303.1	992.4
16597.7	992.1	16613.7	992	16818.7	992	16912.8	992.3	17061.4	992.3
17169.3	991.7	17232.9	991.8	17259.7	989	17316.4	990.2	17470.6	990.2
17483.4	990.2	17700.5	989.9	17786.2	989.2	17832.4	989	17894.5	988.9
17924.8	989.2	17933.3	990.5	17979.7	992.1	17985.3	991.5	17994.8	988.7
18008.6	988.7	18105.1	987.6	18137.2	986.9	18189.2	987.8	18201.2	986.8
18216.4	989.2	18243.6	989.2	18301.9	989	18377.5	989.6	18462.9	990.2
18523.7	988.6	18573.9	986	18643	986.6	18672	985.8	18672.9	984.9
18697.7	984.3	18729.6	988.3	18807.2	987.9	18833	984	18865.3	987.3
18888.3	985.4	18917	987.8	18955.4	987.9	18987.3	984.9	19046.8	987.1
19093.5	986.8	19152.6	983.5	19285.8	983.8	19317.6	981.5	19332.9	979.1
19418.6	978	19438.3	978.8	19545	978.843	19934.7	979	19938.2	981.1
19945.9	981.9	20008.7	980.8	20068.2	980.2	20091.8	979.6	20151.8	979.3
20225.8	978.1	20300.7	979	20367.2	979.3	20442.3	978.7	20509.6	977.2
20568	974.8	20659.1	973.3	20662.9	973.3	20925.5	975.4	20961.3	988.6
20999.4	990.2	21056.8	990.8	21126.2	991.7	21187	992.8	21200.2	992.9
21265.2	993	21340.5	993	21356.1	993	21427.5	993.4	21492.8	993.1
21496	993.1								

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
16000	.025	18301.9	.037	19046.8	.037	20961.3	.025

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
19545 20961.3 510 503 550 .1 .3
Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
16000	18200	993.4	F

CROSS SECTION OUTPUT Profile #PF#1

* E.G. Elev (ft)	* 991.30	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.74	* Wt. n-Val.	* 0.037	* 0.037	* 0.025 *
* W.S. Elev (ft)	* 990.56	* Reach Len. (ft)	* 510.00	* 503.00	* 550.00 *
* Crit W.S. (ft)	* 984.97	* Flow Area (sq ft)	* 6790.54	*17977.87	* 50.64 *
* E.G. Slope (ft/ft)	*0.001134	* Area (sq ft)	* 7908.25	*17977.87	* 50.64 *
* Q Total (cfs)	*164000.00	* Flow (cfs)	*31810.39	*132110.10	* 79.50 *
* Top Width (ft)	* 3736.09	* Top Width (ft)	* 2246.92	* 1416.30	* 72.86 *
* Vel Total (ft/s)	* 6.61	* Avg. Vel. (ft/s)	* 4.68	* 7.35	* 1.57 *
* Max Chl Dpth (ft)	* 17.26	* Hydr. Depth (ft)	* 5.05	* 12.69	* 0.70 *
* Conv. Total (cfs)	*4869981.0	* Conv. (cfs)	*944609.8	*3923010.0	* 2360.8 *
* Length Wtd. (ft)	* 504.14	* Wetted Per. (ft)	* 1347.14	* 1419.41	* 72.90 *
* Min Ch El (ft)	* 973.30	* Shear (lb/sq ft)	* 0.36	* 0.90	* 0.05 *
* Alpha	* 1.09	* Stream Power (lb/ft s)	* 1.67	* 6.59	* 0.08 *
* Frctn Loss (ft)	* 0.47	* Cum Volume (acre-ft)	* 4959.82	*16220.14	* 1020.49 *
* C & E Loss (ft)	* 0.04	* Cum SA (acres)	* 1412.29	* 1790.68	* 552.41 *

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.

CROSS SECTION OUTPUT Profile #PF#2

E.G. Elev (ft)	991.87	Element	Left OB	Channel / Right OB
Vel Head (ft)	1.11	Wt. n-Val.	0.037	0.037 /
W.S. Elev (ft)	990.76	Reach Len. (ft)	510.00	503.00 / 550.00
Crit W.S. (ft)	985.05	Flow Area (sq ft)	1194.17	18262.88 /
E.G. Slope (ft/ft)	0.001485	Area (sq ft)	1194.17	18262.88 /
Q Total (cfs)	164000.00	Flow (cfs)	8955.43	155044.60 /
Top Width (ft)	1516.30	Top Width (ft)	100.00	1416.30 /
Vel Total (ft/s)	8.43	Avg. Vel. (ft/s)	7.50	8.49 /
Max Chl Dpth (ft)	17.46	Hydr. Depth (ft)	11.94	12.89 /
Conv. Total (cfs)	4255498.0	Conv. (cfs)	232376.8	4023121.0 /
Length Wtd. (ft)	503.24	Wetted Per. (ft)	111.96	1421.57 /
Min Ch El (ft)	973.30	Shear (lb/sq ft)	0.99	1.19 /
Alpha	1.00	Stream Power (lb/ft s)	7.42	10.11 /
Frctn Loss (ft)	0.59	Cum Volume (acre-ft)	435.30	16770.79 / 30.85
C & E Loss (ft)	0.08	Cum SA (acres)	69.42	1792.78 / 5.87

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

CROSS SECTION

RIVER: 1
REACH: 1 RS: 204.87

INPUT
Description: 204.87

Right Channel Bank Station Interpolated
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
17067.4	991.5	17111.3	991.5	17255	990.6	17291.2	991.6	17298.2	992.1
17315.9	991	17328.2	990.9	17345.3	988.6	17426.3	988	17520.6	988.2
17594.7	988.5	17781.4	988.6	17822.3	988.5	17925.1	988.2	18001	987.2
18108.5	987.1	18221.3	987.3	18261.7	986.3	18269.2	986.9	18279.6	985.4
18296.9	986.8	18325.5	986.8	18352.2	985.5	18429.1	985.3	18501.3	985.6
18553	984.4	18559.8	986.3	18565.9	988.9	18578.6	987.7	18604.1	983.9
18645.9	981.4	18657.3	984	18678.8	986.2	18730	987.6	18832.5	987.5
18855.2	985.7	18859.7	984.6	18874.5	986.6	18920.1	984.6	18942.9	980.4
18960	980.8	18970.7	982.4	19015.9	985.9	19104.6	986.7	19209.9	985.7
19234.9	985	19264.2	982.7	19275.4	983.5	19297.4	981	19382.3	981.4
19462.8	981	19532.8	979	19555.4	979.1	19566	978.5	19579.4	978.5
19588.4	976.2	19598.7	976.3	19623.4	978.5	19628	979.5	19642.3	981
19714.7	981	19730.8	981	19759.9	975.9	19765	976.4	19772.7	975.9
19854.5	975.9	19859.5	975.9	19861.3	977.3	19877.6	980.8	19890	975.9
19903.3	969.9	19909.9	970	19919.2	968.1	20001	968.1	20022.9	968.1
20059.2	975.3	20126.4	976.2	20213.9	975.3	20298.1	974.9	20351	974.8
20377.2	977.3	20393.3	977.5	20505.4	975.8	20559.1	974.3	20612	976.5
20624.2	974.6	20654.3	973.2	20826.7	974.3	20919.3	974.9	20939.9	984.7
20954.34	991.1405	20961.2	994.2	20981.5	994.3	21037.9	989.4	21047	990.3
21137.3	991.2	21197.6	991.4						

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
17067.4	.025	18221.3	.037	19462.8	.037	20961.2	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19462.8	20954.34	495	499	505 .1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
17067.4	18300	994.3	F
20961.2	21197.6	994.3	F

CROSS SECTION OUTPUT Profile #PF#1

E.G. Elev (ft)	990.80	Element	Left OB	Channel / Right OB
Vel Head (ft)	0.61	Wt. n-Val.	0.037	0.037 /
W.S. Elev (ft)	990.19	Reach Len. (ft)	495.00	499.00 / 505.00
Crit W.S. (ft)	982.94	Flow Area (sq ft)	6202.87	21657.82 /
E.G. Slope (ft/ft)	0.000767	Area (sq ft)	8399.19	21657.82 / 6.71
Q Total (cfs)	164000.00	Flow (cfs)	21030.64	142969.40 /
Top Width (ft)	3635.74	Top Width (ft)	2129.31	1489.40 / 17.03
Vel Total (ft/s)	5.89	Avg. Vel. (ft/s)	3.39	6.60 /
Max Chl Dpth (ft)	22.09	Hydr. Depth (ft)	5.33	14.54 /
Conv. Total (cfs)	5920537.0	Conv. (cfs)	759223.6	5161313.0 /
Length Wtd. (ft)	498.39	Wetted Per. (ft)	1165.78	1498.26 /
Min Ch El (ft)	968.10	Shear (lb/sq ft)	0.25	0.69 /
Alpha	1.14	Stream Power (lb/ft s)	0.86	4.57 /
Frctn Loss (ft)	0.30	Cum Volume (acre-ft)	4864.36	15991.30 / 1020.12
C & E Loss (ft)	0.05	Cum SA (acres)	1386.67	1773.90 / 551.85

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.

CROSS SECTION OUTPUT Profile #PF#2

E.G. Elev (ft)	991.20	Element	Left OB	Channel / Right OB
Vel Head (ft)	0.84	Wt. n-Val.	0.037	0.037 /
W.S. Elev (ft)	990.37	Reach Len. (ft)	495.00	499.00 / 505.00
Crit W.S. (ft)	982.85	Flow Area (sq ft)	487.55	21921.99 /
E.G. Slope (ft/ft)	0.000942	Area (sq ft)	487.55	21921.99 /
Q Total (cfs)	164000.00	Flow (cfs)	2378.75	161621.30 /
Top Width (ft)	1542.20	Top Width (ft)	52.80	1489.40 /
Vel Total (ft/s)	7.32	Avg. Vel. (ft/s)	4.88	7.37 /
Max Chl Dpth (ft)	22.27	Hydr. Depth (ft)	9.23	14.72 /
Conv. Total (cfs)	5343764.0	Conv. (cfs)	77509.1	5266255.0 /
Length Wtd. (ft)	498.86	Wetted Per. (ft)	61.90	1498.43 /
Min Ch El (ft)	968.10	Shear (lb/sq ft)	0.46	0.86 /
Alpha	1.01	Stream Power (lb/ft s)	2.26	6.34 /

```
                                                                    DuplicateEffective
* Frctn Loss (ft)        *    0.37  * Cum Volume (acre-ft)    *  425.45  *16538.78  *   30.85  *
* C & E Loss (ft)        *    0.06  * Cum SA (acres)          *   68.52  * 1776.00  *    5.87  *
*********************************************************************************************

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

CROSS SECTION


RIVER: 1
REACH: 1                  RS: 204.78

INPUT
Description: 204.78

Right Channel Bank Station Interpolated
Station Elevation Data    num=      87
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
 16026.1   987.6 16094.8   987.3 16113.5   986.9 16143.6   989.2 16147.7   990.2
 16176.4   990.8 16200.6   988.8 16231.8   988.4 16338.9   988.8 16416.1   988.9
 16579.2   988.9   16686   989.1 16786.7   989.1 16866.8   989.3 17093.1   989.3
 17192.6   989.3 17283.5     988 17369.3     988 17407.5   989.7 17420.2     988
 17479.3     987 17521.2   986.9 17670.9     988 17754.2   987.8 17912.8   987.4
 17952.6   987.1 18028.5     987 18174.7   986.5 18221.6   986.3 18279.6   986.1
 18350.4   984.9 18361.8     983 18373.6   985.9 18402.3   985.9 18413.2   983.6
 18427.5   987.2 18487.5   986.4   18504   984.4 18585.3   983.7 18598.2   984.9
 18667.6   983.9 18753.3   984.6 18756.1   984.9 18767.8   981.3 18836.7     981
 19173.1   979.8 19219.1   979.8 19295.8   977.2 19323.7   977.5 19337.5     981
 19356.4     981 19398.6     983 19409.2   982.4 19419.8   979.2 19429.6   977.4
 19432.3   975.9 19489.4   975.9 19561.1   974.8 19621.6     973 19660.7   972.1
 19667.7   970.8 19677.1   967.6 19767.4   968.8   19768   968.8 19935.5     968
 19986.5     968 20033.8   975.7 20056.9   977.8 20073.7   975.3 20160.4     975
 20170.8   975.3 20229.5     975 20246.7     975 20324.8   974.9   20340     975
   20452   975.9 20510.9     973 20530.9   973.1 20662.3   973.7 20706.1   973.8
 20782.6   974.9 20801.8   975.1 20832.3 3990.9976 20840.4   995.2 20866.6   994.5
 20921.2   988.9 20982.7   988.3

Manning's n Values        num=       4
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
*************************************************************
 16026.1    .025 18427.5    .037 19398.6    .037 20840.4    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
     19398.620832.33                  505     515     550            .1      .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 16026.1   18400   995.2          F
 20840.4 20982.7   995.2          F

CROSS SECTION OUTPUT  Profile #PF#1
*********************************************************************************************
* E.G. Elev (ft)         *  990.45  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.45  * Wt. n-Val.            *   0.037  *   0.037  *          *
* W.S. Elev (ft)         *  990.01  * Reach Len. (ft)       *  505.00  *  515.00  *  550.00  *
* Crit W.S. (ft)         *  980.93  * Flow Area (sq ft)     * 8139.91  *23734.97  *          *
* E.G. Slope (ft/ft)     *0.000477  * Area (sq ft)          *12728.28  *23734.97  *   92.43  *
* Q Total (cfs)          *164000.00  * Flow (cfs)          *29111.40  *134888.60  *          *
* Top Width (ft)         * 4837.51  * Top Width (ft)       * 3333.40  * 1431.83  *   72.28  *
* Vel Total (ft/s)       *    5.15  * Avg. Vel. (ft/s)     *    3.58  *    5.68  *          *
* Max Chl Dpth (ft)      *   22.41  * Hydr. Depth (ft)     *    8.15  *   16.58  *          *
* Conv. Total (cfs)      *7512086.0  * Conv. (cfs)         *1333460.0  *6178626.0  *          *
* Length Wtd. (ft)       *  513.16  * Wetted Per. (ft)     * 1000.57  * 1438.22  *          *
* Min Ch El (ft)         *  967.60  * Shear (lb/sq ft)     *    0.24  *    0.49  *          *
* Alpha                  *    1.09  * Stream Power (lb/ft s) *    0.87  *    2.79  *          *
* Frctn Loss (ft)        *    0.33  * Cum Volume (acre-ft)  * 4744.32  *15731.30  * 1019.55  *
* C & E Loss (ft)        *    0.03  * Cum SA (acres)        * 1355.64  * 1757.17  *  551.33  *
*********************************************************************************************

Warning: Divided flow computed for this cross-section.
Warning: The cross-section end points had to be extended vertically for the computed water surface.
Note:    Multiple critical depths were found at this location.  The critical depth with the lowest, valid,
         water surface was used.

CROSS SECTION OUTPUT  Profile #PF#2
*********************************************************************************************
* E.G. Elev (ft)         *  990.77  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.63  * Wt. n-Val.            *   0.037  *   0.037  *          *
* W.S. Elev (ft)         *  990.13  * Reach Len. (ft)       *  505.00  *  515.00  *  550.00  *
* Crit W.S. (ft)         *  980.78  * Flow Area (sq ft)     * 2009.30  *23919.55  *          *
* E.G. Slope (ft/ft)     *0.000611  * Area (sq ft)          * 2009.30  *23919.55  *          *
* Q Total (cfs)          *164000.00  * Flow (cfs)          * 9303.23  *154696.80  *          *
* Top Width (ft)         * 1620.43  * Top Width (ft)       *  188.60  * 1431.83  *          *
* Vel Total (ft/s)       *    6.33  * Avg. Vel. (ft/s)     *    4.63  *    6.47  *          *
* Max Chl Dpth (ft)      *   22.53  * Hydr. Depth (ft)     *   10.65  *   16.71  *          *
* Conv. Total (cfs)      *6634912.0  * Conv. (cfs)         *376378.6  *6258533.0  *          *
* Length Wtd. (ft)       *  514.26  * Wetted Per. (ft)     *  199.46  * 1438.35  *          *
* Min Ch El (ft)         *  967.60  * Shear (lb/sq ft)     *    0.38  *    0.63  *          *
* Alpha                  *    1.02  * Stream Power (lb/ft s) *    1.78  *    4.10  *          *
* Frctn Loss (ft)        *    0.42  * Cum Volume (acre-ft)  *  411.26  *16276.21  *   30.85  *
* C & E Loss (ft)        *    0.04  * Cum SA (acres)        *   67.15  * 1759.27  *    5.87  *
*********************************************************************************************

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

CROSS SECTION


RIVER: 1
REACH: 1                  RS: 204.68

INPUT
Description: 204.68
```

Right Channel Bank Station Interpolated
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
17501.1	986.1	17554.2	985.7	17607.9	985.5	17645.5	987.6	17657	986.8
17668.8	987.1	17674.9	990.2	17682.2	987.8	17691	985.7	17742.4	986.2
17748.2	986.3	17778	988.7	17792.2	990.8	17806.1	988.7	17807.3	988.9
17839.5	987.8	17848.5	986.9	17867.4	986.8	17881.2	986.2	17970.4	985.8
18016.4	985.9	18087.9	985.4	18189.8	985	18231.2	984.8	18295.5	984.9
18354.5	984.6	18412.6	984.3	18437.1	982.9	18472.2	984	18491.1	983.4
18518.9	981.6	18530.8	984.6	18531.9	985.1	18550.1	982.9	18601.2	983.1
18621.4	983.6	18662.6	982.9	18685.1	983	18736.6	981.7	18767.6	980.4
18849.4	980.3	18886.2	980.2	18950.6	980	19029.6	979.9	19057.5	983
19071.2	980.7	19099.7	980.9	19114	981.6	19143.3	981.3	19197.1	981.7
19249.9	983.3	19284.9	981.9	19308.1	982.1	19314.7	984.6	19321.8	985
19357.4	981	19361.7	979.6	19368.2	980.1	19394.4	978.2	19398.6	975.9
19415.9	975.9	19458.6	973.3	19479.3	973.1	19513.5	971.9	19564.9	971.9
19621.8	972.2	19668.2	973.2	19691.4	975.5	19719	976.9	19734.6	976.2
19779.1	971.8	19814.3	971.4	19869.4	971.6	19901	972.5	19927.9	972.8
19942.8	973.9	20011.2	975.3	20053.7	976.3	20121.8	976.1	20137.2	975.6
20206.4	975.5	20256.1	973.7	20273.3	974.7	20295	973	20348.3	973.2
20369.6	973.3	20516.3	974.1	20548.6	1990.5028	20548.8	990.6	20582.8	991.5
20647	987.5	20715.7	987.8	20786.9	988	20814	988	20872.4	988.2
20904.2	988.1	20971	988.4						

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
17501.1	.025	18472.2	.037	19321.8	.037	20548.8	.037	20582.8	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19321.8	20548.61	325	407	570 .1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
17501.1	18455	991.5	F
20582.8	20971	991.5	F

CROSS SECTION OUTPUT Profile #PF#1

* E.G. Elev (ft)	* 990.10	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.73	* Wt. n-Val.	* 0.037	* 0.037	* *
* W.S. Elev (ft)	* 989.36	* Reach Len. (ft)	* 325.00	* 407.00	* 570.00 *
* Crit W.S. (ft)	* 982.91	* Flow Area (sq ft)	* 6628.41	*18234.16	* *
* E.G. Slope (ft/ft)	*0.000903	* Area (sq ft)	*10032.96	*18234.16	* 473.96 *
* Q Total (cfs)	*164000.00	* Flow (cfs)	*31211.30	*132788.70	* *
* Top Width (ft)	* 3375.81	* Top Width (ft)	* 1797.31	* 1224.57	* 353.93 *
* Vel Total (ft/s)	* 6.60	* Avg. Vel. (ft/s)	* 4.71	* 7.28	* *
* Max Chl Dpth (ft)	* 17.96	* Hydr. Depth (ft)	* 7.65	* 14.89	* *
* Conv. Total (cfs)	*5457597.0	* Conv. (cfs)	*1038650.0	*4418946.0	* *
* Length Wtd. (ft)	* 390.47	* Wetted Per. (ft)	* 868.45	* 1230.06	* *
* Min Ch El (ft)	* 971.40	* Shear (lb/sq ft)	* 0.43	* 0.84	* *
* Alpha	* 1.08	* Stream Power (lb/ft s)	* 2.03	* 6.09	* *
* Frctn Loss (ft)	* 0.43	* Cum Volume (acre-ft)	* 4612.38	*15483.21	* 1015.97 *
* C & E Loss (ft)	* 0.03	* Cum SA (acres)	* 1325.89	* 1741.47	* 548.64 *

Warning: Divided flow computed for this cross-section.
Warning: The cross-section end points had to be extended vertically for the computed water surface.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION OUTPUT Profile #PF#2

* E.G. Elev (ft)	* 990.31	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.99	* Wt. n-Val.	* 0.037	* 0.037	* *
* W.S. Elev (ft)	* 989.32	* Reach Len. (ft)	* 325.00	* 407.00	* 570.00 *
* Crit W.S. (ft)	* 982.81	* Flow Area (sq ft)	* 2820.76	*18179.75	* *
* E.G. Slope (ft/ft)	*0.001151	* Area (sq ft)	* 2820.76	*18179.75	* *
* Q Total (cfs)	*164000.00	* Flow (cfs)	*14831.20	*149168.80	* *
* Top Width (ft)	* 1586.28	* Top Width (ft)	* 361.80	* 1224.48	* *
* Vel Total (ft/s)	* 7.81	* Avg. Vel. (ft/s)	* 5.26	* 8.21	* *
* Max Chl Dpth (ft)	* 17.92	* Hydr. Depth (ft)	* 7.80	* 14.85	* *
* Conv. Total (cfs)	*4834418.0	* Conv. (cfs)	*437196.3	*4397221.0	* *
* Length Wtd. (ft)	* 395.87	* Wetted Per. (ft)	* 372.04	* 1229.96	* *
* Min Ch El (ft)	* 971.40	* Shear (lb/sq ft)	* 0.54	* 1.06	* *
* Alpha	* 1.05	* Stream Power (lb/ft s)	* 2.86	* 8.71	* *
* Frctn Loss (ft)	* 0.51	* Cum Volume (acre-ft)	* 383.27	*16027.35	* 30.85 *
* C & E Loss (ft)	* 0.02	* Cum SA (acres)	* 63.96	* 1743.57	* 5.87 *

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

CROSS SECTION

RIVER: 1
REACH: 1 RS: 204.61

INPUT
Description: 204.61
Station Elevation Data num= 96

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
14501.4	987.8	14573.3	990	14582.2	987.6	14618.2	988.2	14777.3	988.3
14862.5	988	15060	988.1	15169	988.1	15293.6	988.1	15349.5	988
15354.3	989.1	15407.2	987.7	15581	987.7	15683.1	987.7	15895.1	987.7
15973.3	987.8	16138.5	987.8	16253	987.3	16305.2	988.9	16356.5	986.6
16502.7	987	16642.3	986.6	16753.7	986.8	16913.6	986.7	17015.2	986.4
17201.6	986.5	17292.3	986.1	17385	986.2	17492.5	986.6	17525.7	986
17544.8	987	17555.9	984.9	17607.1	987.6	17733.4	988	17760.1	988.2
17907	986.4	17945.4	985.9	18071.1	985.8	18171.7	984.9	18250.5	986.1
18300.1	984.4	18402.9	984.9	18466.2	984.6	18493.6	983.5	18498.9	981.8
18563.6	983.3	18578.3	983	18591.3	980.7	18665.2	981.8	18677.5	983.2
18687.3	985.4	18775.1	988.2	18821.3	988.9	18834.2	979.9	18973.9	980.4
19090.8	980.1	19180.1	979.7	19288	980.1	19386.4	980.8	19428.1	982.7

```
                                                                    DuplicateEffective
 19471.3   983.1 19479.7   979.4 19500.4   973.3 19642.8   973.3 19760.9   972.7
   19781   972.7 19928.9   973.4   20022   973.4 20085.3   975.2 20097.7   972.6
 20188.3     973 20275.9   973.4 20374.8   973.9 20426.1   974.2 20456.1   987.8
 20482.9   988.5   20507   986.5 20620.9   986.8 20726.9     987 20849.8   987.1
 20944.2   987.1 21033.3   987.2 21060.5   987.3 21176.6   986.9 21261.7   986.8
 21362.3   986.7 21489.6     987 21584.7   987.7 21599.3   987.7 21697.6   987.5
 21835.5   987.5 21887.1   988.6 21890.1   987.2 21897.8   989.2 21930.6   990.8
 21963.1   990.8

Manning's n Values        num=       4
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************************************
 14501.4    .025 18498.9    .037 19471.3    .037 20482.9    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       19471.3 20482.9                 395     449     545            .1      .3
Ineffective Flow      num=       2
   Sta L   Sta R    Elev  Permanent
 14501.4   18570   990.8        F
 20482.9 21963.1   990.8        F

CROSS SECTION OUTPUT  Profile #PF#1
*****************************************************************************************************
* E.G. Elev (ft)          *  989.64  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    1.05  * Wt. n-Val.            *   0.037  *   0.037  *          *
* W.S. Elev (ft)          *  988.59  * Reach Len. (ft)       *  395.00  *  449.00  *  545.00  *
* Crit W.S. (ft)          *  983.53  * Flow Area (sq ft)     * 6207.90  *14692.94  *          *
* E.G. Slope (ft/ft)      *0.001360  * Area (sq ft)          *12682.15  *14692.94  * 2059.67  *
* Q Total (cfs)           *164000.00  * Flow (cfs)           *34891.40  *129108.60  *          *
* Top Width (ft)          * 7282.60  * Top Width (ft)       * 4858.98  * 1011.60  * 1412.02  *
* Vel Total (ft/s)        *    7.85  * Avg. Vel. (ft/s)     *    5.62  *    8.79  *          *
* Max Chl Dpth (ft)       *   15.99  * Hydr. Depth (ft)     *    7.05  *   14.52  *          *
* Conv. Total (cfs)       *4447568.0  * Conv. (cfs)         *946230.9  *3501337.0  *          *
* Length Wtd. (ft)        *  441.21  * Wetted Per. (ft)     *  883.70  * 1016.51  *          *
* Min Ch El (ft)          *  972.60  * Shear (lb/sq ft)     *    0.60  *    1.23  *          *
* Alpha                   *    1.10  * Stream Power (lb/ft s) *    3.35  *   10.78  *          *
* Frctn Loss (ft)         *    0.69  * Cum Volume (acre-ft)  * 4527.64  *15329.38  *  999.40  *
* C & E Loss (ft)         *    0.02  * Cum SA (acres)        * 1301.06  * 1731.02  *  537.08  *
*****************************************************************************************************

Warning: Divided flow computed for this cross-section.
Warning: The cross-section end points had to be extended vertically for the computed water surface.
Note:    Multiple critical depths were found at this location.  The critical depth with the lowest, valid,
         water surface was used.

CROSS SECTION OUTPUT  Profile #PF#2
*****************************************************************************************************
* E.G. Elev (ft)          *  989.78  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    1.16  * Wt. n-Val.            *   0.037  *   0.037  *          *
* W.S. Elev (ft)          *  988.62  * Reach Len. (ft)       *  395.00  *  449.00  *  545.00  *
* Crit W.S. (ft)          *  983.47  * Flow Area (sq ft)     * 4821.31  *14720.97  *          *
* E.G. Slope (ft/ft)      *0.001462  * Area (sq ft)          * 4821.31  *14720.97  *          *
* Q Total (cfs)           *164000.00  * Flow (cfs)           *29704.86  *134295.10  *          *
* Top Width (ft)          * 1602.90  * Top Width (ft)       *  591.30  * 1011.60  *          *
* Vel Total (ft/s)        *    8.39  * Avg. Vel. (ft/s)     *    6.16  *    9.12  *          *
* Max Chl Dpth (ft)       *   16.02  * Hydr. Depth (ft)     *    8.15  *   14.55  *          *
* Conv. Total (cfs)       *4289077.0  * Conv. (cfs)         *776868.4  *3512208.0  *          *
* Length Wtd. (ft)        *  442.77  * Wetted Per. (ft)     *  599.90  * 1016.63  *          *
* Min Ch El (ft)          *  972.60  * Shear (lb/sq ft)     *    0.73  *    1.32  *          *
* Alpha                   *    1.07  * Stream Power (lb/ft s) *    4.52  *   12.06  *          *
* Frctn Loss (ft)         *    0.74  * Cum Volume (acre-ft)  *  354.76  *15873.64  *   30.85  *
* C & E Loss (ft)         *    0.02  * Cum SA (acres)        *   60.41  * 1733.12  *    5.87  *
*****************************************************************************************************

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

CROSS SECTION


RIVER: 1
REACH: 1                RS: 204.53

INPUT
Description: 204.53
Station Elevation Data    num=      96
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
 17504.9   987.8 17516.3   987.9 17522.8   987.1   17597   987.9 17615.7   987.3
 17634.6   987.5 17637.7   988.1 17645.9   986.3 17657.9     988 17704.2   989.7
 17740.1  1006.3 17784.7  1004.7 17850.8  1006.5 17875.5   988.5 17970.4   986.9
 18011.9   987.2 18027.9   986.1 18091.1   986.1 18155.5   985.2 18204.4   984.7
 18283.5   984.5 18320.2   984.4   18443   984.3 18501.9   983.9 18579.8   983.6
   18647   982.6 18678.7   980.4 18706.4   982.9   18747   982.6   18757   983.3
 18815.9   983.6 18827.1   980.6 18916.2   981.2 18927.3     982 19007.2   982.5
 19073.9   982.8 19175.3   983.2 19185.4   983.5 19240.3     981   19276   975.9
   19293     975 19359.2   979.5   19386     976 19409.2   976.4 19468.7   973.1
 19520.6     973 19547.6   973.9 19571.2   975.5 19585.1   972.9 19610.7   972.7
 19729.3   972.9 19787.3     973 19805.5   973.5 19860.6   976.1 19930.7   975.8
 19979.8   973.4 19994.9   973.6 20150.7     974 20174.8     974 20434.3   974.4
 20443.5   974.5 20465.7   985.2 20495.9   987.1 20550.8   986.4   20566   984.8
 20629.6   984.7 20701.1   984.8 20780.4     985 20872.2     985   20943   985.1
 21022.1   985.1 21052.3     985 21118.4   984.9 21183.9   984.8 21260.2     985
 21337.7   986.1 21351.7   986.3 21381.4   984.7 21472.3   984.9 21564.8   985.3
 21626.7   986.2 21653.6   986.5 21678.1   985.5 21716.4   985.3   21781   984.7
 21817.6   987.6 21875.1   987.3 21880.1   988.5 21884.2   988.1   21885   988.9
 21887.9   987.2 21894.1   988.4 21914.7   989.1 21935.1   988.6 21999.2   989.8
   22011   990.1

Manning's n Values        num=       5
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************************************************
 17504.9    .025   18647    .037 19185.4    .037 20495.9    .037   20566    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       19185.4 20495.9                 570     552     525            .1      .3
```

```
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 17504.9   18730    1000       F
 20495.9   22011    1000       F

CROSS SECTION OUTPUT  Profile #PF#1
*****************************************************************************************************
* E.G. Elev (ft)         *  988.93  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    1.25  * Wt. n-Val.           *   0.037  *   0.037  *          *
* W.S. Elev (ft)         *  987.68  * Reach Len. (ft)      *  570.00  *  552.00  *  525.00  *
* Crit W.S. (ft)         *  982.99  * Flow Area (sq ft)    * 2401.60  *16442.59  *          *
* E.G. Slope (ft/ft)     *0.001814  * Area (sq ft)         * 4931.95  *16442.59  * 3265.12  *
* Q Total (cfs)          *164000.00  * Flow (cfs)         *12437.51  *151562.50  *          *
* Top Width (ft)         * 4061.16  * Top Width (ft)      * 1366.62  * 1310.50  * 1384.04  *
* Vel Total (ft/s)       *    8.70  * Avg. Vel. (ft/s)    *    5.18  *    9.22  *          *
* Max Chl Dpth (ft)      *   14.98  * Hydr. Depth (ft)    *    5.27  *   12.55  *          *
* Conv. Total (cfs)      *3850514.0  * Conv. (cfs)        *292017.1  *3558497.0  *          *
* Length Wtd. (ft)       *  552.82  * Wetted Per. (ft)    *  455.86  * 1314.36  *          *
* Min Ch El (ft)         *  972.70  * Shear (lb/sq ft)    *    0.60  *    1.42  *          *
* Alpha                  *    1.06  * Stream Power (lb/ft s) *  3.09  *   13.06  *          *
* Frctn Loss (ft)        *    1.15  * Cum Volume (acre-ft)  * 4447.78  *15168.91  *  966.09  *
* C & E Loss (ft)        *    0.01  * Cum SA (acres)        * 1272.84  * 1719.05  *  519.59  *
*****************************************************************************************************

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 OUTPUT  Profile #PF#2
*****************************************************************************************************
* E.G. Elev (ft)         *  989.03  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    1.35  * Wt. n-Val.           *   0.037  *   0.037  *          *
* W.S. Elev (ft)         *  987.68  * Reach Len. (ft)      *  570.00  *  552.00  *  525.00  *
* Crit W.S. (ft)         *  982.94  * Flow Area (sq ft)    * 1560.11  *16445.87  *          *
* E.G. Slope (ft/ft)     *0.001919  * Area (sq ft)         * 1560.11  *16445.87  *          *
* Q Total (cfs)          *164000.00  * Flow (cfs)         * 8110.36  *155889.60  *          *
* Top Width (ft)         * 1610.90  * Top Width (ft)      *  300.40  * 1310.50  *          *
* Vel Total (ft/s)       *    9.11  * Avg. Vel. (ft/s)    *    5.20  *    9.48  *          *
* Max Chl Dpth (ft)      *   14.98  * Hydr. Depth (ft)    *    5.19  *   12.55  *          *
* Conv. Total (cfs)      *3743779.0  * Conv. (cfs)        *185142.7  *3558637.0  *          *
* Length Wtd. (ft)       *  552.45  * Wetted Per. (ft)    *  307.13  * 1314.94  *          *
* Min Ch El (ft)         *  972.70  * Shear (lb/sq ft)    *    0.61  *    1.50  *          *
* Alpha                  *    1.05  * Stream Power (lb/ft s) *  3.16  *   14.20  *          *
* Frctn Loss (ft)        *    1.21  * Cum Volume (acre-ft)  *  325.82  *15713.02  *   30.85  *
* C & E Loss (ft)        *    0.01  * Cum SA (acres)        *   56.36  * 1721.15  *    5.87  *
*****************************************************************************************************

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: 1
REACH: 1                 RS: 204.42

INPUT
Description: 204.42

Right Channel Bank Station Interpolated
Station Elevation Data     num=      90
    Sta     Elev     Sta     Elev     Sta     Elev     Sta     Elev     Sta     Elev
*****************************************************************************************
   17576   985.4 17608.5   985.2   17708   984.7 17783.2   985.9 17832.4   987.2
 17853.5   986.1 17871.5   986.6 17926.9     986 17956.8   985.7 18023.8   985.6
 18149.3   988.2 18169.7   988.1 18191.3   988.5 18226.7   987.2   18239   992.9
 18240.3   993.2 18241.4   992.8 18249.3     987 18255.2   986.8 18279.8   990.2
 18308.3   987.7 18322.1   985.5 18347.4   985.3 18488.4   983.7 18517.8     983
 18560.8   983.8 18635.1   982.4 18650.1     983 18667.7     983 18723.8   982.5
 18733.2   982.4 18795.2   981.7 18839.1   981.2 18874.1   983.2 18899.1   981.9
 18955.6   982.5 18998.6   983.3 19025.4   984.6 19040.4   981.3   19045   980.6
 19052.9   980.4 19095.4   981.9 19166.1   982.1 19255.9     982 19280.2     982
 19341.8   981.8 19381.9   981.6   19437   981.1 19475.3     981 19500.2   980.6
 19543.1   978.9 19552.9   979.1 19561.9   978.3 19576.9   979.5 19599.7   980.5
 19616.5   980.7 19649.2   979.5   19653   978.6 19672.9   972.5   19732   972.5
 19781.3   972.6 19794.7   975.8 19805.4   972.9 19824.4   972.6 19905.9   971.4
   19930   972.8 19954.4   972.4 19966.8   973.5   19992   972.4 20006.4   972.1
 20057.7   972.3 20101.5     973 20150.5     972 20162.2   972.1 20303.9   972.1
 20322.7   972.1 20397.5   972.3 20434.6   971.9 20454.2   972.5 20468.3   973.3
 20548.4   973.9 20577.1   973.9 20609.6   973.2 20616.9   972.5   20646   972.8
20682.09987.6656 20689.7   990.8 20701.7   992.2 20714.4   988.5   20967   988.5

Manning's n Values         num=       5
    Sta    n Val     Sta    n Val     Sta    n Val     Sta    n Val     Sta    n Val
*****************************************************************************************
   17576     .025 18839.1     .037 19025.4     .037 20689.7     .037 20701.7     .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.    Expan.
       19025.420682.09              430     453     500             .1        .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
   17576 18874.1   993.2       F
 20689.7   20967   993.2       F

CROSS SECTION OUTPUT  Profile #PF#1
*****************************************************************************************************
* E.G. Elev (ft)         *  987.76  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    1.36  * Wt. n-Val.           *   0.037  *   0.037  *          *
* W.S. Elev (ft)         *  986.40  * Reach Len. (ft)      *  430.00  *  453.00  *  500.00  *
* Crit W.S. (ft)         *  982.76  * Flow Area (sq ft)    *  550.34  *17165.11  *          *
* E.G. Slope (ft/ft)     *0.002432  * Area (sq ft)         * 2664.73  *17165.11  *          *
* Q Total (cfs)          *164000.00  * Flow (cfs)         * 2577.06  *161422.90  *          *
```

```
                                                                    DuplicateEffective
* Top Width (ft)          * 2778.70  * Top Width (ft)          * 1125.08  * 1653.63  *          *
* Vel Total (ft/s)        *    9.26  * Avg. Vel. (ft/s)        *    4.68  *    9.40  *          *
* Max Chl Dpth (ft)       *   15.00  * Hydr. Depth (ft)        *    3.64  *   10.38  *          *
* Conv. Total (cfs)       *3325542.0  * Conv. (cfs)            * 52256.9  *3273285.0  *          *
* Length Wtd. (ft)        *  452.82  * Wetted Per. (ft)        *  151.38  * 1658.94  *          *
* Min Ch El (ft)          *  971.40  * Shear (lb/sq ft)        *    0.55  *    1.57  *          *
* Alpha                   *    1.02  * Stream Power (lb/ft s) *    2.58  *   14.77  *          *
* Frctn Loss (ft)         *    1.11  * Cum Volume (acre-ft)    * 4398.08  *14955.97  *  946.41  *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)          * 1256.53  * 1700.27  *  511.25  *
*****************************************************************************************************

Warning: Divided flow computed for this cross-section.
Warning: The cross-section end points had to be extended vertically for the computed water surface.
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 OUTPUT  Profile #PF#2
*****************************************************************************************************
* E.G. Elev (ft)          *  987.81  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    1.42  * Wt. n-Val.            *          *    0.037  *          *
* W.S. Elev (ft)          *  986.38  * Reach Len. (ft)       *  430.00  *  453.00  *  500.00  *
* Crit W.S. (ft)          *  982.73  * Flow Area (sq ft)     *          *17129.48  *          *
* E.G. Slope (ft/ft)      *0.002531  * Area (sq ft)          *          *17129.48  *          *
* Q Total (cfs)           *164000.00  * Flow (cfs)           *          *164000.00  *          *
* Top Width (ft)          * 1653.57  * Top Width (ft)       *          * 1653.57  *          *
* Vel Total (ft/s)        *    9.57  * Avg. Vel. (ft/s)     *          *    9.57  *          *
* Max Chl Dpth (ft)       *   14.98  * Hydr. Depth (ft)     *          *   10.36  *          *
* Conv. Total (cfs)       *3259710.0  * Conv. (cfs)         *          *3259710.0  *          *
* Length Wtd. (ft)        *  453.00  * Wetted Per. (ft)     *          * 1660.67  *          *
* Min Ch El (ft)          *  971.40  * Shear (lb/sq ft)     *          *    1.63  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *   15.61  *          *
* Frctn Loss (ft)         *    1.13  * Cum Volume (acre-ft)  *  315.62  *15500.28  *   30.85  *
* C & E Loss (ft)         *    0.02  * Cum SA (acres)        *   54.40  * 1702.37  *    5.87  *
*****************************************************************************************************

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: 1
REACH: 1                 RS: 204.34

INPUT
Description: 204.34

Left and Right Channel Bank Stations Interpolated
Station Elevation Data    num=      74
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*************************************************************************************
  18066.2    985.2  18081.3       985  18158.1    983.7     18200    983.2     18226      984
  18228.2    983.4  18283.2     983.4  18339.1    987.8  18395.4     986.8  18498.7    986.6
  18514.4    986.2    18516     986.7  18586.8    985.6  18638.2     981.3  18678.3      981
  18721.9    979.9  18774.5     984.6  18806.4    982.8  18806.6     981.1  18864.9    982.2
  18888.3    975.4  18906.9     980.7  18919.1    979.8  18932.5     981.8  18936.3    983.3
  18988.6    982.9  19004.9     982.1  19086.4    981.7   19100981.6723  19184.5    981.5
  19245.5      981  19310.8     980.7  19329.3    980.7  19389.4     980.3  19453.4    979.8
  19487.9    979.5    19552     979.2  19615.6    978.7  19689.1     978.5  19736.5    978.7
  19757.1    988.9  19782.1     971.2  19783.9    970.6  19819.5     969.3  19835.1    971.8
    19891      971  19954.9     970.8  20009.4    971.2  20054.1     972.9  20100.5    973.1
  20107.5    972.7  20175.2     972.5    20253    971.7  20324.6     971.9  20395.6    971.7
  20465.2    971.4  20539.7     971.3  20603.2    971.5  20661.9     971.9  20671.8      972
  20743.2    970.2  20773.2       970  20795.3    976.920816.23986.0935  20827.4      991
  20878.6    990.5  20887.2       987  22239.1    987.1  22248.4     987.2  22254.3    988.2
  22259.5    985.8  22266.1     987.7  22287.1    988.3  22317.8       988

Manning's n Values        num=       4
     Sta   n Val      Sta   n Val      Sta   n Val      Sta   n Val
*************************************************************
  18066.2    .025  18774.5    .037  20827.4    .037  20878.6    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          1910020816.23             495     488     480             .1      .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 18066.2   19100     991       F
 20827.4 22317.8     991       F

CROSS SECTION OUTPUT  Profile #PF#1
*****************************************************************************************************
* E.G. Elev (ft)          *  986.65  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    1.37  * Wt. n-Val.            *          *    0.037  *          *
* W.S. Elev (ft)          *  985.28  * Reach Len. (ft)       *  495.00  *  488.00  *  480.00  *
* Crit W.S. (ft)          *  981.45  * Flow Area (sq ft)     *          *17462.96  *          *
* E.G. Slope (ft/ft)      *0.002470  * Area (sq ft)          * 2117.99  *17462.96  *          *
* Q Total (cfs)           *164000.00  * Flow (cfs)           *          *164000.00  *          *
* Top Width (ft)          * 2452.20  * Top Width (ft)       *  750.25  * 1701.95  *          *
* Vel Total (ft/s)        *    9.39  * Avg. Vel. (ft/s)     *          *    9.39  *          *
* Max Chl Dpth (ft)       *   15.98  * Hydr. Depth (ft)     *          *   10.26  *          *
* Conv. Total (cfs)       *3299565.0  * Conv. (cfs)         *          *3299565.0  *          *
* Length Wtd. (ft)        *  488.00  * Wetted Per. (ft)     *          * 1711.20  *          *
* Min Ch El (ft)          *  969.30  * Shear (lb/sq ft)     *          *    1.57  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *   14.78  *          *
* Frctn Loss (ft)         *    1.97  * Cum Volume (acre-ft)  * 4374.47  *14775.92  *  946.41  *
* C & E Loss (ft)         *    0.22  * Cum SA (acres)        * 1247.28  * 1682.83  *  511.25  *
*****************************************************************************************************

Warning: Divided flow computed for this cross-section.
Warning: The cross-section end points had to be extended vertically for the computed water surface.
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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION OUTPUT Profile #PF#2

E.G. Elev (ft)	986.66	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.37	Wt. n-Val.		0.037	
W.S. Elev (ft)	985.29	Reach Len. (ft)	495.00	488.00	480.00
Crit W.S. (ft)	981.45	Flow Area (sq ft)		17480.30	
E.G. Slope (ft/ft)	0.002469	Area (sq ft)		17480.30	
Q Total (cfs)	164000.00	Flow (cfs)		164000.00	
Top Width (ft)	1701.99	Top Width (ft)		1701.99	
Vel Total (ft/s)	9.38	Avg. Vel. (ft/s)		9.38	
Max Chl Dpth (ft)	15.99	Hydr. Depth (ft)		10.27	
Conv. Total (cfs)	3300310.0	Conv. (cfs)		3300310.0	
Length Wtd. (ft)	488.00	Wetted Per. (ft)		1714.87	
Min Ch El (ft)	969.30	Shear (lb/sq ft)		1.57	
Alpha	1.00	Stream Power (lb/ft s)		14.74	
Frctn Loss (ft)	1.97	Cum Volume (acre-ft)	315.62	15320.32	30.85
C & E Loss (ft)	0.22	Cum SA (acres)	54.40	1684.92	5.87

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

CROSS SECTION

RIVER: 1
REACH: 1 RS: 204.25

INPUT
Description: 204.25

Left and Right Channel Bank Stations Interpolated
Station Elevation Data num= 202

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
13993.51	986.914130.56	987.4114486.44	987.43 14755.8	987.0314937.72	987.04				
15050.6	988.115090.94	987.5715102.07	987.5715109.44	988.6415116.98	989.38				
15128.77	988.115132.01	987.97 15140	988.4715148.98	986.9315153.86	985.73				
15173.36	986.215690.75	986.1815878.25	985.1815889.67	986.2815904.51	988.05				
15907.38	988.115919.42	987.92 15924.1	987.4715931.02	985.8315970.22	986.25				
16049	986.116175.22	986.0216450.56	986.1616463.91	986.2916480.31	987.87				
16486.56	987.416495.93	987.116504.19	987.7916511.66	987.916518.49	987.78				
16535.99	985.816542.09	985.62 16555	985.5516564.89	984.2816584.86	984.26				
16687.99	984.816810.65	985.2916823.94	985.32 16873.9	984.7316893.09	984.53				
16922.74	984.6 16941.4	984.2616960.75	984.6616990.05	984.3317020.18	984.79				
17048.94	986.617091.64	985.2817177.92	98517208.14	985.117249.69	984.95				
17398.31	984.317414.87	984.49 17522.6	984.3917556.82	984.2117600.03	984.35				
17721.19	984.217812.48	984.25 17851.5	984.8117861.89	984.59 17867.1	984.93				
17880.92	98517892.56	984.3517898.26	983.9217932.23	986.4917944.09	986.98				
17988.7	986.718005.49	986.89 18050.6	987.5718083.28	987.6218106.23	986.76				
18158.97	986.818174.45	987.118185.88	987.1218240.34	986.9218277.05	986.27				
18300.85	986.118323.52	985.5518372.65	985.1418410.49	985.0818449.87	985.08				
18490.27	985.5 18520.4	985.1518569.61	985.8 18587.9	985.7618609.93	985.4				
18633.73	984.818652.28	984.25 18660.4	983.8518672.96	983.4118703.66	978.51				
18719.46	976.218724.94	975.718730.59	976.2818765.73	981.3818788.83	981.86				
18812.39	98218851.86	982.6718856.84	982.0218876.79	980.9318917.58	980.72				
18958.37	980.818990.64	980.15 19005.3	981.3 19038	982.5519054.34	981.71				
19061.47	981.919088.33	981.0319097.24	980.6119117.27	982.08 19126.5	981.33				
19134.63	980.819139.73	980.7919178.34	980.9919189.92	980.9119237.27	980.78				
19263.33	980.219297.08	979.95 19300	979.93619332.52	979.7819361.32	979.52				
19438.75	979.41 19458.3	979.519506.35	978.719519.13	978.8519527.66	978.72				
19542.19	978.7319623.64	978.619631.41	978.619649.23	978.6319696.73	978.82				
19703.53	975.7119717.53	970.2 19739	971.319747.27	974.51 19771.1	974.27				
20035.47	970.8820227.56	972.420273.64	972.3620297.51	972.19 20307.7	971.98				
20309.92	971.7420357.54	969.8 20436.7	969.4420448.29	969.4520499.51	969.22				
20526.05	969.29 20588.3	969.720612.99	970.1420643.57	971.0820655.61	971.37				
20680.85	971.2420705.02	971.520710.67	971.3720740.01	974.1420776.89	977.31				
20818.53	981.025320830.46	982.09 20922.2	989.620964.06	989.9520995.89	990.41				
21004.86	987.3921018.73	981.0821052.72	981.121087.73	980.7921108.33	980.92				
21157.66	981.421178.54	981.5221210.73	981.221262.99	982.6321279.42	982.45				
21290.06	979.4521361.92	980.42 21408.6	981.221446.51	981.421456.08	981.58				
21481.84	981.6121499.03	981.7121649.19	981.921681.55	982.0721787.28	982.66				
21862.63	982.921876.61	982.9521939.71	983.421983.01	983.3822043.39	983.78				
22083.67	984.1722130.05	984.4322172.04	984.422225.83	984.5822265.02	984.87				
22339.34	986.3522389.33	985.4622416.26	985.922438.79	986.0322474.98	986.32				
22486.29	987.5222500.35	987.24							

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
13993.51	.03518812.39	.03221290.06	.025		

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
1930020818.53 510 508 500 .1 .3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
13993.51	19300	990	F
20922.222500.35		990	F

CROSS SECTION OUTPUT Profile #PF#1

E.G. Elev (ft)	984.46	Element	Left OB	Channel	Right OB

```
                                                                    DuplicateEffective
* Vel Head (ft)          *    3.56  * Wt. n-Val.              *          *    0.032  *          *
* W.S. Elev (ft)         *  980.90  * Reach Len. (ft)         *  510.00  *  508.00  *  500.00  *
* Crit W.S. (ft)          *  980.90  * Flow Area (sq ft)       *          *10836.44  *          *
* E.G. Slope (ft/ft)     *0.007742  * Area (sq ft)            *  277.23  *10836.44  *   82.25  *
* Q Total (cfs)          *164000.00  * Flow (cfs)             *          *164000.00  *          *
* Top Width (ft)         * 1993.93  * Top Width (ft)         *  339.61  * 1517.18  *  137.15  *
* Vel Total (ft/s)       *   15.13  * Avg. Vel. (ft/s)       *          *   15.13  *          *
* Max Chl Dpth (ft)      *   11.68  * Hydr. Depth (ft)       *          *    7.14  *          *
* Conv. Total (cfs)      *1863855.0  * Conv. (cfs)           *          *1863855.0  *          *
* Length Wtd. (ft)       *  508.00  * Wetted Per. (ft)       *          * 1520.08  *          *
* Min Ch El (ft)         *  969.22  * Shear (lb/sq ft)       *          *    3.45  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *   52.15  *          *
* Frctn Loss (ft)        *    1.15  * Cum Volume (acre-ft)   * 4360.86  *14617.40  *  945.96  *
* C & E Loss (ft)        *    0.79  * Cum SA (acres)         * 1241.09  * 1664.79  *  510.50  *
*********************************************************************************************

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 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.
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 OUTPUT  Profile #PF#2
*********************************************************************************************
* E.G. Elev (ft)         *  984.46  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    3.57  * Wt. n-Val.           *          *    0.032  *          *
* W.S. Elev (ft)         *  980.89  * Reach Len. (ft)      *  510.00  *  508.00  *  500.00  *
* Crit W.S. (ft)         *  980.89  * Flow Area (sq ft)    *          *10810.89  *          *
* E.G. Slope (ft/ft)     *0.007809  * Area (sq ft)         *          *10810.89  *          *
* Q Total (cfs)          *164000.00  * Flow (cfs)          *          *164000.00  *          *
* Top Width (ft)         * 1516.99  * Top Width (ft)      *          * 1516.99  *          *
* Vel Total (ft/s)       *   15.17  * Avg. Vel. (ft/s)    *          *   15.17  *          *
* Max Chl Dpth (ft)      *   11.67  * Hydr. Depth (ft)    *          *    7.13  *          *
* Conv. Total (cfs)      *1855915.0  * Conv. (cfs)         *          *1855915.0  *          *
* Length Wtd. (ft)       *  508.00  * Wetted Per. (ft)    *          * 1520.84  *          *
* Min Ch El (ft)         *  969.22  * Shear (lb/sq ft)    *          *    3.47  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *       *   52.57  *          *
* Frctn Loss (ft)        *    1.15  * Cum Volume (acre-ft)   *  315.62  *15161.85  *   30.85  *
* C & E Loss (ft)        *    0.80  * Cum SA (acres)         *   54.40  * 1666.89  *    5.87  *
*********************************************************************************************

Warning: The energy equation could not be balanced within the specified number of iterations.  The
         program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The 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: 1
REACH: 1                  RS: 204.15

INPUT
Description: 204.15

Left and Right Channel Bank Stations Interpolated
Station Elevation Data    num=      80
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
 16507.2   984.4   16600     985 16650.2   986.1 16657.8   983.8 16666.8     986
 16708.7   983.2 16800.2   983.6 16895.3   983.8 16963.7   983.3 17111.7   982.5
 17141.8   982.4 17289.1   982.7   17397   983.7 17427.8   983.8 17571.9   983.4
 17609.8   983.3 17719.7   983.5 17833.6     983 17949.9   982.8 18031.8   984.3
 18081.2   983.6   18087   981.9 18093.6   985.1 18094.5   983.7 18130.3     986
 18214.6   985.6 18280.4   986.6 18357.2   984.7 18446.1   985.5 18578.2   984.4
 18725.8   984.7 18824.1   985.3 18862.3   983.1 18888.3   980.6   18907   981.1
 18955.1     980 19045.1   979.6 19065.5   979.9 19074.1   976.8   19104     969
 19192.6   971.7   19200   971.7 19310.3   971.7 19331.3   970.9 19446.3   971.9
 19486.8   971.6 19501.3   966.1   19595     966 19644.2   966.2   19661   973.6
   19681   970.2 19769.8   971.6 19860.6   972.7 19968.4   974.8 20027.5   972.3
 20066.1   967.9 20074.7   967.9 20209.5     968 20337.2   968.2 20441.7   967.7
 20540.9   966.7 20554.5   966.5 20580.4   968.8 20679.7   967.8 20753.2   967.1
 20790.2   968.9 20795.8   969.9 20814.5   969.5 20911.6   969.2   20940   967.1
 20986.5 968.321033.38981.5872 21042.6   984.2 21131.4   985.3 21379.2   985.3
 22652.4   985.2 22684.9   986.3   22693   983.9 22700.1   985.5 22708.9   985.4

Manning's n Values        num=       4
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
*************************************************************
 16507.2    .035 18824.1    .032 21131.4    .025 21379.2    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        1920021033.38              510     509     510             .1       .3
Ineffective Flow     num=       1
   Sta L   Sta R    Elev  Permanent
 16507.2   19200   986.6        F

CROSS SECTION OUTPUT  Profile #PF#1
```

DuplicateEffective

E.G. Elev (ft)	982.09	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.93	Wt. n-Val.		0.032	
W.S. Elev (ft)	981.17	Reach Len. (ft)	510.00	509.00	510.00
Crit W.S. (ft)	975.82	Flow Area (sq ft)		21240.76	
E.G. Slope (ft/ft)	0.001058	Area (sq ft)	1488.78	21240.76	
Q Total (cfs)	164000.00	Flow (cfs)		164000.00	
Top Width (ft)	2149.48	Top Width (ft)	317.59	1831.90	
Vel Total (ft/s)	7.72	Avg. Vel. (ft/s)		7.72	
Max Chl Dpth (ft)	15.17	Hydr. Depth (ft)		11.59	
Conv. Total (cfs)	5042939.0	Conv. (cfs)		5042939.0	
Length Wtd. (ft)	509.00	Wetted Per. (ft)		1837.25	
Min Ch El (ft)	966.00	Shear (lb/sq ft)		0.76	
Alpha	1.00	Stream Power (lb/ft s)		5.89	
Frctn Loss (ft)	0.68	Cum Volume (acre-ft)	4350.52	14430.35	945.48
C & E Loss (ft)	0.02	Cum SA (acres)	1237.24	1645.27	509.71

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

CROSS SECTION OUTPUT Profile #PF#2

E.G. Elev (ft)	982.11	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.92	Wt. n-Val.		0.032	
W.S. Elev (ft)	981.18	Reach Len. (ft)	510.00	509.00	510.00
Crit W.S. (ft)	975.82	Flow Area (sq ft)		21274.63	
E.G. Slope (ft/ft)	0.001059	Area (sq ft)		21274.63	
Q Total (cfs)	164000.00	Flow (cfs)		164000.00	
Top Width (ft)	1831.89	Top Width (ft)		1831.89	
Vel Total (ft/s)	7.71	Avg. Vel. (ft/s)		7.71	
Max Chl Dpth (ft)	15.18	Hydr. Depth (ft)		11.61	
Conv. Total (cfs)	5038994.0	Conv. (cfs)		5038994.0	
Length Wtd. (ft)	509.00	Wetted Per. (ft)		1846.75	
Min Ch El (ft)	966.00	Shear (lb/sq ft)		0.76	
Alpha	1.00	Stream Power (lb/ft s)		5.87	
Frctn Loss (ft)	0.68	Cum Volume (acre-ft)	315.62	14974.75	30.85
C & E Loss (ft)	0.02	Cum SA (acres)	54.40	1647.37	5.87

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

CROSS SECTION

RIVER: 1
REACH: 1 RS: 204.05

INPUT
Description: 204.05

Left and Right Channel Bank Stations Interpolated
Station Elevation Data num= 73

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
18304.1	982.1	18322.9	981.3	18412.7	981.2	18490.1	981.1	18499.9	981.4
18523	980.8	18527.4	981.7	18530.5	980.8	18552.5	980.6	18585.3	987.2
18649.8	986.5	18710.4	987.1	18782.2	985.8	18858.9	986.9	18882.3	985.9
18903.8	986.2	18952	984.5	18962.59	980.697	18970.1	978	18992.5	968.5
19020.9	971.4	19097.5	973.6	19099.9	973.6	19168.9	971.6	19234.1	970.7
19315.1	973.1	19401.3	974.1	19432.4	974.2	19453	972.9	19510.9	971.5
19570.9	965.6	19644.7	967.7	19662	968.9	19741.3	971.7	19784.3	975.1
19860.9	975.2	19946.2	976.1	20026.3	975.5	20061.6	973.5	20142.4	974.9
20200.7	974.3	20222.7	972.5	20272.6	972.8	20286.9	973.4	20327.7	971.7
20354.5	969.2	20434.3	970.9	20491.6	971.4	20536	969.7	20605	969.1
20618.5	968.7	20679.5	965	20701.3	965.4	20715.6	967	20746.4	966
20828.1	965.9	20914.2	966.5	20930	968.1	20994	968.4	21024.5	966.7
21045.1	967	21067.8	975.8	21081.76	980.698	21090.6	983.8	21160.1	983.8
22668.7	984.2	22676.7	984.2	22773.1	984.3	22829	984.6	22836.3	985.6
22843	983.5	22852.2	986	22860.7	985.9				

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
18304.1	.05	18552.5	.035	18858.9	.032	21090.6	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
18962.59	21081.76	510	505	520	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
18304.1	18750	987.2	F

CROSS SECTION OUTPUT Profile #PF#1

E.G. Elev (ft)	981.39	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.12	Wt. n-Val.		0.032	
W.S. Elev (ft)	980.27	Reach Len. (ft)	510.00	505.00	520.00
Crit W.S. (ft)	976.80	Flow Area (sq ft)		19320.37	
E.G. Slope (ft/ft)	0.001759	Area (sq ft)		19320.37	
Q Total (cfs)	164000.00	Flow (cfs)		164000.00	
Top Width (ft)	2116.76	Top Width (ft)		2116.76	
Vel Total (ft/s)	8.49	Avg. Vel. (ft/s)		8.49	
Max Chl Dpth (ft)	15.27	Hydr. Depth (ft)		9.13	
Conv. Total (cfs)	3910438.0	Conv. (cfs)		3910438.0	
Length Wtd. (ft)	505.00	Wetted Per. (ft)		2123.09	
Min Ch El (ft)	965.00	Shear (lb/sq ft)		1.00	
Alpha	1.00	Stream Power (lb/ft s)		8.48	
Frctn Loss (ft)	1.42	Cum Volume (acre-ft)	4341.81	14193.37	945.48
C & E Loss (ft)	0.10	Cum SA (acres)	1235.38	1622.20	509.71

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

CROSS SECTION OUTPUT Profile #PF#2

E.G. Elev (ft)	981.41	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.11	Wt. n-Val.		0.032	
W.S. Elev (ft)	980.29	Reach Len. (ft)	510.00	505.00	520.00
Crit W.S. (ft)	976.80	Flow Area (sq ft)		19370.37	
E.G. Slope (ft/ft)	0.001744	Area (sq ft)		19370.37	
Q Total (cfs)	164000.00	Flow (cfs)		164000.00	
Top Width (ft)	2116.76	Top Width (ft)		2116.76	
Vel Total (ft/s)	8.47	Avg. Vel. (ft/s)		8.47	
Max Chl Dpth (ft)	15.29	Hydr. Depth (ft)		9.15	
Conv. Total (cfs)	3927263.0	Conv. (cfs)		3927263.0	
Length Wtd. (ft)	505.00	Wetted Per. (ft)		2123.13	
Min Ch El (ft)	965.00	Shear (lb/sq ft)		0.99	
Alpha	1.00	Stream Power (lb/ft s)		8.41	
Frctn Loss (ft)	1.35	Cum Volume (acre-ft)	315.62	14737.29	30.85
C & E Loss (ft)	0.09	Cum SA (acres)	54.40	1624.30	5.87

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

CROSS SECTION

RIVER: 1
REACH: 1 RS: 203.96

INPUT
Description: 203.96

Right Channel Bank Staion Interpolated
Station Elevation Data num= 91

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
16511.6	983.5	16713.4	983.8	16774.3	983.9	16908.7	984.4	16963.5	986.3
16968.1	982.5	16973.8	984.3	17039.3	980.6	17126.9	980	17138.9	980
17175.8	974.9	17222.8	980.2	17277.4	983.2	17284.8	982.3	17330	982.5
17366.5	984.4	17465.6	982.2	17576.8	981.2	17680.4	980.6	17774.7	979.6
17869.9	981.4	17958.4	981.2	18010.3	980.8	18015.8	982.2	18024.6	982.8
18047.1	980.2	18070.6	981.5	18128.1	982.9	18242.5	983.3	18284.4	984.3
18384	982.4	18469.6	983.6	18481.1	980.9	18496.2	979.1	18583.4	978
18607.3	975.5	18626.7	976.9	18657.9	976	18690	978.1	18723.2	976.2
18730.8	978.5	18760	974.5	18783.2	969.3	18801.2	968.9	18811.7	967.4
18891.8	971.9	18902.5	971.8	18997.2	971.4	19057.4	972	19069.5	973.6
19145.7	973.5	19201.5	971.8	19284.9	973.5	19375	977.1	19427.1	976
19471.7	976.7	19531.2	976.1	19556.4	976.8	19606.4	965.6	19696.9	968.3
19784.2	968.9	19847.3	971.5	19965.6	970.7	19998.5	972.3	20089.8	973.2
20179.8	972.3	20254.9	970.6	20367	970.8	20411.5	970.7	20421.4	969.4
20435.9	965.4	20451.7	964.7	20529.6	965	20554.9	967	20642.7	965.7
20735.2	964.2	20738.9	964.1	20767.7	971.2	20790.3	8978.7	393	20803.5
20835.5	994.9	20850.3	995.2	20872.5	997.5	20910.1	984.2	20997.3	981.9
21108.2	981.9	21539.6	982	21552	986.1	21559.4	984.2	21657.7	986.4
21694	988.5								

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
16511.6	.025	17175.8	.043	18469.6	.043	18902.5	.032	20835.5	.037

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
18730.8 20790.38 495 502 505 .1 .3
Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
16511.6	18730.8	997.5	F
20835.5	21694	997.5	F

CROSS SECTION OUTPUT Profile #PF#1

E.G. Elev (ft)	979.86	Element	Left OB	Channel	Right OB
Vel Head (ft)	2.15	Wt. n-Val.		0.033	
W.S. Elev (ft)	977.71	Reach Len. (ft)	495.00	502.00	505.00
Crit W.S. (ft)	976.71	Flow Area (sq ft)		13938.65	
E.G. Slope (ft/ft)	0.005220	Area (sq ft)	202.34	13938.65	
Q Total (cfs)	164000.00	Flow (cfs)		164000.00	
Top Width (ft)	2225.53	Top Width (ft)	174.77	2050.76	
Vel Total (ft/s)	11.77	Avg. Vel. (ft/s)		11.77	
Max Chl Dpth (ft)	13.61	Hydr. Depth (ft)		6.80	
Conv. Total (cfs)	2269861.0	Conv. (cfs)		2269861.0	
Length Wtd. (ft)	502.00	Wetted Per. (ft)		2056.12	
Min Ch El (ft)	964.10	Shear (lb/sq ft)		2.21	
Alpha	1.00	Stream Power (lb/ft s)		25.99	
Frctn Loss (ft)	0.90	Cum Volume (acre-ft)	4340.62	14000.58	945.48
C & E Loss (ft)	0.43	Cum SA (acres)	1234.36	1598.04	509.71

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

CROSS SECTION OUTPUT Profile #PF#2

E.G. Elev (ft)	979.97	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.99	Wt. n-Val.		0.033	
W.S. Elev (ft)	977.98	Reach Len. (ft)	495.00	502.00	505.00
Crit W.S. (ft)	976.71	Flow Area (sq ft)		14478.25	
E.G. Slope (ft/ft)	0.004601	Area (sq ft)		14478.25	
Q Total (cfs)	164000.00	Flow (cfs)		164000.00	
Top Width (ft)	2050.76	Top Width (ft)		2050.76	
Vel Total (ft/s)	11.33	Avg. Vel. (ft/s)		11.33	
Max Chl Dpth (ft)	13.88	Hydr. Depth (ft)		7.06	
Conv. Total (cfs)	2417852.0	Conv. (cfs)		2417852.0	
Length Wtd. (ft)	502.00	Wetted Per. (ft)		2056.64	
Min Ch El (ft)	964.10	Shear (lb/sq ft)		2.02	
Alpha	1.00	Stream Power (lb/ft s)		22.90	
Frctn Loss (ft)	0.83	Cum Volume (acre-ft)	315.62	14541.08	30.85
C & E Loss (ft)	0.39	Cum SA (acres)	54.40	1600.14	5.87

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

CROSS SECTION

RIVER: 1
REACH: 1 RS: 203.86

INPUT
Description: 203.86

Right Channel Bank Staion Interpolated
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
17504.9	979.4	17555	980.7	17589.4	982.1	17613.5	980.8	17620.6	979.8
17657.6	978.3	17694.3	979.8	17718.4	978.9	17729	980.8	17762.1	977.4
17780.7	978.7	17821.9	984.3	17861.6	984.2	17888.2	982.4	17897.5	983.2
17930.6	983.2	17969.6	984.1	17989.1	983.6	18013.3	984	18044.9	981.7
18064.4	979.2	18096.7	981.5	18136.8	979.8	18171.7	980	18207.5	982
18243.1	982.7	18290.8	981.3	18353.7	982	18421.5	981.7	18458.6	982.1
18488.1	978.2	18540.3	978.5	18564	971	18599.5	968.8	18660.4	971
18700.2	971.8	18760.2	970	18806.7	971.3	18853.4	969.4	18891.2	969
18974.3	973.5	19064.8	976.5	19077.3	975.8	19161.8	973.4	19223.1	970.5
19246.5	967.4	19268.5	965.8	19288.8	962.4	19365.2	962.6	19365.7	962.6
19450.7	962.8	19451.6	962.8	19539.2	963.1	19611.5	963	19690.6	962.4
19743.6	962.3	19811.2	962.7	19858.2	963.1	19928.9	963.6	19992.8	963.8
20013.5	963.8	20076.4	964	20099.2	964	20196.1	964.2	20254.4	964.2
20298.4	964.5	20318.1	968.2	20429.2	967.6	20486.9	967.6	20543.1	968.6
20555	966.5	20576	964.2	20634.3	964.2	20650.7	964.2	20663.3	965.7
20676.9	965.8	20697.7	967.2	20730.9	976.1	20735.9	978.6	323	20761.9	991.8
20803.3	981	20878.5	982.5	20946.4	982.5	20965.7	981.1	21031.2	980.5
21099.9	980.6	21167.6	980.7	21198.2	981	21258.8	981.1	21324.9	981
21359.8	980.5	21368.4	981	21395.8	980.4	21405.9	982.4	21411.7	980.4
21482.6	980.2	21488.8	980.2						

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
17504.9	.043	18243.1	.043	18891.2	.032	20761.9	.037

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
18488.1 20735.9 505 498 480 .1 .3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
17504.9	18243.1	991.8	F
20761.9	21488.8	991.8	F

CROSS SECTION OUTPUT Profile #PF#1

E.G. Elev (ft)	978.53	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.72	Wt. n-Val.		0.033	
W.S. Elev (ft)	977.81	Reach Len. (ft)	505.00	498.00	480.00
Crit W.S. (ft)	971.84	Flow Area (sq ft)		24032.73	
E.G. Slope (ft/ft)	0.000902	Area (sq ft)	2.00	24032.73	
Q Total (cfs)	164000.00	Flow (cfs)		164000.00	
Top Width (ft)	2201.58	Top Width (ft)	9.80	2191.78	
Vel Total (ft/s)	6.82	Avg. Vel. (ft/s)		6.82	
Max Chl Dpth (ft)	15.51	Hydr. Depth (ft)		10.96	
Conv. Total (cfs)	5460451.0	Conv. (cfs)		5460451.0	
Length Wtd. (ft)	498.00	Wetted Per. (ft)		2196.27	
Min Ch El (ft)	962.30	Shear (lb/sq ft)		0.62	
Alpha	1.00	Stream Power (lb/ft s)		4.21	
Frctn Loss (ft)	0.44	Cum Volume (acre-ft)	4339.46	13781.79	945.48
C & E Loss (ft)	0.03	Cum SA (acres)	1233.31	1573.59	509.71

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.

CROSS SECTION OUTPUT Profile #PF#2

E.G. Elev (ft)	978.75	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.69	Wt. n-Val.		0.033	
W.S. Elev (ft)	978.06	Reach Len. (ft)	505.00	498.00	480.00
Crit W.S. (ft)	971.84	Flow Area (sq ft)		24588.83	
E.G. Slope (ft/ft)	0.000838	Area (sq ft)		24588.83	
Q Total (cfs)	164000.00	Flow (cfs)		164000.00	

```
                                                                    DuplicateEffective
* Top Width (ft)          * 2191.78  * Top Width (ft)          *          * 2191.78  *          *
* Vel Total (ft/s)        *    6.67  * Avg. Vel. (ft/s)        *          *    6.67  *          *
* Max Chl Dpth (ft)       *   15.76  * Hydr. Depth (ft)        *          *   11.22  *          *
* Conv. Total (cfs)       *5666380.0  * Conv. (cfs)            *          *5666380.0  *          *
* Length Wtd. (ft)        *  498.00  * Wetted Per. (ft)       *          * 2196.77  *          *
* Min Ch El (ft)          *  962.30  * Shear (lb/sq ft)       *          *    0.59  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    3.90  *          *
* Frctn Loss (ft)         *    0.41  * Cum Volume (acre-ft)   *  315.62  *14315.97  *   30.85  *
* C & E Loss (ft)         *    0.03  * Cum SA (acres)         *   54.40  * 1575.69  *    5.87  *
*********************************************************************************************

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

CROSS SECTION


RIVER: 1
REACH: 1                 RS: 203.77

INPUT
Description: 203.77

Left and Right Channel Bank Staions Interpolated
Station Elevation Data    num=      98
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*************************************************************************************
 15516.5   980.4 15611.3   979.8 15668.7   980.9 15700.1   979.6 15734.7   982.9
 15797.9   987.2   15835     986 15865.2   981.2   15920   981.4 15937.6   976.9
 15947.6   978.2 15969.6   982.9 15985.2   984.3 16056.9   984.3 16076.8   983.7
 16103.9   981.6 16184.4   981.2 16265.9   982.1 16312.5   981.7 16348.3   982.1
 16366.7   978.9 16400.4   980.3 16452.6   980.5 16569.1   980.4 16622.2   980.5
 16857.6   980.3 17032.7   979.9 17052.5   979.9 17220.4   979.9 17326.1   979.2
 17424.8     979   17450   979.3 17461.6   980.3 17495.9   980.1 17515.6   978.2
 17558.9   979.2 17678.1   978.7 17709.3   979.1 17747.1   977.4 17826.8   982.9
 17879.9   983.7 17902.1   982.1 17924.4   981.6 18003.9   982.8 18091.9   980.7
 18117.2   979.8   18191 981.818222.61978.2686 18227.7   977.7 18281.9   974.6
 18343.8   974.4 18371.2   970.5 18451.7   968.1 18515.7   969.6 18591.7   968.7
 18603.5   969.7 18721.8   967.3 18770.9   970.5 18803.6   971.5 18834.8   974.6
 18888.2   976.1 18941.5   973.8 18956.3   972.3 18974.2   976.6 18983.5   976.3
 19032.5   965.6 19113.9   965.1   19224   964.8 19282.2   964.6 19290.6   969.7
 19307.6   974.2 19313.1   973.7 19322.8   969.5 19338.6   967.2 19345.7   964.7
 19426.8   964.5 19492.9   964.4 19606.6   964.2 19685.9   964.3 19717.5   964.1
 19865.4   964.1   19957   963.3 20019.3   964.3 20221.9   964.3 20253.9   964.3
 20282.3   966.5 20325.8   965.1 20328.7   964.2 20338.6   965.4   20430   966.2
 20524.9   966.2 20609.1   966.4 20684.8   966.7 20728.9     97120745.61978.2692
 20746.6   978.7 20820.8   981.2   20854   997.6

Manning's n Values        num=       5
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
*************************************************************************************
 15516.5    .025 17495.9    .043   18191    .043 18803.6    .032 20820.8    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
     18222.6120745.61              490     498     480             .1      .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 15516.5   18191   997.6       F
 20820.8   20854   997.6       F

CROSS SECTION OUTPUT  Profile #PF#1
*********************************************************************************************
* E.G. Elev (ft)          *  978.06  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.63  * Wt. n-Val.             *          *   0.033  *          *
* W.S. Elev (ft)          *  977.43  * Reach Len. (ft)        *  490.00  *  498.00  *  480.00  *
* Crit W.S. (ft)          *  971.58  * Flow Area (sq ft)      *          *25746.39  *          *
* E.G. Slope (ft/ft)      *0.000873  * Area (sq ft)           *    1.65  *25746.39  *          *
* Q Total (cfs)           *164000.00  * Flow (cfs)            *          *164000.00  *          *
* Top Width (ft)          * 2518.56  * Top Width (ft)        *    7.28  * 2511.27  *          *
* Vel Total (ft/s)        *    6.37  * Avg. Vel. (ft/s)      *          *    6.37  *          *
* Max Chl Dpth (ft)       *   14.13  * Hydr. Depth (ft)      *          *   10.25  *          *
* Conv. Total (cfs)       *5549798.0  * Conv. (cfs)          *          *5549798.0  *          *
* Length Wtd. (ft)        *  497.87  * Wetted Per. (ft)      *          * 2519.23  *          *
* Min Ch El (ft)          *  963.30  * Shear (lb/sq ft)      *          *    0.56  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    3.55  *          *
* Frctn Loss (ft)         *    0.45  * Cum Volume (acre-ft)   * 4339.44  *13497.24  *  945.48  *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)         * 1233.21  * 1546.71  *  509.71  *
*********************************************************************************************

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.

CROSS SECTION OUTPUT  Profile #PF#2
*********************************************************************************************
* E.G. Elev (ft)          *  978.32  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.60  * Wt. n-Val.             *          *   0.033  *          *
* W.S. Elev (ft)          *  977.72  * Reach Len. (ft)        *  490.00  *  498.00  *  480.00  *
* Crit W.S. (ft)          *  971.58  * Flow Area (sq ft)      *          *26473.99  *          *
* E.G. Slope (ft/ft)      *0.000799  * Area (sq ft)           *          *26473.99  *          *
* Q Total (cfs)           *164000.00  * Flow (cfs)            *          *164000.00  *          *
* Top Width (ft)          * 2511.27  * Top Width (ft)        *          * 2511.27  *          *
* Vel Total (ft/s)        *    6.19  * Avg. Vel. (ft/s)      *          *    6.19  *          *
* Max Chl Dpth (ft)       *   14.42  * Hydr. Depth (ft)      *          *   10.54  *          *
* Conv. Total (cfs)       *5803637.0  * Conv. (cfs)          *          *5803637.0  *          *
* Length Wtd. (ft)        *  497.94  * Wetted Per. (ft)      *          * 2519.80  *          *
* Min Ch El (ft)          *  963.30  * Shear (lb/sq ft)      *          *    0.52  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    3.24  *          *
* Frctn Loss (ft)         *    0.42  * Cum Volume (acre-ft)   *  315.62  *14024.08  *   30.85  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)         *   54.40  * 1548.81  *    5.87  *
*********************************************************************************************

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

CROSS SECTION
```

RIVER: 1
REACH: 1 RS: 203.67

INPUT
Description: 203.67

Right Channel Bank Staion Interpolated
Station Elevation Data num= 74

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
15401.1	982.5	15424.7	984.1	15508.1	982.3	15591.4	979.1	15681.8	979.9
15787.8	979.3	15920	979.3	16055.7	978.9	16157.5	979.1	16260.6	979.3
16282.2	979.2	16477	979.1	16627.1	979.9	16750.8	980.1	16865.7	979.3
16957.3	981.3	16980.5	980.6	17002.4	977.7	17014.1	979.2	17103.7	973.3
17179.5	973.2	17215.7	975.7	17267.4	969.7	17366.5	975.6	17541.8	974.3
17694.8	973.7	17837.2	974.1	17962.6	973.8	17982.5	973.7	18104.5	972.8
18289.3	972.9	18348.9	975.3	18350.2	973.2	18394.8	968.7	18516.9	971.1
18627.3	969.9	18690.1	970.4	18740.2	966.8	18787.4	966.3	18802.9	968.2
18941.9	973.8	19049	974.1	19155.9	972.4	19180.7	975.8	19211.3	962.3
19411.4	963.8	19519	963.9	19654.3	964.2	19798.6	964.3	19832.9	964.3
20036.1	964.3	20137.2	965.3	20302.2	963	20432.8	965.2	20537.5	965.2
20656.2	965.3	20661.5	965.6	20693.5	975.1	20699.3	977.8	20708.7	982.2
20796	983.8	20827.7	980.1	20837	982.9	20858.2	981.6	21858.6	983.5
21904.3	982.5	23520.4	980	23527.3	982.8	23545.1	983.5	23556.1	980.2
23584.2	981.5	23593	977.2	23603.5	980.1	23621	979.7		

Manning's n Values num= 6

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
15401.1	.025	16957.3	.037	18348.9	.037	18941.9	.032	20708.7	.032
20796	.025								

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
18348.9 20699.3 470 490 505 .1 .3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
15401.1	17837.2	984.1	F
20708.7	23621	984.1	F

CROSS SECTION OUTPUT Profile #PF#1

E.G. Elev (ft)	977.61	Element	Left OB	Channel / Right OB
Vel Head (ft)	0.67	Wt. n-Val.	0.037	0.033
W.S. Elev (ft)	976.93	Reach Len. (ft)	470.00	490.00 / 505.00
Crit W.S. (ft)	971.58	Flow Area (sq ft)	1810.56	23835.66
E.G. Slope (ft/ft)	0.000940	Area (sq ft)	4152.06	23835.66
Q Total (cfs)	164000.00	Flow (cfs)	5176.53	158823.50
Top Width (ft)	3648.91	Top Width (ft)	1300.39	2348.53
Vel Total (ft/s)	6.39	Avg. Vel. (ft/s)	2.86	6.66
Max Chl Dpth (ft)	14.63	Hydr. Depth (ft)	3.54	10.15
Conv. Total (cfs)	5348655.0	Conv. (cfs)	168825.9	5179829.0
Length Wtd. (ft)	489.59	Wetted Per. (ft)	511.75	2355.25
Min Ch El (ft)	962.30	Shear (lb/sq ft)	0.21	0.59
Alpha	1.06	Stream Power (lb/ft s)	0.59	3.96
Frctn Loss (ft)	0.46	Cum Volume (acre-ft)	4316.08	13213.81 / 945.48
C & E Loss (ft)	0.00	Cum SA (acres)	1225.85	1518.93 / 509.71

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

CROSS SECTION OUTPUT Profile #PF#2

E.G. Elev (ft)	977.89	Element	Left OB	Channel / Right OB
Vel Head (ft)	0.66	Wt. n-Val.	0.037	0.033
W.S. Elev (ft)	977.23	Reach Len. (ft)	470.00	490.00 / 505.00
Crit W.S. (ft)	971.58	Flow Area (sq ft)	882.63	24525.28
E.G. Slope (ft/ft)	0.000885	Area (sq ft)	882.63	24525.28
Q Total (cfs)	164000.00	Flow (cfs)	2635.92	161364.10
Top Width (ft)	2567.43	Top Width (ft)	218.90	2348.53
Vel Total (ft/s)	6.45	Avg. Vel. (ft/s)	2.99	6.58
Max Chl Dpth (ft)	14.93	Hydr. Depth (ft)	4.03	10.44
Conv. Total (cfs)	5512272.0	Conv. (cfs)	88597.1	5423675.0
Length Wtd. (ft)	489.82	Wetted Per. (ft)	223.36	2355.54
Min Ch El (ft)	962.30	Shear (lb/sq ft)	0.22	0.58
Alpha	1.03	Stream Power (lb/ft s)	0.65	3.79
Frctn Loss (ft)	0.43	Cum Volume (acre-ft)	310.65	13732.55 / 30.85
C & E Loss (ft)	0.01	Cum SA (acres)	53.17	1521.03 / 5.87

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

CROSS SECTION

RIVER: 1
REACH: 1 RS: 203.58

INPUT
Description: 203.58

Right Channel Bank Staion Interpolated
Station Elevation Data num= 75

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
15526.8	983.1	15573.8	984.7	15577.9	981.7	15586.4	984.8	15648.9	982.8
15684.7	983.7	15735.5	978.7	15806.7	977.9	15925.6	978.3	15954.8	978.2
16031.7	974.4	16204.9	973.9	16321.4	974.3	16490.9	975.4	16570	975.3
16706.6	974.9	16819.9	975.7	16971.3	975.7	17120	975.1	17136.9	976.6
17168.4	976.1	17202.6	978.2	17251.4	973.9	17388.1	976	17458.2	974.6
17489	971.8	17596.3	976.7	17707.8	975.2	17790.7	972.4	17873.7	975.6
17978	974.3	18064.9	975.2	18204	975.9	18355.4	971.3	18433.8	971.3
18553.6	967.4	18636	970.5	18664.8	967.3	18681	970.8	18724	969.1

```
                                                                    DuplicateEffective
 18765.5     971 18876.6   970.7 18988.9     970 19101.4   968.2 19228.7   965.4
 19261.3   964.2 19337.3   967.8 19426.3   965.2 19456.9   967.4   19474   963.9
 19482.9   963.9 19725.9   963.6 19842.5   963.6 19929.1   963.8 20222.2   963.5
 20355.7   963.9   20380   963.9 20543.8   963.6   20636   963.9 20645.5   962.1
20704.98977.3868 20706.2   977.7 20767.4   979.5 20782.3   981.3 20788.1   979.3
 20818.3   979.5 20825.7   982.3 20859.8   981.5 22062.2   983.3   22098   982.2
 23711.2     980 23724.5   982.4 23738.8   982.8 23750.9   979.2   23783   979.2

Manning's n Values        num=       5
     Sta   n Val      Sta   n Val      Sta   n Val      Sta   n Val      Sta   n Val
*********************************************************************************
 15526.8    .025 17202.6    .037   18204    .037   18681    .032 20782.3    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.    Expan.
        1820420704.98               560     513     495             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 15526.8 17707.8   984.8        F
 20782.3   23783   984.8        F

CROSS SECTION OUTPUT  Profile #PF#1
*********************************************************************************************
* E.G. Elev (ft)         *  977.14  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.68  * Wt. n-Val.            *   0.037  *   0.032  *          *
* W.S. Elev (ft)         *  976.47  * Reach Len. (ft)       *  560.00  *  513.00  *  495.00  *
* Crit W.S. (ft)         *  971.52  * Flow Area (sq ft)     *  859.98  *24480.33  *          *
* E.G. Slope (ft/ft)     *0.000945  * Area (sq ft)          * 3274.81  *24480.33  *          *
* Q Total (cfs)          *164000.00  * Flow (cfs)          * 1532.00  *162468.00  *          *
* Top Width (ft)         * 4630.96  * Top Width (ft)       * 2133.56  * 2497.40  *          *
* Vel Total (ft/s)       *    6.47  * Avg. Vel. (ft/s)     *    1.78  *    6.64  *          *
* Max Chl Dpth (ft)      *   14.37  * Hydr. Depth (ft)     *    1.73  *    9.80  *          *
* Conv. Total (cfs)      *5333542.0  * Conv. (cfs)         * 49822.9  *5283719.0  *          *
* Length Wtd. (ft)       *  514.20  * Wetted Per. (ft)     *  496.32  * 2500.83  *          *
* Min Ch El (ft)         *  962.10  * Shear (lb/sq ft)     *    0.10  *    0.58  *          *
* Alpha                  *    1.04  * Stream Power (lb/ft s) *    0.18  *    3.83  *          *
* Frctn Loss (ft)        *    0.56  * Cum Volume (acre-ft)  * 4276.01  *12942.06  *  945.48  *
* C & E Loss (ft)        *    0.00  * Cum SA (acres)        * 1207.33  * 1491.67  *  509.71  *
*********************************************************************************************

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.

CROSS SECTION OUTPUT  Profile #PF#2
*********************************************************************************************
* E.G. Elev (ft)         *  977.46  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.65  * Wt. n-Val.            *   0.037  *   0.032  *          *
* W.S. Elev (ft)         *  976.81  * Reach Len. (ft)       *  560.00  *  513.00  *  495.00  *
* Crit W.S. (ft)         *  971.52  * Flow Area (sq ft)     *  248.33  *25349.32  *          *
* E.G. Slope (ft/ft)     *0.000858  * Area (sq ft)          *  248.33  *25349.32  *          *
* Q Total (cfs)          *164000.00  * Flow (cfs)          *  360.60  *163639.40  *          *
* Top Width (ft)         * 2676.39  * Top Width (ft)       *  179.00  * 2497.39  *          *
* Vel Total (ft/s)       *    6.41  * Avg. Vel. (ft/s)     *    1.45  *    6.46  *          *
* Max Chl Dpth (ft)      *   14.71  * Hydr. Depth (ft)     *    1.39  *   10.15  *          *
* Conv. Total (cfs)      *5599491.0  * Conv. (cfs)         * 12312.0  *5587179.0  *          *
* Length Wtd. (ft)       *  513.05  * Wetted Per. (ft)     *  181.03  * 2501.17  *          *
* Min Ch El (ft)         *  962.10  * Shear (lb/sq ft)     *    0.07  *    0.54  *          *
* Alpha                  *    1.01  * Stream Power (lb/ft s) *    0.11  *    3.50  *          *
* Frctn Loss (ft)        *    0.52  * Cum Volume (acre-ft)  *  304.55  *13452.04  *   30.85  *
* C & E Loss (ft)        *    0.00  * Cum SA (acres)        *   51.02  * 1493.77  *    5.87  *
*********************************************************************************************

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

CROSS SECTION


RIVER: 1
REACH: 1                RS: 203.48

INPUT
Description: 203.48

Right Channel Bank Staion Interpolated
Station Elevation Data    num=      97
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*********************************************************************************
 15578.8    977.1 15693.5    976.9 15717.9      977 15814.4    976.9 15880.9    978.5
 15900.7    978.2 15967.5    973.1 16013.9    973.9 16068.7    973.5 16168.1    973.8
 16324.7      974 16419.6    974.1 16584.4    974.1 16657.7    974.3 16810.8    974.5
 16932.4    974.5 17066.5    974.6 17177.1    974.2 17201.7    974.2 17312.2    975.1
 17331.6      976 17341.7    975.7 17369.6    978.2 17434.9    970.7 17473.9    969.3
 17535.6    971.3 17609.4    970.9 17714.8    972.8 17721.6    972.8 17841.5    973.7
 17932.6      974 18016.7    972.4 18039.3    972.1 18120.3    973.5 18171.8      968
   18184    969.1 18267.5    973.4 18353.5    970.9 18380.1    969.8   18439    969.7
 18521.1  965.52 18538.6    965.3 18561.3    969.6 18571.7      970 18619.2    968.6
 18635.6    969.2 18675.5    973.1 18730.7    972.2 18817.1    970.9   18956    969.1
 18991.1    970.6 19035.5    973.7 19082.7    974.1 19116.8    968.9 19177.6    972.2
 19217.3    970.5 19332.9    970.5 19399.6    962.9 19491.7    962.7 19584.5    965.1
 19624.3    962.2 19645.8    962.3 19669.3      965 19679.4    965.3 19794.5    963.4
 19884.7    963.3 19987.2    964.5 20013.9    964.4 20199.2      964 20220.6    964.7
 20227.4    967.6 20231.3    963.9 20325.6    963.9 20342.5    963.9 20345.7    965.5
 20353.5    967.3 20358.6    964.3   20404    963.2 20433.1    965.2 20458.7      965
   20480    963.1 20588.9    964.7 20638.4    966.8 20725.1    968.7 20785.1    971.2
20856.76976.9083 20866.7    977.7 20886.7    979.4 20901.8    978.6 20909.2    979.5
 20915.7    978.5 20925.9    979.4 20953.9    979.4 20960.7    978.7 20985.4    978.7
 20989.2    980.3   20999    981.2

Manning's n Values        num=       5
     Sta   n Val      Sta   n Val      Sta   n Val      Sta   n Val      Sta   n Val
*********************************************************************************
 15578.8    .025 17369.6    .037 17932.6    .037 18619.2    .032 20886.7    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.    Expan.
       17932.620856.76               500  505.82     515             .1       .3
```

```
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 15578.8 17369.6   981.2       F
   20999   20999   981.2       F

CROSS SECTION OUTPUT  Profile #PF#1
*****************************************************************************************************
* E.G. Elev (ft)         *  976.58  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.67  * Wt. n-Val.            *   0.037  *   0.032  *          *
* W.S. Elev (ft)         *  975.92  * Reach Len. (ft)       *  500.00  *  505.82  *  515.00  *
* Crit W.S. (ft)         *  972.02  * Flow Area (sq ft)     * 2009.24  *23608.84  *          *
* E.G. Slope (ft/ft)     *0.001248  * Area (sq ft)          * 4384.68  *23608.84  *          *
* Q Total (cfs)          *164000.00  * Flow (cfs)          *  6815.32  *157184.70  *          *
* Top Width (ft)         * 4863.77  * Top Width (ft)       * 1952.06  * 2911.72  *          *
* Vel Total (ft/s)       *    6.40  * Avg. Vel. (ft/s)     *    3.39  *    6.66  *          *
* Max Chl Dpth (ft)      *   13.72  * Hydr. Depth (ft)     *    3.70  *    8.11  *          *
* Conv. Total (cfs)      *4642347.0  * Conv. (cfs)         *  192921.2  *4449426.0  *          *
* Length Wtd. (ft)       *  505.61  * Wetted Per. (ft)     *  543.50  * 2918.40  *          *
* Min Ch El (ft)         *  962.20  * Shear (lb/sq ft)     *    0.29  *    0.63  *          *
* Alpha                  *    1.05  * Stream Power (lb/ft s) *    0.98  *    4.20  *          *
* Frctn Loss (ft)        *    0.65  * Cum Volume (acre-ft)  * 4226.78  *12658.89  *  945.48  *
* C & E Loss (ft)        *    0.00  * Cum SA (acres)        * 1181.07  * 1459.82  *  509.71  *
*****************************************************************************************************

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.

CROSS SECTION OUTPUT  Profile #PF#2
*****************************************************************************************************
* E.G. Elev (ft)         *  976.94  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.69  * Wt. n-Val.            *          *   0.033  *          *
* W.S. Elev (ft)         *  976.25  * Reach Len. (ft)       *  500.00  *  505.82  *  515.00  *
* Crit W.S. (ft)         *  971.97  * Flow Area (sq ft)     *          *24567.80  *          *
* E.G. Slope (ft/ft)     *0.001196  * Area (sq ft)          *          *24567.80  *          *
* Q Total (cfs)          *164000.00  * Flow (cfs)          *          *164000.00  *          *
* Top Width (ft)         * 2911.71  * Top Width (ft)       *          * 2911.71  *          *
* Vel Total (ft/s)       *    6.68  * Avg. Vel. (ft/s)     *          *    6.68  *          *
* Max Chl Dpth (ft)      *   14.05  * Hydr. Depth (ft)     *          *    8.44  *          *
* Conv. Total (cfs)      *4742364.0  * Conv. (cfs)         *          *4742364.0  *          *
* Length Wtd. (ft)       *  505.82  * Wetted Per. (ft)     *          * 2920.97  *          *
* Min Ch El (ft)         *  962.20  * Shear (lb/sq ft)     *          *    0.63  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *    4.19  *          *
* Frctn Loss (ft)        *    0.62  * Cum Volume (acre-ft)  *  302.96  *13158.11  *   30.85  *
* C & E Loss (ft)        *    0.00  * Cum SA (acres)        *   49.87  * 1461.92  *    5.87  *
*****************************************************************************************************

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

CROSS SECTION


RIVER: 1
REACH: 1                 RS: 203.39

INPUT
Description: 203.39
Station Elevation Data    num=      96
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*****************************************************************************
   15500   974.4 15548.5   978.1 15604.9   974.8 15609.8   975.3 15717.3   976.3
 15722.2   976.3 15836.5   975.1 15864.7   976.6 15875.6     973 15888.1   975.4
 15914.3   976.1 16076.8   976.1 16271.9   976.2 16290.8   976.1 16376.9   976.2
 16390.2   976.2 16520.6     976 16549.4   977.1 16694.9   973.2 16751.5   970.2
 16832.2   968.6   16901   973.2 17053.7   971.4 17105.6   971.5   17120   974.9
 17136.1   970.9 17147.5   974.3   17212   975.5 17260.9   972.8 17296.2   974.2
   17353   971.2 17382.3   974.9 17417.1   974.8 17453.9   976.4 17519.2   968.1
 17602.4   973.1 17694.4   971.8 17733.8   970.7 17815.5     973 17901.2   972.3
 17947.7   972.1 17970.8     973   18042   972.8   18114   969.5 18199.7   969.1
 18207.5   968.6 18224.3   964.4 18259.9   963.8 18330.5   967.6 18418.7   967.4
 18507.8   969.8 18601.7   972.8 18629.1   974.7 18686.7   980.9   18738   974.3
 18773.9   975.9 18902.4     975 19023.2   970.3 19056.6   971.7 19105.2   965.4
 19218.1   968.3 19268.2     972 19346.8   971.4 19370.8   969.4 19397.9   965.7
 19418.4   960.4 19479.4   959.9 19491.4     962   19633   960.6 19736.1     965
 19770.9   965.7 19800.9   963.8 19816.1   965.5 19916.4     965 20010.4   963.8
 20159.5   964.6 20260.9   963.8 20303.7   964.2 20330.3   963.1   20346   964.4
 20389.8   962.9 20483.7   964.2 20485.1   964.9 20576.8   964.7 20682.1   965.3
 20789.2   969.4 20834.2   971.9 20922.2   969.5 20993.5   968.3 21038.8   975.6
 21082.9   975.6 21098.5   976.5 21138.2   977.4 21143.6   978.2 21153.1   976.5
   21223   978.3

Manning's n Values        num=       5
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
*****************************************************************************
   15500    .025 16832.2    .037 17970.8    .037 18601.7    .032 21038.8    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
     17970.8 21038.8              500     505     500             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
   15500 17519.2   980.9       F
 21223.3   21223   980.9       F

CROSS SECTION OUTPUT  Profile #PF#1
*****************************************************************************************************
* E.G. Elev (ft)         *  975.93  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.70  * Wt. n-Val.            *   0.037  *   0.033  *          *
* W.S. Elev (ft)         *  975.23  * Reach Len. (ft)       *  500.00  *  505.00  *  500.00  *
* Crit W.S. (ft)         *  971.15  * Flow Area (sq ft)     * 1495.78  *23366.65  *          *
* E.G. Slope (ft/ft)     *0.001331  * Area (sq ft)          * 3866.15  *23366.65  *          *
* Q Total (cfs)          *164000.00  * Flow (cfs)          *  4867.25  *159132.80  *          *
* Top Width (ft)         * 4207.76  * Top Width (ft)       * 1350.37  * 2857.40  *          *
* Vel Total (ft/s)       *    6.60  * Avg. Vel. (ft/s)     *    3.25  *    6.81  *          *
* Max Chl Dpth (ft)      *   15.33  * Hydr. Depth (ft)     *    3.31  *    8.18  *          *
* Conv. Total (cfs)      *4495896.0  * Conv. (cfs)         *  133430.7  *4362466.0  *          *
```

```
                                                                    DuplicateEffective
* Length Wtd. (ft)        *  504.81  * Wetted Per. (ft)        *  451.83  * 2861.57  *           *
* Min Ch El (ft)          *  959.90  * Shear (lb/sq ft)        *    0.28  *    0.68  *           *
* Alpha                   *    1.04  * Stream Power (lb/ft s) *    0.89  *    4.62  *           *
* Frctn Loss (ft)         *    0.73  * Cum Volume (acre-ft)   * 4179.42  *12386.15  *  945.48  *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)         * 1162.11  * 1426.33  *  509.71  *
*********************************************************************************************

Warning: Divided flow computed for this cross-section.
Warning: The cross-section end points had to be extended vertically for the computed water surface.
Note:    Multiple critical depths were found at this location.  The critical depth with the lowest, valid,
         water surface was used.

CROSS SECTION OUTPUT  Profile #PF#2
*********************************************************************************************
* E.G. Elev (ft)          *  976.32  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.69  * Wt. n-Val.            *          *    0.033  *          *
* W.S. Elev (ft)          *  975.62  * Reach Len. (ft)       *  500.00  *  505.00  *  500.00  *
* Crit W.S. (ft)          *  971.10  * Flow Area (sq ft)     *          *24520.14  *          *
* E.G. Slope (ft/ft)      *0.001254  * Area (sq ft)          *          *24520.14  *          *
* Q Total (cfs)           *164000.00  * Flow (cfs)          *          *164000.00  *          *
* Top Width (ft)          * 2930.05  * Top Width (ft)       *          * 2930.05  *          *
* Vel Total (ft/s)        *    6.69  * Avg. Vel. (ft/s)     *          *    6.69  *          *
* Max Chl Dpth (ft)       *   15.72  * Hydr. Depth (ft)     *          *    8.37  *          *
* Conv. Total (cfs)       *4631119.0  * Conv. (cfs)         *          *4631119.0  *          *
* Length Wtd. (ft)        *  505.00  * Wetted Per. (ft)     *          * 2937.30  *          *
* Min Ch El (ft)          *  959.90  * Shear (lb/sq ft)     *          *    0.65  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    4.37  *          *
* Frctn Loss (ft)         *    0.69  * Cum Volume (acre-ft)   *  302.96  *12873.10  *   30.85  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)         *   49.87  * 1428.00  *    5.87  *
*********************************************************************************************

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.

CROSS SECTION


RIVER: 1
REACH: 1                 RS: 203.29

INPUT
Description: 203.29

Right Channel Bank Staion Interpolated
Station Elevation Data    num=      97
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
 14306.7   975.2 14398.4   975.7 14462.6   975.2   14487   977.9 14491.6   976.6
 14498.9   977.7 14515.3   976.7   14528     974 14553.9   972.7 14670.7   972.7
 14687.5   972.7 14856.4   972.7 14867.5   972.7 15002.5   972.7 15006.1   972.7
 15100.1   972.9 15122.5   975.2 15172.8   972.4 15364.8   972.7 15484.5     974
 15649.2   973.6 15701.1   973.4   15710   975.9 15724.5   974.3 15776.8   976.4
 15815.8     974 15918.9   974.9 15999.4   974.9 16112.9   975.4 16114.8   975.5
 16293.6   975.5   16301   975.5 16411.1     976 16465.5     976 16664.1     976
 16733.3   975.8 16808.3   976.1 16968.8   976.1 17062.2   976.1   17153   976.2
 17251.7   975.1 17286.9   974.6 17327.4   969.3 17410.1   970.5 17467.7   974.5
 17469.8   973.6   17539   974.4   17590   968.4 17649.5   971.4 17775.2   971.1
 17888.5   970.4 17987.9   968.4 18065.6   972.5 18117.7   969.6 18146.3   971.6
 18204.1   968.8 18247.3   971.6 18266.5   967.8 18378.2   963.9   18464   968.2
 18535.2   966.5 18593.9   967.2 18627.7   974.8 18719.2   971.5 18838.7   974.7
   18920   973.9 18947.9   969.3 19046.6   972.7 19166.7   971.8   19269   971.6
 19295.1   965.4 19325.9   960.7 19447.7   960.9 19552.4   961.6 19655.6   961.1
 19756.7   962.1 19849.6   963.4 19945.3     963   20028   965.9 20124.9   965.7
   20226   965.2 20297.8   963.6 20378.8   964.4 20396.1   961.9 20494.8   962.8
   20586   966.7 20676.2   969.1 20796.8     969 20894.8   969.2 20935.1   968.4
 20981.6   969.2 21027.6   966.621082.58975.7482 21088.3   976.7   21155   977.1
 21257.1   975.6   21295   976.3

Manning's n Values        num=       5
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************************************************
 14306.7    .025 16968.8    .037 18065.6    .037 18535.2    .032 21088.3    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       18065.621082.58             620     535     420             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 14306.7   17590   977.9          F
 21088.3   21295   977.9          F

CROSS SECTION OUTPUT  Profile #PF#1
*********************************************************************************************
* E.G. Elev (ft)          *  975.20  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.73  * Wt. n-Val.            *   0.037  *    0.033  *          *
* W.S. Elev (ft)          *  974.46  * Reach Len. (ft)       *  620.00  *  535.00  *  420.00  *
* Crit W.S. (ft)          *  970.77  * Flow Area (sq ft)     * 1911.74  *22390.42  *          *
* E.G. Slope (ft/ft)      *0.001572  * Area (sq ft)          * 4404.29  *22390.42  *          *
* Q Total (cfs)           *164000.00  * Flow (cfs)          * 7692.92  *156307.10  *          *
* Top Width (ft)          * 4967.77  * Top Width (ft)       * 2002.07  * 2965.71  *          *
* Vel Total (ft/s)        *    6.75  * Avg. Vel. (ft/s)     *    4.02  *    6.98  *          *
* Max Chl Dpth (ft)       *   13.76  * Hydr. Depth (ft)     *    4.02  *    7.55  *          *
* Conv. Total (cfs)       *4136567.0  * Conv. (cfs)         *194038.3  *3942529.0  *          *
* Length Wtd. (ft)        *  540.60  * Wetted Per. (ft)     *  475.81  * 2970.14  *          *
* Min Ch El (ft)          *  960.70  * Shear (lb/sq ft)     *    0.39  *    0.74  *          *
* Alpha                   *    1.04  * Stream Power (lb/ft s) *    1.59  *    5.16  *          *
* Frctn Loss (ft)         *    0.91  * Cum Volume (acre-ft)   * 4131.96  *12120.92  *  945.48  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)         * 1142.87  * 1392.57  *  509.71  *
*********************************************************************************************

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.

CROSS SECTION OUTPUT  Profile #PF#2
*********************************************************************************************
```

				DuplicateEffective		
* E.G. Elev (ft)	* 975.63	* Element	* Left OB	* Channel	* Right OB	*
* Vel Head (ft)	* 0.75	* Wt. n-Val.	*	* 0.033	*	*
* W.S. Elev (ft)	* 974.88	* Reach Len. (ft)	* 620.00	* 535.00	* 420.00	*
* Crit W.S. (ft)	* 970.71	* Flow Area (sq ft)	*	*23633.34	*	*
* E.G. Slope (ft/ft)	*0.001478	* Area (sq ft)	*	*23633.34	*	*
* Q Total (cfs)	*164000.00	* Flow (cfs)	*	*164000.00	*	*
* Top Width (ft)	* 3009.26	* Top Width (ft)	*	* 3009.26	*	*
* Vel Total (ft/s)	* 6.94	* Avg. Vel. (ft/s)	*	* 6.94	*	*
* Max Chl Dpth (ft)	* 14.18	* Hydr. Depth (ft)	*	* 7.85	*	*
* Conv. Total (cfs)	*4265774.0	* Conv. (cfs)	*	*4265774.0	*	*
* Length Wtd. (ft)	* 535.03	* Wetted Per. (ft)	*	* 3016.54	*	*
* Min Ch El (ft)	* 960.70	* Shear (lb/sq ft)	*	* 0.72	*	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 5.02	*	*
* Frctn Loss (ft)	* 0.88	* Cum Volume (acre-ft)	* 302.96	*12593.97	* 30.85	*
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	* 49.87	* 1393.58	* 5.87	*

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

CROSS SECTION

RIVER: 1
REACH: 1 RS: 203.19

INPUT
Description: 203.19

Right Channel Bank Staion Interpolated
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
16639.2	974.6	16696.5	974.6	16879.5	976.3	16960.6	976.7	16982.2	976.1
16987.1	975.2	16999.5	976.6	17045.2	975.2	17145.4	975	17180.8	974.8
17306.9	974	17389.7	974.5	17513.2	972.9	17539	972.7	17596.6	969.7
17650.2	971	17690.3	968.3	17762.5	967.5	17781.9	968.4	17812.7	966.2
17893.5	967.8	17945.6	971.7	18023.5	971.3	18058.7	964.6	18099.2	971.6
18139.8	972.1	18185.8	967.2	18251.5	970.8	18282.1	971.9	18338.2	971.3
18384.4	969	18406.2	969.7	18445.9	965.2	18495.1	966.4	18521	969
18558.4	964.7	18605.8	963.2	18623.9	961.2	18659	961.4	18701.5	965.4
18712.2	964.5	18734.5	964.5	18797.4	970	18848.7	968.9	18911.7	969.9
18983.1	969.7	19009.9	968.7	19025	967.1	19031	968.2	19080.8	968.8
19095.4	970.3	19159	970.9	19191.3	967.9	19256	967.2	19294.3	960.1
19346.5	959	19442.2	956.7	19471.8	962.7	19542.3	963	19643.7	963.4
19644.6	963.4	19721.9	962.3	19788.7	962.7	19870	964.6	19925.6	962.6
19971.9	966.8	20041.3	966	20111.2	965.3	20142.5	963.8	20233.9	963.3
20336.2	963.2	20384.6	963.4	20398.2	962.6	20462.1	962.2	20541.1	965.2
20570.6	966.9	20635.2	967.1	20669.2	965.5	20696.2	966.5	20752.9	964.7
20795.4	967.4	20825.2	966.9	20848.9	967.5	20865.3	966.7	20898.7	966.8
20928.5	970.1	20952.6	973.82	0965.39	974.9	827 20981.8	976.5	20999	975.6
21013	977.9	21075.8	975.9	21096.9	975.8	21174.9	976.1	21273.9	975.8
21344.5	975.8	21380	975.6						

Manning's n Values num= 6

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
16639.2	.025	17762.5	.043	18282.1	.043	18734.5	.037	20981.8	.025
21013	.025								

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
18282.1 20965.39 535 520 485 .1 .3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
16639.2	17587	978	F

CROSS SECTION OUTPUT Profile #PF#1

* E.G. Elev (ft)	* 974.28	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.69	* Wt. n-Val.	* 0.036	* 0.038	* *
* W.S. Elev (ft)	* 973.59	* Reach Len. (ft)	* 535.00	* 520.00	* 485.00 *
* Crit W.S. (ft)	* 970.04	* Flow Area (sq ft)	* 3019.47	*22027.15	* *
* E.G. Slope (ft/ft)	*0.001787	* Area (sq ft)	* 3161.07	*22027.15	* *
* Q Total (cfs)	*164000.00	* Flow (cfs)	*13926.43	*150073.60	* *
* Top Width (ft)	* 3491.38	* Top Width (ft)	* 822.24	* 2669.14	* *
* Vel Total (ft/s)	* 6.55	* Avg. Vel. (ft/s)	* 4.61	* 6.81	* *
* Max Chl Dpth (ft)	* 16.89	* Hydr. Depth (ft)	* 4.34	* 8.25	* *
* Conv. Total (cfs)	*3879641.0	* Conv. (cfs)	*329448.5	*3550193.0	* *
* Length Wtd. (ft)	* 521.19	* Wetted Per. (ft)	* 697.10	* 2673.29	* *
* Min Ch El (ft)	* 956.70	* Shear (lb/sq ft)	* 0.48	* 0.92	* *
* Alpha	* 1.03	* Stream Power (lb/ft s)	* 2.23	* 6.26	* *
* Frctn Loss (ft)	* 1.01	* Cum Volume (acre-ft)	* 4078.12	*11848.15	* 945.48 *
* C & E Loss (ft)	* 0.01	* Cum SA (acres)	* 1122.77	* 1357.97	* 509.71 *

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 OUTPUT Profile #PF#2

* E.G. Elev (ft)	* 974.74	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.79	* Wt. n-Val.	* 0.043	* 0.038	* *
* W.S. Elev (ft)	* 973.95	* Reach Len. (ft)	* 535.00	* 520.00	* 485.00 *
* Crit W.S. (ft)	* 970.04	* Flow Area (sq ft)	* 48.25	*22993.21	* *
* E.G. Slope (ft/ft)	*0.001849	* Area (sq ft)	* 48.25	*22993.21	* *
* Q Total (cfs)	*164000.00	* Flow (cfs)	* 118.21	*163881.80	* *
* Top Width (ft)	* 2689.14	* Top Width (ft)	* 20.00	* 2669.14	* *
* Vel Total (ft/s)	* 7.12	* Avg. Vel. (ft/s)	* 2.45	* 7.13	* *
* Max Chl Dpth (ft)	* 17.25	* Hydr. Depth (ft)	* 2.41	* 8.61	* *
* Conv. Total (cfs)	*3814345.0	* Conv. (cfs)	* 2749.4	*3811596.0	* *
* Length Wtd. (ft)	* 520.03	* Wetted Per. (ft)	* 22.78	* 2673.65	* *
* Min Ch El (ft)	* 956.70	* Shear (lb/sq ft)	* 0.24	* 0.99	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	* 0.60	* 7.07	* *
* Frctn Loss (ft)	* 1.04	* Cum Volume (acre-ft)	* 302.61	*12307.64	* 30.85 *

```
                                                                    DuplicateEffective
* C & E Loss (ft)        *    0.02  * Cum SA (acres)          *   49.73  * 1358.71  *    5.87  *
*****************************************************************************************

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: 1
REACH: 1                RS: 203.09

INPUT
Description: 203.09

Right Channel Bank Staion Interpolated
Station Elevation Data    num=      97
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*****************************************************************************************
 16077.3    972.6 16108.8    973.2 16114.5    973.9 16141.2    974.9    16147    976.1
 16177.1    975.5 16186.3    974.5 16217.9    974.3 16296.3    973.5 16396.3    973.6
 16495.1    973.6 16619.4    973.4 16649.6    973.4 16802.2    973.6 16847.8    974.3
 16927.3    974.4 16967.8    974.4 17063.1    975.3 17138.5    975.2 17150.2    974.9
 17158.9    972.7 17171.5      974 17175.5    975.3 17183.4    974.2    17268    973.7
   17382    973.8 17583.9    974.5 17588.1    974.4 17656.3      973 17724.5    971.9
 17787.2      966   17835    968.2 17878.2    968.6 17889.9    967.6 17960.8      969
 18034.5    970.7 18151.5    966.1 18178.5    966.8 18202.2    966.1 18277.6      970
 18313.5    969.4 18321.1    969.7 18364.1    965.2   18437    969.5   18507    971.4
 18541.2    970.5 18605.3    962.2 18681.6      963 18770.4    960.8 18814.5      971
 18875.7      969 18992.4    969.2 19035.2    968.4 19104.8    968.6 19136.4      968
 19190.2    961.9 19211.5    961.8 19247.1      964 19266.9    960.3 19282.4    958.7
 19461.8    959.9 19573.5    959.6 19585.9    960.2 19653.1    960.1 19682.3    962.4
 19752.6    963.1   19757    963.1 19865.5    961.3 19934.1    962.2 20005.1    964.6
 20113.7    965.7 20184.3    965.7 20264.8      966 20287.7    966.2 20364.7    966.6
 20397.2    966.4 20469.2    966.1 20498.9    964.4 20517.6    961.6 20546.5    960.5
 20610.5    960.6 20636.9    964.4 20681.6    965.4 20709.6    964.4 20742.1    962.1
 20765.3    962.2   20780    963.2 20812.8    959.6 20837.9    961.320914.82973.8939
 20917.3    974.3 20926.9    975.4 20942.8    974.2 20972.4    973.4 21023.3    975.3
 21111.6    973.6   21171    974.1

Manning's n Values        num=       5
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
*****************************************************************************
 16077.3    .025 17588.1    .043   18507    .043 18814.5    .037 20917.3    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.    Expan.
        1850720914.82              520     518     500             .1       .3
Ineffective Flow     num=       2
  Sta L   Sta R    Elev  Permanent
 16077.3 17583.9   976.1       F
 20917.3   21171   976.1       F

CROSS SECTION OUTPUT  Profile #PF#1
*****************************************************************************************
* E.G. Elev (ft)         *  973.25  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.83  * Wt. n-Val.             *   0.043  *   0.038  *          *
* W.S. Elev (ft)         *  972.42  * Reach Len. (ft)        *  520.00  *  518.00  *  500.00  *
* Crit W.S. (ft)         *  969.19  * Flow Area (sq ft)      * 3133.13  *20204.47  *          *
* E.G. Slope (ft/ft)     *0.002112  * Area (sq ft)           * 3133.13  *20204.47  *          *
* Q Total (cfs)          *164000.00  * Flow (cfs)           *12200.67  *151799.30  *          *
* Top Width (ft)         * 3213.89  * Top Width (ft)        *  815.04  * 2398.85  *          *
* Vel Total (ft/s)       *    7.03  * Avg. Vel. (ft/s)      *    3.89  *    7.51  *          *
* Max Chl Dpth (ft)      *   13.72  * Hydr. Depth (ft)      *    3.84  *    8.42  *          *
* Conv. Total (cfs)      *3568365.0  * Conv. (cfs)          *265466.2  *3302899.0  *          *
* Length Wtd. (ft)       *  518.12  * Wetted Per. (ft)      *  816.06  * 2403.51  *          *
* Min Ch El (ft)         *  958.70  * Shear (lb/sq ft)      *    0.51  *    1.11  *          *
* Alpha                  *    1.08  * Stream Power (lb/ft s) *    1.97  *    8.33  *          *
* Frctn Loss (ft)        *    0.99  * Cum Volume (acre-ft)  * 4039.47  *11596.08  *  945.48  *
* C & E Loss (ft)        *    0.02  * Cum SA (acres)        * 1112.72  * 1327.72  *  509.71  *
*****************************************************************************************

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 OUTPUT  Profile #PF#2
*****************************************************************************************
* E.G. Elev (ft)         *  973.69  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.94  * Wt. n-Val.             *   0.043  *   0.038  *          *
* W.S. Elev (ft)         *  972.75  * Reach Len. (ft)        *  520.00  *  518.00  *  500.00  *
* Crit W.S. (ft)         *  968.97  * Flow Area (sq ft)      *  185.01  *20978.55  *          *
* E.G. Slope (ft/ft)     *0.002162  * Area (sq ft)           *  185.01  *20978.55  *          *
* Q Total (cfs)          *164000.00  * Flow (cfs)           *  516.86  *163483.10  *          *
* Top Width (ft)         * 2475.85  * Top Width (ft)        *   77.00  * 2398.85  *          *
* Vel Total (ft/s)       *    7.75  * Avg. Vel. (ft/s)      *    2.79  *    7.79  *          *
* Max Chl Dpth (ft)      *   14.05  * Hydr. Depth (ft)      *    2.40  *    8.75  *          *
* Conv. Total (cfs)      *3526911.0  * Conv. (cfs)          * 11115.5  *3515796.0  *          *
* Length Wtd. (ft)       *  518.00  * Wetted Per. (ft)      *   80.70  * 2403.84  *          *
* Min Ch El (ft)         *  958.70  * Shear (lb/sq ft)      *    0.31  *    1.18  *          *
* Alpha                  *    1.01  * Stream Power (lb/ft s) *    0.86  *    9.18  *          *
* Frctn Loss (ft)        *    0.98  * Cum Volume (acre-ft)  *  301.18  *12045.18  *   30.85  *
* C & E Loss (ft)        *    0.04  * Cum SA (acres)        *   49.13  * 1328.46  *    5.87  *
*****************************************************************************************

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: 1
```

REACH: 1 RS: 202.99

INPUT
Description: 202.99
Station Elevation Data num= 96

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
17058.5	973.2	17114.3	973.5	17267.7	973.8	17289	973.9	17305.6	974.4
17316.7	973.3	17329.5	974.7	17397.2	973.4	17508.3	973.5	17530.6	972.5
17571.7	973.2	17646.3	973.1	17659.9	972.5	17696.1	969.8	17713.5	970
17723.9	969.1	17781.1	967.5	17850.9	965.7	17864.6	967.2	17879.9	968
17893	968.2	17922	965.3	17941	964	17984.7	968.4	18035.6	970
18091.7	969.9	18126.6	969.7	18186.5	969.9	18238.3	970	18288.7	964.3
18293.1	963.9	18346.5	968.2	18360.3	967.9	18420.8	969.3	18469.4	969.3
18497.6	968.2	18580.4	968.7	18586.2	968.9	18608.3	967.1	18619.4	964.4
18650.8	965	18666.5	962.2	18686.7	961.6	18748.1	962.5	18789.2	962.8
18875	962.8	18906.3	963.4	18945.7	961.5	18988.8	963.5	19005.4	963.6
19058	964.4	19119.4	964.2	19128.8	964.3	19182	965.3	19208.5	964.3
19269.4	961.7	19318.8	960.3	19334.7	959.8	19391.3	959.8	19415.3	959.6
19435.9	960	19527.6	959.5	19609.2	959.5	19725.7	959.2	19759.9	960.9
19828.4	961.4	19945.2	960.7	19948	960.7	20028.5	959.3	20090	960.7
20131.7	963.1	20172.8	964.1	20227.9	965.4	20241.1	965.3	20304	965
20364.7	965.9	20422.1	964.9	20460.6	964.9	20528.6	963.3	20552.5	959.7
20558.2	959.8	20619.9	962.6	20665.6	962	20682.4	960.6	20692.5	959.3
20713.5	960.1	20748.9	960	20773.8	959.3	20789	960.3	20808	960.6
20818.5	963.8	20841.7	963.9	20894.5	963.1	20926.9	970.2	20960.7	976.4
20976	975.9								

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
17058.5	.025	17646.3	.043	18469.4	.043	19058	.037	20926.9	.043

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
18469.4 20926.9 480 456 424 .1 .3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
17058.5	17646.3	976	F

CROSS SECTION OUTPUT Profile #PF#1

		Left OB	Channel	Right OB
E.G. Elev (ft)	972.24	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.75	Wt. n-Val.	0.043	0.038	0.043
W.S. Elev (ft)	971.50	Reach Len. (ft)	480.00	456.00	424.00
Crit W.S. (ft)	967.56	Flow Area (sq ft)	2580.34	22030.56	4.58
E.G. Slope (ft/ft)	0.001726	Area (sq ft)	2580.34	22030.56	4.58
Q Total (cfs)	164000.00	Flow (cfs)	8104.63	155890.50	4.86
Top Width (ft)	3260.60	Top Width (ft)	796.04	2457.50	7.06
Vel Total (ft/s)	6.66	Avg. Vel. (ft/s)	3.14	7.08	1.06
Max Chl Dpth (ft)	12.30	Hydr. Depth (ft)	3.24	8.96	0.65
Conv. Total (cfs)	3947903.0	Conv. (cfs)	195099.2	3752686.0	117.1
Length Wtd. (ft)	457.42	Wetted Per. (ft)	797.26	2460.41	7.18
Min Ch El (ft)	959.20	Shear (lb/sq ft)	0.35	0.96	0.07
Alpha	1.08	Stream Power (lb/ft s)	1.10	6.83	0.07
Frctn Loss (ft)	0.68	Cum Volume (acre-ft)	4005.36	11344.96	945.46
C & E Loss (ft)	0.04	Cum SA (acres)	1103.10	1298.84	509.67

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

CROSS SECTION OUTPUT Profile #PF#2

		Left OB	Channel	Right OB
E.G. Elev (ft)	972.66	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.79	Wt. n-Val.		0.038	
W.S. Elev (ft)	971.87	Reach Len. (ft)	480.00	456.00	424.00
Crit W.S. (ft)	967.53	Flow Area (sq ft)		22949.27	
E.G. Slope (ft/ft)	0.001673	Area (sq ft)		22949.27	
Q Total (cfs)	164000.00	Flow (cfs)		164000.00	
Top Width (ft)	2457.50	Top Width (ft)		2457.50	
Vel Total (ft/s)	7.15	Avg. Vel. (ft/s)		7.15	
Max Chl Dpth (ft)	12.67	Hydr. Depth (ft)		9.34	
Conv. Total (cfs)	4009597.0	Conv. (cfs)		4009597.0	
Length Wtd. (ft)	456.00	Wetted Per. (ft)		2464.65	
Min Ch El (ft)	959.20	Shear (lb/sq ft)		0.97	
Alpha	1.00	Stream Power (lb/ft s)		6.95	
Frctn Loss (ft)	0.67	Cum Volume (acre-ft)	300.08	11784.00	30.85
C & E Loss (ft)	0.04	Cum SA (acres)	48.67	1299.58	5.87

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

CROSS SECTION

RIVER: 1
REACH: 1 RS: 202.9

INPUT
Description: 202.9

Right Channel Bank Staion Interpolated
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
16149.3	972.1	16219	972.6	16381.4	973.3	16446.1	973.3	16495.7	974.5
16526.4	971.9	16579.2	972.6	16597.9	974.5	16618	973.6	16631.4	972.3
16699.5	972.9	16755	974.1	16804	971.3	16823.8	973.1	16887.1	972.5
16957.5	972.2	16968.8	972.6	17046.9	971.4	17089.7	971.9	17151.8	972
17172.3	972.1	17235.7	971.8	17304.6	971.3	17369.1	970.9	17440.5	971.3
17504.7	971	17572.9	970.6	17644	970	17676.2	972.2	17699.3	970.6
17772.5	968.5	17815	965.7	17875.4	965.2	17896.7	963.8	17966.8	965.8
18000.2	967.5	18046.2	967	18087.7	964.4	18148.3	968.4	18203.5	967.3
18258.7	965	18308.6	967.1	18383	966.5	18433.6	966.6	18455.6	968.2
18517.5	967.7	18563	962.4	18611.6	961.8	18646	958.2	18714	961.6

```
                                                                    DuplicateEffective
 18808.1   961.6 18872.7   961.1   18917   963.4 18971.7   963.8 19054.2   965.2
 19121.2   965.8 19211.2   964.4 19215.4     966 19303.3   961.5 19368.9   960.3
 19378.2   959.7 19431.8   961.6 19460.5   960.1 19592.2   957.9 19666.6   958.3
 19722.9   960.9 19833.6     959 19903.1   959.5 19944.9     961 20063.7   959.6
 20145.5   959.8 20206.7   960.4 20250.7   959.4 20318.7   958.5 20412.7   962.7
 20460.7   961.4 20488.5   963.8 20502.9     964   20545   960.1   20596   959.7
 20624.3   960.6 20694.4     959 20754.9   958.5 20806.5   956.5 20831.6   957.9
 20858.2   961.1 20861.7   962.3 20936.5   969.5 20988.5   971.9 20993.5   972.3
   21011   973.7 21025.1   975.7 21027.9   980.1 21042.4     977 21052.5   978.4
 21066.1   978.5   21080   974.2

Manning's n Values         num=       5
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************************************************
 16149.3    .025   17815    .043 18455.6    .043 18872.7    .037   21011    .043

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       18455.6 20993.5              575     538     460             .1       .3
Ineffective Flow     num=       1
   Sta L   Sta R    Elev  Permanent
 16149.3   17500   980.1        F

CROSS SECTION OUTPUT  Profile #PF#1
*********************************************************************************************
* E.G. Elev (ft)         *  971.52  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.60  * Wt. n-Val.            *   0.041  *   0.038  *          *
* W.S. Elev (ft)         *  970.92  * Reach Len. (ft)       *  575.00  *  538.00  *  460.00  *
* Crit W.S. (ft)         *  966.33  * Flow Area (sq ft)     * 3303.01  *23985.46  *          *
* E.G. Slope (ft/ft)     *0.001285  * Area (sq ft)          * 3303.09  *23985.46  *          *
* Q Total (cfs)          *164000.00  * Flow (cfs)           *11302.34  *152697.70  *          *
* Top Width (ft)         * 3419.52  * Top Width (ft)       *  907.81  * 2511.71  *          *
* Vel Total (ft/s)       *    6.01  * Avg. Vel. (ft/s)     *    3.42  *    6.37  *          *
* Max Chl Dpth (ft)      *   14.42  * Hydr. Depth (ft)     *    3.67  *    9.55  *          *
* Conv. Total (cfs)      *4574160.0  * Conv. (cfs)         *315236.0  *4258924.0  *          *
* Length Wtd. (ft)       *  540.74  * Wetted Per. (ft)     *  901.08  * 2514.33  *          *
* Min Ch El (ft)         *  956.50  * Shear (lb/sq ft)     *    0.29  *    0.77  *          *
* Alpha                  *    1.07  * Stream Power (lb/ft s) *  1.01  *    4.87  *          *
* Frctn Loss (ft)        *    0.66  * Cum Volume (acre-ft)  * 3972.95  *11104.10  *  945.44  *
* C & E Loss (ft)        *    0.02  * Cum SA (acres)        * 1093.71  * 1272.83  *  509.63  *
*********************************************************************************************

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.

CROSS SECTION OUTPUT  Profile #PF#2
*********************************************************************************************
* E.G. Elev (ft)         *  971.95  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.67  * Wt. n-Val.            *          *   0.038  *          *
* W.S. Elev (ft)         *  971.28  * Reach Len. (ft)       *  575.00  *  538.00  *  460.00  *
* Crit W.S. (ft)         *  966.26  * Flow Area (sq ft)     *          *24881.66  *          *
* E.G. Slope (ft/ft)     *0.001315  * Area (sq ft)          *          *24881.66  *          *
* Q Total (cfs)          *164000.00  * Flow (cfs)           *          *164000.00  *          *
* Top Width (ft)         * 2511.71  * Top Width (ft)       *          * 2511.71  *          *
* Vel Total (ft/s)       *    6.59  * Avg. Vel. (ft/s)     *          *    6.59  *          *
* Max Chl Dpth (ft)      *   14.78  * Hydr. Depth (ft)     *          *    9.91  *          *
* Conv. Total (cfs)      *4523109.0  * Conv. (cfs)         *          *4523109.0  *          *
* Length Wtd. (ft)       *  538.00  * Wetted Per. (ft)     *          * 2517.77  *          *
* Min Ch El (ft)         *  956.50  * Shear (lb/sq ft)     *          *    0.81  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *         *    5.35  *          *
* Frctn Loss (ft)        *    0.68  * Cum Volume (acre-ft)  *  300.08  *11533.64  *   30.85  *
* C & E Loss (ft)        *    0.02  * Cum SA (acres)        *   48.67  * 1273.57  *    5.87  *
*********************************************************************************************

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

CROSS SECTION


RIVER: 1
REACH: 1                 RS: 202.8

INPUT
Description: 202.8

Right Channel Bank Staion Interpolated
Station Elevation Data    num=      97
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
 16524.8   970.3 16556.4   971.5 16586.6   971.3 16591.4   972.2 16622.9   972.3
 16660.4   974.1 16671.5   973.8 16699.8   970.7   16750   971.8 16768.2   970.7
   16810   971.7 16908.3   970.6 16968.5   970.2 16997.3   973.4 17058.9   971.8
   17081   970.9 17148.9     971 17188.6   970.2 17279.5   971.1 17348.6     971
   17423   970.4 17488.6   969.6 17496.3   969.7 17556.3   970.2 17607.5   969.3
 17662.7   971.7 17678.2   969.4 17755.1   968.2 17771.4   968.3 17836.1   965.5
 17897.9   964.9 17974.2   962.8 18017.4   962.7 18037.3   963.4 18039.7     964
 18135.1   964.3 18137.8   964.2   18205   963.3 18273.4   965.1 18313.6   965.5
 18348.1   967.5 18390.8   968.8 18406.9   966.2 18434.5   959.9   18478   958.9
 18492.5   956.4 18526.7   958.4   18618   960.3 18696.7   962.9 18716.3   963.1
 18761.6   962.1 18858.8   963.6 18897.8   963.7 18966.5   960.9 18996.3   959.9
 19072.2   959.5   19083   959.6 19151.4   960.5 19243.7   960.1 19333.5   960.5
 19396.1   960.6 19435.5   960.4 19525.6   959.5 19621.8   960.4 19685.6   961.9
 19750.9   962.5 19813.5   963.5 19828.2   963.6 19893.3   963.5 19985.3   961.5
 20027.7     961 20127.3   961.5 20220.9     962 20261.5   962.8 20325.2   962.5
 20339.8   963.1 20397.5   960.8   20461   959.3 20525.1   958.4 20576.6   957.1
 20634.6   957.7 20682.6   958.4 20759.8   957.1 20823.5   956.8 20855.2   957.6
 20859.5   958.4   20873   957.9 20906.1   958.3 20955.4   956.8 20983.8   959.2
 20987.6   962.6 21013.7     971 21014.96 971.6307 21019.3   973.8 21057.4   987.6
 21082.8     986   21093   986.3

Manning's n Values         num=       5
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************************************************
 16524.8    .025 17771.4    .043 18390.8    .043 19243.7    .037 21019.3    .043
```

```
                                                                DuplicateEffective
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      18390.821014.96                600   555.5     450            .1      .3
Ineffective Flow      num=       1
  Sta L   Sta R    Elev  Permanent
 16524.8 17279.5   987.6       F

CROSS SECTION OUTPUT  Profile #PF#1
*************************************************************************************************
* E.G. Elev (ft)          *  970.84  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.52  * Wt. n-Val.             *   0.042  *   0.039  *          *
* W.S. Elev (ft)          *  970.32  * Reach Len. (ft)        *  600.00  *  555.50  *  450.00  *
* Crit W.S. (ft)          *  965.61  * Flow Area (sq ft)      * 3650.87  *25399.50  *          *
* E.G. Slope (ft/ft)      *0.001157  * Area (sq ft)           * 3652.99  *25399.50  *          *
* Q Total (cfs)           *164000.00  * Flow (cfs)           *13003.14  *150996.90  *          *
* Top Width (ft)          * 3577.40  * Top Width (ft)        *  956.63  * 2620.78  *          *
* Vel Total (ft/s)        *    5.65  * Avg. Vel. (ft/s)      *    3.56  *    5.94  *          *
* Max Chl Dpth (ft)       *   13.92  * Hydr. Depth (ft)      *    3.97  *    9.69  *          *
* Conv. Total (cfs)       *4820928.0  * Conv. (cfs)          *382239.1  *4438689.0  *          *
* Length Wtd. (ft)        *  558.84  * Wetted Per. (ft)      *  920.28  * 2625.07  *          *
* Min Ch El (ft)          *  956.40  * Shear (lb/sq ft)      *    0.29  *    0.70  *          *
* Alpha                   *    1.05  * Stream Power (lb/ft s) *    1.02  *    4.16  *          *
* Frctn Loss (ft)         *    0.71  * Cum Volume (acre-ft)  * 3927.04  *10799.13  *  945.44  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)        * 1081.41  * 1241.14  *  509.63  *
*************************************************************************************************

Warning: Divided flow computed for this cross-section.
Warning: The cross-section end points had to be extended vertically for the computed water surface.
Note:    Multiple critical depths were found at this location.  The critical depth with the lowest, valid,
         water surface was used.

CROSS SECTION OUTPUT  Profile #PF#2
*************************************************************************************************
* E.G. Elev (ft)          *  971.25  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.61  * Wt. n-Val.             *          *   0.039  *          *
* W.S. Elev (ft)          *  970.64  * Reach Len. (ft)        *  600.00  *  555.50  *  450.00  *
* Crit W.S. (ft)          *  965.52  * Flow Area (sq ft)      *          *26258.33  *          *
* E.G. Slope (ft/ft)      *0.001223  * Area (sq ft)           *          *26258.33  *          *
* Q Total (cfs)           *164000.00  * Flow (cfs)           *          *164000.00  *          *
* Top Width (ft)          * 2620.78  * Top Width (ft)        *          * 2620.78  *          *
* Vel Total (ft/s)        *    6.25  * Avg. Vel. (ft/s)      *          *    6.25  *          *
* Max Chl Dpth (ft)       *   14.24  * Hydr. Depth (ft)      *          *   10.02  *          *
* Conv. Total (cfs)       *4688712.0  * Conv. (cfs)          *          *4688712.0  *          *
* Length Wtd. (ft)        *  555.50  * Wetted Per. (ft)      *          * 2627.25  *          *
* Min Ch El (ft)          *  956.40  * Shear (lb/sq ft)      *          *    0.76  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    4.77  *          *
* Frctn Loss (ft)         *    0.75  * Cum Volume (acre-ft)  *  300.08  *11217.83  *   30.85  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)        *   48.67  * 1241.88  *    5.87  *
*************************************************************************************************

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

CROSS SECTION


RIVER: 1
REACH: 1                 RS: 202.69

INPUT
Description: 202.69

Right Channel Bank Staion Interpolated
Station Elevation Data    num=      97
    Sta     Elev     Sta     Elev     Sta     Elev     Sta     Elev     Sta     Elev
*************************************************************************************
 17011.6   967.7 17023.5   967.7 17027.5   969.7 17103.8   970.9 17146.9   971.1
 17176.2   972.4 17191.8   969.4 17194.6   968.5   17229   967.1 17294.2   968.5
 17355.9   968.4 17445.9     967 17473.9   966.6   17539   968.1 17612.5   967.1
 17670.9   967.5 17744.3   967.8 17814.2   967.3   17864     971 17864.9   969.3
   17868   967.6 17892.1   965.9 17941.9   963.7 18000.1   961.6 18034.8   963.6
 18086.5   962.2 18149.2   965.2 18155.1   964.6 18181.7   966.5 18238.5   967.5
 18278.8   966.4 18296.3     967 18357.8   968.5 18371.8   972.9 18377.8   973.6
 18394.4   971.5 18484.4     971 18522.7   971.5 18539.1   964.7 18552.9   960.1
 18644.5   957.3   18707   953.7 18734.1   956.4 18813.8     956 18848.2   955.5
 18893.1   956.3   18953   954.8 19004.8   957.3 19084.1   957.6 19157.7   958.3
 19178.7   958.5 19240.7   959.5 19322.9   960.8 19365.9   962.7 19411.4   962.6
 19474.6   962.5 19548.6   961.5 19628.5   961.4 19720.2   962.7 19779.3     961
 19788.6   961.1 19848.4     962 19949.8   964.6 20005.6   961.1 20016.8   961.1
 20083.2     961 20101.5   960.8 20164.7   959.6 20249.5   962.2 20340.4     963
 20436.6   963.5 20463.4   963.4 20522.8   963.7 20592.1   963.4 20658.5   962.2
 20698.9   961.2 20768.7   958.6 20856.6   958.8 20890.1   958.6 21023.8   956.8
 21070.8   960.8 21077.4   967.1 21081.8970.8403 21085.4   973.9   21098   980.8
 21103.6   981.6 21111.1   978.1 21139.5   981.1 21166.7   979.8 21198.8   976.9
 21211.8   978.5 21216.7   978.5 21220.2   977.8 21223.7   977.9 21225.4   978.5
 21238.2   975.1   21274   973.3

Manning's n Values        num=       5
    Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
*************************************************************************************
 17011.6    .025   17868    .043 18377.8    .043 19084.1    .037 21103.6    .043

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      18377.8 21081.8                585   566.1     510            .1      .3
Ineffective Flow      num=       2
  Sta L   Sta R    Elev  Permanent
 17011.6 17176.2   981.6       F
 21274.4   21274   981.6       F

CROSS SECTION OUTPUT  Profile #PF#1
*************************************************************************************************
* E.G. Elev (ft)          *  970.12  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.61  * Wt. n-Val.             *   0.037  *   0.039  *          *
* W.S. Elev (ft)          *  969.50  * Reach Len. (ft)        *  585.00  *  566.10  *  510.00  *
* Crit W.S. (ft)          *  965.26  * Flow Area (sq ft)      * 3370.61  *23641.28  *          *
* E.G. Slope (ft/ft)      *0.001416  * Area (sq ft)           * 3395.31  *23641.28  *          *
* Q Total (cfs)           *164000.00  * Flow (cfs)           *11595.49  *152404.50  *          *
```

```
                                                                    DuplicateEffective
* Top Width (ft)          * 3716.99  * Top Width (ft)          * 1164.28  * 2552.71  *          *
* Vel Total (ft/s)        *    6.07  * Avg. Vel. (ft/s)        *    3.44  *    6.45  *          *
* Max Chl Dpth (ft)       *   15.80  * Hydr. Depth (ft)        *    2.93  *    9.26  *          *
* Conv. Total (cfs)       *4357701.0  * Conv. (cfs)            *308107.7  *4049594.0  *          *
* Length Wtd. (ft)        *  567.45  * Wetted Per. (ft)        * 1150.25  * 2558.76  *          *
* Min Ch El (ft)          *  953.70  * Shear (lb/sq ft)        *    0.26  *    0.82  *          *
* Alpha                   *    1.07  * Stream Power (lb/ft s) *    0.89  *    5.27  *          *
* Frctn Loss (ft)         *    0.88  * Cum Volume (acre-ft)    * 3878.50  *10486.43  *  945.44  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)          * 1066.80  * 1208.15  *  509.63  *
*****************************************************************************************************

Warning: Divided flow computed for this cross-section.
Warning: The cross-section end points had to be extended vertically for the computed water surface.
Note:    Multiple critical depths were found at this location.  The critical depth with the lowest, valid,
         water surface was used.

CROSS SECTION OUTPUT  Profile #PF#2
*****************************************************************************************************
* E.G. Elev (ft)          *  970.49  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.70  * Wt. n-Val.             *          *    0.039  *          *
* W.S. Elev (ft)          *  969.79  * Reach Len. (ft)        *  585.00  *  566.10  *  510.00  *
* Crit W.S. (ft)          *  965.27  * Flow Area (sq ft)      *          *24379.59  *          *
* E.G. Slope (ft/ft)      *0.001483  * Area (sq ft)           *          *24379.59  *          *
* Q Total (cfs)           *164000.00  * Flow (cfs)            *          *164000.00  *          *
* Top Width (ft)          * 2553.41  * Top Width (ft)        *          * 2553.41  *          *
* Vel Total (ft/s)        *    6.73  * Avg. Vel. (ft/s)      *          *    6.73  *          *
* Max Chl Dpth (ft)       *   16.09  * Hydr. Depth (ft)      *          *    9.55  *          *
* Conv. Total (cfs)       *4258962.0  * Conv. (cfs)          *          *4258962.0  *          *
* Length Wtd. (ft)        *  566.10  * Wetted Per. (ft)      *          * 2559.81  *          *
* Min Ch El (ft)          *  953.70  * Shear (lb/sq ft)      *          *    0.88  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    5.93  *          *
* Frctn Loss (ft)         *    0.93  * Cum Volume (acre-ft)  *  300.08  *10894.95  *   30.85  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)        *   48.67  * 1208.88  *    5.87  *
*****************************************************************************************************

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

CROSS SECTION


RIVER: 1
REACH: 1                 RS: 202.59

INPUT
Description: 202.59

Right Channel Bank Staion Interpolated
Station Elevation Data    num=      97
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*****************************************************************************
 17002.6   972.3 17024.4   972.3 17044.5   970.3 17059.2     968 17094.8   969.6
 17174.4   971.6 17206.5   971.5   17240   970.3 17269.6   966.5 17294.8   968.3
 17332.9   969.6 17346.3     969 17365.3   965.5 17382.1   965.5 17399.6   966.6
 17456.2   967.4 17523.1   966.7 17531.4   966.1 17557.2     966 17651.6   966.7
 17719.5   967.2 17792.8   966.6 17824.5     966 17874.3   968.6 17886.2   967.6
 17905.4   963.2 17965.1   963.4 18022.2   961.6 18100.5   965.1 18174.1   965.7
 18210.5   964.5 18233.1   965.7 18298.3   968.6 18346.1   966.9 18416.7   969.6
 18505.8   969.5 18556.9   967.5 18622.3     970 18641.7     970 18695.8   961.6
 18704.2   959.5 18757.3     962 18789.4   959.6 18857.2   957.4 18891.5   955.7
   18960   953.7 18984.2   957.3 19041.9   957.5 19094.7   960.1 19217.7   959.4
 19264.1   960.3 19322.3   963.2 19396.6   964.3 19407.1   961.9 19425.6     960
   19426   960.9 19488.2   960.7 19564.4   961.7 19640.1   961.8 19698.4   962.2
 19757.8   961.8 19850.5   959.2 19935.3   960.1 19956.2     961 19994.3   961.1
 20000.8   960.6 20005.1   959.6 20026.1   957.7 20112.1   958.6 20156.3   960.2
 20218.5   960.8 20291.8   962.8 20371.5   961.1 20441.9     962 20501.9   959.5
 20592.8   959.1   20699   957.2   20711     957 20803.1     957 20825.8   957.1
 20901.9   957.5   20941   958.6 20978.1   956.7   21025   956.8 21152.1   957.5
21195.09969.8993 21199.6   971.2 21234.1   969.1 21236.8   970.4 21264.7   967.7
 21299.7   971.3 21305.5   967.6 21325.7   957.4 21362.7   958.8 21403.9     974
 21429.1     977   21478   977.8

Manning's n Values        num=       5
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
*****************************************************************************
 17002.6    .025 18022.2    .043 18416.7    .043 19217.7    .037 21403.9    .043

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       18416.721195.09             400   561.2     640             .1      .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 17002.6 17332.9   977.8       F
   21200   21478   977.8       F

CROSS SECTION OUTPUT  Profile #PF#1
*****************************************************************************************************
* E.G. Elev (ft)          *  969.23  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.68  * Wt. n-Val.             *   0.030  *   0.038  *          *
* W.S. Elev (ft)          *  968.55  * Reach Len. (ft)        *  400.00  *  561.20  *  640.00  *
* Crit W.S. (ft)          *  964.73  * Flow Area (sq ft)      * 2690.62  *22510.76  *          *
* E.G. Slope (ft/ft)      *0.001710  * Area (sq ft)           * 2741.01  *22510.76  *  645.31  *
* Q Total (cfs)           *164000.00  * Flow (cfs)            *11762.68  *152237.30  *          *
* Top Width (ft)          * 3795.64  * Top Width (ft)        * 1100.09  * 2593.47  *  102.09  *
* Vel Total (ft/s)        *    6.51  * Avg. Vel. (ft/s)      *    4.37  *    6.76  *          *
* Max Chl Dpth (ft)       *   14.85  * Hydr. Depth (ft)      *    2.60  *    8.68  *          *
* Conv. Total (cfs)       *3966361.0  * Conv. (cfs)          *284481.9  *3681879.0  *          *
* Length Wtd. (ft)        *  549.75  * Wetted Per. (ft)      * 1037.30  * 2598.01  *          *
* Min Ch El (ft)          *  953.70  * Shear (lb/sq ft)      *    0.28  *    0.92  *          *
* Alpha                   *    1.03  * Stream Power (lb/ft s) *    1.21  *    6.25  *          *
* Frctn Loss (ft)         *    0.91  * Cum Volume (acre-ft)  * 3837.29  *10186.54  *  941.66  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)        * 1051.60  * 1174.71  *  509.04  *
*****************************************************************************************************

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.
```

CROSS SECTION OUTPUT Profile #PF#2

* E.G. Elev (ft)	*	969.56	* Element	*	Left OB	*	Channel	*	Right OB	*
* Vel Head (ft)	*	0.78	* Wt. n-Val.	*		*	0.038	*		*
* W.S. Elev (ft)	*	968.77	* Reach Len. (ft)	*	400.00	*	561.20	*	640.00	*
* Crit W.S. (ft)	*	964.70	* Flow Area (sq ft)	*		*	23099.83	*		*
* E.G. Slope (ft/ft)	*	0.001832	* Area (sq ft)	*		*	23099.83	*		*
* Q Total (cfs)	*	164000.00	* Flow (cfs)	*		*	164000.00	*		*
* Top Width (ft)	*	2606.65	* Top Width (ft)	*		*	2606.65	*		*
* Vel Total (ft/s)	*	7.10	* Avg. Vel. (ft/s)	*		*	7.10	*		*
* Max Chl Dpth (ft)	*	15.07	* Hydr. Depth (ft)	*		*	8.86	*		*
* Conv. Total (cfs)	*	3831880.0	* Conv. (cfs)	*		*	3831880.0	*		*
* Length Wtd. (ft)	*	561.08	* Wetted Per. (ft)	*		*	2611.44	*		*
* Min Ch El (ft)	*	953.70	* Shear (lb/sq ft)	*		*	1.01	*		*
* Alpha	*	1.00	* Stream Power (lb/ft s)	*		*	7.18	*		*
* Frctn Loss (ft)	*	1.02	* Cum Volume (acre-ft)	*	300.08	*	10586.43	*	30.85	*
* C & E Loss (ft)	*	0.00	* Cum SA (acres)	*	48.67	*	1175.35	*	5.87	*

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: 1
REACH: 1 RS: 202.48

INPUT
Description: 202.48

Right Channel Bank Staion Interpolated
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
17009.6	967.6	17022.6	967.5	17087.4	968.9	17103.6	970.4	17112.7	969.9
17147.3	972	17156.9	971.8	17158.2	972.3	17178.9	971	17194.4	968
17247.5	968.9	17346.9	969.1	17398.9	969.9	17439.3	968.6	17487.9	968.6
17510.1	966.5	17588.4	966.2	17656.6	965	17699.5	965.1	17766.7	963.2
17818.3	961.3	17890	963.8	17903.9	964.7	17928.8	961.3	17945.4	959.8
17990.2	960.1	18038.4	959.4	18049.4	960.1	18123	963.9	18190.8	965.8
18202.9	966.1	18268.8	964.1	18281.9	963.4	18373.9	966.8	18446.2	967.8
18518.9	965.4	18575.8	971.2	18611.2	970.9	18639.1	969.5	18713	961.6
18741.6	959.3	18784.7	961.7	18862.1	959	18930.8	954.4	19044.5	952.5
19074.6	956.5	19142.6	957.5	19190.4	959.1	19212.4	958.4	19300.6	961.8
19319.9	962.4	19391.1	961.2	19413.8	960.8	19449.5	958.2	19532.2	958.9
19643.4	959	19750	959.8	19755	959.8	19836.5	958.7	19940.1	961.4
20015	957.1	20042.9	956.5	20093.3	957.6	20148	959.8	20169.8	958.7
20238.1	957.7	20350.9	956.9	20382.1	955.8	20443.3	956.5	20518.7	957.1
20582.5	957.3	20605	956.3	20635.4	956.3	20720.3	959.3	20738.9	959.4
20761.4	962.7	20791.3	965.4	20855.9	962.6	20874.6	962	20962.4	963.2
21037.1	963.2	21067	962.7	21100.7	957.5	21141.9	956.9	21226.2	955.6
21274.2	959.7	21307.36	968.958	21309.3	969.5	21365.5	967.8	21385.7	965.3
21411.6	965.6	21424.5	960.8	21433.2	956.4	21477.4	957.2	21505.2	969
21532	978.5	21590.9	977.9						

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
17009.6	.043	18575.8	.043	19074.6	.037	21532	.043

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
18575.8 21307.36 700 576.2 385 .1 .3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
17009.6	17398.9	978.5	F
21309.3	21590.9	978.5	F

CROSS SECTION OUTPUT Profile #PF#1

* E.G. Elev (ft)	*	968.30	* Element	*	Left OB	*	Channel	*	Right OB	*
* Vel Head (ft)	*	0.65	* Wt. n-Val.	*	0.043	*	0.038	*		*
* W.S. Elev (ft)	*	967.66	* Reach Len. (ft)	*	700.00	*	576.20	*	385.00	*
* Crit W.S. (ft)	*	963.72	* Flow Area (sq ft)	*	3546.47	*	22956.75	*		*
* E.G. Slope (ft/ft)	*	0.001617	* Area (sq ft)	*	3548.41	*	22956.75	*	824.39	*
* Q Total (cfs)	*	164000.00	* Flow (cfs)	*	11539.59	*	152460.40	*		*
* Top Width (ft)	*	3830.22	* Top Width (ft)	*	1048.52	*	2646.34	*	135.36	*
* Vel Total (ft/s)	*	6.19	* Avg. Vel. (ft/s)	*	3.25	*	6.64	*		*
* Max Chl Dpth (ft)	*	15.16	* Hydr. Depth (ft)	*	3.45	*	8.67	*		*
* Conv. Total (cfs)	*	4078760.0	* Conv. (cfs)	*	286995.3	*	3791765.0	*		*
* Length Wtd. (ft)	*	585.03	* Wetted Per. (ft)	*	1029.25	*	2650.03	*		*
* Min Ch El (ft)	*	952.50	* Shear (lb/sq ft)	*	0.35	*	0.87	*		*
* Alpha	*	1.09	* Stream Power (lb/ft s)	*	1.13	*	5.81	*		*
* Frctn Loss (ft)	*	0.91	* Cum Volume (acre-ft)	*	3808.41	*	9893.65	*	930.86	*
* C & E Loss (ft)	*	0.02	* Cum SA (acres)	*	1041.73	*	1140.96	*	507.29	*

Warning: Divided flow computed for this cross-section.
Warning: The cross-section end points had to be extended vertically for the computed water surface.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION OUTPUT Profile #PF#2

* E.G. Elev (ft)	*	968.54	* Element	*	Left OB	*	Channel	*	Right OB	*
* Vel Head (ft)	*	0.77	* Wt. n-Val.	*	0.043	*	0.038	*		*
* W.S. Elev (ft)	*	967.77	* Reach Len. (ft)	*	700.00	*	576.20	*	385.00	*
* Crit W.S. (ft)	*	963.79	* Flow Area (sq ft)	*	163.17	*	23252.06	*		*
* E.G. Slope (ft/ft)	*	0.001789	* Area (sq ft)	*	163.17	*	23252.06	*		*
* Q Total (cfs)	*	164000.00	* Flow (cfs)	*	236.09	*	163763.90	*		*
* Top Width (ft)	*	2826.14	* Top Width (ft)	*	178.75	*	2647.39	*		*
* Vel Total (ft/s)	*	7.00	* Avg. Vel. (ft/s)	*	1.45	*	7.04	*		*

```
                                                                    DuplicateEffective
* Max Chl Dpth (ft)      *   15.27  * Hydr. Depth (ft)       *    0.91  *    8.78  *          *
* Conv. Total (cfs)      *3877911.0  * Conv. (cfs)           *  5582.5  *3872328.0  *          *
* Length Wtd. (ft)       *  576.90  * Wetted Per. (ft)       *  180.40  * 2651.19  *          *
* Min Ch El (ft)         *  952.50  * Shear (lb/sq ft)       *    0.10  *    0.98  *          *
* Alpha                  *    1.01  * Stream Power (lb/ft s) *    0.15  *    6.90  *          *
* Frctn Loss (ft)        *    1.00  * Cum Volume (acre-ft)   *  299.33  *10287.85  *   30.85  *
* C & E Loss (ft)        *    0.02  * Cum SA (acres)         *   47.85  * 1141.51  *    5.87  *
*********************************************************************************************

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: 1
REACH: 1                RS: 202.37

INPUT
Description: 202.37

Right Channel Bank Staion Interpolated
Station Elevation Data    num=      97
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*************************************************************************************
 17046.5     966 17144.2   966.4 17159.7   966.4 17174.6   968.6 17199.8   968.8
 17234.1   972.8 17240.1   970.8 17243.5   970.9 17244.9   973.1 17262.2     972
 17288.2   966.3 17339.4   966.6 17390.7   968.1 17480.2   967.1 17572.6   967.5
 17609.6   965.2 17687.4   964.4   17729   964.2 17762.4   962.8 17818.6   964.2
 17908.4   962.3 17967.5   961.6 18000.2     964 18038.7   964.1 18072.2   959.7
 18099.8   957.9 18104.7   958.4 18151.6   958.4 18194.7   959.1 18243.6   962.8
 18315.7   961.8 18394.4   965.8 18412.7   966.2 18470.8   964.2 18481.7   964.7
 18501.3   969.1 18508.1     970 18598.8   969.5 18602.7   969.6 18648.3   963.8
 18679.8   963.2   18704   957.9 18743.6   960.5 18769.5   961.1 18842.5   955.2
 18917.4   955.9 18993.6   955.2 19026.1   956.5 19078.6   954.6 19116.4   956.7
 19134.5   956.6 19275.2   955.9 19317.5   959.5 19392.9   961.2 19411.7   961.2
 19457.9   957.5 19505.5   956.4 19577.4   956.1 19580.5   956.2 19670.2   956.8
 19746.9   961.5 19839.2   958.9 19936.5   957.1   20045   956.9 20086.7   957.3
 20169.3   956.2 20237.2   955.3 20328.5     958 20334.1   957.4 20399.8     957
 20463.4   959.2 20513.6     962 20602.6   959.9 20704.3   960.7 20742.9     961
 20844.4   960.5 20908.1   960.2 20950.1   961.7 21049.7   960.9 21054.1   960.9
 21135.1   960.3 21179.1   960.2 21212.7   956.8 21338.5   957.1 21366.3   957.1
 21382.6   961.2 21402.5   967.3 21411.9   966.7 21431.9   963.9 21452.4   962.7
   21480   964.4 21496.8     956 21544.1   956.621581.78968.0081 21601.9   974.1
 21642.4     975   21693   974.4

Manning's n Values        num=       5
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
*************************************************************************************
 17046.5    .025 17390.7    .043 18508.1    .043 18743.6    .037 21601.9    .043

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       18508.121581.78              430   400.7     360             .1       .3
Ineffective Flow     num=       1
   Sta L   Sta R    Elev  Permanent
 17046.5 17390.7     975          F

CROSS SECTION OUTPUT  Profile #PF#1
*********************************************************************************************
* E.G. Elev (ft)         *  967.38  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.58  * Wt. n-Val.           *   0.043  *   0.037  *          *
* W.S. Elev (ft)         *  966.79  * Reach Len. (ft)      *  430.00  *  400.70  *  360.00  *
* Crit W.S. (ft)         *  962.77  * Flow Area (sq ft)    * 3570.38  *24155.44  *          *
* E.G. Slope (ft/ft)     *0.001487  * Area (sq ft)         * 3653.85  *24155.44  *          *
* Q Total (cfs)          *164000.00  * Flow (cfs)          *11849.87  *152150.10  *          *
* Top Width (ft)         * 4026.46  * Top Width (ft)      * 1083.03  * 2943.43  *          *
* Vel Total (ft/s)       *    5.92  * Avg. Vel. (ft/s)    *    3.32  *    6.30  *          *
* Max Chl Dpth (ft)      *   12.19  * Hydr. Depth (ft)    *    3.94  *    8.21  *          *
* Conv. Total (cfs)      *4253334.0  * Conv. (cfs)        *307326.0  *3946008.0  *          *
* Length Wtd. (ft)       *  401.97  * Wetted Per. (ft)    *  908.19  * 2950.76  *          *
* Min Ch El (ft)         *  954.60  * Shear (lb/sq ft)    *    0.36  *    0.76  *          *
* Alpha                  *    1.07  * Stream Power (lb/ft s) *  1.21  *    4.79  *          *
* Frctn Loss (ft)        *    0.43  * Cum Volume (acre-ft)  * 3750.54  * 9582.06  *  927.22  *
* C & E Loss (ft)        *    0.06  * Cum SA (acres)        * 1024.61  * 1103.99  *  506.69  *
*********************************************************************************************

Warning: Divided flow computed for this cross-section.
Warning: The cross-section end points had to be extended vertically for the computed water surface.
Note:    Multiple critical depths were found at this location.  The critical depth with the lowest, valid,
         water surface was used.

CROSS SECTION OUTPUT  Profile #PF#2
*********************************************************************************************
* E.G. Elev (ft)         *  967.52  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.69  * Wt. n-Val.           *   0.043  *   0.037  *          *
* W.S. Elev (ft)         *  966.82  * Reach Len. (ft)      *  430.00  *  400.70  *  360.00  *
* Crit W.S. (ft)         *  963.06  * Flow Area (sq ft)    *  598.51  *24244.56  *          *
* E.G. Slope (ft/ft)     *0.001673  * Area (sq ft)         *  598.51  *24244.56  *          *
* Q Total (cfs)          *164000.00  * Flow (cfs)          * 1619.72  *162380.30  *          *
* Top Width (ft)         * 3165.40  * Top Width (ft)      *  221.16  * 2944.24  *          *
* Vel Total (ft/s)       *    6.60  * Avg. Vel. (ft/s)    *    2.71  *    6.70  *          *
* Max Chl Dpth (ft)      *   12.22  * Hydr. Depth (ft)    *    2.71  *    8.23  *          *
* Conv. Total (cfs)      *4009107.0  * Conv. (cfs)        * 39595.2  *3969512.0  *          *
* Length Wtd. (ft)       *  400.84  * Wetted Per. (ft)    *  225.94  * 2951.60  *          *
* Min Ch El (ft)         *  954.60  * Shear (lb/sq ft)    *    0.28  *    0.86  *          *
* Alpha                  *    1.02  * Stream Power (lb/ft s) *  0.75  *    5.75  *          *
* Frctn Loss (ft)        *    0.45  * Cum Volume (acre-ft)  *  293.21  * 9973.71  *   30.85  *
* C & E Loss (ft)        *    0.09  * Cum SA (acres)        *   44.64  * 1104.53  *    5.87  *
*********************************************************************************************

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.
```

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

CROSS SECTION

RIVER: 1
REACH: 1 RS: 202.29

INPUT
Description: 202.29
Station Elevation Data num= 96

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
17300	969.4	17300.2	969.4	17310.5	971.8	17342.5	971.5	17346.7	971.3
17352.1	970.9	17359.3	970.4	17377.2	970.2	17388.5	970.1	17410.3	969.8
17443.6	969.4	17469.5	969.2	17494.3	969	17512.1	968.3	17537.2	968.2
17551.3	968.6	17580.1	968.2	17588.6	968.1	17610.9	968	17662.1	967.6
17695.1	967.2	17731.2	966.7	17756	966.3	17772.6	965.6	17783.7	965.5
17806	965.9	17845.1	965.4	17859.1	965.2	17870.8	965.1	17909	964.8
17939.7	964.2	17948.3	964	17978	963.3	17983.9	963.1	18035.9	962.8
18043.8	962.7	18050.9	962.7	18093.6	962.3	18093.8	962.8	18107.2	962.7
18151	961.8	18180	961.8	18197.4	961.8	18203.9	961.7	18212.7	961.5
18297.3	960.6	18444	959	18520.4	958	18577.3	957.8	18667.8	958.1
18744.1	957.7	18943.8	956.4	18989.6	956.6	19224.4	957.4	19228.7	957.4
19485.5	956.7	19523.1	956.9	19553.4	956.9	19827.7	956.8	19864.8	956.1
19898	956.1	20171.5	956.3	20383.2	955.7	20442.4	955.9	20499.8	957.2
20499.9	957.2	20696.8	957.3	20777.7	957.4	20879.1	956.5	20964	956.5
21129.5	956.9	21176.5	956.6	21222.8	956.1	21262.9	955.8	21273.6	955.5
21305.8	956.3	21343.7	957	21400.4	957.2	21410.8	957.3	21495.3	956.7
21550.9	957.9	21563.4	959.3	21703.1	961	21803	962.3	21973.7	964.9
22093.3	966.9	22138.1	968.1	22178	968.7	22302.7	970.7	22344.1	970.7
22388.8	970.9	22553.3	971.9	22676.5	971.2	22717.7	971.3	22766.5	972.1
22785.4	971.9								

Manning's n Values num= 6

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
17300	.025	17469.5	.043	18197.4	.043	18989.6	.037	21563.4	.043
21803	.043								

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
18197.4 21803 590 583.1 600 .1 .3
Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
21803	22785.4	972.1	F

CROSS SECTION OUTPUT Profile #PF#1

E.G. Elev (ft)	966.88	Element	Left OB	Channel / Right OB
Vel Head (ft)	0.37	Wt. n-Val.	0.043	0.038
W.S. Elev (ft)	966.51	Reach Len. (ft)	590.00	583.10 / 600.00
Crit W.S. (ft)	961.30	Flow Area (sq ft)	1223.63	*33003.69
E.G. Slope (ft/ft)	*0.000809	Area (sq ft)	1223.63	*33003.69 / 575.33
Q Total (cfs)	*164000.00	Flow (cfs)	2326.17	*161673.80
Top Width (ft)	4327.50	Top Width (ft)	454.68	3605.60 / 267.22
Vel Total (ft/s)	4.79	Avg. Vel. (ft/s)	1.90	4.90
Max Chl Dpth (ft)	11.01	Hydr. Depth (ft)	2.69	9.15
Conv. Total (cfs)	*5764473.0	Conv. (cfs)	81763.2	*5682710.0
Length Wtd. (ft)	583.21	Wetted Per. (ft)	455.07	3605.80
Min Ch El (ft)	955.50	Shear (lb/sq ft)	0.14	0.46
Alpha	1.03	Stream Power (lb/ft s)	0.26	2.27
Frctn Loss (ft)	0.64	Cum Volume (acre-ft)	3726.47	9319.16 / 924.84
C & E Loss (ft)	0.02	Cum SA (acres)	1017.02	1073.87 / 505.59

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

CROSS SECTION OUTPUT Profile #PF#2

E.G. Elev (ft)	966.97	Element	Left OB	Channel / Right OB
Vel Head (ft)	0.38	Wt. n-Val.		0.038
W.S. Elev (ft)	966.59	Reach Len. (ft)	590.00	583.10 / 600.00
Crit W.S. (ft)	961.30	Flow Area (sq ft)		*33283.39
E.G. Slope (ft/ft)	*0.000812	Area (sq ft)		*33283.39
Q Total (cfs)	*164000.00	Flow (cfs)		*164000.00
Top Width (ft)	3605.60	Top Width (ft)		3605.60
Vel Total (ft/s)	4.93	Avg. Vel. (ft/s)		4.93
Max Chl Dpth (ft)	11.09	Hydr. Depth (ft)		9.23
Conv. Total (cfs)	*5756355.0	Conv. (cfs)		*5756355.0
Length Wtd. (ft)	583.10	Wetted Per. (ft)		3614.88
Min Ch El (ft)	955.50	Shear (lb/sq ft)		0.47
Alpha	1.00	Stream Power (lb/ft s)		2.30
Frctn Loss (ft)	0.64	Cum Volume (acre-ft)	290.25	9709.12 / 30.85
C & E Loss (ft)	0.02	Cum SA (acres)	43.55	1074.40 / 5.87

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

CROSS SECTION

RIVER: 1
REACH: 1 RS: 202.18

INPUT
Description: 202.18

Right Channel Bank Staion Interpolated
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
17052.9	966.6	17168.5	966	17288.7	965.2	17328.5	965.5	17342.3	968
17346	967	17354.3	968	17364.1	966.7	17396.2	967.4	17415.4	969

DuplicateEffective

17507.1	967.7	17613.8	965.1	17631.5	964.7	17747.4	962.9	17748.5	962.9
17865.9	962.4	17961.7	963.1	18017.5	963.4	18100.5	963.8	18139.7	964.7
18194.4	960.2	18256	959.9	18292.6	958.2	18331.5	958.9	18344.2	960.8
18389	961.7	18415.9	960.6	18473.5	964.7	18525.3	966.1	18612.9	966.4
18643.2	962.4	18672.1	961.3	18707.1	957.3	18769	952.6	18804.3	955.4
18910.2	957.1	18976	956.3	19019.3	958.4	19048.9	958.7	19085.4	956.1
19142.3	957	19169.3	958.6	19183.3	960.5	19235.6	960.8	19285.1	963
19369.7	960.1	19472.8	957.3	19559.8	955.6	19630.4	954.7	19686.5	951.8
19727.7	955.4	19747.8	950.7	19844.5	951.9	19893.9	954	19954	950
20009	954	20067.8	952	20110.4	954.4	20177.3	963.5	20231.5	963.4
20240.9	962.3	20277.5	960.8	20351.6	962	20380	959.9	20405.9	959.3
20492.4	961.5	20578.7	962.9	20684.9	962.3	20769.5	960.5	20826.3	963.1
20876.8	962.2	20900.3	963.5	20997.2	958.5	21014.5	957.4	21075.2	957.9
21127.2	959.8	21207.6	957.2	21255	956.2	21287.8	957.6	21353.8	957.8
21374.8	961.6	21414.6	960.9	21415.3	960.1	21444.1	956.6	21527.2	959.6
21591.2	960.1	21643.6	958.8	21685.6	954	21737.8	955.1	21787.2	954.7
21808.8	955.3	21829.3	951.8	21869.4	951.7	21919.3	955.9	21938.4	1966.7695
21957.1	977.4	21992	978.3						

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
17052.9	.025	17415.4	.043	18139.7	.043	18976	.037	21957.1	.043

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

18139.7	21938.41		525	511.84	500	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
17052.9	17415.4	978.3	F

CROSS SECTION OUTPUT Profile #PF#1

E.G. Elev (ft)	966.23	Element	Left OB	Channel / Right OB
Vel Head (ft)	0.53	Wt. n-Val.	0.043	0.038 /
W.S. Elev (ft)	965.70	Reach Len. (ft)	525.00	511.84 / 500.00
Crit W.S. (ft)	961.75	Flow Area (sq ft)	1254.37	27384.83 /
E.G. Slope (ft/ft)	0.001545	Area (sq ft)	1287.41	27384.83 /
Q Total (cfs)	164000.00	Flow (cfs)	2949.36	161050.60 /
Top Width (ft)	4356.13	Top Width (ft)	666.91	3689.21 /
Vel Total (ft/s)	5.73	Avg. Vel. (ft/s)	2.35	5.88 /
Max Chl Dpth (ft)	15.70	Hydr. Depth (ft)	2.28	7.42 /
Conv. Total (cfs)	4172957.0	Conv. (cfs)	75045.9	4097911.0 /
Length Wtd. (ft)	512.05	Wetted Per. (ft)	550.64	3697.85 /
Min Ch El (ft)	950.00	Shear (lb/sq ft)	0.22	0.71 /
Alpha	1.04	Stream Power (lb/ft s)	0.52	4.20 /
Frctn Loss (ft)	1.19	Cum Volume (acre-ft)	3709.47	8914.98 / 920.88
C & E Loss (ft)	0.04	Cum SA (acres)	1009.42	1025.04 / 503.75

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 OUTPUT Profile #PF#2

E.G. Elev (ft)	966.31	Element	Left OB	Channel / Right OB
Vel Head (ft)	0.55	Wt. n-Val.		0.038 /
W.S. Elev (ft)	965.77	Reach Len. (ft)	525.00	511.84 / 500.00
Crit W.S. (ft)	961.75	Flow Area (sq ft)		27619.54 /
E.G. Slope (ft/ft)	0.001559	Area (sq ft)		27619.54 /
Q Total (cfs)	164000.00	Flow (cfs)		164000.00 /
Top Width (ft)	3692.06	Top Width (ft)		3692.06 /
Vel Total (ft/s)	5.94	Avg. Vel. (ft/s)		5.94 /
Max Chl Dpth (ft)	15.77	Hydr. Depth (ft)		7.48 /
Conv. Total (cfs)	4154161.0	Conv. (cfs)		4154161.0 /
Length Wtd. (ft)	511.84	Wetted Per. (ft)		3701.82 /
Min Ch El (ft)	950.00	Shear (lb/sq ft)		0.73 /
Alpha	1.00	Stream Power (lb/ft s)		4.31 /
Frctn Loss (ft)	1.19	Cum Volume (acre-ft)	290.25	9301.49 / 30.85
C & E Loss (ft)	0.04	Cum SA (acres)	43.55	1025.56 / 5.87

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: 1
REACH: 1 RS: 202.09

INPUT
Description: 202.09

Right Channel Bank Staion Interpolated
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
12423.7	965.6	17099.8	965.6	17186	965.4	17264.6	965.3	17349.3	965
17358.9	964.8	17418	967.1	17422.9	965.6	17428.2	966.9	17452	965.9
17476.4	966.1	17491.8	967.5	17574.4	967	17614.9	967.2	17693.5	967.2
17814.7	961.1	17920.2	960.8	17951.8	961.2	18050.9	963.8	18132.1	964.1
18212.9	964.4	18247.5	964.7	18306	959.3	18322.2	960.3	18340.5	958.1
18363.8	957.3	18389.5	962.4	18475.1	961.1	18485.9	960.9	18523.3	964.1
18558.3	962.3	18573.3	963.2	18621.2	963.3	18652.7	957.8	18708.8	958.1
18748.7	952.2	18769.9	955.2	18859.3	957.7	18962.1	957.3	18975.3	957.3
19086	957.5	19165.3	959.6	19217.9	961	19287.9	955.2	19344.8	963

```
                                                                  DuplicateEffective
 19434.4   961.7 19513.8   958.9 19564.6   953.8 19623.2   957.6 19686.2   956.9
 19738.7   957.5 19783.4   954.5 19908.5   952.6 19947.2     952 20093.1     950
 20106.3     950 20143.3   952.6 20167.6   955.5 20187.3   956.2 20207.9     958
   20254   956.6 20271.4   957.6 20297.7   960.4 20396.6   960.4 20472.8   959.6
 20529.3   963.3 20613.6   962.6   20698   962.2 20720.5   961.5 20787.7   964.2
 20816.2   959.4 20866.2   961.1 20916.3   960.7 20996.8   963.3 21047.5   963.6
 21101.6   961.6   21155   960.7 21221.6   961.5 21280.8   956.9 21370.9   957.5
 21444.4   956.7 21456.1   957.6 21466.3   959.4 21503.9     959 21516.7   956.6
 21530.5   955.5 21561.3     958 21627.9   959.2   21709   959.7 21751.4   954.3
 21825.3   953.8 21856.2   951.2 21912.9   951.7 21928.2 955.721938.26 965.332
   21947   973.7   21985   973.7

Manning's n Values          num=       5
     Sta   n Val      Sta   n Val      Sta   n Val      Sta   n Val
*********************************************************************************
 12423.7    .025 17491.8    .043 18212.9    .043   19086    .037   21947    .043

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       18212.921938.26              510  509.32     500             .1      .3
Ineffective Flow      num=       1
   Sta L    Sta R     Elev  Permanent
 12423.7 17491.8   973.7       F

CROSS SECTION OUTPUT  Profile #PF#1
*********************************************************************************************
* E.G. Elev (ft)         *  965.01  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.92  * Wt. n-Val.             *   0.043  *   0.038  *          *
* W.S. Elev (ft)         *  964.09  * Reach Len. (ft)        *  510.00  *  509.32  *  500.00  *
* Crit W.S. (ft)         *  961.98  * Flow Area (sq ft)      *  685.44  *20909.31  *          *
* E.G. Slope (ft/ft)     *0.003848  * Area (sq ft)           *  685.44  *20909.31  *          *
* Q Total (cfs)          *164000.00  * Flow (cfs)           * 2203.35  *161796.70  *          *
* Top Width (ft)         * 4052.05  * Top Width (ft)        *  373.14  * 3678.91  *          *
* Vel Total (ft/s)       *    7.59  * Avg. Vel. (ft/s)      *    3.21  *    7.74  *          *
* Max Chl Dpth (ft)      *   14.09  * Hydr. Depth (ft)      *    1.84  *    5.68  *          *
* Conv. Total (cfs)      *2643855.0  * Conv. (cfs)          * 35520.3  *2608335.0  *          *
* Length Wtd. (ft)       *  509.33  * Wetted Per. (ft)      *  373.25  * 3688.94  *          *
* Min Ch El (ft)         *  950.00  * Shear (lb/sq ft)      *    0.44  *    1.36  *          *
* Alpha                  *    1.03  * Stream Power (lb/ft s) *    1.42  *   10.54  *          *
* Frctn Loss (ft)        *    1.03  * Cum Volume (acre-ft)  * 3697.58  * 8631.24  *  920.88  *
* C & E Loss (ft)        *    0.10  * Cum SA (acres)        * 1003.15  *  981.75  *  503.75  *
*********************************************************************************************

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 OUTPUT  Profile #PF#2
*********************************************************************************************
* E.G. Elev (ft)         *  965.09  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.93  * Wt. n-Val.             *          *   0.038  *          *
* W.S. Elev (ft)         *  964.16  * Reach Len. (ft)        *  510.00  *  509.32  *  500.00  *
* Crit W.S. (ft)         *  961.95  * Flow Area (sq ft)      *          *21163.39  *          *
* E.G. Slope (ft/ft)     *0.003803  * Area (sq ft)           *          *21163.39  *          *
* Q Total (cfs)          *164000.00  * Flow (cfs)           *          *164000.00  *          *
* Top Width (ft)         * 3682.20  * Top Width (ft)        *          * 3682.20  *          *
* Vel Total (ft/s)       *    7.75  * Avg. Vel. (ft/s)      *          *    7.75  *          *
* Max Chl Dpth (ft)      *   14.16  * Hydr. Depth (ft)      *          *    5.75  *          *
* Conv. Total (cfs)      *2659472.0  * Conv. (cfs)          *          *2659472.0  *          *
* Length Wtd. (ft)       *  509.32  * Wetted Per. (ft)      *          * 3692.31  *          *
* Min Ch El (ft)         *  950.00  * Shear (lb/sq ft)      *          *    1.36  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *   10.54  *          *
* Frctn Loss (ft)        *    1.02  * Cum Volume (acre-ft)  *  290.25  * 9014.89  *   30.85  *
* C & E Loss (ft)        *    0.11  * Cum SA (acres)        *   43.55  *  982.23  *    5.87  *
*********************************************************************************************

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: 1
REACH: 1                    RS: 201.99

INPUT
Description: 201.99

Right Channel Bank Staion Interpolated
Station Elevation Data     num=      97
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*********************************************************************************
 12423.7   962.9 12792.3   963.8 13061.9   964.2 13286.8   963.1 13510.3     962
 13746.9   961.3   13984   962.2 14217.9   962.9 14443.4   963.1 14690.7   964.7
 14908.9   964.6 14956.9   968.1 14966.2   964.3   15216   964.5 15450.3   964.3
 15717.5   963.6 15947.7     963 16170.3   962.3 16226.7   962.5 16243.5   964.4
 16481.8   963.7   16706   964.8 16931.9   964.5 17163.9     965 17409.1   965.4
 17507.7   965.1 17760.7   967.9 18000.5   959.7 18235.1   962.5 18353.1   960.5
 18417.7   956.5   18440   960.5 18639.2     962   18674   954.8 18737.7   957.9
 18818.4   957.6 18843.9   951.9 18894.5     956 19104.7   956.3 19162.4   959.4
   19182   952.7 19244.4   958.4   19290   953.9 19357.8   953.9 19392.3   959.4
 19476.2   956.3 19599.7   958.8 19757.3   956.9 19806.8   958.1 19854.1   952.5
 20078.1   951.3 20095.8     953 20192.9   950.6 20250.9   959.6 20290.2   950.4
 20347.4   962.9 20368.6   965.8 20433.1     963 20465.1   950.1 20577.2   949.5
   20589   951.7 20619.5   951.7 20638.1   949.5 20700.3   949.5 20727.6   954.8
 20735.3   964.1 20750.8   961.1 20862.1   965.2   20904   975.7 20956.4   975.3
 20989.8   964.1 21038.3   963.3 21074.1   972.2 21105.1     970   21109   967.5
 21138.5   968.2 21163.6   953.1 21180.4   949.1 21267.5   949.1 21538.3   949.1
```

```
                                                                    DuplicateEffective
 21555.3   949.1   21578   958.4 21595.4   955.8 21617.3   955.7 21641.7   951.9
 21676.1   954.4 21726.5   948.7 21821.2   953.2 21862.8   963.621892.71964.4166
   21991   967.1 22006.5     964 22019.9   967.9 22243.3   966.9 22585.6     967
 22917.2   966.9 23024.3   966.9

Manning's n Values        num=       7
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************************************************
 12423.7    .025 17507.7    .043 17760.7    .043 19357.8    .032 20250.9    .037
   21991    .037 22006.5    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       18235.121892.71              470  477.46     490             .1      .3
Ineffective Flow     num=       2
   Sta L    Sta R    Elev  Permanent
 12423.7 17760.7   975.7       F
 21990.9 23024.3   975.7       F

CROSS SECTION OUTPUT  Profile #PF#1
*************************************************************************************************
* E.G. Elev (ft)         *  963.87  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.58  * Wt. n-Val.             *   0.043  *   0.036  *          *
* W.S. Elev (ft)         *  963.29  * Reach Len. (ft)        *  470.00  *  477.46  *  490.00  *
* Crit W.S. (ft)         *  958.65  * Flow Area (sq ft)      *  702.50  *26531.65  *          *
* E.G. Slope (ft/ft)     *0.001252  * Area (sq ft)           * 2110.20  *26531.65  *          *
* Q Total (cfs)          *164000.00  * Flow (cfs)           * 1394.28  *162605.70  *          *
* Top Width (ft)         * 5331.46  * Top Width (ft)        * 2122.37  * 3209.09  *          *
* Vel Total (ft/s)       *    6.02  * Avg. Vel. (ft/s)      *    1.98  *    6.13  *          *
* Max Chl Dpth (ft)      *   14.59  * Hydr. Depth (ft)      *    2.07  *    8.27  *          *
* Conv. Total (cfs)      *4634981.0  * Conv. (cfs)          * 39405.2  *4595576.0  *          *
* Length Wtd. (ft)       *  477.43  * Wetted Per. (ft)      *  339.69  * 3231.97  *          *
* Min Ch El (ft)         *  948.70  * Shear (lb/sq ft)      *    0.16  *    0.64  *          *
* Alpha                  *    1.03  * Stream Power (lb/ft s) *    0.32  *    3.93  *          *
* Frctn Loss (ft)        *    0.47  * Cum Volume (acre-ft)  * 3681.21  * 8353.90  *  920.88  *
* C & E Loss (ft)        *    0.05  * Cum SA (acres)        *  988.54  *  941.48  *  503.75  *
*************************************************************************************************

Warning: Divided flow computed for this cross-section.
Warning: The cross-section end points had to be extended vertically for the computed water surface.
Note:    Multiple critical depths were found at this location.  The critical depth with the lowest, valid,
         water surface was used.

CROSS SECTION OUTPUT  Profile #PF#2
*************************************************************************************************
* E.G. Elev (ft)         *  963.96  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.58  * Wt. n-Val.             *          *   0.036  *          *
* W.S. Elev (ft)         *  963.38  * Reach Len. (ft)        *  470.00  *  477.46  *  490.00  *
* Crit W.S. (ft)         *  958.65  * Flow Area (sq ft)      *          *26811.01  *          *
* E.G. Slope (ft/ft)     *0.001241  * Area (sq ft)           *          *26811.01  *          *
* Q Total (cfs)          *164000.00  * Flow (cfs)           *          *164000.00  *          *
* Top Width (ft)         * 3219.77  * Top Width (ft)        *          * 3219.77  *          *
* Vel Total (ft/s)       *    6.12  * Avg. Vel. (ft/s)      *          *    6.12  *          *
* Max Chl Dpth (ft)      *   14.68  * Hydr. Depth (ft)      *          *    8.33  *          *
* Conv. Total (cfs)      *4655852.0  * Conv. (cfs)          *          *4655852.0  *          *
* Length Wtd. (ft)       *  477.46  * Wetted Per. (ft)      *          * 3243.71  *          *
* Min Ch El (ft)         *  948.70  * Shear (lb/sq ft)      *          *    0.64  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *    3.92  *          *
* Frctn Loss (ft)        *    0.46  * Cum Volume (acre-ft)  *  290.25  * 8734.42  *   30.85  *
* C & E Loss (ft)        *    0.05  * Cum SA (acres)        *   43.55  *  941.88  *    5.87  *
*************************************************************************************************

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.

CROSS SECTION


RIVER: 1
REACH: 1                 RS: 201.9

INPUT
Description: 201.9

Right Channel Bank Staion Interpolated
Station Elevation Data    num=      97
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
   12498   962.4 12680.7     963 12847.7   963.1 13015.1   963.3 13199.8   963.2
 13361.7   963.7 13371.9   960.2 13574.5   962.7 13724.8   961.4 13908.8   961.8
 14082.1   962.6   14282   963.2 14504.3   963.3 14674.9     963 14875.2   963.6
   15026   967.2 15036.6   963.6 15225.9   964.3 15398.3   964.4 15600.8   964.2
 15790.8   963.8 15996.8   963.9 16181.7   962.7 16294.9   962.8 16309.4   964.3
 16331.6     962 16525.6   962.6 16699.1   963.6 16881.9   964.4 17117.4   963.7
 17353.6   965.3 17563.8   966.2   17569   964.3 17769.9   966.6 17941.7     966
 17954.3   963.8 18181.9   958.7 18226.6   955.3 18260.2   960.7 18291.8   960.5
 18303.9   958.6 18480.2   961.7 18648.9   961.8 18745.5     962 18798.7   956.2
 18820.8   957.2 18854.3   951.8 18909.2   955.3 19138.4   956.3   19200   953.3
 19336.3   962.3 19389.1   958.9 19449.9   951.5 19624.1   955.9 19782.3   957.2
 19911.4   951.6 20081.9   950.6 20221.5   952.6 20269.4   959.3 20331.6   955.1
   20356   957.7 20398.9   948.7 20567.7   948.5 20744.7   949.1 20888.3   947.2
 20954.4   949.9 21000.8     949 21037.1   957.5 21099.1     956 21139.7   949.7
 21300.7   952.4 21411.2   949.7 21444.1   955.9 21487.9   956.1 21503.4     949
 21546.8     949 21556.2   952.2 21567.4   960.5   21588   955.9 21628.6   952.2
 21667.7   955.7 21698.6     949 21736.9     950 21748.7   952.4 21786.7   952.8
21827.41963.9898   21842     968 21955.2   963.2 21982.2   967.4 22181.8     966
 22228.4   965.8 22400.7   965.8 22432.3   965.9 22634.3   966.5 22801.2   966.1
 23008.7     966   23096   965.3

Manning's n Values        num=       7
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************************************************
   12498    .025   17569    .043 17769.9    .043 19389.1    .032 20331.6    .037
   21842    .037 21982.2    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
```

```
                                                                    DuplicateEffective
      17954.321827.41             500   495.8     500              .1       .3
Ineffective Flow     num=       2
   Sta L    Sta R     Elev  Permanent
   12498 17769.9      968       F
 21842.1   23096      968       F

CROSS SECTION OUTPUT  Profile #PF#1
*************************************************************************************************
* E.G. Elev (ft)          *  963.35  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.41  * Wt. n-Val.              *          *   0.036  *          *
* W.S. Elev (ft)          *  962.94  * Reach Len. (ft)         *  500.00  *  495.80  *  500.00  *
* Crit W.S. (ft)          *  957.27  * Flow Area (sq ft)       *          *31873.70  *          *
* E.G. Slope (ft/ft)      *0.000785  * Area (sq ft)            * 1051.08  *31873.70  *          *
* Q Total (cfs)           *164000.00  * Flow (cfs)             *          *164000.00  *          *
* Top Width (ft)          * 5241.54  * Top Width (ft)         * 1410.58  * 3830.97  *          *
* Vel Total (ft/s)        *    5.15  * Avg. Vel. (ft/s)       *          *    5.15  *          *
* Max Chl Dpth (ft)       *   15.74  * Hydr. Depth (ft)       *          *    8.32  *          *
* Conv. Total (cfs)       *5852611.0  * Conv. (cfs)           *          *5852611.0  *          *
* Length Wtd. (ft)        *  495.80  * Wetted Per. (ft)       *          * 3845.63  *          *
* Min Ch El (ft)          *  947.20  * Shear (lb/sq ft)       *          *    0.41  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    2.09  *          *
* Frctn Loss (ft)         *    0.34  * Cum Volume (acre-ft)   * 3664.16  * 8033.81  *  920.88  *
* C & E Loss (ft)         *    0.02  * Cum SA (acres)         *  969.48  *  902.90  *  503.75  *
*************************************************************************************************

Warning: Divided flow computed for this cross-section.
Warning: The cross-section end points had to be extended vertically for the computed water surface.
Note:    Multiple critical depths were found at this location.  The critical depth with the lowest, valid,
         water surface was used.

CROSS SECTION OUTPUT  Profile #PF#2
*************************************************************************************************
* E.G. Elev (ft)          *  963.45  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.40  * Wt. n-Val.              *          *   0.036  *          *
* W.S. Elev (ft)          *  963.05  * Reach Len. (ft)         *  500.00  *  495.80  *  500.00  *
* Crit W.S. (ft)          *  957.27  * Flow Area (sq ft)       *          *32284.29  *          *
* E.G. Slope (ft/ft)      *0.000756  * Area (sq ft)            *          *32284.29  *          *
* Q Total (cfs)           *164000.00  * Flow (cfs)             *          *164000.00  *          *
* Top Width (ft)          * 3830.97  * Top Width (ft)         *          * 3830.97  *          *
* Vel Total (ft/s)        *    5.08  * Avg. Vel. (ft/s)       *          *    5.08  *          *
* Max Chl Dpth (ft)       *   15.85  * Hydr. Depth (ft)       *          *    8.43  *          *
* Conv. Total (cfs)       *5964132.0  * Conv. (cfs)           *          *5964132.0  *          *
* Length Wtd. (ft)        *  495.80  * Wetted Per. (ft)       *          * 3845.85  *          *
* Min Ch El (ft)          *  947.20  * Shear (lb/sq ft)       *          *    0.40  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    2.01  *          *
* Frctn Loss (ft)         *    0.33  * Cum Volume (acre-ft)   *  290.25  * 8410.55  *   30.85  *
* C & E Loss (ft)         *    0.02  * Cum SA (acres)         *   43.55  *  903.24  *    5.87  *
*************************************************************************************************

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

CROSS SECTION


RIVER: 1
REACH: 1                  RS: 201.81

INPUT
Description: 201.81

Left and Right Channel Bank Staions Interpolated
Station Elevation Data    num=      98
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*************************************************************************************
 12574.1   961.8 12761.8     962 12923.9   962.6 13108.8   962.8 13276.3     963
 13435.2   962.8 13461.6   960.9 13640.2   962.7 13758.3   961.2 13887.4   962.7
 14049.5   962.4 14230.8   962.1   14408   962.7 14585.1   963.8 14774.2   962.7
 14940.9   962.1 15056.2   964.1   15099   967.8 15104.2   963.1 15275.2   964.2
 15444.5   964.1 15610.6   963.9 15771.8   963.8 15946.1   963.3 16142.1   962.7
 16322.1     962 16382.5   963.6 16475.3   960.8 16709.7   962.1 16947.6   962.4
   17136     963   17301   963.8 17538.6   963.1 17700.9   964.2 17890.2   965.6
 17935.7 965.617946.89963.6227   17964   960.6   18130     958 18246.7   956.1
 18277.1   959.5 18483.2   960.9 18556.4   960.8 18619.6   964.6 18716.1   963.4
   18765   964.3 18860.5   957.6   18955   958.4 19006.4   951.6 19072.9   957.9
 19139.8   953.9 19294.5   954.6 19378.9   957.7 19550.9   954.4 19605.4   951.1
 19693.5   953.4 19720.4   950.1 19883.7   950.2 20049.4     953 20182.8   953.5
 20285.8   953.2 20377.1   957.6 20392.1   962.6 20421.1   948.6   20597   946.8
   20665   946.7 20832.3   946.1 20846.8   951.1 20855.6   956.4 20869.8   954.4
 20881.2   950.3 20908.5   949.6   20924   952.5 20962.6   950.9 21000.7   946.6
 21169.8     946 21187.6   953.2 21244.2   956.3 21263.5   960.4 21295.1   951.3
 21322.9   946.6 21496.1   948.5 21522.9   951.7 21690.5   950.7   21775   950.9
21803.27963.6213   21811   967.1   21860   969.2 21904.1   961.6 21929.9     965
 21975.7   963.6 22175.4   965.3 22352.1     965   22654   963.5 22715.1   963.5
 22875.2   962.8 23093.9   964.4 23169.5   964.2

Manning's n Values        num=       7
     Sta   n Val      Sta   n Val      Sta   n Val      Sta   n Val      Sta   n Val
*************************************************************************************
 12574.1    .025 17700.9    .065 17935.7    .065 19378.9    .032 20392.1    .037
   21860    .025 21975.7    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.    Expan.
      17946.8921803.27             535  511.61     515             .1       .3
Ineffective Flow     num=       2
   Sta L    Sta R     Elev  Permanent
 12574.1 17935.7    969.2       F
 21859.6 23169.5    969.2       F

CROSS SECTION OUTPUT  Profile #PF#1
*************************************************************************************************
* E.G. Elev (ft)          *  962.99  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.36  * Wt. n-Val.              *          *   0.037  *          *
* W.S. Elev (ft)          *  962.64  * Reach Len. (ft)         *  535.00  *  511.61  *  515.00  *
* Crit W.S. (ft)          *  955.84  * Flow Area (sq ft)       *          *34251.95  *          *
* E.G. Slope (ft/ft)      *0.000619  * Area (sq ft)            * 1201.75  *34251.95  *    7.18  *
```

```
                                                                    DuplicateEffective
* Q Total (cfs)          *164000.00  * Flow (cfs)                 *          *164000.00  *          *
* Top Width (ft)         * 5916.44  * Top Width (ft)             * 2255.78  * 3646.80  *   13.87  *
* Vel Total (ft/s)       *    4.79  * Avg. Vel. (ft/s)           *          *    4.79  *          *
* Max Chl Dpth (ft)      *   16.64  * Hydr. Depth (ft)          *          *    9.39  *          *
* Conv. Total (cfs)      *6592084.0  * Conv. (cfs)               *          *6592084.0  *          *
* Length Wtd. (ft)       *  511.64  * Wetted Per. (ft)          *          * 3662.92  *          *
* Min Ch El (ft)         *  946.00  * Shear (lb/sq ft)          *          *    0.36  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s)    *          *    1.73  *          *
* Frctn Loss (ft)        *    0.51  * Cum Volume (acre-ft)      * 3651.23  * 7657.48  *  920.84  *
* C & E Loss (ft)        *    0.02  * Cum SA (acres)            *  948.44  *  860.35  *  503.67  *
*********************************************************************************************

Warning: Divided flow computed for this cross-section.
Warning: The cross-section end points had to be extended vertically for the computed water surface.
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:    Multiple critical depths were found at this location.  The critical depth with the lowest, valid,
         water surface was used.

CROSS SECTION OUTPUT  Profile #PF#2
*********************************************************************************************
* E.G. Elev (ft)          *  963.10  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.35  * Wt. n-Val.              *          *   0.037  *          *
* W.S. Elev (ft)          *  962.75  * Reach Len. (ft)         *  535.00  *  511.61  *  515.00  *
* Crit W.S. (ft)          *  955.84  * Flow Area (sq ft)       *          *34684.20  *          *
* E.G. Slope (ft/ft)      *0.000597  * Area (sq ft)            *          *34684.20  *          *
* Q Total (cfs)           *164000.00  * Flow (cfs)             *          *164000.00  *          *
* Top Width (ft)          * 3650.46  * Top Width (ft)          *          * 3650.46  *          *
* Vel Total (ft/s)        *    4.73  * Avg. Vel. (ft/s)        *          *    4.73  *          *
* Max Chl Dpth (ft)       *   16.75  * Hydr. Depth (ft)       *          *    9.50  *          *
* Conv. Total (cfs)       *6711267.0  * Conv. (cfs)            *          *6711267.0  *          *
* Length Wtd. (ft)        *  511.61  * Wetted Per. (ft)       *          * 3666.82  *          *
* Min Ch El (ft)          *  946.00  * Shear (lb/sq ft)       *          *    0.35  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    1.67  *          *
* Frctn Loss (ft)         *    0.49  * Cum Volume (acre-ft)   *  290.25  * 8029.43  *   30.85  *
* C & E Loss (ft)         *    0.03  * Cum SA (acres)         *   43.55  *  860.66  *    5.87  *
*********************************************************************************************

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

CROSS SECTION


RIVER: 1
REACH: 1                RS: 201.71

INPUT
Description: 201.71

Left Channel Bank Staion Interpolated
Station Elevation Data    num=      97
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
 12659.2   961.6 12855.6      961   13000     961 13129.9   960.8 13180.2   962.1
 13187.7   959.3 13371.2      960 13521.5   960.3 13689.3   960.5 13844.9   960.6
 13979.7   960.3 14193.8   960.9 14324.5   960.9   14461     961 14593.2   960.9
 14774.5   961.4 14909.4   960.6 15132.5   961.7 15192.9   963.1 15384.5   962.1
 15537.8   962.3 15716.6   961.2 15856.1   961.1 16082.6   960.9 16210.7   961.2
   16383     961 16543.7      961 16684.4   961.3 16813.5   961.2 16941.4   961.7
 17106.2   961.5 17255.2      962 17388.3   961.5 17585.2   961.5 17706.7   962.1
 17766.4   963.8 17769.2   962.5 17794.4   964.5 17957.8   964.3 18096.3   964.8
18107.05962.8899 18140.2      957 18197.6   953.2 18356.6   956.6 18441.5   961.3
 18556.1   957.7 18600.1   958.6 18651.3   956.4 18676.1   956.9   18707   951.3
   18764     957 18831.5   958.2 19007.5   955.3 19076.4     952 19279.5   954.1
 19409.2   953.7 19475.6   949.9 19555.7   955.6 19660.9     959 19739.3   954.2
 19763.1   949.4 19910.3      951 19978.4   951.1 20023.1   954.8   20199     956
 20304.5   951.4 20347.1   954.9 20447.3   951.1 20499.8   956.3 20554.9   954.5
 20692.6   956.1 20848.5   954.8 20899.8   950.2 20984.5   949.7 21011.3     946
 21148.8   948.4 21186.8   951.7 21268.1   954.5   21355   953.1 21433.7   954.9
 21490.6   959.4 21528.5   960.3 21661.1   959.7 21837.7   959.7 21975.8   962.2
   22098   963.6 22111.4   961.1 22160.6   964.1 22190.7   962.9 22353.1   963.4
 22385.7   963.3 22516.6   964.2 22615.8   964.3 22832.1   963.4 22981.6   963.4
 23127.8   962.8   23246     962

Manning's n Values        num=       7
     Sta   n Val      Sta   n Val      Sta   n Val      Sta   n Val      Sta   n Val
*********************************************************************************
 12659.2    .025 17706.7    .065 18096.3    .065 19660.9    .032 20554.9    .037
   21355    .025 21528.5    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
     18107.05 21528.5                 505  489.63     495             .1      .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 12659.2 18096.3     966       F
   22098   23246     966       F

CROSS SECTION OUTPUT  Profile #PF#1
*********************************************************************************************
* E.G. Elev (ft)          *  962.46  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.59  * Wt. n-Val.              *          *   0.040  *   0.025  *
* W.S. Elev (ft)          *  961.87  * Reach Len. (ft)         *  505.00  *  489.63  *  495.00  *
* Crit W.S. (ft)          *  958.21  * Flow Area (sq ft)       *          *25898.28  *  759.85  *
* E.G. Slope (ft/ft)      *0.001826  * Area (sq ft)            * 3860.96  *25898.28  *  766.25  *
* Q Total (cfs)           *164000.00  * Flow (cfs)             *          *161174.80  * 2825.19  *
* Top Width (ft)          * 8308.19  * Top Width (ft)          * 4446.92  * 3415.69  *  445.58  *
* Vel Total (ft/s)        *    6.15  * Avg. Vel. (ft/s)        *          *    6.22  *    3.72  *
* Max Chl Dpth (ft)       *   15.87  * Hydr. Depth (ft)       *          *    7.58  *    1.77  *
* Conv. Total (cfs)       *3838417.0  * Conv. (cfs)            *          *3772294.0  * 66123.6  *
* Length Wtd. (ft)        *  489.70  * Wetted Per. (ft)       *          * 3420.11  *  428.91  *
* Min Ch El (ft)          *  946.00  * Shear (lb/sq ft)       *          *    0.86  *    0.20  *
* Alpha                   *    1.01  * Stream Power (lb/ft s) *          *    5.37  *    0.75  *
```

```
                                                                    DuplicateEffective
* Frctn Loss (ft)        *    0.78  * Cum Volume (acre-ft)   * 3620.14  * 7304.25  *  916.27  *
* C & E Loss (ft)        *    0.02  * Cum SA (acres)         *  907.28  *  818.87  *  500.95  *
*********************************************************************************************

Warning: Divided flow computed for this cross-section.
Warning: The cross-section end points had to be extended vertically for the computed water surface.
Note:    Multiple critical depths were found at this location.  The critical depth with the lowest, valid,
         water surface was used.

CROSS SECTION OUTPUT  Profile #PF#2
*********************************************************************************************
* E.G. Elev (ft)          *  962.58  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.60  * Wt. n-Val.           *          *    0.040  *          *
* W.S. Elev (ft)          *  961.98  * Reach Len. (ft)      *  505.00  *  489.63  *  495.00  *
* Crit W.S. (ft)          *  958.21  * Flow Area (sq ft)    *          * 26277.29  *          *
* E.G. Slope (ft/ft)      *0.001807  * Area (sq ft)         *          * 26277.29  *          *
* Q Total (cfs)           *164000.00  * Flow (cfs)          *          *164000.00  *          *
* Top Width (ft)          * 3415.69  * Top Width (ft)      *          * 3415.69  *          *
* Vel Total (ft/s)        *    6.24  * Avg. Vel. (ft/s)     *          *    6.24  *          *
* Max Chl Dpth (ft)       *   15.98  * Hydr. Depth (ft)     *          *    7.69  *          *
* Conv. Total (cfs)       *3858296.0  * Conv. (cfs)         *          *3858296.0  *          *
* Length Wtd. (ft)        *  489.63  * Wetted Per. (ft)     *          * 3421.90  *          *
* Min Ch El (ft)          *  946.00  * Shear (lb/sq ft)     *          *    0.87  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *        *    5.41  *          *
* Frctn Loss (ft)         *    0.76  * Cum Volume (acre-ft)   *  290.25  * 7671.43  *   30.85  *
* C & E Loss (ft)         *    0.03  * Cum SA (acres)         *   43.55  *  819.17  *    5.87  *
*********************************************************************************************

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

CROSS SECTION


RIVER: 1
REACH: 1                RS: 201.62

INPUT
Description: 201.62

Left Channel Bank Station Interpolated
Station Elevation Data    num=      97
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
 12723.6   960.1 12862.6   960.3 13017.9   960.4 13156.4   960.4 13253.3   961.5
 13267.4     959 13436.1   959.9 13621.5   960.4 13766.2   960.5 13909.8   960.4
 14075.1   960.4 14269.1   960.4 14410.3   960.9 14542.3   960.9 14677.4     961
 14845.4   961.8 15072.7     961 15207.9   961.9 15344.9   961.6 15510.2   961.6
 15676.2     961   15821   960.6 15995.5   960.4 16157.9   960.8   16296   961.1
 16491.6   961.1 16630.4   960.7 16799.9   960.5 16987.6   960.1 17022.4     962
 17197.5   958.5 17331.6   959.3 17350.4   962.3   17555   961.1 17693.7   961.5
 17788.7   963.5 17792.9   962.2 17963.6   963.3   18107   962.8 18229.7   963.9
 18233.5962.1533 18253.2   953.1 18417.5   953.4 18563.5   953.4 18723.5   952.3
 18864.3   951.9 18956.1   956.6 19045.2   956.9 19129.4   952.1 19159.3   954.5
 19237.7   952.1 19435.3   953.3   19483   951.6   19522   953.4   19577   948.8
 19677.3   954.6 19737.2   953.8 19772.7   949.2 19918.1   949.3 20064.6   953.2
 20213.3   953.8 20358.7   952.9 20472.9     952 20509.2     950 20584.5   955.3
 20619.5   953.2 20653.6   948.7 20723.6   953.3 20794.2   955.3 20904.8   954.6
 20962.2   949.9 20990.6   945.6 21150.5   945.9 21165.2   946.9 21199.1   955.3
   21351   951.4 21457.3   955.6 21477.5   960.2 21514.2   959.4 21654.6   959.9
   21824   959.8 21964.5   960.6 22074.2     961   22085   959.8 22090.5   961.3
 22197.1   961.9 22233.4   963.7 22249.4   962.1   22301   963.2 22456.6   963.4
 22491.4   963.3 22714.7   962.8 22775.6   962.8 22945.1   962.7 23131.5   962.5
 23268.1   960.6 23318.4   961.5

Manning's n Values        num=       9
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************************************************
 12723.6    .025 16799.9     .15 17197.5    .025 17792.9    .065 18229.7    .065
   19577    .032 20509.2    .037   21351    .025 21477.5    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       18233.5 21477.5             485  486.48     510            .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 12723.6 18229.7     965          F
 22233.4 23318.4   963.9          F

CROSS SECTION OUTPUT  Profile #PF#1
*********************************************************************************************
* E.G. Elev (ft)          *  961.66  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.51  * Wt. n-Val.           *          *    0.041  *    0.025  *
* W.S. Elev (ft)          *  961.15  * Reach Len. (ft)      *  485.00  *  486.48  *  510.00  *
* Crit W.S. (ft)          *  956.72  * Flow Area (sq ft)    *          * 28110.98  *  662.38  *
* E.G. Slope (ft/ft)      *0.001385  * Area (sq ft)         * 2551.77  * 28110.98  *  681.56  *
* Q Total (cfs)           *164000.00  * Flow (cfs)          *          *162456.50  * 1543.48  *
* Top Width (ft)          * 7614.80  * Top Width (ft)      * 3690.53  * 3241.81  *  682.45  *
* Vel Total (ft/s)        *    5.70  * Avg. Vel. (ft/s)     *          *    5.78  *    2.33  *
* Max Chl Dpth (ft)       *   15.55  * Hydr. Depth (ft)     *          *    8.67  *    1.08  *
* Conv. Total (cfs)       *4406350.0  * Conv. (cfs)         *          *4364879.0  * 41470.3  *
* Length Wtd. (ft)        *  486.98  * Wetted Per. (ft)     *          * 3247.77  *  612.70  *
* Min Ch El (ft)          *  945.60  * Shear (lb/sq ft)     *          *    0.75  *    0.09  *
* Alpha                   *    1.02  * Stream Power (lb/ft s) *        *    4.33  *    0.22  *
* Frctn Loss (ft)         *    0.78  * Cum Volume (acre-ft)   * 3582.97  * 7000.71  *  908.04  *
* C & E Loss (ft)         *    0.02  * Cum SA (acres)         *  860.11  *  781.46  *  494.54  *
*********************************************************************************************

Warning: Divided flow computed for this cross-section.
Warning: The cross-section end points had to be extended vertically for the computed water surface.
Note:    Multiple critical depths were found at this location.  The critical depth with the lowest, valid,
         water surface was used.

CROSS SECTION OUTPUT  Profile #PF#2
*********************************************************************************************
* E.G. Elev (ft)          *  961.80  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.51  * Wt. n-Val.           *          *    0.041  *          *
```

```
                                                                    DuplicateEffective
* W.S. Elev (ft)          *  961.28  * Reach Len. (ft)        *  485.00  *  486.48  *  510.00  *
* Crit W.S. (ft)          *  956.72  * Flow Area (sq ft)      *          *28552.62  *          *
* E.G. Slope (ft/ft)      *0.001343  * Area (sq ft)           *          *28552.62  *          *
* Q Total (cfs)           *164000.00  * Flow (cfs)            *          *164000.00  *          *
* Top Width (ft)          * 3241.81  * Top Width (ft)        *          * 3241.81  *          *
* Vel Total (ft/s)        *    5.74  * Avg. Vel. (ft/s)      *          *    5.74  *          *
* Max Chl Dpth (ft)       *   15.68  * Hydr. Depth (ft)      *          *    8.81  *          *
* Conv. Total (cfs)       *4475808.0  * Conv. (cfs)          *          *4475808.0  *          *
* Length Wtd. (ft)        *  486.48  * Wetted Per. (ft)      *          * 3248.99  *          *
* Min Ch El (ft)          *  945.60  * Shear (lb/sq ft)      *          *    0.74  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    4.23  *          *
* Frctn Loss (ft)         *    0.77  * Cum Volume (acre-ft)  *  290.25  * 7363.28  *   30.85  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)        *   43.55  *  781.75  *    5.87  *
*****************************************************************************************

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

CROSS SECTION


RIVER: 1
REACH: 1                 RS: 201.52

INPUT
Description: 201.52

Left Channel Bank Station Interpolated
Station Elevation Data    num=      97
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*****************************************************************************
 12786.6   960.2 12939.6   960.1   13099   960.1 13244.9   960.2 13300.5   962.8
 13357.3   959.7 13501.3   960.4 13678.7   959.8 13830.9     960 14035.1   959.9
 14185.2   959.4 14386.6   959.8   14539   959.6 14722.7   959.3 14894.1   959.5
 15114.2   959.2 15254.5   962.1 15427.2   959.8 15592.7   959.9 15779.1   959.7
 15959.1   959.6 16138.8   959.3 16313.2   960.4 16492.7   958.5 16665.8     959
 16834.1     958 17009.5   957.5 17081.3   959.5 17261.7     956 17408.3   957.9
   17566     960 17731.1   959.6 17842.3   960.3 17845.2   962.9 17943.7 3961.3971
 18009.1   960.4 18087.6   959.9 18104.5     954 18264.9   951.7 18427.6   949.5
 18577.1   948.4 18651.6   946.4 18699.1   952.7 18753.8     949 18784.8   949.1
 18848.6   953.1 18893.8     954 18925.3     958 19065.9   958.5   19153   954.3
 19223.7   956.3   19377   949.7 19404.1   948.6 19480.7   949.5 19540.9   947.7
 19607.6   951.7   19748   954.6 19781.1   954.1 19818.6   949.6 19876.6   948.4
   19936   956.7 20100.5   954.2   20244   952.7 20403.3   950.4 20550.4   948.2
 20608.4     948 20715.6   953.3 20891.6   948.2 20923.4   941.8 20972.4   940.9
 20990.6   945.3 21048.3     948   21178   947.3 21216.5   954.8 21254.9     957
 21391.4   958.4 21554.4     958 21596.8   958.1 21777.9   958.2 21934.4   958.6
 21995.7   958.3 22004.2   960.1 22157.3   959.4 22212.5   961.1 22218.9   959.2
 22225.8   961.6 22299.7   963.1 22311.3   960.4 22338.4   962.5 22478.8   962.4
 22674.4   962.5 22848.1   961.1 22905.9   961.6 23058.8   963.2 23081.5   963.2
 23263.4   961.3   23370   959.8

Manning's n Values        num=       7
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
*****************************************************************************
 12786.6    .025 17009.5     .15 17261.7    .025 17845.2     .15 19480.7    .032
   20244    .037 21391.4    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      17943.73 21391.4              495  492.06     495             .1      .3
Ineffective Flow     num=       2
   Sta L    Sta R     Elev  Permanent
 12786.6 17845.2   963.2       F
 22212.5   23370   963.2       F

CROSS SECTION OUTPUT  Profile #PF#1
*****************************************************************************************
* E.G. Elev (ft)          *  960.87  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.46  * Wt. n-Val.            *          *    0.049  *    0.025  *
* W.S. Elev (ft)          *  960.41  * Reach Len. (ft)       *  495.00  *  492.06  *  495.00  *
* Crit W.S. (ft)          *  955.39  * Flow Area (sq ft)     *          *28831.95  * 1431.09  *
* E.G. Slope (ft/ft)      *0.001854  * Area (sq ft)          * 4789.06  *28831.95  * 1448.82  *
* Q Total (cfs)           *164000.00  * Flow (cfs)           *          *158597.90  * 5402.08  *
* Top Width (ft)          * 8984.51  * Top Width (ft)       * 4752.04  * 3382.87  *  849.60  *
* Vel Total (ft/s)        *    5.42  * Avg. Vel. (ft/s)     *          *    5.50  *    3.77  *
* Max Chl Dpth (ft)       *   19.51  * Hydr. Depth (ft)     *          *    8.52  *    1.79  *
* Conv. Total (cfs)       *3808935.0  * Conv. (cfs)         *          *3683471.0  *125464.6  *
* Length Wtd. (ft)        *  492.14  * Wetted Per. (ft)     *          * 3388.49  *  798.86  *
* Min Ch El (ft)          *  940.90  * Shear (lb/sq ft)     *          *    0.98  *    0.21  *
* Alpha                   *    1.01  * Stream Power (lb/ft s) *          *    5.42  *    0.78  *
* Frctn Loss (ft)         *    0.85  * Cum Volume (acre-ft)  * 3542.10  * 6682.74  *  895.57  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)        *  813.11  *  744.46  *  485.58  *
*****************************************************************************************

Warning: Divided flow computed for this cross-section.
Warning: The cross-section end points had to be extended vertically for the computed water surface.
Note:    Multiple critical depths were found at this location.  The critical depth with the lowest, valid,
         water surface was used.

CROSS SECTION OUTPUT  Profile #PF#2
*****************************************************************************************
* E.G. Elev (ft)          *  961.02  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.49  * Wt. n-Val.            *          *    0.049  *          *
* W.S. Elev (ft)          *  960.53  * Reach Len. (ft)       *  495.00  *  492.06  *  495.00  *
* Crit W.S. (ft)          *  955.39  * Flow Area (sq ft)     *          *29242.62  *          *
* E.G. Slope (ft/ft)      *0.001898  * Area (sq ft)          *          *29242.62  *          *
* Q Total (cfs)           *164000.00  * Flow (cfs)           *          *164000.00  *          *
* Top Width (ft)          * 3382.85  * Top Width (ft)       *          * 3382.85  *          *
* Vel Total (ft/s)        *    5.61  * Avg. Vel. (ft/s)     *          *    5.61  *          *
* Max Chl Dpth (ft)       *   19.63  * Hydr. Depth (ft)     *          *    8.64  *          *
* Conv. Total (cfs)       *3764143.0  * Conv. (cfs)         *          *3764143.0  *          *
* Length Wtd. (ft)        *  492.06  * Wetted Per. (ft)     *          * 3390.73  *          *
* Min Ch El (ft)          *  940.90  * Shear (lb/sq ft)     *          *    1.02  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    5.73  *          *
* Frctn Loss (ft)         *    0.86  * Cum Volume (acre-ft)  *  290.25  * 7040.55  *   30.85  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)        *   43.55  *  744.76  *    5.87  *
```

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

CROSS SECTION

RIVER: 1
REACH: 1 RS: 201.43

INPUT
Description: 201.43

Left Channel Bank Station Interpolated
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
12790.4	959.2	12931.7	959.4	13106.1	959.5	13261.9	959.6	13426.6	960.3
13574.8	960.1	13719.2	960	13863.6	960.3	14015.4	959.4	14162.1	960.1
14260	960.7	14418.2	961.9	14556.8	961.4	14697.8	960.6	14846.1	959.1
15008.5	959.1	15194.6	958.6	15331.7	959.1	15511.6	959.4	15657.5	959.5
15799.1	959.9	15827.9	961.5	15973.4	960.8	16110.8	960.5	16254.2	959.9
16478.5	958.1	16617.9	958	16780.3	959.8	16924.1	959.3	17061.9	956
17202.1	956.4	17374.3	959	17594.2	959.4	17734	959.4	17844.3	960.3
17853.5	961.9	17859.2	959.6	18001.4	960.7	18014.9960.4907		18053	959.9
18066.9	952.8	18179.7	952.8	18317	950.6	18459.7	949.9	18597.4	947.5
18738.8	948.8	18799.8	954.8	18924.3	958	19076.8	958.9	19195.5	956.6
19253.6	950.7	19403.4	947	19416.1	948.3	19450.8	947.6	19528.4	954.4
19671.9	955.8	19712.9	955.8	19744.1	948.3	19847.5	947.6	19851.7	953.1
19996.8	955.1	20141.7	954.2	20303.2	954.8	20474.6	951.5	20649	946.3
20689.8	947.9	20719.5	943.8	20747.5	947.5	20911.6	947	20951.8	947.8
20976.3	941.3	21080.6	942.7	21100.4	945.1	21136.4	946.2	21179.1	944.6
21271.5	950.5	21342.1	957.5	21353.3	959.8	21363.1	957.2	21516.4	957.7
21676.7	958.3	21814.1	958.7	21883	958.4	22035.4	957.9	22182.8	959.4
22322.3	960.9	22328.9	958.7	22340	962.3	22362.8	960.4	22606.3	961.2
22648.5	961.2	22787	960.2	22945.6	960.3	23094.6	961.1	23289.3	961
23341.9	960.2	23387.4	958.8						

Manning's n Values num= 7

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
12790.4	.043	15827.9	.065	17202.1	.025	17853.5	.15	19253.6	.032
20649	.037	21342.1	.025						

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
18014.9 21342.1 555 519.88 505 .1 .3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
12790.4	18000	962.3	F
22322.3	23387.4	962.3	F

CROSS SECTION OUTPUT Profile #PF#1

E.G. Elev (ft)	960.01	Element	Left OB	Channel / Right OB
Vel Head (ft)	0.55	Wt. n-Val.		0.042 / 0.025
W.S. Elev (ft)	959.46	Reach Len. (ft)	555.00	519.88 / 505.00
Crit W.S. (ft)	954.87	Flow Area (sq ft)		26895.29 / 1076.51
E.G. Slope (ft/ft)	0.001619	Area (sq ft)	1820.20	26895.29 / 1085.40
Q Total (cfs)	164000.00	Flow (cfs)		160971.10 / 3028.85
Top Width (ft)	6526.99	Top Width (ft)	2369.07	3288.24 / 869.68
Vel Total (ft/s)	5.86	Avg. Vel. (ft/s)		5.99 / 2.81
Max Chl Dpth (ft)	18.16	Hydr. Depth (ft)		8.18 / 1.28
Conv. Total (cfs)	4076199.0	Conv. (cfs)		4000917.0 / 75281.8
Length Wtd. (ft)	519.63	Wetted Per. (ft)		3296.86 / 844.04
Min Ch El (ft)	941.30	Shear (lb/sq ft)		0.82 / 0.13
Alpha	1.03	Stream Power (lb/ft s)		4.93 / 0.36
Frctn Loss (ft)	0.94	Cum Volume (acre-ft)	3504.55	6367.99 / 881.17
C & E Loss (ft)	0.01	Cum SA (acres)	772.65	706.78 / 475.81

Warning: Divided flow computed for this cross-section.
Warning: The cross-section end points had to be extended vertically for the computed water surface.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION OUTPUT Profile #PF#2

E.G. Elev (ft)	960.15	Element	Left OB	Channel / Right OB
Vel Head (ft)	0.56	Wt. n-Val.		0.042 /
W.S. Elev (ft)	959.60	Reach Len. (ft)	555.00	519.88 / 505.00
Crit W.S. (ft)	954.87	Flow Area (sq ft)		27334.01 /
E.G. Slope (ft/ft)	0.001604	Area (sq ft)		27334.01 /
Q Total (cfs)	164000.00	Flow (cfs)		164000.00 /
Top Width (ft)	3288.24	Top Width (ft)		3288.24 /
Vel Total (ft/s)	6.00	Avg. Vel. (ft/s)		6.00 /
Max Chl Dpth (ft)	18.30	Hydr. Depth (ft)		8.31 /
Conv. Total (cfs)	4094692.0	Conv. (cfs)		4094692.0 /
Length Wtd. (ft)	519.88	Wetted Per. (ft)		3299.09 /
Min Ch El (ft)	941.30	Shear (lb/sq ft)		0.83 /
Alpha	1.00	Stream Power (lb/ft s)		4.98 /
Frctn Loss (ft)	0.92	Cum Volume (acre-ft)	290.25	6721.00 / 30.85
C & E Loss (ft)	0.01	Cum SA (acres)	43.55	707.08 / 5.87

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

CROSS SECTION

RIVER: 1
REACH: 1 RS: 201.33

INPUT
Description: 201.33

```
Left ChannelBank Station Interpolated
Station Elevation Data    num=      97
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*********************************************************************************
 12785.7   957.8 12951.9   958.1 13134.4   958.1 13293.5   958.1 13493.4   958.4
 13649.5   958.9 13744.1   960.9 13758.6   959.4 13925.5     959 14085.7   958.6
 14255.8   961.3 14420.6   961.4 14593.6   961.2 14794.8   960.7 14992.6   959.3
   15164   957.6 15345.7   958.5 15520.6   959.3 15694.3   959.9 15854.4   959.9
 16014.9   960.3 16184.1   960.4 16362.7   960.3 16517.9   960.6 16680.1   958.6
 16837.4   958.7   16937   956.7 17109.2   956.2 17266.3   958.7 17288.5   957.8
 17465.9   959.2 17667.7     959 17831.2   959.5   17862   961.6 17929.5   961.8
 17948.2   960.418049.52959.5026 18072.4   959.3 18086.6     953 18242.2   954.4
 18398.7   954.5 18556.7   954.3 18607.2   952.5 18626.2   948.5 18634.2     950
 18715.7   949.6   18791   954.8 18874.7   955.9 18937.2   954.7 18984.3     948
 19116.8   949.1 19140.9     943 19269.7   945.9   19315   948.3 19489.9   950.7
 19565.6   952.4 19588.8   955.2 19608.2   948.1 19752.9     948 19806.6     953
 19969.5   952.2 20134.6   953.3 20171.4   952.2 20226.7   955.4 20293.9   954.2
 20341.3   955.5 20424.9   951.7 20512.5   950.6 20548.8   944.7 20652.6     950
 20769.7   946.7 20843.2     955 21006.1   948.3 21057.8   946.6 21076.8   943.6
 21236.1   944.8 21304.1   946.3 21310.7     945   21357   957.5 21381.8   958.1
 21545.7   957.7 21548.3   957.8 21799.8   956.8 21810.6   956.8 22056.9   957.1
 22107.8   957.3   22115   958.6 22356.1   957.9 22513.8   959.5 22624.6   962.2
 22794.7   960.7 22966.1     961 23037.1   962.1 23192.4   961.3 23366.6   961.5
 23397.6   960.4   23444   960.7

Manning's n Values        num=       7
     Sta   n Val      Sta   n Val      Sta   n Val      Sta   n Val
*********************************************************************************
 12785.7    .043 15854.4    .065 17266.3    .025 17929.5     .15 19116.8    .032
   19315    .037 21381.8    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
     18049.52 21381.8              515  514.62     515             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 12785.7 17929.5   962.2        F
 22624.6   23444   962.2        F

CROSS SECTION OUTPUT  Profile #PF#1
*************************************************************************************************
* E.G. Elev (ft)         *  959.06  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.63  * Wt. n-Val.            *          *   0.042  *   0.025  *
* W.S. Elev (ft)         *  958.44  * Reach Len. (ft)       *  515.00  *  514.62  *  515.00  *
* Crit W.S. (ft)         *  954.88  * Flow Area (sq ft)     *          *25245.53  *  889.59  *
* E.G. Slope (ft/ft)     *0.002024  * Area (sq ft)          *  944.14  *25245.53  *  889.59  *
* Q Total (cfs)          *164000.00  * Flow (cfs)           *          *161537.10  * 2462.93  *
* Top Width (ft)         * 5745.25  * Top Width (ft)       * 1467.85  * 3307.46  *  969.94  *
* Vel Total (ft/s)       *    6.28  * Avg. Vel. (ft/s)     *          *    6.40  *    2.77  *
* Max Chl Dpth (ft)      *   15.44  * Hydr. Depth (ft)     *          *    7.63  *    0.92  *
* Conv. Total (cfs)      *3645795.0  * Conv. (cfs)         *          *3591043.0  * 54752.0  *
* Length Wtd. (ft)       *  514.63  * Wetted Per. (ft)     *          * 3316.01  *  970.05  *
* Min Ch El (ft)         *  943.00  * Shear (lb/sq ft)     *          *    0.96  *    0.12  *
* Alpha                  *    1.03  * Stream Power (lb/ft s) *        *    6.15  *    0.32  *
* Frctn Loss (ft)        *    1.00  * Cum Volume (acre-ft)  * 3486.94  * 6056.85  *  869.72  *
* C & E Loss (ft)        *    0.01  * Cum SA (acres)        *  748.21  *  667.42  *  465.14  *
*************************************************************************************************

Warning: Divided flow computed for this cross-section.
Warning: The cross-section end points had to be extended vertically for the computed water surface.
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 OUTPUT  Profile #PF#2
*************************************************************************************************
* E.G. Elev (ft)         *  959.23  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.63  * Wt. n-Val.            *          *   0.042  *          *
* W.S. Elev (ft)         *  958.60  * Reach Len. (ft)       *  515.00  *  514.62  *  515.00  *
* Crit W.S. (ft)         *  954.88  * Flow Area (sq ft)     *          *25785.53  *          *
* E.G. Slope (ft/ft)     *0.001959  * Area (sq ft)          *          *25785.53  *          *
* Q Total (cfs)          *164000.00  * Flow (cfs)           *          *164000.00  *          *
* Top Width (ft)         * 3307.45  * Top Width (ft)       *          * 3307.45  *          *
* Vel Total (ft/s)       *    6.36  * Avg. Vel. (ft/s)     *          *    6.36  *          *
* Max Chl Dpth (ft)      *   15.60  * Hydr. Depth (ft)     *          *    7.80  *          *
* Conv. Total (cfs)      *3705386.0  * Conv. (cfs)         *          *3705386.0  *          *
* Length Wtd. (ft)       *  514.62  * Wetted Per. (ft)     *          * 3316.67  *          *
* Min Ch El (ft)         *  943.00  * Shear (lb/sq ft)     *          *    0.95  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *        *    6.05  *          *
* Frctn Loss (ft)        *    0.96  * Cum Volume (acre-ft)  *  290.25  * 6404.02  *   30.85  *
* C & E Loss (ft)        *    0.01  * Cum SA (acres)        *   43.55  *  667.72  *    5.87  *
*************************************************************************************************

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

CROSS SECTION


RIVER: 1
REACH: 1                RS: 201.24

INPUT
Description: 201.24

Left Channel Bank Station Interpolated
Station Elevation Data    num=      97
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*********************************************************************************
   12806   955.8 12962.7   956.3 13145.6   957.3 13331.4   956.5 13517.2   956.2
 13697.1   957.3 13855.5   957.4 14010.3     957 14164.7   956.7 14318.4   958.2
   14482   958.5   14660   956.8 14688.4   957.7 14821.8   955.2   14989   957.8
   15156   956.9 15324.8   957.6 15476.8     959 15632.7   959.6   15787   959.8
 15939.5     959 16132.2   958.4 16296.2   957.9 16464.6   957.9 16632.1   958.1
 16801.9   956.7 16986.8   954.6 17117.8   954.3 17180.2   958.7 17353.5   957.6
```

```
                                                                  DuplicateEffective
 17566.1   957.4 17719.1   957.9 17947.6   957.8 18063.5   959.918067.36958.4367
 18084.6   951.9 18123.2   954.4 18273.7   954.7 18463.7   954.1 18640.4   954.1
 18769.1   951.5 18834.7   946.6 18852.7   947.7   18957   944.8 19101.5   944.9
 19190.4   949.6 19365.4   949.8 19479.4   950.7 19501.5   945.5 19659.5   947.2
 19709.9     951 19861.9   951.5 20036.3   950.6 20116.5     953 20174.4   956.4
 20272.4   956.3 20322.3   953.3 20397.8   952.3 20534.1   946.8 20728.3   949.3
 20901.9   952.6 21060.4   953.1 21108.8   948.4 21143.3   943.1 21322.6     943
   21477   945.1 21515.7   945.4 21547.4   956.4   21570   957.6 21573.6   955.3
 21742.9   955.8 21840.8   955.8 22073.6   956.2 22315.2   956.6 22474.6   957.8
 22660.5   959.5 22837.1   960.3   23006   960.7   23189   960.3 23372.7   959.3
 23535.3   958.6 23693.7   960.2 23701.8   958.7 23728.6   959.3 23733.9   957.9
 23745.1   960.6 23895.9   959.5 24055.3   959.7   24212     959 24364.3   958.6
 24523.2     960 24683.9   959.1 24867.9   960.4 25044.2   960.6 25240.9   961.6
 25449.6   962.7   25490   964.7

Manning's n Values        num=       9
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************************************************
   12806    .043 16132.2    .065 17180.2    .025 17947.6     .15 18063.5     .15
   18957    .037 19659.5    .032 20174.4    .037   21570    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
     18067.36   21570              485  488.56     490             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
   12806 18063.5   964.7         F
   23006   25490   964.7         F

CROSS SECTION OUTPUT  Profile #PF#1
*********************************************************************************************************
* E.G. Elev (ft)         *  958.06  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.59  * Wt. n-Val.            *          *   0.040  *   0.025  *
* W.S. Elev (ft)         *  957.46  * Reach Len. (ft)       *  485.00  *  488.56  *  490.00  *
* Crit W.S. (ft)         *  953.61  * Flow Area (sq ft)     *          * 25746.25 * 1138.86  *
* E.G. Slope (ft/ft)     *0.001852  * Area (sq ft)          * 2208.10  * 25746.25 * 1138.86  *
* Q Total (cfs)          *164000.00  * Flow (cfs)          *          *160488.90  * 3511.11  *
* Top Width (ft)         * 6935.04  * Top Width (ft)       * 2577.63  * 3497.54  *  859.88  *
* Vel Total (ft/s)       *    6.10  * Avg. Vel. (ft/s)     *          *    6.23  *    3.08  *
* Max Chl Dpth (ft)      *   14.46  * Hydr. Depth (ft)     *          *    7.36  *    1.32  *
* Conv. Total (cfs)      *3811227.0  * Conv. (cfs)         *          *3729632.0  * 81595.2  *
* Length Wtd. (ft)       *  488.58  * Wetted Per. (ft)     *          * 3502.73  *  860.52  *
* Min Ch El (ft)         *  943.00  * Shear (lb/sq ft)     *          *    0.85  *    0.15  *
* Alpha                  *    1.03  * Stream Power (lb/ft s) *        *    5.30  *    0.47  *
* Frctn Loss (ft)        *    0.68  * Cum Volume (acre-ft)  * 3468.30  * 5755.64  *  857.73  *
* C & E Loss (ft)        *    0.05  * Cum SA (acres)        *  724.29  *  627.23  *  454.33  *
*********************************************************************************************************

Warning: Divided flow computed for this cross-section.
Warning: The cross-section end points had to be extended vertically for the computed water surface.
Note:    Multiple critical depths were found at this location.  The critical depth with the lowest, valid,
         water surface was used.

CROSS SECTION OUTPUT  Profile #PF#2
*********************************************************************************************************
* E.G. Elev (ft)         *  958.26  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.60  * Wt. n-Val.            *          *   0.040  *          *
* W.S. Elev (ft)         *  957.66  * Reach Len. (ft)       *  485.00  *  488.56  *  490.00  *
* Crit W.S. (ft)         *  953.61  * Flow Area (sq ft)     *          * 26420.07  *          *
* E.G. Slope (ft/ft)     *0.001790  * Area (sq ft)          *          * 26420.07  *          *
* Q Total (cfs)          *164000.00  * Flow (cfs)          *          *164000.00  *          *
* Top Width (ft)         * 3500.08  * Top Width (ft)       *          * 3500.08  *          *
* Vel Total (ft/s)       *    6.21  * Avg. Vel. (ft/s)     *          *    6.21  *          *
* Max Chl Dpth (ft)      *   14.66  * Hydr. Depth (ft)     *          *    7.55  *          *
* Conv. Total (cfs)      *3876386.0  * Conv. (cfs)         *          *3876386.0  *          *
* Length Wtd. (ft)       *  488.56  * Wetted Per. (ft)     *          * 3505.53  *          *
* Min Ch El (ft)         *  943.00  * Shear (lb/sq ft)     *          *    0.84  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *        *    5.23  *          *
* Frctn Loss (ft)        *    0.65  * Cum Volume (acre-ft)  *  290.25  * 6095.64  *   30.85  *
* C & E Loss (ft)        *    0.06  * Cum SA (acres)        *   43.55  *  627.51  *    5.87  *
*********************************************************************************************************

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

CROSS SECTION


RIVER: 1
REACH: 1                 RS: 201.14

INPUT
Description: 201.14

Left Channel Bank Station Interpolated
Station Elevation Data    num=      97
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
 12823.9   955.7 12999.4   956.2 13212.7   955.6 13428.9     956 13645.2   955.7
 13816.9   955.8 13992.2     956 14163.4   956.5 14335.2   955.8 14527.3   956.5
 14708.6   956.3 14909.6   955.2 15093.8   955.5   15267   954.8 15439.6   956.4
 15609.9   956.4   15791   956.8 15950.3     959 16129.2   957.7 16303.6     956
   16475   953.7 16660.8     955 16839.9   953.5 17004.5   951.4 17082.5   958.8
 17162.8   956.1 17184.4   958.7 17362.4   957.4 17598.4   957.1 17832.2   956.8
 18017.1     960   18032 960.218037.86957.9083 18056.8   950.5 18241.1   949.4
 18415.6   950.8 18585.7   951.8 18725.4   952.4 18733.1   949.9 18790.6   949.1
 18818.8   941.6 18850.4   943.3 18986.4   943.9 19077.9   949.8 19149.1   948.9
 19305.2     951 19389.8   945.3 19562.7   946.4   19610   949.5 19790.7   949.7
   19961   950.3 20069.8   955.8 20203.6   953.6 20241.8   949.2 20445.4   947.5
 20553.6     952 20738.9   949.5 20840.4   947.3 20887.4   943.5 20941.4   948.4
 20992.7   949.8 21019.8     942 21063.4   942.9 21079.7   945.4 21128.6     946
   21160   941.1 21202.5   940.4 21278.6   945.6 21455.1   945.3 21569.3   940.9
 21644.4   944.5 21697.9   954.5   21721   955.2 21725.6   953.1 21741.2     955
 22051.3   955.9 22155.8   956.1 22389.7   956.4 22512.4   956.8 22725.1   956.9
 22832.8     959 22857.1     957 23030.8     959 23238.6   958.8   23414   958.9
 23606.9   957.7 23803.1     958 24052.9   958.2 24291.1   958.1 24471.3   958.5
 24625.1   958.9 24632.8   957.3 24637.8   958.9 24815.7   959.6 25013.4   960.6
```

```
 25215.4   961.6 25365.2   962.4

Manning's n Values        num=       8
     Sta   n Val      Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************************************************
 12823.9    .043 16303.6    .065 17184.4    .025   18032     .15 18850.4    .037
   19610    .032 20553.6    .037   21721    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      18037.86   21721              480  481.53     485             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 12823.9   18032   962.4       F
 22832.8 25365.2   962.4       F

CROSS SECTION OUTPUT  Profile #PF#1
**********************************************************************************************
* E.G. Elev (ft)         *  957.32  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.42  * Wt. n-Val.             *          *   0.040  *   0.025  *
* W.S. Elev (ft)         *  956.91  * Reach Len. (ft)        *  480.00  *  481.53  *  485.00  *
* Crit W.S. (ft)         *  952.08  * Flow Area (sq ft)      *          *31262.79  *  806.56  *
* E.G. Slope (ft/ft)     *0.001090  * Area (sq ft)           * 5150.77  *31262.79  *  806.56  *
* Q Total (cfs)          *164000.00  * Flow (cfs)            *          *162632.90  * 1367.12  *
* Top Width (ft)         * 8631.33  * Top Width (ft)        * 3946.34  * 3680.58  * 1004.42  *
* Vel Total (ft/s)       *    5.11  * Avg. Vel. (ft/s)      *          *    5.20  *    1.70  *
* Max Chl Dpth (ft)      *   16.51  * Hydr. Depth (ft)      *          *    8.49  *    0.80  *
* Conv. Total (cfs)      *4966393.0  * Conv. (cfs)          *          *4924992.0  * 41400.3  *
* Length Wtd. (ft)       *  481.58  * Wetted Per. (ft)      *          * 3687.66  * 1004.99  *
* Min Ch El (ft)         *  940.40  * Shear (lb/sq ft)      *          *    0.58  *    0.05  *
* Alpha                  *    1.03  * Stream Power (lb/ft s) *          *    3.00  *    0.09  *
* Frctn Loss (ft)        *    0.50  * Cum Volume (acre-ft)  * 3427.33  * 5435.94  *  846.79  *
* C & E Loss (ft)        *    0.03  * Cum SA (acres)        *  687.97  *  586.97  *  443.84  *
**********************************************************************************************

Warning: Divided flow computed for this cross-section.
Warning: The cross-section end points had to be extended vertically for the computed water surface.
Note:    Multiple critical depths were found at this location.  The critical depth with the lowest, valid,
         water surface was used.

CROSS SECTION OUTPUT  Profile #PF#2
**********************************************************************************************
* E.G. Elev (ft)         *  957.55  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.40  * Wt. n-Val.             *          *   0.040  *          *
* W.S. Elev (ft)         *  957.15  * Reach Len. (ft)        *  480.00  *  481.53  *  485.00  *
* Crit W.S. (ft)         *  952.08  * Flow Area (sq ft)      *          *32150.13  *          *
* E.G. Slope (ft/ft)     *0.001017  * Area (sq ft)           *          *32150.13  *          *
* Q Total (cfs)          *164000.00  * Flow (cfs)            *          *164000.00  *          *
* Top Width (ft)         * 3680.58  * Top Width (ft)        *          * 3680.58  *          *
* Vel Total (ft/s)       *    5.10  * Avg. Vel. (ft/s)      *          *    5.10  *          *
* Max Chl Dpth (ft)      *   16.75  * Hydr. Depth (ft)      *          *    8.74  *          *
* Conv. Total (cfs)      *5142934.0  * Conv. (cfs)          *          *5142934.0  *          *
* Length Wtd. (ft)       *  481.53  * Wetted Per. (ft)      *          * 3689.85  *          *
* Min Ch El (ft)         *  940.40  * Shear (lb/sq ft)      *          *    0.55  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *    2.82  *          *
* Frctn Loss (ft)        *    0.47  * Cum Volume (acre-ft)  *  290.25  * 5767.18  *   30.85  *
* C & E Loss (ft)        *    0.03  * Cum SA (acres)        *   43.55  *  587.24  *    5.87  *
**********************************************************************************************

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

CROSS SECTION


RIVER: 1
REACH: 1                 RS: 201.05

INPUT
Description: 201.05

Left Channel Bank Station Interpolated
Station Elevation Data     num=      97
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*********************************************************************************************
 12848.3    954.5 13055.4    953.7 13276.2    955.4 13483.1    957.1 13684.3    954.7
 13886.2    954.5 14079.9      955 14267.8    955.7 14489.3    955.5   14686    954.3
 14893.9    954.8 15093.5    953.8 15286.8      955   15508    955.8 15694.8    955.4
 15890.9    955.3 16093.3    955.3 16296.5    955.9 16489.7    956.3 16687.2    954.3
 16876.1    953.1 17029.6    951.4   17090    955.6 17177.7    953.2 17211.7    959.1
 17239.8    956.7 17474.3    956.9 17712.8    956.3 17920.1    957.3 17947.8    957.7
17948.21 957.514 17963.9    950.4 18149.7    948.9 18366.7    949.3 18552.6    947.7
   18642    947.2 18662.5    941.8 18877.7    942.9 18965.7    942.8 19025.5    948.9
 19069.3    949.7   19115      948 19146.2    943.8 19305.4    944.7 19341.4    942.6
 19450.5    944.4   19486    951.1 19656.3    948.4 19742.2    949.2 19800.5    946.7
 19926.9      951 19979.4    950.2 20027.5    955.4 20105.3    953.3 20157.5    947.1
 20233.6    946.1 20272.3    948.2 20302.6    946.7 20402.5    950.2 20615.4    948.5
 20746.4    950.2 20793.3      949 20816.3    941.7 20964.1    941.5 20993.4    945.9
 21193.9    949.2 21384.8    948.9 21582.1      946 21750.2    942.4 21815.9    945.1
   21849    955.5 21881.2    953.7 21901.6    955.1   21907    953.3 21990.8    953.6
 22189.8    954.8 22244.5    955.2 22537.9    955.5 22570.5    955.5   22835    955.8
 22894.6    957.1 22905.9      959 22934.1    957.4 23165.2    957.6   23380      958
   23414      957 23451.8    959.3 23684.3    956.6 23933.2      957 24126.1    957.5
   24400    957.7 24595.1    958.4 24603.3    957.1 24622.7    959.8 24638.5    957.6
 24836.5    959.9 24997.1    961.2

Manning's n Values        num=       8
     Sta   n Val      Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************************************************
 12848.3    .043 16687.2     .15 17177.7    .025 17947.8     .15 18965.7    .037
   19486    .032 20402.5    .037   21849    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      17948.21   21849              520  512.89     510             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 12848.3 17947.8   961.2       F
```

22905.9 24997.1 961.2 F

CROSS SECTION OUTPUT Profile #PF#1

E.G. Elev (ft)	956.80	Element	Left OB	Channel	Right OB	
Vel Head (ft)	0.31	Wt. n-Val.		0.045	0.025	
W.S. Elev (ft)	956.49	Reach Len. (ft)	520.00	512.89	510.00	
Crit W.S. (ft)	950.99	Flow Area (sq ft)	6743.27	35607.62	1502.82	
E.G. Slope (ft/ft)	0.000974	Area (sq ft)		35607.62	1502.82	
Q Total (cfs)	164000.00	Flow (cfs)		160385.10	3614.90	
Top Width (ft)	9249.94	Top Width (ft)	4334.00	3898.52	1017.42	
Vel Total (ft/s)	4.42	Avg. Vel. (ft/s)		4.50	2.41	
Max Chl Dpth (ft)	14.99	Hydr. Depth (ft)		9.13	1.48	
Conv. Total (cfs)	5254537.0	Conv. (cfs)		5138716.0	115820.9	
Length Wtd. (ft)	512.83	Wetted Per. (ft)		3906.11	1017.82	
Min Ch El (ft)	941.50	Shear (lb/sq ft)		0.55	0.09	
Alpha	1.02	Stream Power (lb/ft s)		2.50	0.22	
Frctn Loss (ft)	0.41	Cum Volume (acre-ft)	3361.80	5066.33	833.93	
C & E Loss (ft)	0.01	Cum SA (acres)	642.35	545.08	432.59	

Warning: Divided flow computed for this cross-section.
Warning: The cross-section end points had to be extended vertically for the computed water surface.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION OUTPUT Profile #PF#2

E.G. Elev (ft)	957.06	Element	Left OB	Channel	Right OB	
Vel Head (ft)	0.31	Wt. n-Val.		0.045		
W.S. Elev (ft)	956.74	Reach Len. (ft)	520.00	512.89	510.00	
Crit W.S. (ft)	950.99	Flow Area (sq ft)		36618.90		
E.G. Slope (ft/ft)	0.000928	Area (sq ft)		36618.90		
Q Total (cfs)	164000.00	Flow (cfs)		164000.00		
Top Width (ft)	3898.52	Top Width (ft)		3898.52		
Vel Total (ft/s)	4.48	Avg. Vel. (ft/s)		4.48		
Max Chl Dpth (ft)	15.24	Hydr. Depth (ft)		9.39		
Conv. Total (cfs)	5383665.0	Conv. (cfs)		5383665.0		
Length Wtd. (ft)	512.89	Wetted Per. (ft)		3907.62		
Min Ch El (ft)	941.50	Shear (lb/sq ft)		0.54		
Alpha	1.00	Stream Power (lb/ft s)		2.43		
Frctn Loss (ft)	0.39	Cum Volume (acre-ft)	290.25	5387.08	30.85	
C & E Loss (ft)	0.01	Cum SA (acres)	43.55	545.35	5.87	

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

CROSS SECTION

RIVER: 1
REACH: 1 RS: 200.95

INPUT
Description: 200.95

Left Channel Bank Station Interpolated
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
12874.8	952.5	13039.9	952	13212.3	952.3	13372.8	953.5	13537.8	953.7
13708.5	953.7	13872.8	954	14042.5	953.4	14205.3	953.3	14401.9	953.5
14603.1	953.1	14762	954.2	14934	952.2	15127.8	952.8	15312.6	953.8
15422.3	957.2	15583	954.7	15746.4	955	15906.8	956.3	15988.2	955.4
16164.6	957.4	16332.4	957.6	16504.4	956.6	16673	957.2	16861.4	956.7
17049	953.4	17207.8	951.7	17274	955.6	17440.2	954.4	17613.5	957.4
17631.7	953.8	17653.9	958.1	17824.4	958	17905.8	956.9	189	17952.4
17964.6	951.3	18135.4	946.6	18219.9	947	18317.2	949.6	18410.9	946.7
18428.8	949	18651.9	947.8	18690.8	946.2	18729.3	940.1	18914	943.4
19040.9	943.9	19102.9	941.9	19126.2	943.3	19190.9	941.9	19216.4	943.8
19237.2	941.5	19420.9	944.3	19517.6	943.7	19555.3	947.7	19758.1	946.5
19818.9	950.2	19947.1	951.5	20006.8	955.9	20184.2	954.1	20323.1	951.3
20414.3	945.7	20527.8	944.2	20653.3	949.4	20684.2	940.5	20842.4	942.7
20989.1	947.8	21069.4	948.4	21262.3	947.7	21448.8	948.8	21631.4	946.7
21802	942.6	21869.1	939.8	21909.3	943.4	21954	953.2	22148.5	954.1
22306.3	954	22378	955.4	22594.8	954	22757.8	954.9	22935.8	954.8
23107.3	956.2	23275.4	955.9	23411.6	954.8	23573.4	957.7	23629.1	956.7
23796.3	955.8	23971.7	955.8	24129.8	956	24294.4	955.8	24466.5	955.4
24623.6	955.4	24630	955.3	24639.7	957.8	24648.4	954.6	24662.5	958.2
24836.4	959.8	24988.3	960.7						

Manning's n Values num= 6

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
12874.8	.043	17824.4	.15	18729.3	.037	19517.6	.032	20323.1	.037
21954	.035								

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
17905.8	21954	475 474.38	480	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
12874.8	17824.4	960.7	F
23100	24988.3	960.7	F

CROSS SECTION OUTPUT Profile #PF#1

E.G. Elev (ft)	956.38	Element	Left OB	Channel	Right OB	
Vel Head (ft)	0.29	Wt. n-Val.		0.041	0.035	
W.S. Elev (ft)	956.09	Reach Len. (ft)	475.00	474.38	480.00	
Crit W.S. (ft)	949.86	Flow Area (sq ft)		37268.25	1788.89	
E.G. Slope (ft/ft)	0.000668	Area (sq ft)	8739.61	37268.25	2273.76	
Q Total (cfs)	164000.00	Flow (cfs)		161348.80	2651.20	
Top Width (ft)	10045.22	Top Width (ft)	3687.99	4001.09	2356.15	
Vel Total (ft/s)	4.20	Avg. Vel. (ft/s)		4.33	1.48	
Max Chl Dpth (ft)	16.29	Hydr. Depth (ft)		9.31	1.57	

```
                                                                    DuplicateEffective
* Conv. Total (cfs)       *6344019.0  * Conv. (cfs)                 *          *6241462.0  *102556.5  *
* Length Wtd. (ft)        *  474.50  * Wetted Per. (ft)            *          * 4006.72  * 1140.01  *
* Min Ch El (ft)          *  939.80  * Shear (lb/sq ft)            *          *    0.39  *    0.07  *
* Alpha                   *    1.05  * Stream Power (lb/ft s)      *          *    1.68  *    0.10  *
* Frctn Loss (ft)         *    0.44  * Cum Volume (acre-ft)        * 3269.39  * 4637.30  *  811.82  *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)              *  594.47  *  498.58  *  412.84  *
*********************************************************************************************

Warning: Divided flow computed for this cross-section.
Warning: The cross-section end points had to be extended vertically for the computed water surface.
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:    Multiple critical depths were found at this location.  The critical depth with the lowest, valid,
         water surface was used.

CROSS SECTION OUTPUT  Profile #PF#2
*********************************************************************************************
* E.G. Elev (ft)          *  956.66  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.28  * Wt. n-Val.              *          *   0.041  *          *
* W.S. Elev (ft)          *  956.38  * Reach Len. (ft)         *  475.00  *  474.38  *  480.00  *
* Crit W.S. (ft)          *  949.86  * Flow Area (sq ft)       *          *38407.73  *          *
* E.G. Slope (ft/ft)      *0.000629  * Area (sq ft)            *          *38407.73  *          *
* Q Total (cfs)           *164000.00  * Flow (cfs)             *          *164000.00  *          *
* Top Width (ft)          * 4001.09  * Top Width (ft)         *          * 4001.09  *          *
* Vel Total (ft/s)        *    4.27  * Avg. Vel. (ft/s)       *          *    4.27  *          *
* Max Chl Dpth (ft)       *   16.58  * Hydr. Depth (ft)       *          *    9.60  *          *
* Conv. Total (cfs)       *6536869.0  * Conv. (cfs)            *          *6536869.0  *          *
* Length Wtd. (ft)        *  474.38  * Wetted Per. (ft)        *          * 4010.18  *          *
* Min Ch El (ft)          *  939.80  * Shear (lb/sq ft)        *          *    0.38  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s)  *          *    1.61  *          *
* Frctn Loss (ft)         *    0.41  * Cum Volume (acre-ft)    *  290.25  * 4945.39  *   30.85  *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)          *   43.55  *  498.84  *    5.87  *
*********************************************************************************************

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

CROSS SECTION


RIVER: 1
REACH: 1                RS: 200.86

INPUT
Description: 200.86

Left Channel Bank Station Interpolated
Station Elevation Data    num=      98
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
   12893   952.7 13071.4   952.1 13217.7   954.6 13366.3   951.7 13513.8   953.9
   13666   954.4 13820.1   953.4 13963.2   953.3   14149   953.3 14333.5   952.5
 14509.1   952.1 14688.3   953.1 14861.7   952.4 15054.1   951.6 15210.6   951.7
 15424.6     955 15571.3   952.8 15782.9   955.2 16020.2   955.6 16192.2   953.9
 16399.2   952.8 16559.9     953 16714.8   953.3 16760.5   954.7 16916.6   953.9
 17003.1   954.6 17168.1   950.1 17285.1   949.5 17360.5   954.6 17520.2     953
 17694.7     956 17869.8     957 17934.1   958.117992.44956.5698 17995.1   956.5
  17996956.3408 18052.8   946.3 18288.3   948.1 18449.5   947.1 18628.5   947.7
   18762   951.3 18912.7   950.4 19061.6   946.8   19092   945.3 19141.3   938.5
 19175.6   940.7 19336.6   941.9 19619.6   944.7 19730.8   944.7 19826.2   949.9
 19922.8   951.3 20011.5   955.4 20112.1   951.4 20184.7   943.1   20254   952.1
 20308.4   952.8 20438.4   949.3 20464.9   944.1 20568.6   943.9 20744.1   941.1
 20840.6   941.3 20896.7   945.9 20979.1   947.3   21100   946.2 21279.3   951.2
 21459.1   946.8 21602.1   945.3 21642.4   941.5 21792.5   940.9 21831.9   940.3
 21865.4   942.7   21898     952   22032   954.1 22187.6   953.7 22377.3   953.4
 22522.7   953.4 22725.4   952.8 22947.9   954.9 23137.5     955 23294.6   956.1
 23413.1   955.8   23420   954.5 23482.2   956.5 23641.6   956.7 23647.7   954.4
   23806   955.4 23951.6   954.9   24112   954.8 24269.9   954.6 24426.7   954.8
 24604.6   954.9 24656.8   954.3 24670.5   956.8 24680.8     954 24693.9   958.2
 24856.4   958.5 25029.7     959   25175   960.2

Manning's n Values        num=       6
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************************************************
   12893    .043 17934.1     .15 19619.6    .032 20308.4    .037   21898    .035
   22032    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       17996   22032               525  523.32     525             .1      .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
   12893   17750   960.2       F
   23360   25175   960.2       F

CROSS SECTION OUTPUT  Profile #PF#1
*********************************************************************************************
* E.G. Elev (ft)          *  955.94  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.31  * Wt. n-Val.              *          *   0.053  *   0.035  *
* W.S. Elev (ft)          *  955.63  * Reach Len. (ft)         *  525.00  *  523.32  *  525.00  *
* Crit W.S. (ft)          *  949.69  * Flow Area (sq ft)       *          *35548.44  * 2059.19  *
* E.G. Slope (ft/ft)      *0.001346  * Area (sq ft)            *11394.54  *35548.44  * 2898.59  *
* Q Total (cfs)           *164000.00  * Flow (cfs)             *          *159393.20  * 4606.83  *
* Top Width (ft)          *11080.59  * Top Width (ft)         * 4780.42  * 4032.00  * 2268.17  *
* Vel Total (ft/s)        *    4.36  * Avg. Vel. (ft/s)       *          *    4.48  *    2.24  *
* Max Chl Dpth (ft)       *   17.13  * Hydr. Depth (ft)       *          *    8.82  *    1.72  *
* Conv. Total (cfs)       *4470468.0  * Conv. (cfs)            *          *4344891.0  *125577.2  *
* Length Wtd. (ft)        *  523.36  * Wetted Per. (ft)        *          * 4037.40  * 1196.09  *
* Min Ch El (ft)          *  938.50  * Shear (lb/sq ft)        *          *    0.74  *    0.14  *
* Alpha                   *    1.03  * Stream Power (lb/ft s)  *          *    3.32  *    0.32  *
* Frctn Loss (ft)         *    0.59  * Cum Volume (acre-ft)    * 3159.61  * 4240.80  *  783.33  *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)          *  548.30  *  454.83  *  387.36  *
*********************************************************************************************

Warning: Divided flow computed for this cross-section.
```

Warning: The cross-section end points had to be extended vertically for the computed water surface.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION OUTPUT Profile #PF#2

E.G. Elev (ft)	956.24	Element	Left OB	Channel / Right OB
Vel Head (ft)	0.31	Wt. n-Val.		0.053 /
W.S. Elev (ft)	955.94	Reach Len. (ft)	525.00	523.32 / 525.00
Crit W.S. (ft)	949.69	Flow Area (sq ft)		36762.91 /
E.G. Slope (ft/ft)	0.001276	Area (sq ft)		36762.91 /
Q Total (cfs)	164000.00	Flow (cfs)		164000.00 /
Top Width (ft)	4032.00	Top Width (ft)		4032.00 /
Vel Total (ft/s)	4.46	Avg. Vel. (ft/s)		4.46 /
Max Chl Dpth (ft)	17.44	Hydr. Depth (ft)		9.12 /
Conv. Total (cfs)	4591685.0	Conv. (cfs)		4591685.0 /
Length Wtd. (ft)	523.32	Wetted Per. (ft)		4039.54 /
Min Ch El (ft)	938.50	Shear (lb/sq ft)		0.72 /
Alpha	1.00	Stream Power (lb/ft s)		3.23 /
Frctn Loss (ft)	0.55	Cum Volume (acre-ft)	290.25	4536.07 / 30.85
C & E Loss (ft)	0.00	Cum SA (acres)	43.55	455.10 / 5.87

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

CROSS SECTION

RIVER: 1
REACH: 1 RS: 200.77

INPUT
Description: 200.77
Station Elevation Data num= 96

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
12925.1	950.1	13101.8	952.3	13250.4	951	13436.7	950.7	13651.1	951.4
13804.4	951.9	14027	953.4	14249.5	951.8	14401.1	950.7	14592.6	949.7
14752.3	950.6	14873.3	950.3	15006	952.1	15110.8	950.9	15249.1	953.3
15443.8	954.5	15631.2	955.3	15702.9	951.3	15936.9	951	16108.8	954.5
16172	955.8	16295.1	951.4	16462	950.7	16530.6	949.9	16652.3	952.8
16854.8	954	17022.2	952.1	17185.4	949.9	17349.4	948.1	17402.8	955.2
17473.6	951.6	17660.6	954.4	17828.8	955.3	17926.5	954	17969.3	948
18147.9	944.4	18302.9	946.4	18524.1	946.1	18650.9	949	18815.8	948.8
18902.5	949.8	18913.4	952	19097	950.8	19277	951.3	19280.8	951.9
19280.9	949.5	19321.8	951.3	19557.8	943.7	19720.4	945.1	19857.8	946.5
19911.9	942.9	19989.5	951.1	20140.5	950.2	20288.5	945.2	20339.4	948.6
20362.3	944.7	20388.7	942.6	20487.8	944	20788	936.9	20804.9	937.1
20829.2	942.4	20906.3	944.7	21056	944.4	21222.9	942.6	21375.1	940.2
21524.6	940.4	21559.7	941	21581	950.6	21785.8	951.3	21951	952.4
22102.3	952.1	22329.8	953.2	22461	953	22651.4	953.3	22824.9	954.7
23050.7	954.8	23217.5	954.9	23380.5	954.5	23421.7	954.3	23434.6	956
23439.7	954.3	23489.2	957.2	23506.4	952.5	23514.1	955.4	23706.9	954.3
23876.7	954.3	24057.8	954.4	24216.1	954.4	24385.4	954.2	24554.4	953.9
24685.3	953.1	24698.2	956.8	24704.7	952.7	24723.6	958.6	24886.7	958.9
24978	959.5								

Manning's n Values num= 6

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
12925.1	.043	17828.8	.15	19321.8	.032	19857.8	.037	21785.8	.025
21951	.035								

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
17828.8 21951 500 495.64 520 .1 .3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
12925.1	17630	960	F
23630	24978	960	F

CROSS SECTION OUTPUT Profile #PF#1

E.G. Elev (ft)	955.35	Element	Left OB	Channel / Right OB
Vel Head (ft)	0.33	Wt. n-Val.	0.043	0.043 / 0.035
W.S. Elev (ft)	955.02	Reach Len. (ft)	500.00	495.64 / 520.00
Crit W.S. (ft)	949.21	Flow Area (sq ft)	62.55	34826.94 / 1951.25
E.G. Slope (ft/ft)	0.000950	Area (sq ft)	14814.58	34826.94 / 2840.32
Q Total (cfs)	164000.00	Flow (cfs)	37.64	160936.30 / 3026.04
Top Width (ft)	11449.90	Top Width (ft)	4718.53	4101.49 / 2629.89
Vel Total (ft/s)	4.45	Avg. Vel. (ft/s)	0.60	4.62 / 1.55
Max Chl Dpth (ft)	18.12	Hydr. Depth (ft)	0.42	8.49 / 1.25
Conv. Total (cfs)	5320745.0	Conv. (cfs)	1221.1	5221349.0 / 98175.5
Length Wtd. (ft)	496.09	Wetted Per. (ft)	147.30	4108.72 / 1557.74
Min Ch El (ft)	936.90	Shear (lb/sq ft)	0.03	0.50 / 0.07
Alpha	1.06	Stream Power (lb/ft s)	0.02	2.32 / 0.12
Frctn Loss (ft)	0.55	Cum Volume (acre-ft)	3001.67	3818.06 / 748.74
C & E Loss (ft)	0.01	Cum SA (acres)	491.06	405.98 / 357.84

Warning: Divided flow computed for this cross-section.
Warning: The cross-section end points had to be extended vertically for the computed water surface.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION OUTPUT Profile #PF#2

E.G. Elev (ft)	955.70	Element	Left OB	Channel / Right OB
Vel Head (ft)	0.32	Wt. n-Val.		0.043 /
W.S. Elev (ft)	955.38	Reach Len. (ft)	500.00	495.64 / 520.00
Crit W.S. (ft)	949.21	Flow Area (sq ft)		36283.86 /
E.G. Slope (ft/ft)	0.000875	Area (sq ft)		36283.86 /
Q Total (cfs)	164000.00	Flow (cfs)		164000.00 /
Top Width (ft)	4122.20	Top Width (ft)		4122.20 /
Vel Total (ft/s)	4.52	Avg. Vel. (ft/s)		4.52 /
Max Chl Dpth (ft)	18.48	Hydr. Depth (ft)		8.80 /

```
                                                                    DuplicateEffective
* Conv. Total (cfs)      *5545445.0  * Conv. (cfs)                  *          *5545445.0  *          *
* Length Wtd. (ft)       *  495.65  * Wetted Per. (ft)             *          * 4132.49  *          *
* Min Ch El (ft)         *  936.90  * Shear (lb/sq ft)             *          *    0.48  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s)       *          *    2.17  *          *
* Frctn Loss (ft)        *    0.50  * Cum Volume (acre-ft)         *  290.25  * 4097.29  *   30.85  *
* C & E Loss (ft)        *    0.00  * Cum SA (acres)               *   43.55  *  406.12  *    5.87  *
*********************************************************************************************************

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

CROSS SECTION


RIVER: 1
REACH: 1                 RS: 200.67

INPUT
Description: 200.67
Station Elevation Data    num=      96
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*************************************************************************************
 12952.7   947.8 13129.5   948.3 13308.2   948.8 13483.1   949.2   13641   952.6
   13766     952 13870.6   949.3 14073.7   950.3   14282   951.5 14535.6   948.8
 14746.4   948.7 14899.4   949.8 15045.4   950.6 15138.5   953.1 15312.3   952.8
 15471.5   952.2 15651.1   951.4 15730.3   949.9 15964.5     954 16199.7   953.8
 16438.6   948.9 16643.2   952.3 16796.2     954 17002.3   953.9 17133.8   952.2
 17211.9   946.7 17315.9     947 17376.2   954.8 17384.7   952.3 17551.8   953.1
 17732.2   954.1 17919.3   952.9   17950   943.8 18101.5   944.9 18330.6   947.4
 18498.9   943.9   18565   943.8 18742.3   948.8 18888.2     952 18925.4   946.6
 18962.8   948.9 19023.7   947.4 19040.9   949.6 19238.5   952.4 19366.3   948.8
 19569.2   947.1 19719.3   940.8 19796.7   942.1 19832.7   943.8   19969     943
 20047.1     949   20111   948.4   20263   939.8 20444.8   942.7   20609   942.6
 20782.8   941.1 20963.8   942.2 20998.9   941.8 21090.6   944.3 21256.2   942.8
 21298.3   943.3   21316   950.6 21367.7   945.7 21427.5   950.4   21604   951.9
 21649.3   952.3 21939.5   952.7 21971.5   952.7   22194   953.4 22217.8   954.7
 22233.1     953 22256.3   952.8 22476.8   953.9 22513.4   953.9 22711.5   955.1
 22773.4   955.2 22873.4   959.1 23051.6   959.3 23158.6   956.6 23168.5   958.8
 23393.6   957.5   23430   957.4 23431.7   955.9 23584.2   954.6 23749.1   953.9
 23939.2     954 24125.4   954.8 24292.4   954.6 24492.9   954.3 24643.7   954.1
 24725.3   954.1 24731.8   955.7 24741.4   953.7 24755.2   960.7   24923   959.7
 24996.7     960

Manning's n Values        num=       8
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
*************************************************************************************
 12952.7    .043 17919.3     .15 18962.8    .032 19040.9     .15 19366.3    .032
   20263    .043   21604    .025 21649.3    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.    Expan.
       17919.3 21649.3              500  503.34     510             .1         .3
Ineffective Flow     num=       3
   Sta L    Sta R     Elev  Permanent
 12952.7    17540      960       F
   22230    23500      960       F
   23915 24996.7      960       F

CROSS SECTION OUTPUT  Profile #PF#1
*********************************************************************************************************
* E.G. Elev (ft)          *  954.80  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.38  * Wt. n-Val.             *   0.043  *   0.047  *   0.025  *
* W.S. Elev (ft)          *  954.42  * Reach Len. (ft)        *  500.00  *  503.34  *  510.00  *
* Crit W.S. (ft)          *  948.98  * Flow Area (sq ft)      *  337.22  *32402.02  * 1045.48  *
* E.G. Slope (ft/ft)      *0.001288  * Area (sq ft)           *15971.37  *32402.02  * 1461.47  *
* Q Total (cfs)           *164000.00  * Flow (cfs)            *  386.70  *160716.40  * 2896.93  *
* Top Width (ft)          *10368.24  * Top Width (ft)        * 4962.41  * 3730.00  * 1675.83  *
* Vel Total (ft/s)        *    4.85  * Avg. Vel. (ft/s)      *    1.15  *    4.96  *    2.77  *
* Max Chl Dpth (ft)       *   14.62  * Hydr. Depth (ft)      *    0.89  *    8.69  *    1.21  *
* Conv. Total (cfs)       *4569344.0  * Conv. (cfs)          * 10774.2  *4477856.0  * 80713.9  *
* Length Wtd. (ft)        *  503.48  * Wetted Per. (ft)      *  379.31  * 3734.79  *  862.41  *
* Min Ch El (ft)          *  939.80  * Shear (lb/sq ft)      *    0.07  *    0.70  *    0.10  *
* Alpha                   *    1.03  * Stream Power (lb/ft s) *    0.08  *    3.46  *    0.27  *
* Frctn Loss (ft)         *    0.65  * Cum Volume (acre-ft)  * 2824.98  * 3435.59  *  723.07  *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)        *  435.50  *  361.42  *  332.14  *
*********************************************************************************************************

Warning: Divided flow computed for this cross-section.
Warning: The cross-section end points had to be extended vertically for the computed water surface.
Note:    Multiple critical depths were found at this location.  The critical depth with the lowest, valid,
         water surface was used.

CROSS SECTION OUTPUT  Profile #PF#2
*********************************************************************************************************
* E.G. Elev (ft)          *  955.20  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.36  * Wt. n-Val.             *   0.043  *   0.047  *          *
* W.S. Elev (ft)          *  954.84  * Reach Len. (ft)        *  500.00  *  503.34  *  510.00  *
* Crit W.S. (ft)          *  948.98  * Flow Area (sq ft)      *  341.27  *33939.87  *          *
* E.G. Slope (ft/ft)      *0.001158  * Area (sq ft)           *  341.27  *33939.87  *          *
* Q Total (cfs)           *164000.00  * Flow (cfs)            *  457.27  *163542.70  *          *
* Top Width (ft)          * 4009.30  * Top Width (ft)        *  279.30  * 3730.00  *          *
* Vel Total (ft/s)        *    4.78  * Avg. Vel. (ft/s)      *    1.34  *    4.82  *          *
* Max Chl Dpth (ft)       *   15.04  * Hydr. Depth (ft)      *    1.22  *    9.10  *          *
* Conv. Total (cfs)       *4819677.0  * Conv. (cfs)          * 13438.4  *4806238.0  *          *
* Length Wtd. (ft)        *  503.33  * Wetted Per. (ft)      *  280.55  * 3737.32  *          *
* Min Ch El (ft)          *  939.80  * Shear (lb/sq ft)      *    0.09  *    0.66  *          *
* Alpha                   *    1.01  * Stream Power (lb/ft s) *    0.12  *    3.16  *          *
* Frctn Loss (ft)         *    0.59  * Cum Volume (acre-ft)  *  288.29  * 3697.77  *   30.85  *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)        *   41.94  *  361.45  *    5.87  *
*********************************************************************************************************

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

CROSS SECTION
```

RIVER: 1
REACH: 1 RS: 200.58

INPUT
Description: 200.58

Right Channel Bank Station Interpolated
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
13004.2	946.1	13252.7	946	13406.6	945.2	13565.9	944.9	13774.2	944.6
13943.1	945.5	14116.9	945	14279.1	946.6	14438.8	947.7	14609	948.4
14768.3	947.1	14929	947.1	15050.5	947.2	15202.4	950.2	15286.6	950.1
15344.6	952	15501.3	950.2	15638.8	948.6	15758.4	951.1	15992.6	950.5
16109.8	952.6	16227.7	949.4	16451.3	948.4	16610.1	950.8	16708	953.4
16925.1	953.5	17149.3	953.1	17163.9	953.3	17234.2	944.5	17318.9	945.5
17387.8	953.1	17544.8	952.5	17768	953.3	17947	953.3	18120.4	944.7
18239.5	947	18479.6	944.5	18689.4	943	18899.8	947.1	18982.6	947.4
19060.5	950.5	19193.4	946.5	19239.2	951	19272	950.3	19281	947.8
19435	949.5	19481.5	950.8	19780.1	939.9	19839	939.1	20105.5	937.6
20341.3	941.2	20411.6	945.7	20456.8	943.9	20469.2	941.9	20590	941.2
20660	946.3	20712.1	943.5	20803.5	943.1	20830.7	941.2	21002.3	943.4
21117.8	946.3	21272	946.4	21425	950.4	21450	950.6778	21452	950.7
21643	952.3	21667.2	952.4	21820.3	952	21847.8	952	22017.1	952.7
22213.8	952.2	22244.2	960.6	22257.8	957.2	22270.2	958.5	22289.1	952.8
22392.9	953.3	22566.6	953.5	22797.3	954.2	22998.5	955.3	23151	955.4
23322.6	954.9	23399.1	953.2	23498	953.6	23506	952.3	23516.9	955.5
23555.1	955.9	23578.4	953.2	23779.1	953.4	23989.5	954.5	24174.8	954.3
24351.4	954.1	24538.2	953.8	24699.8	953.7	24771.3	955.3	24776.5	952.9
24795.5	960.4	24969.5	959.5						

Manning's n Values num= 7

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
13004.2	.15	14609	.043	17947	.15	19481.5	.032	20105.5	.043
21425	.025	21643	.025						

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
17947 21450 475 479.55 530 .1 .3

Ineffective Flow num= 3

Sta L	Sta R	Elev	Permanent
13004.2	17460	960	F
22800	23380	960	F
24200	24969.5	960	F

CROSS SECTION OUTPUT Profile #PF#1

E.G. Elev (ft)	954.14	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.39	Wt. n-Val.	0.043	0.048	0.025
W.S. Elev (ft)	953.76	Reach Len. (ft)	475.00	479.55	530.00
Crit W.S. (ft)	948.29	Flow Area (sq ft)	366.16	31612.27	1563.34
E.G. Slope (ft/ft)	0.001313	Area (sq ft)	23418.66	31612.27	1568.20
Q Total (cfs)	164000.00	Flow (cfs)	379.05	159405.60	4215.36
Top Width (ft)	10091.02	Top Width (ft)	4942.80	3503.00	1645.22
Vel Total (ft/s)	4.89	Avg. Vel. (ft/s)	1.04	5.04	2.70
Max Chl Dpth (ft)	16.16	Hydr. Depth (ft)	0.75	9.02	1.02
Conv. Total (cfs)	4526509.0	Conv. (cfs)	10462.2	4399700.0	116346.8
Length Wtd. (ft)	481.45	Wetted Per. (ft)	487.00	3505.02	1540.52
Min Ch El (ft)	937.60	Shear (lb/sq ft)	0.06	0.74	0.08
Alpha	1.04	Stream Power (lb/ft s)	0.06	3.73	0.22
Frctn Loss (ft)	0.53	Cum Volume (acre-ft)	2598.92	3065.74	705.33
C & E Loss (ft)	0.02	Cum SA (acres)	378.65	319.63	312.70

Warning: Divided flow computed for this cross-section.
Warning: The cross-section end points had to be extended vertically for the computed water surface.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION OUTPUT Profile #PF#2

E.G. Elev (ft)	954.60	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.37	Wt. n-Val.	0.043	0.048	
W.S. Elev (ft)	954.23	Reach Len. (ft)	475.00	479.55	530.00
Crit W.S. (ft)	948.29	Flow Area (sq ft)	521.74	33271.84	
E.G. Slope (ft/ft)	0.001187	Area (sq ft)	521.74	33271.84	
Q Total (cfs)	164000.00	Flow (cfs)	697.49	163302.50	
Top Width (ft)	3940.00	Top Width (ft)	437.00	3503.00	
Vel Total (ft/s)	4.85	Avg. Vel. (ft/s)	1.34	4.91	
Max Chl Dpth (ft)	16.63	Hydr. Depth (ft)	1.19	9.50	
Conv. Total (cfs)	4759369.0	Conv. (cfs)	20241.6	4739127.0	
Length Wtd. (ft)	479.52	Wetted Per. (ft)	438.60	3508.58	
Min Ch El (ft)	937.60	Shear (lb/sq ft)	0.09	0.70	
Alpha	1.02	Stream Power (lb/ft s)	0.12	3.45	
Frctn Loss (ft)	0.49	Cum Volume (acre-ft)	283.34	3309.45	30.85
C & E Loss (ft)	0.01	Cum SA (acres)	37.83	319.66	5.87

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

CROSS SECTION

RIVER: 1
REACH: 1 RS: 200.49

INPUT
Description: 200.49
Station Elevation Data num= 96

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
13048.9	945.6	13261.8	944.9	13471.4	944.9	13640.6	945.6	13821.9	945.7
13998.1	945.5	14204.4	944.8	14399.4	943.8	14586.6	943.4	14763.6	943
14951.3	943.1	15156.1	943.2	15371.2	945.2	15548.1	948.1	15769.6	946.9
15979.3	948.4	16200.3	947.6	16375.3	947.1	16493.4	953	16719	952.8

```
                                                                                DuplicateEffective
 16949.5     951 17106.4   951.7 17132.4   947.4   17168   952.5 17198.4   950.8
 17234.4   945.1 17404.6   947.6 17536.5   952.7 17719.3   953.3 17750.3   952.7
 17791.5   947.5 17816.7   949.6 17852.9     949 17862.5   950.8 18012.9   951.3
 18153.1   947.1 18273.7   941.6 18480.3   943.2 18739.9     945 18856.4   944.7
 19028.1   939.7   19085   944.7 19190.4   945.3 19261.7   948.1 19342.5   943.7
 19490.6   939.8   19542   943.5 19650.1   948.1 19854.1   940.8 19947.1   937.5
   20192   936.9 20201.4   940.9 20275.4   939.8 20324.1     944 20367.7   939.3
 20425.1   937.8   20452   941.7 20573.6   946.4 20608.5   941.9   20627   944.1
 20638.3   940.9 20706.1   939.4 20811.1   939.3 20837.1   942.5 20956.7   943.3
 20975.1   941.9 21136.8   944.8   21171   950.3 21342.1   950.2 21559.3   950.8
 21830.5   950.9 21861.8   951.1 21876.9   959.1 21891.8     959 21905.4   951.7
 22133.6   952.2   22336   952.4 22590.8   952.7 22633.1   952.7 22813.2   952.3
 23018.2   953.8 23185.8   954.6 23401.6   954.5   23519     954 23540.6   951.9
 23589.4   954.7 23609.6     952 23780.4   952.4 23946.1   952.4   24145   952.4
 24343.4   952.9 24514.6   953.3 24725.8   953.2 24810.9   953.5 24835.6     958
 24956.8   957.1

Manning's n Values         num=       7
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************************************************
 13048.9     .15 15548.1    .043 17719.3    .043 18273.7     .15 19342.5    .032
   20192    .043   21171    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.    Expan.
       17719.3   21171              510  497.59     510              .1       .3
Ineffective Flow      num=       4
   Sta L   Sta R    Elev  Permanent
 13048.9   17380     960       F
   21840   22160     960       F
   22950   23300     960       F
   24485 24956.8     960       F

CROSS SECTION OUTPUT  Profile #PF#1
*************************************************************************************************
* E.G. Elev (ft)          *  953.59  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.32  * Wt. n-Val.             *   0.043  *   0.047  *   0.025  *
* W.S. Elev (ft)          *  953.28  * Reach Len. (ft)        *  510.00  *  497.59  *  510.00  *
* Crit W.S. (ft)          *  946.97  * Flow Area (sq ft)      *  607.04  *33688.59  * 3074.81  *
* E.G. Slope (ft/ft)      *0.000940  * Area (sq ft)           *29543.49  *33688.59  * 3468.71  *
* Q Total (cfs)           *164000.00  * Flow (cfs)            *  961.51  *154777.40  * 8261.14  *
* Top Width (ft)          *10978.11  * Top Width (ft)        * 4663.19  * 3450.48  * 2864.45  *
* Vel Total (ft/s)        *    4.39  * Avg. Vel. (ft/s)      *    1.58  *    4.59  *    2.69  *
* Max Chl Dpth (ft)       *   16.38  * Hydr. Depth (ft)      *    1.83  *    9.76  *    1.29  *
* Conv. Total (cfs)       *5347928.0  * Conv. (cfs)          * 31354.1  *5047184.0  *269389.9  *
* Length Wtd. (ft)        *  498.40  * Wetted Per. (ft)      *  332.19  * 3455.46  * 2378.92  *
* Min Ch El (ft)          *  936.90  * Shear (lb/sq ft)      *    0.11  *    0.57  *    0.08  *
* Alpha                   *    1.05  * Stream Power (lb/ft s) *    0.17  *    2.63  *    0.20  *
* Frctn Loss (ft)         *    0.41  * Cum Volume (acre-ft)  * 2310.15  * 2706.29  *  674.69  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)        *  326.27  *  281.36  *  285.27  *
*************************************************************************************************

Warning: Divided flow computed for this cross-section.
Warning: The cross-section end points had to be extended vertically for the computed water surface.
Note:    Multiple critical depths were found at this location.  The critical depth with the lowest, valid,
         water surface was used.

CROSS SECTION OUTPUT  Profile #PF#2
*************************************************************************************************
* E.G. Elev (ft)          *  954.10  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.33  * Wt. n-Val.             *   0.043  *   0.047  *          *
* W.S. Elev (ft)          *  953.77  * Reach Len. (ft)        *  510.00  *  497.59  *  510.00  *
* Crit W.S. (ft)          *  946.97  * Flow Area (sq ft)      *  775.44  *35402.63  *          *
* E.G. Slope (ft/ft)      *0.000893  * Area (sq ft)           *  775.44  *35402.63  *          *
* Q Total (cfs)           *164000.00  * Flow (cfs)            * 1371.76  *162628.30  *          *
* Top Width (ft)          * 3791.00  * Top Width (ft)        *  339.30  * 3451.70  *          *
* Vel Total (ft/s)        *    4.53  * Avg. Vel. (ft/s)      *    1.77  *    4.59  *          *
* Max Chl Dpth (ft)       *   16.87  * Hydr. Depth (ft)      *    2.29  *   10.26  *          *
* Conv. Total (cfs)       *5487085.0  * Conv. (cfs)          * 45896.2  *5441189.0  *          *
* Length Wtd. (ft)        *  497.80  * Wetted Per. (ft)      *  345.94  * 3460.15  *          *
* Min Ch El (ft)          *  936.90  * Shear (lb/sq ft)      *    0.13  *    0.57  *          *
* Alpha                   *    1.02  * Stream Power (lb/ft s) *    0.22  *    2.62  *          *
* Frctn Loss (ft)         *    0.39  * Cum Volume (acre-ft)  *  276.27  * 2931.44  *   30.85  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)        *   33.60  *  281.38  *    5.87  *
*************************************************************************************************

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

CROSS SECTION


RIVER: 1
REACH: 1                RS: 200.39

INPUT
Description: 200.39
Station Elevation Data     num=      96
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*********************************************************************************
 13083.9   945.2 13254.6   945.3 13486.8   945.5 13742.8   945.8 14008.5     946
 14273.9   945.9 14454.3   945.6 14637.7   945.4 14834.7   945.2 15022.8   944.7
 15192.5   944.4 15417.5   944.4 15642.9   944.4 15819.7   943.9 16016.8   943.5
 16254.5   943.6 16478.3   943.8 16652.7   943.9 16819.7   947.8 16875.2   949.8
 16928.9   948.8 16992.7   951.1 17168.8   950.1 17242.1     945   17439   948.6
 17484.9     949 17507.9   946.2 17527.7   949.5 17682.5   952.2 17714.9   945.6
 17726.7   949.9   17781   947.5 17966.7   946.8 18026.8   945.7 18050.3   941.5
   18183   941.3 18379.8   942.6 18534.2     941 18751.2   942.5 18800.2   941.7
 18918.7   944.9 19025.6   941.5 19161.9   944.8 19220.8   943.5 19267.5   947.7
 19444.5   940.9 19506.7     939 19763.7   940.6   19785   940.5 20110.3   939.9
 20152.6     937   20199   940.6 20240.6   941.7 20272.3   938.7 20460.6   948.4
 20515.5   946.8 20585.3   946.5 20659.8   939.5 20714.2   938.7   20742   943.3
 20788.5   938.9 20812.7   939.9 20854.3   937.8 20978.7   940.9   21041   951.3
   21062   949.6 21134.2   949.8 21326.6   949.6 21342.1   949.6 21606.3     951
 21865.7   950.7 21893.4   950.9 21911.5     958 21918.5   956.7 21925.9   957.8
 21937.7   950.6 22152.6   950.7 22336.4   951.5 22566.3   951.6 22807.6   951.9
 23031.4   952.1 23203.3   953.2 23429.6   953.3 23573.8     952   23600   955.9
```

DuplicateEffective

23653.9	951.2	23829	950.5	24004.5	950.7	24185.9	951.4	24362.4	951.7		
24572.6	951.5	24742.1	951.6	24842.9	953.7	24848.9	951.1	24857.3	956.6		
24952.5	957.6										

Manning's n Values num= 7

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
13083.9	.15	16875.2	.043	17682.5	.043	18751.2	.15	19506.7	.032
20199	.043	21041	.025						

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
17682.5	21041	550 506.5	480	.1	.3

Ineffective Flow num= 3

Sta L	Sta R	Elev	Permanent
13080	17300	960	F
21400	22680	960	F
24775	24952.5	960	F

CROSS SECTION OUTPUT Profile #PF#1

E.G. Elev (ft)	953.17	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.28	Wt. n-Val.	0.043	0.045	0.025
W.S. Elev (ft)	952.89	Reach Len. (ft)	550.00	506.50	480.00
Crit W.S. (ft)	946.26	Flow Area (sq ft)	1497.02	34887.88	3429.20
E.G. Slope (ft/ft)	0.000739	Area (sq ft)	33168.13	34887.88	5797.26
Q Total (cfs)	164000.00	Flow (cfs)	3488.42	151819.00	8692.53
Top Width (ft)	11315.74	Top Width (ft)	4598.60	3358.50	3358.64
Vel Total (ft/s)	4.12	Avg. Vel. (ft/s)	2.33	4.35	2.53
Max Chl Dpth (ft)	15.89	Hydr. Depth (ft)	3.91	10.39	1.65
Conv. Total (cfs)	6034760.0	Conv. (cfs)	128364.4	5586533.0	319861.9
Length Wtd. (ft)	507.09	Wetted Per. (ft)	382.99	3363.45	2078.59
Min Ch El (ft)	937.00	Shear (lb/sq ft)	0.18	0.48	0.08
Alpha	1.06	Stream Power (lb/ft s)	0.42	2.08	0.19
Frctn Loss (ft)	0.54	Cum Volume (acre-ft)	1943.04	2314.62	620.44
C & E Loss (ft)	0.02	Cum SA (acres)	272.06	242.47	248.84

Warning: Divided flow computed for this cross-section.
Warning: The cross-section end points had to be extended vertically for the computed water surface.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION OUTPUT Profile #PF#2

E.G. Elev (ft)	953.70	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.29	Wt. n-Val.	0.043	0.045	
W.S. Elev (ft)	953.40	Reach Len. (ft)	550.00	506.50	480.00
Crit W.S. (ft)	946.26	Flow Area (sq ft)	1694.62	36622.89	
E.G. Slope (ft/ft)	0.000702	Area (sq ft)	1694.62	36622.89	
Q Total (cfs)	164000.00	Flow (cfs)	4130.06	159869.90	
Top Width (ft)	3741.00	Top Width (ft)	382.50	3358.50	
Vel Total (ft/s)	4.28	Avg. Vel. (ft/s)	2.44	4.37	
Max Chl Dpth (ft)	16.40	Hydr. Depth (ft)	4.43	10.90	
Conv. Total (cfs)	6188329.0	Conv. (cfs)	155842.5	6032486.0	
Length Wtd. (ft)	508.20	Wetted Per. (ft)	390.34	3365.56	
Min Ch El (ft)	937.00	Shear (lb/sq ft)	0.19	0.48	
Alpha	1.02	Stream Power (lb/ft s)	0.46	2.08	
Frctn Loss (ft)	0.49	Cum Volume (acre-ft)	261.81	2520.06	30.85
C & E Loss (ft)	0.02	Cum SA (acres)	29.37	242.48	5.87

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

CROSS SECTION

RIVER: 1
REACH: 1 RS: 200.3

INPUT
Description: 200.3
Station Elevation Data num= 96

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
13125.5	945.5	13316	945.5	13495.7	945.7	13687.9	945.9	13882.5	945.7
14123.9	945.2	14361.2	945.8	14546.2	945.8	14737.5	945.3	14938.1	945.4
15122.2	945.1	15335	945.6	15433	945.6	15567.6	939.4	15743.1	943.1
15926.3	943.9	16194.5	945.4	16429.4	944.1	16628.2	944	16879.3	943.5
17113.8	942.4	17377.6	941.9	17498.6	943.3	17607.2	938.9	17628.8	936.3
17658.3	936.3	17675	944.5	17697.5	951.2	17780.4	950.6	17838.1	947
17867.7	942.5	17967.1	945	18084.3	942	18261.2	944.6	18437.1	945.1
18628.2	943.1	18829.4	943.7	19025	944.9	19214.9	946.9	19248.3	947.6
19276.7	941.7	19395.7	940.8	19474.4	946.5	19525.1	941.1	19863.4	942.3
20078.8	940.7	20263.9	939.9	20310.8	939.3	20322.1	942.6	20372.8	938
20488.5	939.3	20499.7	937.7	20594.1	938.9	20626.9	940.5	20657.3	939.8
20690.1	946.3	20711.8	945.7	20725.9	942.7	20819.1	942.7	20861.5	948.6
20879.4	947.5	20896	957	20906	955	20980	955.9	20990	954.6
21051.2	955.9	21071.8	953.9	21206.4	955	21247.3	956.9	21438.7	956
21607.6	952.1	21652.6	956.5	21832	957.6	22017.2	957.7	22136.9	954
22358.1	956.8	22480.5	957.8	22661.3	957.9	22684.8	957.8	22918.3	956.9
22985.5	956.5	23086.3	950.7	23165.3	950.8	23400.3	954	23576.8	954.1
23691	953.2	23717.5	950.5	23919.1	949.7	24108.8	949.5	24379.6	950.1
24590.3	950.3	24795.9	950.7	24878.3	952.9	24883.6	950.7	24903	957.1
24983.7	956.7								

Manning's n Values num= 7

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
13125.5	.15	17780.4	.15	18261.2	.065	19395.7	.032	20263.9	.043
20896	.043	21206.4	.053						

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
17780.4	20896	520 515.72	560	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent

13125 17205 960 F

CROSS SECTION OUTPUT Profile #PF#1

E.G. Elev (ft)	952.61	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.49	Wt. n-Val.	0.150	0.046	0.053
W.S. Elev (ft)	952.12	Reach Len. (ft)	520.00	515.72	560.00
Crit W.S. (ft)	947.18	Flow Area (sq ft)	5257.79	28732.01	2497.26
E.G. Slope (ft/ft)	0.001603	Area (sq ft)	35712.51	28732.01	2497.26
Q Total (cfs)	179750.00	Flow (cfs)	9082.61	166347.00	4320.39
Top Width (ft)	9118.91	Top Width (ft)	4654.90	3107.07	1356.93
Vel Total (ft/s)	4.93	Avg. Vel. (ft/s)	1.73	5.79	1.73
Max Chl Dpth (ft)	15.82	Hydr. Depth (ft)	9.14	9.25	1.84
Conv. Total (cfs)	4488975.0	Conv. (cfs)	226824.0	4154256.0	107895.0
Length Wtd. (ft)	517.47	Wetted Per. (ft)	578.54	3112.25	1357.60
Min Ch El (ft)	937.70	Shear (lb/sq ft)	0.91	0.92	0.18
Alpha	1.29	Stream Power (lb/ft s)	1.57	5.35	0.32
Frctn Loss (ft)	0.93	Cum Volume (acre-ft)	1508.19	1944.74	574.75
C & E Loss (ft)	0.01	Cum SA (acres)	213.64	204.88	222.85

Warning: Divided flow computed for this cross-section.
Warning: The cross-section end points had to be extended vertically for the computed water surface.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION OUTPUT Profile #PF#2

E.G. Elev (ft)	953.18	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.46	Wt. n-Val.	0.150	0.046	
W.S. Elev (ft)	952.73	Reach Len. (ft)	520.00	515.72	560.00
Crit W.S. (ft)	947.17	Flow Area (sq ft)	5605.86	30611.86	
E.G. Slope (ft/ft)	0.001382	Area (sq ft)	5605.86	30611.86	
Q Total (cfs)	179750.00	Flow (cfs)	9271.11	170478.90	
Top Width (ft)	3683.53	Top Width (ft)	575.40	3108.13	
Vel Total (ft/s)	4.96	Avg. Vel. (ft/s)	1.65	5.57	
Max Chl Dpth (ft)	16.43	Hydr. Depth (ft)	9.74	9.85	
Conv. Total (cfs)	4835241.0	Conv. (cfs)	249391.0	4585850.0	
Length Wtd. (ft)	516.00	Wetted Per. (ft)	589.04	3113.47	
Min Ch El (ft)	937.70	Shear (lb/sq ft)	0.82	0.85	
Alpha	1.20	Stream Power (lb/ft s)	1.36	4.72	
Frctn Loss (ft)	0.80	Cum Volume (acre-ft)	215.72	2129.17	30.85
C & E Loss (ft)	0.01	Cum SA (acres)	23.33	204.89	5.87

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

CROSS SECTION

RIVER: 1
REACH: 1 RS: 200.2

INPUT
Description: 200.2

Left Channel Bank Station Interpolated
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
13153.3	944.6	13349.8	941	13453.5	941.7	13506.2	944.4	13667.2	944.5
13896.4	944.4	14116.1	944.3	14330.9	944.2	14491.6	944.1	14677.3	943.8
14757.1	939.6	14939.8	944.1	15110.7	943.8	15278.6	943.3	15461.1	943.2
15632.4	943.3	15866.9	943.9	16084.9	943.3	16260.8	943.4	16458.2	942.6
16696.4	943.8	16928.4	942.2	17115	942.02	92 17146.9	942	17406.4	942.7
17643.4	942.6	17703.7	941.7	17728.1	936.2	17754.7	936.2	17774.2	941
17960.5	949.6	18052.3	948	18086.8	939.2	18113.1	940.7	18233.7	939.8
18402.1	943	18511.7	944.8	18531.7	941.8	18707.3	944.7	18794.8	941.3
19017.2	943.2	19081.1	945.2	19247.5	944.2	19313.2	945.7	19482.3	942.9
19591.6	942.6	20062.3	940.4	20235.8	940	20296.5	940.6	20329.2	937.6
20402.2	940.4	20578.4	937.9	20633	938.7	20676	937	20686.1	939.7
20744	948	20822.3	948	20949.1	954.9	21027.6	947.5	21215	947.3
21338.5	947.2	21527.5	948.5	21746	948.8	21841.7	948.3	22059	949.1
22185.4	949.1	22507.1	948.8	22551.2	949	22836.7	949.8	22992.3	949.2
23156.3	950.7	23327.5	950.2	23492.3	951.2	23633.4	950.7	23641.6	948.8
23667.9	953.3	23785.4	949.4	23980	949	24145.7	948.5	24326	947.5
24336.6	946.6	24353.9	949.4	24529.6	949.2	24626.1	949.5	24679.5	947.3
24861.6	949.3	24983.4	948.5	24990.2	949.6	24999.2	947	25138.6	950
25169.5	955.5	25202.4	950.9	25239.2	950	25434.2	953.6	25474.7	955.9
25481.6	954.7	25498.7	958.4						

Manning's n Values num= 8

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
13153.3	.15	17960.5	.15	18233.7	.065	19482.3	.032	20235.8	.043
20744	.043	21215	.025	23667.9	.053				

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
17960.5 20744 535 525.73 515 .1 .3

Ineffective Flow num= 3

Sta L	Sta R	Elev	Permanent
13150	17115	960	F
20744	23100	960	F
25169.5	25498.7	960	F

CROSS SECTION OUTPUT Profile #PF#1

E.G. Elev (ft)	951.67	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.56	Wt. n-Val.	0.150	0.046	0.051
W.S. Elev (ft)	951.10	Reach Len. (ft)	535.00	525.73	515.00
Crit W.S. (ft)	946.78	Flow Area (sq ft)	7123.41	24953.69	3542.48
E.G. Slope (ft/ft)	0.002027	Area (sq ft)	37700.66	24953.69	9020.27
Q Total (cfs)	179750.00	Flow (cfs)	13140.99	158890.60	7718.37
Top Width (ft)	11857.73	Top Width (ft)	4807.20	2783.50	4267.03
Vel Total (ft/s)	5.05	Avg. Vel. (ft/s)	1.84	6.37	2.18

```
                                                                    DuplicateEffective
* Max Chl Dpth (ft)      *   14.90  * Hydr. Depth (ft)        *    8.43  *    8.96  *    1.84  *
* Conv. Total (cfs)      *3992119.0  * Conv. (cfs)            *291851.9  *3528848.0  *171419.5  *
* Length Wtd. (ft)       *  525.91  * Wetted Per. (ft)        *  846.90  * 2786.31  * 1924.34  *
* Min Ch El (ft)         *  937.00  * Shear (lb/sq ft)        *    1.06  *    1.13  *    0.23  *
* Alpha                  *    1.43  * Stream Power (lb/ft s) *    1.96  *    7.22  *    0.51  *
* Frctn Loss (ft)        *    0.98  * Cum Volume (acre-ft)   * 1070.00  * 1626.94  *  500.71  *
* C & E Loss (ft)        *    0.03  * Cum SA (acres)         *  157.16  *  170.01  *  186.70  *
*****************************************************************************************

Warning: Divided flow computed for this cross-section.
Warning: The cross-section end points had to be extended vertically for the computed water surface.
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 OUTPUT  Profile #PF#2
*****************************************************************************************
* E.G. Elev (ft)         *  952.38  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.55  * Wt. n-Val.             *   0.150  *   0.046  *          *
* W.S. Elev (ft)         *  951.83  * Reach Len. (ft)        *  535.00  *  525.73  *  515.00  *
* Crit W.S. (ft)         *  946.77  * Flow Area (sq ft)      * 7740.51  *26985.25  *          *
* E.G. Slope (ft/ft)     *0.001732  * Area (sq ft)           * 7740.51  *26985.25  *          *
* Q Total (cfs)          *179750.00  * Flow (cfs)           *13843.60  *165906.40  *          *
* Top Width (ft)         * 3629.00  * Top Width (ft)        *  845.50  * 2783.50  *          *
* Vel Total (ft/s)       *    5.18  * Avg. Vel. (ft/s)      *    1.79  *    6.15  *          *
* Max Chl Dpth (ft)      *   15.63  * Hydr. Depth (ft)      *    9.15  *    9.69  *          *
* Conv. Total (cfs)      *4319022.0  * Conv. (cfs)          *332633.1  *3986389.0  *          *
* Length Wtd. (ft)       *  526.30  * Wetted Per. (ft)      *  856.71  * 2790.14  *          *
* Min Ch El (ft)         *  937.00  * Shear (lb/sq ft)      *    0.98  *    1.05  *          *
* Alpha                  *    1.31  * Stream Power (lb/ft s) *    1.75  *    6.43  *          *
* Frctn Loss (ft)        *    0.81  * Cum Volume (acre-ft)   *  136.06  * 1788.21  *   30.85  *
* C & E Loss (ft)        *    0.04  * Cum SA (acres)         *   14.85  *  170.01  *    5.87  *
*****************************************************************************************

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

CROSS SECTION


RIVER: 1
REACH: 1                RS: 200.1

INPUT
Description: 200.1
Station Elevation Data    num=      96
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*****************************************************************************************
 13401.5    961.6 13404.9    959.9 13406.7    957.2 13436.1    949.3 13438.3    947.2
 13608.9    944.8 13771.4    944.1 13861.6    946.2 14093.6    944.2   14363    943.5
 14599.1      944 14804.9    943.5 14985.6    943.6 15188.8    942.7 15425.2    942.8
 15650.8    942.8 15834.1    942.9 16015.4    942.8 16214.7    941.9 16467.4    941.6
 16641.3    942.8 16821.1      944 17077.9    942.2   17313    941.7 17523.7    941.6
 17672.5    940.7 17733.3    943.5 17903.5      943   18097      942   18197    940.9
   18244    934.9 18278.2    934.7   18280    936.9   18289    936.2 18327.6    941.8
 18505.3    941.8   18602    941.2 18752.8    944.8 18927.6    940.3 19044.3    938.9
 19072.3    941.3 19130.7      943 19301.3    943.1 19402.1    944.8 19524.2    937.7
 19631.9    945.9 19875.1    939.3 20104.9    934.9 20306.5    934.5 20329.5    935.2
 20520.9    935.5 20604.1    936.7   20643    947.2 20857.2    946.5 21112.6    946.5
 21165.6    945.5 21339.7    946.3 21499.9    947.4 21673.2    947.4 21692.7    947.4
 21938.1    947.6 21976.2    947.6   22310    947.7 22366.6    947.7 22620.5      948
   22748    948.7 23104.3    950.4 23323.4    950.8   23521    950.1 23671.5    950.7
 23677.2    948.1 23730.1    951.6 23754.2    948.1 23760.8    950.1 23949.5    948.5
 24132.7    948.8 24309.4      949 24354.9    949.5 24372.1    946.9 24561.3    948.7
 24717.9    946.9 24773.6    949.1 24952.8    948.5 25016.6    946.2 25028.8    948.4
 25039.1    944.7 25073.4    947.5 25256.1    949.3 25287.2    954.4   25301    949.1
 25375.9    953.1 25528.9      956 25539.2    957.4 25551.8    955.4 25735.3    957.8
   25963      960

Manning's n Values        num=       8
     Sta    n Val     Sta    n Val     Sta    n Val     Sta    n Val     Sta    n Val
*****************************************************************************************
 13401.5      .15 15425.2     .043 16821.1      .15 18752.8      .15 19524.2     .032
   20643     .043 21165.6     .025 23730.1     .053

Bank Sta: Left    Right    Lengths: Left Channel   Right     Coeff Contr.    Expan.
        17733.3   20643              490  491.65     495             .1        .3
Ineffective Flow      num=       3
   Sta L    Sta R     Elev  Permanent
   13400    17030      960       F
   20800    23000      960       F
 25287.2    25965      960       F

CROSS SECTION OUTPUT  Profile #PF#1
*****************************************************************************************
* E.G. Elev (ft)         *  950.66  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.47  * Wt. n-Val.             *   0.150  *   0.050  *   0.050  *
* W.S. Elev (ft)         *  950.19  * Reach Len. (ft)        *  490.00  *  491.65  *  495.00  *
* Crit W.S. (ft)         *  945.22  * Flow Area (sq ft)      * 5946.08  *28462.42  * 3251.01  *
* E.G. Slope (ft/ft)     *0.001730  * Area (sq ft)           *30238.28  *28462.42  * 9247.00  *
* Q Total (cfs)          *179750.00  * Flow (cfs)           *10167.66  *163284.20  * 6298.19  *
* Top Width (ft)         *11254.10  * Top Width (ft)        * 4300.50  * 2909.70  * 4043.90  *
* Vel Total (ft/s)       *    4.77  * Avg. Vel. (ft/s)      *    1.71  *    5.74  *    1.94  *
* Max Chl Dpth (ft)      *   15.69  * Hydr. Depth (ft)      *    8.45  *    9.78  *    1.79  *
* Conv. Total (cfs)      *4321296.0  * Conv. (cfs)          *244436.5  *3925447.0  *151412.3  *
* Length Wtd. (ft)       *  491.84  * Wetted Per. (ft)      *  703.37  * 2913.88  * 1823.03  *
* Min Ch El (ft)         *  934.50  * Shear (lb/sq ft)      *    0.91  *    1.06  *    0.19  *
* Alpha                  *    1.33  * Stream Power (lb/ft s) *    1.56  *    6.05  *    0.37  *
* Frctn Loss (ft)        *    0.58  * Cum Volume (acre-ft)   *  652.79  * 1304.60  *  392.73  *
* C & E Loss (ft)        *    0.06  * Cum SA (acres)         *  101.23  *  135.65  *  137.58  *
*****************************************************************************************

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.
```

CROSS SECTION OUTPUT Profile #PF#2

E.G. Elev (ft)	951.53	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.42	Wt. n-Val.	0.150	0.051	0.043
W.S. Elev (ft)	951.11	Reach Len. (ft)	490.00	491.65	495.00
Crit W.S. (ft)	945.22	Flow Area (sq ft)	6594.26	31144.08	653.90
E.G. Slope (ft/ft)	0.001392	Area (sq ft)	6594.26	31144.08	653.90
Q Total (cfs)	179750.00	Flow (cfs)	10748.50	166859.30	2142.24
Top Width (ft)	3770.00	Top Width (ft)	703.30	2909.70	157.00
Vel Total (ft/s)	4.68	Avg. Vel. (ft/s)	1.63	5.36	3.28
Max Chl Dpth (ft)	16.61	Hydr. Depth (ft)	9.38	10.70	4.16
Conv. Total (cfs)	4818061.0	Conv. (cfs)	288105.3	4472535.0	57421.1
Length Wtd. (ft)	491.67	Wetted Per. (ft)	711.94	2913.88	161.42
Min Ch El (ft)	934.50	Shear (lb/sq ft)	0.80	0.93	0.35
Alpha	1.23	Stream Power (lb/ft s)	1.31	4.98	1.15
Frctn Loss (ft)	0.51	Cum Volume (acre-ft)	48.03	1437.43	26.99
C & E Loss (ft)	0.04	Cum SA (acres)	5.33	135.65	4.95

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

CROSS SECTION

RIVER: 1
REACH: 1 RS: 200

INPUT
Description: 200
Station Elevation Data num= 96

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
13751.9	957.5	13774.9	950.4	13899.2	945.3	14075.2	943.6	14247.4	943.4
14390.2	944.1	14410.8	941.9	14489.5	944.7	14707.6	944.7	14871.6	945
15032.5	944.4	15300.2	944.1	15460.8	944.8	15628	944.3	15784.9	944.2
15958.7	943.4	16114	943.3	16279	942.4	16452	942.3	16652.4	942.7
16843.9	942.3	17008.1	943.8	17197.2	943.5	17388.9	942.5	17552.5	941.8
17738.6	942.2	17904	942.1	18074.8	942.9	18250.5	943.4	18433.6	942.2
18601	942.2	18626	940.2	18638.8	934	18658.5	933.4	18693.5	940.2
18768.9	944.3	18874.7	940.2	19043.7	940.6	19233.3	941.2	19416.4	942.6
19566.9	941.6	19720.1	935.8	19796.8	938.8	19975	934.4	20272.3	934.1
20276.6	934.2	20626.2	936.3	20790.5	935.3	20829	944.5	21085.6	944
21172.7	942.8	21329.4	945.1	21406.2	952.7	21433.8	946.6	21513.2	947.1
21713.7	947	21747.4	947	21906.5	946.8	21920.3	946.8	22147.8	946
22206.3	945.8	22451.9	946.8	22701.3	947.9	22901.9	948.3	23151.7	949.3
23234.2	950.1	23323.5	948.7	23510.9	949.9	23672.1	949.6	23707.3	949.9
23712.7	946.9	23720.9	949.2	23769.1	950.4	23820.8	947.8	23989.1	947.8
24020.6	947.1	24029.2	945.6	24038	947.6	24198.6	947	24361	947.2
24513.5	945.6	24672.5	946.4	24863.2	946.6	25018.9	946.3	25064.3	946
25075.8	943.9	25087.5	947.1	25163.5	947.5	25181.3	953.2	25200.7	953.7
25211	947.8	25384.8	952.1	25573.3	956	25602.8	956.1	25616.3	960.7
25622.7	961.4								

Manning's n Values num= 9

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
13751.9	.15	15628	.043	17008.1	.15	18601	.15	19566.9	.032
20829	.032	21329.4	.043	21713.7	.025	23769.1	.053		

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
17008.1	20829	520 521.67	525	.1	.3

Ineffective Flow num= 3

Sta L	Sta R	Elev	Permanent
13751	16950	960	F
21350	23200	960	F
25200.7	25625	960	F

CROSS SECTION OUTPUT Profile #PF#1

E.G. Elev (ft)	950.01	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.27	Wt. n-Val.	0.043	0.049	0.039
W.S. Elev (ft)	949.74	Reach Len. (ft)	520.00	521.67	525.00
Crit W.S. (ft)	944.16	Flow Area (sq ft)	360.81	37062.06	7114.48
E.G. Slope (ft/ft)	0.000864	Area (sq ft)	18898.55	37062.06	11612.06
Q Total (cfs)	179750.00	Flow (cfs)	1238.45	158884.00	19627.52
Top Width (ft)	11193.60	Top Width (ft)	3217.23	3820.90	4155.47
Vel Total (ft/s)	4.04	Avg. Vel. (ft/s)	3.43	4.29	2.76
Max Chl Dpth (ft)	16.34	Hydr. Depth (ft)	6.21	9.70	3.14
Conv. Total (cfs)	6113840.0	Conv. (cfs)	42123.5	5404126.0	667591.3
Length Wtd. (ft)	521.96	Wetted Per. (ft)	58.10	3824.60	2271.73
Min Ch El (ft)	933.40	Shear (lb/sq ft)	0.34	0.52	0.17
Alpha	1.05	Stream Power (lb/ft s)	1.15	2.24	0.47
Frctn Loss (ft)	0.40	Cum Volume (acre-ft)	376.42	934.82	274.21
C & E Loss (ft)	0.02	Cum SA (acres)	58.95	97.67	90.99

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.

CROSS SECTION OUTPUT Profile #PF#2

E.G. Elev (ft)	950.98	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.28	Wt. n-Val.	0.043	0.050	0.032
W.S. Elev (ft)	950.70	Reach Len. (ft)	520.00	521.67	525.00
Crit W.S. (ft)	944.16	Flow Area (sq ft)	416.36	40715.75	1418.00
E.G. Slope (ft/ft)	0.000792	Area (sq ft)	416.36	40715.75	1418.00
Q Total (cfs)	179750.00	Flow (cfs)	1388.62	172089.50	6271.86
Top Width (ft)	4100.00	Top Width (ft)	58.10	3820.90	221.00
Vel Total (ft/s)	4.22	Avg. Vel. (ft/s)	3.34	4.23	4.42
Max Chl Dpth (ft)	17.30	Hydr. Depth (ft)	7.17	10.66	6.42
Conv. Total (cfs)	6388853.0	Conv. (cfs)	49355.8	6116576.0	222920.5
Length Wtd. (ft)	521.71	Wetted Per. (ft)	65.53	3824.60	227.63
Min Ch El (ft)	933.40	Shear (lb/sq ft)	0.31	0.53	0.31

```
                                                                    DuplicateEffective
* Alpha                 *    1.00  * Stream Power (lb/ft s) *    1.05  *    2.22  *   1.36  *
* Frctn Loss (ft)       *    0.35  * Cum Volume (acre-ft)   *    8.60  * 1031.90  *  15.22  *
* C & E Loss (ft)       *    0.02  * Cum SA (acres)         *    1.05  *   97.67  *   2.80  *
*********************************************************************************************

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

CROSS SECTION


RIVER: 1
REACH: 1                RS: 199.91

INPUT
Description: 199.91
Station Elevation Data    num=      96
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
   14357     952 14390.5   944.3 14519.8   944.3 14639.2     944 14799.9   943.3
   14919   943.3 15064.9   943.3 15201.6   943.3 15338.6   943.4 15454.7   943.3
 15584.5   943.3 15701.7   943.3 15826.7     943 15946.8   942.7 16066.9   942.8
   16186   942.4 16318.5   941.2 16444.9   941.2   16595   941.2 16734.2   941.2
 16862.4   941.9 16985.5   941.6 17123.4   941.2 17256.1   940.2 17418.5   940.8
 17583.3   941.1 17747.3   940.1 17924.2   940.7 18048.2   942.2   18185   942.2
 18189.1   942.2 18396.1   942.1 18544.2   943.4 18752.1     941 18756.5   940.1
 18757.1   941.1 18776.4   938.5 18875.1   932.1 19009.5   940.1 19154.1   941.2
 19274.4   940.6 19412.9   940.1 19433.2   938.2   19665   944.1 19683.4   944.3
   20122   935.3   20357   935.3 20396.2   935.2 20513.6   938.9 20603.3   938.2
 20817.6   934.9 20841.2   934.9   21013   935.1 21078.3   935.1 21141.2   941.5
 21181.1   941.5 21315.9     945 21377.5   952.3 21405.6   945.7 21555.3   946.7
 21673.9   946.5 21886.3   946.2 22065.2   946.2 22189.8   945.7 22354.3   945.2
   22462   946.4 22675.7   948.1   22731   948.3 22992.2   947.3 23079.5   947.2
 23195.8   947.1 23332.1   947.2   23499   947.4 23628.6   947.3 23678.5   948.1
 23685.3   950.9 23692.1   948.2 23702.9   950.2 23747.7   949.7 23766.7   947.4
 23890.2   946.9   24000   946.9 24127.8   946.1 24323.2   945.3 24446.3   945.3
 24602.1   944.4 24749.8   944.2 24887.7   943.5 25018.7   945.8 25033.6   942.4
 25046.9   947.2 25137.9   947.1 25214.4   951.6 25285.5   947.1 25444.7   950.8
 25559.1   953.2

Manning's n Values        num=      10
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************************************************
   14357     .15 16318.5    .043 17747.3     .15 18544.2     .15 19433.2    .032
   21013    .043 21315.9    .043 21377.5    .025 23702.9    .053 25018.7    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      16862.4 21315.9             465  466.41     465             .1        .3
Ineffective Flow     num=       3
   Sta L   Sta R    Elev  Permanent
   14357   16800     960       F
   21330   23050     960       F
   25200 25559.1     960       F

CROSS SECTION OUTPUT  Profile #PF#1
*********************************************************************************************
* E.G. Elev (ft)        *  949.60  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)         *    0.21  * Wt. n-Val.            *   0.043  *   0.046  *   0.044  *
* W.S. Elev (ft)        *  949.39  * Reach Len. (ft)       *  465.00  *  466.41  *  465.00  *
* Crit W.S. (ft)        *  943.36  * Flow Area (sq ft)     *  477.76  *43007.52  * 6769.67  *
* E.G. Slope (ft/ft)    *0.000668  * Area (sq ft)          *16319.12  *43007.52  *11526.39  *
* Q Total (cfs)         *179750.00  * Flow (cfs)           * 1657.71  *164523.10  *13569.20  *
* Top Width (ft)        *10846.61  * Top Width (ft)       * 2494.03  * 4453.50  * 3899.08  *
* Vel Total (ft/s)      *    3.58  * Avg. Vel. (ft/s)     *    3.47  *    3.83  *    2.00  *
* Max Chl Dpth (ft)     *   17.29  * Hydr. Depth (ft)     *    7.66  *    9.66  *    3.25  *
* Conv. Total (cfs)     *6954198.0  * Conv. (cfs)         * 64133.8  *6365097.0  *524967.6  *
* Length Wtd. (ft)      *  466.19  * Wetted Per. (ft)     *   62.40  * 4455.54  * 2083.72  *
* Min Ch El (ft)        *  932.10  * Shear (lb/sq ft)     *    0.32  *    0.40  *    0.14  *
* Alpha                 *    1.08  * Stream Power (lb/ft s) *  1.11  *    1.54  *    0.27  *
* Frctn Loss (ft)       *    0.50  * Cum Volume (acre-ft)  *  166.22  *  455.37  *  134.77  *
* C & E Loss (ft)       *    0.01  * Cum SA (acres)        *   24.86  *   48.12  *   42.45  *
*********************************************************************************************

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

CROSS SECTION OUTPUT  Profile #PF#2
*********************************************************************************************
* E.G. Elev (ft)        *  950.61  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)         *    0.22  * Wt. n-Val.            *   0.043  *   0.046  *   0.043  *
* W.S. Elev (ft)        *  950.39  * Reach Len. (ft)       *  465.00  *  466.41  *  465.00  *
* Crit W.S. (ft)        *  943.36  * Flow Area (sq ft)     *  540.67  *47497.17  *   64.28  *
* E.G. Slope (ft/ft)    *0.000573  * Area (sq ft)          *  540.67  *47497.17  *   64.28  *
* Q Total (cfs)         *179750.00  * Flow (cfs)           * 1727.02  *177898.40  *  124.56  *
* Top Width (ft)        * 4530.00  * Top Width (ft)       *   62.40  * 4453.50  *   14.10  *
* Vel Total (ft/s)      *    3.74  * Avg. Vel. (ft/s)     *    3.19  *    3.75  *    1.94  *
* Max Chl Dpth (ft)     *   18.29  * Hydr. Depth (ft)     *    8.66  *   10.67  *    4.56  *
* Conv. Total (cfs)     *7510252.0  * Conv. (cfs)         * 72157.5  *7432890.0  *  5204.4  *
* Length Wtd. (ft)      *  466.37  * Wetted Per. (ft)     *   71.24  * 4455.54  *   17.92  *
* Min Ch El (ft)        *  932.10  * Shear (lb/sq ft)     *    0.27  *    0.38  *    0.13  *
* Alpha                 *    1.00  * Stream Power (lb/ft s) *  0.87  *    1.43  *    0.25  *
* Frctn Loss (ft)       *    0.47  * Cum Volume (acre-ft)  *    2.89  *  503.68  *    6.28  *
* C & E Loss (ft)       *    0.00  * Cum SA (acres)        *    0.33  *   48.12  *    1.38  *
*********************************************************************************************

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

CROSS SECTION
```

RIVER: 1
REACH: 1 RS: 199.82

INPUT
Description: 199.82

Left Channel Bank Station Interpolated
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
14626.5	957.7	14665	955.3	14714.8	947.7	14731.9	943.6	14878.2	942.2
15038.4	942.1	15177.1	942.1	15312	942.9	15442.8	943.5	15572.5	942.6
15710.4	942.1	15843.3	942.2	15981.6	942	16111.7	941.9	16269.4	941.3
16337.7	941.1	16490	941.8	16647.8	941.2	16807.1	940.1	16870	940.1
16937.5	940.1	17070.8	940.1	17202.5	940.1	17339.2	940.1	17503.8	940.1
17635.5	940.1	17774.7	939.1	17955.5	939.8	18107	939.8	18236.3	940.2
18376.6	941.1	18554.9	941.8	18684.9	940.6	18768.3	940	18787.7	931.4
18818.1	931.2	18845.4	938.1	18894.5	940	19032.4	940.6	19165.1	939.3
19236.6	938.1	19354.5	941.6	19458.6	938.6	20124.2	939.3	20322.3	939.2
20533.6	938.6	20766.2	939.3	20910.7	936.7	20926	937.9	21009.9	936.6
21146.9	939.7	21241.8	942.2	21405.4	944.5	21551.8	945.7	21756.1	945.8
21937.2	945.7	22121.7	945.7	22347.1	945.6	22491.6	945.9	22657.2	946.2
22790.5	945.6	22925.1	946.5	23055.8	946.4	23218.3	946.1	23364.5	946.1
23514.8	945.8	23642	948.2	23655.7	947.2	23663.6	949.2	23669.7	947
23724.8	949.5	23780.9	946.5	23947	945	24077.1	944.4	24199.5	945.5
24210.3	943.6	24214.2	944.9	24354.9	943.6	24545.8	943	24742.9	943.3
24928.6	944	25002.7	943.7	25010.2	942.2	25023.6	945.4	25153.6	945.8
25304.8	946.9	25434.7	948.1	25588.5	950.5	25663.5	951.7	25798.3	956.3
25810.1	957.9	25834.3	954.9	25859.3	957.7	25991.9	960.7	26149.5	962.1
26241.6	962.1	26277	964.4						

Manning's n Values num= 6

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
14626.5	.15	18554.9	.15	19165.1	.065	21405.4	.025	23724.8	.053
25002.7	.025								

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
16870	21405.4	0	0	.1	.3

Ineffective Flow num= 3

Sta L	Sta R	Elev	Permanent
14626.5	16870	960	F
21650	22900	960	F
25350	26127	960	F

CROSS SECTION OUTPUT Profile #PF#1

E.G. Elev (ft)	949.09	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.19	Wt. n-Val.		0.089	0.039
W.S. Elev (ft)	948.90	Reach Len. (ft)			
Crit W.S. (ft)	943.28	Flow Area (sq ft)		42049.83	9729.14
E.G. Slope (ft/ft)	0.002007	Area (sq ft)	14822.50	42049.83	13723.95
Q Total (cfs)	179750.00	Flow (cfs)		138919.60	40830.43
Top Width (ft)	10752.57	Top Width (ft)	2163.06	4535.40	4054.11
Vel Total (ft/s)	3.47	Avg. Vel. (ft/s)		3.30	4.20
Max Chl Dpth (ft)	17.70	Hydr. Depth (ft)		9.27	3.65
Conv. Total (cfs)	4012368.0	Conv. (cfs)		3100954.0	911414.0
Length Wtd. (ft)		Wetted Per. (ft)		4538.42	2669.79
Min Ch El (ft)	931.20	Shear (lb/sq ft)		1.16	0.46
Alpha	1.03	Stream Power (lb/ft s)		3.84	1.92
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.

CROSS SECTION OUTPUT Profile #PF#2

E.G. Elev (ft)	950.14	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.24	Wt. n-Val.		0.089	0.025
W.S. Elev (ft)	949.90	Reach Len. (ft)			
Crit W.S. (ft)	943.25	Flow Area (sq ft)		46585.23	1112.80
E.G. Slope (ft/ft)	0.002185	Area (sq ft)		46585.23	1112.80
Q Total (cfs)	179750.00	Flow (cfs)		171357.00	8392.96
Top Width (ft)	4780.00	Top Width (ft)		4535.40	244.60
Vel Total (ft/s)	3.77	Avg. Vel. (ft/s)		3.68	7.54
Max Chl Dpth (ft)	18.70	Hydr. Depth (ft)		10.27	4.55
Conv. Total (cfs)	3845833.0	Conv. (cfs)		3666262.0	179571.2
Length Wtd. (ft)		Wetted Per. (ft)		4548.22	248.76
Min Ch El (ft)	931.20	Shear (lb/sq ft)		1.40	0.61
Alpha	1.10	Stream Power (lb/ft s)		5.14	4.60
Frctn Loss (ft)		Cum Volume (acre-ft)			
C & E Loss (ft)		Cum SA (acres)			

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:1

Reach	River Sta.	n1	n2	n3	n4	n5	n6	n7	n8	n9	n10
1	214.14	.04	.035	.04							
1	214.04	.04	.035	.04							
1	213.95	.04	.035	.04							
1	213.85	.04	.035	.04							
1	213.75	.037	.032	.037							
1	213.745	Bridge									
1	213.74	.037	.032	.037							
1	213.66	.037	.032	.037							

						DuplicateEffective						
213.57	.037	.032	.037									
213.47	.037	.032	.037									
213.38	.037	.032	.037									
213.33	.037	.032	.037									
213.26	.037	.032	.037									
213.255	Bridge											
213.25	.037	.032	.037									
213.21	.037	.032	.037									
213.11	.037	.032	.037									
213.03	.037	.032	.037									
212.93	.037	.032	.037									
212.84	.037	.032	.037									
212.74	.037	.032	.037									
212.68	.037	.032	.037									
212.675	Bridge											
212.67	.037	.032	.037									
212.56	.037	.032	.037									
212.46	.037	.032	.037									
212.37	.037	.032	.037									
212.27	.045	.033	.04									
212.18	.045	.033	.04									
212.08	.045	.033	.04									
211.99	.045	.033	.04									
211.89	.045	.033	.04									
211.79	.045	.033	.04									
211.71	.045	.033	.04									
211.64	.045	.033	.04									
211.54	.037	.032	.037									
211.525	Bridge											
211.51	.037	.032	.037									
211.41	.037	.032	.037									
211.31	.037	.032	.037									
211.21	.037	.032	.037									
211.12	.037	.032	.037									
211.02	.037	.032	.037									
210.93	.037	.032	.037									
210.83	.037	.032	.037									
210.74	.037	.032	.037									
210.64	.037	.032	.037									
210.55	.037	.032	.037									
210.46	.037	.032	.037	.037	.025							
210.36	.032	.037	.025	.025								
210.26	.037	.032	.037	.037	.025							
210.17	.037	.032	.037	.025								
210.07	.032	.037	.037	.025								
209.98	.037	.032	.037									
209.88	.037	.032	.037	.025								
209.79	.037	.032	.035	.025								
209.69	.037	.032	.035	.025								
209.6	.037	.032	.035	.025								
209.54	.025	.037	.032	.037	.025							
209.535	Bridge											
209.53	.025	.037	.032	.037	.025							
209.42	.037	.032	.03	.025								
209.33	.037	.032	.025									
209.24	.037	.032	.032	.037	.037	.025						
209.14	.037	.032	.037	.025								
209.04	.037	.037	.032	.037	.025							
208.95	.037	.037	.032	.037								
208.85	.037	.032	.037	.037								
208.75	.037	.032	.037	.025								
208.67	.037	.037	.032	.037	.037	.025						
208.57	.037	.037	.032	.032	.037							
208.48	.043	.043	.032	.037	.037	.025						
208.39	.043	.043	.032	.037	.037							
208.29	.025	.043	.043	.032	.037	.037	.025					
208.19	.025	.043	.043	.032	.032							
208.1	.025	.043	.043	.032	.032							
207.99	.043	.043	.032	.032								
207.9	.043	.032	.032	.032								
207.8	.025	.043	.032	.032	.032							
207.71	.025	.043	.032	.032	.032							
207.62	.025	.043	.032	.032	.032							
207.53	.025	.043	.032	.032	.032							
207.49	.032	.032	.032									
207.485	Bridge											
207.48	.032	.032										
207.43	.025	.043	.032	.032	.032							
207.34	.025	.043	.032	.032	.032							
207.27	.025	.043	.032	.032	.032							
207.16	.025	.043	.032	.032	.032							
207.07	.043	.032	.032	.032								
206.97	.025	.043	.032	.032	.032							
206.88	.025	.043	.032	.032	.032	.025						
206.79	.025	.043	.032	.032	.032							
206.7	.025	.043	.032	.032	.032							
206.6	.025	.043	.032	.032	.032							
206.51	.025	.043	.032	.032	.032							
206.41	.025	.043	.032	.032	.032							
206.32	.043	.032	.032	.032	.025							
206.22	.043	.043	.032	.025								
206.13	.043	.033	.032									
206.03	.043	.033	.032									
205.94	.043	.033	.032	.037								
205.84	.043	.043	.032	.032	.037							
205.75	.043	.043	.043	.025								
205.62	.025	.043	.043	.032	.032	.025						
205.52	.043	.043	.032	.032	.025							
205.43	.043	.043	.032	.032	.025							
205.4	.043	.043	.032	.032								
205.34	.043	.043	.025									
205.25	.025	.037	.037	.025								
205.15	.025	.037	.037	.025								
205.06	.037	.037	.037	.025								
204.97	.025	.037	.037	.025								
204.87	.025	.037	.037	.025								

					DuplicateEffective						
*1	* 204.78	* .025*	.037*	.037*	.025*	*	*	*	*	*	*
*1	* 204.68	* .025*	.037*	.037*	.037*	.025*	*	*	*	*	*
*1	* 204.61	* .025*	.037*	.037*	.025*	*	*	*	*	*	*
*1	* 204.53	* .025*	.037*	.037*	.037*	.025*	*	*	*	*	*
*1	* 204.42	* .025*	.037*	.037*	.037*	.025*	*	*	*	*	*
*1	* 204.34	* .025*	.037*	.037*	.025*	*	*	*	*	*	*
*1	* 204.25	* .035*	.032*	.025*	*	*	*	*	*	*	*
*1	* 204.15	* .035*	.032*	.025*	.025*	*	*	*	*	*	*
*1	* 204.05	* .05*	.035*	.032*	.025*	*	*	*	*	*	*
*1	* 203.96	* .025*	.043*	.043*	.032*	.037*	*	*	*	*	*
*1	* 203.86	* .043*	.043*	.032*	.037*	*	*	*	*	*	*
*1	* 203.77	* .025*	.043*	.043*	.032*	.025*	*	*	*	*	*
*1	* 203.67	* .025*	.037*	.037*	.032*	.032*	.025*	*	*	*	*
*1	* 203.58	* .025*	.037*	.037*	.032*	.025*	*	*	*	*	*
*1	* 203.48	* .025*	.037*	.037*	.032*	.025*	*	*	*	*	*
*1	* 203.39	* .025*	.037*	.037*	.032*	.025*	*	*	*	*	*
*1	* 203.29	* .025*	.037*	.037*	.032*	.025*	*	*	*	*	*
*1	* 203.19	* .025*	.043*	.043*	.037*	.025*	.025*	*	*	*	*
*1	* 203.09	* .025*	.043*	.043*	.037*	.025*	*	*	*	*	*
*1	* 202.99	* .025*	.043*	.043*	.037*	.043*	*	*	*	*	*
*1	* 202.9	* .025*	.043*	.043*	.037*	.043*	*	*	*	*	*
*1	* 202.8	* .025*	.043*	.043*	.037*	.043*	*	*	*	*	*
*1	* 202.69	* .025*	.043*	.043*	.037*	.043*	*	*	*	*	*
*1	* 202.59	* .025*	.043*	.043*	.037*	.043*	*	*	*	*	*
*1	* 202.48	* .043*	.043*	.037*	.043*	*	*	*	*	*	*
*1	* 202.37	* .025*	.043*	.043*	.037*	.043*	*	*	*	*	*
*1	* 202.29	* .025*	.043*	.043*	.037*	.043*	.043*	*	*	*	*
*1	* 202.18	* .025*	.043*	.043*	.037*	.043*	*	*	*	*	*
*1	* 202.09	* .025*	.043*	.043*	.037*	.043*	*	*	*	*	*
*1	* 201.99	* .025*	.043*	.043*	.032*	.037*	.037*	.025*	*	*	*
*1	* 201.9	* .025*	.043*	.043*	.032*	.037*	.037*	.025*	*	*	*
*1	* 201.81	* .025*	.065*	.065*	.032*	.037*	.025*	.025*	*	*	*
*1	* 201.71	* .025*	.065*	.065*	.032*	.037*	.025*	.025*	*	*	*
*1	* 201.62	* .025*	.15*	.025*	.065*	.065*	.032*	.037*	.025*	.025*	*
*1	* 201.52	* .025*	.15*	.025*	.15*	.032*	.037*	.025*	*	*	*
*1	* 201.43	* .043*	.065*	.025*	.15*	.032*	.037*	.025*	*	*	*
*1	* 201.33	* .043*	.065*	.025*	.15*	.032*	.037*	.025*	*	*	*
*1	* 201.24	* .043*	.065*	.025*	.15*	.15*	.037*	.032*	.037*	.025*	*
*1	* 201.14	* .043*	.065*	.025*	.15*	.037*	.032*	.037*	.025*	*	*
*1	* 201.05	* .043*	.15*	.025*	.15*	.037*	.032*	.037*	.025*	*	*
*1	* 200.95	* .043*	.15*	.037*	.032*	.037*	.035*	*	*	*	*
*1	* 200.86	* .043*	.15*	.032*	.037*	.035*	.035*	*	*	*	*
*1	* 200.77	* .043*	.15*	.032*	.037*	.025*	.035*	*	*	*	*
*1	* 200.67	* .043*	.15*	.032*	.15*	.032*	.043*	.025*	.025*	*	*
*1	* 200.58	* .15*	.043*	.15*	.032*	.043*	.025*	.025*	*	*	*
*1	* 200.49	* .15*	.043*	.043*	.15*	.032*	.043*	.025*	*	*	*
*1	* 200.39	* .15*	.043*	.043*	.15*	.032*	.043*	.025*	*	*	*
*1	* 200.3	* .15*	.15*	.065*	.032*	.043*	.043*	.053*	*	*	*
*1	* 200.2	* .15*	.15*	.065*	.032*	.043*	.043*	.025*	.053*	*	*
*1	* 200.1	* .15*	.043*	.15*	.15*	.032*	.043*	.025*	.053*	*	*
*1	* 200	* .15*	.043*	.15*	.15*	.032*	.032*	.043*	.025*	.053*	*
*1	* 199.91	* .15*	.043*	.15*	.15*	.032*	.043*	.043*	.025*	.053*	.025*
*1	* 199.82	* .15*	.15*	.065*	.025*	.053*	.025*	*	*	*	*

SUMMARY OF REACH LENGTHS

River: 1

Reach	River Sta.	Left	Channel	Right
*1	* 214.14	* 475*	510.51*	570*
*1	* 214.04	* 495*	493.12*	480*
*1	* 213.95	* 500*	504.25*	500*
*1	* 213.85	* 521*	520.04*	541*
*1	* 213.75	* 125*	116.36*	120*
*1	* 213.745	*Bridge *	*	*
*1	* 213.74	* 391*	373.47*	361*
*1	* 213.66	* 490*	491.08*	495*
*1	* 213.57	* 650*	500.37*	390*
*1	* 213.47	* 500*	493.66*	485*
*1	* 213.38	* 210*	290.06*	395*
*1	* 213.33	* 266*	316.41*	426*
*1	* 213.26	* 155*	152.22*	155*
*1	* 213.255	*Bridge *	*	*
*1	* 213.25	* 121*	123.36*	121*
*1	* 213.21	* 450*	531.57*	745*
*1	* 213.11	* 425*	459.38*	565*
*1	* 213.03	* 475*	495*	525*
*1	* 212.93	* 495*	501.9*	535*
*1	* 212.84	* 565*	538.19*	480*
*1	* 212.74	* 296*	242.17*	66*
*1	* 212.68	* 155*	154.01*	155*
*1	* 212.675	*Bridge *	*	*
*1	* 212.67	* 481*	557.08*	901*
*1	* 212.56	* 495*	502.71*	525*
*1	* 212.46	* 495*	497.81*	510*
*1	* 212.37	* 500*	495.84*	485*
*1	* 212.27	* 510*	495*	475*
*1	* 212.18	* 500*	502.53*	485*
*1	* 212.08	* 510*	519.85*	475*
*1	* 211.99	* 740*	489.19*	710*
*1	* 211.89	* 507*	527.46*	640*
*1	* 211.79	* 680*	450.74*	290*
*1	* 211.71	* 780*	392.06*	500*
*1	* 211.64	* 481*	521.13*	221*
*1	* 211.54	* 125*	125.49*	120*
*1	* 211.525	*Bridge *	*	*
*1	* 211.51	* 541*	562.88*	606*
*1	* 211.41	* 500*	501.53*	505*
*1	* 211.31	* 540*	523.28*	460*
*1	* 211.21	* 495*	493.11*	475*
*1	* 211.12	* 500*	505.73*	500*
*1	* 211.02	* 485*	493.19*	495*

						DuplicateEffective
*1	*	210.93	*	505*	505.14*	505*
*1	*	210.83	*	505*	505.61*	500*
*1	*	210.74	*	495*	503.39*	500*
*1	*	210.64	*	520*	515.29*	495*
*1	*	210.55	*	475*	473.19*	495*
*1	*	210.46	*	520*	522.28*	505*
*1	*	210.36	*	480*	487.62*	480*
*1	*	210.26	*	505*	512.65*	520*
*1	*	210.17	*	505*	497.78*	495*
*1	*	210.07	*	495*	490.15*	505*
*1	*	209.98	*	549.53*	500.89*	495.04*
*1	*	209.88	*	504.67*	500.86*	499.29*
*1	*	209.79	*	492.06*	500.22*	508.91*
*1	*	209.69	*	500.2*	544.5*	694.57*
*1	*	209.6	*	256*	290*	340.7*
*1	*	209.54	*	116*	116*	116*
*1	*	209.535	*Bridge	*	*	*
*1	*	209.53	*	566*	647*	655*
*1	*	209.42	*	522.18*	501.19*	560.6*
*1	*	209.33	*	505.94*	495.23*	518.99*
*1	*	209.24	*	510*	515*	525*
*1	*	209.14	*	500*	504.56*	485*
*1	*	209.04	*	495*	493.26*	500*
*1	*	208.95	*	505*	506.69*	505*
*1	*	208.85	*	510*	519.42*	530*
*1	*	208.75	*	440*	443.83*	450*
*1	*	208.67	*	495*	511.45*	475*
*1	*	208.57	*	560*	514.75*	370*
*1	*	208.48	*	500*	476.54*	525*
*1	*	208.39	*	505*	512.19*	480*
*1	*	208.29	*	490*	501.01*	510*
*1	*	208.19	*	550*	514.57*	505*
*1	*	208.1	*	640*	558.37*	480*
*1	*	207.99	*	475*	482.29*	500*
*1	*	207.9	*	505*	509.52*	585*
*1	*	207.8	*	495*	494.8*	505*
*1	*	207.71	*	485*	487.91*	485*
*1	*	207.62	*	460*	465*	515*
*1	*	207.53	*	231*	227*	201*
*1	*	207.49	*	50*	54*	35*
*1	*	207.485	*Bridge	*	*	*
*1	*	207.48	*	251*	245.54*	316*
*1	*	207.43	*	450*	471*	575*
*1	*	207.34	*	370*	393.75*	530*
*1	*	207.27	*	575*	572.72*	585*
*1	*	207.16	*	475*	463.31*	475*
*1	*	207.07	*	510*	514.11*	520*
*1	*	206.97	*	480*	491.78*	480*
*1	*	206.88	*	480*	487.71*	505*
*1	*	206.79	*	495*	489.96*	520*
*1	*	206.7	*	500*	500.23*	500*
*1	*	206.6	*	515*	504.63*	520*
*1	*	206.51	*	495*	496.45*	500*
*1	*	206.41	*	495*	494.64*	490*
*1	*	206.32	*	515*	513.83*	520*
*1	*	206.22	*	500*	502.44*	460*
*1	*	206.13	*	490*	483.44*	540*
*1	*	206.03	*	590*	513.6*	510*
*1	*	205.94	*	505*	506.69*	510*
*1	*	205.84	*	495*	496*	480*
*1	*	205.75	*	825*	642*	490*
*1	*	205.62	*	560*	523*	510*
*1	*	205.52	*	430*	470*	400*
*1	*	205.43	*	175*	171.89*	125*
*1	*	205.4	*	305*	315*	370*
*1	*	205.34	*	485*	492*	450*
*1	*	205.25	*	505*	506*	485*
*1	*	205.15	*	495*	495.39*	495*
*1	*	205.06	*	505*	505*	530*
*1	*	204.97	*	510*	503*	550*
*1	*	204.87	*	495*	499*	505*
*1	*	204.78	*	505*	515*	550*
*1	*	204.68	*	325*	407*	570*
*1	*	204.61	*	395*	449*	545*
*1	*	204.53	*	570*	552*	525*
*1	*	204.42	*	430*	453*	500*
*1	*	204.34	*	495*	488*	480*
*1	*	204.25	*	510*	508*	500*
*1	*	204.15	*	510*	509*	510*
*1	*	204.05	*	510*	505*	520*
*1	*	203.96	*	495*	502*	505*
*1	*	203.86	*	505*	498*	480*
*1	*	203.77	*	490*	498*	480*
*1	*	203.67	*	470*	490*	505*
*1	*	203.58	*	560*	513*	495*
*1	*	203.48	*	500*	505.82*	515*
*1	*	203.39	*	500*	505*	500*
*1	*	203.29	*	620*	535*	420*
*1	*	203.19	*	535*	520*	485*
*1	*	203.09	*	520*	518*	500*
*1	*	202.99	*	480*	456*	424*
*1	*	202.9	*	575*	538*	460*
*1	*	202.8	*	600*	555.5*	450*
*1	*	202.69	*	585*	566.1*	510*
*1	*	202.59	*	400*	561.2*	640*
*1	*	202.48	*	700*	576.2*	385*
*1	*	202.37	*	430*	400.7*	360*
*1	*	202.29	*	590*	583.1*	600*
*1	*	202.18	*	525*	511.84*	500*
*1	*	202.09	*	510*	509.32*	500*
*1	*	201.99	*	470*	477.46*	490*
*1	*	201.9	*	500*	495.8*	500*
*1	*	201.81	*	535*	511.61*	515*
*1	*	201.71	*	505*	489.63*	495*
*1	*	201.62	*	485*	486.48*	510*
*1	*	201.52	*	495*	492.06*	495*

```
                                                                  DuplicateEffective
*1              *    201.43      *      555*   519.88*      505*
*1              *    201.33      *      515*   514.62*      515*
*1              *    201.24      *      485*   488.56*      490*
*1              *    201.14      *      480*   481.53*      485*
*1              *    201.05      *      520*   512.89*      510*
*1              *    200.95      *      475*   474.38*      480*
*1              *    200.86      *      525*   523.32*      525*
*1              *    200.77      *      500*   495.64*      520*
*1              *    200.67      *      500*   503.34*      510*
*1              *    200.58      *      475*   479.55*      530*
*1              *    200.49      *      510*   497.59*      510*
*1              *    200.39      *      550*    506.5*      480*
*1              *    200.3       *      520*   515.72*      560*
*1              *    200.2       *      535*   525.73*      515*
*1              *    200.1       *      490*   491.65*      495*
*1              *    200         *      520*   521.67*      525*
*1              *    199.91      *      465*   466.41*      465*
*1              *    199.82      *        0*       0*        0*
**************************************************************

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

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: 1

*****************************************************
*     Reach      *   River Sta.    * Contr.  * Expan.  *
*****************************************************
*1              *    214.14  *       .1*       .3*
*1              *    214.04  *       .1*       .3*
*1              *    213.95  *       .1*       .3*
*1              *    213.85  *       .1*       .3*
*1              *    213.75  *       .1*       .3*
*1              *    213.745 *Bridge   *         *
*1              *    213.74  *       .1*       .3*
*1              *    213.66  *       .1*       .3*
*1              *    213.57  *       .1*       .3*
*1              *    213.47  *       .1*       .3*
*1              *    213.38  *       .1*       .3*
*1              *    213.33  *       .1*       .3*
*1              *    213.26  *       .1*       .3*
*1              *    213.255 *Bridge   *         *
*1              *    213.25  *       .1*       .3*
*1              *    213.21  *       .1*       .3*
*1              *    213.11  *       .1*       .3*
*1              *    213.03  *       .1*       .3*
*1              *    212.93  *       .1*       .3*
*1              *    212.84  *       .1*       .3*
*1              *    212.74  *       .1*       .3*
*1              *    212.68  *       .1*       .3*
*1              *    212.675 *Bridge   *         *
*1              *    212.67  *       .1*       .3*
*1              *    212.56  *       .1*       .3*
*1              *    212.46  *       .1*       .3*
*1              *    212.37  *       .1*       .3*
*1              *    212.27  *       .1*       .3*
*1              *    212.18  *       .1*       .3*
*1              *    212.08  *       .1*       .3*
*1              *    211.99  *       .1*       .3*
*1              *    211.89  *       .1*       .3*
*1              *    211.79  *       .1*       .3*
*1              *    211.71  *       .1*       .3*
*1              *    211.64  *       .1*       .3*
*1              *    211.54  *       .1*       .3*
*1              *    211.525 *Bridge   *         *
*1              *    211.51  *       .1*       .3*
*1              *    211.41  *       .1*       .3*
*1              *    211.31  *       .1*       .3*
*1              *    211.21  *       .1*       .3*
*1              *    211.12  *       .1*       .3*
*1              *    211.02  *       .1*       .3*
*1              *    210.93  *       .1*       .3*
*1              *    210.83  *       .1*       .3*
*1              *    210.74  *       .1*       .3*
*1              *    210.64  *       .1*       .3*
*1              *    210.55  *       .1*       .3*
*1              *    210.46  *       .1*       .3*
*1              *    210.36  *       .1*       .3*
*1              *    210.26  *       .1*       .3*
*1              *    210.17  *       .1*       .3*
*1              *    210.07  *       .1*       .3*
*1              *    209.98  *       .1*       .3*
*1              *    209.88  *       .1*       .3*
*1              *    209.79  *       .1*       .3*
*1              *    209.69  *       .1*       .3*
*1              *    209.6   *       .1*       .3*
*1              *    209.54  *       .3*       .5*
*1              *    209.535 *Bridge   *         *
*1              *    209.53  *       .3*       .5*
*1              *    209.42  *       .1*       .3*
*1              *    209.33  *       .1*       .3*
*1              *    209.24  *       .1*       .3*
*1              *    209.14  *       .1*       .3*
*1              *    209.04  *       .1*       .3*
*1              *    208.95  *       .1*       .3*
*1              *    208.85  *       .1*       .3*
*1              *    208.75  *       .1*       .3*
*1              *    208.67  *       .1*       .3*
*1              *    208.57  *       .1*       .3*
*1              *    208.48  *       .1*       .3*
*1              *    208.39  *       .1*       .3*
*1              *    208.29  *       .1*       .3*
*1              *    208.19  *       .1*       .3*
*1              *    208.1   *       .1*       .3*
*1              *    207.99  *       .1*       .3*
*1              *    207.9   *       .1*       .3*
```

```
*1              *    207.8   *       .1*       .3*
*1              *    207.71  *       .1*       .3*
*1              *    207.62  *       .1*       .3*
*1              *    207.53  *       .1*       .3*
*1              *    207.49  *       .1*       .3*
*1              *    207.485 *Bridge   *         *
*1              *    207.48  *       .1*       .3*
*1              *    207.43  *       .1*       .3*
*1              *    207.34  *       .1*       .3*
*1              *    207.27  *       .1*       .3*
*1              *    207.16  *       .1*       .3*
*1              *    207.07  *       .1*       .3*
*1              *    206.97  *       .1*       .3*
*1              *    206.88  *       .1*       .3*
*1              *    206.79  *       .1*       .3*
*1              *    206.7   *       .1*       .3*
*1              *    206.6   *       .1*       .3*
*1              *    206.51  *       .1*       .3*
*1              *    206.41  *       .1*       .3*
*1              *    206.32  *       .1*       .3*
*1              *    206.22  *       .1*       .3*
*1              *    206.13  *       .1*       .3*
*1              *    206.03  *       .1*       .3*
*1              *    205.94  *       .1*       .3*
*1              *    205.84  *       .1*       .3*
*1              *    205.75  *       .1*       .3*
*1              *    205.62  *       .1*       .3*
*1              *    205.52  *       .1*       .3*
*1              *    205.43  *       .1*       .3*
*1              *    205.4   *       .1*       .3*
*1              *    205.34  *       .1*       .3*
*1              *    205.25  *       .1*       .3*
*1              *    205.15  *       .1*       .3*
*1              *    205.06  *       .1*       .3*
*1              *    204.97  *       .1*       .3*
*1              *    204.87  *       .1*       .3*
*1              *    204.78  *       .1*       .3*
*1              *    204.68  *       .1*       .3*
*1              *    204.61  *       .1*       .3*
*1              *    204.53  *       .1*       .3*
*1              *    204.42  *       .1*       .3*
*1              *    204.34  *       .1*       .3*
*1              *    204.25  *       .1*       .3*
*1              *    204.15  *       .1*       .3*
*1              *    204.05  *       .1*       .3*
*1              *    203.96  *       .1*       .3*
*1              *    203.86  *       .1*       .3*
*1              *    203.77  *       .1*       .3*
*1              *    203.67  *       .1*       .3*
*1              *    203.58  *       .1*       .3*
*1              *    203.48  *       .1*       .3*
*1              *    203.39  *       .1*       .3*
*1              *    203.29  *       .1*       .3*
*1              *    203.19  *       .1*       .3*
*1              *    203.09  *       .1*       .3*
*1              *    202.99  *       .1*       .3*
*1              *    202.9   *       .1*       .3*
*1              *    202.8   *       .1*       .3*
*1              *    202.69  *       .1*       .3*
*1              *    202.59  *       .1*       .3*
*1              *    202.48  *       .1*       .3*
*1              *    202.37  *       .1*       .3*
*1              *    202.29  *       .1*       .3*
*1              *    202.18  *       .1*       .3*
*1              *    202.09  *       .1*       .3*
*1              *    201.99  *       .1*       .3*
*1              *    201.9   *       .1*       .3*
*1              *    201.81  *       .1*       .3*
*1              *    201.71  *       .1*       .3*
*1              *    201.62  *       .1*       .3*
*1              *    201.52  *       .1*       .3*
*1              *    201.43  *       .1*       .3*
*1              *    201.33  *       .1*       .3*
*1              *    201.24  *       .1*       .3*
*1              *    201.14  *       .1*       .3*
*1              *    201.05  *       .1*       .3*
*1              *    200.95  *       .1*       .3*
*1              *    200.86  *       .1*       .3*
*1              *    200.77  *       .1*       .3*
*1              *    200.67  *       .1*       .3*
*1              *    200.58  *       .1*       .3*
*1              *    200.49  *       .1*       .3*
*1              *    200.39  *       .1*       .3*
*1              *    200.3   *       .1*       .3*
*1              *    200.2   *       .1*       .3*
*1              *    200.1   *       .1*       .3*
*1              *    200     *       .1*       .3*
*1              *    199.91  *       .1*       .3*
*1              *    199.82  *       .1*       .3*
*****************************************************
```

Profile Output Table - CHECKRAS

Reach	River Sta	Froude # Chl	Top Wdth Act (ft)	Conv. Total (cfs)	Prof Delta WS (ft)	Left Sta Eff (ft)	Enc Sta L (ft)	Center Station (ft)	Enc Sta R (ft)	Rght Sta Eff (ft)	Min Ch El (ft)	Left Stagn (ft)	Right Stagn (ft)
1	214.14		0.36	726.91	5961484.0		19654.95		20020.10	21089.67	1048.70		
1	214.14		0.36	726.86	5963943.0	0.01	19654.97	19654.97	20020.10	20381.83	20381.83	1048.70	

* 1	* 214.04	*	0.36 *	733.94 *	5809707.0 *	*	19637.86 *	*	20006.70 *		
*	20922.39 *	1048.80 *	*	*	*						
* 1	* 214.04	*	0.36 *	733.89 *	5812338.0 *	0.01 *	19637.88 *	19637.88 *	20006.70 *		
20371.77 *	20371.77 *	1048.80 *	*	*	*						
*	*	*	*	*	*						
* 1	* 213.95	*	0.43 *	745.37 *	4843418.0 *	*	19586.39 *	*	19935.90 *		
*	20814.54 *	1049.30 *	*	*	*						
* 1	* 213.95	*	0.43 *	745.19 *	4846870.0 *	0.01 *	19586.54 *	19586.54 *	19935.90 *		
20331.73 *	20331.73 *	1049.30 *	*	*	*						
*	*	*	*	*	*						
* 1	* 213.85	*	0.58 *	702.64 *	3578540.0 *	*	19618.33 *	*	20057.05 *		
*	20320.97 *	1048.10 *	*	*	*						
* 1	* 213.85	*	0.58 *	702.59 *	3579632.0 *	0.01 *	19618.33 *	19618.33 *	20057.05 *		
20320.92 *	20320.92 *	1048.10 *	*	*	*						
*	*	*	*	*	*						
* 1	* 213.75	*	0.41 *	656.45 *	5575129.0 *	*	19640.95 *	*	19969.30 *		
*	20297.39 *	1044.60 *	*	*	*						
* 1	* 213.75	*	0.41 *	656.35 *	5578780.0 *	0.01 *	19641.00 *	19641.00 *	19969.30 *		
20297.35 *	20297.35 *	1044.60 *	*	*	*						
*	*	*	*	*	*						
* 1	* 213.745 BR U *		0.44 *	634.96 *	4375788.0 *	*	19641.74 *	*	19969.30 *		
*	20296.71 *	1044.60 *	*	*	*						
* 1	* 213.745 BR U *		0.44 *	635.01 *	4378146.0 *	0.01 *	19641.72 *	19641.00 *	19969.30 *		
20297.35 *	20296.73 *	1044.60 *	*	*	*						
*	*	*	*	*	*						
* 1	* 213.745 BR D *		0.44 *	633.79 *	4316097.0 *	*	19642.37 *	*	19969.30 *		
*	20296.16 *	1044.60 *	*	*	*						
* 1	* 213.745 BR D *		0.44 *	633.84 *	4318510.0 *	0.01 *	19642.35 *	19641.87 *	19969.30 *		
20296.60 *	20296.18 *	1044.60 *	*	*	*						
*	*	*	*	*	*						
* 1	* 213.74	*	0.42 *	654.76 *	5459470.0 *	*	19641.85 *	*	19969.30 *		
*	20296.61 *	1044.60 *	*	*	*						
* 1	* 213.74	*	0.42 *	654.73 *	5462967.0 *	0.01 *	19641.87 *	19641.87 *	19969.30 *		
20296.60 *	20296.60 *	1044.60 *	*	*	*						
*	*	*	*	*	*						
* 1	* 213.66	*	0.62 *	566.02 *	3604114.0 *	*	19599.41 *	*	19986.45 *		
*	20253.57 *	1047.60 *	*	*	*						
* 1	* 213.66	*	0.62 *	565.99 *	3608339.0 *	0.01 *	19687.57 *	19687.57 *	19986.45 *		
20253.56 *	20253.56 *	1047.60 *	*	*	*						
*	*	*	*	*	*						
* 1	* 213.57	*	0.55 *	852.17 *	3949740.0 *	*	19095.13 *	*	19929.15 *		
*	20336.67 *	1046.70 *	*	*	*						
* 1	* 213.57	*	0.55 *	852.16 *	3953934.0 *	0.02 *	19484.50 *	19484.50 *	19929.15 *		
20336.66 *	20336.66 *	1046.70 *	*	*	*						
*	*	*	*	*	*						
* 1	* 213.47	*	0.52 *	1023.14 *	4106424.0 *	*	18842.44 *	*	19758.75 *		
*	20266.44 *	1045.80 *	*	*	*						
* 1	* 213.47	*	0.52 *	1023.12 *	4110138.0 *	0.02 *	19243.30 *	19243.30 *	19758.75 *		
20266.42 *	20266.42 *	1045.80 *	*	*	*						
*	*	*	*	*	*						
* 1	* 213.38	*	0.37 *	1101.78 *	5943323.0 *	*	19196.18 *	*	19909.55 *		
*	20447.88 *	1045.40 *	*	*	*						
* 1	* 213.38	*	0.37 *	1101.75 *	5937578.0 *	0.02 *	19346.10 *	19346.10 *	19909.55 *		
20447.85 *	20447.85 *	1045.40 *	*	*	*						
*	*	*	*	*	*						
* 1	* 213.33	*	0.33 *	1185.64 *	6865352.0 *	*	19328.90 *	*	19921.90 *		
*	20514.54 *	1045.40 *	*	*	*						
* 1	* 213.33	*	0.33 *	1185.62 *	6854778.0 *	0.01 *	19328.90 *	19328.90 *	19921.90 *		
20514.52 *	20514.52 *	1045.40 *	*	*	*						
*	*	*	*	*	*						
* 1	* 213.26	*	0.32 *	881.25 *	7091407.0 *	*	19497.16 *	*	19938.05 *		
*	20378.41 *	1040.40 *	*	*	*						
* 1	* 213.26	*	0.32 *	881.21 *	7098897.0 *	0.01 *	19497.18 *	19497.18 *	19938.05 *		
20378.39 *	20378.39 *	1040.40 *	*	*	*						
*	*	*	*	*	*						
* 1	* 213.255 BR U *		0.34 *	860.74 *	5381226.0 *	*	19497.36 *	*	19938.05 *		
*	20378.10 *	1040.40 *	*	*	*						
* 1	* 213.255 BR U *		0.34 *	860.81 *	5386143.0 *	0.01 *	19497.33 *	19497.18 *	19938.05 *		
20378.39 *	20378.14 *	1040.40 *	*	*	*						
*	*	*	*	*	*						
* 1	* 213.255 BR D *		0.34 *	859.92 *	5322311.0 *	*	19497.68 *	*	19938.05 *		
*	20377.60 *	1040.40 *	*	*	*						
* 1	* 213.255 BR D *		0.34 *	859.99 *	5327335.0 *	0.01 *	19497.65 *	19497.55 *	19938.05 *		
20377.79 *	20377.64 *	1040.40 *	*	*	*						
*	*	*	*	*	*						
* 1	* 213.25	*	0.33 *	880.24 *	6986536.0 *	*	19497.55 *	*	19938.05 *		
*	20377.79 *	1040.40 *	*	*	*						
* 1	* 213.25	*	0.33 *	880.24 *	6994050.0 *	0.01 *	19497.55 *	19497.55 *	19938.05 *		
20377.79 *	20377.79 *	1040.40 *	*	*	*						
*	*	*	*	*	*						
* 1	* 213.21	*	0.31 *	1010.19 *	7351368.0 *	*	19408.31 *	*	19954.40 *		
*	20418.50 *	1044.90 *	*	*	*						
* 1	* 213.21	*	0.31 *	928.20 *	7227547.0 *	0.01 *	19490.30 *	19490.30 *	19954.40 *		
20418.50 *	20418.50 *	1044.90 *	*	*	*						
*	*	*	*	*	*						
* 1	* 213.11	*	0.40 *	927.80 *	5493675.0 *	*	19616.88 *	*	20102.60 *		
*	20544.67 *	1047.60 *	*	*	*						
* 1	* 213.11	*	0.40 *	927.79 *	5496745.0 *	0.01 *	19616.88 *	19616.88 *	20102.60 *		
20544.67 *	20544.67 *	1047.60 *	*	*	*						

1	213.03		0.42	965.60	5167811.0		19602.70		20131.96		
	20591.83	1046.70									
1	213.03		0.42	919.76	5170676.0	0.01	19672.07	19672.00	20131.96		
20591.83	20591.83	1046.70									
1	212.93		0.48	798.99	4575514.0		19690.76		20090.25		
	20754.14	1045.40									
1	212.93		0.48	798.99	4579008.0	0.01	19690.76	19690.76	20090.25		
20489.75	20489.75	1045.40									
1	212.84		0.58	635.75	3778154.0		19711.50		20029.38		
	20347.25	1043.10									
1	212.84		0.58	635.75	3782263.0	0.01	19711.50	19711.50	20029.38		
20347.25	20347.25	1043.10									
1	212.74		0.51	676.59	4336312.0		19690.61		20028.90		
	20367.19	1041.60									
1	212.74		0.51	676.59	4341428.0	0.01	19690.61	19690.61	20028.90		
20367.20	20367.20	1041.60									
1	212.68		0.44	629.02	5173112.0		19501.07		19815.59		
	20130.09	1036.90									
1	212.68		0.44	629.03	5178275.0	0.01	19501.07	19501.07	19815.59		
20130.10	20130.10	1036.90									
1	212.675 BR U		0.46	603.60	3867106.0		19501.78		19815.59		
	20129.38	1036.90									
1	212.675 BR U		0.47	603.16	3846322.0	-0.09	19502.00	19501.07	19815.59		
20130.10	20129.17	1036.90									
1	212.675 BR D		0.48	601.64	3774164.0		19502.77		19815.59		
	20128.41	1036.90									
1	212.675 BR D		0.48	601.23	3754689.0	-0.08	19502.97	19502.33	19815.59		
20128.84	20128.20	1036.90									
1	212.67		0.45	626.50	4999902.0		19502.34		19815.59		
	20128.83	1036.90									
1	212.67		0.45	626.51	5002046.0	0.01	19502.33	19502.33	19815.59		
20128.84	20128.84	1036.90									
1	212.56		0.90	520.87	2374592.0		19731.19		19991.60		
	20452.05	1039.30									
1	212.56		0.89	521.09	2400832.0	0.11	19731.05	19731.05	19991.60		
20252.14	20252.14	1039.30									
1	212.46		0.72	557.52	3013623.0		19743.48		20022.17		
	20301.00	1037.20									
1	212.46		0.72	557.66	2974752.0	0.06	19743.34	19743.34	20022.17		
20301.00	20301.00	1037.20									
1	212.37		0.87	573.58	2432248.0		19745.66		20032.38		
	20319.25	1036.60									
1	212.37		0.87	573.63	2435146.0	0.01	19745.64	19744.06	20032.38		
20320.69	20319.27	1036.60									
1	212.27		0.89	605.55	2297156.0		19720.16		20022.80		
	20325.71	1035.10									
1	212.27		0.89	605.70	2303734.0	0.03	19720.08	19715.25	20022.80		
20330.35	20325.78	1035.10									
1	212.18		0.66	627.55	3203782.0		19706.96		20020.71		
	20334.51	1030.80									
1	212.18		0.65	627.68	3213324.0	0.03	19706.88	19706.85	20020.71		
20334.57	20334.56	1030.80									
1	212.08		0.49	589.65	4417610.0		19681.17		19975.99		
	20270.83	1025.90									
1	212.08		0.49	589.77	4428936.0	0.04	19681.11	19681.09	19975.99		
20270.90	20270.88	1025.90									
1	211.99		0.55	549.29	3893922.0		18069.24		19974.71		
	20249.15	1025.39									
1	211.99		0.55	549.74	3905949.0	0.05	19699.79	19699.77	19974.71		
20249.64	20249.53	1025.39									
1	211.89		0.52	564.78	4156215.0		19685.85		19968.25		
	20250.63	1024.19									
1	211.89		0.52	564.94	4171896.0	0.05	19685.78	19685.75	19968.25		
20250.74	20250.72	1024.19									
1	211.79		0.52	567.58	4132806.0		18953.78		19933.79		
	20217.57	1023.84									
1	211.79		0.52	567.77	4151454.0	0.06	19649.90	19649.87	19933.79		
20217.70	20217.67	1023.84									
1	211.71		0.52	569.11	4130222.0		19628.57		19913.13		
	20197.68	1023.19									

							DuplicateEffective					
* 1	* 211.71	*	0.52 *		569.33 *	4151491.0 *	0.07 *	19628.47 *	19628.43 *	19913.13 *		
20197.84 *	20197.80 *	1023.19 *		*								
*	*	*	*	*	*	*	*	*	*	*		
*	*	*	*									
* 1	* 211.64	*	0.55 *		561.75 *	3941953.0 *	*	19657.87 *	*	19938.75 *		
*	20599.27 *	1022.58 *		*								
* 1	* 211.64	*	0.54 *		562.02 *	3966851.0 *	0.08 *	19657.74 *	19657.70 *	19938.75 *		
20219.80 *	20219.76 *	1022.58 *		*								
*	*	*	*	*	*	*	*	*	*	*		
*	*	*	*									
* 1	* 211.54	*	0.63 *		525.50 *	3482746.0 *	*	19603.89 *	*	19830.70 *		
*	20129.39 *	1021.90 *		*								
* 1	* 211.54	*	0.63 *		525.86 *	3518758.0 *	0.13 *	19603.71 *	19603.65 *	19830.70 *		
20129.64 *	20129.57 *	1021.90 *		*								
*	*	*	*	*	*	*	*	*	*	*		
*	*	*	*									
* 1	* 211.525 BR U *		0.72 *		493.62 *	2511687.0 *	*	19605.33 *	*	19830.70 *		
*	20127.96 *	1021.90 *		*								
* 1	* 211.525 BR U *		0.71 *		494.09 *	2542505.0 *	0.16 *	19605.09 *	19603.65 *	19830.70 *		
20129.64 *	20128.19 *	1021.90 *		*								
*	*	*	*	*	*	*	*	*	*	*		
*	*	*	*									
* 1	* 211.525 BR D *		0.78 *		495.01 *	2341905.0 *	*	19617.96 *	*	19876.38 *		
*	20136.17 *	1021.80 *		*								
* 1	* 211.525 BR D *		0.76 *		495.38 *	2392157.0 *	0.26 *	19617.96 *	19615.19 *	19876.38 *		
20137.39 *	20136.54 *	1021.80 *		*								
*	*	*	*	*	*	*	*	*	*	*		
*	*	*	*									
* 1	* 211.51	*	0.71 *		521.31 *	3070642.0 *	*	19615.63 *	*	19876.38 *		
*	20136.94 *	1021.80 *		*								
* 1	* 211.51	*	0.70 *		521.98 *	3132976.0 *	0.24 *	19615.30 *	19615.19 *	19876.38 *		
20137.39 *	20137.28 *	1021.80 *		*								
*	*	*	*	*	*	*	*	*	*	*		
*	*	*	*									
* 1	* 211.41	*	0.59 *		565.86 *	3761447.0 *	*	19638.65 *	*	19922.07 *		
*	20204.51 *	1018.30 *		*								
* 1	* 211.41	*	0.57 *		567.44 *	3840224.0 *	0.27 *	19638.23 *	19638.10 *	19922.07 *		
20206.06 *	20205.67 *	1018.30 *		*								
*	*	*	*	*	*	*	*	*	*	*		
*	*	*	*									
* 1	* 211.31	*	0.70 *		821.06 *	2963673.0 *	*	19532.35 *	*	19943.65 *		
*	20353.41 *	1020.80 *		*								
* 1	* 211.31	*	0.67 *		823.96 *	3112242.0 *	0.43 *	19531.48 *	19531.21 *	19943.65 *		
20356.09 *	20355.44 *	1020.80 *		*								
*	*	*	*	*	*	*	*	*	*	*		
*	*	*	*									
* 1	* 211.21	*	0.60 *		989.51 *	3429417.0 *	*	19530.23 *	*	20025.00 *		
*	20519.74 *	1021.10 *		*								
* 1	* 211.21	*	0.57 *		991.82 *	3677597.0 *	0.59 *	19529.09 *	19528.75 *	20025.00 *		
20521.25 *	20520.91 *	1021.10 *		*								
*	*	*	*	*	*	*	*	*	*	*		
*	*	*	*									
* 1	* 211.12	*	0.34 *		1060.56 *	6543288.0 *	*	19499.53 *	*	20035.33 *		
*	20560.09 *	1015.70 *		*								
* 1	* 211.12	*	0.32 *		1081.14 *	6851806.0 *	0.54 *	19498.71 *	19498.47 *	20035.33 *		
20610.00 *	20610.00 *	1015.70 *		*								
*	*	*	*	*	*	*	*	*	*	*		
*	*	*	*									
* 1	* 211.02	*	0.49 *		1310.75 *	4385797.0 *	*	19488.55 *	*	19940.71 *		
*	21302.72 *	1019.40 *		*								
* 1	* 211.02	*	0.47 *		1005.42 *	4606872.0 *	0.61 *	19487.61 *	19487.12 *	19940.71 *		
20550.00 *	20550.00 *	1019.40 *		*								
*	*	*	*	*	*	*	*	*	*	*		
*	*	*	*									
* 1	* 210.93	*	0.47 *		2048.87 *	4499064.0 *	*	19481.01 *	*	19946.96 *		
*	21576.00 *	1018.70 *		*								
* 1	* 210.93	*	0.53 *		1173.11 *	4002269.0 *	0.05 *	19480.93 *	19479.13 *	19946.96 *		
20700.00 *	20700.00 *	1018.70 *		*								
*	*	*	*	*	*	*	*	*	*	*		
*	*	*	*									
* 1	* 210.83	*	0.46 *		2225.61 *	4572343.0 *	*	19452.65 *	*	19930.41 *		
*	21722.11 *	1019.10 *		*								
* 1	* 210.83	*	0.51 *		1303.30 *	4129675.0 *	-0.04 *	19452.71 *	19450.42 *	19930.41 *		
20800.00 *	20800.00 *	1019.10 *		*								
*	*	*	*	*	*	*	*	*	*	*		
*	*	*	*									
* 1	* 210.74	*	0.41 *		2325.61 *	5244781.0 *	*	19428.40 *	*	19929.91 *		
*	21790.52 *	1018.20 *		*								
* 1	* 210.74	*	0.42 *		1365.70 *	5083538.0 *	0.11 *	19428.24 *	19426.13 *	19929.91 *		
20830.00 *	20830.00 *	1018.20 *		*								
*	*	*	*	*	*	*	*	*	*	*		
*	*	*	*									
* 1	* 210.64	*	0.37 *		2379.09 *	5743728.0 *	*	19389.05 *	*	19924.60 *		
*	21800.00 *	1017.70 *		*								
* 1	* 210.64	*	0.40 *		1479.19 *	5368837.0 *	0.01 *	19388.98 *	19388.60 *	19924.60 *		
20900.00 *	20900.00 *	1017.70 *		*								
*	*	*	*	*	*	*	*	*	*	*		
*	*	*	*									
* 1	* 210.55	*	0.41 *		1930.65 *	5210137.0 *	*	19327.73 *	*	19902.68 *		
*	21300.00 *	1018.00 *		*								
* 1	* 210.55	*	0.40 *		1743.43 *	5330421.0 *	0.26 *	19326.98 *	19322.17 *	19902.68 *		
21110.00 *	21110.00 *	1018.00 *		*								
*	*	*	*	*	*	*	*	*	*	*		
*	*	*	*									
* 1	* 210.46	*	0.21 *		1904.94 *	9356502.0 *	*	19377.00 *	*	20330.50 *		
*	21281.98 *	1016.30 *		*								
* 1	* 210.46	*	0.21 *		1905.27 *	9515830.0 *	0.25 *	19377.00 *	19377.00 *	20330.50 *		
21284.00 *	21282.27 *	1016.30 *		*								
*	*	*	*	*	*	*	*	*	*	*		
*	*	*	*									
* 1	* 210.36	*	0.29 *		1908.19 *	7131869.0 *	*	19378.10 *	*	20333.16 *		
*	21286.29 *	1017.40 *		*								
* 1	* 210.36	*	0.28 *		1909.31 *	7359590.0 *	0.27 *	19377.68 *	19375.17 *	20333.16 *		
21291.16 *	21286.99 *	1017.40 *		*								
*	*	*	*	*	*	*	*	*	*	*		
*	*	*	*									

						DuplicateEffective				
1	210.26		0.26	1943.97	7711693.0		19380.62		20354.45	
	21324.59	1016.90								
1	210.26		0.25	1945.53	7955870.0	0.29	19380.11	19377.08	20354.45	
21331.80	21325.63	1016.90								
1	210.17		0.30	1974.59	6728709.0		19354.60		20344.66	
	21329.19	1014.70								
1	210.17		0.29	1975.40	6982102.0	0.31	19354.60	19354.60	20344.66	
21334.72	21330.00	1014.70								
1	210.07		0.26	2110.06	7123192.0		19210.00		20077.75	
	21320.05	1018.70								
1	210.07		0.26	2015.00	7236885.0	0.31	19210.00	19210.00	20077.75	
21225.00	21225.00	1018.70								
1	209.98		0.17	2344.97	12960820.0		584.16		1871.19	
	2948.12	998.62								
1	209.98		0.18	1842.97	12481800.0	0.28	949.70	949.70	1871.19	
2792.67	2792.67	998.62								
1	209.88		0.20	1821.60	11715260.0		1138.61		1959.73	
	2960.21	997.42								
1	209.88		0.20	1650.94	11288030.0	0.26	1138.08	1130.44	1959.73	
2789.02	2789.02	997.42								
1	209.79		0.19	1840.66	11536480.0		1137.82		1964.68	
	2978.48	1003.93								
1	209.79		0.20	1686.12	10862060.0	0.25	1137.35	1105.89	1964.68	
2823.47	2823.47	1003.93								
1	209.69		0.28	1773.41	7393035.0		982.56		1838.46	
	2848.81	1004.96								
1	209.69		0.30	1666.72	6712772.0	0.17	979.67	965.68	1838.46	
2711.24	2711.24	1004.96								
1	209.6		0.25	1627.99	8951574.0		1072.01		1556.79	
	2700.00	1003.48								
1	209.6		0.28	1328.11	8007438.0	0.05	1071.89	937.97	1556.79	
2400.00	2400.00	1003.48								
1	209.54		0.41	1093.87	5840043.0		-453.58		364.07	
	640.28	1005.00								
1	209.54		0.40	1050.00	5882311.0	0.22	-430.00	-430.00	364.07	
620.00	620.00	1005.00								
1	209.535 BR U		0.42	1013.87	4357145.0		-453.58		364.07	
	640.28	1005.00								
1	209.535 BR U		0.42	970.00	4403094.0	0.22	-430.00	-430.00	364.07	
620.00	620.00	1005.00								
1	209.535 BR D		0.43	1013.87	4297493.0		-453.58		364.07	
	640.28	1005.00								
1	209.535 BR D		0.43	970.00	4346859.0	0.23	-430.00	-430.00	364.07	
620.00	620.00	1005.00								
1	209.53		0.42	1093.87	5676541.0		-453.58		364.07	
	640.28	1005.00								
1	209.53		0.41	1050.00	5726011.0	0.23	-430.00	-430.00	364.07	
620.00	620.00	1005.00								
1	209.42		0.35	1664.70	6035340.0		542.53		1390.58	
	2207.23	1003.87								
1	209.42		0.34	1636.60	6218621.0	0.26	571.09	571.09	1390.58	
2210.07	2207.69	1003.87								
1	209.33		0.27	1805.66	7866844.0		601.98		1408.40	
	2407.64	996.31								
1	209.33		0.27	1585.47	7985517.0	0.26	615.66	615.66	1408.40	
2201.13	2201.13	996.31								
1	209.24		0.44	1984.37	4716374.0		18865.63		19828.90	
	20850.00	1008.90								
1	209.24		0.47	1637.72	4431403.0	-0.01	19212.28	19212.28	19828.90	
20850.00	20850.00	1008.90								
1	209.14		0.45	2147.65	4648719.0		18952.35		19878.60	
	21100.00	1010.60								
1	209.14		0.48	1899.79	4347684.0	-0.09	19200.21	19200.21	19878.60	
21100.00	21100.00	1010.60								
1	209.04		0.37	2170.30	5812813.0		19029.70		19888.35	
	21200.00	1012.20								
1	209.04		0.38	1980.00	5581269.0	-0.06	19220.00	19220.00	19888.35	
21200.00	21200.00	1012.20								
1	208.95		0.77	2059.33	2702037.0		19140.67		19630.65	
	21200.00	1013.80								
1	208.95		0.77	2058.96	2706599.0	0.01	19141.04	19141.04	19630.65	
21200.00	21200.00	1013.80								

*	*	*	*	*	*	*	*	*	*	*	*
* 1	* 208.85	*	0.54	* 1951.08	* 3676905.0	*	* 19135.36	*	* 19973.14		
*	21150.00	* 1013.40	*	*	*	*	*	*	*		
* 1	* 208.85	*	0.54	* 1945.66	* 3678330.0	* 0.01	* 19204.34	* 19199.70	* 19973.14		
21150.00	* 21150.00	* 1013.40	*	*	*	*	*	*	*		
*	*	*	*	*	*	*	*	*	*	*	*
* 1	* 208.75	*	0.44	* 1548.90	* 4623178.0	*	* 19250.30	*	* 20024.25		
*	20799.20	* 1005.20	*	*	*	*	*	*	*		
* 1	* 208.75	*	0.44	* 1548.90	* 4613830.0	* 0.01	* 19250.29	* 19192.90	* 20024.25		
20799.20	* 20799.20	* 1005.20	*	*	*	*	*	*	*		
*	*	*	*	*	*	*	*	*	*	*	*
* 1	* 208.67	*	0.48	* 1822.25	* 4132509.0	*	* 19322.90	*	* 20112.59		
*	21150.00	* 1007.60	*	*	*	*	*	*	*		
* 1	* 208.67	*	0.48	* 1585.22	* 4131094.0	* 0.00	* 19322.89	* 19118.22	* 20112.59		
20908.11	* 20908.11	* 1007.60	*	*	*	*	*	*	*		
*	*	*	*	*	*	*	*	*	*	*	*
* 1	* 208.57	*	1.00	* 1241.44	* 1929565.0	*	* 19398.56	*	* 20014.15		
*	20986.72	* 1007.60	*	*	*	*	*	*	*		
* 1	* 208.57	*	1.00	* 1241.44	* 1924572.0	* 0.00	* 19398.56	* 19087.13	* 20014.15		
20640.00	* 20640.00	* 1007.60	*	*	*	*	*	*	*		
*	*	*	*	*	*	*	*	*	*	*	*
* 1	* 208.48	*	0.49	* 2170.30	* 3977183.0	*	* 18510.56	*	* 19595.71		
*	20680.86	* 1007.60	*	*	*	*	*	*	*		
* 1	* 208.48	*	0.49	* 2170.30	* 3989798.0	* 0.02	* 18510.56	* 18510.56	* 19595.71		
20680.86	* 20680.86	* 1007.60	*	*	*	*	*	*	*		
*	*	*	*	*	*	*	*	*	*	*	*
* 1	* 208.39	*	0.51	* 2285.86	* 3703180.0	*	* 18462.94	*	* 19605.86		
*	20748.79	* 1005.60	*	*	*	*	*	*	*		
* 1	* 208.39	*	0.51	* 2285.85	* 3723944.0	* 0.03	* 18462.94	* 18462.94	* 19605.86		
20748.79	* 20748.79	* 1005.60	*	*	*	*	*	*	*		
*	*	*	*	*	*	*	*	*	*	*	*
* 1	* 208.29	*	0.49	* 2381.48	* 3897028.0	*	* 18562.60	*	* 19753.34		
*	20944.08	* 1004.70	*	*	*	*	*	*	*		
* 1	* 208.29	*	0.49	* 2381.47	* 3931101.0	* 0.05	* 18562.60	* 18562.60	* 19753.34		
20944.07	* 20944.07	* 1004.70	*	*	*	*	*	*	*		
*	*	*	*	*	*	*	*	*	*	*	*
* 1	* 208.19	*	0.46	* 2664.04	* 4197702.0	*	* 18679.18	*	* 20011.19		
*	21343.21	* 1004.70	*	*	*	*	*	*	*		
* 1	* 208.19	*	0.45	* 2664.02	* 4252565.0	* 0.07	* 18679.18	* 18679.18	* 20011.19		
21343.20	* 21343.20	* 1004.70	*	*	*	*	*	*	*		
*	*	*	*	*	*	*	*	*	*	*	*
* 1	* 208.1	*	0.46	* 2944.82	* 4190911.0	*	* 18822.37	*	* 20294.77		
*	21767.19	* 1001.40	*	*	*	*	*	*	*		
* 1	* 208.1	*	0.45	* 2944.81	* 4276917.0	* 0.10	* 18822.37	* 18822.37	* 20294.77		
21767.18	* 21767.18	* 1001.40	*	*	*	*	*	*	*		
*	*	*	*	*	*	*	*	*	*	*	*
* 1	* 207.99	*	0.49	* 2720.96	* 3863648.0	*	* 19093.03	*	* 20513.72		
*	21934.50	* 999.90	*	*	*	*	*	*	*		
* 1	* 207.99	*	0.48	* 2749.34	* 3969111.0	* 0.16	* 19093.03	* 19093.03	* 20513.72		
21934.42	* 21934.42	* 999.90	*	*	*	*	*	*	*		
*	*	*	*	*	*	*	*	*	*	*	*
* 1	* 207.9	*	0.41	* 3048.05	* 4698084.0	*	* 19062.58	*	* 20621.13		
*	22137.56	* 1000.80	*	*	*	*	*	*	*		
* 1	* 207.9	*	0.40	* 3016.31	* 4877759.0	* 0.20	* 19104.70	* 19104.70	* 20621.13		
22137.55	* 22137.55	* 1000.80	*	*	*	*	*	*	*		
*	*	*	*	*	*	*	*	*	*	*	*
* 1	* 207.8	*	0.47	* 2917.79	* 4065865.0	*	* 18941.44	*	* 20560.36		
*	21871.23	* 999.10	*	*	*	*	*	*	*		
* 1	* 207.8	*	0.46	* 2617.43	* 4224476.0	* 0.25	* 19249.50	* 19249.50	* 20560.36		
21871.22	* 21871.22	* 999.10	*	*	*	*	*	*	*		
*	*	*	*	*	*	*	*	*	*	*	*
* 1	* 207.71	*	0.50	* 2746.35	* 3823945.0	*	* 18957.79	*	* 20532.05		
*	21704.14	* 1000.30	*	*	*	*	*	*	*		
* 1	* 207.71	*	0.51	* 2344.11	* 3804678.0	* 0.18	* 19360.00	* 19360.00	* 20532.05		
21704.11	* 21704.11	* 1000.30	*	*	*	*	*	*	*		
*	*	*	*	*	*	*	*	*	*	*	*
* 1	* 207.62	*	0.61	* 2471.21	* 3148584.0	*	* 19001.18	*	* 20495.21		
*	21472.38	* 1000.20	*	*	*	*	*	*	*		
* 1	* 207.62	*	0.61	* 1962.23	* 3196970.0	* 0.21	* 19510.10	* 19510.10	* 20495.21		
21472.33	* 21472.33	* 1000.20	*	*	*	*	*	*	*		
*	*	*	*	*	*	*	*	*	*	*	*
* 1	* 207.53	*	0.47	* 2131.14	* 4305239.0	*	* 19043.86	*	* 20338.95		
*	21175.00	* 999.10	*	*	*	*	*	*	*		
* 1	* 207.53	*	0.48	* 1672.10	* 4211741.0	* 0.16	* 19502.90	* 19502.90	* 20338.95		
21175.00	* 21175.00	* 999.10	*	*	*	*	*	*	*		
*	*	*	*	*	*	*	*	*	*	*	*
* 1	* 207.49	*	0.35	* 1579.37	* 6081966.0	*	* 19473.78	*	* 20262.35		
*	21053.15	* 992.20	*	*	*	*	*	*	*		
* 1	* 207.49	*	0.34	* 1579.37	* 6264807.0	* 0.26	* 19473.78	* 19473.78	* 20262.35		
21053.15	* 21053.15	* 992.20	*	*	*	*	*	*	*		
*	*	*	*	*	*	*	*	*	*	*	*
* 1	* 207.485 BR_U	*	0.36	* 1518.95	* 4905047.0	*	* 19474.08	*	* 20262.35		
*	21053.03	* 992.20	*	*	*	*	*	*	*		
* 1	* 207.485 BR_U	*	0.35	* 1519.37	* 5025672.0	* 0.23	* 19473.78	* 19473.78	* 20262.35		
21053.15	* 21053.15	* 992.20	*	*	*	*	*	*	*		
*	*	*	*	*	*	*	*	*	*	*	*
* 1	* 207.485 BR_D	*	0.37	* 1518.64	* 4870028.0	*	* 19474.31	*	* 20262.35		
*	21052.95	* 992.20	*	*	*	*	*	*	*		

DuplicateEffective
* 1 * 207.485 BR D * 0.36 * 1518.87 * 4992637.0 * 0.23 * 19474.14 * 19474.14 * 20262.35 *
21053.01 * 21053.01 * 992.20 * * * * * * * * *
* * * * * *

* 1 * 207.48 * 0.35 * 1578.88 * 6008209.0 * * 16831.47 * * 20262.35 *
* 21053.01 * 992.20 * * *
* 1 * 207.48 * 0.34 * 1578.87 * 6188367.0 * 0.25 * 19474.14 * 19474.14 * 20262.35 *
21053.01 * 21053.01 * 992.20 * * * * * * * * *
* * * * * *

* 1 * 207.43 * 0.54 * 1686.77 * 3661078.0 * * 19253.23 * * 20096.65 *
* 20940.00 * 999.00 * * *
* 1 * 207.43 * 0.52 * 1686.77 * 3861824.0 * 0.35 * 19253.23 * 19253.23 * 20096.65 *
20940.00 * 20940.00 * 999.00 * * * * * * * * *
* * * * * *

* 1 * 207.34 * 0.61 * 1568.77 * 3226315.0 * * 19230.00 * * 20014.38 *
* 20798.77 * 995.90 * * *
* 1 * 207.34 * 0.56 * 1568.77 * 3575019.0 * 0.64 * 19230.00 * 19230.00 * 20014.38 *
20798.77 * 20798.77 * 995.90 * * * * * * * * *
* * * * * *

* 1 * 207.27 * 0.62 * 1628.70 * 3135219.0 * * 18980.00 * * 20013.35 *
* 20608.70 * 993.30 * * *
* 1 * 207.27 * 0.54 * 1617.90 * 3683406.0 * 1.00 * 18980.00 * 18980.00 * 20013.35 *
20597.90 * 20597.90 * 993.30 * * * * * * * * *
* * * * * *

* 1 * 207.16 * 0.50 * 2127.45 * 4023740.0 * * 18607.05 * * 20127.95 *
* 20734.50 * 992.70 * * *
* 1 * 207.16 * 0.52 * 1734.50 * 3885416.0 * 0.70 * 19000.00 * 19000.00 * 20127.95 *
20734.50 * 20734.50 * 992.70 * * * * * * * * *
* * * * * *

* 1 * 207.07 * 0.86 * 2121.27 * 2286164.0 * * 18413.03 * * 20268.81 *
* 20748.27 * 992.80 * * *
* 1 * 207.07 * 0.88 * 1710.74 * 2254410.0 * 0.43 * 18857.57 * 18857.57 * 20268.81 *
20748.18 * 20748.18 * 992.80 * * * * * * * * *
* * * * * *

* 1 * 206.97 * 0.36 * 1872.81 * 5970014.0 * * 18394.10 * * 20268.25 *
* 20800.00 * 981.70 * * *
* 1 * 206.97 * 0.36 * 1567.64 * 6019868.0 * 0.90 * 18850.00 * 18850.00 * 20268.25 *
20800.00 * 20800.00 * 981.70 * * * * * * * * *
* * * * * *

* 1 * 206.88 * 0.31 * 2078.38 * 7226234.0 * * 18332.23 * * 20264.40 *
* 20800.00 * 981.80 * * *
* 1 * 206.88 * 0.31 * 1800.86 * 7191503.0 * 0.89 * 18838.93 * 18838.93 * 20264.40 *
20800.00 * 20800.00 * 981.80 * * * * * * * * *
* * * * * *

* 1 * 206.79 * 0.29 * 2279.32 * 7514464.0 * * 18343.49 * * 20279.13 *
* 20895.15 * 981.80 * * *
* 1 * 206.79 * 0.29 * 1934.31 * 7590998.0 * 0.91 * 18806.01 * 18806.01 * 20279.13 *
20895.15 * 20895.15 * 981.80 * * * * * * * * *
* * * * * *

* 1 * 206.7 * 0.27 * 2572.12 * 7908733.0 * * 18250.64 * * 20324.45 *
* 21165.35 * 981.80 * * *
* 1 * 206.7 * 0.27 * 2093.13 * 8015485.0 * 0.93 * 18784.84 * 18784.84 * 20324.45 *
21138.80 * 21138.11 * 981.80 * * * * * * * * *
* * * * * *

* 1 * 206.6 * 0.33 * 2786.93 * 6230824.0 * * 17938.02 * * 20306.18 *
* 21066.25 * 981.80 * * *
* 1 * 206.6 * 0.33 * 2185.35 * 6298256.0 * 0.89 * 18675.58 * 18675.58 * 20306.18 *
21066.25 * 21066.25 * 981.80 * * * * * * * * *
* * * * * *

* 1 * 206.51 * 0.45 * 2915.00 * 4521128.0 * * 17700.00 * * 20084.15 *
* 20615.00 * 981.80 * * *
* 1 * 206.51 * 0.46 * 2053.65 * 4533739.0 * 0.82 * 18561.35 * 18561.35 * 20084.15 *
20622.10 * 20615.00 * 981.80 * * * * * * * * *
* * * * * *

* 1 * 206.41 * 0.46 * 3564.70 * 4380634.0 * * 17111.00 * * 20154.06 *
* 20685.21 * 982.50 * * *
* 1 * 206.41 * 0.47 * 2190.50 * 4381569.0 * 0.80 * 18494.71 * 18494.71 * 20154.06 *
20685.21 * 20685.21 * 982.50 * * * * * * * * *
* * * * * *

* 1 * 206.32 * 0.46 * 3656.33 * 4293590.0 * * 17150.00 * * 20171.80 *
* 20854.87 * 982.80 * * *
* 1 * 206.32 * 0.47 * 2377.93 * 4288577.0 * 0.79 * 18476.94 * 18476.94 * 20171.80 *
20854.87 * 20854.87 * 982.80 * * * * * * * * *
* * * * * *

* 1 * 206.22 * 0.52 * 3772.23 * 3853835.0 * * 16969.39 * * 20127.88 *
* 20977.29 * 983.00 * * *
* 1 * 206.22 * 0.51 * 2441.77 * 3986076.0 * 0.87 * 18435.00 * 18435.00 * 20127.88 *
20977.29 * 20977.29 * 983.00 * * * * * * * * *
* * * * * *

* 1 * 206.13 * 0.52 * 3610.69 * 3625268.0 * * 17049.27 * * 20059.00 *
* 20914.89 * 984.60 * * *
* 1 * 206.13 * 0.57 * 2386.31 * 3294110.0 * 0.58 * 18370.00 * 18370.00 * 20059.00 *
20914.89 * 20914.89 * 984.60 * * * * * * * * *
* * * * * *

* 1 * 206.03 * 0.61 * 3627.33 * 3071777.0 * * 16967.78 * * 19987.25 *
* 21127.08 * 984.50 * * *
* 1 * 206.03 * 0.67 * 2131.13 * 2786996.0 * 0.18 * 18320.00 * 18320.00 * 19987.25 *
20772.60 * 20772.60 * 984.50 * * * * * * * * *
* * * * * *

DuplicateEffective

* 1	* 205.94	*	0.48 *	3651.58 *	3932557.0 *	*	17284.78 *	*	19792.05 *			
*	21215.00 *	981.00 *	*	*	*		*	*	*			
* 1	* 205.94	*	0.45 *	2567.00 *	4259277.0 *	0.58 *	18200.00 *	18200.00 *	19792.05 *			
20767.00 *	20767.00 *	981.00 *	*	*	*		*	*	*			
*	*	*	*	*	*		*	*	*			
* 1	* 205.84	*	0.38 *	3746.65 *	5233237.0 *	*	17620.55 *	*	19511.65 *			
*	21450.00 *	979.50 *	*	*	*		*	*	*			
* 1	* 205.84	*	0.36 *	2435.70 *	5449105.0 *	0.61 *	18100.00 *	18100.00 *	19511.65 *			
20535.70 *	20535.70 *	979.50 *	*	*	*		*	*	*			
*	*	*	*	*	*		*	*	*			
* 1	* 205.75	*	0.37 *	3257.26 *	3950065.0 *	*	18027.86 *	*	19249.15 *			
*	21400.00 *	973.90 *	*	*	*		*	*	*			
* 1	* 205.75	*	0.35 *	2402.30 *	4290733.0 *	0.74 *	18048.00 *	18048.00 *	19249.15 *			
20450.30 *	20450.30 *	973.90 *	*	*	*		*	*	*			
*	*	*	*	*	*		*	*	*			
* 1	* 205.62	*	0.31 *	3845.50 *	6366636.0 *	*	17560.75 *	*	19333.05 *			
*	21480.00 *	976.00 *	*	*	*		*	*	*			
* 1	* 205.62	*	0.31 *	2234.10 *	6407340.0 *	0.71 *	18216.00 *	18216.00 *	19333.05 *			
20450.10 *	20450.10 *	976.00 *	*	*	*		*	*	*			
*	*	*	*	*	*		*	*	*			
* 1	* 205.52	*	0.28 *	3732.69 *	7454148.0 *	*	17650.00 *	*	19601.55 *			
*	21400.00 *	975.90 *	*	*	*		*	*	*			
* 1	* 205.52	*	0.29 *	2019.90 *	7126233.0 *	0.65 *	18591.60 *	18591.60 *	19601.55 *			
20611.50 *	20611.50 *	975.90 *	*	*	*		*	*	*			
*	*	*	*	*	*		*	*	*			
* 1	* 205.43	*	0.29 *	3335.92 *	7116273.0 *	*	17800.00 *	*	19843.95 *			
*	21400.00 *	976.10 *	*	*	*		*	*	*			
* 1	* 205.43	*	0.33 *	1842.37 *	6524281.0 *	0.53 *	18922.07 *	18917.50 *	19843.95 *			
20770.40 *	20764.44 *	976.10 *	*	*	*		*	*	*			
*	*	*	*	*	*		*	*	*			
* 1	* 205.4	*	0.24 *	3650.00 *	8621961.0 *	*	17800.00 *	*	19893.90 *			
*	21450.00 *	975.50 *	*	*	*		*	*	*			
* 1	* 205.4	*	0.26 *	1747.80 *	8073093.0 *	0.57 *	19020.00 *	19020.00 *	19893.90 *			
20767.80 *	20767.80 *	975.50 *	*	*	*		*	*	*			
*	*	*	*	*	*		*	*	*			
* 1	* 205.34	*	0.30 *	3427.47 *	5172262.0 *	*	17906.05 *	*	20013.65 *			
*	21400.00 *	975.57 *	*	*	*		*	*	*			
* 1	* 205.34	*	0.35 *	1562.96 *	4487226.0 *	0.34 *	19180.00 *	19180.00 *	20013.65 *			
20742.96 *	20742.96 *	975.57 *	*	*	*		*	*	*			
*	*	*	*	*	*		*	*	*			
* 1	* 205.25	*	0.28 *	3390.62 *	6571525.0 *	*	17950.00 *	*	20227.10 *			
*	21340.62 *	973.40 *	*	*	*		*	*	*			
* 1	* 205.25	*	0.32 *	1482.30 *	5737392.0 *	0.23 *	19300.00 *	19300.00 *	20227.10 *			
20782.30 *	20782.30 *	973.40 *	*	*	*		*	*	*			
*	*	*	*	*	*		*	*	*			
* 1	* 205.15	*	0.49 *	3035.78 *	3632205.0 *	*	18072.60 *	*	20266.70 *			
*	21134.21 *	973.10 *	*	*	*		*	*	*			
* 1	* 205.15	*	0.47 *	1445.00 *	3844879.0 *	0.49 *	19385.00 *	19385.00 *	20266.70 *			
20830.00 *	20830.00 *	973.10 *	*	*	*		*	*	*			
*	*	*	*	*	*		*	*	*			
* 1	* 205.06	*	0.47 *	2103.93 *	3787357.0 *	*	18080.00 *	*	20287.35 *			
*	20907.77 *	970.50 *	*	*	*		*	*	*			
* 1	* 205.06	*	0.46 *	1435.30 *	3871248.0 *	0.51 *	19470.00 *	19470.00 *	20287.35 *			
20905.30 *	20905.30 *	970.50 *	*	*	*		*	*	*			
*	*	*	*	*	*		*	*	*			
* 1	* 204.97	*	0.36 *	2834.16 *	4869981.0 *	*	18200.00 *	*	20253.15 *			
*	21034.16 *	973.30 *	*	*	*		*	*	*			
* 1	* 204.97	*	0.42 *	1516.30 *	4255498.0 *	0.20 *	19445.00 *	19445.00 *	20253.15 *			
20961.30 *	20961.30 *	973.30 *	*	*	*		*	*	*			
*	*	*	*	*	*		*	*	*			
* 1	* 204.87	*	0.31 *	2652.20 *	5920537.0 *	*	18300.00 *	*	20208.57 *			
*	20952.20 *	968.10 *	*	*	*		*	*	*			
* 1	* 204.87	*	0.34 *	1542.20 *	5343764.0 *	0.18 *	19410.00 *	19410.00 *	20208.57 *			
20952.20 *	20952.20 *	968.10 *	*	*	*		*	*	*			
*	*	*	*	*	*		*	*	*			
* 1	* 204.78	*	0.25 *	2430.43 *	7512086.0 *	*	18400.00 *	*	20115.46 *			
*	20830.43 *	967.60 *	*	*	*		*	*	*			
* 1	* 204.78	*	0.28 *	1620.43 *	6634912.0 *	0.13 *	19210.00 *	19210.00 *	20115.46 *			
20830.43 *	20830.43 *	967.60 *	*	*	*		*	*	*			
*	*	*	*	*	*		*	*	*			
* 1	* 204.68	*	0.33 *	2091.37 *	5457597.0 *	*	18455.00 *	*	19935.21 *			
*	20546.37 *	971.40 *	*	*	*		*	*	*			
* 1	* 204.68	*	0.38 *	1586.28 *	4834418.0 *	-0.04 *	18960.00 *	18960.00 *	19935.21 *			
20546.37 *	20546.28 *	971.40 *	*	*	*		*	*	*			
*	*	*	*	*	*		*	*	*			
* 1	* 204.61	*	0.41 *	1891.94 *	4447568.0 *	*	18570.00 *	*	19977.10 *			
*	20482.90 *	972.60 *	*	*	*		*	*	*			
* 1	* 204.61	*	0.42 *	1602.90 *	4289077.0 *	0.03 *	18880.00 *	18880.00 *	19977.10 *			
20482.90 *	20482.90 *	972.60 *	*	*	*		*	*	*			
*	*	*	*	*	*		*	*	*			
* 1	* 204.53	*	0.46 *	1765.90 *	3850514.0 *	*	18730.00 *	*	19840.65 *			
*	20495.90 *	972.70 *	*	*	*		*	*	*			
* 1	* 204.53	*	0.47 *	1610.90 *	3743779.0 *	0.00 *	18885.00 *	18885.00 *	19840.65 *			
20495.90 *	20495.90 *	972.70 *	*	*	*		*	*	*			
*	*	*	*	*	*		*	*	*			
* 1	* 204.42	*	0.51 *	1804.93 *	3325542.0 *	*	18874.10 *	*	19853.75 *			
*	20679.03 *	971.40 *	*	*	*		*	*	*			
* 1	* 204.42	*	0.52 *	1653.57 *	3259710.0 *	-0.02 *	19025.40 *	19025.40 *	19853.75 *			
20679.03 *	20678.97 *	971.40 *	*	*	*		*	*	*			

1	204.34		0.52	1701.95	3299565.0		19100.00		19958.12			
	20814.38	969.30										
1	204.34		0.52	1701.99	3300310.0	0.01	19100.00	19100.00	19958.12			
20814.38	20814.38	969.30										
1	204.25		1.00	1517.18	1863855.0		19300.00		20059.27			
	20817.18	969.22										
1	204.25		1.00	1516.99	1855915.0	-0.02	19300.00	19300.00	20059.27			
20817.18	20816.99	969.22										
1	204.15		0.40	1831.90	5042939.0		18882.41		20116.69			
	21031.89	966.00										
1	204.15		0.40	1831.89	5038994.0	0.02	19200.00	19200.00	20116.69			
21031.89	21031.89	966.00										
1	204.05		0.50	2116.76	3910438.0		18963.78		20022.18			
	21080.54	965.00										
1	204.05		0.49	2116.76	3927263.0	0.02	18963.78	18963.78	20022.18			
21080.54	21080.54	965.00										
1	203.96		0.80	2050.76	2269861.0		18736.54		19760.59			
	20787.30	964.10										
1	203.96		0.75	2050.76	2417852.0	0.26	18736.54	18736.54	19760.59			
20787.30	20787.30	964.10										
1	203.86		0.36	2191.78	5460451.0		18542.49		19612.00			
	20734.27	962.30										
1	203.86		0.35	2191.78	5666380.0	0.25	18542.49	18542.49	19612.00			
20734.27	20734.27	962.30										
1	203.77		0.35	2511.27	5549798.0		18232.41		19484.11			
	20743.68	963.30										
1	203.77		0.34	2511.27	5803637.0	0.29	18232.41	18232.41	19484.11			
20743.68	20743.68	963.30										
1	203.67		0.37	2860.23	5348655.0		17837.20		19524.10			
	20697.43	962.30										
1	203.67		0.36	2567.43	5512272.0	0.29	18130.00	18130.00	19524.10			
20697.43	20697.43	962.30										
1	203.58		0.37	2993.59	5333542.0		17707.80		19454.49			
	20701.39	962.10										
1	203.58		0.36	2676.39	5599491.0	0.35	18025.00	18025.00	19454.49			
20701.39	20701.39	962.10										
1	203.48		0.41	3454.84	4642347.0		17389.48		19394.68			
	20844.31	962.20										
1	203.48		0.40	2911.71	4742364.0	0.33	17932.60	17932.60	19394.68			
20844.31	20844.31	962.20										
1	203.39		0.42	3309.00	4495896.0		17519.20		19504.80			
	21036.48	959.90										
1	203.39		0.41	2930.05	4631119.0	0.40	17970.80	17970.80	19504.80			
21036.47	21036.47	959.90										
1	203.29		0.45	3441.31	4136567.0		17590.00		19574.09			
	21074.86	960.70										
1	203.29		0.44	3009.26	4265774.0	0.41	18065.60	18065.60	19574.09			
21074.86	21074.86	960.70										
1	203.19		0.42	3364.24	3879641.0		17587.00		19623.75			
	20951.24	956.70										
1	203.19		0.43	2689.14	3814345.0	0.36	18262.10	18262.10	19623.75			
20951.24	20951.24	956.70										
1	203.09		0.46	3213.89	3568365.0		17691.96		19710.91			
	20905.85	958.70										
1	203.09		0.46	2475.85	3526911.0	0.32	18430.00	18430.00	19710.91			
20905.85	20905.85	958.70										
1	202.99		0.42	3260.60	3947903.0		17673.37		19698.15			
	20933.96	959.20										
1	202.99		0.41	2457.50	4009597.0	0.37	18469.40	18469.40	19698.15			
20926.90	20926.90	959.20										
1	202.9		0.36	3412.11	4574160.0		17518.03		19724.55			
	20967.30	956.50										
1	202.9		0.37	2511.71	4523109.0	0.36	18455.60	18455.60	19724.55			
20967.31	20967.31	956.50										
1	202.8		0.34	3540.65	4820928.0		17429.80		19702.88			
	21011.58	956.40										
1	202.8		0.35	2620.78	4688712.0	0.33	18390.80	18390.80	19702.88			
21011.58	21011.58	956.40										
1	202.69		0.37	3701.48	4357701.0		17191.27		19729.80			
	21080.23	953.70										

				DuplicateEffective					
1	202.69		0.38	2553.41	4258962.0	0.29	18526.82	18377.80	19729.80
21080.23	21080.23	953.70							
1	202.59		0.40	3629.52	3966361.0		17348.76		19805.89
	21190.40	953.70							
1	202.59		0.42	2606.65	3831880.0	0.23	18524.37	18416.70	19805.89
21190.40	21190.40	953.70							
1	202.48		0.40	3674.66	4078760.0		17497.88		19941.58
	21302.69	952.50							
1	202.48		0.42	2826.14	3877911.0	0.11	18360.00	18360.00	19941.58
21302.70	21302.70	952.50							
1	202.37		0.39	3850.50	4253334.0		17583.96		20044.94
	21577.77	954.60							
1	202.37		0.41	3165.40	4009107.0	0.03	18270.00	18270.00	20044.94
21577.77	21577.77	954.60							
1	202.29		0.29	4060.28	5764473.0		17742.72		20000.20
	21803.00	955.50							
1	202.29		0.29	3605.60	5756355.0	0.08	18197.40	18197.40	20000.20
21803.00	21803.00	955.50							
1	202.18		0.38	4239.81	4172957.0		17589.10		20039.05
	21936.53	950.00							
1	202.18		0.38	3692.06	4154161.0	0.06	18139.70	18139.70	20039.05
21936.54	21936.54	950.00							
1	202.09		0.57	4052.05	2643855.0		17755.36		20075.58
	21936.96	950.00							
1	202.09		0.57	3682.20	2659472.0	0.07	18253.40	18212.90	20075.58
21936.96	21936.96	950.00							
1	201.99		0.38	3548.70	4634981.0		17895.49		20063.91
	21861.56	948.70							
1	201.99		0.37	3219.77	4655852.0	0.09	18235.10	18235.10	20063.91
21861.56	21861.56	948.70							
1	201.9		0.31	3830.97	5852611.0		17992.63		19890.86
	21823.60	947.20							
1	201.9		0.31	3830.97	5964132.0	0.11	17992.63	17992.63	19890.86
21823.60	21823.60	947.20							
1	201.81		0.28	3646.80	6592084.0		17952.48		19875.08
	21801.08	946.00							
1	201.81		0.27	3650.46	6711267.0	0.12	17952.48	17952.48	19875.08
21801.08	21801.08	946.00							
1	201.71		0.40	3844.58	3838417.0		18112.81		19817.78
	21957.39	946.00							
1	201.71		0.40	3415.69	3858296.0	0.11	18112.81	18112.81	19817.78
21528.50	21528.50	946.00							
1	201.62		0.35	3854.25	4406350.0		18235.69		19855.50
	22089.94	945.60							
1	201.62		0.34	3241.81	4475808.0	0.14	18235.69	18235.69	19855.50
21477.50	21477.50	945.60							
1	201.52		0.33	4181.52	3808935.0		18008.54		19667.57
	22190.05	940.90							
1	201.52		0.34	3382.85	3764143.0	0.12	18008.55	18008.55	19667.57
21391.40	21391.40	940.90							
1	201.43		0.37	4131.77	4076199.0		18053.86		19678.50
	22188.55	941.30							
1	201.43		0.37	3288.24	4094692.0	0.13	18053.86	18053.86	19678.50
21342.10	21342.10	941.30							
1	201.33		0.41	4277.40	3645795.0		18074.35		19715.66
	22408.97	943.00							
1	201.33		0.40	3307.45	3705386.0	0.16	18074.35	18074.35	19715.66
21381.80	21381.80	943.00							
1	201.24		0.40	4357.41	3811227.0		18069.92		19818.68
	22430.09	943.00							
1	201.24		0.40	3500.08	3876386.0	0.19	18069.92	18069.92	19818.68
21570.00	21570.00	943.00							
1	201.14		0.31	4685.00	4966393.0		18040.42		19879.43
	22725.42	940.40							
1	201.14		0.30	3680.58	5142934.0	0.24	18040.42	18040.42	19879.43
21721.00	21721.00	940.40							
1	201.05		0.26	4915.94	5254537.0		17950.48		19898.61
	22866.42	941.50							
1	201.05		0.26	3898.52	5383665.0	0.26	17950.48	17950.48	19898.61
21849.00	21849.00	941.50							

DuplicateEffective

1	200.95		0.25	5141.07	6344019.0			17952.91			19929.90
	23093.98	939.80									
1	200.95		0.24	4001.09	6536869.0		0.28	17952.91	17952.91		19929.90
21954.00	21954.00	939.80									
1	200.86		0.27	5228.08	4470468.0			18000.00			20014.00
	23228.08	938.50									
1	200.86		0.26	4032.00	4591685.0		0.30	18000.00	18000.00		20014.00
22032.00	22032.00	938.50									
1	200.77		0.28	5805.53	5320745.0			17630.00			19889.90
	23630.00	936.90									
1	200.77		0.27	4122.20	5545445.0		0.35	17828.80	17828.80		19889.90
21951.00	21951.00	936.90									
1	200.67		0.30	4971.62	4569344.0			17540.00			19784.30
	23915.00	939.80									
1	200.67		0.28	4009.30	4819677.0		0.41	17640.00	17640.00		19784.30
21649.30	21649.30	939.80									
1	200.58		0.30	5529.80	4526509.0			17460.00			19698.50
	23847.47	937.60									
1	200.58		0.28	3940.00	4759369.0		0.47	17510.00	17510.00		19698.50
21450.00	21450.00	937.60									
1	200.49		0.26	6161.28	5347928.0			17380.00			19445.15
	24485.00	936.90									
1	200.49		0.25	3791.00	5487085.0		0.50	17380.00	17380.00		19445.15
21171.00	21171.00	936.90									
1	200.39		0.24	5819.36	6034760.0			17300.00			19361.75
	24775.00	937.00									
1	200.39		0.23	3741.00	6188329.0		0.52	17300.00	17300.00		19361.75
21041.00	21041.00	937.00									
1	200.3		0.34	5039.41	4488975.0			17205.00			19338.20
	24887.90	937.70									
1	200.3		0.31	3683.53	4835241.0		0.60	17205.00	17205.00		19338.20
20896.00	20888.53	937.70									
1	200.2		0.37	5551.98	3992119.0			17115.00			19352.25
	25144.80	937.00									
1	200.2		0.35	3629.00	4319022.0		0.73	17115.00	17115.00		19352.25
20744.00	20744.00	937.00									
1	200.1		0.32	5433.71	4321296.0			17030.00			19188.15
	25261.51	934.50									
1	200.1		0.29	3770.00	4818061.0		0.92	17030.00	17030.00		19188.15
20800.00	20800.00	934.50									
1	200		0.24	6148.14	6113840.0			16950.00			18918.55
	25170.51	933.40									
1	200		0.23	4100.00	6388853.0		0.96	16950.00	16950.00		18918.55
21050.00	21050.00	933.40									
1	199.91		0.22	6597.49	6954198.0			16800.00			19089.15
	25176.77	932.10									
1	199.91		0.20	4530.00	7510252.0		1.01	16800.00	16800.00		19089.15
21330.00	21330.00	932.10									
1	199.82		0.19	7203.54	4012368.0			16870.00			19137.70
	25350.00	931.20									
1	199.82		0.20	4780.00	3845833.0		1.00	16870.00	16870.00		19137.70
21650.00	21650.00	931.20									

****

****

ERRORS WARNINGS AND NOTES
Errors Warnings and Notes for Plan : DupEff

River: 1 Reach: 1 RS: 214.14 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: 1 Reach: 1 RS: 214.14 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 214.04 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: 1 Reach: 1 RS: 214.04 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 213.95 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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 213.95 Profile: PF#2
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). 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: 1  Reach: 1     RS: 213.85     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.
     Note:   Multiple critical depths were found at this location.  The critical depth with the lowest, valid, water surface was
          used.
River: 1  Reach: 1     RS: 213.85     Profile: PF#2
     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.
     Note:   Multiple critical depths were found at this location.  The critical depth with the lowest, valid, water surface was
          used.
River: 1  Reach: 1     RS: 213.75     Profile: PF#1
     Note:   Multiple critical depths were found at this location.  The critical depth with the lowest, valid, energy was used.
River: 1  Reach: 1     RS: 213.75     Profile: PF#2
     Note:   Multiple critical depths were found at this location.  The critical depth with the lowest, valid, energy was used.
River: 1  Reach: 1     RS: 213.745     Profile: PF#1 Upstream
     Note:   Multiple critical depths were found at this location.  The critical depth with the lowest, valid, energy was used.
River: 1  Reach: 1     RS: 213.745     Profile: PF#1 Downstream
     Note:   Multiple critical depths were found at this location.  The critical depth with the lowest, valid, energy was used.
River: 1  Reach: 1     RS: 213.745     Profile: PF#2 Upstream
     Note:   Multiple critical depths were found at this location.  The critical depth with the lowest, valid, energy was used.
River: 1  Reach: 1     RS: 213.745     Profile: PF#2 Downstream
     Note:   Multiple critical depths were found at this location.  The critical depth with the lowest, valid, energy was used.
River: 1  Reach: 1     RS: 213.74     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:   Multiple critical depths were found at this location.  The critical depth with the lowest, valid, energy was used.
River: 1  Reach: 1     RS: 213.74     Profile: PF#2
     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:   Multiple critical depths were found at this location.  The critical depth with the lowest, valid, energy was used.
River: 1  Reach: 1     RS: 213.66     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 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: 1  Reach: 1     RS: 213.66     Profile: PF#2
     Warning:The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for additional cross sections.
     Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.  This may indicate
          the need for additional cross sections.
     Note:   Multiple critical depths were found at this location.  The critical depth with the lowest, valid, water surface was
          used.
River: 1  Reach: 1     RS: 213.57     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: 1  Reach: 1     RS: 213.57     Profile: PF#2
     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: 1  Reach: 1     RS: 213.47     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:   Multiple critical depths were found at this location.  The critical depth with the lowest, valid, water surface was
          used.
River: 1  Reach: 1     RS: 213.47     Profile: PF#2
     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:   Multiple critical depths were found at this location.  The critical depth with the lowest, valid, water surface was
          used.
River: 1  Reach: 1     RS: 213.38     Profile: PF#1
     Note:   Multiple critical depths were found at this location.  The critical depth with the lowest, valid, water surface was
          used.
River: 1  Reach: 1     RS: 213.38     Profile: PF#2
     Note:   Multiple critical depths were found at this location.  The critical depth with the lowest, valid, water surface was
          used.
River: 1  Reach: 1     RS: 213.33     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: 1  Reach: 1     RS: 213.33     Profile: PF#2
     Note:   Multiple critical depths were found at this location.  The critical depth with the lowest, valid, water surface was
          used.
River: 1  Reach: 1     RS: 213.26     Profile: PF#1
     Note:   Multiple critical depths were found at this location.  The critical depth with the lowest, valid, energy was used.
River: 1  Reach: 1     RS: 213.26     Profile: PF#2
     Note:   Multiple critical depths were found at this location.  The critical depth with the lowest, valid, energy was used.
River: 1  Reach: 1     RS: 213.255     Profile: PF#1 Upstream
     Note:   Multiple critical depths were found at this location.  The critical depth with the lowest, valid, energy was used.
River: 1  Reach: 1     RS: 213.255     Profile: PF#1 Downstream
     Note:   Multiple critical depths were found at this location.  The critical depth with the lowest, valid, energy was used.
River: 1  Reach: 1     RS: 213.255     Profile: PF#2 Upstream
     Note:   Multiple critical depths were found at this location.  The critical depth with the lowest, valid, energy was used.
River: 1  Reach: 1     RS: 213.255     Profile: PF#2 Downstream
     Note:   Multiple critical depths were found at this location.  The critical depth with the lowest, valid, energy was used.
River: 1  Reach: 1     RS: 213.25     Profile: PF#1
     Note:   Multiple critical depths were found at this location.  The critical depth with the lowest, valid, energy was used.
River: 1  Reach: 1     RS: 213.25     Profile: PF#2
     Note:   Multiple critical depths were found at this location.  The critical depth with the lowest, valid, energy was used.
River: 1  Reach: 1     RS: 213.21     Profile: PF#1
     Note:   Multiple critical depths were found at this location.  The critical depth with the lowest, valid, water surface was
```

used.
River: 1 Reach: 1 RS: 213.21 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 213.11 Profile: PF#1
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 213.11 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 213.03 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: 1 Reach: 1 RS: 213.03 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 212.93 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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 212.93 Profile: PF#2
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). 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: 1 Reach: 1 RS: 212.84 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 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: 1 Reach: 1 RS: 212.84 Profile: PF#2
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 212.74 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: 1 Reach: 1 RS: 212.74 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 212.68 Profile: PF#1
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 212.68 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 212.675 Profile: PF#1
Note: Momentum answer is not valid if the water surface is above the low chord or if there is weir flow. The momentum answer has been disregarded.
River: 1 Reach: 1 RS: 212.675 Profile: PF#1 Upstream
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 212.675 Profile: PF#1 Downstream
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 212.675 Profile: PF#2 Upstream
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 212.675 Profile: PF#2 Downstream
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 212.67 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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 212.67 Profile: PF#2
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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 212.56 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 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: 1 Reach: 1 RS: 212.56 Profile: PF#2
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 212.46 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 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: 1 Reach: 1 RS: 212.46 Profile: PF#2
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 212.37 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: 1 Reach: 1 RS: 212.37 Profile: PF#2

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: 1 Reach: 1 RS: 212.27 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 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: 1 Reach: 1 RS: 212.27 Profile: PF#2
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: 1 Reach: 1 RS: 212.18 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 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: 1 Reach: 1 RS: 212.18 Profile: PF#2
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: 1 Reach: 1 RS: 212.08 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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: 1 Reach: 1 RS: 212.08 Profile: PF#2
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). 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: 1 Reach: 1 RS: 211.99 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: 1 Reach: 1 RS: 211.99 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: 1 Reach: 1 RS: 211.89 Profile: PF#1
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: 1 Reach: 1 RS: 211.89 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: 1 Reach: 1 RS: 211.79 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: 1 Reach: 1 RS: 211.79 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: 1 Reach: 1 RS: 211.71 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: 1 Reach: 1 RS: 211.71 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: 1 Reach: 1 RS: 211.64 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 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: 1 Reach: 1 RS: 211.64 Profile: PF#2
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: 1 Reach: 1 RS: 211.54 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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

River: 1 Reach: 1 RS: 211.54 Profile: PF#2
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). 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, energy was used.

River: 1 Reach: 1 RS: 211.525 Profile: PF#1 Upstream
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). 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, energy was used.

River: 1 Reach: 1 RS: 211.525 Profile: PF#1 Downstream
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). 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, energy was used.

River: 1 Reach: 1 RS: 211.525 Profile: PF#2 Upstream
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

River: 1 Reach: 1 RS: 211.525 Profile: PF#2 Downstream
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). 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, energy was used.

River: 1 Reach: 1 RS: 211.51 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 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, energy was used.

River: 1 Reach: 1 RS: 211.51 Profile: PF#2
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

River: 1 Reach: 1 RS: 211.41 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: 1 Reach: 1 RS: 211.41 Profile: PF#2
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: 1 Reach: 1 RS: 211.31 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 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: 1 Reach: 1 RS: 211.31 Profile: PF#2
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 211.21 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: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 211.21 Profile: PF#2
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: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 211.12 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: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 211.12 Profile: PF#2
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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 211.02 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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 211.02 Profile: PF#2
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: 1 Reach: 1 RS: 210.93 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: 1 Reach: 1 RS: 210.93 Profile: PF#2
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: 1 Reach: 1 RS: 210.83 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: 1 Reach: 1 RS: 210.83 Profile: PF#2
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: 1 Reach: 1 RS: 210.74 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: 1 Reach: 1 RS: 210.74 Profile: PF#2
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: 1 Reach: 1 RS: 210.64 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: 1 Reach: 1 RS: 210.64 Profile: PF#2
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: 1 Reach: 1 RS: 210.55 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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 210.55 Profile: PF#2
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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 210.46 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: 1 Reach: 1 RS: 210.46 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 210.36 Profile: PF#1

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 210.36 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 210.26 Profile: PF#1
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 210.26 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 210.17 Profile: PF#1
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 210.17 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 210.07 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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 210.07 Profile: PF#2
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: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 209.98 Profile: PF#1
Warning:Divided flow computed for this cross-section.
Warning:The cross-section end points had to be extended vertically for the computed water surface.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 209.98 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 209.88 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: 1 Reach: 1 RS: 209.88 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 209.79 Profile: PF#1
Warning:Divided flow computed for this cross-section.
Warning:The cross-section end points had to be extended vertically for the computed water surface.
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: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 209.79 Profile: PF#2
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: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 209.69 Profile: PF#1
Warning:Divided flow computed for this cross-section.
Warning:The cross-section end points had to be extended vertically for the computed water surface.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 209.69 Profile: PF#2
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: 1 Reach: 1 RS: 209.6 Profile: PF#1
Warning:Divided flow computed for this cross-section.
Warning:The cross-section end points had to be extended vertically for the computed water surface.
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: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 209.6 Profile: PF#2
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). 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: 1 Reach: 1 RS: 209.54 Profile: PF#1
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 209.54 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 209.535 Profile: PF#1 Upstream
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 209.535 Profile: PF#1 Downstream
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 209.535 Profile: PF#2 Upstream
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 209.535 Profile: PF#2 Downstream
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 209.53 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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 209.53 Profile: PF#2
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). 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, energy was used.
River: 1 Reach: 1 RS: 209.42 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: 1 Reach: 1 RS: 209.42 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 209.33 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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was

used.
River: 1 Reach: 1 RS: 209.33 Profile: PF#2
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: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 209.24 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: 1 Reach: 1 RS: 209.24 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 209.14 Profile: PF#1
Warning:Divided flow computed for this cross-section.
Warning:The cross-section end points had to be extended vertically for the computed water surface.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 209.14 Profile: PF#2
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). 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: 1 Reach: 1 RS: 209.04 Profile: PF#1
Warning:Divided flow computed for this cross-section.
Warning:The cross-section end points had to be extended vertically for the computed water surface.
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: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 209.04 Profile: PF#2
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: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 208.95 Profile: PF#1
Warning:Divided flow computed for this cross-section.
Warning:The cross-section end points had to be extended vertically for the computed water surface.
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 208.95 Profile: PF#2
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 208.85 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: 1 Reach: 1 RS: 208.85 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 208.75 Profile: PF#1
Warning:Divided flow computed for this cross-section.
Warning:The cross-section end points had to be extended vertically for the computed water surface.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 208.75 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 208.67 Profile: PF#1
Warning:Divided flow computed for this cross-section.
Warning:The cross-section end points had to be extended vertically for the computed water surface.
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.
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: 1 Reach: 1 RS: 208.67 Profile: PF#2
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.
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: 1 Reach: 1 RS: 208.57 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: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.
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: 1 Reach: 1 RS: 208.57 Profile: PF#2
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The 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: 1 Reach: 1 RS: 208.48 Profile: PF#1
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: 1 Reach: 1 RS: 208.48 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: 1 Reach: 1 RS: 208.39 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: 1 Reach: 1 RS: 208.39 Profile: PF#2
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: 1 Reach: 1 RS: 208.29 Profile: PF#1
Warning:Divided flow computed for this cross-section.
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: 1 Reach: 1 RS: 208.29 Profile: PF#2
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: 1 Reach: 1 RS: 208.19 Profile: PF#1
Warning:Divided flow computed for this cross-section.
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: 1 Reach: 1 RS: 208.19 Profile: PF#2
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: 1 Reach: 1 RS: 208.1 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.

River: 1 Reach: 1 RS: 208.1 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: 1 Reach: 1 RS: 207.99 Profile: PF#1
Warning:Divided flow computed for this cross-section.
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: 1 Reach: 1 RS: 207.99 Profile: PF#2
Warning:Divided flow computed for this cross-section.
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: 1 Reach: 1 RS: 207.9 Profile: PF#1
Warning:Divided flow computed for this cross-section.
Warning:The cross-section end points had to be extended vertically for the computed water surface.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: 1 Reach: 1 RS: 207.9 Profile: PF#2
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: 1 Reach: 1 RS: 207.8 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: 1 Reach: 1 RS: 207.8 Profile: PF#2
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: 1 Reach: 1 RS: 207.71 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: 1 Reach: 1 RS: 207.71 Profile: PF#2
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: 1 Reach: 1 RS: 207.62 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: 1 Reach: 1 RS: 207.62 Profile: PF#2
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: 1 Reach: 1 RS: 207.53 Profile: PF#1
Warning:Divided flow computed for this cross-section.
Warning:The cross-section end points had to be extended vertically for the computed water surface.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: 1 Reach: 1 RS: 207.53 Profile: PF#2
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: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 207.49 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, energy was used.
River: 1 Reach: 1 RS: 207.49 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 207.485 Profile: PF#1
Note: Momentum answer is not valid if the water surface is above the low chord or if there is weir flow. The momentum answer has been disregarded.
River: 1 Reach: 1 RS: 207.485 Profile: PF#1 Upstream
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 207.485 Profile: PF#1 Downstream
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 207.485 Profile: PF#2 Upstream
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 207.485 Profile: PF#2 Downstream
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 207.48 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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 207.48 Profile: PF#2
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: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 207.43 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: 1 Reach: 1 RS: 207.43 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 207.34 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: 1 Reach: 1 RS: 207.34 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 207.27 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 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: 1 Reach: 1 RS: 207.27 Profile: PF#2
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: 1 Reach: 1 RS: 207.16 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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 207.16 Profile: PF#2
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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 207.07 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 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.
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: 1 Reach: 1 RS: 207.07 Profile: PF#2
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 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.
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: 1 Reach: 1 RS: 206.97 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: 1 Reach: 1 RS: 206.97 Profile: PF#2
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: 1 Reach: 1 RS: 206.88 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: 1 Reach: 1 RS: 206.88 Profile: PF#2
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: 1 Reach: 1 RS: 206.79 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: 1 Reach: 1 RS: 206.79 Profile: PF#2
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: 1 Reach: 1 RS: 206.7 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: 1 Reach: 1 RS: 206.7 Profile: PF#2
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: 1 Reach: 1 RS: 206.6 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: 1 Reach: 1 RS: 206.6 Profile: PF#2
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: 1 Reach: 1 RS: 206.51 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: 1 Reach: 1 RS: 206.51 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 206.41 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: 1 Reach: 1 RS: 206.41 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 206.32 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: 1 Reach: 1 RS: 206.32 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 206.22 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: 1 Reach: 1 RS: 206.22 Profile: PF#2
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: 1 Reach: 1 RS: 206.13 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.
River: 1 Reach: 1 RS: 206.13 Profile: PF#2
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 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: 1 Reach: 1 RS: 206.03 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.
River: 1 Reach: 1 RS: 206.03 Profile: PF#2
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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 205.94 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: 1 Reach: 1 RS: 205.94 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 205.84 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: 1 Reach: 1 RS: 205.84 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: 1 Reach: 1 RS: 205.75 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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 205.75 Profile: PF#2
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: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 205.62 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: 1 Reach: 1 RS: 205.62 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 205.52 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: 1 Reach: 1 RS: 205.52 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 205.43 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: 1 Reach: 1 RS: 205.43 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 205.4 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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 205.4 Profile: PF#2
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: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 205.34 Profile: PF#1
Warning:Divided flow computed for this cross-section.
Warning:The cross-section end points had to be extended vertically for the computed water surface.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 205.34 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 205.25 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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 205.25 Profile: PF#2
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: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 205.15 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: 1 Reach: 1 RS: 205.15 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 205.06 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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 205.06 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 204.97 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: 1 Reach: 1 RS: 204.97 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 204.87 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: 1 Reach: 1 RS: 204.87 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 204.78 Profile: PF#1
Warning:Divided flow computed for this cross-section.
Warning:The cross-section end points had to be extended vertically for the computed water surface.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 204.78 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 204.68 Profile: PF#1
Warning:Divided flow computed for this cross-section.
Warning:The cross-section end points had to be extended vertically for the computed water surface.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 204.68 Profile: PF#2

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 204.61 Profile: PF#1
Warning:Divided flow computed for this cross-section.
Warning:The cross-section end points had to be extended vertically for the computed water surface.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 204.61 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 204.53 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: 1 Reach: 1 RS: 204.53 Profile: PF#2
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: 1 Reach: 1 RS: 204.42 Profile: PF#1
Warning:Divided flow computed for this cross-section.
Warning:The cross-section end points had to be extended vertically for the computed water surface.
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: 1 Reach: 1 RS: 204.42 Profile: PF#2
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: 1 Reach: 1 RS: 204.34 Profile: PF#1
Warning:Divided flow computed for this cross-section.
Warning:The cross-section end points had to be extended vertically for the computed water surface.
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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 204.34 Profile: PF#2
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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 204.25 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 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.
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: 1 Reach: 1 RS: 204.25 Profile: PF#2
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The 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: 1 Reach: 1 RS: 204.15 Profile: PF#1
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 204.15 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 204.05 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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 204.05 Profile: PF#2
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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 203.96 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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: 1 Reach: 1 RS: 203.96 Profile: PF#2
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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: 1 Reach: 1 RS: 203.86 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: 1 Reach: 1 RS: 203.86 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: 1 Reach: 1 RS: 203.77 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: 1 Reach: 1 RS: 203.77 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: 1 Reach: 1 RS: 203.67 Profile: PF#1
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: 1 Reach: 1 RS: 203.67 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: 1 Reach: 1 RS: 203.58 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: 1 Reach: 1 RS: 203.58 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: 1 Reach: 1 RS: 203.48 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: 1 Reach: 1 RS: 203.48 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: 1 Reach: 1 RS: 203.39 Profile: PF#1
Warning:Divided flow computed for this cross-section.
Warning:The cross-section end points had to be extended vertically for the computed water surface.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: 1 Reach: 1 RS: 203.39 Profile: PF#2
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: 1 Reach: 1 RS: 203.29 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: 1 Reach: 1 RS: 203.29 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: 1 Reach: 1 RS: 203.19 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: 1 Reach: 1 RS: 203.19 Profile: PF#2
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: 1 Reach: 1 RS: 203.09 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: 1 Reach: 1 RS: 203.09 Profile: PF#2
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: 1 Reach: 1 RS: 202.99 Profile: PF#1
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: 1 Reach: 1 RS: 202.99 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: 1 Reach: 1 RS: 202.9 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: 1 Reach: 1 RS: 202.9 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: 1 Reach: 1 RS: 202.8 Profile: PF#1
Warning:Divided flow computed for this cross-section.
Warning:The cross-section end points had to be extended vertically for the computed water surface.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: 1 Reach: 1 RS: 202.8 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: 1 Reach: 1 RS: 202.69 Profile: PF#1
Warning:Divided flow computed for this cross-section.
Warning:The cross-section end points had to be extended vertically for the computed water surface.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 202.69 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 202.59 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: 1 Reach: 1 RS: 202.59 Profile: PF#2
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: 1 Reach: 1 RS: 202.48 Profile: PF#1
Warning:Divided flow computed for this cross-section.
Warning:The cross-section end points had to be extended vertically for the computed water surface.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 202.48 Profile: PF#2
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: 1 Reach: 1 RS: 202.37 Profile: PF#1
Warning:Divided flow computed for this cross-section.
Warning:The cross-section end points had to be extended vertically for the computed water surface.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 202.37 Profile: PF#2
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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 202.29 Profile: PF#1
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 202.29 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 202.18 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: 1 Reach: 1 RS: 202.18 Profile: PF#2
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: 1 Reach: 1 RS: 202.09 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: 1 Reach: 1 RS: 202.09 Profile: PF#2
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: 1 Reach: 1 RS: 201.99 Profile: PF#1
Warning:Divided flow computed for this cross-section.
Warning:The cross-section end points had to be extended vertically for the computed water surface.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 201.99 Profile: PF#2
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: 1 Reach: 1 RS: 201.9 Profile: PF#1
Warning:Divided flow computed for this cross-section.
Warning:The cross-section end points had to be extended vertically for the computed water surface.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 201.9 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 201.81 Profile: PF#1
Warning:Divided flow computed for this cross-section.
Warning:The cross-section end points had to be extended vertically for the computed water surface.
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: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 201.81 Profile: PF#2
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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 201.71 Profile: PF#1

Warning:Divided flow computed for this cross-section.
Warning:The cross-section end points had to be extended vertically for the computed water surface.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 201.71 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 201.62 Profile: PF#1
Warning:Divided flow computed for this cross-section.
Warning:The cross-section end points had to be extended vertically for the computed water surface.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 201.62 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 201.52 Profile: PF#1
Warning:Divided flow computed for this cross-section.
Warning:The cross-section end points had to be extended vertically for the computed water surface.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 201.52 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 201.43 Profile: PF#1
Warning:Divided flow computed for this cross-section.
Warning:The cross-section end points had to be extended vertically for the computed water surface.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 201.43 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 201.33 Profile: PF#1
Warning:Divided flow computed for this cross-section.
Warning:The cross-section end points had to be extended vertically for the computed water surface.
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: 1 Reach: 1 RS: 201.33 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 201.24 Profile: PF#1
Warning:Divided flow computed for this cross-section.
Warning:The cross-section end points had to be extended vertically for the computed water surface.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 201.24 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 201.14 Profile: PF#1
Warning:Divided flow computed for this cross-section.
Warning:The cross-section end points had to be extended vertically for the computed water surface.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 201.14 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 201.05 Profile: PF#1
Warning:Divided flow computed for this cross-section.
Warning:The cross-section end points had to be extended vertically for the computed water surface.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 201.05 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 200.95 Profile: PF#1
Warning:Divided flow computed for this cross-section.
Warning:The cross-section end points had to be extended vertically for the computed water surface.
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: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 200.95 Profile: PF#2
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: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 200.86 Profile: PF#1
Warning:Divided flow computed for this cross-section.
Warning:The cross-section end points had to be extended vertically for the computed water surface.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 200.86 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 200.77 Profile: PF#1
Warning:Divided flow computed for this cross-section.
Warning:The cross-section end points had to be extended vertically for the computed water surface.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 200.77 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 200.67 Profile: PF#1
Warning:Divided flow computed for this cross-section.
Warning:The cross-section end points had to be extended vertically for the computed water surface.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 200.67 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 200.58 Profile: PF#1
Warning:Divided flow computed for this cross-section.
Warning:The cross-section end points had to be extended vertically for the computed water surface.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: 1 Reach: 1 RS: 200.58 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 200.49 Profile: PF#1
Warning:Divided flow computed for this cross-section.
Warning:The cross-section end points had to be extended vertically for the computed water surface.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 200.49 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 200.39 Profile: PF#1
Warning:Divided flow computed for this cross-section.
Warning:The cross-section end points had to be extended vertically for the computed water surface.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 200.39 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 200.3 Profile: PF#1
Warning:Divided flow computed for this cross-section.
Warning:The cross-section end points had to be extended vertically for the computed water surface.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 200.3 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 200.2 Profile: PF#1
Warning:Divided flow computed for this cross-section.
Warning:The cross-section end points had to be extended vertically for the computed water surface.
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: 1 Reach: 1 RS: 200.2 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 200.1 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.
River: 1 Reach: 1 RS: 200.1 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 200 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: 1 Reach: 1 RS: 200 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 199.91 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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 199.91 Profile: PF#2
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: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: 1 Reach: 1 RS: 199.82 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: 1 Reach: 1 RS: 199.82 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

cHECk-RAS Report

HEC-RAS Project: *duplicateeffective.prj*
Plan File: *duplicateeffective.p01*
Geometry File: *duplicateeffective.g02*
Flow File: *duplicateeffective.f01*
Report Date: *8/23/2013*

Message ID	Message	Cross sections affected	Comments
BR LF 01	This is ($strucname$). The selected profile is $profilename$. Type of flow is low flow because, 1. EGEL 3 of $egel3$ is less than or equal to MinTopRd of $minelweirflow$. 2. EGEL 3 of $egel3$ is less than MxLoCdU of $mxlocdu$.	209.535(Bridge-UP); 211.525(Bridge-UP); 213.255(Bridge-UP); 213.745(Bridge-UP)	
BR LW 02	This is a Bridge Section. The selected profile is $profilename$. EGEL of $egel3$ at Section 3 is higher than the MinTopRd of $minelweirflow$. However, weir flow is not computed at this structure. Please investigate the problem.	212.675(Bridge-UP)	
BR PW 02	This is a Bridge Section. The selected profile is $profilename$. Type of flow is submerged pressure and weir flow because, 1. EGEL 3 of $egel3$ is greater than MinTopRd of $minelweirflow$. 2. EGEL 3 of $egel3$ is equal to or greater than MxLoCdU of $mxlocdu$. 3. WSEL 2 of $wsel2$ is equal to or greater than MxLoCdD of $mxlocdd$.	212.675(Bridge-UP)	
BR PW 05	This is a Bridge Section. The selected profile is $profilename$. EGEL of $egel3$ at Section 3 is higher than the MinTopRd of $minelweirflow$. However, weir flow is not computed at this structure. Please investigate the problem.	212.675(Bridge-UP)	
FW FW 01L	The Left encroachment station is within the channel. The Left encroachment station $encrstal$ is more than left channel bank station $stalob$. The left encroachment station should be the same as the left channel bank station.	200.86; 200.95; 201.05; 201.14; 201.24; 201.33; 201.43; 201.52; 201.62; 201.71; 201.81; 201.9; 203.77; 203.86; 203.96; 204.05; 208.95; 210.26; 210.36; 210.55; 210.74; 210.83; 210.93; 211.12; 211.21; 211.31; 211.41; 213.11; 213.66; 213.95; 214.04; 214.14	
FW FW 01R	The Right encroachment station is within the channel. The Right encroachment station $encrstar$ is less than right channel bank station $starob$. The right encroachment station should be the same as the right channel bank station.	201.81; 201.9; 201.99; 202.09; 202.18; 202.37; 202.48; 202.59; 202.69; 202.8; 202.9; 203.09; 203.19; 203.29; 203.39; 203.48; 203.58; 203.67; 203.77; 203.86; 203.96; 204.05; 204.15; 204.25; 204.34; 204.42; 204.68; 204.78; 204.87; 206.13; 206.22; 206.32; 206.41; 207.07; 210.26; 210.36; 211.21; 211.31; 211.79; 211.99; 213.11; 213.33; 213.38; 213.47; 213.57; 213.66; 213.85; 213.95; 214.04; 214.14	

FW FW 03L	The left channel bank elevation of $lobelev$ is higher than the 1-percent-annual-chance WSEL of $wsel$. Relocate the left channel bank station at or below the 1-percent-annual-chance WSEL. Do not place the bank stations at the bottom of the channel. Do not place the bank stations at the low flow channel. Use the Horizontal Variation in "n" Values option in HEC-RAS to assign different "n" values to the left bank slope, low flow channel, and the right bank slope. Let HEC-RAS compute the composite "n" value based on the depth of flow.	200.49; 200.77; 201.05; 201.9; 202.09; 202.37; 202.48; 202.59; 202.69; 203.86; 203.96; 204.05; 205.43; 206.03; 206.13; 206.22; 206.7; 206.79; 206.97; 207.07; 208.57; 208.67; 208.75; 208.85; 208.95; 209.6; 209.69; 209.79; 209.88; 210.64; 211.12; 211.41; 211.71; 213.11; 213.66; 213.95; 214.04; 214.14	
FW FW 03R	The right channel bank elevation of $robelev$ is higher than the 1-percent annual chance WSEL of $wsel$. Relocate the right channel bank station at or below the 1-percent annual chance WSEL. Do not place the bank stations at the bottom of the channel. Do not place the bank stations at the low flow channel. Use the Horizontal Variation in "n" Values option in HEC-RAS to assign different "n" values to the left bank slope, low flow channel, and the right bank slope. Let HEC-RAS compute the composite "n" value based on the depth of flow.	200.3; 201.24; 202.09; 202.48; 202.9; 203.39; 205.43; 205.84; 205.94; 206.7; 209.42; 210.17; 210.46; 210.55; 210.64; 210.74; 210.83; 210.93; 211.02; 211.12; 211.71; 211.89; 212.08; 213.11; 213.33; 213.38; 213.47; 213.57; 213.66; 213.85; 213.95; 214.04; 214.14	
FW FW 05L	The 1-percent annual chance flood is contained within the channel. The Left encroachment station $encstal$ is outside the channel. The Left channel bank station is $stalob$. Adjust the left encroachment station so that it is the same as the left channel bank station.	208.57; 208.67; 208.75	
FW FW 05R	The 1-percent annual chance flood is contained within the channel. The Right encroachment station $encstar$ is outside the channel. Right channel bank station is $starob$. Adjust the right encroachment station so that it is the same as the right channel bank station..	211.12; 212.08	
FW FW 06L	The left side of the floodway boundary is within the channel. The left station effective of $ineffstal$ for the floodway profile is more than the left channel bank station of $stalob$. The left encroachment station of $encstal$ is less than the left channel bank station. Adjust the left encroachment station so that it is the same as the left channel bank station.	208.57; 208.67; 208.75; 208.85	
FW FW 06R	The right side of the floodway boundary is within the channel. The right station effective of $ineffstar$ for the floodway profile is less than the right channel bank station of $starob$. The right encroachment station of $encstar$ is more than the right channel bank station. Adjust the right encroachment station so that it is the same as the right channel bank station.	212.08	

FW SC 02	The surcharge value of $surcharge$ is greater than the maximum allowable value of $allowsurchrg$. Use the suggestions from the Help section to reduce the computed surcharge value to be no more than $allowsurchrg$.	199.91	
FW ST 03S2L	This is Section 2 of a hydraulic structure. The left encroachment station is within the structure opening area. The left station effective of $ineffstal$ for the 1%-annual-chance profile is less than the left most abutment station of $abutstal$. The 1%-annual-chance floodplain is outside the structure opening. The left encroachment station of $encstal$ is greater than the left most abutment station of $abutstal$. Enc_Sta_L should be relocated outside of the structure opening area.	207.48	
FW ST 04BDL	This is ($strucname$) downstream internal section. The left encroachment station is within the channel. The left encroachment station of $encstal$ is greater than the left bank station of $stalob$. The leftencroachment station should be the same as the left channel bank station.	213.255(Bridge-DN); 213.745(Bridge-DN)	
FW ST 04BDR	This is ($strucname$) downstream internal section. The right encroachment station is within the channel. The right encroachment station of $encstar$ is less than the right bank station of $starob$. The right encroachment station should be the same as the right channel bank station.	213.255(Bridge-DN)	
FW ST 04BUL	This is ($strucname$) upstream internal section. The left encroachment station is within the channel. The left encroachment station of $encstal$ is greater than the left bank station of $stalob$. The left encroachment station should be the same as the left channel bank station.	211.525(Bridge-UP); 213.255(Bridge-UP); 213.745(Bridge-UP)	
FW ST 04BUR	This is ($strucname$) upstream internal section. The right encroachment station is within the channel. The right encroachment station of $encstar$ is less than the right bank station of $starob$. The right encroachment station should be the same as the right channel bank station.	213.255(Bridge-UP)	
FW ST 04S2L	This is Section 2 of a hydraulic structure. The left encroachment station is within the channel. The left encroachment station of $encstal$ is greater than the left bank station of $stalob$. The left encroachment station should be the same as the left channel bank station.	207.48; 211.51; 213.25; 213.74	

FW ST 04S2R	This is Section 2 of a hydraulic structure. The right encroachment station is within the channel. The right encroachment station of $encstar$ is less than the right bank station of $starob$. The right encroachment station should be the same as right channel bank station.	207.48; 211.51; 213.25; 213.74	
FW ST 04S3L	This is Section 3 of a hydraulic structure. The Left Channel Bank station is outside the Left Abutment station. The left encroachment station is within the channel. The left encroachment station of $encstal$ is greater than the left bank station of $stalob$. The left encroachment station should be the same as the left channel bank station.	207.49; 211.54; 213.26; 213.75	
FW ST 04S3R	This is Section 3 of a hydraulic structure. The right encroachment station is within the channel. The right encroachment station of $encstar$ is less than the right bank station of $starob$. The right encroachment station should be the same as the right channel bank station.	207.49; 211.54; 213.26; 213.75	
FW ST 06BU	This is the Upstream Bridge Internal Section. Negative surcharge value of $negsurchrg$ occurs at this section. Use the suggestions from the Help section such that negative surcharge value will not be less than (-0.09) foot.	212.675(Bridge-UP)	
MP SW 01DK	The name of the stream is ($streamname$). The flow regime is subcritical or mixed flow. Starting water-surface elevations are computed from Known WSELs as the downstream boundary condition. Provide backup information on Known water-surface elevations or use same energy slope for all the profiles as the starting boundary condition and rerun the plan.		
NT RC 05	The left overbank n-value of $nlob$ and the right overbank n-value of $nrob$ are less than or equal to the channel n-value of nch. Follow the procedure in (FHWA, 1984) to compute the n-value for the natural floodplain and the channel. Or follow the procedure in (USGS, 1977) to compute the n-value for urban development. Please submit supporting information on the evaluation of n-values.	204.42; 204.53; 204.61; 204.68; 204.78; 204.87; 205.06; 205.15; 205.25; 205.75; 206.32; 206.41; 206.51; 206.6; 206.7; 206.79; 206.88; 206.97; 207.07; 207.16; 207.27; 207.53; 207.62; 207.71; 207.8; 207.9; 209.24; 209.69; 210.07; 210.26; 210.46	

NT RS 02BDC	This is the Downstream Bridge Section (BRD). The channel n value of $chldn$ for the downstream internal bridge opening section is equal to or larger than the channel n value of $chl2$ at Section 2. Usually, the channel "n" value of the bridge opening section represents the area below the bridge deck and is less than the channel "n" value of Section 2. The "n" value for Section 2 represents the natural valley channel section roughness for the reach between Section 3 and Section 4. Please change the "n" value of the internal bridge opening section or provide supporting information for the use of the higher "n" value.	209.535(Bridge-DN); 211.525(Bridge-DN); 213.255(Bridge-DN); 213.745(Bridge-DN)	
NT RS 02BUC	This is the Upstream Bridge Section (BRU). The channel n value of $chlup$ for the upstream internal bridge opening section is equal to or larger than the channel n value of $chl3$ at Section 3. Usually, the channel "n" value of the bridge opening section represents the area below the bridge deck and is less than the channel "n" value of Section 3. The "n" value for Section 3 represents the natural valley channel section roughness for the reach between Section 3 and Section 4. Please change the "n" value of the internal bridge opening section or provide supporting information for the use of a higher "n" value.	209.535(Bridge-UP); 211.525(Bridge-UP); 212.675(Bridge-UP); 213.255(Bridge-UP); 213.745(Bridge-UP)	
NT TL 01S2	This is Section2 of a hydraulic structure. The contraction and expansion loss coefficients are cc and ce. They should be equal to 0.3 and 0.5, respectively, for typical structure sections according to page 5-8 of the HEC-RAS Hydraulic Reference Manual (HEC, 2010).	207.48; 211.51; 212.67; 213.25; 213.74	
NT TL 01S3	This is Section3 of a hydraulic structure. The contraction and expansion loss coefficients are cc and ce. They should be equal to 0.3 and 0.5, respectively, for typical structure sections according to page 5-8 of the HEC-RAS Hydraulic Reference Manual (HEC, 2010).	207.49; 211.54; 212.68; 213.26; 213.75	
NT TL 01S4	This is Section 4 of a hydraulic structure. The contraction and expansion loss coefficients are cc and ce. They should be equal to 0.3 and 0.5, respectively according to page 5-8 of the HEC-RAS Hydraulic Reference Manual (HEC, 2010)..	207.53; 209.6; 211.64; 212.74; 213.33; 213.85	

ST DT 01B	This is ($strucname$). 'Upstream Dist' of $distup$ in "Bridge Width Table" is less than the height of the bridge opening of $height$. This indicates that Section 3 may not be placed at the foot of the road embankment or wing walls and may not represent the natural valley cross section. Section 3 should be relocated or provide a statement that it represents the natural valley cross section. The HEC-RAS geometry file may need to be recreated using a GIS program. Lengths at Sections 4, 3 and 2 and 'Upstream Dist' should be adjusted.	207.485(Bridge-UP); 209.535(Bridge-UP); 211.525(Bridge-UP); 213.255(Bridge-UP); 213.745(Bridge-UP)	
ST DT 02B	This is ($strucname$). 'Downstream Dist' of $distdn$ in 'Bridge Width Table' is less than the height of the bridge opening of $height$. This indicates that Section 2 may not be placed at the foot of the road embankment or wing walls and may not represent the natural valley cross section. Section 2 should be relocated or provide a statement that it represents the natural valley cross section. A HEC-RAS geometry file may need to be recreated using a GIS program. Lengths at Sections 3 and 2 should be adjusted.	207.485(Bridge-DN); 209.535(Bridge-DN); 211.525(Bridge-DN); 213.255(Bridge-DN); 213.745(Bridge-DN)	
ST DT 03	This is ($Structure$) section. The Contraction Length is longer than the Expansion Length. Section 4 channel distance of $Length_Chnl4$ is longer than Section 2 channel distance of $Length_Chnl2$. Section 4 and Section 1 should be relocated. The HEC-RAS geometry file may need to be recreated using a GIS program.	213.255(Bridge-UP); 213.745(Bridge-UP)	
ST GD 06	Left and/or right abutment station computed by the cHECk-RAS program is equal to zero. cHECk-RAS cannot evaluate this structure.	212.675(Bridge)	
ST IF 03S2L	This is Section 2. The selected profile is $profilename$. Weir flow occurs at ($strucname$). However, the left ineffective flow elevation of $ineffelr$ at the left ineffective flow station $ineffstal$ is equal to or higher than the WSEL of $wsel2$. The ineffective flow elevation should be lower than the WSEL at Section 2.	207.48(Bridge)	

ST IF 03S3L	This is Section 3. The selected profile is $profilename$. Weir flow occurs at ($strucname$). However, the left ineffective flow elevation of $ineffelr$ at the left ineffective flow station $ineffstal$ is equal to or higher than the WSEL of $wsel3$. The computed upstream LMnTpRd is $lmntprdu$. The ineffective flow elevation should be equal to or lower than the computed LMnTpRdU. It should also be lower than the WSEL at Section 3.	207.49(Bridge)	
ST IF 04S2R	This is Section 2. The selected profile is $profilename$. Weir flow occurs at ($strucname$). However, the right ineffective flow elevation of $ineffell$ at the right ineffective flow station $ineffstar$ is equal to or higher than the WSEL of $wsel2$. The upstream RMnTpRu is $rmntprdu$. The ineffective flow elevation should be lower than the WSEL at Section 2.	207.48(Bridge)	
ST IF 04S3R	This is Section 3. The selected profile is $profilename$. Weir flow occurs at ($strucname$). However, the right ineffective flow elevation of $ineffell$ at the right ineffective flow station $ineffstar$ is equal to or higher than the WSEL of $wsel3$. The computed upstream RMnTpRd is $rmntprdu$. The ineffective flow elevation should be equal to the computed RMnTpRdU.	207.49(Bridge)	
ST IF 05S2L	This is Section 2 of a hydraulic structure. The left ineffective flow station is within the opening area of the structure. The left ineffective flow station of $ineffstal$ is greater than the downstream left abutment station of $abutstal$ at ($strucname$). The Left ineffective flow station should be adjusted.	211.51(Bridge); 212.67(Bridge)	
ST IF 05S2R	This is Section 2 of a hydraulic structure. The right ineffective flow station is within the opening area of the structure. The right ineffective flow station of $ineffstar$ is less than the upstream right abutment station of $abutstar$ at ($strucname$). The Right ineffective flow station should be adjusted.	211.51(Bridge)	
ST IF 05S3L	This is Section 3 of a hydraulic structure. The left ineffective flow station is within the opening area of the structure. The left ineffective flow station of $ineffstal$ is greater than the upstream left abutment station of $abutstal$ at ($strucname$). The Left ineffective flow station should be adjusted.	212.68(Bridge)	

ST IF 05S3R	This is Section 3 of a hydraulic structure. The right ineffective flow station is within the opening area of the structure. The right ineffective flow station of $ineffstar$ is less than the upstream right abutment station of $abutstar$ at ($strucname$). The Right ineffective flow station should be adjusted.	211.54(Bridge)	
ST IF 06S2L	This is Section 2. The selected profile is $profilename$. Low or pressure flow occurs at ($strucname$). The Dn_Dist of $dndist$ at the structure is less than the opening height of $openheight$ of the structure. The cHECk-RAS computed left ineffective flow station of $compineffstal$ is less than the input left ineffective flow station of $ineffstal$. The left ineffective flow station should be adjusted per the help instructions and the HEC-RAS manual.	211.51(Bridge); 213.74(Bridge)	
ST IF 06S2R	This is Section 2. The selected profile is $profilename$. Low or pressure flow occurs at ($strucname$). The Dn_Dist of $dndist$ at the structure is less than the opening height of $openheight$ of the structure. The cHECk-RAS computed right ineffective flow station of $compineffstar$ is greater than the input right ineffective flow station of $ineffstar$. The right ineffective flow station should be adjusted per the help instructions and the HEC-RAS manual.	211.51(Bridge); 213.74(Bridge)	
ST IF 06S3L	This is Section 3. The selected profile is $profilename$. Low or pressure flow occurs at ($strucname$). The Up_Dist of $updist$ at the structure is less than the opening height of $openheight$ of the structure. The cHECk-RAS computed left ineffective flow station of $compineffstal$ is less than the input left ineffective flow station of $ineffstal$. The left ineffective flow station should be adjusted per the help instructions and the HEC-RAS manual.	213.75(Bridge)	

ST IF 06S3R	This is Section 3. The selected profile is $profilename$. Low or pressure flow occurs at ($strucname$). The Up_Dist of $updist$ at the structure is less than the opening height of $openheight$ of the structure. The cHECk-RAS computed right ineffective flow station of $compineffstar$ is greater than the input right ineffective flow station of $ineffstar$. The right ineffective flow station should be adjusted per the help instructions and the HEC-RAS manual.	211.54(Bridge); 213.75(Bridge)	
ST IF 07S1L	This is Section 1. Left Ineffective flow option was considered at this section. However, it should be a fully expanded cross section. Ineffective flow stations and elevations should be cleared from this section, unless the areas beyond the ineffective flow stations are not within the flow path of the stream. This message should be ignored if this section is Section 3 of the downstream structure.	207.43(Bridge); 209.42(Bridge); 212.56(Bridge); 213.21(Bridge); 213.66(Bridge)	
ST IF 07S1R	This is Section 1. Right Ineffective flow option was considered at this section. However, it should be a fully expanded cross section. Ineffective flow stations and elevations should be cleared from this section, unless the areas beyond the ineffective flow stations are not within the flow path of the stream. This message should be ignored if this section is Section 3 of the downstream structure.	207.43(Bridge); 209.42(Bridge); 212.56(Bridge); 213.21(Bridge); 213.66(Bridge)	
ST IF 07S4L	This is Section 4. Left Ineffective flow option was considered at this section. However, it should be a fully expanded cross section. Ineffective flow stations and elevations should be cleared from this section, unless the areas beyond the ineffective flow stations are not within the flow path of the stream. This message should be ignored if this section is Section 2 of the upstream structure.	207.53(Bridge); 209.6(Bridge); 212.74(Bridge); 213.33(Bridge); 213.85(Bridge)	
ST IF 07S4R	This is Section 4. Right Ineffective flow option was considered at this section. However, it should be a fully expanded cross section. Ineffective flow stations and elevations should be cleared from this section, unless the areas beyond the ineffective flow stations are not within the flow path of the stream. This message should be ignored if this section is Section 2 of the upstream structure.	207.53(Bridge); 209.6(Bridge); 212.74(Bridge); 213.33(Bridge); 213.85(Bridge)	

XS CD 01	Critical Depth occurs at $assignedname$ flood. Flow Code will be "C". The Ineffective flow option is used. The Ineffective Flow elevation is equal to or higher than the Critical WSEL. Please investigate whether this selection is appropriate.	204.25; 207.07; 208.57	
XS DC 01	Discharge decreases in the downstream direction for $assignedname$ flood. There are no lateral structures. Documentation of hydrologic analysis is required or provide explanation.	205.4; 213.21	
XS DT 01	Both the right overbank distance of rob and the left overbank distance of lob are longer than the channel distance of chl . Please review the creation of left overbank, channel and right overbank distances. The HEC-RAS geometry file may need to be recreated using a GIS program. Please resolve the differences among the distances.	211.71; 211.99	
XS IF 03R	The Right Ineffective Flow Station is within the channel. The Right Ineffective Flow Station of $ineffstar$ is less than the RightBankSta of $bankstar$. The Right Ineffective Flow Station or the RightBankSta should be adjusted.	206.51	
XS SW 01DK	The name of the stream is $streamname$. The flow regime is subcritical or mixed flow. Starting WSEL is computed from Known WSEL as the downstream boundary for $Assigned_Name$ flood. Provide backup information on Known WSEL or use energy slope as the downstream boundary.	199.82	

APPENDIX D

PRE-PROJECT MODEL

HEC-RAS Plan: PrePrj River: 1 Reach: 1

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
1	214.14	PF#1	169000.00	1048.70	1075.50	1062.66	1077.01	0.000804	9.84	17180.80	1312.25	0.36
1	214.14	PF#2	169000.00	1048.70	1075.51	1062.66	1077.01	0.000803	9.83	17184.70	726.86	0.36
1	214.04	PF#1	169000.00	1048.80	1075.04	1062.64	1076.58	0.000846	9.95	16977.37	813.60	0.36
1	214.04	PF#2	169000.00	1048.80	1075.05	1062.64	1076.59	0.000845	9.95	16981.74	733.89	0.36
1	213.95	PF#1	169000.00	1049.30	1074.16	1063.67	1076.05	0.001218	11.04	15307.03	777.39	0.43
1	213.95	PF#2	169000.00	1049.30	1074.16	1063.67	1076.05	0.001216	11.04	15312.30	745.19	0.43
1	213.85	PF#1	169000.00	1048.10	1071.66	1065.14	1075.08	0.002230	14.98	11764.97	1017.61	0.58
1	213.85	PF#2	169000.00	1048.10	1071.66	1065.14	1075.09	0.002229	14.98	11769.17	702.59	0.58
1	213.75	PF#1	169000.00	1044.60	1071.97	1060.91	1073.93	0.000919	11.25	15022.38	656.45	0.41
1	213.75	PF#2	169000.00	1044.60	1071.98	1060.91	1073.94	0.000918	11.25	15027.59	656.35	0.41
1	213.745		Bridge									
1	213.74	PF#1	169000.00	1044.60	1071.66	1060.91	1073.68	0.000958	11.40	14818.54	654.76	0.42
1	213.74	PF#2	169000.00	1044.60	1071.67	1060.91	1073.69	0.000957	11.40	14824.14	654.73	0.42
1	213.66	PF#1	169000.00	1047.60	1069.25	1063.62	1072.99	0.002199	15.51	10898.87	586.13	0.62
1	213.66	PF#2	169000.00	1047.60	1069.27	1063.62	1073.00	0.002194	15.50	10906.54	565.99	0.62
1	213.57	PF#1	169000.00	1046.70	1069.19	1063.09	1071.61	0.001831	12.49	13535.50	1275.07	0.55
1	213.57	PF#2	169000.00	1046.70	1069.20	1063.09	1071.62	0.001827	12.47	13548.50	852.16	0.55
1	213.47	PF#1	169000.00	1045.80	1068.60	1061.42	1070.60	0.001694	11.35	14886.18	1423.99	0.52
1	213.47	PF#2	169000.00	1045.80	1068.62	1061.42	1070.62	0.001691	11.34	14903.41	1023.12	0.52
1	213.38	PF#1	169000.00	1045.40	1068.60	1059.33	1069.81	0.000809	8.83	19139.19	1251.70	0.37
1	213.38	PF#2	169000.00	1045.40	1068.61	1059.33	1069.82	0.000810	8.82	19155.46	1101.75	0.37
1	213.33	PF#1	169000.00	1045.40	1068.57	1057.70	1069.53	0.000606	7.87	21480.53	1371.95	0.33
1	213.33	PF#2	169000.00	1045.40	1068.58	1057.70	1069.54	0.000608	7.86	21496.88	1185.62	0.33
1	213.26	PF#1	169000.00	1040.40	1068.16	1055.61	1069.32	0.000568	8.67	19493.06	881.25	0.32
1	213.26	PF#2	169000.00	1040.40	1068.17	1055.61	1069.34	0.000567	8.66	19505.00	881.21	0.32
1	213.255		Bridge									
1	213.25	PF#1	169000.00	1040.40	1067.95	1055.61	1069.14	0.000585	8.75	19310.29	880.24	0.33
1	213.25	PF#2	169000.00	1040.40	1067.96	1055.61	1069.15	0.000584	8.75	19322.64	880.24	0.33
1	213.21	PF#1	166000.00	1044.90	1067.99	1055.88	1069.03	0.000510	8.17	20359.04	1540.81	0.31
1	213.21	PF#2	166000.00	1044.90	1068.00	1055.88	1069.04	0.000528	8.17	20314.90	928.20	0.31
1	213.11	PF#1	166000.00	1047.60	1067.16	1058.35	1068.63	0.000913	9.73	17066.41	927.80	0.40
1	213.11	PF#2	166000.00	1047.60	1067.16	1058.35	1068.63	0.000912	9.72	17071.96	927.79	0.40
1	213.03	PF#1	166000.00	1046.70	1066.57	1058.30	1068.17	0.001032	10.14	16391.46	965.60	0.42
1	213.03	PF#2	166000.00	1046.70	1066.58	1058.30	1068.17	0.001031	10.13	16382.57	919.76	0.42
1	212.93	PF#1	166000.00	1045.40	1065.48	1058.04	1067.55	0.001316	11.53	14401.99	850.17	0.48
1	212.93	PF#2	166000.00	1045.40	1065.49	1058.04	1067.55	0.001314	11.52	14408.72	798.99	0.48
1	212.84	PF#1	166000.00	1043.10	1063.54	1057.57	1066.65	0.001930	14.14	11737.26	635.75	0.58
1	212.84	PF#2	166000.00	1043.10	1063.56	1057.57	1066.66	0.001926	14.13	11744.94	635.75	0.58
1	212.74	PF#1	166000.00	1041.60	1063.06	1055.53	1065.57	0.001465	12.71	13064.60	721.72	0.51
1	212.74	PF#2	166000.00	1041.60	1063.08	1055.53	1065.58	0.001462	12.70	13073.93	676.59	0.51
1	212.68	PF#1	166000.00	1036.90	1063.02	1052.69	1065.16	0.001030	11.74	14139.83	629.02	0.44
1	212.68	PF#2	166000.00	1036.90	1063.04	1052.69	1065.17	0.001028	11.73	14148.58	629.03	0.44
1	212.675		Bridge									
1	212.67	PF#1	166000.00	1036.90	1062.53	1052.69	1064.77	0.001102	12.00	13830.37	626.50	0.45
1	212.67	PF#2	166000.00	1036.90	1062.54	1052.69	1064.77	0.001101	12.00	13834.12	626.51	0.45
1	212.56	PF#1	166000.00	1039.30	1056.88	1055.74	1063.23	0.004887	20.23	8207.45	521.49	0.90
1	212.56	PF#2	166000.00	1039.30	1056.98	1055.74	1063.25	0.004781	20.09	8264.06	521.09	0.89
1	212.46	PF#1	166000.00	1037.20	1056.23	1052.77	1060.78	0.003034	17.11	9703.74	1555.15	0.72
1	212.46	PF#2	166000.00	1037.20	1056.29	1052.77	1060.80	0.003114	17.05	9738.24	557.66	0.72

HEC-RAS Plan: PrePrj River: 1 Reach: 1 (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
1	212.37	PF#1	166000.00	1036.60	1053.09	1051.73	1058.81	0.004662	19.19	8648.72	573.57	0.87
1	212.37	PF#2	166000.00	1036.60	1053.09	1051.73	1058.81	0.004657	19.19	8651.87	573.59	0.87
1	212.27	PF#1	166000.00	1035.10	1050.67	1049.57	1056.35	0.005236	19.12	8681.71	2800.97	0.89
1	212.27	PF#2	166000.00	1035.10	1050.67	1049.57	1056.35	0.005237	19.12	8681.12	605.47	0.89
1	212.18	PF#1	166000.00	1030.80	1050.25	1045.89	1053.95	0.002692	15.42	10762.00	2340.53	0.66
1	212.18	PF#2	166000.00	1030.80	1050.25	1045.89	1053.94	0.002692	15.43	10761.62	627.48	0.66
1	212.08	PF#1	166000.00	1025.90	1050.04	1041.45	1052.67	0.001415	13.00	12773.79	2180.71	0.49
1	212.08	PF#2	166000.00	1025.90	1050.05	1041.45	1052.67	0.001415	12.99	12774.66	589.61	0.49
1	211.99	PF#1	166000.00	1025.39	1048.55	1041.17	1051.77	0.001822	14.40	11524.16	1310.27	0.55
1	211.99	PF#2	166000.00	1025.39	1048.55	1041.17	1051.78	0.001822	14.40	11525.23	549.11	0.55
1	211.89	PF#1	166000.00	1024.19	1047.93	1039.97	1050.85	0.001600	13.70	12113.28	564.71	0.52
1	211.89	PF#2	166000.00	1024.19	1047.93	1039.97	1050.85	0.001600	13.70	12114.32	564.72	0.52
1	211.79	PF#1	166000.00	1023.84	1047.07	1039.27	1050.00	0.001620	13.72	12095.82	1185.33	0.52
1	211.79	PF#2	166000.00	1023.84	1047.08	1039.27	1050.00	0.001619	13.72	12097.07	567.51	0.52
1	211.71	PF#1	166000.00	1023.19	1046.34	1038.56	1049.27	0.001623	13.72	12101.39	635.05	0.52
1	211.71	PF#2	166000.00	1023.19	1046.35	1038.56	1049.27	0.001622	13.72	12102.92	569.02	0.52
1	211.64	PF#1	166000.00	1022.58	1045.45	1038.24	1048.58	0.001783	14.19	11700.25	828.77	0.55
1	211.64	PF#2	166000.00	1022.58	1045.46	1038.24	1048.58	0.001782	14.19	11701.96	561.65	0.55
1	211.54	PF#1	166000.00	1021.90	1043.47	1038.07	1047.45	0.002293	15.99	10380.21	525.33	0.63
1	211.54	PF#2	166000.00	1021.90	1043.48	1038.07	1047.45	0.002291	15.99	10382.84	525.34	0.63
1	211.525		Bridge									
1	211.51	PF#1	166000.00	1021.80	1041.77	1037.98	1046.46	0.002980	17.37	9557.39	520.99	0.71
1	211.51	PF#2	166000.00	1021.80	1041.78	1037.98	1046.46	0.002975	17.36	9562.67	521.02	0.71
1	211.41	PF#1	166000.00	1018.30	1041.28		1044.73	0.001987	14.89	11147.43	565.09	0.59
1	211.41	PF#2	166000.00	1018.30	1041.30		1044.74	0.001984	14.88	11154.11	565.16	0.59
1	211.31	PF#1	166000.00	1020.80	1039.90	1037.24	1043.44	0.003366	15.11	10988.09	819.03	0.73
1	211.31	PF#2	166000.00	1020.80	1039.93	1037.24	1043.46	0.003343	15.07	11012.49	819.24	0.72
1	211.21	PF#1	166000.00	1021.10	1039.00	1035.55	1041.62	0.002619	12.98	12792.40	987.74	0.64
1	211.21	PF#2	166000.00	1021.10	1039.05	1035.55	1041.64	0.002589	12.93	12838.46	987.93	0.63
1	211.12	PF#1	166000.00	1015.70	1039.46	1029.88	1040.57	0.000691	8.47	19593.40	1059.20	0.35
1	211.12	PF#2	166000.00	1015.70	1039.50	1029.88	1040.61	0.000686	8.45	19638.26	1059.34	0.35
1	211.02	PF#1	166000.00	1019.40	1037.87	1032.11	1039.96	0.001614	11.65	14595.42	1082.12	0.52
1	211.02	PF#2	166000.00	1019.40	1037.86	1032.11	1039.99	0.001636	11.73	14253.05	945.86	0.52
1	210.93	PF#1	166000.00	1018.70	1037.32	1034.18	1039.03	0.001711	11.09	17850.32	2652.71	0.52
1	210.93	PF#2	166000.00	1018.70	1037.34	1034.18	1039.04	0.001701	11.07	17892.91	2037.06	0.52
1	210.83	PF#1	166000.00	1019.10	1036.08	1032.21	1038.08	0.001945	11.75	16606.27	2245.35	0.55
1	210.83	PF#2	166000.00	1019.10	1036.08	1032.20	1038.09	0.001949	11.76	16550.71	2196.33	0.56
1	210.74	PF#1	166000.00	1018.20	1035.65	1029.79	1037.15	0.001241	10.08	17706.73	1394.30	0.45
1	210.74	PF#2	166000.00	1018.20	1035.66	1029.79	1037.16	0.001236	10.07	17730.05	1394.43	0.45
1	210.64	PF#1	166000.00	1017.70	1035.03	1029.03	1036.51	0.001265	9.99	18879.26	2977.70	0.45
1	210.64	PF#2	166000.00	1017.70	1035.05	1029.03	1036.53	0.001258	9.97	18930.01	2362.22	0.45
1	210.55	PF#1	166000.00	1018.00	1034.00	1028.55	1035.76	0.001590	10.64	15683.73	1809.09	0.50
1	210.55	PF#2	166000.00	1018.00	1034.02	1028.55	1035.78	0.001582	10.62	15658.21	1401.75	0.50
1	210.46	PF#1	166000.00	1016.30	1034.53	1025.05	1035.02	0.000443	5.63	29458.93	2040.48	0.25
1	210.46	PF#2	166000.00	1016.30	1034.55	1025.05	1035.04	0.000447	5.63	29495.45	1881.55	0.25
1	210.36	PF#1	166000.00	1017.40	1033.85	1027.55	1034.67	0.000894	7.24	22914.04	1900.01	0.37
1	210.36	PF#2	166000.00	1017.40	1033.87	1027.55	1034.69	0.000889	7.23	22952.31	1900.09	0.37
1	210.26	PF#1	166000.00	1016.90	1033.53	1026.47	1034.23	0.000770	6.68	24846.37	1932.32	0.33
1	210.26	PF#2	166000.00	1016.90	1033.56	1026.47	1034.25	0.000766	6.67	24889.07	1932.44	0.33
1	210.17	PF#1	166000.00	1014.70	1032.78	1027.95	1033.71	0.001212	7.77	21357.62	2172.37	0.42

HEC-RAS Plan: PrePrj River: 1 Reach: 1 (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
1	210.17	PF#2	166000.00	1014.70	1032.80	1027.95	1033.74	0.001203	7.75	21412.63	1968.14	0.41
1	210.07	PF#1	166000.00	1009.00	1032.65	1024.08	1033.20	0.000560	5.87	28476.46	2455.50	0.26
1	210.07	PF#2	166000.00	1009.00	1032.67	1023.80	1033.22	0.000583	5.99	28155.72	2015.00	0.27
1	209.98	PF#1	166000.00	999.33	1032.58	1020.16	1032.98	0.000253	5.36	33591.25	1907.28	0.21
1	209.98	PF#2	166000.00	999.33	1032.57	1019.84	1032.99	0.000264	5.48	32703.40	1833.89	0.22
1	209.88	PF#1	166000.00	997.69	1032.30	1018.95	1032.83	0.000280	6.22	29912.03	1598.70	0.23
1	209.88	PF#2	166000.00	997.69	1032.31	1018.95	1032.85	0.000283	6.25	29718.88	1572.44	0.23
1	209.79	PF#1	166000.00	1002.93	1032.25	1018.56	1032.66	0.000264	5.58	32664.73	2127.00	0.22
1	209.79	PF#2	166000.00	1002.93	1032.25	1018.56	1032.68	0.000267	5.61	32462.59	1764.36	0.22
1	209.69	PF#1	166000.00	1004.31	1031.55	1021.24	1032.41	0.000717	7.09	22376.16	1884.95	0.34
1	209.69	PF#2	166000.00	1004.31	1031.55	1021.24	1032.42	0.000721	7.11	22238.57	1409.29	0.34
1	209.60	PF#1	166000.00	1004.15	1030.45	1024.57	1031.81	0.001456	9.48	17877.49	2237.97	0.48
1	209.60	PF#2	166000.00	1004.15	1030.45	1024.59	1031.82	0.001467	9.51	17875.76	1583.08	0.49
1	209.54	PF#1	166000.00	1004.27	1030.22	1021.90	1031.46	0.000859	8.94	18578.12	1096.44	0.38
1	209.54	PF#2	166000.00	1004.27	1030.22	1021.90	1031.46	0.000858	8.93	18583.07	1096.45	0.38
1	209.535		Bridge									
1	209.53	PF#1	166000.00	1004.27	1029.88	1021.90	1031.17	0.000917	9.12	18206.70	1095.63	0.39
1	209.53	PF#2	166000.00	1004.27	1029.89	1021.90	1031.18	0.000917	9.11	18212.18	1095.66	0.39
1	209.42	PF#1	166000.00	998.44	1028.88	1023.49	1030.40	0.001432	9.87	16825.82	1341.42	0.48
1	209.42	PF#2	166000.00	998.44	1028.89	1023.49	1030.40	0.001430	9.86	16834.28	1258.70	0.48
1	209.33	PF#1	166000.00	993.71	1028.74	1019.30	1029.68	0.000900	7.81	21284.99	1846.30	0.38
1	209.33	PF#2	166000.00	993.71	1028.74	1019.30	1029.69	0.000898	7.80	21271.72	1587.64	0.38
1	209.24	PF#1	166000.00	1003.00	1027.66	1023.98	1029.02	0.001727	7.87	18342.27	3253.82	0.49
1	209.24	PF#2	166000.00	1003.00	1027.66	1023.97	1029.02	0.001733	7.96	18240.73	1837.89	0.49
1	209.14	PF#1	166000.00	1002.87	1026.70	1023.37	1028.02	0.002091	8.19	18285.82	2920.82	0.52
1	209.14	PF#2	166000.00	1002.87	1026.70	1023.39	1028.02	0.002095	8.30	18193.59	2015.26	0.52
1	209.04	PF#1	166000.00	1007.02	1026.13	1021.52	1027.00	0.001480	7.61	22158.26	2879.85	0.45
1	209.04	PF#2	166000.00	1007.02	1026.13	1021.52	1027.00	0.001472	7.67	22144.93	2229.48	0.44
1	208.95	PF#1	166000.00	997.33	1025.58	1018.20	1026.45	0.000834	7.48	22428.03	2457.28	0.36
1	208.95	PF#2	166000.00	997.33	1025.59	1018.20	1026.45	0.000833	7.47	22427.83	1796.50	0.36
1	208.85	PF#1	166000.00	998.88	1024.64	1020.18	1025.84	0.001533	8.85	19077.56	2503.80	0.47
1	208.85	PF#2	166000.00	998.88	1024.64	1020.18	1025.85	0.001530	8.84	19088.28	1908.84	0.47
1	208.75	PF#1	166000.00	1000.44	1024.13	1017.95	1025.18	0.001099	8.25	20164.69	2367.21	0.43
1	208.75	PF#2	166000.00	1000.44	1024.13	1017.95	1025.19	0.001097	8.24	20138.36	1732.32	0.43
1	208.67	PF#1	166000.00	1003.03	1022.72	1019.09	1024.33	0.001934	10.26	16624.84	2041.05	0.54
1	208.67	PF#2	166000.00	1003.03	1022.74	1019.09	1024.33	0.001927	10.25	16642.84	1612.41	0.54
1	208.57	PF#1	166000.00	1002.61	1020.24	1018.75	1023.00	0.004009	13.35	12466.15	1408.38	0.77
1	208.57	PF#2	166000.00	1002.61	1020.26	1018.75	1023.02	0.003991	13.33	12454.02	1338.18	0.77
1	208.48	PF#1	166000.00	998.70	1019.72	1016.90	1020.98	0.002203	9.01	18422.12	2180.58	0.55
1	208.48	PF#2	166000.00	998.70	1019.76	1016.90	1021.01	0.002170	8.97	18507.30	2180.73	0.54
1	208.39	PF#1	166000.00	998.71	1018.82	1015.82	1020.02	0.002140	8.79	18883.54	2250.69	0.53
1	208.39	PF#2	166000.00	998.71	1018.88	1015.82	1020.06	0.002091	8.73	19021.24	2250.88	0.53
1	208.29	PF#1	166000.00	1002.85	1017.69	1014.81	1018.90	0.002223	8.84	18779.90	2317.98	0.55
1	208.29	PF#2	166000.00	1002.85	1017.80	1014.81	1018.98	0.002120	8.71	19050.08	2318.35	0.53
1	208.19	PF#1	166000.00	1001.01	1016.79	1013.53	1017.78	0.001820	7.99	20773.45	2551.03	0.49
1	208.19	PF#2	166000.00	1001.01	1016.97	1013.53	1017.92	0.001707	7.82	21234.29	2569.70	0.48
1	208.10	PF#1	166000.00	999.34	1015.84	1012.70	1016.86	0.001770	8.40	21147.31	2881.28	0.50
1	208.10	PF#2	166000.00	999.34	1016.14	1012.70	1017.08	0.001567	8.07	21987.09	2828.05	0.47
1	207.99	PF#1	166000.00	996.98	1014.47	1012.00	1015.86	0.002225	9.93	18378.98	2515.81	0.56
1	207.99	PF#2	166000.00	996.98	1014.96	1011.99	1016.22	0.001888	9.43	19331.60	2625.91	0.52

HEC-RAS Plan: PrePrj River: 1 Reach: 1 (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
1	207.90	PF#1	166000.00	991.51	1013.80	1010.85	1014.78	0.001712	8.45	21576.79	2939.43	0.49
1	207.90	PF#2	166000.00	991.51	1014.50	1010.85	1015.31	0.001298	7.72	23691.96	3027.09	0.43
1	207.80	PF#1	166000.00	992.47	1012.20	1009.50	1013.72	0.001991	10.67	18139.69	2392.33	0.55
1	207.80	PF#2	166000.00	992.47	1012.87	1009.36	1014.41	0.001831	10.57	17859.34	2093.65	0.53
1	207.71	PF#1	166000.00	992.51	1010.85	1008.26	1012.65	0.002160	11.50	16829.93	2123.01	0.58
1	207.71	PF#2	166000.00	992.51	1011.35	1008.53	1013.36	0.002192	11.87	15809.92	1893.38	0.59
1	207.62	PF#1	166000.00	990.12	1010.08	1007.03	1011.66	0.001607	11.08	17810.53	1910.23	0.51
1	207.62	PF#2	166000.00	990.12	1010.13	1007.20	1012.30	0.002037	12.51	15031.07	1445.04	0.58
1	207.49	PF#1	166000.00	984.35	1009.47	1005.22	1010.82	0.001637	9.34	17780.93	2019.02	0.49
1	207.49	PF#2	166000.00	984.35	1009.99	1005.22	1011.22	0.001409	8.92	18613.58	1662.02	0.46
1	207.485		Bridge									
1	207.48	PF#1	166000.00	984.35	1008.38	1005.22	1010.05	0.002291	10.34	16048.44	1589.81	0.57
1	207.48	PF#2	166000.00	984.35	1009.15	1005.22	1010.59	0.001802	9.61	17270.43	1595.23	0.51
1	207.43	PF#1	166000.00	983.56	1007.86	1004.49	1009.50	0.002218	10.29	16190.36	1661.32	0.56
1	207.43	PF#2	166000.00	983.56	1008.76	1004.49	1010.15	0.001689	9.47	17531.08	1569.25	0.50
1	207.34	PF#1	166000.00	983.49	1007.56	1000.99	1008.62	0.000950	8.28	20214.86	1590.24	0.39
1	207.34	PF#2	166000.00	983.49	1008.50	1000.97	1009.46	0.000787	7.83	21192.27	1422.38	0.36
1	207.27	PF#1	166000.00	982.68	1007.15	997.48	1008.22	0.000665	8.35	20670.33	1456.46	0.34
1	207.27	PF#2	166000.00	982.68	1008.10	997.48	1009.11	0.000584	8.06	20594.82	1047.97	0.32
1	207.16	PF#1	166000.00	969.66	1007.51	986.51	1007.86	0.000127	4.91	37553.66	2625.42	0.16
1	207.16	PF#2	166000.00	969.66	1008.40	986.51	1008.78	0.000126	4.98	33336.06	1107.07	0.16
1	207.07	PF#1	166000.00	992.80	1004.30	1004.30	1007.37	0.005291	15.06	12691.58	2119.64	0.86
1	207.07	PF#2	166000.00	992.80	1004.74	1004.74	1008.25	0.005421	15.68	11729.38	1710.76	0.88
1	206.97	PF#1	166000.00	981.70	1003.73	995.22	1004.80	0.000773	8.53	21352.72	2153.02	0.36
1	206.97	PF#2	166000.00	981.70	1004.63	995.22	1005.77	0.000760	8.62	19950.61	1567.65	0.36
1	206.88	PF#1	166000.00	981.80	1003.59	993.27	1004.41	0.000528	7.55	24354.63	2551.42	0.31
1	206.88	PF#2	166000.00	981.80	1004.48	993.27	1005.39	0.000533	7.71	22622.40	1800.87	0.31
1	206.79	PF#1	166000.00	981.80	1003.43	992.85	1004.13	0.000488	6.93	26343.92	3026.52	0.29
1	206.79	PF#2	166000.00	981.80	1004.34	992.85	1005.10	0.000478	7.08	24760.10	1934.31	0.29
1	206.7	PF#1	166000.00	981.80	1003.32	994.04	1003.85	0.000441	6.03	29831.77	3518.68	0.27
1	206.7	PF#2	166000.00	981.80	1004.25	994.03	1004.82	0.000429	6.14	27986.51	2093.13	0.27
1	206.6	PF#1	166000.00	981.80	1002.90	996.86	1003.56	0.000710	6.91	26877.21	3305.80	0.33
1	206.6	PF#2	166000.00	981.80	1003.79	996.68	1004.54	0.000695	7.14	24927.56	2185.35	0.33
1	206.51	PF#1	166000.00	981.80	1002.02	998.52	1003.04	0.001348	8.99	22111.07	4076.34	0.45
1	206.51	PF#2	166000.00	981.80	1002.84	999.19	1004.02	0.001341	9.36	20116.29	2060.75	0.46
1	206.41	PF#1	166000.00	982.50	1001.41	997.88	1002.32	0.001436	8.71	23370.94	3862.05	0.46
1	206.41	PF#2	166000.00	982.50	1002.21	998.36	1003.30	0.001435	9.12	20569.79	2190.50	0.47
1	206.32	PF#1	166000.00	982.80	1000.76	997.04	1001.56	0.001495	8.05	24553.57	3961.10	0.46
1	206.32	PF#2	166000.00	982.80	1001.56	997.90	1002.55	0.001498	8.50	21191.37	2377.93	0.47
1	206.22	PF#1	166000.00	983.00	999.83	996.53	1000.70	0.001855	8.54	24922.29	3819.75	0.52
1	206.22	PF#2	166000.00	983.00	1000.69	996.71	1001.72	0.001734	8.70	21235.98	2441.76	0.51
1	206.13	PF#1	166000.00	984.60	998.84		999.71	0.002097	8.44	24241.50	3610.69	0.52
1	206.13	PF#2	166000.00	984.60	999.43		1000.65	0.002540	9.44	19323.64	2386.31	0.57
1	206.03	PF#1	166000.00	984.50	997.19	995.40	998.47	0.002920	10.04	20468.71	3627.33	0.61
1	206.03	PF#2	166000.00	984.50	997.37	995.41	999.15	0.003548	11.22	16111.43	2131.13	0.67
1	205.94	PF#1	166000.00	981.00	996.28	992.36	997.17	0.001782	8.09	23804.66	3972.87	0.48
1	205.94	PF#2	166000.00	981.00	996.85	992.30	997.71	0.001519	7.77	22932.47	2567.00	0.45
1	205.84	PF#1	166000.00	979.50	995.78	991.10	996.43	0.001006	6.80	27802.52	3933.88	0.38
1	205.84	PF#2	166000.00	979.50	996.39	991.10	997.06	0.000928	6.78	25656.61	2435.70	0.36

HEC-RAS Plan: PrePrj River: 1 Reach: 1 (Continued)

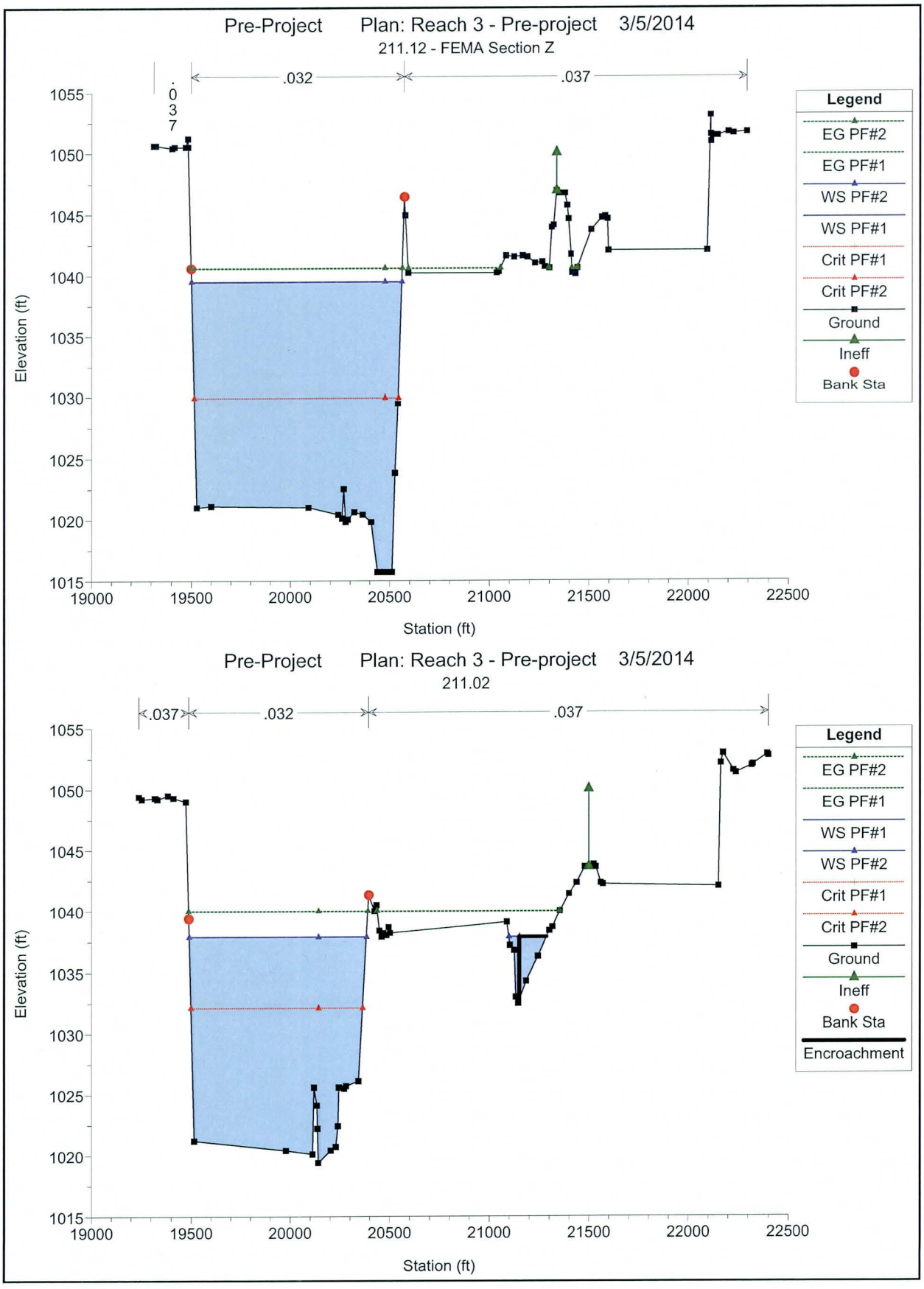
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
1	205.75	PF#1	166000.00	973.90	995.10	989.59	995.78	0.001766	6.71	25677.88	3323.88	0.37
1	205.75	PF#2	166000.00	973.90	995.83	989.59	996.48	0.001497	6.46	25689.01	2402.30	0.35
1	205.62	PF#1	166000.00	976.00	994.55	988.70	995.07	0.000680	5.99	30115.93	4036.33	0.31
1	205.62	PF#2	166000.00	976.00	995.25	988.65	995.85	0.000671	6.18	26877.98	2234.10	0.31
1	205.52	PF#1	166000.00	975.90	994.29	987.07	994.75	0.000496	5.67	33142.45	4244.90	0.28
1	205.52	PF#2	166000.00	975.90	994.95	987.28	995.53	0.000543	6.12	27120.82	2019.90	0.29
1	205.43	PF#1	166000.00	976.10	994.00	986.93	994.50	0.000544	6.04	31497.31	3841.70	0.29
1	205.43	PF#2	166000.00	976.10	994.53	986.96	995.24	0.000647	6.76	24572.11	1842.36	0.33
1	205.4	PF#1	164000.00	975.50	993.99	984.67	994.40	0.000362	5.41	35918.61	4097.72	0.24
1	205.4	PF#2	164000.00	975.50	994.56	984.67	995.10	0.000413	5.90	27793.06	1747.80	0.26
1	205.34	PF#1	164000.00	975.57	993.64	986.68	994.20	0.001005	6.45	29523.90	7348.98	0.30
1	205.34	PF#2	164000.00	975.57	993.98	986.65	994.85	0.001336	7.53	22084.25	1562.96	0.35
1	205.25	PF#1	164000.00	973.40	993.26	985.25	993.82	0.000623	6.64	30541.15	4512.59	0.28
1	205.25	PF#2	164000.00	973.40	993.49	985.17	994.34	0.000817	7.64	22667.86	1482.30	0.32
1	205.15	PF#1	164000.00	973.10	991.76	987.66	993.21	0.002039	10.40	19448.92	3049.25	0.49
1	205.15	PF#2	164000.00	973.10	992.25	987.65	993.69	0.001819	10.06	17454.25	1445.00	0.47
1	205.06	PF#1	164000.00	970.50	990.85	984.95	992.22	0.001875	9.62	18539.62	2210.65	0.47
1	205.06	PF#2	164000.00	970.50	991.36	984.95	992.79	0.001795	9.65	17327.95	1435.30	0.46
1	204.97	PF#1	164000.00	973.30	990.56	984.97	991.30	0.001134	7.35	24818.88	3736.08	0.36
1	204.97	PF#2	164000.00	973.30	990.76	985.05	991.87	0.001485	8.49	19456.31	1516.30	0.42
1	204.87	PF#1	164000.00	968.10	990.19	982.95	990.80	0.000767	6.60	27860.69	3635.74	0.31
1	204.87	PF#2	164000.00	968.10	990.36	982.85	991.20	0.000942	7.37	22408.61	1542.20	0.34
1	204.78	PF#1	164000.00	967.60	990.01	980.93	990.45	0.000477	5.68	31874.74	4837.51	0.25
1	204.78	PF#2	164000.00	967.60	990.13	980.78	990.77	0.000611	6.47	25927.76	1620.43	0.28
1	204.68	PF#1	164000.00	971.40	989.36	982.91	990.10	0.000903	7.28	24862.56	3375.81	0.33
1	204.68	PF#2	164000.00	971.40	989.32	982.81	990.31	0.001151	8.21	20999.24	1586.28	0.38
1	204.61	PF#1	164000.00	972.60	988.59	983.53	989.64	0.001360	8.79	20900.84	7282.60	0.41
1	204.61	PF#2	164000.00	972.60	988.62	983.47	989.78	0.001462	9.12	19540.62	1602.90	0.42
1	204.53	PF#1	164000.00	972.70	987.68	982.99	988.93	0.001814	9.22	18844.19	4061.16	0.46
1	204.53	PF#2	164000.00	972.70	987.68	982.93	989.02	0.001920	9.48	18003.71	1610.90	0.47
1	204.42	PF#1	164000.00	971.40	986.40	982.76	987.76	0.002432	9.40	17715.45	2778.70	0.51
1	204.42	PF#2	164000.00	971.40	986.38	982.73	987.80	0.002533	9.58	17125.44	1653.57	0.52
1	204.34	PF#1	164000.00	969.30	985.28	981.46	986.65	0.002470	9.39	17462.96	2452.20	0.52
1	204.34	PF#2	164000.00	969.30	985.29	981.46	986.65	0.002472	9.39	17473.86	1701.98	0.52
1	204.25	PF#1	164000.00	969.22	980.90	980.90	984.46	0.007742	15.13	10836.44	1993.93	1.00
1	204.25	PF#2	164000.00	969.22	980.90	980.90	984.46	0.007774	15.15	10825.70	1517.10	1.00
1	204.15	PF#1	164000.00	966.00	981.17	975.82	982.09	0.001058	7.72	21240.53	2149.48	0.40
1	204.15	PF#2	164000.00	966.00	981.18	975.82	982.11	0.001059	7.71	21274.74	1831.89	0.40
1	204.05	PF#1	164000.00	965.00	980.27	976.80	981.39	0.001759	8.49	19320.24	2116.76	0.50
1	204.05	PF#2	164000.00	965.00	980.29	976.80	981.41	0.001744	8.47	19370.37	2116.76	0.49
1	203.96	PF#1	164000.00	964.10	977.71	976.71	979.86	0.005220	11.77	13938.52	2225.52	0.80
1	203.96	PF#2	164000.00	964.10	977.98	976.71	979.97	0.004601	11.33	14478.25	2050.76	0.75
1	203.86	PF#1	164000.00	962.30	977.81	971.84	978.53	0.000902	6.82	24032.60	2201.58	0.36
1	203.86	PF#2	164000.00	962.30	978.06	971.84	978.75	0.000838	6.67	24588.96	2191.78	0.35
1	203.77	PF#1	164000.00	963.30	977.43	971.58	978.06	0.000873	6.37	25746.08	2518.55	0.35
1	203.77	PF#2	164000.00	963.30	977.72	971.58	978.32	0.000799	6.19	26474.14	2511.27	0.34
1	203.67	PF#1	164000.00	962.30	976.93	971.59	977.61	0.000940	6.66	25645.87	3648.91	0.37
1	203.67	PF#2	164000.00	962.30	977.23	971.59	977.89	0.000885	6.58	25408.07	2567.43	0.36
1	203.58	PF#1	164000.00	962.10	976.47	971.52	977.14	0.000946	6.64	25339.94	4630.93	0.37
1	203.58	PF#2	164000.00	962.10	976.81	971.52	977.46	0.000858	6.46	25597.97	2676.39	0.36

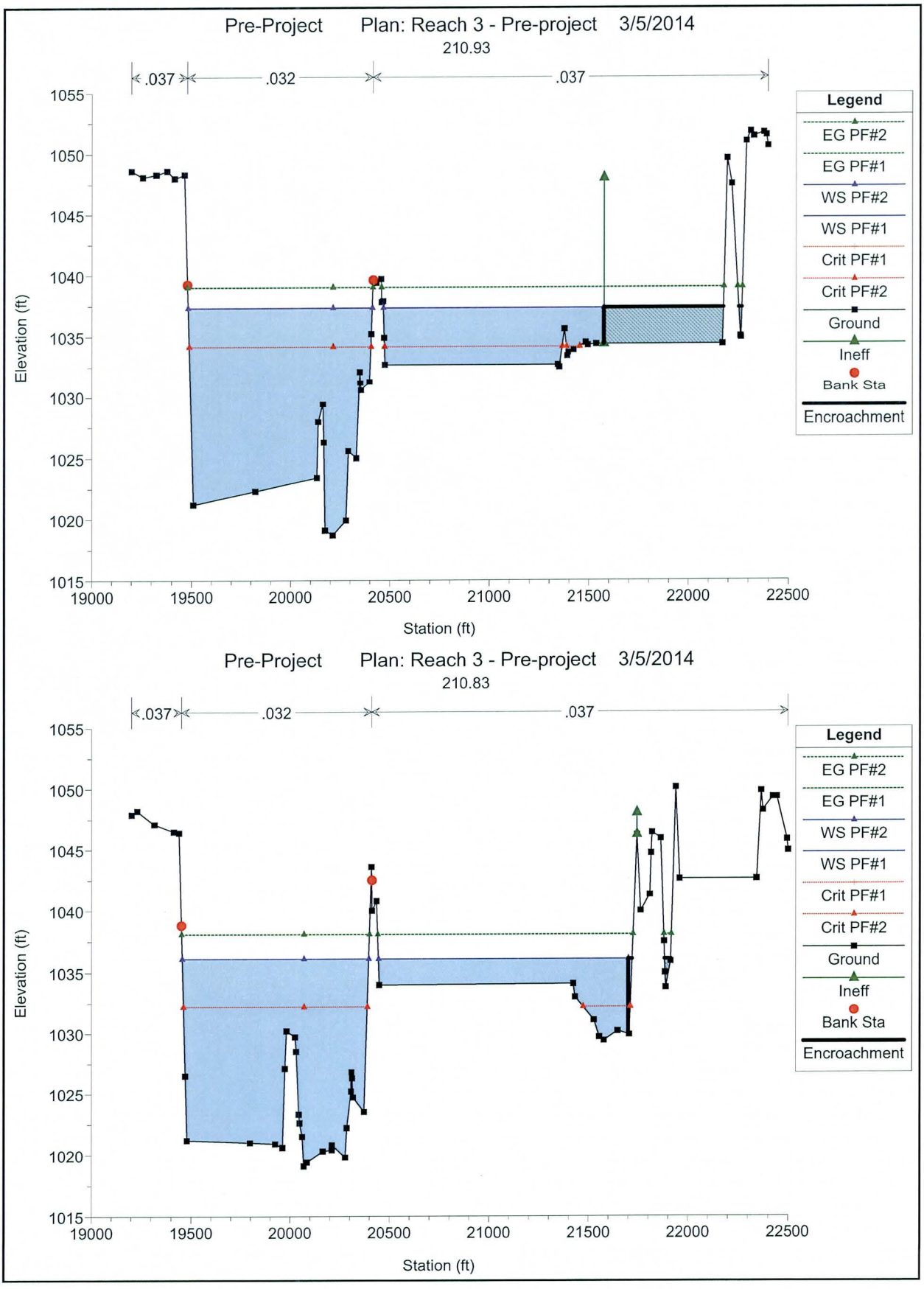
HEC-RAS Plan: PrePrj River: 1 Reach: 1 (Continued)

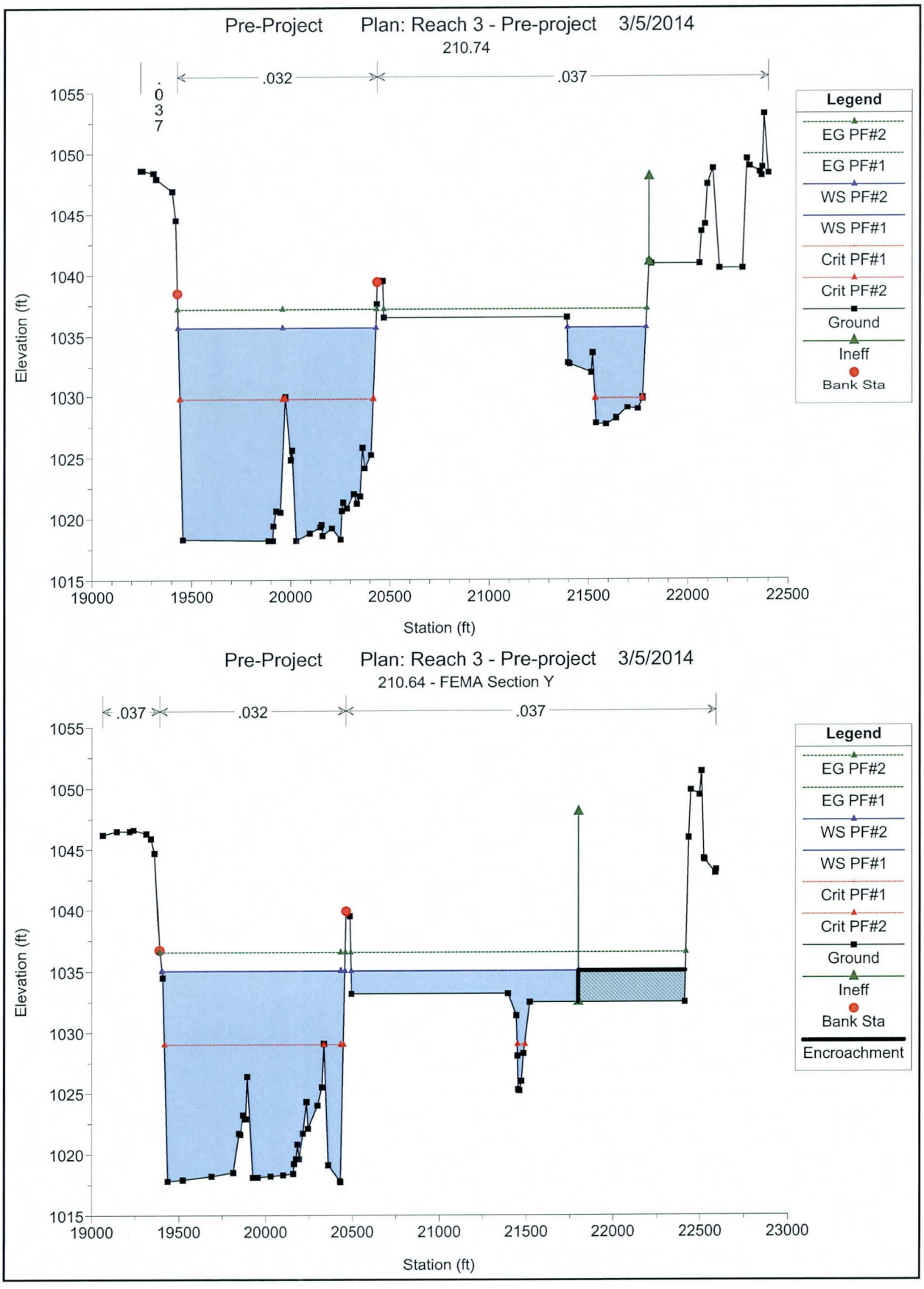
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
1	203.48	PF#1	164000.00	962.20	975.92	972.02	976.58	0.001248	6.66	25617.87	4863.76	0.41
1	203.48	PF#2	164000.00	962.20	976.25	971.97	976.94	0.001196	6.68	24567.98	2911.71	0.40
1	203.39	PF#1	164000.00	959.90	975.23	971.15	975.93	0.001331	6.81	24862.22	4207.73	0.42
1	203.39	PF#2	164000.00	959.90	975.62	971.13	976.32	0.001254	6.69	24520.14	2930.05	0.41
1	203.29	PF#1	164000.00	960.70	974.46	970.77	975.20	0.001572	6.98	24301.95	4967.75	0.45
1	203.29	PF#2	164000.00	960.70	974.88	970.71	975.63	0.001478	6.94	23633.34	3009.26	0.44
1	203.19	PF#1	164000.00	956.70	973.59	970.04	974.28	0.001787	6.81	25046.42	3491.37	0.42
1	203.19	PF#2	164000.00	956.70	973.95	970.04	974.74	0.001849	7.13	23041.46	2689.14	0.43
1	203.09	PF#1	164000.00	958.70	972.42	969.20	973.25	0.002112	7.51	23337.60	3213.89	0.46
1	203.09	PF#2	164000.00	958.70	972.75	968.97	973.69	0.002162	7.79	21163.71	2475.85	0.46
1	202.99	PF#1	164000.00	959.20	971.50	967.56	972.24	0.001726	7.08	24615.47	3260.60	0.42
1	202.99	PF#2	164000.00	959.20	971.87	967.53	972.66	0.001673	7.15	22949.42	2457.50	0.41
1	202.9	PF#1	164000.00	956.50	970.92	966.33	971.52	0.001285	6.37	27288.47	3419.52	0.36
1	202.9	PF#2	164000.00	956.50	971.28	966.26	971.95	0.001315	6.59	24881.82	2511.71	0.37
1	202.8	PF#1	164000.00	956.40	970.32	965.60	970.84	0.001157	5.94	29050.37	3577.40	0.34
1	202.8	PF#2	164000.00	956.40	970.64	965.52	971.25	0.001223	6.25	26258.33	2620.78	0.35
1	202.69	PF#1	164000.00	953.70	969.50	965.26	970.12	0.001416	6.45	27011.89	3716.99	0.37
1	202.69	PF#2	164000.00	953.70	969.79	965.27	970.49	0.001483	6.73	24379.74	2553.41	0.38
1	202.59	PF#1	164000.00	953.70	968.55	964.73	969.23	0.001710	6.76	25201.60	3795.66	0.40
1	202.59	PF#2	164000.00	953.70	968.77	964.70	969.56	0.001832	7.10	23099.99	2606.65	0.42
1	202.48	PF#1	164000.00	952.50	967.66	963.72	968.30	0.001617	6.64	26503.22	3830.22	0.40
1	202.48	PF#2	164000.00	952.50	967.77	963.79	968.54	0.001788	7.04	23415.41	2826.15	0.42
1	202.37	PF#1	164000.00	954.60	966.79	962.99	967.38	0.001487	6.30	27726.06	4026.46	0.39
1	202.37	PF#2	164000.00	954.60	966.82	963.06	967.52	0.001673	6.70	24843.26	3165.40	0.41
1	202.29	PF#1	164000.00	955.50	966.51	961.30	966.88	0.000809	4.90	34227.57	4327.50	0.29
1	202.29	PF#2	164000.00	955.50	966.59	961.30	966.97	0.000812	4.93	33283.39	3605.60	0.29
1	202.18	PF#1	164000.00	950.00	965.70	961.75	966.23	0.001545	5.88	28639.46	4356.15	0.38
1	202.18	PF#2	164000.00	950.00	965.77	961.75	966.31	0.001559	5.94	27619.54	3692.06	0.38
1	202.09	PF#1	164000.00	950.00	964.09	961.98	965.01	0.003848	7.74	21595.00	4052.07	0.57
1	202.09	PF#2	164000.00	950.00	964.16	961.95	965.09	0.003803	7.75	21163.17	3682.20	0.57
1	201.99	PF#1	164000.00	948.70	963.29	958.65	963.87	0.001252	6.13	27234.37	5331.53	0.38
1	201.99	PF#2	164000.00	948.70	963.38	958.65	963.96	0.001241	6.12	26811.01	3219.77	0.37
1	201.9	PF#1	164000.00	947.20	962.94	957.27	963.35	0.000785	5.15	31873.93	5241.60	0.31
1	201.9	PF#2	164000.00	947.20	963.05	957.27	963.45	0.000756	5.08	32284.29	3830.97	0.31
1	201.81	PF#1	164000.00	946.00	962.64	955.84	962.99	0.000619	4.79	34252.18	5916.63	0.28
1	201.81	PF#2	164000.00	946.00	962.75	955.84	963.10	0.000597	4.73	34684.21	3650.46	0.27
1	201.71	PF#1	164000.00	946.00	961.87	958.20	962.46	0.001825	6.22	26658.36	8308.26	0.40
1	201.71	PF#2	164000.00	946.00	961.98	958.20	962.58	0.001807	6.24	26277.08	3415.69	0.40
1	201.62	PF#1	164000.00	945.60	961.15	956.72	961.66	0.001385	5.78	28773.37	7614.80	0.35
1	201.62	PF#2	164000.00	945.60	961.28	956.72	961.80	0.001343	5.74	28552.42	3241.81	0.34
1	201.52	PF#1	164000.00	940.90	960.41	955.39	960.87	0.001854	5.50	30263.04	8984.51	0.33
1	201.52	PF#2	164000.00	940.90	960.53	955.39	961.02	0.001898	5.61	29242.41	3382.85	0.34
1	201.43	PF#1	164000.00	941.30	959.46	954.87	960.01	0.001619	5.99	27972.05	6527.26	0.37
1	201.43	PF#2	164000.00	941.30	959.60	954.87	960.15	0.001604	6.00	27333.81	3288.24	0.37
1	201.33	PF#1	164000.00	943.00	958.44	954.88	959.06	0.002023	6.40	26135.38	5745.33	0.41
1	201.33	PF#2	164000.00	943.00	958.60	954.88	959.23	0.001959	6.36	25785.53	3307.45	0.40
1	201.24	PF#1	164000.00	943.00	957.47	953.61	958.06	0.001852	6.23	26885.37	6935.19	0.40
1	201.24	PF#2	164000.00	943.00	957.66	953.61	958.26	0.001790	6.21	26420.07	3500.08	0.40
1	201.14	PF#1	164000.00	940.40	956.91	952.08	957.32	0.001090	5.20	32069.63	8631.40	0.31
1	201.14	PF#2	164000.00	940.40	957.15	952.08	957.55	0.001017	5.10	32150.13	3680.58	0.30

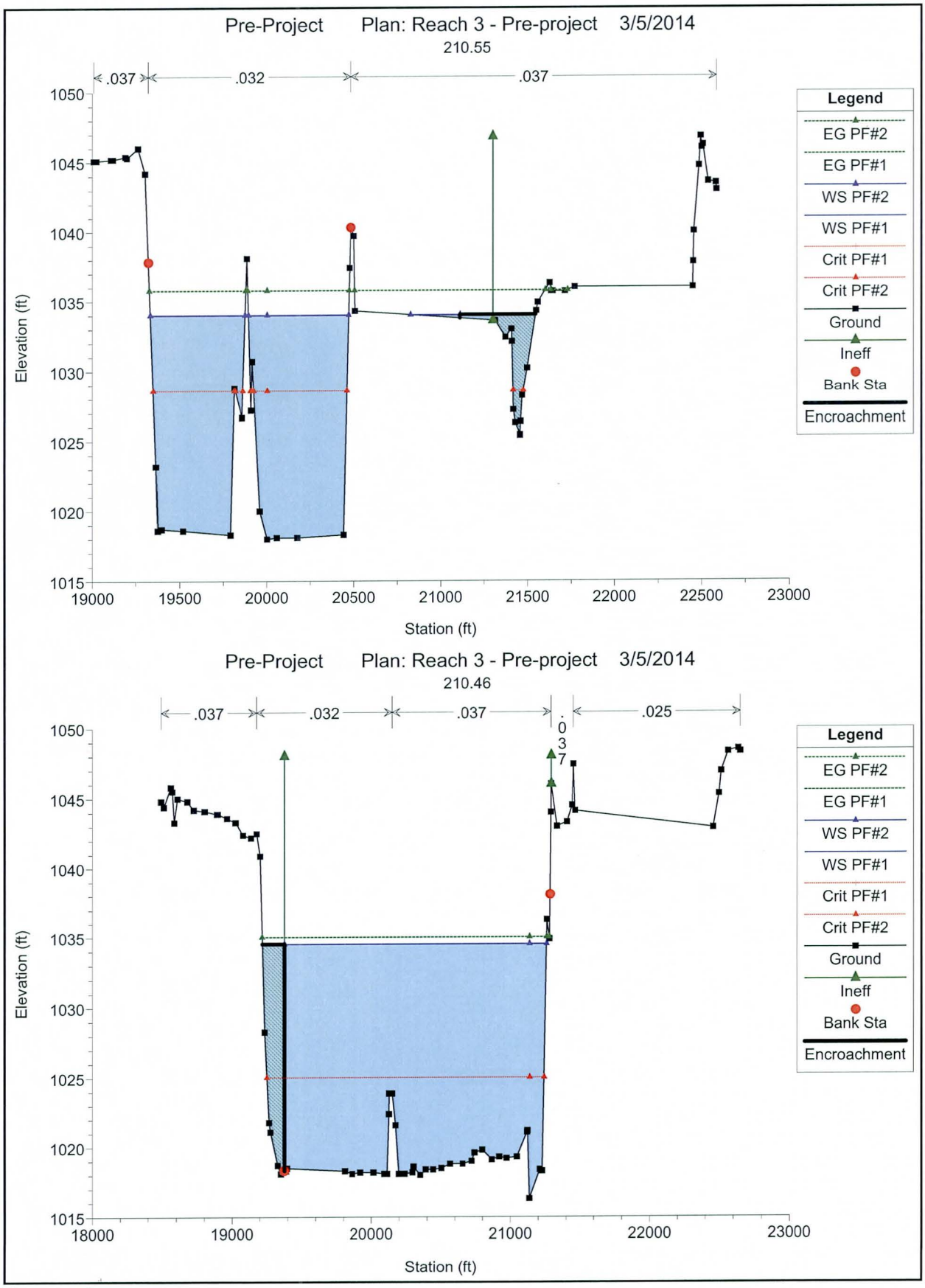
HEC-RAS Plan: PrePrj River: 1 Reach: 1 (Continued)

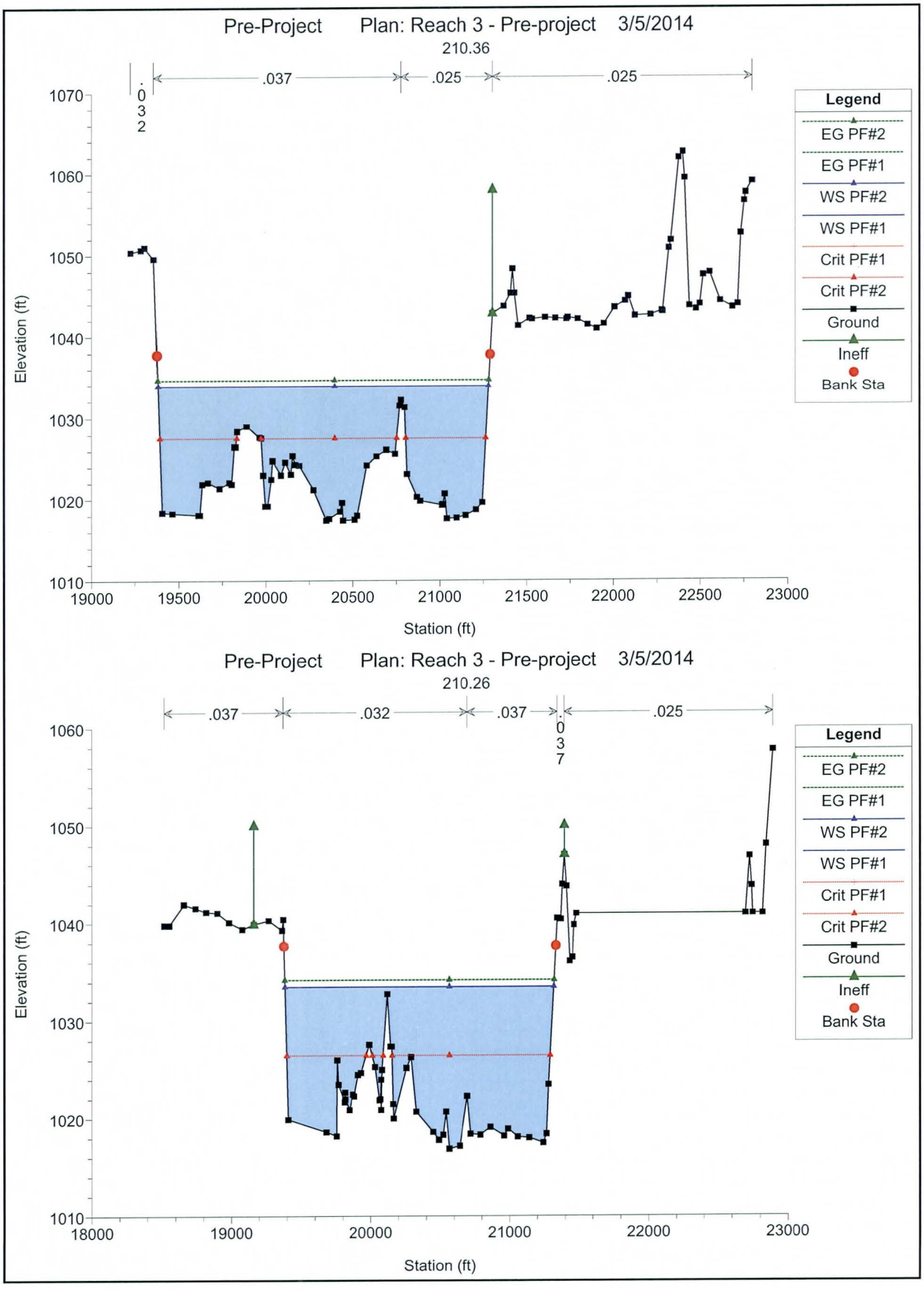
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
1	201.05	PF#1	164000.00	941.50	956.49	950.99	956.80	0.000974	4.50	37110.74	9249.99	0.26
1	201.05	PF#2	164000.00	941.50	956.74	950.99	957.06	0.000928	4.48	36618.90	3898.52	0.26
1	200.95	PF#1	164000.00	939.80	956.09	949.86	956.38	0.000668	4.33	39057.77	10045.40	0.25
1	200.95	PF#2	164000.00	939.80	956.38	949.86	956.66	0.000629	4.27	38407.73	4001.09	0.24
1	200.86	PF#1	164000.00	938.50	955.63	949.69	955.94	0.001346	4.48	37607.95	11080.61	0.27
1	200.86	PF#2	164000.00	938.50	955.94	949.69	956.24	0.001276	4.46	36762.91	4032.00	0.26
1	200.77	PF#1	164000.00	936.90	955.02	949.21	955.35	0.000950	4.62	36841.44	11450.00	0.28
1	200.77	PF#2	164000.00	936.90	955.38	949.21	955.70	0.000875	4.52	36283.61	4122.20	0.27
1	200.67	PF#1	164000.00	939.80	954.42	948.98	954.80	0.001288	4.96	33785.32	10368.40	0.30
1	200.67	PF#2	164000.00	939.80	954.84	948.98	955.20	0.001158	4.82	34281.14	4009.30	0.28
1	200.58	PF#1	164000.00	937.60	953.76	948.30	954.14	0.001313	5.04	33542.10	10091.16	0.30
1	200.58	PF#2	164000.00	937.60	954.23	948.30	954.60	0.001187	4.91	33793.82	3940.00	0.28
1	200.49	PF#1	164000.00	936.90	953.28	946.97	953.59	0.000940	4.59	37370.81	10978.31	0.26
1	200.49	PF#2	164000.00	936.90	953.77	946.97	954.10	0.000893	4.59	36178.30	3791.00	0.25
1	200.39	PF#1	164000.00	937.00	952.89	946.26	953.17	0.000739	4.35	39814.10	11315.74	0.24
1	200.39	PF#2	164000.00	937.00	953.40	946.26	953.70	0.000702	4.37	38317.50	3741.00	0.23
1	200.3	PF#1	179750.00	937.70	952.12	947.18	952.61	0.001603	5.79	36487.07	9118.91	0.34
1	200.3	PF#2	179750.00	937.70	952.73	947.17	953.18	0.001382	5.57	36217.73	3683.53	0.31
1	200.2	PF#1	179750.00	937.00	951.10	946.78	951.67	0.002027	6.37	35619.23	11857.69	0.37
1	200.2	PF#2	179750.00	937.00	951.83	946.78	952.38	0.001732	6.15	34725.75	3629.00	0.35
1	200.1	PF#1	179750.00	934.50	950.19	945.22	950.66	0.001730	5.74	37659.50	11254.10	0.32
1	200.1	PF#2	179750.00	934.50	951.11	945.22	951.53	0.001392	5.36	38392.25	3770.00	0.29
1	200	PF#1	179750.00	933.40	949.74	944.16	950.01	0.000864	4.29	44537.35	11193.60	0.24
1	200	PF#2	179750.00	933.40	950.70	944.15	950.98	0.000792	4.23	42550.11	4100.00	0.23
1	199.91	PF#1	179750.00	932.10	949.39	943.37	949.60	0.000668	3.83	50254.95	10846.61	0.22
1	199.91	PF#2	179750.00	932.10	950.39	943.36	950.61	0.000573	3.75	48102.12	4530.00	0.20
1	199.82	PF#1	179750.00	931.20	948.90	943.28	949.09	0.002007	3.30	51778.97	10752.57	0.19
1	199.82	PF#2	179750.00	931.20	949.90	943.24	950.14	0.002185	3.68	47698.04	4780.00	0.20

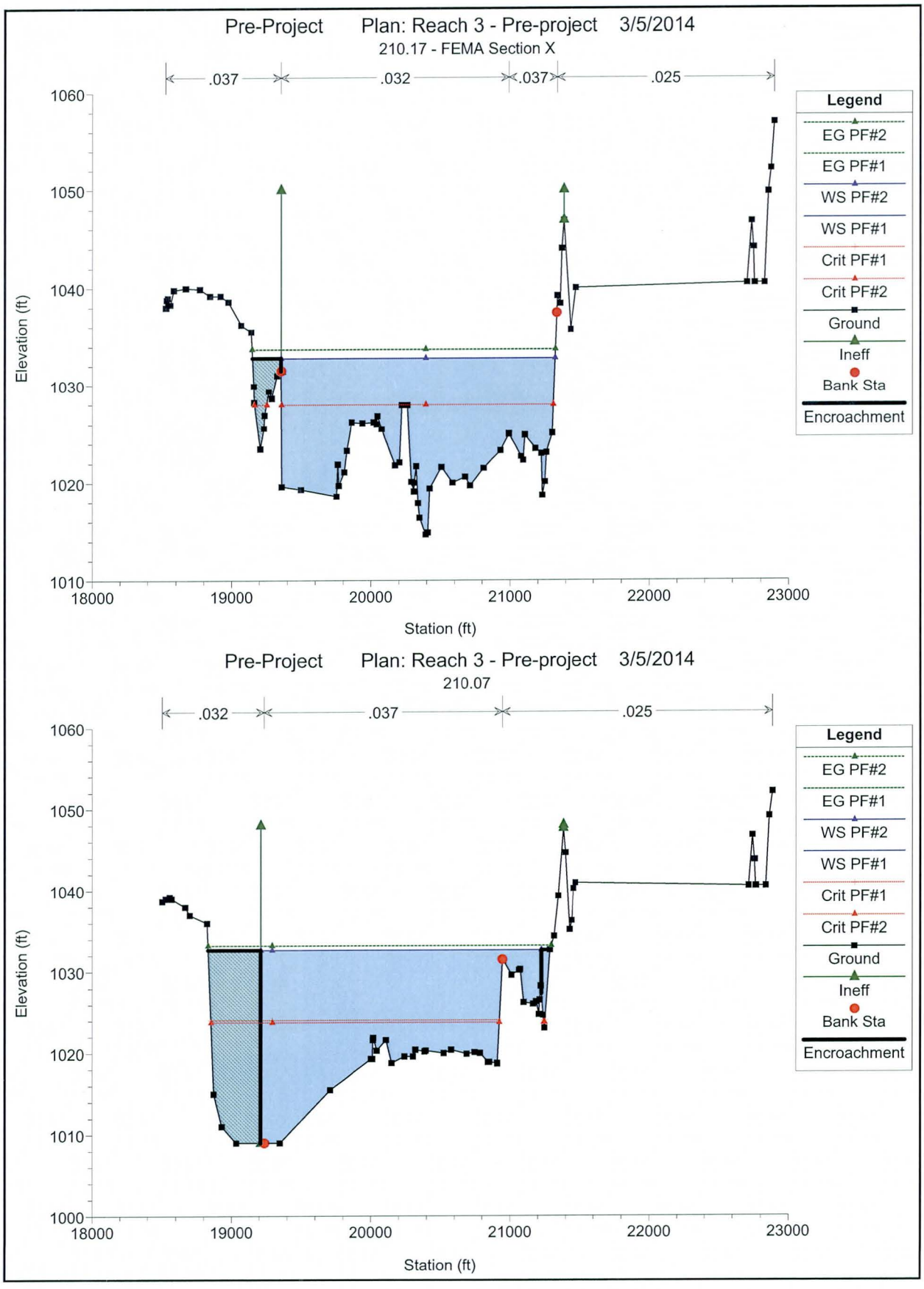

Pre-Project Plan: Reach 3 - Pre-project 3/5/2014
211.12 - FEMA Section Z
.037
.032
.037
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
Pre-Project Plan: Reach 3 - Pre-project 3/5/2014
211.02
.037
.032
.037
Legend
EG PF#2
EG PF#1
WS PF#1
WS PF#2
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

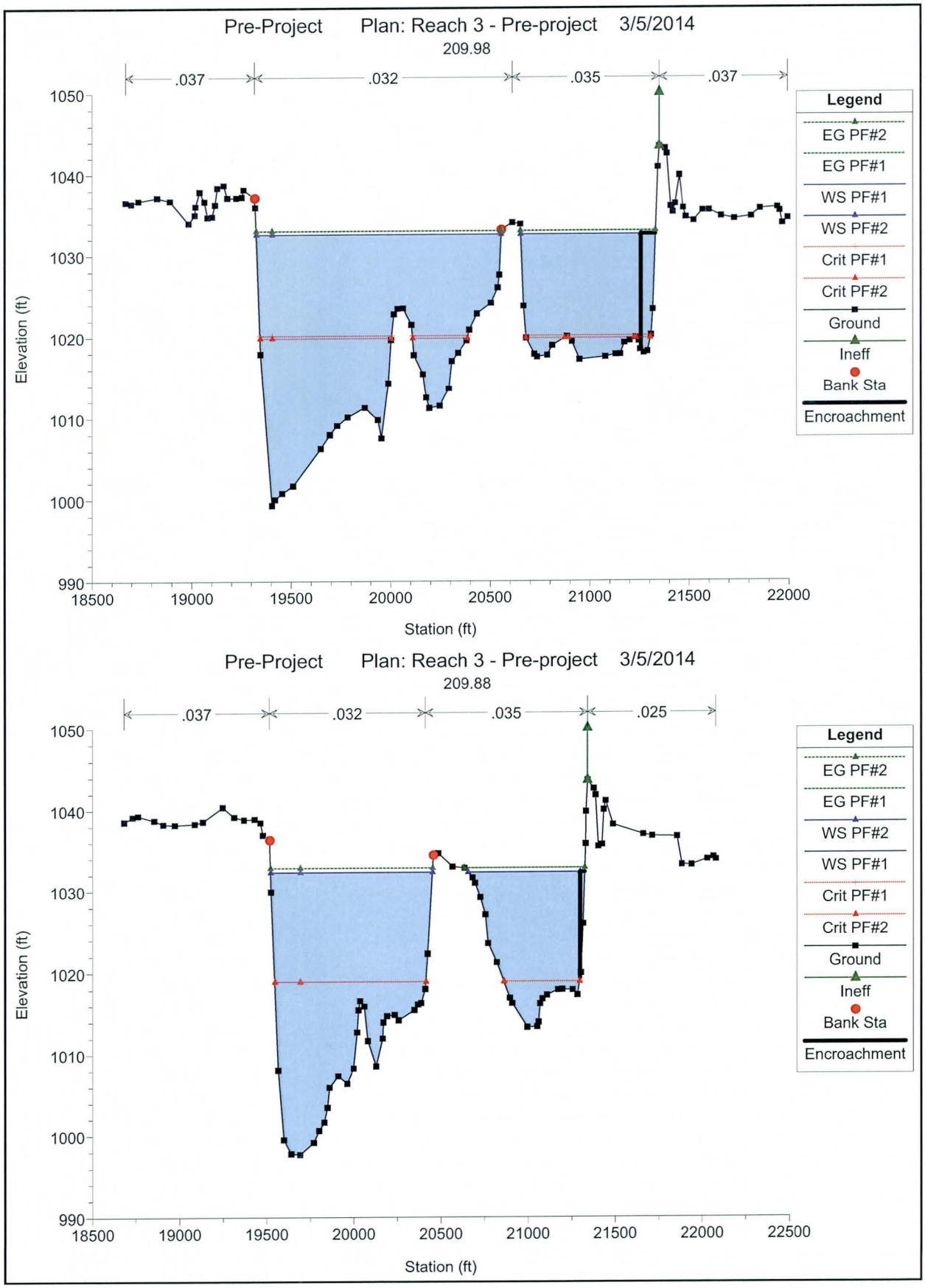

Pre-Project Plan: Reach 3 - Pre-project 3/5/2014
210.93
.037
.032
.037
Elevation (ft)
1055
1050
1045
1040
1035
1030
1025
1020
1015
19000
19500
20000
20500
21000
21500
22000
22500
Station (ft)
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment
Pre-Project Plan: Reach 3 - Pre-project 3/5/2014
210.83
.037
.032
.037
Elevation (ft)
1055
1050
1045
1040
1035
1030
1025
1020
1015
19000
19500
20000
20500
21000
21500
22000
22500
Station (ft)
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment

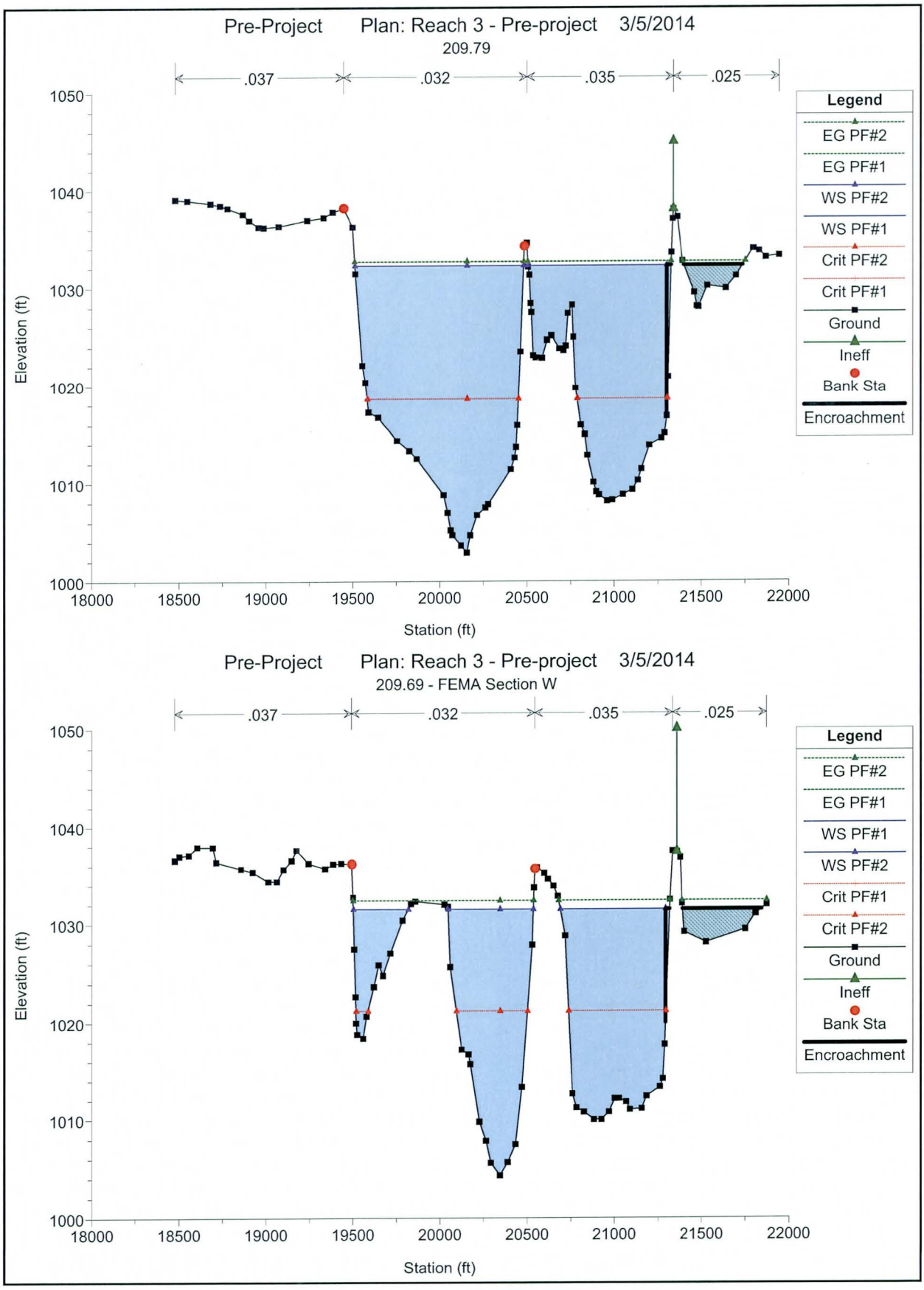

Pre-Project Plan: Reach 3 - Pre-project 3/5/2014
210.74
.037
.032
.037
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
1055
1050
1045
1040
1035
1030
1025
1020
1015
19000
19500
20000
20500
21000
21500
22000
22500
Pre-Project Plan: Reach 3 - Pre-project 3/5/2014
210.64 - FEMA Section Y
.037
.032
.037
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment
Elevation (ft)
Station (ft)
1055
1050
1045
1040
1035
1030
1025
1020
1015
19000
19500
20000
20500
21000
21500
22000
22500
23000

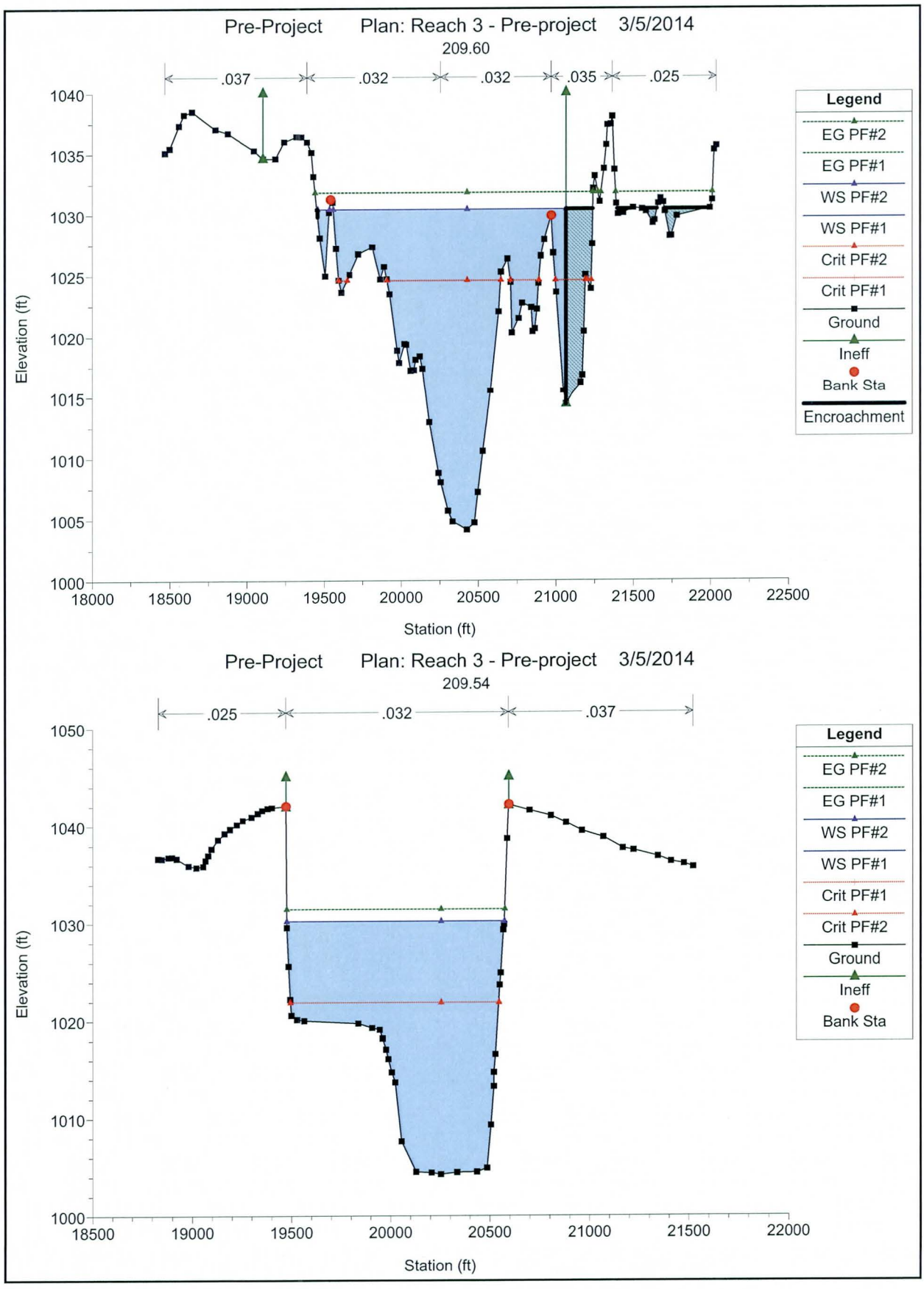

Pre-Project Plan: Reach 3 - Pre-project 3/5/2014
210.55
.037
.032
.037
Elevation (ft)
Station (ft)
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment
Pre-Project Plan: Reach 3 - Pre-project 3/5/2014
210.46
.037
.032
.037
.037
.025
Elevation (ft)
Station (ft)
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment

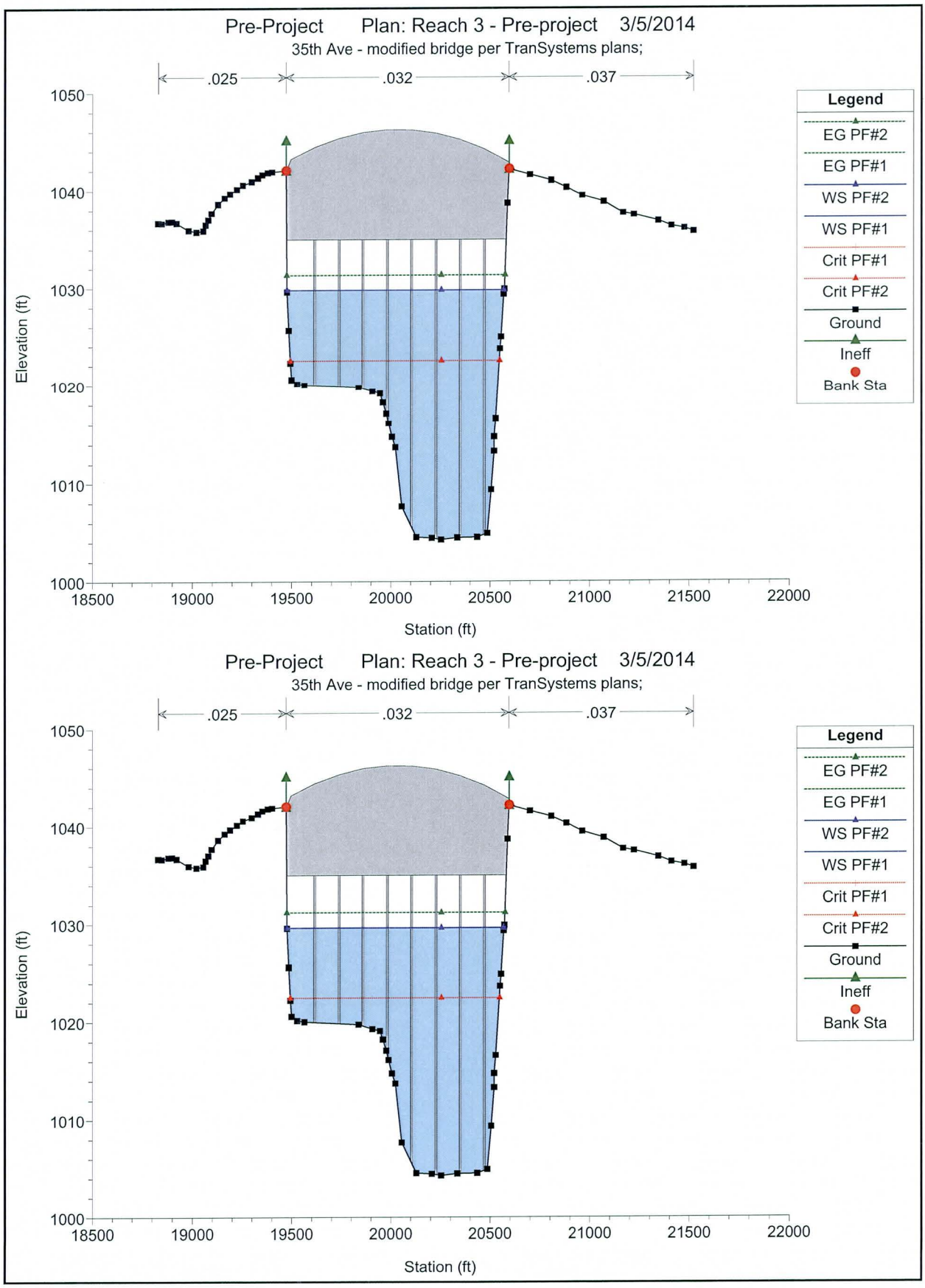

Pre-Project Plan: Reach 3 - Pre-project 3/5/2014
210.36
.032
.037
.025
.025
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
1070
1060
1050
1040
1030
1020
1010
19000
19500
20000
20500
21000
21500
22000
22500
23000
Pre-Project Plan: Reach 3 - Pre-project 3/5/2014
210.26
.037
.032
.037
.037
.025
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
1060
1050
1040
1030
1020
1010
18000
19000
20000
21000
22000
23000

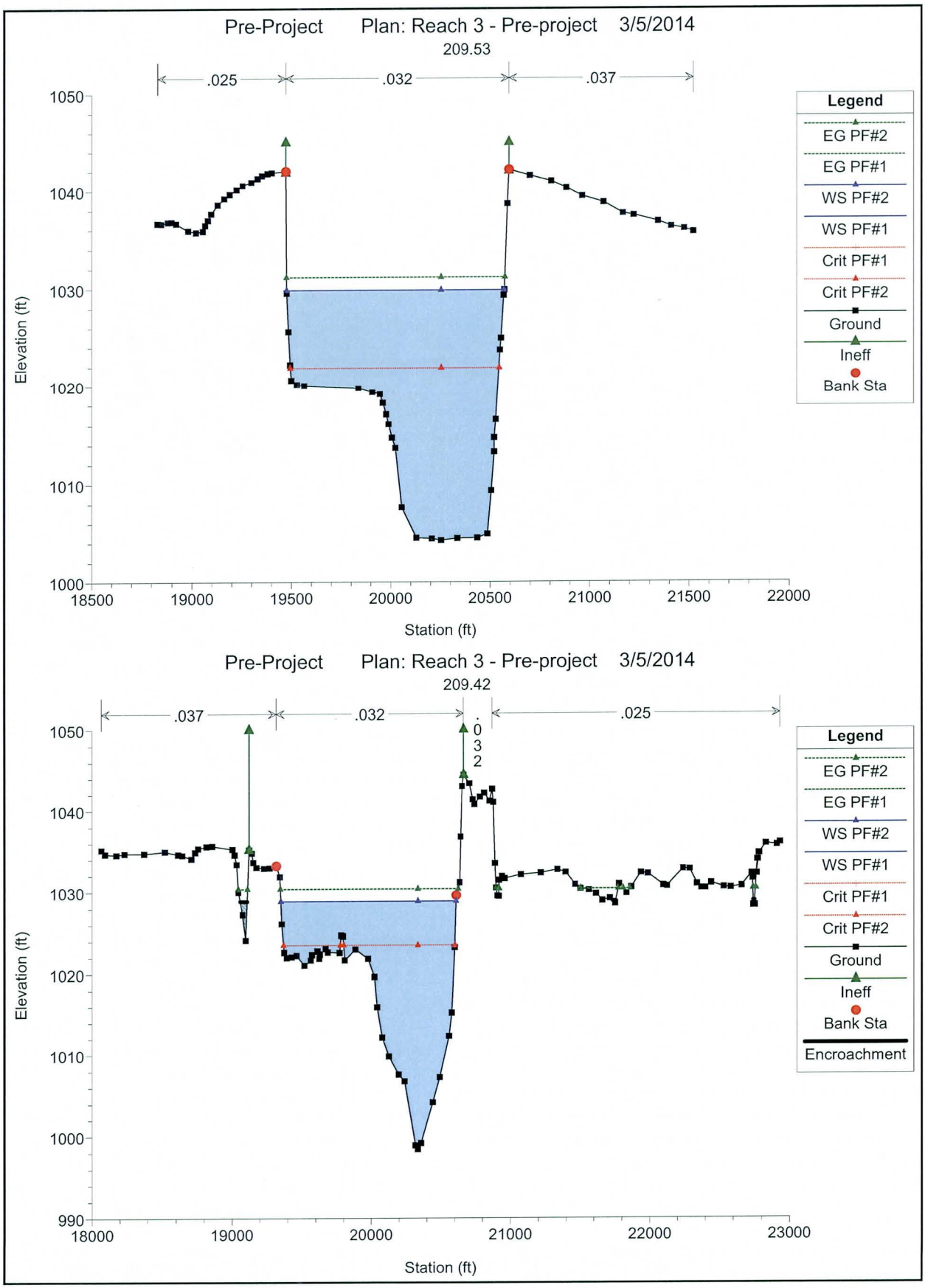

Pre-Project Plan: Reach 3 - Pre-project 3/5/2014
210.17 - FEMA Section X
.037
.032
.037
.025
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment
Elevation (ft)
Station (ft)
1060
1050
1040
1030
1020
1010
18000
19000
20000
21000
22000
23000
Pre-Project Plan: Reach 3 - Pre-project 3/5/2014
210.07
.032
.037
.025
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment
Elevation (ft)
Station (ft)
1060
1050
1040
1030
1020
1010
1000
18000
19000
20000
21000
22000
23000

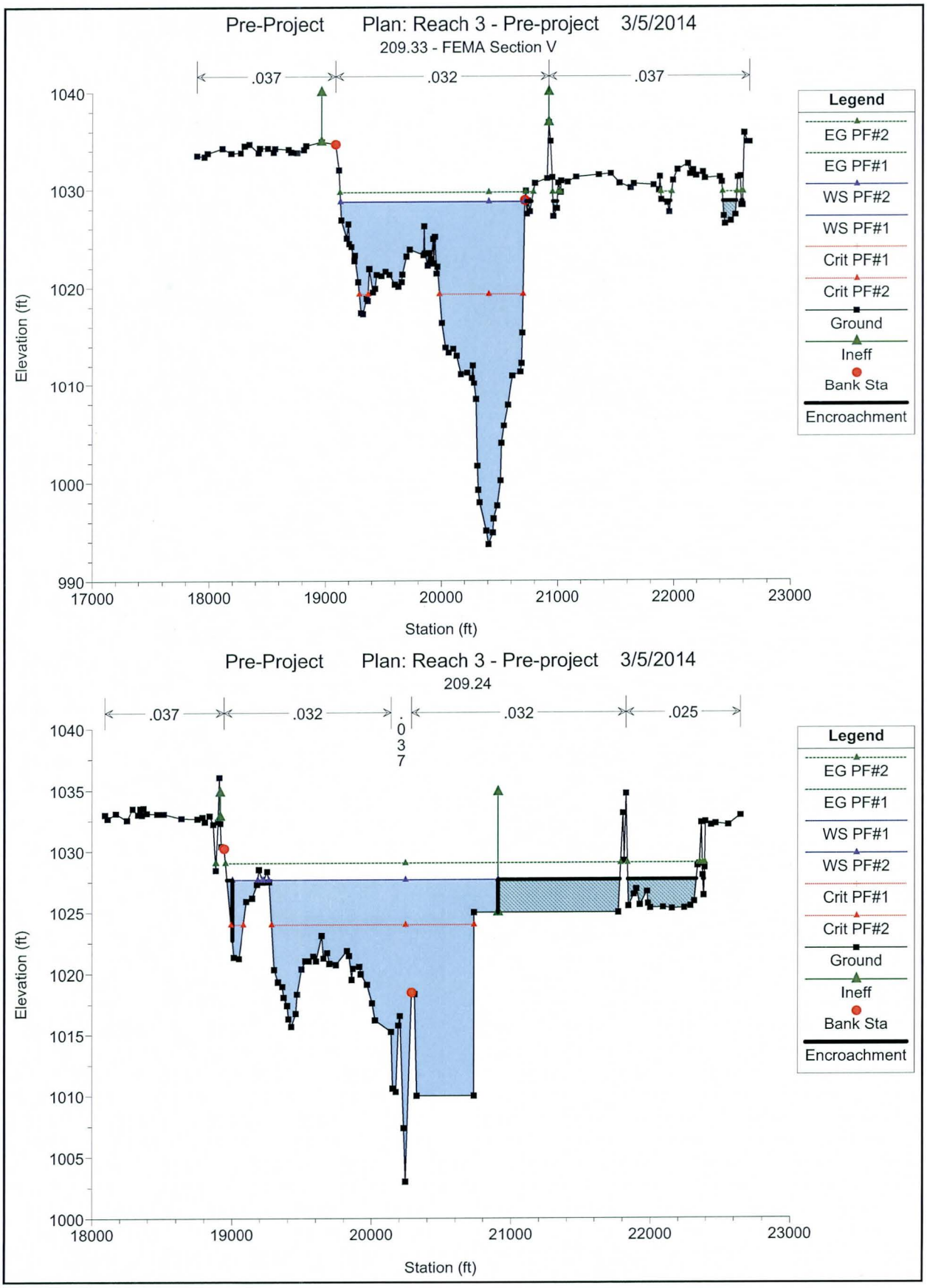

Pre-Project Plan: Reach 3 - Pre-project 3/5/2014
209.98
.037
.032
.035
.037
Elevation (ft)
Station (ft)
Legend
EG PF#2
EG PF#1
WS PF#1
WS PF#2
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment
Pre-Project Plan: Reach 3 - Pre-project 3/5/2014
209.88
.037
.032
.035
.025
Elevation (ft)
Station (ft)
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment

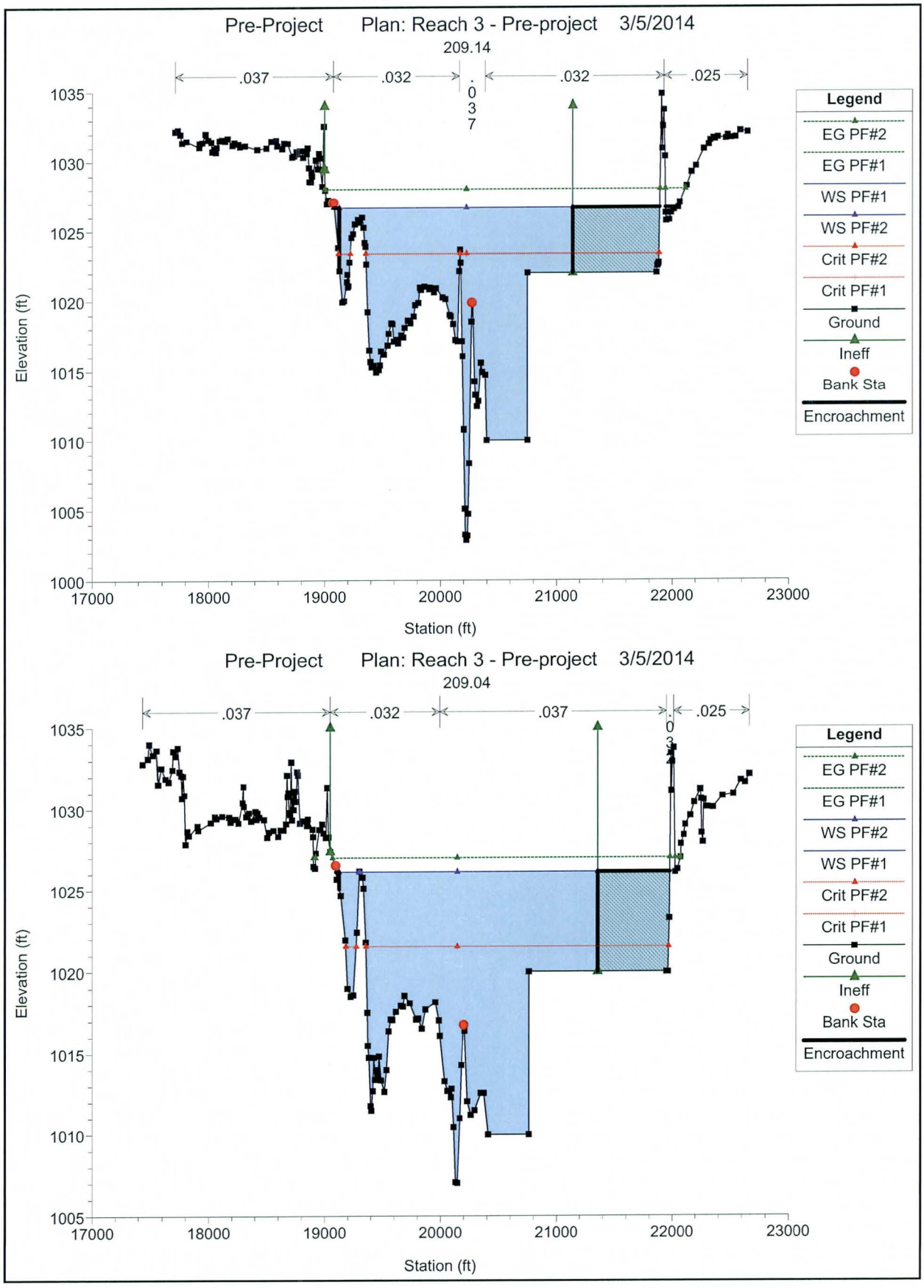

Pre-Project Plan: Reach 3 - Pre-project 3/5/2014
209.79
.037
.032
.035
.025
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#2
Crit PF#1
Ground
Ineff
Bank Sta
Encroachment
Elevation (ft)
Station (ft)
1050
1040
1030
1020
1010
1000
18000
18500
19000
19500
20000
20500
21000
21500
22000
Pre-Project Plan: Reach 3 - Pre-project 3/5/2014
209.69 - FEMA Section W
.037
.032
.035
.025
Legend
EG PF#2
EG PF#1
WS PF#1
WS PF#2
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment
Elevation (ft)
Station (ft)
1050
1040
1030
1020
1010
1000
18000
18500
19000
19500
20000
20500
21000
21500
22000

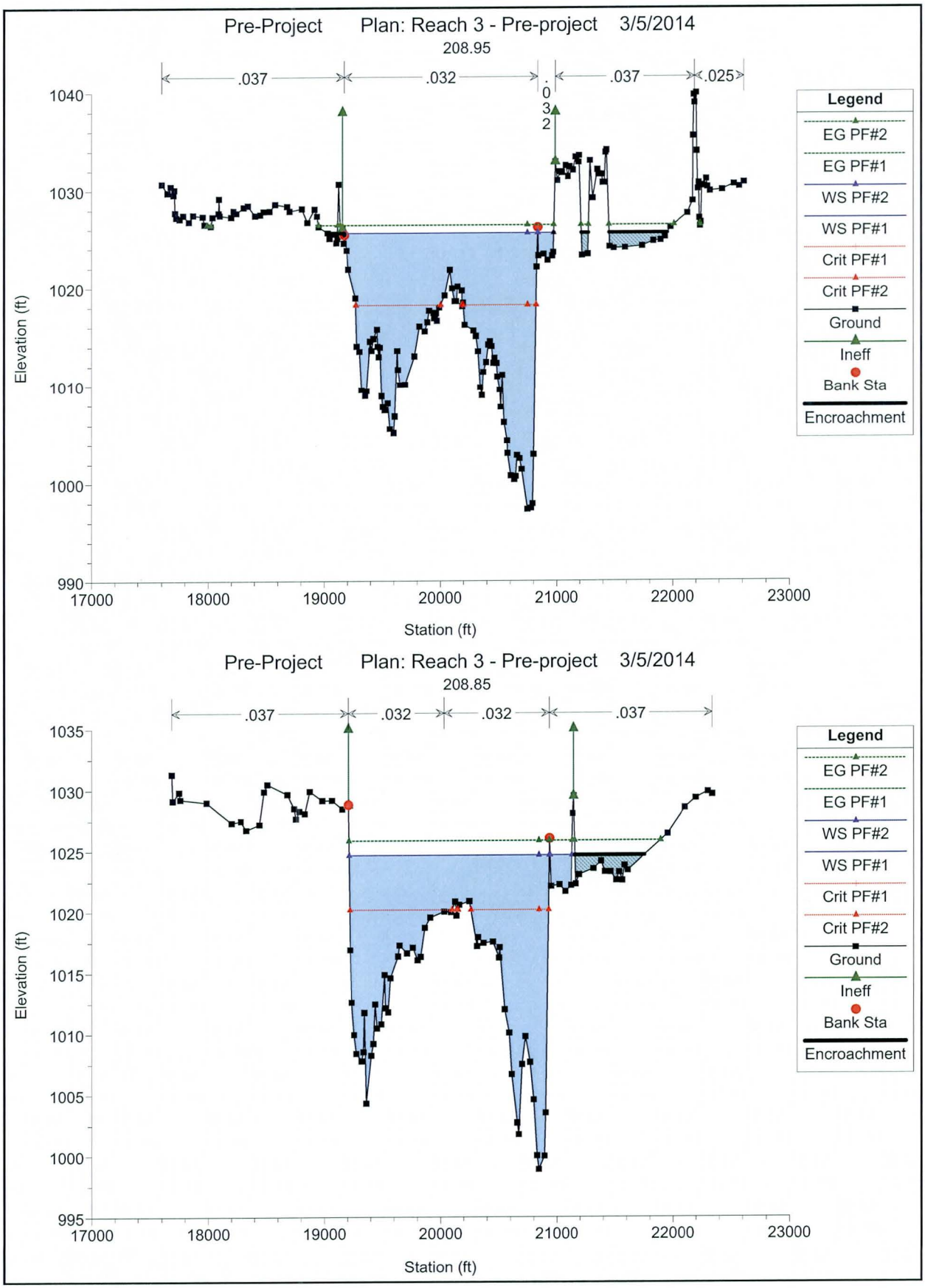

Pre-Project
Plan: Reach 3 - Pre-project
3/5/2014
209.60
.037
.032
.032
.035
.025
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#2
Crit PF#1
Ground
Ineff
Bank Sta
Encroachment
Elevation (ft)
Station (ft)
1040
1035
1030
1025
1020
1015
1010
1005
1000
18000
18500
19000
19500
20000
20500
21000
21500
22000
22500
Pre-Project
Plan: Reach 3 - Pre-project
3/5/2014
209.54
.025
.032
.037
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
1050
1040
1030
1020
1010
1000
18500
19000
19500
20000
20500
21000
21500
22000

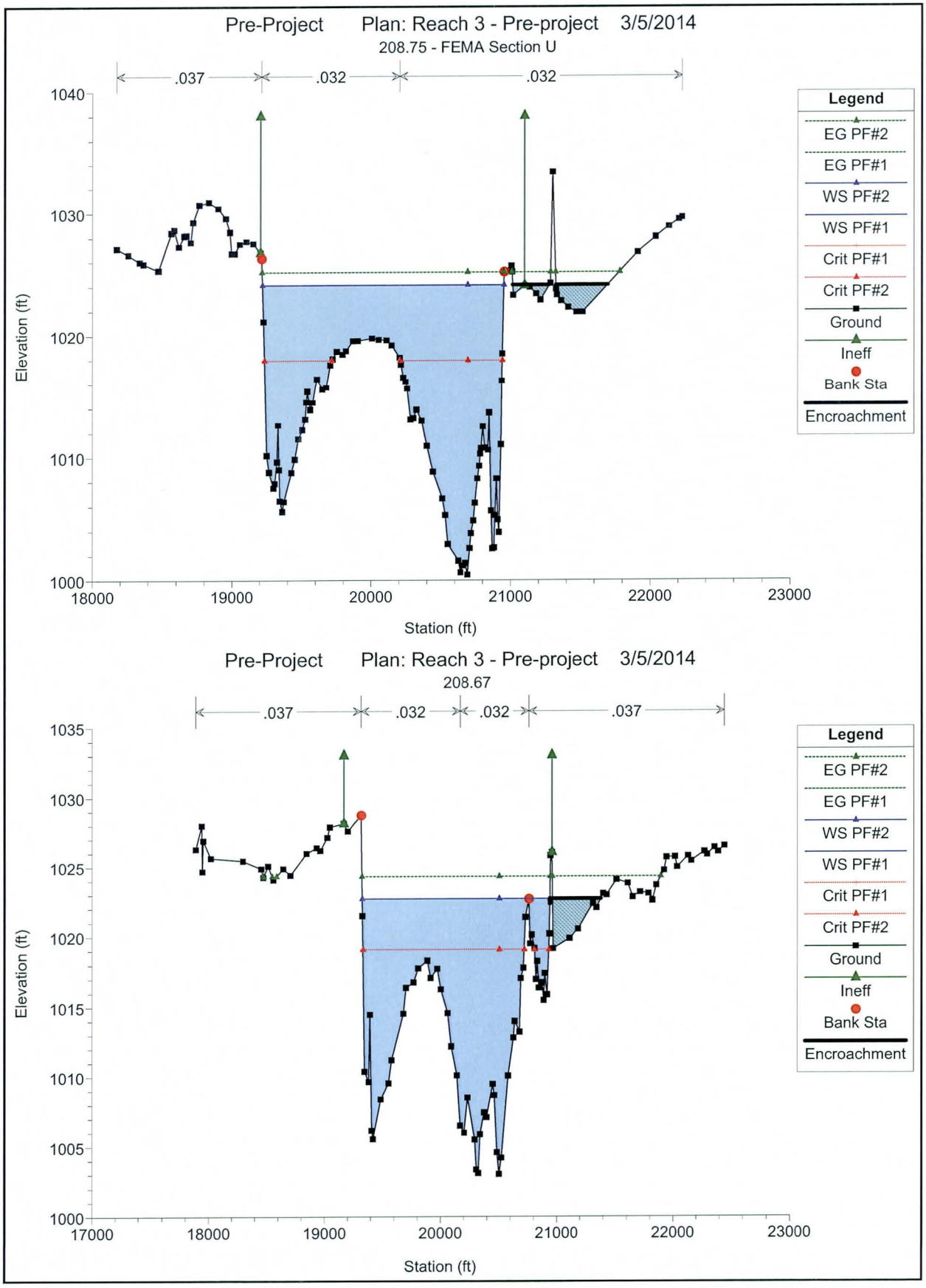

Pre-Project Plan: Reach 3 - Pre-project 3/5/2014
35th Ave - modified bridge per TranSystems plans;
.025
.032
.037
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
1050
1040
1030
1020
1010
1000
18500
19000
19500
20000
20500
21000
21500
22000
Pre-Project Plan: Reach 3 - Pre-project 3/5/2014
35th Ave - modified bridge per TranSystems plans;
.025
.032
.037
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
1050
1040
1030
1020
1010
1000
18500
19000
19500
20000
20500
21000
21500
22000

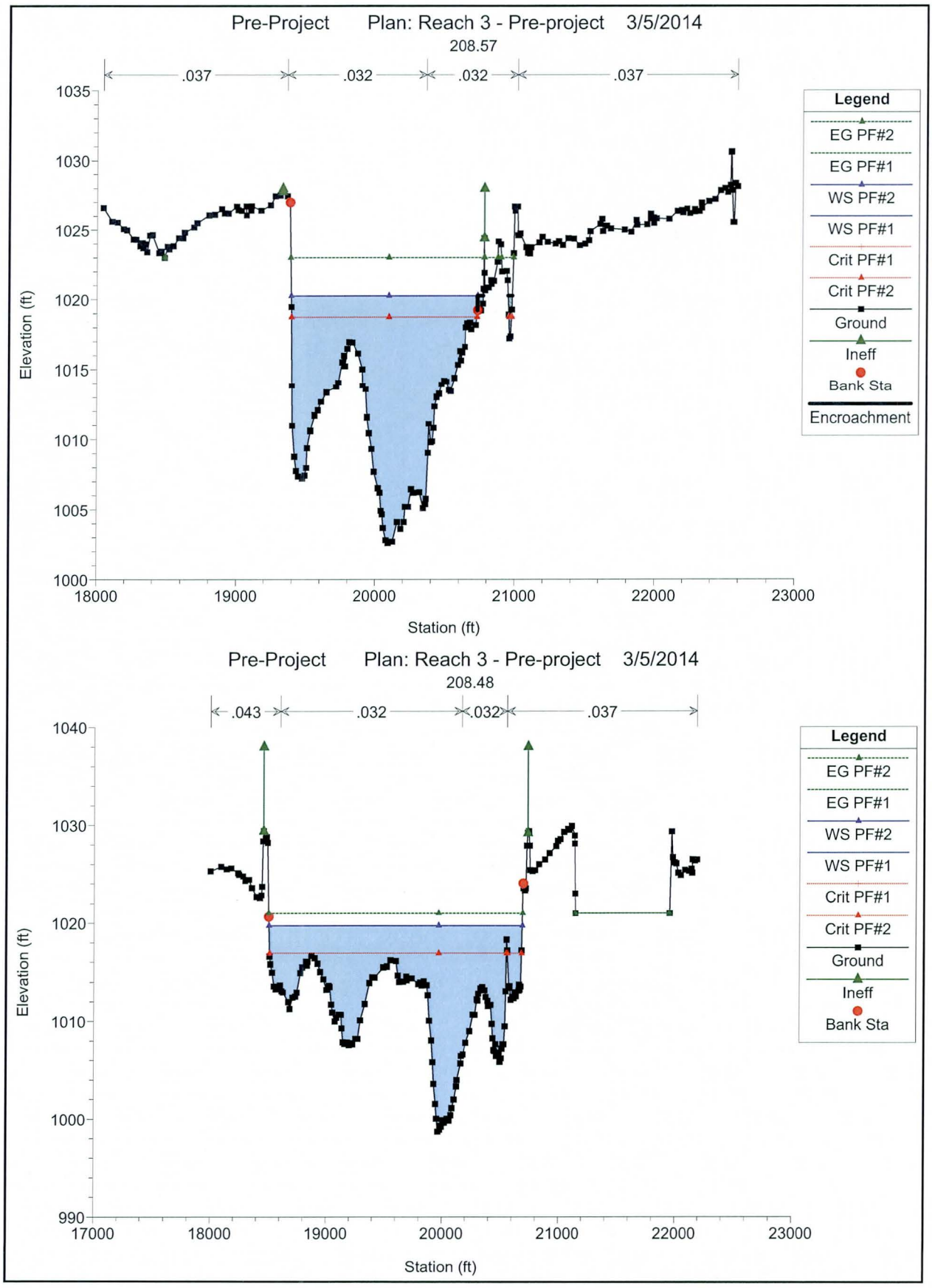

Pre-Project Plan: Reach 3 - Pre-project 3/5/2014
209.53
.025
.032
.037
Elevation (ft)
Station (ft)
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Pre-Project Plan: Reach 3 - Pre-project 3/5/2014
209.42
.037
.032
.025
.032
Elevation (ft)
Station (ft)
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment

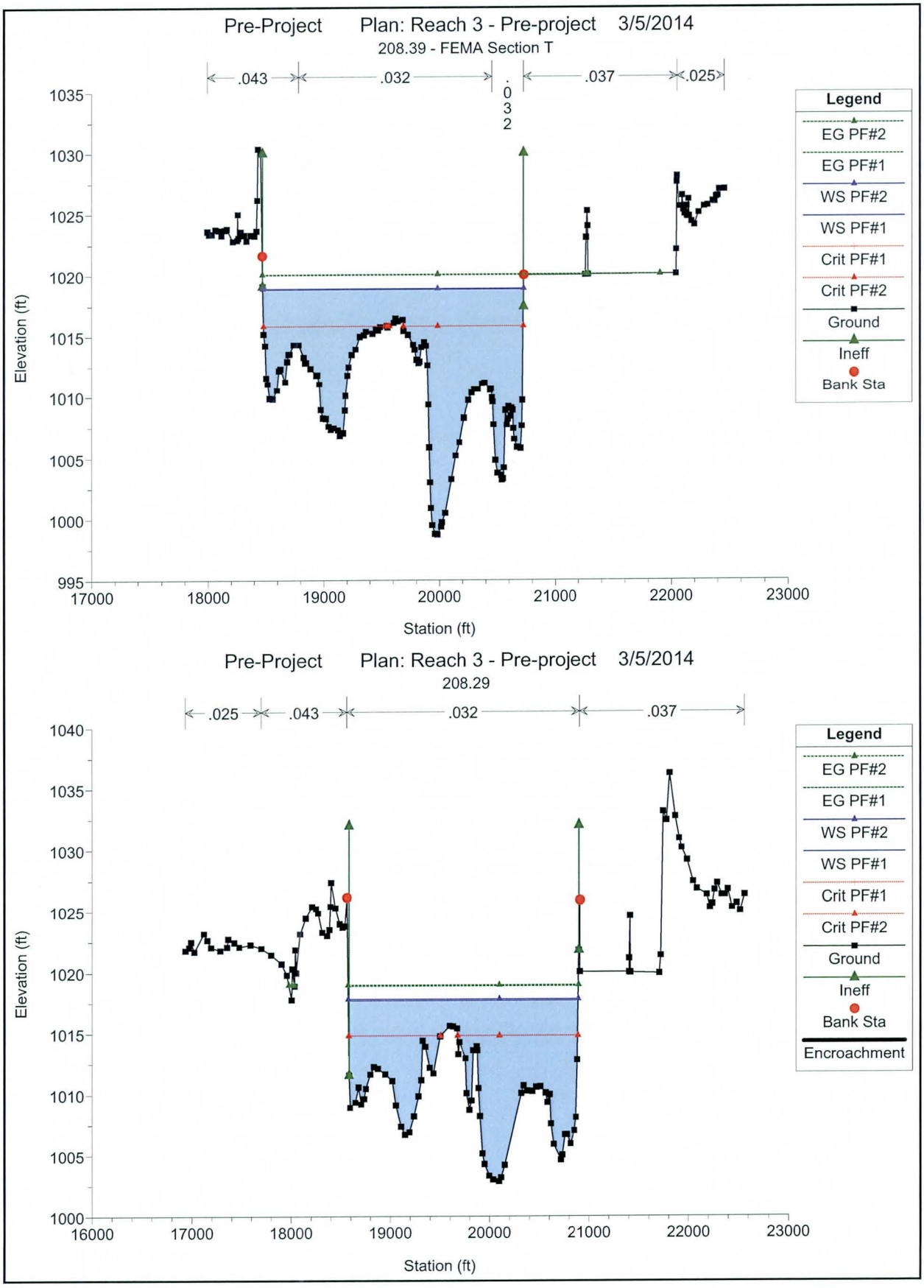

Pre-Project
Plan: Reach 3 - Pre-project
3/5/2014
209.33 - FEMA Section V
.037
.032
.037
Elevation (ft)
Station (ft)
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment
Pre-Project
Plan: Reach 3 - Pre-project
3/5/2014
209.24
.037
.032
.037
.032
.025
Elevation (ft)
Station (ft)
Legend
EG PF#2
EG PF#1
WS PF#1
WS PF#2
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment

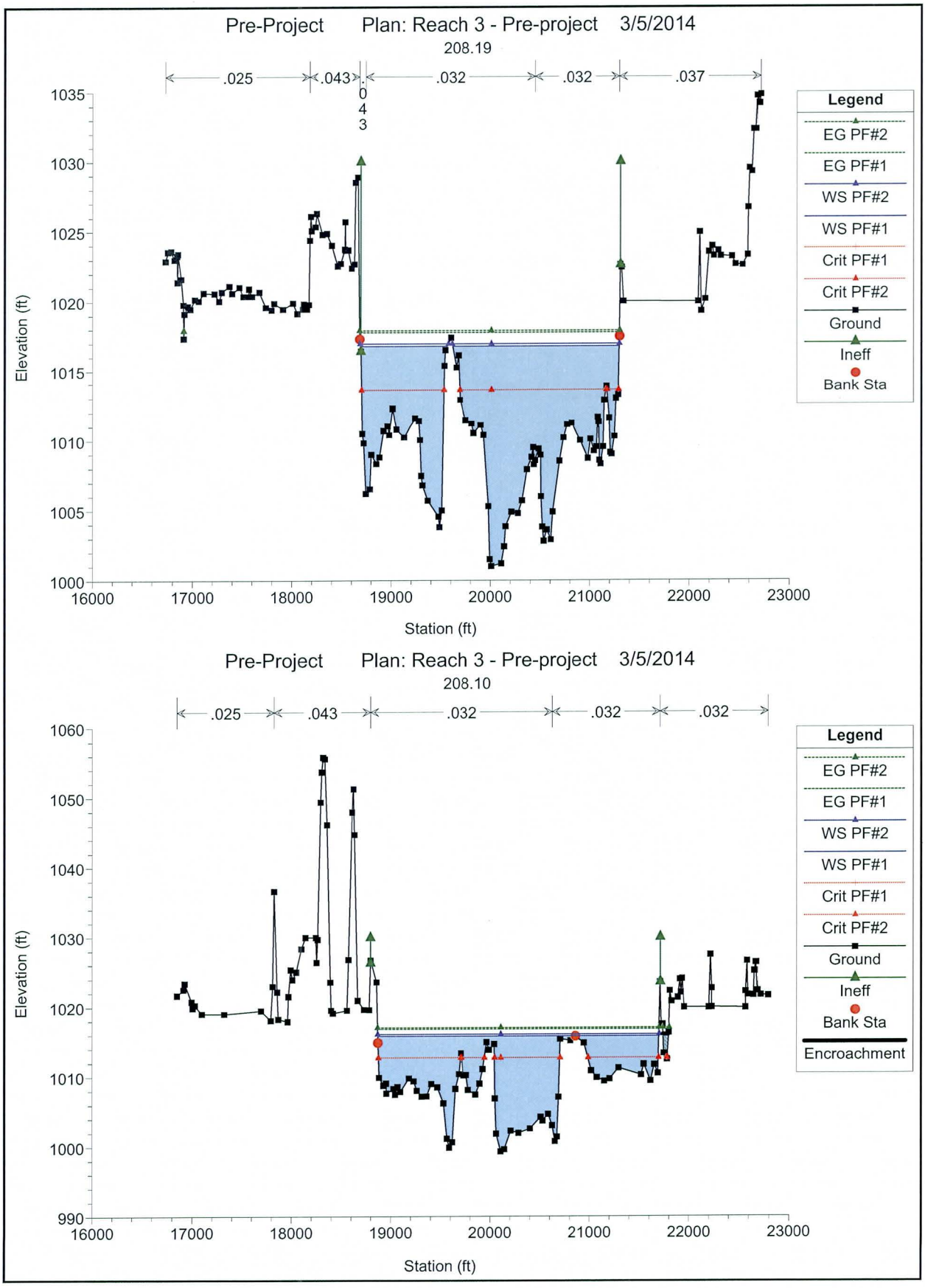

Pre-Project Plan: Reach 3 - Pre-project 3/5/2014
209.14
.037
.032
.037
.032
.025
Elevation (ft)
Station (ft)
Legend
EG PF#2
EG PF#1
WS PF#1
WS PF#2
Crit PF#2
Crit PF#1
Ground
Ineff
Bank Sta
Encroachment
Pre-Project Plan: Reach 3 - Pre-project 3/5/2014
209.04
.037
.032
.037
.025
Elevation (ft)
Station (ft)
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#2
Crit PF#1
Ground
Ineff
Bank Sta
Encroachment

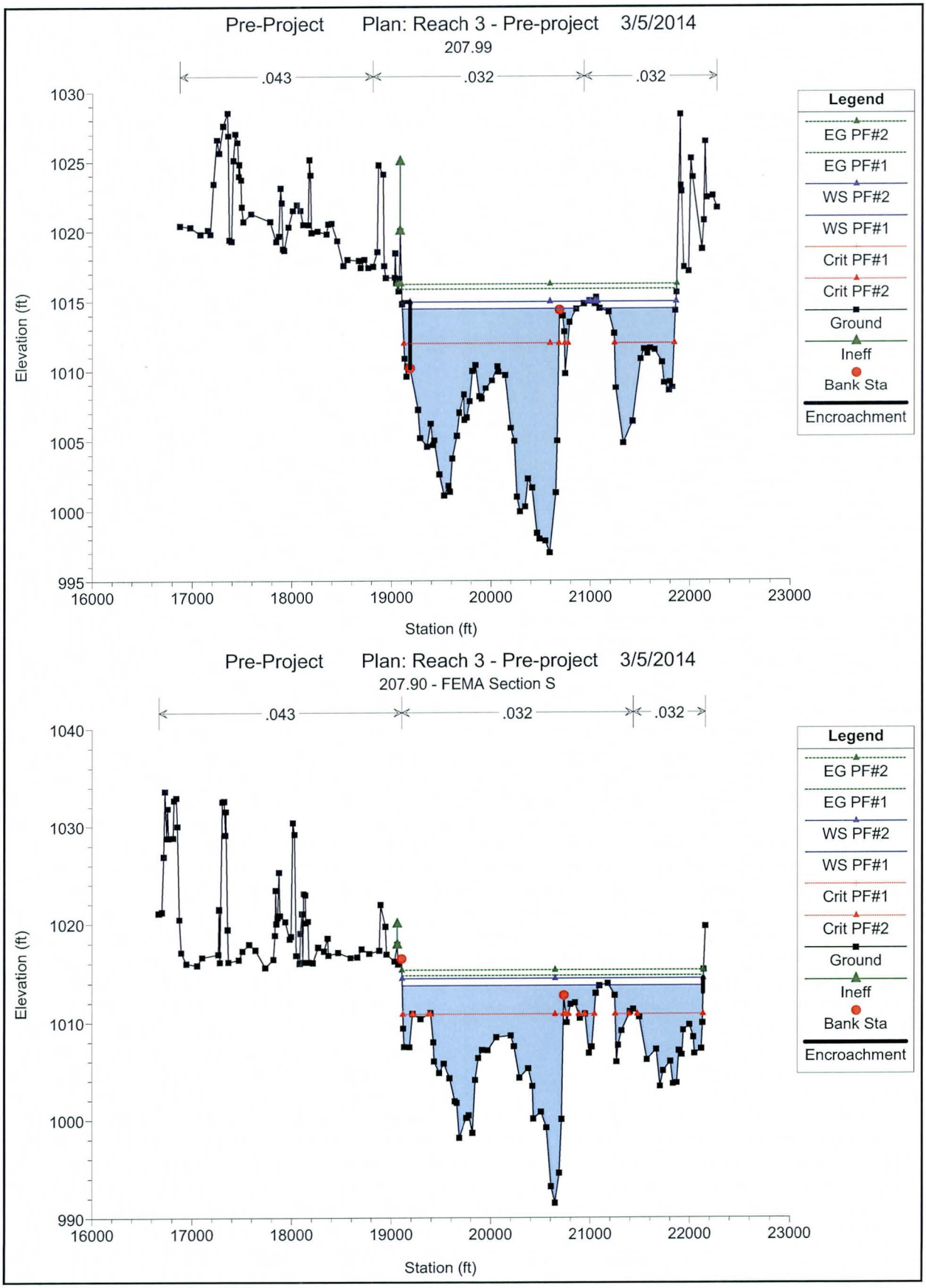

Pre-Project Plan: Reach 3 - Pre-project 3/5/2014
208.95
.037
.032
.032
.037
.025
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment
Elevation (ft)
Station (ft)
Pre-Project Plan: Reach 3 - Pre-project 3/5/2014
208.85
.037
.032
.032
.037
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

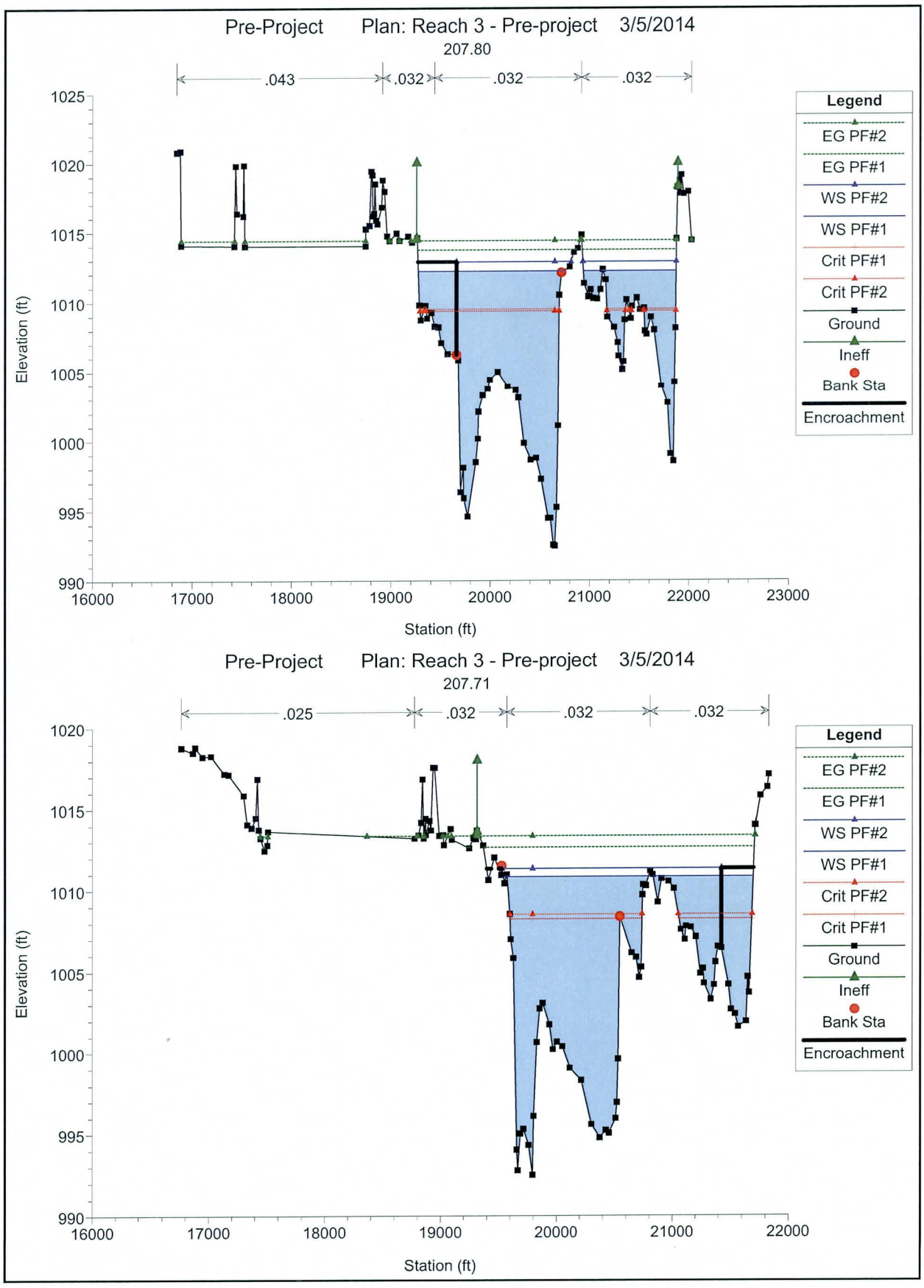

Pre-Project
Plan: Reach 3 - Pre-project
3/5/2014
208.75 - FEMA Section U
.037
.032
.032
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment
Elevation (ft)
Station (ft)
Pre-Project
Plan: Reach 3 - Pre-project
3/5/2014
208.67
.037
.032
.032
.037
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

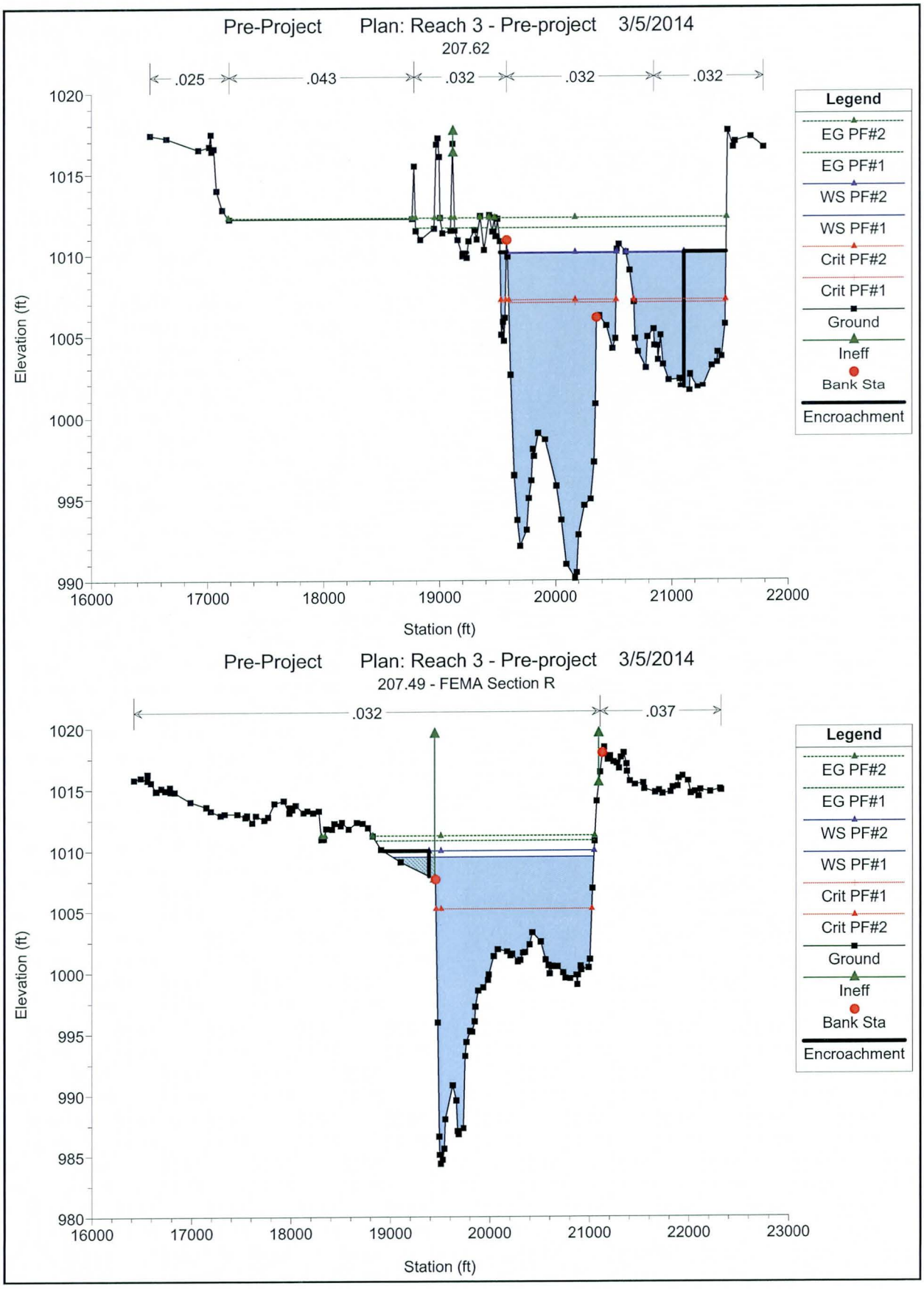

Pre-Project Plan: Reach 3 - Pre-project 3/5/2014
208.57
.037
.032
.032
.037
Elevation (ft)
Station (ft)
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment
Pre-Project Plan: Reach 3 - Pre-project 3/5/2014
208.48
.043
.032
.032
.037
Elevation (ft)
Station (ft)
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta

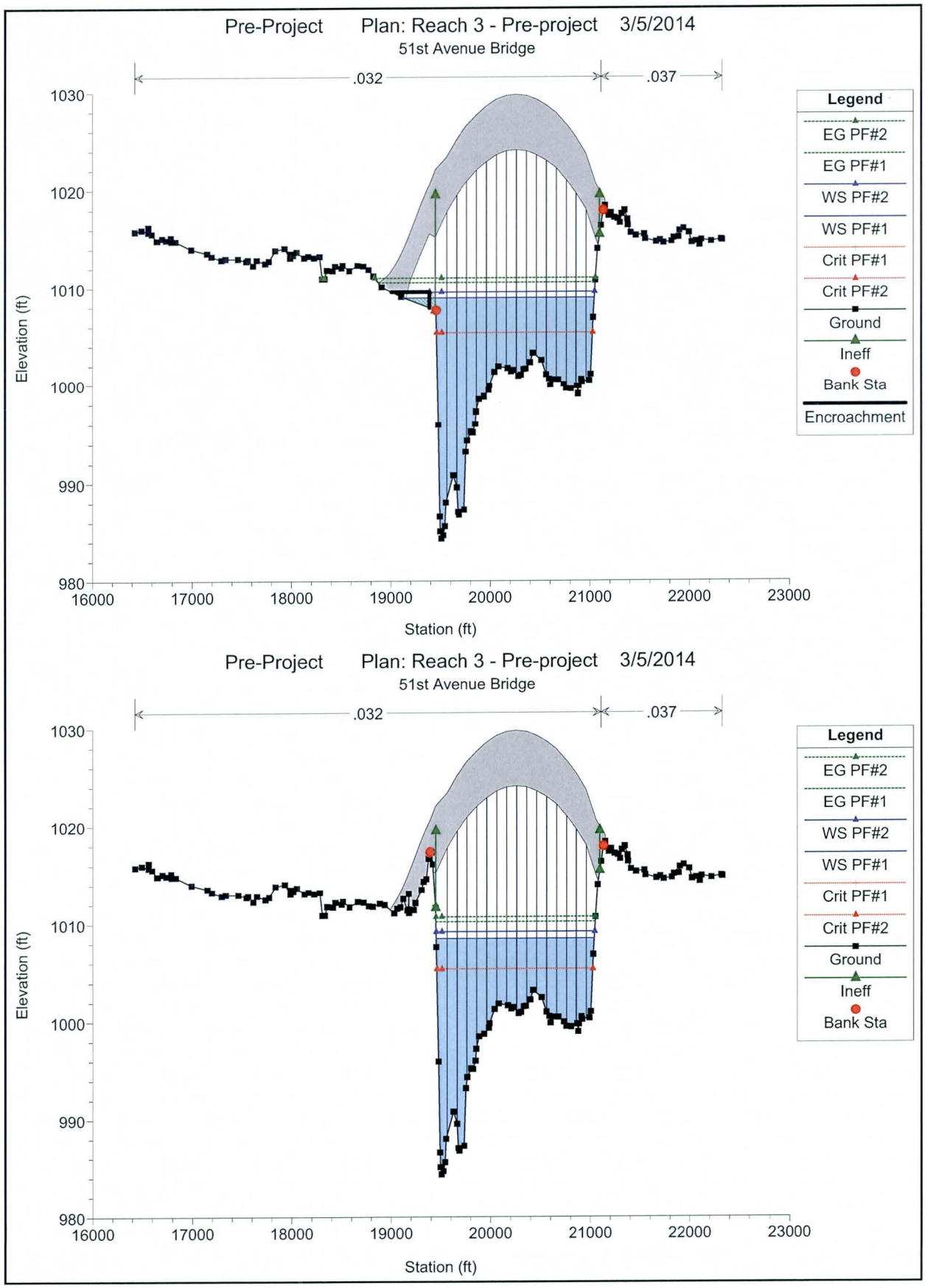

Pre-Project
Plan: Reach 3 - Pre-project
3/5/2014
208.39 - FEMA Section T
.043
.032
.032
.037
.025
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
Pre-Project
Plan: Reach 3 - Pre-project
3/5/2014
208.29
.025
.043
.032
.037
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

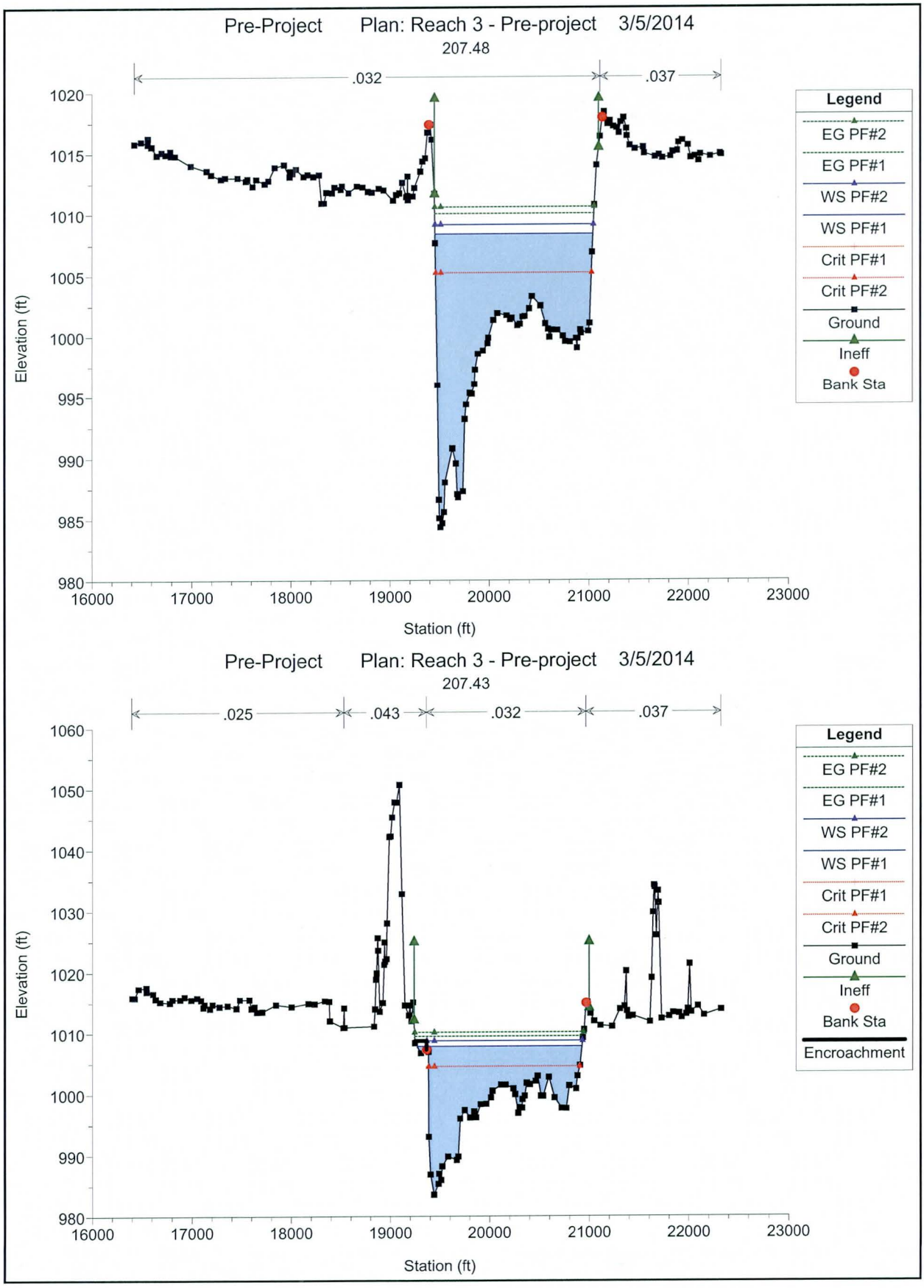

Pre-Project Plan: Reach 3 - Pre-project 3/5/2014
208.19
.025
.043
.032
.032
.037
0
4
3
Elevation (ft)
Station (ft)
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Pre-Project Plan: Reach 3 - Pre-project 3/5/2014
208.10
.025
.043
.032
.032
.032
Elevation (ft)
Station (ft)
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment

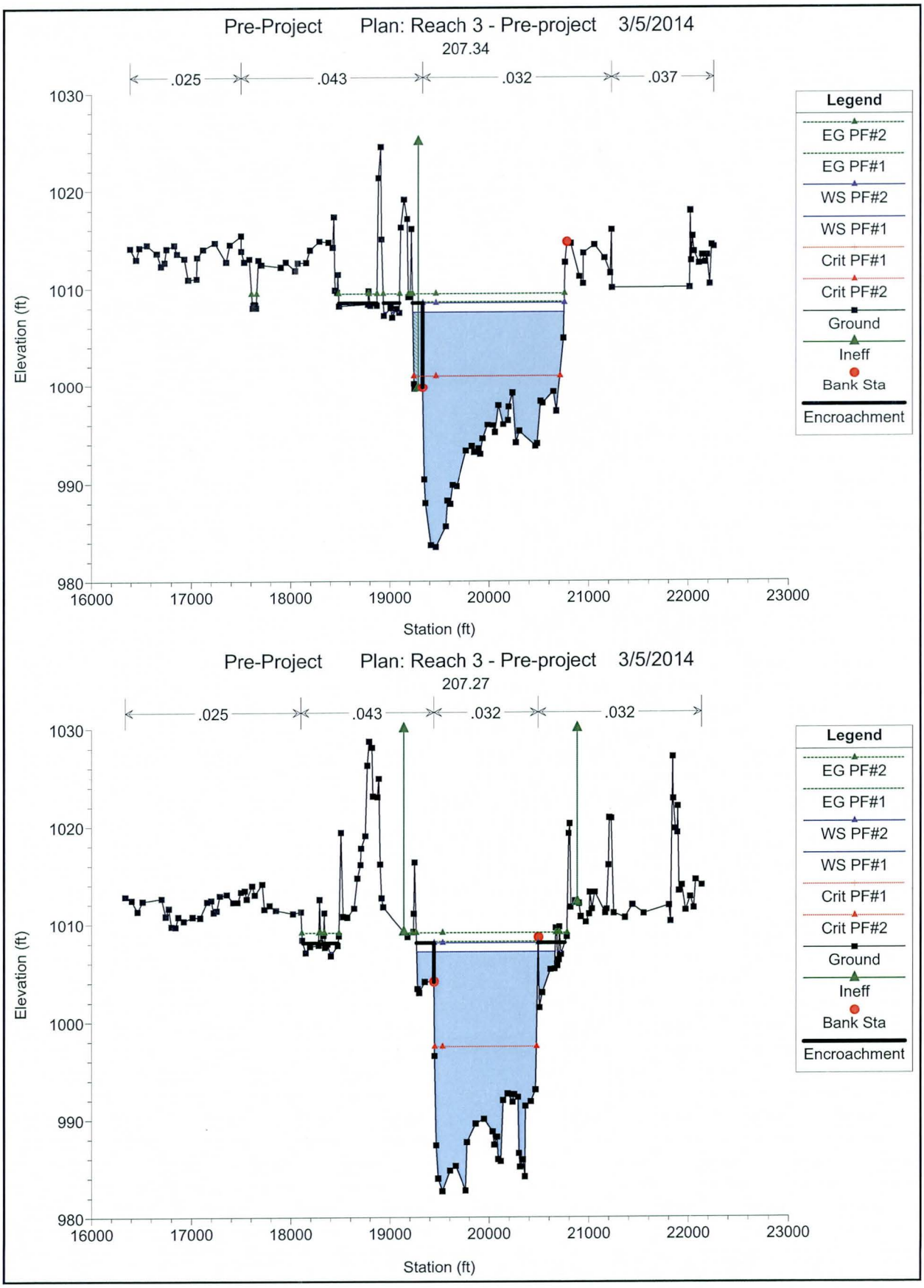

Pre-Project Plan: Reach 3 - Pre-project 3/5/2014
207.99
.043
.032
.032
Elevation (ft)
Station (ft)
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment
Pre-Project Plan: Reach 3 - Pre-project 3/5/2014
207.90 - FEMA Section S
.043
.032
.032
Elevation (ft)
Station (ft)
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment

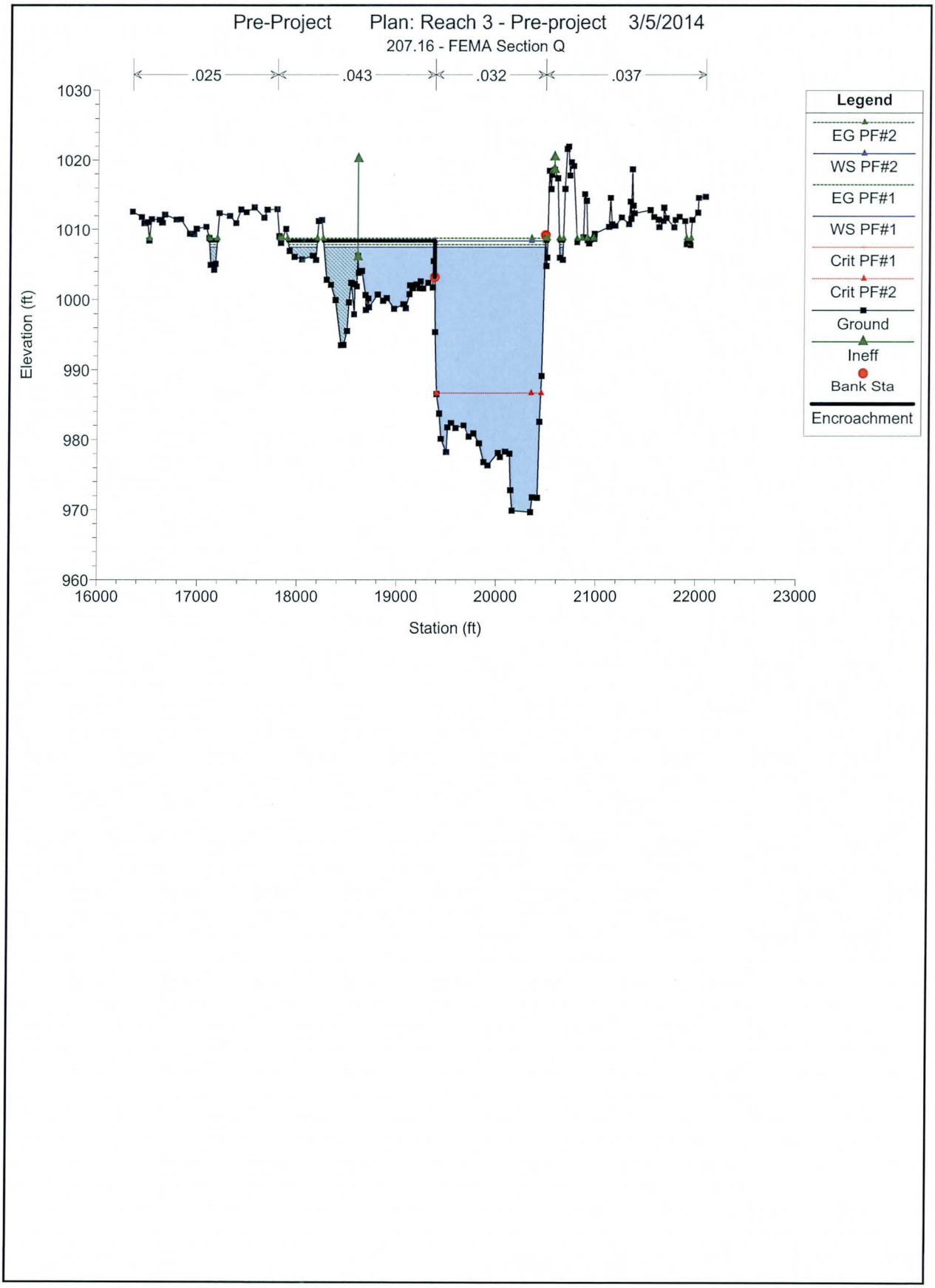

Pre-Project
Plan: Reach 3 - Pre-project
3/5/2014
207.80
.043
.032
.032
.032
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment
Elevation (ft)
Station (ft)
1025
1020
1015
1010
1005
1000
995
990
16000
17000
18000
19000
20000
21000
22000
23000
Pre-Project
Plan: Reach 3 - Pre-project
3/5/2014
207.71
.025
.032
.032
.032
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#2
Crit PF#1
Ground
Ineff
Bank Sta
Encroachment
Elevation (ft)
Station (ft)
1020
1015
1010
1005
1000
995
990
16000
17000
18000
19000
20000
21000
22000


Pre-Project Plan: Reach 3 - Pre-project 3/5/2014
207.62
.025
.043
.032
.032
.032
Elevation (ft)
Station (ft)
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#2
Crit PF#1
Ground
Ineff
Bank Sta
Encroachment
Pre-Project Plan: Reach 3 - Pre-project 3/5/2014
207.49 - FEMA Section R
.032
.037
Elevation (ft)
Station (ft)
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment


Pre-Project Plan: Reach 3 - Pre-project 3/5/2014
51st Avenue Bridge
.032
.037
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment
Elevation (ft)
Station (ft)
1030
1020
1010
1000
990
980
16000
17000
18000
19000
20000
21000
22000
23000
Pre-Project Plan: Reach 3 - Pre-project 3/5/2014
51st Avenue Bridge
.032
.037
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)


Pre-Project Plan: Reach 3 - Pre-project 3/5/2014
207.48
.032
.037
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
Pre-Project Plan: Reach 3 - Pre-project 3/5/2014
207.43
.025
.043
.032
.037
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment
Elevation (ft)
Station (ft)


Pre-Project Plan: Reach 3 - Pre-project 3/5/2014
207.34
.025
.043
.032
.037
Elevation (ft)
Station (ft)
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment
Pre-Project Plan: Reach 3 - Pre-project 3/5/2014
207.27
.025
.043
.032
.032
Elevation (ft)
Station (ft)
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment


Pre-Project
Plan: Reach 3 - Pre-project
3/5/2014
207.16 - FEMA Section Q
.025
.043
.032
.037
Elevation (ft)
1030
1020
1010
1000
990
980
970
960
16000
17000
18000
19000
20000
21000
22000
23000
Station (ft)
Legend
EG PF#2
WS PF#2
EG PF#1
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment

HEC-RAS Version 4.1.0 Jan 2010
U.S. Army Corps of Engineers
Hydrologic Engineering Center
609 Second Street
Davis, California

```
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
XXXXXXX  XXXX     X       XXX  XXXX     XXXXXX    XXXX
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
```

PROJECT DATA
Project Title: Pre-Project
Project File : Pre-Project.prj
Run Date and Time: 3/5/2014 9:31:14 AM

Project in English units

Project Description:
City of Phoenix ARS (AZTEC project No AZE1005)
Salt River Effective model -
Received from FEMA for LOMR case no. 08-09-1412P
Salt River Effective model -
Received from FEMA for LOMR case no.
08-09-1294P

==========
Used the model obtained from LOMR 08-09-1412P which modified
sections 209.33 to 209.98 based on TranSystems mapping and grading plans and
Modified cross section 208.57, 208.67, 208.75 & 208.85 based on LOMR
08-09-1294P to create the Duplicate Effective
Model

==========
Pre-Project Model created from new mapping for the area between FEMA
Section Q and FEMA Section X. New mapping done by Kenney Aerial Mapping on
September 24, 2010, 1"=40' mapping with a 1' contour.
Revised Cross Sections
207.27 to 209.98 with new mapping

S.Smedley 12/09/10

PLAN DATA

Plan Title: Reach 3 - Pre-project
Plan File : r:\Phoenix\Projects\AZE1005-ARS_ProgramManagement\Technical\Drainage\HEC-RAS\Pre-Project Model\Pre-Project.p01

Geometry Title: Salt River Reach 3 - Pre-Project
Geometry File : r:\Phoenix\Projects\AZE1005-ARS_ProgramManagement\Technical\Drainage\HEC-RAS\Pre-Project Model\Pre-Project.g02

Flow Title   : Reach 3 - Floodway
Flow File   : r:\Phoenix\Projects\AZE1005-ARS_ProgramManagement\Technical\Drainage\HEC-RAS\Pre-Project Model\Pre-Project.f01

Plan Summary Information:
Number of: Cross Sections = 160   Multiple Openings =   0
            Culverts   =   0   Inline Structures =   0
            Bridges   =   6   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:     Subcritical Flow

Encroachment Data
   Equal Conveyance = True
   Left Offset      =        0
   Right Offset     =        0

River = 1                Reach = 1
RS      Profile           Method  Value1  Value2
214.14  PF#2                    119654.9720381.83
214.04  PF#2                    119637.8820371.77
213.95  PF#2                    119586.5420331.73
213.85  PF#2                    119618.3320320.92
213.75  PF#2                    1   1964120297.35
213.74  PF#2                    119641.87 20296.6
213.66  PF#2                    119687.5720253.56
213.57  PF#2                    1 19484.520336.66
213.47  PF#2                    1 19243.320266.42
213.38  PF#2                    1 19346.120447.85
213.33  PF#2                    1 19328.920514.52
213.26  PF#2                    119497.1820378.39
213.25  PF#2                    119497.5520377.79
213.21  PF#2                    1 19490.3 20418.5
213.11  PF#2                    119616.8820544.67
213.03  PF#2                    1   1967220591.83
212.93  PF#2                    119690.7620489.75
212.84  PF#2                    1 19711.520347.25
212.74  PF#2                    119690.61 20367.2
212.68  PF#2                    119501.07 20130.1
212.67  PF#2                    119502.3320128.84
212.56  PF#2                    119731.0520252.14
212.46  PF#2                    119743.34   20301
212.37  PF#2                    119744.0620320.69
212.27  PF#2                    119715.2520330.35
212.18  PF#2                    119706.8520334.57
212.08  PF#2                    119681.09 20270.9
211.99  PF#2                    119699.7720249.64
211.89  PF#2                    119685.7520250.74
211.79  PF#2                    119649.87 20217.7
211.71  PF#2                    119628.4320197.84
211.64  PF#2                    1 19657.7 20219.8
211.54  PF#2                    119603.6520129.64
211.51  PF#2                    119615.1920137.39
211.41  PF#2                    1 19638.120206.06
211.31  PF#2                    119531.2120356.09
211.21  PF#2                    119528.7520521.25
211.12  PF#2                    119498.47   20610
211.02  PF#2                    119487.12   21150
210.93  PF#2                    119479.13   21575
210.83  PF#2                    119450.42   21700
210.74  PF#2                    119426.13   21800
210.64  PF#2                    1 19388.6   21800
210.55  PF#2                    119322.17   21110
210.46  PF#2                    1   19377   21284
210.36  PF#2                    119375.1721291.16
210.26  PF#2                    119377.08 21331.8
210.17  PF#2                    1 19354.621334.72
210.07  PF#2                    1   19210   21225
209.98  PF#2                    119316.5321256.06
209.88  PF#2                    119516.3921299.85
209.79  PF#2                    119444.0721299.89
209.69  PF#2                    119492.4321293.09
209.60  PF#2                    119457.3121064.47
209.54  PF#2                    119471.7520594.25
209.53  PF#2                    119471.7520594.25
209.42  PF#2                    119318.5620610.47
209.33  PF#2                    119086.1920715.31
209.24  PF#2                    119001.6620907.53
209.14  PF#2                    119124.9221140.18
209.04  PF#2                    119124.0321356.72
208.95  PF#2                    119173.8520972.83
```

208.85	PF#2	119206.0221155.77
208.75	PF#2	119212.9820952.96
208.67	PF#2	119317.6920938.72
208.57	PF#2	119382.5620731.12
208.48	PF#2	118501.9220691.24
208.39	PF#2	118468.9520724.42
208.29	PF#2	118561.8220909.13
208.19	PF#2	118679.18 21343.2
208.10	PF#2	118822.3721737.69
207.99	PF#2	119184.3621863.07
207.90	PF#2	119103.9222135.26
207.80	PF#2	119658.1621871.22
207.71	PF#2	119527.6521424.84
207.62	PF#2	119577.9221105.73
207.49	PF#2	119387.2821132.01
207.48	PF#2	119387.2821132.01
207.43	PF#2	119363.8620968.54
207.34	PF#2	119328.8820778.22
207.27	PF#2	119441.5520490.77
207.16	PF#2	119371.4620479.77
207.07	PF#2	118857.5720748.18
206.97	PF#2	1 18850 20800
206.88	PF#2	118838.93 20800
206.79	PF#2	118806.0120895.15
206.7	PF#2	118784.84 21138.8
206.6	PF#2	118675.5821066.25
206.51	PF#2	118561.35 20622.1
206.41	PF#2	118494.7120685.21
206.32	PF#2	118476.9420854.87
206.22	PF#2	1 1843520977.29
206.13	PF#2	1 1837020914.89
206.03	PF#2	1 18320 20772.6
205.94	PF#2	1 18200 20767
205.84	PF#2	1 18100 20535.7
205.75	PF#2	1 18048 20450.3
205.62	PF#2	1 18216 20450.1
205.52	PF#2	1 18591.6 20611.5
205.43	PF#2	1 18917.5 20770.4
205.4	PF#2	1 19020 20767.8
205.34	PF#2	1 1918020742.96
205.25	PF#2	1 19300 20782.3
205.15	PF#2	1 19385 20830
205.06	PF#2	1 19470 20905.3
204.97	PF#2	1 19445 20961.3
204.87	PF#2	1 19410 20952.2
204.78	PF#2	1 1921020830.43
204.68	PF#2	1 1896020546.37
204.61	PF#2	1 18880 20482.9
204.53	PF#2	1 18885 20495.9
204.42	PF#2	1 19025.420679.03
204.34	PF#2	1 1910020814.38
204.25	PF#2	1 1930020817.18
204.15	PF#2	1 1920021031.89
204.05	PF#2	118963.7821080.54
203.96	PF#2	118736.54 20787.3
203.86	PF#2	118542.4920734.27
203.77	PF#2	118232.4120743.68
203.67	PF#2	1 1813020697.43
203.58	PF#2	1 1802520701.39
203.48	PF#2	1 17932.620844.31
203.39	PF#2	1 17970.821036.47
203.29	PF#2	1 18065.621074.86
203.19	PF#2	1 18262.120951.24
203.09	PF#2	1 1843020905.85
202.99	PF#2	1 18469.4 20926.9
202.9	PF#2	1 18455.620967.31
202.8	PF#2	1 18390.821011.58
202.69	PF#2	1 18377.821080.23
202.59	PF#2	1 18416.7 21190.4
202.48	PF#2	1 18360 21302.7
202.37	PF#2	1 1827021577.77
202.29	PF#2	1 18197.4 21803
202.18	PF#2	1 18139.721936.54
202.09	PF#2	1 18212.921936.96
201.99	PF#2	1 18235.121861.56
201.9	PF#2	117992.63 21823.6
201.81	PF#2	117952.4821801.08
201.71	PF#2	118112.81 21528.5
201.62	PF#2	118235.69 21477.5

201.52	PF#2	118008.55	21391.4
201.43	PF#2	118053.86	21342.1
201.33	PF#2	118074.35	21381.8
201.24	PF#2	118069.92	21570
201.14	PF#2	118040.42	21721
201.05	PF#2	117950.48	21849
200.95	PF#2	117952.91	21954
200.86	PF#2	1 18000	22032
200.77	PF#2	1 17828.8	21951
200.67	PF#2	1 17640	21649.3
200.58	PF#2	1 17510	21450
200.49	PF#2	1 17380	21171
200.39	PF#2	1 17300	21041
200.3	PF#2	1 17205	20896
200.2	PF#2	1 17115	20744
200.1	PF#2	1 17030	20800
200	PF#2	1 16950	21050
199.91	PF#2	1 16800	21330
199.82	PF#2	1 16870	21650

FLOW DATA

Flow Title: Reach 3 - Floodway
Flow File : r:\Phoenix\Projects\AZE1005-ARS_ProgramManagement\Technical\Drainage\HEC-RAS\Pre-Project Model\Pre-Project.f01

Flow Data (cfs)

River	Reach	RS	PF#1	PF#2
1	1	214.14	169000	169000
1	1	213.21	166000	166000
1	1	205.4	164000	164000
1	1	200.3	179750	179750

Boundary Conditions

River	Reach	Profile	Upstream	Downstream
1	1	PF#1	Normal S = 0.001	Known WS = 948.9
1	1	PF#2	Normal S = 0.001	Known WS = 949.9

GEOMETRY DATA

Geometry Title: Salt River Reach 3 - Pre-Project
Geometry File : r:\Phoenix\Projects\AZE1005-ARS_ProgramManagement\Technical\Drainage\HEC-RAS\Pre-Project Model\Pre-Project.g02

CROSS SECTION

RIVER: 1
REACH: 1 RS: 214.14

INPUT
Description: 214.14
Station Elevation Data num= 96

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
18555.4	1082.6	18577.7	1082.5	18586.5	1082.5	18650.6	1082	18678.8	1082.1
18707.4	1081.7	18729.5	1082	18771.6	1082.1	18793.7	1081.8	18836	1080.9
18859.7	1080.3	18935.6	1078.9	19050.6	1077.2	19056.7	1077.2	19059.9	1077.1
19062.9	1076.9	19063.3	1077	19067.8	1077.1	19071.9	1077.1	19078.2	1077.1
19188.3	1078.1	19249.7	1079.4	19290.2	1080.1	19298.1	1080.2	19313.1	1080.4
19327.5	1080.7	19358.6	1080.6	19391.6	1080.5	19412.8	1080.3	19520.8	1077.9
19554.8	1077.5	19580.2	1077.3	19610.8	1076.5	19651.9	1076.7	19697.7	1058.7
19715.9	1051.7	19732.8	1050.2	19750.7	1048.7	20032.7	1049	20292.3	1049.2
20350.9	1065.9	20388.3	1077.5	20405.5	1075.6	20406	1075.6	20439.7	1075.6
20637.3	1075.5	20899.6	1075.4	20920.6	1075.5	20941.8	1075.4	20947.4	1075.5
20962	1075.5	20980	1075.4	20989.9	1075.4	21074.1	1075.4	21119.6	1075.7
21168.7	1076.8	21222	1076.6	21326.8	1076.2	21327.4	1076.2	21342.2	1075
21390.6	1075	21428.8	1075	21455.3	1075.3	21502.1	1076.4	21502.4	1076.2
21505.4	1076.4	21551.9	1077.5	21591.8	1077.6	21726.3	1078.4	21759.2	1078.5
21766.3	1078.3	21792.4	1078.4	21884.6	1078.9	22013	1079.1	22034.3	1079.5

22101.6	1079.7	22156.1	1080.1	22201.4	1080	22204.6	1079.9	22217.3	1080.5
22235	1081.3	22238.1	1081.3	22264.5	1081	22267.7	1080.9	22269.4	1080.7
22269.9	1080.6	22272.4	1080.4	22280.3	1079.8	22341.9	1080.2	22431	1080.6
22501.3	1081.2	22591.2	1081.8	22602.9	1082	22619.7	1083	22686.6	1082.9
22710.3	1082.5								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
18555.4	.04	19651.9	.035	20388.3	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19651.9	20388.3	475 510.51	570	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
18555.4	19651.9	1082	F
20388.3	22710.3	1082	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 214.04

INPUT
Description: 214.04
Station Elevation Data num= 96

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
19072.9	1079.7	19093.4	1080.3	19132.2	1080.8	19189.9	1082.5	19193.8	1082.6
19198.4	1082.5	19239.2	1081	19288.1	1081.2	19324.4	1080.7	19371.7	1079.1
19395.9	1078.4	19428.8	1078	19449.6	1077.2	19490.6	1077.5	19513.1	1077.7
19544.1	1077.9	19555.9	1077.7	19588.8	1076.5	19610.7	1075.7	19613.2	1075.7
19632.1	1075.8	19635.6	1075.8	19636.8	1075.4	19702.8	1053	19711.2	1052.5
19718.8	1052.3	19726.8	1051.2	19735.4	1048.8	20175.7	1049	20286.6	1049
20298.5	1052.8	20376.6	1076.5	20387.2	1075.5	20390.3	1075.2	20574.2	1076
20667.2	1076.1	20825.6	1075.6	20839.5	1075.5	20839.8	1075.5	20855.8	1073
20864.2	1073.4	20909.3	1072.6	20914.5	1072.6	20915.6	1072.9	20928.6	1077
20951.8	1077	20990.8	1076.9	20996.8	1076.9	21016.8	1077.3	21040.9	1077.5
21130.4	1077.3	21234.3	1076.9	21246.3	1076.9	21256.8	1076.2	21294.9	1076.5
21366.4	1076.6	21461.4	1076.5	21539.2	1076.3	21557.9	1076.3	21565.1	1076.3
21586.9	1076.6	21607.7	1076.8	21639.2	1077.1	21662.1	1077.5	21690.5	1078.1
21711.2	1078.3	21774.8	1078.5	21799.9	1079.2	21800.4	1079.3	21942.9	1079.4
21971	1079.3	22001.7	1079.3	22020.7	1079.3	22177.7	1078.3	22203.1	1078.1
22217.2	1078.1	22226.8	1078	22231.1	1078	22238.5	1078	22248	1077.8
22357.9	1076.9	22384.7	1077.9	22394.1	1078.2	22399.6	1078.1	22400.9	1078.1
22428.8	1077.9	22430.1	1077.9	22450.6	1078.2	22542.8	1078.3	22554	1078.5
22667.1	1079.2	22667.7	1079.3	22717.7	1081.1	22725.6	1081.1	22727.3	1081.2
22747.1	1084								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
19072.9	.04	19636.8	.035	20376.6	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19636.8	20376.6	495 493.12	480	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
19072.9	19636.8	1083	F
20376.6	22747.1	1083	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 213.95

INPUT
Description: 213.95 - FEMA Section AG
Station Elevation Data num= 96

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
19012.2	1082.3	19071.8	1081.2	19072.8	1081.2	19073.5	1081.2	19172.6	1080
19176.1	1079.9	19177	1079.9	19191.6	1079.8	19233.8	1079.1	19245.6	1079.2
19283.7	1079.1	19366	1078.5	19459.9	1077.8	19508.7	1075.2	19510	1075.1
19510.4	1075.2	19511.8	1075.3	19534.7	1076.7	19583.1	1074.4	19622.2	1071.5
19627.4	1072.4	19631.4	1072.9	19699.3	1056.7	19729	1049.4	19783.8	1049.5
20255.4	1049.3	20277.7	1056.5	20337.1	1075.9	20360.3	1074.9	20361.6	1074.8
20403.2	1074.5	20653.5	1075.3	20691.9	1075.3	20740	1075.5	20772	1075.4
20775.5	1075.1	20784.4	1073.9	20808.5	1074.1	20840.9	1074.4	20844.2	1074.5
20853.7	1075.1	20870	1074.8	20875	1074.6	20914.9	1075.6	20922.3	1075.7
20949.7	1076.5	20960.6	1076.8	20964.2	1076.9	20966.3	1078.4	20973	1080.1

21108.8	1079.4	21171.4	1079.5	21176.1	1079.5	21183	1079.7	21200.9	1076.8
21203.1	1076.6	21232.6	1076.3	21271.1	1076	21272.6	1076	21274.1	1076
21377.7	1076.7	21386.9	1076.7	21400.8	1076.7	21470.9	1077.6	21502.4	1077.7
21528	1077.6	21534	1077.9	21534.2	1077.9	21537	1078	21542.7	1077.4
21542.9	1077.8	21554.1	1077.4	21695.2	1077.7	21731.7	1077.2	21736.1	1076.3
21743.3	1075.1	21752	1076.3	21753.2	1076.5	21753.7	1076.6	21759.1	1078.6
21760.3	1079.1	21763.3	1079.6	21764.1	1079.5	21772.7	1079.3	21784.7	1079.3
21791.6	1079.5	21806.1	1079.6	21832.6	1079.8	21918.1	1079.8	21918.4	1080.2
22000.8	1079.8	22342	1078.4	22351.4	1078.4	22362.3	1078.4	22373.8	1078.7
22391.3	1078.7								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
19012.2	.04	19534.7	.035	20337.1	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19534.7	20337.1	500	504.25	500	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
19012.2	19534.7	1082.3	F
20337.1	22391.3	1082.3	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 213.85

INPUT
Description: 213.85
Station Elevation Data num= 96

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
17827.8	1078.7	17849.3	1078.5	17962.5	1078	17983.6	1077.8	18087.6	1077.7
18117.7	1077.6	18209	1077.4	18245.6	1077.6	18313.2	1077.9	18389.3	1078.8
18415.4	1078.8	18437.5	1078.2	18449	1078.3	18463.7	1078.2	18513.6	1077.6
18548.9	1077.6	18753.1	1077.6	18798.9	1077.6	18834.2	1077.6	18917.4	1077
19257.5	1075.3	19264.9	1075.1	19293.5	1075.6	19308	1069.8	19333.3	1060.1
19342.5	1063.1	19360.7	1068.8	19366.6	1068.9	19391	1069.1	19423.4	1069.4
19453.2	1068.8	19469.5	1068.4	19505	1067.4	19506.5	1067.3	19507.3	1067.3
19507.8	1067.3	19547.4	1067.3	19584.5	1067.6	19698.5	1068	19698.6	1068
19700.1	1067.8	19706.3	1067	19707.5	1066.9	19732.9	1066.7	19742.3	1067
19770.4	1067.6	19785.4	1067.6	19789.2	1066.5	19853.9	1048.1	19906.4	1048.1
20083.9	1048.2	20249.9	1048.3	20313.2	1069.1	20328.7	1074.2	20334.9	1074.2
20586	1074.1	20640.3	1074.2	20781.1	1074.5	20824.2	1074.1	20842	1073.7
20852.3	1073.7	20870.3	1073.9	20934.9	1073.8	20979.5	1074.4	21111.7	1075.1
21125.5	1075	21144.4	1074.8	21152.1	1075.1	21185.5	1076.2	21224.6	1075.6
21230.8	1075.4	21246.8	1077.2	21248.3	1077.3	21269	1076.4	21270.4	1076.3
21272.5	1076.3	21337.9	1076.3	21381.5	1076.2	21384.6	1076.3	21498.8	1077.1
21503.7	1077.1	21545.5	1077.1	21557.5	1077.1	21587	1077.2	21625.9	1077.3
21671.9	1077.5	21707.6	1077.4	21723.9	1077.4	21767.4	1077.3	21770.2	1077.3
21773.6	1077.4	21774.6	1077.4	21801.1	1079.6	21831.2	1078.8	21907.4	1079.1
21970.5	1078.8								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
17827.8	.04	19785.4	.035	20328.7	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19785.4	20328.7	521	520.04	541	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
17827.8	19618.33	1078	F
20328.7	21970.5	1078	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 213.75

INPUT
Description: 213.75
Station Elevation Data num= 28

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
18435	1076	19470	1076	19600	1080	19633.4	1080.84	19633.5	1074.13
19633.6	1073.5	19636.5	1073.5	19709	1048.55	19764	1047	19769.5	1047
19834.5	1047.15	19899	1046.6	19904	1046.6	19959	1047	20034	1044.61
20039	1044.6	20104	1045	20169	1045.5	20174	1045.5	20240.5	1049.35
20302	1073.8	20305	1073.8	20305.1	1074.8	20305.2	1081.5	20340	1080

```
   20490    1076   20925    1075   21465    1076

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
   18435    .037 19633.5    .032 20305.1    .037

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       19633.5 20305.1             125  116.36     120             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
   18435 19633.5 1074.13       F
 20305.1   21465  1074.8       F

BRIDGE


RIVER: 1
REACH: 1                   RS: 213.745

INPUT
Description: 7th Street Bridge
Distance from Upstream XS =       .1
Deck/Roadway Width        =  115.36
Weir Coefficient          =     2.6
Upstream  Deck/Roadway Coordinates
    num=       8
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
 19633.4 1080.84 1074.13 19633.5 1080.84 1074.13   19764 1084.56 1077.81
   19899 1085.96 1079.23   20039 1085.95  1079.2   20174 1084.45  1077.7
   20305 1081.53 1074.82 20305.2  1081.5 1074.82

Upstream Bridge Cross Section Data
Station Elevation Data    num=      28
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
   18435    1076   19470    1076   19600    1080 19633.4 1080.84 19633.5 1074.13
 19633.6  1073.5 19636.5  1073.5   19709 1048.55   19764    1047 19769.5    1047
 19834.5 1047.15   19899  1046.6   19904  1046.6   19959    1047   20034 1044.61
   20039  1044.6   20104    1045   20169  1045.5   20174  1045.5 20240.5 1049.35
   20302  1073.8   20305  1073.8 20305.1  1074.8 20305.2  1081.5   20340    1080
   20490    1076   20925    1075   21465    1076

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
   18435    .037 19633.5    .032 20305.1    .037

Bank Sta: Left   Right    Coeff Contr.   Expan.
       19633.5 20305.1             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
   18435 19633.5 1074.13       F
 20305.1   21465  1074.8       F

Downstream  Deck/Roadway Coordinates
    num=       8
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
 19633.4 1080.84 1074.13 19633.5 1080.84 1074.13   19764 1084.56 1077.81
   19899 1085.96 1079.23   20039 1085.95  1079.2   20174 1084.45  1077.7
   20305 1081.53 1074.82 20305.2  1081.5 1074.82

Downstream Bridge Cross Section Data
Station Elevation Data    num=      28
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
   18435    1076   19470    1076   19600    1080 19633.4 1080.84 19633.5 1074.13
 19633.6  1073.5 19636.5  1073.5   19709 1048.55   19764    1047 19769.5    1047
 19834.5 1047.15   19899  1046.6   19904  1046.6   19959    1047   20034 1044.61
   20039  1044.6   20104    1045   20169  1045.5   20174  1045.5 20240.5 1049.35
   20302  1073.8   20305  1073.8 20305.1  1074.8 20305.2  1081.5   20340    1080
   20490    1076   20925    1075   21465    1076

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
   18435    .037 19633.5    .032 20305.1    .037

Bank Sta: Left   Right    Coeff Contr.   Expan.
       19633.5 20305.1             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
   18435 19633.5 1074.13       F
 20305.1   21465  1074.8       F
```

```
Upstream Embankment side slope              =         horiz. to 1.0 vertical
Downstream Embankment side slope            =         horiz. to 1.0 vertical
Maximum allowable submergence for weir flow =     .95
Elevation at which weir flow begins         =
Energy head used in spillway design         =
Spillway height used in design              =
Weir crest shape                            = Broad Crested

Number of Piers =  4

Pier Data
Pier Station     Upstream= 19766.5    Downstream= 19766.5
Upstream     num=        2
    Width   Elev    Width   Elev
       5    1047        5 1077.88
Downstream     num=        2
    Width   Elev    Width   Elev
       5    1047        5 1077.88

Pier Data
Pier Station     Upstream= 19901.5    Downstream= 19901.5
Upstream     num=        2
    Width   Elev    Width   Elev
       5  1046.6        5  1079.2
Downstream     num=        2
    Width   Elev    Width   Elev
       5  1046.6        5  1079.2

Pier Data
Pier Station     Upstream= 20036.5    Downstream= 20036.5
Upstream     num=        2
    Width   Elev    Width   Elev
       5  1044.6        5  1079.2
Downstream     num=        2
    Width   Elev    Width   Elev
       5  1044.6        5  1079.2

Pier Data
Pier Station     Upstream= 20171.5    Downstream= 20171.5
Upstream     num=        2
    Width   Elev    Width   Elev
       5  1045.5        5  1077.7
Downstream     num=        2
    Width   Elev    Width   Elev
       5  1045.5        5  1077.7

Number of Bridge Coefficient Sets =  1

Low Flow Methods and Data
       Energy
       Momentum               Cd   =     1.2
       Yarnell                KVal =    1.05
Selected Low Flow Methods = Highest Energy Answer

High Flow Method
       Energy Only

Additional Bridge Parameters
       Add Friction component to Momentum
       Add Weight component to Momentum
       Class B flow critical depth computations use critical depth
           inside the bridge at the upstream end
       Criteria to check for pressure flow = Upstream energy grade line

CROSS SECTION


RIVER: 1
REACH: 1                 RS: 213.74

INPUT
Description: 213.74
Station Elevation Data    num=      28
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
   18435    1076   19470    1076   19600    1080 19633.4 1080.84 19633.5 1074.13
 19633.6  1073.5 19636.5  1073.5   19709 1048.55   19764    1047 19769.5    1047
 19834.5 1047.15   19899  1046.6   19904  1046.6   19959    1047   20034 1044.61
   20039  1044.6   20104    1045   20169  1045.5   20174  1045.5 20240.5 1049.35
```

20302	1073.8	20305	1073.8	20305.1	1074.8	20305.2	1081.5	20340	1080
20490	1076	20925	1075	21465	1076				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
18435	.037	19633.5	.032	20305.1	.037

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19633.5	20305.1	391	373.47	361	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
18435	19633.5	1074.13	F
20305.1	21465	1074.8	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 213.66

INPUT
Description: 213.66
Station Elevation Data num= 96

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
17026.7	1076.4	17035.9	1076.4	17047	1076.4	17057.3	1076.5	17212.3	1077.3
17306.5	1077.8	17311.3	1077.7	17325.2	1077.3	17326.2	1077.3	17343.4	1077.3
17442.9	1076.7	17474.5	1076.6	17571	1076	17573.6	1076	17595.6	1076.1
17610	1076.1	17705.1	1075	17741.5	1075.1	17947.8	1075.4	17953.1	1075.5
18038.8	1075.4	18185.8	1075.6	18234.4	1076.1	18300.9	1076.4	18318.8	1076.5
18414	1075.5	18414.6	1075.5	18415.1	1075.5	18415.7	1075.5	18448.6	1075.8
18455.1	1075.4	18472.5	1073.3	18527.9	1073.3	18683	1073	18718.7	1073
18832.1	1073.3	18873.8	1073.2	18878.4	1072.9	18881.8	1072.9	18892.6	1074.2
18901.3	1075.2	19033.1	1075.2	19131.6	1074.9	19140.9	1074.8	19157.1	1074.8
19235.1	1073.7	19291.4	1073.4	19291.9	1073.4	19292.2	1073.4	19391.8	1069.9
19418.5	1069.7	19442.4	1069.3	19496.9	1070	19532.6	1070.6	19537.6	1070.2
19543	1070.6	19572.3	1071.8	19605.3	1068.7	19616.1	1068.2	19621.3	1069.8
19633.2	1073.3	19663.1	1073.7	19675.2	1073.6	19689.7	1068.5	19748.8	1047.6
19750.4	1047.6	20010.7	1047.7	20194.9	1047.9	20235	1062.5	20260.3	1071.7
20270.2	1073.7	20288.3	1076.6	20297.7	1078.3	20387.2	1078.5	20416.3	1078.5
20457.1	1078.5	20464.9	1076.1	20469.4	1075.3	20825.5	1074.4	20828.5	1074.4
20828.8	1074.4	20830.9	1074.4	20837.2	1074.9	20839.2	1074.9	20870.3	1074.9
20871.4	1074.9	20872.6	1074.6	20872.8	1074.7	20900.8	1074.1	20901.5	1074
20908.4	1073.9	20912.4	1073.9	20915.4	1074	20927	1075.1	20951.2	1077.5
20999.4	1077.6								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
17026.7	.037	19675.2	.032	20297.7	.037

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19675.2	20297.7	490	491.08	495	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
17026.7	19675.2	1078.5	F
20297.7	20999.4	1078.5	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 213.57

INPUT
Description: 213.57 - FEMA Section AF
Station Elevation Data num= 96

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
17508.1	1075.8	17669.7	1076	17677.2	1076	17679.4	1076	17681.9	1075.9
17685.3	1075.9	17879.1	1077.7	17883.6	1077.7	17891.2	1077.7	17899.7	1077.7
17907.2	1077.7	18293.4	1077.1	18302.2	1077.1	18305.6	1077.2	18335	1077.2
18409.4	1076.8	18482.1	1076	18487.1	1075.3	18493.2	1074.6	18496.9	1074.6
18674	1073.2	18717	1073	18743.5	1072.8	18755.4	1072.8	18802	1072.6
18832.6	1072.6	18934.4	1072.7	18941.7	1072.7	18977	1069	18979.3	1068.7
18979.7	1068.7	18981.1	1068.6	19032.8	1069.7	19078.3	1069.3	19123.5	1069
19190.3	1068.3	19211.6	1068.4	19212.3	1068.4	19245	1068.5	19287.9	1069
19318.4	1068.9	19384.7	1069.1	19398.3	1068.6	19484.5	1068.5	19514.1	1067.2
19542.6	1063.6	19548	1062.9	19575	1062.8	19586.3	1062.5	19595.5	1063.8
19603.2	1064.4	19612.3	1065.2	19617.4	1064.5	19668.9	1061.9	19672.3	1061.7
19674.3	1061.7	19711.7	1060.1	19720	1057.4	19743.1	1047.9	20035.4	1047
20123.9	1046.7	20135.8	1048.3	20147.5	1050.1	20202.7	1051.3	20261.3	1052.3

20286.6	1053	20301.2	1052.6	20302.5	1052.5	20345.5	1073.5	20347.7	1074.6
20347.8	1074.6	20348.2	1074.6	20373.8	1075.7	20384.8	1075.5	20390.6	1075.6
20426.7	1075.7	20435.9	1075.7	20452.6	1075.3	20481.8	1075.4	20485.6	1075.2
20501.3	1076.7	20634	1076	20804.5	1073.3	20853.6	1072.8	20858.1	1072.8
20865.8	1073.1	20870.9	1073	20902.9	1071.5	20922.6	1075.2	20923.6	1075.4
20925.3	1075.3	20936.8	1075.1	20950.5	1074.7	21085.5	1074.8	21211.9	1075.1
21311.2	1074.8								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
17508.1	.037	19484.5	.032	20373.8	.037

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19484.5	20373.8	650	500.37	390	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
17508.1	19484.5	1077.7	F
20373.8	21311.2	1077.7	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 213.47

INPUT
Description: 213.47
Station Elevation Data num= 96

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
17897	1072.3	17950.9	1072.3	17955.5	1073.1	17972.5	1074.8	18140.3	1074.1
18179.1	1074.1	18193.1	1074	18207.9	1073.9	18257.4	1074	18402.2	1073.7
18450.1	1073.2	18519.9	1072.6	18592.3	1071.7	18600.6	1071.6	18625.8	1071.9
18741.5	1071.7	18784.9	1071.7	18805.1	1070.7	18823.4	1069.4	18880.6	1067
18888.4	1066.7	18938.9	1066.6	18942.7	1066.6	18948.4	1066.6	18970.5	1067.2
19008	1068.2	19008.9	1068.2	19041.7	1068.5	19057.6	1068.6	19057.8	1068.6
19058.1	1068.6	19060.2	1068.6	19154.7	1068.1	19202.4	1067.9	19243.3	1067
19289	1066	19306.6	1065.6	19313.9	1065.3	19357.8	1064.8	19392.5	1064.4
19420.7	1063.8	19432.7	1063.5	19483.4	1062	19493.9	1061.7	19499.6	1061.8
19534.7	1062.6	19536.4	1062.5	19585.4	1061.2	19586.6	1061.2	19587.5	1061.2
19588.9	1061.1	19593.6	1060.6	19689.9	1051.5	19699.6	1050.5	19735.3	1047
19807.1	1046.8	19827.4	1046.8	19970.4	1046.6	19993.9	1046.3	20037.8	1046.2
20146.5	1045.8	20205.3	1048.7	20214.8	1049.3	20219.4	1049	20220.8	1048.9
20255.2	1063.1	20274.2	1072.4	20283.3	1072.6	20341.6	1072.5	20362.6	1072.6
20428.7	1074.9	20446.8	1074.9	20469.6	1074.9	20474.3	1074.9	20476.7	1075
20483.2	1074.9	20484.1	1074.9	20486.3	1074.9	20488.6	1074.7	20489.3	1074.7
20515.7	1073.2	20526.3	1073.3	20537.5	1073.5	20540.5	1073.4	20545	1073.8
20567.4	1075.2	20569.1	1075.4	20578.4	1075	20619.2	1074.5	20621.6	1074.4
20649.8	1074	20700.8	1074	20735.1	1074.2	20751.5	1074.5	20765.2	1074.8
20783.9	1075.1								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
17897	.037	19243.3	.032	20274.2	.037

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19243.3	20274.2	500	493.66	485	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
17897	19243.3	1075.4	F
20274.2	20783.9	1075.4	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 213.38

INPUT
Description: 213.38
Station Elevation Data num= 96

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
17634.6	1070.7	17652.1	1070.7	17729.5	1071.2	17747.9	1072.2	17763.8	1073.1
17893.9	1073.4	17976.4	1073.1	18006.5	1072.7	18006.7	1072.7	18008	1072.7
18197.8	1072.8	18341.3	1071.5	18390.9	1071.3	18419.4	1070.9	18420.4	1070.9
18423.8	1070.9	18431	1071	18656.8	1070.5	18735	1070.6	18756.6	1070.9
18796.6	1071.1	18974.7	1070.8	19012.6	1070.8	19073.3	1070.8	19129.4	1069.7
19192.7	1068.9	19195.5	1068.8	19196.5	1068.5	19204.6	1068.3	19213.9	1068.2
19225.5	1067.5	19242.1	1066.8	19303.8	1064.4	19303.9	1064.4	19304.2	1064.4
19346.1	1064.6	19365.3	1061.2	19365.5	1061.2	19401.7	1061	19405.7	1060.8

19411.2	1060.6	19452.9	1058.9	19499.7	1059.7	19523.7	1060.4	19526.3	1060.4
19530.8	1060.5	19534.1	1060.4	19575.5	1058.6	19625.5	1054.4	19648.5	1052.9
19678.5	1053.7	19684.4	1053.8	19732.6	1049.4	19735.1	1049.2	19761.4	1050.8
19767.8	1050.7	19771.9	1050.2	19796.5	1046.2	19864.4	1045.8	20277.6	1045.7
20311.6	1045.6	20311.7	1045.4	20329.1	1049.4	20361.7	1051.6	20363.3	1052.8
20364.3	1052.8	20374	1053.5	20405.3	1054.8	20417	1056.5	20434.2	1065
20473	1075.2	20473.5	1075.2	20515.6	1074.3	20532	1073.2	20533.3	1073
20535.9	1073	20539.6	1072.9	20569.9	1072.5	20578	1072.1	20607.5	1072.2
20652.6	1074	20655.9	1074.1	20722.7	1075.3	20793.4	1076	20804.4	1076.4
20831.2	1076.4	20834	1075.7	20842.3	1072.9	20845.3	1072.1	20848.9	1072.1
20860.3	1072.3	20875.9	1072.3	20895.1	1072.4	20963.7	1072.4	20982.3	1071.9
20996.7	1072.4								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
17634.6	.037	19346.1	.032	20473	.037

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19346.1	20473	210 290.06	395	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
17634.6	19346.1	1076.4	F
20473	20996.7	1076.4	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 213.33

INPUT
Description: 213.33
Station Elevation Data num= 96

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
17662.6	1072.6	17668	1072.6	17677	1072.6	17679.2	1072.7	17685.5	1072.7
17890.3	1072	17891.3	1072	17919.8	1071.9	18055.2	1071.9	18114.9	1071.9
18241.8	1071.2	18279.3	1070.9	18302.9	1070.9	18305.8	1070.8	18316.6	1070.7
18337.3	1070.5	18464.8	1070.6	18565.2	1070.8	18644.2	1071	18654.1	1071
18680.7	1070.7	18888.5	1070	18954.5	1069.6	19002.1	1069.7	19091.3	1069
19104.2	1069	19104.4	1069	19107.7	1069	19109.5	1068.5	19112.3	1067.7
19112.4	1067.7	19123.4	1067.3	19136.1	1067.1	19144.4	1069.1	19147.5	1069.9
19163.9	1070.3	19173.4	1070.7	19184.4	1069.5	19203.3	1068.1	19209.7	1067.1
19222.7	1066	19244.2	1064.1	19272.3	1063	19328.9	1063.5	19336.9	1063.4
19344.3	1063.4	19367.2	1062.3	19389	1062	19396.3	1061.9	19416.7	1061.3
19418.1	1060.9	19453.8	1059.7	19472.5	1059.2	19476.7	1057.5	19530.4	1058.7
19538.8	1058.7	19541	1058.6	19590	1056.9	19629.4	1054.2	19644.5	1053.7
19671.3	1051.4	19710.3	1047.2	19715.9	1046.8	19755.6	1046.4	19757.3	1046.3
19759.3	1046.3	19761.3	1046.3	19780.3	1046.2	20358.7	1045.4	20444.8	1048.7
20449.3	1048.9	20508	1066.2	20514.9	1068.7	20553.2	1069.1	20640.2	1069.7
20662.5	1069.4	20704	1068.4	20729.7	1068.7	20782.7	1069.1	20784.7	1069.2
20789.1	1069.5	20821.1	1071.4	20854.7	1073	20856.9	1073.1	20859.1	1073.1
20896	1072.7	20902.1	1072.7	20919.8	1072.5	20932.4	1072.6	20967.3	1072.5
21012.3	1072.8	21051.5	1073	21059.7	1073	21066	1073.1	21092.4	1073
21244.4	1073.1								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
17662.6	.037	19328.9	.032	20514.9	.037

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19328.9	20514.9	266 316.41	426	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
17662.6	19328.9	1073.1	F
20640.2	21244.4	1073.1	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 213.26

INPUT
Description: 213.26
Station Elevation Data num= 45

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
17300	1071.7	17670	1072	17850	1073.6	18250	1075.5	19180	1078.2
19488.1	1078.1	19488.2	1072.97	19495.2	1069.2	19517.2	1057.5	19564.2	1055.45
19584.2	1051.3	19586.9	1051	19589.4	1051	19638.2	1048.1	19686.9	1047.3

```
 19689.4  1047.3 19704.2  1047.2 19743.2  1042.2 19786.9 1042.15 19789.4  1042.2
 19838.2  1042.8 19871.7  1042.9 19886.9 1043.85 19889.4  1043.8 19938.2  1044.1
 19986.9  1042.7 19989.4  1042.7 20038.2  1042.3 20086.9 1042.85 20089.4  1042.8
 20121.7  1043.3 20171.2 1041.05 20188.2  1040.9 20189.4  1040.9 20223.2  1040.4
 20248.7  1042.2 20286.9  1043.4 20289.4  1043.4 20307.7 1044.35 20382.7  1069.6
 20387.9  1070.4 20387.9  1072.9   20388 1078.19   20790  1078.3   21330  1075.5

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
   17300    .037 19488.2    .032 20387.9    .037

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.    Expan.
       19488.2 20387.9              155  152.22     155              .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
   17300 19488.2 1072.97        F
 20387.9   21330  1070.4        F

BRIDGE


RIVER: 1
REACH: 1                   RS: 213.255

INPUT
Description: Central Avenue Bridge
Distance from Upstream XS =       .1
Deck/Roadway Width        =  151.22
Weir Coefficient          =     2.6
Upstream  Deck/Roadway Coordinates
    num=       11
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
 19488.1  1078.1 1072.97 19488.2 1078.14 1072.97 19586.9  1078.5 1073.28
 19686.9 1078.86 1073.64 19786.9 1079.15 1073.93 19886.9 1079.37  1074.2
 19989.4 1079.38  1074.2 20086.9 1079.13 1073.93 20188.2 1078.89  1073.7
 20286.9 1078.53 1073.32   20388 1078.19 1072.98

Upstream Bridge Cross Section Data
Station Elevation Data    num=      45
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
   17300   1071.7    17670     1072    17850   1073.6    18250   1075.5    19180   1078.2
 19488.1   1078.1 19488.2 1072.97 19495.2   1069.2 19517.2   1057.5 19564.2 1055.45
 19584.2   1051.3 19586.9     1051 19589.4     1051 19638.2   1048.1 19686.9   1047.3
 19689.4   1047.3 19704.2   1047.2 19743.2   1042.2 19786.9 1042.15 19789.4   1042.2
 19838.2   1042.8 19871.7   1042.9 19886.9 1043.85 19889.4   1043.8 19938.2   1044.1
 19986.9   1042.7 19989.4   1042.7 20038.2   1042.3 20086.9 1042.85 20089.4   1042.8
 20121.7   1043.3 20171.2 1041.05 20188.2   1040.9 20189.4   1040.9 20223.2   1040.4
 20248.7   1042.2 20286.9   1043.4 20289.4   1043.4 20307.7 1044.35 20382.7   1069.6
 20387.9   1070.4 20387.9   1072.9   20388 1078.19   20790   1078.3   21330   1075.5

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
   17300    .037 19488.2    .032 20387.9    .037

Bank Sta: Left   Right    Coeff Contr.    Expan.
       19488.2 20387.9              .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
   17300 19488.2 1072.97        F
 20387.9   21330  1070.4        F

Downstream  Deck/Roadway Coordinates
    num=       11
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
 19488.1  1078.1 1072.97 19488.2 1078.14 1072.97 19586.9  1078.5 1073.28
 19686.9 1078.86 1073.64 19786.9 1079.15 1073.93 19886.9 1079.37  1074.2
 19989.4 1079.38  1074.2 20086.9 1079.13 1073.93 20188.2 1078.89  1073.7
 20286.9 1078.53 1073.32   20388 1078.19 1072.98

Downstream Bridge Cross Section Data
Station Elevation Data    num=      45
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
   17300   1071.7    17670     1072    17850   1073.6    18250   1075.5    19180   1078.2
 19488.1   1078.1 19488.2 1072.97 19495.2   1069.2 19517.2   1057.5 19564.2 1055.45
 19584.2   1051.3 19586.9     1051 19589.4     1051 19638.2   1048.1 19686.9   1047.3
 19689.4   1047.3 19704.2   1047.2 19743.2   1042.2 19786.9 1042.15 19789.4   1042.2
 19838.2   1042.8 19871.7   1042.9 19886.9 1043.85 19889.4   1043.8 19938.2   1044.1
 19986.9   1042.7 19989.4   1042.7 20038.2   1042.3 20086.9 1042.85 20089.4   1042.8
 20121.7   1043.3 20171.2 1041.05 20188.2   1040.9 20189.4   1040.9 20223.2   1040.4
```

```
 20248.7  1042.2 20286.9  1043.4 20289.4  1043.4 20307.7 1044.35 20382.7  1069.6
 20387.9  1070.4 20387.9  1072.9   20388 1078.19   20790  1078.3   21330  1075.5

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
   17300    .037 19488.2    .032 20387.9    .037

Bank Sta: Left   Right    Coeff Contr.   Expan.
       19488.2 20387.9            .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
   17300 19488.2 1072.97       F
 20387.9   21330  1070.4       F

Upstream Embankment side slope              =         horiz. to 1.0 vertical
Downstream Embankment side slope            =         horiz. to 1.0 vertical
Maximum allowable submergence for weir flow =     .95
Elevation at which weir flow begins         =
Energy head used in spillway design         =
Spillway height used in design              =
Weir crest shape                            = Broad Crested

Number of Piers =  8

Pier Data
Pier Station     Upstream=19588.15    Downstream=19588.15
Upstream     num=       2
    Width   Elev    Width   Elev
     2.5    1051     2.5 1073.28
Downstream     num=       2
    Width   Elev    Width   Elev
     2.5    1051     2.5 1073.28

Pier Data
Pier Station     Upstream=19688.15    Downstream=19688.15
Upstream     num=       2
    Width   Elev    Width   Elev
     2.5  1047.3     2.5  1073.7
Downstream     num=       2
    Width   Elev    Width   Elev
     2.5  1047.3     2.5  1073.7

Pier Data
Pier Station     Upstream=19788.15    Downstream=19788.15
Upstream     num=       2
    Width   Elev    Width   Elev
     2.5 1042.15     2.5  1073.9
Downstream     num=       2
    Width   Elev    Width   Elev
     2.5 1042.15     2.5  1073.9

Pier Data
Pier Station     Upstream=19888.15    Downstream=19888.15
Upstream     num=       2
    Width   Elev    Width   Elev
     2.5  1043.8     2.5  1074.2
Downstream     num=       2
    Width   Elev    Width   Elev
     2.5  1043.8     2.5  1074.2

Pier Data
Pier Station     Upstream=19988.15    Downstream=19988.15
Upstream     num=       2
    Width   Elev    Width   Elev
     2.5  1042.7     2.5  1074.2
Downstream     num=       2
    Width   Elev    Width   Elev
     2.5  1042.7     2.5  1074.2

Pier Data
Pier Station     Upstream=20088.15    Downstream=20088.15
Upstream     num=       2
    Width   Elev    Width   Elev
     2.5  1042.8     2.5  1073.9
Downstream     num=       2
    Width   Elev    Width   Elev
     2.5  1042.8     2.5  1073.9

Pier Data
```

```
Pier Station     Upstream=20189.45    Downstream=20189.45
Upstream     num=        2
    Width   Elev    Width   Elev
     2.5  1040.9     2.5  1073.7
Downstream     num=        2
    Width   Elev    Width   Elev
     2.5  1040.9     2.5  1073.7

Pier Data
Pier Station     Upstream=20288.15    Downstream=20288.15
Upstream     num=        2
    Width   Elev    Width   Elev
     2.5  1043.4     2.5  1073.3
Downstream     num=        2
    Width   Elev    Width   Elev
     2.5  1043.4     2.5  1073.3

Number of Bridge Coefficient Sets =  1

Low Flow Methods and Data
       Energy
       Momentum               Cd   =     1.2
       Yarnell                KVal =    1.05
Selected Low Flow Methods = Highest Energy Answer

High Flow Method
       Energy Only

Additional Bridge Parameters
       Add Friction component to Momentum
       Add Weight component to Momentum
       Class B flow critical depth computations use critical depth
           inside the bridge at the upstream end
       Criteria to check for pressure flow = Upstream energy grade line

CROSS SECTION


RIVER: 1
REACH: 1                  RS: 213.25

INPUT
Description: 213.25 - FEMA Section AE
Station Elevation Data    num=      45
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
   17300  1071.7   17670    1072   17850  1073.6   18250  1075.5   19180  1078.2
 19488.1  1078.1 19488.2 1072.97 19495.2  1069.2 19517.2  1057.5 19564.2 1055.45
 19584.2  1051.3 19586.9    1051 19589.4    1051 19638.2  1048.1 19686.9  1047.3
 19689.4  1047.3 19704.2  1047.2 19743.2  1042.2 19786.9 1042.15 19789.4  1042.2
 19838.2  1042.8 19871.7  1042.9 19886.9 1043.85 19889.4  1043.8 19938.2  1044.1
 19986.9  1042.7 19989.4  1042.7 20038.2  1042.3 20086.9 1042.85 20089.4  1042.8
 20121.7  1043.3 20171.2 1041.05 20188.2  1040.9 20189.4  1040.9 20223.2  1040.4
 20248.7  1042.2 20286.9  1043.4 20289.4  1043.4 20307.7 1044.35 20382.7  1069.6
 20387.9  1070.4 20387.9  1072.9   20388 1078.19   20790  1078.3   21330  1075.5

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
   17300    .037 19488.2    .032 20387.9    .037

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       19488.2 20387.9              121  123.36     121             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
   17300 19488.2 1072.97       F
 20387.9   21330  1070.4       F

CROSS SECTION


RIVER: 1
REACH: 1                  RS: 213.21

INPUT
Description: 213.21

Right Channel Bank Station Interpolated
Station Elevation Data    num=      96
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 18330.9  1072.8   18364  1072.8 18412.8  1073.1 18447.9    1073 18475.1  1072.3
```

18506.2	1072	18530.5	1071.1	18588.6	1070	18604.7	1069.8	18607.3	1070		
18638.6	1069.9	18645.2	1070	18646.8	1070	18647	1070	18648.3	1070		
18679.6	1070.4	18691	1070.2	18696.8	1070.3	18826.1	1070.2	18853.1	1069.7		
18879.8	1069.1	18990	1068.8	19004.3	1068.6	19030.8	1069	19071.8	1069.5		
19171.4	1069.4	19189.5	1069.4	19238.8	1069.2	19251.2	1070	19253.8	1070		
19283.8	1069	19284.7	1069	19384	1068.2	19385.3	1068.1	19387.8	1068.1		
19391.2	1068.1	19421.7	1067.9	19486.6	1066.6	19490.3	1065.6	19518.8	1054.9		
19533.4	1049	19535.9	1049.5	19545.6	1052	19551.4	1054.2	19576.8	1051.8		
19595.9	1047.4	19611.2	1046.8	19618.6	1046.7	19619.1	1046.6	19626.3	1045.5		
19627	1045.3	19697	1045.2	19802.7	1045.1	20377.2	1044.9	20380.6	1045		
20387.2	1045.1	20389.8	1045.1	20418.5	1045.3	20484.9	1046.3	20500.9	1046.4		
20506.4	1046.3	20545.8	1046.4	20547	1046.4	20573.1	1046	20581	1046		
20584	1054.4	20584.6	1058.9	20634.9	1062.9	20654.9	1064.2	20663	1064.8		
20687	1065.1	20732.3	1064.9	20749.5	1065.1	20761.2	1066	20787.8	1066.2		
20803.3	1066.3	20840	1066.3	20853.8	1066.3	20900.8	1066.8	20929.7	1067.2		
20948.4	1067.8	20957.7	1070.3	20963.6	1072.1	20965.8	1071.9	20972.5	1072.2		
20980.1	1072.5	21025.3	1072.2	21041.7	1072.4	21049	1072.4	21083	1072.6		
21094.6	1072.7	21137.7	1072.7	21224.3	1073.6	21258.5	1074.2	21274.1	1074.3		
21278.4	1074.5										

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
18330.9	.037	19490.3	.032	20418.5	.037

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19490.3	20418.5	450	531.57	745	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
18330.9	19253.8	1074	F
20418.5	21278.4	1074	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 213.11

INPUT
Description: 213.11
Station Elevation Data num= 85

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
17566.5	1070.1	17705.4	1071.3	17742.2	1071.6	17814.3	1070.1	17888.9	1069.6
17929.2	1069.8	17996.1	1072.7	18084.9	1073.4	18245.7	1073.1	18304.6	1073.3
18312.5	1071.8	18319.5	1069.3	18320.2	1069.1	18324.7	1069.1	18353.4	1069.6
18382.1	1068.8	18390	1068.3	18395.2	1069.2	18399.3	1071.7	18472.2	1071.2
18480.8	1071.2	18492.7	1070.4	18507.8	1070	18517.1	1069.2	18520.7	1069.6
18584	1071.9	18596.8	1072.2	18606	1072.4	18609.2	1072.4	18753.6	1072
18759.6	1071.8	18769.2	1073.7	18780.8	1075.5	18785.7	1075	18793.4	1074.4
18863.8	1073.8	18931.9	1074.1	18960.3	1074.3	18976.4	1074.4	19015.9	1075
19047.7	1075	19171.5	1072.4	19275.4	1071	19456	1071.1	19523.2	1069.3
19575	1067.9	19589.1	1068.3	19601.9	1071.4	19606.1	1072.1	19616.1	1067.5
19661.3	1047.6	20012.6	1047.6	20486.9	1047.9	20586.5	1081.1	20599.1	1086
20638.9	1086.2	20743.9	1086.8	20798.9	1087.3	20849	1087.5	20878.6	1087.6
20889.5	1087.8	20899.2	1087.8	20922	1087.5	21000.4	1087.3	21062.3	1085.9
21080.5	1084.4	21100.6	1083.3	21131.5	1083	21372.7	1078.3	21390.1	1077.6
21449.7	1073.9	21464.1	1073.6	21478.8	1073.9	21484.8	1073.8	21573.7	1073.9
21602.4	1073.9	21694.6	1073.6	21800.6	1072.4	21943.2	1070.8	22180.4	1070.9
22217.7	1071	22268.3	1071.4	22474.2	1073.6	22486.2	1076.3	22488.2	1077

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
17566.5	.037	19606.1	.032	20599.1	.037

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19606.1	20599.1	425	459.38	565	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
17566.5	18780.8	1087.8	F
20599.1	22488.2	1087.8	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 213.03

INPUT
Description: 213.03
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
16056.5	1068.9	16069.1	1068.8	16071.5	1068.8	16197.1	1069.2	16383.9	1070
16409	1070	16413.8	1070	16414.4	1070	16428.8	1070	16501.9	1070.2
16550	1070.3	16603.1	1070.5	16734.3	1069.9	16759	1069.9	16800.6	1069.5
16821.1	1069.8	16943.1	1070.1	16956.6	1070.5	16985.9	1070.6	17193.9	1070.8
17238.8	1069.8	17263.2	1069.3	17296.6	1068.7	17461.4	1069.1	17486.5	1069.2
17576.5	1069.4	17728.6	1070.6	17908.4	1072	17938.3	1071.6	17974.7	1070.1
17987.3	1069.9	18028.7	1068.5	18086.7	1069.1	18107.5	1068.9	18113.8	1068.9
18246.2	1068.5	18370.2	1068.2	18382.5	1068.2	18389	1068.3	18394.9	1068.3
18496	1070.4	18502.4	1070.5	18521.4	1070.6	18643.8	1071	18700.9	1071.3
18708.1	1071.2	18723.6	1071.3	18831.5	1070.9	18846.4	1070.8	18847.1	1070.8
18848.3	1070.8	18969.8	1071.4	19007.8	1071.8	19178.9	1073.7	19181.7	1073.7
19324.1	1073.1	19588.8	1066.9	19627.1	1066	19640.5	1066.2	19662.1	1067.2
19666.3	1067.8	19672.11	066.574	19703.2	1060	19755.3	1050.7	19776.1	1048.9
19807.6	1047.8	19807.9	1047.8	19808.6	1047.8	19883.7	1046.8	19936.5	1046.7
19974.6	1046.7	20168.5	1046.8	20481.5	1047.5	20531.6	1047.5	20536.3	1047.6
20551.1	1052.6	20591.83	1066.575	20595.4	1067.8	20639.6	1083	20645.8	1085
20668.5	1085.5	20744.1	1085.4	20806.7	1086.1	20879.4	1082	20936.8	1078.5
20990.3	1075.5	21125.9	1073.2	21137.8	1072.9	21183.6	1072.1	21221	1072
21240.8	1071.7	21303.4	1071.3	21328.8	1071.1	21394.9	1071.7	21406.3	1071.8
21439	1071.7	21481.2	1071.9						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
16056.5	.037	19672.1	.03220591.83		.037

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

19672.12	0591.83		475	495	525	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
16056.5	19178.9	1086.1	F
20645.8	21481.2	1086.1	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 212.93

INPUT
Description: 212.93

Left and Right Channel Bank Stations Interpolated
Station Elevation Data num= 93

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
18913.7	1067.5	18940.6	1066.4	18961.6	1067.4	18996.4	1069.5	19034.7	1069.3
19121.7	1070.2	19158.8	1070.2	19269.6	1071.2	19362.4	1070.3	19381.3	1070.6
19412.2	1072.5	19420.1	1072.9	19430.8	1073.3	19436.5	1073.5	19633.3	1068.7
19645	1068.3	19645.7	1068.4	19645.9	1068.4	19653.4	1069	19673.1	1070.5
19690.76	1065.485	19697.4	1063.6	19757.3	1046.7	19779.3	1046.4	19826.6	1046.3
19850.5	1046.5	19924.2	1047.4	19928.9	1047.5	19929.5	1047.4	19958.7	1045.5
20129.7	1045.4	20271.7	1045.6	20345.4	1045.6	20426.9	1045.5	20489.75	1065.484
20489.8	1065.5	20498.7	1068.1	20501.4	1068	20587.1	1066.5	20637	1066.5
20655.9	1066.4	20685.9	1065.7	20749.1	1064.9	20804.3	1071.3	20847	1074.9
20872.4	1075.1	20941	1074.1	20990.9	1073	21005.7	1072.8	21075.3	1071.3
21079.7	1071.2	21083	1071.2	21113	1071.3	21246.3	1072.7	21249.5	1072.8
21261.8	1072.9	21268.5	1072.9	21332.8	1073.1	21571.4	1072.7	21590.1	1072.7
21815.9	1071.3	21853.1	1071.3	21982.5	1070.6	22017.6	1070.5	22314.9	1070
22499	1068.8	22548.8	1068.9	22568.2	1068.4	22648.5	1068.9	22948.3	1069.7
23054.9	1071.1	23121.6	1072	23140.9	1076.4	23143.5	1077.2	23151.2	1077.1
23159.2	1077	23162.2	1077.3	23171	1077.8	23179.9	1081.1	23202.7	1089.6
23248.6	1089.5	23303.8	1089.6	23327.8	1082.2	23331.1	1081	23333.2	1080.6
23345.9	1077.9	23350.9	1077.9	23361.3	1078.1	23377.6	1073.6	23386.3	1070.8
23389.2	1071	23392	1071.2	23394	1070.7				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
18913.7	.037	19690.76	.03220489.75		.037

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

19690.76	20489.75		495	501.9	535	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
18913.7	19673.1	1078	F
20498.7	23394	1078	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 212.84

INPUT
Description: 212.84 - FEMA Section AD

Left and Right Channel Bank Stations
Interpolated
Station Elevation Data num= 66

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
16284.9	1068.4	16487.1	1068.9	16606	1069.3	16985	1071.2	17015.9	1071.4
17038.7	1071.8	17089.2	1071.1	17339.8	1070.2	17519.4	1069.1	17554.9	1069.1
17652.7	1069	17900.6	1068.7	18109.2	1068.8	18133.9	1069	19053.9	1067.7
19203.8	1066	19229.6	1065.8	19232.1	1065.8	19238.5	1065.7	19242.2	1065.7
19244.8	1065.8	19286.8	1067.4	19292.2	1069.2	19450.5	1067.9	19498.7	1067.5
19560.8	1067	19586	1066.9	19671.4	1066.8	19692.2	1068.3	19695.5	1068.9
19711.5	1063.544	19765.4	1045.5	19772.2	1043.1	19790.5	1043.1	19811.3	1043.2
20298.7	1043.5	20314.2	1050.2	20347.25	1063.544	20367.7	1071.8	20367.9	1071.8
20405.2	1072.8	20416.8	1072.7	20424.4	1072.7	20490.9	1070.9	20522.9	1069.8
20629.8	1070.1	20679.7	1070.1	20767.5	1070.4	20793.1	1070.2	20818.2	1069.1
20874.5	1068.7	20940.7	1070.4	20979.1	1070.3	21186.4	1069.3	21242.6	1069.1
21449.2	1070.2	21488.8	1070.8	21502.4	1071	21582.5	1070.9	21684.9	1071.4
21805.3	1070.7	21883.6	1070.5	21943.6	1070.2	22187.5	1070.4	22226.7	1070.2
22398.2	1069.8								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
16284.9	.037	19711.5	.03	20347.25	.037

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
19711.5 20347.25 565 538.19 480 .1 .3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
16284.9	19695.5	1072.8	F
20367.7	22398.2	1072.8	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 212.74

INPUT
Description: 212.74

Left and Right Channel Bank Stations Interpolated
Station Elevation Data num= 70

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
15451.4	1067.1	15456.2	1067.3	15464.1	1067.8	15467.8	1068.3	15480.9	1067.9
15619.6	1066.5	15997.3	1067	16142.7	1066.6	16235	1067.1	16317.5	1067.4
16486.7	1067.9	16644.3	1068.2	16906.1	1067.7	17106.4	1067.8	17312.1	1069.3
17351.4	1069.8	17392.8	1069.3	17578.5	1067.9	17799	1066.9	17906.3	1067
18021.4	1067.4	18082.2	1066.6	18121.5	1067.1	18128.7	1067	19421.5	1067
19430.3	1070.5	19440.7	1074.4	19464.5	1074.9	19479.6	1075	19498.8	1064.8
19504.9	1062.5	19514.1	1062.5	19546.7	1062.8	19569.3	1066	19571.5	1066.5
19577.2	1066.5	19641.5	1067.1	19653.8	1066.8	19678.6	1067.3	19690.61	1063.061
19709.2	1056.5	19745.4	1042.1	19776.5	1041.9	20081.3	1041.6	20297.5	1041.8
20311.1	1046.1	20335	1053.3	20367.2	1063.063	20372.6	1064.7	20387.5	1069
20400.7	1069	20436.3	1069	20477.6	1068.5	20512.4	1068.7	20545.9	1068.9
20612.1	1068.9	20630.4	1069.2	20677.9	1069.9	20719.8	1069.6	20764.1	1069.6
20802.7	1069.4	20847.1	1068.9	20916.2	1069.1	20977.1	1068.7	21027.9	1068.8
21126.4	1069.4	21156	1069.5	21203.9	1069.2	21326.9	1068.9	21421.2	1069.1

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
15451.4	.037	19690.61	.032	20367.2	.037

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
19690.61 20367.2 296 242.17 66 .1 .3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
15451.4	19678.6	1074	F
20387.5	21421.2	1074	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 212.68

```
INPUT
Description: 212.68



             Upstream face of 7th Avenue bridge
Station Elevation Data    num=      34
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
   18325  1064.219130.38    106819307.91    1072 19492.8 1073.0319492.89 1066.21
19501.071063.02319567.36  1037.219595.08  1037.519600.27  1037.519645.74  1037.8
19703.33 1037.8819708.52 1037.8819721.94  1039.119780.83  1037.619790.36    1040
19811.58  1039.419816.77  1039.419829.76  1037.219839.72    103819878.26  1039.3
19919.83  1037.519925.02  1037.519977.41  1036.920028.08  1038.120033.27  1038.1
20064.88  1037.5 20130.11063.02520137.19  1065.820137.28 1072.6620407.73    1072
20615.57    106820641.55  1067.620780.11    106821568.17  1069.3

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
   18325    .03719501.07    .032 20130.1    .037

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.    Expan.
      19501.07 20130.1             155  154.01     155             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
   1832519492.89 1066.21       F
20137.1921568.17  1065.8       F

BRIDGE


RIVER: 1
REACH: 1                  RS: 212.675

INPUT
Description: 7th Avenue Bridge
Distance from Upstream XS =       .1
Deck/Roadway Width        =  153.01
Weir Coefficient          =     2.6
Upstream  Deck/Roadway Coordinates
    num=      11
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
   18325  1064.2  1064.219130.38    1068    106819307.91    1072    1072
 19492.8 1073.03 1073.0319492.89 1073.03 1066.2119595.08  1073.9 1067.07
19703.34 1074.35 1067.5219811.58 1074.48 1067.6419925.02 1074.24 1067.41
20033.27  1073.6 1066.7620137.19 1072.66 1065.84

Upstream Bridge Cross Section Data
Station Elevation Data    num=      34
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
   18325  1064.219130.38    106819307.91    1072 19492.8 1073.0319492.89 1066.21
19501.071063.02319567.36  1037.219595.08  1037.519600.27  1037.519645.74  1037.8
19703.33 1037.8819708.52 1037.8819721.94  1039.119780.83  1037.619790.36    1040
19811.58  1039.419816.77  1039.419829.76  1037.219839.72    103819878.26  1039.3
19919.83  1037.519925.02  1037.519977.41  1036.920028.08  1038.120033.27  1038.1
20064.88  1037.5 20130.11063.02520137.19  1065.820137.28 1072.6620407.73    1072
20615.57    106820641.55  1067.620780.11    106821568.17  1069.3

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
   18325    .03719501.07    .032 20130.1    .037

Bank Sta: Left   Right    Coeff Contr.    Expan.
      19501.07 20130.1             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
   1832519492.89 1066.21       F
20137.1921568.17  1065.8       F

Downstream  Deck/Roadway Coordinates
    num=      11
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
   18325  1064.2  1064.219130.38    1068    106819307.91    1072    1072
 19492.8 1073.03 1073.0319492.89 1073.03 1066.2119595.08  1073.9 1067.07
19703.34 1074.35 1067.5219811.58 1074.48 1067.6419925.02 1074.24 1067.41
20033.27  1073.6 1066.7620137.19 1072.66 1065.84
```

```
Downstream Bridge Cross Section Data
Station Elevation Data    num=      34
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
   18325  1064.219130.38    106819307.91    1072 19492.8 1073.0319492.89 1066.21
19502.331062.53319567.36  1037.219595.08  1037.519600.27  1037.519645.74  1037.8
19703.33 1037.8819708.52 1037.8819721.94  1039.119780.83  1037.619790.36    1040
19811.58  1039.419816.77  1039.419829.76  1037.219839.72    103819878.26  1039.3
19919.83  1037.519925.02  1037.519977.41  1036.920028.08  1038.120033.27  1038.1
20064.88  1037.520128.841062.53220137.19  1065.820137.28 1072.6620407.73    1072
20615.57    106820641.55  1067.620780.11    106821568.17  1069.3

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
   18325    .03719502.33    .03220128.84    .037

Bank Sta: Left   Right    Coeff Contr.   Expan.
      19502.3320128.84             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
   1832519492.89 1066.21       F
20137.1921568.17  1065.8       F

Upstream Embankment side slope                =         horiz. to 1.0 vertical
Downstream Embankment side slope              =         horiz. to 1.0 vertical
Maximum allowable submergence for weir flow =     .95
Elevation at which weir flow begins           =
Energy head used in spillway design           =
Spillway height used in design                =
Weir crest shape                              = Broad Crested

Number of Piers =  5

Pier Data
Pier Station     Upstream=19597.67    Downstream=19597.67
Upstream     num=       2
    Width   Elev    Width   Elev
     4.8    1036     4.8    1068
Downstream     num=       2
    Width   Elev    Width   Elev
     4.8    1036     4.8    1068

Pier Data
Pier Station     Upstream=19705.06    Downstream=19705.06
Upstream     num=       2
    Width   Elev    Width   Elev
     4.8    1036     4.8    1068
Downstream     num=       2
    Width   Elev    Width   Elev
     4.8    1036     4.8    1068

Pier Data
Pier Station     Upstream=19814.17    Downstream=19814.17
Upstream     num=       2
    Width   Elev    Width   Elev
     4.8    1036     4.8    1068
Downstream     num=       2
    Width   Elev    Width   Elev
     4.8    1036     4.8    1068

Pier Data
Pier Station     Upstream=19922.42    Downstream=19922.42
Upstream     num=       2
    Width   Elev    Width   Elev
     4.8    1036     4.8    1068
Downstream     num=       2
    Width   Elev    Width   Elev
     4.8    1036     4.8    1068

Pier Data
Pier Station     Upstream=20030.67    Downstream=20030.67
Upstream     num=       2
    Width   Elev    Width   Elev
     4.8    1036     4.8    1068
Downstream     num=       2
    Width   Elev    Width   Elev
     4.8    1036     4.8    1068

Number of Bridge Coefficient Sets =  1
```

```
Low Flow Methods and Data
       Energy
       Momentum               Cd   =     1.2
       Yarnell                KVal =    1.05
Selected Low Flow Methods = Highest Energy Answer

High Flow Method
       Energy Only

Additional Bridge Parameters
       Add Friction component to Momentum
       Add Weight component to Momentum
       Class B flow critical depth computations use critical depth
           inside the bridge at the upstream end
       Criteria to check for pressure flow = Upstream energy grade line

CROSS SECTION


RIVER: 1
REACH: 1                  RS: 212.67

INPUT
Description: 212.67

Left and Right Channel Bank Stations Interpolated
Station Elevation Data    num=      34
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
   18325  1064.219130.38    106819307.91    1072 19492.8 1073.0319492.89 1066.21
19502.331062.53319567.36  1037.219595.08  1037.519600.27  1037.519645.74  1037.8
19703.33 1037.8819708.52 1037.8819721.94  1039.119780.83  1037.619790.36    1040
19811.58  1039.419816.77  1039.419829.76  1037.219839.72    103819878.26  1039.3
19919.83  1037.519925.02  1037.519977.41  1036.920028.08  1038.120033.27  1038.1
20064.88  1037.520128.841062.53220137.19  1065.820137.28 1072.6620407.73    1072
20615.57    106820641.55  1067.620780.11    106821568.17  1069.3

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
   18325    .03719502.33    .03220128.84    .037

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      19502.3320128.84              481  557.08     901             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
   1832519492.89 1066.21       F
20137.1921568.17  1065.8       F

CROSS SECTION


RIVER: 1
REACH: 1                  RS: 212.56

INPUT
Description: 212.56

Left and Right Channel Bank Stations Interpolated
Station Elevation Data    num=      84
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 18526.6  1067.7 18605.6  1068.5 18672.9  1069.1 18686.4    1060 19108.7  1062.5
 19147.3  1066.2 19151.5  1066.4 19161.7  1067.6 19184.3  1068.9 19238.8  1068.8
 19249.1  1068.8 19264.6    1065 19289.8  1059.5   19333  1060.5 19374.1  1060.3
 19381.8  1063.3 19405.9  1071.5 19420.1  1070.7 19427.9  1069.3 19436.8    1069
 19464.9  1070.8   19474  1071.7 19488.9  1073.8 19506.5  1072.1 19530.4  1065.8
   19539  1066.2   19604  1065.9 19607.1  1065.3 19613.7  1065.3 19619.1  1065.7
 19619.8  1066.4 19637.7    1068 19655.3  1067.8 19692.8  1068.819731.051056.917
 19757.5  1048.7 19785.4  1039.9   19929  1039.8 20217.8  1039.320252.141056.916
   20264    1063 20269.6  1061.5 20279.7  1059.4 20318.1  1058.6 20372.9  1059.3
 20398.1  1060.1 20425.6  1066.2 20438.5  1062.1 20445.5  1059.5 20451.6  1056.8
 20575.6  1077.4 20581.9  1078.8 20601.9  1079.3 20671.6  1080.6 20698.7  1080.1
 20732.1  1079.9 20755.7  1079.5 20791.2  1077.6 20834.9  1075.6 20892.5  1079.5
   20896  1079.6 20938.4  1078.1 20958.4  1077.9 21004.8  1078.7 21029.1  1078.1
 21101.8  1077.3 21144.7  1078.4 21165.1  1078.9 21203.3  1079.8 21236.8  1080.1
   21329  1071.7 21351.9  1069.5 21384.8  1066.8 21396.7    1060 21632.6    1060
 21640.1  1063.9 21686.7  1065.4 21688.1  1065.4 21734.9  1066.2 21757.8  1066.7
 21833.3  1068.7 21846.1  1068.8 21931.4  1069.9 21952.1    1069

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
```

```
 18526.6    .03719731.05    .03220252.14    .037

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      19731.0520252.14             495  502.71     525             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 18526.6 19692.8    1078       F
   20301 21952.1    1078       F

CROSS SECTION


RIVER: 1
REACH: 1                    RS: 212.46

INPUT
Description: 212.46 - FEMA Section AC

Left and Right Channel Bank Stations
             Interpolated
Station Elevation Data    num=      66
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 18753.5  1067.1 18827.8  1067.7 18877.5  1068.2 18898.4    1055 19357.3  1055.1
 19382.1  1053.4   19409  1053.9 19429.7  1053.3 19445.8  1054.1 19481.5  1054.3
   19531  1052.9 19550.5  1054.6 19656.6    1055 19684.4  1069.8   19700  1067.4
 19714.7  1067.819743.341056.289 19787.6  1038.5 19877.7  1038.3 20214.4  1037.2
 20270.9  1039.9 20290.3  1040.2   203011040.331 20380.4  1041.3 20415.6  1048.6
 20422.7  1048.9 20436.9  1047.2 20446.3  1048.4 20484.2  1055.6 20494.5    1057
 20510.9  1057.5 20553.9  1062.4 20563.5    1064 20616.9  1070.3 20661.5  1072.5
 20691.8  1074.7 20705.2  1075.2 20771.8  1073.9 20836.5  1073.6 20841.8  1073.2
 20893.4  1072.8 20932.3  1068.7 20999.5  1072.8 21028.4    1074 21091.5  1069.7
 21143.4  1069.4 21187.1  1070.2 21222.4  1071.9 21234.8  1070.7 21242.4  1070.9
 21265.3  1070.2 21277.9  1069.2   21302  1065.4 21326.5  1063.3 21392.1  1057.4
 21427.4  1052.9 21482.8  1061.6 21523.6  1061.6 21591.7  1061.2 21609.9  1060.7
 21657.5  1061.6   22674    1062 22695.3  1072.2 22728.6  1064.6 22746.1  1064.3
 22917.1  1063.8

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
 18753.5    .03719743.34    .032   20301    .037

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      19743.34   20301             495  497.81     510             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 18753.5 19684.4  1075.2       F
   20301 22917.1  1075.2       F

CROSS SECTION


RIVER: 1
REACH: 1                    RS: 212.37

INPUT
Description: 212.37

Left and Right Channel Bank Stations Interpolated
Station Elevation Data    num=      53
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 18816.9  1066.3 18818.6  1066.2 18822.9  1066.3   18834  1066.3 18957.9    1066
 18989.9  1065.8   19000  1065.6 19036.9  1065.2 19054.2  1064.9 19092.2  1064.1
 19112.5  1063.4 19137.4  1064.7 19138.3  1064.8 19139.3  1064.8 19195.1  1066.9
 19209.3    1061 19668.8    1061 19681.7  1066.2 19684.6  1067.4 19684.8  1067.3
 19685.1  1067.2 19692.2  1064.6 19715.3    1065 19717.4  1065.1 19722.1  1063.2
19744.061053.778 19782.7  1037.2 19926.2  1036.9 20272.4  1037.1 20284.2  1036.6
 20285.4  1036.6 20288.8  1038.620320.691053.776 20338.6  1062.3 20338.7  1062.3
 20369.5  1065.2 20396.5  1069.4 20454.4  1070.1 20471.3  1070.1 20508.4    1061
 22070.8    1061 22075.2  1062.9 22088.8  1064.3 22125.1  1067.6 22147.7  1068.9
 22155.8  1069.3 22177.3  1071.8 22222.4  1065.3 22242.6  1063.6 22252.8  1063.9
 22275.2  1064.6 22382.7  1065.6 22407.8  1066.1

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
 18816.9    .03719744.06    .03220320.69    .037

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      19744.0620320.69             500  495.84     485             .1       .3
Ineffective Flow     num=       2
```

Sta L	Sta R	Elev	Permanent
18816.9	19684.6	1070	F
20396.5	22407.8	1070	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 212.27

INPUT
Description: 212.27

Left and Right Channel Bank Stations Interpolated

Station Elevation Data num= 95

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
17693.1	1064.6	17697.9	1064.6	17734.8	1064	17740.4	1063.9	17785.6	1063.1
17796.2	1063.1	17827.6	1062.5	17846.2	1062.4	17893.5	1062.2	18008.4	1061.5
18061.8	1061.5	18108.5	1062.4	18180.8	1062.8	18221.3	1063	18239.7	1059
18264.8	1054.5	18285.2	1054	18326.7	1048.1	18342.3	1046.2	18362.6	1053.4
18380.3	1046.2	18395.3	1042.4	18405.4	1039	18415.2	1036.5	18431.2	1031.5
18465.3	1023.5	18544.4	1025.1	18579.3	1015.6	18586.4	1013.2	18615.7	1013
18649.7	1013	18693.4	1012.9	18782.3	1012.3	18931.2	1012.8	18976.1	1012.6
18981.9	1012.7	19083	1012.1	19110	1012.1	19284.8	1012.2	19302.3	1012.4
19314.3	1019	19342.1	1028.5	19385.1	1048.2	19442.6	1044.9	19457.4	1044.6
19509.8	1062.9	19515.4	1063	19561	1063.7	19676.4	1065.4	19715.25	1052.334
19754.6	1039.1	19765.4	1035.4	19935.2	1035.2	20003.5	1035.2	20097.2	1035.1
20281.9	1035.1	20330.35	1052.334	20337	1054.7	20351	1059.5	20416.4	1037.6
20457	1023.9	20721.5	1023.4	20766.6	1022.9	20810.1	1022.2	20848.4	1021.5
20878.3	1023.7	20909.5	1025.8	20935.1	1026.2	20970.3	1026.8	20984	1027.2
21016.1	1028	21073.4	1026.9	21105.5	1026.6	21138.2	1026.2	21189.1	1025.7
21190.6	1025.7	21248.8	1040.7	21294.4	1051.5	21328.2	1059.6	21333.8	1060.2
21373.3	1067.4	21415.5	1061.7	21426.9	1059.4	21439.1	1056.3	21473.7	1050
21501.4	1044.9	21538.1	1038.9	21543.5	1037.9	21579.4	1046.2	21617.1	1054.3
21626.5	1056.1	21660.7	1060	21745.2	1060.6	21930.8	1061.7	21968.2	1061.7

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
17693.1	.04	19715.25	.03	20330.35	.04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
19715.25 20330.35 510 495 475 .1 .3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
17693.1	19676.4	1065.4	F
20351	21968.2	1059.5	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 212.18

INPUT
Description: 212.18

Left and Right Channel Bank Stations Interpolated
Station Elevation Data num= 87

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
16867.12	1065.2	16906.93	1063.9	17072.69	1063.6	17369.21	1062.4	17505.56	1062.52
17612.28	1062.9	17794.36	1062.3	17881.75	1062.5	17916.47	1062.3	17948.21	1065.69
18039.48	1010.8	18149.75	1011.6	18168.39	1016.6	18177.08	1014.6	18188	1020.06
18220.51	1027.2	18252.71	1039.3	18269.64	1041.1	18292.43	1036.7	18335.96	1016.75
18454.36	1016.2	18568.19	1014.7	18633.81	1016.1	18764.91	1017.4	18823.95	1017.09
19046.22	1017.7	19156.65	1019.3	19198.34	1018.4	19223.89	1018.4	19248.34	1016.23
19311.18	1015.1	19393.8	1012.98	19433	1012.5	19464.03	1021.8	19488.46	1011.1
19574.96	1010.6	19614.98	1037.4	19649.87	1059.8	1 19685.1	1058.8	19706.85	1050.309
19749.09	1033.8	19960.28	1030.8	20229.47	1031.7	20272.48	1032.6	20319.31	1039.88
20334.57	1050.3	20720.72	1054.5	20354.62	1060.3	20472.17	1061.55	20523.7	1061.62
20551.86	1053.0	20622.11	1048.8	20687.56	1052.2	20928.11	1055.2	21136.97	1058.41
21257.08	1058.6	21362.76	1060.7	21646.22	1067.2	21858.08	1068.1	22054.43	1067.43
22158.98	1065.9	22243.23	1064.32	22279.9	1062.8	22295.67	1065.5	22307.88	1060.91
22324.63	1061.3	22394.01	1058.4	22480.34	1058.9	22555.28	1058.9	22720.83	1059.92
22855.27	1061.5	22949.17	1061.4	22974.76	1060	23021.3	1058.5	23070.19	1058.44

```
23114.11 1060.29 23152.9 1060.0823260.95  1061.423486.25 1061.0523586.41 1061.15
23621.07 1061.4723789.79 1060.3723929.16  1060.4 24034.7  1061.824176.57 1062.42
24281.11 1062.3324460.33 1061.22

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
16867.12    .04519706.85    .03320334.57     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      19706.8520334.57              500  502.53     485             .1       .3
Ineffective Flow      num=       2
   Sta L   Sta R    Elev  Permanent
16867.1219649.87    1068       F
 20523.724460.33    1068       F

CROSS SECTION


RIVER: 1
REACH: 1                   RS: 212.08

INPUT
Description: 212.08

Left and Right Channel Bank Stations Interpolated
Station Elevation Data    num=      101
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 17052.4  1065.117093.98  1063.217330.91 1062.5917423.14 1062.2117562.97 1062.23
17854.31    106117952.67 1061.3917989.42  1061.1 18003.9 1064.7218053.78 1032.77
18092.97  1010.318121.67 1010.4218204.85 1011.4918218.51 1014.5318400.47 1013.68
18430.19  1013.718591.23 1012.7318717.39 1012.5518827.36 1012.71 18982.9 1014.44
19125.21  1014.119158.95 1014.27 19197.5 1013.7219237.59 1014.0519246.24 1012.73
19261.95  1013.819287.74 1011.5219294.56 1009.4419377.18 1009.8819458.03 1009.79
19560.86  1055.919603.52 1052.7719676.09 1052.9419681.091050.10619689.85 1045.14
19720.06 1031.7419729.83  1028.619835.59 1026.9819956.58 1026.4520018.74 1026.48
20046.86 1026.7120134.08  1025.920179.54 1025.9920234.17 1026.6520245.73 1033.13
20270.89  1050.120275.07 1052.9220290.81  1060.920335.45 1060.3720383.25 1044.65
20424.79 1044.3820442.88 1052.7920545.79  1055.720813.04 1061.3820956.27 1063.95
21082.72 1065.9821252.33 1068.1621359.98  1067.921436.79 1067.7621473.77 1066.77
21529.98 1066.4821607.29  1070.321676.41 1072.821730.28 1073.8421923.53 1073.03
22030.61 1073.7622091.57 1073.1322182.24  1073.622303.01 1072.0522453.89 1069.64
22595.45 1068.2222755.09 1066.8622966.16  1063.923129.47 1061.46 23222.4 1059.05
23255.36 1058.6423268.74 1055.5123278.67  1058.323295.59 1055.5423328.26  1058.3
23417.52  1058.423428.87  1058.123519.64  1059.323868.62 1059.1724082.28 1059.08
24280.77 1060.1224441.84 1061.9124594.59  1060.924688.74 1061.7424871.91 1061.24
 24970.8 1060.3325012.15 1058.2625172.94  1060.8 25399.4 1060.1425629.95 1059.85
25800.17 1059.4125815.84 1060.0725861.96  1079.725884.17 1080.2625963.83 1080.96
26004.82 1061.65

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
 17052.4    .04519681.09    .03320270.89     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      19681.0920270.89              510  519.85     475             .1       .3
Ineffective Flow      num=       2
   Sta L   Sta R    Elev  Permanent
 17052.419560.86    1078       F
 20290.826004.82    1078       F

CROSS SECTION


RIVER: 1
REACH: 1                   RS: 211.99

INPUT
Description: 211.99 - FEMA Section AB

Left and Right Channel Bank Stations
            Interpolated
Station Elevation Data    num=       97
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
17386.75    106217493.12 1060.3617883.55  1058.918026.04 1059.0818043.61 1064.43
18128.52  1011.918212.07 1010.04 18284.3 1009.4118375.77 1031.9918386.79 1034.99
18398.32  1031.618455.15 1010.4218634.29 1010.1518715.79 1026.1718726.98 1025.43
18746.82  1028.918793.14 1039.1118826.55 1047.2218835.49 1050.27 18880.3 1056.14
18928.65  1059.619023.07 1060.4719122.51 1058.69 19147.6 1056.9819172.92  1053.9
19222.57  1059.719306.36 1064.7519387.36 1066.2619419.32 1065.7319467.92  1063.3
```

```
19535.53  1055.9 19579.8  1052.519594.04 1050.0119626.09 1059.7519669.23 1060.17
19682.93  1052.119695.13  1051.719699.771048.63219734.91 1025.3919968.68 1025.66
 20018.4    102620129.78  1025.520175.87 1025.6620205.91  1027.820236.81 1047.09
20249.651048.632 20249.8 1048.6520268.39  1059.720319.37 1059.4520355.66 1049.61
20366.72 1051.1620380.34 1056.3120536.66  1059.720697.58 1062.9120861.07 1067.46
20969.05  1071.421086.46 1074.5421220.77  1077.821348.89 1078.3521519.24 1075.76
21606.23 1073.4221740.53 1069.1421834.91    106821936.77 1071.0222068.74 1077.26
22189.17 1082.4922398.45 1089.6222486.87  1090.322515.75 1089.9422616.83 1085.49
22698.81 1083.4322757.86 1080.0622899.81  1069.523059.97  1066.123300.96 1061.35
23457.95 1059.0923578.87 1055.29 23592.8  1052.823611.42  1057.123707.16 1057.71
23758.72 1057.8423837.72 1057.31   23902  1056.223950.13 1056.5724182.97 1056.91
24332.01 1056.0724582.04 1056.0124636.44    105924704.95 1057.5324865.28 1057.45
24966.74 1058.31 24996.3 1059.9325064.88  1059.825072.86 1059.0925171.62 1057.94
25224.27 1057.7525467.18 1058.61

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
17386.75    .04519699.77    .03320249.65     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      19699.7720249.65              740  489.19     710             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
17386.7519669.23    1078        F
 20268.325467.18    1078        F

CROSS SECTION


RIVER: 1
REACH: 1                  RS: 211.89

INPUT
Description: 211.89

Left and Right Channel Bank Stations Interpolated
Station Elevation Data    num=      95
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
17673.64  1059.917830.52  1057.818075.45 1057.5918106.59 1061.3918156.21 1060.92
18181.64    105718268.15  1057.418570.49 1056.27 18656.7 1057.3718734.79  1059.4
18854.83  1058.1 18903.9 1058.6218933.75 1056.2618954.51  1054.319026.15 1059.53
19074.67  1064.519130.02 1067.6619166.92 1067.8219220.33 1064.2519291.97 1056.93
19339.05  1053.2 19355.5 1049.4119383.94 1051.7719506.58 1049.7319568.03 1052.09
19611.95  1052.419640.96 1059.4519668.79 1059.3319685.751048.02319719.16 1025.75
19877.45 1024.19   19996  1024.820046.95 1024.9420149.18 1025.3420215.53 1026.87
20231.37 1035.8620250.74 1048.0220268.71  1059.320317.76 1059.25 20347.9 1053.02
20357.11 1053.8720365.64 1057.4620503.92  1061.220587.79 1062.3220715.42 1064.82
20808.25 1066.4820898.25 1068.17 21050.2    107021240.42  1069.721365.85 1067.31
21444.39 1066.6721597.69 1066.8121747.36  1066.621837.61 1066.0122018.21 1062.79
22078.36 1061.7622206.84  1065.222377.75  1068.122579.85 1068.7522814.63 1068.78
22947.07 1067.96 23029.4 1068.0923191.51  1066.423528.26  1059.523662.78 1056.72
23775.83 1055.5423829.73 1054.1523844.87  1051.223876.82 1056.0923920.99    1057
23995.44 1056.4724052.85  1056.124082.77  1056.624140.98 1058.2724165.07 1058.25
24271.91 1056.4524411.05 1053.1724579.36  1053.324759.09 1054.04 24774.1 1055.28
24840.04 1057.6924883.78 1058.2624920.88  1055.825041.94 1055.2925284.44  1056.1
25336.01 1057.1325359.39 1058.3225402.51  1057.3 25726.4 1058.2326172.96 1058.11
 26295.6  1059.626333.92 1078.1726470.33  1078.826504.14  1058.926569.17 1059.94

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
17673.64    .04519685.75    .03320250.74     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      19685.7520250.74              507  527.46     640             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
17673.6419640.96    1068        F
 20268.726569.17    1068        F

CROSS SECTION


RIVER: 1
REACH: 1                  RS: 211.79

INPUT
Description: 211.79

Left and Right Channel Bank Stations Interpolated
```

```
Station Elevation Data    num=      85
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
18158.31  1058.118521.37 1057.9218711.98 1053.2918821.22 1049.9719332.48  1038.9
 19421.9  1034.719443.13 1034.6819494.83 1031.4519529.82 1033.8919593.73 1053.47
19613.84  1059.219631.93 1059.1219649.871047.18219683.64 1024.7119868.29 1023.84
19990.11 1024.4520071.01  1024.2   20181 1025.03 20210.4 1042.5420217.711047.186
20234.96 1058.1520266.77 1058.9620288.34  1058.220317.07 1049.6420327.91 1051.41
20334.62 1054.8620544.02 1058.1120748.52  1061.320960.89 1062.1921136.74 1063.31
21355.67 1062.99 21514.2 1062.9221680.46  1061.621736.21 1061.7621809.47 1060.69
21912.92 1059.5422164.31 1055.8622183.26  1055.422365.65 1059.3522456.33 1059.66
22607.29 1061.0722697.85 1061.2422757.13    106222877.22 1061.9822997.38 1061.21
23058.71 1061.6923238.58 1060.2923378.99  1059.623483.49 1059.3723694.55 1056.44
23766.47 1056.3523904.99 1053.8723939.63  1052.523954.41 1049.7323974.63 1054.92
24066.57 1057.0124104.95 1055.7224159.03  1054.924203.29 1053.77 24226.8 1054.13
24410.42 1054.11 24588.5 1054.8124806.33  1056.924857.28 1056.9224892.35 1056.25
 24937.4 1056.2724992.53 1057.9125025.07  1054.525154.69 1054.6325336.45 1057.87
25508.23 1059.0125689.64 1058.1825912.41  1058.826025.53 1058.4626235.18 1058.51
26315.33    105826360.96 1059.1426386.48  1071.426401.46 1071.61 26423.9  1078.8
26526.56 1078.9226547.02 1071.3226569.39  1067.826599.18 1058.2826670.85 1059.87

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
18158.31    .04519649.87    .03320217.71     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.    Expan.
      19649.8720217.71              680  450.74     290             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
18158.3119613.84    1068       F
 20266.726670.85    1068       F

CROSS SECTION


RIVER: 1
REACH: 1                  RS: 211.71

INPUT
Description: 211.71

Left and Right Channel Bank Stations Interpolated
Station Elevation Data    num=      82
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
18356.24  1056.618403.32 1056.5118836.53 1046.2619011.11 1054.3319170.81  1053.8
19462.94  1052.519478.82 1053.0919497.62 1060.06   19533 1043.2819551.37 1045.32
19595.29    105919611.46 1057.8119628.43 1046.4719661.32 1024.4919846.96 1023.81
19928.43 1023.1919998.17  1023.220045.76 1023.2120158.51 1023.3920197.84 1046.47
20216.14 1057.2120266.22 1057.7620314.99  1042.620325.03 1043.14 20337.2 1046.87
20568.24 1050.2520851.05 1051.3120962.88  1051.521206.35 1051.6421388.45 1051.42
21419.92 1051.2321727.44 1052.6221848.61  1053.521981.25 1052.7822130.55 1052.51
22220.26 1051.5322459.24 1054.3422578.82  1055.122876.18 1055.9323025.66 1056.21
23117.46 1056.8923238.24 1055.61 23357.2  1054.623446.32 1054.2323535.13 1054.99
23685.75 1053.2823748.15 1053.5423836.62  1056.423904.67 1055.7524029.98 1052.16
24046.15  1048.724064.65 1054.8424297.11  1054.624417.85 1054.0824709.66 1055.58
 24914.5 1057.2724949.53 1057.2425042.76  1055.725080.42 1056.7725117.12  1053.8
25243.64 1054.8825321.41 1057.3325361.74    105825507.43 1059.54 25610.8 1058.49
25724.65 1059.9825796.42 1060.0825841.82  1059.625987.23  1060.326062.01 1060.39
26081.09 1058.8926241.81 1058.1126377.22  1057.126422.65 1058.2926467.41 1067.88
26493.74 1078.7726570.07 1078.7926595.33    1080 26627.3 1065.29 26661.5 1058.87
26693.27 1058.2226725.34 1059.01

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
18356.24    .04519628.43    .03320197.84     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.    Expan.
      19628.4320197.84              780  392.06     500             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
18356.24 19595.3    1068       F
 20266.226725.34    1068       F

CROSS SECTION


RIVER: 1
REACH: 1                  RS: 211.64

INPUT
```

```
Description: 211.63

Left and Right Channel Bank Stations Interpolated
Station Elevation Data    num=      74
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
18455.22  1055.618870.41 1054.6119083.17 1054.4919308.22 1054.2519426.55 1053.86
 19582.2  1054.119594.16 1050.2119604.79 1050.3319629.34 1057.4119639.51  1057.5
 19657.71045.60119689.19    102519804.58  1023.319911.42 1022.65 19986.5 1022.75
20036.19 1022.9320060.82  1023.620181.08 1022.5820196.63 1031.17 20219.81045.602
20238.13 1057.0220265.94 1057.5920288.34  1056.820321.05 1046.9420343.65 1039.08
20371.71 1043.95 20510.4 1045.0120712.01  1046.120789.36 1046.9121038.61 1047.48
21208.66 1048.1421454.04 1047.8221685.69  1048.521805.81 1048.0822092.18 1048.45
22242.98 1048.2222332.89 1048.1922513.12  1050.222770.05 1051.0723054.32  1051.7
23295.42 1051.6523472.95 1051.1123700.42  1052.523820.77 1054.7623926.54 1054.04
23949.21 1052.3623981.01 1052.4624008.88  1047.424037.13 1053.1124090.43 1054.01
24133.79 1054.5824302.75 1054.0624347.21  1053.624484.04    105424904.87 1055.84
 25102.6 1055.6325165.57 1054.9925293.65  1054.325400.67 1057.0625522.25 1059.22
25597.17 1058.4125713.85 1057.9825824.69  1060.625850.02 1060.9225980.05 1061.02
26040.31 1060.2826085.96 1060.1626115.36  1058.626378.37 1057.1726385.52 1058.22
26496.95 1078.6826605.38 1079.6726703.24  1058.126712.22 1058.41

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
18455.22    .045 19657.7    .033 20219.8     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.    Expan.
       19657.7 20219.8             481  521.13     221             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
18455.2219639.51    1068       F
 20265.926712.22    1068       F

CROSS SECTION


RIVER: 1
REACH: 1                  RS: 211.54

INPUT
Description: 211.54 - FEMA Section AA
Station Elevation Data    num=      24
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
   18557    105619498.08 1062.8819570.11  1056.919585.13  1056.719633.01  1023.1
19866.76  1021.920100.43  1023.220148.29  1056.820163.32    105720195.23  1056.3
 20223.6  1049.320265.59  1046.120326.25  1049.420339.59  1050.820360.21  1052.5
20374.03  1055.420382.33  1055.9 20385.6  1055.9 20412.1  1057.320434.96  1056.7
20443.92  1057.120456.54  1061.420479.34  1060.721248.52  1053.6

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
   18557    .03719498.08    .03220163.32    .037

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.    Expan.
      19498.0820163.32             125  125.49     120             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
   1855719498.08    1070       F
20163.3221248.52    1070       F

BRIDGE


RIVER: 1
REACH: 1                  RS: 211.525

INPUT
Description: 19th Avenue Bridge
Distance from Upstream XS =       .1
Deck/Roadway Width        =  124.49
Weir Coefficient          =     2.6
Upstream  Deck/Roadway Coordinates
    num=      11
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
   18557    1056    105619498.08 1062.88 1062.8819498.08 1062.88 1056.33
19617.96  1065.1 1058.4319732.91  1067.4 1060.6819853.66 1068.72 1062.03
19974.41 1069.18 1062.5120095.16 1068.67 1061.9720215.91 1067.18 1060.46
20336.66 1064.77 1058.0320456.45  1061.4 1054.73

Upstream Bridge Cross Section Data
```

```
Station Elevation Data    num=      24
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
   18557    105619498.08 1062.8819570.11  1056.919585.13  1056.719633.01  1023.1
19866.76  1021.920100.43  1023.220148.29  1056.820163.32    105720195.23  1056.3
 20223.6  1049.320265.59  1046.120326.25  1049.420339.59  1050.820360.21  1052.5
20374.03  1055.420382.33  1055.9 20385.6  1055.9 20412.1  1057.320434.96  1056.7
20443.92  1057.120456.54  1061.420479.34  1060.721248.52  1053.6

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
   18557    .03719498.08    .03220163.32    .037

Bank Sta: Left   Right    Coeff Contr.   Expan.
      19498.0820163.32           .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
   1855719498.08    1070       F
20163.3221248.52    1070       F

Downstream  Deck/Roadway Coordinates
    num=      11
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
   18557    1056    105619498.08 1062.88 1062.8819498.08 1062.88 1056.33
19617.96  1065.1 1058.4319732.91  1067.4 1060.6819853.66 1068.72 1062.03
19974.41 1069.18 1062.5120095.16 1068.67 1061.9720215.91 1067.18 1060.46
20336.66 1064.77 1058.0320456.45  1061.4 1054.73

Downstream Bridge Cross Section Data
Station Elevation Data    num=      22
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
   18577    105619498.08 1062.8819510.11    105119579.82  1056.719594.75  1056.5
19642.62    102319876.38  1021.820110.04    102320157.91  1056.620172.93  1056.8
20204.85  1056.120210.17  1055.920249.54  1049.420344.26  1054.820347.44  1054.8
20366.65  1054.320380.75  1054.620418.55    105520428.15    105520456.54  1061.4
20479.34  1060.721248.52  1053.6

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
   18577    .03719579.82    .03220172.93    .037

Bank Sta: Left   Right    Coeff Contr.   Expan.
      19579.8220172.93           .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
   1857719579.82  1056.7     F
20172.9321248.52  1056.8     F

Upstream Embankment side slope              =         horiz. to 1.0 vertical
Downstream Embankment side slope            =         horiz. to 1.0 vertical
Maximum allowable submergence for weir flow =     .95
Elevation at which weir flow begins         =
Energy head used in spillway design         =
Spillway height used in design              =
Weir crest shape                            = Broad Crested

Number of Piers =  7

Pier Data
Pier Station     Upstream=19615.06    Downstream=19615.06
Upstream     num=       2
    Width   Elev    Width   Elev
      5.8  1046.9     5.8 1058.51
Downstream     num=       2
    Width   Elev    Width   Elev
      5.8  1046.9     5.8 1058.51

Pier Data
Pier Station     Upstream=19735.81    Downstream=19735.81
Upstream     num=       2
    Width   Elev    Width   Elev
      5.8    1022     5.8 1060.77
Downstream     num=       2
    Width   Elev    Width   Elev
      5.8    1022     5.8 1060.77

Pier Data
Pier Station     Upstream=19856.56    Downstream=19856.56
Upstream     num=       2
    Width   Elev    Width   Elev
```

```
     5.8 1020.85     5.8 1062.07
Downstream     num=        2
    Width   Elev    Width   Elev
     5.8 1020.85     5.8 1062.07

Pier Data
Pier Station     Upstream=19977.31    Downstream=19977.31
Upstream     num=        2
    Width   Elev    Width   Elev
     5.8 1028.55     5.8 1062.51
Downstream     num=        2
    Width   Elev    Width   Elev
     5.8 1028.55     5.8 1062.51

Pier Data
Pier Station     Upstream=20098.06    Downstream=20098.06
Upstream     num=        2
    Width   Elev    Width   Elev
     5.8 1033.84     5.8 1062.02
Downstream     num=        2
    Width   Elev    Width   Elev
     5.8 1033.84     5.8 1062.02

Pier Data
Pier Station     Upstream=20218.81    Downstream=20218.81
Upstream     num=        2
    Width   Elev    Width   Elev
     5.8 1039.95     5.8 1060.55
Downstream     num=        2
    Width   Elev    Width   Elev
     5.8 1039.95     5.8 1060.55

Pier Data
Pier Station     Upstream=20339.56    Downstream=20339.56
Upstream     num=        2
    Width   Elev    Width   Elev
     5.8 1045.78     5.8 1058.17
Downstream     num=        2
    Width   Elev    Width   Elev
     5.8 1045.78     5.8 1058.17

Number of Bridge Coefficient Sets =  1

Low Flow Methods and Data
       Energy
       Momentum               Cd   =     1.2
       Yarnell                KVal =    1.05
Selected Low Flow Methods = Highest Energy Answer

High Flow Method
       Energy Only

Additional Bridge Parameters
       Add Friction component to Momentum
       Add Weight component to Momentum
       Class B flow critical depth computations use critical depth
           inside the bridge at the upstream end
       Criteria to check for pressure flow = Upstream energy grade line

CROSS SECTION


RIVER: 1
REACH: 1                  RS: 211.51

INPUT
Description: 211.51




             Begin 19th Ave Landfill channelization


Station Elevation Data    num=      22
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
   18577    105619498.08 1062.8819510.11    105119579.82  1056.719594.75  1056.5
```

```
19642.62    102319876.38  1021.820110.04    102320157.91  1056.620172.93  1056.8
20204.85  1056.120210.17  1055.920249.54  1049.420344.26  1054.820347.44  1054.8
20366.65  1054.320380.75  1054.620418.55    105520428.15    105520456.54  1061.4
20479.34  1060.721248.52  1053.6

Manning's n Values          num=       3
     Sta   n Val     Sta    n Val     Sta   n Val
   18577    .03719579.82    .03220172.93    .037

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.    Expan.
      19579.8220172.93              541  562.88     606             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
   1857719579.82  1056.7       F
20172.9321248.52  1056.8       F

CROSS SECTION


RIVER: 1
REACH: 1                    RS: 211.41

INPUT
Description: 211.41

Left and Right Channel Bank Stations Interpolated
Station Elevation Data    num=      98
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
18573.85  1055.518621.78 1056.6118655.14 1053.7918722.99 1053.2518902.93  1052.9
19132.77  1051.619320.33 1050.8719480.47 1049.5819533.31 1047.7219566.92  1049.4
 19611.4  1046.919634.53 1044.0819638.09 1041.7819668.43 1022.1819702.69 1018.56
19754.63 1019.6519786.92  1018.319889.98 1020.7419930.16 1020.8119994.45 1020.82
20076.61 1020.9120167.45  1021.220192.38 1033.0120195.55 1039.3220206.061041.777
20220.36 1045.1220236.46 1054.7820293.62    105620331.24 1065.2220351.37 1065.23
20357.03 1066.6220414.04 1056.96 20436.1  1062.220445.88 1058.7420504.13 1060.74
20521.21 1060.7920557.16 1066.5820578.69  1061.620603.37 1060.3620654.05 1060.04
20689.25 1058.2320722.97 1060.5820735.67  1057.720828.84 1057.0620846.13 1057.59
20898.33 1070.2520938.86 1063.6420980.02    106321017.32 1057.9221060.66 1055.82
21097.07 1055.5321119.44 1056.16 21132.9  1055.121181.47  1054.221283.06  1053.8
21298.44 1058.2121320.94 1060.3521339.43  1062.821380.38 1060.3221406.09 1052.45
21459.74 1053.4821477.97 1059.9821533.47    106121555.62 1081.8121619.68 1081.91
21644.09  1080.121655.42 1076.4821707.29  1075.321720.18 1072.1521749.96 1071.27
21770.47 1076.9921793.84 1054.8221802.85  1056.121842.36    105621864.05 1053.48
21891.41 1052.6921905.23 1051.4321991.71  1051.822210.76 1052.0622373.03 1052.78
22531.21 1052.1722650.75 1052.0922819.43  1052.522919.43 1053.1423211.23 1053.67
23252.71 1054.2423349.12 1054.0823463.55  1053.123574.33 1051.7923680.61 1051.32
23891.22 1051.5624133.09 1051.4824212.43  1051.924237.65 1050.3224284.73 1050.32
24320.22    105124361.59 1050.58 24444.1    1052

Manning's n Values          num=       3
     Sta   n Val     Sta    n Val     Sta   n Val
18573.85    .03719638.09    .03220206.06    .037

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.    Expan.
      19638.0920206.06              500  501.53     505             .1       .3

CROSS SECTION


RIVER: 1
REACH: 1                    RS: 211.31

INPUT
Description: 211.31

Left and Right Channel Bank Stations Interpolated
Station Elevation Data    num=      98
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 19209.8    1054 19309.4  1053.9   19371  1052.4 19415.6    1052 19462.5  1051.5
 19496.2  1050.5 19510.1  1050.5 19528.9  1041.9 19531.21040.766 19571.7  1020.8
   19614  1021.1 19677.8  1021.1 19724.1  1021.3 19888.2    1022 19928.3  1022.1
 19954.9  1021.8 19973.9    1032 19980.4  1029.8 19994.7  1027.2   20059  1026.6
   20112  1026.2 20123.3    1028 20158.9  1030.9 20198.7  1033.6 20212.5  1034.3
 20267.3  1034.5 20269.1  1035.1 20281.8  1034.8 20323.2  1035.6 20338.5  1037.1
   20343    1038 20356.11040.765 20425.9  1055.5 20434.4  1057.4 20457.3    1049
   20499  1049.5 20549.5  1051.1 20551.5    1051 20571.1  1052.5 20575.3  1055.6
 20584.2  1059.5   20614  1060.7 20625.4    1057   20636  1051.6 20682.5  1051.6
 20692.1  1051.6 20699.2    1055 20718.1  1055.1 20723.4  1052.3 20725.3  1052.3
 20778.6  1052.4   20806  1052.5 20808.3  1053.2 20835.4  1052.5 20836.7  1052.2
```

20884.1	1051.7	20893	1051.9	20922.6	1067.4	20930.4	1067.8	20944	1066.2
20964.4	1055.2	20970.5	1050.2	21010.5	1050.3	21036.1	1052	21040.8	1052.7
21082	1053.8	21083.4	1053.5	21093.1	1049.5	21124.5	1050.5	21134.6	1050.2
21141.3	1051.6	21160.1	1051.2	21201.6	1048.9	21204.4	1049.1	21219.3	1052.5
21236.3	1049.8	21240.9	1049.4	21293.9	1049	21338.4	1048.2	21394.2	1047.1
21457	1046.7	21459.4	1046.7	21510.1	1046.2	21538.8	1046.8	21571	1046.8
21576.7	1047.8	21607.4	1058.3	21626.3	1059.1	21651.1	1060.7	21661.7	1060.9
21672.8	1062	21684.6	1057.7	21696.7	1051.4	21740.6	1053.4	21745.1	1054.1
21754.3	1054.6	21757.7	1053	21786	1052.5				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
19209.8	.037	19531.2	.032	20356.1	.037

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19531.2	20356.1	540	523.28	460	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
20434.4	21786	1060	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 211.21

INPUT
Description: 211.21

Left and Right Channel Bank Stations Interpolated
Station Elevation Data num= 88

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
19418.7	1050	19432.3	1049.9	19486.6	1051	19504.4	1050.9	19507.4	1051.4
19520	1044.7	19528.74	1040.216	19566	1021.1	19781.8	1021.6	19997.4	1022.1
20060.3	1022.2	20076.2	1032.8	20080	1035	20082.4	1032.7	20093.4	1024.4
20174.8	1026.6	20183.9	1027.6	20204.6	1029.5	20217.4	1030.4	20229.3	1030.7
20232.4	1030.9	20272.7	1031.9	20335.2	1032.6	20395.1	1032	20413.6	1031.7
20425.2	1031.3	20429.3	1031.7	20447.4	1035.2	20472.4	1032.1	20501.4	1030.2
20521.26	1040.216	20521.28	1040.226	20524.4	1041.8	20544	1051.9	20563.3	1064.6
20571.8	1065.7	20580.9	1066	20589.3	1061.5	20605.5	1058.5	20622.4	1060.1
20646.3	1062.6	20659.3	1063.4	20674.4	1064.8	20683.8	1065.5	20692.9	1064.2
20760.3	1066	20772	1068	20791.6	1063.6	20814.8	1059	20846.6	1053
20876.7	1045.5	20891.6	1044.9	20916.6	1044.2	20944.9	1044.5	20964.5	1044.9
21002.8	1046.7	21028.1	1048.6	21034.5	1044.8	21035.5	1044	21113.8	1044.6
21130.1	1044.6	21249.3	1044	21250	1044.1	21260.5	1047.3	21288	1046.8
21324.8	1046.7	21359.3	1046.9	21432.1	1048	21449.9	1048.7	21452.1	1049.4
21462.5	1051.8	21469.8	1052.8	21533.8	1052	21595.7	1051.9	21614.5	1051.8
21642.6	1057.9	21645.8	1056.1	21673.8	1046.4	21698	1040.9	21967.4	1041
21972	1044.7	21983.2	1052.6	21984.7	1051.9	21991.1	1050.7	21999	1051.3
22028.7	1051	22088.3	1051.4	22171	1051.7				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
19418.7	.037	19528.74	.032	20521.26	.037

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19528.74	20521.26	495	493.11	475	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
20571.8	22171	1068	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 211.12

INPUT
Description: 211.12 - FEMA Section Z

Left Channel Bank Station Interpolated
Station Elevation Data num= 63

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
19314	1050.6	19321.1	1050.6	19403.5	1050.4	19415.2	1050.5	19470.9	1050.5
19482.5	1051.2	19483.7	1050.5	19498.46	1040.58	19527.6	1021	19600.2	1021.1
20090.7	1021	20239.6	1020.4	20259	1020.1	20267	1022.5	20276.5	1019.8
20287.8	1020	20321.5	1020.6	20364.3	1020.4	20406.5	1019.8	20438.1	1015.7
20453.3	1015.7	20484.3	1015.7	20510.9	1015.7	20526.1	1023.8	20540.7	1029.4
20572.2	1046.4	20577.1	1044.9	20591.9	1040.2	21035.6	1040.2	21045.7	1040.3

```
 21082.9  1041.6   21123  1041.5   21166  1041.6 21189.7  1041.5 21228.3    1041
 21264.3  1041.1 21277.3  1040.7 21299.3  1040.6 21311.7  1043.9 21321.5  1044.1
 21335.9  1046.9 21349.5  1046.7 21377.3  1046.7 21389.3  1045.7 21395.8  1044.6
   21409  1041.7 21414.3  1040.2 21431.9  1040.1 21441.7  1040.6 21511.5  1043.7
 21564.5  1044.7 21580.3  1044.8   21593  1044.6   21597    1042 22094.6    1042
 22111.5  1053.1 22112.9  1051.5 22113.7  1050.9   22123  1051.4 22146.6  1051.4
 22200.7  1051.7 22225.6  1051.6 22293.4  1051.7

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
   19314    .03719498.46    .032 20572.2    .037

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.    Expan.
      19498.46 20572.2              500  505.73     500             .1       .3
Ineffective Flow     num=       1
   Sta L   Sta R    Elev  Permanent
 21335.9 22293.4    1050       F

CROSS SECTION


RIVER: 1
REACH: 1                   RS: 211.02

INPUT
Description: 211.02

Left Channel Bank Station Interpolated
Station Elevation Data     num=       58
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
   19239  1049.4 19253.3  1049.2 19318.8  1049.3   19330  1049.2 19381.9  1049.5
 19409.6  1049.3 19472.3    104919487.121039.375 19515.1  1021.2 19977.7  1020.4
 20111.7  1020.1 20119.2  1025.6 20133.2  1024.1 20136.2  1022.2   20140  1019.4
 20202.9  1020.4 20228.3  1020.7 20238.9  1022.4 20243.6  1025.6 20270.1  1025.5
 20279.9  1025.7 20343.8  1026.1 20394.3  1041.3 20424.2    1040   20434  1040.5
 20448.3  1038.4 20459.5  1037.9 20468.8  1038.2 20484.1    1038 20494.6  1038.7
 20501.7  1038.2 21087.6  1039.1 21102.9  1037.2 21124.7  1036.8 21132.2    1033
 21144.9  1032.5 21184.2  1034.3 21243.7  1036.3 21300.5  1038.4 21315.9  1038.7
 21353.2    1040 21399.5  1041.4   21439  1042.3   21480  1043.6 21514.7  1043.6
 21524.4  1043.8 21535.1  1043.6 21559.7  1042.3 21570.6  1042.2 22151.3    1042
 22163.4  1052.1 22174.7  1052.9 22226.3  1051.5 22239.2  1051.3   22318  1051.9
 22324.3    1052 22393.8  1052.8 22399.8  1052.7

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
   19239    .03719487.12    .032 20394.3    .037

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.    Expan.
      19487.12 20394.3              485  493.19     495             .1       .3
Ineffective Flow     num=       1
   Sta L   Sta R    Elev  Permanent
   21500 22399.8    1050       F

CROSS SECTION


RIVER: 1
REACH: 1                   RS: 210.93

INPUT
Description: 210.93

Left Channel Bank Station Interpolated
Station Elevation Data     num=       50
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 19200.1  1048.6 19256.6  1048.1 19323.4  1048.3 19376.7  1048.6 19414.5    1048
 19464.2  1048.319479.121039.255 19508.9  1021.2 19821.8  1022.3 20131.9  1023.4
 20138.8    1028 20162.4  1029.4 20166.3  1026.3 20172.8  1019.1   20212  1018.7
 20278.3  1019.9   20290  1025.6 20331.4    1025 20349.2  1032.1 20351.6  1031.2
 20355.1  1030.5 20397.8  1031.3 20406.9  1035.2 20414.8  1039.6 20431.2  1039.4
 20455.9  1039.7 20458.7  1037.8 20465.5  1037.9 20470.4  1034.9 20474.7  1032.7
 21343.1  1032.7 21350.5  1032.5 21376.3  1035.6 21390.1  1033.4 21395.9  1033.7
 21424.3  1033.9 21484.4  1034.5 21494.9  1034.3   21537  1034.4 22171.3  1034.4
 22195.5  1049.6 22217.9  1047.5 22260.9    1035 22263.6  1034.9 22291.1    1051
 22312.1  1051.8 22326.6  1051.4 22375.7  1051.7 22388.8  1051.5 22397.4  1050.6

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
 19200.1    .03719479.12    .032 20414.8    .037
```

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      19479.12 20414.8              505  505.14     505             .1       .3
Ineffective Flow     num=       1
   Sta L   Sta R    Elev  Permanent
   21576 22397.4    1048       F

CROSS SECTION


RIVER: 1
REACH: 1                  RS: 210.83

INPUT
Description: 210.83

Left Channel Bank Station Interpolated
Station Elevation Data    num=      61
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 19202.3  1047.9 19230.6  1048.2 19316.1  1047.1 19412.4  1046.5 19438.4  1046.4
19450.411038.813 19469.9  1026.5 19479.2  1021.2 19797.6    1021 19923.9  1020.9
 19961.4  1020.6 19972.9  1027.1 19981.7  1030.2 20023.7  1029.7 20030.1  1028.5
 20042.7  1023.3 20047.1  1022.6 20060.1  1021.5   20068  1019.1 20084.8  1019.4
 20164.7  1020.3 20209.2  1020.4 20210.1  1020.8 20276.6  1019.8 20285.1  1022.2
 20306.6  1025.2   20309  1026.8 20312.4  1026.3 20316.8  1024.7 20372.8  1023.5
 20408.7  1043.6 20410.4  1042.5   20412    1040 20434.3  1040.8 20448.6    1034
 21423.7  1034.1 21433.7    1033 21527.5  1031.1 21554.4  1029.7 21577.9  1029.4
 21646.5  1030.2 21704.4  1029.9 21742.9  1046.2 21761.3    1040 21807.2  1041.3
   21814  1044.7 21818.3  1046.4 21862.5  1045.9 21879.4  1037.5 21883.7    1035
 21887.9  1033.8 21911.6  1035.9 21937.9  1050.1 21957.5  1042.6 22341.8  1042.6
 22364.7  1049.8 22372.9  1048.2   22423  1049.3 22443.3  1049.3 22494.1  1045.8
 22499.7  1044.9

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
 19202.3    .03719450.41    .032 20410.4    .037

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      19450.41 20410.4              505  505.61     500             .1       .3
Ineffective Flow     num=       1
   Sta L   Sta R    Elev  Permanent
 21742.9 22499.7    1048       F

CROSS SECTION


RIVER: 1
REACH: 1                  RS: 210.74

INPUT
Description: 210.74

Left Channel Bank Station Interpolated
Station Elevation Data    num=      63
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 19243.9  1048.6 19252.9  1048.6 19306.8  1048.4 19320.5  1047.9 19400.4  1046.9
 19417.4  1044.519426.121038.473 19455.3  1018.3 19887.7  1018.2 19910.2  1018.2
 19912.1  1019.4 19926.7  1020.6 19947.1  1020.5 19971.2  1029.9 19999.5  1024.8
 20005.9  1025.6 20026.7  1018.2 20095.6  1018.8   20149  1019.3 20154.3  1019.5
 20159.1  1018.6 20206.5  1019.2 20250.3  1018.3 20256.9  1020.6 20263.3  1021.3
 20281.7  1020.8 20318.1    1022 20333.5  1021.2 20349.8  1021.8 20361.7  1025.8
 20373.2  1024.1 20404.6  1025.2 20432.5  1037.6 20433.7  1039.4 20462.4  1039.5
 20468.2  1036.5 21389.5  1036.5 21394.6  1032.8   21404  1032.7 21513.7    1032
 21520.3  1033.6 21537.2  1027.8 21587.9  1027.7 21638.9  1028.2 21695.6    1029
 21747.1  1028.9   21771  1029.8 21801.8    1041 21813.2  1040.9 22057.2  1040.9
 22066.5  1043.5 22085.1  1044.1 22096.2  1047.4 22123.7  1048.7 22156.7  1040.5
 22272.5  1040.5 22293.7  1049.5 22308.5  1048.9 22356.6  1048.4 22365.3  1048.1
   22369  1048.8 22377.5  1053.2 22399.8  1048.3

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
 19243.9    .03719426.12    .032 20433.7    .037

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      19426.12 20433.7              495  503.39     500             .1       .3
Ineffective Flow     num=       1
   Sta L   Sta R    Elev  Permanent
 21801.8 22399.8    1048       F
```

CROSS SECTION

RIVER: 1
REACH: 1 RS: 210.64

INPUT
Description: 210.64 - FEMA Section Y
Station Elevation Data num= 56

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
19062.1	1046.2	19142.3	1046.5	19216.9	1046.5	19239.3	1046.6	19313.3	1046.3
19339.3	1045.9	19359.9	1044.7	19388.6	1036.7	19405.4	1034.5	19435.6	1017.8
19522.4	1017.9	19688	1018.2	19812.5	1018.5	19845.7	1021.7	19854.2	1021.6
19868.7	1023.2	19885.6	1022.9	19894.1	1026.4	19926.9	1018.1	19954	1018.1
20029.3	1018.2	20100.6	1018.3	20159.1	1018.4	20163.7	1019.2	20174.9	1019.6
20183.1	1020.8	20192.3	1019.6	20214.4	1021.7	20234.8	1024.3	20242.8	1022.1
20298.5	1024	20323.5	1025.5	20335	1029.1	20359.6	1019.1	20427.6	1017.8
20430.1	1017.7	20460.6	1039.9	20483.4	1039.5	20493.5	1033.2	21394.6	1033.2
21442.1	1031.4	21449.1	1028.1	21453.5	1025.3	21460.9	1025.2	21472.1	1026
21483.6	1028.3	21519.7	1032.5	22411.4	1032.5	22434.2	1045.9	22446.8	1049.8
22496.5	1049.4	22507.7	1051.3	22521	1044.2	22524.9	1044.1	22586.3	1043
22591.1	1043.3								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
19062.1	.037	19388.6	.032	20460.6	.037

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19388.6	20460.6	520 515.29	495	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
21800	22591.1	1048	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 210.55

INPUT
Description: 210.55

Left Channel Bank Station Interpolated
Station Elevation Data num= 55

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
19008	1045.1	19023.1	1045.1	19106.6	1045.2	19117.1	1045.2	19188.7	1045.4
19198.2	1045.3	19263.2	1046	19303.5	1044.21	19322.16	1037.82	19365	1023.2
19375.9	1018.6	19396.7	1018.7	19519.3	1018.6	19791	1018.3	19813.4	1028.8
19857.3	1026.7	19886.1	1038.1	19909.3	1027.2	19915.5	1030.7	19959.6	1020
20002.1	1018	20058.3	1018.1	20175.7	1018.1	20440.7	1018.3	20476.7	1037.4
20483.2	1040.3	20500.3	1039.7	20507.6	1034.3	21313.5	1033.6	21372.5	1032.4
21406.9	1033	21409.3	1032.1	21417.2	1027.2	21429	1026.3	21456.2	1025.4
21459.3	1026.4	21468.1	1028.2	21496.9	1030.2	21548.3	1034.3	21557.5	1034.9
21626.2	1036.3	21634.2	1035.7	21643.8	1035.7	21713	1035.7	21771.2	1036
22449.6	1036	22451.9	1037.8	22455.6	1040	22484.4	1044.7	22494.2	1046.8
22499.9	1046	22506.9	1046.2	22537.1	1043.6	22580.7	1043.5	22585	1043

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
19008	.037	19322.16	.032	20483.2	.037

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19322.16	20483.2	475 473.19	495	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
21300	22585	1046.8	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 210.46

INPUT
Description: 210.46

Left and Right Channel Bank Stations Interpolated
Station Elevation Data num= 74

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev

18491.3	1044.8	18509.6	1044.4	18559.8	1045.8	18571.1	1045.5	18584.8	1043.3
18607.7	1045	18678	1044.8	18723.7	1044.2	18801	1044.1	18803.4	1044.1
18891.1	1043.9	18897.1	1043.9	18962.7	1043.6	19022.5	1043.3	19024.4	1043.3
19078.3	1042.4	19136.1	1042.2	19176.5	1042.5	19201.9	1040.9	19233.8	1028.3
19266.3	1021.8	19276.2	1021.1	19328.5	1018.7	19351.6	1018.1	19377	1018.33
19395.8	1018.5	19810.2	1018.3	19863.8	1018.1	19922	1018.2	20015.9	1018.2
20094.1	1018.1	20114.1	1018.1	20127.6	1022.4	20129.6	1023.9	20150.4	1023.9
20174.1	1021.6	20197.2	1018.1	20239.9	1018.1	20295.4	1018.2	20303	1018.6
20351.5	1018	20390.4	1018.4	20443.9	1018.4	20502.8	1018.5	20565.4	1018.8
20656.3	1018.8	20722.5	1019	20743	1019.6	20798.1	1019.8	20867.2	1019.1
20920.3	1019.3	20973.2	1019.2	21047.3	1019.3	21120.7	1021.1	21123	1021.2
21136.1	1016.3	21211.7	1018.4	21228.5	1018.3	21261.8	1036.3	21280.4	1034.9
21284	1038.08	21290.7	1044	21292.3	1046	21334.2	1043	21405.2	1043.3
21443.5	1044.5	21454	1047.4	21465.5	1044.1	22456.6	1042.9	22498.8	1045.3
22515	1046.9	22564.7	1048.3	22637.2	1048.5	22652	1048.3		

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
18491.3	.037	19176.5	.032	20150.4	.037	21292.3	.037	21454	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19377	21284	520 522.28	505	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
18491.3	19377	1048	F
21292.3	22652	1048	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 210.36

INPUT
Description: 210.36

Left and Right Channel Bank Stations Interpolated
Station Elevation Data num= 99

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
19224.5	1050.4	19284.3	1050.7	19305	1051	19357.1	1049.61	9375.161	037.787
19404.8	1018.4	19463.3	1018.3	19612.3	1018.1	19621.3	1018.1	19634.8	1021.9
19667.3	1022.1	19733.3	1021.4	19790.5	1022.1	19802.9	1021.9	19818.6	1026.5
19827	1026.5	19834.6	1028.4	19890.9	1029	19964.7	1027.7	19973.5	1027.6
19985.2	1023	19997.6	1019.2	20010.7	1019.2	20032.2	1022.5	20039.2	1024.8
20087.1	1023	20111.8	1024.6	20144.4	1023.1	20153.9	1025.4	20168.7	1024.3
20191.7	1024.2	20273.6	1021.2	20346.9	1017.4	20363.5	1017.6	20425.8	1018.5
20437.5	1019.6	20442.7	1017.4	20510.8	1017.5	20526.1	1018	20581.3	1024.2
20636.5	1025.3	20692.9	1026.1	20742.9	1025.6	20769.6	1031.4	20776.7	1032.1
20797.4	1031.2	20811.3	1023.1	20868.1	1020.3	20886.8	1019.8	21012.2	1019.3
21017.9	1019.4	21027	1020.7	21039.6	1017.6	21095.8	1017.7	21149.8	1018
21208.9	1018.7	21245	1019.62	1291.17	1037.78	621291.23	1037.81	21303.9	1042.8
21368	1043.7	21407.5	1045.3	21418.5	1048.3	21429.5	1045.3	21450.9	1041.3
21516.4	1042.2	21531.8	1042.1	21606.4	1042.3	21664.8	1042.2	21728.4	1042.1
21735.8	1042.3	21795.8	1042.1	21853	1041.4	21904.7	1040.9	21945.9	1041.5
22007.4	1043.5	22067.8	1044.3	22085.5	1044.9	22124.1	1042.5	22213.9	1042.6
22278	1043.1	22282.5	1043	22318.4	1050.8	22330.1	1051.8	22376	1061.9
22399.2	1062.6	22410.6	1059.4	22438.3	1043.7	22476	1043.3	22498.2	1043.9
22517.5	1047.5	22554.5	1047.8	22615.4	1044.3	22685.5	1043.5	22715.7	1043.9
22733.2	1052.6	22752.7	1056.6	22761.2	1057.6	22797.5	1059		

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
19224.5	.032	19357.1	.037	20776.7	.025	21303.9	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19375.16	21291.17	480 487.62	480	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
21303.9	22797.5	1058	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 210.26

INPUT
Description: 210.26

Left and Right Channel Bank Stations Interpolated
Station Elevation Data num= 75

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
18518	1039.8	18554.5	1039.8	18657.8	1042	18741.9	1041.6	18818	1041.2
18898.6	1041.1	18982.3	1040.1	19077.8	1039.4	19162	1039.9	19268.1	1040.3
19363.8	1039.3	19372.2	1040.41	9377.07	1037.672	19408.8	1019.9	19682.2	1018.6
19755.3	1018.2	19759.5	1026	19769	1023.5	19813.4	1021.7	19816	1022.7
19816.8	1022	19849.2	1020.9	19871.6	1022.5	19881.3	1022.3	19909.8	1024.5
19932.2	1024.7	19991.1	1027.6	20032.1	1025.3	20063.9	1021.9	20070.8	1022
20075.8	1024	20075.9	1020.9	20082.4	1025	20120.1	1032.8	20142.9	1027.4
20152.1	1027.4	20162	1021.5	20166.1	1020	20257.3	1025.2	20290.7	1026.3
20327.7	1020.7	20449	1018.6	20490.7	1017.8	20521.6	1018.3	20541.8	1020.7
20564.4	1016.9	20641.9	1017.2	20694.8	1022.3	20718.8	1018.4	20789.5	1018.3
20862.3	1019.1	20960	1018.2	20989.1	1018.9	21058.3	1018.1	21141	1018
21241.8	1017.5	21265.8	1018.4	21280.3	1023.52	1331.82	1037.672	21342.1	1040.5
21367.6	1040.4	21378.7	1044	21393.2	1047	21408.2	1043.8	21433.3	1036.1
21453.3	1036.5	21462.7	1039.8	21481.6	1041	22697.5	1041	22726.9	1046.8
22740.7	1043.8	22748.5	1041	22815.8	1041	22841.3	1048	22891	1057.7

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
18518	.037	19372.2	.032	20694.8	.037	21342.1	.037	21393.2	.025

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
19377.07 21331.82 505 512.65 520 .1 .3
Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
18518	19162	1050	F
21393.2	22891	1050	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 210.17

INPUT
Description: 210.17 - FEMA Section X

Right Channel Bank Station
Interpolated
Station Elevation Data num= 81

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
18525.7	1038	18530.7	1038	18532.2	1038.8	18540.9	1039	18542.7	1038.3
18559.1	1038.3	18583.6	1039.8	18667.3	1040	18672.2	1040	18771.1	1039.9
18843.2	1039.2	18918.6	1039.2	18975.6	1038.6	19067.9	1036.2	19141.4	1035.5
19159.7	1029.9	19162.1	1028.2	19206.3	1023.5	19232.4	1025.6	19237.8	1026.9
19267.8	1029.3	19288.9	1028.6	19327.1	1031	19354.6	1031.5	19359.6	1019.6
19498.4	1019.3	19752.3	1018.6	19761.8	1021.9	19768.4	1019.7	19807.9	1021.1
19826.4	1023.3	19861.6	1026.2	19939.7	1026.1	20019.7	1026.2	20040.5	1026
20047	1026.8	20077	1025.5	20173.1	1021.8	20204.7	1022.1	20221.8	1027.9
20260.5	1027.9	20289.3	1020.1	20308.5	1019.1	20310	1020	20324.5	1021.7
20336.8	1017.9	20348.1	1016.4	20392.6	1014.7	20407.8	1014.9	20421.1	1019.4
20505.4	1021.6	20584.7	1020	20677.5	1020.6	20713	1019.7	20811.2	1021.5
20931.9	1023.3	20991.7	1025	21079.4	1022.7	21093.5	1022.3	21106.3	1024.9
21181.2	1023.5	21223	1023	21231	1018.7	21249.3	1020.1	21260.4	1023.1
21302.8	1025.12	1334.72	1037.43	21339.3	1039.2	21359.2	1038.4	21371.3	1044
21385.9	1046.9	21435.8	1035.7	21473.1	1040	22703.8	1040.5	22737.6	1046.8
22750.2	1044.1	22757.2	1040.5	22826.4	1040.5	22854	1049.8	22873.2	1052.2
22897.3	1057								

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
18525.7	.037	19354.6	.032	20991.7	.037	21339.3	.025

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
19354.62 1334.72 505 497.78 495 .1 .3
Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
18525.7	19354.6	1050	F
21385.9	22897.3	1050	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 210.07

```
INPUT
Description: 210.07

Left Channel Bank Station Interpolated
Station Elevation Data    num=      63
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
 18501.7   1038.7 18526.7     1039 18555.4   1039.2 18568.3     1039 18666.5     1038
 18699.1     1037 18823.3     1036 18871.6     1015 18929.9     1011 19033.6     1009
 19235.4     1009 19348.4     1009 19707.92 1015.47 20002.2   1019.3 20010.8   1019.3
 20015.9   1021.6 20017.6   1021.9 20043.4   1020.3 20109.3   1021.6 20149.1   1018.8
 20241.7   1019.6 20301.9   1019.6 20319.7   1020.4 20385.2   1020.2   20395   1020.3
 20523.6     1020   20576   1020.4 20689.9   1019.9 20746.4   1020.1 20785.8     1020
 20842.9   1018.9 20851.6   1018.9 20907.6   1018.8 20909.5   1018.7 20945.5   1031.5
 20951.8   1031.4 21011.2   1029.6 21065.6   1030.2 21073.1   1030.3 21098.1   1026.3
 21164.8   1026.1 21186.9   1026.4 21207.2   1024.8 21212.4   1026.6 21220.7   1028.3
 21237.2   1024.7 21246.8   1023.1 21286.7   1032.7 21315.8   1034.4 21346.3   1039.3
 21383.5   1047.6 21397.9   1044.6 21428.3   1035.2 21444.5   1036.3 21455.5   1040.2
   21470   1040.9 22716.5   1040.5 22744.1   1046.7 22757.9   1043.7 22766.1   1040.5
 22836.3   1040.5 22861.9   1049.1 22885.1   1052.1

Manning's n Values        num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
 18501.7    .032 19235.4    .037 20945.5    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       19235.4 20945.5             511  494.01     499             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 18501.7   19210    1048        F
 21383.5 22885.1    1048        F

CROSS SECTION


RIVER: 1
REACH: 1                  RS: 209.98

INPUT
Description: 209.98
Station Elevation Data    num=      98
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
 18668.5  1036.618697.08  1036.418734.38 1036.7718827.89 1037.1718891.14 1036.77
18984.54 1033.9819015.54    103519019.11 1036.0719039.74 1037.8819063.96 1036.69
19080.08 1034.7119102.37  1034.8 19117.4 1036.2919128.81 1038.3719161.01  1038.7
19178.98 1037.1419223.54 1037.1519252.87 1037.2419262.16 1038.1619316.53 1037.12
19320.05 1035.9519346.13  1017.919404.18  999.3319419.58 1000.0419454.66  1000.8
19509.56 1001.6919648.56 1006.2919693.86 1007.9819730.85 1009.0719783.08  1010.1
19870.73  1011.219935.51 1009.78   19954 1007.5419988.72 1014.2820002.24 1019.63
20016.49  1022.820034.93 1023.4720061.33 1023.5220103.67 1021.5120115.62 1017.75
20160.94  1015.420177.85 1012.4120193.89 1011.1520245.68 1011.4220291.47  1013.6
20306.68    101720338.83    101820381.79 1019.5320395.72 1020.8720434.04 1022.84
20504.16 1024.1620538.37 1026.0220546.29 1027.5920556.23 1033.0920611.04    1034
20650.54 1033.8220666.54 1023.78 20679.7 1019.86 20720.9 1017.8420734.97  1017.5
20785.73 1017.7120811.04 1018.9120884.31 1020.0320910.52 1019.3820949.25 1017.17
21078.22  1017.521129.65  1017.821152.66 1017.8221174.06 1019.2421200.18 1019.51
21229.85 1019.9121245.64 1019.4921252.12  1018.421270.29 1017.9921289.12 1018.16
21307.13 1020.2121315.98 1023.3321341.38 1040.8121348.39 1043.3821377.38 1043.15
 21386.5 1042.4621406.32    103621416.82 1035.2821428.25 1036.3321450.49 1039.82
 21469.3 1035.78 21483.2 1034.6521522.63  1034.221567.64  1035.521599.88 1035.51
21661.06 1034.7621726.66 1034.4221811.43 1034.72 21853.4 1035.6921940.91 1035.84
21952.68  1035.421966.07 1033.85 21992.8 1034.48

Manning's n Values        num=       4
     Sta   n Val      Sta   n Val      Sta   n Val      Sta   n Val
 18668.5    .03719316.53    .03220611.04    .03521348.39    .037

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       19316.5320556.23             519  492.54     497             .1       .3
Ineffective Flow     num=       1
   Sta L   Sta R    Elev  Permanent
21348.39 21992.8    1050        F

CROSS SECTION


RIVER: 1
REACH: 1                  RS: 209.88

INPUT
```

```
Description: 209.88
Station Elevation Data    num=      86
     Sta     Elev     Sta     Elev     Sta     Elev     Sta     Elev     Sta     Elev
 18681.6  1038.618731.14  1039.218763.46 1039.3418856.45 1038.79 18905.9  1038.3
18972.22 1038.2419086.42 1038.3619133.19 1038.6419247.38  1040.419312.42  1039.2
19370.23 1038.8619431.06 1038.94 19464.1  1038.519478.74 1036.9519516.39 1036.33
19524.73 1029.9319566.56 1008.1219598.63  999.5119640.57  997.7919691.39  997.69
19769.93  999.1719800.24 1000.6319830.26 1001.6519848.56 1003.4919859.91 1005.96
19910.09 1007.3819960.95 1006.4419998.92 1008.33 20019.7 1012.7920028.16  1015.5
20036.86 1016.6420060.08 1015.9420081.03 1011.7120128.18 1008.5820166.29 1012.01
20170.17 1013.9920191.29 1014.7620234.45  1014.920257.49 1014.2520347.95  1015.5
20367.77 1016.1920385.95 1016.3620409.64  1018.120423.54 1022.3220456.01 1034.43
20483.89 1034.6720565.05    103320635.49 1032.8420681.89 1031.6520696.22 1030.98
20726.21 1029.2420755.18 1027.1320770.71  1023.620820.79  1021.320895.81 1016.98
20909.35 1016.3220995.87 1013.3921052.42 1013.4521060.47 1014.0221069.18 1016.28
21082.94 1016.8821108.18 1017.3421171.62    101821195.56 1018.0421256.03    1018
21284.76 1017.3721304.47    102021317.07 1026.0321331.64  1035.821333.55 1039.79
21343.21 1043.6321377.98 1042.6221388.21 1041.8121404.25  1035.521425.05 1035.73
21434.81 1040.0221446.16  1041.121487.63 1038.1921660.18 1036.9721711.89 1036.75
21854.56  1036.721882.84  1033.221940.17 1033.1622030.34 1033.8822065.08 1034.17
 22079.6 1033.84

Manning's n Values        num=       4
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
 18681.6    .03719516.39    .03220409.64    .03521343.21    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      19516.3920456.01             504  500.82     498             .1       .3
Ineffective Flow     num=       1
   Sta L   Sta R    Elev  Permanent
21343.21 22079.6    1050       F

CROSS SECTION


RIVER: 1
REACH: 1                  RS: 209.79

INPUT
Description: 209.79
Station Elevation Data    num=      88
     Sta     Elev     Sta     Elev     Sta     Elev     Sta     Elev     Sta     Elev
   18478  1039.118547.32    103918680.54  1038.718735.84 1038.4718778.47  1038.2
18867.63 1037.5818904.62 1036.9318958.14 1036.2518987.49 1036.1919073.08 1036.32
19236.66 1036.9419329.91  1037.219382.24 1037.7819444.07 1038.1919498.52 1036.22
19513.54 1031.4319553.99  1022.1 19571.5 1020.3419590.34 1017.2619645.32 1016.75
19753.15 1014.3619823.32 1013.32 19865.9 1012.5120020.52  1008.820043.28 1006.98
20061.01 1005.1920070.25  1004.720120.93 1003.6520155.77 1002.9320174.93 1004.69
20213.95 1006.75 20261.7 1007.5120277.78 1007.8520407.18 1011.4220429.11  1012.6
20436.72  1013.720443.56 1015.9720461.81  1023.520483.82 1034.23 20498.1 1034.58
20504.71 1032.1120512.34  1031.320519.12  1028.420524.31 1027.4920534.91  1023.1
20549.48 1022.87   20586 1022.8420614.75 1024.6720638.75  1025.120684.87 1023.81
 20707.6  1023.6 20720.8 1024.0920733.07 1027.3820758.04 1028.2320764.93 1024.95
20778.48 1019.7220808.83 1015.9720831.65 1014.9820846.84 1012.8520881.12  1010.1
 20897.1  1009.120912.85 1008.7820959.43 1008.1620989.08 1008.2621049.83 1008.81
 21103.7 1009.3121134.95 1010.2721154.91 1011.4421200.09 1013.86 21269.9 1014.57
21288.19 1015.0921300.85 1016.8321308.56  1020.921327.41 1033.5421334.24 1037.02
 21338.6 1038.0621361.76 1037.2221390.51 1032.6821458.96 1029.4621474.45 1028.08
21483.78 1027.99 21534.4 1030.1521640.51  1029.921698.99 1031.1721796.88 1033.95
21828.55  1033.721867.29 1033.0421943.58 1033.24

Manning's n Values        num=       4
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
   18478    .03719444.07    .032 20498.1    .035 21338.6    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      19444.0720483.82             497  500.22     505             .1       .3
Ineffective Flow     num=       1
   Sta L   Sta R    Elev  Permanent
 21338.621943.58    1045       F

CROSS SECTION


RIVER: 1
REACH: 1                  RS: 209.69

INPUT
Description: 209.69 - FEMA Section W
```

Cross Section updated per TranSystems
Corporation Mapping (2004)
Station Elevation Data num= 79

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
18475.3	1036.618501.27	1037.0118555.73	1037.118604.16	1037.9418693.61	1037.91				
18713.08	1036.4218856.56	1035.7218924.19	1035.419013.81	1034.4219062.29	1034.42				
19100.44	1035.66 19147.2	1036.5619175.29	1037.619244.67	1036.2819338.84	1035.73				
19385.14	1036.219430.61	1036.2719492.43	1036.219500.27	1032.79 19507.8	1027.51				
19516.1	1022.71 19518.8	102019525.43	1018.8219559.45	1018.4119579.01	1020.7				
19621.14	1023.7319647.77	1025.9119673.24	1024.8619715.23	1027.0919785.34	1030.41				
19832.97	1032.119857.65	1032.3420024.37	1032.0320044.93	1031.820057.41	1025.71				
20124.81	1017.2620165.14	1016.7620174.99	1015.7520227.11	1009.820264.95	1007.86				
20292.56	1005.59 20344.4	1004.3120389.19	1005.67 20433.3	1007.520470.15	1013.38				
20529.15	1027.9420538.92	1033.7520544.22	1035.720556.02	1035.8420597.43	1035.25				
20618.65	1034.6320650.09	1033.9320675.14	1032.8920717.21	1028.8520759.34	1012.69				
20783.68	1011.2320826.54	1010.7920883.72	101020927.19	1010 20970.1	1010.8				
21003.47	1012.1821026.39	1012.221067.57	1011.8321088.59	1011.0421156.18	1011.13				
21184.27	1012.4221260.74	1013.421277.81	1014.2321288.47	1017.7721318.41	1032.5				
21333.74	1037.4721358.95	1037.3821378.51	1036.7921388.27	1032.1321400.68	1029.23				
21526.41	1028.1621751.75	1029.4921809.86	1031.0421871.59	1032					

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
18475.3	.03719492.43	.03220544.22	.03521333.74	.025			

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19492.4320544.22		541.3	544.5	578.5	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
21357.9221871.59		1050	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 209.60

INPUT
Description: 209.60
Station Elevation Data num= 103

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
18469.5	1035.118499.81	1035.4518559.67	1037.3418591.52	1038.2418643.68	1038.5				
18795.86	1037.0418875.18	1036.7119045.39	1035.2919104.09	1034.619184.46	1034.61				
19241.49	103619320.94	1036.4219351.39	1036.419388.64	1035.9819416.69	1035.11				
19429.98	1033.1319471.58	1028.0619506.16	1024.95 19531.1	1030.1819540.55	1031.27				
19554.2	1031.0219576.25	1027.219593.08	1024.619610.96	1023.5919664.92	1025.06				
19722.19	1026.7419812.88	1027.319864.15	1024.68 19888.8	1025.72 19905.8	1024.69				
19924.74	1023.4519973.61	1018.8519986.32	1017.8420020.82	1019.4 20032.5	1019.33				
20060.41	1017.1920081.88	1017.2420092.63	1018.120119.51	1018.37 20136.7	1017.34				
20181.06	101320241.08	1008.820254.81	1008.0320302.31	1005.6920331.32	1004.82				
20426.49	1004.1520474.77	1004.7320497.48	1007.2 20528.8	1010.620578.52	1015.51				
20631.21	102220647.07	1025.2720688.78	1026.3620707.93	1024.4220716.24	1020.28				
20760.34	1021.4420782.28	1022.720841.16	1022.3420849.67	1020.3920863.94	1020.61				
20877.59	1022.220887.46	1024.32 20902.3	1026.58 20925.4	1027.9120969.67	1029.89				
20982.58	1026.8121001.53	1023.5821047.39	1015.521064.47	1014.4421160.64	1016.23				
21172.28	1016.821181.95	1020.3821191.77	1025.0321226.86	1023.8621235.74	1027.53				
21241.41	1032.1121251.88	1033.1421283.45	1031.0521310.96	1033.7321325.88	1035.7				
21333.44	1037.35 21354.6	1037.421364.61	1038.03 21378.8	1033.6621390.24	1030.9				
21401.57	1030.0221435.67	1030.121498.83	1030.5421556.27	1030.4421581.41	1030.24				
21625.21	1029.2621637.41	1029.521660.06	1030.9121675.31	1031.3121692.85	1031				
21703.66	1030.2421734.86	1028.1821744.79	1028.221781.34	1029.8421995.82	1030.48				
22010.96	1031.1822022.88	1035.26	22038	1035.6					

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
18469.5	.03719388.64	.03220254.81	.03220969.67	.03521364.61	.025				

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19540.5520969.67		243	288.7	318	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
18469.519104.09		1040	F
21064.47	22038	1040	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 209.54

```
INPUT
Description: 209.54
Station Elevation Data    num=      64
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 18830.2  1036.718846.47 1036.66 18879.5 1036.8318897.96 1036.85 18920.8  1036.7
18981.04 1035.9519020.45 1035.78 19054.3  1035.919066.48  1036.519079.96 1037.02
19096.25  1037.719128.81 1038.6219162.01 1039.2619189.37 1039.6919223.34 1040.15
19254.25 1040.5919299.11 1040.9219330.55  1041.319351.87  1041.619380.04  1041.8
19400.92 1041.8919471.75 1042.04   19476 1029.5819484.73 1025.6319493.22 1022.25
19499.21  1020.619527.23 1020.1619563.46 1020.0419837.52 1019.7619907.24  1019.3
19944.91 1019.1119959.55 1018.2319976.64  1017.119988.84 1016.1320005.93 1014.76
20023.01 1013.7120054.74 1007.6620127.96 1004.5220206.07 1004.4420252.44 1004.27
20334.23 1004.47 20435.5 1004.5220486.75 1004.9220506.28 1009.3520520.92 1013.31
20520.92 1014.7620528.24 1016.6120549.63 1023.72 20554.8 1024.9520567.95 1029.34
20571.66  1029.920587.11 1038.7120594.25 1042.1820699.28 1041.58 20806.1 1041.01
20881.51 1040.31 20963.2 1039.4821070.02 1038.8421167.41 1037.6921220.83  1037.5
21343.36 1036.8621409.34 1036.3521475.31  1036.121522.44 1035.78

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
 18830.2    .02519471.75    .03220594.25    .037

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      19471.7520594.25             114  116.26     106             .3       .5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 18830.2 19471.8    1045       F
   2059421522.44    1045       F

BRIDGE


RIVER: 1
REACH: 1                  RS: 209.535

INPUT
Description: 35th Ave - modified bridge per TranSystems plans;
Used Interim
             Finished grade per plans; the pier widths were doubled (plans=5ft;
             model=10ft) in order to model the debris accumulation.
Distance from Upstream XS =      24
Deck/Roadway Width        =      91
Weir Coefficient          =     2.6
Upstream  Deck/Roadway Coordinates
    num=       12
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
19471.75 1042.04    103519496.41 1043.19    103519615.66 1044.42    1035
19737.91 1045.34    103519860.16 1045.94    103519982.41 1046.22    1035
20104.66 1046.19    103520226.91 1045.85    103520349.16 1045.19    1035
20471.41 1044.21    103520590.29 1042.87    103520703.53 1040.09    1035

Upstream Bridge Cross Section Data
Station Elevation Data    num=      64
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 18830.2  1036.718846.47 1036.66 18879.5 1036.8318897.96 1036.85 18920.8  1036.7
18981.04 1035.9519020.45 1035.78 19054.3  1035.919066.48  1036.519079.96 1037.02
19096.25  1037.719128.81 1038.6219162.01 1039.2619189.37 1039.6919223.34 1040.15
19254.25 1040.5919299.11 1040.9219330.55  1041.319351.87  1041.619380.04  1041.8
19400.92 1041.8919471.75 1042.04   19476 1029.5819484.73 1025.6319493.22 1022.25
19499.21  1020.619527.23 1020.1619563.46 1020.0419837.52 1019.7619907.24  1019.3
19944.91 1019.1119959.55 1018.2319976.64  1017.119988.84 1016.1320005.93 1014.76
20023.01 1013.7120054.74 1007.6620127.96 1004.5220206.07 1004.4420252.44 1004.27
20334.23 1004.47 20435.5 1004.5220486.75 1004.9220506.28 1009.3520520.92 1013.31
20520.92 1014.7620528.24 1016.6120549.63 1023.72 20554.8 1024.9520567.95 1029.34
20571.66  1029.920587.11 1038.7120594.25 1042.1820699.28 1041.58 20806.1 1041.01
20881.51 1040.31 20963.2 1039.4821070.02 1038.8421167.41 1037.6921220.83  1037.5
21343.36 1036.8621409.34 1036.3521475.31  1036.121522.44 1035.78

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
 18830.2    .02519471.75    .03220594.25    .037

Bank Sta: Left   Right    Coeff Contr.   Expan.
      19471.7520594.25             .3       .5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 18830.2 19471.8    1045       F
   2059421522.44    1045       F
```

```
Downstream  Deck/Roadway Coordinates
    num=      12
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
19471.75 1042.04    103519496.41 1043.19    103519615.66 1044.42    1035
19737.91 1045.34    103519860.16 1045.94    103519982.41 1046.22    1035
20104.66 1046.19    103520226.91 1045.85    103520349.16 1045.19    1035
20471.41 1044.21    103520590.29 1042.87    103520703.53 1040.09    1035

Downstream Bridge Cross Section Data
Station Elevation Data    num=      64
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 18830.2  1036.718846.47 1036.66 18879.5 1036.8318897.96 1036.85 18920.8  1036.7
18981.04 1035.9519020.45 1035.78 19054.3  1035.919066.48  1036.519079.96 1037.02
19096.25  1037.719128.81 1038.6219162.01 1039.2619189.37 1039.6919223.34 1040.15
19254.25 1040.5919299.11 1040.9219330.55  1041.319351.87  1041.619380.04  1041.8
19400.92 1041.8919471.75 1042.04   19476 1029.5819484.73 1025.6319493.22 1022.25
19499.21  1020.619527.23 1020.1619563.46 1020.0419837.52 1019.7619907.24  1019.3
19944.91 1019.1119959.55 1018.2319976.64  1017.119988.84 1016.1320005.93 1014.76
20023.01 1013.7120054.74 1007.6620127.96 1004.5220206.07 1004.4420252.44 1004.27
20334.23 1004.47 20435.5 1004.5220486.75 1004.9220506.28 1009.3520520.92 1013.31
20520.92 1014.7620528.24 1016.6120549.63 1023.72 20554.8 1024.9520567.95 1029.34
20571.66  1029.920587.11 1038.7120594.25 1042.1820699.28 1041.58 20806.1 1041.01
20881.51 1040.31 20963.2 1039.4821070.02 1038.8421167.41 1037.6921220.83  1037.5
21343.36 1036.8621409.34 1036.3521475.31  1036.121522.44 1035.78

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
 18830.2    .02519471.75    .03220594.25    .037

Bank Sta: Left   Right    Coeff Contr.   Expan.
      19471.7520594.25            .3       .5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 18830.2 19471.8    1045        F
   2059421522.44    1045        F

Upstream Embankment side slope              =       0 horiz. to 1.0 vertical
Downstream Embankment side slope            =       0 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow =     .95
Elevation at which weir flow begins         =
Energy head used in spillway design         =
Spillway height used in design              =
Weir crest shape                            = Broad Crested

Number of Piers =  8

Pier Data
Pier Station     Upstream=19615.66    Downstream=19615.66
Upstream     num=       2
    Width   Elev    Width   Elev
      10     990      10    1040
Downstream     num=       2
    Width   Elev    Width   Elev
      10     990      10    1040

Pier Data
Pier Station     Upstream=19737.91    Downstream=19737.91
Upstream     num=       2
    Width   Elev    Width   Elev
      10     990      10    1040
Downstream     num=       2
    Width   Elev    Width   Elev
      10     990      10    1040

Pier Data
Pier Station     Upstream=19860.16    Downstream=19860.16
Upstream     num=       2
    Width   Elev    Width   Elev
      10     990      10    1040
Downstream     num=       2
    Width   Elev    Width   Elev
      10     990      10    1040

Pier Data
Pier Station     Upstream=19982.41    Downstream=19982.41
Upstream     num=       2
    Width   Elev    Width   Elev
      10     990      10    1040
```

```
Downstream      num=        2
    Width   Elev    Width   Elev
      10     990      10    1040

Pier Data
Pier Station     Upstream=20104.66    Downstream=20104.66
Upstream      num=        2
    Width   Elev    Width   Elev
      10     990      10    1040
Downstream      num=        2
    Width   Elev    Width   Elev
      10     990      10    1040

Pier Data
Pier Station     Upstream=20226.91    Downstream=20226.91
Upstream      num=        2
    Width   Elev    Width   Elev
      10     990      10    1040
Downstream      num=        2
    Width   Elev    Width   Elev
      10     990      10    1040

Pier Data
Pier Station     Upstream=20349.16    Downstream=20349.16
Upstream      num=        2
    Width   Elev    Width   Elev
      10     990      10    1040
Downstream      num=        2
    Width   Elev    Width   Elev
      10     990      10    1040

Pier Data
Pier Station     Upstream=20471.41    Downstream=20471.41
Upstream      num=        2
    Width   Elev    Width   Elev
      10     990      10    1040
Downstream      num=        2
    Width   Elev    Width   Elev
      10     990      10    1040

Number of Bridge Coefficient Sets =  1

Low Flow Methods and Data
       Energy
       Momentum                Cd   =     1.2
Selected Low Flow Methods = Momentum

High Flow Method
       Pressure and Weir flow
           Submerged Inlet Cd          =
           Submerged Inlet + Outlet Cd =      .8
           Max Low Cord                =    1035

Additional Bridge Parameters
       Add Friction component to Momentum
       Do not add Weight component to Momentum
       Class B flow critical depth computations use critical depth
           inside the bridge at the upstream end
       Criteria to check for pressure flow = Upstream energy grade line

CROSS SECTION


RIVER: 1
REACH: 1                  RS: 209.53

INPUT
Description: 209.53
Station Elevation Data    num=      64
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 18830.2  1036.718846.47 1036.66 18879.5 1036.8318897.96 1036.85 18920.8  1036.7
18981.04 1035.9519020.45 1035.78 19054.3  1035.919066.48  1036.519079.96 1037.02
19096.25  1037.719128.81 1038.6219162.01 1039.2619189.37 1039.6919223.34 1040.15
19254.25 1040.5919299.11 1040.9219330.55  1041.319351.87  1041.619380.04  1041.8
19400.92 1041.8919471.75 1042.04   19476 1029.5819484.73 1025.6319493.22 1022.25
19499.21  1020.619527.23 1020.1619563.46 1020.0419837.52 1019.7619907.24  1019.3
19944.91 1019.1119959.55 1018.2319976.64  1017.119988.84 1016.1320005.93 1014.76
20023.01 1013.7120054.74 1007.6620127.96 1004.5220206.07 1004.4420252.44 1004.27
20334.23 1004.47 20435.5 1004.5220486.75 1004.9220506.28 1009.3520520.92 1013.31
```

```
20520.92 1014.7620528.24 1016.6120549.63 1023.72 20554.8 1024.9520567.95 1029.34
20571.66  1029.920587.11 1038.7120594.25 1042.1820699.28 1041.58 20806.1 1041.01
20881.51 1040.31 20963.2 1039.4821070.02 1038.8421167.41 1037.6921220.83  1037.5
21343.36 1036.8621409.34 1036.3521475.31  1036.121522.44 1035.78

Manning's n Values         num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
 18830.2    .02519471.75    .03220594.25    .037

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      19471.7520594.25              588     626   654.7              .3       .5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 18830.2 19471.8    1045        F
   2059421522.44    1045        F

CROSS SECTION


RIVER: 1
REACH: 1                   RS: 209.42

INPUT
Description: 209.42
Station Elevation Data     num=     117
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
 18066.3  1035.2 18092.5  1034.718174.13  1034.618232.22 1034.7518374.28 1034.76
18519.36    103518614.36 1034.6418643.67 1034.5418708.46  1034.118735.86  1034.9
18757.05 1035.3618816.34 1035.6218857.04 1035.6919001.96 1035.2819017.56 1034.59
19031.34 1033.4219044.82    103019075.88  1027.319098.95 1024.1519123.26 1035.21
19142.22  1034.819153.41 1033.6619175.69 1033.0419229.76 1032.9219270.26 1032.96
19318.56 1033.2219344.15 1031.8819356.56 1026.1619373.86 1022.6419393.04    1022
19428.02  1022.119463.74 1022.2719519.23 1021.07 19565.1  1021.719573.94 1022.35
19613.08 1022.7919626.02  1021.919630.14 1022.4119670.75 1023.0719686.66 1022.67
19771.52  1022.619783.71 1024.7219795.37 1024.6119808.15 1021.7219887.54    1023
19978.34 1021.89   20024 1019.6620043.24 1015.9520079.12  1012.220127.13 1009.85
20197.83  1007.6 20239.6 1006.7820318.19  998.9120334.72  998.4420358.65  999.18
20442.82  1004.220493.17 1007.2720559.67 1012.3920578.47 1015.2620600.01 1023.23
20610.47 1029.5820635.94 1031.1720643.41 1036.7820653.39    104320663.79  1044.4
20706.16 1043.36 20730.5 1041.37 20742.8 1040.7820782.21 1041.6920812.94 1042.18
20850.74  1041.2 20869.7 1042.6620877.68 1041.04 20890.4  1033.520897.41 1030.52
20907.67 1029.5420917.26  1029.520920.08 1031.4520940.19  1031.920959.31 1031.64
21075.63 1032.0921217.55  1032.321336.33  1032.721395.05 1032.3721464.28 1030.89
21504.38  1030.421565.16 1030.2321615.46 1029.79 21661.1 1028.9521714.94  1029.2
21753.32  1028.621780.93 1030.96 21834.5 1029.8321868.92 1030.5821937.71 1032.32
21987.07 1032.1822098.03  1030.822124.72  1030.722241.07 1032.7922289.03 1032.75
22341.52 1030.9522372.56 1030.47 22400.6 1030.4722442.55 1031.0522532.24 1030.58
22582.04  1030.522661.25 1030.7122731.42 1032.1822738.15 1031.5922744.66 1028.33
 22751.2 1028.3322764.51 1032.1822773.18  1033.922782.89  1034.722830.05 1035.87
22909.02 1035.7122931.75 1036.02

Manning's n Values         num=        4
     Sta   n Val      Sta   n Val      Sta   n Val      Sta   n Val
 18066.3    .03719318.56    .03220663.79    .032 20869.7    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      19318.5620610.47              501  486.04     526              .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 18066.319123.26    1050        F
20663.7922931.75    1050        F

CROSS SECTION


RIVER: 1
REACH: 1                   RS: 209.33

INPUT
Description: 209.33 - FEMA Section V
Cross Section updated per TranSystems
            Corporation Mapping (2004)
Station Elevation Data     num=     133
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
 17896.2  1033.517958.97  1033.417986.14 1033.7518112.66 1034.2418188.57 1033.75
18270.44 1033.7918305.44 1034.5118345.72 1034.6718423.99 1033.7918435.53 1034.26
18503.15 1034.2518553.69 1033.8418565.35 1034.23 18681.1 1034.1318703.77 1033.85
18754.95 1033.7918813.08  1034.118832.57  1034.518965.64 1034.9219086.19 1034.65
19114.67    103219134.93 1026.84 19181.5 1024.9719197.05 1026.4319203.85 1024.41
```

```
19223.43  1024.119250.18  1022.719253.79  1023.219282.68 1020.5519307.62  1017.4
19325.01  1017.3 19355.8 1018.86 19365.9 1018.62 19378.8  1021.919409.32  1019.5
19428.42 1019.8819441.87  1021.319481.76 1021.1719517.59 1021.6219549.59  1021.3
19597.25  1020.3 19627.7 1020.0919656.16 1020.5419662.21 1021.32 19697.4  1023.1
19726.12  1023.819844.27 1023.2419849.98  1026.219855.05 1023.4119879.93 1022.23
19888.16 1023.4519913.86 1022.8219926.21  1024.919931.49 1022.4219941.55 1025.12
19955.92 1021.4119963.16  1022.120001.12 1016.37 20032.8 1013.8620059.79 1013.33
20098.45 1013.7320128.52 1013.0120166.76  1011.120221.81 1011.2620263.13  1010.7
20270.95 1012.0120280.71 1010.1220297.89 1008.4820309.88 1001.6920317.32  999.24
20329.38  997.9520387.71   995.120406.58  993.7120444.15  994.9120450.21  996.31
20481.01  997.6320509.49  1000.220517.12    100420538.38 1005.7920573.28 1007.87
20610.33 1010.95 20679.1 1011.3520688.91 1012.2320695.14 1015.3520715.31 1028.88
20723.94  1029.820732.61 1027.4620742.95  1028.8 20757.3 1027.7120801.95  1030.6
20907.29 1031.09 20920.3 1036.87 20934.7 1034.9620949.59  1031.220960.05  1027.2
20990.79 1028.0521001.98 1030.6421022.93 1029.6821027.18 1030.8421082.45 1030.72
21158.66 1031.2421353.12 1031.48 21455.4  1031.621531.07  1030.621626.53 1030.11
21653.83 1030.5321823.49  1030.421871.63 1029.8821878.34 1031.2721890.58  1028.9
21942.99 1028.61 21959.1 1027.6421991.93 1030.86 22030.2    103222122.88  1032.6
22142.26 1031.5322167.18 1031.9522193.03 1031.3722250.67 1031.7322268.19  1031.1
22397.32 1031.2122414.21  1030.722431.33  1027.222441.79  1026.422491.98 1026.69
22530.86 1027.3322550.52 1031.1922572.62  1031.322581.69 1028.3322592.78 1028.33
22605.98  1035.822633.72 1034.8522651.94 1034.85

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
 17896.2    .03719086.19    .032 20920.3    .037

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      19086.1920715.31              563   490.4     583             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R     Elev  Permanent
 17896.218965.64     1040        F
 20920.322651.94     1040        F

CROSS SECTION


RIVER: 1
REACH: 1                   RS: 209.24

INPUT
Description: 209.24
Station Elevation Data     num=     100
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
 18093.1    103318111.19 1032.6618170.55 1033.11 18249.7 1032.5618290.75  1033.5
18331.25 1033.0118346.32  1033.518358.33 1032.9818369.13 1033.5418393.42 1033.13
18469.39 1033.0718512.08 1033.0718637.39  1032.7 18752.3 1032.6518788.04 1032.79
18804.94  1032.418838.39  1032.918864.91  1032.218883.35 1028.4418899.45 1032.41
18908.64 1036.0218915.46 1032.28 18922.1  1030.418942.52 1030.2119012.72 1021.32
19049.33 1021.2119102.51  1025.919144.88 1026.16 19179.4 1027.2819192.91 1028.51
19221.01 1027.4819251.07 1028.3419265.36  1027.519301.53 1020.3219329.15 1019.35
19360.39 1018.9919370.19  1018.119394.97 1017.4219404.33 1016.3219424.98 1015.69
19456.86 1016.7719466.18 1018.3619497.21 1020.3619524.86 1021.0119549.47 1021.01
19582.15  1021.419600.78    102119641.86 1023.0919653.99 1021.23 19681.4 1021.69
19697.48  1020.819743.39  1020.719822.79 1021.8619837.12 1021.4319857.39 1019.53
19867.11  1020.419912.92 1020.5519923.39 1019.9719969.32 1019.1520004.86 1017.61
20026.23 1016.2120141.25 1015.2420152.29  1010.620175.79 1010.3220193.09 1015.77
 20204.3 1016.5620231.05 1007.3720243.67    100320287.34  1018.5 20308.5 1018.37
20324.96    101020735.49    101020735.59    1025 21770.2    102521803.67 1033.09
21811.84  1029.2 21825.3  1034.721842.65  1025.5 21881.3 1026.4421899.12 1026.89
21924.24  1025.621976.69 1026.6721982.73 1025.6921999.87 1025.35 22090.2 1025.39
22155.13  1025.322244.29 1025.3522289.44  1025.522316.75 1025.8822341.35  1028.8
22353.64 1028.9322368.41  1032.3 22376.5    1028 22384.1 1026.3522390.56 1028.61
22396.37 1032.3722437.65 1032.0922468.97 1032.2122560.84  1032.122647.85 1032.88

Manning's n Values         num=       5
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
 18093.1    .03718942.52    .03220141.25    .03720287.34    .032 21825.3    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      18942.5220287.34              514  515.61     523             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R     Elev  Permanent
 18093.118914.46  1034.8        F
20907.5322647.85  1034.8        F

CROSS SECTION
```

RIVER: 1
REACH: 1 RS: 209.14

INPUT
Description: 209.14
Station Elevation Data num= 175

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
17712.7	1032.217733.81	1032.317755.05		103217769.95	1031.3817807.73	1031.5			
17918.31	1031.0617920.82	1031.35 17943.8	1031.417971.64	1032.03 17993.6	1031.59				
18020.99	1031.4418029.62	1030.7518045.75	1030.9618061.27	1030.718068.04	1031.06				
18093.7	1031.5318113.91	1031.618141.03	1031.518161.73	1031.6918203.99	1031.2				
18219.59	1031.4118257.52	1031.318268.17	1031.118314.57	1031.1718419.42	1030.9				
18497.7	103118540.47	1031.4918580.28	1031.5618590.93	1031.1518633.39	1030.95				
18650.39	1031.36 18680.6	1031.33 18720.2	1030.3418737.94	1030.4318755.98	1030.74				
18761.99	1030.5718784.42	1030.818801.05	1030.8118813.66	1030.3218833.88	1030.8				
18845.19	1030.618852.07	103118864.66	1029.5818869.21	1028.618880.65	1028.56				
18885.94	1029.26 18891.7	1029 18922.1	1030.1218940.12	1029.49 18950.3	1030.6				
18957.14	1030.2718979.23	1028.2418984.98	1029.4718992.18	1032.5518998.45	1029.47				
19003.26	1027.9619018.59	1026.9819028.63	1027.2519044.02	1027.119074.49	1027.06				
19081.18	1026.819115.16	1023.8219127.21	1022.1519152.59	1019.9119166.14	1019.99				
19191.51	1021.3619196.09	1021.919199.73	1020.9819206.42	1021.0719214.89	1022.76				
19231.49	1024.5319245.82	1024.819263.22	1025.519289.61	1025.8219298.62	1025.62				
19324.23	102619336.29	1025.2619345.92	1024.1819353.34	1023.919359.53	1022.62				
19371.81	1019.2119387.21	1016.4719396.66	1015.6519407.14	1015.2719424.22	1015.38				
19446	1014.919468.59	1015.0719478.96	1015.419488.13	1016.419514.03	1016.16				
19544.56	1016.8119553.79	1017.6519576.59	1018.419585.23	1018.3419597.29	1017.1				
19625.64	1017.2319633.67	1016.9619662.81	1017.5319679.21	1017.3919691.15	1018.07				
19718.55	1018.619739.96	1018.419768.73	1018.89 19781	1019.719808.31	1019.85				
19822.58	1020.9519830.13	1020.7719859.66	1021.0119900.07	1020.82 19905.4	1020.95				
19942.86	1020.6119958.76	1020.920016.03	1020.2420040.17	1020.1220076.36	1019				
20087.02	1018.8920107.15	1018.3320126.03	1017.1820145.24	1017.120160.85	1022.12				
20168.39	1023.6720173.07	1022.7220184.98	1017.120190.01	1016.0320200.85	1010.77				
20209.55	1005.1 20215.2	1003.2620224.09	1002.8720233.55	1003.1920239.27	1004.74				
20248.4	1008.35 20267.4	1018.520271.19	1019.8720278.27	1019.8620294.18	1014.23				
20299.82	1013.1920314.27	1012.420327.64	1012.7720348.37	1015.5620359.78	1014.91				
20385.64	1014.720398.56	101020748.72	101020748.82	102221863.55	1022				
21871.58	1022.521877.08	1022.621882.23	1022.721906.95	1034.8521913.42	1030.91				
21918.47	1032.5421926.44	1033.7121935.64	1030.3421940.87	1026.3 21945.9	1025.72				
21972.1	1025.7821989.84	1026.3122013.87	1026.5522052.95	1026.722065.97	1027.04				
22126.27	1028.2422168.73	1029.24 22206.6	1029.6622274.49	1030.8822316.41	1031.2				
22330.02	1031.5222355.73	1031.6822369.85	1031.622394.81	1031.7422463.25	1031.65				
22479.79	1031.8822509.72	1031.722546.93	1031.7422588.34	1032.222649.92	1032.1				

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
17712.7	.03719074.49	.03220160.85	.03720385.64	.03221926.44	.025				

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19074.4920271.19		515 499.52	517	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
17712.718998.45	1034	F	
21140.1822649.92	1034	F	

CROSS SECTION

RIVER: 1
REACH: 1 RS: 209.04

INPUT
Description: 209.04
Station Elevation Data num= 165

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
17436.1	1032.817481.92	1033.1217492.97		103417523.41	1033.35 17553.8	1033.63			
17567.41	1031.5517593.91	1032.5517629.24	1031.9 17655.8	1031.7 17689.7	1032.45				
17695.46	1033.5817714.36	1033.28 17733.5	1033.7817748.64	1032.3417764.76	1032.1				
17771.89	1030.7217780.47	1032.0617790.76	1030.917801.38	1027.8717816.77	1028.68				
17830.26	1028.417903.58	1029 17910.5	1028.7318018.61	1029.2118054.11	1029.58				
18068.41	1029.4618116.27	1029.618176.67	1029.55 18188.3	1029.2418231.03	1029.42				
18257.65	1029.1818293.37	1030.4418300.67	1031.4218303.42	1030.2118325.88	1029.58				
18349.35	1029.818368.26	1029.318405.02	1029.918413.03	1029.418422.64	1029.8				
18438.88	1029.5318477.77	1029.3918506.45	1028.2818520.92	1028.6118558.78	1028.72				
18600.38	1028.3418620.89	1028.7418645.84	1028.7418668.28	1029.12 18676.4	1032.1				
18682.1	1030.818687.17	1031.0418693.62	1029.83 18704	1029.6918712.79	1032.9				
18719.4	1029.3618729.67	1031.0618732.96	103018744.07	1031.1318756.77	1030.5				
18763.23	1032.3118770.67	1032.118787.85	1029.1618817.09	1029.318848.11	1029.01				
18855.89	1029.418896.56	1028.7818900.74	1028.3218904.52	1026.4718916.87	1026.35				
18924.49	1027.318953.93	1028.7618978.91	1029.118990.65	1028.5419010.12	1028.26				

```
19022.96 1031.3419032.32  1028.319047.62 1027.3919092.73 1026.5319103.69 1025.67
19138.37 1024.6619177.83 1021.9319196.79    101919225.46 1018.5119249.34  1018.6
19280.44  1022.4   19302 1026.1719327.89 1025.7919336.16 1025.11 19356.9 1021.79
19371.16 1017.5319374.44  1015.519384.22 1014.7719399.04 1011.7819405.42 1011.48
19417.16  1012.719427.75 1014.7619437.29 1013.3919456.39    101419462.67 1013.64
19470.92 1014.8419487.88 1013.3619517.22 1012.6619535.61    101419553.79 1016.39
19571.83 1017.1219585.34 1017.0819616.81 1017.5819660.08 1017.9519677.15  1017.9
19689.47 1018.5619734.18  1018.119789.91 1017.1119808.47 1017.1819838.18 1016.55
19869.54 1017.7219955.17 1018.1619985.34 1017.0519993.46  1016.120033.72  1013.3
 20059.3  1012.720088.98 1012.3120095.15 1012.8420110.54 1010.4620127.24 1007.07
20143.74 1007.02 20165.7    101120181.04  1014.320198.46 1016.7720207.15  1016.4
20231.68 1012.0620261.67 1011.2120295.29  1011.520349.03 1012.5820373.43 1012.57
20411.55    101020761.17    101020761.27    102021949.73    102021962.03    1020
 21974.3 1023.2921988.69  1033.421992.14 1031.1121999.39 1032.8822011.93 1033.73
22024.53  1026.122043.74 1026.2822072.39    102722075.88 1027.8422101.16 1028.39
22112.98 1029.0322158.53 1029.59 22192.5  1030.422243.49  1031.222251.38 1030.62
22255.34 1028.53   22266 1027.9622271.88 1030.5722302.67 1030.1322353.28  1030.1
 22435.9  1030.822527.91 1030.9122594.31 1031.7522629.46  1031.622666.72 1032.11

Manning's n Values        num=       5
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
 17436.1    .03719047.62    .03219993.46    .03721949.73    .03222011.93    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      19092.7320198.46              495  493.13     531             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 17436.119047.62    1035       F
21356.7222666.72    1035       F

CROSS SECTION


RIVER: 1
REACH: 1                  RS: 208.95

INPUT
Description: 208.95
Station Elevation Data    num=     179
     Sta     Elev     Sta     Elev     Sta     Elev     Sta     Elev     Sta     Elev
 17602.6  1030.717651.71 1029.7817678.28 1030.4417702.53 1029.58 17709.4  1030.1
17716.28 1027.7417726.85 1027.2417754.92  1027.117785.11 1027.4717835.06  1026.8
17871.62 1027.4917953.86 1027.3617970.21 1026.5318023.39 1026.3518038.68  1027.3
18091.11  1027.718094.77 1029.1818100.61 1027.4618198.47  1027.318220.25 1027.92
18246.36  1027.718309.26 1028.2918344.29 1028.4518407.59 1027.4418451.06 1027.54
18478.84 1027.87 18531.8  1027.918579.44  1028.618682.24  1028.418703.67  1027.9
18808.65 1028.1418857.03 1026.7318917.85 1028.0918938.27 1027.3818952.79 1026.25
 19030.7 1025.6219046.62 1025.0619082.99 1025.4919104.79  1024.619112.99 1025.03
19124.51 1030.6519140.48  1025.319157.35 1026.0919168.11 1024.5519173.85  1025.4
19195.16 1023.8219207.08 1021.8719270.39 1018.9419282.25 1014.0419305.81  1013.5
19323.91  1009.5 19355.8 1008.9319366.92  1009.419397.25 1014.53 19409.8 1013.58
19425.91 1014.79 19456.9 1015.7219460.95 1014.0219470.72 1012.9419481.47 1013.92
19495.24 1008.88 19506.5  1007.819522.51 1007.4919548.22 1008.1719566.69  1005.6
19598.49  1005.219607.34 1006.8619629.96 1013.5719636.47 1011.6219653.72 1010.05
19696.34 1010.0919777.25 1013.0119819.13 1016.0219864.73 1015.5219888.04 1016.45
19903.55 1017.6219939.71 1017.39 19944.9 1016.8619961.63 1017.3519968.78  1016.6
19989.37 1017.9320035.86  1019.220080.09  1021.820099.08 1019.9320121.36  1018.6
20137.49  1018.6 20148.8  1020.120184.87 1019.7120189.78 1018.0720196.27 1018.47
20209.65 1016.1720285.35  1015.620305.76 1015.0520324.48  1013.520343.75 1009.77
20358.33 1008.95 20370.4 1011.3820394.52  1012.4 20413.5 1014.1920426.89  1014.5
 20439.5 1014.0320455.51 1012.3320465.37 1012.8320483.75 1012.3120489.18  1010.9
20510.98  1009.520519.28 1007.7620531.47 1011.0620546.03 1006.2720573.29 1004.38
20576.36  1003.120604.86 1000.7820634.63  1000.420646.76 1000.7220658.11  1002.9
20679.97 1002.5620696.64 1001.4520747.49  997.3320778.46  997.4520790.93   997.9
20799.87 1002.98 20826.7 1022.0920836.45 1026.1820841.68 1023.2520885.15  1023.4
 20920.7 1022.7820959.96 1023.2220968.83  1023.620987.66  1032.921003.77    1031
21026.87 1031.8921043.74  1031.8 21076.8  1032.521096.37  1031.421112.48 1032.38
21141.57 1032.0521164.67 1033.3921189.39 1032.8521193.31 1033.5521219.82 1023.28
21269.17 1023.4221286.95 1033.0221310.01  1029.221351.05  1032.121360.77 1031.64
21387.79 1031.6321396.55 1030.7921410.37 1030.7921421.06 1033.8621429.05  1034.1
21456.59 1024.1821491.57 1024.0121589.23 1024.0621735.97 1024.24 21832.1 1024.74
21894.74 1024.8321931.61 1025.1721980.52 1026.1622127.26 1027.6222173.37  1028.9
22176.23 1035.5222183.06 1039.7122188.16  1038.9 22201.8 1039.9222208.53 1033.98
22216.16 1030.1322224.26 1030.7422231.11  1027.122236.95 1026.2822242.59  1026.7
22251.03  1030.522265.51 1030.4222289.51 1031.1422297.99 1030.3422321.91  1029.9
22425.63 1030.0322527.54 1030.6122572.36 1030.3722612.01 1030.81

Manning's n Values        num=       5
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
```

 17602.6   .03719173.85   .03220836.45   .03220987.66   .03722188.16   .025

Bank Sta: Left   Right   Lengths: Left Channel   Right   Coeff Contr.   Expan.
      19173.8520836.45   458 514.75   603   .1   .3
Ineffective Flow   num=   2
   Sta L   Sta R   Elev Permanent
 17602.619157.35   1038   F
20987.6622612.01   1038   F

CROSS SECTION

RIVER: 1
REACH: 1   RS: 208.85

INPUT
Description: 208.85
Station Elevation Data   num=   94
     Sta   Elev   Sta   Elev   Sta   Elev   Sta   Elev   Sta   Elev
 17686.5 1031.317694.85 1029.1417749.61 1029.8317758.78 1029.2417984.78   1029
18200.56 1027.33 18280.2 1027.4818328.38 1026.7418441.61 1027.218481.04 1029.88
18510.33 1030.4718682.91 1029.6618740.64 1028.5118754.98 1027.6618784.26 1028.29
18831.49 1028.118874.45 1029.918981.82 1029.1619065.57 1029.1719153.39 1028.46
19206.02 1028.819223.16 1016.919235.47 1012.619256.34 1009.9419276.84 1008.4
19321.83 1007.7919338.38 1008.5419346.72 1011.7719362.51 1004.319405.36 1008.25
19423.93 1009.2 19438.9 1012.4519455.14 1010.47 19490.9 1010.8219519.66 1014.86
19526.32 1012.1319549.87 1011.819568.97 1014.59 19634.7 1016.3719646.89 1017.27
19710.87 1016.62 19760.5 1017.0919801.77 1016.0619827.94 1016.3419863.39 1018.72
19910.52 1019.5620029.52 1020.0320086.67 1019.9920123.45 1020.8520133.93 1019.7
20161.37 1020.5920247.21 1020.8920314.65 1017.220322.23 1017.9420368.81 1017.46
20450.41 1017.56 20502.8 1016.2520508.13 1017.1120550.98 1012.0220589.54 1010.1
20610.51 1006.6920658.34 1002.720671.28 1001.7520700.39 1007.5220728.31 1009.8
20767.63 1007.720799.68 1004.620828.74   100020843.88 998.88 20892.5 999.97
20902.76 1003.520934.99 1026.0120948.22 1022.1321019.79 1022.2521070.81 1021.7
21121.72 1022.221135.41 1028.06 21144.4 1029.4921161.18 1022.3121191.38 1023.06
21314.23 1023.5621380.26 1024.1621412.34 1023.3121460.67 1023.321510.92 1022.62
21535.21 1023.2821562.07 1022.621581.65 1023.8321609.58 1023.4221953.16 1026.38
22103.46 1028.5222197.52 1029.322301.84 1029.8222339.32 1029.6

Manning's n Values   num=   4
     Sta   n Val   Sta   n Val   Sta   n Val   Sta   n Val
 17686.5   .03719206.02   .03220029.52   .03220934.99   .037

Bank Sta: Left   Right   Lengths: Left Channel   Right   Coeff Contr.   Expan.
      19206.0220934.99   511 479.03   452   .1   .3
Ineffective Flow   num=   2
   Sta L   Sta R   Elev Permanent
 17686.519206.02   1035   F
 21144.422339.32   1035   F

CROSS SECTION

RIVER: 1
REACH: 1   RS: 208.75

INPUT
Description: 208.75 - FEMA Section U
Station Elevation Data   num=   120
     Sta   Elev   Sta   Elev   Sta   Elev   Sta   Elev   Sta   Elev
 18173.6 1027.118257.35 1026.618340.04   102618367.17 1025.85 18472.3 1025.33
 18563.9 1028.418584.53 1028.6518617.81 1027.2618655.45 1028.1618671.42 1028.21
18702.85 1027.6418720.75 1029.2818764.48 1030.7318832.51 1030.9518900.38 1030.43
18954.98 1029.618984.44 1028.4718996.07 1026.719017.06 1026.719056.46 1027.48
19103.99 1027.7119153.26 1027.5219204.89 1026.7419212.98 1026.2819226.43 1021.15
19249.91 1010.1619266.81 1008.819299.44 1007.519308.35 1007.8819324.64 1009.65
19332.09 1012.6519339.05   100919344.99 1006.4719362.61 1005.619374.08 1006.4
19427.89 1008.7719452.89 1009.8519478.06 1011.5219505.81 1012.2619526.98 1013.15
19535.38 1014.5319541.92 1015.3919562.58 1013.9119580.22 1014.519611.04 1016.44
 19649.5 1015.55 19676.7 1015.719706.53 1017.5819723.84 1018.0919752.75 1018.69
19793.14 1018.4519817.64 1018.7419868.41 1019.5619904.45 1019.5820006.67 1019.78
20053.74 1019.6720110.37 1019.6320147.15 1019.220205.32 1018.1820213.52 1017.6
20230.83 1016.5620246.24 1016.2120258.43 1015.620282.65 1013.1320304.16 1013.25
20325.33 1013.8820360.87 1013.0220399.39 1010.9320443.45 1008.8320509.67 1006.65
20530.45 1005.320549.36 1002.9420624.04 1001.58 20641.4 1000.6320653.89 1001.2
20674.36 1001.420691.66 1000.4420708.01 1002.620717.29 1003.8220733.99 1004.85
20745.04 1006.320762.48 1008.2720775.95 1009.320782.78 1010.2820788.76 1010.74
20801.71 1012.5220813.85 1010.7820838.24 1010.5920846.26 1013.6520860.81 1005.65
20869.16 1002.57 20881.6 1002.6520888.55 1005.2820898.48 1008.2720908.17 1004.93

```
20915.98  1003.920930.47 1011.0420936.86 1016.2920940.05  1018.520952.96 1025.18
21004.85 1025.6821010.02  1025.221017.42  1023.321098.69 1024.0821136.04 1023.95
21181.34 1023.4121212.16  1022.921283.95 1024.2721300.57  1033.421323.99  1023.8
 21329.9 1023.31 21360.2 1022.8421410.93  1022.321471.63  1021.921516.43  1021.9
21910.17 1026.7822038.72 1028.0622133.23  1028.922205.11  1029.522228.96 1029.66

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
 18173.6    .03719212.98    .03220205.32    .032

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      19212.9820952.96             565  559.49     569             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 18173.619204.89    1038       F
21098.6922228.96    1038       F

CROSS SECTION


RIVER: 1
REACH: 1                  RS: 208.67

INPUT
Description: 208.67

Left and Right Channel Bank Stations Interpolated
Station Elevation Data    num=     100
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 17889.8  1026.317940.06 1028.0117946.89  1024.717953.87 1026.9318019.22 1025.66
18296.94 1025.4718455.93  1024.918473.38 1024.2818514.46  1025.118559.79  1024.1
18645.36  1024.918707.02 1024.4318845.34    102618932.39  1026.418963.79  1026.2
19024.26 1027.15 19046.1  1027.9 19164.5 1028.1519199.93  1027.619317.69 1028.73
19328.09  1021.519347.56  1010.419383.55 1009.6619393.77 1014.4919409.65 1006.16
19420.84 1005.5519487.27  1008.419553.76 1009.5619580.27 1011.2219681.59 1014.56
19704.28 1016.4119768.18 1016.7919807.68 1017.7819886.33 1018.3119914.74  1017.1
19970.68 1017.7520001.36  1016.320060.25 1014.5920091.06 1012.2120139.57 1010.12
20167.85  1006.520204.43 1005.9920234.48 1008.5220294.94  1005.520308.87 1003.36
20326.14  1003.1 20341.6 1005.8820376.14 1007.4520397.29  1007.120450.21  1009.5
20461.96 1008.6920485.33 1004.5920503.57 1003.0320523.73  1004.220581.55  1010.1
20626.86 1012.8320637.02 1014.0120678.94 1013.25 20690.1 1017.0720712.53 1017.81
20729.15  1021.420758.54  1022.720769.24 1019.5220782.73 1020.1520807.03  1019.2
20820.96    1017   20831 1018.2720844.49  1016.4 20871.7 1016.7620886.74 1015.51
 20895.7 1017.4320915.38 1015.9220935.23 1020.22 20944.4 1025.8420956.53 1026.07
20966.88 1019.1721108.47  1019.921183.53 1020.5621311.57 1022.3821340.58 1022.08
21398.61  1023.121427.63    102321512.69  1024.121608.59 1023.8421651.56 1022.85
   21715  1023.221786.17  1023.121820.67  1022.621854.56  1023.721920.87 1024.77
21941.67  1025.7 22014.6 1025.7422033.05    1025 22130.7  1025.822157.61 1025.44
22270.31 1026.1122293.23 1025.8922355.71  1026.422387.92  1026.122440.81 1026.52

Manning's n Values        num=       4
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
 17889.8    .03719317.69    .03220167.85    .03220758.54    .037

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      19317.6920758.54             456  449.63     359             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 17889.8 19164.5    1033       F
20956.5322440.81    1033       F

CROSS SECTION


RIVER: 1
REACH: 1                  RS: 208.57

INPUT
Description: 208.57

Left and Right Channel Bank Stations Interpolated
Station Elevation Data    num=     200
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 18043.1  1026.618105.91 1025.6118144.21 1025.5418188.08 1025.0718211.89 1024.98
18258.69 1024.3218280.09  1024.3 18310.7 1023.8218325.77 1024.0618329.48  1023.7
18344.87 1023.9718358.43  1023.418379.45  1024.618397.41 1024.6418445.05 1023.33
18458.29 1023.4418481.95    102318501.82 1023.7818512.77 1023.6118543.96 1023.83
18582.81 1024.4118612.91  1024.418624.01 1024.8218690.73 1025.19 18713.9  1025.5
18798.55 1026.0618839.05 1026.11 18890.3 1026.5118911.31 1026.2118937.47 1026.19
```

```
18997.38  1026.7 19007.7 1026.4519032.19 1026.3919066.17 1026.72 19069.2 1026.07
19101.45  1026.419105.39 1026.7419174.29  1026.4 19242.2  1026.819276.95 1027.45
19311.47 1027.5119330.99  1027.819362.95 1027.4519382.56    102719394.18 1019.45
19399.31 1013.8219402.99 1010.9919419.31 1008.7819431.17 1007.7619447.66 1007.37
 19476.1 1007.2219494.43 1007.4419505.11 1007.9819510.11  1009.419533.51 1010.62
19563.13 1011.7319586.72 1012.0619609.82 1012.6819648.13 1013.3219717.79 1013.72
19732.39 1014.0619760.19  1015.5 19773.2 1015.9719779.57 1015.2219796.53 1016.47
19809.96 1016.9519834.29 1016.9119874.35 1016.1319906.36    101519908.98 1013.83
19930.84 1013.5519941.27  1011.619955.11 1010.4519974.65 1009.3319991.51  1007.7
 20021.3 1006.5220034.23  1006.220042.76 1004.9120051.06 1004.6620058.22 1003.68
20078.97  1002.820093.45 1002.6120125.82  1002.720159.52 1004.1120184.03 1003.61
20208.06 1004.1120215.97  1005.220237.26  1005.220259.55 1006.4520277.02  1006.2
20316.96 1006.2320344.15  1005.120360.59 1005.3820364.27 1005.7720377.87 1009.05
20383.24 1011.1320397.61  1009.820408.18 1009.8720417.33 1010.83 20424.9 1012.33
20438.51 1013.0120456.81 1013.2320474.11 1013.9220492.85 1014.2120507.45 1014.14
20526.79 1013.4920539.37  1013.420565.14  1014.420590.58 1015.3220605.65  1016.3
20611.83 1015.6220620.49  1016.220641.35  1016.620645.26    101820655.94 1018.29
20677.36 1018.3420685.83 1017.8720717.99 1018.1720731.12  1019.220755.71  1019.2
20769.35 1019.6820773.24 1020.7420777.09  1024.4 20779.8  1021.920783.92 1020.63
 20809.6 1020.8420827.39 1021.3720830.05 1021.0920847.21 1021.3220873.66  1022.7
 20879.2 1024.1620895.09 1023.9520904.95 1021.9920937.19 1022.0320945.09 1021.36
 20954.6  1018.920958.81 1017.2120967.22 1017.3620976.54 1019.2520988.26 1023.32
20994.42  1026.720999.24 1026.3921015.31  1026.721019.76 1024.6121033.44 1024.74
21076.95 1023.7521088.41 1023.3321103.62 1023.2921111.64 1023.7321169.95 1024.08
21191.87  1024.521229.35 1024.1321285.49    102421310.35 1024.17 21337.9  1023.9
21376.71 1024.3921419.04 1024.3521462.54 1023.8721499.93 1023.9821527.74 1024.24
21537.93 1024.89 21609.1 1025.4321620.99  1025.821627.53  1024.921654.54  1025.3
21683.04  1025.121782.17 1025.0121829.35 1024.8521865.87  1025.721871.34 1025.36
21941.71  1025.421967.65 1025.8321968.32 1026.1621988.33  1025.9 21991.2 1025.49
22008.95 1025.8322099.68  1025.822160.09 1026.36 22189.9 1026.4322199.11 1026.26
22228.89 1026.54 22250.8  1026.222285.77  1026.522286.17 1026.32 22317.8 1026.35
22334.22 1026.9822335.38  1026.622386.13 1027.09 22430.6 1027.2322470.47 1027.86
22500.57 1028.0222520.45 1027.7422540.45 1028.2422544.52  1030.622547.07 1030.63
22553.13 1027.8822560.23 1025.56 22566.7 1025.5622575.37 1028.3822590.86 1028.15

Manning's n Values        num=       4
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
 18043.1    .03719362.95    .03220360.59    .03221015.31    .037

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      19382.5620731.12             685  539.75     467             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 18043.119330.99    1028       F
20777.0922590.86    1028       F

CROSS SECTION


RIVER: 1
REACH: 1                  RS: 208.48

INPUT
Description: 208.48

Left and Right Channel Bank Stations Interpolated
Station Elevation Data    num=     185
     Sta     Elev     Sta     Elev     Sta     Elev     Sta     Elev     Sta     Elev
 17996.8  1025.318087.88 1025.75 18135.7  1025.518174.14  1025.618234.42  1025.1
18242.22 1024.9418278.75 1024.7718296.78  1024.3 18330.3 1024.4218356.37 1023.56
18396.78 1022.6518425.65 1022.5418438.55  1022.818443.72  1023.7 18452.1 1028.37
18456.36  1029.418473.79 1028.6418483.21  1028.818490.75 1028.2118501.92 1020.63
18510.88 1016.57 18517.2  1015.818532.92    101518548.71  1013.618563.89 1013.29
18601.46  1013.718615.03  1013.118626.88 1012.9718673.46 1011.9918685.14  1011.3
18709.42 1012.4418732.62 1012.5518746.16 1012.9618776.92 1014.9518793.29  1015.5
18825.78 1016.0518831.87  1015.7 18838.1 1016.0518871.38 1016.6518899.17  1016.4
18924.17 1015.8618946.43 1015.0518974.62 1014.32 19000.9 1013.23 19021.6 1013.67
19029.98 1013.5319042.98 1011.7419052.81 1010.9319074.74 1010.0219087.23  1010.4
19108.55 1010.7119125.56  1010.719132.98  1009.319144.31  1007.919158.27 1007.71
19179.57 1007.87 19196.9  1007.619203.86  1007.819229.67 1007.68 19252.4 1008.24
19273.39 1008.2519295.63 1010.1319335.75  1011.819373.54 1013.9419397.84 1014.52
19417.49  1014.519491.91  1015.5 19523.5 1015.5919555.18  1016.219600.72 1016.13
19617.17 1014.71 19629.3 1014.0619663.03 1014.0919690.04  1014.619692.52 1014.24
19735.34 1014.4219792.79 1013.8519809.79 1014.0119821.12  1013.719839.66 1014.12
19864.65 1013.7319874.48 1012.6919887.08  1010.119906.28 1008.0919917.38 1005.84
19926.24  1003.619942.51 1001.5519951.73 1000.05 19964.2   998.719978.79  998.89
19981.77  999.3319993.04  999.2120006.45  999.8920018.92  999.6320043.06 1000.05
20060.21  999.8420074.55  1000.420083.95 1001.12 20102.1 1001.99 20121.5 1003.34
20125.67    100420158.75  1005.720162.52 1006.4920179.29 1006.6420200.95 1007.85
```

20236.77 1009.0320265.78 1010.7320279.71 1010.720298.68 1012.2620305.31 1012.15
20311.54 1012.8520329.99 1013.420344.23 1013.5320362.96 1013.220374.51 1012.51
20389.85 1012.1320395.57 1011.620416.51 1011.7220428.19 1009.7820434.35 1008.3
20442.45 1007.1 20448.8 1006.9920458.78 1007.720466.63 1006.4720478.96 1006.83
20496.57 1005.8720507.33 1006.2420513.16 1007.2420520.27 1007.720530.35 1007.7
20539.28 1009.5220546.34 1013.120551.79 1018.3120557.74 1017.2320572.86 1013.46
20578.59 1013.6420588.38 1012.2320601.35 1012.5220613.84 1012.420624.34 1013.01
20633.27 1012.620656.88 1013.1820660.09 1013.7820664.57 1013.2620672.63 1013.6
20680.59 1017.2220691.24 1024.0220693.58 1023.5420707.17 1023.320714.21 1023.5
20723.64 1027.920730.75 1029.220739.88 1029.3820746.13 1027.9 20750.4 1025.4
20770.94 1025.2820793.11 1025.3820828.04 102620878.66 1026.4820916.71 1027.13
20973.15 1027.8520988.41 1028.3821010.17 1028.5621041.21 1029.321075.03 1029.6
21086.4 1029.521107.07 1029.921134.05 1028.9221135.79 1028.121140.85 1022.96
21143.56 1020.9921952.21 1020.9921968.53 1029.3421977.18 1026.721993.27 1026.16
22006.53 1026.0722025.31 1025.122046.26 1024.8522082.66 1025.4122119.24 1025.3
22140.38 1025.5122146.37 1025.1122150.45 1026.4822168.72 1026.3522187.16 1026.47

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
17996.8	.04318601.46		.03220162.52		.03220551.79		.037

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
18501.9220691.24 521 435.12 469 .1 .3
Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
17996.818456.36		1038	F
20730.7522187.16		1038	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 208.39

INPUT
Description: 208.39 - FEMA Section T

Left and Right Channel Bank Stations
Interpolated
Station Elevation Data num= 159

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
17994.5	1023.618007.86	1023.3718031.73	1023.3618062.84	1023.7418090.42	1023.67				
18114.62	1023.318143.17	1023.7 18160.8	1023.818214.18	1022.818251.67	1022.9				
18257.49	102518261.64	1023.0718284.65	1023.5818312.07	1023.318333.31	1022.84				
18368.53	1023.318401.14	1023.2618419.63	1023.6318426.12	1026.1818432.11	1030.36				
18454.65	1030.1118468.95	1021.618472.03	1019.0718480.28	1015.1718493.86	1014.23				
18502.94	1011.618514.98	1011.08 18532.3	1009.8718559.86	1009.8318596.86	1010.52				
18612.43	1012.1818626.02	1012.3218667.62	1011.2718684.66	1012.92 18695.4	1013.5				
18704.94	1013.5318739.77	1014.318782.19	1014.318825.93	1013.2618838.43	1012.8				
18847.91	1012.8418885.02	1012.3418935.29	1011.818943.22	1011.8318961.27	1011.08				
18972.93	1008.9618990.89	1008.29 19016.5	1008.26 19040.7	1007.6 19060.3	1007.35				
19084.42	1007.4719120.66	1007.319138.38	1006.8519166.34	1007.0619181.66	1008.9				
19188.11	1010.08 19204.6	1011.7919214.81	1012.4619242.99	1013.4619276.36	1013.92				
19313.19	1014.9519348.93	1015.0719366.19	1015.3619421.96	1015.219452.11	1015.53				
19470.77	1015.4519487.54	1015.7419545.02	1015.8319551.46	1015.719604.21	1016.09				
19619.85	1016.4619639.62	1016.2219680.93	1016.3419688.83	1015.419726.01	1015.1				
19770.98	1014.319784.11	1013.8819799.23	1013.0619816.81	1012.79 19826.9	1012.9				
19842.07	1014.119865.81	1014.519881.86	1014.219894.64	1012.619902.68	1009.36				
19909.6	1005.8819917.47	100319924.78	1000.919935.61	999.4919959.92	998.77				
19979.97	998.7120012.27	999.3720018.31	999.73 20046.6	1000.520100.86	1003.25				
20137.31	1005.220171.78	1006.2820210.78	1008.29 20248.1	1009.7120277.51	1010.3				
20300.59	1010.5920331.57	1010.5920368.25	1011.1 20389.4	1011.1720436.67	1010.51				
20445.36	1010.65 20453.1	1009.8820458.48	1009.5820465.68	1007.7420482.62	1004.82				
20500.75	1003.7520533.42	1003.5820538.13	1003.1920548.27	1003.320555.54	1004.2				
20568.26	1008.8920580.93	1007.7120590.06	1008.2120595.17	1009.21 20613	1008.44				
20620.51	1009.0820630.22	1008.920636.21	1007.4320644.82	1006.5520668.74	1005.89				
20698.78	1005.8120709.21	1007.6420714.18	1009.720724.42	102021260.32	1020.01				
21266.13	1023.0621274.82	1025.2421279.02	1023.9921283.14	1020.0322038.34	1020.07				
22041.46	1022.0522045.28	1027.5922047.66	1028.122065.98	1025.622089.56	1025.6				
22092.59	1026.522103.19	1025.322115.74	1024.9622132.19	1025.6422134.15	1024.81				
22141.7	1024.75 22147.3	1026.222154.11	1024.7822173.98	1024.3522198.56	1024.07				
22234.19	1025.0822282.49	1025.6222311.63	1025.722357.18	1026.0422371.46	1026				
22384.45	1026.422397.87	1026.4722411.27	1026.9922454.87	1027					

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
17994.5	.04318782.19		.032 20453.1		.03220724.42		.03722047.66		.025

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

```
      18468.9520724.42                509  512.43     494             .1       .3
Ineffective Flow      num=        2
   Sta L    Sta R     Elev  Permanent
 17994.518472.03     1030        F
20721.8722454.87     1030        F

CROSS SECTION


RIVER: 1
REACH: 1                    RS: 208.29

INPUT
Description: 208.29

Left and Right Channel Bank Stations Interpolated
Station Elevation Data     num=      131
      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
 16935.4  1021.816972.48 1022.0516991.55  1022.517024.32  1021.717120.62  1023.2
17155.59 1022.6617192.85 1022.0617285.39  1021.817353.34 1022.0917365.71 1022.74
17425.62 1022.4517477.86  1022.117592.61 1022.28 17700.8 1021.9817799.59 1021.43
17903.68  1020.717956.41 1019.8118005.57 1017.7618011.18  1020.3 18035.1  1018.9
18042.76 1021.8618050.62 1019.9918090.91 1023.1618147.03 1024.4418210.46  1025.4
18249.72 1025.2318271.71 1024.8518313.27 1023.2818362.38    102318385.21 1023.51
18396.18 1025.41 18402.2 1027.3518445.01 1025.2918488.76 1023.9818518.15 1023.71
18541.67  1023.818561.82 1026.1218582.96 1011.5618594.71 1008.9318648.73 1009.35
18681.71  1010.618708.42  1009.218737.24 1009.6518755.56 1010.4718800.06 1011.63
 18835.5 1012.2318875.15  1012.118949.06 1011.6419019.42  1011.119055.94 1009.11
19108.87 1007.3719148.55  1006.719191.76  1006.919238.46  1008.219283.47 1009.86
19311.57 1011.1519324.96 1014.4119351.55  1013.919395.76 1012.1719433.43  1011.7
19500.33 1014.7619596.42 1015.6219629.34 1015.5719669.13 1015.4119682.11 1013.28
19693.86 1014.2919756.49 1012.9419768.98  1010.119798.49 1008.7219819.74  1009.5
 19836.3 1013.6119870.91 1013.9419876.64  1013.619889.61 1010.5119904.18  1008.2
19928.74 1005.1419950.84 1004.2719997.62 1003.3220036.38    100320095.78 1002.85
20117.53 1003.1820153.59 1004.19 20318.8  1010.120343.18 1010.7120377.38  1010.3
20428.47 1010.2720469.42  1010.620509.53 1010.6320564.09 1010.1320581.39 1009.34
20605.08    101020617.03 1007.58 20645.5  1005.9 20716.8 1004.6120731.17 1005.02
 20758.6 1006.6920777.07  1006.720814.86 1005.9420852.55 1007.0220869.68  1008.1
20883.72  1012.820899.05  1021.820909.13 1025.8820910.68 1020.0521403.95 1020.03
21404.24 1021.1221413.92 1024.5921416.52    102021705.57 1019.95 21721.4 1021.36
21744.23  1033.121778.65 1032.3921810.99 1036.2321866.31  1032.721906.79 1030.91
21931.28 1030.1421987.27 1029.1522047.93  1027.422086.31 1026.7922185.43  1026.3
22216.41 1025.2922240.41 1025.5822262.45  1026.722288.71 1027.2522334.14  1026.3
22365.77  1026.3   22395 1026.7322437.63  1025.322484.18 1025.63 22519.5 1025.02
22563.78 1026.31

Manning's n Values         num=        4
      Sta   n Val      Sta   n Val      Sta   n Val      Sta   n Val
 16935.4    .025 17700.8    .04318561.82    .03220909.13    .037

Bank Sta: Left   Right     Lengths: Left Channel   Right      Coeff Contr.    Expan.
      18561.8220909.13                577  525.37     560             .1       .3
Ineffective Flow      num=        2
   Sta L    Sta R     Elev  Permanent
 16935.418582.96     1032        F
20899.0522563.78     1032        F

CROSS SECTION


RIVER: 1
REACH: 1                    RS: 208.19

INPUT
Description: 208.19

Left and Right Channel Bank Stations Interpolated
Station Elevation Data     num=      159
      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
 16730.1  1022.916753.12 1023.5516785.44  1023.6 16819.4    102316845.13 1023.28
16850.24  1021.416853.31 1023.4216886.56 1021.6316909.64 1019.7916911.45 1017.37
16918.57 1019.1316953.51 1019.6816978.39 1019.47 17023.7 1020.1717062.04 1020.06
17111.18 1020.6417219.52  1020.617267.34 1020.0517293.42  1020.717369.92 1021.12
17397.42 1020.6217471.85 1021.0417511.52  1020.417566.36  1020.417569.38 1020.93
17598.82  1020.417672.95  1020.717738.43 1019.5917795.84  1019.417821.76 1019.88
17911.17 1019.4518010.94  1019.9 18054.7 1019.1418110.66 1019.4518120.16 1019.83
18153.28 1019.4518171.52 1019.7918181.75 1024.3718190.83  1026.118197.36 1025.06
18237.15 1025.3418249.53  1026.318307.15 1024.7918350.15 1024.8618400.95    1024
18460.32 1022.5318489.32 1022.7218530.98 1023.7218535.79  1025.718539.61 1023.66
```

```
   18565 1023.6618602.13 1022.3718631.53 1022.6718642.73  1028.518666.35 1028.87
18683.99  1017.318695.75 1016.4218710.31  1010.518725.05 1009.8218747.26  1006.2
18787.22 1006.5318801.02 1008.9818851.13 1008.3218883.28 1008.7918924.65  1010.7
18964.64 1011.0318979.98 1010.4119014.36 1012.2519052.42  1010.819129.94 1010.23
19240.15 1011.5919275.61  1011.4 19288.7 1010.0419301.43 1007.4819314.13  1006.8
 19366.6  1005.719475.49 1004.5619485.33  1003.819509.19 1005.0119534.81 1015.38
19544.85 1016.4919600.74  1017.419656.77 1015.2519677.18 1016.1219692.65 1012.86
 19745.9 1011.4519808.87  1011.219828.37 1010.5419899.37  1011.119929.77  1010.4
19978.61  1005.319993.64  1001.520008.63 1001.01 20109.3 1001.2120138.23 1002.42
20152.68 1003.8520211.69  1004.920276.37  1004.820317.78  1005.720367.67 1007.91
20413.06 1008.7920429.71 1009.4920435.42 1008.2520447.29 1008.5520484.38 1009.39
20503.03 1008.9420508.06 1005.9920520.43 1003.8120535.39 1002.8120566.18  1003.6
20607.12  1002.920626.59  1004.920695.02 1008.5120734.91  1010.220770.97 1011.13
20817.48 1011.2320904.94    101020982.62  1008.721008.43  1010.121043.19 1009.23
21068.97 1009.53 21081.6 1011.6421090.53 1011.32 21098.2 1008.5521110.25 1008.29
21134.97 1009.5321146.26 1012.8121169.22 1013.8321195.79 1011.5921207.45 1009.12
21220.24    1009   21248 1010.2921263.85 1012.9521285.83 1013.2221297.24 1017.48
21306.02 1022.6221318.96 1022.4221337.97 1020.0222088.87    102022106.28 1024.94
   22120 1019.3122160.73 1020.1822197.34 1023.5222231.32 1023.9322246.27 1023.25
22291.76  1023.622316.75 1023.2322428.91  1023.222463.35 1022.6322535.02 1022.57
22586.05  1023.322592.95 1026.6722605.13 1029.5222628.84 1029.2622647.68  1032.3
 22666.8  1032.322683.99 1034.73 22703.8 1034.1922714.61 1034.83

Manning's n Values        num=       6
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
 16730.1    .02518181.75    .04318683.99    .04318747.26    .03220447.29    .032
21297.24    .037

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      18683.9921297.24              537  505.13     617             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 16730.118695.75    1030       F
21306.0222714.61    1030       F

CROSS SECTION


RIVER: 1
REACH: 1                  RS: 208.10

INPUT
Description: 208.10

Left and Right Channel Bank Stations Interpolated
Station Elevation Data    num=     129
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
   16849  1021.716914.49 1022.52 16925.9 1023.4316996.09 1020.8317006.05 1019.92
17027.87 1020.3117098.78 1019.0717322.52 1019.0617694.41 1019.55 17793.4  1018.1
17811.32    102317826.28 1036.6217856.27  1022.217868.24  1018.317961.78 1017.95
17970.02 1021.5617992.67 1025.3618008.84 1023.9618047.58 1025.05 18099.5 1028.37
18140.76    103018245.37    103018252.56  1026.418262.34  1029.718292.78 1049.38
18302.82  1053.7 18317.1 1055.81 18333.4  1055.618356.26 1046.1618389.95  1023.6
18399.27  1019.618416.54 1019.1718557.41  1019.618572.13 1026.7918608.43 1047.96
18623.04 1051.2718634.23 1044.7318668.11 1020.9918732.88  1019.718784.22 1019.66
 18797.7 1026.7118856.99  1023.6 18870.8 1014.9118882.98  1009.918926.29 1008.77
18952.21 1009.0818956.06 1007.6619027.93 1008.3319043.05  1007.519068.13 1008.59
19095.06 1007.8919182.71  1009.819229.38  1009.419260.25 1008.0519310.05 1007.21
19358.35 1007.2519407.38    100919467.85 1008.54   19529 1006.2419563.13 1001.18
19586.76  999.9119617.21 1000.6819649.86  1008.319685.47 1010.4119707.28 1013.39
19729.45 1010.2219757.65  1010.3 19778.4 1008.1619852.01 1007.4919894.95 1009.04
19925.84 1011.1419965.18    101519989.66 1013.8820041.83 1014.7120048.67 1006.92
20061.49  1001.920106.89  999.3420143.17  999.6520207.73 1002.3220285.89    1002
20401.54 1002.6220509.22 1004.29 20528.1 1003.7420583.67  1004.720623.44 1003.08
20651.87  1000.820671.68 1001.4420688.98 1007.14 20705.6 1015.4520809.23  1015.2
20856.97 1015.8320946.74 1014.8921019.47  1010.921075.66 1009.9321150.61  1009.4
 21204.6 1009.7321295.02 1011.2921520.61  1010.321545.89 1011.8121615.11 1009.44
21650.89 1011.7721687.56 1010.5421709.32  1023.621722.41 1017.3221736.88 1017.55
21745.37 1013.3821780.34 1012.5121796.93  1016.421806.75 1022.3621824.91 1020.88
21887.06  1021.421909.05 1024.0221919.75  1022.121932.01 1024.09 21952.2 1020.02
 22200.4 1020.0222216.67 1027.5122230.47 1022.72 22230.5 1020.04   22568 1019.98
22568.37 1022.26 22583.7  1026.622591.93 1021.7822647.09 1021.7422656.37 1025.17
22670.28 1026.3922686.39 1022.3722716.17 1021.7522791.32 1021.66

Manning's n Values        num=       5
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
   16849    .02517826.28    .043 18797.7    .03220623.44    .03221709.32    .032

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
```

18870.820856.97 582 483.64 477 .1 .3
Ineffective Flow num= 2
Sta L Sta R Elev Permanent
1684918796.92 1030 F
21709.3222791.32 1030 F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 207.99

INPUT
Description: 207.99

Left and Right Channel Bank Stations Interpolated
Station Elevation Data num= 146
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev
16875.4 1020.416977.53 1020.317079.65 1019.7917154.55 1020.117179.37 1019.8
17210.01 1023.417244.75 1026.617267.55 1025.6317306.41 1027.617349.36 1028.51
17355.92 1026.917369.61 1019.3917391.72 1019.2917409.24 1025.1117426.47 1027.04
17451.06 1026.417464.15 1023.9517469.46 1024.8217487.85 1023.717495.78 1021.77
17512.14 1020.717590.41 1021.2717781.42 1020.717841.75 1019.2617866.96 1019.66
17883.94 1023.117895.04 1022.0517908.22 1018.7417922.06 1018.6417964.38 1020.31
18006.33 1021.4918046.72 1021.918082.14 1021.518110.76 1020.4818160.74 1020.46
18172.03 1025.1418182.63 1024.0318194.68 1019.8918254.92 102018344.22 1019.8
18361.2 1020.518393.48 1020.5618451.15 1019.3118513.04 1017.5418553.55 1017.97
18671.62 1017.918689.62 1017.418726.09 1017.9818764.94 1017.3918813.55 1017.48
18856.12 1018.52 18866.8 1024.75 18913.8 1024.0818924.68 1017.5218940.28 1016.67
19029.29 1016.719035.76 1018.4319044.22 1016.3219067.34 1015.719077.06 1016.63
19084.9 1020 19104.1 1014.819128.89 1010.8919148.44 1009.619155.94 1010.31
19184.36 1010.1919264.79 1007.1819286.08 1005.219355.36 1004.5819391.83 1006.23
19415.23 1004.719426.94 1005.0419478.75 1002.6119527.05 1001.119569.99 1001.79
19584.17 1001.3719607.99 1003.7419654.67 1005.3519679.49 1006.97 19726 1008.24
19729.58 1006.519756.21 1006.6619785.55 1007.7719812.51 1009.9919843.15 1010.42
19882.31 1008.1119905.55 1007.9719946.07 1008.720009.37 1009.2920064.03 1010.32
20073.82 1009.9320140.66 1009.6920197.34 1005.920233.66 1004.97 20259.6 1001
20291.07 999.9520342.68 1000.320370.63 1002.29 20412.8 1001.6420462.43 998.4
20486.63 997.99 20545.4 997.8520589.68 996.9820650.71 1001.2920665.28 1004.99
20685.76 1014.37 20716.6 1013.9420733.22 1012.8220743.49 1009.820787.79 1013.48
20857.42 1014.4320933.98 1014.820990.89 101521043.51 1014.821055.56 1015.26
21090.28 1014.4821181.08 1014.221237.07 1012.69 21253.4 1008.7221328.64 1004.82
21423.21 1006.3621502.67 1010.8421536.23 1011.5721568.91 1011.23 21597.2 1011.62
21641.23 1011.5121715.89 1010.621737.64 1009.1121786.71 1008.521795.52 1009.19
21820.53 1008.7521849.91 1014.321861.63 1015.621897.57 1028.3621904.18 1023.24
21912.53 1022.8321936.68 1017.4121986.37 1017.12 22007.9 1025.2 22025.2 1023.85
22120.03 1018.722137.71 1020.7422149.54 1026.4322164.63 1022.3922225.39 1022.53
22268.37 1021.66

Manning's n Values num= 3
Sta n Val Sta n Val Sta n Val
16875.4 .04318813.55 .03220933.98 .032

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
19184.3620685.76 483 482.81 544 .1 .3
Ineffective Flow num= 1
Sta L Sta R Elev Permanent
16875.4 19084.9 1025 F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 207.90

INPUT
Description: 207.90 - FEMA Section S

Right Channel Bank Station Interpolated
Station Elevation Data num= 139
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev
16668.2 1021.116697.07 1021.2216715.13 1026.9116727.84 1033.6216745.17 1028.8
16753.49 1031.8416764.39 1028.79 16810.7 1028.83 16818.7 1032.69 16841.3 1032.95
16853.11 1030.01 16873.1 1020.4716891.99 1017.12 16943.6 1015.9717050.54 1015.79
17101.54 1016.6117263.36 1016.9317270.78 1021.4917278.85 1016.117302.32 1032.54
17320.25 1032.617332.89 1029.117338.19 1031.5317355.36 1019.4417363.77 1016.13
17467.61 1016.35 17507.5 1017.2617575.75 1017.9317637.97 1017.3717736.67 1015.57
17817.34 1016.417833.13 1018.8517839.54 1023.4217846.61 1020.0217858.61 1020.63
17873.28 1025.2817882.53 1020.8617935.87 1020.2417980.62 1018.4617993.47 1018.74

```
18011.06 1030.3618027.82 1029.1718046.04  1016.818080.62    101618086.75 1019.05
18101.91 1021.0518111.27  1016.118119.63 1023.0718136.92 1022.93 18141.3  1020.1
18162.57 1020.2718173.65  1016.118212.38 1016.0418265.52 1017.6318323.62 1017.25
18359.43 1018.5518367.46  1016.818464.77  1017.118591.55 1016.5618660.05 1016.62
18702.95 1017.4518780.18    101718879.49 1017.3118891.96 1021.9318940.48 1019.73
18952.38 1016.9219031.56  1016.219060.06 1017.8719067.42 1015.8819103.92 1016.45
 19119.3  1009.419128.18  1007.519182.35 1007.4819212.17 1010.9119293.27 1010.38
19393.17 1010.9919421.17 1007.9719428.14 1005.9919480.51  1004.819526.08 1005.76
19582.83 1004.2619635.98  1001.9 19655.3 1001.73 19680.9  998.1619752.44 1000.19
   19780 1000.4619816.99  998.6619843.97 1004.0719874.71 1006.3419914.15 1007.17
19969.33 1007.1420056.68 1008.4820200.39 1008.6620232.26 1007.5520288.85 1004.31
20377.34 1005.2620417.85 1003.4220427.57 1000.1120504.31  1000.820558.52  999.21
20604.85  993.1920644.76  991.5120687.55  994.5520711.17 1000.0620732.09 1012.78
20763.47 1010.0120800.67 1011.8720847.15 1012.0220898.47 1010.4520949.89 1010.88
20990.46 1006.8321018.72 1007.4921057.36    101321092.93 1013.7821176.86    1014
21245.63 1012.7921264.52 1005.9321280.37 1007.6521314.43 1009.1421399.59  1011.1
21431.25 1011.3621491.56 1010.5621568.39 1006.1621663.65 1007.2221700.62  1003.4
21731.26    100521804.84 1005.97 21831.2 1003.6621868.05 1003.7621890.34  1007.1
21922.07 1006.6821935.02 1009.1921998.72 1009.7522038.53 1008.4722049.04  1006.8
22117.71 1007.2922129.13 1009.9522139.94 1015.3522157.75 1019.77

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
 16668.2    .04319103.92    .03221431.25    .032

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      19103.9220732.09             539  522.44     631             .1       .3
Ineffective Flow     num=       1
   Sta L   Sta R    Elev  Permanent
 16668.219060.06    1020       F

CROSS SECTION


RIVER: 1
REACH: 1                  RS: 207.80

INPUT
Description: 207.80

Right Channel Bank Station Interpolated
Station Elevation Data    num=     109
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
   16847  1020.816881.43 1020.8816889.14 1014.0617423.25 1014.0217437.36 1019.81
17449.69 1016.3517514.99 1016.1817522.38 1019.8617533.21    101418745.96    1014
18747.14 1015.2318785.25 1015.4718803.65 1019.41 18812.8 1019.1318818.08 1016.15
18830.38 1016.3318839.64 1018.4718851.42 1015.8518863.81 1015.5818906.25 1016.79
18916.17 1018.7518934.32 1017.9318961.11 1014.7318985.02 1014.3819054.94 1014.93
19084.72  1014.419171.92 1014.7119211.05 1014.2719263.17  1014.619283.23  1009.8
19298.12  1008.719345.79 1009.7719361.86 1008.8419406.08 1009.2419437.98 1008.25
19477.47  1008.219503.55 1007.0819568.66 1006.2719658.16 1006.2119675.69 1005.82
19698.72  996.3319730.48  998.0819733.28   995.919773.43  994.59 19855.8  998.48
19877.01 1000.1719883.54  1002.119925.83 1003.2419975.91  1003.719997.48  1004.4
20076.29 1004.9720174.45 1003.8720255.28 1003.6120282.72 1003.0820338.27  999.85
20406.22  998.6420460.89  998.7720510.16  997.2620581.42  994.4620603.25  994.47
20632.96  992.5420648.95  992.4720666.06  995.24 20681.5  1001.120693.48  1010.5
20716.41 1012.0820800.22  1012.520841.99 1013.54 20884.1 1013.8220920.76  1014.8
20945.15 1011.3120989.05 1010.3921010.79 1010.8721036.94 1010.2721077.32 1010.23
21109.98 1010.87   21133 1012.3121160.79 1011.5621177.26 1008.9121246.33 1008.17
21282.66 1007.0821290.52 1006.1121329.18 1005.1421342.09 1005.7121352.76  1008.7
21369.79 1010.1621414.07  1008.821425.78  1009.721474.56 1010.29 21505.1 1009.45
21545.57 1009.5621554.18  1007.921571.78 1007.6821615.22 1008.9121647.74 1007.98
21719.77  1003.921783.84 1002.6921812.84  999.0521842.79  998.5321853.07  1004.2
21864.13  1008.121873.45 1014.5221884.47  1018.221905.86 1018.6921919.82 1017.75
21925.45  1019.121949.45 1017.7321993.49 1017.89 22027.6  1014.4

Manning's n Values        num=       4
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
   16847    .04318916.17    .03219437.98    .03220920.76    .032

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      19658.1620716.41             562  495.85     534             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
   1684719258.08 1020.02       F
21887.79 22027.6    1020       F

CROSS SECTION
```

RIVER: 1
REACH: 1 RS: 207.71

INPUT
Description: 207.71

Right Channel Bank Station Interpolated
Station Elevation Data num= 108

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
16765.5	1018.816864.05	1018.516883.96	1018.83 16946.6	1018.2517019.42	1018.3				
17136.18	1017.2 17170.8	1017.1517303.76	1015.8717335.63	1014.0917372.94	1013.88				
17409.16	1014.4917422.74	1016.8817433.43	1013.7717448.63	1013.2317483.11	1012.47				
17506.89	1012.81 17513.1	1013.66 18774.7	1013.2118809.24	1013.4118831.09	1014.19				
18843.56	1016.8418853.86	1013.2118868.79	1014.4318872.21	1013.4318903.56	1014.3				
18915.43	1013.7218934.72	1017.5718947.92	1017.5618987.39	1013.3819020.33	1013.43				
19027.69	1012.819085.22	1013.819094.95	1013.1319248.09	1012.619285.22	1013.25				
19305.86	1013.1519314.35	1013.719368.82	1012.7819413.68	1010.6419464.11	1012.03				
19523.67	1010.9519527.65	1011.5219551.29	1010.4419572.96	101119597.58	1008.56				
19605.18	1007.0219627.97	1005.8519657.47	994.0619666.38	992.7919688.57	995.04				
19715.06	995.3319759.55	994.3419793.67	992.5119803.39	996.1319830.72	1000.69				
19855.42	1002.7619881.16	1003.119938.64	1001.7819969.09	1000.2420003.96	1000.71				
20050.72	1000.4320115.93	999.0820215.92	998.3420303.55	995.6120375.22	994.79				
20428.32	995.2420454.42	995.0720512.14	995.9920522.85	996.96 20533.3	999.64				
20547.49	1008.39 20648.7	1006.1720687.38	1005.920713.47	1004.6720731.93	1005.3				
20741.19	1009.7320746.73	1010.35 20772.5	1010.2820808.32	1011.220830.19	1010.96				
20873.06	1009.2920906.05	1010.71 20965.5	1010.5521012.29	1010.1121072.81	1007.6				
21108.59	1006.9921119.39	1007.821160.93	1007.7421204.29	1007.1621242.82	1004.91				
21266.21	1005.2121275.47	1004.321333.41	1003.3121362.56	1004.221374.32	1005.6				
21395.86	1006.5621424.84	1006.4621486.44	1004.2221508.72	1002.7 21543.4	1002.42				
21570.4	1001.6321638.89	1001.9621653.18	1004.721664.01	1003.7221715.77	1014				
21757.66	1015.821817.54	1016.31 21829.8	1017.09						

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
16765.5	.025	18774.7	.03219572.96	.03220808.32	.032		

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
19527.6520547.49 493 488.78 530 .1 .3
Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
16765.519317.77		1018.01	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 207.62

INPUT
Description: 207.62

Right Channel Bank Station Interpolated
Station Elevation Data num= 101

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
16509	1017.416645.43	1017.216919.74	1016.517013.42	1016.69 17027.9	1017.45				
17034.42	1016.417053.64	1016.5617076.88	1013.9817126.62	1012.817186.46	1012.21				
18763.02	1012.2318778.97	1015.4718793.91	1011.4718833.77	1010.9318952.24	1011.61				
18969.94	1016.818982.78	1017.1918995.37	1016.0419003.08	1012.2919023.38	1011.33				
19094.14	1011.4819111.14	1016.8419129.43	1011.5 19154.7	1010.9119196.96	1009.9				
19235.08	1009.819251.28	1010.8319302.98	1011.5119321.01	1010.9519350.49	1012.4				
19384.05	1010.2819428.49	1012.4419454.54	1011.4219474.75	1012.3 19484.7	1011.14				
19499.5	1012.2219519.63	1010.8319532.75	1005.0519547.04	1005.8419555.44	1004.68				
19564.36	1006.119577.92	1010.919585.31	1009.8819611.56	1002.61 19642	996.43				
19669.61	993.68 19693.6	992.119750.51	993.0819768.07	995.0219790.48	996.11				
19803.19	998.0319812.49	997.619849.07	999.02 19907.7	998.6220004.83	995.78				
20047.36	993.6920089.64	990.98 20168.2	990.1220182.51	990.4820197.59	992.77				
20247.65	994.5720301.38	994.9620330.75	997.22 20342.9	1000.7820350.67	1006.1				
20375.47	1006.2220436.16	1005.620488.63	1004.220513.76	1004.820525.92	1010.31				
20543.71	1010.6320602.97	1010.1320636.54	100920672.41	1007.0520682.77	1004.8				
20708.62	100420776.14	100320790.62	1004.920843.22	1005.3820847.96	1004.39				
20874.88	1004.3620880.15	1003.520902.51	1005 20923.7	1003.2120972.78	1002.28				
21067.88	1002.3421078.21	1001.8721154.43	1001.5721159.77	1002.621224.84	1001.79				
21269.33	1001.921347.54	1003.13 21393	1003.3321397.93	1003.9721430.66	1003.7				
21461.46	1005.6821482.81	1017.6221529.57	1016.621545.67	1016.9521681.55	1017.23				
21786.85	1016.58								

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val

```
   16509    .02517186.46    .04318778.97    .03219577.92    .03220843.22    .032

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      19577.9220350.67              493  471.11     510             .1       .3
Ineffective Flow     num=       1
   Sta L   Sta R    Elev  Permanent
   1650919113.11 1017.59       F

CROSS SECTION


RIVER: 1
REACH: 1                  RS: 207.49

INPUT
Description: 207.49 - FEMA Section R
Station Elevation Data    num=     132
     Sta     Elev     Sta     Elev     Sta     Elev     Sta     Elev     Sta     Elev
 16428.7  1015.8 16495.7 1015.9716562.86 1015.7616564.59 1016.2616598.27 1015.57
16649.77 1014.8716697.75  1015.1 16736.1 1014.9216785.22 1015.1916790.29 1014.82
16831.41  1014.816991.24    101417150.66 1013.5817195.01 1013.2617294.72 1012.89
17334.41 1013.0117462.54 1013.0117546.67 1012.7517562.88  1012.917614.19  1012.3
17650.74 1012.8817736.69 1012.5217773.31 1012.7717836.83 1013.8617929.25 1014.08
17986.02  1013.117990.65 1013.5218016.47 1013.3718049.96  1013.718127.06 1013.11
18166.95 1013.26 18225.6  1013.118282.06 1013.2418307.52 1010.9218331.41 1010.93
18355.11  1011.818412.86 1011.7618437.92 1012.22 18500.6 1012.0318512.42 1012.32
18580.58 1011.7618667.35  1012.318723.55 1012.2218776.25 1011.8618824.39  1011.2
 18908.1 1010.0819104.21 1009.0719452.06 1007.6419475.46  995.95 19490.7   986.6
19495.57  985.0919506.62  984.3519525.63  984.6819542.24   985.619551.29  988.02
19625.61  990.8219661.41  989.5719674.45  987.0619684.82  986.7919735.07  987.29
19753.75  993.2119767.32  994.3519804.67  995.2619824.05  995.1919850.05  996.03
19857.63  997.2419885.03  998.5319936.77  998.7919984.18   999.419991.14  999.86
20041.57 1001.3220082.06 1001.8920173.24 1001.7120208.46 1001.3720224.73 1001.51
20281.74 1000.8820306.63    100120333.88  1001.620354.98 1001.64   20399 1002.28
20426.44 1003.2520511.22 1002.5120559.96 1001.0320588.83 1000.5820601.27  999.91
20628.36 1000.5120679.26  1000.520736.27    100020758.91  999.5520809.15  999.51
20871.65   999.8 20880.9  999.0220888.29   999.820914.65 1000.5220919.87 1000.24
20993.76  1000.421007.95 1001.0621032.55 1006.89 21053.5 1010.7621074.81    1014
21109.99 1016.3721132.01 1017.9321150.62  1018.421187.24  1017.421208.87 1017.67
21243.49 1017.1921276.95 1017.0821299.03 1016.6621316.72 1017.5621345.51 1017.93
21373.46 1017.0121379.02  1016.421407.52 1015.6221458.26 1015.3421541.47 1015.47
21552.48 1014.9821661.71  1014.721700.36 1014.8621734.65  1014.621816.76 1014.73
21837.28  1015.121887.67 1015.1821897.57 1015.8421938.37 1016.0421994.52 1015.63
22023.41 1014.6222062.71 1014.7522101.76 1014.3622119.41  1014.922218.68 1014.73
22317.91 1014.9522327.82 1014.86

Manning's n Values        num=       2
     Sta   n Val     Sta   n Val
 16428.7    .03221109.99    .037

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      19452.0621132.01              244  246.48     308             .3       .5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 16428.7 19445.4  1019.5       F
21096.5122327.82  1019.5       F

BRIDGE


RIVER: 1
REACH: 1                  RS: 207.485

INPUT
Description: 51st Avenue Bridge
Distance from Upstream XS =      88
Deck/Roadway Width        =      95
Weir Coefficient          =     2.6
Upstream  Deck/Roadway Coordinates
    num=       30
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
 17338.3 1010.47 1005.47 18388.3 1010.34 1005.34 18888.3 1010.64 1005.64
 18938.3    1011    1006 18988.3  1011.5  1006.5 19038.3  1012.3  1007.3
 19088.3  1013.2  1007.2 19138.3  1014.3  1008.3 19188.3  1015.6  1010.6
 19288.3  1018.2  1013.2 19388.3 1020.56 1015.56   19445 1022.05  1015.2
 19560.3  1023.4 1017.77 19660.3 1025.18 1019.47 19760.3 1026.58 1020.87
 19860.3 1027.68    1022 19960.3 1028.58 1022.87 20060.3 1029.28 1023.59
 20160.3 1029.68 1023.99 20260.3 1029.78 1024.09 20360.3 1029.68    1024
 20460.3 1029.28 1023.59 20560.3 1028.68 1023.01 20660.3 1027.88 1022.21
```

```
 20760.3 1026.68    1021 20860.3 1025.41 1019.67 20960.3 1023.68 1018.03
 21059.4  1020.6 1014.92 21074.8  1020.3  1014.5 21150.6    1019    1012

Upstream Bridge Cross Section Data
Station Elevation Data    num=     132
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 16428.7  1015.8 16495.7 1015.9716562.86 1015.7616564.59 1016.2616598.27 1015.57
16649.77 1014.8716697.75  1015.1 16736.1 1014.9216785.22 1015.1916790.29 1014.82
16831.41  1014.816991.24    101417150.66 1013.5817195.01 1013.2617294.72 1012.89
17334.41 1013.0117462.54 1013.0117546.67 1012.7517562.88  1012.917614.19  1012.3
17650.74 1012.8817736.69 1012.5217773.31 1012.7717836.83 1013.8617929.25 1014.08
17986.02  1013.117990.65 1013.5218016.47 1013.3718049.96  1013.718127.06 1013.11
18166.95 1013.26 18225.6  1013.118282.06 1013.2418307.52 1010.9218331.41 1010.93
18355.11  1011.818412.86 1011.7618437.92 1012.22 18500.6 1012.0318512.42 1012.32
18580.58 1011.7618667.35  1012.318723.55 1012.2218776.25 1011.8618824.39  1011.2
 18908.1 1010.0819104.21 1009.0719452.06 1007.6419475.46  995.95 19490.7   986.6
19495.57  985.0919506.62  984.3519525.63  984.6819542.24   985.619551.29  988.02
19625.61  990.8219661.41  989.5719674.45  987.0619684.82  986.7919735.07  987.29
19753.75  993.2119767.32  994.3519804.67  995.2619824.05  995.1919850.05  996.03
19857.63  997.2419885.03  998.5319936.77  998.7919984.18   999.419991.14  999.86
20041.57 1001.3220082.06 1001.8920173.24 1001.7120208.46 1001.3720224.73 1001.51
20281.74 1000.8820306.63    100120333.88  1001.620354.98 1001.64   20399 1002.28
20426.44 1003.2520511.22 1002.5120559.96 1001.0320588.83 1000.5820601.27  999.91
20628.36 1000.5120679.26  1000.520736.27    100020758.91  999.5520809.15  999.51
20871.65   999.8 20880.9  999.0220888.29   999.820914.65 1000.5220919.87 1000.24
20993.76  1000.421007.95 1001.0621032.55 1006.89 21053.5 1010.7621074.81    1014
21109.99 1016.3721132.01 1017.9321150.62  1018.421187.24  1017.421208.87 1017.67
21243.49 1017.1921276.95 1017.0821299.03 1016.6621316.72 1017.5621345.51 1017.93
21373.46 1017.0121379.02  1016.421407.52 1015.6221458.26 1015.3421541.47 1015.47
21552.48 1014.9821661.71  1014.721700.36 1014.8621734.65  1014.621816.76 1014.73
21837.28  1015.121887.67 1015.1821897.57 1015.8421938.37 1016.0421994.52 1015.63
22023.41 1014.6222062.71 1014.7522101.76 1014.3622119.41  1014.922218.68 1014.73
22317.91 1014.9522327.82 1014.86

Manning's n Values        num=       2
     Sta   n Val     Sta   n Val
 16428.7    .03221109.99    .037

Bank Sta: Left   Right    Coeff Contr.   Expan.
      19452.0621132.01            .3       .5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 16428.7 19445.4  1019.5       F
21096.5122327.82  1019.5       F

Downstream  Deck/Roadway Coordinates
    num=      30
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
 17338.3 1010.47 1005.47 18388.3 1010.34 1005.34 18888.3 1010.64 1005.64
 18938.3    1011    1006 18988.3  1011.5  1006.5 19038.3  1012.3  1007.3
 19088.3  1013.2  1007.2 19138.3  1014.3  1008.3 19188.3  1015.6  1010.6
 19288.3  1018.2  1013.2 19388.3 1020.56 1015.56   19445 1022.05  1015.2
 19560.3  1023.4 1017.77 19660.3 1025.18 1019.47 19760.3 1026.58 1020.87
 19860.3 1027.68    1022 19960.3 1028.58 1022.87 20060.3 1029.28 1023.59
 20160.3 1029.68 1023.99 20260.3 1029.78 1024.09 20360.3 1029.68    1024
 20460.3 1029.28 1023.59 20560.3 1028.68 1023.01 20660.3 1027.88 1022.21
 20760.3 1026.68    1021 20860.3 1025.41 1019.67 20960.3 1023.68 1018.03
 21059.4  1020.6 1014.92 21074.8  1020.3  1014.5 21150.6    1019    1012

Downstream Bridge Cross Section Data
Station Elevation Data    num=     150
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 16428.7  1015.8 16495.7 1015.9716562.86 1015.7616564.59 1016.2616598.27 1015.57
16649.77 1014.8716697.75  1015.1 16736.1 1014.9216785.22 1015.1916790.29 1014.82
16831.41  1014.816991.24    101417150.66 1013.5817195.01 1013.2617294.72 1012.89
17334.41 1013.0117462.54 1013.0117546.67 1012.7517562.88  1012.917614.19  1012.3
17650.74 1012.8817736.69 1012.5217773.31 1012.7717836.83 1013.8617929.25 1014.08
17986.02  1013.117990.65 1013.5218016.47 1013.3718049.96  1013.718127.06 1013.11
18166.95 1013.26 18225.6  1013.118282.06 1013.2418307.52 1010.9218331.41 1010.93
18355.11  1011.818412.86 1011.7618437.92 1012.22 18500.6 1012.0318512.42 1012.32
18580.58 1011.7618667.35  1012.318723.55 1012.2218776.25 1011.8618816.04  1011.8
18887.02  1012.118935.21 1011.9719030.23 1011.14 19061.7  1011.619092.68 1011.73
19121.65  1012.619162.06 1011.4319172.56 1011.5319175.75 1013.1119179.28 1011.17
19228.02 1011.4719243.11 1012.16 19304.2  1013.5 19325.9 1014.3319353.08  1014.6
19375.05  1016.719387.28 1017.3619405.46 1017.36 19416.8 1016.12 19445.4 1011.67
19452.06 1007.6419475.46  995.95 19490.7   986.619495.57  985.0919506.62  984.35
19525.63  984.6819542.24   985.619551.29  988.0219625.61  990.8219661.41  989.57
19674.45  987.0619684.82  986.7919735.07  987.2919753.75  993.2119767.32  994.35
19804.67  995.2619824.05  995.1919850.05  996.0319857.63  997.2419885.03  998.53
```

```
19936.77  998.7919984.18   999.419991.14  999.8620041.57 1001.3220082.06 1001.89
20173.24 1001.7120208.46 1001.3720224.73 1001.5120281.74 1000.8820306.63    1001
20333.88  1001.620354.98 1001.64   20399 1002.2820426.44 1003.2520511.22 1002.51
20559.96 1001.0320588.83 1000.5820601.27  999.9120628.36 1000.5120679.26  1000.5
20736.27    100020758.91  999.5520809.15  999.5120871.65   999.8 20880.9  999.02
20888.29   999.820914.65 1000.5220919.87 1000.2420993.76  1000.421007.95 1001.06
21032.55 1006.89 21053.5 1010.7621074.81    101421109.99 1016.3721132.01 1017.93
21150.62  1018.421187.24  1017.421208.87 1017.6721243.49 1017.1921276.95 1017.08
21299.03 1016.6621316.72 1017.5621345.51 1017.9321373.46 1017.0121379.02  1016.4
21407.52 1015.6221458.26 1015.3421541.47 1015.4721552.48 1014.9821661.71  1014.7
21700.36 1014.8621734.65  1014.621816.76 1014.7321837.28  1015.121887.67 1015.18
21897.57 1015.8421938.37 1016.0421994.52 1015.6322023.41 1014.6222062.71 1014.75
22101.76 1014.3622119.41  1014.922218.68 1014.7322317.91 1014.9522327.82 1014.86

Manning's n Values        num=       2
     Sta   n Val     Sta   n Val
 16428.7    .03221109.99    .037

Bank Sta: Left   Right    Coeff Contr.   Expan.
      19387.2821132.01            .3       .5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 16428.7 19445.4  1019.5       F
21096.5122327.82  1019.5       F

Upstream Embankment side slope              =         horiz. to 1.0 vertical
Downstream Embankment side slope            =         horiz. to 1.0 vertical
Maximum allowable submergence for weir flow =     .95
Elevation at which weir flow begins         =
Energy head used in spillway design         =
Spillway height used in design              =
Weir crest shape                            = Broad Crested

Number of Piers =  15

Pier Data
Pier Station     Upstream= 19562.3    Downstream= 19562.3
Upstream      num=        2
    Width   Elev    Width   Elev
        4   997.3       4  1017.8
Downstream    num=        2
    Width   Elev    Width   Elev
        4   997.3       4  1017.8

Pier Data
Pier Station     Upstream= 19662.3    Downstream= 19662.3
Upstream      num=        2
    Width   Elev    Width   Elev
        4    997        4 1019.54
Downstream    num=        2
    Width   Elev    Width   Elev
        4    997        4 1019.54

Pier Data
Pier Station     Upstream= 19762.3    Downstream= 19762.3
Upstream      num=        2
    Width   Elev    Width   Elev
        4   996.4       4 1020.94
Downstream    num=        2
    Width   Elev    Width   Elev
        4   996.4       4 1020.94

Pier Data
Pier Station     Upstream= 19862.3    Downstream= 19862.3
Upstream      num=        2
    Width   Elev    Width   Elev
        4   999.5       4    1022
Downstream    num=        2
    Width   Elev    Width   Elev
        4   999.5       4    1022

Pier Data
Pier Station     Upstream= 19962.3    Downstream= 19962.3
Upstream      num=        2
    Width   Elev    Width   Elev
        4   997.4       4  1022.9
Downstream    num=        2
    Width   Elev    Width   Elev
        4   997.4       4  1022.9
```

```
Pier Data
Pier Station     Upstream= 20062.3    Downstream= 20062.3
Upstream     num=        2
    Width   Elev    Width   Elev
       4   994.6        4  1023.6
Downstream     num=        2
    Width   Elev    Width   Elev
       4   994.6        4  1023.6

Pier Data
Pier Station     Upstream= 20162.3    Downstream= 20162.3
Upstream     num=        2
    Width   Elev    Width   Elev
       4   995.5        4    1024
Downstream     num=        2
    Width   Elev    Width   Elev
       4   995.5        4    1024

Pier Data
Pier Station     Upstream= 20262.3    Downstream= 20262.3
Upstream     num=        2
    Width   Elev    Width   Elev
       4   999.6        4  1024.1
Downstream     num=        2
    Width   Elev    Width   Elev
       4   999.6        4  1024.1

Pier Data
Pier Station     Upstream= 20362.3    Downstream= 20362.3
Upstream     num=        2
    Width   Elev    Width   Elev
       4   998.5        4    1024
Downstream     num=        2
    Width   Elev    Width   Elev
       4   998.5        4    1024

Pier Data
Pier Station     Upstream= 20462.3    Downstream= 20462.3
Upstream     num=        2
    Width   Elev    Width   Elev
       4   998.9        4  1023.6
Downstream     num=        2
    Width   Elev    Width   Elev
       4   998.9        4  1023.6

Pier Data
Pier Station     Upstream= 20562.3    Downstream= 20562.3
Upstream     num=        2
    Width   Elev    Width   Elev
       4   996.7        4    1023
Downstream     num=        2
    Width   Elev    Width   Elev
       4   996.7        4    1023

Pier Data
Pier Station     Upstream= 20662.3    Downstream= 20662.3
Upstream     num=        2
    Width   Elev    Width   Elev
       4   997.9        4  1022.2
Downstream     num=        2
    Width   Elev    Width   Elev
       4   997.9        4  1022.2

Pier Data
Pier Station     Upstream= 20762.3    Downstream= 20762.3
Upstream     num=        2
    Width   Elev    Width   Elev
       4    998        4    1021
Downstream     num=        2
    Width   Elev    Width   Elev
       4    998        4    1021

Pier Data
Pier Station     Upstream= 20862.3    Downstream= 20862.3
Upstream     num=        2
    Width   Elev    Width   Elev
       4   999.9        4  1019.7
Downstream     num=        2
```

```
    Width   Elev    Width   Elev
       4   999.9       4  1019.7

Pier Data
Pier Station     Upstream= 20962.3    Downstream= 20962.3
Upstream      num=        2
    Width   Elev    Width   Elev
       4     998       4    1018
Downstream      num=        2
    Width   Elev    Width   Elev
       4     998       4    1018

Number of Bridge Coefficient Sets =  1

Low Flow Methods and Data
       Energy
       Momentum                Cd   =     1.2
       Yarnell                 KVal =    1.05
Selected Low Flow Methods = Highest Energy Answer

High Flow Method
       Pressure and Weir flow
           Submerged Inlet Cd          =
           Submerged Inlet + Outlet Cd =      .8
           Max Low Cord                =

Additional Bridge Parameters
       Add Friction component to Momentum
       Add Weight component to Momentum
       Class B flow critical depth computations use critical depth
           inside the bridge at the upstream end
       Criteria to check for pressure flow = Upstream energy grade line

CROSS SECTION


RIVER: 1
REACH: 1                  RS: 207.48

INPUT
Description: 207.48
Station Elevation Data     num=      150
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 16428.7  1015.8 16495.7 1015.9716562.86 1015.7616564.59 1016.2616598.27 1015.57
16649.77 1014.8716697.75  1015.1 16736.1 1014.9216785.22 1015.1916790.29 1014.82
16831.41  1014.816991.24    101417150.66 1013.5817195.01 1013.2617294.72 1012.89
17334.41 1013.0117462.54 1013.0117546.67 1012.7517562.88  1012.917614.19  1012.3
17650.74 1012.8817736.69 1012.5217773.31 1012.7717836.83 1013.8617929.25 1014.08
17986.02  1013.117990.65 1013.5218016.47 1013.3718049.96  1013.718127.06 1013.11
18166.95 1013.26 18225.6  1013.118282.06 1013.2418307.52 1010.9218331.41 1010.93
18355.11  1011.818412.86 1011.7618437.92 1012.22 18500.6 1012.0318512.42 1012.32
18580.58 1011.7618667.35  1012.318723.55 1012.2218776.25 1011.8618816.04  1011.8
18887.02  1012.118935.21 1011.9719030.23 1011.14 19061.7  1011.619092.68 1011.73
19121.65  1012.619162.06 1011.4319172.56 1011.5319175.75 1013.1119179.28 1011.17
19228.02 1011.4719243.11 1012.16 19304.2  1013.5 19325.9 1014.3319353.08  1014.6
19375.05  1016.719387.28 1017.3619405.46 1017.36 19416.8 1016.12 19445.4 1011.67
19452.06 1007.6419475.46  995.95 19490.7   986.619495.57  985.0919506.62  984.35
19525.63  984.6819542.24   985.619551.29  988.0219625.61  990.8219661.41  989.57
19674.45  987.0619684.82  986.7919735.07  987.2919753.75  993.2119767.32  994.35
19804.67  995.2619824.05  995.1919850.05  996.0319857.63  997.2419885.03  998.53
19936.77  998.7919984.18   999.419991.14  999.8620041.57 1001.3220082.06 1001.89
20173.24 1001.7120208.46 1001.3720224.73 1001.5120281.74 1000.8820306.63    1001
20333.88  1001.620354.98 1001.64   20399 1002.2820426.44 1003.2520511.22 1002.51
20559.96 1001.0320588.83 1000.5820601.27  999.9120628.36 1000.5120679.26  1000.5
20736.27    100020758.91  999.5520809.15  999.5120871.65   999.8 20880.9  999.02
20888.29   999.820914.65 1000.5220919.87 1000.2420993.76  1000.421007.95 1001.06
21032.55 1006.89 21053.5 1010.7621074.81    101421109.99 1016.3721132.01 1017.93
21150.62  1018.421187.24  1017.421208.87 1017.6721243.49 1017.1921276.95 1017.08
21299.03 1016.6621316.72 1017.5621345.51 1017.9321373.46 1017.0121379.02  1016.4
21407.52 1015.6221458.26 1015.3421541.47 1015.4721552.48 1014.9821661.71  1014.7
21700.36 1014.8621734.65  1014.621816.76 1014.7321837.28  1015.121887.67 1015.18
21897.57 1015.8421938.37 1016.0421994.52 1015.6322023.41 1014.6222062.71 1014.75
22101.76 1014.3622119.41  1014.922218.68 1014.7322317.91 1014.9522327.82 1014.86

Manning's n Values         num=       2
     Sta   n Val     Sta   n Val
 16428.7    .03221109.99    .037

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
```

```
      19387.2821132.01              236  236.83     302             .3       .5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 16428.7 19445.4  1019.5       F
21096.5122327.82  1019.5       F

CROSS SECTION


RIVER: 1
REACH: 1                  RS: 207.43

INPUT
Description: 207.43

Left and Right Channel Bank Stations Interpolated
Station Elevation Data    num=     143
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 16400.1  1015.916427.13 1015.8616467.13  1017.416546.13 1017.6416548.16  1016.9
16612.58  1016.616636.85  1015.716681.02  1015.216776.74 1015.0816803.54  1015.6
16881.54  1015.616924.76 1016.0416991.64 1015.5517051.39 1015.8717090.21  1015.5
17114.15  1014.317125.61 1014.7617179.55  1014.117205.34 1014.7617275.25 1014.41
17356.43 1014.5817445.28 1014.1517482.13 1015.5617579.53 1015.5817599.94 1014.11
17631.22 1014.3917655.16 1013.5217708.41 1013.5717845.76 1014.72 18003.6 1014.39
18171.98 1014.9218233.95 1014.8418336.95 1015.3718380.76 1015.2618388.01 1012.07
18524.22 1010.9318531.31 1014.1718535.46 1010.9618836.05 1011.1518846.66    1014
18854.03 1018.9218861.73 1019.9218871.85 1025.6618877.54 1023.6118892.35 1013.59
18924.33 1015.0318937.21 1021.3118940.84 1024.9718946.13  1021.818961.89 1022.23
18966.25 1028.0618989.42 1042.1519002.36 1042.2519017.12 1045.2919042.34 1047.78
 19062.2 1047.7419090.47 1050.6619115.96 1032.8419146.43 1014.6119184.73 1012.98
19195.72 1014.6219211.64 1012.0519228.35 1015.1319246.11 1008.4119307.43 1006.73
19363.86 1007.32 19382.3 1006.92 19385.9  993.0419404.18  986.87 19439.6  983.56
19483.69  985.3219489.64  986.9819511.17  985.9519521.59  988.1919580.14  989.79
19667.17  989.2319682.41   989.819702.21  996.0119748.59  997.3719805.76  996.17
19845.03  997.1619865.87   996.219910.31  998.36 19967.1  998.42 20014.9  999.47
20029.21 1000.5420117.14 1001.5220160.39 1001.5220237.95  1000.920255.99  999.99
 20286.6  996.9120299.66  997.8620325.13  997.7620329.59  999.1920351.58  999.75
20372.56  1001.820404.32 1001.5820462.17  1002.120481.31 1002.9420514.37  999.73
20536.37  999.7320593.55 1002.7620649.48  999.4320722.23   997.720767.76  997.66
20797.59 1001.3720868.09 1000.8620883.15 1002.9520908.05 1004.6920936.25 1009.27
20950.15  1010.620968.54 1014.9620983.24 1015.0921012.76 1013.2421049.68 1012.01
21112.56 1011.2721229.86  1011.121309.34 1013.9821354.05 1014.4421369.82  1020.2
21378.58 1013.6721394.32  1012.721435.95 1012.8721609.23  1011.921625.61  1019.1
 21640.8 1029.7821650.64 1034.1921655.56  1033.921672.55 1026.0321689.59 1033.27
21696.49 1031.3221725.79 1012.3921801.22  1012.8 21841.9  1013.421900.68  1013.3
21928.32 1012.5821976.61 1013.15 21992.6 1013.9822009.96 1021.3622026.88  1013.5
22092.72 1014.4622153.94 1012.9822325.55 1013.89

Manning's n Values        num=       4
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
 16400.1    .02518531.31    .04319363.86    .03220968.54    .037

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      19363.8620968.54             493  507.55     548             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 16400.119236.09    1025       F
20997.7222325.55    1025       F

CROSS SECTION


RIVER: 1
REACH: 1                  RS: 207.34

INPUT
Description: 207.34

Left and Right Channel Bank Stations Interpolated
Station Elevation Data    num=     116
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
   16390  1014.116451.04 1012.9616482.56 1014.1616558.25 1014.4616655.51  1013.6
16695.35 1012.2816731.16 1012.6516750.26 1014.0516827.83 1014.4316856.22 1013.55
16929.16 1013.0616968.52 1010.9117052.73    101117057.91 1013.1717117.28 1013.98
 17234.8 1014.6617348.67  1012.717385.85 1014.4717500.69  1015.417503.76 1013.82
17533.18  1012.717584.34    101317616.71 1008.0217651.81 1008.0217674.24 1012.87
17705.69 1012.3917898.66 1012.1717949.85 1012.6718043.68  1011.818070.29 1012.58
18154.63 1012.6218193.52  1013.918287.14  1014.818378.12 1014.6918421.32 1014.16
18432.79 1017.3218444.91  1009.818465.12 1009.5818473.11  1011.418485.37 1008.18
```

```
18780.52 1008.3418786.65 1009.7218802.51 1008.2318868.49 1008.2318885.79 1021.27
18907.71 1024.4818915.88    101518939.87 1007.1919006.62 1007.9819023.93    1007
19059.35  1007.919094.18  1007.519110.18  1016.219141.52 1019.0719173.29 1017.11
19186.74 1009.0919205.41 1009.1119216.48 1016.0419241.39 1000.1519247.38  999.56
19328.88  999.6919345.58  990.4119358.21  987.98    19413  983.6919462.18  983.49
19562.66  985.5919578.81  988.2219606.64  987.8819631.71  989.8319673.73   989.7
19767.19  993.3119825.99  993.7619849.88  993.1519895.22  993.5119911.96  992.95
19935.76  994.5419987.22  995.9520035.82  995.9120059.81  995.1820093.54  997.88
20142.45  995.9920188.72  996.4120195.76  997.7420234.48  999.13 20268.8  994.11
20301.96   995.320463.57  993.7620481.07  994.0120515.37  998.2920535.47  998.11
20643.38  999.2320673.27  997.3120743.93 1004.8620759.51  1012.620778.22  1014.7
20821.48 1014.5520907.13 1011.1720944.55 1010.4420947.79 1013.5521057.05  1014.4
21158.18 1013.0621217.14 1011.51 21229.7 1015.9421234.29 1010.0122016.61 1010.04
22023.58  1017.922031.01 1012.7722044.31 1015.2722060.16 1013.7122109.89  1012.5
 22140.1 1013.3622172.49  1012.622190.62 1013.3522218.57 1010.3822236.62 1014.38
22258.02  1014.2

Manning's n Values        num=       4
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
   16390    .025175 00.69    .04319328.88    .032 21229.7    .037

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      19328.8820778.22              478  511.15     584             .1       .3
Ineffective Flow     num=       1
   Sta L   Sta R    Elev  Permanent
   1639019283.77    1025       F

CROSS SECTION


RIVER: 1
REACH: 1                  RS: 207.27

INPUT
Description: 207.27
Station Elevation Data    num=     143
     Sta     Elev     Sta     Elev     Sta     Elev     Sta     Elev     Sta     Elev
 16338.2  1012.816403.51 1012.4316463.73  1011.316514.39 1012.33   16700 1012.61
16741.69 1010.8216772.67 1011.6116799.26 1009.7516839.67  1009.716867.76 1010.76
16922.76 1010.3317010.45 1010.7417086.24 1010.67 17157.3 1012.2717197.79 1012.42
17222.11  1011.217252.76 1011.37 17284.7  1012.917353.36 1013.0317419.07 1012.22
17463.35 1012.2217497.28 1013.2917537.66 1013.4217557.02 1012.5617611.11 1013.93
17637.43 1012.9817712.33  1014.117733.37  1011.517786.06  1011.9 17849.2  1011.4
18020.19 1011.0718101.36 1011.2518112.58 1008.3918148.83 1007.0718192.15  1007.7
18278.76 1007.8418288.02  1012.518299.18 1008.1518328.14 1008.8518334.94 1011.14
18342.37 1007.6118368.55 1007.9618401.13 1006.7518469.26  1007.818481.64 1008.82
18502.64  1019.418523.54 1010.7718566.42  1010.718638.14  1011.618671.96  1014.7
 18703.3 1016.0818708.83 1017.7718752.24 1019.0518771.42 1026.2418789.76  1028.7
18818.49 1028.0618826.99 1023.0818872.32    102318886.44 1024.88 18901.1 1016.13
18914.73 1012.65 18931.1 1011.7319175.81  1008.719235.12  1009.219238.65 1011.07
19247.16 1016.3219276.61  1003.419292.88 1003.0119349.31  1004.119441.55 1004.12
19447.75  996.5419463.65  987.3819483.81  983.9719526.52  982.6819603.75  984.77
19659.72  985.2519761.91  982.7519777.21  987.6919864.21   989.619948.08  990.08
20034.07  988.7820050.88  987.4220079.13  988.2420090.21  985.9420115.59  985.74
20138.99  991.9920185.99  992.6720234.27  991.8120249.79  992.59 20288.9  992.32
 20297.7  986.5520307.85  985.1620337.94   985.920356.26  984.1620362.31   991.4
20416.85  991.8620464.21  993.0620490.43 1008.6420502.64  1001.520530.06 1003.03
 20614.7 1005.3620654.56  1005.420666.72  1009.620677.91 1009.4820682.81 1005.72
20695.73 1006.3420701.57  1009.7 20718.3  1006.920776.63 1008.7320795.72 1019.26
20806.32 1020.2620817.13 1011.71 20859.6 1012.3320902.24 1012.0920920.17 1010.74
20971.04  1010.221003.47 1011.0221012.12 1013.2321032.96 1011.53 21059.4 1013.24
21164.91 1011.1321179.37  1011.521197.44 1016.0221206.33 1020.8621224.74  1020.8
21249.48  1011.121362.87 1010.6521437.58 1011.9521550.02 1011.0721803.99  1011.9
21818.54 1010.2921842.19  1027.121846.14 1022.8121868.81 1019.7521887.76 1019.33
21891.68 1022.04 21904.6 1013.3721935.71 1013.9521973.98 1011.4122021.45 1012.75
22054.81 1011.6422075.41 1014.5122135.35 1013.96

Manning's n Values        num=       4
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
 16338.2    .025181 01.36    .04319441.55    .03220490.43    .032

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      19441.5520490.43           495.6     574   655.3             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 16338.219136.61    1030       F
20883.0322135.35    1030       F

CROSS SECTION
```

```
RIVER: 1
REACH: 1                    RS: 207.16

INPUT
Description: 207.16 - FEMA Section Q
Downstream limits of updated
          sections
New topography by Kenney Aerial - Sept. 2010
Station Elevation Data    num=     150
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 16343.5  1012.616436.28 1011.8316462.44  1010.916497.16 1011.0716513.02 1008.42
16536.33 1011.5316613.93 1011.43 16639.9 1010.9916663.54 1012.1916778.32 1011.46
16822.69 1011.4916914.67  1009.416954.33 1009.3416980.24  1010.117076.42 1010.38
17106.55 1008.7917121.67 1004.9417155.96 1004.2317170.59  1005.117207.53 1012.41
17311.23    101217373.52 1010.9417423.47 1012.9217478.62 1012.5417560.28 1013.23
17657.23 1011.7517689.19 1012.9117788.46 1012.9817809.89 1009.0617825.58 1008.08
17876.67  1010.1   17912 1006.9617961.12 1006.1118037.75 1005.7418144.43 1006.26
18178.23 1005.6618203.48 1011.2418234.84  1011.418285.17 1002.8318327.92 1002.11
18375.51  999.9418431.91   993.518457.64  993.5618492.03  995.5418509.49   999.6
18531.96  1002.418562.35  997.9218570.17  1002.218589.88 1001.8718600.77 1006.26
 18608.8 1003.8218642.04 1004.0918678.06 1000.6518683.19  998.5318706.79 1000.15
18714.26  998.9118801.36 1000.7118855.38  999.8418890.96  1000.218965.92   998.7
19058.76  999.3419082.21  998.7819118.59 1000.7619124.46 1002.0519154.47  1001.6
19187.25 1002.1819218.05  1001.619229.95 1002.6119256.06 1001.5719305.75  1002.4
19351.62 1001.7219361.74 1005.5119371.46 1003.2119377.86   995.419395.47  986.39
19423.79  983.7119441.27  980.1519495.82  978.25 19507.5  981.7719542.54  982.41
19587.75  981.6719670.68  982.0419722.07  980.4719771.21   980.919826.09   979.5
19873.01  976.8419913.92  976.37 20016.3  978.1320038.45  977.5420088.37  978.33
20131.27  978.0420142.84  972.8320158.41  969.8920342.73  969.6620360.02   971.8
 20410.6  971.7320430.37  982.5620448.85  989.1620479.77  1009.220489.77 1004.79
20499.12 1006.0120517.88 1018.4820534.96 1015.8720541.47  1017.920568.83 1018.62
20601.82 1017.4220623.36 1005.9920653.12  1005.720674.35 1015.8920694.61 1021.65
20708.69 1021.9820723.02  1017.8   20737 1019.7320759.03 1019.1620798.34 1008.24
20863.13  1008.9   20876 1015.1320893.82 1014.1820906.14 1008.51 20920.1 1008.03
20970.13  1008.720975.19  1009.421118.29  1010.421133.42  1014.621149.49 1010.82
 21179.7 1010.5421244.66  1011.8 21318.5  1010.821332.07 1014.0521340.69 1011.58
21351.88 1018.6821361.88 1013.4921375.26 1012.4121531.56 1012.8621568.57 1011.87
21614.86 1011.4821621.15 1010.3421662.98 1011.2521669.39  1013.221692.52  1011.7
21771.67 1010.3221783.96 1011.4221823.49  1011.921881.29 1011.2521897.89 1007.92
21937.26  1007.821954.95 1011.4322012.49 1012.4822019.41 1014.5922087.37 1014.74

Manning's n Values        num=       4
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
 16343.5    .02517788.46    .04319371.46    .03220479.77    .037

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      19371.4620479.77             586  585.23     607             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 16343.518601.44 1020.18       F
20568.2222087.37 1020.45       F

CROSS SECTION


RIVER: 1
REACH: 1                    RS: 207.07

INPUT
Description: 207.07

Right Channel Bank Station Interpolated
Station Elevation Data    num=      97
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 16445.4  1010.8 16477.5  1010.8 16492.9  1010.8 16495.3  1012.4 16612.3  1012.1
 16706.3  1012.4 16731.4  1011.4 16754.5  1011.7 16775.6  1010.8 16823.5    1006
 16897.1  1007.2 16996.9  1007.2 17084.4  1008.1   17118  1007.2 17130.1  1007.9
 17215.3  1007.5 17296.8  1005.9 17391.8  1005.8 17473.1  1006.2 17581.5  1006.7
 17688.2  1006.9 17793.8  1007.5 17860.3  1007.8 17918.6  1006.5 17937.7  1009.2
 17950.5  1008.4 18054.6  1008.5 18145.7  1009.4 18249.2  1008.8 18339.2  1006.2
   18409  1004.8 18416.3  1003.9 18490.8  1003.4 18511.6   998.8 18578.1   997.6
 18602.7   998.8   18624   998.9 18705.2  1001.4 18768.4  1001.7   18825   999.3
 18843.9   997.7   18938   998.1 19029.9  1000.3   19121  1004.5 19134.1  1007.4
 19200.4  1009.2 19224.9  1008.7 19244.6  1006.5 19312.8  1004.4 19414.2  1003.2
 19443.8  1001.8 19521.9  1001.9 19538.7  1003.4 19547.9  1003.2 19557.9  1004.4
 19673.5  1001.7 19761.8  1001.1 19774.6  1001.9 19789.4  1004.7 19852.9   995.2
 19935.8   993.4 19939.1   993.8 19945.4   992.8   19998   992.8   20099   992.9
```

20181.6	993	20237.1	993	20335	993.1	20381.8	993.2	20403	998.8		
20417.1	996.1	20529.1	995.5	20635.3	995.9	20719.4	996.3	20720.5	998.7		
20734.9	1003.5	20748.22	1004.3	20786.5	1006.6	20840.1	1007	20851.3	1007.9		
20926.4	1009.4	21006.6	1009.9	21089.4	1010	21172.8	1009.7	21301.4	1008.9		
21383.6	1008.7	21497.8	1007.9	21578.8	1007.1	21613.2	1007.3	21673.3	1011.2		
21705.2	1010.3	21732.7	1013.7	21818.2	1013	21896.1	1014.4	21908.3	1013.5		
21967.3	1014.4	21999.5	1014.1								

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
16445.4	.043	18490.8	.032	19789.4	.032	20926.4	.032

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19789.4	20748.22	510 514.11	520	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
16445.4	18145.7	1013	F
20926.4	21999.5	1013	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 206.97

INPUT
Description: 206.97

Right Channel Bank Station Interpolated
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
16303.3	1009.9	16422	1010.3	16524.8	1010.6	16626.6	1010.6	16719.6	1011.3
16794.5	1009.6	16836.4	1004.7	16959	1004.6	17073.2	1004.7	17198.7	1004.8
17241.8	1005.5	17390.7	1004.8	17512.3	1005.1	17603.3	1005.3	17704.7	1005.3
17836.9	1005.5	17965	1005.2	18085.7	1005.8	18094.8	1005.9	18105	1008
18196	1007.4	18235.2	1007.2	18260.5	1005.9	18283.2	1007.6	18372.2	1006.3
18390.1	1005.1	18407.6	999.1	18518.7	997.7	18623.3	996.9	18669.1	995.6
18742.3	996.3	18834	1000.5	18925.1	1002.3	19025.7	1004.4	19072.3	1003.7
19086.7	1001.2	19181.7	1005.8	19197	1005.7	19217.7	1002.3	19234.5	1008.4
19316.9	1001.8	19405.1	1002.1	19456.4	1006.1	19566.5	1005.4	19666.3	1005.2
19736.5	1004.4	19776.5	998.7	19783.2	1000.5	19808.3	994.1	19822.1	992.8
19919.1	992.9	20108.8	993.1	20124.9	999	20128.8	998.6	20159.3	982.1
20170.6	981.8	20265.5	981.8	20360.8	981.8	20399.3	981.8	20400.1	981.8
20443.8	981.8	20457.3	981.8	20522.8	981.8	20543.7	981.8	20552.2	981.8
20558.1	981.8	20559.2	981.8	20645	981.8	20661.9	981.7	20684.6	981.8
20778.2	981.8	20792.8	981.8	20800	984.2432	20814.9	989.3	20826.8	991.9
20829.6	993.6	20832.1	993.2	20841.1	988	20882.9	981.8	20888	981.8
20995.1	981.8	21051.7	981.8	21053.6	981.8	21086.6	1009	21114.5	1010.4
21124.9	1008.4	21145.7	1009.1	21151.2	1011.2	21171.8	1014.5	21174	1009.3
21270.2	1009.8	21364.9	1009.2	21463.9	1009.1	21469.9	1008.9	21475.8	1010.8
21486.9	1008.5	21498	1009.8						

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
16303.3	.025	16719.6	.043	18407.6	.032	19736.5	.032	21086.6	.032

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19736.5	20800	480 491.78	480	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
20800	21498	1010	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 206.88

INPUT
Description: 206.88

Right Channel Bank Station Interpolated
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
16205.8	1008.1	16348.5	1008.4	16441.8	1008.4	16531.3	1008.2	16598.3	1009.2
16605	1008.5	16606.3	1010.2	16696.6	1005.4	16819.2	1004.3	16908.4	1004.4
17006	1004.7	17092.4	1003.2	17182	1004	17323.7	1003.7	17415.5	1003.8
17503.8	1003.9	17603.8	1003.9	17703.9	1004.6	17815.8	1005.9	17930.5	1006.3
18057.4	1006.3	18152.5	1006	18216	1005.3	18267.1	1005.9	18292.7	1007.3

18373.6	999.7	18386.3	996.3	18470	995.7	18533.8	995.1	18593.4	996.7
18657.8	996.4	18748.4	998	18835.7	998.9	18932.3	1000.4	18993.2	1000.9
19018.7	1003.6	19101.5	1004	19119.7	1002.9	19166.7	1006	19168.3	1006.9
19251.9	1004.5	19258.4	1005	19341.6	1001.3	19360.8	1001.1	19415.8	1004.9
19507.2	1001.3	19566.3	1004.7	19645.5	1003.4	19728.8	1003.5	19781.8	993.3
19833	992.7	19942.2	993	19947.1	996.6	19996.5	982.3	20008.3	981.8
20016.1	981.8	20105.7	981.8	20143	981.8	20146.6	981.8	20221.6	981.8
20334.4	981.8	20459.7	981.8	20546.8	981.8	20641.2	981.8	20760.8	981.8
20800	981.8	20820.9	981.8	20832	984	20842.1	983.1	20850.4	981.8
20851.4	981.8	20928.6	981.8	20948.4	981.8	21002.4	999.3	21012.9	997
21041.1	997	21047.1	998.2	21081.4	998.4	21113.7	986.4	21142	981.7
21162.6	990	21181.8	991.8	21199.6	1001.3	21208.2	1003.8	21233.9	1006.9
21251.5	1012.2	21270.1	1006.2	21313.5	1006.5	21327.6	1009.1	21361.8	1011.6
21394.4	1008.9	21440.9	1009.7	21454	1011.6	21546.5	1009	21569.8	1012.6
21605	1009.6	21674.6	1010.5						

Manning's n Values num= 6

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
16205.8	.025	16696.6	.043	18386.3	.032	19728.8	.032	21251.5	.032
21605	.025								

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19728.8	20800	480 487.71	505	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
16205.8	18292.7	1007.3	F
20800	21674.6	1012	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 206.79

INPUT
Description: 206.79

Right Channel Bank Station Interpolated
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
16211.1	1006.9	16286.9	1006.9	16364.1	1007.5	16379.7	1007.6	16449.9	1007.6
16525.2	1007.8	16538.6	1008.9	16619.3	1008.5	16666.4	1006.2	16699.6	1001.9
16769.7	1002.3	16840	1002.4	16905.7	1002.4	16989.2	1002.5	17055.4	1002.7
17133	1002.7	17230.9	1002.5	17245.4	1002.4	17322.6	1003	17404	1003.7
17419.6	1003.8	17484.7	1004.3	17553	1004.8	17588.7	1004.8	17631.2	1003
17670.6	1002.9	17748.9	1006.3	17834.7	1006.5	17871.1	1006.6	17919.1	1005.8
17921.7	1005.2	17948.4	1004.4	18036.8	1004.9	18106	1004.9	18182.5	1004.5
18301.7	1004.4	18337	1004.5	18378.4	997.7	18439.7	995.6	18517.1	995.3
18604.7	996.5	18674.2	996.8	18740.3	995.7	18770.1	994.8	18841.6	996.3
18882	997.5	18920.6	1006.8	19010.4	1005.9	19096.2	1003.2	19138.3	1000.6
19186.5	1000.9	19206.9	1002.3	19281.9	1002	19360.7	1002.6	19391.1	1000
19450.2	1002.2	19485	1002.5	19519.3	1004	19570	1004.1	19626.2	1001.8
19645.2	1001.4	19653.2	1002.5	19663.1	1005.3	19671.5	1001	19690.4	994.6
19711.8	993	19766	993.3	19929.9	994	19943.3	996.8	19952.4	996.3
19962.3	992.6	19991	990.7	20007.7	991.1	20032.9	987.2	20042.3	985
20082.5	982.2	20100.2	981.8	20136.1	981.8	20140	981.8	20180.6	981.8
20309.2	981.8	20331	981.8	20390.5	981.8	20420.7	981.8	20422.7	981.8
20425	981.8	20501.8	981.8	20576.6	981.8	20625.3	981.8	20832.1	981.8
20847	981.8	20851.9	981.8	20865.4	988.82	0895.15	1003.436	20902.8	1007.2
20935.6	1019.6	20986	1019.6						

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
16211.1	.025	16525.2	.043	18378.4	.032	19663.1	.032	20935.6	.032

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19663.12	0895.15	495 489.96	520	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
16211.1	17871.1	1015	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 206.7

INPUT
Description: 206.7 - FEMA Section P

Station Elevation Data num= 96

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
16235.4	1006.6	16247.5	1006.6	16320.8	1007.1	16332.7	1007	16402.3	1007.2
16479.2	1008	16505.8	1007.5	16527.3	1008	16552.4	1002	16640.8	1001.4
16727.5	1001.8	16815.4	1001.7	16889.1	1001.5	16902.1	1001.5	16968.1	1001.2
17043.4	1001.3	17155	1000.9	17251.1	1001.1	17317.4	1002.1	17335.4	1002.3
17401.1	1002.9	17430.7	1003.1	17519.9	1003.5	17616.5	1003.3	17699.9	1004
17823.5	1005.8	17891.6	1004.8	17962.7	1005.6	18043.4	1006.2	18125.2	1006.2
18207.9	1005.3	18257.6	1003	18280.3	995.2	18285.8	995.2	18301.4	997.1
18329.6	998.9	18423.4	998.8	18488.5	996	18559.6	995.2	18629.1	994.8
18690.8	994.6	18728.6	993.3	18746.4	994.2	18779.5	994.4	18815.2	996.6
18848.2	1004.6	18945.8	1005	19021.2	1004.8	19092.1	1004.4	19150.1	1003.8
19192.4	1001.5	19285.5	1002.1	19293.9	1002.1	19370.4	999.7	19431.5	999.7
19468.9	1000.2	19510.1	1003.7	19543.9	1002.8	19624.5	994.6	19647.2	992.9
19711.3	993.2	19814.1	993.4	19871.2	993.4	19882.5	995.3	19901.9	992.6
19941.1	991.3	20015.4	991.6	20098.2	993.9	20143.5	994	20167.9	992.9
20185.2	1000.4	20197.8	994.4	20212.7	993.7	20259.6	993.7	20275.9	991.3
20314.8	981.8	20318.5	981.8	20393.8	981.8	20691.8	981.8	20713.3	981.8
20963.1	981.8	21002.8	981.8	21076.8	981.8	21102.7	981.8	21120	988.8
21131	999.6	21138.8	1004.7	21146.9	1002.8	21207	1004.5	21234.3	1006.1
21262.4	1006.4	21329	1008.1	21422.5	1007.5	21452.5	1018.4	21484.3	1017.2
21488	1018.6								

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
16235.4	.025	16640.8	.043	18329.6	.032	19510.1	.032	21138.8	.032

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19510.1	21138.8	500 500.23	500	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
16235.4	18110	1015	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 206.6

INPUT
Description: 206.6

Right Channel Bank Station Interpolated
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
15752.8	1005.9	15777	1004.9	15795.8	1006	15801	1003.8	15809.3	1007.3
15819.9	1006.1	15842.8	1009.5	15850.1	1008	15855.5	1009.8	15868.1	1009.5
15879.9	1006.9	15895.6	1008.4	15904.2	1005.4	15941.1	1007.3	16035.3	1006.2
16155.5	1005.7	16243.9	1005.6	16347.4	1004.9	16444.6	1004.9	16555.6	1004.8
16645	1004.4	16756.4	1003.6	16845.8	1003.1	16944.2	1003.4	17049.2	1002.3
17143.6	1001.7	17249.3	1001.2	17366.6	1001	17501.5	1003.7	17624.2	1003.7
17723.3	1004.1	17790.8	1004	17818	998.9	17847.9	1003.1	17937.7	1002.9
17956.2	1002.7	17971.4	998.8	17988.6	1001.2	18083.6	1001.7	18173.1	1001.7
18217.2	1001.9	18242.2	997.1	18334.4	996.5	18436.5	995	18542.1	993.8
18633.3	993.9	18742.2	997.5	18817.7	997.8	18852.6	1003.9	18965.8	1004.2
19055.2	1003.8	19184.3	1003.1	19243.2	1000	19325.9	998.4	19358	993.4
19395.9	993.2	19452.5	996.6	19546.1	997.7	19580.1	996.6	19611.2	993.1
19679	993.4	19778	993.3	19846.4	993.3	19854.8	995.6	19874.7	992.9
19953.8	992.1	20043.5	994.5	20146.1	995.4	20262.3	995.5	20371.5	995.1
20435.5	995.1	20475.7	981.8	20489.7	981.8	20608.9	981.8	20609	981.8
20738.4	981.8	20854.4	981.8	20866.2	981.8	20903.7	981.8	20931.2	981.8
20996	981.8	21003.4	981.8	21042	988.8	21050.2	9952	1066.25	1002.898
21069.1	1004.3	21182.2	1006.4	21270.7	1006.8	21401.9	1007.6	21495.5	1008
21503.1	1008	21594.4	1008.1	21688	1008.4	21840.4	1008.8	21940.4	1009.3
21957.8	1009.5	21998	1007.2						

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
15752.8	.025	16944.2	.043	18334.4	.032	19546.1	.032	21069.1	.032

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19546.12	1066.25	515 504.63	520	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
15752.8	17847.9	1009	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 206.51

INPUT
Description: 206.51
Station Elevation Data num= 96

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
15913.8	1005.6	15956.7	1007.2	15960.5	1006.2	15969.2	1008	16053.6	1008.2
16067.4	1005.5	16150.9	1004.8	16244	1004.8	16317.6	1004.8	16358.5	1004.6
16454.2	1004.5	16463	1004.5	16544	1004.3	16655.6	1003.2	16728.4	1002.6
16756.4	1002.5	16830	1001.9	16942.4	1001.6	16965.9	1001.5	17053.8	1001.7
17131.5	1001.6	17218.7	1001.1	17306.1	1000.9	17382.1	1001.5	17467	1001.9
17537	1002.2	17549.6	1001.2	17642.5	1001.4	17732.1	999	17805.5	999.3
17867.7	1000	17906.8	1001.8	17982.4	1001.1	18024.8	1000	18113.4	1001
18197.5	1001.3	18210.2	1000.8	18235.8	995.8	18284.9	994.8	18353.6	996.2
18430.7	989.4	18472.3	992.6	18563.8	993.1	18633.6	994.5	18690.9	995.9
18720.1	998	18725.5	999	18780.9	997.9	18793	996.9	18839.1	995.7
18912.5	997.1	18936.6	997.3	18950.4	998.8	18982	1000.3	19017.4	998.8
19041	995.2	19046.4	993.8	19117.4	994.6	19184.9	992.6	19190.6	992.6
19209.6	996.5	19283.6	998.8	19380.8	997	19450	996.8	19458	996.8
19546.2	997.4	19586.4	996.5	19645.9	993.2	19653.5	993.3	19813.4	992.5
19869.8	992.3	19881.5	997.9	19911.8	995.3	19937.5	994.2	19964.8	991.9
19978.6	992.1	20019.7	990.5	20038.1	988.7	20070.3	987.9	20113.5	982.4
20192.5	982	20272.4	981.8	20353.1	981.8	20395.6	982.6	20485.4	993.1
20530.4	997	20546.7	997.4	20554.3	995.6	20599.9	998.6	20622.1	999.3
20634.8	998.6	20716.6	1000	20819.1	1001.3	20897.8	1001.5	20989.4	1002.8
21021	1008								

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
15913.8	.025	17218.7	.043	18235.8	.032	19546.2	.032	20622.1	.032

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19546.2	20622.1	495 496.45	500	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
15913.8	17700	1008	F
20615	21021	1008	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 206.41

INPUT
Description: 206.41

Right Channel Bank Station Interpolated
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
16072.3	1004.6	16106.4	1006.4	16110	1005.1	16145.4	1008.7	16171	1008.7
16201.9	1005.9	16207.2	1004	16245.8	1004.3	16311.3	1003.5	16339	1003.3
16410.7	1003.1	16479.2	1003.2	16504.4	1003.2	16587.4	1003	16660.5	1002.5
16723.1	1001.7	16801.8	1001.5	16828.5	1001.3	16901.2	1001.1	16957.6	1001.1
17046.4	1001	17111	1001.2	17185.4	1001	17248.3	1000.1	17325.6	999.8
17339.6	999.7	17404.5	999.4	17486.4	999.7	17508.2	999.5	17572.4	999.3
17623.9	997.5	17651.1	1000.3	17677.5	1000.2	17744.8	1000	17841.4	1000
17924.2	1000	17975.5	1001.6	18054.4	997.3	18144.7	995.9	18247.4	997.4
18279.8	997.6	18300.2	993.9	18302.9	992.5	18313.4	993.5	18405.6	991.3
18469.8	989.6	18495.7	988.3	18533.5	989.6	18556.8	987.7	18575.5	988.9
18582.4	987.8	18584.3	989.6	18620.5	992.5	18634.5	992.5	18697.7	996.9
18786	998.9	18861.4	999.4	18929.1	999.3	18999.1	996.6	19037	995.4
19069.4	992.6	19082.5	992.4	19169.3	990.8	19285.4	995	19369.2	996.5
19395.7	996.5	19466.6	996.5	19539.8	996.4	19622.9	997.3	19694.4	996.7
19720.5	996.5	19730.2	994.5	19748.7	992.6	19835.1	990.8	19895.8	991.8
19904.5	990.4	19996.1	990.2	20002.5	990.4	20015.5	997.7	20035	990
20091.8	991.6	20171.9	991.2	20269.1	991.6	20343.1	990.4	20356.9	990
20360	988.9	20373.3	988	20379.2	986.7	20421	985.4	20490.4	985.8
20544.3	985.8	20576.7	983.8	20636.9	982.52	0685.22	1001.416	20690.8	1003.6
20719.8	1001.5	20729	1007.4						

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
16072.3	.025	17185.4	.043	18300.2	.032	19622.9	.032	20690.8	.032

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19622.9	20685.22	495 494.64	490	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
16072.3	17111	1008	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 206.32

INPUT
Description: 206.32 - FEMA Section O

Right Channel Bank Station Interpolated
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
16817.7	1002.2	16831.7	1004.4	16847.7	1000.1	16903	997.6	16998.5	999.5
17015.9	999.8	17073.2	995.7	17113.2	998.3	17193.6	998.2	17277.8	999.4
17336.8	998.4	17343.9	998.8	17416.7	997.2	17461	999.1	17530.2	1000
17612	1000.6	17634.8	999.5	17703.3	1001.3	17735.8	1000.4	17761.4	998.4
17843.7	998.5	17853.7	998	17875.9	994.2	17903.4	993.9	17962.9	996.3
18028.7	995.2	18096.2	993.6	18102.6	993.3	18134.8	1001.1	18154.4	1000.2
18192.6	1000.1	18243.3	992.5	18301.4	992.6	18329.8	993.4	18404.3	989.6
18429.4	987.7	18495.6	987.8	18512.7	986.5	18544.6	986.5	18577	989.5
18647	992.5	18707.1	997.1	18782.1	996.8	18869.6	997.5	18885	997.8
18895.7	996.8	18922.1	996.8	18939.9	995.3	18961.5	991.6	18990.7	990
19055.1	991.9	19120.2	992.7	19199.6	995.3	19288	998.1	19351.7	998.3
19433.6	998.5	19488.7	998.2	19527.8	996.5	19535	995.3	19546.5	994.9
19619.6	996.5	19696.3	996.5	19801.3	996.5	19818	996	19830.1	994.5
19917.7	993.3	19992.8	991.2	20076.4	989.2	20107.3	989	20181.4	989.5
20194.5	994.9	20217.3	987.2	20265.3	989.9	20314.9	990.8	20362.4	989.9
20372.9	988.8	20409.1	988.6	20435	986.4	20447.1	986.7	20565.6	989.2
20589.2	986.1	20647.7	982.8	20703.3	983.2	20732.7	988.7	20805.2	991
20816.2	997.6	20847.3	998.3	20854.9	1000.773	20855.6	1001	20889.3	1002
20959.7	1001.8	20988.9	1002.7	21076.4	1002.8	21150.5	1002.8	21226.3	1002.8
21295.2	1002.7	21368	1003.3						

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
16817.7	.043	18404.3	.032	19488.7	.032	20889.3	.032	20988.9	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19488.7	20854.9	515	513.83	520	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
16817.7	17150	1004	F
20899.3	21368	1004	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 206.22

INPUT
Description: 206.22

Right Channel Bank Station Interpolated
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
16557.5	1004.3	16639.4	1004	16713.7	1003.6	16806.6	1001.8	16878.4	999
16892.3	998.9	16946.1	1002.9	16955.9	1004.8	16975.7	997.5	16981.9	999.4
16987.4	998.1	17046.8	996.8	17159.7	997	17260.1	998.5	17320.1	997.5
17343.9	994.5	17380.4	994.5	17400.6	996.8	17408	996.8	17477.4	998.9
17541.1	999.5	17596.5	998.4	17631.6	996.8	17724.8	998.9	17740.4	998.5
17771.5	991.4	17846.4	992.8	17904.5	993.5	17940	995.6	18004.2	995.6
18016.1	997.5	18035.4	995.9	18079.4	996.3	18103.6	997.7	18147.1	997.6
18161.3	993.8	18238.9	993.7	18321.5	992.4	18333.6	991.4	18443.6	991.4
18455.9	991.4	18507.4	994.4	18550.2	989.5	18634.4	989.6	18723.2	987.6
18759.4	986.3	18833.1	991.5	18933.1	991.9	18987.8	992.5	19058	994.5
19110.4	996.4	19138.8	999.5	19223.6	1000.6	19278.4	1001.5	19361.2	1000.2
19370.9	998.6	19381.6	1000.1	19456.3	999.5	19512.1	996.4	19583	994.5
19660.7	994.4	19691.9	994.4	19781.3	994.4	19826.6	994.4	19870	992.6
19877.4	990.6	19912.2	990	20004.6	991.9	20079	991.3	20117.2	990.7
20188.2	986.9	20282	986.7	20306.6	994.7	20332.7	985.9	20338.2	985.9
20423.1	985.1	20525.8	983	20611.1	984.7	20700.7	989.7	20755.5	992.3
20766.6	995.9	20807.8	996.5	20844.2	994.9	20887.6	996.6	20898.1	998.3
20968.3	999	20974.6	999.12	20977.35	999.8423	20990.9	1003.5	21017.9	1001.7
21148.3	1002.6	21222.8	1003.1	21294.4	1003.3	21307.8	1003.3	21385.2	1003.5
21467.9	1003.9	21480	1004						

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
16557.5	.043	19278.4	.043	19583	.032	20990.9	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19278.4	20977.35	500 502.44	460	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
16557.5	16955.9	1004	F
21480	21480	1004	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 206.13

INPUT
Description: 206.13

Right Channel Bank Station Interpolated
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
16722.1	1002.8	16785.1	1002.2	16877.3	1002.1	16908.3	1000.9	16979.6	1000.9
17014.5	1000.3	17057.5	998.5	17070.3	997.5	17183.2	997.5	17222.6	994.5
17342.3	992.1	17417.8	994.4	17490.8	994.6	17494	994.7	17613.2	996.3
17668.4	995.8	17699.1	991.3	17790.1	992.3	17861.7	993.7	17934.2	993.6
17996.1	993.2	18017.5	997.2	18080.8	996.1	18121.2	996.9	18147.1	992.3
18166.8	991.3	18235.4	991.3	18302.6	991.3	18386	991.3	18421.8	989.5
18432	988.4	18469.5	988.4	18475.1	989.5	18500.2	989.3	18504.2	988.4
18568.5	987.1	18688.1	988.4	18765.4	989.5	18782.8	992.5	18860.9	996.5
18915	999.2	18980.4	995.4	19020.4	994.5	19089.1	997.3	19153.9	1000.5
19162	1001.6	19203	1003.8	19205.7	1003.2	19223.2	1003	19263.9	1000.5
19294	999.3	19352.5	999.3	19369.3	998.5	19381.9	996.4	19450.5	995.7
19547.3	995.6	19615.3	994.4	19675.1	990.6	19753.3	990.5	19774.8	990.4
19852.5	988.3	19926.3	986.6	19938.1	987.1	19943.1	987.8	19956	986.6
19959	986.7	20036.9	986.5	20105.4	986.3	20129.5	986.8	20164.8	990.8
20183.5	987.1	20270.6	987.9	20276.8	988.6	20297.8	988.6	20342.4	987.5
20366.8	987.4	20431.3	985.5	20458.7	984.6	20505.9	984.6	20523.1	985.6
20557.7	986.6	20563.2	987.2	20637	987.5	20656	988.4	20660.4	988
20685	996.6	20699.6	998	20710.6	997.6	20766.4	997.9	20788.2	997
20848.3	996.7	20868.5	996	20903.4	995.72	20914.99	998.8712	20934.1	1004.1
20964.8	1000.3	20989.1	1000.6						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
16722.1	.043	19203	.033	20934.1	.032

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19203	20914.99	490 483.44	540	.1	.3

CROSS SECTION

RIVER: 1
REACH: 1 RS: 206.03

INPUT
Description: 206.03
Station Elevation Data num= 96

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
16802.9	1002.4	16810.4	1002	16813.6	1000.9	16824	1002.4	16844.6	1000.6
16890.3	1000.8	16957.6	998.6	16974.2	996.3	17051	996.3	17118.7	996
17158.8	996.3	17238.1	994.4	17268.4	993.9	17337.7	992.2	17429.7	992.2
17531.5	992.2	17538.3	993.5	17547.2	994.4	17602.5	996.5	17662	996.6
17711.8	998.8	17753.6	997.9	17811.8	999.7	17868.4	998.8	17876	996.8
17888.6	992.2	17921.7	991.3	17955.9	991.3	18046.3	991.3	18129	992.2
18208.5	993.4	18309.7	993.6	18420.9	993.3	18447.9	989.4	18457.8	986.4
18517.5	985.1	18549.4	986.9	18588	984	18644.4	992.4	18712.4	995.4
18774.2	998.9	18830	995.4	18904.6	994.2	18908.3	994.2	18995.9	996.3
19086.5	1000.5	19177	1002.9	19201.9	1004.4	19226.8	1002.9	19249.6	1003.2
19274.5	1000.5	19281.8	998.5	19300.1	995.7	19315.7	994.3	19390.1	994.3
19400.5	994.3	19413.5	991.2	19424.9	989.1	19482.5	986.8	19510.1	986.8
19554.4	985.8	19658.8	985.8	19753.3	985.9	19822.1	985.9	19854.2	986.9
19870.5	986.6	19902.2	987.2	19919.6	986.6	19994.1	987.8	20078.9	988.1
20133.4	987.5	20176.6	991.9	20201.4	992.1	20216.4	992.9	20292.1	994.2
20354	993	20378.4	992	20392	989.3	20410.4	989.1	20427.7	986.6
20479.5	986.9	20548	985.1	20601.3	984.5	20610.2	984.8	20660.5	989.4

20711.9	992.7	20772.6	995.4	20851.6	995.1	20876.8	995	20972.6	994.7
21099.7	995.7	21122.5	995.9	21132.1	998.6	21160.4	1005.3	21175.8	999.9
21184.2	999.9								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
16802.9	.043	19201.9	.033	20772.6	.032

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19201.9	20772.6	590	513.6	510	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
16802.9	16900	1003	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 205.94

INPUT
Description: 205.94
Station Elevation Data num= 96

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
16903.8	1000.5	16909.4	1000	16920.9	1001.6	16972.5	1001.2	16975.5	1000.3
16985.1	1001.6	17007.6	998.7	17082.9	996.3	17151.6	996.3	17234	996.3
17267.9	996.3	17336.5	996.2	17426	996.4	17508.2	996.2	17592.3	996.3
17688.9	994.4	17733.4	994	17754.7	991.9	17830.3	991.2	17928	993.4
17928.3	993.4	18000.5	993.2	18041.8	993.1	18116.7	993.3	18216.4	993.4
18279.7	991.1	18294.7	987.3	18302.5	986.7	18362.5	986.9	18376.8	985.1
18407.6	986.2	18496.1	984.1	18565.5	985.4	18614.9	987.2	18629.5	988.4
18642.1	988.5	18669.8	994.1	18756.5	994.7	18817.1	995.6	18869.8	993.4
18916.1	992.8	18941.2	994.2	19004.1	991	19053.5	981.9	19123.4	981.8
19199.3	982	19250	981.9	19337.5	981.5	19354.9	982.2	19448.6	985
19535.3	985	19613.6	984.8	19703.6	985.4	19775.9	989.5	19831.1	990.2
19926.3	989.4	19994.7	989.1	20082.6	988.9	20106.6	989.1	20111.2	988.5
20149.5	990.4	20183.7	994.3	20237	990.7	20262.2	991.4	20291.7	989.3
20345	989.3	20445.6	986.5	20507.2	982.5	20519.9	982.9	20520.2	982.1
20569.1	981	20589.6	984	20612	989.6	20643	991.1	20662.1	992.9
20686.6	992.8	20704.4	994.4	20767	996.6	20871.9	997.4	20903.2	996.9
20938.8	991.7	20969.6	993.5	21038.9	995.4	21103	995.9	21150.3	993.9
21195.3	994.9	21265.8	994.7	21288.8	994	21309.9	995.5	21385.6	995.9
21402.4	995.6	21473.1	995.1	21527.7	994.8	21551	998.8	21641.3	999.1
21683	1001.6								

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
16903.8	.043	18817.1	.033	20767	.032	20938.8	.037

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
18817.1	20767	505	506.69	510	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
21215	21683	999	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 205.84

INPUT
Description: 205.84
Station Elevation Data num= 96

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
17154.7	999.5	17167.6	998.3	17173.7	999	17242.7	999.3	17319.2	999.3
17395.4	998.8	17445.8	998.6	17482.3	997.2	17534.1	997.5	17544.3	997.1
17572.5	997.3	17612.4	996.5	17644.3	993.7	17719.4	994.2	17735.7	993.6
17775	993.6	17842.8	992.3	17862.2	987.5	17958.9	987.6	17969.5	989.4
18029.4	989.1	18042.3	990.1	18085.3	986.5	18121.7	984.6	18194.4	985
18242.1	986.4	18267.7	987.9	18304.8	988.6	18343.6	988.3	18423.5	987.9
18487.6	987.3	18519.2	980.3	18575.4	985.3	18594.1	984.3	18599.2	983
18611.3	981.7	18624.5	979.5	18698.1	979.6	18782.8	980.6	18852.2	980.4
18868.5	982.8	18970.3	982.9	19086.6	984.3	19137.9	986	19161.5	987.5
19244.2	986.1	19262.6	985.8	19339.3	985.7	19420.2	986.1	19521.7	987.3
19606.4	989.5	19664.7	990.4	19734.4	992	19762.4	991.1	19876.6	990.8
19965.5	989.4	20028.7	988.2	20132.7	984.3	20147.5	983.5	20176	983
20199.7	984.8	20287.6	984.2	20364.3	982.3	20417.7	981.2	20446.2	981.5
20481.4	989.8	20508	994.7	20535.7	996	20575.3	996.4	20613.9	995.2

20691.5	994.7	20737.2	994.6	20809.8	995.7	20816.4	996	20875	995.1
20909.1	992.8	20953.5	994.7	21021.3	995.7	21074.7	995.5	21087.2	993.8
21126.7	992.2	21139.8	993.2	21222.1	993.7	21281.4	994.3	21334.2	993
21367.3	994.1	21398.1	992.4	21450.5	994.8	21460	991.6	21508.8	993.1
21563.2	993.7	21607.4	993.3	21622.3	993.7	21634.1	995.7	21671.2	996.7
21696	999.5								

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
17154.7	.043	18487.6	.043	18575.4	.032	20535.7	.032	20875	.037

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
18487.6	20535.7	495	496	480	.1 .3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
21450	21696	999	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 205.75

INPUT
Description: 205.75
Station Elevation Data num= 96

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
17305.3	998.9	17323.7	996.7	17395.5	996.8	17486.9	996.4	17509.8	996.4
17581.1	996.2	17666.5	995.9	17680.3	996	17753.1	996.5	17853.4	996.5
17864.9	996.5	17966.3	996	18048	994.8	18136.2	989.8	18199.9	985.9
18204.5	985.7	18238.3	975.2	18303	975.1	18340.9	977.7	18362.6	983.3
18414.2	984.2	18425.5	978.9	18465.2	978.9	18482	983.4	18487.5	980.6
18502.7	981.5	18551.9	977.5	18634.1	978.7	18705.8	979.9	18783.7	983.6
18852.2	983.7	18938.1	983.3	19031.5	983.4	19132.6	984.5	19156	984.8
19231.1	986.4	19292.3	989.2	19362.3	991.3	19410.6	989.7	19510.1	990.4
19547	990.4	19564.3	991.1	19608.3	991.1	19685.9	990.7	19759.4	989.7
19806.7	989.9	19819.8	990.5	19830.2	990.2	19906.7	988.4	19984.6	988.8
20051.4	988.1	20065.4	987.5	20101.2	975.7	20131.5	973.9	20148.4	974.7
20183.3	981	20265.9	982.2	20296.1	983.6	20320.1	985.5	20338.8	985.9
20373.3	988.6	20450.3	990	20500.5	990.7	20583.6	992.4	20674.8	995.6
20691.1	996.1	20754.7	995.2	20833.9	994.8	20900.7	994.8	20927.8	993.3
20929.3	994.1	20943.9	991.9	20951.5	991.7	20989	994	21037.1	991.6
21060.1	993.2	21120.9	992.7	21131.3	991.3	21198.6	991.5	21306.4	993.9
21377	994.4	21386.2	994.7	21449.8	995	21502.3	995.3	21567.5	995.7
21648.1	996.3	21682	996.5	21789	996.8	21807.7	996.8	21902.8	997.4
21921	997.6	22001	997.7	22076.6	997.7	22142.9	997.7	22143.7	999
22145	998.9								

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
17305.3	.043	18048	.043	20583.6	.043	21131.3	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
18048	20450.3	825	642	490	.1 .3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
21400	22145	999	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 205.62

INPUT
Description: 205.62
Station Elevation Data num= 96

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
16987.1	998.1	17010.8	998	17131	997.7	17220.3	997.9	17312.3	997.2
17337.5	997.1	17349.7	993.8	17415.9	993.4	17452.1	994.5	17456	993.6
17462.6	995.4	17470.7	993.9	17481.8	995.3	17536.8	995.9	17541.4	995
17548.6	996.6	17570.5	992.9	17606.9	994.3	17705.6	994.3	17778.6	994
17854.3	993.6	17935.8	992.6	18000.5	991.8	18066.9	989.1	18154.7	990.1
18182.6	989.5	18216	991.5	18272.9	988.7	18345.5	987	18362.3	985.3
18364.3	986.4	18412.4	980.4	18471.7	977.8	18582.6	976.6	18682.4	977.6
18758.9	978.6	18831.8	982	18915	981.6	18928.4	981.8	18994.8	981.7
19088.8	983.1	19188.8	983.9	19260.2	983.8	19272.1	983.6	19307.3	987.6
19315.9	987.5	19391.2	986.5	19461.1	986.8	19526.5	987.3	19591.7	987.7
19623.7	987.9	19690.2	986.9	19701.7	986.9	19732.4	983.9	19808.3	985.5

19928.6	988.8	19968.4	987.6	20009.8	976	20075.5	976.6	20117.2	979
20204.9	979.7	20242.3	978.4	20253.8	980.5	20285.7	981	20339.5	984.7
20409.9	988.4	20450.1	989.3	20468.3	987	20504.3	986.9	20542.3	986
20605.7	986.7	20698.9	989.9	20708.2	990.1	20715.6	995	20780.9	994.9
20847	991.9	20932.4	991	21003.2	991.1	21102.3	991.6	21194.4	992
21286.6	992.7	21318.6	992.9	21388	993.6	21473.6	994.3	21596.5	994.7
21668.5	995	21758.9	995.6	21817	996.1	21920.7	996.9	21963.3	997.1
22043.7	997.1	22107.3	997.1	22215.9	997.1	22261	998.1	22277.9	997.6
22288.5	999.4								

Manning's n Values num= 6

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
16987.1	.025	17481.8	.043	18216	.043	18471.7	.032	20715.6	.032
20847	.025								

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
18216	20450.1	560	523	510	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
16987.1	17548.6	999.4	F
21480	22288.5	999.4	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 205.52

INPUT
Description: 205.52
Station Elevation Data num= 96

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
17458.9	998.2	17496.2	998.1	17528.6	993.9	17537	994	17538.2	993.3
17605.2	993.8	17611.5	994.9	17615.9	993.3	17622.8	995	17635.1	992.9
17665.3	993	17698.1	994.2	17701.5	993.5	17707.3	995.3	17718.9	995
17731.8	991.3	17820.7	991.9	17894	991.4	17966.9	990.6	18049.9	988.1
18115.3	988.8	18176.3	990.1	18241.5	990	18289.2	989.7	18376.9	989.8
18458.3	990.2	18560.9	990.7	18591.6	991.1	18628.8	988.9	18702.3	978.1
18778	976.8	18843.9	975.9	18919.8	976.6	19003.3	977.9	19078	982
19149.6	982.2	19216.6	981.8	19294.8	981.6	19381.8	980.6	19438.9	979.8
19513.6	979.7	19597.1	981.3	19627.4	982.2	19649.8	981.4	19768.3	982.9
19791.5	982.7	19851.9	983.6	19974.7	981.4	20083.4	978.3	20118	977.6
20126.6	978.1	20161.7	976.5	20215.1	976.5	20237.4	983.2	20307.8	986.1
20375.9	986.4	20411.3	986.8	20436.2	983.2	20454.8	985.7	20472.6	986.8
20567.5	986.1	20573.3	986	20590.7	989.7	20611.5	992.8	20623.9	992.6
20656.5	990.1	20672.2	990.7	20688.3	988.5	20695.2	989.1	20701.5	986.9
20769.2	978.7	20789.2	977.6	20827.6	986.2	20844.7	988.1	20936.4	989.8
21007.2	990.9	21024.7	991.2	21032.1	992.9	21046.7	990.6	21139.1	991.6
21236.4	992	21330.9	992.2	21420.6	992.8	21530.8	993.2	21637.9	993.3
21722.2	993.8	21801	994.3	21909.2	994.5	22026.9	995.2	22127.5	995.8
22175.4	995.9	22246.4	996.2	22303.2	996.7	22383	996.1	22389.5	996.1
22400	997.5								

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
17458.9	.043	18591.6	.043	18628.8	.032	20611.5	.032	21032.1	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
18591.6	20611.5	430	470	400	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
17458.9	17650	998.2	F
21400	22400	998.2	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 205.43

INPUT
Description: 205.43
Station Elevation Data num= 96

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
17577.6	999	17651.4	999	17676.6	993.3	17745.1	993.5	17753.8	994.9
17756.2	993	17761.9	994.1	17779.1	992.9	17827.8	993.4	17837	994.7
17842	993.6	17850.1	995.1	17856.3	994.6	17874.1	989.8	17945.8	990.5
18015.5	989.2	18089	988.6	18171.5	988.1	18272	989	18345.2	989.6
18417.8	988.9	18513.1	989.6	18555.5	988.8	18590.9	983.9	18653.7	980.2

18675.6	981.9	18718.1	992.1	18755	996.2	18831.5	994	18917.5	994.6
18981	993.6	18995.7	991.7	19013.2	983.5	19029.3	979.6	19078	977.3
19159.1	977.1	19235.8	977	19329.8	976.7	19401.3	976.1	19408.1	977.1
19408.2	976.1	19472.5	977.8	19481.8	976.1	19482.8	979.9	19504.5	976.3
19572.1	976.7	19685.1	976.7	19752	976.5	19776.2	976.6	19871.8	985.4
19922.1	984.5	19948.6	982.8	19969.8	979	19994.4	976.5	20009.7	976.5
20115.4	976.5	20173.1	982	20198.5	982.2	20281.7	985.3	20371.1	985.5
20444.6	985.5	20542.7	985.9	20552.8	986	20628.8	985.9	20672.4	986.4
20739.7	988.8	20745.5	988.9	20770.4	996.3	20821.2	987.3	20830.8	986.4
20857.3	988.8	20888.7	988.5	20910.3	984	20959.4	986.1	21024	983.6
21078.8	987.2	21088.9	990.3	21171.4	991.7	21190.4	992.1	21193.4	991.5
21282.9	992	21368	992.7	21454.5	993.1	21528.9	993.3	21613.1	993.6
21695.1	993.6	21768.9	993.9	21849.3	994.3	21923.6	994.4	21927.2	994.4
21997.3	994.6	22016.9	994.6	22089.4	994.6	22155	995.4	22231.3	997.7
22285	998.6								

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
17577.6	.043	18917.5	.043	18981	.032	20770.4	.032	21088.9	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
18917.5	20770.4	175 171.89	125	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
17577.6	17800	999	F
21400	22285	999	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 205.4

INPUT
Description: 205.4
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
17511.1	996.9	17519.9	996.9	17605.2	997.3	17609	997.3	17712.9	997.8
17756.7	992.2	17854.3	993.8	17914.6	991.3	17916.5	991.2	17968.9	990.2
18031	989.2	18084.1	988.8	18154.5	988.3	18213.4	988.3	18281.7	988.2
18304.7	988.2	18362.5	988.2	18388.7	988.6	18461.3	988.1	18529.4	988.4
18564.6	988.5	18633.4	988.7	18712.8	988.5	18774.2	988.2	18787.4	988.1
18843.8	987.9	18915.9	985.1	18943.3	984.3	19013.3	982.5	19020	982.2985
19079.8	980.5	19133	979.1	19154.8	978.5	19196.1	978.7	19231.1	977.1
19260.1	977.2	19291.7	976.5	19304.1	976.8	19364.1	975.5	19377.1	975.5
19436	975.7	19498.9	975.9	19564	975.7	19635.3	976.2	19694.9	976.3
19718.4	976.2	19774.1	976.1	19840.5	976	19902.9	976	19988.4	976
20047.6	976.1	20060.4	976.2	20120.1	976.4	20173.6	976.9	20230.4	977.5
20290.1	977.8	20348.4	979	20391.6	980.6	20448.9	982.1	20522.8	983.7
20592.3	985.3	20647.3	986.7	20692.4	987.2	20767.8	987.4	20829.1	987.4
20894.3	987.9	20922.5	988.1	20978.2	988.9	21055.7	989.4	21057.2	989.4
21142	989.4	21212	990.9	21270.2	991	21321.8	991.1	21338.9	991.2
21394.1	991.7	21407.6	991.9	21469.8	992.7	21547.3	993.5	21598.6	992.6
21619.5	993.7	21690.3	993.7	21721.2	993.7	21811.7	993.8	21872.4	994.2
21923.6	995.3	21941	995.5	22005.1	996.1	22017	996.2	22078.7	996.7
22181.1	997.7	22194.2	997.8	22249.3	998.6	22318.8	999	22386.3	999.2
22404.4	998.5	22455.6	999.3						

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
17511.1	.043	18843.8	.043	19079.8	.032	20767.8	.032

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19020	20767.8	305	315 370	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
17511.1	17800	999.3	F
21450	22455.6	999.3	F

Blocked Obstructions num= 1

Sta L	Sta R	Elev
17511.1	19020	988

CROSS SECTION

RIVER: 1
REACH: 1 RS: 205.34

INPUT

Description: 205.34 - FEMA Cross Section M
Station Elevation Data num= 268

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
13687.27	990.713918.08	990.6813941.26	990.714074.31	990.7414097.95	990.77
14379.8	991.214502.02	991.2714504.17	991.3214654.78	991.4514667.42	991.12
14692.66	99314709.75	992.96 14715.8	991.19 14721	993.2814723.16	993.14
14738.13	990.914750.87	991.8914755.59	992.514795.12	991.614806.23	991.16
14847.09	991.615017.82	991.6715028.83	991.05 15074.2	990.915389.93	990.38
15426.63	990.415457.08	991.7615497.69	991.9115548.79	991.7415599.83	990.06
15624.82	992.515632.81	992.1815645.65	991.2715655.09	992.7415660.02	991.59
15665.1	993.615682.98	994.8415701.37	993.3215707.96	993.3215720.14	993.51
15863.53	993.415962.36	993.7816143.17	993.716302.48	993.5316434.69	994
16540.11	994.5 16630.9	994.0316710.83	993.4216732.11	994.2916741.14	994.53
16755.65	994.816763.06	993.9916780.42	993.7616789.57	993.416811.41	992.38
16945.01	992.917037.42	993.3817118.17	992.917138.04	992.7817279.36	992.27
17420.37	992.117527.98	992.75 17560.1	992.78 17728.5	991.3317729.54	991.26
17753.81	988.517789.02	988.817833.72	989.117845.57	991.9517853.64	990.8
17860.73	99217869.58	99217881.45	991.8417895.69	992.1317897.64	994.57
17904.21	994.517909.94	991.8217920.11	988.7917940.57	989.6117986.35	989.54
18002.56	989.718065.95	989.1618080.07	988.8318116.41	988.3818122.12	987.76
18187.93	987.418195.48	987.3618246.02	987.5818264.37	987.6418314.54	986.65
18327.91	986.818350.36	988.1118365.79	988.5818392.98	988.6518415.65	990.57
18418	99118432.37	990.8218481.36	991.38 18548.7	990.7218596.12	990.95
18645.9	99518660.36	994.9818676.98	995.0618724.18	991.4718772.07	990.61
18787.28	990.318822.48	988.85 18833.8	988.7918853.31	988.4818883.89	988.52
18895.6	987.7 18912.2	992.1218970.58	990.1619022.37	991.3519035.55	989.07
19043.96	988.619066.14	988.56 19076.9	991.3319096.79	993.0719099.41	993.11
19116.55	988.419170.12	987.719232.28	987.219252.59	986.66 19258.9	986.61
19276.73	986.119284.34	985.9919293.57	985.3919297.05	984.9419318.57	978.71
19328.6	976.919337.34	97619422.11	976.1819470.05	976.22 19524.9	976.33
19562.89	976.719632.66	976.0919705.72	976.4319754.05	976.6319843.53	976.95
19853.47	97719865.48	976.519880.46	976.3619890.89	975.8119912.96	977.83
19933.5	976.919947.42	976.619979.26	976.26 20010.7	976.0820051.63	975.84
20062.33	975.720073.85	975.5720119.54	976.87 20199.2	978.2920212.26	978.81
20258.32	980.920264.39	980.66 20329.9	980.6420332.62	980.4120369.18	979.74
20375	980.1 20380.1	980.6320381.06	981.0320388.75	983.0320395.38	983.51
20436.76	985.120502.38	985.6120525.59	985.520561.61	985.7420587.94	985.95
20626.14	985.820644.89	985.7420678.28	985.5520707.29	986.1820742.96	987
20746.96	986.620752.64	985.5420762.54	985.0520787.99	983.0120822.69	985.52
20836.01	987.120844.69	986.9620890.92	987.1920931.14	987.6220978.97	988.36
21006.5	988.721057.23	989.3821083.41	989.721100.77	990.25 21161.6	990.89
21172.71	99121247.07	990.97 21252.7	990.9921266.22	990.7621277.98	990.73
21290.76	992.8 21299	991.1421333.63	991.1321435.22	991.221524.43	991.65
21554.31	991.6 21567.7	991.7221625.82	992.321657.32	992.4221684.03	992.58
21782.19	993.421851.31	993.7221863.14	993.921872.38	994.1621891.44	994.52
21949.81	994.621975.44	994.9221995.48	994.9122007.76	995.2522037.54	996.24
22051.44	996.622075.07	997.6322125.13	998.6122139.54	998.9522159.57	998.78
22179.58	998.822264.13	998.322280.55	998.0322353.16	997.9122369.37	997.91
22404.01	99822463.45	998.2722491.06	998.822531.57	998.5222560.64	998.76
22593.64	998.8 22617.2	999.0722646.25	999.1222676.56	998.9422686.88	999.19
22731.76	1000.522770.23	1000.7922779.44	1001.3422789.67	1000.9722824.65	1001.12
22886.17	1001.722901.04	1001.6722978.01	1002.0623003.78	1002.23 23080.5	1002.51
23154.45	1002.823270.34	1003.4323291.75	1003.5623364.66	1004.1223410.89	1004.31
23481.28	1004.623504.95	1004.7623548.34	1004.8523582.71	1004.8423645.08	1005.05
23678.1	1005.223738.97	1005.2323762.47	1005.11 23813.7	1005.1223872.53	1005.28
23908.97	1005.423920.45	1005.5423934.72	1004.9423951.14	1004.4623976.71	1005.57
23998.12	1003.624004.04	1002.9424049.64	1002.74		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
13687.27	.04318481.36	.04320931.14	.025

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

19284.3420742.96	485	492	450	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
13687.27	17900	1000	F
2140024049.64		1000	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 205.25

INPUT
Description: 205.25
Station Elevation Data num= 96

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev

16580.4	994	16657.1	994	16708.3	993.9	16776.5	993.6	16819.1	994.5
16845.8	992.8	16892.9	992.2	16971.6	992.3	17154.1	993.1	17172.8	993.1
17289.2	992.5	17431.5	991.8	17455.8	991.6	17644.6	992.5	17718.9	992.3
17808.9	991.8	17842.7	989.1	17907.9	989.9	17920.6	992.1	17926.4	990.6
17933.2	992.4	17964.3	990.4	17989.2	990.3	17999.1	987.6	18061	989.2
18108.7	990.1	18179	988.3	18216.3	987	18244.2	987.5	18311.6	987.2
18329.2	987.8	18392.2	987.8	18457.1	988.6	18493.2	989.2	18509.7	988.5
18583.8	989	18614.2	989.1	18647.4	988	18708.8	987.6	18775.5	989.5
18807.1	990	18886.3	989.2	18946.4	989	18990.4	988.1	19012.5	989.2
19101	990.2	19156.3	989.9	19179.1	987.1	19186.7	985.4	19228.7	983.3
19242.4	982	19306.5	983.4	19368.3	983.9	19442.9	983.5	19503.3	984.6
19563	981.8	19581.1	985.9	19632.5	986.1	19671.9	987.3	19726.2	975.8
19815.7	975.6	19878.1	976.2	19957	975.9	20042	975.5	20112.8	975.3
20121.8	975.7	20160.5	973.8	20242	973.4	20260.5	974.6	20329.5	975
20404.8	975.5	20471.4	978.3	20486.8	979.5	20522.9	977.9	20526	975.8
20552.9	975.9	20584.6	974.1	20632.4	973.9	20697	975.7	20712	975.7
20738.9	981.7	20741.5	980.7	20782.3	986.4	20848.1	987.4	20923.8	989.9
21014.3	990.6	21121.3	991.6	21201.7	992.1	21283.6	992.1	21338.5	993.1
21347.9	993.8	21358.2	992.2	21370.3	995.6	21409.5	995.7	21424	994.5
21499.5	993.3								

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
16580.4	.025	18108.7	.037	19671.9	.037	20782.3	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19671.9	20782.3	505	506	485	.1 .3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
16580.4	17950	995.7	F
21347.9	21499.5	995.7	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 205.15

INPUT
Description: 205.15
Station Elevation Data num= 96

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
18001.2	994	18008.5	992.8	18015.6	994.9	18038.3	990.9	18047.4	991.8
18061.5	992.1	18077.6	991.6	18146.4	988.8	18170.1	988.9	18200.6	988.3
18243	988.8	18269.7	988.5	18292.3	988.8	18341.7	989.8	18374.9	990.2
18415.6	990.6	18438.3	991.1	18547.3	991	18558.8	991.1	18618.4	991.8
18625.4	991.9	18687.7	991.3	18696.2	991.3	18745.4	991.4	18794.1	991.1
18810	991.2	18866.4	991	18894.1	991.2	18920.9	990.7	18973.2	990.3
19018.9	989.8	19055.8	989.7	19109.2	989.4	19141.8	988.8	19181.8	988.8
19228.5	988.7	19285.2	989.2	19335.5	988.1	19346.3	987.8	19386.8	986.1
19394.2	985.9	19440.1	984.4	19443.6	984.3	19490	983.7	19506.7	983.8
19532.2	982.8	19587.2	983.3	19612.4	983.6	19619.1	984.1	19660.7	983.9
19705.1	983.1	19747.1	983.7	19787.1	984.9	19805.2	976.8	19822.3	973.4
19827.6	974.7	19829.5	974.2	19853	974.2	19880.4	973.6	19881.2	973.1
19908.4	980	19918.9	982.2	19934	984.3	19978.1	984.9	20006.4	984.1
20054.3	983.8	20064.2	983.5	20106.6	982	20110.7	981.8	20166.7	979
20196.8	978.1	20246.3	976.6	20250.4	976.4	20298.9	975.4	20340.8	975.5
20371.6	975.7	20436.2	974	20495	974.1	20608.2	975.2	20651	975.7
20691.5	977.2	20705.2	979.5	20746.3	987.3	20793.1	987.9	20838	988.7
20896.6	989.6	20910.7	990.1	20968.3	990.3	20999	990.6	21039.8	990.8
21107	991.7	21127.2	991.3	21170.3	994.1	21206.9	995.7	21258.6	996.3
21293	996.4								

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
18001.2	.025	18146.4	.037	19787.1	.037	20746.3	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19787.1	20746.3	495 495.39	495	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
18001.2	18061.5	995	F
21293	21293	996.4	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 205.06

INPUT
Description: 205.06
Station Elevation Data num= 129

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
17971	990.9	18065.3	988.6	18104.6	990.4	18115.6	988.2	18128.9	991.2
18143.2	991.5	18167.1	990.4	18222.4	988.9	18239	988.9	18268	988.1
18295.2	989	18314.3	988.5	18358.9	987.5	18410.5	986.7	18435.8	988.1
18478.4	994.2	18515	994	18541.2	993.6	18567.7	993	18668.2	993.4
18694.6	996.3	18716.8	994.1	18733	990.9	18773.1	991.2	18799	993.8
18844	996.4	18879.8	994	18912.8	991.3	18929.6	990.6	18948.8	990.9
18974.6	992.4	18989	991.8	18996.9	990.8	19026.5	996.8	19033.3	997.5
19038.3	998.5	19071.8	995.8	19078.5	994.1	19097.2	986.1	19133.8	987
19136.4	990.2	19142.8	992.6	19151.6	994.3	19202.7	994.1	19217.4	994.9
19226.3	988.3	19230.3	986.5	19252.3	985.8	19287.1	985.9	19329.2	986.2
19380.3	987.3	19388.1	987.3	19434.5	987.8	19445.1	987.8	19500.6	988.4
19538.9	988.7	19598.7	988.7	19648.7	990	19669.4	989.9	19722.7	988.3
19771.5	986.5	19803.6	986.4	19827.5	985.6	19841.3	984.7	19887	983.6
19904.2	973.1	19931.3	971.2	19981.6	971.1	19982.8	971.1	20027.4	970.5
20053.2	971.3	20073.5	976.1	20120.4	976.2	20137.3	976.4	20147.5	981
20155.4	983.6	20196	987.3	20208.9	986.1	20221.7	985.3	20253.8	981
20275.4	981	20301.5	975.4	20306.9	975.1	20315.2	975.1	20365	974.5
20425.5	974.6	20470.1	974.5	20497.9	974.4	20563.5	973.5	20601.9	973.2
20671.9	974	20850.2	976	20856.8	977.9	20880.3	977.7	20892.4	984.3
20905.3	990.8	20927.2	991.2	20971.3	992	21020.6	993	21062.7	993.2
21101.6	993.3	21146	993.7	21204.6	993.9	21256.1	994.5	21300.3	994.8
21336.3	994.9	21378.2	995	21414.7	995.2	21457.8	995.2	21484.8	995.4
21512.4	994.7	21514.5	995.9	21516.2	996.3	21518.9	995.5	21525.9	994.3
21532.1	994.6	21537.4	995.2	21546	995	21560.5	995.3	21575	995
21602.5	996.4	21628.8	996.3	21672.8	996.3	21709.9	996.5	21754.4	996.4
21826.9	996.1	21895.5	996.5	21951.4	996.6	21997.9	996.4		

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
17971	.037	19026.5	.037	19669.4	.037	20905.3	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19669.4	20905.3	505	505	530	.1 .3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
17971	18080	998.5	F
21997.9	21997.9	998.5	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 204.97

INPUT
Description: 204.97

Left Channel Bank Station Interpolated
Station Elevation Data num= 86

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
16000	993.3	16025.7	992.1	16060.7	991.7	16273.1	992.3	16303.1	992.4
16597.7	992.1	16613.7	992	16818.7	992	16912.8	992.3	17061.4	992.3
17169.3	991.7	17232.9	991.8	17259.7	989	17316.4	990.2	17470.6	990.2
17483.4	990.2	17700.5	989.9	17786.2	989.2	17832.4	989	17894.5	988.9
17924.8	989.2	17933.3	990.5	17979.7	992.1	17985.3	991.5	17994.8	988.7
18008.6	988.7	18105.1	987.6	18137.2	986.9	18189.2	987.8	18201.2	986.8
18216.4	989.2	18243.6	989.2	18301.9	989	18377.5	989.6	18462.9	990.2
18523.7	988.6	18573.9	986	18643	986.6	18672	985.8	18672.9	984.9
18697.7	984.3	18729.6	988.3	18807.2	987.9	18833	984	18865.3	987.3
18888.3	985.4	18917	987.8	18955.4	987.9	18987.3	984.9	19046.8	987.1
19093.5	986.8	19152.6	983.5	19285.8	983.8	19317.6	981.5	19332.9	979.1
19418.6	978	19438.3	978.8	19545	978.843	19934.7	979	19938.2	981.1
19945.9	981.9	20008.7	980.8	20068.2	980.2	20091.8	979.6	20151.8	979.3
20225.8	978.1	20300.7	979	20367.2	979.3	20442.3	978.7	20509.6	977.2
20568	974.8	20659.1	973.3	20662.9	973.3	20925.5	975.4	20961.3	988.6
20999.4	990.2	21056.8	990.8	21126.2	991.7	21187	992.8	21200.2	992.9
21265.2	993	21340.5	993	21356.1	993	21427.5	993.4	21492.8	993.1
21496	993.1								

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
16000	.025	18301.9	.037	19046.8	.037	20961.3	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.

```
        19545 20961.3                510     503     550             .1       .3
Ineffective Flow     num=       1
   Sta L   Sta R    Elev  Permanent
   16000   18200   993.4       F

CROSS SECTION


RIVER: 1
REACH: 1                    RS: 204.87

INPUT
Description: 204.87

Right Channel Bank Station Interpolated
Station Elevation Data    num=      97
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 17067.4   991.5 17111.3   991.5   17255   990.6 17291.2   991.6 17298.2   992.1
 17315.9     991 17328.2   990.9 17345.3   988.6 17426.3     988 17520.6   988.2
 17594.7   988.5 17781.4   988.6 17822.3   988.5 17925.1   988.2   18001   987.2
 18108.5   987.1 18221.3   987.3 18261.7   986.3 18269.2   986.9 18279.6   985.4
 18296.9   986.8 18325.5   986.8 18352.2   985.5 18429.1   985.3 18501.3   985.6
   18553   984.4 18559.8   986.3 18565.9   988.9 18578.6   987.7 18604.1   983.9
 18645.9   981.4 18657.3     984 18678.8   986.2   18730   987.6 18832.5   987.5
 18855.2   985.7 18859.7   984.6 18874.5   986.6 18920.1   984.6 18942.9   980.4
   18960   980.8 18970.7   982.4 19015.9   985.9 19104.6   986.7 19209.9   985.7
 19234.9     985 19264.2   982.7 19275.4   983.5 19297.4     981 19382.3   981.4
 19462.8     981 19532.8     979 19555.4   979.1   19566   978.5 19579.4   978.5
 19588.4   976.2 19598.7   976.3 19623.4   978.5   19628   979.5 19642.3     981
 19714.7     981 19730.8     981 19759.9   975.9   19765   976.4 19772.7   975.9
 19854.5   975.9 19859.5   975.9 19861.3   977.3 19877.6   980.8   19890   975.9
 19903.3   969.9 19909.9     970 19919.2   968.1   20001   968.1 20022.9   968.1
 20059.2   975.3 20126.4   976.2 20213.9   975.3 20298.1   974.9   20351   974.8
 20377.2   977.3 20393.3   977.5 20505.4   975.8 20559.1   974.3   20612   976.5
 20624.2   974.6 20654.3   973.2 20826.7   974.3 20919.3   974.9 20939.9   984.7
20954.34991.1405 20961.2   994.2 20981.5   994.3 21037.9   989.4   21047   990.3
 21137.3   991.2 21197.6   991.4

Manning's n Values        num=       4
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
 17067.4    .025 18221.3    .037 19462.8    .037 20961.2    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       19462.820954.34              495     499     505             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 17067.4   18300   994.3       F
 20961.2 21197.6   994.3       F

CROSS SECTION


RIVER: 1
REACH: 1                    RS: 204.78

INPUT
Description: 204.78

Right Channel Bank Station Interpolated
Station Elevation Data    num=      87
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 16026.1   987.6 16094.8   987.3 16113.5   986.9 16143.6   989.2 16147.7   990.2
 16176.4   990.8 16200.6   988.8 16231.8   988.4 16338.9   988.8 16416.1   988.9
 16579.2   988.9   16686   989.1 16786.7   989.1 16866.8   989.3 17093.1   989.3
 17192.6   989.3 17283.5     988 17369.3     988 17407.5   989.7 17420.2     988
 17479.3     987 17521.2   986.9 17670.9     988 17754.2   987.8 17912.8   987.4
 17952.6   987.1 18028.5     987 18174.7   986.5 18221.6   986.3 18279.6   986.1
 18350.4   984.9 18361.8     983 18373.6   985.9 18402.3   985.9 18413.2   983.6
 18427.5   987.2 18487.5   986.4   18504   984.4 18585.3   983.7 18598.2   984.9
 18667.6   983.9 18753.3   984.6 18756.1   984.9 18767.8   981.3 18836.7     981
 19173.1   979.8 19219.1   979.8 19295.8   977.2 19323.7   977.5 19337.5     981
 19356.4     981 19398.6     983 19409.2   982.4 19419.8   979.2 19429.6   977.4
 19432.3   975.9 19489.4   975.9 19561.1   974.8 19621.6     973 19660.7   972.1
 19667.7   970.8 19677.1   967.6 19767.4   968.8   19768   968.8 19935.5     968
 19986.5     968 20033.8   975.7 20056.9   977.8 20073.7   975.3 20160.4     975
 20170.8   975.3 20229.5     975 20246.7     975 20324.8   974.9   20340     975
   20452   975.9 20510.9     973 20530.9   973.1 20662.3   973.7 20706.1   973.8
 20782.6   974.9 20801.8   975.120832.33990.9976 20840.4   995.2 20866.6   994.5
 20921.2   988.9 20982.7   988.3
```

```
Manning's n Values          num=       4
     Sta   n Val     Sta    n Val     Sta   n Val     Sta   n Val
 16026.1    .025 18427.5     .037 19398.6    .037 20840.4    .025

Bank Sta: Left   Right     Lengths: Left Channel   Right     Coeff Contr.   Expan.
       19398.620832.33                505     515     550             .1      .3
Ineffective Flow      num=       2
   Sta L   Sta R    Elev  Permanent
 16026.1   18400   995.2        F
 20840.4 20982.7   995.2        F

CROSS SECTION


RIVER: 1
REACH: 1                    RS: 204.68

INPUT
Description: 204.68

Right Channel Bank Station Interpolated
Station Elevation Data     num=      97
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 17501.1   986.1 17554.2   985.7 17607.9   985.5 17645.5   987.6   17657   986.8
 17668.8   987.1 17674.9   990.2 17682.2   987.8   17691   985.7 17742.4   986.2
 17748.2   986.3   17778   988.7 17792.2   990.8 17806.1   988.7 17807.3   988.9
 17839.5   987.8 17848.5   986.9 17867.4   986.8 17881.2   986.2 17970.4   985.8
 18016.4   985.9 18087.9   985.4 18189.8     985 18231.2   984.8 18295.5   984.9
 18354.5   984.6 18412.6   984.3 18437.1   982.9 18472.2     984 18491.1   983.4
 18518.9   981.6 18530.8   984.6 18531.9   985.1 18550.1   982.9 18601.2   983.1
 18621.4   983.6 18662.6   982.9 18685.1     983 18736.6   981.7 18767.6   980.4
 18849.4   980.3 18886.2   980.2 18950.6     980 19029.6   979.9 19057.5     983
 19071.2   980.7 19099.7   980.9   19114   981.6 19143.3   981.3 19197.1   981.7
 19249.9   983.3 19284.9   981.9 19308.1   982.1 19314.7   984.6 19321.8     985
 19357.4     981 19361.7   979.6 19368.2   980.1 19394.4   978.2 19398.6   975.9
 19415.9   975.9 19458.6   973.3 19479.3   973.1 19513.5   971.9 19564.9   971.9
 19621.8   972.2 19668.2   973.2 19691.4   975.5   19719   976.9 19734.6   976.2
 19779.1   971.8 19814.3   971.4 19869.4   971.6   19901   972.5 19927.9   972.8
 19942.8   973.9 20011.2   975.3 20053.7   976.3 20121.8   976.1 20137.2   975.6
 20206.4   975.5 20256.1   973.7 20273.3   974.7   20295     973 20348.3   973.2
 20369.6   973.3 20516.3   974.120548.61990.5028 20548.8   990.6 20582.8   991.5
   20647   987.5 20715.7   987.8 20786.9     988   20814     988 20872.4   988.2
 20904.2   988.1   20971   988.4

Manning's n Values          num=       5
     Sta   n Val     Sta    n Val     Sta   n Val     Sta   n Val     Sta   n Val
 17501.1    .025 18472.2     .037 19321.8    .037 20548.8    .037 20582.8    .025

Bank Sta: Left   Right     Lengths: Left Channel   Right     Coeff Contr.   Expan.
       19321.820548.61                325     407     570             .1      .3
Ineffective Flow      num=       2
   Sta L   Sta R    Elev  Permanent
 17501.1   18455   991.5        F
 20582.8   20971   991.5        F

CROSS SECTION


RIVER: 1
REACH: 1                    RS: 204.61

INPUT
Description: 204.61
Station Elevation Data     num=      96
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 14501.4   987.8 14573.3     990 14582.2   987.6 14618.2   988.2 14777.3   988.3
 14862.5     988   15060   988.1   15169   988.1 15293.6   988.1 15349.5     988
 15354.3   989.1 15407.2   987.7   15581   987.7 15683.1   987.7 15895.1   987.7
 15973.3   987.8 16138.5   987.8   16253   987.3 16305.2   988.9 16356.5   986.6
 16502.7     987 16642.3   986.6 16753.7   986.8 16913.6   986.7 17015.2   986.4
 17201.6   986.5 17292.3   986.1   17385   986.2 17492.5   986.6 17525.7     986
 17544.8     987 17555.9   984.9 17607.1   987.6 17733.4     988 17760.1   988.2
   17907   986.4 17945.4   985.9 18071.1   985.8 18171.7   984.9 18250.5   986.1
 18300.1   984.4 18402.9   984.9 18466.2   984.6 18493.6   983.5 18498.9   981.8
 18563.6   983.3 18578.3     983 18591.3   980.7 18665.2   981.8 18677.5   983.2
 18687.3   985.4 18775.1   988.2 18821.3   988.9 18834.2   979.9 18973.9   980.4
 19090.8   980.1 19180.1   979.7   19288   980.1 19386.4   980.8 19428.1   982.7
 19471.3   983.1 19479.7   979.4 19500.4   973.3 19642.8   973.3 19760.9   972.7
```

19781	972.7	19928.9	973.4	20022	973.4	20085.3	975.2	20097.7	972.6
20188.3	973	20275.9	973.4	20374.8	973.9	20426.1	974.2	20456.1	987.8
20482.9	988.5	20507	986.5	20620.9	986.8	20726.9	987	20849.8	987.1
20944.2	987.1	21033.3	987.2	21060.5	987.3	21176.6	986.9	21261.7	986.8
21362.3	986.7	21489.6	987	21584.7	987.7	21599.3	987.7	21697.6	987.5
21835.5	987.5	21887.1	988.6	21890.1	987.2	21897.8	989.2	21930.6	990.8
21963.1	990.8								

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
14501.4	.025	18498.9	.037	19471.3	.037	20482.9	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19471.3	20482.9	395	449	545	.1 .3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
14501.4	18570	990.8	F
20482.9	21963.1	990.8	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 204.53

INPUT
Description: 204.53
Station Elevation Data num= 96

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
17504.9	987.8	17516.3	987.9	17522.8	987.1	17597	987.9	17615.7	987.3
17634.6	987.5	17637.7	988.1	17645.9	986.3	17657.9	988	17704.2	989.7
17740.1	1006.3	17784.7	1004.7	17850.8	1006.5	17875.5	988.5	17970.4	986.9
18011.9	987.2	18027.9	986.1	18091.1	986.1	18155.5	985.2	18204.4	984.7
18283.5	984.5	18320.2	984.4	18443	984.3	18501.9	983.9	18579.8	983.6
18647	982.6	18678.7	980.4	18706.4	982.9	18747	982.6	18757	983.3
18815.9	983.6	18827.1	980.6	18916.2	981.2	18927.3	982	19007.2	982.5
19073.9	982.8	19175.3	983.2	19185.4	983.5	19240.3	981	19276	975.9
19293	975	19359.2	979.5	19386	976	19409.2	976.4	19468.7	973.1
19520.6	973	19547.6	973.9	19571.2	975.5	19585.1	972.9	19610.7	972.7
19729.3	972.9	19787.3	973	19805.5	973.5	19860.6	976.1	19930.7	975.8
19979.8	973.4	19994.9	973.6	20150.7	974	20174.8	974	20434.3	974.4
20443.5	974.5	20465.7	985.2	20495.9	987.1	20550.8	986.4	20566	984.8
20629.6	984.7	20701.1	984.8	20780.4	985	20872.2	985	20943	985.1
21022.1	985.1	21052.3	985	21118.4	984.9	21183.9	984.8	21260.2	985
21337.7	986.1	21351.7	986.3	21381.4	984.7	21472.3	984.9	21564.8	985.3
21626.7	986.2	21653.6	986.5	21678.1	985.5	21716.4	985.3	21781	984.7
21817.6	987.6	21875.1	987.3	21880.1	988.5	21884.2	988.1	21885	988.9
21887.9	987.2	21894.1	988.4	21914.7	989.1	21935.1	988.6	21999.2	989.8
22011	990.1								

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
17504.9	.025	18647	.037	19185.4	.037	20495.9	.037	20566	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19185.4	20495.9	570	552	525	.1 .3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
17504.9	18730	1000	F
20495.9	22011	1000	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 204.42

INPUT
Description: 204.42

Right Channel Bank Station Interpolated
Station Elevation Data num= 90

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
17576	985.4	17608.5	985.2	17708	984.7	17783.2	985.9	17832.4	987.2
17853.5	986.1	17871.5	986.6	17926.9	986	17956.8	985.7	18023.8	985.6
18149.3	988.2	18169.7	988.1	18191.3	988.5	18226.7	987.2	18239	992.9
18240.3	993.2	18241.4	992.8	18249.3	987	18255.2	986.8	18279.8	990.2
18308.3	987.7	18322.1	985.5	18347.4	985.3	18488.4	983.7	18517.8	983
18560.8	983.8	18635.1	982.4	18650.1	983	18667.7	983	18723.8	982.5

18733.2	982.4	18795.2	981.7	18839.1	981.2	18874.1	983.2	18899.1	981.9
18955.6	982.5	18998.6	983.3	19025.4	984.6	19040.4	981.3	19045	980.6
19052.9	980.4	19095.4	981.9	19166.1	982.1	19255.9	982	19280.2	982
19341.8	981.8	19381.9	981.6	19437	981.1	19475.3	981	19500.2	980.6
19543.1	978.9	19552.9	979.1	19561.9	978.3	19576.9	979.5	19599.7	980.5
19616.5	980.7	19649.2	979.5	19653	978.6	19672.9	972.5	19732	972.5
19781.3	972.6	19794.7	975.8	19805.4	972.9	19824.4	972.6	19905.9	971.4
19930	972.8	19954.4	972.4	19966.8	973.5	19992	972.4	20006.4	972.1
20057.7	972.3	20101.5	973	20150.5	972	20162.2	972.1	20303.9	972.1
20322.7	972.1	20397.5	972.3	20434.6	971.9	20454.2	972.5	20468.3	973.3
20548.4	973.9	20577.1	973.9	20609.6	973.2	20616.9	972.5	20646	972.8
20682.09	987.6656	20689.7	990.8	20701.7	992.2	20714.4	988.5	20967	988.5

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
17576	.025	18839.1	.037	19025.4	.037	20689.7	.037	20701.7	.025

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

19025.42	20682.09	430	453	500	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
17576	18874.1	993.2	F
20689.7	20967	993.2	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 204.34

INPUT
Description: 204.34

Left and Right Channel Bank Stations Interpolated
Station Elevation Data num= 74

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
18066.2	985.2	18081.3	985	18158.1	983.7	18200	983.2	18226	984
18228.2	983.4	18283.2	983.4	18339.1	987.8	18395.4	986.8	18498.7	986.6
18514.4	986.2	18516	986.7	18586.8	985.6	18638.2	981.3	18678.3	981
18721.9	979.9	18774.5	984.6	18806.4	982.8	18806.6	981.1	18864.9	982.2
18888.3	975.4	18906.9	980.7	18919.1	979.8	18932.5	981.8	18936.3	983.3
18988.6	982.9	19004.9	982.1	19086.4	981.7	19100	981.6723	19184.5	981.5
19245.5	981	19310.8	980.7	19329.3	980.7	19389.4	980.3	19453.4	979.8
19487.9	979.5	19552	979.2	19615.6	978.7	19689.1	978.5	19736.5	978.7
19757.1	988.9	19782.1	971.2	19783.9	970.6	19819.5	969.3	19835.1	971.8
19891	971	19954.9	970.8	20009.4	971.2	20054.1	972.9	20100.5	973.1
20107.5	972.7	20175.2	972.5	20253	971.7	20324.6	971.9	20395.6	971.7
20465.2	971.4	20539.7	971.3	20603.2	971.5	20661.9	971.9	20671.8	972
20743.2	970.2	20773.2	970	20795.3	976.9	20816.23	986.0935	20827.4	991
20878.6	990.5	20887.2	987	22239.1	987.1	22248.4	987.2	22254.3	988.2
22259.5	985.8	22266.1	987.7	22287.1	988.3	22317.8	988		

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
18066.2	.025	18774.5	.037	20827.4	.037	20878.6	.025

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

19100	20816.23	495	488	480	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
18066.2	19100	991	F
20827.4	22317.8	991	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 204.25

INPUT
Description: 204.25

Left and Right Channel Bank Stations Interpolated
Station Elevation Data num= 202

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
13993.51	986.91	14130.56	987.41	14486.44	987.43	14755.8	987.03	14937.72	987.04
15050.6	988.11	15090.94	987.57	15102.07	987.57	15109.44	988.64	15116.98	989.38
15128.77	988.11	15132.01	987.97	15140	988.47	15148.98	986.93	15153.86	985.73
15173.36	986.21	15690.75	986.18	15878.25	985.18	15889.67	986.28	15904.51	988.05

```
15907.38   988.115919.42  987.92 15924.1  987.4715931.02  985.8315970.22  986.25
   16049   986.116175.22  986.0216450.56  986.1616463.91  986.2916480.31  987.87
16486.56   987.416495.93   987.116504.19  987.7916511.66   987.916518.49  987.78
16535.99   985.816542.09  985.62   16555  985.5516564.89  984.2816584.86  984.26
16687.99   984.816810.65  985.2916823.94  985.32 16873.9  984.7316893.09  984.53
16922.74   984.6 16941.4  984.2616960.75  984.6616990.05  984.3317020.18  984.79
17048.94   986.617091.64  985.2817177.92     98517208.14   985.117249.69  984.95
17398.31   984.317414.87  984.49 17522.6  984.3917556.82  984.2117600.03  984.35
17721.19   984.217812.48  984.25 17851.5  984.8117861.89  984.59 17867.1  984.93
17880.92     98517892.56  984.3517898.26  983.9217932.23  986.4917944.09  986.98
 17988.7   986.718005.49  986.89 18050.6  987.5718083.28  987.6218106.23  986.76
18158.97   986.818174.45   987.118185.88  987.1218240.34  986.9218277.05  986.27
18300.85   986.118323.52  985.5518372.65  985.1418410.49  985.0818449.87  985.08
18490.27   985.5 18520.4  985.1518569.61   985.8 18587.9  985.7618609.93   985.4
18633.73   984.818652.28  984.25 18660.4  983.8518672.96  983.4118703.66  978.51
18719.46   976.218724.94   975.718730.59  976.2818765.73  981.3818788.83  981.86
18812.39     98218851.86  982.6718856.84  982.0218876.79  980.9318917.58  980.72
18958.37   980.818990.64  980.15 19005.3   981.3   19038  982.5519054.34  981.71
19061.47   981.919088.33  981.0319097.24  980.6119117.27  982.08 19126.5  981.33
19134.63   980.819139.73  980.7919178.34  980.9919189.92  980.9119237.27  980.78
19263.33   980.219297.08  979.95   19300 979.93619332.52  979.7819361.32  979.52
19438.75  979.41 19458.3   979.519506.35   978.719519.13  978.8519527.66  978.72
19542.19  978.7319623.64   978.619631.41   978.619649.23  978.6319696.73  978.82
19703.53  975.7119717.53   970.2   19739   971.319747.27  974.51 19771.1  974.27
20035.47  970.8820227.56   972.420273.64  972.3620297.51  972.19 20307.7  971.98
20309.92  971.7420357.54   969.8 20436.7  969.4420448.29  969.4520499.51  969.22
20526.05  969.29 20588.3   969.720612.99  970.1420643.57  971.0820655.61  971.37
20680.85  971.2420705.02   971.520710.67  971.3720740.01  974.1420776.89  977.31
20818.53981.025320830.46  982.09 20922.2   989.620964.06  989.9520995.89  990.41
21004.86  987.3921018.73  981.0821052.72   981.121087.73  980.7921108.33  980.92
21157.66   981.421178.54  981.5221210.73   981.221262.99  982.6321279.42  982.45
21290.06  979.4521361.92  980.42 21408.6   981.221446.51   981.421456.08  981.58
21481.84  981.6121499.03  981.7121649.19   981.921681.55  982.0721787.28  982.66
21862.63   982.921876.61  982.9521939.71   983.421983.01  983.3822043.39  983.78
22083.67  984.1722130.05  984.4322172.04   984.422225.83  984.5822265.02  984.87
22339.34  986.3522389.33  985.4622416.26   985.922438.79  986.0322474.98  986.32
22486.29  987.5222500.35  987.24
```

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
13993.51	.03518812.39		.03221290.06		.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
1930020818.53		510	508	500 .1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
13993.51	19300	990	F
20922.222500.35		990	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 204.15

INPUT
Description: 204.15

Left and Right Channel Bank Stations Interpolated
Station Elevation Data num= 80

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 16507.2   984.4   16600     985 16650.2   986.1 16657.8   983.8 16666.8     986
 16708.7   983.2 16800.2   983.6 16895.3   983.8 16963.7   983.3 17111.7   982.5
 17141.8   982.4 17289.1   982.7   17397   983.7 17427.8   983.8 17571.9   983.4
 17609.8   983.3 17719.7   983.5 17833.6     983 17949.9   982.8 18031.8   984.3
 18081.2   983.6   18087   981.9 18093.6   985.1 18094.5   983.7 18130.3     986
 18214.6   985.6 18280.4   986.6 18357.2   984.7 18446.1   985.5 18578.2   984.4
 18725.8   984.7 18824.1   985.3 18862.3   983.1 18888.3   980.6   18907   981.1
 18955.1     980 19045.1   979.6 19065.5   979.9 19074.1   976.8   19104     969
 19192.6   971.7   19200   971.7 19310.3   971.7 19331.3   970.9 19446.3   971.9
 19486.8   971.6 19501.3   966.1   19595     966 19644.2   966.2   19661   973.6
   19681   970.2 19769.8   971.6 19860.6   972.7 19968.4   974.8 20027.5   972.3
 20066.1   967.9 20074.7   967.9 20209.5     968 20337.2   968.2 20441.7   967.7
 20540.9   966.7 20554.5   966.5 20580.4   968.8 20679.7   967.8 20753.2   967.1
 20790.2   968.9 20795.8   969.9 20814.5   969.5 20911.6   969.2   20940   967.1
 20986.5   968.321033.38981.5872 21042.6   984.2 21131.4   985.3 21379.2   985.3
 22652.4   985.2 22684.9   986.3   22693   983.9 22700.1   985.5 22708.9   985.4
```

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
16507.2	.035	18824.1	.032	21131.4	.025	21379.2	.025

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
19200 21033.38 510 509 510 .1 .3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
16507.2	19200	986.6	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 204.05

INPUT
Description: 204.05

Left and Right Channel Bank Stations Interpolated
Station Elevation Data num= 73

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
18304.1	982.1	18322.9	981.3	18412.7	981.2	18490.1	981.1	18499.9	981.4
18523	980.8	18527.4	981.7	18530.5	980.8	18552.5	980.6	18585.3	987.2
18649.8	986.5	18710.4	987.1	18782.2	985.8	18858.9	986.9	18882.3	985.9
18903.8	986.2	18952	984.5	18962.59	980.697	18970.1	978	18992.5	968.5
19020.9	971.4	19097.5	973.6	19099.9	973.6	19168.9	971.6	19234.1	970.7
19315.1	973.1	19401.3	974.1	19432.4	974.2	19453	972.9	19510.9	971.5
19570.9	965.6	19644.7	967.7	19662	968.9	19741.3	971.7	19784.3	975.1
19860.9	975.2	19946.2	976.1	20026.3	975.5	20061.6	973.5	20142.4	974.9
20200.7	974.3	20222.7	972.5	20272.6	972.8	20286.9	973.4	20327.7	971.7
20354.5	969.2	20434.3	970.9	20491.6	971.4	20536	969.7	20605	969.1
20618.5	968.7	20679.5	965	20701.3	965.4	20715.6	967	20746.4	966
20828.1	965.9	20914.2	966.5	20930	968.1	20994	968.4	21024.5	966.7
21045.1	967	21067.8	975.8	21081.76	980.698	21090.6	983.8	21160.1	983.8
22668.7	984.2	22676.7	984.2	22773.1	984.3	22829	984.6	22836.3	985.6
22843	983.5	22852.2	986	22860.7	985.9				

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
18304.1	.05	18552.5	.035	18858.9	.032	21090.6	.025

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
18962.59 21081.76 510 505 520 .1 .3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
18304.1	18750	987.2	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 203.96

INPUT
Description: 203.96

Right Channel Bank Staion Interpolated
Station Elevation Data num= 91

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
16511.6	983.5	16713.4	983.8	16774.3	983.9	16908.7	984.4	16963.5	986.3
16968.1	982.5	16973.8	984.3	17039.3	980.6	17126.9	980	17138.9	980
17175.8	974.9	17222.8	980.2	17277.4	983.2	17284.8	982.3	17330	982.5
17366.5	984.4	17465.6	982.2	17576.8	981.2	17680.4	980.6	17774.7	979.6
17869.9	981.4	17958.4	981.2	18010.3	980.8	18015.8	982.2	18024.6	982.8
18047.1	980.2	18070.6	981.5	18128.1	982.9	18242.5	983.3	18284.4	984.3
18384	982.4	18469.6	983.6	18481.1	980.9	18496.2	979.1	18583.4	978
18607.3	975.5	18626.7	976.9	18657.9	976	18690	978.1	18723.2	976.2
18730.8	978.5	18760	974.5	18783.2	969.3	18801.2	968.9	18811.7	967.4
18891.8	971.9	18902.5	971.8	18997.2	971.4	19057.4	972	19069.5	973.6
19145.7	973.5	19201.5	971.8	19284.9	973.5	19375	977.1	19427.1	976
19471.7	976.7	19531.2	976.1	19556.4	976.8	19606.4	965.6	19696.9	968.3
19784.2	968.9	19847.3	971.5	19965.6	970.7	19998.5	972.3	20089.8	973.2
20179.8	972.3	20254.9	970.6	20367	970.8	20411.5	970.7	20421.4	969.4
20435.9	965.4	20451.7	964.7	20529.6	965	20554.9	967	20642.7	965.7
20735.2	964.2	20738.9	964.1	20767.7	971.2	20790.38	978.739	20803.5	983.1
20835.5	994.9	20850.3	995.2	20872.5	997.5	20910.1	984.2	20997.3	981.9
21108.2	981.9	21539.6	982	21552	986.1	21559.4	984.2	21657.7	986.4
21694	988.5								

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
16511.6	.025	17175.8	.043	18469.6	.043	18902.5	.032	20835.5	.037

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
18730.8	20790.38	495	502	505	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
16511.6	18730.8	997.5	F
20835.5	21694	997.5	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 203.86

INPUT
Description: 203.86

Right Channel Bank Staion Interpolated
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
17504.9	979.4	17555	980.7	17589.4	982.1	17613.5	980.8	17620.6	979.8
17657.6	978.3	17694.3	979.8	17718.4	978.9	17729	980.8	17762.1	977.4
17780.7	978.7	17821.9	984.3	17861.6	984.2	17888.2	982.4	17897.5	983.2
17930.6	983.2	17969.6	984.1	17989.1	983.6	18013.3	984	18044.9	981.7
18064.4	979.2	18096.7	981.5	18136.8	979.8	18171.7	980	18207.5	982
18243.1	982.7	18290.8	981.3	18353.7	982	18421.5	981.7	18458.6	982.1
18488.1	978.2	18540.3	978.5	18564	971	18599.5	968.8	18660.4	971
18700.2	971.8	18760.2	970	18806.7	971.3	18853.4	969.4	18891.2	969
18974.3	973.5	19064.8	976.5	19077.3	975.8	19161.8	973.4	19223.1	970.5
19246.5	967.4	19268.5	965.8	19288.8	962.4	19365.2	962.6	19365.7	962.6
19450.7	962.8	19451.6	962.8	19539.2	963.1	19611.5	963	19690.6	962.4
19743.6	962.3	19811.2	962.7	19858.2	963.1	19928.9	963.6	19992.8	963.8
20013.5	963.8	20076.4	964	20099.2	964	20196.1	964.2	20254.4	964.2
20298.4	964.5	20318.1	968.2	20429.2	967.6	20486.9	967.6	20543.1	968.6
20555	966.5	20576	964.2	20634.3	964.2	20650.7	964.2	20663.3	965.7
20676.9	965.8	20697.7	967.2	20730.9	976.1	20735.9	978.6	323 20761.9	991.8
20803.3	981	20878.5	982.5	20946.4	982.5	20965.7	981.1	21031.2	980.5
21099.9	980.6	21167.6	980.7	21198.2	981	21258.8	981.1	21324.9	981
21359.8	980.5	21368.4	981	21395.8	980.4	21405.9	982.4	21411.7	980.4
21482.6	980.2	21488.8	980.2						

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
17504.9	.043	18243.1	.043	18891.2	.032	20761.9	.037

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
18488.1	20735.9	505	498	480	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
17504.9	18243.1	991.8	F
20761.9	21488.8	991.8	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 203.77

INPUT
Description: 203.77

Left and Right Channel Bank Staions Interpolated
Station Elevation Data num= 98

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
15516.5	980.4	15611.3	979.8	15668.7	980.9	15700.1	979.6	15734.7	982.9
15797.9	987.2	15835	986	15865.2	981.2	15920	981.4	15937.6	976.9
15947.6	978.2	15969.6	982.9	15985.2	984.3	16056.9	984.3	16076.8	983.7
16103.9	981.6	16184.4	981.2	16265.9	982.1	16312.5	981.7	16348.3	982.1
16366.7	978.9	16400.4	980.3	16452.6	980.5	16569.1	980.4	16622.2	980.5
16857.6	980.3	17032.7	979.9	17052.5	979.9	17220.4	979.9	17326.1	979.2
17424.8	979	17450	979.3	17461.6	980.3	17495.9	980.1	17515.6	978.2
17558.9	979.2	17678.1	978.7	17709.3	979.1	17747.1	977.4	17826.8	982.9
17879.9	983.7	17902.1	982.1	17924.4	981.6	18003.9	982.8	18091.9	980.7
18117.2	979.8	18191	981.8	18222.6	1978.2	686 18227.7	977.7	18281.9	974.6
18343.8	974.4	18371.2	970.5	18451.7	968.1	18515.7	969.6	18591.7	968.7
18603.5	969.7	18721.8	967.3	18770.9	970.5	18803.6	971.5	18834.8	974.6

18888.2	976.1	18941.5	973.8	18956.3	972.3	18974.2	976.6	18983.5	976.3
19032.5	965.6	19113.9	965.1	19224	964.8	19282.2	964.6	19290.6	969.7
19307.6	974.2	19313.1	973.7	19322.8	969.5	19338.6	967.2	19345.7	964.7
19426.8	964.5	19492.9	964.4	19606.6	964.2	19685.9	964.3	19717.5	964.1
19865.4	964.1	19957	963.3	20019.3	964.3	20221.9	964.3	20253.9	964.3
20282.3	966.5	20325.8	965.1	20328.7	964.2	20338.6	965.4	20430	966.2
20524.9	966.2	20609.1	966.4	20684.8	966.7	20728.9	97120745.61978.2692		
20746.6	978.7	20820.8	981.2	20854	997.6				

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
15516.5	.025	17495.9	.043	18191	.043	18803.6	.032	20820.8	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
18222.6	20745.61	490	498	480	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
15516.5	18191	997.6	F
20820.8	20854	997.6	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 203.67

INPUT
Description: 203.67

Right Channel Bank Staion Interpolated
Station Elevation Data num= 74

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
15401.1	982.5	15424.7	984.1	15508.1	982.3	15591.4	979.1	15681.8	979.9
15787.8	979.3	15920	979.3	16055.7	978.9	16157.5	979.1	16260.6	979.3
16282.2	979.2	16477	979.1	16627.1	979.9	16750.8	980.1	16865.7	979.3
16957.3	981.3	16980.5	980.6	17002.4	977.7	17014.1	979.2	17103.7	973.3
17179.5	973.2	17215.7	975.7	17267.4	969.7	17366.5	975.6	17541.8	974.3
17694.8	973.7	17837.2	974.1	17962.6	973.8	17982.5	973.7	18104.5	972.8
18289.3	972.9	18348.9	975.3	18350.2	973.2	18394.8	968.7	18516.9	971.1
18627.3	969.9	18690.1	970.4	18740.2	966.8	18787.4	966.3	18802.9	968.2
18941.9	973.8	19049	974.1	19155.9	972.4	19180.7	975.8	19211.3	962.3
19411.4	963.8	19519	963.9	19654.3	964.2	19798.6	964.3	19832.9	964.3
20036.1	964.3	20137.2	965.3	20302.2	963	20432.8	965.2	20537.5	965.2
20656.2	965.3	20661.5	965.6	20693.5	975.1	20699.3977.8097		20708.7	982.2
20796	983.8	20827.7	980.1	20837	982.9	20858.2	981.6	21858.6	983.5
21904.3	982.5	23520.4	980	23527.3	982.8	23545.1	983.5	23556.1	980.2
23584.2	981.5	23593	977.2	23603.5	980.1	23621	979.7		

Manning's n Values num= 6

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
15401.1	.025	16957.3	.037	18348.9	.037	18941.9	.032	20708.7	.032
20796	.025								

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
18348.9	20699.3	470	490	505	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
15401.1	17837.2	984.1	F
20708.7	23621	984.1	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 203.58

INPUT
Description: 203.58

Right Channel Bank Staion Interpolated
Station Elevation Data num= 75

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
15526.8	983.1	15573.8	984.7	15577.9	981.7	15586.4	984.8	15648.9	982.8
15684.7	983.7	15735.5	978.7	15806.7	977.9	15925.6	978.3	15954.8	978.2
16031.7	974.4	16204.9	973.9	16321.4	974.3	16490.9	975.4	16570	975.3
16706.6	974.9	16819.9	975.7	16971.3	975.7	17120	975.1	17136.9	976.6
17168.4	976.1	17202.6	978.2	17251.4	973.9	17388.1	976	17458.2	974.6
17489	971.8	17596.3	976.7	17707.8	975.2	17790.7	972.4	17873.7	975.6
17978	974.3	18064.9	975.2	18204	975.9	18355.4	971.3	18433.8	971.3

18553.6	967.4	18636	970.5	18664.8	967.3	18681	970.8	18724	969.1
18765.5	971	18876.6	970.7	18988.9	970	19101.4	968.2	19228.7	965.4
19261.3	964.2	19337.3	967.8	19426.3	965.2	19456.9	967.4	19474	963.9
19482.9	963.9	19725.9	963.6	19842.5	963.6	19929.1	963.8	20222.2	963.5
20355.7	963.9	20380	963.9	20543.8	963.6	20636	963.9	20645.5	962.1
20704.98	977.3868	20706.2	977.7	20767.4	979.5	20782.3	981.3	20788.1	979.3
20818.3	979.5	20825.7	982.3	20859.8	981.5	22062.2	983.3	22098	982.2
23711.2	980	23724.5	982.4	23738.8	982.8	23750.9	979.2	23783	979.2

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
15526.8	.025	17202.6	.037	18204	.037	18681	.032	20782.3	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
18204	20704.98	560	513	495	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
15526.8	17707.8	984.8	F
20782.3	23783	984.8	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 203.48

INPUT
Description: 203.48

Right Channel Bank Staion Interpolated
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
15578.8	977.1	15693.5	976.9	15717.9	977	15814.4	976.9	15880.9	978.5
15900.7	978.2	15967.5	973.1	16013.9	973.9	16068.7	973.5	16168.1	973.8
16324.7	974	16419.6	974.1	16584.4	974.1	16657.7	974.3	16810.8	974.5
16932.4	974.5	17066.5	974.6	17177.1	974.2	17201.7	974.2	17312.2	975.1
17331.6	976	17341.7	975.7	17369.6	978.2	17434.9	970.7	17473.9	969.3
17535.6	971.3	17609.4	970.9	17714.8	972.8	17721.6	972.8	17841.5	973.7
17932.6	974	18016.7	972.4	18039.3	972.1	18120.3	973.5	18171.8	968
18184	969.1	18267.5	973.4	18353.5	970.9	18380.1	969.8	18439	969.7
18521.1	965.52	18538.6	965.3	18561.3	969.6	18571.7	970	18619.2	968.6
18635.6	969.2	18675.5	973.1	18730.7	972.2	18817.1	970.9	18956	969.1
18991.1	970.6	19035.5	973.7	19082.7	974.1	19116.8	968.9	19177.6	972.2
19217.3	970.5	19332.9	970.5	19399.6	962.9	19491.7	962.7	19584.5	965.1
19624.3	962.2	19645.8	962.3	19669.3	965	19679.4	965.3	19794.5	963.4
19884.7	963.3	19987.2	964.5	20013.9	964.4	20199.2	964	20220.6	964.7
20227.4	967.6	20231.3	963.9	20325.6	963.9	20342.5	963.9	20345.7	965.5
20353.5	967.3	20358.6	964.3	20404	963.2	20433.1	965.2	20458.7	965
20480	963.1	20588.9	964.7	20638.4	966.8	20725.1	968.7	20785.1	971.2
20856.76	976.9083	20866.7	977.7	20886.7	979.4	20901.8	978.6	20909.2	979.5
20915.7	978.5	20925.9	979.4	20953.9	979.4	20960.7	978.7	20985.4	978.7
20989.2	980.3	20999	981.2						

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
15578.8	.025	17369.6	.037	17932.6	.037	18619.2	.032	20886.7	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
17932.62	20856.76	500	505.82	515	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
15578.8	17369.6	981.2	F
20999	20999	981.2	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 203.39

INPUT
Description: 203.39
Station Elevation Data num= 96

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
15500	974.4	15548.5	978.1	15604.9	974.8	15609.8	975.3	15717.3	976.3
15722.2	976.3	15836.5	975.1	15864.7	976.6	15875.6	973	15888.1	975.4
15914.3	976.1	16076.8	976.1	16271.9	976.2	16290.8	976.1	16376.9	976.2
16390.2	976.2	16520.6	976	16549.4	977.1	16694.9	973.2	16751.5	970.2
16832.2	968.6	16901	973.2	17053.7	971.4	17105.6	971.5	17120	974.9

17136.1	970.9	17147.5	974.3	17212	975.5	17260.9	972.8	17296.2	974.2
17353	971.2	17382.3	974.9	17417.1	974.8	17453.9	976.4	17519.2	968.1
17602.4	973.1	17694.4	971.8	17733.8	970.7	17815.5	973	17901.2	972.3
17947.7	972.1	17970.8	973	18042	972.8	18114	969.5	18199.7	969.1
18207.5	968.6	18224.3	964.4	18259.9	963.8	18330.5	967.6	18418.7	967.4
18507.8	969.8	18601.7	972.8	18629.1	974.7	18686.7	980.9	18738	974.3
18773.9	975.9	18902.4	975	19023.2	970.3	19056.6	971.7	19105.2	965.4
19218.1	968.3	19268.2	972	19346.8	971.4	19370.8	969.4	19397.9	965.7
19418.4	960.4	19479.4	959.9	19491.4	962	19633	960.6	19736.1	965
19770.9	965.7	19800.9	963.8	19816.1	965.5	19916.4	965	20010.4	963.8
20159.5	964.6	20260.9	963.8	20303.7	964.2	20330.3	963.1	20346	964.4
20389.8	962.9	20483.7	964.2	20485.1	964.9	20576.8	964.7	20682.1	965.3
20789.2	969.4	20834.2	971.9	20922.2	969.5	20993.5	968.3	21038.8	975.6
21082.9	975.6	21098.5	976.5	21138.2	977.4	21143.6	978.2	21153.1	976.5
21223	978.3								

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
15500	.025	16832.2	.037	17970.8	.037	18601.7	.032	21038.8	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
17970.8	21038.8	500	505	500	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
15500	17519.2	980.9	F
21223.3	21223	980.9	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 203.29

INPUT
Description: 203.29

Right Channel Bank Staion Interpolated
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
14306.7	975.2	14398.4	975.7	14462.6	975.2	14487	977.9	14491.6	976.6
14498.9	977.7	14515.3	976.7	14528	974	14553.9	972.7	14670.7	972.7
14687.5	972.7	14856.4	972.7	14867.5	972.7	15002.5	972.7	15006.1	972.7
15100.1	972.9	15122.5	975.2	15172.8	972.4	15364.8	972.7	15484.5	974
15649.2	973.6	15701.1	973.4	15710	975.9	15724.5	974.3	15776.8	976.4
15815.8	974	15918.9	974.9	15999.4	974.9	16112.9	975.4	16114.8	975.5
16293.6	975.5	16301	975.5	16411.1	976	16465.5	976	16664.1	976
16733.3	975.8	16808.3	976.1	16968.8	976.1	17062.2	976.1	17153	976.2
17251.7	975.1	17286.9	974.6	17327.4	969.3	17410.1	970.5	17467.7	974.5
17469.8	973.6	17539	974.4	17590	968.4	17649.5	971.4	17775.2	971.1
17888.5	970.4	17987.9	968.4	18065.6	972.5	18117.7	969.6	18146.3	971.6
18204.1	968.8	18247.3	971.6	18266.5	967.8	18378.2	963.9	18464	968.2
18535.2	966.5	18593.9	967.2	18627.7	974.8	18719.2	971.5	18838.7	974.7
18920	973.9	18947.9	969.3	19046.6	972.7	19166.7	971.8	19269	971.6
19295.1	965.4	19325.9	960.7	19447.7	960.9	19552.4	961.6	19655.6	961.1
19756.7	962.1	19849.6	963.4	19945.3	963	20028	965.9	20124.9	965.7
20226	965.2	20297.8	963.6	20378.8	964.4	20396.1	961.9	20494.8	962.8
20586	966.7	20676.2	969.1	20796.8	969	20894.8	969.2	20935.1	968.4
20981.6	969.2	21027.6	966.62	1082.58	975.7	482	21088.3	976.7	21155	977.1
21257.1	975.6	21295	976.3						

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
14306.7	.025	16968.8	.037	18065.6	.037	18535.2	.032	21088.3	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
18065.62	1082.58	620	535	420	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
14306.7	17590	977.9	F
21088.3	21295	977.9	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 203.19

INPUT
Description: 203.19

```
Right Channel Bank Staion Interpolated
Station Elevation Data    num=      97
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 16639.2   974.6 16696.5   974.6 16879.5   976.3 16960.6   976.7 16982.2   976.1
 16987.1   975.2 16999.5   976.6 17045.2   975.2 17145.4     975 17180.8   974.8
 17306.9     974 17389.7   974.5 17513.2   972.9   17539   972.7 17596.6   969.7
 17650.2     971 17690.3   968.3 17762.5   967.5 17781.9   968.4 17812.7   966.2
 17893.5   967.8 17945.6   971.7 18023.5   971.3 18058.7   964.6 18099.2   971.6
 18139.8   972.1 18185.8   967.2 18251.5   970.8 18282.1   971.9 18338.2   971.3
 18384.4     969 18406.2   969.7 18445.9   965.2 18495.1   966.4   18521     969
 18558.4   964.7 18605.8   963.2 18623.9   961.2   18659   961.4 18701.5   965.4
 18712.2   964.5 18734.5   964.5 18797.4     970 18848.7   968.9 18911.7   969.9
 18983.1   969.7 19009.9   968.7   19025   967.1   19031   968.2 19080.8   968.8
 19095.4   970.3   19159   970.9 19191.3   967.9   19256   967.2 19294.3   960.1
 19346.5     959 19442.2   956.7 19471.8   962.7 19542.3     963 19643.7   963.4
 19644.6   963.4 19721.9   962.3 19788.7   962.7   19870   964.6 19925.6   962.6
 19971.9   966.8 20041.3     966 20111.2   965.3 20142.5   963.8 20233.9   963.3
 20336.2   963.2 20384.6   963.4 20398.2   962.6 20462.1   962.2 20541.1   965.2
 20570.6   966.9 20635.2   967.1 20669.2   965.5 20696.2   966.5 20752.9   964.7
 20795.4   967.4 20825.2   966.9 20848.9   967.5 20865.3   966.7 20898.7   966.8
 20928.5   970.1 20952.6   973.820965.39974.9827 20981.8   976.5   20999   975.6
   21013   977.9 21075.8   975.9 21096.9   975.8 21174.9   976.1 21273.9   975.8
 21344.5   975.8   21380   975.6

Manning's n Values        num=       6
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
 16639.2    .025 17762.5    .043 18282.1    .043 18734.5    .037 20981.8    .025
   21013    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       18282.120965.39             535     520     485             .1       .3
Ineffective Flow     num=       1
   Sta L   Sta R    Elev  Permanent
 16639.2   17587     978       F

CROSS SECTION


RIVER: 1
REACH: 1                  RS: 203.09

INPUT
Description: 203.09

Right Channel Bank Staion Interpolated
Station Elevation Data    num=      97
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 16077.3   972.6 16108.8   973.2 16114.5   973.9 16141.2   974.9   16147   976.1
 16177.1   975.5 16186.3   974.5 16217.9   974.3 16296.3   973.5 16396.3   973.6
 16495.1   973.6 16619.4   973.4 16649.6   973.4 16802.2   973.6 16847.8   974.3
 16927.3   974.4 16967.8   974.4 17063.1   975.3 17138.5   975.2 17150.2   974.9
 17158.9   972.7 17171.5     974 17175.5   975.3 17183.4   974.2   17268   973.7
   17382   973.8 17583.9   974.5 17588.1   974.4 17656.3     973 17724.5   971.9
 17787.2     966   17835   968.2 17878.2   968.6 17889.9   967.6 17960.8     969
 18034.5   970.7 18151.5   966.1 18178.5   966.8 18202.2   966.1 18277.6     970
 18313.5   969.4 18321.1   969.7 18364.1   965.2   18437   969.5   18507   971.4
 18541.2   970.5 18605.3   962.2 18681.6     963 18770.4   960.8 18814.5     971
 18875.7     969 18992.4   969.2 19035.2   968.4 19104.8   968.6 19136.4     968
 19190.2   961.9 19211.5   961.8 19247.1     964 19266.9   960.3 19282.4   958.7
 19461.8   959.9 19573.5   959.6 19585.9   960.2 19653.1   960.1 19682.3   962.4
 19752.6   963.1   19757   963.1 19865.5   961.3 19934.1   962.2 20005.1   964.6
 20113.7   965.7 20184.3   965.7 20264.8     966 20287.7   966.2 20364.7   966.6
 20397.2   966.4 20469.2   966.1 20498.9   964.4 20517.6   961.6 20546.5   960.5
 20610.5   960.6 20636.9   964.4 20681.6   965.4 20709.6   964.4 20742.1   962.1
 20765.3   962.2   20780   963.2 20812.8   959.6 20837.9   961.320914.82973.8939
 20917.3   974.3 20926.9   975.4 20942.8   974.2 20972.4   973.4 21023.3   975.3
 21111.6   973.6   21171   974.1

Manning's n Values        num=       5
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
 16077.3    .025 17588.1    .043   18507    .043 18814.5    .037 20917.3    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        1850720914.82              520     518     500             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 16077.3 17583.9   976.1       F
 20917.3   21171   976.1       F
```

CROSS SECTION

RIVER: 1
REACH: 1 RS: 202.99

INPUT
Description: 202.99
Station Elevation Data num= 96

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
17058.5	973.2	17114.3	973.5	17267.7	973.8	17289	973.9	17305.6	974.4
17316.7	973.3	17329.5	974.7	17397.2	973.4	17508.3	973.5	17530.6	972.5
17571.7	973.2	17646.3	973.1	17659.9	972.5	17696.1	969.8	17713.5	970
17723.9	969.1	17781.1	967.5	17850.9	965.7	17864.6	967.2	17879.9	968
17893	968.2	17922	965.3	17941	964	17984.7	968.4	18035.6	970
18091.7	969.9	18126.6	969.7	18186.5	969.9	18238.3	970	18288.7	964.3
18293.1	963.9	18346.5	968.2	18360.3	967.9	18420.8	969.3	18469.4	969.3
18497.6	968.2	18580.4	968.7	18586.2	968.9	18608.3	967.1	18619.4	964.4
18650.8	965	18666.5	962.2	18686.7	961.6	18748.1	962.5	18789.2	962.8
18875	962.8	18906.3	963.4	18945.7	961.5	18988.8	963.5	19005.4	963.6
19058	964.4	19119.4	964.2	19128.8	964.3	19182	965.3	19208.5	964.3
19269.4	961.7	19318.8	960.3	19334.7	959.8	19391.3	959.8	19415.3	959.6
19435.9	960	19527.6	959.5	19609.2	959.5	19725.7	959.2	19759.9	960.9
19828.4	961.4	19945.2	960.7	19948	960.7	20028.5	959.3	20090	960.7
20131.7	963.1	20172.8	964.1	20227.9	965.4	20241.1	965.3	20304	965
20364.7	965.9	20422.1	964.9	20460.6	964.9	20528.6	963.3	20552.5	959.7
20558.2	959.8	20619.9	962.6	20665.6	962	20682.4	960.6	20692.5	959.3
20713.5	960.1	20748.9	960	20773.8	959.3	20789	960.3	20808	960.6
20818.5	963.8	20841.7	963.9	20894.5	963.1	20926.9	970.2	20960.7	976.4
20976	975.9								

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
17058.5	.025	17646.3	.043	18469.4	.043	19058	.037	20926.9	.043

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
18469.4	20926.9	480	456	424	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
17058.5	17646.3	976	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 202.9

INPUT
Description: 202.9

Right Channel Bank Staion Interpolated
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
16149.3	972.1	16219	972.6	16381.4	973.3	16446.1	973.3	16495.7	974.5
16526.4	971.9	16579.2	972.6	16597.9	974.5	16618	973.6	16631.4	972.3
16699.5	972.9	16755	974.1	16804	971.3	16823.8	973.1	16887.1	972.5
16957.5	972.2	16968.8	972.6	17046.9	971.4	17089.7	971.9	17151.8	972
17172.3	972.1	17235.7	971.8	17304.6	971.3	17369.1	970.9	17440.5	971.3
17504.7	971	17572.9	970.6	17644	970	17676.2	972.2	17699.3	970.6
17772.5	968.5	17815	965.7	17875.4	965.2	17896.7	963.8	17966.8	965.8
18000.2	967.5	18046.2	967	18087.7	964.4	18148.3	968.4	18203.5	967.3
18258.7	965	18308.6	967.1	18383	966.5	18433.6	966.6	18455.6	968.2
18517.5	967.7	18563	962.4	18611.6	961.8	18646	958.2	18714	961.6
18808.1	961.6	18872.7	961.1	18917	963.4	18971.7	963.8	19054.2	965.2
19121.2	965.8	19211.2	964.4	19215.4	966	19303.3	961.5	19368.9	960.3
19378.2	959.7	19431.8	961.6	19460.5	960.1	19592.2	957.9	19666.6	958.3
19722.9	960.9	19833.6	959	19903.1	959.5	19944.9	961	20063.7	959.6
20145.5	959.8	20206.7	960.4	20250.7	959.4	20318.7	958.5	20412.7	962.7
20460.7	961.4	20488.5	963.8	20502.9	964	20545	960.1	20596	959.7
20624.3	960.6	20694.4	959	20754.9	958.5	20806.5	956.5	20831.6	957.9
20858.2	961.1	20861.7	962.3	20936.5	969.5	20988.5	971.9	20993.5	972.3
21011	973.7	21025.1	975.7	21027.9	980.1	21042.4	977	21052.5	978.4
21066.1	978.5	21080	974.2						

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
16149.3	.025	17815	.043	18455.6	.043	18872.7	.037	21011	.043

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
18455.6 20993.5 575 538 460 .1 .3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
16149.3	17500	980.1	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 202.8

INPUT
Description: 202.8

Right Channel Bank Staion Interpolated
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
16524.8	970.3	16556.4	971.5	16586.6	971.3	16591.4	972.2	16622.9	972.3
16660.4	974.1	16671.5	973.8	16699.8	970.7	16750	971.8	16768.2	970.7
16810	971.7	16908.3	970.6	16968.5	970.2	16997.3	973.4	17058.9	971.8
17081	970.9	17148.9	971	17188.6	970.2	17279.5	971.1	17348.6	971
17423	970.4	17488.6	969.6	17496.3	969.7	17556.3	970.2	17607.5	969.3
17662.7	971.7	17678.2	969.4	17755.1	968.2	17771.4	968.3	17836.1	965.5
17897.9	964.9	17974.2	962.8	18017.4	962.7	18037.3	963.4	18039.7	964
18135.1	964.3	18137.8	964.2	18205	963.3	18273.4	965.1	18313.6	965.5
18348.1	967.5	18390.8	968.8	18406.9	966.2	18434.5	959.9	18478	958.9
18492.5	956.4	18526.7	958.4	18618	960.3	18696.7	962.9	18716.3	963.1
18761.6	962.1	18858.8	963.6	18897.8	963.7	18966.5	960.9	18996.3	959.9
19072.2	959.5	19083	959.6	19151.4	960.5	19243.7	960.1	19333.5	960.5
19396.1	960.6	19435.5	960.4	19525.6	959.5	19621.8	960.4	19685.6	961.9
19750.9	962.5	19813.5	963.5	19828.2	963.6	19893.3	963.5	19985.3	961.5
20027.7	961	20127.3	961.5	20220.9	962	20261.5	962.8	20325.2	962.5
20339.8	963.1	20397.5	960.8	20461	959.3	20525.1	958.4	20576.6	957.1
20634.6	957.7	20682.6	958.4	20759.8	957.1	20823.5	956.8	20855.2	957.6
20859.5	958.4	20873	957.9	20906.1	958.3	20955.4	956.8	20983.8	959.2
20987.6	962.6	21013.7	97	121014.9	6971.6	307 21019.3	973.8	21057.4	987.6
21082.8	986	21093	986.3						

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
16524.8	.025	17771.4	.043	18390.8	.043	19243.7	.037	21019.3	.043

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
18390.8 21014.96 600 555.5 450 .1 .3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
16524.8	17279.5	987.6	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 202.69

INPUT
Description: 202.69

Right Channel Bank Staion Interpolated
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
17011.6	967.7	17023.5	967.7	17027.5	969.7	17103.8	970.9	17146.9	971.1
17176.2	972.4	17191.8	969.4	17194.6	968.5	17229	967.1	17294.2	968.5
17355.9	968.4	17445.9	967	17473.9	966.6	17539	968.1	17612.5	967.1
17670.9	967.5	17744.3	967.8	17814.2	967.3	17864	971	17864.9	969.3
17868	967.6	17892.1	965.9	17941.9	963.7	18000.1	961.6	18034.8	963.6
18086.5	962.2	18149.2	965.2	18155.1	964.6	18181.7	966.5	18238.5	967.5
18278.8	966.4	18296.3	967	18357.8	968.5	18371.8	972.9	18377.8	973.6
18394.4	971.5	18484.4	971	18522.7	971.5	18539.1	964.7	18552.9	960.1
18644.5	957.3	18707	953.7	18734.1	956.4	18813.8	956	18848.2	955.5
18893.1	956.3	18953	954.8	19004.8	957.3	19084.1	957.6	19157.7	958.3
19178.7	958.5	19240.7	959.5	19322.9	960.8	19365.9	962.7	19411.4	962.6
19474.6	962.5	19548.6	961.5	19628.5	961.4	19720.2	962.7	19779.3	961
19788.6	961.1	19848.4	962	19949.8	964.6	20005.6	961.1	20016.8	961.1
20083.2	961	20101.5	960.8	20164.7	959.6	20249.5	962.2	20340.4	963
20436.6	963.5	20463.4	963.4	20522.8	963.7	20592.1	963.4	20658.5	962.2
20698.9	961.2	20768.7	958.6	20856.6	958.8	20890.1	958.6	21023.8	956.8
21070.8	960.8	21077.4	967.1	21081.8	970.8	403 21085.4	973.9	21098	980.8
21103.6	981.6	21111.1	978.1	21139.5	981.1	21166.7	979.8	21198.8	976.9

21211.8	978.5	21216.7	978.5	21220.2	977.8	21223.7	977.9	21225.4	978.5
21238.2	975.1	21274	973.3						

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
17011.6	.025	17868	.043	18377.8	.043	19084.1	.037	21103.6	.043

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
18377.8	21081.8	585	566.1	510	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
17011.6	17176.2	981.6	F
21274.4	21274	981.6	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 202.59

INPUT
Description: 202.59

Right Channel Bank Staion Interpolated
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
17002.6	972.3	17024.4	972.3	17044.5	970.3	17059.2	968	17094.8	969.6
17174.4	971.6	17206.5	971.5	17240	970.3	17269.6	966.5	17294.8	968.3
17332.9	969.6	17346.3	969	17365.3	965.5	17382.1	965.5	17399.6	966.6
17456.2	967.4	17523.1	966.7	17531.4	966.1	17557.2	966	17651.6	966.7
17719.5	967.2	17792.8	966.6	17824.5	966	17874.3	968.6	17886.2	967.6
17905.4	963.2	17965.1	963.4	18022.2	961.6	18100.5	965.1	18174.1	965.7
18210.5	964.5	18233.1	965.7	18298.3	968.6	18346.1	966.9	18416.7	969.6
18505.8	969.5	18556.9	967.5	18622.3	970	18641.7	970	18695.8	961.6
18704.2	959.5	18757.3	962	18789.4	959.6	18857.2	957.4	18891.5	955.7
18960	953.7	18984.2	957.3	19041.9	957.5	19094.7	960.1	19217.7	959.4
19264.1	960.3	19322.3	963.2	19396.6	964.3	19407.1	961.9	19425.6	960
19426	960.9	19488.2	960.7	19564.4	961.7	19640.1	961.8	19698.4	962.2
19757.8	961.8	19850.5	959.2	19935.3	960.1	19956.2	961	19994.3	961.1
20000.8	960.6	20005.1	959.6	20026.1	957.7	20112.1	958.6	20156.3	960.2
20218.5	960.8	20291.8	962.8	20371.5	961.1	20441.9	962	20501.9	959.5
20592.8	959.1	20699	957.2	20711	957	20803.1	957	20825.8	957.1
20901.9	957.5	20941	958.6	20978.1	956.7	21025	956.8	21152.1	957.5
21195.09	969.8993	21199.6	971.2	21234.1	969.1	21236.8	970.4	21264.7	967.7
21299.7	971.3	21305.5	967.6	21325.7	957.4	21362.7	958.8	21403.9	974
21429.1	977	21478	977.8						

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
17002.6	.025	18022.2	.043	18416.7	.043	19217.7	.037	21403.9	.043

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
18416.72	21195.09	400	561.2	640	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
17002.6	17332.9	977.8	F
21200	21478	977.8	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 202.48

INPUT
Description: 202.48

Right Channel Bank Staion Interpolated
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
17009.6	967.6	17022.6	967.5	17087.4	968.9	17103.6	970.4	17112.7	969.9
17147.3	972	17156.9	971.8	17158.2	972.3	17178.9	971	17194.4	968
17247.5	968.9	17346.9	969.1	17398.9	969.9	17439.3	968.6	17487.9	968.6
17510.1	966.5	17588.4	966.2	17656.6	965	17699.5	965.1	17766.7	963.2
17818.3	961.3	17890	963.8	17903.9	964.7	17928.8	961.3	17945.4	959.8
17990.2	960.1	18038.4	959.4	18049.4	960.1	18123	963.9	18190.8	965.8
18202.9	966.1	18268.8	964.1	18281.9	963.4	18373.9	966.8	18446.2	967.8
18518.9	965.4	18575.8	971.2	18611.2	970.9	18639.1	969.5	18713	961.6
18741.6	959.3	18784.7	961.7	18862.1	959	18930.8	954.4	19044.5	952.5

19074.6	956.5	19142.6	957.5	19190.4	959.1	19212.4	958.4	19300.6	961.8
19319.9	962.4	19391.1	961.2	19413.8	960.8	19449.5	958.2	19532.2	958.9
19643.4	959	19750	959.8	19755	959.8	19836.5	958.7	19940.1	961.4
20015	957.1	20042.9	956.5	20093.3	957.6	20148	959.8	20169.8	958.7
20238.1	957.7	20350.9	956.9	20382.1	955.8	20443.3	956.5	20518.7	957.1
20582.5	957.3	20605	956.3	20635.4	956.3	20720.3	959.3	20738.9	959.4
20761.4	962.7	20791.3	965.4	20855.9	962.6	20874.6	962	20962.4	963.2
21037.1	963.2	21067	962.7	21100.7	957.5	21141.9	956.9	21226.2	955.6
21274.2	959.7	21307.36	968.958	21309.3	969.5	21365.5	967.8	21385.7	965.3
21411.6	965.6	21424.5	960.8	21433.2	956.4	21477.4	957.2	21505.2	969
21532	978.5	21590.9	977.9						

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
17009.6	.043	18575.8	.043	19074.6	.037	21532	.043

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
18575.8	21307.36	700	576.2	385	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
17009.6	17398.9	978.5	F
21309.3	21590.9	978.5	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 202.37

INPUT
Description: 202.37

Right Channel Bank Staion Interpolated
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
17046.5	966	17144.2	966.4	17159.7	966.4	17174.6	968.6	17199.8	968.8
17234.1	972.8	17240.1	970.8	17243.5	970.9	17244.9	973.1	17262.2	972
17288.2	966.3	17339.4	966.6	17390.7	968.1	17480.2	967.1	17572.6	967.5
17609.6	965.2	17687.4	964.4	17729	964.2	17762.4	962.8	17818.6	964.2
17908.4	962.3	17967.5	961.6	18000.2	964	18038.7	964.1	18072.2	959.7
18099.8	957.9	18104.7	958.4	18151.6	958.4	18194.7	959.1	18243.6	962.8
18315.7	961.8	18394.4	965.8	18412.7	966.2	18470.8	964.2	18481.7	964.7
18501.3	969.1	18508.1	970	18598.8	969.5	18602.7	969.6	18648.3	963.8
18679.8	963.2	18704	957.9	18743.6	960.5	18769.5	961.1	18842.5	955.2
18917.4	955.9	18993.6	955.2	19026.1	956.5	19078.6	954.6	19116.4	956.7
19134.5	956.6	19275.2	955.9	19317.5	959.5	19392.9	961.2	19411.7	961.2
19457.9	957.5	19505.5	956.4	19577.4	956.1	19580.5	956.2	19670.2	956.8
19746.9	961.5	19839.2	958.9	19936.5	957.1	20045	956.9	20086.7	957.3
20169.3	956.2	20237.2	955.3	20328.5	958	20334.1	957.4	20399.8	957
20463.4	959.2	20513.6	962	20602.6	959.9	20704.3	960.7	20742.9	961
20844.4	960.5	20908.1	960.2	20950.1	961.7	21049.7	960.9	21054.1	960.9
21135.1	960.3	21179.1	960.2	21212.7	956.8	21338.5	957.1	21366.3	957.1
21382.6	961.2	21402.5	967.3	21411.9	966.7	21431.9	963.9	21452.4	962.7
21480	964.4	21496.8	956	21544.1	956.62	1581.78	968.008	1601.9	974.1
21642.4	975	21693	974.4						

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
17046.5	.025	17390.7	.043	18508.1	.043	18743.6	.037	21601.9	.043

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
18508.1	21581.78	430	400.7	360	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
17046.5	17390.7	975	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 202.29

INPUT
Description: 202.29
Station Elevation Data num= 96

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
17300	969.4	17300.2	969.4	17310.5	971.8	17342.5	971.5	17346.7	971.3
17352.1	970.9	17359.3	970.4	17377.2	970.2	17388.5	970.1	17410.3	969.8
17443.6	969.4	17469.5	969.2	17494.3	969	17512.1	968.3	17537.2	968.2

17551.3	968.6	17580.1	968.2	17588.6	968.1	17610.9	968	17662.1	967.6
17695.1	967.2	17731.2	966.7	17756	966.3	17772.6	965.6	17783.7	965.5
17806	965.9	17845.1	965.4	17859.1	965.2	17870.8	965.1	17909	964.8
17939.7	964.2	17948.3	964	17978	963.3	17983.9	963.1	18035.9	962.8
18043.8	962.7	18050.9	962.7	18093.6	962.3	18093.8	962.8	18107.2	962.7
18151	961.8	18180	961.8	18197.4	961.8	18203.9	961.7	18212.7	961.5
18297.3	960.6	18444	959	18520.4	958	18577.3	957.8	18667.8	958.1
18744.1	957.7	18943.8	956.4	18989.6	956.6	19224.4	957.4	19228.7	957.4
19485.5	956.7	19523.1	956.9	19553.4	956.9	19827.7	956.8	19864.8	956.1
19898	956.1	20171.5	956.3	20383.2	955.7	20442.4	955.9	20499.8	957.2
20499.9	957.2	20696.8	957.3	20777.7	957.4	20879.1	956.5	20964	956.5
21129.5	956.9	21176.5	956.6	21222.8	956.1	21262.9	955.8	21273.6	955.5
21305.8	956.3	21343.7	957	21400.4	957.2	21410.8	957.3	21495.3	956.7
21550.9	957.9	21563.4	959.3	21703.1	961	21803	962.3	21973.7	964.9
22093.3	966.9	22138.1	968.1	22178	968.7	22302.7	970.7	22344.1	970.7
22388.8	970.9	22553.3	971.9	22676.5	971.2	22717.7	971.3	22766.5	972.1
22785.4	971.9								

Manning's n Values num= 6

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
17300	.025	17469.5	.043	18197.4	.043	18989.6	.037	21563.4	.043
21803	.043								

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
18197.4	21803	590	583.1	600	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
21803	22785.4	972.1	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 202.18

INPUT
Description: 202.18

Right Channel Bank Staion Interpolated
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
17052.9	966.6	17168.5	966	17288.7	965.2	17328.5	965.5	17342.3	968
17346	967	17354.3	968	17364.1	966.7	17396.2	967.4	17415.4	969
17507.1	967.7	17613.8	965.1	17631.5	964.7	17747.4	962.9	17748.5	962.9
17865.9	962.4	17961.7	963.1	18017.5	963.4	18100.5	963.8	18139.7	964.7
18194.4	960.2	18256	959.9	18292.6	958.2	18331.5	958.9	18344.2	960.8
18389	961.7	18415.9	960.6	18473.5	964.7	18525.3	966.1	18612.9	966.4
18643.2	962.4	18672.1	961.3	18707.1	957.3	18769	952.6	18804.3	955.4
18910.2	957.1	18976	956.3	19019.3	958.4	19048.9	958.7	19085.4	956.1
19142.3	957	19169.3	958.6	19183.3	960.5	19235.6	960.8	19285.1	963
19369.7	960.1	19472.8	957.3	19559.8	955.6	19630.4	954.7	19686.5	951.8
19727.7	955.4	19747.8	950.7	19844.5	951.9	19893.9	954	19954	950
20009	954	20067.8	952	20110.4	954.4	20177.3	963.5	20231.5	963.4
20240.9	962.3	20277.5	960.8	20351.6	962	20380	959.9	20405.9	959.3
20492.4	961.5	20578.7	962.9	20684.9	962.3	20769.5	960.5	20826.3	963.1
20876.8	962.2	20900.3	963.5	20997.2	958.5	21014.5	957.4	21075.2	957.9
21127.2	959.8	21207.6	957.2	21255	956.2	21287.8	957.6	21353.8	957.8
21374.8	961.6	21414.6	960.9	21415.3	960.1	21444.1	956.6	21527.2	959.6
21591.2	960.1	21643.6	958.8	21685.6	954	21737.8	955.1	21787.2	954.7
21808.8	955.3	21829.3	951.8	21869.4	951.7	21919.3	955.9	21938.4	1966.7695
21957.1	977.4	21992	978.3						

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
17052.9	.025	17415.4	.043	18139.7	.043	18976	.037	21957.1	.043

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
18139.721938.41		525	511.84	500	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
17052.9	17415.4	978.3	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 202.09

INPUT

Description: 202.09

Right Channel Bank Staion Interpolated
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
12423.7	965.6	17099.8	965.6	17186	965.4	17264.6	965.3	17349.3	965
17358.9	964.8	17418	967.1	17422.9	965.6	17428.2	966.9	17452	965.9
17476.4	966.1	17491.8	967.5	17574.4	967	17614.9	967.2	17693.5	967.2
17814.7	961.1	17920.2	960.8	17951.8	961.2	18050.9	963.8	18132.1	964.1
18212.9	964.4	18247.5	964.7	18306	959.3	18322.2	960.3	18340.5	958.1
18363.8	957.3	18389.5	962.4	18475.1	961.1	18485.9	960.9	18523.3	964.1
18558.3	962.3	18573.3	963.2	18621.2	963.3	18652.7	957.8	18708.8	958.1
18748.7	952.2	18769.9	955.2	18859.3	957.7	18962.1	957.3	18975.3	957.3
19086	957.5	19165.3	959.6	19217.9	961	19287.9	955.2	19344.8	963
19434.4	961.7	19513.8	958.9	19564.6	953.8	19623.2	957.6	19686.2	956.9
19738.7	957.5	19783.4	954.5	19908.5	952.6	19947.2	952	20093.1	950
20106.3	950	20143.3	952.6	20167.6	955.5	20187.3	956.2	20207.9	958
20254	956.6	20271.4	957.6	20297.7	960.4	20396.6	960.4	20472.8	959.6
20529.3	963.3	20613.6	962.6	20698	962.2	20720.5	961.5	20787.7	964.2
20816.2	959.4	20866.2	961.1	20916.3	960.7	20996.8	963.3	21047.5	963.6
21101.6	961.6	21155	960.7	21221.6	961.5	21280.8	956.9	21370.9	957.5
21444.4	956.7	21456.1	957.6	21466.3	959.4	21503.9	959	21516.7	956.6
21530.5	955.5	21561.3	958	21627.9	959.2	21709	959.7	21751.4	954.3
21825.3	953.8	21856.2	951.2	21912.9	951.7	21928.2	955.7	21938.26	965.332
21947	973.7	21985	973.7						

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
12423.7	.025	17491.8	.043	18212.9	.043	19086	.037	21947	.043

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
18212.9	21938.26	510	509.32	500	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
12423.7	17491.8	973.7	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 201.99

INPUT
Description: 201.99

Right Channel Bank Staion Interpolated
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
12423.7	962.9	12792.3	963.8	13061.9	964.2	13286.8	963.1	13510.3	962
13746.9	961.3	13984	962.2	14217.9	962.9	14443.4	963.1	14690.7	964.7
14908.9	964.6	14956.9	968.1	14966.2	964.3	15216	964.5	15450.3	964.3
15717.5	963.6	15947.7	963	16170.3	962.3	16226.7	962.5	16243.5	964.4
16481.8	963.7	16706	964.8	16931.9	964.5	17163.9	965	17409.1	965.4
17507.7	965.1	17760.7	967.9	18000.5	959.7	18235.1	962.5	18353.1	960.5
18417.7	956.5	18440	960.5	18639.2	962	18674	954.8	18737.7	957.9
18818.4	957.6	18843.9	951.9	18894.5	956	19104.7	956.3	19162.4	959.4
19182	952.7	19244.4	958.4	19290	953.9	19357.8	953.9	19392.3	959.4
19476.2	956.3	19599.7	958.8	19757.3	956.9	19806.8	958.1	19854.1	952.5
20078.1	951.3	20095.8	953	20192.9	950.6	20250.9	959.6	20290.2	950.4
20347.4	962.9	20368.6	965.8	20433.1	963	20465.1	950.1	20577.2	949.5
20589	951.7	20619.5	951.7	20638.1	949.5	20700.3	949.5	20727.6	954.8
20735.3	964.1	20750.8	961.1	20862.1	965.2	20904	975.7	20956.4	975.3
20989.8	964.1	21038.3	963.3	21074.1	972.2	21105.1	970	21109	967.5
21138.5	968.2	21163.6	953.1	21180.4	949.1	21267.5	949.1	21538.3	949.1
21555.3	949.1	21578	958.4	21595.4	955.8	21617.3	955.7	21641.7	951.9
21676.1	954.4	21726.5	948.7	21821.2	953.2	21862.8	963.6	21892.7	1964.4166
21991	967.1	22006.5	964	22019.9	967.9	22243.3	966.9	22585.6	967
22917.2	966.9	23024.3	966.9						

Manning's n Values num= 7

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
12423.7	.025	17507.7	.043	17760.7	.043	19357.8	.032	20250.9	.037
21991	.037	22006.5	.025						

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
18235.1	21892.71	470	477.46	490	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
12423.7	17760.7	975.7	F

21990.9 23024.3 975.7 F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 201.9

INPUT
Description: 201.9

Right Channel Bank Staion Interpolated
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
12498	962.4	12680.7	963	12847.7	963.1	13015.1	963.3	13199.8	963.2
13361.7	963.7	13371.9	960.2	13574.5	962.7	13724.8	961.4	13908.8	961.8
14082.1	962.6	14282	963.2	14504.3	963.3	14674.9	963	14875.2	963.6
15026	967.2	15036.6	963.6	15225.9	964.3	15398.3	964.4	15600.8	964.2
15790.8	963.8	15996.8	963.9	16181.7	962.7	16294.9	962.8	16309.4	964.3
16331.6	962	16525.6	962.6	16699.1	963.6	16881.9	964.4	17117.4	963.7
17353.6	965.3	17563.8	966.2	17569	964.3	17769.9	966.6	17941.7	966
17954.3	963.8	18181.9	958.7	18226.6	955.3	18260.2	960.7	18291.8	960.5
18303.9	958.6	18480.2	961.7	18648.9	961.8	18745.5	962	18798.7	956.2
18820.8	957.2	18854.3	951.8	18909.2	955.3	19138.4	956.3	19200	953.3
19336.3	962.3	19389.1	958.9	19449.9	951.5	19624.1	955.9	19782.3	957.2
19911.4	951.6	20081.9	950.6	20221.5	952.6	20269.4	959.3	20331.6	955.1
20356	957.7	20398.9	948.7	20567.7	948.5	20744.7	949.1	20888.3	947.2
20954.4	949.9	21000.8	949	21037.1	957.5	21099.1	956	21139.7	949.7
21300.7	952.4	21411.2	949.7	21444.1	955.9	21487.9	956.1	21503.4	949
21546.8	949	21556.2	952.2	21567.4	960.5	21588	955.9	21628.6	952.2
21667.7	955.7	21698.6	949	21736.9	950	21748.7	952.4	21786.7	952.8
21827.4	1963.9	898 21842	968	21955.2	963.2	21982.2	967.4	22181.8	966
22228.4	965.8	22400.7	965.8	22432.3	965.9	22634.3	966.5	22801.2	966.1
23008.7	966	23096	965.3						

Manning's n Values num= 7

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
12498	.025	17569	.043	17769.9	.043	19389.1	.032	20331.6	.037
21842	.037	21982.2	.025						

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
17954.3	21827.41	500	495.8	500 .1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
12498	17769.9	968	F
21842.1	23096	968	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 201.81

INPUT
Description: 201.81

Left and Right Channel Bank Staions Interpolated
Station Elevation Data num= 98

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
12574.1	961.8	12761.8	962	12923.9	962.6	13108.8	962.8	13276.3	963
13435.2	962.8	13461.6	960.9	13640.2	962.7	13758.3	961.2	13887.4	962.7
14049.5	962.4	14230.8	962.1	14408	962.7	14585.1	963.8	14774.2	962.7
14940.9	962.1	15056.2	964.1	15099	967.8	15104.2	963.1	15275.2	964.2
15444.5	964.1	15610.6	963.9	15771.8	963.8	15946.1	963.3	16142.1	962.7
16322.1	962	16382.5	963.6	16475.3	960.8	16709.7	962.1	16947.6	962.4
17136	963	17301	963.8	17538.6	963.1	17700.9	964.2	17890.2	965.6
17935.7	965.6	17946.8	963.6	17964	960.6	18130	958	18246.7	956.1
18277.1	959.5	18483.2	960.9	18556.4	960.8	18619.6	964.6	18716.1	963.4
18765	964.3	18860.5	957.6	18955	958.4	19006.4	951.6	19072.9	957.9
19139.8	953.9	19294.5	954.6	19378.9	957.7	19550.9	954.4	19605.4	951.1
19693.5	953.4	19720.4	950.1	19883.7	950.2	20049.4	953	20182.8	953.5
20285.8	953.2	20377.1	957.6	20392.1	962.6	20421.1	948.6	20597	946.8
20665	946.7	20832.3	946.1	20846.8	951.1	20855.6	956.4	20869.8	954.4
20881.2	950.3	20908.5	949.6	20924	952.5	20962.6	950.9	21000.7	946.6
21169.8	946	21187.6	953.2	21244.2	956.3	21263.5	960.4	21295.1	951.3
21322.9	946.6	21496.1	948.5	21522.9	951.7	21690.5	950.7	21775	950.9
21803.2	7963.6	213 21811	967.1	21860	969.2	21904.1	961.6	21929.9	965
21975.7	963.6	22175.4	965.3	22352.1	965	22654	963.5	22715.1	963.5
22875.2	962.8	23093.9	964.4	23169.5	964.2				

Manning's n Values num= 7

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
12574.1	.025	17700.9	.065	17935.7	.065	19378.9	.032	20392.1	.037
21860	.025	21975.7	.025						

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
17946.89	21803.27	535	511.61	515	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
12574.1	17935.7	969.2	F
21859.6	23169.5	969.2	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 201.71

INPUT
Description: 201.71

Left Channel Bank Staion Interpolated
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
12659.2	961.6	12855.6	961	13000	961	13129.9	960.8	13180.2	962.1
13187.7	959.3	13371.2	960	13521.5	960.3	13689.3	960.5	13844.9	960.6
13979.7	960.3	14193.8	960.9	14324.5	960.9	14461	961	14593.2	960.9
14774.5	961.4	14909.4	960.6	15132.5	961.7	15192.9	963.1	15384.5	962.1
15537.8	962.3	15716.6	961.2	15856.1	961.1	16082.6	960.9	16210.7	961.2
16383	961	16543.7	961	16684.4	961.3	16813.5	961.2	16941.4	961.7
17106.2	961.5	17255.2	962	17388.3	961.5	17585.2	961.5	17706.7	962.1
17766.4	963.8	17769.2	962.5	17794.4	964.5	17957.8	964.3	18096.3	964.8
18107.05	962.8899	18140.2	957	18197.6	953.2	18356.6	956.6	18441.5	961.3
18556.1	957.7	18600.1	958.6	18651.3	956.4	18676.1	956.9	18707	951.3
18764	957	18831.5	958.2	19007.5	955.3	19076.4	952	19279.5	954.1
19409.2	953.7	19475.6	949.9	19555.7	955.6	19660.9	959	19739.3	954.2
19763.1	949.4	19910.3	951	19978.4	951.1	20023.1	954.8	20199	956
20304.5	951.4	20347.1	954.9	20447.3	951.1	20499.8	956.3	20554.9	954.5
20692.6	956.1	20848.5	954.8	20899.8	950.2	20984.5	949.7	21011.3	946
21148.8	948.4	21186.8	951.7	21268.1	954.5	21355	953.1	21433.7	954.9
21490.6	959.4	21528.5	960.3	21661.1	959.7	21837.7	959.7	21975.8	962.2
22098	963.6	22111.4	961.1	22160.6	964.1	22190.7	962.9	22353.1	963.4
22385.7	963.3	22516.6	964.2	22615.8	964.3	22832.1	963.4	22981.6	963.4
23127.8	962.8	23246	962						

Manning's n Values num= 7

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
12659.2	.025	17706.7	.065	18096.3	.065	19660.9	.032	20554.9	.037
21355	.025	21528.5	.025						

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
18107.05	21528.5	505	489.63	495	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
12659.2	18096.3	966	F
22098	23246	966	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 201.62

INPUT
Description: 201.62

Left Channel Bank Station Interpolated
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
12723.6	960.1	12862.6	960.3	13017.9	960.4	13156.4	960.4	13253.3	961.5
13267.4	959	13436.1	959.9	13621.5	960.4	13766.2	960.5	13909.8	960.4
14075.1	960.4	14269.1	960.4	14410.3	960.9	14542.3	960.9	14677.4	961
14845.4	961.8	15072.7	961	15207.9	961.9	15344.9	961.6	15510.2	961.6
15676.2	961	15821	960.6	15995.5	960.4	16157.9	960.8	16296	961.1
16491.6	961.1	16630.4	960.7	16799.9	960.5	16987.6	960.1	17022.4	962
17197.5	958.5	17331.6	959.3	17350.4	962.3	17555	961.1	17693.7	961.5
17788.7	963.5	17792.9	962.2	17963.6	963.3	18107	962.8	18229.7	963.9
18233.59	962.1533	18253.2	953.1	18417.5	953.4	18563.5	953.4	18723.5	952.3

18864.3	951.9	18956.1	956.6	19045.2	956.9	19129.4	952.1	19159.3	954.5
19237.7	952.1	19435.3	953.3	19483	951.6	19522	953.4	19577	948.8
19677.3	954.6	19737.2	953.8	19772.7	949.2	19918.1	949.3	20064.6	953.2
20213.3	953.8	20358.7	952.9	20472.9	952	20509.2	950	20584.5	955.3
20619.5	953.2	20653.6	948.7	20723.6	953.3	20794.2	955.3	20904.8	954.6
20962.2	949.9	20990.6	945.6	21150.5	945.9	21165.2	946.9	21199.1	955.3
21351	951.4	21457.3	955.6	21477.5	960.2	21514.2	959.4	21654.6	959.9
21824	959.8	21964.5	960.6	22074.2	961	22085	959.8	22090.5	961.3
22197.1	961.9	22233.4	963.7	22249.4	962.1	22301	963.2	22456.6	963.4
22491.4	963.3	22714.7	962.8	22775.6	962.8	22945.1	962.7	23131.5	962.5
23268.1	960.6	23318.4	961.5						

Manning's n Values num= 9

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
12723.6	.025	16799.9	.15	17197.5	.025	17792.9	.065	18229.7	.065
19577	.032	20509.2	.037	21351	.025	21477.5	.025		

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
18233.5	21477.5	485 486.48	510	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
12723.6	18229.7	965	F
22233.4	23318.4	963.9	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 201.52

INPUT
Description: 201.52

Left Channel Bank Station Interpolated
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
12786.6	960.2	12939.6	960.1	13099	960.1	13244.9	960.2	13300.5	962.8
13357.3	959.7	13501.3	960.4	13678.7	959.8	13830.9	960	14035.1	959.9
14185.2	959.4	14386.6	959.8	14539	959.6	14722.7	959.3	14894.1	959.5
15114.2	959.2	15254.5	962.1	15427.2	959.8	15592.7	959.9	15779.1	959.7
15959.1	959.6	16138.8	959.3	16313.2	960.4	16492.7	958.5	16665.8	959
16834.1	958	17009.5	957.5	17081.3	959.5	17261.7	956	17408.3	957.9
17566	960	17731.1	959.6	17842.3	960.3	17845.2	962.9	17943.7	3961.3971
18009.1	960.4	18087.6	959.9	18104.5	954	18264.9	951.7	18427.6	949.5
18577.1	948.4	18651.6	946.4	18699.1	952.7	18753.8	949	18784.8	949.1
18848.6	953.1	18893.8	954	18925.3	958	19065.9	958.5	19153	954.3
19223.7	956.3	19377	949.7	19404.1	948.6	19480.7	949.5	19540.9	947.7
19607.6	951.7	19748	954.6	19781.1	954.1	19818.6	949.6	19876.6	948.4
19936	956.7	20100.5	954.2	20244	952.7	20403.3	950.4	20550.4	948.2
20608.4	948	20715.6	953.3	20891.6	948.2	20923.4	941.8	20972.4	940.9
20990.6	945.3	21048.3	948	21178	947.3	21216.5	954.8	21254.9	957
21391.4	958.4	21554.4	958	21596.8	958.1	21777.9	958.2	21934.4	958.6
21995.7	958.3	22004.2	960.1	22157.3	959.4	22212.5	961.1	22218.9	959.2
22225.8	961.6	22299.7	963.1	22311.3	960.4	22338.4	962.5	22478.8	962.4
22674.4	962.5	22848.1	961.1	22905.9	961.6	23058.8	963.2	23081.5	963.2
23263.4	961.3	23370	959.8						

Manning's n Values num= 7

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
12786.6	.025	17009.5	.15	17261.7	.025	17845.2	.15	19480.7	.032
20244	.037	21391.4	.025						

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
17943.73	21391.4	495 492.06	495	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
12786.6	17845.2	963.2	F
22212.5	23370	963.2	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 201.43

INPUT
Description: 201.43

Left Channel Bank Station Interpolated

Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
12790.4	959.2	12931.7	959.4	13106.1	959.5	13261.9	959.6	13426.6	960.3
13574.8	960.1	13719.2	960	13863.6	960.3	14015.4	959.4	14162.1	960.1
14260	960.7	14418.2	961.9	14556.8	961.4	14697.8	960.6	14846.1	959.1
15008.5	959.1	15194.6	958.6	15331.7	959.1	15511.6	959.4	15657.5	959.5
15799.1	959.9	15827.9	961.5	15973.4	960.8	16110.8	960.5	16254.2	959.9
16478.5	958.1	16617.9	958	16780.3	959.8	16924.1	959.3	17061.9	956
17202.1	956.4	17374.3	959	17594.2	959.4	17734	959.4	17844.3	960.3
17853.5	961.9	17859.2	959.6	18001.4	960.7	18014.99	960.4907	18053	959.9
18066.9	952.8	18179.7	952.8	18317	950.6	18459.7	949.9	18597.4	947.5
18738.8	948.8	18799.8	954.8	18924.3	958	19076.8	958.9	19195.5	956.6
19253.6	950.7	19403.4	947	19416.1	948.3	19450.8	947.6	19528.4	954.4
19671.9	955.8	19712.9	955.8	19744.1	948.3	19847.5	947.6	19851.7	953.1
19996.8	955.1	20141.7	954.2	20303.2	954.8	20474.6	951.5	20649	946.3
20689.8	947.9	20719.5	943.8	20747.5	947.5	20911.6	947	20951.8	947.8
20976.3	941.3	21080.6	942.7	21100.4	945.1	21136.4	946.2	21179.1	944.6
21271.5	950.5	21342.1	957.5	21353.3	959.8	21363.1	957.2	21516.4	957.7
21676.7	958.3	21814.1	958.7	21883	958.4	22035.4	957.9	22182.8	959.4
22322.3	960.9	22328.9	958.7	22340	962.3	22362.8	960.4	22606.3	961.2
22648.5	961.2	22787	960.2	22945.6	960.3	23094.6	961.1	23289.3	961
23341.9	960.2	23387.4	958.8						

Manning's n Values num= 7

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
12790.4	.043	15827.9	.065	17202.1	.025	17853.5	.15	19253.6	.032
20649	.037	21342.1	.025						

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
18014.9	21342.1	555	519.88	505	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
12790.4	18000	962.3	F
22322.3	23387.4	962.3	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 201.33

INPUT
Description: 201.33

Left ChannelBank Station Interpolated
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
12785.7	957.8	12951.9	958.1	13134.4	958.1	13293.5	958.1	13493.4	958.4
13649.5	958.9	13744.1	960.9	13758.6	959.4	13925.5	959	14085.7	958.6
14255.8	961.3	14420.6	961.4	14593.6	961.2	14794.8	960.7	14992.6	959.3
15164	957.6	15345.7	958.5	15520.6	959.3	15694.3	959.9	15854.4	959.9
16014.9	960.3	16184.1	960.4	16362.7	960.3	16517.9	960.6	16680.1	958.6
16837.4	958.7	16937	956.7	17109.2	956.2	17266.3	958.7	17288.5	957.8
17465.9	959.2	17667.7	959	17831.2	959.5	17862	961.6	17929.5	961.8
17948.2	960.41	18049.52	959.5026	18072.4	959.3	18086.6	953	18242.2	954.4
18398.7	954.5	18556.7	954.3	18607.2	952.5	18626.2	948.5	18634.2	950
18715.7	949.6	18791	954.8	18874.7	955.9	18937.2	954.7	18984.3	948
19116.8	949.1	19140.9	943	19269.7	945.9	19315	948.3	19489.9	950.7
19565.6	952.4	19588.8	955.2	19608.2	948.1	19752.9	948	19806.6	953
19969.5	952.2	20134.6	953.3	20171.4	952.2	20226.7	955.4	20293.9	954.2
20341.3	955.5	20424.9	951.7	20512.5	950.6	20548.8	944.7	20652.6	950
20769.7	946.7	20843.2	955	21006.1	948.3	21057.8	946.6	21076.8	943.6
21236.1	944.8	21304.1	946.3	21310.7	945	21357	957.5	21381.8	958.1
21545.7	957.7	21548.3	957.8	21799.8	956.8	21810.6	956.8	22056.9	957.1
22107.8	957.3	22115	958.6	22356.1	957.9	22513.8	959.5	22624.6	962.2
22794.7	960.7	22966.1	961	23037.1	962.1	23192.4	961.3	23366.6	961.5
23397.6	960.4	23444	960.7						

Manning's n Values num= 7

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
12785.7	.043	15854.4	.065	17266.3	.025	17929.5	.15	19116.8	.032
19315	.037	21381.8	.025						

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
18049.52	21381.8	515	514.62	515	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
12785.7	17929.5	962.2	F
22624.6	23444	962.2	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 201.24

INPUT
Description: 201.24

Left Channel Bank Station Interpolated
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
12806	955.8	12962.7	956.3	13145.6	957.3	13331.4	956.5	13517.2	956.2
13697.1	957.3	13855.5	957.4	14010.3	957	14164.7	956.7	14318.4	958.2
14482	958.5	14660	956.8	14688.4	957.7	14821.8	955.2	14989	957.8
15156	956.9	15324.8	957.6	15476.8	959	15632.7	959.6	15787	959.8
15939.5	959	16132.2	958.4	16296.2	957.9	16464.6	957.9	16632.1	958.1
16801.9	956.7	16986.8	954.6	17117.8	954.3	17180.2	958.7	17353.5	957.6
17566.1	957.4	17719.1	957.9	17947.6	957.8	18063.5	959.9	18067.3	6958.4367
18084.6	951.9	18123.2	954.4	18273.7	954.7	18463.7	954.1	18640.4	954.1
18769.1	951.5	18834.7	946.6	18852.7	947.7	18957	944.8	19101.5	944.9
19190.4	949.6	19365.4	949.8	19479.4	950.7	19501.5	945.5	19659.5	947.2
19709.9	951	19861.9	951.5	20036.3	950.6	20116.5	953	20174.4	956.4
20272.4	956.3	20322.3	953.3	20397.8	952.3	20534.1	946.8	20728.3	949.3
20901.9	952.6	21060.4	953.1	21108.8	948.4	21143.3	943.1	21322.6	943
21477	945.1	21515.7	945.4	21547.4	956.4	21570	957.6	21573.6	955.3
21742.9	955.8	21840.8	955.8	22073.6	956.2	22315.2	956.6	22474.6	957.8
22660.5	959.5	22837.1	960.3	23006	960.7	23189	960.3	23372.7	959.3
23535.3	958.6	23693.7	960.2	23701.8	958.7	23728.6	959.3	23733.9	957.9
23745.1	960.6	23895.9	959.5	24055.3	959.7	24212	959	24364.3	958.6
24523.2	960	24683.9	959.1	24867.9	960.4	25044.2	960.6	25240.9	961.6
25449.6	962.7	25490	964.7						

Manning's n Values num= 9

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
12806	.043	16132.2	.065	17180.2	.025	17947.6	.15	18063.5	.15
18957	.037	19659.5	.032	20174.4	.037	21570	.025		

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
18067.36	21570	485	488.56	490	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
12806	18063.5	964.7	F
23006	25490	964.7	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 201.14

INPUT
Description: 201.14

Left Channel Bank Station Interpolated
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
12823.9	955.7	12999.4	956.2	13212.7	955.6	13428.9	956	13645.2	955.7
13816.9	955.8	13992.2	956	14163.4	956.5	14335.2	955.8	14527.3	956.5
14708.6	956.3	14909.6	955.2	15093.8	955.5	15267	954.8	15439.6	956.4
15609.9	956.4	15791	956.8	15950.3	959	16129.2	957.7	16303.6	956
16475	953.7	16660.8	955	16839.9	953.5	17004.5	951.4	17082.5	958.8
17162.8	956.1	17184.4	958.7	17362.4	957.4	17598.4	957.1	17832.2	956.8
18017.1	960	18032	960.2	18037.8	6957.9	083 18056.8	950.5	18241.1	949.4
18415.6	950.8	18585.7	951.8	18725.4	952.4	18733.1	949.9	18790.6	949.1
18818.8	941.6	18850.4	943.3	18986.4	943.9	19077.9	949.8	19149.1	948.9
19305.2	951	19389.8	945.3	19562.7	946.4	19610	949.5	19790.7	949.7
19961	950.3	20069.8	955.8	20203.6	953.6	20241.8	949.2	20445.4	947.5
20553.6	952	20738.9	949.5	20840.4	947.3	20887.4	943.5	20941.4	948.4
20992.7	949.8	21019.8	942	21063.4	942.9	21079.7	945.4	21128.6	946
21160	941.1	21202.5	940.4	21278.6	945.6	21455.1	945.3	21569.3	940.9
21644.4	944.5	21697.9	954.5	21721	955.2	21725.6	953.1	21741.2	955
22051.3	955.9	22155.8	956.1	22389.7	956.4	22512.4	956.8	22725.1	956.9
22832.8	959	22857.1	957	23030.8	959	23238.6	958.8	23414	958.9
23606.9	957.7	23803.1	958	24052.9	958.2	24291.1	958.1	24471.3	958.5
24625.1	958.9	24632.8	957.3	24637.8	958.9	24815.7	959.6	25013.4	960.6
25215.4	961.6	25365.2	962.4						

Manning's n Values num= 8

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
12823.9	.043	16303.6	.065	17184.4	.025	18032	.15	18850.4	.037
19610	.032	20553.6	.037	21721	.025				

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
18037.86	21721	480 481.53	485	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
12823.9	18032	962.4	F
22832.8	25365.2	962.4	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 201.05

INPUT
Description: 201.05

Left Channel Bank Station Interpolated
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
12848.3	954.5	13055.4	953.7	13276.2	955.4	13483.1	957.1	13684.3	954.7
13886.2	954.5	14079.9	955	14267.8	955.7	14489.3	955.5	14686	954.3
14893.9	954.8	15093.5	953.8	15286.8	955	15508	955.8	15694.8	955.4
15890.9	955.3	16093.3	955.3	16296.5	955.9	16489.7	956.3	16687.2	954.3
16876.1	953.1	17029.6	951.4	17090	955.6	17177.7	953.2	17211.7	959.1
17239.8	956.7	17474.3	956.9	17712.8	956.3	17920.1	957.3	17947.8	957.7
17948.21	957.514	17963.9	950.4	18149.7	948.9	18366.7	949.3	18552.6	947.7
18642	947.2	18662.5	941.8	18877.7	942.9	18965.7	942.8	19025.5	948.9
19069.3	949.7	19115	948	19146.2	943.8	19305.4	944.7	19341.4	942.6
19450.5	944.4	19486	951.1	19656.3	948.4	19742.2	949.2	19800.5	946.7
19926.9	951	19979.4	950.2	20027.5	955.4	20105.3	953.3	20157.5	947.1
20233.6	946.1	20272.3	948.2	20302.6	946.7	20402.5	950.2	20615.4	948.5
20746.4	950.2	20793.3	949	20816.3	941.7	20964.1	941.5	20993.4	945.9
21193.9	949.2	21384.8	948.9	21582.1	946	21750.2	942.4	21815.9	945.1
21849	955.5	21881.2	953.7	21901.6	955.1	21907	953.3	21990.8	953.6
22189.8	954.8	22244.5	955.2	22537.9	955.5	22570.5	955.5	22835	955.8
22894.6	957.1	22905.9	959	22934.1	957.4	23165.2	957.6	23380	958
23414	957	23451.8	959.3	23684.3	956.6	23933.2	957	24126.1	957.5
24400	957.7	24595.1	958.4	24603.3	957.1	24622.7	959.8	24638.5	957.6
24836.5	959.9	24997.1	961.2						

Manning's n Values num= 8

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
12848.3	.043	16687.2	.15	17177.7	.025	17947.8	.15	18965.7	.037
19486	.032	20402.5	.037	21849	.025				

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
17948.21	21849	520 512.89	510	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
12848.3	17947.8	961.2	F
22905.9	24997.1	961.2	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 200.95

INPUT
Description: 200.95

Left Channel Bank Station Interpolated
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
12874.8	952.5	13039.9	952	13212.3	952.3	13372.8	953.5	13537.8	953.7
13708.5	953.7	13872.8	954	14042.5	953.4	14205.3	953.3	14401.9	953.5
14603.1	953.1	14762	954.2	14934	952.2	15127.8	952.8	15312.6	953.8
15422.3	957.2	15583	954.7	15746.4	955	15906.8	956.3	15988.2	955.4
16164.6	957.4	16332.4	957.6	16504.4	956.6	16673	957.2	16861.4	956.7
17049	953.4	17207.8	951.7	17274	955.6	17440.2	954.4	17613.5	957.4
17631.7	953.8	17653.9	958.1	17824.4	958	17905.8	956.9	17952.4	956.3
17964.6	951.3	18135.4	946.6	18219.9	947	18317.2	949.6	18410.9	946.7
18428.8	949	18651.9	947.8	18690.8	946.2	18729.3	940.1	18914	943.4
19040.9	943.9	19102.9	941.9	19126.2	943.3	19190.9	941.9	19216.4	943.8

19237.2	941.5	19420.9	944.3	19517.6	943.7	19555.3	947.7	19758.1	946.5
19818.9	950.2	19947.1	951.5	20006.8	955.9	20184.2	954.1	20323.1	951.3
20414.3	945.7	20527.8	944.2	20653.3	949.4	20684.2	940.5	20842.4	942.7
20989.1	947.8	21069.4	948.4	21262.3	947.7	21448.8	948.8	21631.4	946.7
21802	942.6	21869.1	939.8	21909.3	943.4	21954	953.2	22148.5	954.1
22306.3	954	22378	955.4	22594.8	954	22757.8	954.9	22935.8	954.8
23107.3	956.2	23275.4	955.9	23411.6	954.8	23573.4	957.7	23629.1	956.7
23796.3	955.8	23971.7	955.8	24129.8	956	24294.4	955.8	24466.5	955.4
24623.6	955.4	24630	955.3	24639.7	957.8	24648.4	954.6	24662.5	958.2
24836.4	959.8	24988.3	960.7						

Manning's n Values num= 6

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
12874.8	.043	17824.4	.15	18729.3	.037	19517.6	.032	20323.1	.037
21954	.035								

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
17905.8	21954	475 474.38	480	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
12874.8	17824.4	960.7	F
23100	24988.3	960.7	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 200.86

INPUT
Description: 200.86

Left Channel Bank Station Interpolated
Station Elevation Data num= 98

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
12893	952.7	13071.4	952.1	13217.7	954.6	13366.3	951.7	13513.8	953.9
13666	954.4	13820.1	953.4	13963.2	953.3	14149	953.3	14333.5	952.5
14509.1	952.1	14688.3	953.1	14861.7	952.4	15054.1	951.6	15210.6	951.7
15424.6	955	15571.3	952.8	15782.9	955.2	16020.2	955.6	16192.2	953.9
16399.2	952.8	16559.9	953	16714.8	953.3	16760.5	954.7	16916.6	953.9
17003.1	954.6	17168.1	950.1	17285.1	949.5	17360.5	954.6	17520.2	953
17694.7	956	17869.8	957	17934.1	958.11	17992.44	956.56	98 17995.1	956.5
17996	956.3408	18052.8	946.3	18288.3	948.1	18449.5	947.1	18628.5	947.7
18762	951.3	18912.7	950.4	19061.6	946.8	19092	945.3	19141.3	938.5
19175.6	940.7	19336.6	941.9	19619.6	944.7	19730.8	944.7	19826.2	949.9
19922.8	951.3	20011.5	955.4	20112.1	951.4	20184.7	943.1	20254	952.1
20308.4	952.8	20438.4	949.3	20464.9	944.1	20568.6	943.9	20744.1	941.1
20840.6	941.3	20896.7	945.9	20979.1	947.3	21100	946.2	21279.3	951.2
21459.1	946.8	21602.1	945.3	21642.4	941.5	21792.5	940.9	21831.9	940.3
21865.4	942.7	21898	952	22032	954.1	22187.6	953.7	22377.3	953.4
22522.7	953.4	22725.4	952.8	22947.9	954.9	23137.5	955	23294.6	956.1
23413.1	955.8	23420	954.5	23482.2	956.5	23641.6	956.7	23647.7	954.4
23806	955.4	23951.6	954.9	24112	954.8	24269.9	954.6	24426.7	954.8
24604.6	954.9	24656.8	954.3	24670.5	956.8	24680.8	954	24693.9	958.2
24856.4	958.5	25029.7	959	25175	960.2				

Manning's n Values num= 6

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
12893	.043	17934.1	.15	19619.6	.032	20308.4	.037	21898	.035
22032	.035								

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
17996	22032	525 523.32	525	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
12893	17750	960.2	F
23360	25175	960.2	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 200.77

INPUT
Description: 200.77
Station Elevation Data num= 96

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
12925.1	950.1	13101.8	952.3	13250.4	951	13436.7	950.7	13651.1	951.4

```
 13804.4   951.9   14027   953.4 14249.5   951.8 14401.1   950.7 14592.6   949.7
 14752.3   950.6 14873.3   950.3   15006   952.1 15110.8   950.9 15249.1   953.3
 15443.8   954.5 15631.2   955.3 15702.9   951.3 15936.9     951 16108.8   954.5
   16172   955.8 16295.1   951.4   16462   950.7 16530.6   949.9 16652.3   952.8
 16854.8     954 17022.2   952.1 17185.4   949.9 17349.4   948.1 17402.8   955.2
 17473.6   951.6 17660.6   954.4 17828.8   955.3 17926.5     954 17969.3     948
 18147.9   944.4 18302.9   946.4 18524.1   946.1 18650.9     949 18815.8   948.8
 18902.5   949.8 18913.4     952   19097   950.8   19277   951.3 19280.8   951.9
 19280.9   949.5 19321.8   951.3 19557.8   943.7 19720.4   945.1 19857.8   946.5
 19911.9   942.9 19989.5   951.1 20140.5   950.2 20288.5   945.2 20339.4   948.6
 20362.3   944.7 20388.7   942.6 20487.8     944   20788   936.9 20804.9   937.1
 20829.2   942.4 20906.3   944.7   21056   944.4 21222.9   942.6 21375.1   940.2
 21524.6   940.4 21559.7     941   21581   950.6 21785.8   951.3   21951   952.4
 22102.3   952.1 22329.8   953.2   22461     953 22651.4   953.3 22824.9   954.7
 23050.7   954.8 23217.5   954.9 23380.5   954.5 23421.7   954.3 23434.6     956
 23439.7   954.3 23489.2   957.2 23506.4   952.5 23514.1   955.4 23706.9   954.3
 23876.7   954.3 24057.8   954.4 24216.1   954.4 24385.4   954.2 24554.4   953.9
 24685.3   953.1 24698.2   956.8 24704.7   952.7 24723.6   958.6 24886.7   958.9
   24978   959.5

Manning's n Values          num=       6
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
 12925.1    .043 17828.8     .15 19321.8    .032 19857.8    .037 21785.8    .025
   21951    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       17828.8   21951             500  495.64     520             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 12925.1   17630     960       F
   23630   24978     960       F

CROSS SECTION


RIVER: 1
REACH: 1                    RS: 200.67

INPUT
Description: 200.67
Station Elevation Data      num=      96
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 12952.7   947.8 13129.5   948.3 13308.2   948.8 13483.1   949.2   13641   952.6
   13766     952 13870.6   949.3 14073.7   950.3   14282   951.5 14535.6   948.8
 14746.4   948.7 14899.4   949.8 15045.4   950.6 15138.5   953.1 15312.3   952.8
 15471.5   952.2 15651.1   951.4 15730.3   949.9 15964.5     954 16199.7   953.8
 16438.6   948.9 16643.2   952.3 16796.2     954 17002.3   953.9 17133.8   952.2
 17211.9   946.7 17315.9     947 17376.2   954.8 17384.7   952.3 17551.8   953.1
 17732.2   954.1 17919.3   952.9   17950   943.8 18101.5   944.9 18330.6   947.4
 18498.9   943.9   18565   943.8 18742.3   948.8 18888.2     952 18925.4   946.6
 18962.8   948.9 19023.7   947.4 19040.9   949.6 19238.5   952.4 19366.3   948.8
 19569.2   947.1 19719.3   940.8 19796.7   942.1 19832.7   943.8   19969     943
 20047.1     949   20111   948.4   20263   939.8 20444.8   942.7   20609   942.6
 20782.8   941.1 20963.8   942.2 20998.9   941.8 21090.6   944.3 21256.2   942.8
 21298.3   943.3   21316   950.6 21367.7   945.7 21427.5   950.4   21604   951.9
 21649.3   952.3 21939.5   952.7 21971.5   952.7   22194   953.4 22217.8   954.7
 22233.1     953 22256.3   952.8 22476.8   953.9 22513.4   953.9 22711.5   955.1
 22773.4   955.2 22873.4   959.1 23051.6   959.3 23158.6   956.6 23168.5   958.8
 23393.6   957.5   23430   957.4 23431.7   955.9 23584.2   954.6 23749.1   953.9
 23939.2     954 24125.4   954.8 24292.4   954.6 24492.9   954.3 24643.7   954.1
 24725.3   954.1 24731.8   955.7 24741.4   953.7 24755.2   960.7   24923   959.7
 24996.7     960

Manning's n Values          num=       8
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
 12952.7    .043 17919.3     .15 18962.8    .032 19040.9     .15 19366.3    .032
   20263    .043   21604    .025 21649.3    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       17919.3 21649.3             500  503.34     510             .1       .3
Ineffective Flow     num=       3
   Sta L   Sta R    Elev  Permanent
 12952.7   17540     960       F
   22230   23500     960       F
   23915 24996.7     960       F

CROSS SECTION
```

RIVER: 1
REACH: 1 RS: 200.58

INPUT
Description: 200.58

Right Channel Bank Station Interpolated
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
13004.2	946.1	13252.7	946	13406.6	945.2	13565.9	944.9	13774.2	944.6
13943.1	945.5	14116.9	945	14279.1	946.6	14438.8	947.7	14609	948.4
14768.3	947.1	14929	947.1	15050.5	947.2	15202.4	950.2	15286.6	950.1
15344.6	952	15501.3	950.2	15638.8	948.6	15758.4	951.1	15992.6	950.5
16109.8	952.6	16227.7	949.4	16451.3	948.4	16610.1	950.8	16708	953.4
16925.1	953.5	17149.3	953.1	17163.9	953.3	17234.2	944.5	17318.9	945.5
17387.8	953.1	17544.8	952.5	17768	953.3	17947	953.3	18120.4	944.7
18239.5	947	18479.6	944.5	18689.4	943	18899.8	947.1	18982.6	947.4
19060.5	950.5	19193.4	946.5	19239.2	951	19272	950.3	19281	947.8
19435	949.5	19481.5	950.8	19780.1	939.9	19839	939.1	20105.5	937.6
20341.3	941.2	20411.6	945.7	20456.8	943.9	20469.2	941.9	20590	941.2
20660	946.3	20712.1	943.5	20803.5	943.1	20830.7	941.2	21002.3	943.4
21117.8	946.3	21272	946.4	21425	950.4	21450	950.6778	21452	950.7
21643	952.3	21667.2	952.4	21820.3	952	21847.8	952	22017.1	952.7
22213.8	952.2	22244.2	960.6	22257.8	957.2	22270.2	958.5	22289.1	952.8
22392.9	953.3	22566.6	953.5	22797.3	954.2	22998.5	955.3	23151	955.4
23322.6	954.9	23399.1	953.2	23498	953.6	23506	952.3	23516.9	955.5
23555.1	955.9	23578.4	953.2	23779.1	953.4	23989.5	954.5	24174.8	954.3
24351.4	954.1	24538.2	953.8	24699.8	953.7	24771.3	955.3	24776.5	952.9
24795.5	960.4	24969.5	959.5						

Manning's n Values num= 7

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
13004.2	.15	14609	.043	17947	.15	19481.5	.032	20105.5	.043
21425	.025	21643	.025						

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
17947	21450	475 479.55	530	.1	.3

Ineffective Flow num= 3

Sta L	Sta R	Elev	Permanent
13004.2	17460	960	F
22800	23380	960	F
24200	24969.5	960	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 200.49

INPUT
Description: 200.49
Station Elevation Data num= 96

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
13048.9	945.6	13261.8	944.9	13471.4	944.9	13640.6	945.6	13821.9	945.7
13998.1	945.5	14204.4	944.8	14399.4	943.8	14586.6	943.4	14763.6	943
14951.3	943.1	15156.1	943.2	15371.2	945.2	15548.1	948.1	15769.6	946.9
15979.3	948.4	16200.3	947.6	16375.3	947.1	16493.4	953	16719	952.8
16949.5	951	17106.4	951.7	17132.4	947.4	17168	952.5	17198.4	950.8
17234.4	945.1	17404.6	947.6	17536.5	952.7	17719.3	953.3	17750.3	952.7
17791.5	947.5	17816.7	949.6	17852.9	949	17862.5	950.8	18012.9	951.3
18153.1	947.1	18273.7	941.6	18480.3	943.2	18739.9	945	18856.4	944.7
19028.1	939.7	19085	944.7	19190.4	945.3	19261.7	948.1	19342.5	943.7
19490.6	939.8	19542	943.5	19650.1	948.1	19854.1	940.8	19947.1	937.5
20192	936.9	20201.4	940.9	20275.4	939.8	20324.1	944	20367.7	939.3
20425.1	937.8	20452	941.7	20573.6	946.4	20608.5	941.9	20627	944.1
20638.3	940.9	20706.1	939.4	20811.1	939.3	20837.1	942.5	20956.7	943.3
20975.1	941.9	21136.8	944.8	21171	950.3	21342.1	950.2	21559.3	950.8
21830.5	950.9	21861.8	951.1	21876.9	959.1	21891.8	959	21905.4	951.7
22133.6	952.2	22336	952.4	22590.8	952.7	22633.1	952.7	22813.2	952.3
23018.2	953.8	23185.8	954.6	23401.6	954.5	23519	954	23540.6	951.9
23589.4	954.7	23609.6	952	23780.4	952.4	23946.1	952.4	24145	952.4
24343.4	952.9	24514.6	953.3	24725.8	953.2	24810.9	953.5	24835.6	958
24956.8	957.1								

Manning's n Values num= 7

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
13048.9	.15	15548.1	.043	17719.3	.043	18273.7	.15	19342.5	.032
20192	.043	21171	.025						

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
17719.3 21171 510 497.59 510 .1 .3
Ineffective Flow num= 4

Sta L	Sta R	Elev	Permanent
13048.9	17380	960	F
21840	22160	960	F
22950	23300	960	F
24485	24956.8	960	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 200.39

INPUT
Description: 200.39
Station Elevation Data num= 96

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
13083.9	945.2	13254.6	945.3	13486.8	945.5	13742.8	945.8	14008.5	946
14273.9	945.9	14454.3	945.6	14637.7	945.4	14834.7	945.2	15022.8	944.7
15192.5	944.4	15417.5	944.4	15642.9	944.4	15819.7	943.9	16016.8	943.5
16254.5	943.6	16478.3	943.8	16652.7	943.9	16819.7	947.8	16875.2	949.8
16928.9	948.8	16992.7	951.1	17168.8	950.1	17242.1	945	17439	948.6
17484.9	949	17507.9	946.2	17527.7	949.5	17682.5	952.2	17714.9	945.6
17726.7	949.9	17781	947.5	17966.7	946.8	18026.8	945.7	18050.3	941.5
18183	941.3	18379.8	942.6	18534.2	941	18751.2	942.5	18800.2	941.7
18918.7	944.9	19025.6	941.5	19161.9	944.8	19220.8	943.5	19267.5	947.7
19444.5	940.9	19506.7	939	19763.7	940.6	19785	940.5	20110.3	939.9
20152.6	937	20199	940.6	20240.6	941.7	20272.3	938.7	20460.6	948.4
20515.5	946.8	20585.3	946.5	20659.8	939.5	20714.2	938.7	20742	943.3
20788.5	938.9	20812.7	939.9	20854.3	937.8	20978.7	940.9	21041	951.3
21062	949.6	21134.2	949.8	21326.6	949.6	21342.1	949.6	21606.3	951
21865.7	950.7	21893.4	950.9	21911.5	958	21918.5	956.7	21925.9	957.8
21937.7	950.6	22152.6	950.7	22336.4	951.5	22566.3	951.6	22807.6	951.9
23031.4	952.1	23203.3	953.2	23429.6	953.3	23573.8	952	23600	955.9
23653.9	951.2	23829	950.5	24004.5	950.7	24185.9	951.4	24362.4	951.7
24572.6	951.5	24742.1	951.6	24842.9	953.7	24848.9	951.1	24857.3	956.6
24952.5	957.6								

Manning's n Values num= 7

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
13083.9	.15	16875.2	.043	17682.5	.043	18751.2	.15	19506.7	.032
20199	.043	21041	.025						

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
17682.5 21041 550 506.5 480 .1 .3
Ineffective Flow num= 3

Sta L	Sta R	Elev	Permanent
13080	17300	960	F
21400	22680	960	F
24775	24952.5	960	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 200.3

INPUT
Description: 200.3
Station Elevation Data num= 96

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
13125.5	945.5	13316	945.5	13495.7	945.7	13687.9	945.9	13882.5	945.7
14123.9	945.2	14361.2	945.8	14546.2	945.8	14737.5	945.3	14938.1	945.4
15122.2	945.1	15335	945.6	15433	945.6	15567.6	939.4	15743.1	943.1
15926.3	943.9	16194.5	945.4	16429.4	944.1	16628.2	944	16879.3	943.5
17113.8	942.4	17377.6	941.9	17498.6	943.3	17607.2	938.9	17628.8	936.3
17658.3	936.3	17675	944.5	17697.5	951.2	17780.4	950.6	17838.1	947
17867.7	942.5	17967.1	945	18084.3	942	18261.2	944.6	18437.1	945.1
18628.2	943.1	18829.4	943.7	19025	944.9	19214.9	946.9	19248.3	947.6
19276.7	941.7	19395.7	940.8	19474.4	946.5	19525.1	941.1	19863.4	942.3
20078.8	940.7	20263.9	939.9	20310.8	939.3	20322.1	942.6	20372.8	938
20488.5	939.3	20499.7	937.7	20594.1	938.9	20626.9	940.5	20657.3	939.8
20690.1	946.3	20711.8	945.7	20725.9	942.7	20819.1	942.7	20861.5	948.6
20879.4	947.5	20896	957	20906	955	20980	955.9	20990	954.6
21051.2	955.9	21071.8	953.9	21206.4	955	21247.3	956.9	21438.7	956
21607.6	952.1	21652.6	956.5	21832	957.6	22017.2	957.7	22136.9	954
22358.1	956.8	22480.5	957.8	22661.3	957.9	22684.8	957.8	22918.3	956.9

22985.5	956.5	23086.3	950.7	23165.3	950.8	23400.3	954	23576.8	954.1
23691	953.2	23717.5	950.5	23919.1	949.7	24108.8	949.5	24379.6	950.1
24590.3	950.3	24795.9	950.7	24878.3	952.9	24883.6	950.7	24903	957.1
24983.7	956.7								

Manning's n Values num= 7

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
13125.5	.15	17780.4	.15	18261.2	.065	19395.7	.032	20263.9	.043
20896	.043	21206.4	.053						

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
17780.4	20896	520	515.72	560	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
13125	17205	960	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 200.2

INPUT
Description: 200.2

Left Channel Bank Station Interpolated
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
13153.3	944.6	13349.8	941	13453.5	941.7	13506.2	944.4	13667.2	944.5
13896.4	944.4	14116.1	944.3	14330.9	944.2	14491.6	944.1	14677.3	943.8
14757.1	939.6	14939.8	944.1	15110.7	943.8	15278.6	943.3	15461.1	943.2
15632.4	943.3	15866.9	943.9	16084.9	943.3	16260.8	943.4	16458.2	942.6
16696.4	943.8	16928.4	942.2	17115	942.02	92 17146.9	942	17406.4	942.7
17643.4	942.6	17703.7	941.7	17728.1	936.2	17754.7	936.2	17774.2	941
17960.5	949.6	18052.3	948	18086.8	939.2	18113.1	940.7	18233.7	939.8
18402.1	943	18511.7	944.8	18531.7	941.8	18707.3	944.7	18794.8	941.3
19017.2	943.2	19081.1	945.2	19247.5	944.2	19313.2	945.7	19482.3	942.9
19591.6	942.6	20062.3	940.4	20235.8	940	20296.5	940.6	20329.2	937.6
20402.2	940.4	20578.4	937.9	20633	938.7	20676	937	20686.1	939.7
20744	948	20822.3	948	20949.1	954.9	21027.6	947.5	21215	947.3
21338.5	947.2	21527.5	948.5	21746	948.8	21841.7	948.3	22059	949.1
22185.4	949.1	22507.1	948.8	22551.2	949	22836.7	949.8	22992.3	949.2
23156.3	950.7	23327.5	950.2	23492.3	951.2	23633.4	950.7	23641.6	948.8
23667.9	953.3	23785.4	949.4	23980	949	24145.7	948.5	24326	947.5
24336.6	946.6	24353.9	949.4	24529.6	949.2	24626.1	949.5	24679.5	947.3
24861.6	949.3	24983.4	948.5	24990.2	949.6	24999.2	947	25138.6	950
25169.5	955.5	25202.4	950.9	25239.2	950	25434.2	953.6	25474.7	955.9
25481.6	954.7	25498.7	958.4						

Manning's n Values num= 8

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
13153.3	.15	17960.5	.15	18233.7	.065	19482.3	.032	20235.8	.043
20744	.043	21215	.025	23667.9	.053				

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
17960.5	20744	535	525.73	515	.1	.3

Ineffective Flow num= 3

Sta L	Sta R	Elev	Permanent
13150	17115	960	F
20744	23100	960	F
25169.5	25498.7	960	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 200.1

INPUT
Description: 200.1
Station Elevation Data num= 96

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
13401.5	961.6	13404.9	959.9	13406.7	957.2	13436.1	949.3	13438.3	947.2
13608.9	944.8	13771.4	944.1	13861.6	946.2	14093.6	944.2	14363	943.5
14599.1	944	14804.9	943.5	14985.6	943.6	15188.8	942.7	15425.2	942.8
15650.8	942.8	15834.1	942.9	16015.4	942.8	16214.7	941.9	16467.4	941.6
16641.3	942.8	16821.1	944	17077.9	942.2	17313	941.7	17523.7	941.6
17672.5	940.7	17733.3	943.5	17903.5	943	18097	942	18197	940.9
18244	934.9	18278.2	934.7	18280	936.9	18289	936.2	18327.6	941.8

18505.3	941.8	18602	941.2	18752.8	944.8	18927.6	940.3	19044.3	938.9
19072.3	941.3	19130.7	943	19301.3	943.1	19402.1	944.8	19524.2	937.7
19631.9	945.9	19875.1	939.3	20104.9	934.9	20306.5	934.5	20329.5	935.2
20520.9	935.5	20604.1	936.7	20643	947.2	20857.2	946.5	21112.6	946.5
21165.6	945.5	21339.7	946.3	21499.9	947.4	21673.2	947.4	21692.7	947.4
21938.1	947.6	21976.2	947.6	22310	947.7	22366.6	947.7	22620.5	948
22748	948.7	23104.3	950.4	23323.4	950.8	23521	950.1	23671.5	950.7
23677.2	948.1	23730.1	951.6	23754.2	948.1	23760.8	950.1	23949.5	948.5
24132.7	948.8	24309.4	949	24354.9	949.5	24372.1	946.9	24561.3	948.7
24717.9	946.9	24773.6	949.1	24952.8	948.5	25016.6	946.2	25028.8	948.4
25039.1	944.7	25073.4	947.5	25256.1	949.3	25287.2	954.4	25301	949.1
25375.9	953.1	25528.9	956	25539.2	957.4	25551.8	955.4	25735.3	957.8
25963	960								

Manning's n Values num= 8

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
13401.5	.15	15425.2	.043	16821.1	.15	18752.8	.15	19524.2	.032
20643	.043	21165.6	.025	23730.1	.053				

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
17733.3	20643	490 491.65	495	.1	.3

Ineffective Flow num= 3

Sta L	Sta R	Elev	Permanent
13400	17030	960	F
20800	23000	960	F
25287.2	25965	960	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 200

INPUT
Description: 200
Station Elevation Data num= 96

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
13751.9	957.5	13774.9	950.4	13899.2	945.3	14075.2	943.6	14247.4	943.4
14390.2	944.1	14410.8	941.9	14489.5	944.7	14707.6	944.7	14871.6	945
15032.5	944.4	15300.2	944.1	15460.8	944.8	15628	944.3	15784.9	944.2
15958.7	943.4	16114	943.3	16279	942.4	16452	942.3	16652.4	942.7
16843.9	942.3	17008.1	943.8	17197.2	943.5	17388.9	942.5	17552.5	941.8
17738.6	942.2	17904	942.1	18074.8	942.9	18250.5	943.4	18433.6	942.2
18601	942.2	18626	940.2	18638.8	934	18658.5	933.4	18693.5	940.2
18768.9	944.3	18874.7	940.2	19043.7	940.6	19233.3	941.2	19416.4	942.6
19566.9	941.6	19720.1	935.8	19796.8	938.8	19975	934.4	20272.3	934.1
20276.6	934.2	20626.2	936.3	20790.5	935.3	20829	944.5	21085.6	944
21172.7	942.8	21329.4	945.1	21406.2	952.7	21433.8	946.6	21513.2	947.1
21713.7	947	21747.4	947	21906.5	946.8	21920.3	946.8	22147.8	946
22206.3	945.8	22451.9	946.8	22701.3	947.9	22901.9	948.3	23151.7	949.3
23234.2	950.1	23323.5	948.7	23510.9	949.9	23672.1	949.6	23707.3	949.9
23712.7	946.9	23720.9	949.2	23769.1	950.4	23820.8	947.8	23989.1	947.8
24020.6	947.1	24029.2	945.6	24038	947.6	24198.6	947	24361	947.2
24513.5	945.6	24672.5	946.4	24863.2	946.6	25018.9	946.3	25064.3	946
25075.8	943.9	25087.5	947.1	25163.5	947.5	25181.3	953.2	25200.7	953.7
25211	947.8	25384.8	952.1	25573.3	956	25602.8	956.1	25616.3	960.7
25622.7	961.4								

Manning's n Values num= 9

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
13751.9	.15	15628	.043	17008.1	.15	18601	.15	19566.9	.032
20829	.032	21329.4	.043	21713.7	.025	23769.1	.053		

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
17008.1	20829	520 521.67	525	.1	.3

Ineffective Flow num= 3

Sta L	Sta R	Elev	Permanent
13751	16950	960	F
21350	23200	960	F
25200.7	25625	960	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 199.91

INPUT
Description: 199.91

Station Elevation Data num= 96

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
14357	952	14390.5	944.3	14519.8	944.3	14639.2	944	14799.9	943.3
14919	943.3	15064.9	943.3	15201.6	943.3	15338.6	943.4	15454.7	943.3
15584.5	943.3	15701.7	943.3	15826.7	943	15946.8	942.7	16066.9	942.8
16186	942.4	16318.5	941.2	16444.9	941.2	16595	941.2	16734.2	941.2
16862.4	941.9	16985.5	941.6	17123.4	941.2	17256.1	940.2	17418.5	940.8
17583.3	941.1	17747.3	940.1	17924.2	940.7	18048.2	942.2	18185	942.2
18189.1	942.2	18396.1	942.1	18544.2	943.4	18752.1	941	18756.5	940.1
18757.1	941.1	18776.4	938.5	18875.1	932.1	19009.5	940.1	19154.1	941.2
19274.4	940.6	19412.9	940.1	19433.2	938.2	19665	944.1	19683.4	944.3
20122	935.3	20357	935.3	20396.2	935.2	20513.6	938.9	20603.3	938.2
20817.6	934.9	20841.2	934.9	21013	935.1	21078.3	935.1	21141.2	941.5
21181.1	941.5	21315.9	945	21377.5	952.3	21405.6	945.7	21555.3	946.7
21673.9	946.5	21886.3	946.2	22065.2	946.2	22189.8	945.7	22354.3	945.2
22462	946.4	22675.7	948.1	22731	948.3	22992.2	947.3	23079.5	947.2
23195.8	947.1	23332.1	947.2	23499	947.4	23628.6	947.3	23678.5	948.1
23685.3	950.9	23692.1	948.2	23702.9	950.2	23747.7	949.7	23766.7	947.4
23890.2	946.9	24000	946.9	24127.8	946.1	24323.2	945.3	24446.3	945.3
24602.1	944.4	24749.8	944.2	24887.7	943.5	25018.7	945.8	25033.6	942.4
25046.9	947.2	25137.9	947.1	25214.4	951.6	25285.5	947.1	25444.7	950.8
25559.1	953.2								

Manning's n Values num= 10

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
14357	.15	16318.5	.043	17747.3	.15	18544.2	.15	19433.2	.032
21013	.043	21315.9	.043	21377.5	.025	23702.9	.053	25018.7	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
16862.4	21315.9	465 466.41	465	.1	.3

Ineffective Flow num= 3

Sta L	Sta R	Elev	Permanent
14357	16800	960	F
21330	23050	960	F
25200	25559.1	960	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 199.82

INPUT
Description: 199.82

Left Channel Bank Station Interpolated
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
14626.5	957.7	14665	955.3	14714.8	947.7	14731.9	943.6	14878.2	942.2
15038.4	942.1	15177.1	942.1	15312	942.9	15442.8	943.5	15572.5	942.6
15710.4	942.1	15843.3	942.2	15981.6	942	16111.7	941.9	16269.4	941.3
16337.7	941.1	16490	941.8	16647.8	941.2	16807.1	940.1	16870	940.1
16937.5	940.1	17070.8	940.1	17202.5	940.1	17339.2	940.1	17503.8	940.1
17635.5	940.1	17774.7	939.1	17955.5	939.8	18107	939.8	18236.3	940.2
18376.6	941.1	18554.9	941.8	18684.9	940.6	18768.3	940	18787.7	931.4
18818.1	931.2	18845.4	938.1	18894.5	940	19032.4	940.6	19165.1	939.3
19236.6	938.1	19354.5	941.6	19458.6	938.6	20124.2	939.3	20322.3	939.2
20533.6	938.6	20766.2	939.3	20910.7	936.7	20926	937.9	21009.9	936.6
21146.9	939.7	21241.8	942.2	21405.4	944.5	21551.8	945.7	21756.1	945.8
21937.2	945.7	22121.7	945.7	22347.1	945.6	22491.6	945.9	22657.2	946.2
22790.5	945.6	22925.1	946.5	23055.8	946.4	23218.3	946.1	23364.5	946.1
23514.8	945.8	23642	948.2	23655.7	947.2	23663.6	949.2	23669.7	947
23724.8	949.5	23780.9	946.5	23947	945	24077.1	944.4	24199.5	945.5
24210.3	943.6	24214.2	944.9	24354.9	943.6	24545.8	943	24742.9	943.3
24928.6	944	25002.7	943.7	25010.2	942.2	25023.6	945.4	25153.6	945.8
25304.8	946.9	25434.7	948.1	25588.5	950.5	25663.5	951.7	25798.3	956.3
25810.1	957.9	25834.3	954.9	25859.3	957.7	25991.9	960.7	26149.5	962.1
26241.6	962.1	26277	964.4						

Manning's n Values num= 6

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
14626.5	.15	18554.9	.15	19165.1	.065	21405.4	.025	23724.8	.053
25002.7	.025								

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
16870	21405.4	0 0	0	.1	.3

Ineffective Flow num= 3

Sta L	Sta R	Elev	Permanent
14626.5	16870	960	F

21650	22900	960	F
25350	26127	960	F

SUMMARY OF MANNING'S N VALUES

River:1

Reach	River Sta.	n1	n2	n3	n4	n5	n6	n7	n8	n9	n10
1	214.14	.04	.035	.04							
1	214.04	.04	.035	.04							
1	213.95	.04	.035	.04							
1	213.85	.04	.035	.04							
1	213.75	.037	.032	.037							
1	213.745	Bridge									
1	213.74	.037	.032	.037							
1	213.66	.037	.032	.037							
1	213.57	.037	.032	.037							
1	213.47	.037	.032	.037							
1	213.38	.037	.032	.037							
1	213.33	.037	.032	.037							
1	213.26	.037	.032	.037							
1	213.255	Bridge									
1	213.25	.037	.032	.037							
1	213.21	.037	.032	.037							
1	213.11	.037	.032	.037							
1	213.03	.037	.032	.037							
1	212.93	.037	.032	.037							
1	212.84	.037	.032	.037							
1	212.74	.037	.032	.037							
1	212.68	.037	.032	.037							
1	212.675	Bridge									
1	212.67	.037	.032	.037							
1	212.56	.037	.032	.037							
1	212.46	.037	.032	.037							
1	212.37	.037	.032	.037							
1	212.27	.045	.033	.04							
1	212.18	.045	.033	.04							
1	212.08	.045	.033	.04							
1	211.99	.045	.033	.04							
1	211.89	.045	.033	.04							
1	211.79	.045	.033	.04							

1	211.71	.045	.033	.04		
1	211.64	.045	.033	.04		
1	211.54	.037	.032	.037		
1	211.525	Bridge				
1	211.51	.037	.032	.037		
1	211.41	.037	.032	.037		
1	211.31	.037	.032	.037		
1	211.21	.037	.032	.037		
1	211.12	.037	.032	.037		
1	211.02	.037	.032	.037		
1	210.93	.037	.032	.037		
1	210.83	.037	.032	.037		
1	210.74	.037	.032	.037		
1	210.64	.037	.032	.037		
1	210.55	.037	.032	.037		
1	210.46	.037	.032	.037	.037	.025
1	210.36	.032	.037	.025	.025	
1	210.26	.037	.032	.037	.037	.025
1	210.17	.037	.032	.037	.025	
1	210.07	.032	.037	.025		
1	209.98	.037	.032	.035	.037	
1	209.88	.037	.032	.035	.025	
1	209.79	.037	.032	.035	.025	
1	209.69	.037	.032	.035	.025	
1	209.60	.037	.032	.032	.035	.025
1	209.54	.025	.032	.037		
1	209.535	Bridge				
1	209.53	.025	.032	.037		
1	209.42	.037	.032	.032	.025	
1	209.33	.037	.032	.037		
1	209.24	.037	.032	.037	.032	.025
1	209.14	.037	.032	.037	.032	.025
1	209.04	.037	.032	.037	.032	.025
1	208.95	.037	.032	.032	.037	.025
1	208.85	.037	.032	.032	.037	
1	208.75	.037	.032	.032		
1	208.67	.037	.032	.032	.037	
1	208.57	.037	.032	.032	.037	
1	208.48	.043	.032	.032	.037	

1	208.39	.043	.032	.032	.037	.025	
1	208.29	.025	.043	.032	.037		
1	208.19	.025	.043	.043	.032	.032	.037
1	208.10	.025	.043	.032	.032	.032	
1	207.99	.043	.032	.032			
1	207.90	.043	.032	.032			
1	207.80	.043	.032	.032	.032		
1	207.71	.025	.032	.032	.032		
1	207.62	.025	.043	.032	.032	.032	
1	207.49	.032	.037				
1	207.485	Bridge					
1	207.48	.032	.037				
1	207.43	.025	.043	.032	.037		
1	207.34	.025	.043	.032	.037		
1	207.27	.025	.043	.032	.032		
1	207.16	.025	.043	.032	.037		
1	207.07	.043	.032	.032	.032		
1	206.97	.025	.043	.032	.032	.032	
1	206.88	.025	.043	.032	.032	.032	.025
1	206.79	.025	.043	.032	.032	.032	
1	206.7	.025	.043	.032	.032	.032	
1	206.6	.025	.043	.032	.032	.032	
1	206.51	.025	.043	.032	.032	.032	
1	206.41	.025	.043	.032	.032	.032	
1	206.32	.043	.032	.032	.032	.025	
1	206.22	.043	.043	.032	.025		
1	206.13	.043	.033	.032			
1	206.03	.043	.033	.032			
1	205.94	.043	.033	.032	.037		
1	205.84	.043	.043	.032	.032	.037	
1	205.75	.043	.043	.043	.025		
1	205.62	.025	.043	.043	.032	.032	.025
1	205.52	.043	.043	.032	.032	.025	
1	205.43	.043	.043	.032	.032	.025	
1	205.4	.043	.043	.032	.032		
1	205.34	.043	.043	.025			
1	205.25	.025	.037	.037	.025		
1	205.15	.025	.037	.037	.025		
1	205.06	.037	.037	.037	.025		
1	204.97	.025	.037	.037	.025		

1		204.87	.025	.037	.037	.025			
1		204.78	.025	.037	.037	.025			
1		204.68	.025	.037	.037	.037	.025		
1		204.61	.025	.037	.037	.025			
1		204.53	.025	.037	.037	.037	.025		
1		204.42	.025	.037	.037	.037	.025		
1		204.34	.025	.037	.037	.025			
1		204.25	.035	.032	.025				
1		204.15	.035	.032	.025	.025			
1		204.05	.05	.035	.032	.025			
1		203.96	.025	.043	.043	.032	.037		
1		203.86	.043	.043	.032	.037			
1		203.77	.025	.043	.043	.032	.025		
1		203.67	.025	.037	.037	.032	.032	.025	
1		203.58	.025	.037	.037	.032	.025		
1		203.48	.025	.037	.037	.032	.025		
1		203.39	.025	.037	.037	.032	.025		
1		203.29	.025	.037	.037	.032	.025		
1		203.19	.025	.043	.043	.037	.025	.025	
1		203.09	.025	.043	.043	.037	.025		
1		202.99	.025	.043	.043	.037	.043		
1		202.9	.025	.043	.043	.037	.043		
1		202.8	.025	.043	.043	.037	.043		
1		202.69	.025	.043	.043	.037	.043		
1		202.59	.025	.043	.043	.037	.043		
1		202.48	.043	.043	.037	.043			
1		202.37	.025	.043	.043	.037	.043		
1		202.29	.025	.043	.043	.037	.043	.043	
1		202.18	.025	.043	.043	.037	.043		
1		202.09	.025	.043	.043	.037	.043		
1		201.99	.025	.043	.043	.032	.037	.037	.025
1		201.9	.025	.043	.043	.032	.037	.037	.025
1		201.81	.025	.065	.065	.032	.037	.025	.025
1		201.71	.025	.065	.065	.032	.037	.025	.025
1		201.62	.025	.15	.025	.065	.065	.032	.037
1	.025 .025	201.52	.025	.15	.025	.15	.032	.037	.025
1		201.43	.043	.065	.025	.15	.032	.037	.025
1		201.33	.043	.065	.025	.15	.032	.037	.025
1	.037 .025	201.24	.043	.065	.025	.15	.15	.037	.032

1		201.14	.043	.065	.025	.15	.037	.032	.037
	.025								
1		201.05	.043	.15	.025	.15	.037	.032	.037
	.025								
1		200.95	.043	.15	.037	.032	.037	.035	
1		200.86	.043	.15	.032	.037	.035	.035	
1		200.77	.043	.15	.032	.037	.025	.035	
1		200.67	.043	.15	.032	.15	.032	.043	.025
	.025								
1		200.58	.15	.043	.15	.032	.043	.025	.025
1		200.49	.15	.043	.043	.15	.032	.043	.025
1		200.39	.15	.043	.043	.15	.032	.043	.025
1		200.3	.15	.15	.065	.032	.043	.043	.053
1		200.2	.15	.15	.065	.032	.043	.043	.025
	.053								
1		200.1	.15	.043	.15	.15	.032	.043	.025
	.053								
1		200	.15	.043	.15	.15	.032	.032	.043
	.025	.053							
1		199.91	.15	.043	.15	.15	.032	.043	.043
	.025	.053	.025						
1		199.82	.15	.15	.065	.025	.053	.025	

SUMMARY OF REACH LENGTHS

River: 1

Reach	River Sta.	Left	Channel	Right
1	214.14	475	510.51	570
1	214.04	495	493.12	480
1	213.95	500	504.25	500
1	213.85	521	520.04	541
1	213.75	125	116.36	120
1	213.745	Bridge		
1	213.74	391	373.47	361
1	213.66	490	491.08	495
1	213.57	650	500.37	390
1	213.47	500	493.66	485
1	213.38	210	290.06	395
1	213.33	266	316.41	426
1	213.26	155	152.22	155
1	213.255	Bridge		
1	213.25	121	123.36	121
1	213.21	450	531.57	745
1	213.11	425	459.38	565
1	213.03	475	495	525
1	212.93	495	501.9	535
1	212.84	565	538.19	480
1	212.74	296	242.17	66
1	212.68	155	154.01	155
1	212.675	Bridge		
1	212.67	481	557.08	901
1	212.56	495	502.71	525
1	212.46	495	497.81	510
1	212.37	500	495.84	485
1	212.27	510	495	475
1	212.18	500	502.53	485
1	212.08	510	519.85	475
1	211.99	740	489.19	710
1	211.89	507	527.46	640
1	211.79	680	450.74	290
1	211.71	780	392.06	500
1	211.64	481	521.13	221
1	211.54	125	125.49	120
1	211.525	Bridge		
1	211.51	541	562.88	606

1	211.41	500	501.53	505
1	211.31	540	523.28	460
1	211.21	495	493.11	475
1	211.12	500	505.73	500
1	211.02	485	493.19	495
1	210.93	505	505.14	505
1	210.83	505	505.61	500
1	210.74	495	503.39	500
1	210.64	520	515.29	495
1	210.55	475	473.19	495
1	210.46	520	522.28	505
1	210.36	480	487.62	480
1	210.26	505	512.65	520
1	210.17	505	497.78	495
1	210.07	511	494.01	499
1	209.98	519	492.54	497
1	209.88	504	500.82	498
1	209.79	497	500.22	505
1	209.69	541.3	544.5	578.5
1	209.60	243	288.7	318
1	209.54	114	116.26	106
1	209.535	Bridge		
1	209.53	588	626	654.7
1	209.42	501	486.04	526
1	209.33	563	490.4	583
1	209.24	514	515.61	523
1	209.14	515	499.52	517
1	209.04	495	493.13	531
1	208.95	458	514.75	603
1	208.85	511	479.03	452
1	208.75	565	559.49	569
1	208.67	456	449.63	359
1	208.57	685	539.75	467
1	208.48	521	435.12	469
1	208.39	509	512.43	494
1	208.29	577	525.37	560
1	208.19	537	505.13	617
1	208.10	582	483.64	477
1	207.99	483	482.81	544
1	207.90	539	522.44	631
1	207.80	562	495.85	534
1	207.71	493	488.78	530
1	207.62	493	471.11	510
1	207.49	244	246.48	308
1	207.485	Bridge		
1	207.48	236	236.83	302
1	207.43	493	507.55	548
1	207.34	478	511.15	584
1	207.27	495.6	574	655.3
1	207.16	586	585.23	607
1	207.07	510	514.11	520
1	206.97	480	491.78	480
1	206.88	480	487.71	505
1	206.79	495	489.96	520
1	206.7	500	500.23	500
1	206.6	515	504.63	520
1	206.51	495	496.45	500
1	206.41	495	494.64	490
1	206.32	515	513.83	520
1	206.22	500	502.44	460
1	206.13	490	483.44	540
1	206.03	590	513.6	510
1	205.94	505	506.69	510
1	205.84	495	496	480
1	205.75	825	642	490
1	205.62	560	523	510
1	205.52	430	470	400
1	205.43	175	171.89	125
1	205.4	305	315	370
1	205.34	485	492	450
1	205.25	505	506	485
1	205.15	495	495.39	495
1	205.06	505	505	530
1	204.97	510	503	550
1	204.87	495	499	505
1	204.78	505	515	550
1	204.68	325	407	570
1	204.61	395	449	545
1	204.53	570	552	525

1	204.42	430	453	500
1	204.34	495	488	480
1	204.25	510	508	500
1	204.15	510	509	510
1	204.05	510	505	520
1	203.96	495	502	505
1	203.86	505	498	480
1	203.77	490	498	480
1	203.67	470	490	505
1	203.58	560	513	495
1	203.48	500	505.82	515
1	203.39	500	505	500
1	203.29	620	535	420
1	203.19	535	520	485
1	203.09	520	518	500
1	202.99	480	456	424
1	202.9	575	538	460
1	202.8	600	555.5	450
1	202.69	585	566.1	510
1	202.59	400	561.2	640
1	202.48	700	576.2	385
1	202.37	430	400.7	360
1	202.29	590	583.1	600
1	202.18	525	511.84	500
1	202.09	510	509.32	500
1	201.99	470	477.46	490
1	201.9	500	495.8	500
1	201.81	535	511.61	515
1	201.71	505	489.63	495
1	201.62	485	486.48	510
1	201.52	495	492.06	495
1	201.43	555	519.88	505
1	201.33	515	514.62	515
1	201.24	485	488.56	490
1	201.14	480	481.53	485
1	201.05	520	512.89	510
1	200.95	475	474.38	480
1	200.86	525	523.32	525
1	200.77	500	495.64	520
1	200.67	500	503.34	510
1	200.58	475	479.55	530
1	200.49	510	497.59	510
1	200.39	550	506.5	480
1	200.3	520	515.72	560
1	200.2	535	525.73	515
1	200.1	490	491.65	495
1	200	520	521.67	525
1	199.91	465	466.41	465
1	199.82	0	0	0

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: 1

Reach	River Sta.		Contr.	Expan.
1	214.14		.1	.3
1	214.04		.1	.3
1	213.95		.1	.3
1	213.85		.1	.3
1	213.75		.1	.3
1	213.745	Bridge		
1	213.74		.1	.3
1	213.66		.1	.3
1	213.57		.1	.3
1	213.47		.1	.3
1	213.38		.1	.3
1	213.33		.1	.3
1	213.26		.1	.3
1	213.255	Bridge		
1	213.25		.1	.3
1	213.21		.1	.3
1	213.11		.1	.3
1	213.03		.1	.3
1	212.93		.1	.3
1	212.84		.1	.3

1	212.74	.1	.3
1	212.68	.1	.3
1	212.675	Bridge	
1	212.67	.1	.3
1	212.56	.1	.3
1	212.46	.1	.3
1	212.37	.1	.3
1	212.27	.1	.3
1	212.18	.1	.3
1	212.08	.1	.3
1	211.99	.1	.3
1	211.89	.1	.3
1	211.79	.1	.3
1	211.71	.1	.3
1	211.64	.1	.3
1	211.54	.1	.3
1	211.525	Bridge	
1	211.51	.1	.3
1	211.41	.1	.3
1	211.31	.1	.3
1	211.21	.1	.3
1	211.12	.1	.3
1	211.02	.1	.3
1	210.93	.1	.3
1	210.83	.1	.3
1	210.74	.1	.3
1	210.64	.1	.3
1	210.55	.1	.3
1	210.46	.1	.3
1	210.36	.1	.3
1	210.26	.1	.3
1	210.17	.1	.3
1	210.07	.1	.3
1	209.98	.1	.3
1	209.88	.1	.3
1	209.79	.1	.3
1	209.69	.1	.3
1	209.60	.1	.3
1	209.54	.3	.5
1	209.535	Bridge	
1	209.53	.3	.5
1	209.42	.1	.3
1	209.33	.1	.3
1	209.24	.1	.3
1	209.14	.1	.3
1	209.04	.1	.3
1	208.95	.1	.3
1	208.85	.1	.3
1	208.75	.1	.3
1	208.67	.1	.3
1	208.57	.1	.3
1	208.48	.1	.3
1	208.39	.1	.3
1	208.29	.1	.3
1	208.19	.1	.3
1	208.10	.1	.3
1	207.99	.1	.3
1	207.90	.1	.3
1	207.80	.1	.3
1	207.71	.1	.3
1	207.62	.1	.3
1	207.49	.3	.5
1	207.485	Bridge	
1	207.48	.3	.5
1	207.43	.1	.3
1	207.34	.1	.3
1	207.27	.1	.3
1	207.16	.1	.3
1	207.07	.1	.3
1	206.97	.1	.3
1	206.88	.1	.3
1	206.79	.1	.3
1	206.7	.1	.3
1	206.6	.1	.3
1	206.51	.1	.3
1	206.41	.1	.3
1	206.32	.1	.3
1	206.22	.1	.3
1	206.13	.1	.3

1	206.03	.1	.3
1	205.94	.1	.3
1	205.84	.1	.3
1	205.75	.1	.3
1	205.62	.1	.3
1	205.52	.1	.3
1	205.43	.1	.3
1	205.4	.1	.3
1	205.34	.1	.3
1	205.25	.1	.3
1	205.15	.1	.3
1	205.06	.1	.3
1	204.97	.1	.3
1	204.87	.1	.3
1	204.78	.1	.3
1	204.68	.1	.3
1	204.61	.1	.3
1	204.53	.1	.3
1	204.42	.1	.3
1	204.34	.1	.3
1	204.25	.1	.3
1	204.15	.1	.3
1	204.05	.1	.3
1	203.96	.1	.3
1	203.86	.1	.3
1	203.77	.1	.3
1	203.67	.1	.3
1	203.58	.1	.3
1	203.48	.1	.3
1	203.39	.1	.3
1	203.29	.1	.3
1	203.19	.1	.3
1	203.09	.1	.3
1	202.99	.1	.3
1	202.9	.1	.3
1	202.8	.1	.3
1	202.69	.1	.3
1	202.59	.1	.3
1	202.48	.1	.3
1	202.37	.1	.3
1	202.29	.1	.3
1	202.18	.1	.3
1	202.09	.1	.3
1	201.99	.1	.3
1	201.9	.1	.3
1	201.81	.1	.3
1	201.71	.1	.3
1	201.62	.1	.3
1	201.52	.1	.3
1	201.43	.1	.3
1	201.33	.1	.3
1	201.24	.1	.3
1	201.14	.1	.3
1	201.05	.1	.3
1	200.95	.1	.3
1	200.86	.1	.3
1	200.77	.1	.3
1	200.67	.1	.3
1	200.58	.1	.3
1	200.49	.1	.3
1	200.39	.1	.3
1	200.3	.1	.3
1	200.2	.1	.3
1	200.1	.1	.3
1	200	.1	.3
1	199.91	.1	.3
1	199.82	.1	.3

Profile Output Table - Standard Table 1

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
1	214.14	PF#1	169000.00	1048.70	1075.50	1062.66	1077.01					

0.000804	9.84	17180.80	1312.25	0.36			
1	214.14	PF#2	169000.00	1048.70	1075.51	1062.66	1077.01
0.000803	9.83	17184.70	726.86	0.36			
1	214.04	PF#1	169000.00	1048.80	1075.04	1062.64	1076.58
0.000846	9.95	16977.37	813.60	0.36			
1	214.04	PF#2	169000.00	1048.80	1075.05	1062.64	1076.59
0.000845	9.95	16981.74	733.89	0.36			
1	213.95	PF#1	169000.00	1049.30	1074.16	1063.67	1076.05
0.001218	11.04	15307.03	777.39	0.43			
1	213.95	PF#2	169000.00	1049.30	1074.16	1063.67	1076.05
0.001216	11.04	15312.30	745.19	0.43			
1	213.85	PF#1	169000.00	1048.10	1071.66	1065.14	1075.08
0.002230	14.98	11764.97	1017.61	0.58			
1	213.85	PF#2	169000.00	1048.10	1071.66	1065.14	1075.09
0.002229	14.98	11769.17	702.59	0.58			
1	213.75	PF#1	169000.00	1044.60	1071.97	1060.91	1073.93
0.000919	11.25	15022.38	656.45	0.41			
1	213.75	PF#2	169000.00	1044.60	1071.98	1060.91	1073.94
0.000918	11.25	15027.59	656.35	0.41			
1	213.745		Bridge				
1	213.74	PF#1	169000.00	1044.60	1071.66	1060.91	1073.68
0.000958	11.40	14818.54	654.76	0.42			
1	213.74	PF#2	169000.00	1044.60	1071.67	1060.91	1073.69
0.000957	11.40	14824.14	654.73	0.42			
1	213.66	PF#1	169000.00	1047.60	1069.25	1063.62	1072.99
0.002199	15.51	10898.87	586.13	0.62			
1	213.66	PF#2	169000.00	1047.60	1069.27	1063.62	1073.00
0.002194	15.50	10906.54	565.99	0.62			
1	213.57	PF#1	169000.00	1046.70	1069.19	1063.09	1071.61
0.001831	12.49	13535.50	1275.07	0.55			
1	213.57	PF#2	169000.00	1046.70	1069.20	1063.09	1071.62
0.001827	12.47	13548.50	852.16	0.55			
1	213.47	PF#1	169000.00	1045.80	1068.60	1061.42	1070.60
0.001694	11.35	14886.18	1423.99	0.52			
1	213.47	PF#2	169000.00	1045.80	1068.62	1061.42	1070.62
0.001691	11.34	14903.41	1023.12	0.52			
1	213.38	PF#1	169000.00	1045.40	1068.60	1059.33	1069.81
0.000809	8.83	19139.19	1251.70	0.37			
1	213.38	PF#2	169000.00	1045.40	1068.61	1059.33	1069.82
0.000810	8.82	19155.46	1101.75	0.37			
1	213.33	PF#1	169000.00	1045.40	1068.57	1057.70	1069.53
0.000606	7.87	21480.53	1371.95	0.33			
1	213.33	PF#2	169000.00	1045.40	1068.58	1057.70	1069.54
0.000608	7.86	21496.88	1185.62	0.33			
1	213.26	PF#1	169000.00	1040.40	1068.16	1055.61	1069.32
0.000568	8.67	19493.06	881.25	0.32			
1	213.26	PF#2	169000.00	1040.40	1068.17	1055.61	1069.34
0.000567	8.66	19505.00	881.21	0.32			
1	213.255		Bridge				

1	213.25	PF#1	169000.00	1040.40	1067.95	1055.61	1069.14
0.000585	8.75	19310.29	880.24	0.33			
1	213.25	PF#2	169000.00	1040.40	1067.96	1055.61	1069.15
0.000584	8.75	19322.64	880.24	0.33			
1	213.21	PF#1	166000.00	1044.90	1067.99	1055.88	1069.03
0.000510	8.17	20359.04	1540.81	0.31			
1	213.21	PF#2	166000.00	1044.90	1068.00	1055.88	1069.04
0.000528	8.17	20314.90	928.20	0.31			
1	213.11	PF#1	166000.00	1047.60	1067.16	1058.35	1068.63
0.000913	9.73	17066.41	927.80	0.40			
1	213.11	PF#2	166000.00	1047.60	1067.16	1058.35	1068.63
0.000912	9.72	17071.96	927.79	0.40			
1	213.03	PF#1	166000.00	1046.70	1066.57	1058.30	1068.17
0.001032	10.14	16391.46	965.60	0.42			
1	213.03	PF#2	166000.00	1046.70	1066.58	1058.30	1068.17
0.001031	10.13	16382.57	919.76	0.42			
1	212.93	PF#1	166000.00	1045.40	1065.48	1058.04	1067.55
0.001316	11.53	14401.99	850.17	0.48			
1	212.93	PF#2	166000.00	1045.40	1065.49	1058.04	1067.55
0.001314	11.52	14408.72	798.99	0.48			
1	212.84	PF#1	166000.00	1043.10	1063.54	1057.57	1066.65
0.001930	14.14	11737.26	635.75	0.58			
1	212.84	PF#2	166000.00	1043.10	1063.56	1057.57	1066.66
0.001926	14.13	11744.94	635.75	0.58			
1	212.74	PF#1	166000.00	1041.60	1063.06	1055.53	1065.57
0.001465	12.71	13064.60	721.72	0.51			
1	212.74	PF#2	166000.00	1041.60	1063.08	1055.53	1065.58
0.001462	12.70	13073.93	676.59	0.51			
1	212.68	PF#1	166000.00	1036.90	1063.02	1052.69	1065.16
0.001030	11.74	14139.83	629.02	0.44			
1	212.68	PF#2	166000.00	1036.90	1063.04	1052.69	1065.17
0.001028	11.73	14148.58	629.03	0.44			
1	212.675		Bridge				
1	212.67	PF#1	166000.00	1036.90	1062.53	1052.69	1064.77
0.001102	12.00	13830.37	626.50	0.45			
1	212.67	PF#2	166000.00	1036.90	1062.54	1052.69	1064.77
0.001101	12.00	13834.12	626.51	0.45			
1	212.56	PF#1	166000.00	1039.30	1056.88	1055.74	1063.23
0.004887	20.23	8207.45	521.49	0.90			
1	212.56	PF#2	166000.00	1039.30	1056.98	1055.74	1063.25
0.004781	20.09	8264.06	521.09	0.89			
1	212.46	PF#1	166000.00	1037.20	1056.23	1052.77	1060.78
0.003034	17.11	9703.74	1555.15	0.72			
1	212.46	PF#2	166000.00	1037.20	1056.29	1052.77	1060.80
0.003114	17.05	9738.24	557.66	0.72			
1	212.37	PF#1	166000.00	1036.60	1053.09	1051.73	1058.81
0.004662	19.19	8648.72	573.57	0.87			
1	212.37	PF#2	166000.00	1036.60	1053.09	1051.73	1058.81
0.004657	19.19	8651.87	573.59	0.87			
1	212.27	PF#1	166000.00	1035.10	1050.67	1049.57	1056.35
0.005236	19.12	8681.71	2800.97	0.89			
1	212.27	PF#2	166000.00	1035.10	1050.67	1049.57	1056.35

0.005237	19.12	8681.12	605.47	0.89			
1	212.18	PF#1	166000.00	1030.80	1050.25	1045.89	1053.95
0.002692	15.42	10762.00	2340.53	0.66			
1	212.18	PF#2	166000.00	1030.80	1050.25	1045.89	1053.94
0.002692	15.43	10761.62	627.48	0.66			
1	212.08	PF#1	166000.00	1025.90	1050.04	1041.45	1052.67
0.001415	13.00	12773.79	2180.71	0.49			
1	212.08	PF#2	166000.00	1025.90	1050.05	1041.45	1052.67
0.001415	12.99	12774.66	589.61	0.49			
1	211.99	PF#1	166000.00	1025.39	1048.55	1041.17	1051.77
0.001822	14.40	11524.16	1310.27	0.55			
1	211.99	PF#2	166000.00	1025.39	1048.55	1041.17	1051.78
0.001822	14.40	11525.23	549.11	0.55			
1	211.89	PF#1	166000.00	1024.19	1047.93	1039.97	1050.85
0.001600	13.70	12113.28	564.71	0.52			
1	211.89	PF#2	166000.00	1024.19	1047.93	1039.97	1050.85
0.001600	13.70	12114.32	564.72	0.52			
1	211.79	PF#1	166000.00	1023.84	1047.07	1039.27	1050.00
0.001620	13.72	12095.82	1185.33	0.52			
1	211.79	PF#2	166000.00	1023.84	1047.08	1039.27	1050.00
0.001619	13.72	12097.07	567.51	0.52			
1	211.71	PF#1	166000.00	1023.19	1046.34	1038.56	1049.27
0.001623	13.72	12101.39	635.05	0.52			
1	211.71	PF#2	166000.00	1023.19	1046.35	1038.56	1049.27
0.001622	13.72	12102.92	569.02	0.52			
1	211.64	PF#1	166000.00	1022.58	1045.45	1038.24	1048.58
0.001783	14.19	11700.25	828.77	0.55			
1	211.64	PF#2	166000.00	1022.58	1045.46	1038.24	1048.58
0.001782	14.19	11701.96	561.65	0.55			
1	211.54	PF#1	166000.00	1021.90	1043.47	1038.07	1047.45
0.002293	15.99	10380.21	525.33	0.63			
1	211.54	PF#2	166000.00	1021.90	1043.48	1038.07	1047.45
0.002291	15.99	10382.84	525.34	0.63			
1	211.525		Bridge				
1	211.51	PF#1	166000.00	1021.80	1041.77	1037.98	1046.46
0.002980	17.37	9557.39	520.99	0.71			
1	211.51	PF#2	166000.00	1021.80	1041.78	1037.98	1046.46
0.002975	17.36	9562.67	521.02	0.71			
1	211.41	PF#1	166000.00	1018.30	1041.28		1044.73
0.001987	14.89	11147.43	565.09	0.59			
1	211.41	PF#2	166000.00	1018.30	1041.30		1044.74
0.001984	14.88	11154.11	565.16	0.59			
1	211.31	PF#1	166000.00	1020.80	1039.90	1037.24	1043.44
0.003366	15.11	10988.09	819.03	0.73			
1	211.31	PF#2	166000.00	1020.80	1039.93	1037.24	1043.46
0.003343	15.07	11012.49	819.24	0.72			
1	211.21	PF#1	166000.00	1021.10	1039.00	1035.55	1041.62
0.002619	12.98	12792.40	987.74	0.64			
1	211.21	PF#2	166000.00	1021.10	1039.05	1035.55	1041.64
0.002589	12.93	12838.46	987.93	0.63			

1	211.12	PF#1	166000.00	1015.70	1039.46	1029.88	1040.57
0.000691	8.47	19593.40	1059.20	0.35			
1	211.12	PF#2	166000.00	1015.70	1039.50	1029.88	1040.61
0.000686	8.45	19638.26	1059.34	0.35			
1	211.02	PF#1	166000.00	1019.40	1037.87	1032.11	1039.96
0.001614	11.65	14595.42	1082.12	0.52			
1	211.02	PF#2	166000.00	1019.40	1037.86	1032.11	1039.99
0.001636	11.73	14253.05	945.86	0.52			
1	210.93	PF#1	166000.00	1018.70	1037.32	1034.18	1039.03
0.001711	11.09	17850.32	2652.71	0.52			
1	210.93	PF#2	166000.00	1018.70	1037.34	1034.18	1039.04
0.001701	11.07	17892.91	2037.06	0.52			
1	210.83	PF#1	166000.00	1019.10	1036.08	1032.21	1038.08
0.001945	11.75	16606.27	2245.35	0.55			
1	210.83	PF#2	166000.00	1019.10	1036.08	1032.20	1038.09
0.001949	11.76	16550.71	2196.33	0.56			
1	210.74	PF#1	166000.00	1018.20	1035.65	1029.79	1037.15
0.001241	10.08	17706.73	1394.30	0.45			
1	210.74	PF#2	166000.00	1018.20	1035.66	1029.79	1037.16
0.001236	10.07	17730.05	1394.43	0.45			
1	210.64	PF#1	166000.00	1017.70	1035.03	1029.03	1036.51
0.001265	9.99	18879.26	2977.70	0.45			
1	210.64	PF#2	166000.00	1017.70	1035.05	1029.03	1036.53
0.001258	9.97	18930.01	2362.22	0.45			
1	210.55	PF#1	166000.00	1018.00	1034.00	1028.55	1035.76
0.001590	10.64	15683.73	1809.09	0.50			
1	210.55	PF#2	166000.00	1018.00	1034.02	1028.55	1035.78
0.001582	10.62	15658.21	1401.75	0.50			
1	210.46	PF#1	166000.00	1016.30	1034.53	1025.05	1035.02
0.000443	5.63	29458.93	2040.48	0.25			
1	210.46	PF#2	166000.00	1016.30	1034.55	1025.05	1035.04
0.000447	5.63	29495.45	1881.55	0.25			
1	210.36	PF#1	166000.00	1017.40	1033.85	1027.55	1034.67
0.000894	7.24	22914.04	1900.01	0.37			
1	210.36	PF#2	166000.00	1017.40	1033.87	1027.55	1034.69
0.000889	7.23	22952.31	1900.09	0.37			
1	210.26	PF#1	166000.00	1016.90	1033.53	1026.47	1034.23
0.000770	6.68	24846.37	1932.32	0.33			
1	210.26	PF#2	166000.00	1016.90	1033.56	1026.47	1034.25
0.000766	6.67	24889.07	1932.44	0.33			
1	210.17	PF#1	166000.00	1014.70	1032.78	1027.95	1033.71
0.001212	7.77	21357.62	2172.37	0.42			
1	210.17	PF#2	166000.00	1014.70	1032.80	1027.95	1033.74
0.001203	7.75	21412.63	1968.14	0.41			
1	210.07	PF#1	166000.00	1009.00	1032.65	1024.08	1033.20
0.000560	5.87	28476.46	2455.50	0.26			
1	210.07	PF#2	166000.00	1009.00	1032.67	1023.80	1033.22
0.000583	5.99	28155.72	2015.00	0.27			
1	209.98	PF#1	166000.00	999.33	1032.58	1020.16	1032.98
0.000253	5.36	33591.25	1907.28	0.21			
1	209.98	PF#2	166000.00	999.33	1032.57	1019.84	1032.99
0.000264	5.48	32703.40	1833.89	0.22			
1	209.88	PF#1	166000.00	997.69	1032.30	1018.95	1032.83

0.000280	6.22	29912.03	1598.70	0.23			
1	209.88	PF#2	166000.00	997.69	1032.31	1018.95	1032.85
0.000283	6.25	29718.88	1572.44	0.23			
1	209.79	PF#1	166000.00	1002.93	1032.25	1018.56	1032.66
0.000264	5.58	32664.73	2127.00	0.22			
1	209.79	PF#2	166000.00	1002.93	1032.25	1018.56	1032.68
0.000267	5.61	32462.59	1764.36	0.22			
1	209.69	PF#1	166000.00	1004.31	1031.55	1021.24	1032.41
0.000717	7.09	22376.16	1884.95	0.34			
1	209.69	PF#2	166000.00	1004.31	1031.55	1021.24	1032.42
0.000721	7.11	22238.57	1409.29	0.34			
1	209.60	PF#1	166000.00	1004.15	1030.45	1024.57	1031.81
0.001456	9.48	17877.49	2237.97	0.48			
1	209.60	PF#2	166000.00	1004.15	1030.45	1024.59	1031.82
0.001467	9.51	17875.76	1583.08	0.49			
1	209.54	PF#1	166000.00	1004.27	1030.22	1021.90	1031.46
0.000859	8.94	18578.12	1096.44	0.38			
1	209.54	PF#2	166000.00	1004.27	1030.22	1021.90	1031.46
0.000858	8.93	18583.07	1096.45	0.38			
1	209.535		Bridge				
1	209.53	PF#1	166000.00	1004.27	1029.88	1021.90	1031.17
0.000917	9.12	18206.70	1095.63	0.39			
1	209.53	PF#2	166000.00	1004.27	1029.89	1021.90	1031.18
0.000917	9.11	18212.18	1095.66	0.39			
1	209.42	PF#1	166000.00	998.44	1028.88	1023.49	1030.40
0.001432	9.87	16825.82	1341.42	0.48			
1	209.42	PF#2	166000.00	998.44	1028.89	1023.49	1030.40
0.001430	9.86	16834.28	1258.70	0.48			
1	209.33	PF#1	166000.00	993.71	1028.74	1019.30	1029.68
0.000900	7.81	21284.99	1846.30	0.38			
1	209.33	PF#2	166000.00	993.71	1028.74	1019.30	1029.69
0.000898	7.80	21271.72	1587.64	0.38			
1	209.24	PF#1	166000.00	1003.00	1027.66	1023.98	1029.02
0.001727	7.87	18342.27	3253.82	0.49			
1	209.24	PF#2	166000.00	1003.00	1027.66	1023.97	1029.02
0.001733	7.96	18240.73	1837.89	0.49			
1	209.14	PF#1	166000.00	1002.87	1026.70	1023.37	1028.02
0.002091	8.19	18285.82	2920.82	0.52			
1	209.14	PF#2	166000.00	1002.87	1026.70	1023.39	1028.02
0.002095	8.30	18193.59	2015.26	0.52			
1	209.04	PF#1	166000.00	1007.02	1026.13	1021.52	1027.00
0.001480	7.61	22158.26	2879.85	0.45			
1	209.04	PF#2	166000.00	1007.02	1026.13	1021.52	1027.00
0.001472	7.67	22144.93	2229.48	0.44			
1	208.95	PF#1	166000.00	997.33	1025.58	1018.20	1026.45
0.000834	7.48	22428.03	2457.28	0.36			
1	208.95	PF#2	166000.00	997.33	1025.59	1018.20	1026.45
0.000833	7.47	22427.83	1796.50	0.36			
1	208.85	PF#1	166000.00	998.88	1024.64	1020.18	1025.84
0.001533	8.85	19077.56	2503.80	0.47			
1	208.85	PF#2	166000.00	998.88	1024.64	1020.18	1025.85
0.001530	8.84	19088.28	1908.84	0.47			

1	208.75	PF#1	166000.00	1000.44	1024.13	1017.95	1025.18
0.001099	8.25	20164.69	2367.21	0.43			
1	208.75	PF#2	166000.00	1000.44	1024.13	1017.95	1025.19
0.001097	8.24	20138.36	1732.32	0.43			
1	208.67	PF#1	166000.00	1003.03	1022.72	1019.09	1024.33
0.001934	10.26	16624.84	2041.05	0.54			
1	208.67	PF#2	166000.00	1003.03	1022.74	1019.09	1024.33
0.001927	10.25	16642.84	1612.41	0.54			
1	208.57	PF#1	166000.00	1002.61	1020.24	1018.75	1023.00
0.004009	13.35	12466.15	1408.38	0.77			
1	208.57	PF#2	166000.00	1002.61	1020.26	1018.75	1023.02
0.003991	13.33	12454.02	1338.18	0.77			
1	208.48	PF#1	166000.00	998.70	1019.72	1016.90	1020.98
0.002203	9.01	18422.12	2180.58	0.55			
1	208.48	PF#2	166000.00	998.70	1019.76	1016.90	1021.01
0.002170	8.97	18507.30	2180.73	0.54			
1	208.39	PF#1	166000.00	998.71	1018.82	1015.82	1020.02
0.002140	8.79	18883.54	2250.69	0.53			
1	208.39	PF#2	166000.00	998.71	1018.88	1015.82	1020.06
0.002091	8.73	19021.24	2250.88	0.53			
1	208.29	PF#1	166000.00	1002.85	1017.69	1014.81	1018.90
0.002223	8.84	18779.90	2317.98	0.55			
1	208.29	PF#2	166000.00	1002.85	1017.80	1014.81	1018.98
0.002120	8.71	19050.08	2318.35	0.53			
1	208.19	PF#1	166000.00	1001.01	1016.79	1013.53	1017.78
0.001820	7.99	20773.45	2551.03	0.49			
1	208.19	PF#2	166000.00	1001.01	1016.97	1013.53	1017.92
0.001707	7.82	21234.29	2569.70	0.48			
1	208.10	PF#1	166000.00	999.34	1015.84	1012.70	1016.86
0.001770	8.40	21147.31	2881.28	0.50			
1	208.10	PF#2	166000.00	999.34	1016.14	1012.70	1017.08
0.001567	8.07	21987.09	2828.05	0.47			
1	207.99	PF#1	166000.00	996.98	1014.47	1012.00	1015.86
0.002225	9.93	18378.98	2515.81	0.56			
1	207.99	PF#2	166000.00	996.98	1014.96	1011.99	1016.22
0.001888	9.43	19331.60	2625.91	0.52			
1	207.90	PF#1	166000.00	991.51	1013.80	1010.85	1014.78
0.001712	8.45	21576.79	2939.43	0.49			
1	207.90	PF#2	166000.00	991.51	1014.50	1010.85	1015.31
0.001298	7.72	23691.96	3027.09	0.43			
1	207.80	PF#1	166000.00	992.47	1012.20	1009.50	1013.72
0.001991	10.67	18139.69	2392.33	0.55			
1	207.80	PF#2	166000.00	992.47	1012.87	1009.36	1014.41
0.001831	10.57	17859.34	2093.65	0.53			
1	207.71	PF#1	166000.00	992.51	1010.85	1008.26	1012.65
0.002160	11.50	16829.93	2123.01	0.58			
1	207.71	PF#2	166000.00	992.51	1011.35	1008.53	1013.36
0.002192	11.87	15809.92	1893.38	0.59			
1	207.62	PF#1	166000.00	990.12	1010.08	1007.03	1011.66
0.001607	11.08	17810.53	1910.23	0.51			
1	207.62	PF#2	166000.00	990.12	1010.13	1007.20	1012.30
0.002037	12.51	15031.07	1445.04	0.58			

1	207.49	PF#1	166000.00	984.35	1009.47	1005.22	1010.82
0.001637	9.34	17780.93	2019.02	0.49			
1	207.49	PF#2	166000.00	984.35	1009.99	1005.22	1011.22
0.001409	8.92	18613.58	1662.02	0.46			

1 207.485 Bridge

1	207.48	PF#1	166000.00	984.35	1008.38	1005.22	1010.05
0.002291	10.34	16048.44	1589.81	0.57			
1	207.48	PF#2	166000.00	984.35	1009.15	1005.22	1010.59
0.001802	9.61	17270.43	1595.23	0.51			
1	207.43	PF#1	166000.00	983.56	1007.86	1004.49	1009.50
0.002218	10.29	16190.36	1661.32	0.56			
1	207.43	PF#2	166000.00	983.56	1008.76	1004.49	1010.15
0.001689	9.47	17531.08	1569.25	0.50			
1	207.34	PF#1	166000.00	983.49	1007.56	1000.99	1008.62
0.000950	8.28	20214.86	1590.24	0.39			
1	207.34	PF#2	166000.00	983.49	1008.50	1000.97	1009.46
0.000787	7.83	21192.27	1422.38	0.36			
1	207.27	PF#1	166000.00	982.68	1007.15	997.48	1008.22
0.000665	8.35	20670.33	1456.46	0.34			
1	207.27	PF#2	166000.00	982.68	1008.10	997.48	1009.11
0.000584	8.06	20594.82	1047.97	0.32			
1	207.16	PF#1	166000.00	969.66	1007.51	986.51	1007.86
0.000127	4.91	37553.66	2625.42	0.16			
1	207.16	PF#2	166000.00	969.66	1008.40	986.51	1008.78
0.000126	4.98	33336.06	1107.07	0.16			
1	207.07	PF#1	166000.00	992.80	1004.30	1004.30	1007.37
0.005291	15.06	12691.58	2119.64	0.86			
1	207.07	PF#2	166000.00	992.80	1004.74	1004.74	1008.25
0.005421	15.68	11729.38	1710.76	0.88			
1	206.97	PF#1	166000.00	981.70	1003.73	995.22	1004.80
0.000773	8.53	21352.72	2153.02	0.36			
1	206.97	PF#2	166000.00	981.70	1004.63	995.22	1005.77
0.000760	8.62	19950.61	1567.65	0.36			
1	206.88	PF#1	166000.00	981.80	1003.59	993.27	1004.41
0.000528	7.55	24354.63	2551.42	0.31			
1	206.88	PF#2	166000.00	981.80	1004.48	993.27	1005.39
0.000533	7.71	22622.40	1800.87	0.31			
1	206.79	PF#1	166000.00	981.80	1003.43	992.85	1004.13
0.000488	6.93	26343.92	3026.52	0.29			
1	206.79	PF#2	166000.00	981.80	1004.34	992.85	1005.10
0.000478	7.08	24760.10	1934.31	0.29			
1	206.7	PF#1	166000.00	981.80	1003.32	994.04	1003.85
0.000441	6.03	29831.77	3518.68	0.27			
1	206.7	PF#2	166000.00	981.80	1004.25	994.03	1004.82
0.000429	6.14	27986.51	2093.13	0.27			
1	206.6	PF#1	166000.00	981.80	1002.90	996.86	1003.56
0.000710	6.91	26877.21	3305.80	0.33			
1	206.6	PF#2	166000.00	981.80	1003.79	996.68	1004.54
0.000695	7.14	24927.56	2185.35	0.33			
1	206.51	PF#1	166000.00	981.80	1002.02	998.52	1003.04
0.001348	8.99	22111.07	4076.34	0.45			

1	206.51	PF#2	166000.00	981.80	1002.84	999.19	1004.02
0.001341	9.36	20116.29	2060.75	0.46			
1	206.41	PF#1	166000.00	982.50	1001.41	997.88	1002.32
0.001436	8.71	23370.94	3862.05	0.46			
1	206.41	PF#2	166000.00	982.50	1002.21	998.36	1003.30
0.001435	9.12	20569.79	2190.50	0.47			
1	206.32	PF#1	166000.00	982.80	1000.76	997.04	1001.56
0.001495	8.05	24553.57	3961.10	0.46			
1	206.32	PF#2	166000.00	982.80	1001.56	997.90	1002.55
0.001498	8.50	21191.37	2377.93	0.47			
1	206.22	PF#1	166000.00	983.00	999.83	996.53	1000.70
0.001855	8.54	24922.29	3819.75	0.52			
1	206.22	PF#2	166000.00	983.00	1000.69	996.71	1001.72
0.001734	8.70	21235.98	2441.76	0.51			
1	206.13	PF#1	166000.00	984.60	998.84		999.71
0.002097	8.44	24241.50	3610.69	0.52			
1	206.13	PF#2	166000.00	984.60	999.43		1000.65
0.002540	9.44	19323.64	2386.31	0.57			
1	206.03	PF#1	166000.00	984.50	997.19	995.40	998.47
0.002920	10.04	20468.71	3627.33	0.61			
1	206.03	PF#2	166000.00	984.50	997.37	995.41	999.15
0.003548	11.22	16111.43	2131.13	0.67			
1	205.94	PF#1	166000.00	981.00	996.28	992.36	997.17
0.001782	8.09	23804.66	3972.87	0.48			
1	205.94	PF#2	166000.00	981.00	996.85	992.30	997.71
0.001519	7.77	22932.47	2567.00	0.45			
1	205.84	PF#1	166000.00	979.50	995.78	991.10	996.43
0.001006	6.80	27802.52	3933.88	0.38			
1	205.84	PF#2	166000.00	979.50	996.39	991.10	997.06
0.000928	6.78	25656.61	2435.70	0.36			
1	205.75	PF#1	166000.00	973.90	995.10	989.59	995.78
0.001766	6.71	25677.88	3323.88	0.37			
1	205.75	PF#2	166000.00	973.90	995.83	989.59	996.48
0.001497	6.46	25689.01	2402.30	0.35			
1	205.62	PF#1	166000.00	976.00	994.55	988.70	995.07
0.000680	5.99	30115.93	4036.33	0.31			
1	205.62	PF#2	166000.00	976.00	995.25	988.65	995.85
0.000671	6.18	26877.98	2234.10	0.31			
1	205.52	PF#1	166000.00	975.90	994.29	987.07	994.75
0.000496	5.67	33142.45	4244.90	0.28			
1	205.52	PF#2	166000.00	975.90	994.95	987.28	995.53
0.000543	6.12	27120.82	2019.90	0.29			
1	205.43	PF#1	166000.00	976.10	994.00	986.93	994.50
0.000544	6.04	31497.31	3841.70	0.29			
1	205.43	PF#2	166000.00	976.10	994.53	986.96	995.24
0.000647	6.76	24572.11	1842.36	0.33			
1	205.4	PF#1	164000.00	975.50	993.99	984.67	994.40
0.000362	5.41	35918.61	4097.72	0.24			
1	205.4	PF#2	164000.00	975.50	994.56	984.67	995.10
0.000413	5.90	27793.06	1747.80	0.26			
1	205.34	PF#1	164000.00	975.57	993.64	986.68	994.20
0.001005	6.45	29523.90	7348.98	0.30			
1	205.34	PF#2	164000.00	975.57	993.98	986.65	994.85

0.001336	7.53	22084.25	1562.96	0.35			
1	205.25	PF#1	164000.00	973.40	993.26	985.25	993.82
0.000623	6.64	30541.15	4512.59	0.28			
1	205.25	PF#2	164000.00	973.40	993.49	985.17	994.34
0.000817	7.64	22667.86	1482.30	0.32			
1	205.15	PF#1	164000.00	973.10	991.76	987.66	993.21
0.002039	10.40	19448.92	3049.25	0.49			
1	205.15	PF#2	164000.00	973.10	992.25	987.65	993.69
0.001819	10.06	17454.25	1445.00	0.47			
1	205.06	PF#1	164000.00	970.50	990.85	984.95	992.22
0.001875	9.62	18539.62	2210.65	0.47			
1	205.06	PF#2	164000.00	970.50	991.36	984.95	992.79
0.001795	9.65	17327.95	1435.30	0.46			
1	204.97	PF#1	164000.00	973.30	990.56	984.97	991.30
0.001134	7.35	24818.88	3736.08	0.36			
1	204.97	PF#2	164000.00	973.30	990.76	985.05	991.87
0.001485	8.49	19456.31	1516.30	0.42			
1	204.87	PF#1	164000.00	968.10	990.19	982.95	990.80
0.000767	6.60	27860.69	3635.74	0.31			
1	204.87	PF#2	164000.00	968.10	990.36	982.85	991.20
0.000942	7.37	22408.61	1542.20	0.34			
1	204.78	PF#1	164000.00	967.60	990.01	980.93	990.45
0.000477	5.68	31874.74	4837.51	0.25			
1	204.78	PF#2	164000.00	967.60	990.13	980.78	990.77
0.000611	6.47	25927.76	1620.43	0.28			
1	204.68	PF#1	164000.00	971.40	989.36	982.91	990.10
0.000903	7.28	24862.56	3375.81	0.33			
1	204.68	PF#2	164000.00	971.40	989.32	982.81	990.31
0.001151	8.21	20999.24	1586.28	0.38			
1	204.61	PF#1	164000.00	972.60	988.59	983.53	989.64
0.001360	8.79	20900.84	7282.60	0.41			
1	204.61	PF#2	164000.00	972.60	988.62	983.47	989.78
0.001462	9.12	19540.62	1602.90	0.42			
1	204.53	PF#1	164000.00	972.70	987.68	982.99	988.93
0.001814	9.22	18844.19	4061.16	0.46			
1	204.53	PF#2	164000.00	972.70	987.68	982.93	989.02
0.001920	9.48	18003.71	1610.90	0.47			
1	204.42	PF#1	164000.00	971.40	986.40	982.76	987.76
0.002432	9.40	17715.45	2778.70	0.51			
1	204.42	PF#2	164000.00	971.40	986.38	982.73	987.80
0.002533	9.58	17125.44	1653.57	0.52			
1	204.34	PF#1	164000.00	969.30	985.28	981.46	986.65
0.002470	9.39	17462.96	2452.20	0.52			
1	204.34	PF#2	164000.00	969.30	985.29	981.46	986.65
0.002472	9.39	17473.86	1701.98	0.52			
1	204.25	PF#1	164000.00	969.22	980.90	980.90	984.46
0.007742	15.13	10836.44	1993.93	1.00			
1	204.25	PF#2	164000.00	969.22	980.90	980.90	984.46
0.007774	15.15	10825.70	1517.10	1.00			
1	204.15	PF#1	164000.00	966.00	981.17	975.82	982.09
0.001058	7.72	21240.53	2149.48	0.40			
1	204.15	PF#2	164000.00	966.00	981.18	975.82	982.11
0.001059	7.71	21274.74	1831.89	0.40			

1	204.05	PF#1	164000.00	965.00	980.27	976.80	981.39
0.001759	8.49	19320.24	2116.76	0.50			
1	204.05	PF#2	164000.00	965.00	980.29	976.80	981.41
0.001744	8.47	19370.37	2116.76	0.49			
1	203.96	PF#1	164000.00	964.10	977.71	976.71	979.86
0.005220	11.77	13938.52	2225.52	0.80			
1	203.96	PF#2	164000.00	964.10	977.98	976.71	979.97
0.004601	11.33	14478.25	2050.76	0.75			
1	203.86	PF#1	164000.00	962.30	977.81	971.84	978.53
0.000902	6.82	24032.60	2201.58	0.36			
1	203.86	PF#2	164000.00	962.30	978.06	971.84	978.75
0.000838	6.67	24588.96	2191.78	0.35			
1	203.77	PF#1	164000.00	963.30	977.43	971.58	978.06
0.000873	6.37	25746.08	2518.55	0.35			
1	203.77	PF#2	164000.00	963.30	977.72	971.58	978.32
0.000799	6.19	26474.14	2511.27	0.34			
1	203.67	PF#1	164000.00	962.30	976.93	971.59	977.61
0.000940	6.66	25645.87	3648.91	0.37			
1	203.67	PF#2	164000.00	962.30	977.23	971.59	977.89
0.000885	6.58	25408.07	2567.43	0.36			
1	203.58	PF#1	164000.00	962.10	976.47	971.52	977.14
0.000946	6.64	25339.94	4630.93	0.37			
1	203.58	PF#2	164000.00	962.10	976.81	971.52	977.46
0.000858	6.46	25597.97	2676.39	0.36			
1	203.48	PF#1	164000.00	962.20	975.92	972.02	976.58
0.001248	6.66	25617.87	4863.76	0.41			
1	203.48	PF#2	164000.00	962.20	976.25	971.97	976.94
0.001196	6.68	24567.98	2911.71	0.40			
1	203.39	PF#1	164000.00	959.90	975.23	971.15	975.93
0.001331	6.81	24862.22	4207.73	0.42			
1	203.39	PF#2	164000.00	959.90	975.62	971.13	976.32
0.001254	6.69	24520.14	2930.05	0.41			
1	203.29	PF#1	164000.00	960.70	974.46	970.77	975.20
0.001572	6.98	24301.95	4967.75	0.45			
1	203.29	PF#2	164000.00	960.70	974.88	970.71	975.63
0.001478	6.94	23633.34	3009.26	0.44			
1	203.19	PF#1	164000.00	956.70	973.59	970.04	974.28
0.001787	6.81	25046.42	3491.37	0.42			
1	203.19	PF#2	164000.00	956.70	973.95	970.04	974.74
0.001849	7.13	23041.46	2689.14	0.43			
1	203.09	PF#1	164000.00	958.70	972.42	969.20	973.25
0.002112	7.51	23337.60	3213.89	0.46			
1	203.09	PF#2	164000.00	958.70	972.75	968.97	973.69
0.002162	7.79	21163.71	2475.85	0.46			
1	202.99	PF#1	164000.00	959.20	971.50	967.56	972.24
0.001726	7.08	24615.47	3260.60	0.42			
1	202.99	PF#2	164000.00	959.20	971.87	967.53	972.66
0.001673	7.15	22949.42	2457.50	0.41			
1	202.9	PF#1	164000.00	956.50	970.92	966.33	971.52
0.001285	6.37	27288.47	3419.52	0.36			
1	202.9	PF#2	164000.00	956.50	971.28	966.26	971.95
0.001315	6.59	24881.82	2511.71	0.37			

1	202.8	PF#1	164000.00	956.40	970.32	965.60	970.84
0.001157	5.94	29050.37	3577.40	0.34			
1	202.8	PF#2	164000.00	956.40	970.64	965.52	971.25
0.001223	6.25	26258.33	2620.78	0.35			
1	202.69	PF#1	164000.00	953.70	969.50	965.26	970.12
0.001416	6.45	27011.89	3716.99	0.37			
1	202.69	PF#2	164000.00	953.70	969.79	965.27	970.49
0.001483	6.73	24379.74	2553.41	0.38			
1	202.59	PF#1	164000.00	953.70	968.55	964.73	969.23
0.001710	6.76	25201.60	3795.66	0.40			
1	202.59	PF#2	164000.00	953.70	968.77	964.70	969.56
0.001832	7.10	23099.99	2606.65	0.42			
1	202.48	PF#1	164000.00	952.50	967.66	963.72	968.30
0.001617	6.64	26503.22	3830.22	0.40			
1	202.48	PF#2	164000.00	952.50	967.77	963.79	968.54
0.001788	7.04	23415.41	2826.15	0.42			
1	202.37	PF#1	164000.00	954.60	966.79	962.99	967.38
0.001487	6.30	27726.06	4026.46	0.39			
1	202.37	PF#2	164000.00	954.60	966.82	963.06	967.52
0.001673	6.70	24843.26	3165.40	0.41			
1	202.29	PF#1	164000.00	955.50	966.51	961.30	966.88
0.000809	4.90	34227.57	4327.50	0.29			
1	202.29	PF#2	164000.00	955.50	966.59	961.30	966.97
0.000812	4.93	33283.39	3605.60	0.29			
1	202.18	PF#1	164000.00	950.00	965.70	961.75	966.23
0.001545	5.88	28639.46	4356.15	0.38			
1	202.18	PF#2	164000.00	950.00	965.77	961.75	966.31
0.001559	5.94	27619.54	3692.06	0.38			
1	202.09	PF#1	164000.00	950.00	964.09	961.98	965.01
0.003848	7.74	21595.00	4052.07	0.57			
1	202.09	PF#2	164000.00	950.00	964.16	961.95	965.09
0.003803	7.75	21163.17	3682.20	0.57			
1	201.99	PF#1	164000.00	948.70	963.29	958.65	963.87
0.001252	6.13	27234.37	5331.53	0.38			
1	201.99	PF#2	164000.00	948.70	963.38	958.65	963.96
0.001241	6.12	26811.01	3219.77	0.37			
1	201.9	PF#1	164000.00	947.20	962.94	957.27	963.35
0.000785	5.15	31873.93	5241.60	0.31			
1	201.9	PF#2	164000.00	947.20	963.05	957.27	963.45
0.000756	5.08	32284.29	3830.97	0.31			
1	201.81	PF#1	164000.00	946.00	962.64	955.84	962.99
0.000619	4.79	34252.18	5916.63	0.28			
1	201.81	PF#2	164000.00	946.00	962.75	955.84	963.10
0.000597	4.73	34684.21	3650.46	0.27			
1	201.71	PF#1	164000.00	946.00	961.87	958.20	962.46
0.001825	6.22	26658.36	8308.26	0.40			
1	201.71	PF#2	164000.00	946.00	961.98	958.20	962.58
0.001807	6.24	26277.08	3415.69	0.40			
1	201.62	PF#1	164000.00	945.60	961.15	956.72	961.66
0.001385	5.78	28773.37	7614.80	0.35			
1	201.62	PF#2	164000.00	945.60	961.28	956.72	961.80
0.001343	5.74	28552.42	3241.81	0.34			

1	201.52	PF#1	164000.00	940.90	960.41	955.39	960.87
0.001854	5.50	30263.04	8984.51	0.33			
1	201.52	PF#2	164000.00	940.90	960.53	955.39	961.02
0.001898	5.61	29242.41	3382.85	0.34			
1	201.43	PF#1	164000.00	941.30	959.46	954.87	960.01
0.001619	5.99	27972.05	6527.26	0.37			
1	201.43	PF#2	164000.00	941.30	959.60	954.87	960.15
0.001604	6.00	27333.81	3288.24	0.37			
1	201.33	PF#1	164000.00	943.00	958.44	954.88	959.06
0.002023	6.40	26135.38	5745.33	0.41			
1	201.33	PF#2	164000.00	943.00	958.60	954.88	959.23
0.001959	6.36	25785.53	3307.45	0.40			
1	201.24	PF#1	164000.00	943.00	957.47	953.61	958.06
0.001852	6.23	26885.37	6935.19	0.40			
1	201.24	PF#2	164000.00	943.00	957.66	953.61	958.26
0.001790	6.21	26420.07	3500.08	0.40			
1	201.14	PF#1	164000.00	940.40	956.91	952.08	957.32
0.001090	5.20	32069.63	8631.40	0.31			
1	201.14	PF#2	164000.00	940.40	957.15	952.08	957.55
0.001017	5.10	32150.13	3680.58	0.30			
1	201.05	PF#1	164000.00	941.50	956.49	950.99	956.80
0.000974	4.50	37110.74	9249.99	0.26			
1	201.05	PF#2	164000.00	941.50	956.74	950.99	957.06
0.000928	4.48	36618.90	3898.52	0.26			
1	200.95	PF#1	164000.00	939.80	956.09	949.86	956.38
0.000668	4.33	39057.77	10045.40	0.25			
1	200.95	PF#2	164000.00	939.80	956.38	949.86	956.66
0.000629	4.27	38407.73	4001.09	0.24			
1	200.86	PF#1	164000.00	938.50	955.63	949.69	955.94
0.001346	4.48	37607.95	11080.61	0.27			
1	200.86	PF#2	164000.00	938.50	955.94	949.69	956.24
0.001276	4.46	36762.91	4032.00	0.26			
1	200.77	PF#1	164000.00	936.90	955.02	949.21	955.35
0.000950	4.62	36841.44	11450.00	0.28			
1	200.77	PF#2	164000.00	936.90	955.38	949.21	955.70
0.000875	4.52	36283.61	4122.20	0.27			
1	200.67	PF#1	164000.00	939.80	954.42	948.98	954.80
0.001288	4.96	33785.32	10368.40	0.30			
1	200.67	PF#2	164000.00	939.80	954.84	948.98	955.20
0.001158	4.82	34281.14	4009.30	0.28			
1	200.58	PF#1	164000.00	937.60	953.76	948.30	954.14
0.001313	5.04	33542.10	10091.16	0.30			
1	200.58	PF#2	164000.00	937.60	954.23	948.30	954.60
0.001187	4.91	33793.82	3940.00	0.28			
1	200.49	PF#1	164000.00	936.90	953.28	946.97	953.59
0.000940	4.59	37370.81	10978.31	0.26			
1	200.49	PF#2	164000.00	936.90	953.77	946.97	954.10
0.000893	4.59	36178.30	3791.00	0.25			
1	200.39	PF#1	164000.00	937.00	952.89	946.26	953.17
0.000739	4.35	39814.10	11315.74	0.24			
1	200.39	PF#2	164000.00	937.00	953.40	946.26	953.70
0.000702	4.37	38317.50	3741.00	0.23			
1	200.3	PF#1	179750.00	937.70	952.12	947.18	952.61

0.001603	5.79	36487.07	9118.91	0.34			
1	200.3	PF#2	179750.00	937.70	952.73	947.17	953.18
0.001382	5.57	36217.73	3683.53	0.31			
1	200.2	PF#1	179750.00	937.00	951.10	946.78	951.67
0.002027	6.37	35619.23	11857.69	0.37			
1	200.2	PF#2	179750.00	937.00	951.83	946.78	952.38
0.001732	6.15	34725.75	3629.00	0.35			
1	200.1	PF#1	179750.00	934.50	950.19	945.22	950.66
0.001730	5.74	37659.50	11254.10	0.32			
1	200.1	PF#2	179750.00	934.50	951.11	945.22	951.53
0.001392	5.36	38392.25	3770.00	0.29			
1	200	PF#1	179750.00	933.40	949.74	944.16	950.01
0.000864	4.29	44537.35	11193.60	0.24			
1	200	PF#2	179750.00	933.40	950.70	944.15	950.98
0.000792	4.23	42550.11	4100.00	0.23			
1	199.91	PF#1	179750.00	932.10	949.39	943.37	949.60
0.000668	3.83	50254.95	10846.61	0.22			
1	199.91	PF#2	179750.00	932.10	950.39	943.36	950.61
0.000573	3.75	48102.12	4530.00	0.20			
1	199.82	PF#1	179750.00	931.20	948.90	943.28	949.09
0.002007	3.30	51778.97	10752.57	0.19			
1	199.82	PF#2	179750.00	931.20	949.90	943.24	950.14
0.002185	3.68	47698.04	4780.00	0.20			

ERRORS WARNINGS AND NOTES
Errors Warnings and Notes for Plan : PrePrj

River: 1 Reach: 1 RS: 214.14 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, energy was used.
River: 1 Reach: 1 RS: 214.14 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 214.04 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, energy was used.
River: 1 Reach: 1 RS: 214.04 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 213.95 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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 213.95 Profile: PF#2
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). 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, energy was used.
River: 1 Reach: 1 RS: 213.85 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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 213.85 Profile: PF#2
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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 213.75 Profile: PF#1
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: 1 Reach: 1 RS: 213.75 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: 1 Reach: 1 RS: 213.745 Profile: PF#1 Upstream
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: 1 Reach: 1 RS: 213.745 Profile: PF#1 Downstream
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: 1 Reach: 1 RS: 213.745 Profile: PF#2 Upstream
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: 1 Reach: 1 RS: 213.745 Profile: PF#2 Downstream
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: 1 Reach: 1 RS: 213.74 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: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: 1 Reach: 1 RS: 213.74 Profile: PF#2
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: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: 1 Reach: 1 RS: 213.66 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 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, energy was used.
River: 1 Reach: 1 RS: 213.66 Profile: PF#2
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 213.57 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, energy was used.
River: 1 Reach: 1 RS: 213.57 Profile: PF#2
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, energy was used.
River: 1 Reach: 1 RS: 213.47 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: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 213.47 Profile: PF#2
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: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 213.38 Profile: PF#1
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 213.38 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 213.33 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, energy was used.
River: 1 Reach: 1 RS: 213.33 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 213.26 Profile: PF#1
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: 1 Reach: 1 RS: 213.26 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: 1 Reach: 1 RS: 213.255 Profile: PF#1 Upstream
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: 1 Reach: 1 RS: 213.255 Profile: PF#1 Downstream
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: 1 Reach: 1 RS: 213.255 Profile: PF#2 Upstream
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: 1 Reach: 1 RS: 213.255 Profile: PF#2 Downstream
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: 1 Reach: 1 RS: 213.25 Profile: PF#1
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: 1 Reach: 1 RS: 213.25 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: 1 Reach: 1 RS: 213.21 Profile: PF#1
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 213.21 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 213.11 Profile: PF#1
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 213.11 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 213.03 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, energy was used.

River: 1 Reach: 1 RS: 213.03 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 212.93 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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 212.93 Profile: PF#2
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). 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, energy was used.
River: 1 Reach: 1 RS: 212.84 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 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, energy was used.
River: 1 Reach: 1 RS: 212.84 Profile: PF#2
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 212.74 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, energy was used.
River: 1 Reach: 1 RS: 212.74 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 212.68 Profile: PF#1
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: 1 Reach: 1 RS: 212.68 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: 1 Reach: 1 RS: 212.675 Profile: PF#1
Note: Momentum answer is not valid if the water surface is above the low chord or if there is weir flow. The momentum
answer has been disregarded.
River: 1 Reach: 1 RS: 212.675 Profile: PF#1 Upstream
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: 1 Reach: 1 RS: 212.675 Profile: PF#1 Downstream
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: 1 Reach: 1 RS: 212.675 Profile: PF#2 Upstream
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: 1 Reach: 1 RS: 212.675 Profile: PF#2 Downstream
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: 1 Reach: 1 RS: 212.67 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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: 1 Reach: 1 RS: 212.67 Profile: PF#2
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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: 1 Reach: 1 RS: 212.56 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 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, energy was used.
River: 1 Reach: 1 RS: 212.56 Profile: PF#2
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 212.46 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 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, energy was used.
River: 1 Reach: 1 RS: 212.46 Profile: PF#2
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 212.37 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, energy was used.
River: 1 Reach: 1 RS: 212.37 Profile: PF#2
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, energy was used.
River: 1 Reach: 1 RS: 212.27 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 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, energy was used.
River: 1 Reach: 1 RS: 212.27 Profile: PF#2
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 212.18 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 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, energy was used.
River: 1 Reach: 1 RS: 212.18 Profile: PF#2
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 212.08 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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 212.08 Profile: PF#2
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). 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, energy was used.
River: 1 Reach: 1 RS: 211.99 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, energy was used.
River: 1 Reach: 1 RS: 211.99 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 211.89 Profile: PF#1
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 211.89 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 211.79 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, energy was used.
River: 1 Reach: 1 RS: 211.79 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 211.71 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, energy was used.
River: 1 Reach: 1 RS: 211.71 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 211.64 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 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, energy was used.
River: 1 Reach: 1 RS: 211.64 Profile: PF#2
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 211.54 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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: 1 Reach: 1 RS: 211.54 Profile: PF#2
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). 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: 1 Reach: 1 RS: 211.525 Profile: PF#1 Upstream

Warning:The velocity head has changed by more than 0.5 ft (0.15 m). 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: 1 Reach: 1 RS: 211.525 Profile: PF#1 Downstream
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). 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: 1 Reach: 1 RS: 211.525 Profile: PF#2 Upstream
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). 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: 1 Reach: 1 RS: 211.525 Profile: PF#2 Downstream
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). 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: 1 Reach: 1 RS: 211.51 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 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: 1 Reach: 1 RS: 211.51 Profile: PF#2
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: 1 Reach: 1 RS: 211.41 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: 1 Reach: 1 RS: 211.41 Profile: PF#2
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: 1 Reach: 1 RS: 211.31 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 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, energy was used.

River: 1 Reach: 1 RS: 211.31 Profile: PF#2
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

River: 1 Reach: 1 RS: 211.21 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.
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, energy was used.

River: 1 Reach: 1 RS: 211.21 Profile: PF#2
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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 211.12 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: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 211.12 Profile: PF#2
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: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 211.02 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, energy was used.
River: 1 Reach: 1 RS: 211.02 Profile: PF#2
Warning:Divided flow computed for this cross-section.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 210.93 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, energy was used.
River: 1 Reach: 1 RS: 210.93 Profile: PF#2
Warning:Divided flow computed for this cross-section.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 210.83 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, energy was used.
River: 1 Reach: 1 RS: 210.83 Profile: PF#2
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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 210.74 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, energy was used.
River: 1 Reach: 1 RS: 210.74 Profile: PF#2
Warning:Divided flow computed for this cross-section.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 210.64 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, energy was used.
River: 1 Reach: 1 RS: 210.64 Profile: PF#2
Warning:Divided flow computed for this cross-section.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 210.55 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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 210.55 Profile: PF#2
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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 210.46 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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 210.46 Profile: PF#2
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: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 210.36 Profile: PF#1
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 210.36 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 210.26 Profile: PF#1
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 210.26 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 210.17 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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 210.17 Profile: PF#2
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: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 210.07 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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 210.07 Profile: PF#2
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: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 209.98 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, energy was used.
River: 1 Reach: 1 RS: 209.98 Profile: PF#2
Warning:Divided flow computed for this cross-section.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 209.88 Profile: PF#1
Warning:Divided flow computed for this cross-section.
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, energy was used.
River: 1 Reach: 1 RS: 209.88 Profile: PF#2
Warning:Divided flow computed for this cross-section.
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, energy was used.
River: 1 Reach: 1 RS: 209.79 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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 209.79 Profile: PF#2

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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 209.69 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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 209.69 Profile: PF#2
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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 209.60 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, energy was used.
River: 1 Reach: 1 RS: 209.60 Profile: PF#2
Warning:Divided flow computed for this cross-section.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 209.54 Profile: PF#1
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: 1 Reach: 1 RS: 209.54 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: 1 Reach: 1 RS: 209.535 Profile: PF#1 Upstream
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: 1 Reach: 1 RS: 209.535 Profile: PF#1 Downstream
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: 1 Reach: 1 RS: 209.535 Profile: PF#2 Upstream
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: 1 Reach: 1 RS: 209.535 Profile: PF#2 Downstream
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: 1 Reach: 1 RS: 209.53 Profile: PF#1
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: 1 Reach: 1 RS: 209.53 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: 1 Reach: 1 RS: 209.42 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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 209.42 Profile: PF#2
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). 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, energy was used.
River: 1 Reach: 1 RS: 209.33 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, energy was used.

River: 1 Reach: 1 RS: 209.33 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 209.24 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, energy was used.
River: 1 Reach: 1 RS: 209.24 Profile: PF#2
Warning:Divided flow computed for this cross-section.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 209.14 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, energy was used.
River: 1 Reach: 1 RS: 209.14 Profile: PF#2
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, energy was used.
River: 1 Reach: 1 RS: 209.04 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, energy was used.
River: 1 Reach: 1 RS: 209.04 Profile: PF#2
Warning:Divided flow computed for this cross-section.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 208.95 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, energy was used.
River: 1 Reach: 1 RS: 208.95 Profile: PF#2
Warning:Divided flow computed for this cross-section.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 208.85 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, energy was used.
River: 1 Reach: 1 RS: 208.85 Profile: PF#2
Warning:Divided flow computed for this cross-section.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 208.75 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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 208.75 Profile: PF#2
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). 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, energy was used.
River: 1 Reach: 1 RS: 208.67 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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 208.67 Profile: PF#2
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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 208.57 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 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, energy was used.
River: 1 Reach: 1 RS: 208.57 Profile: PF#2
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 208.48 Profile: PF#1
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 208.48 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 208.39 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, energy was used.
River: 1 Reach: 1 RS: 208.39 Profile: PF#2
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, energy was used.
River: 1 Reach: 1 RS: 208.29 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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 208.29 Profile: PF#2
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, energy was used.
River: 1 Reach: 1 RS: 208.19 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, energy was used.
River: 1 Reach: 1 RS: 208.19 Profile: PF#2
Warning:Divided flow computed for this cross-section.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 208.10 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, energy was used.
River: 1 Reach: 1 RS: 208.10 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 207.99 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, energy was used.
River: 1 Reach: 1 RS: 207.99 Profile: PF#2
Warning:Divided flow computed for this cross-section.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 207.90 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 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, energy was used.
River: 1 Reach: 1 RS: 207.90 Profile: PF#2
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). 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, energy was used.
River: 1 Reach: 1 RS: 207.80 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, energy was used.
River: 1 Reach: 1 RS: 207.80 Profile: PF#2
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, energy was used.
River: 1 Reach: 1 RS: 207.71 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, energy was used.
River: 1 Reach: 1 RS: 207.71 Profile: PF#2
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, energy was used.
River: 1 Reach: 1 RS: 207.62 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, energy was used.
River: 1 Reach: 1 RS: 207.62 Profile: PF#2
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 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, energy was used.
River: 1 Reach: 1 RS: 207.49 Profile: PF#1
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: 1 Reach: 1 RS: 207.49 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: 1 Reach: 1 RS: 207.485 Profile: PF#1
Note: Momentum answer is not valid if the water surface is above the low chord or if there is weir flow. The momentum
answer has been disregarded.
River: 1 Reach: 1 RS: 207.485 Profile: PF#1 Upstream
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: 1 Reach: 1 RS: 207.485 Profile: PF#1 Downstream
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: 1 Reach: 1 RS: 207.485 Profile: PF#2 Upstream
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: 1 Reach: 1 RS: 207.485 Profile: PF#2 Downstream
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: 1 Reach: 1 RS: 207.48 Profile: PF#1
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was

used.
River: 1 Reach: 1 RS: 207.48 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: 1 Reach: 1 RS: 207.43 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: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 207.43 Profile: PF#2
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: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 207.34 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, energy was used.
River: 1 Reach: 1 RS: 207.34 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 207.27 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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 207.27 Profile: PF#2
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: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 207.16 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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 207.16 Profile: PF#2
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: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 207.07 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 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.
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, energy was used.
River: 1 Reach: 1 RS: 207.07 Profile: PF#2
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 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.
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, energy was used.
River: 1 Reach: 1 RS: 206.97 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, energy was used.
River: 1 Reach: 1 RS: 206.97 Profile: PF#2
Warning:Divided flow computed for this cross-section.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 206.88 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, energy was used.
River: 1 Reach: 1 RS: 206.88 Profile: PF#2
Warning:Divided flow computed for this cross-section.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 206.79 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, energy was used.
River: 1 Reach: 1 RS: 206.79 Profile: PF#2
Warning:Divided flow computed for this cross-section.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 206.7 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, energy was used.
River: 1 Reach: 1 RS: 206.7 Profile: PF#2
Warning:Divided flow computed for this cross-section.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 206.6 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, energy was used.
River: 1 Reach: 1 RS: 206.6 Profile: PF#2
Warning:Divided flow computed for this cross-section.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 206.51 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, energy was used.
River: 1 Reach: 1 RS: 206.51 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 206.41 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, energy was used.
River: 1 Reach: 1 RS: 206.41 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 206.32 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, energy was used.

River: 1 Reach: 1   RS: 206.32   Profile: PF#2
     Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1   RS: 206.22   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, energy was used.
River: 1 Reach: 1   RS: 206.22   Profile: PF#2
     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, energy was used.
River: 1 Reach: 1   RS: 206.13   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.
River: 1 Reach: 1   RS: 206.13   Profile: PF#2
     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 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: 1 Reach: 1   RS: 206.03   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.
River: 1 Reach: 1   RS: 206.03   Profile: PF#2
     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.
     Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1   RS: 205.94   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, energy was used.
River: 1 Reach: 1   RS: 205.94   Profile: PF#2
     Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1   RS: 205.84   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, energy was used.
River: 1 Reach: 1   RS: 205.84   Profile: PF#2
     Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1   RS: 205.75   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.
     Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1   RS: 205.75   Profile: PF#2
     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: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1   RS: 205.62   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, energy was used.
River: 1 Reach: 1   RS: 205.62   Profile: PF#2
     Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1   RS: 205.52   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, energy was used.
River: 1 Reach: 1 RS: 205.52 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 205.43 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, energy was used.
River: 1 Reach: 1 RS: 205.43 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 205.4 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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 205.4 Profile: PF#2
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: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 205.34 Profile: PF#1
Warning:Divided flow computed for this cross-section.
Warning:The cross-section end points had to be extended vertically for the computed water surface.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 205.34 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 205.25 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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 205.25 Profile: PF#2
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: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 205.15 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, energy was used.
River: 1 Reach: 1 RS: 205.15 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 205.06 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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 205.06 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 204.97 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, energy was used.
River: 1 Reach: 1 RS: 204.97 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 204.87 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, energy was used.
River: 1 Reach: 1 RS: 204.87 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

River: 1 Reach: 1 RS: 204.78 Profile: PF#1
Warning:Divided flow computed for this cross-section.
Warning:The cross-section end points had to be extended vertically for the computed water surface.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 204.78 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 204.68 Profile: PF#1
Warning:Divided flow computed for this cross-section.
Warning:The cross-section end points had to be extended vertically for the computed water surface.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 204.68 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 204.61 Profile: PF#1
Warning:Divided flow computed for this cross-section.
Warning:The cross-section end points had to be extended vertically for the computed water surface.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 204.61 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 204.53 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, energy was used.
River: 1 Reach: 1 RS: 204.53 Profile: PF#2
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, energy was used.
River: 1 Reach: 1 RS: 204.42 Profile: PF#1
Warning:Divided flow computed for this cross-section.
Warning:The cross-section end points had to be extended vertically for the computed water surface.
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, energy was used.
River: 1 Reach: 1 RS: 204.42 Profile: PF#2
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, energy was used.
River: 1 Reach: 1 RS: 204.34 Profile: PF#1
Warning:Divided flow computed for this cross-section.
Warning:The cross-section end points had to be extended vertically for the computed water surface.
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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 204.34 Profile: PF#2
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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 204.25 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 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.
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, energy was used.
River: 1 Reach: 1 RS: 204.25 Profile: PF#2
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The 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, energy was used.
River: 1 Reach: 1 RS: 204.15 Profile: PF#1
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 204.15 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 204.05 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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 204.05 Profile: PF#2
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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 203.96 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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 203.96 Profile: PF#2
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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 203.86 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, energy was used.
River: 1 Reach: 1 RS: 203.86 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 203.77 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, energy was used.
River: 1 Reach: 1 RS: 203.77 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 203.67 Profile: PF#1
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 203.67 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 203.58 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, energy was used.
River: 1 Reach: 1 RS: 203.58 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 203.48 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, energy was used.
River: 1 Reach: 1 RS: 203.48 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 203.39 Profile: PF#1
Warning:Divided flow computed for this cross-section.
Warning:The cross-section end points had to be extended vertically for the computed water surface.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 203.39 Profile: PF#2
Warning:Divided flow computed for this cross-section.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 203.29 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, energy was used.
River: 1 Reach: 1 RS: 203.29 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 203.19 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, energy was used.
River: 1 Reach: 1 RS: 203.19 Profile: PF#2
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, energy was used.
River: 1 Reach: 1 RS: 203.09 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, energy was used.
River: 1 Reach: 1 RS: 203.09 Profile: PF#2
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, energy was used.
River: 1 Reach: 1 RS: 202.99 Profile: PF#1
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 202.99 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 202.9 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, energy was used.
River: 1 Reach: 1 RS: 202.9 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 202.8 Profile: PF#1
Warning:Divided flow computed for this cross-section.
Warning:The cross-section end points had to be extended vertically for the computed water surface.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 202.8 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 202.69 Profile: PF#1
Warning:Divided flow computed for this cross-section.
Warning:The cross-section end points had to be extended vertically for the computed water surface.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 202.69 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 202.59 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, energy was used.
River: 1 Reach: 1 RS: 202.59 Profile: PF#2
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, energy was used.
River: 1 Reach: 1 RS: 202.48 Profile: PF#1
Warning:Divided flow computed for this cross-section.
Warning:The cross-section end points had to be extended vertically for the computed water surface.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 202.48 Profile: PF#2
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, energy was used.
River: 1 Reach: 1 RS: 202.37 Profile: PF#1
Warning:Divided flow computed for this cross-section.
Warning:The cross-section end points had to be extended vertically for the computed water surface.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 202.37 Profile: PF#2
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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 202.29 Profile: PF#1
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 202.29 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 202.18 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, energy was used.
River: 1 Reach: 1   RS: 202.18   Profile: PF#2
     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, energy was used.
River: 1 Reach: 1   RS: 202.09   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, energy was used.
River: 1 Reach: 1   RS: 202.09   Profile: PF#2
     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, energy was used.
River: 1 Reach: 1   RS: 201.99   Profile: PF#1
     Warning:Divided flow computed for this cross-section.
     Warning:The cross-section end points had to be extended vertically for the computed water surface.
     Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1   RS: 201.99   Profile: PF#2
     Warning:Divided flow computed for this cross-section.
     Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1   RS: 201.9   Profile: PF#1
     Warning:Divided flow computed for this cross-section.
     Warning:The cross-section end points had to be extended vertically for the computed water surface.
     Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1   RS: 201.9   Profile: PF#2
     Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1   RS: 201.81   Profile: PF#1
     Warning:Divided flow computed for this cross-section.
     Warning:The cross-section end points had to be extended vertically for the computed water surface.
     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: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1   RS: 201.81   Profile: PF#2
     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.
     Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1   RS: 201.71   Profile: PF#1
     Warning:Divided flow computed for this cross-section.
     Warning:The cross-section end points had to be extended vertically for the computed water surface.
     Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1   RS: 201.71   Profile: PF#2
     Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1   RS: 201.62   Profile: PF#1
     Warning:Divided flow computed for this cross-section.
     Warning:The cross-section end points had to be extended vertically for the computed water surface.
     Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

River: 1 Reach: 1 RS: 201.62 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 201.52 Profile: PF#1
Warning:Divided flow computed for this cross-section.
Warning:The cross-section end points had to be extended vertically for the computed water surface.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 201.52 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 201.43 Profile: PF#1
Warning:Divided flow computed for this cross-section.
Warning:The cross-section end points had to be extended vertically for the computed water surface.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 201.43 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 201.33 Profile: PF#1
Warning:Divided flow computed for this cross-section.
Warning:The cross-section end points had to be extended vertically for the computed water surface.
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, energy was used.
River: 1 Reach: 1 RS: 201.33 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 201.24 Profile: PF#1
Warning:Divided flow computed for this cross-section.
Warning:The cross-section end points had to be extended vertically for the computed water surface.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 201.24 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 201.14 Profile: PF#1
Warning:Divided flow computed for this cross-section.
Warning:The cross-section end points had to be extended vertically for the computed water surface.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 201.14 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 201.05 Profile: PF#1
Warning:Divided flow computed for this cross-section.
Warning:The cross-section end points had to be extended vertically for the computed water surface.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 201.05 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 200.95 Profile: PF#1
Warning:Divided flow computed for this cross-section.
Warning:The cross-section end points had to be extended vertically for the computed water surface.
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: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 200.95 Profile: PF#2
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: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 200.86 Profile: PF#1
Warning:Divided flow computed for this cross-section.
Warning:The cross-section end points had to be extended vertically for the computed water surface.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 200.86 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 200.77 Profile: PF#1
Warning:Divided flow computed for this cross-section.
Warning:The cross-section end points had to be extended vertically for the computed water surface.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 200.77 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 200.67 Profile: PF#1
Warning:Divided flow computed for this cross-section.
Warning:The cross-section end points had to be extended vertically for the computed water surface.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 200.67 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 200.58 Profile: PF#1
Warning:Divided flow computed for this cross-section.
Warning:The cross-section end points had to be extended vertically for the computed water surface.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 200.58 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 200.49 Profile: PF#1
Warning:Divided flow computed for this cross-section.
Warning:The cross-section end points had to be extended vertically for the computed water surface.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 200.49 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 200.39 Profile: PF#1
Warning:Divided flow computed for this cross-section.
Warning:The cross-section end points had to be extended vertically for the computed water surface.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 200.39 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 200.3 Profile: PF#1
Warning:Divided flow computed for this cross-section.
Warning:The cross-section end points had to be extended vertically for the computed water surface.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 200.3 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 200.2 Profile: PF#1
Warning:Divided flow computed for this cross-section.
Warning:The cross-section end points had to be extended vertically for the computed water surface.
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, energy was used.
River: 1 Reach: 1 RS: 200.2 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 200.1 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, energy was used.
River: 1 Reach: 1 RS: 200.1 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 200 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, energy was used.
River: 1 Reach: 1 RS: 200 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 199.91 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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 199.91 Profile: PF#2
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: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 199.82 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, energy was used.
River: 1 Reach: 1 RS: 199.82 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

cHECk-RAS Report

HEC-RAS Project: *pre-project.prj*
Plan File: *pre-project.p01*
Geometry File: *pre-project.g02*
Flow File: *pre-project.f01*
Report Date: *3/5/2014*

Message ID	Message	Cross sections affected	Comments
BR LF 01	This is ($strucname$). The selected profile is $profilename$. Type of flow is low flow because, 1. EGEL 3 of $egel3$ is less than or equal to MinTopRd of $minelweirflow$. 2. EGEL 3 of $egel3$ is less than MxLoCdU of $mxlocdu$.	207.485(Bridge-UP); 209.535(Bridge-UP); 211.525(Bridge-UP); 213.255(Bridge-UP); 213.745(Bridge-UP)	
BR LW 02	This is a Bridge Section. The selected profile is $profilename$. EGEL of $egel3$ at Section 3 is higher than the MinTopRd of $minelweirflow$. However, weir flow is not computed at this structure. Please investigate the problem.	212.675(Bridge-UP)	
BR PW 02	This is a Bridge Section. The selected profile is $profilename$. Type of flow is submerged pressure and weir flow because, 1. EGEL 3 of $egel3$ is greater than MinTopRd of $minelweirflow$. 2. EGEL 3 of $egel3$ is equal to or greater than MxLoCdU of $mxlocdu$. 3. WSEL 2 of $wsel2$ is equal to or greater than MxLoCdD of $mxlocdd$.	212.675(Bridge-UP)	
BR PW 05	This is a Bridge Section. The selected profile is $profilename$. EGEL of $egel3$ at Section 3 is higher than the MinTopRd of $minelweirflow$. However, weir flow is not computed at this structure. Please investigate the problem.	212.675(Bridge-UP)	
FW FW 01L	The Left encroachment station is within the channel. The Left encroachment station $encrstal$ is more than left channel bank station $stalob$. The left encroachment station should be the same as the left channel bank station.	200.86; 200.95; 201.05; 201.14; 201.24; 201.33; 201.43; 201.52; 201.62; 201.71; 201.81; 201.9; 203.77; 203.86; 203.96; 204.05; 209.04; 209.14; 209.24; 210.26; 210.36; 210.55; 210.74; 210.83; 210.93; 211.12; 211.21; 211.31; 211.41; 213.11; 213.66; 213.95; 214.04; 214.14	
FW FW 01R	The Right encroachment station is within the channel. The Right encroachment station $encrstar$ is less than right channel bank station $starob$. The right encroachment station should be the same as the right channel bank station.	201.81; 201.9; 201.99; 202.09; 202.18; 202.37; 202.48; 202.59; 202.69; 202.8; 202.9; 203.09; 203.19; 203.29; 203.39; 203.48; 203.58; 203.67; 203.77; 203.86; 203.96; 204.05; 204.15; 204.25; 204.34; 204.42; 204.68; 204.78; 204.87; 206.13; 206.22; 206.32; 206.41; 207.07; 210.26; 210.36; 211.21; 211.31; 211.79; 211.99; 213.11; 213.33; 213.38; 213.47; 213.57; 213.66; 213.85; 213.95; 214.04; 214.14	

FW FW 03L	The left channel bank elevation of $lobelev$ is higher than the 1-percent-annual-chance WSEL of $wsel$. Relocate the left channel bank station at or below the 1-percent-annual-chance WSEL. Do not place the bank stations at the bottom of the channel. Do not place the bank stations at the low flow channel. Use the Horizontal Variation in "n" Values option in HEC-RAS to assign different "n" values to the left bank slope, low flow channel, and the right bank slope. Let HEC-RAS compute the composite "n" value based on the depth of flow.	200.49; 200.77; 201.05; 201.9; 202.09; 202.37; 202.48; 202.59; 202.69; 203.86; 203.96; 204.05; 205.43; 206.03; 206.13; 206.22; 206.7; 206.79; 206.97; 207.07; 207.62; 207.71; 207.9; 208.19; 208.29; 208.39; 208.48; 208.57; 208.67; 208.75; 208.85; 209.04; 209.14; 209.24; 209.33; 209.42; 209.6; 209.69; 209.79; 209.88; 209.98; 210.64; 211.12; 211.41; 211.71; 213.11; 213.66; 213.95; 214.04; 214.14	
FW FW 03R	The right channel bank elevation of $robelev$ is higher than the 1-percent annual chance WSEL of $wsel$. Relocate the right channel bank station at or below the 1-percent annual chance WSEL. Do not place the bank stations at the bottom of the channel. Do not place the bank stations at the low flow channel. Use the Horizontal Variation in "n" Values option in HEC-RAS to assign different "n" values to the left bank slope, low flow channel, and the right bank slope. Let HEC-RAS compute the composite "n" value based on the depth of flow.	200.3; 201.24; 202.09; 202.48; 202.9; 203.39; 205.43; 205.84; 205.94; 206.7; 207.16; 207.27; 207.34; 207.43; 208.19; 208.29; 208.39; 208.48; 208.75; 208.85; 208.95; 209.33; 209.42; 209.69; 209.79; 209.88; 209.98; 210.17; 210.46; 210.55; 210.64; 210.74; 210.83; 210.93; 211.02; 211.12; 211.71; 211.89; 212.08; 213.11; 213.33; 213.38; 213.47; 213.57; 213.66; 213.85; 213.95; 214.04; 214.14	
FW FW 04L	The 1-percent-annual-chance floodplain is outside of the channel. The left station effective of $ineffstal$ for the 1-percent-annual-chance floodplain is less than the left channel bank station $stalob$. However, the left encroachment station $encstal$ is outside of the 1-percent-annual-chance floodplain. Adjust the left encroachment station so that it will be within the floodplain.	208.1	
FW FW 04R	The 1-percent-annual-chance floodplain is outside of the channel. The right station effective of $ineffstar$ for the 1-percent-annual-chance floodplain is greater than the right channel bank station $starob$. However, the right encroachment station $encstar$ is outside of the 1-percent-annual-chance floodplain. Adjust the right encroachment station so that it will be within the floodplain.	207.8; 207.99; 208.1; 208.85; 210.74	
FW FW 05L	The 1-percent annual chance flood is contained within the channel. The Left encroachment station $encstal$ is outside the channel. The Left channel bank station is $stalob$. Adjust the left encroachment station so that it is the same as the left channel bank station.	208.19	

FW FW 05R	The 1-percent annual chance flood is contained within the channel. The Right encroachment station $encstar$ is outside the channel. Right channel bank station is $starob$. Adjust the right encroachment station so that it is the same as the right channel bank station..	208.19; 211.12; 212.08	
FW FW 06L	The left side of the floodway boundary is within the channel. The left station effective of $ineffstal$ for the floodway profile is more than the left channel bank station of $stalob$. The left encroachment station of $encstal$ is less than the left channel bank station. Adjust the left encroachment station so that it is the same as the left channel bank station.	208.19	
FW FW 06R	The right side of the floodway boundary is within the channel. The right station effective of $ineffstar$ for the floodway profile is less than the right channel bank station of $starob$. The right encroachment station of $encstar$ is more than the right channel bank station. Adjust the right encroachment station so that it is the same as the right channel bank station.	207.27; 208.19; 211.12; 212.08	
FW SC 02	The surcharge value of $surcharge$ is greater than the maximum allowable value of $allowsurchrg$. Use the suggestions from the Help section to reduce the computed surcharge value to be no more than $allowsurchrg$.	199.91	
FW ST 04BDL	This is ($strucname$) downstream internal section. The left encroachment station is within the channel. The left encroachment station of $encstal$ is greater than the left bank station of $stalob$. The leftencroachment station should be the same as the left channel bank station.	213.255(Bridge-DN); 213.745(Bridge-DN)	
FW ST 04BUL	This is ($strucname$) upstream internal section. The left encroachment station is within the channel. The left encroachment station of $encstal$ is greater than the left bank station of $stalob$. The left encroachment station should be the same as the left channel bank station.	211.525(Bridge-UP); 213.255(Bridge-UP); 213.745(Bridge-UP)	
FW ST 04S2L	This is Section 2 of a hydraulic structure. The left encroachment station is within the channel. The left encroachment station of $encstal$ is greater than the left bank station of $stalob$. The left encroachment station should be the same as the left channel bank station.	211.51; 213.25; 213.74	
FW ST 04S2R	This is Section 2 of a hydraulic structure. The right encroachment station is within the channel. The right encroachment station of $encstar$ is less than the right bank station of $starob$. The right encroachment station should be the same as right channel bank station.	211.51; 213.25; 213.74	

FW ST 04S3L	This is Section 3 of a hydraulic structure. The Left Channel Bank station is outside the Left Abutment station. The left encroachment station is within the channel. The left encroachment station of $encstal$ is greater than the left bank station of $stalob$. The left encroachment station should be the same as the left channel bank station.	211.54; 213.26; 213.75	
FW ST 04S3R	This is Section 3 of a hydraulic structure. The right encroachment station is within the channel. The right encroachment station of $encstar$ is less than the right bank station of $starob$. The right encroachment station should be the same as the right channel bank station.	211.54; 213.26; 213.75	
FW ST 06BU	This is the Upstream Bridge Internal Section. Negative surcharge value of $negsurchrg$ occurs at this section. Use the suggestions from the Help section such that negative surcharge value will not be less than (-0.09) foot.	212.675(Bridge-UP)	
FW ST 08S3L	This is Section 3 of a hydraulic structure. The left encroachment station is outside the 1%-annual-chance floodplain. The left station effective of $ineffstal$ for the 1%-annual-chance profile is less than the left channel bank station of $stalob$. The 1%-annual-chance floodplain is outside the channel. The left encroachment station of $encstal$ is less than the left station effective of $ineffstal$ for the 1%-annual-chance profile. The Enc_Sta_L must be within the 1%-annual-chance floodplain.	207.49	
MP SW 01DK	The name of the stream is ($streamname$). The flow regime is subcritical or mixed flow. Starting water-surface elevations are computed from Known WSELs as the downstream boundary condition. Provide backup information on Known water-surface elevations or use same energy slope for all the profiles as the starting boundary condition and rerun the plan.		
NT RC 05	The left overbank n-value of $nlob$ and the right overbank n-value of $nrob$ are less than or equal to the channel n-value of nch. Follow the procedure in (FHWA, 1984) to compute the n-value for the natural floodplain and the channel. Or follow the procedure in (USGS, 1977) to compute the n-value for urban development. Please submit supporting information on the evaluation of n-values.	204.42; 204.53; 204.61; 204.68; 204.78; 204.87; 205.06; 205.15; 205.25; 205.75; 206.32; 206.41; 206.51; 206.6; 206.7; 206.79; 206.88; 206.97; 207.07; 207.62; 207.71; 208.1; 209.04; 209.6; 210.07; 210.26; 210.46	

NT RS 02BDC	This is the Downstream Bridge Section (BRD). The channel n value of $chldn$ for the downstream internal bridge opening section is equal to or larger than the channel n value of $chl2$ at Section 2. Usually, the channel "n" value of the bridge opening section represents the area below the bridge deck and is less than the channel "n" value of Section 2. The "n" value for Section 2 represents the natural valley channel section roughness for the reach between Section 3 and Section 4. Please change the "n" value of the internal bridge opening section or provide supporting information for the use of the higher "n" value.	207.485(Bridge-DN); 209.535(Bridge-DN); 211.525(Bridge-DN); 213.255(Bridge-DN); 213.745(Bridge-DN)	
NT RS 02BUC	This is the Upstream Bridge Section (BRU). The channel n value of $chlup$ for the upstream internal bridge opening section is equal to or larger than the channel n value of $chl3$ at Section 3. Usually, the channel "n" value of the bridge opening section represents the area below the bridge deck and is less than the channel "n" value of Section 3. The "n" value for Section 3 represents the natural valley channel section roughness for the reach between Section 3 and Section 4. Please change the "n" value of the internal bridge opening section or provide supporting information for the use of a higher "n" value.	207.485(Bridge-UP); 209.535(Bridge-UP); 211.525(Bridge-UP); 212.675(Bridge-UP); 213.255(Bridge-UP); 213.745(Bridge-UP)	
NT TL 01S2	This is Section2 of a hydraulic structure. The contraction and expansion loss coefficients are cc and ce. They should be equal to 0.3 and 0.5, respectively, for typical structure sections according to page 5-8 of the HEC-RAS Hydraulic Reference Manual (HEC, 2010).	211.51; 212.67; 213.25; 213.74	
NT TL 01S3	This is Section3 of a hydraulic structure. The contraction and expansion loss coefficients are cc and ce. They should be equal to 0.3 and 0.5, respectively, for typical structure sections according to page 5-8 of the HEC-RAS Hydraulic Reference Manual (HEC, 2010).	211.54; 212.68; 213.26; 213.75	
NT TL 01S4	This is Section 4 of a hydraulic structure. The contraction and expansion loss coefficients are cc and ce. They should be equal to 0.3 and 0.5, respectively according to page 5-8 of the HEC-RAS Hydraulic Reference Manual (HEC, 2010)..	207.62; 209.6; 211.64; 212.74; 213.33; 213.85	

ST DT 01B	This is ($strucname$). 'Upstream Dist' of $distup$ in "Bridge Width Table" is less than the height of the bridge opening of $height$. This indicates that Section 3 may not be placed at the foot of the road embankment or wing walls and may not represent the natural valley cross section. Section 3 should be relocated or provide a statement that it represents the natural valley cross section. The HEC-RAS geometry file may need to be recreated using a GIS program. Lengths at Sections 4, 3 and 2 and 'Upstream Dist' should be adjusted.	209.535(Bridge-UP); 211.525(Bridge-UP); 213.255(Bridge-UP); 213.745(Bridge-UP)	
ST DT 02B	This is ($strucname$). 'Downstream Dist' of $distdn$ in 'Bridge Width Table' is less than the height of the bridge opening of $height$. This indicates that Section 2 may not be placed at the foot of the road embankment or wing walls and may not represent the natural valley cross section. Section 2 should be relocated or provide a statement that it represents the natural valley cross section. A HEC-RAS geometry file may need to be recreated using a GIS program. Lengths at Sections 3 and 2 should be adjusted.	209.535(Bridge-DN); 211.525(Bridge-DN); 213.255(Bridge-DN); 213.745(Bridge-DN)	
ST DT 03	This is ($Structure$) section. The Contraction Length is longer than the Expansion Length. Section 4 channel distance of $Length_Chnl4$ is longer than Section 2 channel distance of $Length_Chnl2$. Section 4 and Section 1 should be relocated. The HEC-RAS geometry file may need to be recreated using a GIS program.	207.485(Bridge-UP); 213.255(Bridge-UP); 213.745(Bridge-UP)	
ST GD 06	Left and/or right abutment station computed by the cHECk-RAS program is equal to zero. cHECk-RAS cannot evaluate this structure.	212.675(Bridge)	
ST IF 05S2L	This is Section 2 of a hydraulic structure. The left ineffective flow station is within the opening area of the structure. The left ineffective flow station of $ineffstal$ is greater than the downstream left abutment station of $abutstal$ at ($strucname$). The Left ineffective flow station should be adjusted.	207.48(Bridge); 211.51(Bridge); 212.67(Bridge)	
ST IF 05S2R	This is Section 2 of a hydraulic structure. The right ineffective flow station is within the opening area of the structure. The right ineffective flow station of $ineffstar$ is less than the upstream right abutment station of $abutstar$ at ($strucname$). The Right ineffective flow station should be adjusted.	211.51(Bridge)	

ST IF 05S3L	This is Section 3 of a hydraulic structure. The left ineffective flow station is within the opening area of the structure. The left ineffective flow station of $ineffstal$ is greater than the upstream left abutment station of $abutstal$ at ($strucname$). The Left ineffective flow station should be adjusted.	207.49(Bridge); 212.68(Bridge)	
ST IF 05S3R	This is Section 3 of a hydraulic structure. The right ineffective flow station is within the opening area of the structure. The right ineffective flow station of $ineffstar$ is less than the upstream right abutment station of $abutstar$ at ($strucname$). The Right ineffective flow station should be adjusted.	211.54(Bridge)	
ST IF 06S2L	This is Section 2. The selected profile is $profilename$. Low or pressure flow occurs at ($strucname$). The Dn_Dist of $dndist$ at the structure is less than the opening height of $openheight$ of the structure. The cHECk-RAS computed left ineffective flow station of $compineffstal$ is less than the input left ineffective flow station of $ineffstal$. The left ineffective flow station should be adjusted per the help instructions and the HEC-RAS manual.	209.53(Bridge); 211.51(Bridge); 213.25(Bridge); 213.74(Bridge)	
ST IF 06S2R	This is Section 2. The selected profile is $profilename$. Low or pressure flow occurs at ($strucname$). The Dn_Dist of $dndist$ at the structure is less than the opening height of $openheight$ of the structure. The cHECk-RAS computed right ineffective flow station of $compineffstar$ is greater than the input right ineffective flow station of $ineffstar$. The right ineffective flow station should be adjusted per the help instructions and the HEC-RAS manual.	209.53(Bridge); 211.51(Bridge); 213.25(Bridge); 213.74(Bridge)	
ST IF 06S3L	This is Section 3. The selected profile is $profilename$. Low or pressure flow occurs at ($strucname$). The Up_Dist of $updist$ at the structure is less than the opening height of $openheight$ of the structure. The cHECk-RAS computed left ineffective flow station of $compineffstal$ is less than the input left ineffective flow station of $ineffstal$. The left ineffective flow station should be adjusted per the help instructions and the HEC-RAS manual.	209.54(Bridge); 213.26(Bridge); 213.75(Bridge)	

ST IF 06S3R	This is Section 3. The selected profile is $profilename$. Low or pressure flow occurs at ($strucname$). The Up_Dist of $updist$ at the structure is less than the opening height of $openheight$ of the structure. The cHECk-RAS computed right ineffective flow station of $compineffstar$ is greater than the input right ineffective flow station of $ineffstar$. The right ineffective flow station should be adjusted per the help instructions and the HEC-RAS manual.	209.54(Bridge); 211.54(Bridge); 213.26(Bridge); 213.75(Bridge)	
ST IF 07S1L	This is Section 1. Left Ineffective flow option was considered at this section. However, it should be a fully expanded cross section. Ineffective flow stations and elevations should be cleared from this section, unless the areas beyond the ineffective flow stations are not within the flow path of the stream. This message should be ignored if this section is Section 3 of the downstream structure.	207.43(Bridge); 209.42(Bridge); 212.56(Bridge); 213.21(Bridge); 213.66(Bridge)	
ST IF 07S1R	This is Section 1. Right Ineffective flow option was considered at this section. However, it should be a fully expanded cross section. Ineffective flow stations and elevations should be cleared from this section, unless the areas beyond the ineffective flow stations are not within the flow path of the stream. This message should be ignored if this section is Section 3 of the downstream structure.	207.43(Bridge); 209.42(Bridge); 212.56(Bridge); 213.21(Bridge); 213.66(Bridge)	
ST IF 07S4L	This is Section 4. Left Ineffective flow option was considered at this section. However, it should be a fully expanded cross section. Ineffective flow stations and elevations should be cleared from this section, unless the areas beyond the ineffective flow stations are not within the flow path of the stream. This message should be ignored if this section is Section 2 of the upstream structure.	207.62(Bridge); 209.6(Bridge); 212.74(Bridge); 213.33(Bridge); 213.85(Bridge)	
ST IF 07S4R	This is Section 4. Right Ineffective flow option was considered at this section. However, it should be a fully expanded cross section. Ineffective flow stations and elevations should be cleared from this section, unless the areas beyond the ineffective flow stations are not within the flow path of the stream. This message should be ignored if this section is Section 2 of the upstream structure.	207.62(Bridge); 209.6(Bridge); 212.74(Bridge); 213.33(Bridge); 213.85(Bridge)	

XS CD 01	Critical Depth occurs at $assignedname$ flood. Flow Code will be "C". The Ineffective flow option is used. The Ineffective Flow elevation is equal to or higher than the Critical WSEL. Please investigate whether this selection is appropriate.	204.25; 207.07	
XS DC 01	Discharge decreases in the downstream direction for $assignedname$ flood. There are no lateral structures. Documentation of hydrologic analysis is required or provide explanation.	205.4; 213.21	
XS DT 01	Both the right overbank distance of rob and the left overbank distance of lob are longer than the channel distance of chl . Please review the creation of left overbank, channel and right overbank distances. The HEC-RAS geometry file may need to be recreated using a GIS program. Please resolve the differences among the distances.	207.8; 208.19; 208.29; 208.48; 209.33; 209.53; 211.71; 211.99	
XS IF 03L	The Left Ineffective Flow Station is within the channel. The Left Ineffective Flow Station of $ineffstal$ is greater than the LeftBankSta of $bankstal$. The Left Ineffective Flow Station or the LeftBankSta should be adjusted.	207.48; 208.19; 208.29; 208.39; 209.53; 209.54	
XS IF 03R	The Right Ineffective Flow Station is within the channel. The Right Ineffective Flow Station of $ineffstar$ is less than the RightBankSta of $bankstar$. The Right Ineffective Flow Station or the RightBankSta should be adjusted.	206.51; 207.48; 207.49; 208.29; 208.39; 209.53; 209.54	
XS SW 01DK	The name of the stream is $streamname$. The flow regime is subcritical or mixed flow. Starting WSEL is computed from Known WSEL as the downstream boundary for $Assigned_Name$ flood. Provide backup information on Known WSEL or use energy slope as the downstream boundary.	199.82	

APPENDIX E

POST-PROJECT MODEL

HEC-RAS Plan: PostPrj River: 1 Reach: 1

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
1	214.14	PF#1	169000.00	1048.70	1075.50	1062.66	1077.01	0.000804	9.84	17180.80	1312.25	0.36
1	214.14	PF#2	169000.00	1048.70	1075.51	1062.66	1077.01	0.000803	9.83	17184.70	726.86	0.36
1	214.04	PF#1	169000.00	1048.80	1075.04	1062.64	1076.58	0.000846	9.95	16977.37	813.60	0.36
1	214.04	PF#2	169000.00	1048.80	1075.05	1062.64	1076.59	0.000845	9.95	16981.74	733.89	0.36
1	213.95	PF#1	169000.00	1049.30	1074.16	1063.67	1076.05	0.001218	11.04	15307.03	777.39	0.43
1	213.95	PF#2	169000.00	1049.30	1074.16	1063.67	1076.05	0.001216	11.04	15312.30	745.19	0.43
1	213.85	PF#1	169000.00	1048.10	1071.66	1065.14	1075.08	0.002230	14.98	11764.97	1017.61	0.58
1	213.85	PF#2	169000.00	1048.10	1071.66	1065.14	1075.09	0.002229	14.98	11769.17	702.59	0.58
1	213.75	PF#1	169000.00	1044.60	1071.97	1060.91	1073.93	0.000919	11.25	15022.38	656.45	0.41
1	213.75	PF#2	169000.00	1044.60	1071.98	1060.91	1073.94	0.000918	11.25	15027.59	656.35	0.41
1	213.745		Bridge									
1	213.74	PF#1	169000.00	1044.60	1071.66	1060.91	1073.68	0.000958	11.40	14818.54	654.76	0.42
1	213.74	PF#2	169000.00	1044.60	1071.67	1060.91	1073.69	0.000957	11.40	14824.14	654.73	0.42
1	213.66	PF#1	169000.00	1047.60	1069.25	1063.62	1072.99	0.002199	15.51	10898.87	586.13	0.62
1	213.66	PF#2	169000.00	1047.60	1069.27	1063.62	1073.00	0.002194	15.50	10906.54	565.99	0.62
1	213.57	PF#1	169000.00	1046.70	1069.19	1063.09	1071.61	0.001831	12.49	13535.50	1275.07	0.55
1	213.57	PF#2	169000.00	1046.70	1069.20	1063.09	1071.62	0.001827	12.47	13548.50	852.16	0.55
1	213.47	PF#1	169000.00	1045.80	1068.60	1061.42	1070.60	0.001694	11.35	14886.18	1423.99	0.52
1	213.47	PF#2	169000.00	1045.80	1068.62	1061.42	1070.62	0.001691	11.34	14903.41	1023.12	0.52
1	213.38	PF#1	169000.00	1045.40	1068.60	1059.33	1069.81	0.000809	8.83	19139.19	1251.70	0.37
1	213.38	PF#2	169000.00	1045.40	1068.61	1059.33	1069.82	0.000810	8.82	19155.46	1101.75	0.37
1	213.33	PF#1	169000.00	1045.40	1068.57	1057.70	1069.53	0.000606	7.87	21480.53	1371.95	0.33
1	213.33	PF#2	169000.00	1045.40	1068.58	1057.70	1069.54	0.000608	7.86	21496.88	1185.62	0.33
1	213.26	PF#1	169000.00	1040.40	1068.16	1055.61	1069.32	0.000568	8.67	19493.06	881.25	0.32
1	213.26	PF#2	169000.00	1040.40	1068.17	1055.61	1069.34	0.000567	8.66	19505.00	881.21	0.32
1	213.255		Bridge									
1	213.25	PF#1	169000.00	1040.40	1067.95	1055.61	1069.14	0.000585	8.75	19310.29	880.24	0.33
1	213.25	PF#2	169000.00	1040.40	1067.96	1055.61	1069.15	0.000584	8.75	19322.64	880.24	0.33
1	213.21	PF#1	166000.00	1044.90	1067.99	1055.88	1069.03	0.000510	8.17	20359.04	1540.81	0.31
1	213.21	PF#2	166000.00	1044.90	1068.00	1055.88	1069.04	0.000528	8.17	20314.90	928.20	0.31
1	213.11	PF#1	166000.00	1047.60	1067.16	1058.35	1068.63	0.000913	9.73	17066.41	927.80	0.40
1	213.11	PF#2	166000.00	1047.60	1067.16	1058.35	1068.63	0.000912	9.72	17071.96	927.79	0.40
1	213.03	PF#1	166000.00	1046.70	1066.57	1058.30	1068.17	0.001032	10.14	16391.46	965.60	0.42
1	213.03	PF#2	166000.00	1046.70	1066.58	1058.30	1068.17	0.001031	10.13	16382.57	919.76	0.42
1	212.93	PF#1	166000.00	1045.40	1065.48	1058.04	1067.55	0.001316	11.53	14401.99	850.17	0.48
1	212.93	PF#2	166000.00	1045.40	1065.49	1058.04	1067.55	0.001314	11.52	14408.72	798.99	0.48
1	212.84	PF#1	166000.00	1043.10	1063.54	1057.57	1066.65	0.001930	14.14	11737.26	635.75	0.58
1	212.84	PF#2	166000.00	1043.10	1063.56	1057.57	1066.66	0.001926	14.13	11744.94	635.75	0.58
1	212.74	PF#1	166000.00	1041.60	1063.06	1055.53	1065.57	0.001465	12.71	13064.60	721.72	0.51
1	212.74	PF#2	166000.00	1041.60	1063.08	1055.53	1065.58	0.001462	12.70	13073.93	676.59	0.51
1	212.68	PF#1	166000.00	1036.90	1063.02	1052.69	1065.16	0.001030	11.74	14139.83	629.02	0.44
1	212.68	PF#2	166000.00	1036.90	1063.04	1052.69	1065.17	0.001028	11.73	14148.58	629.03	0.44
1	212.675		Bridge									
1	212.67	PF#1	166000.00	1036.90	1062.53	1052.69	1064.77	0.001102	12.00	13830.37	626.50	0.45
1	212.67	PF#2	166000.00	1036.90	1062.54	1052.69	1064.77	0.001101	12.00	13834.12	626.51	0.45
1	212.56	PF#1	166000.00	1039.30	1056.88	1055.74	1063.23	0.004887	20.23	8207.45	521.49	0.90
1	212.56	PF#2	166000.00	1039.30	1056.98	1055.74	1063.25	0.004781	20.09	8264.06	521.09	0.89
1	212.46	PF#1	166000.00	1037.20	1056.23	1052.77	1060.78	0.003034	17.11	9703.74	1555.15	0.72
1	212.46	PF#2	166000.00	1037.20	1056.29	1052.77	1060.80	0.003114	17.05	9738.24	557.66	0.72

HEC-RAS Plan: PostPrj River: 1 Reach: 1 (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
1	212.37	PF#1	166000.00	1036.60	1053.09	1051.73	1058.81	0.004662	19.19	8648.72	573.57	0.87
1	212.37	PF#2	166000.00	1036.60	1053.09	1051.73	1058.81	0.004657	19.19	8651.87	573.59	0.87
1	212.27	PF#1	166000.00	1035.10	1050.67	1049.57	1056.35	0.005236	19.12	8681.71	2800.97	0.89
1	212.27	PF#2	166000.00	1035.10	1050.67	1049.57	1056.35	0.005237	19.12	8681.12	605.47	0.89
1	212.18	PF#1	166000.00	1030.80	1050.25	1045.89	1053.95	0.002692	15.42	10762.00	2340.53	0.66
1	212.18	PF#2	166000.00	1030.80	1050.25	1045.89	1053.94	0.002692	15.43	10761.62	627.48	0.66
1	212.08	PF#1	166000.00	1025.90	1050.04	1041.45	1052.67	0.001415	13.00	12773.79	2180.71	0.49
1	212.08	PF#2	166000.00	1025.90	1050.05	1041.45	1052.67	0.001415	12.99	12774.66	589.61	0.49
1	211.99	PF#1	166000.00	1025.39	1048.55	1041.17	1051.77	0.001822	14.40	11524.16	1310.27	0.55
1	211.99	PF#2	166000.00	1025.39	1048.55	1041.17	1051.78	0.001822	14.40	11525.23	549.11	0.55
1	211.89	PF#1	166000.00	1024.19	1047.93	1039.97	1050.85	0.001600	13.70	12113.28	564.71	0.52
1	211.89	PF#2	166000.00	1024.19	1047.93	1039.97	1050.85	0.001600	13.70	12114.32	564.72	0.52
1	211.79	PF#1	166000.00	1023.84	1047.07	1039.27	1050.00	0.001620	13.72	12095.82	1185.33	0.52
1	211.79	PF#2	166000.00	1023.84	1047.08	1039.27	1050.00	0.001619	13.72	12097.07	567.51	0.52
1	211.71	PF#1	166000.00	1023.19	1046.34	1038.56	1049.27	0.001623	13.72	12101.46	635.05	0.52
1	211.71	PF#2	166000.00	1023.19	1046.35	1038.56	1049.27	0.001622	13.72	12102.92	569.02	0.52
1	211.64	PF#1	166000.00	1022.58	1045.45	1038.24	1048.58	0.001783	14.19	11700.18	828.74	0.55
1	211.64	PF#2	166000.00	1022.58	1045.46	1038.24	1048.58	0.001782	14.19	11701.96	561.65	0.55
1	211.54	PF#1	166000.00	1021.90	1043.47	1038.07	1047.45	0.002293	15.99	10380.14	525.33	0.63
1	211.54	PF#2	166000.00	1021.90	1043.48	1038.07	1047.45	0.002291	15.99	10382.84	525.34	0.63
1	211.525		Bridge									
1	211.51	PF#1	166000.00	1021.80	1041.77	1037.98	1046.46	0.002980	17.37	9557.27	520.99	0.71
1	211.51	PF#2	166000.00	1021.80	1041.78	1037.98	1046.46	0.002975	17.36	9562.61	521.02	0.71
1	211.41	PF#1	166000.00	1018.30	1041.28		1044.73	0.001987	14.89	11147.29	565.09	0.59
1	211.41	PF#2	166000.00	1018.30	1041.30		1044.74	0.001984	14.88	11154.04	565.16	0.59
1	211.31	PF#1	166000.00	1020.80	1039.90	1037.24	1043.44	0.003367	15.11	10987.69	819.03	0.73
1	211.31	PF#2	166000.00	1020.80	1039.93	1037.24	1043.46	0.003343	15.07	11011.89	819.23	0.72
1	211.21	PF#1	166000.00	1021.10	1039.00	1035.55	1041.62	0.002620	12.98	12791.68	987.74	0.64
1	211.21	PF#2	166000.00	1021.10	1039.05	1035.55	1041.64	0.002589	12.93	12837.38	987.92	0.63
1	211.12	PF#1	166000.00	1015.70	1039.46	1029.88	1040.57	0.000691	8.47	19592.75	1059.20	0.35
1	211.12	PF#2	166000.00	1015.70	1039.50	1029.88	1040.61	0.000686	8.45	19637.23	1059.34	0.35
1	211.02	PF#1	166000.00	1019.40	1037.87	1032.11	1039.96	0.001614	11.65	14594.49	1082.08	0.52
1	211.02	PF#2	166000.00	1019.40	1037.86	1032.11	1039.99	0.001637	11.73	14251.89	945.85	0.52
1	210.93	PF#1	166000.00	1018.70	1037.32	1034.18	1039.03	0.001712	11.09	17847.84	2652.70	0.52
1	210.93	PF#2	166000.00	1018.70	1037.34	1034.18	1039.04	0.001702	11.07	17888.93	2037.05	0.52
1	210.83	PF#1	166000.00	1019.10	1036.07	1032.21	1038.07	0.001947	11.75	16600.59	2245.32	0.55
1	210.83	PF#2	166000.00	1019.10	1036.08	1032.20	1038.09	0.001951	11.76	16541.59	2196.31	0.56
1	210.74	PF#1	166000.00	1018.20	1035.64	1029.79	1037.15	0.001242	10.09	17703.16	1394.28	0.45
1	210.74	PF#2	166000.00	1018.20	1035.66	1029.79	1037.16	0.001237	10.08	17724.10	1394.40	0.45
1	210.64	PF#1	166000.00	1017.70	1035.03	1029.03	1036.51	0.001266	9.99	18871.19	2977.66	0.45
1	210.64	PF#2	166000.00	1017.70	1035.05	1029.03	1036.53	0.001260	9.97	18916.74	2362.16	0.45
1	210.55	PF#1	166000.00	1018.00	1034.00	1028.55	1035.75	0.001591	10.64	15677.24	1804.21	0.50
1	210.55	PF#2	166000.00	1018.00	1034.02	1028.55	1035.77	0.001584	10.63	15648.99	1394.10	0.50
1	210.46	PF#1	166000.00	1016.30	1034.52	1025.05	1035.02	0.000444	5.64	29451.81	2040.46	0.25
1	210.46	PF#2	166000.00	1016.30	1034.54	1025.05	1035.03	0.000448	5.63	29483.97	1881.54	0.25
1	210.36	PF#1	166000.00	1017.40	1033.85	1027.55	1034.66	0.000895	7.25	22905.46	1899.99	0.37
1	210.36	PF#2	166000.00	1017.40	1033.87	1027.55	1034.68	0.000891	7.24	22938.39	1900.06	0.37
1	210.26	PF#1	166000.00	1016.90	1033.53	1026.47	1034.22	0.000771	6.68	24836.70	1932.29	0.33
1	210.26	PF#2	166000.00	1016.90	1033.55	1026.47	1034.24	0.000768	6.67	24873.50	1932.40	0.33
1	210.17	PF#1	166000.00	1014.70	1032.77	1027.95	1033.71	0.001214	7.78	21345.12	2172.33	0.42

HEC-RAS Plan: PostPrj River: 1 Reach: 1 (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
1	210.17	PF#2	166000.00	1014.70	1032.79	1027.95	1033.73	0.001206	7.76	21392.45	1968.12	0.41
1	210.07	PF#1	166000.00	1009.00	1032.58	1025.16	1033.23	0.000548	5.79	28331.99	2494.29	0.26
1	210.07	PF#2	166000.00	1009.00	1032.65	1024.41	1033.22	0.000570	5.92	28124.73	2015.00	0.27
1	209.98	PF#1	166000.00	999.33	1032.58	1020.16	1032.98	0.000253	5.36	33592.19	1907.28	0.21
1	209.98	PF#2	166000.00	999.33	1032.57	1019.84	1032.99	0.000264	5.48	32698.47	1833.88	0.22
1	209.88	PF#1	166000.00	997.69	1032.30	1018.95	1032.83	0.000280	6.22	29912.61	1598.72	0.23
1	209.88	PF#2	166000.00	997.69	1032.31	1018.95	1032.84	0.000283	6.25	29714.46	1572.32	0.23
1	209.79	PF#1	166000.00	1002.93	1032.25	1018.56	1032.66	0.000264	5.58	32665.39	2127.03	0.22
1	209.79	PF#2	166000.00	1002.93	1032.25	1018.56	1032.67	0.000267	5.61	32457.63	1764.34	0.22
1	209.69	PF#1	166000.00	1004.31	1031.55	1021.24	1032.41	0.000717	7.09	22376.69	1884.99	0.34
1	209.69	PF#2	166000.00	1004.31	1031.56	1021.24	1032.42	0.000716	7.09	22389.98	1433.22	0.34
1	209.60	PF#1	166000.00	1004.15	1030.45	1024.57	1031.81	0.001456	9.48	17878.46	2238.65	0.48
1	209.60	PF#2	166000.00	1004.15	1030.45	1024.59	1031.82	0.001467	9.51	17875.76	1583.08	0.49
1	209.54	PF#1	166000.00	1004.27	1030.22	1021.90	1031.46	0.000859	8.93	18578.79	1096.44	0.38
1	209.54	PF#2	166000.00	1004.27	1030.22	1021.90	1031.46	0.000858	8.93	18582.94	1096.45	0.38
1	209.535		Bridge									
1	209.53	PF#1	166000.00	1004.27	1029.88	1021.90	1031.17	0.000917	9.12	18207.37	1095.63	0.39
1	209.53	PF#2	166000.00	1004.27	1029.88	1021.90	1031.17	0.000917	9.11	18211.78	1095.66	0.39
1	209.42	PF#1	166000.00	998.44	1028.89	1023.49	1030.40	0.001432	9.87	16826.75	1341.49	0.48
1	209.42	PF#2	166000.00	998.44	1028.89	1023.49	1030.40	0.001430	9.86	16833.66	1258.70	0.48
1	209.33	PF#1	166000.00	993.71	1028.74	1019.30	1029.68	0.000900	7.81	21286.58	1846.56	0.38
1	209.33	PF#2	166000.00	993.71	1028.74	1019.30	1029.69	0.000899	7.80	21270.94	1587.64	0.38
1	209.24	PF#1	166000.00	1003.00	1027.66	1023.98	1029.02	0.001727	7.87	18344.56	3253.96	0.49
1	209.24	PF#2	166000.00	1003.00	1027.66	1023.97	1029.02	0.001734	7.96	18239.16	1837.81	0.49
1	209.14	PF#1	166000.00	1002.87	1026.71	1023.37	1028.02	0.002090	8.18	18289.83	2920.92	0.52
1	209.14	PF#2	166000.00	1002.87	1026.71	1023.40	1028.02	0.002087	8.24	18278.03	2040.18	0.52
1	209.04	PF#1	166000.00	1007.02	1026.13	1021.52	1027.00	0.001479	7.60	22163.50	2880.31	0.45
1	209.04	PF#2	166000.00	1007.02	1026.13	1021.52	1027.00	0.001471	7.67	22150.64	2229.67	0.44
1	208.95	PF#1	166000.00	997.33	1025.59	1018.20	1026.45	0.000833	7.47	22432.89	2457.62	0.36
1	208.95	PF#2	166000.00	997.33	1025.59	1018.20	1026.45	0.000833	7.47	22433.32	1796.52	0.36
1	208.85	PF#1	166000.00	998.88	1024.64	1020.18	1025.85	0.001531	8.84	19085.01	2504.30	0.47
1	208.85	PF#2	166000.00	998.88	1024.65	1020.18	1025.85	0.001528	8.84	19096.66	1908.88	0.47
1	208.75	PF#1	166000.00	1000.44	1024.13	1017.95	1025.18	0.001097	8.24	20173.12	2367.88	0.43
1	208.75	PF#2	166000.00	1000.44	1024.14	1017.95	1025.19	0.001096	8.24	20147.45	1732.34	0.43
1	208.67	PF#1	166000.00	1003.03	1022.73	1019.09	1024.33	0.001929	10.25	16637.54	2042.32	0.54
1	208.67	PF#2	166000.00	1003.03	1022.74	1019.09	1024.34	0.001922	10.24	16656.72	1612.42	0.54
1	208.57	PF#1	166000.00	1002.61	1020.28	1018.75	1023.02	0.003954	13.29	12521.85	1408.87	0.77
1	208.57	PF#2	166000.00	1002.61	1020.30	1018.75	1023.03	0.003935	13.27	12508.58	1338.24	0.76
1	208.48	PF#1	166000.00	998.70	1019.79	1016.90	1021.03	0.002142	8.93	18579.98	2180.85	0.54
1	208.48	PF#2	166000.00	998.70	1019.83	1016.90	1021.06	0.002110	8.89	18664.90	2181.00	0.54
1	208.39	PF#1	166000.00	998.71	1018.93	1015.86	1020.12	0.001995	8.76	18954.06	2230.78	0.53
1	208.39	PF#2	166000.00	998.71	1018.99	1015.86	1020.16	0.001951	8.70	19086.19	2231.08	0.52
1	208.29	PF#1	166000.00	1002.85	1017.77	1014.93	1019.02	0.002276	8.97	18505.98	2265.27	0.55
1	208.29	PF#2	166000.00	1002.85	1017.89	1014.93	1019.10	0.002172	8.84	18769.10	2265.55	0.54
1	208.19	PF#1	166000.00	1001.01	1016.79	1013.70	1017.86	0.001975	8.31	19980.37	2467.07	0.51
1	208.19	PF#2	166000.00	1001.01	1016.97	1013.70	1018.00	0.001848	8.12	20443.23	2484.63	0.50
1	208.10	PF#1	166000.00	999.34	1015.82	1012.75	1016.87	0.001845	8.57	20758.44	2840.52	0.51
1	208.10	PF#2	166000.00	999.34	1016.12	1012.75	1017.09	0.001633	8.23	21593.66	2790.38	0.48
1	207.99	PF#1	166000.00	996.98	1014.47	1012.00	1015.86	0.002225	9.93	18378.98	2515.81	0.56
1	207.99	PF#2	166000.00	996.98	1014.96	1011.99	1016.22	0.001888	9.43	19331.60	2625.91	0.52

HEC-RAS Plan: PostPrj River: 1 Reach: 1 (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
1	207.90	PF#1	166000.00	991.51	1013.80	1010.85	1014.78	0.001712	8.45	21576.97	2939.46	0.49
1	207.90	PF#2	166000.00	991.51	1014.50	1010.85	1015.31	0.001298	7.72	23691.96	3027.09	0.43
1	207.80	PF#1	166000.00	992.47	1012.20	1009.50	1013.72	0.001991	10.67	18139.84	2392.35	0.55
1	207.80	PF#2	166000.00	992.47	1012.87	1009.36	1014.41	0.001831	10.57	17859.34	2093.65	0.53
1	207.71	PF#1	166000.00	992.51	1010.85	1008.26	1012.65	0.002160	11.50	16829.66	2122.98	0.58
1	207.71	PF#2	166000.00	992.51	1011.35	1008.53	1013.36	0.002192	11.87	15809.92	1893.38	0.59
1	207.62	PF#1	166000.00	990.12	1010.08	1007.03	1011.66	0.001607	11.08	17810.42	1910.23	0.51
1	207.62	PF#2	166000.00	990.12	1010.13	1007.20	1012.30	0.002037	12.51	15031.07	1445.04	0.58
1	207.49	PF#1	166000.00	984.35	1009.47	1005.22	1010.82	0.001637	9.34	17780.88	1888.92	0.49
1	207.49	PF#2	166000.00	984.35	1009.99	1005.22	1011.22	0.001409	8.92	18613.61	1662.02	0.46
1	207.485		Bridge									
1	207.48	PF#1	166000.00	984.35	1008.38	1005.22	1010.05	0.002291	10.34	16048.44	1589.81	0.57
1	207.48	PF#2	166000.00	984.35	1009.15	1005.22	1010.59	0.001802	9.61	17270.43	1595.23	0.51
1	207.43	PF#1	166000.00	983.56	1007.86	1004.49	1009.50	0.002218	10.29	16190.36	1661.32	0.56
1	207.43	PF#2	166000.00	983.56	1008.76	1004.49	1010.15	0.001689	9.47	17531.08	1569.25	0.50
1	207.34	PF#1	166000.00	983.49	1007.56	1000.99	1008.62	0.000950	8.28	20214.86	1590.24	0.39
1	207.34	PF#2	166000.00	983.49	1008.50	1000.97	1009.46	0.000787	7.83	21192.27	1422.38	0.36
1	207.27	PF#1	166000.00	982.68	1007.15	997.48	1008.22	0.000665	8.35	20670.33	1456.46	0.34
1	207.27	PF#2	166000.00	982.68	1008.10	997.48	1009.11	0.000584	8.06	20594.82	1047.97	0.32
1	207.16	PF#1	166000.00	969.66	1007.51	986.51	1007.86	0.000127	4.91	37553.66	2625.42	0.16
1	207.16	PF#2	166000.00	969.66	1008.40	986.51	1008.78	0.000126	4.98	33336.06	1107.07	0.16
1	207.07	PF#1	166000.00	992.80	1004.30	1004.30	1007.37	0.005291	15.06	12691.58	2119.64	0.86
1	207.07	PF#2	166000.00	992.80	1004.74	1004.74	1008.25	0.005421	15.68	11729.38	1710.76	0.88
1	206.97	PF#1	166000.00	981.70	1003.73	995.22	1004.80	0.000773	8.53	21352.72	2153.02	0.36
1	206.97	PF#2	166000.00	981.70	1004.63	995.22	1005.77	0.000760	8.62	19950.61	1567.65	0.36
1	206.88	PF#1	166000.00	981.80	1003.59	993.27	1004.41	0.000528	7.55	24354.63	2551.42	0.31
1	206.88	PF#2	166000.00	981.80	1004.48	993.27	1005.39	0.000533	7.71	22622.40	1800.87	0.31
1	206.79	PF#1	166000.00	981.80	1003.43	992.85	1004.13	0.000488	6.93	26343.92	3026.52	0.29
1	206.79	PF#2	166000.00	981.80	1004.34	992.85	1005.10	0.000478	7.08	24760.10	1934.31	0.29
1	206.7	PF#1	166000.00	981.80	1003.32	994.04	1003.85	0.000441	6.03	29831.77	3518.68	0.27
1	206.7	PF#2	166000.00	981.80	1004.25	994.03	1004.82	0.000429	6.14	27986.51	2093.13	0.27
1	206.6	PF#1	166000.00	981.80	1002.90	996.86	1003.56	0.000710	6.91	26877.21	3305.80	0.33
1	206.6	PF#2	166000.00	981.80	1003.79	996.68	1004.54	0.000695	7.14	24927.56	2185.35	0.33
1	206.51	PF#1	166000.00	981.80	1002.02	998.52	1003.04	0.001348	8.99	22111.07	4076.34	0.45
1	206.51	PF#2	166000.00	981.80	1002.84	999.19	1004.02	0.001341	9.36	20116.29	2060.75	0.46
1	206.41	PF#1	166000.00	982.50	1001.41	997.88	1002.32	0.001436	8.71	23370.94	3862.05	0.46
1	206.41	PF#2	166000.00	982.50	1002.21	998.36	1003.30	0.001435	9.12	20569.79	2190.50	0.47
1	206.32	PF#1	166000.00	982.80	1000.76	997.04	1001.56	0.001495	8.05	24553.57	3961.10	0.46
1	206.32	PF#2	166000.00	982.80	1001.56	997.90	1002.55	0.001498	8.50	21191.37	2377.93	0.47
1	206.22	PF#1	166000.00	983.00	999.83	996.53	1000.70	0.001855	8.54	24922.29	3819.75	0.52
1	206.22	PF#2	166000.00	983.00	1000.69	996.71	1001.72	0.001734	8.70	21235.98	2441.76	0.51
1	206.13	PF#1	166000.00	984.60	998.84		999.71	0.002097	8.44	24241.50	3610.69	0.52
1	206.13	PF#2	166000.00	984.60	999.43		1000.65	0.002540	9.44	19323.64	2386.31	0.57
1	206.03	PF#1	166000.00	984.50	997.19	995.40	998.47	0.002920	10.04	20468.71	3627.33	0.61
1	206.03	PF#2	166000.00	984.50	997.37	995.41	999.15	0.003548	11.22	16111.43	2131.13	0.67
1	205.94	PF#1	166000.00	981.00	996.28	992.36	997.17	0.001782	8.09	23804.66	3972.87	0.48
1	205.94	PF#2	166000.00	981.00	996.85	992.30	997.71	0.001519	7.77	22932.47	2567.00	0.45
1	205.84	PF#1	166000.00	979.50	995.78	991.10	996.43	0.001006	6.80	27802.52	3933.88	0.38
1	205.84	PF#2	166000.00	979.50	996.39	991.10	997.06	0.000928	6.78	25656.61	2435.70	0.36

HEC-RAS Plan: PostPrj River: 1 Reach: 1 (Continued)

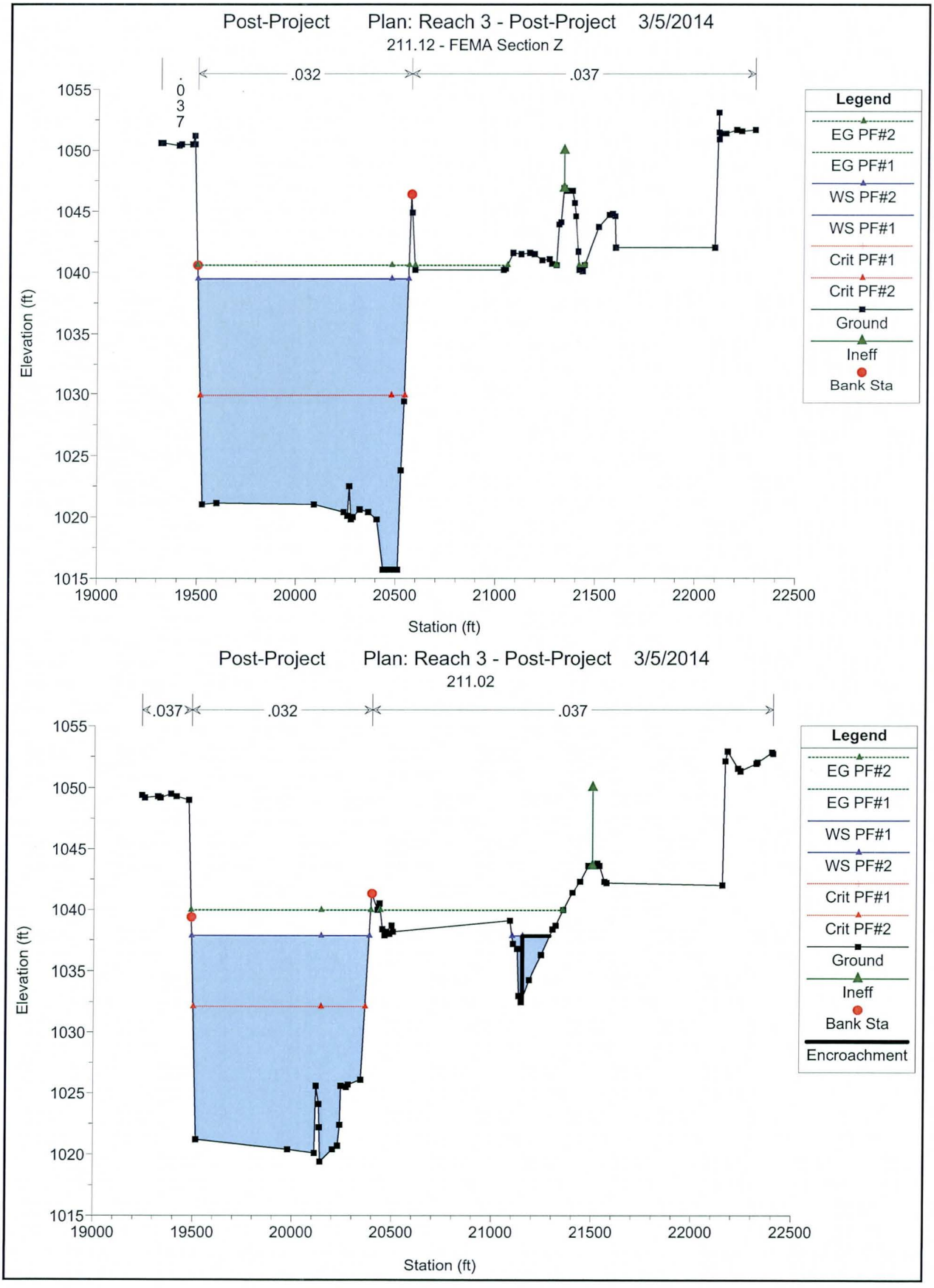
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
1	205.75	PF#1	166000.00	973.90	995.10	989.59	995.78	0.001766	6.71	25677.88	3323.88	0.37
1	205.75	PF#2	166000.00	973.90	995.83	989.59	996.48	0.001497	6.46	25689.01	2402.30	0.35
1	205.62	PF#1	166000.00	976.00	994.55	988.70	995.07	0.000680	5.99	30115.93	4036.33	0.31
1	205.62	PF#2	166000.00	976.00	995.25	988.65	995.85	0.000671	6.18	26877.98	2234.10	0.31
1	205.52	PF#1	166000.00	975.90	994.29	987.07	994.75	0.000496	5.67	33142.45	4244.90	0.28
1	205.52	PF#2	166000.00	975.90	994.95	987.28	995.53	0.000543	6.12	27120.82	2019.90	0.29
1	205.43	PF#1	166000.00	976.10	994.00	986.93	994.50	0.000544	6.04	31497.31	3841.70	0.29
1	205.43	PF#2	166000.00	976.10	994.53	986.96	995.24	0.000647	6.76	24572.11	1842.36	0.33
1	205.4	PF#1	164000.00	975.50	993.99	984.67	994.40	0.000362	5.41	35918.61	4097.72	0.24
1	205.4	PF#2	164000.00	975.50	994.56	984.67	995.10	0.000413	5.90	27793.06	1747.80	0.26
1	205.34	PF#1	164000.00	975.57	993.64	986.68	994.20	0.001005	6.45	29523.90	7348.98	0.30
1	205.34	PF#2	164000.00	975.57	993.98	986.65	994.85	0.001336	7.53	22084.25	1562.96	0.35
1	205.25	PF#1	164000.00	973.40	993.26	985.25	993.82	0.000623	6.64	30541.15	4512.59	0.28
1	205.25	PF#2	164000.00	973.40	993.49	985.17	994.34	0.000817	7.64	22667.86	1482.30	0.32
1	205.15	PF#1	164000.00	973.10	991.76	987.66	993.21	0.002039	10.40	19448.92	3049.25	0.49
1	205.15	PF#2	164000.00	973.10	992.25	987.65	993.69	0.001819	10.06	17454.25	1445.00	0.47
1	205.06	PF#1	164000.00	970.50	990.85	984.95	992.22	0.001875	9.62	18539.62	2210.65	0.47
1	205.06	PF#2	164000.00	970.50	991.36	984.95	992.79	0.001795	9.65	17327.95	1435.30	0.46
1	204.97	PF#1	164000.00	973.30	990.56	984.97	991.30	0.001134	7.35	24818.88	3736.08	0.36
1	204.97	PF#2	164000.00	973.30	990.76	985.05	991.87	0.001485	8.49	19456.31	1516.30	0.42
1	204.87	PF#1	164000.00	968.10	990.19	982.95	990.80	0.000767	6.60	27860.69	3635.74	0.31
1	204.87	PF#2	164000.00	968.10	990.36	982.85	991.20	0.000942	7.37	22408.61	1542.20	0.34
1	204.78	PF#1	164000.00	967.60	990.01	980.93	990.45	0.000477	5.68	31874.74	4837.51	0.25
1	204.78	PF#2	164000.00	967.60	990.13	980.78	990.77	0.000611	6.47	25927.76	1620.43	0.28
1	204.68	PF#1	164000.00	971.40	989.36	982.91	990.10	0.000903	7.28	24862.56	3375.81	0.33
1	204.68	PF#2	164000.00	971.40	989.32	982.81	990.31	0.001151	8.21	20999.24	1586.28	0.38
1	204.61	PF#1	164000.00	972.60	988.59	983.53	989.64	0.001360	8.79	20900.84	7282.60	0.41
1	204.61	PF#2	164000.00	972.60	988.62	983.47	989.78	0.001462	9.12	19540.62	1602.90	0.42
1	204.53	PF#1	164000.00	972.70	987.68	982.99	988.93	0.001814	9.22	18844.19	4061.16	0.46
1	204.53	PF#2	164000.00	972.70	987.68	982.93	989.02	0.001920	9.48	18003.71	1610.90	0.47
1	204.42	PF#1	164000.00	971.40	986.40	982.76	987.76	0.002432	9.40	17715.45	2778.70	0.51
1	204.42	PF#2	164000.00	971.40	986.38	982.73	987.80	0.002533	9.58	17125.44	1653.57	0.52
1	204.34	PF#1	164000.00	969.30	985.28	981.46	986.65	0.002470	9.39	17462.96	2452.20	0.52
1	204.34	PF#2	164000.00	969.30	985.29	981.46	986.65	0.002472	9.39	17473.86	1701.98	0.52
1	204.25	PF#1	164000.00	969.22	980.90	980.90	984.46	0.007742	15.13	10836.44	1993.93	1.00
1	204.25	PF#2	164000.00	969.22	980.90	980.90	984.46	0.007774	15.15	10825.70	1517.10	1.00
1	204.15	PF#1	164000.00	966.00	981.17	975.82	982.09	0.001058	7.72	21240.53	2149.48	0.40
1	204.15	PF#2	164000.00	966.00	981.18	975.82	982.11	0.001059	7.71	21274.74	1831.89	0.40
1	204.05	PF#1	164000.00	965.00	980.27	976.80	981.39	0.001759	8.49	19320.24	2116.76	0.50
1	204.05	PF#2	164000.00	965.00	980.29	976.80	981.41	0.001744	8.47	19370.37	2116.76	0.49
1	203.96	PF#1	164000.00	964.10	977.71	976.71	979.86	0.005220	11.77	13938.52	2225.52	0.80
1	203.96	PF#2	164000.00	964.10	977.98	976.71	979.97	0.004601	11.33	14478.25	2050.76	0.75
1	203.86	PF#1	164000.00	962.30	977.81	971.84	978.53	0.000902	6.82	24032.60	2201.58	0.36
1	203.86	PF#2	164000.00	962.30	978.06	971.84	978.75	0.000838	6.67	24588.96	2191.78	0.35
1	203.77	PF#1	164000.00	963.30	977.43	971.58	978.06	0.000873	6.37	25746.08	2518.55	0.35
1	203.77	PF#2	164000.00	963.30	977.72	971.58	978.32	0.000799	6.19	26474.14	2511.27	0.34
1	203.67	PF#1	164000.00	962.30	976.93	971.59	977.61	0.000940	6.66	25645.87	3648.91	0.37
1	203.67	PF#2	164000.00	962.30	977.23	971.59	977.89	0.000885	6.58	25408.07	2567.43	0.36
1	203.58	PF#1	164000.00	962.10	976.47	971.52	977.14	0.000946	6.64	25339.94	4630.93	0.37
1	203.58	PF#2	164000.00	962.10	976.81	971.52	977.46	0.000858	6.46	25597.97	2676.39	0.36

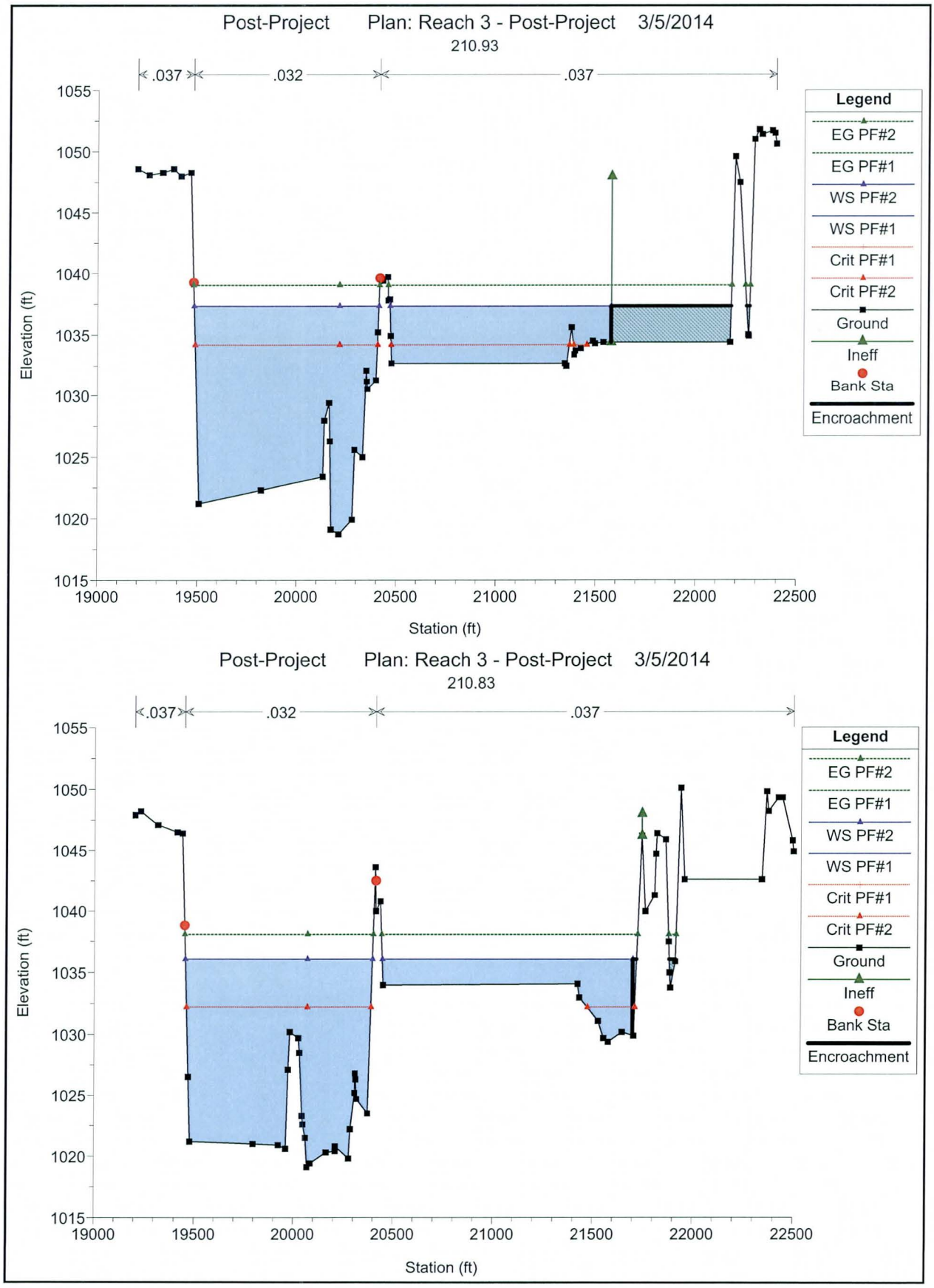
HEC-RAS Plan: PostPrj River: 1 Reach: 1 (Continued)

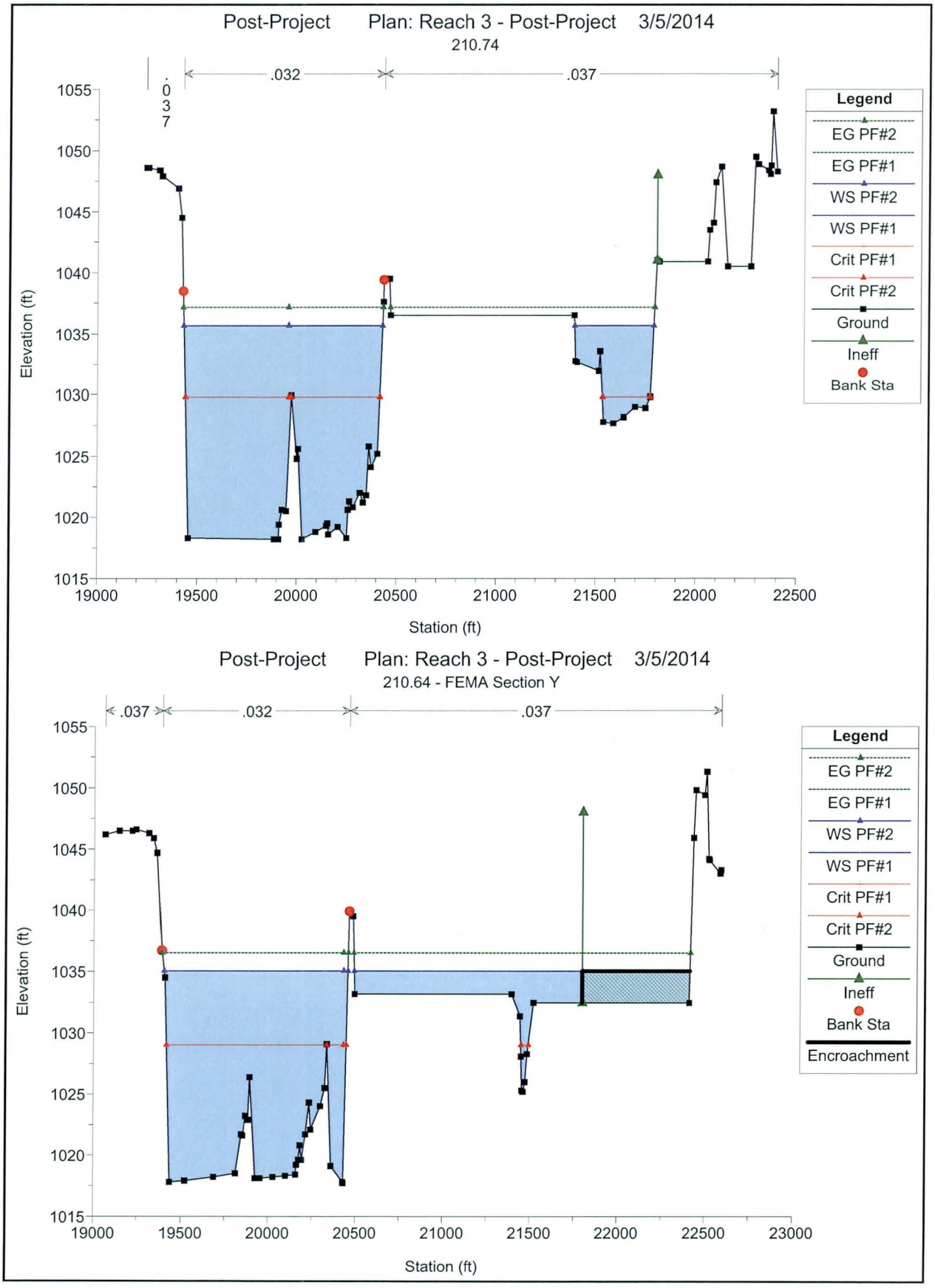
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
1	203.48	PF#1	164000.00	962.20	975.92	972.02	976.58	0.001248	6.66	25617.87	4863.76	0.41
1	203.48	PF#2	164000.00	962.20	976.25	971.97	976.94	0.001196	6.68	24567.98	2911.71	0.40
1	203.39	PF#1	164000.00	959.90	975.23	971.15	975.93	0.001331	6.81	24862.22	4207.73	0.42
1	203.39	PF#2	164000.00	959.90	975.62	971.13	976.32	0.001254	6.69	24520.14	2930.05	0.41
1	203.29	PF#1	164000.00	960.70	974.46	970.77	975.20	0.001572	6.98	24301.95	4967.75	0.45
1	203.29	PF#2	164000.00	960.70	974.88	970.71	975.63	0.001478	6.94	23633.34	3009.26	0.44
1	203.19	PF#1	164000.00	956.70	973.59	970.04	974.28	0.001787	6.81	25046.42	3491.37	0.42
1	203.19	PF#2	164000.00	956.70	973.95	970.04	974.74	0.001849	7.13	23041.46	2689.14	0.43
1	203.09	PF#1	164000.00	958.70	972.42	969.20	973.25	0.002112	7.51	23337.60	3213.89	0.46
1	203.09	PF#2	164000.00	958.70	972.75	968.97	973.69	0.002162	7.79	21163.71	2475.85	0.46
1	202.99	PF#1	164000.00	959.20	971.50	967.56	972.24	0.001726	7.08	24615.47	3260.60	0.42
1	202.99	PF#2	164000.00	959.20	971.87	967.53	972.66	0.001673	7.15	22949.42	2457.50	0.41
1	202.9	PF#1	164000.00	956.50	970.92	966.33	971.52	0.001285	6.37	27288.47	3419.52	0.36
1	202.9	PF#2	164000.00	956.50	971.28	966.26	971.95	0.001315	6.59	24881.82	2511.71	0.37
1	202.8	PF#1	164000.00	956.40	970.32	965.60	970.84	0.001157	5.94	29050.37	3577.40	0.34
1	202.8	PF#2	164000.00	956.40	970.64	965.52	971.25	0.001223	6.25	26258.33	2620.78	0.35
1	202.69	PF#1	164000.00	953.70	969.50	965.26	970.12	0.001416	6.45	27011.89	3716.99	0.37
1	202.69	PF#2	164000.00	953.70	969.79	965.27	970.49	0.001483	6.73	24379.74	2553.41	0.38
1	202.59	PF#1	164000.00	953.70	968.55	964.73	969.23	0.001710	6.76	25201.60	3795.66	0.40
1	202.59	PF#2	164000.00	953.70	968.77	964.70	969.56	0.001832	7.10	23099.99	2606.65	0.42
1	202.48	PF#1	164000.00	952.50	967.66	963.72	968.30	0.001617	6.64	26503.22	3830.22	0.40
1	202.48	PF#2	164000.00	952.50	967.77	963.79	968.54	0.001788	7.04	23415.41	2826.15	0.42
1	202.37	PF#1	164000.00	954.60	966.79	962.99	967.38	0.001487	6.30	27726.06	4026.46	0.39
1	202.37	PF#2	164000.00	954.60	966.82	963.06	967.52	0.001673	6.70	24843.26	3165.40	0.41
1	202.29	PF#1	164000.00	955.50	966.51	961.30	966.88	0.000809	4.90	34227.57	4327.50	0.29
1	202.29	PF#2	164000.00	955.50	966.59	961.30	966.97	0.000812	4.93	33283.39	3605.60	0.29
1	202.18	PF#1	164000.00	950.00	965.70	961.75	966.23	0.001545	5.88	28639.46	4356.15	0.38
1	202.18	PF#2	164000.00	950.00	965.77	961.75	966.31	0.001559	5.94	27619.54	3692.06	0.38
1	202.09	PF#1	164000.00	950.00	964.09	961.98	965.01	0.003848	7.74	21595.00	4052.07	0.57
1	202.09	PF#2	164000.00	950.00	964.16	961.95	965.09	0.003803	7.75	21163.17	3682.20	0.57
1	201.99	PF#1	164000.00	948.70	963.29	958.65	963.87	0.001252	6.13	27234.37	5331.53	0.38
1	201.99	PF#2	164000.00	948.70	963.38	958.65	963.96	0.001241	6.12	26811.01	3219.77	0.37
1	201.9	PF#1	164000.00	947.20	962.94	957.27	963.35	0.000785	5.15	31873.93	5241.60	0.31
1	201.9	PF#2	164000.00	947.20	963.05	957.27	963.45	0.000756	5.08	32284.29	3830.97	0.31
1	201.81	PF#1	164000.00	946.00	962.64	955.84	962.99	0.000619	4.79	34252.18	5916.63	0.28
1	201.81	PF#2	164000.00	946.00	962.75	955.84	963.10	0.000597	4.73	34684.21	3650.46	0.27
1	201.71	PF#1	164000.00	946.00	961.87	958.20	962.46	0.001825	6.22	26658.36	8308.26	0.40
1	201.71	PF#2	164000.00	946.00	961.98	958.20	962.58	0.001807	6.24	26277.08	3415.69	0.40
1	201.62	PF#1	164000.00	945.60	961.15	956.72	961.66	0.001385	5.78	28773.37	7614.80	0.35
1	201.62	PF#2	164000.00	945.60	961.28	956.72	961.80	0.001343	5.74	28552.42	3241.81	0.34
1	201.52	PF#1	164000.00	940.90	960.41	955.39	960.87	0.001854	5.50	30263.04	8984.51	0.33
1	201.52	PF#2	164000.00	940.90	960.53	955.39	961.02	0.001898	5.61	29242.41	3382.85	0.34
1	201.43	PF#1	164000.00	941.30	959.46	954.87	960.01	0.001619	5.99	27972.05	6527.26	0.37
1	201.43	PF#2	164000.00	941.30	959.60	954.87	960.15	0.001604	6.00	27333.81	3288.24	0.37
1	201.33	PF#1	164000.00	943.00	958.44	954.88	959.06	0.002023	6.40	26135.38	5745.33	0.41
1	201.33	PF#2	164000.00	943.00	958.60	954.88	959.23	0.001959	6.36	25785.53	3307.45	0.40
1	201.24	PF#1	164000.00	943.00	957.47	953.61	958.06	0.001852	6.23	26885.37	6935.19	0.40
1	201.24	PF#2	164000.00	943.00	957.66	953.61	958.26	0.001790	6.21	26420.07	3500.08	0.40
1	201.14	PF#1	164000.00	940.40	956.91	952.08	957.32	0.001090	5.20	32069.63	8631.40	0.31
1	201.14	PF#2	164000.00	940.40	957.15	952.08	957.55	0.001017	5.10	32150.13	3680.58	0.30

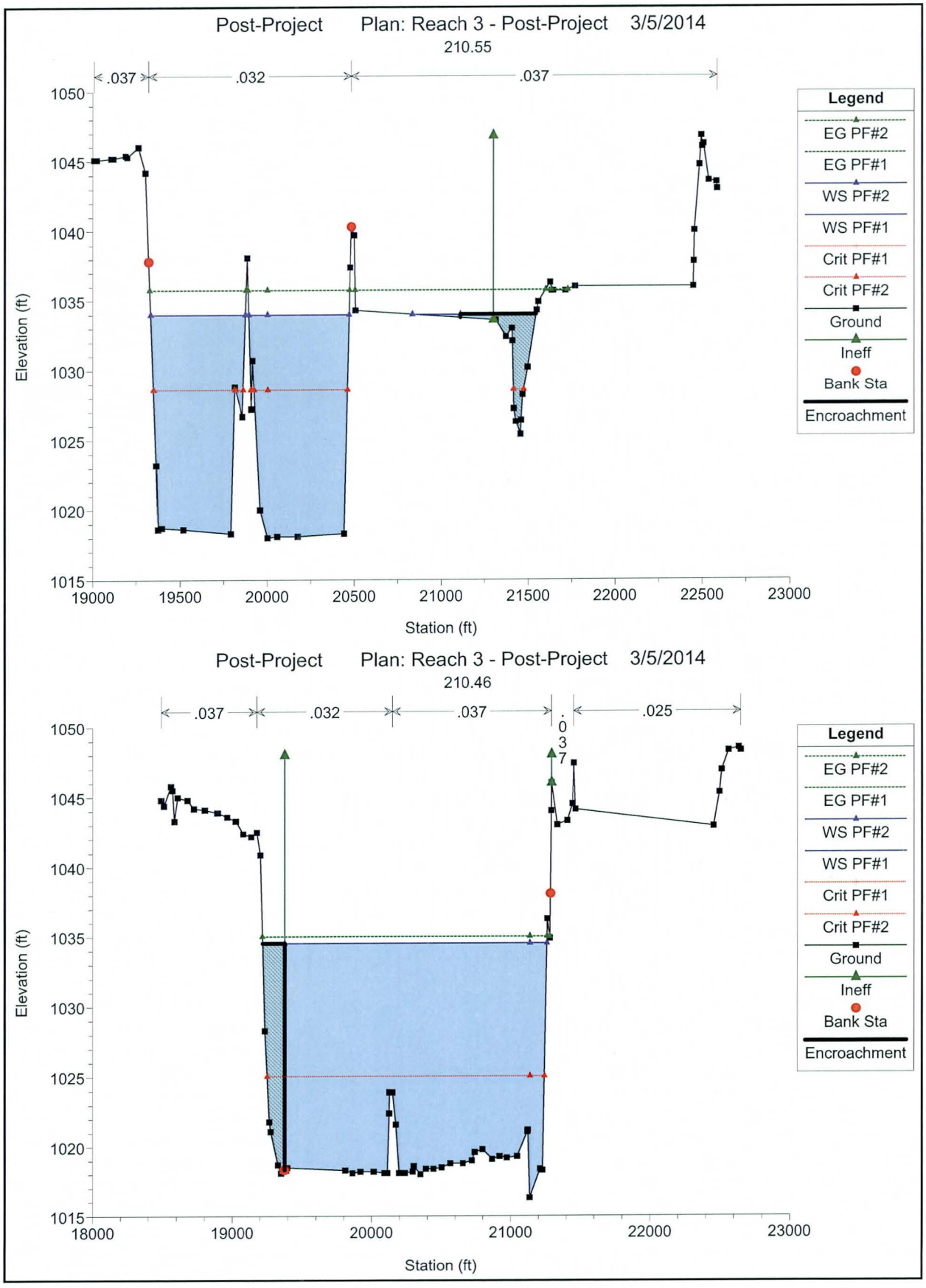
HEC-RAS Plan: PostPrj River: 1 Reach: 1 (Continued)

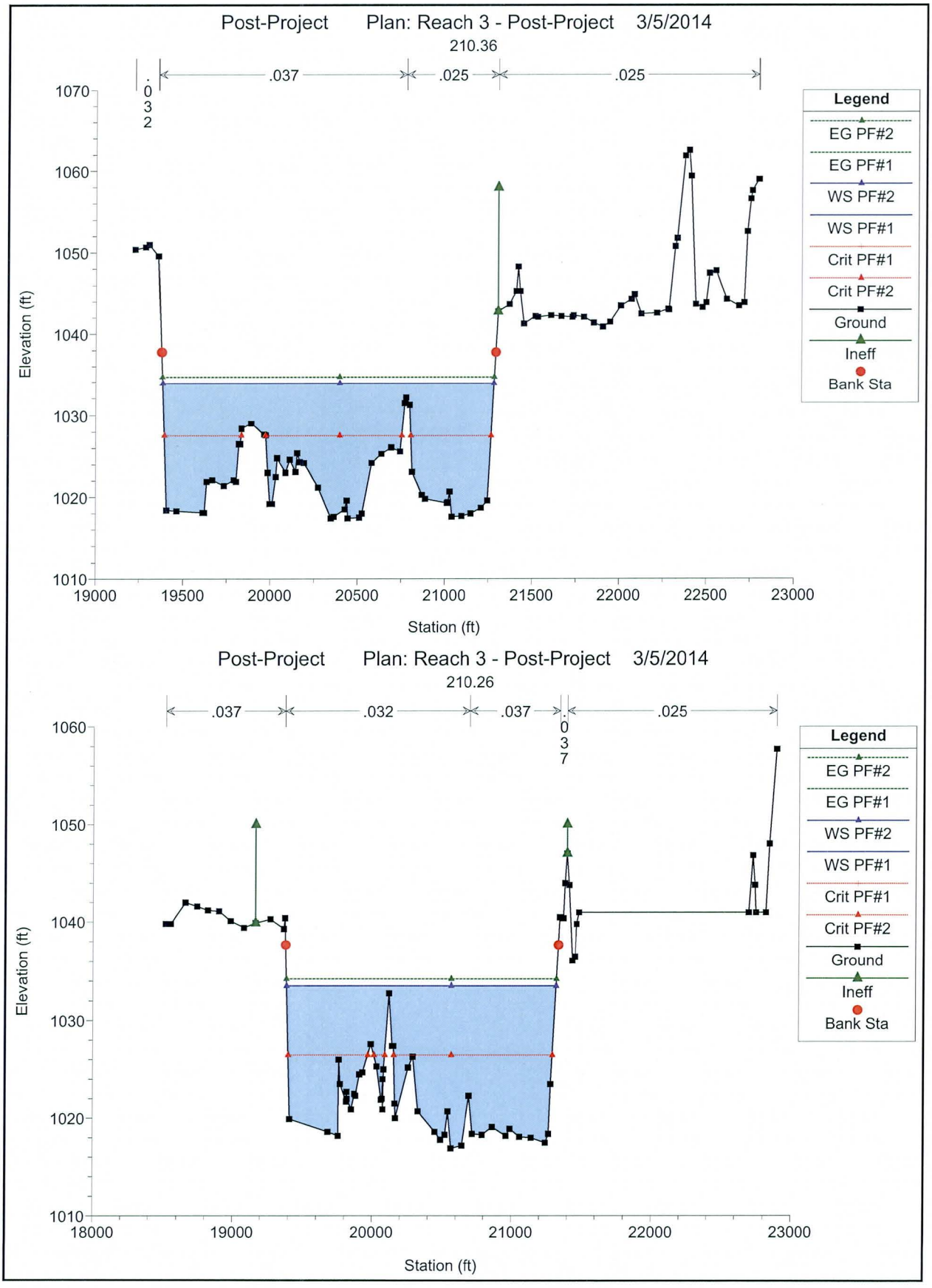
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
1	201.05	PF#1	164000.00	941.50	956.49	950.99	956.80	0.000974	4.50	37110.74	9249.99	0.26
1	201.05	PF#2	164000.00	941.50	956.74	950.99	957.06	0.000928	4.48	36618.90	3898.52	0.26
1	200.95	PF#1	164000.00	939.80	956.09	949.86	956.38	0.000668	4.33	39057.77	10045.40	0.25
1	200.95	PF#2	164000.00	939.80	956.38	949.86	956.66	0.000629	4.27	38407.73	4001.09	0.24
1	200.86	PF#1	164000.00	938.50	955.63	949.69	955.94	0.001346	4.48	37607.95	11080.61	0.27
1	200.86	PF#2	164000.00	938.50	955.94	949.69	956.24	0.001276	4.46	36762.91	4032.00	0.26
1	200.77	PF#1	164000.00	936.90	955.02	949.21	955.35	0.000950	4.62	36841.44	11450.00	0.28
1	200.77	PF#2	164000.00	936.90	955.38	949.21	955.70	0.000875	4.52	36283.61	4122.20	0.27
1	200.67	PF#1	164000.00	939.80	954.42	948.98	954.80	0.001288	4.96	33785.32	10368.40	0.30
1	200.67	PF#2	164000.00	939.80	954.84	948.98	955.20	0.001158	4.82	34281.14	4009.30	0.28
1	200.58	PF#1	164000.00	937.60	953.76	948.30	954.14	0.001313	5.04	33542.10	10091.16	0.30
1	200.58	PF#2	164000.00	937.60	954.23	948.30	954.60	0.001187	4.91	33793.82	3940.00	0.28
1	200.49	PF#1	164000.00	936.90	953.28	946.97	953.59	0.000940	4.59	37370.81	10978.31	0.26
1	200.49	PF#2	164000.00	936.90	953.77	946.97	954.10	0.000893	4.59	36178.30	3791.00	0.25
1	200.39	PF#1	164000.00	937.00	952.89	946.26	953.17	0.000739	4.35	39814.10	11315.74	0.24
1	200.39	PF#2	164000.00	937.00	953.40	946.26	953.70	0.000702	4.37	38317.50	3741.00	0.23
1	200.3	PF#1	179750.00	937.70	952.12	947.18	952.61	0.001603	5.79	36487.07	9118.91	0.34
1	200.3	PF#2	179750.00	937.70	952.73	947.17	953.18	0.001382	5.57	36217.73	3683.53	0.31
1	200.2	PF#1	179750.00	937.00	951.10	946.78	951.67	0.002027	6.37	35619.23	11857.69	0.37
1	200.2	PF#2	179750.00	937.00	951.83	946.78	952.38	0.001732	6.15	34725.75	3629.00	0.35
1	200.1	PF#1	179750.00	934.50	950.19	945.22	950.66	0.001730	5.74	37659.50	11254.10	0.32
1	200.1	PF#2	179750.00	934.50	951.11	945.22	951.53	0.001392	5.36	38392.25	3770.00	0.29
1	200	PF#1	179750.00	933.40	949.74	944.16	950.01	0.000864	4.29	44537.35	11193.60	0.24
1	200	PF#2	179750.00	933.40	950.70	944.15	950.98	0.000792	4.23	42550.11	4100.00	0.23
1	199.91	PF#1	179750.00	932.10	949.39	943.37	949.60	0.000668	3.83	50254.95	10846.61	0.22
1	199.91	PF#2	179750.00	932.10	950.39	943.36	950.61	0.000573	3.75	48102.12	4530.00	0.20
1	199.82	PF#1	179750.00	931.20	948.90	943.28	949.09	0.002007	3.30	51778.97	10752.57	0.19
1	199.82	PF#2	179750.00	931.20	949.90	943.24	950.14	0.002185	3.68	47698.04	4780.00	0.20

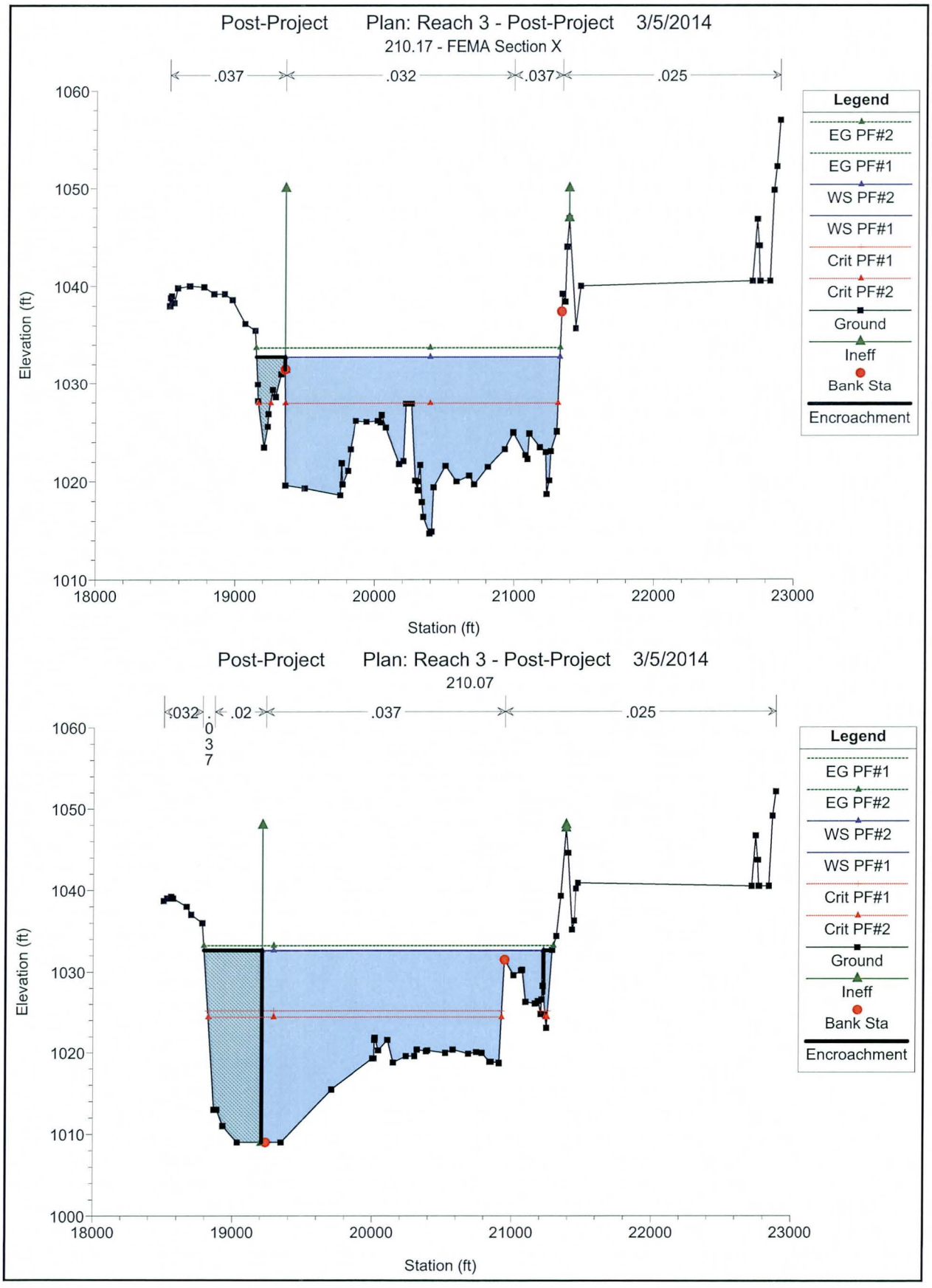

Post-Project Plan: Reach 3 - Post-Project 3/5/2014
211.12 - FEMA Section Z
.037
.032
.037
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
1055
1050
1045
1040
1035
1030
1025
1020
1015
19000
19500
20000
20500
21000
21500
22000
22500
Post-Project Plan: Reach 3 - Post-Project 3/5/2014
211.02
.037
.032
.037
Legend
EG PF#2
EG PF#1
WS PF#1
WS PF#2
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

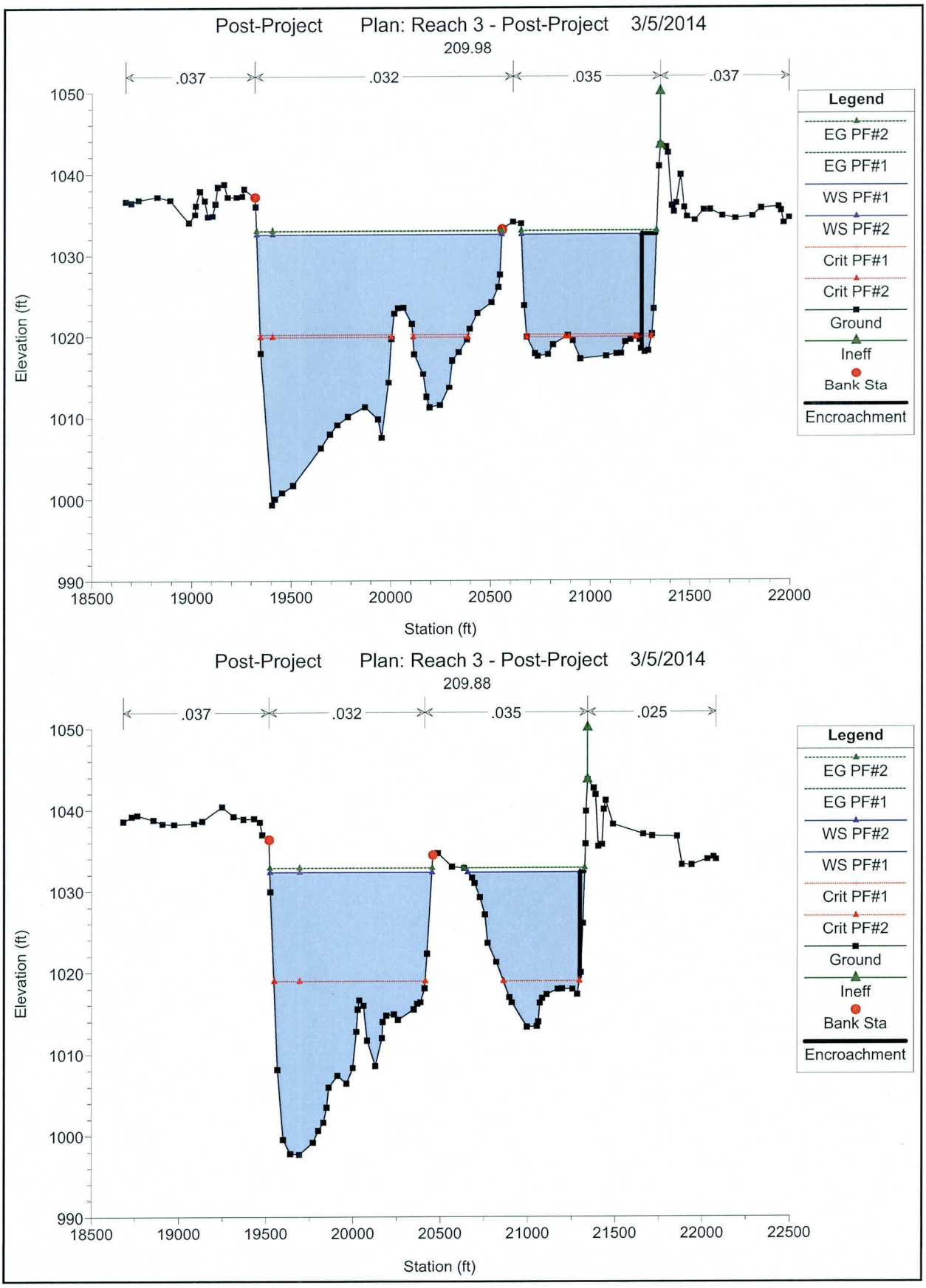

Post-Project Plan: Reach 3 - Post-Project 3/5/2014
210.93
.037
.032
.037
Elevation (ft)
Station (ft)
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment
Post-Project Plan: Reach 3 - Post-Project 3/5/2014
210.83
.037
.032
.037
Elevation (ft)
Station (ft)
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment

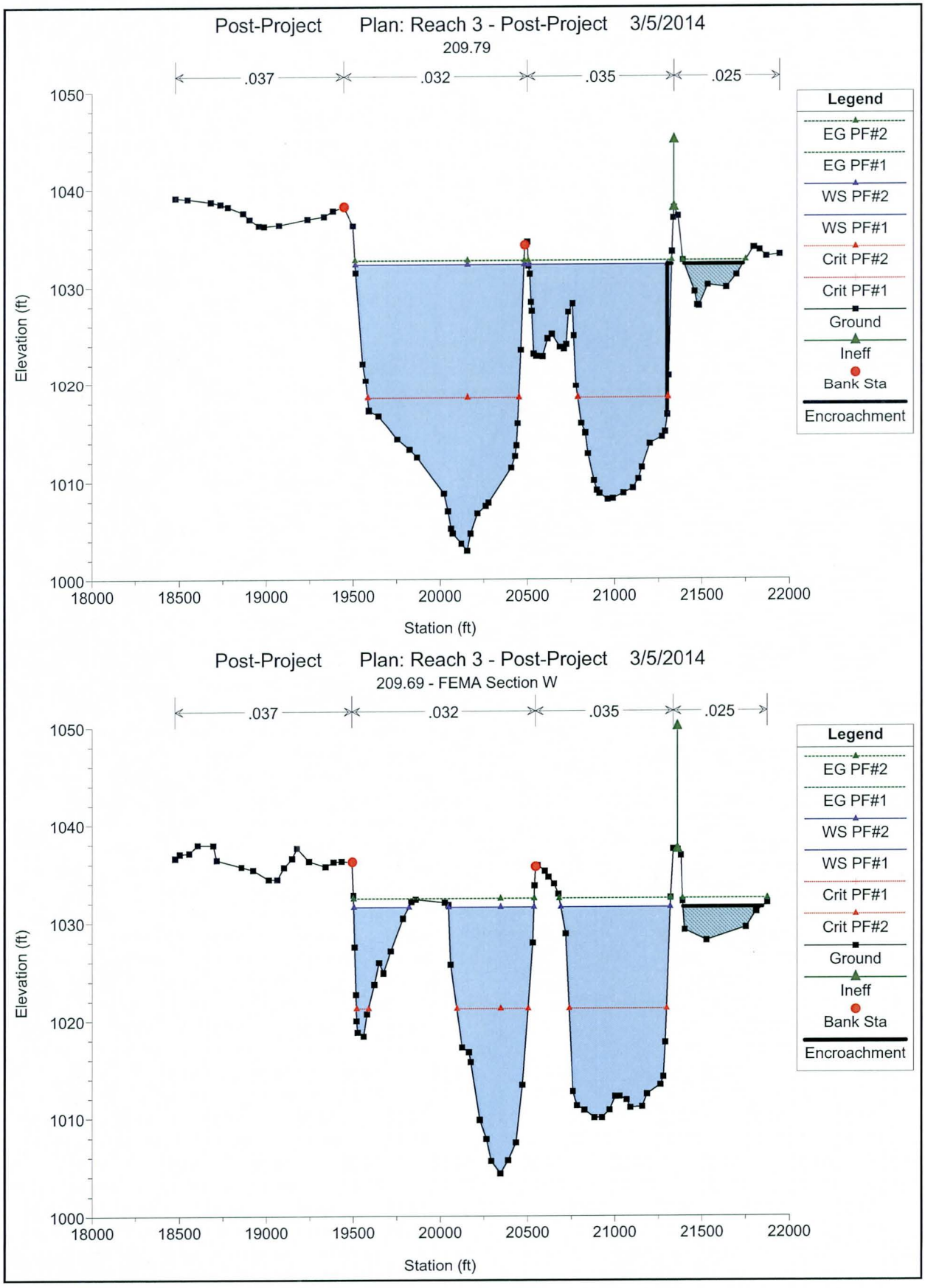

Post-Project Plan: Reach 3 - Post-Project 3/5/2014
210.74
.037
.032
.037
Elevation (ft)
Station (ft)
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Post-Project Plan: Reach 3 - Post-Project 3/5/2014
210.64 - FEMA Section Y
.037
.032
.037
Elevation (ft)
Station (ft)
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment

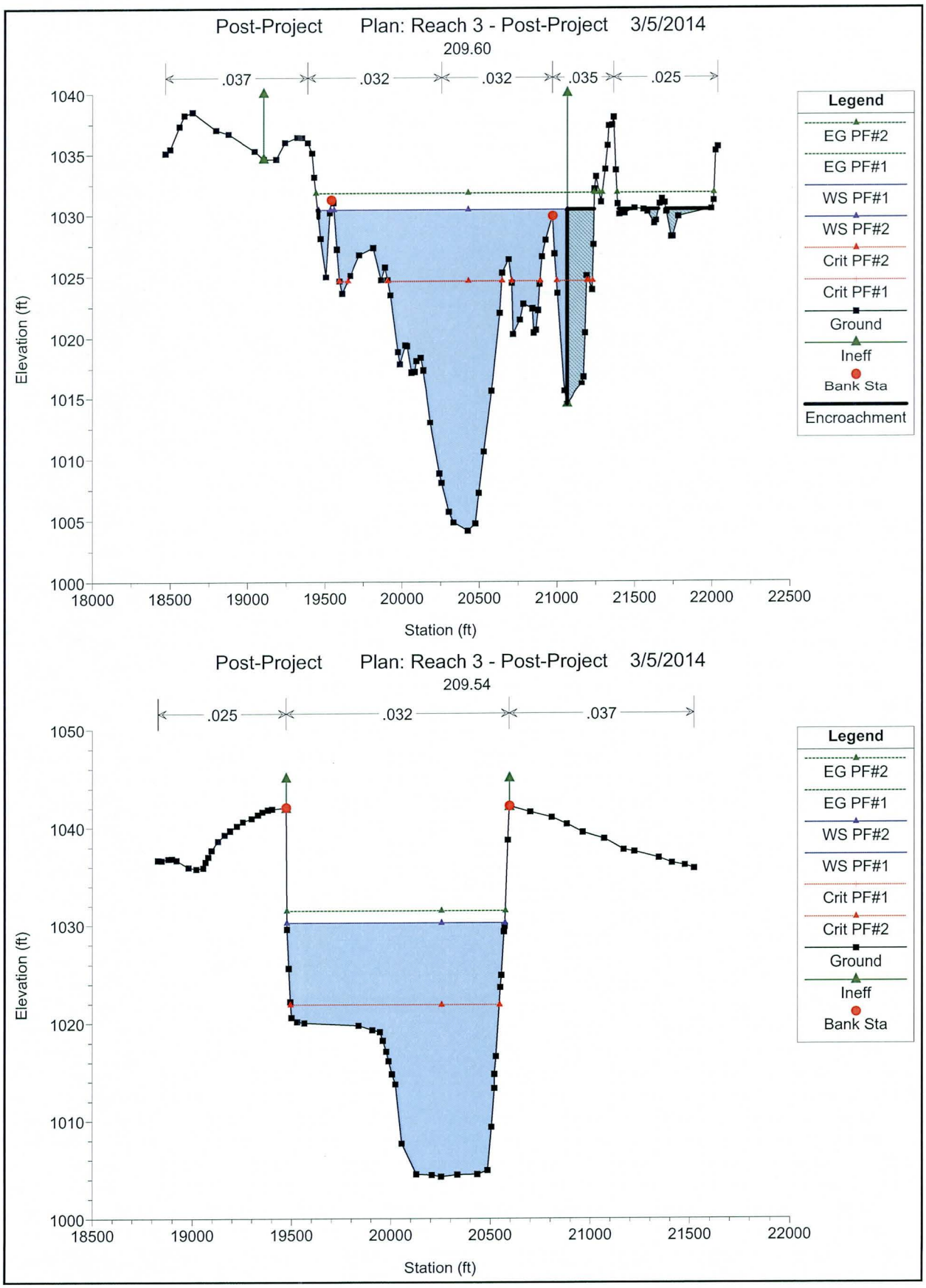

Post-Project Plan: Reach 3 - Post-Project 3/5/2014
210.55
.037
.032
.037
Elevation (ft)
Station (ft)
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment
Post-Project Plan: Reach 3 - Post-Project 3/5/2014
210.46
.037
.032
.037
.025
Elevation (ft)
Station (ft)
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment

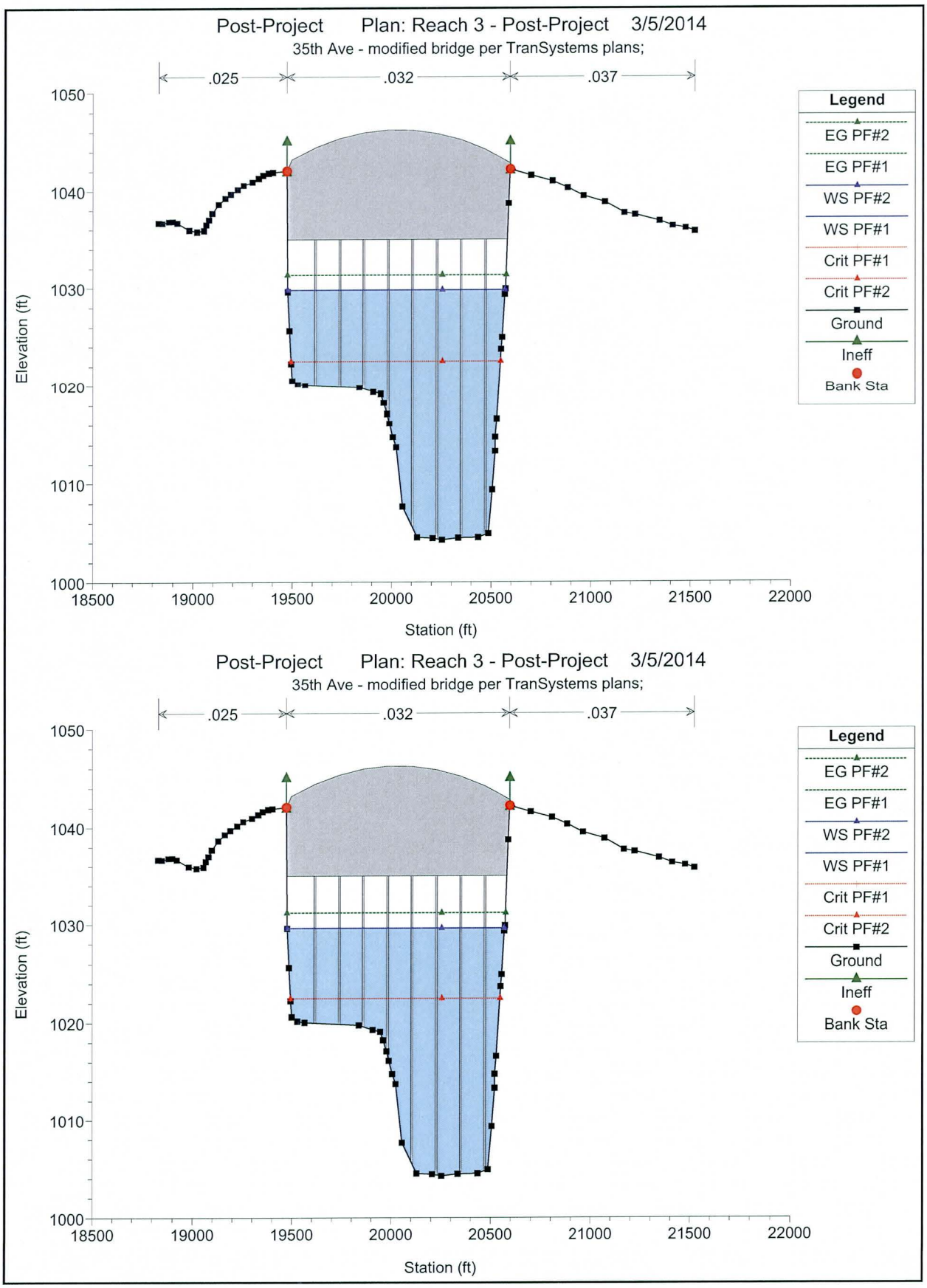

Post-Project Plan: Reach 3 - Post-Project 3/5/2014
210.36
.032
.037
.025
.025
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
1070
1060
1050
1040
1030
1020
1010
19000
19500
20000
20500
21000
21500
22000
22500
23000
Post-Project Plan: Reach 3 - Post-Project 3/5/2014
210.26
.037
.032
.037
.037
.025
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
1060
1050
1040
1030
1020
1010
18000
19000
20000
21000
22000
23000

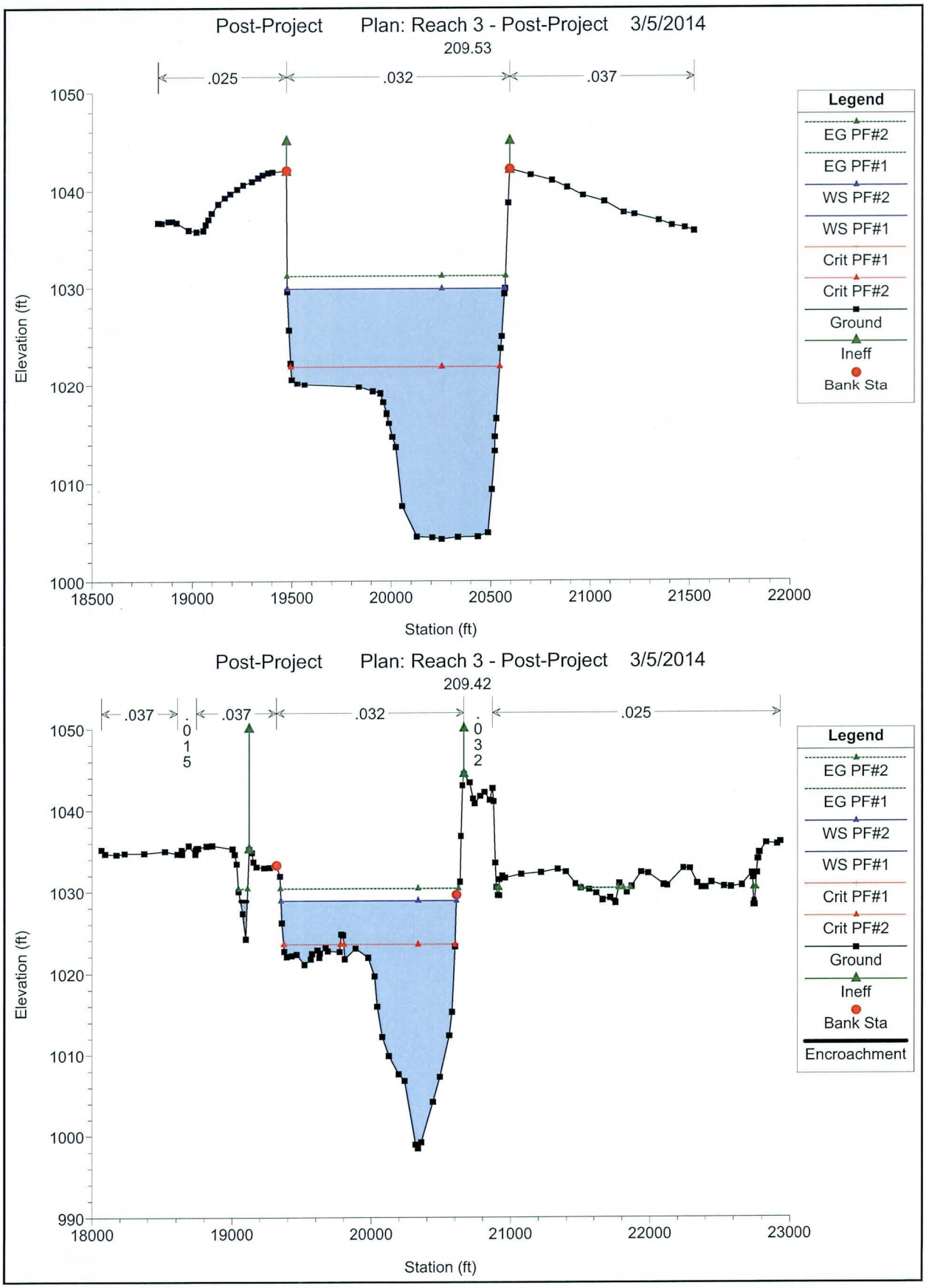

Post-Project Plan: Reach 3 - Post-Project 3/5/2014
210.17 - FEMA Section X
.037
.032
.037
.025
Elevation (ft)
Station (ft)
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment
Post-Project Plan: Reach 3 - Post-Project 3/5/2014
210.07
.032
.02
.037
.025
Elevation (ft)
Station (ft)
Legend
EG PF#1
EG PF#2
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment

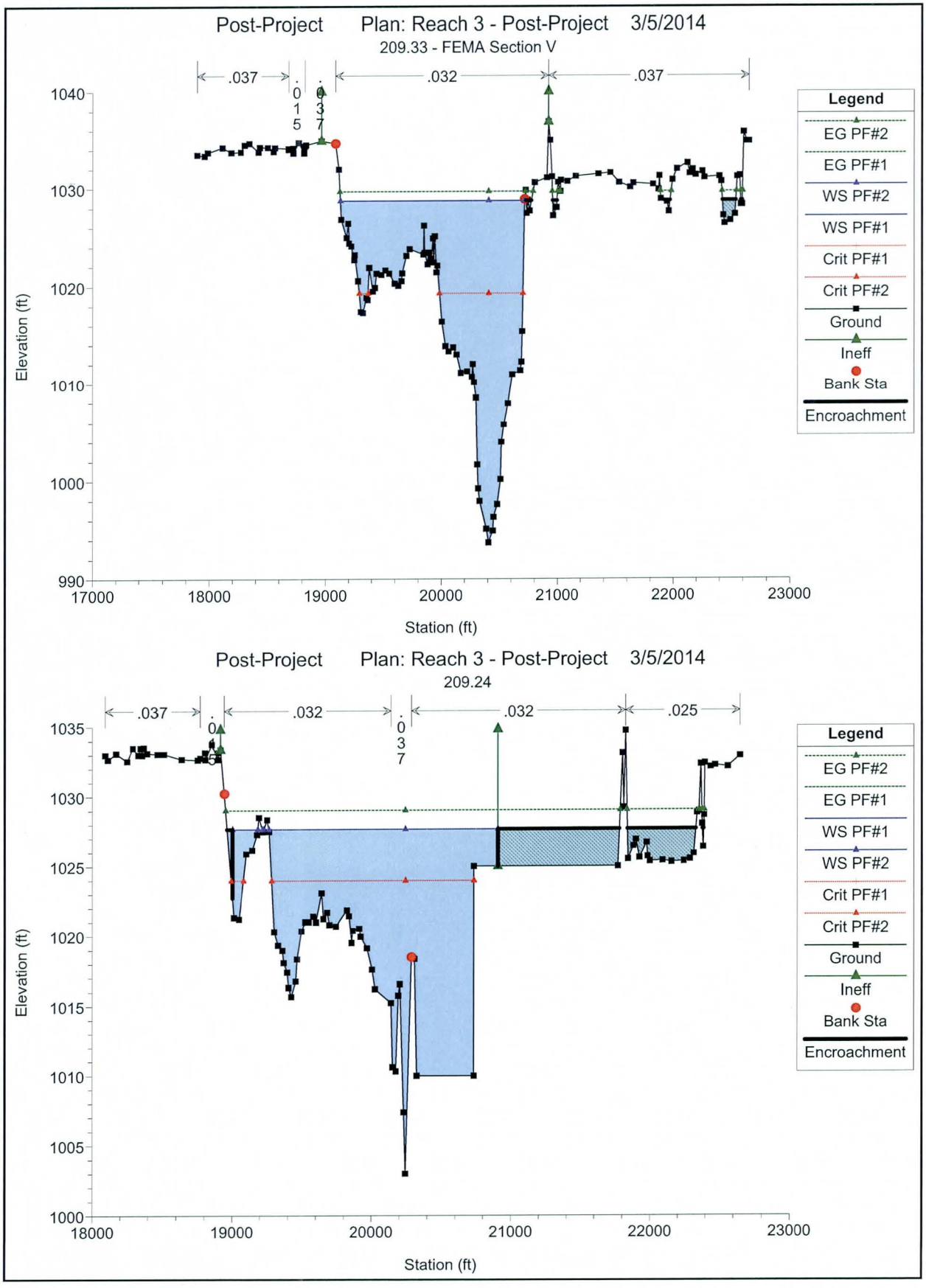

Post-Project Plan: Reach 3 - Post-Project 3/5/2014
209.98
.037
.032
.035
.037
Elevation (ft)
Station (ft)
Legend
EG PF#2
EG PF#1
WS PF#1
WS PF#2
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment
Post-Project Plan: Reach 3 - Post-Project 3/5/2014
209.88
.037
.032
.035
.025
Elevation (ft)
Station (ft)
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment

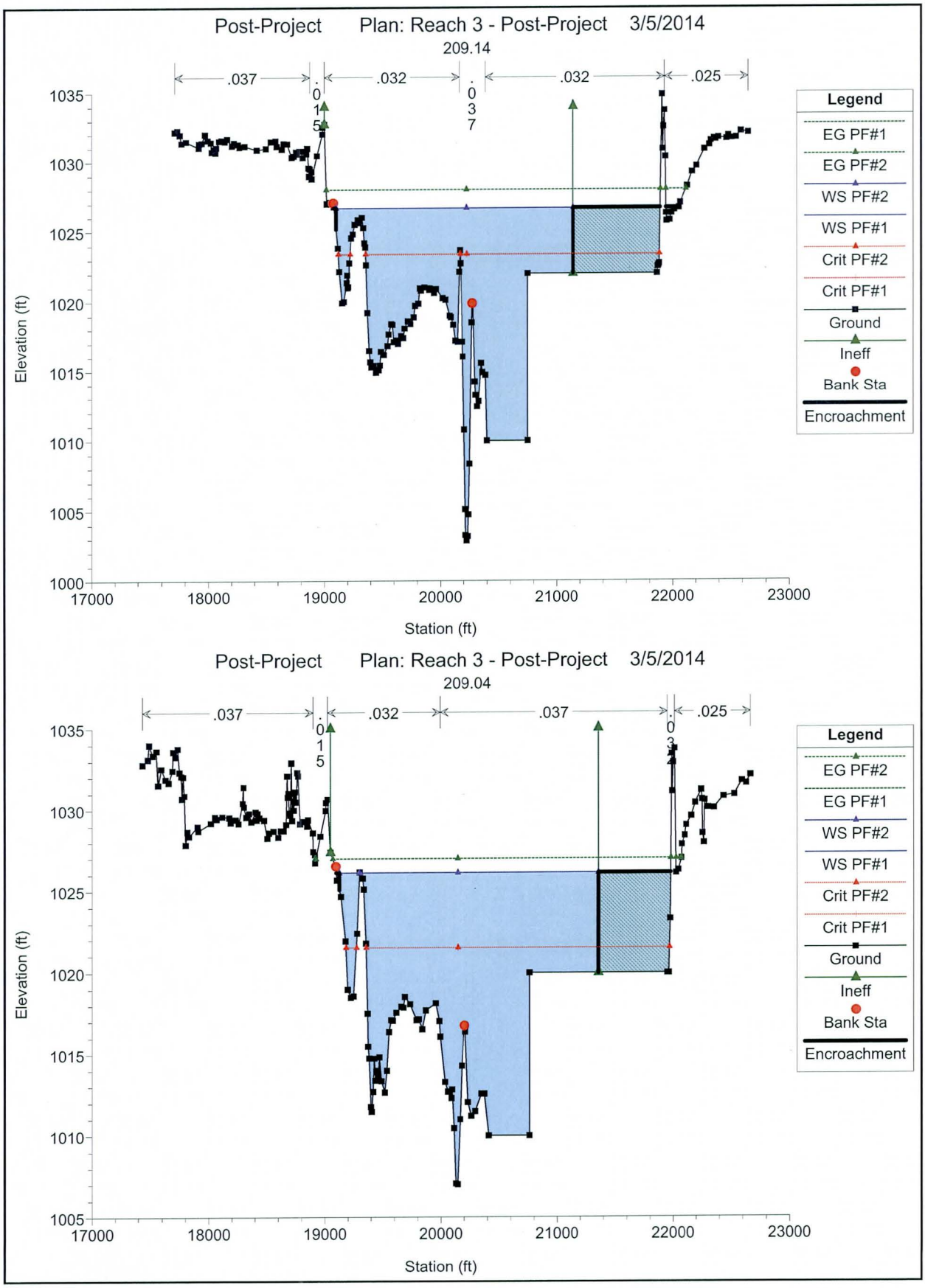

Post-Project Plan: Reach 3 - Post-Project 3/5/2014
209.79
.037
.032
.035
.025
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#2
Crit PF#1
Ground
Ineff
Bank Sta
Encroachment
Elevation (ft)
1050
1040
1030
1020
1010
1000
18000
18500
19000
19500
20000
20500
21000
21500
22000
Station (ft)
Post-Project Plan: Reach 3 - Post-Project 3/5/2014
209.69 - FEMA Section W
.037
.032
.035
.025
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment
Elevation (ft)
1050
1040
1030
1020
1010
1000
18000
18500
19000
19500
20000
20500
21000
21500
22000
Station (ft)

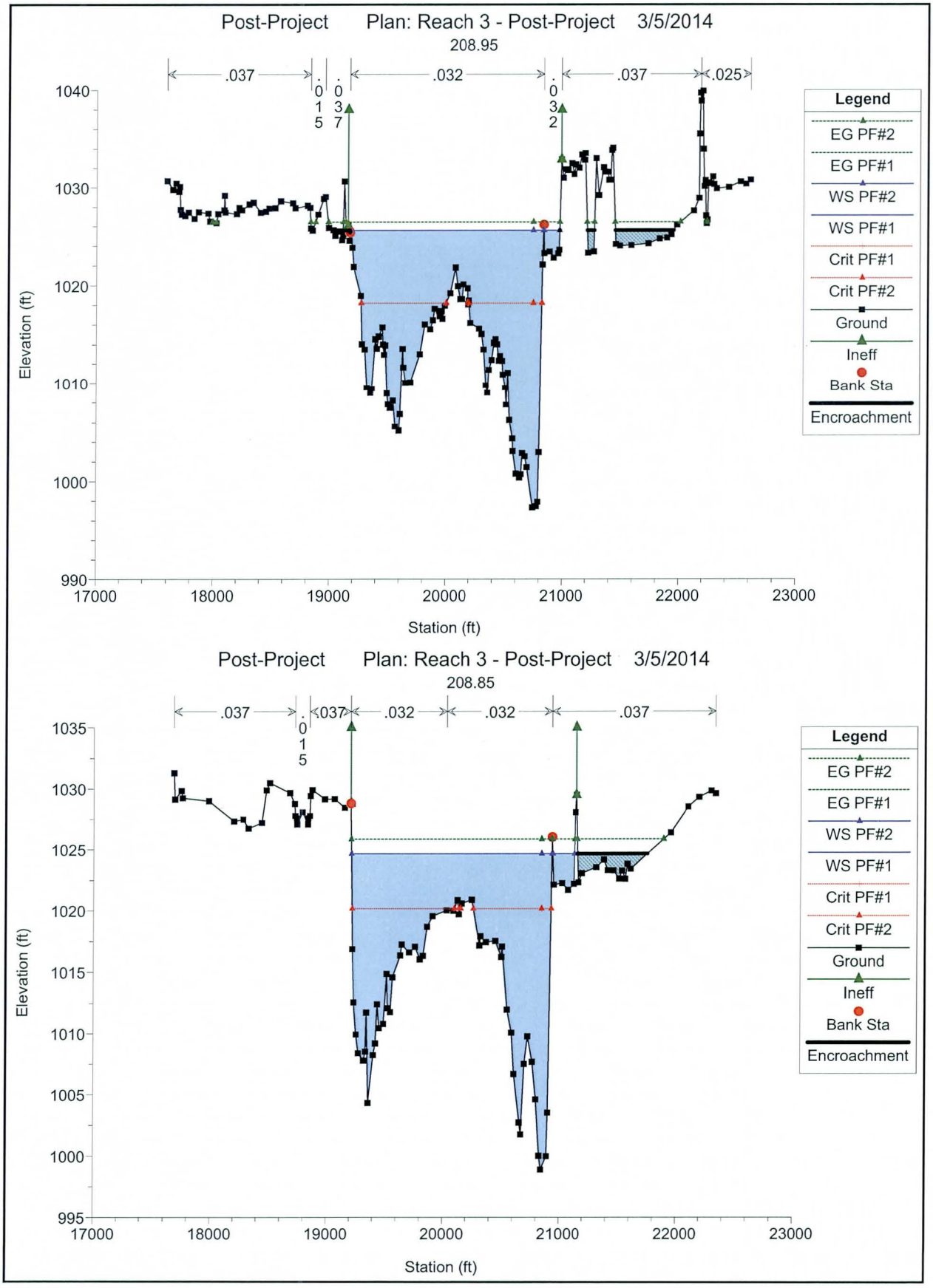

Post-Project Plan: Reach 3 - Post-Project 3/5/2014
209.60
.037
.032
.032
.035
.025
Elevation (ft)
Station (ft)
Legend
EG PF#2
EG PF#1
WS PF#1
WS PF#2
Crit PF#2
Crit PF#1
Ground
Ineff
Bank Sta
Encroachment
Post-Project Plan: Reach 3 - Post-Project 3/5/2014
209.54
.025
.032
.037
Elevation (ft)
Station (ft)
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta

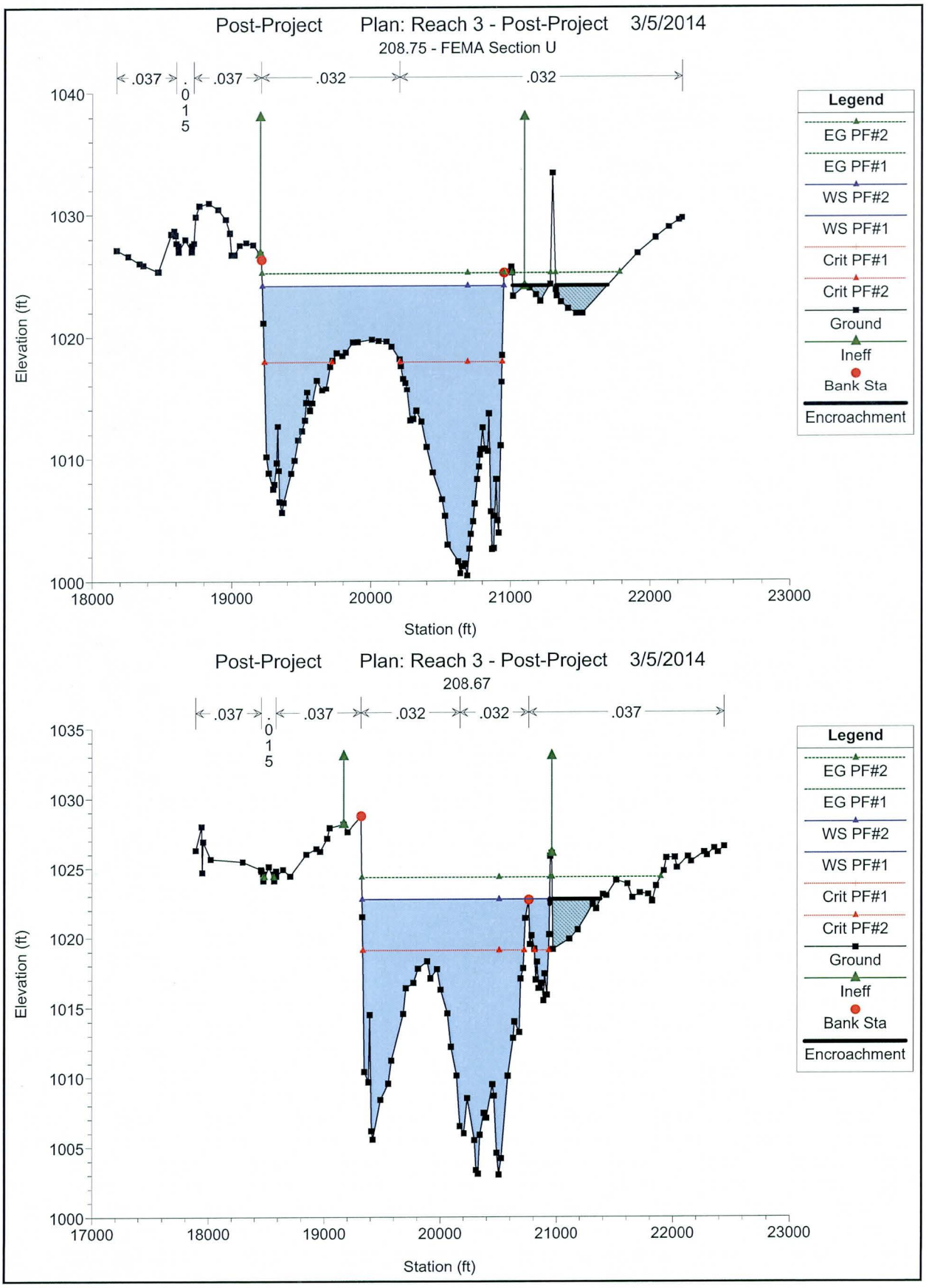

Post-Project Plan: Reach 3 - Post-Project 3/5/2014
35th Ave - modified bridge per TranSystems plans;
.025
.032
.037
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
1050
1040
1030
1020
1010
1000
18500
19000
19500
20000
20500
21000
21500
22000
Post-Project Plan: Reach 3 - Post-Project 3/5/2014
35th Ave - modified bridge per TranSystems plans;
.025
.032
.037
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
1050
1040
1030
1020
1010
1000
18500
19000
19500
20000
20500
21000
21500
22000

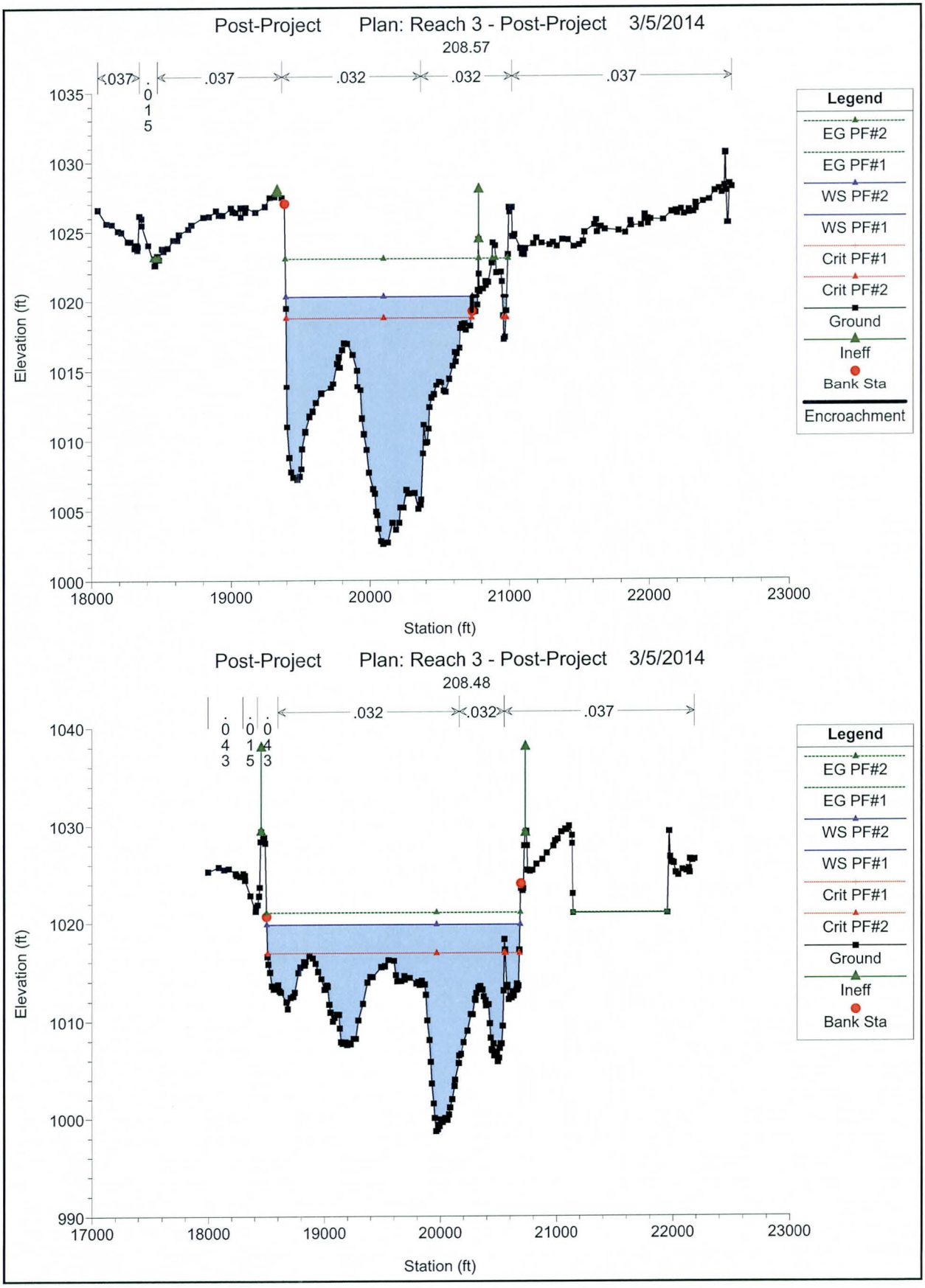

Post-Project Plan: Reach 3 - Post-Project 3/5/2014
209.53
.025
.032
.037
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
1050
1040
1030
1020
1010
1000
18500
19000
19500
20000
20500
21000
21500
22000
Post-Project Plan: Reach 3 - Post-Project 3/5/2014
209.42
.037
.015
.037
.032
.032
.025
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment
Elevation (ft)
Station (ft)
1050
1040
1030
1020
1010
1000
990
18000
19000
20000
21000
22000
23000

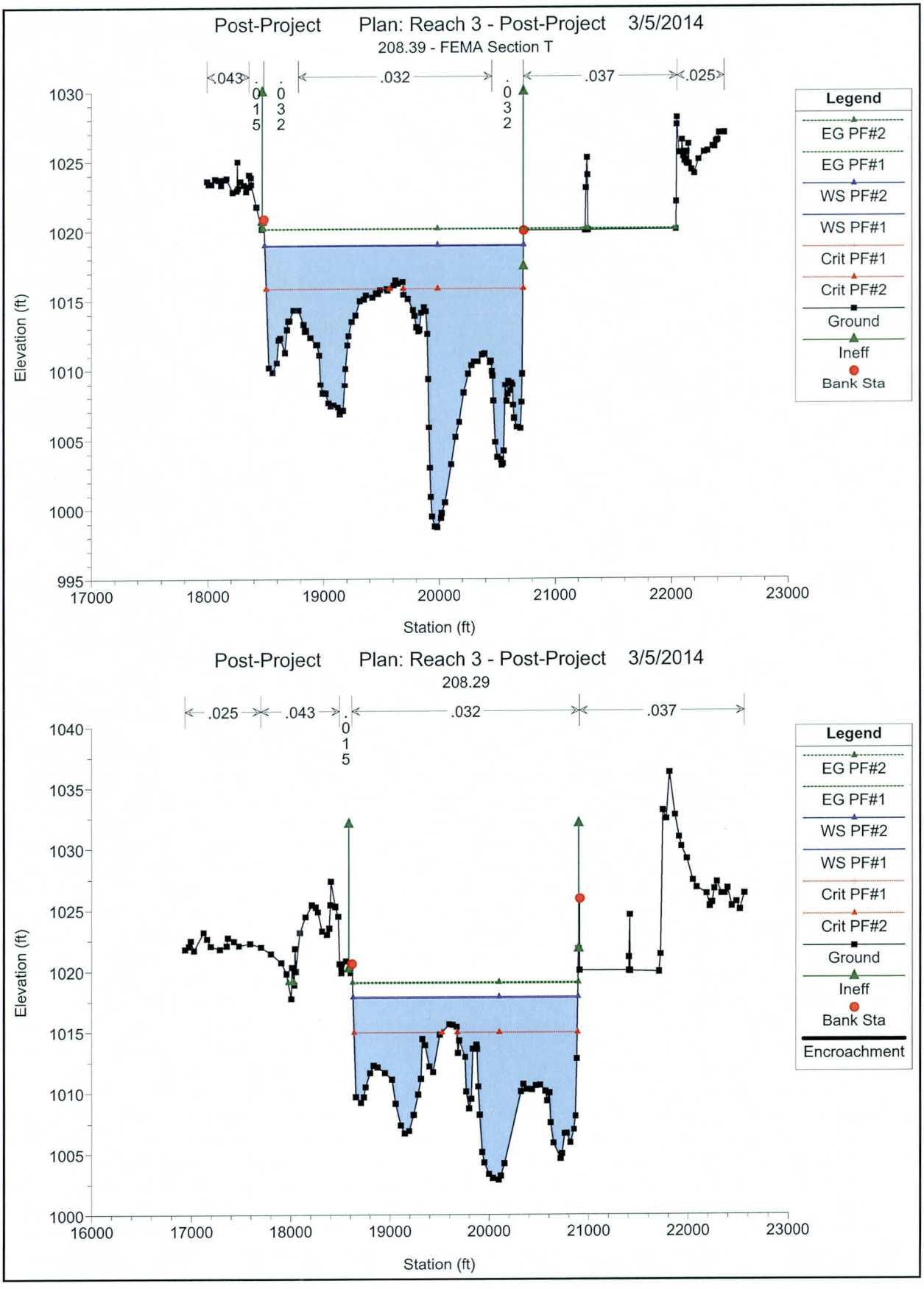

Post-Project Plan: Reach 3 - Post-Project 3/5/2014
209.33 - FEMA Section V
.037
.015
.037
.032
.037
Elevation (ft)
Station (ft)
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment
Post-Project Plan: Reach 3 - Post-Project 3/5/2014
209.24
.037
.032
.037
.032
.025
Elevation (ft)
Station (ft)
Legend
EG PF#2
EG PF#1
WS PF#1
WS PF#2
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment

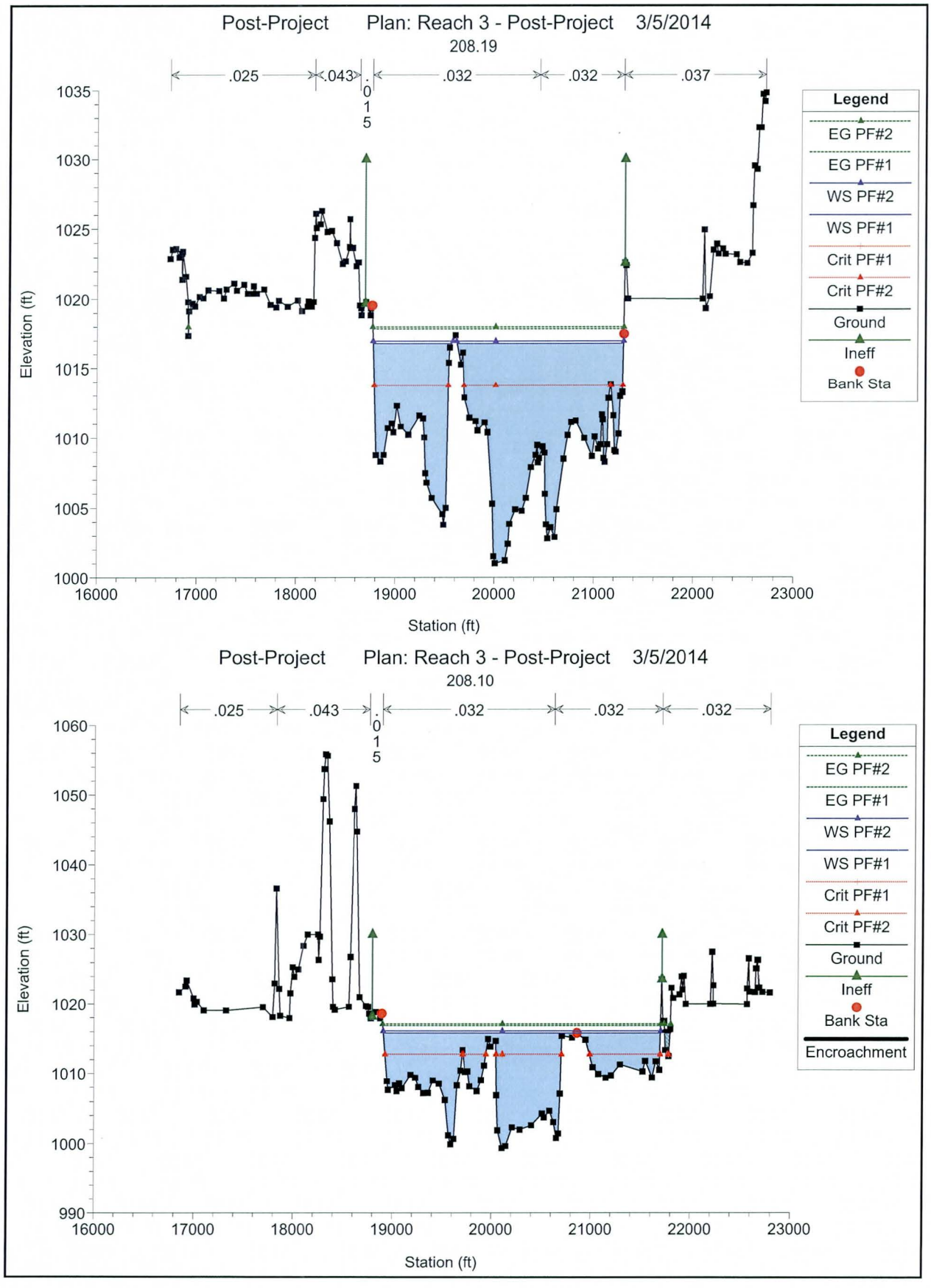

Post-Project Plan: Reach 3 - Post-Project 3/5/2014
209.14
.037
.032
.032
.025
.015
.037
Elevation (ft)
1035
1030
1025
1020
1015
1010
1005
1000
17000
18000
19000
20000
21000
22000
23000
Station (ft)
Legend
EG PF#1
EG PF#2
WS PF#2
WS PF#1
Crit PF#2
Crit PF#1
Ground
Ineff
Bank Sta
Encroachment
Post-Project Plan: Reach 3 - Post-Project 3/5/2014
209.04
.037
.032
.037
.025
.015
.034
Elevation (ft)
1035
1030
1025
1020
1015
1010
1005
17000
18000
19000
20000
21000
22000
23000
Station (ft)
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#2
Crit PF#1
Ground
Ineff
Bank Sta
Encroachment

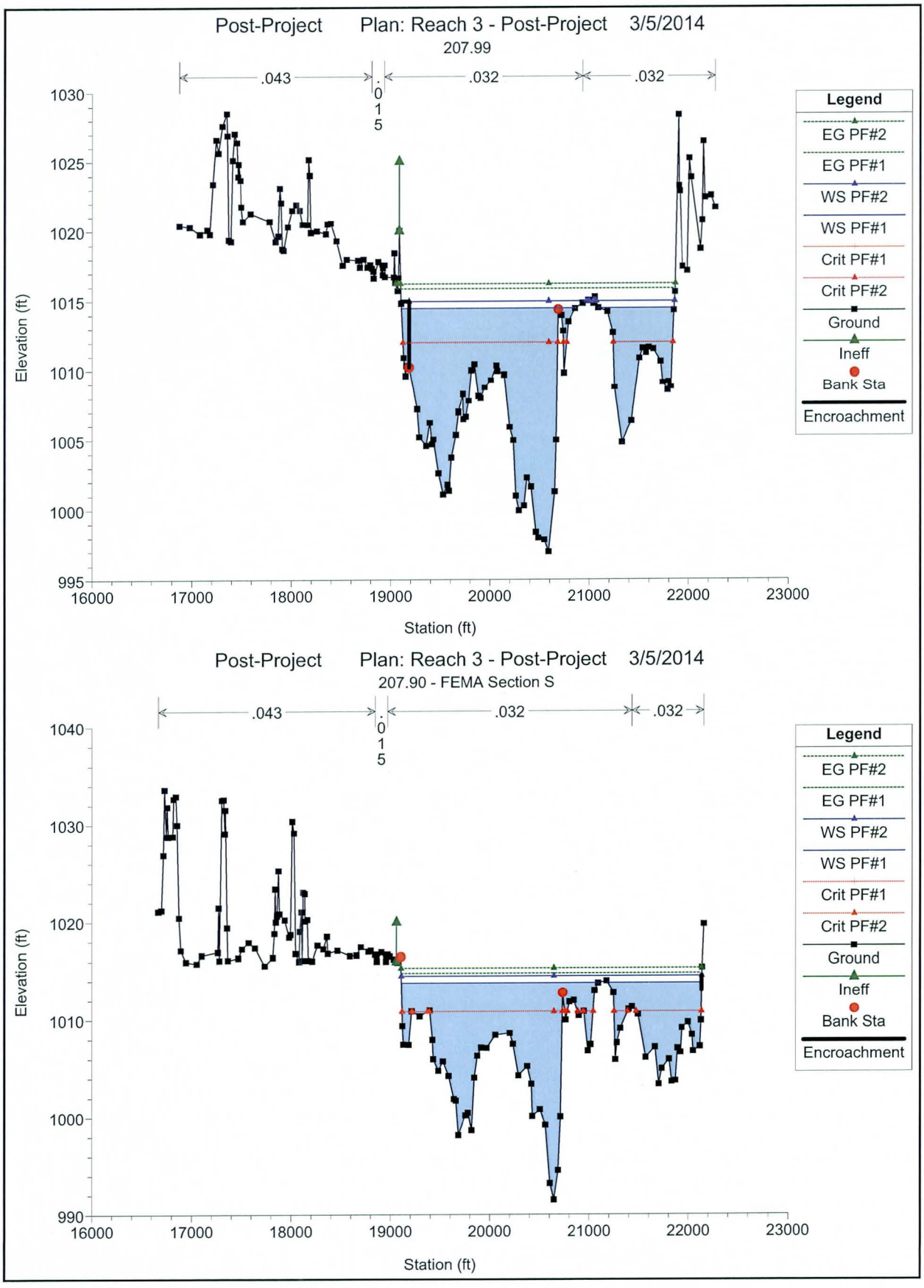

Post-Project Plan: Reach 3 - Post-Project 3/5/2014
208.95
.037
.015
.037
.032
.032
.037
.025
Elevation (ft)
Station (ft)
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment
Post-Project Plan: Reach 3 - Post-Project 3/5/2014
208.85
.037
.015
.037
.032
.032
.037
Elevation (ft)
Station (ft)
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment

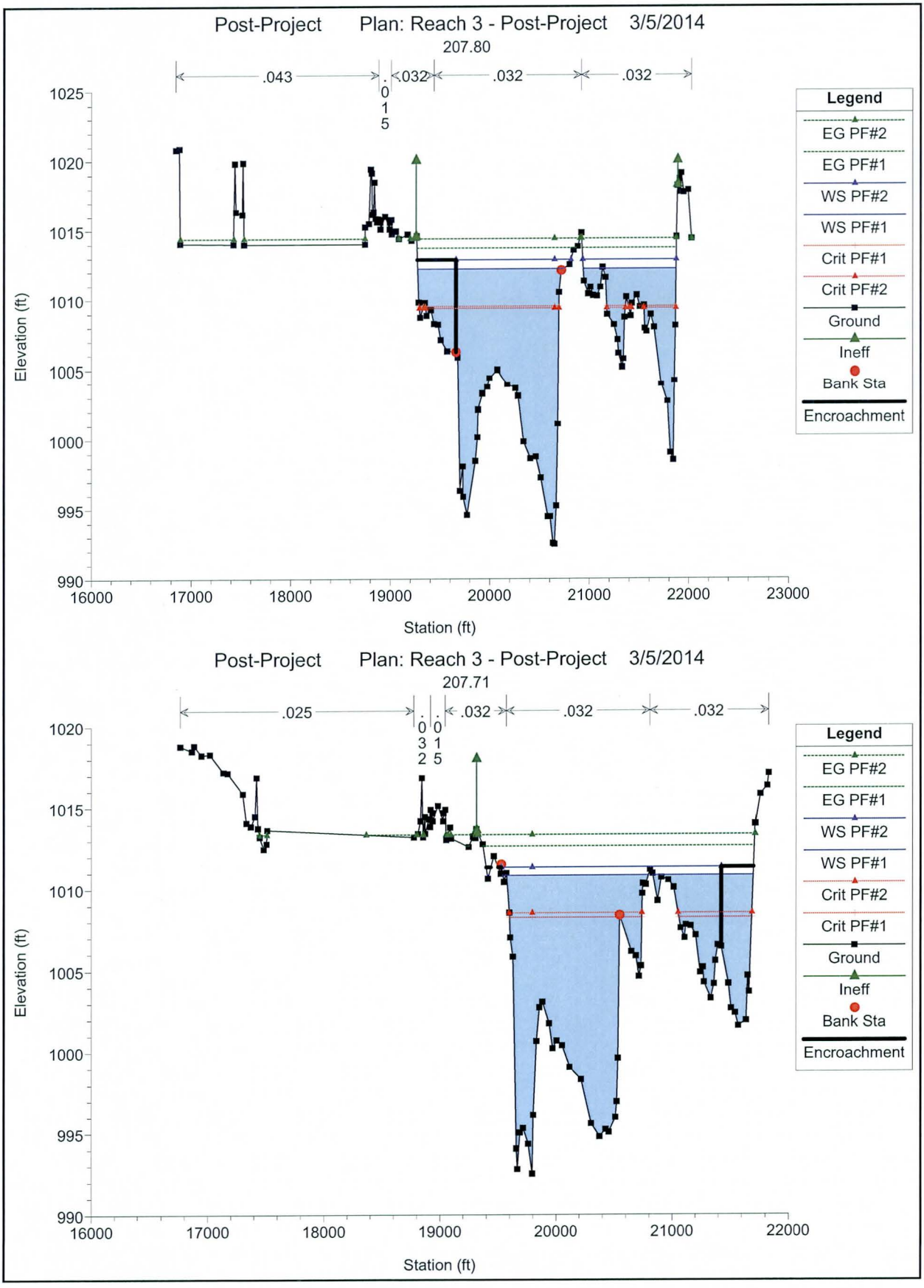

Post-Project Plan: Reach 3 - Post-Project 3/5/2014
208.75 - FEMA Section U
.037
.015
.037
.032
.032
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment
Elevation (ft)
Station (ft)
1040
1030
1020
1010
1000
18000
19000
20000
21000
22000
23000
Post-Project Plan: Reach 3 - Post-Project 3/5/2014
208.67
.037
.015
.037
.032
.032
.037
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment
Elevation (ft)
Station (ft)
1035
1030
1025
1020
1015
1010
1005
1000
17000
18000
19000
20000
21000
22000
23000

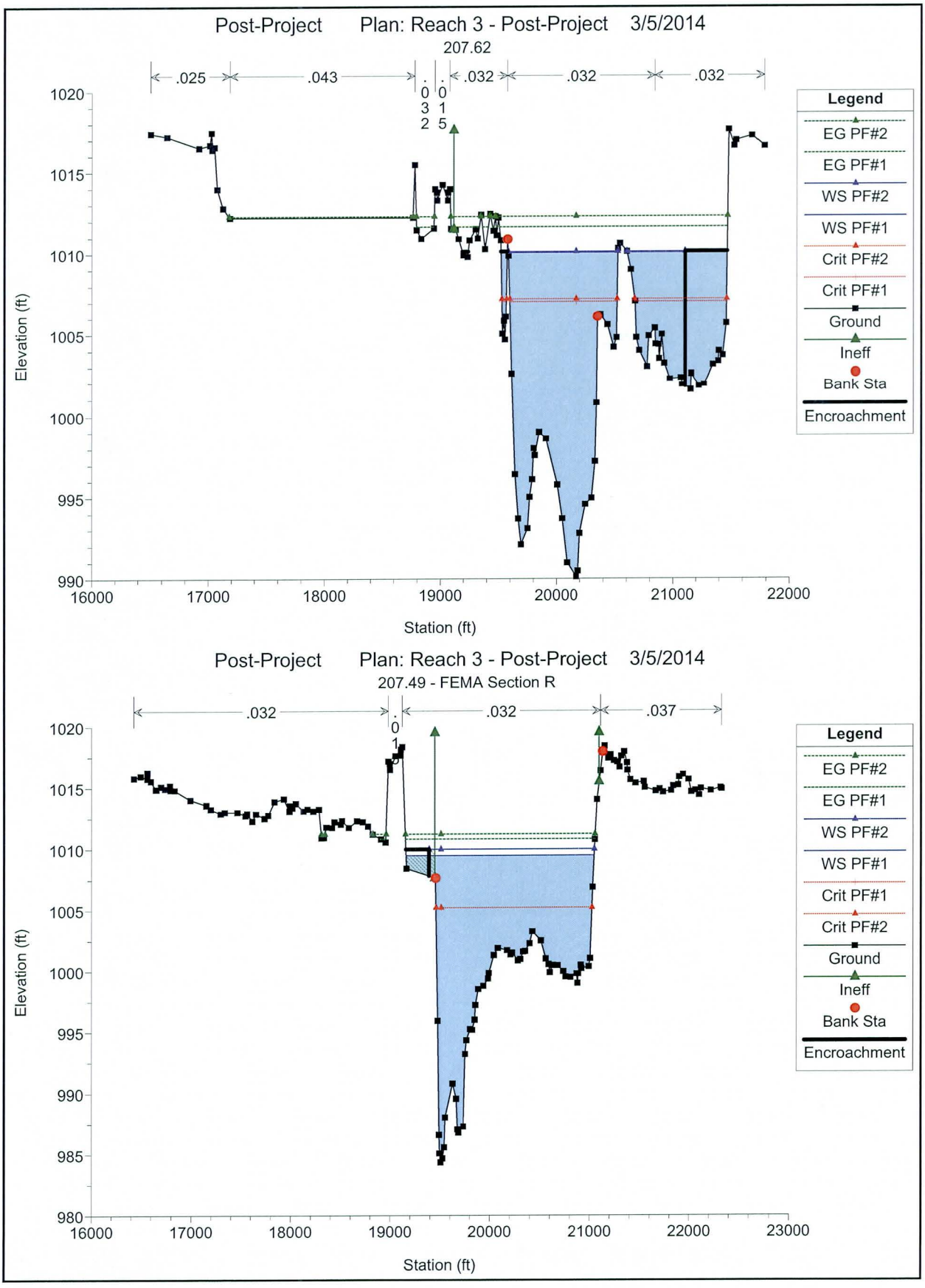

Post-Project Plan: Reach 3 - Post-Project 3/5/2014
208.57
.037
.015
.037
.032
.032
.037
Elevation (ft)
Station (ft)
1035
1030
1025
1020
1015
1010
1005
1000
18000
19000
20000
21000
22000
23000
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment
Post-Project Plan: Reach 3 - Post-Project 3/5/2014
208.48
.043
.015
.043
.032
.032
.037
Elevation (ft)
Station (ft)
1040
1030
1020
1010
1000
990
17000
18000
19000
20000
21000
22000
23000
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta

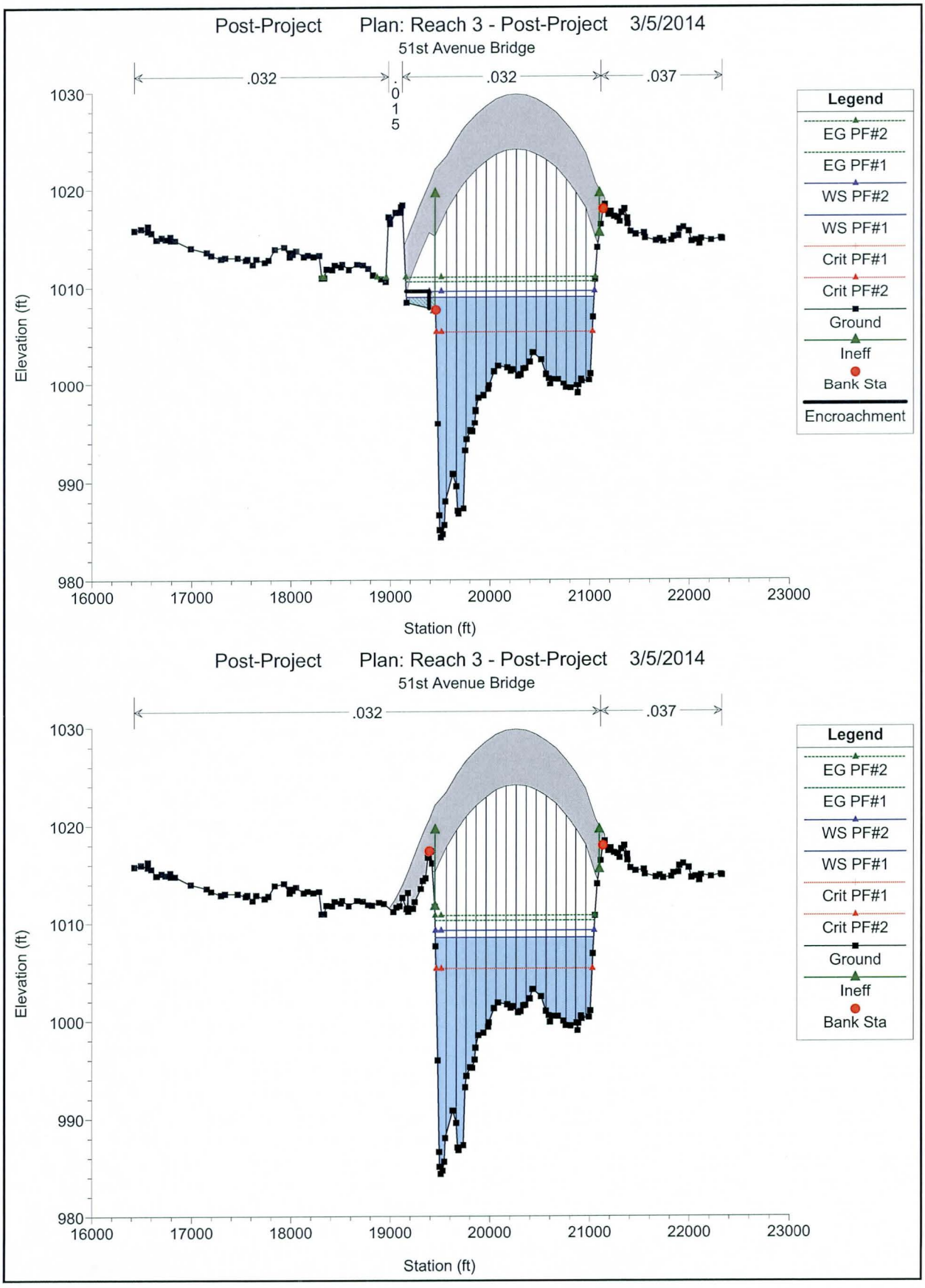

Post-Project Plan: Reach 3 - Post-Project 3/5/2014
208.39 - FEMA Section T
.043
.015
.032
.032
.037
.025
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
Post-Project Plan: Reach 3 - Post-Project 3/5/2014
208.29
.025
.043
.015
.032
.037
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

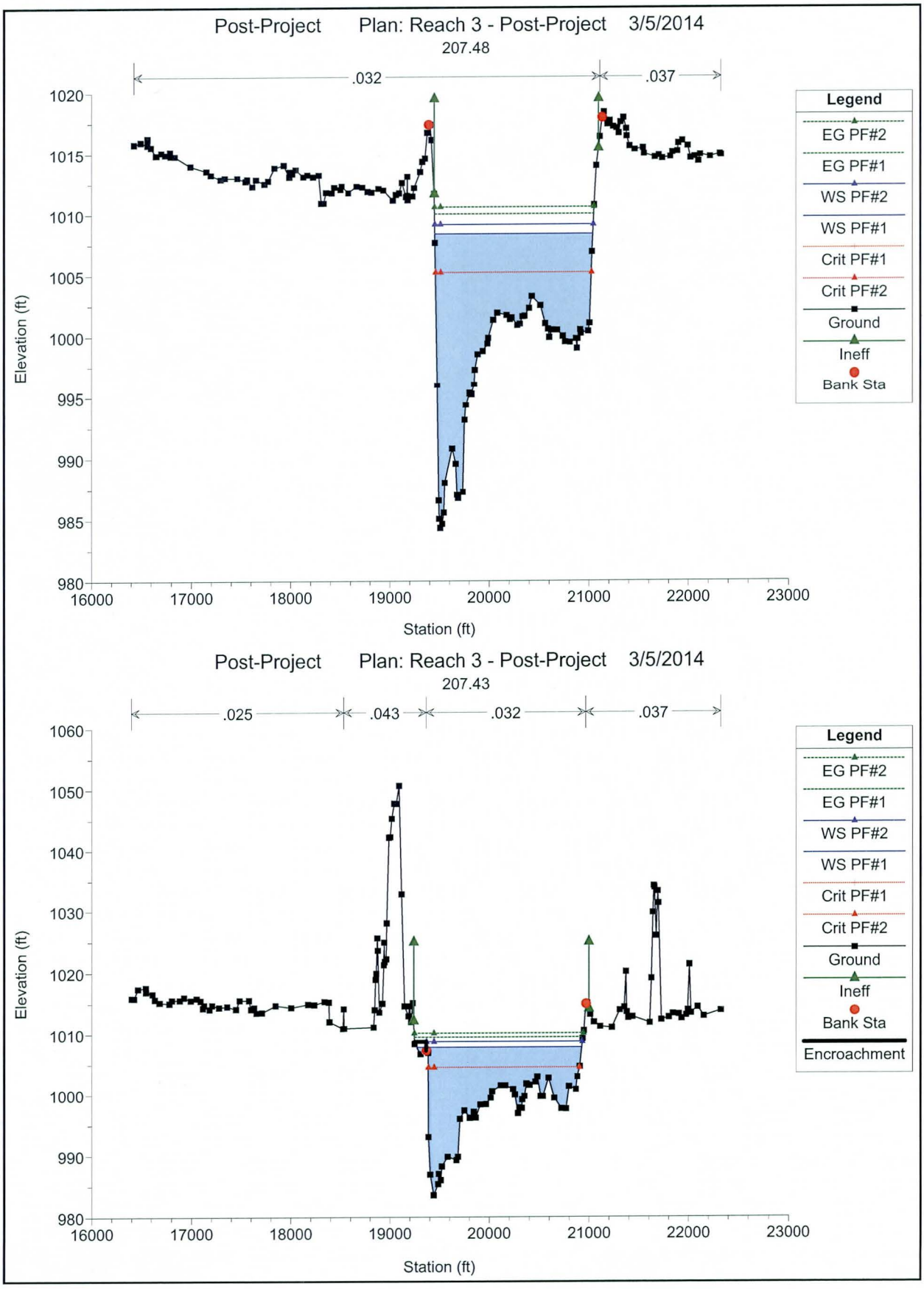

Post-Project Plan: Reach 3 - Post-Project 3/5/2014
208.19
.025
.043
.032
.032
.037
Elevation (ft)
Station (ft)
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Post-Project Plan: Reach 3 - Post-Project 3/5/2014
208.10
.025
.043
.032
.032
.032
Elevation (ft)
Station (ft)
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment

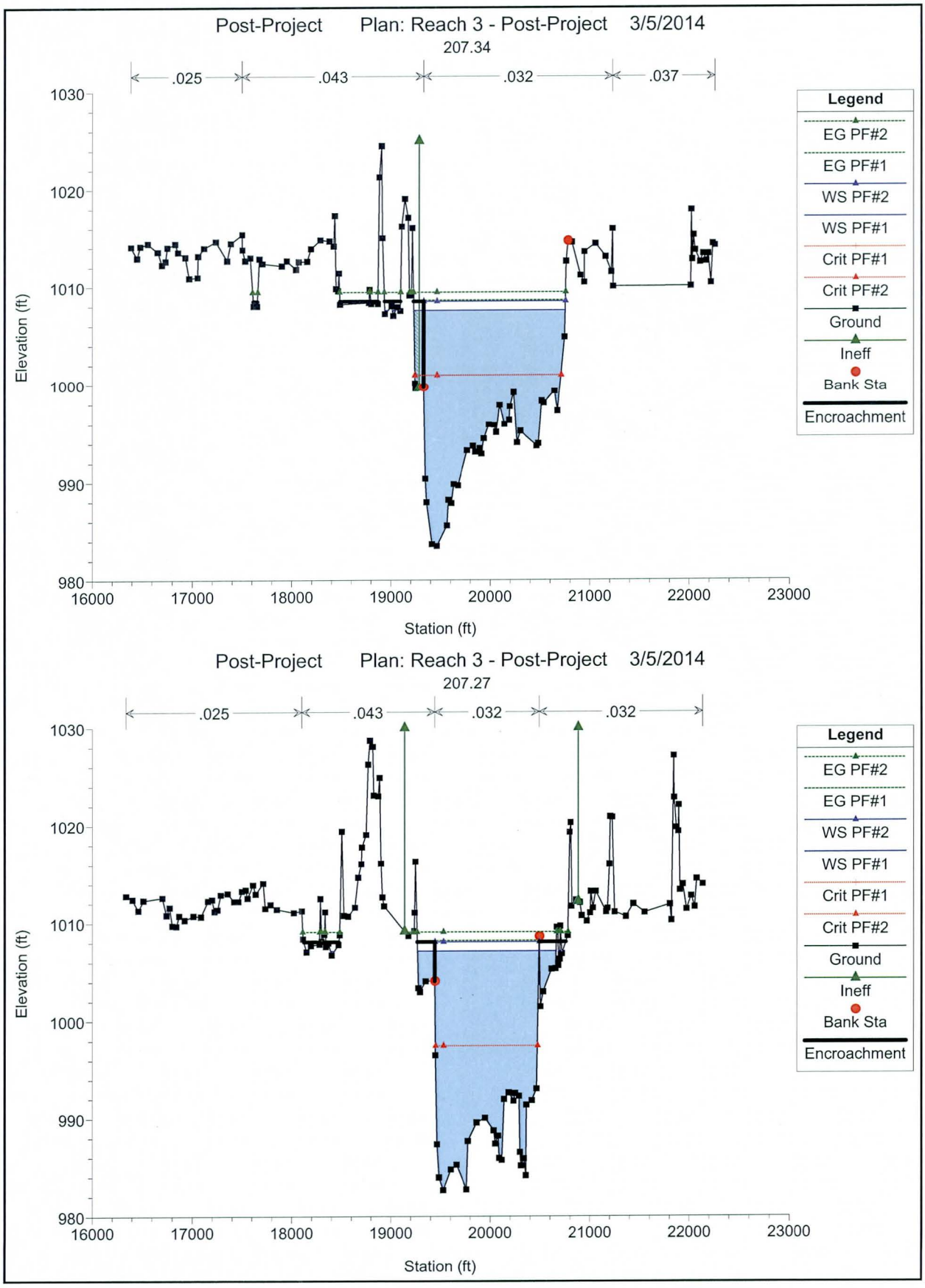

Post-Project
Plan: Reach 3 - Post-Project
3/5/2014
207.99
.043
.032
.032
.015
Elevation (ft)
Station (ft)
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment
Post-Project
Plan: Reach 3 - Post-Project
3/5/2014
207.90 - FEMA Section S
.043
.032
.032
.015
Elevation (ft)
Station (ft)
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment

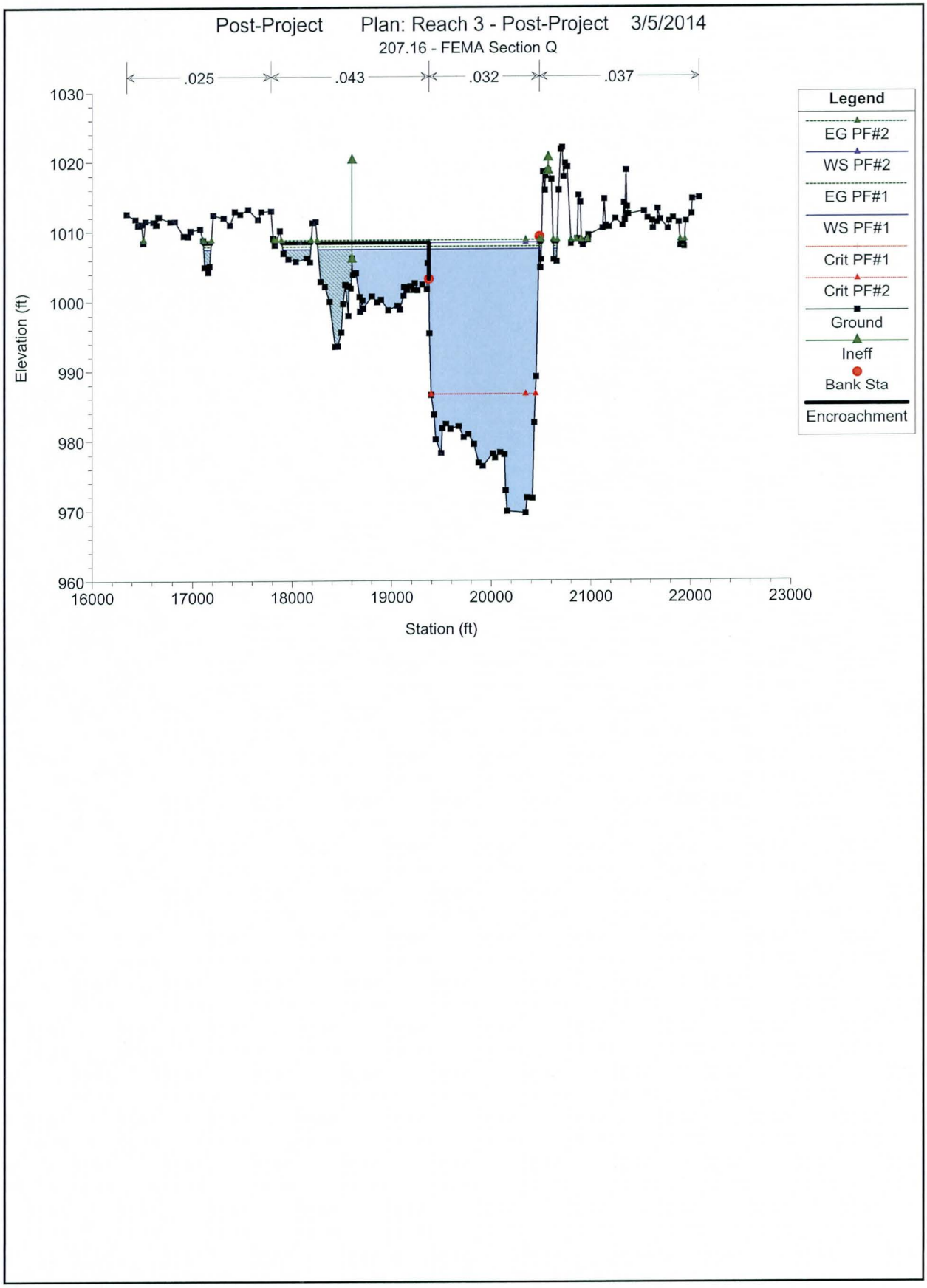

Post-Project Plan: Reach 3 - Post-Project 3/5/2014
207.80
.043
.032
.032
.032
.015
Elevation (ft)
Station (ft)
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment
Post-Project Plan: Reach 3 - Post-Project 3/5/2014
207.71
.025
.032
.032
.032
.032.015
Elevation (ft)
Station (ft)
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#2
Crit PF#1
Ground
Ineff
Bank Sta
Encroachment


Post-Project Plan: Reach 3 - Post-Project 3/5/2014
207.62
.025
.043
.032
.032
.032
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#2
Crit PF#1
Ground
Ineff
Bank Sta
Encroachment
Elevation (ft)
Station (ft)
Post-Project Plan: Reach 3 - Post-Project 3/5/2014
207.49 - FEMA Section R
.032
.032
.037
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment
Elevation (ft)
Station (ft)


Post-Project Plan: Reach 3 - Post-Project 3/5/2014
51st Avenue Bridge
.032
.032
.037
.015
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment
Elevation (ft)
1030
1020
1010
1000
990
980
16000
17000
18000
19000
20000
21000
22000
23000
Station (ft)
Post-Project Plan: Reach 3 - Post-Project 3/5/2014
51st Avenue Bridge
.032
.037
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Elevation (ft)
1030
1020
1010
1000
990
980
16000
17000
18000
19000
20000
21000
22000
23000
Station (ft)


Post-Project Plan: Reach 3 - Post-Project 3/5/2014
207.48
.032
.037
Elevation (ft)
Station (ft)
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Post-Project Plan: Reach 3 - Post-Project 3/5/2014
207.43
.025
.043
.032
.037
Elevation (ft)
Station (ft)
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment


Post-Project Plan: Reach 3 - Post-Project 3/5/2014
207.34
.025
.043
.032
.037
Elevation (ft)
Station (ft)
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment
Post-Project Plan: Reach 3 - Post-Project 3/5/2014
207.27
.025
.043
.032
.032
Elevation (ft)
Station (ft)
Legend
EG PF#2
EG PF#1
WS PF#2
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment


Post-Project
Plan: Reach 3 - Post-Project 3/5/2014
207.16 - FEMA Section Q
.025
.043
.032
.037
1030
1020
1010
1000
990
980
970
960
Elevation (ft)
16000
17000
18000
19000
20000
21000
22000
23000
Station (ft)
Legend
EG PF#2
WS PF#2
EG PF#1
WS PF#1
Crit PF#1
Crit PF#2
Ground
Ineff
Bank Sta
Encroachment

HEC-RAS Version 4.1.0 Jan 2010
U.S. Army Corps of Engineers
Hydrologic Engineering Center
609 Second Street
Davis, California

```
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
XXXXXXX  XXXX     X       XXX  XXXX     XXXXXX   XXXX
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
```

PROJECT DATA
Project Title: Post-Project
Project File : Post-Project.prj
Run Date and Time: 3/5/2014 9:59:21 AM

Project in English units

Project Description:
City of Phoenix ARS (AZTEC project No AZE1005)
Salt River Effective model -
Received from FEMA for LOMR case no. 08-09-1412P
Salt River Effective model -
Received from FEMA for LOMR case no.
08-09-1294P

==========
Used the model obtained from LOMR 08-09-1412P which modified
sections 209.33 to 209.98 based on TranSystems mapping and grading plans and
Modified cross section 208.57, 208.67, 208.75 & 208.85 based on LOMR
08-09-1294P to create the Duplicate Effective
Model

==========
Pre-Project Model created from new mapping for the area between FEMA
Section Q and FEMA Section X. New mapping done by Kenney Aerial Mapping on
September 24, 2010, 1"=40' mapping with a 1' contour.
Revised Cross Sections
207.19 to 209.98 with new
mapping

==========
Post-Project Model created based on the proposed Avenido Rio
Salado/Broadway Road horizontal and vertical alignment.

S.Smedley May 2013

PLAN DATA

Plan Title: Reach 3 - Post-Project
Plan File : r:\Phoenix\Projects\AZE1005-ARS_ProgramManagement\Technical\Drainage\HEC-RAS\Post-Project Model\Post-Project.p01

Geometry Title: Salt River Reach 3 - Post-Project
Geometry File :
r:\Phoenix\Projects\AZE1005-ARS_ProgramManagement\Technical\Drainage\HEC-RAS\Post-Project Model\Post-Project.g02

Flow Title   : Reach 3 - Floodway
Flow File   :
r:\Phoenix\Projects\AZE1005-ARS_ProgramManagement\Technical\Drainage\HEC-RAS\Post-Project Model\Post-Project.f01

Plan Summary Information:
Number of: Cross Sections = 160   Multiple Openings =   0

Culverts = 0 Inline Structures = 0
Bridges = 6 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: Subcritical Flow

Encroachment Data
Equal Conveyance = True
Left Offset = 0
Right Offset = 0

River = 1 Reach = 1

RS	Profile	Method	Value1	Value2
214.14	PF#2		119654.9720381.83	
214.04	PF#2		119637.8820371.77	
213.95	PF#2		119586.5420331.73	
213.85	PF#2		119618.3320320.92	
213.75	PF#2		1	1964120297.35
213.74	PF#2		119641.87	20296.6
213.66	PF#2		119687.5720253.56	
213.57	PF#2		1 19484.520336.66	
213.47	PF#2		1 19243.320266.42	
213.38	PF#2		1 19346.120447.85	
213.33	PF#2		1 19328.920514.52	
213.26	PF#2		119497.1820378.39	
213.25	PF#2		119497.5520377.79	
213.21	PF#2		1 19490.3	20418.5
213.11	PF#2		119616.8820544.67	
213.03	PF#2		1	1967220591.83
212.93	PF#2		119690.7620489.75	
212.84	PF#2		1 19711.520347.25	
212.74	PF#2		119690.61	20367.2
212.68	PF#2		119501.07	20130.1
212.67	PF#2		119502.3320128.84	
212.56	PF#2		119731.0520252.14	
212.46	PF#2		119743.34	20301
212.37	PF#2		119744.0620320.69	
212.27	PF#2		119715.2520330.35	
212.18	PF#2		119706.8520334.57	
212.08	PF#2		119681.09	20270.9
211.99	PF#2		119699.7720249.64	
211.89	PF#2		119685.7520250.74	
211.79	PF#2		119649.87	20217.7
211.71	PF#2		119628.4320197.84	
211.64	PF#2		1 19657.7	20219.8
211.54	PF#2		119603.6520129.64	
211.51	PF#2		119615.1920137.39	
211.41	PF#2		1 19638.120206.06	
211.31	PF#2		119531.2120356.09	
211.21	PF#2		119528.7520521.25	
211.12	PF#2		119498.47	20610
211.02	PF#2		119487.12	21150
210.93	PF#2		119479.13	21575
210.83	PF#2		119450.42	21700
210.74	PF#2		119426.13	21800
210.64	PF#2		1 19388.6	21800
210.55	PF#2		119322.17	21110
210.46	PF#2		1	19377 21284
210.36	PF#2		119375.1721291.16	
210.26	PF#2		119377.08	21331.8
210.17	PF#2		1 19354.621334.72	
210.07	PF#2		1	19210 21225
209.98	PF#2		119316.5321256.06	
209.88	PF#2		119516.3921299.85	
209.79	PF#2		119444.0721299.89	
209.69	PF#2		119492.43	21350
209.60	PF#2		119457.3121064.47	
209.54	PF#2		119471.7520594.25	
209.53	PF#2		119471.7520594.25	

209.42	PF#2	119318.5620610.47
209.33	PF#2	119086.1920715.31
209.24	PF#2	119001.6620907.53
209.14	PF#2	1 1910021140.18
209.04	PF#2	119124.0321356.72
208.95	PF#2	119173.8520972.83
208.85	PF#2	119206.0221155.77
208.75	PF#2	119212.9820952.96
208.67	PF#2	119317.6920938.72
208.57	PF#2	119382.5620731.12
208.48	PF#2	118501.9220691.24
208.39	PF#2	118468.9520724.42
208.29	PF#2	118561.8220909.13
208.19	PF#2	118679.18 21343.2
208.10	PF#2	118822.3721737.69
207.99	PF#2	119184.3621863.07
207.90	PF#2	119103.9222135.26
207.80	PF#2	119658.1621871.22
207.71	PF#2	119527.6521424.84
207.62	PF#2	119577.9221105.73
207.49	PF#2	119387.2821132.01
207.48	PF#2	119387.2821132.01
207.43	PF#2	119363.8620968.54
207.34	PF#2	119328.8820778.22
207.27	PF#2	119441.5520490.43
207.16	PF#2	119371.4620479.77
207.07	PF#2	118857.5720748.18
206.97	PF#2	1 18850 20800
206.88	PF#2	118838.93 20800
206.79	PF#2	118806.0120895.15
206.7	PF#2	118784.84 21138.8
206.6	PF#2	118675.5821066.25
206.51	PF#2	118561.35 20622.1
206.41	PF#2	118494.7120685.21
206.32	PF#2	118476.9420854.87
206.22	PF#2	1 1843520977.29
206.13	PF#2	1 1837020914.89
206.03	PF#2	1 18320 20772.6
205.94	PF#2	1 18200 20767
205.84	PF#2	1 18100 20535.7
205.75	PF#2	1 18048 20450.3
205.62	PF#2	1 18216 20450.1
205.52	PF#2	1 18591.6 20611.5
205.43	PF#2	1 18917.5 20770.4
205.4	PF#2	1 19020 20767.8
205.34	PF#2	1 1918020742.96
205.25	PF#2	1 19300 20782.3
205.15	PF#2	1 19385 20830
205.06	PF#2	1 19470 20905.3
204.97	PF#2	1 19445 20961.3
204.87	PF#2	1 19410 20952.2
204.78	PF#2	1 1921020830.43
204.68	PF#2	1 1896020546.37
204.61	PF#2	1 18880 20482.9
204.53	PF#2	1 18885 20495.9
204.42	PF#2	1 19025.420679.03
204.34	PF#2	1 1910020814.38
204.25	PF#2	1 1930020817.18
204.15	PF#2	1 1920021031.89
204.05	PF#2	118963.7821080.54
203.96	PF#2	118736.54 20787.3
203.86	PF#2	118542.4920734.27
203.77	PF#2	118232.4120743.68
203.67	PF#2	1 1813020697.43
203.58	PF#2	1 1802520701.39
203.48	PF#2	1 17932.620844.31
203.39	PF#2	1 17970.821036.47
203.29	PF#2	1 18065.621074.86
203.19	PF#2	1 18262.120951.24
203.09	PF#2	1 1843020905.85
202.99	PF#2	1 18469.4 20926.9
202.9	PF#2	1 18455.620967.31
202.8	PF#2	1 18390.821011.58
202.69	PF#2	1 18377.821080.23
202.59	PF#2	1 18416.7 21190.4
202.48	PF#2	1 18360 21302.7
202.37	PF#2	1 1827021577.77
202.29	PF#2	1 18197.4 21803
202.18	PF#2	1 18139.721936.54

202.09	PF#2		1	18212.92	1936.96				
201.99	PF#2		1	18235.12	1861.56				
201.9	PF#2		1	17992.63	21823.6				
201.81	PF#2		1	17952.48	21801.08				
201.71	PF#2		1	18112.81	21528.5				
201.62	PF#2		1	18235.69	21477.5				
201.52	PF#2		1	18008.55	21391.4				
201.43	PF#2		1	18053.86	21342.1				
201.33	PF#2		1	18074.35	21381.8				
201.24	PF#2		1	18069.92	21570				
201.14	PF#2		1	18040.42	21721				
201.05	PF#2		1	17950.48	21849				
200.95	PF#2		1	17952.91	21954				
200.86	PF#2		1	18000	22032				
200.77	PF#2		1	17828.8	21951				
200.67	PF#2		1	17640	21649.3				
200.58	PF#2		1	17510	21450				
200.49	PF#2		1	17380	21171				
200.39	PF#2		1	17300	21041				
200.3	PF#2		1	17205	20896				
200.2	PF#2		1	17115	20744				
200.1	PF#2		1	17030	20800				
200	PF#2		1	16950	21050				
199.91	PF#2		1	16800	21330				
199.82	PF#2		1	16870	21650				

FLOW DATA

Flow Title: Reach 3 - Floodway
Flow File : r:\Phoenix\Projects\AZE1005-ARS_ProgramManagement\Technical\Drainage\HEC-RAS\Post-Project Model\Post-Project.f01

Flow Data (cfs)

River	Reach	RS	PF#1	PF#2
1	1	214.14	169000	169000
1	1	213.21	166000	166000
1	1	205.4	164000	164000
1	1	200.3	179750	179750

Boundary Conditions

River	Reach	Profile	Upstream	Downstream
1	1	PF#1	Normal S = 0.001	Known WS = 948.9
1	1	PF#2	Normal S = 0.001	Known WS = 949.9

GEOMETRY DATA

Geometry Title: Salt River Reach 3 - Post-Project
Geometry File : r:\Phoenix\Projects\AZE1005-ARS_ProgramManagement\Technical\Drainage\HEC-RAS\Post-Project Model\Post-Project.g02

CROSS SECTION

RIVER: 1
REACH: 1 RS: 214.14

INPUT
Description: 214.14
Station Elevation Data num= 96

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
18555.4	1082.6	18577.7	1082.5	18586.5	1082.5	18650.6	1082	18678.8	1082.1
18707.4	1081.7	18729.5	1082	18771.6	1082.1	18793.7	1081.8	18836	1080.9
18859.7	1080.3	18935.6	1078.9	19050.6	1077.2	19056.7	1077.2	19059.9	1077.1
19062.9	1076.9	19063.3	1077	19067.8	1077.1	19071.9	1077.1	19078.2	1077.1
19188.3	1078.1	19249.7	1079.4	19290.2	1080.1	19298.1	1080.2	19313.1	1080.4
19327.5	1080.7	19358.6	1080.6	19391.6	1080.5	19412.8	1080.3	19520.8	1077.9
19554.8	1077.5	19580.2	1077.3	19610.8	1076.5	19651.9	1076.7	19697.7	1058.7
19715.9	1051.7	19732.8	1050.2	19750.7	1048.7	20032.7	1049	20292.3	1049.2
20350.9	1065.9	20388.3	1077.5	20405.5	1075.6	20406	1075.6	20439.7	1075.6

20637.3	1075.5	20899.6	1075.4	20920.6	1075.5	20941.8	1075.4	20947.4	1075.5
20962	1075.5	20980	1075.4	20989.9	1075.4	21074.1	1075.4	21119.6	1075.7
21168.7	1076.8	21222	1076.6	21326.8	1076.2	21327.4	1076.2	21342.2	1075
21390.6	1075	21428.8	1075	21455.3	1075.3	21502.1	1076.4	21502.4	1076.2
21505.4	1076.4	21551.9	1077.5	21591.8	1077.6	21726.3	1078.4	21759.2	1078.5
21766.3	1078.3	21792.4	1078.4	21884.6	1078.9	22013	1079.1	22034.3	1079.5
22101.6	1079.7	22156.1	1080.1	22201.4	1080	22204.6	1079.9	22217.3	1080.5
22235	1081.3	22238.1	1081.3	22264.5	1081	22267.7	1080.9	22269.4	1080.7
22269.9	1080.6	22272.4	1080.4	22280.3	1079.8	22341.9	1080.2	22431	1080.6
22501.3	1081.2	22591.2	1081.8	22602.9	1082	22619.7	1083	22686.6	1082.9
22710.3	1082.5								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
18555.4	.04	19651.9	.035	20388.3	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19651.9	20388.3	475	510.51	570	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
18555.4	19651.9	1082	F
20388.3	22710.3	1082	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 214.04

INPUT
Description: 214.04
Station Elevation Data num= 96

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
19072.9	1079.7	19093.4	1080.3	19132.2	1080.8	19189.9	1082.5	19193.8	1082.6
19198.4	1082.5	19239.2	1081	19288.1	1081.2	19324.4	1080.7	19371.7	1079.1
19395.9	1078.4	19428.8	1078	19449.6	1077.2	19490.6	1077.5	19513.1	1077.7
19544.1	1077.9	19555.9	1077.7	19588.8	1076.5	19610.7	1075.7	19613.2	1075.7
19632.1	1075.8	19635.6	1075.8	19636.8	1075.4	19702.8	1053	19711.2	1052.5
19718.8	1052.3	19726.8	1051.2	19735.4	1048.8	20175.7	1049	20286.6	1049
20298.5	1052.8	20376.6	1076.5	20387.2	1075.5	20390.3	1075.2	20574.2	1076
20667.2	1076.1	20825.6	1075.6	20839.5	1075.5	20839.8	1075.5	20855.8	1073
20864.2	1073.4	20909.3	1072.6	20914.5	1072.6	20915.6	1072.9	20928.6	1077
20951.8	1077	20990.8	1076.9	20996.8	1076.9	21016.8	1077.3	21040.9	1077.5
21130.4	1077.3	21234.3	1076.9	21246.3	1076.9	21256.8	1076.2	21294.9	1076.5
21366.4	1076.6	21461.4	1076.5	21539.2	1076.3	21557.9	1076.3	21565.1	1076.3
21586.9	1076.6	21607.7	1076.8	21639.2	1077.1	21662.1	1077.5	21690.5	1078.1
21711.2	1078.3	21774.8	1078.5	21799.9	1079.2	21800.4	1079.3	21942.9	1079.4
21971	1079.3	22001.7	1079.3	22020.7	1079.3	22177.7	1078.3	22203.1	1078.1
22217.2	1078.1	22226.8	1078	22231.1	1078	22238.5	1078	22248	1077.8
22357.9	1076.9	22384.7	1077.9	22394.1	1078.2	22399.6	1078.1	22400.9	1078.1
22428.8	1077.9	22430.1	1077.9	22450.6	1078.2	22542.8	1078.3	22554	1078.5
22667.1	1079.2	22667.7	1079.3	22717.7	1081.1	22725.6	1081.1	22727.3	1081.2
22747.1	1084								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
19072.9	.04	19636.8	.035	20376.6	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19636.8	20376.6	495	493.12	480	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
19072.9	19636.8	1083	F
20376.6	22747.1	1083	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 213.95

INPUT
Description: 213.95 - FEMA Section AG
Station Elevation Data num= 96

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
19012.2	1082.3	19071.8	1081.2	19072.8	1081.2	19073.5	1081.2	19172.6	1080
19176.1	1079.9	19177	1079.9	19191.6	1079.8	19233.8	1079.1	19245.6	1079.2
19283.7	1079.1	19366	1078.5	19459.9	1077.8	19508.7	1075.2	19510	1075.1
19510.4	1075.2	19511.8	1075.3	19534.7	1076.7	19583.1	1074.4	19622.2	1071.5

19627.4	1072.4	19631.4	1072.9	19699.3	1056.7	19729	1049.4	19783.8	1049.5
20255.4	1049.3	20277.7	1056.5	20337.1	1075.9	20360.3	1074.9	20361.6	1074.8
20403.2	1074.5	20653.5	1075.3	20691.9	1075.3	20740	1075.5	20772	1075.4
20775.5	1075.1	20784.4	1073.9	20808.5	1074.1	20840.9	1074.4	20844.2	1074.5
20853.7	1075.1	20870	1074.8	20875	1074.6	20914.9	1075.6	20922.3	1075.7
20949.7	1076.5	20960.6	1076.8	20964.2	1076.9	20966.3	1078.4	20973	1080.1
21108.8	1079.4	21171.4	1079.5	21176.1	1079.5	21183	1079.7	21200.9	1076.8
21203.1	1076.6	21232.6	1076.3	21271.1	1076	21272.6	1076	21274.1	1076
21377.7	1076.7	21386.9	1076.7	21400.8	1076.7	21470.9	1077.6	21502.4	1077.7
21528	1077.6	21534	1077.9	21534.2	1077.9	21537	1078	21542.7	1077.4
21542.9	1077.8	21554.1	1077.4	21695.2	1077.7	21731.7	1077.2	21736.1	1076.3
21743.3	1075.1	21752	1076.3	21753.2	1076.5	21753.7	1076.6	21759.1	1078.6
21760.3	1079.1	21763.3	1079.6	21764.1	1079.5	21772.7	1079.3	21784.7	1079.3
21791.6	1079.5	21806.1	1079.6	21832.6	1079.8	21918.1	1079.8	21918.4	1080.2
22000.8	1079.8	22342	1078.4	22351.4	1078.4	22362.3	1078.4	22373.8	1078.7
22391.3	1078.7								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
19012.2	.04	19534.7	.035	20337.1	.04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
19534.7 20337.1 500 504.25 500 .1 .3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
19012.2	19534.7	1082.3	F
20337.1	22391.3	1082.3	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 213.85

INPUT
Description: 213.85
Station Elevation Data num= 96

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
17827.8	1078.7	17849.3	1078.5	17962.5	1078	17983.6	1077.8	18087.6	1077.7
18117.7	1077.6	18209	1077.4	18245.6	1077.6	18313.2	1077.9	18389.3	1078.8
18415.4	1078.8	18437.5	1078.2	18449	1078.3	18463.7	1078.2	18513.6	1077.6
18548.9	1077.6	18753.1	1077.6	18798.9	1077.6	18834.2	1077.6	18917.4	1077
19257.5	1075.3	19264.9	1075.1	19293.5	1075.6	19308	1069.8	19333.3	1060.1
19342.5	1063.1	19360.7	1068.8	19366.6	1068.9	19391	1069.1	19423.4	1069.4
19453.2	1068.8	19469.5	1068.4	19505	1067.4	19506.5	1067.3	19507.3	1067.3
19507.8	1067.3	19547.4	1067.3	19584.5	1067.6	19698.5	1068	19698.6	1068
19700.1	1067.8	19706.3	1067	19707.5	1066.9	19732.9	1066.7	19742.3	1067
19770.4	1067.6	19785.4	1067.6	19789.2	1066.5	19853.9	1048.1	19906.4	1048.1
20083.9	1048.2	20249.9	1048.3	20313.2	1069.1	20328.7	1074.2	20334.9	1074.2
20586	1074.1	20640.3	1074.2	20781.1	1074.5	20824.2	1074.1	20842	1073.7
20852.3	1073.7	20870.3	1073.9	20934.9	1073.8	20979.5	1074.4	21111.7	1075.1
21125.5	1075	21144.4	1074.8	21152.1	1075.1	21185.5	1076.2	21224.6	1075.6
21230.8	1075.4	21246.8	1077.2	21248.3	1077.3	21269	1076.4	21270.4	1076.3
21272.5	1076.3	21337.9	1076.3	21381.5	1076.2	21384.6	1076.3	21498.8	1077.1
21503.7	1077.1	21545.5	1077.1	21557.5	1077.1	21587	1077.2	21625.9	1077.3
21671.9	1077.5	21707.6	1077.4	21723.9	1077.4	21767.4	1077.3	21770.2	1077.3
21773.6	1077.4	21774.6	1077.4	21801.1	1079.6	21831.2	1078.8	21907.4	1079.1
21970.5	1078.8								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
17827.8	.04	19785.4	.035	20328.7	.04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
19785.4 20328.7 521 520.04 541 .1 .3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
17827.8	19618.33	1078	F
20328.7	21970.5	1078	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 213.75

INPUT
Description: 213.75
Station Elevation Data num= 28

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
18435	1076	19470	1076	19600	1080	19633.4	1080.84	19633.5	1074.13
19633.6	1073.5	19636.5	1073.5	19709	1048.55	19764	1047	19769.5	1047
19834.5	1047.15	19899	1046.6	19904	1046.6	19959	1047	20034	1044.61
20039	1044.6	20104	1045	20169	1045.5	20174	1045.5	20240.5	1049.35
20302	1073.8	20305	1073.8	20305.1	1074.8	20305.2	1081.5	20340	1080
20490	1076	20925	1075	21465	1076				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
18435	.037	19633.5	.032	20305.1	.037

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19633.5	20305.1	125	116.36	120	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
18435	19633.5	1074.13	F
20305.1	21465	1074.8	F

BRIDGE

RIVER: 1
REACH: 1 RS: 213.745

INPUT
Description: 7th Street Bridge
Distance from Upstream XS = .1
Deck/Roadway Width = 115.36
Weir Coefficient = 2.6
Upstream Deck/Roadway Coordinates
num= 8

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
19633.4	1080.84	1074.13	19633.5	1080.84	1074.13	19764	1084.56	1077.81
19899	1085.96	1079.23	20039	1085.95	1079.2	20174	1084.45	1077.7
20305	1081.53	1074.82	20305.2	1081.5	1074.82			

Upstream Bridge Cross Section Data
Station Elevation Data num= 28

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
18435	1076	19470	1076	19600	1080	19633.4	1080.84	19633.5	1074.13
19633.6	1073.5	19636.5	1073.5	19709	1048.55	19764	1047	19769.5	1047
19834.5	1047.15	19899	1046.6	19904	1046.6	19959	1047	20034	1044.61
20039	1044.6	20104	1045	20169	1045.5	20174	1045.5	20240.5	1049.35
20302	1073.8	20305	1073.8	20305.1	1074.8	20305.2	1081.5	20340	1080
20490	1076	20925	1075	21465	1076				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
18435	.037	19633.5	.032	20305.1	.037

Bank Sta: Left	Right	Coeff Contr.	Expan.
19633.5	20305.1	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
18435	19633.5	1074.13	F
20305.1	21465	1074.8	F

Downstream Deck/Roadway Coordinates
num= 8

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
19633.4	1080.84	1074.13	19633.5	1080.84	1074.13	19764	1084.56	1077.81
19899	1085.96	1079.23	20039	1085.95	1079.2	20174	1084.45	1077.7
20305	1081.53	1074.82	20305.2	1081.5	1074.82			

Downstream Bridge Cross Section Data
Station Elevation Data num= 28

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
18435	1076	19470	1076	19600	1080	19633.4	1080.84	19633.5	1074.13
19633.6	1073.5	19636.5	1073.5	19709	1048.55	19764	1047	19769.5	1047
19834.5	1047.15	19899	1046.6	19904	1046.6	19959	1047	20034	1044.61
20039	1044.6	20104	1045	20169	1045.5	20174	1045.5	20240.5	1049.35
20302	1073.8	20305	1073.8	20305.1	1074.8	20305.2	1081.5	20340	1080
20490	1076	20925	1075	21465	1076				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
18435	.037	19633.5	.032	20305.1	.037

```
Bank Sta: Left   Right    Coeff Contr.   Expan.
      19633.5 20305.1            .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
   18435 19633.5 1074.13       F
 20305.1   21465  1074.8       F

Upstream Embankment side slope              =         horiz. to 1.0 vertical
Downstream Embankment side slope            =         horiz. to 1.0 vertical
Maximum allowable submergence for weir flow =     .95
Elevation at which weir flow begins         =
Energy head used in spillway design         =
Spillway height used in design              =
Weir crest shape                            = Broad Crested

Number of Piers =  4

Pier Data
Pier Station     Upstream= 19766.5    Downstream= 19766.5
Upstream     num=        2
    Width   Elev    Width   Elev
       5    1047       5 1077.88
Downstream     num=        2
    Width   Elev    Width   Elev
       5    1047       5 1077.88

Pier Data
Pier Station     Upstream= 19901.5    Downstream= 19901.5
Upstream     num=        2
    Width   Elev    Width   Elev
       5  1046.6       5  1079.2
Downstream     num=        2
    Width   Elev    Width   Elev
       5  1046.6       5  1079.2

Pier Data
Pier Station     Upstream= 20036.5    Downstream= 20036.5
Upstream     num=        2
    Width   Elev    Width   Elev
       5  1044.6       5  1079.2
Downstream     num=        2
    Width   Elev    Width   Elev
       5  1044.6       5  1079.2

Pier Data
Pier Station     Upstream= 20171.5    Downstream= 20171.5
Upstream     num=        2
    Width   Elev    Width   Elev
       5  1045.5       5  1077.7
Downstream     num=        2
    Width   Elev    Width   Elev
       5  1045.5       5  1077.7

Number of Bridge Coefficient Sets =  1

Low Flow Methods and Data
       Energy
       Momentum               Cd   =     1.2
       Yarnell                KVal =    1.05
Selected Low Flow Methods = Highest Energy Answer

High Flow Method
       Energy Only

Additional Bridge Parameters
       Add Friction component to Momentum
       Add Weight component to Momentum
       Class B flow critical depth computations use critical depth
           inside the bridge at the upstream end
       Criteria to check for pressure flow = Upstream energy grade line

CROSS SECTION


RIVER: 1
REACH: 1                 RS: 213.74

INPUT
Description: 213.74
```

Station Elevation Data num= 28

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
18435	1076	19470	1076	19600	1080	19633.4	1080.84	19633.5	1074.13
19633.6	1073.5	19636.5	1073.5	19709	1048.55	19764	1047	19769.5	1047
19834.5	1047.15	19899	1046.6	19904	1046.6	19959	1047	20034	1044.61
20039	1044.6	20104	1045	20169	1045.5	20174	1045.5	20240.5	1049.35
20302	1073.8	20305	1073.8	20305.1	1074.8	20305.2	1081.5	20340	1080
20490	1076	20925	1075	21465	1076				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
18435	.037	19633.5	.032	20305.1	.037

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19633.5	20305.1	391 373.47	361	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
18435	19633.5	1074.13	F
20305.1	21465	1074.8	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 213.66

INPUT
Description: 213.66
Station Elevation Data num= 96

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
17026.7	1076.4	17035.9	1076.4	17047	1076.4	17057.3	1076.5	17212.3	1077.3
17306.5	1077.8	17311.3	1077.7	17325.2	1077.3	17326.2	1077.3	17343.4	1077.3
17442.9	1076.7	17474.5	1076.6	17571	1076	17573.6	1076	17595.6	1076.1
17610	1076.1	17705.1	1075	17741.5	1075.1	17947.8	1075.4	17953.1	1075.5
18038.8	1075.4	18185.8	1075.6	18234.4	1076.1	18300.9	1076.4	18318.8	1076.5
18414	1075.5	18414.6	1075.5	18415.1	1075.5	18415.7	1075.5	18448.6	1075.8
18455.1	1075.4	18472.5	1073.3	18527.9	1073.3	18683	1073	18718.7	1073
18832.1	1073.3	18873.8	1073.2	18878.4	1072.9	18881.8	1072.9	18892.6	1074.2
18901.3	1075.2	19033.1	1075.2	19131.6	1074.9	19140.9	1074.8	19157.1	1074.8
19235.1	1073.7	19291.4	1073.4	19291.9	1073.4	19292.2	1073.4	19391.8	1069.9
19418.5	1069.7	19442.4	1069.3	19496.9	1070	19532.6	1070.6	19537.6	1070.2
19543	1070.6	19572.3	1071.8	19605.3	1068.7	19616.1	1068.2	19621.3	1069.8
19633.2	1073.3	19663.1	1073.7	19675.2	1073.6	19689.7	1068.5	19748.8	1047.6
19750.4	1047.6	20010.7	1047.7	20194.9	1047.9	20235	1062.5	20260.3	1071.7
20270.2	1073.7	20288.3	1076.6	20297.7	1078.3	20387.2	1078.5	20416.3	1078.5
20457.1	1078.5	20464.9	1076.1	20469.4	1075.3	20825.5	1074.4	20828.5	1074.4
20828.8	1074.4	20830.9	1074.4	20837.2	1074.9	20839.2	1074.9	20870.3	1074.9
20871.4	1074.9	20872.6	1074.6	20872.8	1074.7	20900.8	1074.1	20901.5	1074
20908.4	1073.9	20912.4	1073.9	20915.4	1074	20927	1075.1	20951.2	1077.5
20999.4	1077.6								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
17026.7	.037	19675.2	.032	20297.7	.037

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19675.2	20297.7	490 491.08	495	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
17026.7	19675.2	1078.5	F
20297.7	20999.4	1078.5	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 213.57

INPUT
Description: 213.57 - FEMA Section AF
Station Elevation Data num= 96

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
17508.1	1075.8	17669.7	1076	17677.2	1076	17679.4	1076	17681.9	1075.9
17685.3	1075.9	17879.1	1077.7	17883.6	1077.7	17891.2	1077.7	17899.7	1077.7
17907.2	1077.7	18293.4	1077.1	18302.2	1077.1	18305.6	1077.2	18335	1077.2
18409.4	1076.8	18482.1	1076	18487.1	1075.3	18493.2	1074.6	18496.9	1074.6
18674	1073.2	18717	1073	18743.5	1072.8	18755.4	1072.8	18802	1072.6
18832.6	1072.6	18934.4	1072.7	18941.7	1072.7	18977	1069	18979.3	1068.7
18979.7	1068.7	18981.1	1068.6	19032.8	1069.7	19078.3	1069.3	19123.5	1069

19190.3	1068.3	19211.6	1068.4	19212.3	1068.4	19245	1068.5	19287.9	1069
19318.4	1068.9	19384.7	1069.1	19398.3	1068.6	19484.5	1068.5	19514.1	1067.2
19542.6	1063.6	19548	1062.9	19575	1062.8	19586.3	1062.5	19595.5	1063.8
19603.2	1064.4	19612.3	1065.2	19617.4	1064.5	19668.9	1061.9	19672.3	1061.7
19674.3	1061.7	19711.7	1060.1	19720	1057.4	19743.1	1047.9	20035.4	1047
20123.9	1046.7	20135.8	1048.3	20147.5	1050.1	20202.7	1051.3	20261.3	1052.3
20286.6	1053	20301.2	1052.6	20302.5	1052.5	20345.5	1073.5	20347.7	1074.6
20347.8	1074.6	20348.2	1074.6	20373.8	1075.7	20384.8	1075.5	20390.6	1075.6
20426.7	1075.7	20435.9	1075.7	20452.6	1075.3	20481.8	1075.4	20485.6	1075.2
20501.3	1076.7	20634	1076	20804.5	1073.3	20853.6	1072.8	20858.1	1072.8
20865.8	1073.1	20870.9	1073	20902.9	1071.5	20922.6	1075.2	20923.6	1075.4
20925.3	1075.3	20936.8	1075.1	20950.5	1074.7	21085.5	1074.8	21211.9	1075.1
21311.2	1074.8								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
17508.1	.037	19484.5	.032	20373.8	.037

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19484.5	20373.8	650	500.37	390	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
17508.1	19484.5	1077.7	F
20373.8	21311.2	1077.7	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 213.47

INPUT
Description: 213.47
Station Elevation Data num= 96

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
17897	1072.3	17950.9	1072.3	17955.5	1073.1	17972.5	1074.8	18140.3	1074.1
18179.1	1074.1	18193.1	1074	18207.9	1073.9	18257.4	1074	18402.2	1073.7
18450.1	1073.2	18519.9	1072.6	18592.3	1071.7	18600.6	1071.6	18625.8	1071.9
18741.5	1071.7	18784.9	1071.7	18805.1	1070.7	18823.4	1069.4	18880.6	1067
18888.4	1066.7	18938.9	1066.6	18942.7	1066.6	18948.4	1066.6	18970.5	1067.2
19008	1068.2	19008.9	1068.2	19041.7	1068.5	19057.6	1068.6	19057.8	1068.6
19058.1	1068.6	19060.2	1068.6	19154.7	1068.1	19202.4	1067.9	19243.3	1067
19289	1066	19306.6	1065.6	19313.9	1065.3	19357.8	1064.8	19392.5	1064.4
19420.7	1063.8	19432.7	1063.5	19483.4	1062	19493.9	1061.7	19499.6	1061.8
19534.7	1062.6	19536.4	1062.5	19585.4	1061.2	19586.6	1061.2	19587.5	1061.2
19588.9	1061.1	19593.6	1060.6	19689.9	1051.5	19699.6	1050.5	19735.3	1047
19807.1	1046.8	19827.4	1046.8	19970.4	1046.6	19993.9	1046.3	20037.8	1046.2
20146.5	1045.8	20205.3	1048.7	20214.8	1049.3	20219.4	1049	20220.8	1048.9
20255.2	1063.1	20274.2	1072.4	20283.3	1072.6	20341.6	1072.5	20362.6	1072.6
20428.7	1074.9	20446.8	1074.9	20469.6	1074.9	20474.3	1074.9	20476.7	1075
20483.2	1074.9	20484.1	1074.9	20486.3	1074.9	20488.6	1074.7	20489.3	1074.7
20515.7	1073.2	20526.3	1073.3	20537.5	1073.5	20540.5	1073.4	20545	1073.8
20567.4	1075.2	20569.1	1075.4	20578.4	1075	20619.2	1074.5	20621.6	1074.4
20649.8	1074	20700.8	1074	20735.1	1074.2	20751.5	1074.5	20765.2	1074.8
20783.9	1075.1								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
17897	.037	19243.3	.032	20274.2	.037

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19243.3	20274.2	500	493.66	485	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
17897	19243.3	1075.4	F
20274.2	20783.9	1075.4	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 213.38

INPUT
Description: 213.38
Station Elevation Data num= 96

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
17634.6	1070.7	17652.1	1070.7	17729.5	1071.2	17747.9	1072.2	17763.8	1073.1
17893.9	1073.4	17976.4	1073.1	18006.5	1072.7	18006.7	1072.7	18008	1072.7

18197.8	1072.8	18341.3	1071.5	18390.9	1071.3	18419.4	1070.9	18420.4	1070.9
18423.8	1070.9	18431	1071	18656.8	1070.5	18735	1070.6	18756.6	1070.9
18796.6	1071.1	18974.7	1070.8	19012.6	1070.8	19073.3	1070.8	19129.4	1069.7
19192.7	1068.9	19195.5	1068.8	19196.5	1068.5	19204.6	1068.3	19213.9	1068.2
19225.5	1067.5	19242.1	1066.8	19303.8	1064.4	19303.9	1064.4	19304.2	1064.4
19346.1	1064.6	19365.3	1061.2	19365.5	1061.2	19401.7	1061	19405.7	1060.8
19411.2	1060.6	19452.9	1058.9	19499.7	1059.7	19523.7	1060.4	19526.3	1060.4
19530.8	1060.5	19534.1	1060.4	19575.5	1058.6	19625.5	1054.4	19648.5	1052.9
19678.5	1053.7	19684.4	1053.8	19732.6	1049.4	19735.1	1049.2	19761.4	1050.8
19767.8	1050.7	19771.9	1050.2	19796.5	1046.2	19864.4	1045.8	20277.6	1045.7
20311.6	1045.6	20311.7	1045.4	20329.1	1049.4	20361.7	1051.6	20363.3	1052.8
20364.3	1052.8	20374	1053.5	20405.3	1054.8	20417	1056.5	20434.2	1065
20473	1075.2	20473.5	1075.2	20515.6	1074.3	20532	1073.2	20533.3	1073
20535.9	1073	20539.6	1072.9	20569.9	1072.5	20578	1072.1	20607.5	1072.2
20652.6	1074	20655.9	1074.1	20722.7	1075.3	20793.4	1076	20804.4	1076.4
20831.2	1076.4	20834	1075.7	20842.3	1072.9	20845.3	1072.1	20848.9	1072.1
20860.3	1072.3	20875.9	1072.3	20895.1	1072.4	20963.7	1072.4	20982.3	1071.9
20996.7	1072.4								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
17634.6	.037	19346.1	.032	20473	.037

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19346.1	20473	210 290.06	395	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
17634.6	19346.1	1076.4	F
20473	20996.7	1076.4	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 213.33

INPUT
Description: 213.33
Station Elevation Data num= 96

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
17662.6	1072.6	17668	1072.6	17677	1072.6	17679.2	1072.7	17685.5	1072.7
17890.3	1072	17891.3	1072	17919.8	1071.9	18055.2	1071.9	18114.9	1071.9
18241.8	1071.2	18279.3	1070.9	18302.9	1070.9	18305.8	1070.8	18316.6	1070.7
18337.3	1070.5	18464.8	1070.6	18565.2	1070.8	18644.2	1071	18654.1	1071
18680.7	1070.7	18888.5	1070	18954.5	1069.6	19002.1	1069.7	19091.3	1069
19104.2	1069	19104.4	1069	19107.7	1069	19109.5	1068.5	19112.3	1067.7
19112.4	1067.7	19123.4	1067.3	19136.1	1067.1	19144.4	1069.1	19147.5	1069.9
19163.9	1070.3	19173.4	1070.7	19184.4	1069.5	19203.3	1068.1	19209.7	1067.1
19222.7	1066	19244.2	1064.1	19272.3	1063	19328.9	1063.5	19336.9	1063.4
19344.3	1063.4	19367.2	1062.3	19389	1062	19396.3	1061.9	19416.7	1061.3
19418.1	1060.9	19453.8	1059.7	19472.5	1059.2	19476.7	1057.5	19530.4	1058.7
19538.8	1058.7	19541	1058.6	19590	1056.9	19629.4	1054.2	19644.5	1053.7
19671.3	1051.4	19710.3	1047.2	19715.9	1046.8	19755.6	1046.4	19757.3	1046.3
19759.3	1046.3	19761.3	1046.3	19780.3	1046.2	20358.7	1045.4	20444.8	1048.7
20449.3	1048.9	20508	1066.2	20514.9	1068.7	20553.2	1069.1	20640.2	1069.7
20662.5	1069.4	20704	1068.4	20729.7	1068.7	20782.7	1069.1	20784.7	1069.2
20789.1	1069.5	20821.1	1071.4	20854.7	1073	20856.9	1073.1	20859.1	1073.1
20896	1072.7	20902.1	1072.7	20919.8	1072.5	20932.4	1072.6	20967.3	1072.5
21012.3	1072.8	21051.5	1073	21059.7	1073	21066	1073.1	21092.4	1073
21244.4	1073.1								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
17662.6	.037	19328.9	.032	20514.9	.037

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19328.9	20514.9	266 316.41	426	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
17662.6	19328.9	1073.1	F
20640.2	21244.4	1073.1	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 213.26

INPUT

```
Description: 213.26
Station Elevation Data    num=      45
      Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
    17300  1071.7   17670    1072   17850  1073.6   18250  1075.5   19180  1078.2
 19488.1  1078.1 19488.2 1072.97 19495.2  1069.2 19517.2  1057.5 19564.2 1055.45
 19584.2  1051.3 19586.9    1051 19589.4    1051 19638.2  1048.1 19686.9  1047.3
 19689.4  1047.3 19704.2  1047.2 19743.2  1042.2 19786.9 1042.15 19789.4  1042.2
 19838.2  1042.8 19871.7  1042.9 19886.9 1043.85 19889.4  1043.8 19938.2  1044.1
 19986.9  1042.7 19989.4  1042.7 20038.2  1042.3 20086.9 1042.85 20089.4  1042.8
 20121.7  1043.3 20171.2 1041.05 20188.2  1040.9 20189.4  1040.9 20223.2  1040.4
 20248.7  1042.2 20286.9  1043.4 20289.4  1043.4 20307.7 1044.35 20382.7  1069.6
 20387.9  1070.4 20387.9  1072.9   20388 1078.19   20790  1078.3   21330  1075.5

Manning's n Values        num=       3
      Sta   n Val     Sta   n Val     Sta   n Val
    17300    .037 19488.2    .032 20387.9    .037

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       19488.2 20387.9              155  152.22     155              .1      .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
   17300 19488.2 1072.97        F
 20387.9   21330  1070.4        F

BRIDGE


RIVER: 1
REACH: 1                  RS: 213.255

INPUT
Description: Central Avenue Bridge
Distance from Upstream XS =       .1
Deck/Roadway Width        =  151.22
Weir Coefficient          =     2.6
Upstream  Deck/Roadway Coordinates
    num=       11
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
 19488.1  1078.1 1072.97 19488.2 1078.14 1072.97 19586.9  1078.5 1073.28
 19686.9 1078.86 1073.64 19786.9 1079.15 1073.93 19886.9 1079.37  1074.2
 19989.4 1079.38  1074.2 20086.9 1079.13 1073.93 20188.2 1078.89  1073.7
 20286.9 1078.53 1073.32   20388 1078.19 1072.98

Upstream Bridge Cross Section Data
Station Elevation Data    num=      45
      Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
    17300  1071.7   17670    1072   17850  1073.6   18250  1075.5   19180  1078.2
 19488.1  1078.1 19488.2 1072.97 19495.2  1069.2 19517.2  1057.5 19564.2 1055.45
 19584.2  1051.3 19586.9    1051 19589.4    1051 19638.2  1048.1 19686.9  1047.3
 19689.4  1047.3 19704.2  1047.2 19743.2  1042.2 19786.9 1042.15 19789.4  1042.2
 19838.2  1042.8 19871.7  1042.9 19886.9 1043.85 19889.4  1043.8 19938.2  1044.1
 19986.9  1042.7 19989.4  1042.7 20038.2  1042.3 20086.9 1042.85 20089.4  1042.8
 20121.7  1043.3 20171.2 1041.05 20188.2  1040.9 20189.4  1040.9 20223.2  1040.4
 20248.7  1042.2 20286.9  1043.4 20289.4  1043.4 20307.7 1044.35 20382.7  1069.6
 20387.9  1070.4 20387.9  1072.9   20388 1078.19   20790  1078.3   21330  1075.5

Manning's n Values        num=       3
      Sta   n Val     Sta   n Val     Sta   n Val
    17300    .037 19488.2    .032 20387.9    .037

Bank Sta: Left   Right    Coeff Contr.   Expan.
       19488.2 20387.9              .1      .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
   17300 19488.2 1072.97        F
 20387.9   21330  1070.4        F

Downstream  Deck/Roadway Coordinates
    num=       11
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
 19488.1  1078.1 1072.97 19488.2 1078.14 1072.97 19586.9  1078.5 1073.28
 19686.9 1078.86 1073.64 19786.9 1079.15 1073.93 19886.9 1079.37  1074.2
 19989.4 1079.38  1074.2 20086.9 1079.13 1073.93 20188.2 1078.89  1073.7
 20286.9 1078.53 1073.32   20388 1078.19 1072.98

Downstream Bridge Cross Section Data
Station Elevation Data    num=      45
      Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
    17300  1071.7   17670    1072   17850  1073.6   18250  1075.5   19180  1078.2
```

```
 19488.1  1078.1 19488.2 1072.97 19495.2  1069.2 19517.2  1057.5 19564.2 1055.45
 19584.2  1051.3 19586.9    1051 19589.4    1051 19638.2  1048.1 19686.9  1047.3
 19689.4  1047.3 19704.2  1047.2 19743.2  1042.2 19786.9 1042.15 19789.4  1042.2
 19838.2  1042.8 19871.7  1042.9 19886.9 1043.85 19889.4  1043.8 19938.2  1044.1
 19986.9  1042.7 19989.4  1042.7 20038.2  1042.3 20086.9 1042.85 20089.4  1042.8
 20121.7  1043.3 20171.2 1041.05 20188.2  1040.9 20189.4  1040.9 20223.2  1040.4
 20248.7  1042.2 20286.9  1043.4 20289.4  1043.4 20307.7 1044.35 20382.7  1069.6
 20387.9  1070.4 20387.9  1072.9   20388 1078.19   20790  1078.3   21330  1075.5

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
   17300    .037 19488.2    .032 20387.9    .037

Bank Sta: Left   Right    Coeff Contr.   Expan.
       19488.2 20387.9            .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
   17300 19488.2 1072.97        F
 20387.9   21330  1070.4        F

Upstream Embankment side slope                =         horiz. to 1.0 vertical
Downstream Embankment side slope              =         horiz. to 1.0 vertical
Maximum allowable submergence for weir flow =     .95
Elevation at which weir flow begins           =
Energy head used in spillway design           =
Spillway height used in design                =
Weir crest shape                              = Broad Crested

Number of Piers =  8

Pier Data
Pier Station     Upstream=19588.15    Downstream=19588.15
Upstream     num=       2
    Width   Elev    Width   Elev
      2.5    1051     2.5 1073.28
Downstream     num=       2
    Width   Elev    Width   Elev
      2.5    1051     2.5 1073.28

Pier Data
Pier Station     Upstream=19688.15    Downstream=19688.15
Upstream     num=       2
    Width   Elev    Width   Elev
      2.5  1047.3     2.5  1073.7
Downstream     num=       2
    Width   Elev    Width   Elev
      2.5  1047.3     2.5  1073.7

Pier Data
Pier Station     Upstream=19788.15    Downstream=19788.15
Upstream     num=       2
    Width   Elev    Width   Elev
      2.5 1042.15     2.5  1073.9
Downstream     num=       2
    Width   Elev    Width   Elev
      2.5 1042.15     2.5  1073.9

Pier Data
Pier Station     Upstream=19888.15    Downstream=19888.15
Upstream     num=       2
    Width   Elev    Width   Elev
      2.5  1043.8     2.5  1074.2
Downstream     num=       2
    Width   Elev    Width   Elev
      2.5  1043.8     2.5  1074.2

Pier Data
Pier Station     Upstream=19988.15    Downstream=19988.15
Upstream     num=       2
    Width   Elev    Width   Elev
      2.5  1042.7     2.5  1074.2
Downstream     num=       2
    Width   Elev    Width   Elev
      2.5  1042.7     2.5  1074.2

Pier Data
Pier Station     Upstream=20088.15    Downstream=20088.15
Upstream     num=       2
    Width   Elev    Width   Elev
```

```
     2.5  1042.8     2.5  1073.9
Downstream     num=        2
    Width   Elev    Width   Elev
     2.5  1042.8     2.5  1073.9

Pier Data
Pier Station     Upstream=20189.45    Downstream=20189.45
Upstream     num=        2
    Width   Elev    Width   Elev
     2.5  1040.9     2.5  1073.7
Downstream     num=        2
    Width   Elev    Width   Elev
     2.5  1040.9     2.5  1073.7

Pier Data
Pier Station     Upstream=20288.15    Downstream=20288.15
Upstream     num=        2
    Width   Elev    Width   Elev
     2.5  1043.4     2.5  1073.3
Downstream     num=        2
    Width   Elev    Width   Elev
     2.5  1043.4     2.5  1073.3

Number of Bridge Coefficient Sets =  1

Low Flow Methods and Data
       Energy
       Momentum                Cd   =     1.2
       Yarnell                 KVal =    1.05
Selected Low Flow Methods = Highest Energy Answer

High Flow Method
       Energy Only

Additional Bridge Parameters
       Add Friction component to Momentum
       Add Weight component to Momentum
       Class B flow critical depth computations use critical depth
           inside the bridge at the upstream end
       Criteria to check for pressure flow = Upstream energy grade line

CROSS SECTION


RIVER: 1
REACH: 1                  RS: 213.25

INPUT
Description: 213.25 - FEMA Section AE
Station Elevation Data    num=      45
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
   17300  1071.7   17670    1072   17850  1073.6   18250  1075.5   19180  1078.2
 19488.1  1078.1 19488.2 1072.97 19495.2  1069.2 19517.2  1057.5 19564.2 1055.45
 19584.2  1051.3 19586.9    1051 19589.4    1051 19638.2  1048.1 19686.9  1047.3
 19689.4  1047.3 19704.2  1047.2 19743.2  1042.2 19786.9 1042.15 19789.4  1042.2
 19838.2  1042.8 19871.7  1042.9 19886.9 1043.85 19889.4  1043.8 19938.2  1044.1
 19986.9  1042.7 19989.4  1042.7 20038.2  1042.3 20086.9 1042.85 20089.4  1042.8
 20121.7  1043.3 20171.2 1041.05 20188.2  1040.9 20189.4  1040.9 20223.2  1040.4
 20248.7  1042.2 20286.9  1043.4 20289.4  1043.4 20307.7 1044.35 20382.7  1069.6
 20387.9  1070.4 20387.9  1072.9   20388 1078.19   20790  1078.3   21330  1075.5

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
   17300    .037 19488.2    .032 20387.9    .037

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       19488.2 20387.9             121  123.36     121             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
   17300 19488.2 1072.97        F
 20387.9   21330  1070.4        F

CROSS SECTION


RIVER: 1
REACH: 1                  RS: 213.21

INPUT
```

Description: 213.21

Right Channel Bank Station Interpolated
Station Elevation Data num= 96

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
18330.9	1072.8	18364	1072.8	18412.8	1073.1	18447.9	1073	18475.1	1072.3
18506.2	1072	18530.5	1071.1	18588.6	1070	18604.7	1069.8	18607.3	1070
18638.6	1069.9	18645.2	1070	18646.8	1070	18647	1070	18648.3	1070
18679.6	1070.4	18691	1070.2	18696.8	1070.3	18826.1	1070.2	18853.1	1069.7
18879.8	1069.1	18990	1068.8	19004.3	1068.6	19030.8	1069	19071.8	1069.5
19171.4	1069.4	19189.5	1069.4	19238.8	1069.2	19251.2	1070	19253.8	1070
19283.8	1069	19284.7	1069	19384	1068.2	19385.3	1068.1	19387.8	1068.1
19391.2	1068.1	19421.7	1067.9	19486.6	1066.6	19490.3	1065.6	19518.8	1054.9
19533.4	1049	19535.9	1049.5	19545.6	1052	19551.4	1054.2	19576.8	1051.8
19595.9	1047.4	19611.2	1046.8	19618.6	1046.7	19619.1	1046.6	19626.3	1045.5
19627	1045.3	19697	1045.2	19802.7	1045.1	20377.2	1044.9	20380.6	1045
20387.2	1045.1	20389.8	1045.1	20418.5	1045.3	20484.9	1046.3	20500.9	1046.4
20506.4	1046.3	20545.8	1046.4	20547	1046.4	20573.1	1046	20581	1046
20584	1054.4	20584.6	1058.9	20634.9	1062.9	20654.9	1064.2	20663	1064.8
20687	1065.1	20732.3	1064.9	20749.5	1065.1	20761.2	1066	20787.8	1066.2
20803.3	1066.3	20840	1066.3	20853.8	1066.3	20900.8	1066.8	20929.7	1067.2
20948.4	1067.8	20957.7	1070.3	20963.6	1072.1	20965.8	1071.9	20972.5	1072.2
20980.1	1072.5	21025.3	1072.2	21041.7	1072.4	21049	1072.4	21083	1072.6
21094.6	1072.7	21137.7	1072.7	21224.3	1073.6	21258.5	1074.2	21274.1	1074.3
21278.4	1074.5								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
18330.9	.037	19490.3	.032	20418.5	.037

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19490.3	20418.5	450	531.57	745	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
18330.9	19253.8	1074	F
20418.5	21278.4	1074	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 213.11

INPUT
Description: 213.11
Station Elevation Data num= 85

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
17566.5	1070.1	17705.4	1071.3	17742.2	1071.6	17814.3	1070.1	17888.9	1069.6
17929.2	1069.8	17996.1	1072.7	18084.9	1073.4	18245.7	1073.1	18304.6	1073.3
18312.5	1071.8	18319.5	1069.3	18320.2	1069.1	18324.7	1069.1	18353.4	1069.6
18382.1	1068.8	18390	1068.3	18395.2	1069.2	18399.3	1071.7	18472.2	1071.2
18480.8	1071.2	18492.7	1070.4	18507.8	1070	18517.1	1069.2	18520.7	1069.6
18584	1071.9	18596.8	1072.2	18606	1072.4	18609.2	1072.4	18753.6	1072
18759.6	1071.8	18769.2	1073.7	18780.8	1075.5	18785.7	1075	18793.4	1074.4
18863.8	1073.8	18931.9	1074.1	18960.3	1074.3	18976.4	1074.4	19015.9	1075
19047.7	1075	19171.5	1072.4	19275.4	1071	19456	1071.1	19523.2	1069.3
19575	1067.9	19589.1	1068.3	19601.9	1071.4	19606.1	1072.1	19616.1	1067.5
19661.3	1047.6	20012.6	1047.6	20486.9	1047.9	20586.5	1081.1	20599.1	1086
20638.9	1086.2	20743.9	1086.8	20798.9	1087.3	20849	1087.5	20878.6	1087.6
20889.5	1087.8	20899.2	1087.8	20922	1087.5	21000.4	1087.3	21062.3	1085.9
21080.5	1084.4	21100.6	1083.3	21131.5	1083	21372.7	1078.3	21390.1	1077.6
21449.7	1073.9	21464.1	1073.6	21478.8	1073.9	21484.8	1073.8	21573.7	1073.9
21602.4	1073.9	21694.6	1073.6	21800.6	1072.4	21943.2	1070.8	22180.4	1070.9
22217.7	1071	22268.3	1071.4	22474.2	1073.6	22486.2	1076.3	22488.2	1077

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
17566.5	.037	19606.1	.032	20599.1	.037

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19606.1	20599.1	425	459.38	565	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
17566.5	18780.8	1087.8	F
20599.1	22488.2	1087.8	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 213.03

INPUT
Description: 213.03
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
16056.5	1068.9	16069.1	1068.8	16071.5	1068.8	16197.1	1069.2	16383.9	1070
16409	1070	16413.8	1070	16414.4	1070	16428.8	1070	16501.9	1070.2
16550	1070.3	16603.1	1070.5	16734.3	1069.9	16759	1069.9	16800.6	1069.5
16821.1	1069.8	16943.1	1070.1	16956.6	1070.5	16985.9	1070.6	17193.9	1070.8
17238.8	1069.8	17263.2	1069.3	17296.6	1068.7	17461.4	1069.1	17486.5	1069.2
17576.5	1069.4	17728.6	1070.6	17908.4	1072	17938.3	1071.6	17974.7	1070.1
17987.3	1069.9	18028.7	1068.5	18086.7	1069.1	18107.5	1068.9	18113.8	1068.9
18246.2	1068.5	18370.2	1068.2	18382.5	1068.2	18389	1068.3	18394.9	1068.3
18496	1070.4	18502.4	1070.5	18521.4	1070.6	18643.8	1071	18700.9	1071.3
18708.1	1071.2	18723.6	1071.3	18831.5	1070.9	18846.4	1070.8	18847.1	1070.8
18848.3	1070.8	18969.8	1071.4	19007.8	1071.8	19178.9	1073.7	19181.7	1073.7
19324.1	1073.1	19588.8	1066.9	19627.1	1066	19640.5	1066.2	19662.1	1067.2
19666.3	1067.8	19672.11	066.574	19703.2	1060	19755.3	1050.7	19776.1	1048.9
19807.6	1047.8	19807.9	1047.8	19808.6	1047.8	19883.7	1046.8	19936.5	1046.7
19974.6	1046.7	20168.5	1046.8	20481.5	1047.5	20531.6	1047.5	20536.3	1047.6
20551.1	1052.6	20591.83	1066.575	20595.4	1067.8	20639.6	1083	20645.8	1085
20668.5	1085.5	20744.1	1085.4	20806.7	1086.1	20879.4	1082	20936.8	1078.5
20990.3	1075.5	21125.9	1073.2	21137.8	1072.9	21183.6	1072.1	21221	1072
21240.8	1071.7	21303.4	1071.3	21328.8	1071.1	21394.9	1071.7	21406.3	1071.8
21439	1071.7	21481.2	1071.9						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
16056.5	.037	19672.1	.03	20591.83	.037

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
19672.1 20591.83 475 495 525 .1 .3
Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
16056.5	19178.9	1086.1	F
20645.8	21481.2	1086.1	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 212.93

INPUT
Description: 212.93

Left and Right Channel Bank Stations Interpolated
Station Elevation Data num= 93

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
18913.7	1067.5	18940.6	1066.4	18961.6	1067.4	18996.4	1069.5	19034.7	1069.3
19121.7	1070.2	19158.8	1070.2	19269.6	1071.2	19362.4	1070.3	19381.3	1070.6
19412.2	1072.5	19420.1	1072.9	19430.8	1073.3	19436.5	1073.5	19633.3	1068.7
19645	1068.3	19645.7	1068.4	19645.9	1068.4	19653.4	1069	19673.1	1070.5
19690.76	1065.485	19697.4	1063.6	19757.3	1046.7	19779.3	1046.4	19826.6	1046.3
19850.5	1046.5	19924.2	1047.4	19928.9	1047.5	19929.5	1047.4	19958.7	1045.5
20129.7	1045.4	20271.7	1045.6	20345.4	1045.6	20426.9	1045.52	0489.75	1065.484
20489.8	1065.5	20498.7	1068.1	20501.4	1068	20587.1	1066.5	20637	1066.5
20655.9	1066.4	20685.9	1065.7	20749.1	1064.9	20804.3	1071.3	20847	1074.9
20872.4	1075.1	20941	1074.1	20990.9	1073	21005.7	1072.8	21075.3	1071.3
21079.7	1071.2	21083	1071.2	21113	1071.3	21246.3	1072.7	21249.5	1072.8
21261.8	1072.9	21268.5	1072.9	21332.8	1073.1	21571.4	1072.7	21590.1	1072.7
21815.9	1071.3	21853.1	1071.3	21982.5	1070.6	22017.6	1070.5	22314.9	1070
22499	1068.8	22548.8	1068.9	22568.2	1068.4	22648.5	1068.9	22948.3	1069.7
23054.9	1071.1	23121.6	1072	23140.9	1076.4	23143.5	1077.2	23151.2	1077.1
23159.2	1077	23162.2	1077.3	23171	1077.8	23179.9	1081.1	23202.7	1089.6
23248.6	1089.5	23303.8	1089.6	23327.8	1082.2	23331.1	1081	23333.2	1080.6
23345.9	1077.9	23350.9	1077.9	23361.3	1078.1	23377.6	1073.6	23386.3	1070.8
23389.2	1071	23392	1071.2	23394	1070.7				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
18913.7	.037	19690.76	.03	20489.75	.037

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
19690.76 20489.75 495 501.9 535 .1 .3
Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent

```
 18913.7 19673.1    1078       F
 20498.7   23394    1078       F

CROSS SECTION


RIVER: 1
REACH: 1                    RS: 212.84

INPUT
Description: 212.84 - FEMA Section AD

Left and Right Channel Bank Stations
            Interpolated
Station Elevation Data     num=      66
     Sta    Elev     Sta     Elev     Sta     Elev     Sta     Elev     Sta     Elev
 16284.9  1068.4 16487.1  1068.9   16606  1069.3   16985  1071.2 17015.9  1071.4
 17038.7  1071.8 17089.2  1071.1 17339.8  1070.2 17519.4  1069.1 17554.9  1069.1
 17652.7    1069 17900.6  1068.7 18109.2  1068.8 18133.9    1069 19053.9  1067.7
 19203.8    1066 19229.6  1065.8 19232.1  1065.8 19238.5  1065.7 19242.2  1065.7
 19244.8  1065.8 19286.8  1067.4 19292.2  1069.2 19450.5  1067.9 19498.7  1067.5
 19560.8    1067   19586  1066.9 19671.4  1066.8 19692.2  1068.3 19695.5  1068.9
 19711.51063.544 19765.4  1045.5 19772.2  1043.1 19790.5  1043.1 19811.3  1043.2
 20298.7  1043.5 20314.2  1050.220347.251063.544 20367.7  1071.8 20367.9  1071.8
 20405.2  1072.8 20416.8  1072.7 20424.4  1072.7 20490.9  1070.9 20522.9  1069.8
 20629.8  1070.1 20679.7  1070.1 20767.5  1070.4 20793.1  1070.2 20818.2  1069.1
 20874.5  1068.7 20940.7  1070.4 20979.1  1070.3 21186.4  1069.3 21242.6  1069.1
 21449.2  1070.2 21488.8  1070.8 21502.4    1071 21582.5  1070.9 21684.9  1071.4
 21805.3  1070.7 21883.6  1070.5 21943.6  1070.2 22187.5  1070.4 22226.7  1070.2
 22398.2  1069.8

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
 16284.9    .037 19711.5    .03220347.25    .037

Bank Sta: Left   Right     Lengths: Left Channel   Right      Coeff Contr.    Expan.
       19711.520347.25                565  538.19     480              .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 16284.9 19695.5  1072.8       F
 20367.7 22398.2  1072.8       F

CROSS SECTION


RIVER: 1
REACH: 1                    RS: 212.74

INPUT
Description: 212.74

Left and Right Channel Bank Stations Interpolated
Station Elevation Data     num=      70
     Sta    Elev     Sta     Elev     Sta     Elev     Sta     Elev     Sta     Elev
 15451.4  1067.1 15456.2  1067.3 15464.1  1067.8 15467.8  1068.3 15480.9  1067.9
 15619.6  1066.5 15997.3    1067 16142.7  1066.6   16235  1067.1 16317.5  1067.4
 16486.7  1067.9 16644.3  1068.2 16906.1  1067.7 17106.4  1067.8 17312.1  1069.3
 17351.4  1069.8 17392.8  1069.3 17578.5  1067.9   17799  1066.9 17906.3    1067
 18021.4  1067.4 18082.2  1066.6 18121.5  1067.1 18128.7    1067 19421.5    1067
 19430.3  1070.5 19440.7  1074.4 19464.5  1074.9 19479.6    1075 19498.8  1064.8
 19504.9  1062.5 19514.1  1062.5 19546.7  1062.8 19569.3    1066 19571.5  1066.5
 19577.2  1066.5 19641.5  1067.1 19653.8  1066.8 19678.6  1067.319690.611063.061
 19709.2  1056.5 19745.4  1042.1 19776.5  1041.9 20081.3  1041.6 20297.5  1041.8
 20311.1  1046.1   20335  1053.3 20367.21063.063 20372.6  1064.7 20387.5    1069
 20400.7    1069 20436.3    1069 20477.6  1068.5 20512.4  1068.7 20545.9  1068.9
 20612.1  1068.9 20630.4  1069.2 20677.9  1069.9 20719.8  1069.6 20764.1  1069.6
 20802.7  1069.4 20847.1  1068.9 20916.2  1069.1 20977.1  1068.7 21027.9  1068.8
 21126.4  1069.4   21156  1069.5 21203.9  1069.2 21326.9  1068.9 21421.2  1069.1

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
 15451.4    .03719690.61    .032 20367.2    .037

Bank Sta: Left   Right     Lengths: Left Channel   Right      Coeff Contr.    Expan.
      19690.61 20367.2                296  242.17      66              .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 15451.4 19678.6    1074       F
 20387.5 21421.2    1074       F
```

CROSS SECTION

RIVER: 1
REACH: 1 RS: 212.68

INPUT
Description: 212.68

Upstream face of 7th Avenue bridge
Station Elevation Data num= 34

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
18325	1064.21	9130.38	1063.02	9307.91	1072	19492.8	1073.03	19492.89	1066.21
19501.07	1063.02	319567.36	1037.21	9595.08	1037.51	9600.27	1037.51	9645.74	1037.8
19703.33	1037.88	19708.52	1037.88	19721.94	1039.11	9780.83	1037.61	9790.36	1040
19811.58	1039.41	9816.77	1039.41	9829.76	1037.21	9839.72	103819878.26		1039.3
19919.83	1037.51	9925.02	1037.51	9977.41	1036.92	0028.08	1038.12	0033.27	1038.1
20064.88	1037.5	20130.11	1063.02	520137.19	1065.82	0137.28	1072.66	20407.73	1072
20615.57	106820641.55		1067.62	780.11	106821568.17		1069.3		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
18325	.03	719501.07	.032	20130.1	.037

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
19501.07 20130.1 155 154.01 155 .1 .3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
18325	19492.89	1066.21	F
20137.19	21568.17	1065.8	F

BRIDGE

RIVER: 1
REACH: 1 RS: 212.675

INPUT
Description: 7th Avenue Bridge
Distance from Upstream XS = .1
Deck/Roadway Width = 153.01
Weir Coefficient = 2.6
Upstream Deck/Roadway Coordinates
num= 11

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
18325	1064.2	1064.21	9130.38	1068		106819307.91	1072	1072
19492.8	1073.03	1073.03	19492.89	1073.03	1066.21	19595.08	1073.9	1067.07
19703.34	1074.35	1067.52	19811.58	1074.48	1067.64	19925.02	1074.24	1067.41
20033.27	1073.6	1066.76	20137.19	1072.66	1065.84			

Upstream Bridge Cross Section Data
Station Elevation Data num= 34

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
18325	1064.21	9130.38	1063.02	9307.91	1072	19492.8	1073.03	19492.89	1066.21
19501.07	1063.02	319567.36	1037.21	9595.08	1037.51	9600.27	1037.51	9645.74	1037.8
19703.33	1037.88	19708.52	1037.88	19721.94	1039.11	9780.83	1037.61	9790.36	1040
19811.58	1039.41	9816.77	1039.41	9829.76	1037.21	9839.72	103819878.26		1039.3
19919.83	1037.51	9925.02	1037.51	9977.41	1036.92	0028.08	1038.12	0033.27	1038.1
20064.88	1037.5	20130.11	1063.02	520137.19	1065.82	0137.28	1072.66	20407.73	1072
20615.57	106820641.55		1067.62	780.11	106821568.17		1069.3		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
18325	.03	719501.07	.032	20130.1	.037

Bank Sta: Left Right Coeff Contr. Expan.
19501.07 20130.1 .1 .3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
18325	19492.89	1066.21	F
20137.19	21568.17	1065.8	F

Downstream Deck/Roadway Coordinates
num= 11

```
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
   18325  1064.2  1064.219130.38    1068    106819307.91    1072    1072
 19492.8 1073.03 1073.0319492.89 1073.03 1066.2119595.08  1073.9 1067.07
19703.34 1074.35 1067.5219811.58 1074.48 1067.6419925.02 1074.24 1067.41
20033.27  1073.6 1066.7620137.19 1072.66 1065.84

Downstream Bridge Cross Section Data
Station Elevation Data    num=      34
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
   18325  1064.219130.38    106819307.91    1072 19492.8 1073.0319492.89 1066.21
19502.331062.53319567.36  1037.219595.08  1037.519600.27  1037.519645.74  1037.8
19703.33 1037.8819708.52 1037.8819721.94  1039.119780.83  1037.619790.36    1040
19811.58  1039.419816.77  1039.419829.76  1037.219839.72    103819878.26  1039.3
19919.83  1037.519925.02  1037.519977.41  1036.920028.08  1038.120033.27  1038.1
20064.88  1037.520128.841062.53220137.19  1065.820137.28 1072.6620407.73    1072
20615.57    106820641.55  1067.620780.11    106821568.17  1069.3

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
   18325    .03719502.33    .03220128.84    .037

Bank Sta: Left   Right    Coeff Contr.   Expan.
      19502.3320128.84            .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
   1832519492.89 1066.21       F
20137.1921568.17  1065.8       F

Upstream Embankment side slope                =         horiz. to 1.0 vertical
Downstream Embankment side slope              =         horiz. to 1.0 vertical
Maximum allowable submergence for weir flow =     .95
Elevation at which weir flow begins           =
Energy head used in spillway design           =
Spillway height used in design                =
Weir crest shape                              = Broad Crested

Number of Piers =  5

Pier Data
Pier Station     Upstream=19597.67    Downstream=19597.67
Upstream     num=       2
    Width   Elev    Width   Elev
     4.8    1036     4.8    1068
Downstream     num=       2
    Width   Elev    Width   Elev
     4.8    1036     4.8    1068

Pier Data
Pier Station     Upstream=19705.06    Downstream=19705.06
Upstream     num=       2
    Width   Elev    Width   Elev
     4.8    1036     4.8    1068
Downstream     num=       2
    Width   Elev    Width   Elev
     4.8    1036     4.8    1068

Pier Data
Pier Station     Upstream=19814.17    Downstream=19814.17
Upstream     num=       2
    Width   Elev    Width   Elev
     4.8    1036     4.8    1068
Downstream     num=       2
    Width   Elev    Width   Elev
     4.8    1036     4.8    1068

Pier Data
Pier Station     Upstream=19922.42    Downstream=19922.42
Upstream     num=       2
    Width   Elev    Width   Elev
     4.8    1036     4.8    1068
Downstream     num=       2
    Width   Elev    Width   Elev
     4.8    1036     4.8    1068

Pier Data
Pier Station     Upstream=20030.67    Downstream=20030.67
Upstream     num=       2
    Width   Elev    Width   Elev
     4.8    1036     4.8    1068
```

```
Downstream      num=        2
    Width   Elev    Width   Elev
     4.8    1036     4.8    1068

Number of Bridge Coefficient Sets =  1

Low Flow Methods and Data
       Energy
       Momentum               Cd   =     1.2
       Yarnell                KVal =    1.05
Selected Low Flow Methods = Highest Energy Answer

High Flow Method
       Energy Only

Additional Bridge Parameters
       Add Friction component to Momentum
       Add Weight component to Momentum
       Class B flow critical depth computations use critical depth
           inside the bridge at the upstream end
       Criteria to check for pressure flow = Upstream energy grade line

CROSS SECTION


RIVER: 1
REACH: 1                    RS: 212.67

INPUT
Description: 212.67

Left and Right Channel Bank Stations Interpolated
Station Elevation Data     num=       34
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
   18325  1064.219130.38     106819307.91     1072 19492.8 1073.0319492.89 1066.21
19502.331062.53319567.36  1037.219595.08  1037.519600.27  1037.519645.74  1037.8
19703.33 1037.8819708.52 1037.8819721.94  1039.119780.83  1037.619790.36    1040
19811.58  1039.419816.77  1039.419829.76  1037.219839.72    103819878.26  1039.3
19919.83  1037.519925.02  1037.519977.41  1036.920028.08  1038.120033.27  1038.1
20064.88  1037.520128.841062.53220137.19  1065.820137.28 1072.6620407.73    1072
20615.57    106820641.55  1067.620780.11    106821568.17  1069.3

Manning's n Values         num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
   18325    .03719502.33    .03220128.84    .037

Bank Sta: Left   Right     Lengths: Left Channel   Right      Coeff Contr.    Expan.
      19502.3320128.84                481  557.08     901              .1       .3
Ineffective Flow      num=        2
   Sta L   Sta R    Elev  Permanent
   1832519492.89 1066.21        F
20137.1921568.17  1065.8        F

CROSS SECTION


RIVER: 1
REACH: 1                    RS: 212.56

INPUT
Description: 212.56

Left and Right Channel Bank Stations Interpolated
Station Elevation Data     num=       84
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
 18526.6  1067.7 18605.6  1068.5 18672.9  1069.1 18686.4    1060 19108.7  1062.5
 19147.3  1066.2 19151.5  1066.4 19161.7  1067.6 19184.3  1068.9 19238.8  1068.8
 19249.1  1068.8 19264.6    1065 19289.8  1059.5   19333  1060.5 19374.1  1060.3
 19381.8  1063.3 19405.9  1071.5 19420.1  1070.7 19427.9  1069.3 19436.8    1069
 19464.9  1070.8   19474  1071.7 19488.9  1073.8 19506.5  1072.1 19530.4  1065.8
   19539  1066.2   19604  1065.9 19607.1  1065.3 19613.7  1065.3 19619.1  1065.7
 19619.8  1066.4 19637.7    1068 19655.3  1067.8 19692.8 1068.819731.051056.917
 19757.5  1048.7 19785.4  1039.9   19929  1039.8 20217.8 1039.320252.141056.916
   20264    1063 20269.6  1061.5 20279.7  1059.4 20318.1  1058.6 20372.9  1059.3
 20398.1  1060.1 20425.6  1066.2 20438.5  1062.1 20445.5  1059.5 20451.6  1056.8
 20575.6  1077.4 20581.9  1078.8 20601.9  1079.3 20671.6  1080.6 20698.7  1080.1
 20732.1  1079.9 20755.7  1079.5 20791.2  1077.6 20834.9  1075.6 20892.5  1079.5
   20896  1079.6 20938.4  1078.1 20958.4  1077.9 21004.8  1078.7 21029.1  1078.1
 21101.8  1077.3 21144.7  1078.4 21165.1  1078.9 21203.3  1079.8 21236.8  1080.1
```

```
  21329  1071.7 21351.9  1069.5 21384.8  1066.8 21396.7    1060 21632.6    1060
 21640.1  1063.9 21686.7  1065.4 21688.1  1065.4 21734.9  1066.2 21757.8  1066.7
 21833.3  1068.7 21846.1  1068.8 21931.4  1069.9 21952.1    1069

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
 18526.6    .03719731.05    .03220252.14    .037

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.    Expan.
      19731.0520252.14              495  502.71     525             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 18526.6 19692.8    1078       F
   20301 21952.1    1078       F

CROSS SECTION


RIVER: 1
REACH: 1                   RS: 212.46

INPUT
Description: 212.46 - FEMA Section AC

Left and Right Channel Bank Stations
            Interpolated
Station Elevation Data     num=      66
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 18753.5  1067.1 18827.8  1067.7 18877.5  1068.2 18898.4    1055 19357.3  1055.1
 19382.1  1053.4   19409  1053.9 19429.7  1053.3 19445.8  1054.1 19481.5  1054.3
   19531  1052.9 19550.5  1054.6 19656.6    1055 19684.4  1069.8   19700  1067.4
 19714.7  1067.819743.341056.289 19787.6  1038.5 19877.7  1038.3 20214.4  1037.2
 20270.9  1039.9 20290.3  1040.2   203011040.331 20380.4  1041.3 20415.6  1048.6
 20422.7  1048.9 20436.9  1047.2 20446.3  1048.4 20484.2  1055.6 20494.5    1057
 20510.9  1057.5 20553.9  1062.4 20563.5    1064 20616.9  1070.3 20661.5  1072.5
 20691.8  1074.7 20705.2  1075.2 20771.8  1073.9 20836.5  1073.6 20841.8  1073.2
 20893.4  1072.8 20932.3  1068.7 20999.5  1072.8 21028.4    1074 21091.5  1069.7
 21143.4  1069.4 21187.1  1070.2 21222.4  1071.9 21234.8  1070.7 21242.4  1070.9
 21265.3  1070.2 21277.9  1069.2   21302  1065.4 21326.5  1063.3 21392.1  1057.4
 21427.4  1052.9 21482.8  1061.6 21523.6  1061.6 21591.7  1061.2 21609.9  1060.7
 21657.5  1061.6   22674    1062 22695.3  1072.2 22728.6  1064.6 22746.1  1064.3
 22917.1  1063.8

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
 18753.5    .03719743.34    .032   20301    .037

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.    Expan.
      19743.34   20301              495  497.81     510             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 18753.5 19684.4  1075.2       F
   20301 22917.1  1075.2       F

CROSS SECTION


RIVER: 1
REACH: 1                   RS: 212.37

INPUT
Description: 212.37

Left and Right Channel Bank Stations Interpolated
Station Elevation Data     num=      53
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 18816.9  1066.3 18818.6  1066.2 18822.9  1066.3   18834  1066.3 18957.9    1066
 18989.9  1065.8   19000  1065.6 19036.9  1065.2 19054.2  1064.9 19092.2  1064.1
 19112.5  1063.4 19137.4  1064.7 19138.3  1064.8 19139.3  1064.8 19195.1  1066.9
 19209.3    1061 19668.8    1061 19681.7  1066.2 19684.6  1067.4 19684.8  1067.3
 19685.1  1067.2 19692.2  1064.6 19715.3    1065 19717.4  1065.1 19722.1  1063.2
19744.061053.778 19782.7  1037.2 19926.2  1036.9 20272.4  1037.1 20284.2  1036.6
 20285.4  1036.6 20288.8  1038.620320.691053.776 20338.6  1062.3 20338.7  1062.3
 20369.5  1065.2 20396.5  1069.4 20454.4  1070.1 20471.3  1070.1 20508.4    1061
 22070.8    1061 22075.2  1062.9 22088.8  1064.3 22125.1  1067.6 22147.7  1068.9
 22155.8  1069.3 22177.3  1071.8 22222.4  1065.3 22242.6  1063.6 22252.8  1063.9
 22275.2  1064.6 22382.7  1065.6 22407.8  1066.1

Manning's n Values         num=       3
```

Sta	n Val	Sta	n Val	Sta	n Val
18816.9	.037	19744.06	.032	20320.69	.037

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
19744.06 20320.69 500 495.84 485 .1 .3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
18816.9	19684.6	1070	F
20396.5	22407.8	1070	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 212.27

INPUT
Description: 212.27

Left and Right Channel Bank Stations Interpolated

Station Elevation Data num= 95

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
17693.1	1064.6	17697.9	1064.6	17734.8	1064	17740.4	1063.9	17785.6	1063.1
17796.2	1063.1	17827.6	1062.5	17846.2	1062.4	17893.5	1062.2	18008.4	1061.5
18061.8	1061.5	18108.5	1062.4	18180.8	1062.8	18221.3	1063	18239.7	1059
18264.8	1054.5	18285.2	1054	18326.7	1048.1	18342.3	1046.2	18362.6	1053.4
18380.3	1046.2	18395.3	1042.4	18405.4	1039	18415.2	1036.5	18431.2	1031.5
18465.3	1023.5	18544.4	1025.1	18579.3	1015.6	18586.4	1013.2	18615.7	1013
18649.7	1013	18693.4	1012.9	18782.3	1012.3	18931.2	1012.8	18976.1	1012.6
18981.9	1012.7	19083	1012.1	19110	1012.1	19284.8	1012.2	19302.3	1012.4
19314.3	1019	19342.1	1028.5	19385.1	1048.2	19442.6	1044.9	19457.4	1044.6
19509.8	1062.9	19515.4	1063	19561	1063.7	19676.4	1065.4	19715.25	1052.334
19754.6	1039.1	19765.4	1035.4	19935.2	1035.2	20003.5	1035.2	20097.2	1035.1
20281.9	1035.1	20330.35	1052.334	20337	1054.7	20351	1059.5	20416.4	1037.6
20457	1023.9	20721.5	1023.4	20766.6	1022.9	20810.1	1022.2	20848.4	1021.5
20878.3	1023.7	20909.5	1025.8	20935.1	1026.2	20970.3	1026.8	20984	1027.2
21016.1	1028	21073.4	1026.9	21105.5	1026.6	21138.2	1026.2	21189.1	1025.7
21190.6	1025.7	21248.8	1040.7	21294.4	1051.5	21328.2	1059.6	21333.8	1060.2
21373.3	1067.4	21415.5	1061.7	21426.9	1059.4	21439.1	1056.3	21473.7	1050
21501.4	1044.9	21538.1	1038.9	21543.5	1037.9	21579.4	1046.2	21617.1	1054.3
21626.5	1056.1	21660.7	1060	21745.2	1060.6	21930.8	1061.7	21968.2	1061.7

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
17693.1	.045	19715.25	.033	20330.35	.04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
19715.25 20330.35 510 495 475 .1 .3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
17693.1	19676.4	1065.4	F
20351	21968.2	1059.5	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 212.18

INPUT
Description: 212.18

Left and Right Channel Bank Stations Interpolated
Station Elevation Data num= 87

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
16867.12	1065.2	16906.93	1063.911	7072.69	1063.621	7369.21	1062.481	7505.56	1062.52
17612.28	1062.9	17794.36	1062.331	7881.75	1062.581	7916.47	1062.321	7948.21	1065.69
18039.48	1010.8	18149.75	1011.691	8168.39	1016.641	8177.08	1014.6	18188	1020.06
18220.51	1027.2	18252.71	1039.341	8269.64	1041.161	8292.43	1036.7	18335.96	1016.75
18454.36	1016.2	18568.19	1014.721	8633.81	1016.111	8764.91	1017.461	8823.95	1017.09
19046.22	1017.7	19156.65	1019.371	9198.34	1018.441	9223.89	1018.491	9248.34	1016.23
19311.18	1015.1	19393.8	1012.98	19433	1012.521	9464.03	1021.811	9488.46	1011.1
19574.96	1010.6	19614.98	1037.421	9649.87	1059.81	19685.1	1058.811	9706.85	1050.309
19749.09	1033.8	19960.28	1030.82	0229.47	1031.72	0272.48	1032.67	0319.31	1039.88

```
20334.571050.30720340.72 1054.5120354.62  1060.320472.17 1061.55 20523.7 1061.62
20551.86 1053.0420622.11  1048.820687.56  1052.220928.11 1055.2921136.97 1058.41
21257.08 1058.6921362.76 1060.7121646.22  1067.221858.08 1068.1122054.43 1067.43
22158.98 1065.9622243.23 1064.32 22279.9  1062.822295.67 1065.5922307.88 1060.91
22324.63 1061.3922394.01 1058.4322480.34  1058.922555.28 1058.9222720.83 1059.92
22855.27 1061.5422949.17 1061.4922974.76    1060 23021.3  1058.523070.19 1058.44
23114.11 1060.29 23152.9 1060.0823260.95  1061.423486.25 1061.0523586.41 1061.15
23621.07 1061.4723789.79 1060.3723929.16  1060.4 24034.7  1061.824176.57 1062.42
24281.11 1062.3324460.33 1061.22

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
16867.12    .04519706.85    .03320334.57     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      19706.8520334.57              500  502.53     485             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
16867.1219649.87    1068       F
 20523.724460.33    1068       F

CROSS SECTION


RIVER: 1
REACH: 1                   RS: 212.08

INPUT
Description: 212.08

Left and Right Channel Bank Stations Interpolated
Station Elevation Data     num=     101
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 17052.4  1065.117093.98  1063.217330.91 1062.5917423.14 1062.2117562.97 1062.23
17854.31    106117952.67 1061.3917989.42  1061.1 18003.9 1064.7218053.78 1032.77
18092.97  1010.318121.67 1010.4218204.85 1011.4918218.51 1014.5318400.47 1013.68
18430.19  1013.718591.23 1012.7318717.39 1012.5518827.36 1012.71 18982.9 1014.44
19125.21  1014.119158.95 1014.27 19197.5 1013.7219237.59 1014.0519246.24 1012.73
19261.95  1013.819287.74 1011.5219294.56 1009.4419377.18 1009.8819458.03 1009.79
19560.86  1055.919603.52 1052.7719676.09 1052.9419681.091050.10619689.85 1045.14
19720.06 1031.7419729.83  1028.619835.59 1026.9819956.58 1026.4520018.74 1026.48
20046.86 1026.7120134.08  1025.920179.54 1025.9920234.17 1026.6520245.73 1033.13
20270.89  1050.120275.07 1052.9220290.81  1060.920335.45 1060.3720383.25 1044.65
20424.79 1044.3820442.88 1052.7920545.79  1055.720813.04 1061.3820956.27 1063.95
21082.72 1065.9821252.33 1068.1621359.98  1067.921436.79 1067.7621473.77 1066.77
21529.98 1066.4821607.29  1070.321676.41  1072.821730.28 1073.8421923.53 1073.03
22030.61 1073.7622091.57 1073.1322182.24  1073.622303.01 1072.0522453.89 1069.64
22595.45 1068.2222755.09 1066.8622966.16  1063.923129.47 1061.46 23222.4 1059.05
23255.36 1058.6423268.74 1055.5123278.67  1058.323295.59 1055.5423328.26  1058.3
23417.52  1058.423428.87  1058.123519.64  1059.323868.62 1059.1724082.28 1059.08
24280.77 1060.1224441.84 1061.9124594.59  1060.924688.74 1061.7424871.91 1061.24
 24970.8 1060.3325012.15 1058.2625172.94  1060.8 25399.4 1060.1425629.95 1059.85
25800.17 1059.4125815.84 1060.0725861.96  1079.725884.17 1080.2625963.83 1080.96
26004.82 1061.65

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
 17052.4    .04519681.09    .03320270.89     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      19681.0920270.89              510  519.85     475             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 17052.419560.86    1078       F
 20290.826004.82    1078       F

CROSS SECTION


RIVER: 1
REACH: 1                   RS: 211.99

INPUT
Description: 211.99 - FEMA Section AB

Left and Right Channel Bank Stations
            Interpolated
Station Elevation Data     num=      97
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
```

```
17386.75    106217493.12 1060.3617883.55  1058.918026.04 1059.0818043.61 1064.43
18128.52  1011.918212.07 1010.04 18284.3 1009.4118375.77 1031.9918386.79 1034.99
18398.32  1031.618455.15 1010.4218634.29 1010.1518715.79 1026.1718726.98 1025.43
18746.82  1028.918793.14 1039.1118826.55 1047.2218835.49 1050.27 18880.3 1056.14
18928.65  1059.619023.07 1060.4719122.51 1058.69 19147.6 1056.9819172.92  1053.9
19222.57  1059.719306.36 1064.7519387.36 1066.2619419.32 1065.7319467.92  1063.3
19535.53  1055.9 19579.8  1052.519594.04 1050.0119626.09 1059.7519669.23 1060.17
19682.93  1052.119695.13  1051.719699.771048.63219734.91 1025.3919968.68 1025.66
 20018.4    102620129.78  1025.520175.87 1025.6620205.91  1027.820236.81 1047.09
20249.651048.632 20249.8 1048.6520268.39  1059.720319.37 1059.4520355.66 1049.61
20366.72 1051.1620380.34 1056.3120536.66  1059.720697.58 1062.9120861.07 1067.46
20969.05  1071.421086.46 1074.5421220.77  1077.821348.89 1078.3521519.24 1075.76
21606.23 1073.4221740.53 1069.1421834.91    106821936.77 1071.0222068.74 1077.26
22189.17 1082.4922398.45 1089.6222486.87  1090.322515.75 1089.9422616.83 1085.49
22698.81 1083.4322757.86 1080.0622899.81  1069.523059.97  1066.123300.96 1061.35
23457.95 1059.0923578.87 1055.29 23592.8  1052.823611.42  1057.123707.16 1057.71
23758.72 1057.8423837.72 1057.31   23902  1056.223950.13 1056.5724182.97 1056.91
24332.01 1056.0724582.04 1056.0124636.44    105924704.95 1057.5324865.28 1057.45
24966.74 1058.31 24996.3 1059.9325064.88  1059.825072.86 1059.0925171.62 1057.94
25224.27 1057.7525467.18 1058.61

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
17386.75    .04519699.77    .03320249.65     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      19699.7720249.65              740  489.19     710             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
17386.7519669.23    1078       F
 20268.325467.18    1078       F

CROSS SECTION


RIVER: 1
REACH: 1                  RS: 211.89

INPUT
Description: 211.89

Left and Right Channel Bank Stations Interpolated
Station Elevation Data    num=      95
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
17673.64  1059.917830.52  1057.818075.45 1057.5918106.59 1061.3918156.21 1060.92
18181.64    105718268.15  1057.418570.49 1056.27 18656.7 1057.3718734.79  1059.4
18854.83  1058.1 18903.9 1058.6218933.75 1056.2618954.51  1054.319026.15 1059.53
19074.67  1064.519130.02 1067.6619166.92 1067.8219220.33 1064.2519291.97 1056.93
19339.05  1053.2 19355.5 1049.4119383.94 1051.7719506.58 1049.7319568.03 1052.09
19611.95  1052.419640.96 1059.4519668.79 1059.3319685.751048.02319719.16 1025.75
19877.45 1024.19   19996  1024.820046.95 1024.9420149.18 1025.3420215.53 1026.87
20231.37 1035.8620250.74 1048.0220268.71  1059.320317.76 1059.25 20347.9 1053.02
20357.11 1053.8720365.64 1057.4620503.92  1061.220587.79 1062.3220715.42 1064.82
20808.25 1066.4820898.25 1068.17 21050.2    107021240.42  1069.721365.85 1067.31
21444.39 1066.6721597.69 1066.8121747.36  1066.621837.61 1066.0122018.21 1062.79
22078.36 1061.7622206.84  1065.222377.75  1068.122579.85 1068.7522814.63 1068.78
22947.07 1067.96 23029.4 1068.0923191.51  1066.423528.26  1059.523662.78 1056.72
23775.83 1055.5423829.73 1054.1523844.87  1051.223876.82 1056.0923920.99    1057
23995.44 1056.4724052.85  1056.124082.77  1056.624140.98 1058.2724165.07 1058.25
24271.91 1056.4524411.05 1053.1724579.36  1053.324759.09 1054.04 24774.1 1055.28
24840.04 1057.6924883.78 1058.2624920.88  1055.825041.94 1055.2925284.44  1056.1
25336.01 1057.1325359.39 1058.3225402.51  1057.3 25726.4 1058.2326172.96 1058.11
 26295.6  1059.626333.92 1078.1726470.33  1078.826504.14  1058.926569.17 1059.94

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
17673.64    .04519685.75    .03320250.74     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      19685.7520250.74              507  527.46     640             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
17673.6419640.96    1068       F
 20268.726569.17    1068       F

CROSS SECTION


RIVER: 1
```

REACH: 1 RS: 211.79

INPUT
Description: 211.79

Left and Right Channel Bank Stations Interpolated
Station Elevation Data num= 85

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
18158.31	1058.118521.37	1057.9218711.98	1053.2918821.22	1049.9719332.48	1038.9				
19421.9	1034.719443.13	1034.6819494.83	1031.4519529.82	1033.8919593.73	1053.47				
19613.84	1059.219631.93	1059.1219649.871047.18219683.64		1024.7119868.29	1023.84				
19990.11	1024.4520071.01	1024.2	20181	1025.03 20210.4		1042.5420217.711047.186			
20234.96	1058.1520266.77	1058.9620288.34	1058.220317.07	1049.6420327.91	1051.41				
20334.62	1054.8620544.02	1058.1120748.52	1061.320960.89	1062.1921136.74	1063.31				
21355.67	1062.99 21514.2	1062.9221680.46	1061.621736.21	1061.7621809.47	1060.69				
21912.92	1059.5422164.31	1055.8622183.26	1055.422365.65	1059.3522456.33	1059.66				
22607.29	1061.0722697.85	1061.2422757.13	106222877.22	1061.9822997.38	1061.21				
23058.71	1061.6923238.58	1060.2923378.99	1059.623483.49	1059.3723694.55	1056.44				
23766.47	1056.3523904.99	1053.8723939.63	1052.523954.41	1049.7323974.63	1054.92				
24066.57	1057.0124104.95	1055.7224159.03	1054.924203.29	1053.77 24226.8	1054.13				
24410.42	1054.11 24588.5	1054.8124806.33	1056.924857.28	1056.9224892.35	1056.25				
24937.4	1056.2724992.53	1057.9125025.07	1054.525154.69	1054.6325336.45	1057.87				
25508.23	1059.0125689.64	1058.1825912.41	1058.826025.53	1058.4626235.18	1058.51				
26315.33	105826360.96	1059.1426386.48	1071.426401.46	1071.61 26423.9	1078.8				
26526.56	1078.9226547.02	1071.3226569.39	1067.826599.18	1058.2826670.85	1059.87				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
18158.31	.04519649.87	.03320217.71	.04		

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
19649.8720217.71 680 450.74 290 .1 .3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
18158.3119613.84	1068	F	
20266.726670.85	1068	F	

CROSS SECTION

RIVER: 1
REACH: 1 RS: 211.71

INPUT
Description: 211.71

Left and Right Channel Bank Stations Interpolated
Station Elevation Data num= 82

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
18356.24	1056.618403.32	1056.5118836.53	1046.2619011.11	1054.3319170.81	1053.8				
19462.94	1052.519478.82	1053.0919497.62	1060.06	19533	1043.2819551.37	1045.32			
19595.29	105919611.46	1057.8119628.43	1046.4719661.32	1024.4919846.96	1023.81				
19928.43	1023.1919998.17	1023.220045.76	1023.2120158.51	1023.3920197.84	1046.47				
20216.14	1057.2120266.22	1057.7620314.99	1042.620325.03	1043.14 20337.2	1046.87				
20568.24	1050.2520851.05	1051.3120962.88	1051.521206.35	1051.6421388.45	1051.42				
21419.92	1051.2321727.44	1052.6221848.61	1053.521981.25	1052.7822130.55	1052.51				
22220.26	1051.5322459.24	1054.3422578.82	1055.122876.18	1055.9323025.66	1056.21				
23117.46	1056.8923238.24	1055.61 23357.2	1054.623446.32	1054.2323535.13	1054.99				
23685.75	1053.2823748.15	1053.5423836.62	1056.423904.67	1055.7524029.98	1052.16				
24046.15	1048.724064.65	1054.8424297.11	1054.624417.85	1054.0824709.66	1055.58				
24914.5	1057.2724949.53	1057.2425042.76	1055.725080.42	1056.7725117.12	1053.8				
25243.64	1054.8825321.41	1057.3325361.74	105825507.43	1059.54 25610.8	1058.49				
25724.65	1059.9825796.42	1060.0825841.82	1059.625987.23	1060.326062.01	1060.39				
26081.09	1058.8926241.81	1058.1126377.22	1057.126422.65	1058.2926467.41	1067.88				
26493.74	1078.7726570.07	1078.7926595.33	1080	26627.3	1065.29 26661.5	1058.87			
26693.27	1058.2226725.34	1059.01							

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
18356.24	.04519628.43	.03320197.84	.04		

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
19628.4320197.84 780 392.06 500 .1 .3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
18356.24 19595.3	1068	F	
20266.226725.34	1068	F	

CROSS SECTION

```
RIVER: 1
REACH: 1                    RS: 211.64

INPUT
Description: 211.63

Left and Right Channel Bank Stations Interpolated
Station Elevation Data    num=       74
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
18455.22  1055.618870.41 1054.6119083.17 1054.4919308.22 1054.2519426.55 1053.86
 19582.2  1054.119594.16 1050.2119604.79 1050.3319629.34 1057.4119639.51  1057.5
 19657.71045.60119689.19    102519804.58  1023.319911.42 1022.65 19986.5 1022.75
20036.19 1022.9320060.82  1023.620181.08 1022.5820196.63 1031.17 20219.81045.602
20238.13 1057.0220265.94 1057.5920288.34  1056.820321.05 1046.9420343.65 1039.08
20371.71 1043.95 20510.4 1045.0120712.01  1046.120789.36 1046.9121038.61 1047.48
21208.66 1048.1421454.04 1047.8221685.69  1048.521805.81 1048.0822092.18 1048.45
22242.98 1048.2222332.89 1048.1922513.12  1050.222770.05 1051.0723054.32  1051.7
23295.42 1051.6523472.95 1051.1123700.42  1052.523820.77 1054.7623926.54 1054.04
23949.21 1052.3623981.01 1052.4624008.88  1047.424037.13 1053.1124090.43 1054.01
24133.79 1054.5824302.75 1054.0624347.21  1053.624484.04    105424904.87 1055.84
 25102.6 1055.6325165.57 1054.9925293.65  1054.325400.67 1057.0625522.25 1059.22
25597.17 1058.4125713.85 1057.9825824.69  1060.625850.02 1060.9225980.05 1061.02
26040.31 1060.2826085.96 1060.1626115.36  1058.626378.37 1057.1726385.52 1058.22
26496.95 1078.6826605.38 1079.6726703.24  1058.126712.22 1058.41

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
18455.22    .045 19657.7    .033 20219.8     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       19657.7 20219.8              481  521.13     221             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
18455.2219639.51    1068       F
 20265.926712.22    1068       F

CROSS SECTION


RIVER: 1
REACH: 1                    RS: 211.54

INPUT
Description: 211.54 - FEMA Section AA
Station Elevation Data    num=       24
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
   18557    105619498.08 1062.8819570.11  1056.919585.13  1056.719633.01  1023.1
19866.76  1021.920100.43  1023.220148.29  1056.820163.32    105720195.23  1056.3
 20223.6  1049.320265.59  1046.120326.25  1049.420339.59  1050.820360.21  1052.5
20374.03  1055.420382.33  1055.9 20385.6  1055.9 20412.1  1057.320434.96  1056.7
20443.92  1057.120456.54  1061.420479.34  1060.721248.52  1053.6

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
   18557    .03719498.08    .03220163.32    .037

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      19498.0820163.32             125  125.49     120             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
   1855719498.08    1070       F
20163.3221248.52    1070       F

BRIDGE


RIVER: 1
REACH: 1                    RS: 211.525

INPUT
Description: 19th Avenue Bridge
Distance from Upstream XS =       .1
Deck/Roadway Width        =  124.49
Weir Coefficient          =     2.6
Upstream  Deck/Roadway Coordinates
    num=      11
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
```

```
   18557    1056    105619498.08 1062.88 1062.8819498.08 1062.88 1056.33
19617.96  1065.1 1058.4319732.91  1067.4 1060.6819853.66 1068.72 1062.03
19974.41 1069.18 1062.5120095.16 1068.67 1061.9720215.91 1067.18 1060.46
20336.66 1064.77 1058.0320456.45  1061.4 1054.73

Upstream Bridge Cross Section Data
Station Elevation Data    num=      24
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
   18557    105619498.08 1062.8819570.11  1056.919585.13  1056.719633.01  1023.1
19866.76  1021.920100.43  1023.220148.29  1056.820163.32    105720195.23  1056.3
 20223.6  1049.320265.59  1046.120326.25  1049.420339.59  1050.820360.21  1052.5
20374.03  1055.420382.33  1055.9 20385.6  1055.9 20412.1  1057.320434.96  1056.7
20443.92  1057.120456.54  1061.420479.34  1060.721248.52  1053.6

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
   18557    .03719498.08    .03220163.32    .037

Bank Sta: Left   Right    Coeff Contr.   Expan.
      19498.0820163.32             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
   1855719498.08    1070       F
20163.3221248.52    1070       F

Downstream  Deck/Roadway Coordinates
    num=       11
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
   18557    1056    105619498.08 1062.88 1062.8819498.08 1062.88 1056.33
19617.96  1065.1 1058.4319732.91  1067.4 1060.6819853.66 1068.72 1062.03
19974.41 1069.18 1062.5120095.16 1068.67 1061.9720215.91 1067.18 1060.46
20336.66 1064.77 1058.0320456.45  1061.4 1054.73

Downstream Bridge Cross Section Data
Station Elevation Data    num=      22
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
   18577    105619498.08 1062.8819510.11    105119579.82  1056.719594.75  1056.5
19642.62    102319876.38  1021.820110.04    102320157.91  1056.620172.93  1056.8
20204.85  1056.120210.17  1055.920249.54  1049.420344.26  1054.820347.44  1054.8
20366.65  1054.320380.75  1054.620418.55    105520428.15    105520456.54  1061.4
20479.34  1060.721248.52  1053.6

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
   18577    .03719579.82    .03220172.93    .037

Bank Sta: Left   Right    Coeff Contr.   Expan.
      19579.8220172.93             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
   1857719579.82  1056.7       F
20172.9321248.52  1056.8       F

Upstream Embankment side slope              =         horiz. to 1.0 vertical
Downstream Embankment side slope            =         horiz. to 1.0 vertical
Maximum allowable submergence for weir flow =     .95
Elevation at which weir flow begins         =
Energy head used in spillway design         =
Spillway height used in design              =
Weir crest shape                            = Broad Crested

Number of Piers =  7

Pier Data
Pier Station     Upstream=19615.06    Downstream=19615.06
Upstream     num=       2
    Width   Elev    Width   Elev
     5.8  1046.9     5.8 1058.51
Downstream     num=       2
    Width   Elev    Width   Elev
     5.8  1046.9     5.8 1058.51

Pier Data
Pier Station     Upstream=19735.81    Downstream=19735.81
Upstream     num=       2
    Width   Elev    Width   Elev
     5.8    1022     5.8 1060.77
Downstream     num=       2
    Width   Elev    Width   Elev
```

```
     5.8    1022     5.8 1060.77

Pier Data
Pier Station     Upstream=19856.56    Downstream=19856.56
Upstream     num=        2
    Width   Elev    Width   Elev
     5.8 1020.85     5.8 1062.07
Downstream     num=        2
    Width   Elev    Width   Elev
     5.8 1020.85     5.8 1062.07

Pier Data
Pier Station     Upstream=19977.31    Downstream=19977.31
Upstream     num=        2
    Width   Elev    Width   Elev
     5.8 1028.55     5.8 1062.51
Downstream     num=        2
    Width   Elev    Width   Elev
     5.8 1028.55     5.8 1062.51

Pier Data
Pier Station     Upstream=20098.06    Downstream=20098.06
Upstream     num=        2
    Width   Elev    Width   Elev
     5.8 1033.84     5.8 1062.02
Downstream     num=        2
    Width   Elev    Width   Elev
     5.8 1033.84     5.8 1062.02

Pier Data
Pier Station     Upstream=20218.81    Downstream=20218.81
Upstream     num=        2
    Width   Elev    Width   Elev
     5.8 1039.95     5.8 1060.55
Downstream     num=        2
    Width   Elev    Width   Elev
     5.8 1039.95     5.8 1060.55

Pier Data
Pier Station     Upstream=20339.56    Downstream=20339.56
Upstream     num=        2
    Width   Elev    Width   Elev
     5.8 1045.78     5.8 1058.17
Downstream     num=        2
    Width   Elev    Width   Elev
     5.8 1045.78     5.8 1058.17

Number of Bridge Coefficient Sets =  1

Low Flow Methods and Data
       Energy
       Momentum               Cd   =     1.2
       Yarnell                KVal =    1.05
Selected Low Flow Methods = Highest Energy Answer

High Flow Method
       Energy Only

Additional Bridge Parameters
       Add Friction component to Momentum
       Add Weight component to Momentum
       Class B flow critical depth computations use critical depth
           inside the bridge at the upstream end
       Criteria to check for pressure flow = Upstream energy grade line

CROSS SECTION


RIVER: 1
REACH: 1                  RS: 211.51

INPUT
Description: 211.51
```

```
Station Elevation Data    num=      22
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
   18577   105619498.08 1062.8819510.11   105119579.82  1056.719594.75  1056.5
19642.62   102319876.38  1021.820110.04   102320157.91  1056.620172.93  1056.8
20204.85  1056.120210.17  1055.920249.54  1049.420344.26  1054.820347.44  1054.8
20366.65  1054.320380.75  1054.620418.55   105520428.15   105520456.54  1061.4
20479.34  1060.721248.52  1053.6

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
   18577    .03719579.82    .03220172.93    .037

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      19579.8220172.93              541  562.88     606             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
   1857719579.82  1056.7       F
20172.9321248.52  1056.8       F

CROSS SECTION


RIVER: 1
REACH: 1                  RS: 211.41

INPUT
Description: 211.41

Left and Right Channel Bank Stations Interpolated
Station Elevation Data    num=      98
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
18573.85  1055.518621.78 1056.6118655.14 1053.7918722.99 1053.2518902.93  1052.9
19132.77  1051.619320.33 1050.8719480.47 1049.5819533.31 1047.7219566.92  1049.4
 19611.4  1046.919634.53 1044.0819638.09 1041.7819668.43 1022.1819702.69 1018.56
19754.63 1019.6519786.92  1018.319889.98 1020.7419930.16 1020.8119994.45 1020.82
20076.61 1020.9120167.45  1021.220192.38 1033.0120195.55 1039.3220206.061041.777
20220.36 1045.1220236.46 1054.7820293.62    105620331.24 1065.2220351.37 1065.23
20357.03 1066.6220414.04 1056.96 20436.1  1062.220445.88 1058.7420504.13 1060.74
20521.21 1060.7920557.16 1066.5820578.69  1061.620603.37 1060.3620654.05 1060.04
20689.25 1058.2320722.97 1060.5820735.67  1057.720828.84 1057.0620846.13 1057.59
20898.33 1070.2520938.86 1063.6420980.02    106321017.32 1057.9221060.66 1055.82
21097.07 1055.5321119.44 1056.16 21132.9  1055.121181.47  1054.221283.06  1053.8
21298.44 1058.2121320.94 1060.3521339.43  1062.821380.38 1060.3221406.09 1052.45
21459.74 1053.4821477.97 1059.9821533.47    106121555.62 1081.8121619.68 1081.91
21644.09  1080.121655.42 1076.4821707.29  1075.321720.18 1072.1521749.96 1071.27
21770.47 1076.9921793.84 1054.8221802.85  1056.121842.36    105621864.05 1053.48
21891.41 1052.6921905.23 1051.4321991.71  1051.822210.76 1052.0622373.03 1052.78
22531.21 1052.1722650.75 1052.0922819.43  1052.522919.43 1053.1423211.23 1053.67
23252.71 1054.2423349.12 1054.0823463.55  1053.123574.33 1051.7923680.61 1051.32
23891.22 1051.5624133.09 1051.4824212.43  1051.924237.65 1050.3224284.73 1050.32
24320.22    105124361.59 1050.58 24444.1    1052

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
18573.85    .03719638.09    .03220206.06    .037

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      19638.0920206.06              500  501.53     505             .1       .3

CROSS SECTION


RIVER: 1
REACH: 1                  RS: 211.31

INPUT
Description: 211.31

Left and Right Channel Bank Stations Interpolated
Station Elevation Data    num=      98
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 19209.8    1054 19309.4  1053.9   19371  1052.4 19415.6    1052 19462.5  1051.5
 19496.2  1050.5 19510.1  1050.5 19528.9  1041.9 19531.21040.766 19571.7  1020.8
   19614  1021.1 19677.8  1021.1 19724.1  1021.3 19888.2    1022 19928.3  1022.1
 19954.9  1021.8 19973.9    1032 19980.4  1029.8 19994.7  1027.2   20059  1026.6
   20112  1026.2 20123.3    1028 20158.9  1030.9 20198.7  1033.6 20212.5  1034.3
```

```
 20267.3  1034.5 20269.1  1035.1 20281.8  1034.8 20323.2  1035.6 20338.5  1037.1
   20343    1038 20356.11040.765 20425.9  1055.5 20434.4  1057.4 20457.3    1049
   20499  1049.5 20549.5  1051.1 20551.5    1051 20571.1  1052.5 20575.3  1055.6
 20584.2  1059.5   20614  1060.7 20625.4    1057   20636  1051.6 20682.5  1051.6
 20692.1  1051.6 20699.2    1055 20718.1  1055.1 20723.4  1052.3 20725.3  1052.3
 20778.6  1052.4   20806  1052.5 20808.3  1053.2 20835.4  1052.5 20836.7  1052.2
 20884.1  1051.7   20893  1051.9 20922.6  1067.4 20930.4  1067.8   20944  1066.2
 20964.4  1055.2 20970.5  1050.2 21010.5  1050.3 21036.1    1052 21040.8  1052.7
   21082  1053.8 21083.4  1053.5 21093.1  1049.5 21124.5  1050.5 21134.6  1050.2
 21141.3  1051.6 21160.1  1051.2 21201.6  1048.9 21204.4  1049.1 21219.3  1052.5
 21236.3  1049.8 21240.9  1049.4 21293.9    1049 21338.4  1048.2 21394.2  1047.1
   21457  1046.7 21459.4  1046.7 21510.1  1046.2 21538.8  1046.8   21571  1046.8
 21576.7  1047.8 21607.4  1058.3 21626.3  1059.1 21651.1  1060.7 21661.7  1060.9
 21672.8    1062 21684.6  1057.7 21696.7  1051.4 21740.6  1053.4 21745.1  1054.1
 21754.3  1054.6 21757.7    1053   21786  1052.5

Manning's n Values         num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
 19209.8    .037 19531.2    .032 20356.1    .037

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.    Expan.
       19531.2 20356.1              540  523.28     460             .1       .3
Ineffective Flow     num=       1
   Sta L   Sta R    Elev  Permanent
 20434.4   21786    1060        F

CROSS SECTION


RIVER: 1
REACH: 1                   RS: 211.21

INPUT
Description: 211.21

Left and Right Channel Bank Stations Interpolated
Station Elevation Data     num=      88
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
 19418.7    1050 19432.3  1049.9 19486.6    1051 19504.4  1050.9 19507.4  1051.4
   19520  1044.719528.741040.216   19566  1021.1 19781.8  1021.6 19997.4  1022.1
 20060.3  1022.2 20076.2  1032.8   20080    1035 20082.4  1032.7 20093.4  1024.4
 20174.8  1026.6 20183.9  1027.6 20204.6  1029.5 20217.4  1030.4 20229.3  1030.7
 20232.4  1030.9 20272.7  1031.9 20335.2  1032.6 20395.1    1032 20413.6  1031.7
 20425.2  1031.3 20429.3  1031.7 20447.4  1035.2 20472.4  1032.1 20501.4  1030.2
20521.261040.21620521.281040.226 20524.4  1041.8   20544  1051.9 20563.3  1064.6
 20571.8  1065.7 20580.9    1066 20589.3  1061.5 20605.5  1058.5 20622.4  1060.1
 20646.3  1062.6 20659.3  1063.4 20674.4  1064.8 20683.8  1065.5 20692.9  1064.2
 20760.3    1066   20772    1068 20791.6  1063.6 20814.8    1059 20846.6    1053
 20876.7  1045.5 20891.6  1044.9 20916.6  1044.2 20944.9  1044.5 20964.5  1044.9
 21002.8  1046.7 21028.1  1048.6 21034.5  1044.8 21035.5    1044 21113.8  1044.6
 21130.1  1044.6 21249.3    1044   21250  1044.1 21260.5  1047.3   21288  1046.8
 21324.8  1046.7 21359.3  1046.9 21432.1    1048 21449.9  1048.7 21452.1  1049.4
 21462.5  1051.8 21469.8  1052.8 21533.8    1052 21595.7  1051.9 21614.5  1051.8
 21642.6  1057.9 21645.8  1056.1 21673.8  1046.4   21698  1040.9 21967.4    1041
   21972  1044.7 21983.2  1052.6 21984.7  1051.9 21991.1  1050.7   21999  1051.3
 22028.7    1051 22088.3  1051.4   22171  1051.7

Manning's n Values         num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
 19418.7    .03719528.74    .03220521.26    .037

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.    Expan.
      19528.7420521.26              495  493.11     475             .1       .3
Ineffective Flow     num=       1
   Sta L   Sta R    Elev  Permanent
 20571.8   22171    1068        F

CROSS SECTION


RIVER: 1
REACH: 1                   RS: 211.12

INPUT
Description: 211.12 - FEMA Section Z

Left Channel Bank Station Interpolated
Station Elevation Data     num=      63
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
```

19314	1050.6	19321.1	1050.6	19403.5	1050.4	19415.2	1050.5	19470.9	1050.5
19482.5	1051.2	19483.7	1050.5	19498.46	1040.58	19527.6	1021	19600.2	1021.1
20090.7	1021	20239.6	1020.4	20259	1020.1	20267	1022.5	20276.5	1019.8
20287.8	1020	20321.5	1020.6	20364.3	1020.4	20406.5	1019.8	20438.1	1015.7
20453.3	1015.7	20484.3	1015.7	20510.9	1015.7	20526.1	1023.8	20540.7	1029.4
20572.2	1046.4	20577.1	1044.9	20591.9	1040.2	21035.6	1040.2	21045.7	1040.3
21082.9	1041.6	21123	1041.5	21166	1041.6	21189.7	1041.5	21228.3	1041
21264.3	1041.1	21277.3	1040.7	21299.3	1040.6	21311.7	1043.9	21321.5	1044.1
21335.9	1046.9	21349.5	1046.7	21377.3	1046.7	21389.3	1045.7	21395.8	1044.6
21409	1041.7	21414.3	1040.2	21431.9	1040.1	21441.7	1040.6	21511.5	1043.7
21564.5	1044.7	21580.3	1044.8	21593	1044.6	21597	1042	22094.6	1042
22111.5	1053.1	22112.9	1051.5	22113.7	1050.9	22123	1051.4	22146.6	1051.4
22200.7	1051.7	22225.6	1051.6	22293.4	1051.7				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
19314	.037	19498.46	.032	20572.2	.037

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19498.46	20572.2	500	505.73	500	.1 .3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
21335.9	22293.4	1050	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 211.02

INPUT
Description: 211.02

Left Channel Bank Station Interpolated
Station Elevation Data num= 58

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
19239	1049.4	19253.3	1049.2	19318.8	1049.3	19330	1049.2	19381.9	1049.5
19409.6	1049.3	19472.3	1049	19487.12	1039.375	19515.1	1021.2	19977.7	1020.4
20111.7	1020.1	20119.2	1025.6	20133.2	1024.1	20136.2	1022.2	20140	1019.4
20202.9	1020.4	20228.3	1020.7	20238.9	1022.4	20243.6	1025.6	20270.1	1025.5
20279.9	1025.7	20343.8	1026.1	20394.3	1041.3	20424.2	1040	20434	1040.5
20448.3	1038.4	20459.5	1037.9	20468.8	1038.2	20484.1	1038	20494.6	1038.7
20501.7	1038.2	21087.6	1039.1	21102.9	1037.2	21124.7	1036.8	21132.2	1033
21144.9	1032.5	21184.2	1034.3	21243.7	1036.3	21300.5	1038.4	21315.9	1038.7
21353.2	1040	21399.5	1041.4	21439	1042.3	21480	1043.6	21514.7	1043.6
21524.4	1043.8	21535.1	1043.6	21559.7	1042.3	21570.6	1042.2	22151.3	1042
22163.4	1052.1	22174.7	1052.9	22226.3	1051.5	22239.2	1051.3	22318	1051.9
22324.3	1052	22393.8	1052.8	22399.8	1052.7				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
19239	.037	19487.12	.032	20394.3	.037

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19487.12	20394.3	485	493.19	495	.1 .3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
21500	22399.8	1050	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 210.93

INPUT
Description: 210.93

Left Channel Bank Station Interpolated
Station Elevation Data num= 50

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
19200.1	1048.6	19256.6	1048.1	19323.4	1048.3	19376.7	1048.6	19414.5	1048
19464.2	1048.3	19479.12	1039.255	19508.9	1021.2	19821.8	1022.3	20131.9	1023.4
20138.8	1028	20162.4	1029.4	20166.3	1026.3	20172.8	1019.1	20212	1018.7
20278.3	1019.9	20290	1025.6	20331.4	1025	20349.2	1032.1	20351.6	1031.2
20355.1	1030.5	20397.8	1031.3	20406.9	1035.2	20414.8	1039.6	20431.2	1039.4
20455.9	1039.7	20458.7	1037.8	20465.5	1037.9	20470.4	1034.9	20474.7	1032.7
21343.1	1032.7	21350.5	1032.5	21376.3	1035.6	21390.1	1033.4	21395.9	1033.7
21424.3	1033.9	21484.4	1034.5	21494.9	1034.3	21537	1034.4	22171.3	1034.4

```
 22195.5  1049.6 22217.9  1047.5 22260.9    1035 22263.6  1034.9 22291.1    1051
 22312.1  1051.8 22326.6  1051.4 22375.7  1051.7 22388.8  1051.5 22397.4  1050.6

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
 19200.1    .03719479.12    .032 20414.8    .037

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      19479.12 20414.8              505  505.14     505             .1       .3
Ineffective Flow      num=       1
   Sta L   Sta R    Elev  Permanent
   21576 22397.4    1048       F

CROSS SECTION


RIVER: 1
REACH: 1                   RS: 210.83

INPUT
Description: 210.83

Left Channel Bank Station Interpolated
Station Elevation Data     num=      61
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 19202.3  1047.9 19230.6  1048.2 19316.1  1047.1 19412.4  1046.5 19438.4  1046.4
19450.411038.813 19469.9  1026.5 19479.2  1021.2 19797.6    1021 19923.9  1020.9
 19961.4  1020.6 19972.9  1027.1 19981.7  1030.2 20023.7  1029.7 20030.1  1028.5
 20042.7  1023.3 20047.1  1022.6 20060.1  1021.5   20068  1019.1 20084.8  1019.4
 20164.7  1020.3 20209.2  1020.4 20210.1  1020.8 20276.6  1019.8 20285.1  1022.2
 20306.6  1025.2   20309  1026.8 20312.4  1026.3 20316.8  1024.7 20372.8  1023.5
 20408.7  1043.6 20410.4  1042.5   20412    1040 20434.3  1040.8 20448.6    1034
 21423.7  1034.1 21433.7    1033 21527.5  1031.1 21554.4  1029.7 21577.9  1029.4
 21646.5  1030.2 21704.4  1029.9 21742.9  1046.2 21761.3    1040 21807.2  1041.3
   21814  1044.7 21818.3  1046.4 21862.5  1045.9 21879.4  1037.5 21883.7    1035
 21887.9  1033.8 21911.6  1035.9 21937.9  1050.1 21957.5  1042.6 22341.8  1042.6
 22364.7  1049.8 22372.9  1048.2   22423  1049.3 22443.3  1049.3 22494.1  1045.8
 22499.7  1044.9

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
 19202.3    .03719450.41    .032 20410.4    .037

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      19450.41 20410.4              505  505.61     500             .1       .3
Ineffective Flow      num=       1
   Sta L   Sta R    Elev  Permanent
 21742.9 22499.7    1048       F

CROSS SECTION


RIVER: 1
REACH: 1                   RS: 210.74

INPUT
Description: 210.74

Left Channel Bank Station Interpolated
Station Elevation Data     num=      63
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 19243.9  1048.6 19252.9  1048.6 19306.8  1048.4 19320.5  1047.9 19400.4  1046.9
 19417.4  1044.519426.121038.473 19455.3  1018.3 19887.7  1018.2 19910.2  1018.2
 19912.1  1019.4 19926.7  1020.6 19947.1  1020.5 19971.2  1029.9 19999.5  1024.8
 20005.9  1025.6 20026.7  1018.2 20095.6  1018.8   20149  1019.3 20154.3  1019.5
 20159.1  1018.6 20206.5  1019.2 20250.3  1018.3 20256.9  1020.6 20263.3  1021.3
 20281.7  1020.8 20318.1    1022 20333.5  1021.2 20349.8  1021.8 20361.7  1025.8
 20373.2  1024.1 20404.6  1025.2 20432.5  1037.6 20433.7  1039.4 20462.4  1039.5
 20468.2  1036.5 21389.5  1036.5 21394.6  1032.8   21404  1032.7 21513.7    1032
 21520.3  1033.6 21537.2  1027.8 21587.9  1027.7 21638.9  1028.2 21695.6    1029
 21747.1  1028.9   21771  1029.8 21801.8    1041 21813.2  1040.9 22057.2  1040.9
 22066.5  1043.5 22085.1  1044.1 22096.2  1047.4 22123.7  1048.7 22156.7  1040.5
 22272.5  1040.5 22293.7  1049.5 22308.5  1048.9 22356.6  1048.4 22365.3  1048.1
   22369  1048.8 22377.5  1053.2 22399.8  1048.3

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
 19243.9    .03719426.12    .032 20433.7    .037
```

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      19426.12 20433.7              495  503.39     500             .1       .3
Ineffective Flow     num=       1
   Sta L   Sta R    Elev  Permanent
 21801.8 22399.8    1048       F

CROSS SECTION


RIVER: 1
REACH: 1                  RS: 210.64

INPUT
Description: 210.64 - FEMA Section Y
Station Elevation Data    num=      56
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 19062.1  1046.2 19142.3  1046.5 19216.9  1046.5 19239.3  1046.6 19313.3  1046.3
 19339.3  1045.9 19359.9  1044.7 19388.6  1036.7 19405.4  1034.5 19435.6  1017.8
 19522.4  1017.9   19688  1018.2 19812.5  1018.5 19845.7  1021.7 19854.2  1021.6
 19868.7  1023.2 19885.6  1022.9 19894.1  1026.4 19926.9  1018.1   19954  1018.1
 20029.3  1018.2 20100.6  1018.3 20159.1  1018.4 20163.7  1019.2 20174.9  1019.6
 20183.1  1020.8 20192.3  1019.6 20214.4  1021.7 20234.8  1024.3 20242.8  1022.1
 20298.5    1024 20323.5  1025.5   20335  1029.1 20359.6  1019.1 20427.6  1017.8
 20430.1  1017.7 20460.6  1039.9 20483.4  1039.5 20493.5  1033.2 21394.6  1033.2
 21442.1  1031.4 21449.1  1028.1 21453.5  1025.3 21460.9  1025.2 21472.1    1026
 21483.6  1028.3 21519.7  1032.5 22411.4  1032.5 22434.2  1045.9 22446.8  1049.8
 22496.5  1049.4 22507.7  1051.3   22521  1044.2 22524.9  1044.1 22586.3    1043
 22591.1  1043.3

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
 19062.1    .037 19388.6    .032 20460.6    .037

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       19388.6 20460.6              520  515.29     495             .1       .3
Ineffective Flow     num=       1
   Sta L   Sta R    Elev  Permanent
   21800 22591.1    1048       F

CROSS SECTION


RIVER: 1
REACH: 1                  RS: 210.55

INPUT
Description: 210.55

Left Channel Bank Station Interpolated
Station Elevation Data    num=      55
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
   19008  1045.1 19023.1  1045.1 19106.6  1045.2 19117.1  1045.2 19188.7  1045.4
 19198.2  1045.3 19263.2    1046 19303.5  1044.219322.161037.828   19365  1023.2
 19375.9  1018.6 19396.7  1018.7 19519.3  1018.6   19791  1018.3 19813.4  1028.8
 19857.3  1026.7 19886.1  1038.1 19909.3  1027.2 19915.5  1030.7 19959.6    1020
 20002.1    1018 20058.3  1018.1 20175.7  1018.1 20440.7  1018.3 20476.7  1037.4
 20483.2  1040.3 20500.3  1039.7 20507.6  1034.3 21313.5  1033.6 21372.5  1032.4
 21406.9    1033 21409.3  1032.1 21417.2  1027.2   21429  1026.3 21456.2  1025.4
 21459.3  1026.4 21468.1  1028.2 21496.9  1030.2 21548.3  1034.3 21557.5  1034.9
 21626.2  1036.3 21634.2  1035.7 21643.8  1035.7   21713  1035.7 21771.2    1036
 22449.6    1036 22451.9  1037.8 22455.6    1040 22484.4  1044.7 22494.2  1046.8
 22499.9    1046 22506.9  1046.2 22537.1  1043.6 22580.7  1043.5   22585    1043

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
   19008    .03719322.16    .032 20483.2    .037

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      19322.16 20483.2              475  473.19     495             .1       .3
Ineffective Flow     num=       1
   Sta L   Sta R    Elev  Permanent
   21300   22585  1046.8       F

CROSS SECTION


RIVER: 1
REACH: 1                  RS: 210.46
```

INPUT
Description: 210.46

Left and Right Channel Bank Stations Interpolated
Station Elevation Data num= 74

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
18491.3	1044.8	18509.6	1044.4	18559.8	1045.8	18571.1	1045.5	18584.8	1043.3
18607.7	1045	18678	1044.8	18723.7	1044.2	18801	1044.1	18803.4	1044.1
18891.1	1043.9	18897.1	1043.9	18962.7	1043.6	19022.5	1043.3	19024.4	1043.3
19078.3	1042.4	19136.1	1042.2	19176.5	1042.5	19201.9	1040.9	19233.8	1028.3
19266.3	1021.8	19276.2	1021.1	19328.5	1018.7	19351.6	1018.1	19377	1018.33
19395.8	1018.5	19810.2	1018.3	19863.8	1018.1	19922	1018.2	20015.9	1018.2
20094.1	1018.1	20114.1	1018.1	20127.6	1022.4	20129.6	1023.9	20150.4	1023.9
20174.1	1021.6	20197.2	1018.1	20239.9	1018.1	20295.4	1018.2	20303	1018.6
20351.5	1018	20390.4	1018.4	20443.9	1018.4	20502.8	1018.5	20565.4	1018.8
20656.3	1018.8	20722.5	1019	20743	1019.6	20798.1	1019.8	20867.2	1019.1
20920.3	1019.3	20973.2	1019.2	21047.3	1019.3	21120.7	1021.1	21123	1021.2
21136.1	1016.3	21211.7	1018.4	21228.5	1018.3	21261.8	1036.3	21280.4	1034.9
21284	1038.08	21290.7	1044	21292.3	1046	21334.2	1043	21405.2	1043.3
21443.5	1044.5	21454	1047.4	21465.5	1044.1	22456.6	1042.9	22498.8	1045.3
22515	1046.9	22564.7	1048.3	22637.2	1048.5	22652	1048.3		

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
18491.3	.037	19176.5	.032	20150.4	.037	21292.3	.037	21454	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19377	21284	520	522.28	505	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
18491.3	19377	1048	F
21292.3	22652	1048	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 210.36

INPUT
Description: 210.36

Left and Right Channel Bank Stations Interpolated
Station Elevation Data num= 99

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
19224.5	1050.4	19284.3	1050.7	19305	1051	19357.1	1049.61	9375.16	1037.787
19404.8	1018.4	19463.3	1018.3	19612.3	1018.1	19621.3	1018.1	19634.8	1021.9
19667.3	1022.1	19733.3	1021.4	19790.5	1022.1	19802.9	1021.9	19818.6	1026.5
19827	1026.5	19834.6	1028.4	19890.9	1029	19964.7	1027.7	19973.5	1027.6
19985.2	1023	19997.6	1019.2	20010.7	1019.2	20032.2	1022.5	20039.2	1024.8
20087.1	1023	20111.8	1024.6	20144.4	1023.1	20153.9	1025.4	20168.7	1024.3
20191.7	1024.2	20273.6	1021.2	20346.9	1017.4	20363.5	1017.6	20425.8	1018.5
20437.5	1019.6	20442.7	1017.4	20510.8	1017.5	20526.1	1018	20581.3	1024.2
20636.5	1025.3	20692.9	1026.1	20742.9	1025.6	20769.6	1031.4	20776.7	1032.1
20797.4	1031.2	20811.3	1023.1	20868.1	1020.3	20886.8	1019.8	21012.2	1019.3
21017.9	1019.4	21027	1020.7	21039.6	1017.6	21095.8	1017.7	21149.8	1018
21208.9	1018.7	21245	1019.62	1291.17	1037.78	21291.23	1037.81	21303.9	1042.8
21368	1043.7	21407.5	1045.3	21418.5	1048.3	21429.5	1045.3	21450.9	1041.3
21516.4	1042.2	21531.8	1042.1	21606.4	1042.3	21664.8	1042.2	21728.4	1042.1
21735.8	1042.3	21795.8	1042.1	21853	1041.4	21904.7	1040.9	21945.9	1041.5
22007.4	1043.5	22067.8	1044.3	22085.5	1044.9	22124.1	1042.5	22213.9	1042.6
22278	1043.1	22282.5	1043	22318.4	1050.8	22330.1	1051.8	22376	1061.9
22399.2	1062.6	22410.6	1059.4	22438.3	1043.7	22476	1043.3	22498.2	1043.9
22517.5	1047.5	22554.5	1047.8	22615.4	1044.3	22685.5	1043.5	22715.7	1043.9
22733.2	1052.6	22752.7	1056.6	22761.2	1057.6	22797.5	1059		

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
19224.5	.032	19357.1	.037	20776.7	.025	21303.9	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19375.16	21291.17	480	487.62	480	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
21303.9	22797.5	1058	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 210.26

INPUT
Description: 210.26

Left and Right Channel Bank Stations Interpolated
Station Elevation Data num= 75

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
18518	1039.8	18554.5	1039.8	18657.8	1042	18741.9	1041.6	18818	1041.2
18898.6	1041.1	18982.3	1040.1	19077.8	1039.4	19162	1039.9	19268.1	1040.3
19363.8	1039.3	19372.2	1040.4	19377.07	1037.672	19408.8	1019.9	19682.2	1018.6
19755.3	1018.2	19759.5	1026	19769	1023.5	19813.4	1021.7	19816	1022.7
19816.8	1022	19849.2	1020.9	19871.6	1022.5	19881.3	1022.3	19909.8	1024.5
19932.2	1024.7	19991.1	1027.6	20032.1	1025.3	20063.9	1021.9	20070.8	1022
20075.8	1024	20075.9	1020.9	20082.4	1025	20120.1	1032.8	20142.9	1027.4
20152.1	1027.4	20162	1021.5	20166.1	1020	20257.3	1025.2	20290.7	1026.3
20327.7	1020.7	20449	1018.6	20490.7	1017.8	20521.6	1018.3	20541.8	1020.7
20564.4	1016.9	20641.9	1017.2	20694.8	1022.3	20718.8	1018.4	20789.5	1018.3
20862.3	1019.1	20960	1018.2	20989.1	1018.9	21058.3	1018.1	21141	1018
21241.8	1017.5	21265.8	1018.4	21280.3	1023.52	1331.821	037.672	21342.1	1040.5
21367.6	1040.4	21378.7	1044	21393.2	1047	21408.2	1043.8	21433.3	1036.1
21453.3	1036.5	21462.7	1039.8	21481.6	1041	22697.5	1041	22726.9	1046.8
22740.7	1043.8	22748.5	1041	22815.8	1041	22841.3	1048	22891	1057.7

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
18518	.037	19372.2	.032	20694.8	.037	21342.1	.037	21393.2	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19377.07	21331.82	505	512.65	520	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
18518	19162	1050	F
21393.2	22891	1050	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 210.17

INPUT
Description: 210.17 - FEMA Section X

Right Channel Bank Station
Interpolated
Station Elevation Data num= 81

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
18525.7	1038	18530.7	1038	18532.2	1038.8	18540.9	1039	18542.7	1038.3
18559.1	1038.3	18583.6	1039.8	18667.3	1040	18672.2	1040	18771.1	1039.9
18843.2	1039.2	18918.6	1039.2	18975.6	1038.6	19067.9	1036.2	19141.4	1035.5
19159.7	1029.9	19162.1	1028.2	19206.3	1023.5	19232.4	1025.6	19237.8	1026.9
19267.8	1029.3	19288.9	1028.6	19327.1	1031	19354.6	1031.5	19359.6	1019.6
19498.4	1019.3	19752.3	1018.6	19761.8	1021.9	19768.4	1019.7	19807.9	1021.1
19826.4	1023.3	19861.6	1026.2	19939.7	1026.1	20019.7	1026.2	20040.5	1026
20047	1026.8	20077	1025.5	20173.1	1021.8	20204.7	1022.1	20221.8	1027.9
20260.5	1027.9	20289.3	1020.1	20308.5	1019.1	20310	1020	20324.5	1021.7
20336.8	1017.9	20348.1	1016.4	20392.6	1014.7	20407.8	1014.9	20421.1	1019.4
20505.4	1021.6	20584.7	1020	20677.5	1020.6	20713	1019.7	20811.2	1021.5
20931.9	1023.3	20991.7	1025	21079.4	1022.7	21093.5	1022.3	21106.3	1024.9
21181.2	1023.5	21223	1023	21231	1018.7	21249.3	1020.1	21260.4	1023.1
21302.8	1025.12	1334.72	1037.43	21339.3	1039.2	21359.2	1038.4	21371.3	1044
21385.9	1046.9	21435.8	1035.7	21473.1	1040	22703.8	1040.5	22737.6	1046.8
22750.2	1044.1	22757.2	1040.5	22826.4	1040.5	22854	1049.8	22873.2	1052.2
22897.3	1057								

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
18525.7	.037	19354.6	.032	20991.7	.037	21339.3	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19354.62	1334.72	505	497.78	495	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
18525.7	19354.6	1050	F
21385.9	22897.3	1050	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 210.07

INPUT
Description: 210.07

Left Channel Bank Station Interpolated
Station Elevation Data num= 64

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
18501.7	1038.7	18526.7	1039	18555.4	1039.2	18568.3	1039	18666.5	1038
18699.1	1037	18779.1	1036	18865.4	1013	18885.4	1013	18929.9	1011
19033.6	1009	19235.4	1009	19348.4	100919707.92		1015.47	20002.2	1019.3
20010.8	1019.3	20015.9	1021.6	20017.6	1021.9	20043.4	1020.3	20109.3	1021.6
20149.1	1018.8	20241.7	1019.6	20301.9	1019.6	20319.7	1020.4	20385.2	1020.2
20395	1020.3	20523.6	1020	20576	1020.4	20689.9	1019.9	20746.4	1020.1
20785.8	1020	20842.9	1018.9	20851.6	1018.9	20907.6	1018.8	20909.5	1018.7
20945.5	1031.5	20951.8	1031.4	21011.2	1029.6	21065.6	1030.2	21073.1	1030.3
21098.1	1026.3	21164.8	1026.1	21186.9	1026.4	21207.2	1024.8	21212.4	1026.6
21220.7	1028.3	21237.2	1024.7	21246.8	1023.1	21286.7	1032.7	21315.8	1034.4
21346.3	1039.3	21383.5	1047.6	21397.9	1044.6	21428.3	1035.2	21444.5	1036.3
21455.5	1040.2	21470	1040.9	22716.5	1040.5	22744.1	1046.7	22757.9	1043.7
22766.1	1040.5	22836.3	1040.5	22861.9	1049.1	22885.1	1052.1		

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
18501.7	.032	18779.1	.037	18865.4	.02	19235.4	.037	20945.5	.025

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
19235.4 20945.5 511 494.01 499 .1 .3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
18501.7	19210	1048	F
21383.5	22885.1	1048	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 209.98

INPUT
Description: 209.98
Station Elevation Data num= 98

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
18668.5	1036.61	8697.08	1036.41	8734.38	1036.77	18827.89	1037.17	18891.14	1036.77
18984.54	1033.98	19015.54	1035	19019.11	1036.07	19039.74	1037.88	19063.96	1036.69
19080.08	1034.71	19102.37	1034.8	19117.4	1036.29	19128.81	1038.37	19161.01	1038.7
19178.98	1037.14	19223.54	1037.15	19252.87	1037.24	19262.16	1038.16	19316.53	1037.12
19320.05	1035.95	19346.13	1017.9	19404.18	999.33	19419.58	1000.04	19454.66	1000.8
19509.56	1001.69	19648.56	1006.29	19693.86	1007.98	19730.85	1009.07	19783.08	1010.1
19870.73	1011.2	19935.51	1009.78	19954	1007.54	19988.72	1014.28	20002.24	1019.63
20016.49	1022.82	20034.93	1023.47	20061.33	1023.52	20103.67	1021.51	20115.62	1017.75
20160.94	1015.42	20177.85	1012.41	20193.89	1011.15	20245.68	1011.42	20291.47	1013.6
20306.68	101720	338.83	101820	381.79	1019.53	20395.72	1020.87	20434.04	1022.84
20504.16	1024.16	20538.37	1026.02	20546.29	1027.59	20556.23	1033.09	20611.04	1034
20650.54	1033.82	20666.54	1023.78	20679.7	1019.86	20720.9	1017.84	20734.97	1017.5
20785.73	1017.71	20811.04	1018.91	20884.31	1020.03	20910.52	1019.38	20949.25	1017.17
21078.22	1017.5	21129.65	1017.82	21152.66	1017.82	21174.06	1019.24	21200.18	1019.51
21229.85	1019.91	21245.64	1019.49	21252.12	1018.42	21270.29	1017.99	21289.12	1018.16
21307.13	1020.21	21315.98	1023.33	21341.38	1040.81	21348.39	1043.38	21377.38	1043.15
21386.5	1042.46	21406.32	1036	21416.82	1035.28	21428.25	1036.33	21450.49	1039.82
21469.3	1035.78	21483.2	1034.65	21522.63	1034.22	21567.64	1035.52	21599.88	1035.51
21661.06	1034.76	21726.66	1034.42	21811.43	1034.72	21853.4	1035.69	21940.91	1035.84
21952.68	1035.42	1966.07	1033.85	21992.8	1034.48				

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
18668.5	.037	19316.53	.032	20611.04	.035	21348.39	.037

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
19316.5 20556.23 519 492.54 497 .1 .3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
21348.39	21992.8	1050	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 209.88

INPUT
Description: 209.88
Station Elevation Data num= 86

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
18681.6	1038.618731.14	1039.218763.46	1039.3418856.45	1038.79 18905.9	1038.3				
18972.22	1038.2419086.42	1038.3619133.19	1038.6419247.38	1040.419312.42	1039.2				
19370.23	1038.8619431.06	1038.94 19464.1	1038.519478.74	1036.9519516.39	1036.33				
19524.73	1029.9319566.56	1008.1219598.63	999.5119640.57	997.7919691.39	997.69				
19769.93	999.1719800.24	1000.6319830.26	1001.6519848.56	1003.4919859.91	1005.96				
19910.09	1007.3819960.95	1006.4419998.92	1008.33 20019.7	1012.7920028.16	1015.5				
20036.86	1016.6420060.08	1015.9420081.03	1011.7120128.18	1008.5820166.29	1012.01				
20170.17	1013.9920191.29	1014.7620234.45	1014.920257.49	1014.2520347.95	1015.5				
20367.77	1016.1920385.95	1016.3620409.64	1018.120423.54	1022.3220456.01	1034.43				
20483.89	1034.6720565.05	103320635.49	1032.8420681.89	1031.6520696.22	1030.98				
20726.21	1029.2420755.18	1027.1320770.71	1023.620820.79	1021.320895.81	1016.98				
20909.35	1016.3220995.87	1013.3921052.42	1013.4521060.47	1014.0221069.18	1016.28				
21082.94	1016.8821108.18	1017.3421171.62	101821195.56	1018.0421256.03	1018				
21284.76	1017.3721304.47	102021317.07	1026.0321331.64	1035.821333.55	1039.79				
21343.21	1043.6321377.98	1042.6221388.21	1041.8121404.25	1035.521425.05	1035.73				
21434.81	1040.0221446.16	1041.121487.63	1038.1921660.18	1036.9721711.89	1036.75				
21854.56	1036.721882.84	1033.221940.17	1033.1622030.34	1033.8822065.08	1034.17				
22079.6	1033.84								

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
18681.6	.03719516.39	.03220409.64	.03521343.21	.025			

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

19516.3920456.01		504	500.82	498	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
21343.21	22079.6	1050	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 209.79

INPUT
Description: 209.79
Station Elevation Data num= 88

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
18478	1039.118547.32	103918680.54	1038.718735.84	1038.4718778.47	1038.2				
18867.63	1037.5818904.62	1036.9318958.14	1036.2518987.49	1036.1919073.08	1036.32				
19236.66	1036.9419329.91	1037.219382.24	1037.7819444.07	1038.1919498.52	1036.22				
19513.54	1031.4319553.99	1022.1 19571.5	1020.3419590.34	1017.2619645.32	1016.75				
19753.15	1014.3619823.32	1013.32 19865.9	1012.5120020.52	1008.820043.28	1006.98				
20061.01	1005.1920070.25	1004.720120.93	1003.6520155.77	1002.9320174.93	1004.69				
20213.95	1006.75 20261.7	1007.5120277.78	1007.8520407.18	1011.4220429.11	1012.6				
20436.72	1013.720443.56	1015.9720461.81	1023.520483.82	1034.23 20498.1	1034.58				
20504.71	1032.1120512.34	1031.320519.12	1028.420524.31	1027.4920534.91	1023.1				
20549.48	1022.87 20586	1022.8420614.75	1024.6720638.75	1025.120684.87	1023.81				
20707.6	1023.6 20720.8	1024.0920733.07	1027.3820758.04	1028.2320764.93	1024.95				
20778.48	1019.7220808.83	1015.9720831.65	1014.9820846.84	1012.8520881.12	1010.1				
20897.1	1009.120912.85	1008.7820959.43	1008.1620989.08	1008.2621049.83	1008.81				
21103.7	1009.3121134.95	1010.2721154.91	1011.4421200.09	1013.86 21269.9	1014.57				
21288.19	1015.0921300.85	1016.8321308.56	1020.921327.41	1033.5421334.24	1037.02				
21338.6	1038.0621361.76	1037.2221390.51	1032.6821458.96	1029.4621474.45	1028.08				
21483.78	1027.99 21534.4	1030.1521640.51	1029.921698.99	1031.1721796.88	1033.95				
21828.55	1033.721867.29	1033.0421943.58	1033.24						

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
18478	.03719444.07	.032 20498.1	.035 21338.6	.025			

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

19444.0720483.82		497	500.22	505	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
21338.62	1943.58	1045	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 209.69

INPUT
Description: 209.69 - FEMA Section W
Cross Section updated per TranSystems
Corporation Mapping (2004)
Station Elevation Data num= 79

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
18475.3	1036.618501.27	1037.0118555.73	1037.118604.16	1037.9418693.61	1037.91				
18713.08	1036.4218856.56	1035.7218924.19	1035.419013.81	1034.4219062.29	1034.42				
19100.44	1035.66 19147.2	1036.5619175.29	1037.619244.67	1036.2819338.84	1035.73				
19385.14	1036.219430.61	1036.2719492.43	1036.219500.27	1032.79 19507.8	1027.51				
19516.1	1022.71 19518.8	102019525.43	1018.8219559.45	1018.4119579.01	1020.7				
19621.14	1023.7319647.77	1025.9119673.24	1024.8619715.23	1027.0919785.34	1030.41				
19832.97	1032.119857.65	1032.3420024.37	1032.0320044.93	1031.820057.41	1025.71				
20124.81	1017.2620165.14	1016.7620174.99	1015.7520227.11	1009.820264.95	1007.86				
20292.56	1005.59 20344.4	1004.3120389.19	1005.67 20433.3	1007.520470.15	1013.38				
20529.15	1027.9420538.92	1033.7520544.22	1035.720556.02	1035.8420597.43	1035.25				
20618.65	1034.6320650.09	1033.9320675.14	1032.8920717.21	1028.8520759.34	1012.69				
20783.68	1011.2320826.54	1010.7920883.72	101020927.19	1010 20970.1	1010.8				
21003.47	1012.1821026.39	1012.221067.57	1011.8321088.59	1011.0421156.18	1011.13				
21184.27	1012.4221260.74	1013.421277.81	1014.2321288.47	1017.7721318.41	1032.5				
21333.74	1037.4721358.95	1037.3821378.51	1036.7921388.27	1032.1321400.68	1029.23				
21526.41	1028.1621751.75	1029.4921809.86	1031.0421871.59	1032					

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
18475.3	.03719492.43	.03220544.22	.03521333.74	.025			

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19492.4320544.22		541.3	544.5	578.5	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
21357.9221871.59		1050	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 209.60

INPUT
Description: 209.60
Station Elevation Data num= 103

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
18469.5	1035.118499.81	1035.4518559.67	1037.3418591.52	1038.2418643.68	1038.5				
18795.86	1037.0418875.18	1036.7119045.39	1035.2919104.09	1034.619184.46	1034.61				
19241.49	103619320.94	1036.4219351.39	1036.419388.64	1035.9819416.69	1035.11				
19429.98	1033.1319471.58	1028.0619506.16	1024.95 19531.1	1030.1819540.55	1031.27				
19554.2	1031.0219576.25	1027.219593.08	1024.619610.96	1023.5919664.92	1025.06				
19722.19	1026.7419812.88	1027.319864.15	1024.68 19888.8	1025.72 19905.8	1024.69				
19924.74	1023.4519973.61	1018.8519986.32	1017.8420020.82	1019.4 20032.5	1019.33				
20060.41	1017.1920081.88	1017.2420092.63	1018.120119.51	1018.37 20136.7	1017.34				
20181.06	101320241.08	1008.820254.81	1008.0320302.31	1005.6920331.32	1004.82				
20426.49	1004.1520474.77	1004.7320497.48	1007.2 20528.8	1010.620578.52	1015.51				
20631.21	102220647.07	1025.2720688.78	1026.3620707.93	1024.4220716.24	1020.28				
20760.34	1021.4420782.28	1022.720841.16	1022.3420849.67	1020.3920863.94	1020.61				
20877.59	1022.220887.46	1024.32 20902.3	1026.58 20925.4	1027.9120969.67	1029.89				
20982.58	1026.8121001.53	1023.5821047.39	1015.521064.47	1014.4421160.64	1016.23				
21172.28	1016.821181.95	1020.3821191.77	1025.0321226.86	1023.8621235.74	1027.53				
21241.41	1032.1121251.88	1033.1421283.45	1031.0521310.96	1033.7321325.88	1035.7				
21333.44	1037.35 21354.6	1037.421364.61	1038.03 21378.8	1033.6621390.24	1030.9				
21401.57	1030.0221435.67	1030.121498.83	1030.5421556.27	1030.4421581.41	1030.24				
21625.21	1029.2621637.41	1029.521660.06	1030.9121675.31	1031.3121692.85	1031				
21703.66	1030.2421734.86	1028.1821744.79	1028.221781.34	1029.8421995.82	1030.48				
22010.96	1031.1822022.88	1035.26	22038	1035.6					

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
18469.5	.03719388.64	.03220254.81	.03220969.67	.03521364.61	.025				

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19540.5520969.67		243	288.7	318	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
18469.519104.09		1040	F
21064.47	22038	1040	F

```
CROSS SECTION


RIVER: 1
REACH: 1                    RS: 209.54

INPUT
Description: 209.54
Station Elevation Data    num=      64
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 18830.2  1036.718846.47 1036.66 18879.5 1036.8318897.96 1036.85 18920.8  1036.7
18981.04 1035.9519020.45 1035.78 19054.3  1035.919066.48  1036.519079.96 1037.02
19096.25  1037.719128.81 1038.6219162.01 1039.2619189.37 1039.6919223.34 1040.15
19254.25 1040.5919299.11 1040.9219330.55  1041.319351.87  1041.619380.04  1041.8
19400.92 1041.8919471.75 1042.04   19476 1029.5819484.73 1025.6319493.22 1022.25
19499.21  1020.619527.23 1020.1619563.46 1020.0419837.52 1019.7619907.24  1019.3
19944.91 1019.1119959.55 1018.2319976.64  1017.119988.84 1016.1320005.93 1014.76
20023.01 1013.7120054.74 1007.6620127.96 1004.5220206.07 1004.4420252.44 1004.27
20334.23 1004.47 20435.5 1004.5220486.75 1004.9220506.28 1009.3520520.92 1013.31
20520.92 1014.7620528.24 1016.6120549.63 1023.72 20554.8 1024.9520567.95 1029.34
20571.66  1029.920587.11 1038.7120594.25 1042.1820699.28 1041.58 20806.1 1041.01
20881.51 1040.31 20963.2 1039.4821070.02 1038.8421167.41 1037.6921220.83  1037.5
21343.36 1036.8621409.34 1036.3521475.31  1036.121522.44 1035.78

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
 18830.2    .02519471.75    .03220594.25    .037

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      19471.7520594.25              114  116.26     106             .3       .5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 18830.2 19471.8    1045       F
   2059421522.44    1045       F

BRIDGE


RIVER: 1
REACH: 1                    RS: 209.535

INPUT
Description: 35th Ave - modified bridge per TranSystems plans;
Used Interim
             Finished grade per plans; the pier widths were doubled (plans=5ft;
             model=10ft) in order to model the debris accumulation.
Distance from Upstream XS =      24
Deck/Roadway Width        =      91
Weir Coefficient          =     2.6
Upstream  Deck/Roadway Coordinates
    num=      12
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
19471.75 1042.04    103519496.41 1043.19    103519615.66 1044.42    1035
19737.91 1045.34    103519860.16 1045.94    103519982.41 1046.22    1035
20104.66 1046.19    103520226.91 1045.85    103520349.16 1045.19    1035
20471.41 1044.21    103520590.29 1042.87    103520703.53 1040.09    1035

Upstream Bridge Cross Section Data
Station Elevation Data    num=      64
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 18830.2  1036.718846.47 1036.66 18879.5 1036.8318897.96 1036.85 18920.8  1036.7
18981.04 1035.9519020.45 1035.78 19054.3  1035.919066.48  1036.519079.96 1037.02
19096.25  1037.719128.81 1038.6219162.01 1039.2619189.37 1039.6919223.34 1040.15
19254.25 1040.5919299.11 1040.9219330.55  1041.319351.87  1041.619380.04  1041.8
19400.92 1041.8919471.75 1042.04   19476 1029.5819484.73 1025.6319493.22 1022.25
19499.21  1020.619527.23 1020.1619563.46 1020.0419837.52 1019.7619907.24  1019.3
19944.91 1019.1119959.55 1018.2319976.64  1017.119988.84 1016.1320005.93 1014.76
20023.01 1013.7120054.74 1007.6620127.96 1004.5220206.07 1004.4420252.44 1004.27
20334.23 1004.47 20435.5 1004.5220486.75 1004.9220506.28 1009.3520520.92 1013.31
20520.92 1014.7620528.24 1016.6120549.63 1023.72 20554.8 1024.9520567.95 1029.34
20571.66  1029.920587.11 1038.7120594.25 1042.1820699.28 1041.58 20806.1 1041.01
20881.51 1040.31 20963.2 1039.4821070.02 1038.8421167.41 1037.6921220.83  1037.5
21343.36 1036.8621409.34 1036.3521475.31  1036.121522.44 1035.78

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
 18830.2    .02519471.75    .03220594.25    .037
```

```
Bank Sta: Left   Right    Coeff Contr.   Expan.
      19471.7520594.25            .3       .5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 18830.2 19471.8    1045       F
   2059421522.44    1045       F

Downstream  Deck/Roadway Coordinates
    num=      12
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
19471.75 1042.04    103519496.41 1043.19    103519615.66 1044.42    1035
19737.91 1045.34    103519860.16 1045.94    103519982.41 1046.22    1035
20104.66 1046.19    103520226.91 1045.85    103520349.16 1045.19    1035
20471.41 1044.21    103520590.29 1042.87    103520703.53 1040.09    1035

Downstream Bridge Cross Section Data
Station Elevation Data    num=      64
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 18830.2  1036.718846.47 1036.66 18879.5 1036.8318897.96 1036.85 18920.8  1036.7
18981.04 1035.9519020.45 1035.78 19054.3  1035.919066.48  1036.519079.96 1037.02
19096.25  1037.719128.81 1038.6219162.01 1039.2619189.37 1039.6919223.34 1040.15
19254.25 1040.5919299.11 1040.9219330.55  1041.319351.87  1041.619380.04  1041.8
19400.92 1041.8919471.75 1042.04   19476 1029.5819484.73 1025.6319493.22 1022.25
19499.21  1020.619527.23 1020.1619563.46 1020.0419837.52 1019.7619907.24  1019.3
19944.91 1019.1119959.55 1018.2319976.64  1017.119988.84 1016.1320005.93 1014.76
20023.01 1013.7120054.74 1007.6620127.96 1004.5220206.07 1004.4420252.44 1004.27
20334.23 1004.47 20435.5 1004.5220486.75 1004.9220506.28 1009.3520520.92 1013.31
20520.92 1014.7620528.24 1016.6120549.63 1023.72 20554.8 1024.9520567.95 1029.34
20571.66  1029.920587.11 1038.7120594.25 1042.1820699.28 1041.58 20806.1 1041.01
20881.51 1040.31 20963.2 1039.4821070.02 1038.8421167.41 1037.6921220.83  1037.5
21343.36 1036.8621409.34 1036.3521475.31  1036.121522.44 1035.78

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
 18830.2    .02519471.75    .03220594.25    .037

Bank Sta: Left   Right    Coeff Contr.   Expan.
      19471.7520594.25            .3       .5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 18830.2 19471.8    1045       F
   2059421522.44    1045       F

Upstream Embankment side slope              =       0 horiz. to 1.0 vertical
Downstream Embankment side slope            =       0 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow =     .95
Elevation at which weir flow begins         =
Energy head used in spillway design         =
Spillway height used in design              =
Weir crest shape                            = Broad Crested

Number of Piers =  8

Pier Data
Pier Station     Upstream=19615.66    Downstream=19615.66
Upstream     num=       2
    Width   Elev    Width   Elev
      10     990      10    1040
Downstream     num=       2
    Width   Elev    Width   Elev
      10     990      10    1040

Pier Data
Pier Station     Upstream=19737.91    Downstream=19737.91
Upstream     num=       2
    Width   Elev    Width   Elev
      10     990      10    1040
Downstream     num=       2
    Width   Elev    Width   Elev
      10     990      10    1040

Pier Data
Pier Station     Upstream=19860.16    Downstream=19860.16
Upstream     num=       2
    Width   Elev    Width   Elev
      10     990      10    1040
Downstream     num=       2
    Width   Elev    Width   Elev
      10     990      10    1040
```

```
Pier Data
Pier Station     Upstream=19982.41    Downstream=19982.41
Upstream     num=        2
    Width   Elev    Width   Elev
      10     990      10    1040
Downstream     num=        2
    Width   Elev    Width   Elev
      10     990      10    1040

Pier Data
Pier Station     Upstream=20104.66    Downstream=20104.66
Upstream     num=        2
    Width   Elev    Width   Elev
      10     990      10    1040
Downstream     num=        2
    Width   Elev    Width   Elev
      10     990      10    1040

Pier Data
Pier Station     Upstream=20226.91    Downstream=20226.91
Upstream     num=        2
    Width   Elev    Width   Elev
      10     990      10    1040
Downstream     num=        2
    Width   Elev    Width   Elev
      10     990      10    1040

Pier Data
Pier Station     Upstream=20349.16    Downstream=20349.16
Upstream     num=        2
    Width   Elev    Width   Elev
      10     990      10    1040
Downstream     num=        2
    Width   Elev    Width   Elev
      10     990      10    1040

Pier Data
Pier Station     Upstream=20471.41    Downstream=20471.41
Upstream     num=        2
    Width   Elev    Width   Elev
      10     990      10    1040
Downstream     num=        2
    Width   Elev    Width   Elev
      10     990      10    1040

Number of Bridge Coefficient Sets =  1

Low Flow Methods and Data
       Energy
       Momentum                Cd   =     1.2
Selected Low Flow Methods = Momentum

High Flow Method
       Pressure and Weir flow
           Submerged Inlet Cd          =
           Submerged Inlet + Outlet Cd =      .8
           Max Low Cord                =    1035

Additional Bridge Parameters
       Add Friction component to Momentum
       Do not add Weight component to Momentum
       Class B flow critical depth computations use critical depth
           inside the bridge at the upstream end
       Criteria to check for pressure flow = Upstream energy grade line

CROSS SECTION


RIVER: 1
REACH: 1                  RS: 209.53

INPUT
Description: 209.53
Station Elevation Data    num=      64
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 18830.2  1036.7 18846.47 1036.66 18879.5 1036.8 18897.96 1036.85 18920.8  1036.7
18981.04 1035.9 19020.45 1035.78 19054.3  1035.9 19066.48  1036.5 19079.96 1037.02
19096.25  1037.7 19128.81 1038.62 19162.01 1039.2 19189.37 1039.69 19223.34 1040.15
```

```
19254.25 1040.5919299.11 1040.9219330.55  1041.319351.87  1041.619380.04  1041.8
19400.92 1041.8919471.75 1042.04   19476 1029.5819484.73 1025.6319493.22 1022.25
19499.21  1020.619527.23 1020.1619563.46 1020.0419837.52 1019.7619907.24  1019.3
19944.91 1019.1119959.55 1018.2319976.64  1017.119988.84 1016.1320005.93 1014.76
20023.01 1013.7120054.74 1007.6620127.96 1004.5220206.07 1004.4420252.44 1004.27
20334.23 1004.47 20435.5 1004.5220486.75 1004.9220506.28 1009.3520520.92 1013.31
20520.92 1014.7620528.24 1016.6120549.63 1023.72 20554.8 1024.9520567.95 1029.34
20571.66  1029.920587.11 1038.7120594.25 1042.1820699.28 1041.58 20806.1 1041.01
20881.51 1040.31 20963.2 1039.4821070.02 1038.8421167.41 1037.6921220.83  1037.5
21343.36 1036.8621409.34 1036.3521475.31  1036.121522.44 1035.78

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
 18830.2    .02519471.75    .03220594.25    .037

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      19471.7520594.25             588     626   654.7             .3       .5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 18830.2 19471.8    1045       F
   2059421522.44    1045       F

CROSS SECTION


RIVER: 1
REACH: 1                  RS: 209.42

INPUT
Description: 209.42
Station Elevation Data    num=     120
     Sta     Elev     Sta     Elev     Sta     Elev     Sta     Elev     Sta     Elev
 18066.3  1035.2 18092.5  1034.718174.13  1034.618232.22 1034.7518374.28 1034.76
18519.36    1035   18609 1034.6718638.91 1035.1318640.91 1034.6318688.94 1035.68
18736.66 1034.6318738.66 1035.1318744.74 1035.3318757.05 1035.3618816.34 1035.62
18857.04 1035.6919001.96 1035.2819017.56 1034.5919031.34 1033.4219044.82    1030
19075.88  1027.319098.95 1024.1519123.26 1035.2119142.22  1034.819153.41 1033.66
19175.69 1033.0419229.76 1032.9219270.26 1032.9619318.56 1033.2219344.15 1031.88
19356.56 1026.1619373.86 1022.6419393.04    102219428.02  1022.119463.74 1022.27
19519.23 1021.07 19565.1  1021.719573.94 1022.3519613.08 1022.7919626.02  1021.9
19630.14 1022.4119670.75 1023.0719686.66 1022.6719771.52  1022.619783.71 1024.72
19795.37 1024.6119808.15 1021.7219887.54    102319978.34 1021.89   20024 1019.66
20043.24 1015.9520079.12  1012.220127.13 1009.8520197.83  1007.6 20239.6 1006.78
20318.19  998.9120334.72  998.4420358.65  999.1820442.82  1004.220493.17 1007.27
20559.67 1012.3920578.47 1015.2620600.01 1023.2320610.47 1029.5820635.94 1031.17
20643.41 1036.7820653.39    104320663.79  1044.420706.16 1043.36 20730.5 1041.37
 20742.8 1040.7820782.21 1041.6920812.94 1042.1820850.74  1041.2 20869.7 1042.66
20877.68 1041.04 20890.4  1033.520897.41 1030.5220907.67 1029.5420917.26  1029.5
20920.08 1031.4520940.19  1031.920959.31 1031.6421075.63 1032.0921217.55  1032.3
21336.33  1032.721395.05 1032.3721464.28 1030.8921504.38  1030.421565.16 1030.23
21615.46 1029.79 21661.1 1028.9521714.94  1029.221753.32  1028.621780.93 1030.96
 21834.5 1029.8321868.92 1030.5821937.71 1032.3221987.07 1032.1822098.03  1030.8
22124.72  1030.722241.07 1032.7922289.03 1032.7522341.52 1030.9522372.56 1030.47
 22400.6 1030.4722442.55 1031.0522532.24 1030.5822582.04  1030.522661.25 1030.71
22731.42 1032.1822738.15 1031.5922744.66 1028.33 22751.2 1028.3322764.51 1032.18
22773.18  1033.922782.89  1034.722830.05 1035.8722909.02 1035.7122931.75 1036.02

Manning's n Values        num=       6
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
 18066.3    .037   18609    .01518744.74    .03719318.56    .03220663.79    .032
 20869.7    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      19318.5620610.47             501  486.04     526             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 18066.319123.26    1050       F
20663.7922931.75    1050       F

CROSS SECTION


RIVER: 1
REACH: 1                  RS: 209.33

INPUT
Description: 209.33 - FEMA Section V
Cross Section updated per TranSystems
             Corporation Mapping (2004)
```

```
Station Elevation Data    num=      137
      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
 17896.2  1033.517958.97  1033.417986.14 1033.7518112.66 1034.2418188.57 1033.75
18270.44 1033.7918305.44 1034.5118345.72 1034.6718423.99 1033.7918435.53 1034.26
18503.15 1034.2518553.69 1033.8418565.35 1034.23 18681.1 1034.1318683.99 1034.04
18721.33 1034.1818723.33 1033.6818769.56 1034.7418815.79 1033.6818817.19 1034.18
18823.88 1034.3818832.57  1034.518965.64 1034.9219086.19 1034.6519114.67    1032
19134.93 1026.84 19181.5 1024.9719197.05 1026.4319203.85 1024.4119223.43  1024.1
19250.18  1022.719253.79  1023.219282.68 1020.5519307.62  1017.419325.01  1017.3
 19355.8 1018.86 19365.9 1018.62 19378.8  1021.919409.32  1019.519428.42 1019.88
19441.87  1021.319481.76 1021.1719517.59 1021.6219549.59  1021.319597.25  1020.3
 19627.7 1020.0919656.16 1020.5419662.21 1021.32 19697.4  1023.119726.12  1023.8
19844.27 1023.2419849.98  1026.219855.05 1023.4119879.93 1022.2319888.16 1023.45
19913.86 1022.8219926.21  1024.919931.49 1022.4219941.55 1025.1219955.92 1021.41
19963.16  1022.120001.12 1016.37 20032.8 1013.8620059.79 1013.3320098.45 1013.73
20128.52 1013.0120166.76  1011.120221.81 1011.2620263.13  1010.720270.95 1012.01
20280.71 1010.1220297.89 1008.4820309.88 1001.6920317.32  999.2420329.38  997.95
20387.71   995.120406.58  993.7120444.15  994.9120450.21  996.3120481.01  997.63
20509.49  1000.220517.12    100420538.38 1005.7920573.28 1007.8720610.33 1010.95
 20679.1 1011.3520688.91 1012.2320695.14 1015.3520715.31 1028.8820723.94  1029.8
20732.61 1027.4620742.95  1028.8 20757.3 1027.7120801.95  1030.620907.29 1031.09
 20920.3 1036.87 20934.7 1034.9620949.59  1031.220960.05  1027.220990.79 1028.05
21001.98 1030.6421022.93 1029.6821027.18 1030.8421082.45 1030.7221158.66 1031.24
21353.12 1031.48 21455.4  1031.621531.07  1030.621626.53 1030.1121653.83 1030.53
21823.49  1030.421871.63 1029.8821878.34 1031.2721890.58  1028.921942.99 1028.61
 21959.1 1027.6421991.93 1030.86 22030.2    103222122.88  1032.622142.26 1031.53
22167.18 1031.9522193.03 1031.3722250.67 1031.7322268.19  1031.122397.32 1031.21
22414.21  1030.722431.33  1027.222441.79  1026.422491.98 1026.6922530.86 1027.33
22550.52 1031.1922572.62  1031.322581.69 1028.3322592.78 1028.3322605.98  1035.8
22633.72 1034.8522651.94 1034.85

Manning's n Values        num=       5
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
 17896.2    .03718683.99    .01518823.88    .03719086.19    .032 20920.3    .037

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.    Expan.
      19086.1920715.31              563   490.4     583             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 17896.218965.64    1040        F
 20920.322651.94    1040        F

CROSS SECTION


RIVER: 1
REACH: 1                  RS: 209.24

INPUT
Description: 209.24
Station Elevation Data    num=      98
      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
 18093.1    103318111.19 1032.6618170.55 1033.11 18249.7 1032.5618290.75  1033.5
18331.25 1033.0118346.32  1033.518358.33 1032.9818369.13 1033.5418393.42 1033.13
18469.39 1033.0718512.08 1033.0718637.39  1032.7 18752.3 1032.6518769.95 1032.77
18804.48 1033.1718806.48 1032.67 18852.7 1033.7618898.92 1032.6718900.92 1033.17
18915.11 1033.3718942.52 1030.2119012.72 1021.3219049.33 1021.2119102.51  1025.9
19144.88 1026.16 19179.4 1027.2819192.91 1028.5119221.01 1027.4819251.07 1028.34
19265.36  1027.519301.53 1020.3219329.15 1019.3519360.39 1018.9919370.19  1018.1
19394.97 1017.4219404.33 1016.3219424.98 1015.6919456.86 1016.7719466.18 1018.36
19497.21 1020.3619524.86 1021.0119549.47 1021.0119582.15  1021.419600.78    1021
19641.86 1023.0919653.99 1021.23 19681.4 1021.6919697.48  1020.819743.39  1020.7
19822.79 1021.8619837.12 1021.4319857.39 1019.5319867.11  1020.419912.92 1020.55
19923.39 1019.9719969.32 1019.1520004.86 1017.6120026.23 1016.2120141.25 1015.24
20152.29  1010.620175.79 1010.3220193.09 1015.77 20204.3 1016.5620231.05 1007.37
20243.67    100320287.34  1018.5 20308.5 1018.3720324.96    101020735.49    1010
20735.59    1025 21770.2    102521803.67 1033.0921811.84  1029.2 21825.3  1034.7
21842.65  1025.5 21881.3 1026.4421899.12 1026.8921924.24  1025.621976.69 1026.67
21982.73 1025.6921999.87 1025.35 22090.2 1025.3922155.13  1025.322244.29 1025.35
22289.44  1025.522316.75 1025.8822341.35  1028.822353.64 1028.9322368.41  1032.3
 22376.5    1028 22384.1 1026.3522390.56 1028.6122396.37 1032.3722437.65 1032.09
22468.97 1032.2122560.84  1032.122647.85 1032.88

Manning's n Values        num=       6
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
 18093.1    .03718769.95    .01518942.52    .03220141.25    .03720287.34    .032
 21825.3    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.    Expan.
```

```
      18942.5220287.34              514  515.61     523             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 18093.118914.46  1034.8       F
20907.5322647.85  1034.8       F

CROSS SECTION


RIVER: 1
REACH: 1                  RS: 209.14

INPUT
Description: 209.14
Station Elevation Data    num=     169
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 17712.7  1032.217733.81  1032.317755.05    103217769.95 1031.3817807.73  1031.5
17918.31 1031.0617920.82 1031.35 17943.8  1031.417971.64 1032.03 17993.6 1031.59
18020.99 1031.4418029.62 1030.7518045.75 1030.9618061.27  1030.718068.04 1031.06
 18093.7 1031.5318113.91  1031.618141.03  1031.518161.73 1031.6918203.99  1031.2
18219.59 1031.4118257.52  1031.318268.17  1031.118314.57 1031.1718419.42  1030.9
 18497.7    103118540.47 1031.4918580.28 1031.5618590.93 1031.1518633.39 1030.95
18650.39 1031.36 18680.6 1031.33 18720.2 1030.3418737.94 1030.4318755.98 1030.74
18761.99 1030.5718784.42  1030.818801.05 1030.8118813.66 1030.3218833.88  1030.8
18845.19  1030.618852.07    103118864.66 1029.5818867.52 1028.9818874.62  1029.5
18888.79  1029.318890.79  1028.818936.87 1030.4518982.93 1032.0418984.93 1032.54
18999.04 1032.7419019.38    102719044.02  1027.119074.49 1027.0619081.18  1026.8
19115.16 1023.8219127.21 1022.1519152.59 1019.9119166.14 1019.9919191.51 1021.36
19196.09  1021.919199.73 1020.9819206.42 1021.0719214.89 1022.7619231.49 1024.53
19245.82  1024.819263.22  1025.519289.61 1025.8219298.62 1025.6219324.23    1026
19336.29 1025.2619345.92 1024.1819353.34  1023.919359.53 1022.6219371.81 1019.21
19387.21 1016.4719396.66 1015.6519407.14 1015.2719424.22 1015.38   19446  1014.9
19468.59 1015.0719478.96  1015.419488.13  1016.419514.03 1016.1619544.56 1016.81
19553.79 1017.6519576.59  1018.419585.23 1018.3419597.29  1017.119625.64 1017.23
19633.67 1016.9619662.81 1017.5319679.21 1017.3919691.15 1018.0719718.55  1018.6
19739.96  1018.419768.73 1018.89   19781  1019.719808.31 1019.8519822.58 1020.95
19830.13 1020.7719859.66 1021.0119900.07 1020.82 19905.4 1020.9519942.86 1020.61
19958.76  1020.920016.03 1020.2420040.17 1020.1220076.36    101920087.02 1018.89
20107.15 1018.3320126.03 1017.1820145.24  1017.120160.85 1022.1220168.39 1023.67
20173.07 1022.7220184.98  1017.120190.01 1016.0320200.85 1010.7720209.55  1005.1
 20215.2 1003.2620224.09 1002.8720233.55 1003.1920239.27 1004.74 20248.4 1008.35
 20267.4  1018.520271.19 1019.8720278.27 1019.8620294.18 1014.2320299.82 1013.19
20314.27  1012.420327.64 1012.7720348.37 1015.5620359.78 1014.9120385.64  1014.7
20398.56    101020748.72    101020748.82    102221863.55    102221871.58  1022.5
21877.08  1022.621882.23  1022.721906.95 1034.8521913.42 1030.9121918.47 1032.54
21926.44 1033.7121935.64 1030.3421940.87  1026.3 21945.9 1025.72 21972.1 1025.78
21989.84 1026.3122013.87 1026.5522052.95  1026.722065.97 1027.0422126.27 1028.24
22168.73 1029.24 22206.6 1029.6622274.49 1030.8822316.41  1031.222330.02 1031.52
22355.73 1031.6822369.85  1031.622394.81 1031.7422463.25 1031.6522479.79 1031.88
22509.72  1031.722546.93 1031.7422588.34  1032.222649.92  1032.1

Manning's n Values        num=       6
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
 17712.7    .03718874.62    .01518999.04    .03220160.85    .03720385.64    .032
21926.44    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      19074.4920271.19             515  499.52     517             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 17712.718998.45    1034       F
21140.1822649.92    1034       F

CROSS SECTION


RIVER: 1
REACH: 1                  RS: 209.04

INPUT
Description: 209.04
Station Elevation Data    num=     162
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 17436.1  1032.817481.92 1033.1217492.97    103417523.41 1033.35 17553.8 1033.63
17567.41 1031.5517593.91 1032.5517629.24  1031.9 17655.8  1031.7 17689.7 1032.45
17695.46 1033.5817714.36 1033.28 17733.5 1033.7817748.64 1032.3417764.76  1032.1
17771.89 1030.7217780.47 1032.0617790.76  1030.917801.38 1027.8717816.77 1028.68
17830.26  1028.417903.58    1029 17910.5 1028.7318018.61 1029.2118054.11 1029.58
18068.41 1029.4618116.27  1029.618176.67 1029.55 18188.3 1029.2418231.03 1029.42
```

```
18257.65 1029.1818293.37 1030.4418300.67 1031.4218303.42 1030.2118325.88 1029.58
18349.35  1029.818368.26  1029.318405.02  1029.918413.03  1029.418422.64  1029.8
18438.88 1029.5318477.77 1029.3918506.45 1028.2818520.92 1028.6118558.78 1028.72
18600.38 1028.3418620.89 1028.7418645.84 1028.7418668.28 1029.12 18676.4  1032.1
 18682.1  1030.818687.17 1031.0418693.62 1029.83   18704 1029.6918712.79  1032.9
 18719.4 1029.3618729.67 1031.0618732.96    103018744.07 1031.1318756.77  1030.5
18763.23 1032.3118770.67  1032.118787.85 1029.1618817.09  1029.318848.11 1029.01
18855.89  1029.418897.57  1028.618900.35 1027.4418914.37 1027.2418916.37 1026.74
18961.99  1028.419007.61 1029.9719009.61 1030.4719023.62 1030.6719047.62 1027.39
19092.73 1026.5319103.69 1025.6719138.37 1024.6619177.83 1021.9319196.79    1019
19225.46 1018.5119249.34  1018.619280.44  1022.4   19302 1026.1719327.89 1025.79
19336.16 1025.11 19356.9 1021.7919371.16 1017.5319374.44  1015.519384.22 1014.77
19399.04 1011.7819405.42 1011.4819417.16  1012.719427.75 1014.7619437.29 1013.39
19456.39    101419462.67 1013.6419470.92 1014.8419487.88 1013.3619517.22 1012.66
19535.61    101419553.79 1016.3919571.83 1017.1219585.34 1017.0819616.81 1017.58
19660.08 1017.9519677.15  1017.919689.47 1018.5619734.18  1018.119789.91 1017.11
19808.47 1017.1819838.18 1016.5519869.54 1017.7219955.17 1018.1619985.34 1017.05
19993.46  1016.120033.72  1013.3 20059.3  1012.720088.98 1012.3120095.15 1012.84
20110.54 1010.4620127.24 1007.0720143.74 1007.02 20165.7    101120181.04  1014.3
20198.46 1016.7720207.15  1016.420231.68 1012.0620261.67 1011.2120295.29  1011.5
20349.03 1012.5820373.43 1012.5720411.55    101020761.17    101020761.27    1020
21949.73    102021962.03    1020 21974.3 1023.2921988.69  1033.421992.14 1031.11
21999.39 1032.8822011.93 1033.7322024.53  1026.122043.74 1026.2822072.39    1027
22075.88 1027.8422101.16 1028.3922112.98 1029.0322158.53 1029.59 22192.5  1030.4
22243.49  1031.222251.38 1030.6222255.34 1028.53   22266 1027.9622271.88 1030.57
22302.67 1030.1322353.28  1030.1 22435.9  1030.822527.91 1030.9122594.31 1031.75
22629.46  1031.622666.72 1032.11

Manning's n Values        num=       6
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
 17436.1    .03718900.35    .01519023.62    .03219993.46    .03721949.73    .032
22011.93    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.    Expan.
      19092.7320198.46              495  493.13     531              .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 17436.119047.62    1035       F
21356.7222666.72    1035       F

CROSS SECTION


RIVER: 1
REACH: 1                  RS: 208.95

INPUT
Description: 208.95
Station Elevation Data    num=     184
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 17602.6  1030.717651.71 1029.7817678.28 1030.4417702.53 1029.58 17709.4  1030.1
17716.28 1027.7417726.85 1027.2417754.92  1027.117785.11 1027.4717835.06  1026.8
17871.62 1027.4917953.86 1027.3617970.21 1026.5318023.39 1026.3518038.68  1027.3
18091.11  1027.718094.77 1029.1818100.61 1027.4618198.47  1027.318220.25 1027.92
18246.36  1027.718309.26 1028.2918344.29 1028.4518407.59 1027.4418451.06 1027.54
18478.84 1027.87 18531.8  1027.918579.44  1028.618682.24  1028.418703.67  1027.9
18808.65 1028.1418830.35 1027.9418837.04 1025.7918851.37 1025.5918853.37 1025.59
18899.98 1027.2418946.57 1028.8418948.57 1028.8418962.88 1029.0418992.56 1025.85
 19030.7 1025.6219046.62 1025.0619082.99 1025.4919104.79  1024.619112.99 1025.03
19124.51 1030.6519140.48  1025.319157.35 1026.0919168.11 1024.5519173.85  1025.4
19195.16 1023.8219207.08 1021.8719270.39 1018.9419282.25 1014.0419305.81  1013.5
19323.91  1009.5 19355.8 1008.9319366.92  1009.419397.25 1014.53 19409.8 1013.58
19425.91 1014.79 19456.9 1015.7219460.95 1014.0219470.72 1012.9419481.47 1013.92
19495.24 1008.88 19506.5  1007.819522.51 1007.4919548.22 1008.1719566.69  1005.6
19598.49  1005.219607.34 1006.8619629.96 1013.5719636.47 1011.6219653.72 1010.05
19696.34 1010.0919777.25 1013.0119819.13 1016.0219864.73 1015.5219888.04 1016.45
19903.55 1017.6219939.71 1017.39 19944.9 1016.8619961.63 1017.3519968.78  1016.6
19989.37 1017.9320035.86  1019.220080.09  1021.820099.08 1019.9320121.36  1018.6
20137.49  1018.6 20148.8  1020.120184.87 1019.7120189.78 1018.0720196.27 1018.47
20209.65 1016.1720285.35  1015.620305.76 1015.0520324.48  1013.520343.75 1009.77
20358.33 1008.95 20370.4 1011.3820394.52  1012.4 20413.5 1014.1920426.89  1014.5
 20439.5 1014.0320455.51 1012.3320465.37 1012.8320483.75 1012.3120489.18  1010.9
20510.98  1009.520519.28 1007.7620531.47 1011.0620546.03 1006.2720573.29 1004.38
20576.36  1003.120604.86 1000.7820634.63  1000.420646.76 1000.7220658.11  1002.9
20679.97 1002.5620696.64 1001.4520747.49  997.3320778.46  997.4520790.93   997.9
20799.87 1002.98 20826.7 1022.0920836.45 1026.1820841.68 1023.2520885.15  1023.4
 20920.7 1022.7820959.96 1023.2220968.83  1023.620987.66  1032.921003.77    1031
21026.87 1031.8921043.74  1031.8 21076.8  1032.521096.37  1031.421112.48 1032.38
21141.57 1032.0521164.67 1033.3921189.39 1032.8521193.31 1033.5521219.82 1023.28
```

```
21269.17 1023.4221286.95 1033.0221310.01  1029.221351.05  1032.121360.77 1031.64
21387.79 1031.6321396.55 1030.7921410.37 1030.7921421.06 1033.8621429.05  1034.1
21456.59 1024.1821491.57 1024.0121589.23 1024.0621735.97 1024.24 21832.1 1024.74
21894.74 1024.8321931.61 1025.1721980.52 1026.1622127.26 1027.6222173.37  1028.9
22176.23 1035.5222183.06 1039.7122188.16  1038.9 22201.8 1039.9222208.53 1033.98
22216.16 1030.1322224.26 1030.7422231.11  1027.122236.95 1026.2822242.59  1026.7
22251.03  1030.522265.51 1030.4222289.51 1031.1422297.99 1030.3422321.91  1029.9
22425.63 1030.0322527.54 1030.6122572.36 1030.3722612.01 1030.81

Manning's n Values        num=       7
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
 17602.6    .03718837.04    .01518962.88    .03719173.85    .03220836.45    .032
20987.66    .03722188.16    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      19173.8520836.45              458  514.75     603             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 17602.619157.35    1038       F
20987.6622612.01    1038       F

CROSS SECTION


RIVER: 1
REACH: 1                  RS: 208.85

INPUT
Description: 208.85
Station Elevation Data    num=      99
     Sta     Elev     Sta     Elev     Sta     Elev     Sta     Elev     Sta     Elev
 17686.5  1031.317694.85 1029.1417749.61 1029.8317758.78 1029.2417984.78    1029
18200.56 1027.33 18280.2 1027.4818328.38 1026.7418441.61  1027.218481.04 1029.88
18510.33 1030.4718682.91 1029.6618724.46 1028.7718728.71 1027.7818742.91 1027.58
18744.91 1027.0818791.14 1028.0918837.38 1027.0818839.38 1027.5818853.58 1027.78
 18859.9 1029.4218874.45  1029.918981.82 1029.1619065.57 1029.1719153.39 1028.46
19206.02  1028.819223.16  1016.919235.47  1012.619256.34 1009.9419276.84  1008.4
19321.83 1007.7919338.38 1008.5419346.72 1011.7719362.51  1004.319405.36 1008.25
19423.93  1009.2 19438.9 1012.4519455.14 1010.47 19490.9 1010.8219519.66 1014.86
19526.32 1012.1319549.87  1011.819568.97 1014.59 19634.7 1016.3719646.89 1017.27
19710.87 1016.62 19760.5 1017.0919801.77 1016.0619827.94 1016.3419863.39 1018.72
19910.52 1019.5620029.52 1020.0320086.67 1019.9920123.45 1020.8520133.93  1019.7
20161.37 1020.5920247.21 1020.8920314.65  1017.220322.23 1017.9420368.81 1017.46
20450.41 1017.56 20502.8 1016.2520508.13 1017.1120550.98 1012.0220589.54  1010.1
20610.51 1006.6920658.34  1002.720671.28 1001.7520700.39 1007.5220728.31  1009.8
20767.63  1007.720799.68  1004.620828.74    100020843.88  998.88 20892.5  999.97
20902.76  1003.520934.99 1026.0120948.22 1022.1321019.79 1022.2521070.81  1021.7
21121.72  1022.221135.41 1028.06 21144.4 1029.4921161.18 1022.3121191.38 1023.06
21314.23 1023.5621380.26 1024.1621412.34 1023.3121460.67  1023.321510.92 1022.62
21535.21 1023.2821562.07  1022.621581.65 1023.8321609.58 1023.4221953.16 1026.38
22103.46 1028.5222197.52  1029.322301.84 1029.8222339.32  1029.6

Manning's n Values        num=       6
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
 17686.5    .03718728.71    .01518853.58    .03719206.02    .03220029.52    .032
20934.99    .037

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      19206.0220934.99              511  479.03     452             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 17686.519206.02    1035       F
 21144.422339.32    1035       F

CROSS SECTION


RIVER: 1
REACH: 1                  RS: 208.75

INPUT
Description: 208.75 - FEMA Section U
Station Elevation Data    num=     124
     Sta     Elev     Sta     Elev     Sta     Elev     Sta     Elev     Sta     Elev
 18173.6  1027.118257.35  1026.618340.04    102618367.17 1025.85 18472.3 1025.33
 18563.9  1028.418584.53 1028.6518593.87 1028.3218600.82 1027.6718615.09 1027.47
18617.09 1026.9718663.56 1027.9818710.04 1026.9718712.04 1027.4718726.31 1027.67
18738.43 1029.8218764.48 1030.7318832.51 1030.9518900.38 1030.4318954.98  1029.6
18984.44 1028.4718996.07  1026.719017.06  1026.719056.46 1027.4819103.99 1027.71
```

```
19153.26 1027.5219204.89 1026.7419212.98 1026.2819226.43 1021.1519249.91 1010.16
19266.81  1008.819299.44  1007.519308.35 1007.8819324.64 1009.6519332.09 1012.65
19339.05    100919344.99 1006.4719362.61  1005.619374.08  1006.419427.89 1008.77
19452.89 1009.8519478.06 1011.5219505.81 1012.2619526.98 1013.1519535.38 1014.53
19541.92 1015.3919562.58 1013.9119580.22  1014.519611.04 1016.44 19649.5 1015.55
 19676.7  1015.719706.53 1017.5819723.84 1018.0919752.75 1018.6919793.14 1018.45
19817.64 1018.7419868.41 1019.5619904.45 1019.5820006.67 1019.7820053.74 1019.67
20110.37 1019.6320147.15  1019.220205.32 1018.1820213.52  1017.620230.83 1016.56
20246.24 1016.2120258.43  1015.620282.65 1013.1320304.16 1013.2520325.33 1013.88
20360.87 1013.0220399.39 1010.9320443.45 1008.8320509.67 1006.6520530.45  1005.3
20549.36 1002.9420624.04 1001.58 20641.4 1000.6320653.89  1001.220674.36  1001.4
20691.66 1000.4420708.01  1002.620717.29 1003.8220733.99 1004.8520745.04  1006.3
20762.48 1008.2720775.95  1009.320782.78 1010.2820788.76 1010.7420801.71 1012.52
20813.85 1010.7820838.24 1010.5920846.26 1013.6520860.81 1005.6520869.16 1002.57
 20881.6 1002.6520888.55 1005.2820898.48 1008.2720908.17 1004.9320915.98  1003.9
20930.47 1011.0420936.86 1016.2920940.05  1018.520952.96 1025.1821004.85 1025.68
21010.02  1025.221017.42  1023.321098.69 1024.0821136.04 1023.9521181.34 1023.41
21212.16  1022.921283.95 1024.2721300.57  1033.421323.99  1023.8 21329.9 1023.31
 21360.2 1022.8421410.93  1022.321471.63  1021.921516.43  1021.921910.17 1026.78
22038.72 1028.0622133.23  1028.922205.11  1029.522228.96 1029.66

Manning's n Values        num=       5
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
 18173.6    .03718600.82    .01518726.31    .03719212.98    .03220205.32    .032

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      19212.9820952.96             565  559.49     569             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 18173.619204.89    1038       F
21098.6922228.96    1038       F

CROSS SECTION


RIVER: 1
REACH: 1                  RS: 208.67

INPUT
Description: 208.67

Left and Right Channel Bank Stations Interpolated
Station Elevation Data    num=     105
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 17889.8  1026.317940.06 1028.0117946.89  1024.717953.87 1026.9318019.22 1025.66
18296.94 1025.4718455.93  1024.9 18459.5  1024.818473.77  1024.618475.77  1024.1
18522.23 1025.11 18568.7  1024.1 18570.7  1024.618584.97  1024.818585.84 1024.44
18645.36  1024.918707.02 1024.4318845.34    102618932.39  1026.418963.79  1026.2
19024.26 1027.15 19046.1  1027.9 19164.5 1028.1519199.93  1027.619317.69 1028.73
19328.09  1021.519347.56  1010.419383.55 1009.6619393.77 1014.4919409.65 1006.16
19420.84 1005.5519487.27  1008.419553.76 1009.5619580.27 1011.2219681.59 1014.56
19704.28 1016.4119768.18 1016.7919807.68 1017.7819886.33 1018.3119914.74  1017.1
19970.68 1017.7520001.36  1016.320060.25 1014.5920091.06 1012.2120139.57 1010.12
20167.85  1006.520204.43 1005.9920234.48 1008.5220294.94  1005.520308.87 1003.36
20326.14  1003.1 20341.6 1005.8820376.14 1007.4520397.29  1007.120450.21  1009.5
20461.96 1008.6920485.33 1004.5920503.57 1003.0320523.73  1004.220581.55  1010.1
20626.86 1012.8320637.02 1014.0120678.94 1013.25 20690.1 1017.0720712.53 1017.81
20729.15  1021.420758.54  1022.720769.24 1019.5220782.73 1020.1520807.03  1019.2
20820.96    1017   20831 1018.2720844.49  1016.4 20871.7 1016.7620886.74 1015.51
 20895.7 1017.4320915.38 1015.9220935.23 1020.22 20944.4 1025.8420956.53 1026.07
20966.88 1019.1721108.47  1019.921183.53 1020.5621311.57 1022.3821340.58 1022.08
21398.61  1023.121427.63    102321512.69  1024.121608.59 1023.8421651.56 1022.85
   21715  1023.221786.17  1023.121820.67  1022.621854.56  1023.721920.87 1024.77
21941.67  1025.7 22014.6 1025.7422033.05    1025 22130.7  1025.822157.61 1025.44
22270.31 1026.1122293.23 1025.8922355.71  1026.422387.92  1026.122440.81 1026.52

Manning's n Values        num=       6
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
 17889.8    .037 18459.5    .01518584.97    .03719317.69    .03220167.85    .032
20758.54    .037

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      19317.6920758.54             456  449.63     359             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 17889.8 19164.5    1033       F
20956.5322440.81    1033       F

CROSS SECTION
```

```
RIVER: 1
REACH: 1                    RS: 208.57

INPUT
Description: 208.57
Left and Right Channel Bank Stations Interpolated
Station Elevation Data    num=      203
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 18043.1  1026.618105.91 1025.6118144.21 1025.5418188.08 1025.0718211.89 1024.98
18258.69 1024.3218280.09  1024.3 18310.7 1023.8218325.77 1024.0618329.48  1023.7
18333.22 1023.9418344.36 1026.1718358.63 1025.9718360.63 1025.4718407.09 1024.04
18453.59 1022.5718455.59 1023.0718469.87 1023.27 18473.4 1023.0118481.95    1023
18501.82 1023.7818512.77 1023.6118543.96 1023.8318582.81 1024.4118612.91  1024.4
18624.01 1024.8218690.73 1025.19 18713.9  1025.518798.55 1026.0618839.05 1026.11
 18890.3 1026.5118911.31 1026.2118937.47 1026.1918997.38  1026.7 19007.7 1026.45
19032.19 1026.3919066.17 1026.72 19069.2 1026.0719101.45  1026.419105.39 1026.74
19174.29  1026.4 19242.2  1026.819276.95 1027.4519311.47 1027.5119330.99  1027.8
19362.95 1027.4519382.56    102719394.18 1019.4519399.31 1013.8219402.99 1010.99
19419.31 1008.7819431.17 1007.7619447.66 1007.37 19476.1 1007.2219494.43 1007.44
19505.11 1007.9819510.11  1009.419533.51 1010.6219563.13 1011.7319586.72 1012.06
19609.82 1012.6819648.13 1013.3219717.79 1013.7219732.39 1014.0619760.19  1015.5
 19773.2 1015.9719779.57 1015.2219796.53 1016.4719809.96 1016.9519834.29 1016.91
19874.35 1016.1319906.36    101519908.98 1013.8319930.84 1013.5519941.27  1011.6
19955.11 1010.4519974.65 1009.3319991.51  1007.7 20021.3 1006.5220034.23  1006.2
20042.76 1004.9120051.06 1004.6620058.22 1003.6820078.97  1002.820093.45 1002.61
20125.82  1002.720159.52 1004.1120184.03 1003.6120208.06 1004.1120215.97  1005.2
20237.26  1005.220259.55 1006.4520277.02  1006.220316.96 1006.2320344.15  1005.1
20360.59 1005.3820364.27 1005.7720377.87 1009.0520383.24 1011.1320397.61  1009.8
20408.18 1009.8720417.33 1010.83 20424.9 1012.3320438.51 1013.0120456.81 1013.23
20474.11 1013.9220492.85 1014.2120507.45 1014.1420526.79 1013.4920539.37  1013.4
20565.14  1014.420590.58 1015.3220605.65  1016.320611.83 1015.6220620.49  1016.2
20641.35  1016.620645.26    101820655.94 1018.2920677.36 1018.3420685.83 1017.87
20717.99 1018.1720731.12  1019.220755.71  1019.220769.35 1019.6820773.24 1020.74
20777.09  1024.4 20779.8  1021.920783.92 1020.63 20809.6 1020.8420827.39 1021.37
20830.05 1021.0920847.21 1021.3220873.66  1022.7 20879.2 1024.1620895.09 1023.95
20904.95 1021.9920937.19 1022.0320945.09 1021.36 20954.6  1018.920958.81 1017.21
20967.22 1017.3620976.54 1019.2520988.26 1023.3220994.42  1026.720999.24 1026.39
21015.31  1026.721019.76 1024.6121033.44 1024.7421076.95 1023.7521088.41 1023.33
21103.62 1023.2921111.64 1023.7321169.95 1024.0821191.87  1024.521229.35 1024.13
21285.49    102421310.35 1024.17 21337.9  1023.921376.71 1024.3921419.04 1024.35
21462.54 1023.8721499.93 1023.9821527.74 1024.2421537.93 1024.89 21609.1 1025.43
21620.99  1025.821627.53  1024.921654.54  1025.321683.04  1025.121782.17 1025.01
21829.35 1024.8521865.87  1025.721871.34 1025.3621941.71  1025.421967.65 1025.83
21968.32 1026.1621988.33  1025.9 21991.2 1025.4922008.95 1025.8322099.68  1025.8
22160.09 1026.36 22189.9 1026.4322199.11 1026.2622228.89 1026.54 22250.8  1026.2
22285.77  1026.522286.17 1026.32 22317.8 1026.3522334.22 1026.9822335.38  1026.6
22386.13 1027.09 22430.6 1027.2322470.47 1027.8622500.57 1028.0222520.45 1027.74
22540.45 1028.2422544.52  1030.622547.07 1030.6322553.13 1027.8822560.23 1025.56
 22566.7 1025.5622575.37 1028.3822590.86 1028.15

Manning's n Values        num=       6
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
 18043.1    .03718344.36    .01518469.87    .03719362.95    .03220360.59    .032
21015.31    .037

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      19382.5620731.12                685  539.75     467             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 18043.119330.99    1028        F
20777.0922590.86    1028        F

CROSS SECTION


RIVER: 1
REACH: 1                    RS: 208.48

INPUT
Description: 208.48

Left and Right Channel Bank Stations Interpolated
Station Elevation Data    num=      188
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 17996.8  1025.318087.88 1025.75 18135.7  1025.518174.14  1025.618234.42  1025.1
18242.22 1024.9418272.05 1024.8118301.32 1025.1218316.33 1024.9218318.33 1024.42
 18363.9 1022.82 18409.5 1021.19 18411.5 1021.6918425.26 1021.8918436.46 1022.74
```

```
 18438.55  1022.818443.72  1023.7 18452.1 1028.3718456.36  1029.418473.79 1028.64
 18483.21  1028.818490.75 1028.2118501.92 1020.6318510.88 1016.57 18517.2  1015.8
 18532.92    101518548.71  1013.618563.89 1013.2918601.46  1013.718615.03  1013.1
 18626.88 1012.9718673.46 1011.9918685.14  1011.318709.42 1012.4418732.62 1012.55
 18746.16 1012.9618776.92 1014.9518793.29  1015.518825.78 1016.0518831.87  1015.7
  18838.1 1016.0518871.38 1016.6518899.17  1016.418924.17 1015.8618946.43 1015.05
 18974.62 1014.32 19000.9 1013.23 19021.6 1013.6719029.98 1013.5319042.98 1011.74
 19052.81 1010.9319074.74 1010.0219087.23  1010.419108.55 1010.7119125.56  1010.7
 19132.98  1009.319144.31  1007.919158.27 1007.7119179.57 1007.87 19196.9  1007.6
 19203.86  1007.819229.67 1007.68 19252.4 1008.2419273.39 1008.2519295.63 1010.13
 19335.75  1011.819373.54 1013.9419397.84 1014.5219417.49  1014.519491.91  1015.5
  19523.5 1015.5919555.18  1016.219600.72 1016.1319617.17 1014.71 19629.3 1014.06
 19663.03 1014.0919690.04  1014.619692.52 1014.2419735.34 1014.4219792.79 1013.85
 19809.79 1014.0119821.12  1013.719839.66 1014.1219864.65 1013.7319874.48 1012.69
 19887.08  1010.119906.28 1008.0919917.38 1005.8419926.24  1003.619942.51 1001.55
 19951.73 1000.05 19964.2   998.719978.79  998.8919981.77  999.3319993.04  999.21
 20006.45  999.8920018.92  999.6320043.06 1000.0520060.21  999.8420074.55  1000.4
 20083.95 1001.12 20102.1 1001.99 20121.5 1003.3420125.67    100420158.75  1005.7
 20162.52 1006.4920179.29 1006.6420200.95 1007.8520236.77 1009.0320265.78 1010.73
 20279.71  1010.720298.68 1012.2620305.31 1012.1520311.54 1012.8520329.99  1013.4
 20344.23 1013.5320362.96  1013.220374.51 1012.5120389.85 1012.1320395.57  1011.6
 20416.51 1011.7220428.19 1009.7820434.35  1008.320442.45  1007.1 20448.8 1006.99
 20458.78  1007.720466.63 1006.4720478.96 1006.8320496.57 1005.8720507.33 1006.24
 20513.16 1007.2420520.27  1007.720530.35  1007.720539.28 1009.5220546.34  1013.1
 20551.79 1018.3120557.74 1017.2320572.86 1013.4620578.59 1013.6420588.38 1012.23
 20601.35 1012.5220613.84  1012.420624.34 1013.0120633.27  1012.620656.88 1013.18
 20660.09 1013.7820664.57 1013.2620672.63  1013.620680.59 1017.2220691.24 1024.02
 20693.58 1023.5420707.17  1023.320714.21  1023.520723.64  1027.920730.75  1029.2
 20739.88 1029.3820746.13  1027.9 20750.4  1025.420770.94 1025.2820793.11 1025.38
 20828.04    102620878.66 1026.4820916.71 1027.1320973.15 1027.8520988.41 1028.38
 21010.17 1028.5621041.21  1029.321075.03  1029.6 21086.4  1029.521107.07  1029.9
 21134.05 1028.9221135.79  1028.121140.85 1022.9621143.56 1020.9921952.21 1020.99
 21968.53 1029.3421977.18  1026.721993.27 1026.1622006.53 1026.0722025.31  1025.1
 22046.26 1024.8522082.66 1025.4122119.24  1025.322140.38 1025.5122146.37 1025.11
 22150.45 1026.4822168.72 1026.3522187.16 1026.47

Manning's n Values         num=       6
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
 17996.8    .04318301.32    .01518425.26    .04318601.46    .03220162.52    .032
20551.79    .037

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      18501.9220691.24              521  435.12     469             .1       .3
Ineffective Flow      num=       2
   Sta L   Sta R    Elev  Permanent
 17996.818456.36    1038       F
20730.7522187.16    1038       F

CROSS SECTION


RIVER: 1
REACH: 1                   RS: 208.39

INPUT
Description: 208.39 - FEMA Section T

Left and Right Channel Bank Stations
            Interpolated
Station Elevation Data    num=     155
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 17994.5  1023.618007.86 1023.3718031.73 1023.3618062.84 1023.7418090.42 1023.67
18114.62  1023.318143.17  1023.7 18160.8  1023.818214.18  1022.818251.67  1022.9
18257.49    102518261.64 1023.0718284.65 1023.5818312.07  1023.318333.31 1022.84
18354.73 1023.1818358.68 1024.0518373.79 1023.8518375.79 1023.3518421.67 1021.75
18467.69 1020.1518469.69 1020.6518484.81 1020.8518527.95 1010.1718559.86 1009.83
18596.86 1010.5218612.43 1012.1818626.02 1012.3218667.62 1011.2718684.66 1012.92
 18695.4  1013.518704.94 1013.5318739.77  1014.318782.19  1014.318825.93 1013.26
18838.43  1012.818847.91 1012.8418885.02 1012.3418935.29  1011.818943.22 1011.83
18961.27 1011.0818972.93 1008.9618990.89 1008.29 19016.5 1008.26 19040.7  1007.6
 19060.3 1007.3519084.42 1007.4719120.66  1007.319138.38 1006.8519166.34 1007.06
19181.66  1008.919188.11 1010.08 19204.6 1011.7919214.81 1012.4619242.99 1013.46
19276.36 1013.9219313.19 1014.9519348.93 1015.0719366.19 1015.3619421.96  1015.2
19452.11 1015.5319470.77 1015.4519487.54 1015.7419545.02 1015.8319551.46  1015.7
19604.21 1016.0919619.85 1016.4619639.62 1016.2219680.93 1016.3419688.83  1015.4
19726.01  1015.119770.98  1014.319784.11 1013.8819799.23 1013.0619816.81 1012.79
 19826.9  1012.919842.07  1014.119865.81  1014.519881.86  1014.219894.64  1012.6
19902.68 1009.36 19909.6 1005.8819917.47    100319924.78  1000.919935.61  999.49
19959.92  998.7719979.97  998.7120012.27  999.3720018.31  999.73 20046.6  1000.5
```

```
20100.86 1003.2520137.31  1005.220171.78 1006.2820210.78 1008.29 20248.1 1009.71
20277.51  1010.320300.59 1010.5920331.57 1010.5920368.25  1011.1 20389.4 1011.17
20436.67 1010.5120445.36 1010.65 20453.1 1009.8820458.48 1009.5820465.68 1007.74
20482.62 1004.8220500.75 1003.7520533.42 1003.5820538.13 1003.1920548.27  1003.3
20555.54  1004.220568.26 1008.8920580.93 1007.7120590.06 1008.2120595.17 1009.21
   20613 1008.4420620.51 1009.0820630.22  1008.920636.21 1007.4320644.82 1006.55
20668.74 1005.8920698.78 1005.8120709.21 1007.6420714.18  1009.720724.42    1020
21260.32 1020.0121266.13 1023.0621274.82 1025.2421279.02 1023.9921283.14 1020.03
22038.34 1020.0722041.46 1022.0522045.28 1027.5922047.66  1028.122065.98  1025.6
22089.56  1025.622092.59  1026.522103.19  1025.322115.74 1024.9622132.19 1025.64
22134.15 1024.81 22141.7 1024.75 22147.3  1026.222154.11 1024.7822173.98 1024.35
22198.56 1024.0722234.19 1025.0822282.49 1025.6222311.63  1025.722357.18 1026.04
22371.46    102622384.45  1026.422397.87 1026.4722411.27 1026.9922454.87    1027

Manning's n Values        num=       7
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
 17994.5    .04318358.68    .01518484.81    .03218782.19    .032 20453.1    .032
20724.42    .03722047.66    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      18484.8120724.42             509  512.43     494             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 17994.518472.03    1030       F
20721.8722454.87    1030       F

CROSS SECTION


RIVER: 1
REACH: 1                  RS: 208.29

INPUT
Description: 208.29

Left and Right Channel Bank Stations Interpolated
Station Elevation Data    num=     132
     Sta     Elev     Sta     Elev     Sta     Elev     Sta     Elev     Sta     Elev
 16935.4  1021.816972.48 1022.0516991.55  1022.517024.32  1021.717120.62  1023.2
17155.59 1022.6617192.85 1022.0617285.39  1021.817353.34 1022.0917365.71 1022.74
17425.62 1022.4517477.86  1022.117592.61 1022.28 17700.8 1021.9817799.59 1021.43
17903.68  1020.717956.41 1019.8118005.57 1017.7618011.18  1020.3 18035.1  1018.9
18042.76 1021.8618050.62 1019.9918090.91 1023.1618147.03 1024.4418210.46  1025.4
18249.72 1025.2318271.71 1024.8518313.27 1023.2818362.38    102318385.21 1023.51
18396.18 1025.41 18402.2 1027.3518445.01 1025.2918475.18 1024.4818489.79 1020.58
18505.03 1020.3818507.03 1019.8818553.45 1020.8218599.72 1019.8818601.72 1020.38
18616.97 1020.5818656.97 1009.6718708.42  1009.218737.24 1009.6518755.56 1010.47
18800.06 1011.63 18835.5 1012.2318875.15  1012.118949.06 1011.6419019.42  1011.1
19055.94 1009.1119108.87 1007.3719148.55  1006.719191.76  1006.919238.46  1008.2
19283.47 1009.8619311.57 1011.1519324.96 1014.4119351.55  1013.919395.76 1012.17
19433.43  1011.719500.33 1014.7619596.42 1015.6219629.34 1015.5719669.13 1015.41
19682.11 1013.2819693.86 1014.2919756.49 1012.9419768.98  1010.119798.49 1008.72
19819.74  1009.5 19836.3 1013.6119870.91 1013.9419876.64  1013.619889.61 1010.51
19904.18  1008.219928.74 1005.1419950.84 1004.2719997.62 1003.3220036.38    1003
20095.78 1002.8520117.53 1003.1820153.59 1004.19 20318.8  1010.120343.18 1010.71
20377.38  1010.320428.47 1010.2720469.42  1010.620509.53 1010.6320564.09 1010.13
20581.39 1009.3420605.08    101020617.03 1007.58 20645.5  1005.9 20716.8 1004.61
20731.17 1005.02 20758.6 1006.6920777.07  1006.720814.86 1005.9420852.55 1007.02
20869.68  1008.120883.72  1012.820899.05  1021.820909.13 1025.8820910.68 1020.05
21403.95 1020.0321404.24 1021.1221413.92 1024.5921416.52    102021705.57 1019.95
 21721.4 1021.3621744.23  1033.121778.65 1032.3921810.99 1036.2321866.31  1032.7
21906.79 1030.9121931.28 1030.1421987.27 1029.1522047.93  1027.422086.31 1026.79
22185.43  1026.322216.41 1025.2922240.41 1025.5822262.45  1026.722288.71 1027.25
22334.14  1026.322365.77  1026.3   22395 1026.7322437.63  1025.322484.18 1025.63
 22519.5 1025.0222563.78 1026.31

Manning's n Values        num=       5
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
 16935.4    .025 17700.8    .04318489.79    .01518616.97    .03220909.13    .037

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      18616.9720909.13             577  525.37     560             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 16935.418582.96    1032       F
20899.0522563.78    1032       F

CROSS SECTION
```

RIVER: 1
REACH: 1 RS: 208.19

INPUT
Description: 208.19

Left and Right Channel Bank Stations Interpolated
Station Elevation Data num= 158

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
16730.1	1022.916753.12	1023.5516785.44	1023.6 16819.4	102316845.13	1023.28				
16850.24	1021.416853.31	1023.4216886.56	1021.6316909.64	1019.7916911.45	1017.37				
16918.57	1019.1316953.51	1019.6816978.39	1019.47 17023.7	1020.1717062.04	1020.06				
17111.18	1020.6417219.52	1020.617267.34	1020.0517293.42	1020.717369.92	1021.12				
17397.42	1020.6217471.85	1021.0417511.52	1020.417566.36	1020.417569.38	1020.93				
17598.82	1020.417672.95	1020.717738.43	1019.5917795.84	1019.417821.76	1019.88				
17911.17	1019.4518010.94	1019.9 18054.7	1019.1418110.66	1019.4518120.16	1019.83				
18153.28	1019.4518171.52	1019.7918181.75	1024.3718190.83	1026.118197.36	1025.06				
18237.15	1025.3418249.53	1026.318307.15	1024.7918350.15	1024.8618400.95	1024				
18460.32	1022.5318489.32	1022.7218530.98	1023.7218535.79	1025.718539.61	1023.66				
18565	1023.6618602.13	1022.3718624.47	1022.6418637.84	1019.5418653.01	1019.34				
18655.01	1018.8418701.04	1019.7818747.05	1018.8418749.05	1019.3418764.22	1019.54				
18804.32	1008.7818851.13	1008.3218883.28	1008.7918924.65	1010.718964.64	1011.03				
18979.98	1010.4119014.36	1012.2519052.42	1010.819129.94	1010.2319240.15	1011.59				
19275.61	1011.4 19288.7	1010.0419301.43	1007.4819314.13	1006.8 19366.6	1005.7				
19475.49	1004.5619485.33	1003.819509.19	1005.0119534.81	1015.3819544.85	1016.49				
19600.74	1017.419656.77	1015.2519677.18	1016.1219692.65	1012.86 19745.9	1011.45				
19808.87	1011.219828.37	1010.5419899.37	1011.119929.77	1010.419978.61	1005.3				
19993.64	1001.520008.63	1001.01 20109.3	1001.2120138.23	1002.4220152.68	1003.85				
20211.69	1004.920276.37	1004.820317.78	1005.720367.67	1007.9120413.06	1008.79				
20429.71	1009.4920435.42	1008.2520447.29	1008.5520484.38	1009.3920503.03	1008.94				
20508.06	1005.9920520.43	1003.8120535.39	1002.8120566.18	1003.620607.12	1002.9				
20626.59	1004.920695.02	1008.5120734.91	1010.220770.97	1011.1320817.48	1011.23				
20904.94	101020982.62	1008.721008.43	1010.121043.19	1009.2321068.97	1009.53				
21081.6	1011.6421090.53	1011.32 21098.2	1008.5521110.25	1008.2921134.97	1009.53				
21146.26	1012.8121169.22	1013.8321195.79	1011.5921207.45	1009.1221220.24	1009				
21248	1010.2921263.85	1012.9521285.83	1013.2221297.24	1017.4821306.02	1022.62				
21318.96	1022.4221337.97	1020.0222088.87	102022106.28	1024.94 22120	1019.31				
22160.73	1020.1822197.34	1023.5222231.32	1023.9322246.27	1023.2522291.76	1023.6				
22316.75	1023.2322428.91	1023.222463.35	1022.6322535.02	1022.5722586.05	1023.3				
22592.95	1026.6722605.13	1029.5222628.84	1029.2622647.68	1032.3 22666.8	1032.3				
22683.99	1034.73 22703.8	1034.1922714.61	1034.83						

Manning's n Values num= 6

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
16730.1	.02518181.75	.04318637.84	.01518764.22	.03220447.29	.032				
21297.24	.037								

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
18764.2221297.24		537 505.13	617	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
16730.118695.75	1030	F	
21306.0222714.61	1030	F	

CROSS SECTION

RIVER: 1
REACH: 1 RS: 208.10

INPUT
Description: 208.10

Left and Right Channel Bank Stations Interpolated
Station Elevation Data num= 131

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
16849	1021.716914.49	1022.52 16925.9	1023.4316996.09	1020.8317006.05	1019.92				
17027.87	1020.3117098.78	1019.0717322.52	1019.0617694.41	1019.55 17793.4	1018.1				
17811.32	102317826.28	1036.6217856.27	1022.217868.24	1018.317961.78	1017.95				
17970.02	1021.5617992.67	1025.3618008.84	1023.9618047.58	1025.05 18099.5	1028.37				
18140.76	103018245.37	103018252.56	1026.418262.34	1029.718292.78	1049.38				
18302.82	1053.7 18317.1	1055.81 18333.4	1055.618356.26	1046.1618389.95	1023.6				
18399.27	1019.618416.54	1019.1718557.41	1019.618572.13	1026.7918608.43	1047.96				
18623.04	1051.2718634.23	1044.7318668.11	1020.9918732.88	1019.718754.42	1019.58				
18765.27	1018.6 18780.4	1018.4 18782.4	1017.918829.82	1018.83 18875.8	1017.9				
18877.8	1018.418892.93	1018.6 18945.9	1008.918956.06	1007.6619027.93	1008.33				
19043.05	1007.519068.13	1008.5919095.06	1007.8919182.71	1009.819229.38	1009.4				
19260.25	1008.0519310.05	1007.2119358.35	1007.2519407.38	100919467.85	1008.54				

```
   19529 1006.2419563.13 1001.1819586.76  999.9119617.21 1000.6819649.86  1008.3
19685.47 1010.4119707.28 1013.3919729.45 1010.2219757.65  1010.3 19778.4 1008.16
19852.01 1007.4919894.95 1009.0419925.84 1011.1419965.18    101519989.66 1013.88
20041.83 1014.7120048.67 1006.9220061.49  1001.920106.89  999.3420143.17  999.65
20207.73 1002.3220285.89    100220401.54 1002.6220509.22 1004.29 20528.1 1003.74
20583.67  1004.720623.44 1003.0820651.87  1000.820671.68 1001.4420688.98 1007.14
 20705.6 1015.4520809.23  1015.220856.97 1015.8320946.74 1014.8921019.47  1010.9
21075.66 1009.9321150.61  1009.4 21204.6 1009.7321295.02 1011.2921520.61  1010.3
21545.89 1011.8121615.11 1009.4421650.89 1011.7721687.56 1010.5421709.32  1023.6
21722.41 1017.3221736.88 1017.5521745.37 1013.3821780.34 1012.5121796.93  1016.4
21806.75 1022.3621824.91 1020.8821887.06  1021.421909.05 1024.0221919.75  1022.1
21932.01 1024.09 21952.2 1020.02 22200.4 1020.0222216.67 1027.5122230.47 1022.72
 22230.5 1020.04   22568 1019.9822568.37 1022.26 22583.7  1026.622591.93 1021.78
22647.09 1021.7422656.37 1025.1722670.28 1026.3922686.39 1022.3722716.17 1021.75
22791.32 1021.66

Manning's n Values        num=       6
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
   16849    .02517826.28    .04318765.27    .01518892.93    .03220623.44    .032
21709.32    .032

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      18892.9320856.97              582  483.64     477             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
   1684918796.92    1030       F
21709.3222791.32    1030       F

CROSS SECTION


RIVER: 1
REACH: 1                  RS: 207.99

INPUT
Description: 207.99

Left and Right Channel Bank Stations Interpolated
Station Elevation Data    num=     149
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
 16875.4  1020.416977.53  1020.317079.65 1019.7917154.55  1020.117179.37  1019.8
17210.01  1023.417244.75  1026.617267.55 1025.6317306.41  1027.617349.36 1028.51
17355.92  1026.917369.61 1019.3917391.72 1019.2917409.24 1025.1117426.47 1027.04
17451.06  1026.417464.15 1023.9517469.46 1024.8217487.85  1023.717495.78 1021.77
17512.14  1020.717590.41 1021.2717781.42  1020.717841.75 1019.2617866.96 1019.66
17883.94  1023.117895.04 1022.0517908.22 1018.7417922.06 1018.6417964.38 1020.31
18006.33 1021.4918046.72  1021.918082.14  1021.518110.76 1020.4818160.74 1020.46
18172.03 1025.1418182.63 1024.0318194.68 1019.8918254.92    102018344.22  1019.8
 18361.2  1020.518393.48 1020.5618451.15 1019.3118513.04 1017.5418553.55 1017.97
18671.62  1017.918689.62  1017.418726.09 1017.9818764.94 1017.3918792.07 1017.57
18810.24 1017.3218825.27 1017.1218827.27 1016.6218872.93  1017.818918.59 1016.86
18920.59 1017.3618935.62 1017.5618939.46 1016.7119029.29  1016.719035.76 1018.43
19044.22 1016.3219067.34  1015.719077.06 1016.63 19084.9    1020 19104.1  1014.8
19128.89 1010.8919148.44  1009.619155.94 1010.3119184.36 1010.1919264.79 1007.18
19286.08  1005.219355.36 1004.5819391.83 1006.2319415.23  1004.719426.94 1005.04
19478.75 1002.6119527.05  1001.119569.99 1001.7919584.17 1001.3719607.99 1003.74
19654.67 1005.3519679.49 1006.97   19726 1008.2419729.58  1006.519756.21 1006.66
19785.55 1007.7719812.51 1009.9919843.15 1010.4219882.31 1008.1119905.55 1007.97
19946.07  1008.720009.37 1009.2920064.03 1010.3220073.82 1009.9320140.66 1009.69
20197.34  1005.920233.66 1004.97 20259.6    100120291.07  999.9520342.68  1000.3
20370.63 1002.29 20412.8 1001.6420462.43   998.420486.63  997.99 20545.4  997.85
20589.68  996.9820650.71 1001.2920665.28 1004.9920685.76 1014.37 20716.6 1013.94
20733.22 1012.8220743.49  1009.820787.79 1013.4820857.42 1014.4320933.98  1014.8
20990.89    101521043.51  1014.821055.56 1015.2621090.28 1014.4821181.08  1014.2
21237.07 1012.69 21253.4 1008.7221328.64 1004.8221423.21 1006.3621502.67 1010.84
21536.23 1011.5721568.91 1011.23 21597.2 1011.6221641.23 1011.5121715.89  1010.6
21737.64 1009.1121786.71  1008.521795.52 1009.1921820.53 1008.7521849.91  1014.3
21861.63  1015.621897.57 1028.3621904.18 1023.2421912.53 1022.8321936.68 1017.41
21986.37 1017.12 22007.9  1025.2 22025.2 1023.8522120.03  1018.722137.71 1020.74
22149.54 1026.4322164.63 1022.3922225.39 1022.5322268.37 1021.66

Manning's n Values        num=       4
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
 16875.4    .04318810.24    .01518935.62    .03220933.98    .032

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      19184.3620685.76              483  482.81     544             .1       .3
Ineffective Flow     num=       1
   Sta L   Sta R    Elev  Permanent
```

16875.4 19084.9 1025 F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 207.90

INPUT
Description: 207.90 - FEMA Section S

Right Channel Bank Station Interpolated
Station Elevation Data num= 144

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
16668.2	1021.116697.07	1021.2216715.13	1026.9116727.84	1033.6216745.17	1028.8				
16753.49	1031.8416764.39	1028.79 16810.7	1028.83 16818.7	1032.69 16841.3	1032.95				
16853.11	1030.01 16873.1	1020.4716891.99	1017.12 16943.6	1015.9717050.54	1015.79				
17101.54	1016.6117263.36	1016.9317270.78	1021.4917278.85	1016.117302.32	1032.54				
17320.25	1032.617332.89	1029.117338.19	1031.5317355.36	1019.4417363.77	1016.13				
17467.61	1016.35 17507.5	1017.2617575.75	1017.9317637.97	1017.3717736.67	1015.57				
17817.34	1016.417833.13	1018.8517839.54	1023.4217846.61	1020.0217858.61	1020.63				
17873.28	1025.2817882.53	1020.8617935.87	1020.2417980.62	1018.4617993.47	1018.74				
18011.06	1030.3618027.82	1029.1718046.04	1016.818080.62	101618086.75	1019.05				
18101.91	1021.0518111.27	1016.118119.63	1023.0718136.92	1022.93 18141.3	1020.1				
18162.57	1020.2718173.65	1016.118212.38	1016.0418265.52	1017.6318323.62	1017.25				
18359.43	1018.5518367.46	1016.818464.77	1017.118591.55	1016.5618660.05	1016.62				
18702.95	1017.4518780.18	101718803.01	1017.1218846.22	1016.718861.25	1016.5				
18863.25	101618908.91	1016.9418954.57	101618956.57	1016.5 18971.6	1016.7				
18992.53	1016.5119031.56	1016.219060.06	101619067.42	1015.8819103.92	1016.45				
19119.3	1009.419128.18	1007.519182.35	1007.4819212.17	1010.9119293.27	1010.38				
19393.17	1010.9919421.17	1007.9719428.14	1005.9919480.51	1004.819526.08	1005.76				
19582.83	1004.2619635.98	1001.9 19655.3	1001.73 19680.9	998.1619752.44	1000.19				
19780	1000.4619816.99	998.6619843.97	1004.0719874.71	1006.3419914.15	1007.17				
19969.33	1007.1420056.68	1008.4820200.39	1008.6620232.26	1007.5520288.85	1004.31				
20377.34	1005.2620417.85	1003.4220427.57	1000.1120504.31	1000.820558.52	999.21				
20604.85	993.1920644.76	991.5120687.55	994.5520711.17	1000.0620732.09	1012.78				
20763.47	1010.0120800.67	1011.8720847.15	1012.0220898.47	1010.4520949.89	1010.88				
20990.46	1006.8321018.72	1007.4921057.36	101321092.93	1013.7821176.86	1014				
21245.63	1012.7921264.52	1005.9321280.37	1007.6521314.43	1009.1421399.59	1011.1				
21431.25	1011.3621491.56	1010.5621568.39	1006.1621663.65	1007.2221700.62	1003.4				
21731.26	100521804.84	1005.97 21831.2	1003.6621868.05	1003.7621890.34	1007.1				
21922.07	1006.6821935.02	1009.1921998.72	1009.7522038.53	1008.4722049.04	1006.8				
22117.71	1007.2922129.13	1009.9522139.94	1015.3522157.75	1019.77					

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
16668.2	.04318846.22	.015 18971.6	.03221431.25	.032			

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19103.9220732.09		539 522.44	631	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
16668.219060.06	1020	F	

CROSS SECTION

RIVER: 1
REACH: 1 RS: 207.80

INPUT
Description: 207.80

Right Channel Bank Station Interpolated
Station Elevation Data num= 113

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
16847	1020.816881.43	1020.8816889.14	1014.0617423.25	1014.0217437.36	1019.81				
17449.69	1016.3517514.99	1016.1817522.38	1019.8617533.21	101418745.96	1014				
18747.14	1015.2318785.25	1015.4718803.65	1019.41 18812.8	1019.1318818.08	1016.15				
18830.38	1016.3318839.64	1018.4718851.42	1015.8518863.81	1015.5818875.55	1015.83				
18883.83	1015.7718898.87	1015.5718900.87	1015.0718946.56	1016.0118992.25	1015.07				
18994.25	1015.5719009.29	1015.7719013.87	1014.7419054.94	1014.9319084.72	1014.4				
19171.92	1014.7119211.05	1014.2719263.17	1014.619283.23	1009.819298.12	1008.7				
19345.79	1009.7719361.86	1008.8419406.08	1009.2419437.98	1008.2519477.47	1008.2				
19503.55	1007.0819568.66	1006.2719658.16	1006.2119675.69	1005.8219698.72	996.33				
19730.48	998.0819733.28	995.919773.43	994.59 19855.8	998.4819877.01	1000.17				
19883.54	1002.119925.83	1003.2419975.91	1003.719997.48	1004.420076.29	1004.97				
20174.45	1003.8720255.28	1003.6120282.72	1003.0820338.27	999.8520406.22	998.64				
20460.89	998.7720510.16	997.2620581.42	994.4620603.25	994.4720632.96	992.54				

```
20648.95  992.4720666.06  995.24 20681.5  1001.120693.48  1010.520716.41 1012.08
20800.22  1012.520841.99 1013.54 20884.1 1013.8220920.76  1014.820945.15 1011.31
20989.05 1010.3921010.79 1010.8721036.94 1010.2721077.32 1010.2321109.98 1010.87
   21133 1012.3121160.79 1011.5621177.26 1008.9121246.33 1008.1721282.66 1007.08
21290.52 1006.1121329.18 1005.1421342.09 1005.7121352.76  1008.721369.79 1010.16
21414.07  1008.821425.78  1009.721474.56 1010.29 21505.1 1009.4521545.57 1009.56
21554.18  1007.921571.78 1007.6821615.22 1008.9121647.74 1007.9821719.77  1003.9
21783.84 1002.6921812.84  999.0521842.79  998.5321853.07  1004.221864.13  1008.1
21873.45 1014.5221884.47  1018.221905.86 1018.6921919.82 1017.7521925.45  1019.1
21949.45 1017.7321993.49 1017.89 22027.6  1014.4

Manning's n Values        num=       5
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
   16847    .04318883.83    .01519009.29    .03219437.98    .03220920.76    .032

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      19658.1620716.41             562  495.85     534             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
   1684719258.08 1020.02       F
21887.79 22027.6    1020        F

CROSS SECTION


RIVER: 1
REACH: 1                  RS: 207.71

INPUT
Description: 207.71

Right Channel Bank Station Interpolated
Station Elevation Data    num=     111
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
 16765.5  1018.816864.05  1018.516883.96 1018.83 16946.6 1018.2517019.42  1018.3
17136.18  1017.2 17170.8 1017.1517303.76 1015.8717335.63 1014.0917372.94 1013.88
17409.16 1014.4917422.74 1016.8817433.43 1013.7717448.63 1013.2317483.11 1012.47
17506.89 1012.81 17513.1 1013.66 18774.7 1013.2118809.24 1013.4118831.09 1014.19
18843.56 1016.8418853.86 1013.2118868.79 1014.4318872.21 1013.4318903.56  1014.3
18914.58 1013.8418918.88 1014.8818933.92 1014.6818935.92 1014.1818981.62 1015.12
19027.32 1014.1819029.32 1014.6819044.36 1014.8819051.83 1013.0419085.22  1013.8
19094.95 1013.1319248.09  1012.619285.22 1013.2519305.86 1013.1519314.35  1013.7
19368.82 1012.7819413.68 1010.6419464.11 1012.0319523.67 1010.9519527.65 1011.52
19551.29 1010.4419572.96    101119597.58 1008.5619605.18 1007.0219627.97 1005.85
19657.47  994.0619666.38  992.7919688.57  995.0419715.06  995.3319759.55  994.34
19793.67  992.5119803.39  996.1319830.72 1000.6919855.42 1002.7619881.16  1003.1
19938.64 1001.7819969.09 1000.2420003.96 1000.7120050.72 1000.4320115.93  999.08
20215.92  998.3420303.55  995.6120375.22  994.7920428.32  995.2420454.42  995.07
20512.14  995.9920522.85  996.96 20533.3  999.6420547.49 1008.39 20648.7 1006.17
20687.38  1005.920713.47 1004.6720731.93  1005.320741.19 1009.7320746.73 1010.35
 20772.5 1010.2820808.32  1011.220830.19 1010.9620873.06 1009.2920906.05 1010.71
 20965.5 1010.5521012.29 1010.1121072.81  1007.621108.59 1006.9921119.39  1007.8
21160.93 1007.7421204.29 1007.1621242.82 1004.9121266.21 1005.2121275.47  1004.3
21333.41 1003.3121362.56  1004.221374.32  1005.621395.86 1006.5621424.84 1006.46
21486.44 1004.2221508.72  1002.7 21543.4 1002.42 21570.4 1001.6321638.89 1001.96
21653.18  1004.721664.01 1003.7221715.77    101421757.66  1015.821817.54 1016.31
 21829.8 1017.09

Manning's n Values        num=       6
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
 16765.5    .025 18774.7    .03218918.88    .01519044.36    .03219572.96    .032
20808.32    .032

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      19527.6520547.49             493  488.78     530             .1       .3
Ineffective Flow     num=       1
   Sta L   Sta R    Elev  Permanent
 16765.519317.77 1018.01       F

CROSS SECTION


RIVER: 1
REACH: 1                  RS: 207.62

INPUT
Description: 207.62

Right Channel Bank Station Interpolated
```

```
Station Elevation Data    num=      102
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
   16509  1017.416645.43  1017.216919.74  1016.517013.42 1016.69 17027.9 1017.45
17034.42  1016.417053.64 1016.5617076.88 1013.9817126.62  1012.817186.46 1012.21
18763.02 1012.2318778.97 1015.4718793.91 1011.4718833.77 1010.9318943.03 1011.57
18953.35 1013.9718968.37 1013.7718970.37 1013.2719016.48 1014.2419062.69 1013.27
19064.69 1013.7719079.75 1013.9719089.94 1011.5519129.43  1011.5 19154.7 1010.91
19196.96  1009.919235.08  1009.819251.28 1010.8319302.98 1011.5119321.01 1010.95
19350.49  1012.419384.05 1010.2819428.49 1012.4419454.54 1011.4219474.75  1012.3
 19484.7 1011.14 19499.5 1012.2219519.63 1010.8319532.75 1005.0519547.04 1005.84
19555.44 1004.6819564.36  1006.119577.92  1010.919585.31 1009.8819611.56 1002.61
   19642  996.4319669.61  993.68 19693.6   992.119750.51  993.0819768.07  995.02
19790.48  996.1119803.19  998.0319812.49   997.619849.07  999.02 19907.7  998.62
20004.83  995.7820047.36  993.6920089.64  990.98 20168.2  990.1220182.51  990.48
20197.59  992.7720247.65  994.5720301.38  994.9620330.75  997.22 20342.9 1000.78
20350.67  1006.120375.47 1006.2220436.16  1005.620488.63  1004.220513.76  1004.8
20525.92 1010.3120543.71 1010.6320602.97 1010.1320636.54    100920672.41 1007.05
20682.77  1004.820708.62    100420776.14    100320790.62  1004.920843.22 1005.38
20847.96 1004.3920874.88 1004.3620880.15  1003.520902.51    1005 20923.7 1003.21
20972.78 1002.2821067.88 1002.3421078.21 1001.8721154.43 1001.5721159.77  1002.6
21224.84 1001.7921269.33  1001.921347.54 1003.13   21393 1003.3321397.93 1003.97
21430.66  1003.721461.46 1005.6821482.81 1017.6221529.57  1016.621545.67 1016.95
21681.55 1017.2321786.85 1016.58

Manning's n Values        num=       7
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
   16509    .02517186.46    .04318778.97    .03218953.35    .01519079.75    .032
19577.92    .03220843.22    .032

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      19577.9220350.67               493  471.11     510             .1      .3
Ineffective Flow     num=       1
   Sta L   Sta R    Elev  Permanent
   1650919113.11 1017.59       F

CROSS SECTION


RIVER: 1
REACH: 1                  RS: 207.49

INPUT
Description: 207.49 - FEMA Section R
Station Elevation Data    num=      140
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 16428.7  1015.8 16495.7 1015.9716562.86 1015.7616564.59 1016.2616598.27 1015.57
16649.77 1014.8716697.75  1015.1 16736.1 1014.9216785.22 1015.1916790.29 1014.82
16831.41  1014.816991.24    101417150.66 1013.5817195.01 1013.2617294.72 1012.89
17334.41 1013.0117462.54 1013.0117546.67 1012.7517562.88  1012.917614.19  1012.3
17650.74 1012.8817736.69 1012.5217773.31 1012.7717836.83 1013.8617929.25 1014.08
17986.02  1013.117990.65 1013.5218016.47 1013.3718049.96  1013.718127.06 1013.11
18166.95 1013.26 18225.6  1013.118282.06 1013.2418307.52 1010.9218331.41 1010.93
18355.11  1011.818412.86 1011.7618437.92 1012.22 18500.6 1012.0318512.42 1012.32
18580.58 1011.7618667.35  1012.318723.55 1012.2218776.25 1011.8618824.39  1011.2
 18908.1  1010.818952.92 1010.5518981.19 1017.1618993.87 1016.9618995.87 1016.46
19051.81  1017.619102.46 1017.6419104.46 1018.1419119.48 1018.3419162.06 1008.42
19452.06 1007.6419475.46  995.95 19490.7   986.619495.57  985.0919506.62  984.35
19525.63  984.6819542.24   985.619551.29  988.0219625.61  990.8219661.41  989.57
19674.45  987.0619684.82  986.7919735.07  987.2919753.75  993.2119767.32  994.35
19804.67  995.2619824.05  995.1919850.05  996.0319857.63  997.2419885.03  998.53
19936.77  998.7919984.18   999.419991.14  999.8620041.57 1001.3220082.06 1001.89
20173.24 1001.7120208.46 1001.3720224.73 1001.5120281.74 1000.8820306.63    1001
20333.88  1001.620354.98 1001.64   20399 1002.2820426.44 1003.2520511.22 1002.51
20559.96 1001.0320588.83 1000.5820601.27  999.9120628.36 1000.5120679.26  1000.5
20736.27    100020758.91  999.5520809.15  999.5120871.65   999.8 20880.9  999.02
20888.29   999.820914.65 1000.5220919.87 1000.2420993.76  1000.421007.95 1001.06
21032.55 1006.89 21053.5 1010.7621074.81    101421109.99 1016.3721132.01 1017.93
21150.62  1018.421187.24  1017.421208.87 1017.6721243.49 1017.1921276.95 1017.08
21299.03 1016.6621316.72 1017.5621345.51 1017.9321373.46 1017.0121379.02  1016.4
21407.52 1015.6221458.26 1015.3421541.47 1015.4721552.48 1014.9821661.71  1014.7
21700.36 1014.8621734.65  1014.621816.76 1014.7321837.28  1015.121887.67 1015.18
21897.57 1015.8421938.37 1016.0421994.52 1015.6322023.41 1014.6222062.71 1014.75
22101.76 1014.3622119.41  1014.922218.68 1014.7322317.91 1014.9522327.82 1014.86

Manning's n Values        num=       4
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
 16428.7    .03218981.19    .01519119.48    .03221109.99    .037

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
```

```
     19452.0621132.01              244  246.48     308             .3       .5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 16428.7 19445.4  1019.5       F
21096.5122327.82  1019.5       F

BRIDGE


RIVER: 1
REACH: 1                  RS: 207.485

INPUT
Description: 51st Avenue Bridge
Distance from Upstream XS =      88
Deck/Roadway Width        =      95
Weir Coefficient          =     2.6
Upstream  Deck/Roadway Coordinates
    num=      30
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
 17338.3 1010.47 1005.47 18388.3 1010.34 1005.34 18888.3 1010.64 1005.64
 18938.3    1011    1006 18988.3  1011.5  1006.5 19038.3  1012.3  1007.3
 19088.3  1013.2  1007.2 19138.3  1014.3  1008.3 19188.3  1015.6  1010.6
 19288.3  1018.2  1013.2 19388.3 1020.56 1015.56   19445 1022.05  1015.2
 19560.3  1023.4 1017.77 19660.3 1025.18 1019.47 19760.3 1026.58 1020.87
 19860.3 1027.68    1022 19960.3 1028.58 1022.87 20060.3 1029.28 1023.59
 20160.3 1029.68 1023.99 20260.3 1029.78 1024.09 20360.3 1029.68    1024
 20460.3 1029.28 1023.59 20560.3 1028.68 1023.01 20660.3 1027.88 1022.21
 20760.3 1026.68    1021 20860.3 1025.41 1019.67 20960.3 1023.68 1018.03
 21059.4  1020.6 1014.92 21074.8  1020.3  1014.5 21150.6    1019    1012

Upstream Bridge Cross Section Data
Station Elevation Data    num=     140
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 16428.7  1015.8 16495.7 1015.9716562.86 1015.7616564.59 1016.2616598.27 1015.57
16649.77 1014.8716697.75  1015.1 16736.1 1014.9216785.22 1015.1916790.29 1014.82
16831.41  1014.816991.24    101417150.66 1013.5817195.01 1013.2617294.72 1012.89
17334.41 1013.0117462.54 1013.0117546.67 1012.7517562.88  1012.917614.19  1012.3
17650.74 1012.8817736.69 1012.5217773.31 1012.7717836.83 1013.8617929.25 1014.08
17986.02  1013.117990.65 1013.5218016.47 1013.3718049.96  1013.718127.06 1013.11
18166.95 1013.26 18225.6  1013.118282.06 1013.2418307.52 1010.9218331.41 1010.93
18355.11  1011.818412.86 1011.7618437.92 1012.22 18500.6 1012.0318512.42 1012.32
18580.58 1011.7618667.35  1012.318723.55 1012.2218776.25 1011.8618824.39  1011.2
 18908.1  1010.818952.92 1010.5518981.19 1017.1618993.87 1016.9618995.87 1016.46
19051.81  1017.619102.46 1017.6419104.46 1018.1419119.48 1018.3419162.06 1008.42
19452.06 1007.6419475.46  995.95 19490.7   986.619495.57  985.0919506.62  984.35
19525.63  984.6819542.24   985.619551.29  988.0219625.61  990.8219661.41  989.57
19674.45  987.0619684.82  986.7919735.07  987.2919753.75  993.2119767.32  994.35
19804.67  995.2619824.05  995.1919850.05  996.0319857.63  997.2419885.03  998.53
19936.77  998.7919984.18   999.419991.14  999.8620041.57 1001.3220082.06 1001.89
20173.24 1001.7120208.46 1001.3720224.73 1001.5120281.74 1000.8820306.63    1001
20333.88  1001.620354.98 1001.64   20399 1002.2820426.44 1003.2520511.22 1002.51
20559.96 1001.0320588.83 1000.5820601.27  999.9120628.36 1000.5120679.26  1000.5
20736.27    100020758.91  999.5520809.15  999.5120871.65   999.8 20880.9  999.02
20888.29   999.820914.65 1000.5220919.87 1000.2420993.76  1000.421007.95 1001.06
21032.55 1006.89 21053.5 1010.7621074.81    101421109.99 1016.3721132.01 1017.93
21150.62  1018.421187.24  1017.421208.87 1017.6721243.49 1017.1921276.95 1017.08
21299.03 1016.6621316.72 1017.5621345.51 1017.9321373.46 1017.0121379.02  1016.4
21407.52 1015.6221458.26 1015.3421541.47 1015.4721552.48 1014.9821661.71  1014.7
21700.36 1014.8621734.65  1014.621816.76 1014.7321837.28  1015.121887.67 1015.18
21897.57 1015.8421938.37 1016.0421994.52 1015.6322023.41 1014.6222062.71 1014.75
22101.76 1014.3622119.41  1014.922218.68 1014.7322317.91 1014.9522327.82 1014.86

Manning's n Values        num=       4
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
 16428.7    .03218981.19    .01519119.48    .03221109.99    .037

Bank Sta: Left   Right    Coeff Contr.   Expan.
     19452.0621132.01            .3       .5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 16428.7 19445.4  1019.5       F
21096.5122327.82  1019.5       F

Downstream  Deck/Roadway Coordinates
    num=      30
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
 17338.3 1010.47 1005.47 18388.3 1010.34 1005.34 18888.3 1010.64 1005.64
 18938.3    1011    1006 18988.3  1011.5  1006.5 19038.3  1012.3  1007.3
```

```
 19088.3  1013.2  1007.2 19138.3  1014.3  1008.3 19188.3  1015.6  1010.6
 19288.3  1018.2  1013.2 19388.3 1020.56 1015.56   19445 1022.05  1015.2
 19560.3  1023.4 1017.77 19660.3 1025.18 1019.47 19760.3 1026.58 1020.87
 19860.3 1027.68    1022 19960.3 1028.58 1022.87 20060.3 1029.28 1023.59
 20160.3 1029.68 1023.99 20260.3 1029.78 1024.09 20360.3 1029.68    1024
 20460.3 1029.28 1023.59 20560.3 1028.68 1023.01 20660.3 1027.88 1022.21
 20760.3 1026.68    1021 20860.3 1025.41 1019.67 20960.3 1023.68 1018.03
 21059.4  1020.6 1014.92 21074.8  1020.3  1014.5 21150.6    1019    1012

Downstream Bridge Cross Section Data
Station Elevation Data    num=     150
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 16428.7  1015.8 16495.7 1015.9716562.86 1015.7616564.59 1016.2616598.27 1015.57
16649.77 1014.8716697.75  1015.1 16736.1 1014.9216785.22 1015.1916790.29 1014.82
16831.41  1014.816991.24    101417150.66 1013.5817195.01 1013.2617294.72 1012.89
17334.41 1013.0117462.54 1013.0117546.67 1012.7517562.88  1012.917614.19  1012.3
17650.74 1012.8817736.69 1012.5217773.31 1012.7717836.83 1013.8617929.25 1014.08
17986.02  1013.117990.65 1013.5218016.47 1013.3718049.96  1013.718127.06 1013.11
18166.95 1013.26 18225.6  1013.118282.06 1013.2418307.52 1010.9218331.41 1010.93
18355.11  1011.818412.86 1011.7618437.92 1012.22 18500.6 1012.0318512.42 1012.32
18580.58 1011.7618667.35  1012.318723.55 1012.2218776.25 1011.8618816.04  1011.8
18887.02  1012.118935.21 1011.9719030.23 1011.14 19061.7  1011.619092.68 1011.73
19121.65  1012.619162.06 1011.4319172.56 1011.5319175.75 1013.1119179.28 1011.17
19228.02 1011.4719243.11 1012.16 19304.2  1013.5 19325.9 1014.3319353.08  1014.6
19375.05  1016.719387.28 1017.3619405.46 1017.36 19416.8 1016.12 19445.4 1011.67
19452.06 1007.6419475.46  995.95 19490.7   986.619495.57  985.0919506.62  984.35
19525.63  984.6819542.24   985.619551.29  988.0219625.61  990.8219661.41  989.57
19674.45  987.0619684.82  986.7919735.07  987.2919753.75  993.2119767.32  994.35
19804.67  995.2619824.05  995.1919850.05  996.0319857.63  997.2419885.03  998.53
19936.77  998.7919984.18   999.419991.14  999.8620041.57 1001.3220082.06 1001.89
20173.24 1001.7120208.46 1001.3720224.73 1001.5120281.74 1000.8820306.63    1001
20333.88  1001.620354.98 1001.64   20399 1002.2820426.44 1003.2520511.22 1002.51
20559.96 1001.0320588.83 1000.5820601.27  999.9120628.36 1000.5120679.26  1000.5
20736.27    100020758.91  999.5520809.15  999.5120871.65   999.8 20880.9  999.02
20888.29   999.820914.65 1000.5220919.87 1000.2420993.76  1000.421007.95 1001.06
21032.55 1006.89 21053.5 1010.7621074.81    101421109.99 1016.3721132.01 1017.93
21150.62  1018.421187.24  1017.421208.87 1017.6721243.49 1017.1921276.95 1017.08
21299.03 1016.6621316.72 1017.5621345.51 1017.9321373.46 1017.0121379.02  1016.4
21407.52 1015.6221458.26 1015.3421541.47 1015.4721552.48 1014.9821661.71  1014.7
21700.36 1014.8621734.65  1014.621816.76 1014.7321837.28  1015.121887.67 1015.18
21897.57 1015.8421938.37 1016.0421994.52 1015.6322023.41 1014.6222062.71 1014.75
22101.76 1014.3622119.41  1014.922218.68 1014.7322317.91 1014.9522327.82 1014.86

Manning's n Values        num=       2
     Sta   n Val     Sta   n Val
 16428.7    .03221109.99    .037

Bank Sta: Left   Right    Coeff Contr.   Expan.
      19387.2821132.01            .3       .5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 16428.7 19445.4  1019.5       F
21096.5122327.82  1019.5       F

Upstream Embankment side slope              =         horiz. to 1.0 vertical
Downstream Embankment side slope            =         horiz. to 1.0 vertical
Maximum allowable submergence for weir flow =     .95
Elevation at which weir flow begins         =
Energy head used in spillway design         =
Spillway height used in design              =
Weir crest shape                            = Broad Crested

Number of Piers =  15

Pier Data
Pier Station     Upstream= 19562.3    Downstream= 19562.3
Upstream     num=       2
    Width   Elev    Width   Elev
        4   997.3       4  1017.8
Downstream     num=       2
    Width   Elev    Width   Elev
        4   997.3       4  1017.8

Pier Data
Pier Station     Upstream= 19662.3    Downstream= 19662.3
Upstream     num=       2
    Width   Elev    Width   Elev
        4    997       4 1019.54
Downstream     num=       2
```

```
    Width   Elev    Width   Elev
       4     997       4 1019.54

Pier Data
Pier Station     Upstream= 19762.3    Downstream= 19762.3
Upstream     num=        2
    Width   Elev    Width   Elev
       4   996.4       4 1020.94
Downstream     num=        2
    Width   Elev    Width   Elev
       4   996.4       4 1020.94

Pier Data
Pier Station     Upstream= 19862.3    Downstream= 19862.3
Upstream     num=        2
    Width   Elev    Width   Elev
       4   999.5       4    1022
Downstream     num=        2
    Width   Elev    Width   Elev
       4   999.5       4    1022

Pier Data
Pier Station     Upstream= 19962.3    Downstream= 19962.3
Upstream     num=        2
    Width   Elev    Width   Elev
       4   997.4       4  1022.9
Downstream     num=        2
    Width   Elev    Width   Elev
       4   997.4       4  1022.9

Pier Data
Pier Station     Upstream= 20062.3    Downstream= 20062.3
Upstream     num=        2
    Width   Elev    Width   Elev
       4   994.6       4  1023.6
Downstream     num=        2
    Width   Elev    Width   Elev
       4   994.6       4  1023.6

Pier Data
Pier Station     Upstream= 20162.3    Downstream= 20162.3
Upstream     num=        2
    Width   Elev    Width   Elev
       4   995.5       4    1024
Downstream     num=        2
    Width   Elev    Width   Elev
       4   995.5       4    1024

Pier Data
Pier Station     Upstream= 20262.3    Downstream= 20262.3
Upstream     num=        2
    Width   Elev    Width   Elev
       4   999.6       4  1024.1
Downstream     num=        2
    Width   Elev    Width   Elev
       4   999.6       4  1024.1

Pier Data
Pier Station     Upstream= 20362.3    Downstream= 20362.3
Upstream     num=        2
    Width   Elev    Width   Elev
       4   998.5       4    1024
Downstream     num=        2
    Width   Elev    Width   Elev
       4   998.5       4    1024

Pier Data
Pier Station     Upstream= 20462.3    Downstream= 20462.3
Upstream     num=        2
    Width   Elev    Width   Elev
       4   998.9       4  1023.6
Downstream     num=        2
    Width   Elev    Width   Elev
       4   998.9       4  1023.6

Pier Data
Pier Station     Upstream= 20562.3    Downstream= 20562.3
Upstream     num=        2
    Width   Elev    Width   Elev
```

```
       4   996.7       4    1023
Downstream     num=        2
    Width   Elev    Width   Elev
       4   996.7       4    1023

Pier Data
Pier Station     Upstream= 20662.3    Downstream= 20662.3
Upstream     num=        2
    Width   Elev    Width   Elev
       4   997.9       4  1022.2
Downstream     num=        2
    Width   Elev    Width   Elev
       4   997.9       4  1022.2

Pier Data
Pier Station     Upstream= 20762.3    Downstream= 20762.3
Upstream     num=        2
    Width   Elev    Width   Elev
       4    998        4    1021
Downstream     num=        2
    Width   Elev    Width   Elev
       4    998        4    1021

Pier Data
Pier Station     Upstream= 20862.3    Downstream= 20862.3
Upstream     num=        2
    Width   Elev    Width   Elev
       4   999.9       4  1019.7
Downstream     num=        2
    Width   Elev    Width   Elev
       4   999.9       4  1019.7

Pier Data
Pier Station     Upstream= 20962.3    Downstream= 20962.3
Upstream     num=        2
    Width   Elev    Width   Elev
       4    998        4    1018
Downstream     num=        2
    Width   Elev    Width   Elev
       4    998        4    1018

Number of Bridge Coefficient Sets =  1

Low Flow Methods and Data
       Energy
       Momentum               Cd   =     1.2
       Yarnell                KVal =    1.05
Selected Low Flow Methods = Highest Energy Answer

High Flow Method
       Pressure and Weir flow
           Submerged Inlet Cd          =
           Submerged Inlet + Outlet Cd =      .8
           Max Low Cord                =

Additional Bridge Parameters
       Add Friction component to Momentum
       Add Weight component to Momentum
       Class B flow critical depth computations use critical depth
           inside the bridge at the upstream end
       Criteria to check for pressure flow = Upstream energy grade line

CROSS SECTION


RIVER: 1
REACH: 1                  RS: 207.48

INPUT
Description: 207.48
Station Elevation Data    num=     150
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 16428.7  1015.8 16495.7 1015.9716562.86 1015.7616564.59 1016.2616598.27 1015.57
16649.77 1014.8716697.75  1015.1 16736.1 1014.9216785.22 1015.1916790.29 1014.82
16831.41  1014.816991.24    101417150.66 1013.5817195.01 1013.2617294.72 1012.89
17334.41 1013.0117462.54 1013.0117546.67 1012.7517562.88  1012.917614.19  1012.3
17650.74 1012.8817736.69 1012.5217773.31 1012.7717836.83 1013.8617929.25 1014.08
17986.02  1013.117990.65 1013.5218016.47 1013.3718049.96  1013.718127.06 1013.11
18166.95 1013.26 18225.6  1013.118282.06 1013.2418307.52 1010.9218331.41 1010.93
```

```
18355.11  1011.818412.86 1011.7618437.92 1012.22 18500.6 1012.0318512.42 1012.32
18580.58 1011.7618667.35  1012.318723.55 1012.2218776.25 1011.8618816.04  1011.8
18887.02  1012.118935.21 1011.9719030.23 1011.14 19061.7  1011.619092.68 1011.73
19121.65  1012.619162.06 1011.4319172.56 1011.5319175.75 1013.1119179.28 1011.17
19228.02 1011.4719243.11 1012.16 19304.2  1013.5 19325.9 1014.3319353.08  1014.6
19375.05  1016.719387.28 1017.3619405.46 1017.36 19416.8 1016.12 19445.4 1011.67
19452.06 1007.6419475.46  995.95 19490.7   986.619495.57  985.0919506.62  984.35
19525.63  984.6819542.24   985.619551.29  988.0219625.61  990.8219661.41  989.57
19674.45  987.0619684.82  986.7919735.07  987.2919753.75  993.2119767.32  994.35
19804.67  995.2619824.05  995.1919850.05  996.0319857.63  997.2419885.03  998.53
19936.77  998.7919984.18   999.419991.14  999.8620041.57 1001.3220082.06 1001.89
20173.24 1001.7120208.46 1001.3720224.73 1001.5120281.74 1000.8820306.63    1001
20333.88  1001.620354.98 1001.64   20399 1002.2820426.44 1003.2520511.22 1002.51
20559.96 1001.0320588.83 1000.5820601.27  999.9120628.36 1000.5120679.26  1000.5
20736.27    100020758.91  999.5520809.15  999.5120871.65   999.8 20880.9  999.02
20888.29   999.820914.65 1000.5220919.87 1000.2420993.76  1000.421007.95 1001.06
21032.55 1006.89 21053.5 1010.7621074.81    101421109.99 1016.3721132.01 1017.93
21150.62  1018.421187.24  1017.421208.87 1017.6721243.49 1017.1921276.95 1017.08
21299.03 1016.6621316.72 1017.5621345.51 1017.9321373.46 1017.0121379.02  1016.4
21407.52 1015.6221458.26 1015.3421541.47 1015.4721552.48 1014.9821661.71  1014.7
21700.36 1014.8621734.65  1014.621816.76 1014.7321837.28  1015.121887.67 1015.18
21897.57 1015.8421938.37 1016.0421994.52 1015.6322023.41 1014.6222062.71 1014.75
22101.76 1014.3622119.41  1014.922218.68 1014.7322317.91 1014.9522327.82 1014.86

Manning's n Values         num=       2
     Sta   n Val     Sta   n Val
 16428.7    .03221109.99    .037

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      19387.2821132.01             236  236.83     302             .3       .5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 16428.7 19445.4  1019.5       F
21096.5122327.82  1019.5       F

CROSS SECTION


RIVER: 1
REACH: 1                   RS: 207.43

INPUT
Description: 207.43

Left and Right Channel Bank Stations Interpolated
Station Elevation Data     num=     143
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 16400.1  1015.916427.13 1015.8616467.13  1017.416546.13 1017.6416548.16  1016.9
16612.58  1016.616636.85  1015.716681.02  1015.216776.74 1015.0816803.54  1015.6
16881.54  1015.616924.76 1016.0416991.64 1015.5517051.39 1015.8717090.21  1015.5
17114.15  1014.317125.61 1014.7617179.55  1014.117205.34 1014.7617275.25 1014.41
17356.43 1014.5817445.28 1014.1517482.13 1015.5617579.53 1015.5817599.94 1014.11
17631.22 1014.3917655.16 1013.5217708.41 1013.5717845.76 1014.72 18003.6 1014.39
18171.98 1014.9218233.95 1014.8418336.95 1015.3718380.76 1015.2618388.01 1012.07
18524.22 1010.9318531.31 1014.1718535.46 1010.9618836.05 1011.1518846.66    1014
18854.03 1018.9218861.73 1019.9218871.85 1025.6618877.54 1023.6118892.35 1013.59
18924.33 1015.0318937.21 1021.3118940.84 1024.9718946.13  1021.818961.89 1022.23
18966.25 1028.0618989.42 1042.1519002.36 1042.2519017.12 1045.2919042.34 1047.78
 19062.2 1047.7419090.47 1050.6619115.96 1032.8419146.43 1014.6119184.73 1012.98
19195.72 1014.6219211.64 1012.0519228.35 1015.1319246.11 1008.4119307.43 1006.73
19363.86 1007.32 19382.3 1006.92 19385.9  993.0419404.18  986.87 19439.6  983.56
19483.69  985.3219489.64  986.9819511.17  985.9519521.59  988.1919580.14  989.79
19667.17  989.2319682.41   989.819702.21  996.0119748.59  997.3719805.76  996.17
19845.03  997.1619865.87   996.219910.31  998.36 19967.1  998.42 20014.9  999.47
20029.21 1000.5420117.14 1001.5220160.39 1001.5220237.95  1000.920255.99  999.99
 20286.6  996.9120299.66  997.8620325.13  997.7620329.59  999.1920351.58  999.75
20372.56  1001.820404.32 1001.5820462.17  1002.120481.31 1002.9420514.37  999.73
20536.37  999.7320593.55 1002.7620649.48  999.4320722.23   997.720767.76  997.66
20797.59 1001.3720868.09 1000.8620883.15 1002.9520908.05 1004.6920936.25 1009.27
20950.15  1010.620968.54 1014.9620983.24 1015.0921012.76 1013.2421049.68 1012.01
21112.56 1011.2721229.86  1011.121309.34 1013.9821354.05 1014.4421369.82  1020.2
21378.58 1013.6721394.32  1012.721435.95 1012.8721609.23  1011.921625.61  1019.1
 21640.8 1029.7821650.64 1034.1921655.56  1033.921672.55 1026.0321689.59 1033.27
21696.49 1031.3221725.79 1012.3921801.22  1012.8 21841.9  1013.421900.68  1013.3
21928.32 1012.5821976.61 1013.15 21992.6 1013.9822009.96 1021.3622026.88  1013.5
22092.72 1014.4622153.94 1012.9822325.55 1013.89

Manning's n Values         num=       4
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
```

```
 16400.1    .02518531.31    .04319363.86    .03220968.54    .037

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      19363.8620968.54             493  507.55     548             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 16400.119236.09    1025       F
20997.7222325.55    1025       F

CROSS SECTION


RIVER: 1
REACH: 1                  RS: 207.34

INPUT
Description: 207.34

Left and Right Channel Bank Stations Interpolated
Station Elevation Data    num=     116
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
   16390  1014.116451.04 1012.9616482.56 1014.1616558.25 1014.4616655.51  1013.6
16695.35 1012.2816731.16 1012.6516750.26 1014.0516827.83 1014.4316856.22 1013.55
16929.16 1013.0616968.52 1010.9117052.73    101117057.91 1013.1717117.28 1013.98
 17234.8 1014.6617348.67  1012.717385.85 1014.4717500.69  1015.417503.76 1013.82
17533.18  1012.717584.34    101317616.71 1008.0217651.81 1008.0217674.24 1012.87
17705.69 1012.3917898.66 1012.1717949.85 1012.6718043.68  1011.818070.29 1012.58
18154.63 1012.6218193.52  1013.918287.14  1014.818378.12 1014.6918421.32 1014.16
18432.79 1017.3218444.91  1009.818465.12 1009.5818473.11  1011.418485.37 1008.18
18780.52 1008.3418786.65 1009.7218802.51 1008.2318868.49 1008.2318885.79 1021.27
18907.71 1024.4818915.88    101518939.87 1007.1919006.62 1007.9819023.93    1007
19059.35  1007.919094.18  1007.519110.18  1016.219141.52 1019.0719173.29 1017.11
19186.74 1009.0919205.41 1009.1119216.48 1016.0419241.39 1000.1519247.38  999.56
19328.88  999.6919345.58  990.4119358.21  987.98   19413  983.6919462.18  983.49
19562.66  985.5919578.81  988.2219606.64  987.8819631.71  989.8319673.73   989.7
19767.19  993.3119825.99  993.7619849.88  993.1519895.22  993.5119911.96  992.95
19935.76  994.5419987.22  995.9520035.82  995.9120059.81  995.1820093.54  997.88
20142.45  995.9920188.72  996.4120195.76  997.7420234.48  999.13 20268.8  994.11
20301.96   995.320463.57  993.7620481.07  994.0120515.37  998.2920535.47  998.11
20643.38  999.2320673.27  997.3120743.93 1004.8620759.51  1012.620778.22  1014.7
20821.48 1014.5520907.13 1011.1720944.55 1010.4420947.79 1013.5521057.05  1014.4
21158.18 1013.0621217.14 1011.51 21229.7 1015.9421234.29 1010.0122016.61 1010.04
22023.58  1017.922031.01 1012.7722044.31 1015.2722060.16 1013.7122109.89  1012.5
 22140.1 1013.3622172.49  1012.622190.62 1013.3522218.57 1010.3822236.62 1014.38
22258.02  1014.2

Manning's n Values        num=       4
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
   16390    .02517500.69    .04319328.88    .032 21229.7    .037

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      19328.8820778.22             478  511.15     584             .1       .3
Ineffective Flow     num=       1
   Sta L   Sta R    Elev  Permanent
   1639019283.77    1025       F

CROSS SECTION


RIVER: 1
REACH: 1                  RS: 207.27

INPUT
Description: 207.27
Station Elevation Data    num=     143
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 16338.2  1012.816403.51 1012.4316463.73  1011.316514.39 1012.33   16700 1012.61
16741.69 1010.8216772.67 1011.6116799.26 1009.7516839.67  1009.716867.76 1010.76
16922.76 1010.3317010.45 1010.7417086.24 1010.67 17157.3 1012.2717197.79 1012.42
17222.11  1011.217252.76 1011.37 17284.7  1012.917353.36 1013.0317419.07 1012.22
17463.35 1012.2217497.28 1013.2917537.66 1013.4217557.02 1012.5617611.11 1013.93
17637.43 1012.9817712.33  1014.117733.37  1011.517786.06  1011.9 17849.2  1011.4
18020.19 1011.0718101.36 1011.2518112.58 1008.3918148.83 1007.0718192.15  1007.7
18278.76 1007.8418288.02  1012.518299.18 1008.1518328.14 1008.8518334.94 1011.14
18342.37 1007.6118368.55 1007.9618401.13 1006.7518469.26  1007.818481.64 1008.82
18502.64  1019.418523.54 1010.7718566.42  1010.718638.14  1011.618671.96  1014.7
 18703.3 1016.0818708.83 1017.7718752.24 1019.0518771.42 1026.2418789.76  1028.7
18818.49 1028.0618826.99 1023.0818872.32    102318886.44 1024.88 18901.1 1016.13
18914.73 1012.65 18931.1 1011.7319175.81  1008.719235.12  1009.219238.65 1011.07
```

```
19247.16 1016.3219276.61  1003.419292.88 1003.0119349.31  1004.119441.55 1004.12
19447.75  996.5419463.65  987.3819483.81  983.9719526.52  982.6819603.75  984.77
19659.72  985.2519761.91  982.7519777.21  987.6919864.21   989.619948.08  990.08
20034.07  988.7820050.88  987.4220079.13  988.2420090.21  985.9420115.59  985.74
20138.99  991.9920185.99  992.6720234.27  991.8120249.79  992.59 20288.9  992.32
 20297.7  986.5520307.85  985.1620337.94   985.920356.26  984.1620362.31   991.4
20416.85  991.8620464.21  993.0620490.43 1008.6420502.64  1001.520530.06 1003.03
 20614.7 1005.3620654.56  1005.420666.72  1009.620677.91 1009.4820682.81 1005.72
20695.73 1006.3420701.57  1009.7 20718.3  1006.920776.63 1008.7320795.72 1019.26
20806.32 1020.2620817.13 1011.71 20859.6 1012.3320902.24 1012.0920920.17 1010.74
20971.04  1010.221003.47 1011.0221012.12 1013.2321032.96 1011.53 21059.4 1013.24
21164.91 1011.1321179.37  1011.521197.44 1016.0221206.33 1020.8621224.74  1020.8
21249.48  1011.121362.87 1010.6521437.58 1011.9521550.02 1011.0721803.99  1011.9
21818.54 1010.2921842.19  1027.121846.14 1022.8121868.81 1019.7521887.76 1019.33
21891.68 1022.04 21904.6 1013.3721935.71 1013.9521973.98 1011.4122021.45 1012.75
22054.81 1011.6422075.41 1014.5122135.35 1013.96

Manning's n Values         num=       4
     Sta   n Val      Sta   n Val      Sta   n Val      Sta   n Val
 16338.2    .02518101.36    .04319441.55    .03220490.43    .032

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      19441.5520490.43             495.6     574   655.3             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 16338.219136.61    1030       F
20883.0322135.35    1030       F

CROSS SECTION


RIVER: 1
REACH: 1                   RS: 207.16

INPUT
Description: 207.16 - FEMA Section Q
Downstream limits of updated
          sections
New topography by Kenney Aerial - Sept. 2010
Station Elevation Data    num=     150
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 16343.5  1012.616436.28 1011.8316462.44  1010.916497.16 1011.0716513.02 1008.42
16536.33 1011.5316613.93 1011.43 16639.9 1010.9916663.54 1012.1916778.32 1011.46
16822.69 1011.4916914.67  1009.416954.33 1009.3416980.24  1010.117076.42 1010.38
17106.55 1008.7917121.67 1004.9417155.96 1004.2317170.59  1005.117207.53 1012.41
17311.23    101217373.52 1010.9417423.47 1012.9217478.62 1012.5417560.28 1013.23
17657.23 1011.7517689.19 1012.9117788.46 1012.9817809.89 1009.0617825.58 1008.08
17876.67  1010.1   17912 1006.9617961.12 1006.1118037.75 1005.7418144.43 1006.26
18178.23 1005.6618203.48 1011.2418234.84  1011.418285.17 1002.8318327.92 1002.11
18375.51  999.9418431.91   993.518457.64  993.5618492.03  995.5418509.49   999.6
18531.96  1002.418562.35  997.9218570.17  1002.218589.88 1001.8718600.77 1006.26
 18608.8 1003.8218642.04 1004.0918678.06 1000.6518683.19  998.5318706.79 1000.15
18714.26  998.9118801.36 1000.7118855.38  999.8418890.96  1000.218965.92   998.7
19058.76  999.3419082.21  998.7819118.59 1000.7619124.46 1002.0519154.47  1001.6
19187.25 1002.1819218.05  1001.619229.95 1002.6119256.06 1001.5719305.75  1002.4
19351.62 1001.7219361.74 1005.5119371.46 1003.2119377.86   995.419395.47  986.39
19423.79  983.7119441.27  980.1519495.82  978.25 19507.5  981.7719542.54  982.41
19587.75  981.6719670.68  982.0419722.07  980.4719771.21   980.919826.09   979.5
19873.01  976.8419913.92  976.37 20016.3  978.1320038.45  977.5420088.37  978.33
20131.27  978.0420142.84  972.8320158.41  969.8920342.73  969.6620360.02   971.8
 20410.6  971.7320430.37  982.5620448.85  989.1620479.77  1009.220489.77 1004.79
20499.12 1006.0120517.88 1018.4820534.96 1015.8720541.47  1017.920568.83 1018.62
20601.82 1017.4220623.36 1005.9920653.12  1005.720674.35 1015.8920694.61 1021.65
20708.69 1021.9820723.02  1017.8   20737 1019.7320759.03 1019.1620798.34 1008.24
20863.13  1008.9   20876 1015.1320893.82 1014.1820906.14 1008.51 20920.1 1008.03
20970.13  1008.720975.19  1009.421118.29  1010.421133.42  1014.621149.49 1010.82
 21179.7 1010.5421244.66  1011.8 21318.5  1010.821332.07 1014.0521340.69 1011.58
21351.88 1018.6821361.88 1013.4921375.26 1012.4121531.56 1012.8621568.57 1011.87
21614.86 1011.4821621.15 1010.3421662.98 1011.2521669.39  1013.221692.52  1011.7
21771.67 1010.3221783.96 1011.4221823.49  1011.921881.29 1011.2521897.89 1007.92
21937.26  1007.821954.95 1011.4322012.49 1012.4822019.41 1014.5922087.37 1014.74

Manning's n Values         num=       4
     Sta   n Val      Sta   n Val      Sta   n Val      Sta   n Val
 16343.5    .02517788.46    .04319371.46    .03220479.77    .037

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      19371.4620479.77             586  585.23     607             .1       .3
Ineffective Flow     num=       2
```

Sta L	Sta R	Elev	Permanent
16343.51	8601.44	1020.18	F
20568.22	22087.37	1020.45	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 207.07

INPUT
Description: 207.07

Right Channel Bank Station Interpolated
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
16445.4	1010.8	16477.5	1010.8	16492.9	1010.8	16495.3	1012.4	16612.3	1012.1
16706.3	1012.4	16731.4	1011.4	16754.5	1011.7	16775.6	1010.8	16823.5	1006
16897.1	1007.2	16996.9	1007.2	17084.4	1008.1	17118	1007.2	17130.1	1007.9
17215.3	1007.5	17296.8	1005.9	17391.8	1005.8	17473.1	1006.2	17581.5	1006.7
17688.2	1006.9	17793.8	1007.5	17860.3	1007.8	17918.6	1006.5	17937.7	1009.2
17950.5	1008.4	18054.6	1008.5	18145.7	1009.4	18249.2	1008.8	18339.2	1006.2
18409	1004.8	18416.3	1003.9	18490.8	1003.4	18511.6	998.8	18578.1	997.6
18602.7	998.8	18624	998.9	18705.2	1001.4	18768.4	1001.7	18825	999.3
18843.9	997.7	18938	998.1	19029.9	1000.3	19121	1004.5	19134.1	1007.4
19200.4	1009.2	19224.9	1008.7	19244.6	1006.5	19312.8	1004.4	19414.2	1003.2
19443.8	1001.8	19521.9	1001.9	19538.7	1003.4	19547.9	1003.2	19557.9	1004.4
19673.5	1001.7	19761.8	1001.1	19774.6	1001.9	19789.4	1004.7	19852.9	995.2
19935.8	993.4	19939.1	993.8	19945.4	992.8	19998	992.8	20099	992.9
20181.6	993	20237.1	993	20335	993.1	20381.8	993.2	20403	998.8
20417.1	996.1	20529.1	995.5	20635.3	995.9	20719.4	996.3	20720.5	998.7
20734.9	1003.5	20748.22	1004.3	20786.5	1006.6	20840.1	1007	20851.3	1007.9
20926.4	1009.4	21006.6	1009.9	21089.4	1010	21172.8	1009.7	21301.4	1008.9
21383.6	1008.7	21497.8	1007.9	21578.8	1007.1	21613.2	1007.3	21673.3	1011.2
21705.2	1010.3	21732.7	1013.7	21818.2	1013	21896.1	1014.4	21908.3	1013.5
21967.3	1014.4	21999.5	1014.1						

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
16445.4	.043	18490.8	.032	19789.4	.032	20926.4	.032

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19789.42	20748.22	510	514.11	520	.1

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
16445.4	18145.7	1013	F
20926.4	21999.5	1013	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 206.97

INPUT
Description: 206.97

Right Channel Bank Station Interpolated
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
16303.3	1009.9	16422	1010.3	16524.8	1010.6	16626.6	1010.6	16719.6	1011.3
16794.5	1009.6	16836.4	1004.7	16959	1004.6	17073.2	1004.7	17198.7	1004.8
17241.8	1005.5	17390.7	1004.8	17512.3	1005.1	17603.3	1005.3	17704.7	1005.3
17836.9	1005.5	17965	1005.2	18085.7	1005.8	18094.8	1005.9	18105	1008
18196	1007.4	18235.2	1007.2	18260.5	1005.9	18283.2	1007.6	18372.2	1006.3
18390.1	1005.1	18407.6	999.1	18518.7	997.7	18623.3	996.9	18669.1	995.6
18742.3	996.3	18834	1000.5	18925.1	1002.3	19025.7	1004.4	19072.3	1003.7
19086.7	1001.2	19181.7	1005.8	19197	1005.7	19217.7	1002.3	19234.5	1008.4
19316.9	1001.8	19405.1	1002.1	19456.4	1006.1	19566.5	1005.4	19666.3	1005.2
19736.5	1004.4	19776.5	998.7	19783.2	1000.5	19808.3	994.1	19822.1	992.8
19919.1	992.9	20108.8	993.1	20124.9	999	20128.8	998.6	20159.3	982.1
20170.6	981.8	20265.5	981.8	20360.8	981.8	20399.3	981.8	20400.1	981.8
20443.8	981.8	20457.3	981.8	20522.8	981.8	20543.7	981.8	20552.2	981.8
20558.1	981.8	20559.2	981.8	20645	981.8	20661.9	981.7	20684.6	981.8
20778.2	981.8	20792.8	981.8	20800	984.2432	20814.9	989.3	20826.8	991.9
20829.6	993.6	20832.1	993.2	20841.1	988	20882.9	981.8	20888	981.8
20995.1	981.8	21051.7	981.8	21053.6	981.8	21086.6	1009	21114.5	1010.4
21124.9	1008.4	21145.7	1009.1	21151.2	1011.2	21171.8	1014.5	21174	1009.3
21270.2	1009.8	21364.9	1009.2	21463.9	1009.1	21469.9	1008.9	21475.8	1010.8

21486.9	1008.5	21498	1009.8						

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
16303.3	.025	16719.6	.043	18407.6	.032	19736.5	.032	21086.6	.032

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19736.5	20800	480	491.78	480	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
20800	21498	1010	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 206.88

INPUT
Description: 206.88

Right Channel Bank Station Interpolated
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
16205.8	1008.1	16348.5	1008.4	16441.8	1008.4	16531.3	1008.2	16598.3	1009.2
16605	1008.5	16606.3	1010.2	16696.6	1005.4	16819.2	1004.3	16908.4	1004.4
17006	1004.7	17092.4	1003.2	17182	1004	17323.7	1003.7	17415.5	1003.8
17503.8	1003.9	17603.8	1003.9	17703.9	1004.6	17815.8	1005.9	17930.5	1006.3
18057.4	1006.3	18152.5	1006	18216	1005.3	18267.1	1005.9	18292.7	1007.3
18373.6	999.7	18386.3	996.3	18470	995.7	18533.8	995.1	18593.4	996.7
18657.8	996.4	18748.4	998	18835.7	998.9	18932.3	1000.4	18993.2	1000.9
19018.7	1003.6	19101.5	1004	19119.7	1002.9	19166.7	1006	19168.3	1006.9
19251.9	1004.5	19258.4	1005	19341.6	1001.3	19360.8	1001.1	19415.8	1004.9
19507.2	1001.3	19566.3	1004.7	19645.5	1003.4	19728.8	1003.5	19781.8	993.3
19833	992.7	19942.2	993	19947.1	996.6	19996.5	982.3	20008.3	981.8
20016.1	981.8	20105.7	981.8	20143	981.8	20146.6	981.8	20221.6	981.8
20334.4	981.8	20459.7	981.8	20546.8	981.8	20641.2	981.8	20760.8	981.8
20800	981.8	20820.9	981.8	20832	984	20842.1	983.1	20850.4	981.8
20851.4	981.8	20928.6	981.8	20948.4	981.8	21002.4	999.3	21012.9	997
21041.1	997	21047.1	998.2	21081.4	998.4	21113.7	986.4	21142	981.7
21162.6	990	21181.8	991.8	21199.6	1001.3	21208.2	1003.8	21233.9	1006.9
21251.5	1012.2	21270.1	1006.2	21313.5	1006.5	21327.6	1009.1	21361.8	1011.6
21394.4	1008.9	21440.9	1009.7	21454	1011.6	21546.5	1009	21569.8	1012.6
21605	1009.6	21674.6	1010.5						

Manning's n Values num= 6

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
16205.8	.025	16696.6	.043	18386.3	.032	19728.8	.032	21251.5	.032
21605	.025								

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19728.8	20800	480	487.71	505	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
16205.8	18292.7	1007.3	F
20800	21674.6	1012	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 206.79

INPUT
Description: 206.79

Right Channel Bank Station Interpolated
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
16211.1	1006.9	16286.9	1006.9	16364.1	1007.5	16379.7	1007.6	16449.9	1007.6
16525.2	1007.8	16538.6	1008.9	16619.3	1008.5	16666.4	1006.2	16699.6	1001.9
16769.7	1002.3	16840	1002.4	16905.7	1002.4	16989.2	1002.5	17055.4	1002.7
17133	1002.7	17230.9	1002.5	17245.4	1002.4	17322.6	1003	17404	1003.7
17419.6	1003.8	17484.7	1004.3	17553	1004.8	17588.7	1004.8	17631.2	1003
17670.6	1002.9	17748.9	1006.3	17834.7	1006.5	17871.1	1006.6	17919.1	1005.8
17921.7	1005.2	17948.4	1004.4	18036.8	1004.9	18106	1004.9	18182.5	1004.5
18301.7	1004.4	18337	1004.5	18378.4	997.7	18439.7	995.6	18517.1	995.3
18604.7	996.5	18674.2	996.8	18740.3	995.7	18770.1	994.8	18841.6	996.3
18882	997.5	18920.6	1006.8	19010.4	1005.9	19096.2	1003.2	19138.3	1000.6

19186.5	1000.9	19206.9	1002.3	19281.9	1002	19360.7	1002.6	19391.1	1000
19450.2	1002.2	19485	1002.5	19519.3	1004	19570	1004.1	19626.2	1001.8
19645.2	1001.4	19653.2	1002.5	19663.1	1005.3	19671.5	1001	19690.4	994.6
19711.8	993	19766	993.3	19929.9	994	19943.3	996.8	19952.4	996.3
19962.3	992.6	19991	990.7	20007.7	991.1	20032.9	987.2	20042.3	985
20082.5	982.2	20100.2	981.8	20136.1	981.8	20140	981.8	20180.6	981.8
20309.2	981.8	20331	981.8	20390.5	981.8	20420.7	981.8	20422.7	981.8
20425	981.8	20501.8	981.8	20576.6	981.8	20625.3	981.8	20832.1	981.8
20847	981.8	20851.9	981.8	20865.4	988.8	20895.15	1003.436	20902.8	1007.2
20935.6	1019.6	20986	1019.6						

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
16211.1	.025	16525.2	.043	18378.4	.032	19663.1	.032	20935.6	.032

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19663.12	20895.15	495	489.96	520	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
16211.1	17871.1	1015	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 206.7

INPUT
Description: 206.7 - FEMA Section P
Station Elevation Data num= 96

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
16235.4	1006.6	16247.5	1006.6	16320.8	1007.1	16332.7	1007	16402.3	1007.2
16479.2	1008	16505.8	1007.5	16527.3	1008	16552.4	1002	16640.8	1001.4
16727.5	1001.8	16815.4	1001.7	16889.1	1001.5	16902.1	1001.5	16968.1	1001.2
17043.4	1001.3	17155	1000.9	17251.1	1001.1	17317.4	1002.1	17335.4	1002.3
17401.1	1002.9	17430.7	1003.1	17519.9	1003.5	17616.5	1003.3	17699.9	1004
17823.5	1005.8	17891.6	1004.8	17962.7	1005.6	18043.4	1006.2	18125.2	1006.2
18207.9	1005.3	18257.6	1003	18280.3	995.2	18285.8	995.2	18301.4	997.1
18329.6	998.9	18423.4	998.8	18488.5	996	18559.6	995.2	18629.1	994.8
18690.8	994.6	18728.6	993.3	18746.4	994.2	18779.5	994.4	18815.2	996.6
18848.2	1004.6	18945.8	1005	19021.2	1004.8	19092.1	1004.4	19150.1	1003.8
19192.4	1001.5	19285.5	1002.1	19293.9	1002.1	19370.4	999.7	19431.5	999.7
19468.9	1000.2	19510.1	1003.7	19543.9	1002.8	19624.5	994.6	19647.2	992.9
19711.3	993.2	19814.1	993.4	19871.2	993.4	19882.5	995.3	19901.9	992.6
19941.1	991.3	20015.4	991.6	20098.2	993.9	20143.5	994	20167.9	992.9
20185.2	1000.4	20197.8	994.4	20212.7	993.7	20259.6	993.7	20275.9	991.3
20314.8	981.8	20318.5	981.8	20393.8	981.8	20691.8	981.8	20713.3	981.8
20963.1	981.8	21002.8	981.8	21076.8	981.8	21102.7	981.8	21120	988.8
21131	999.6	21138.8	1004.7	21146.9	1002.8	21207	1004.5	21234.3	1006.1
21262.4	1006.4	21329	1008.1	21422.5	1007.5	21452.5	1018.4	21484.3	1017.2
21488	1018.6								

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
16235.4	.025	16640.8	.043	18329.6	.032	19510.1	.032	21138.8	.032

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19510.1	21138.8	500	500.23	500	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
16235.4	18110	1015	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 206.6

INPUT
Description: 206.6

Right Channel Bank Station Interpolated
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
15752.8	1005.9	15777	1004.9	15795.8	1006	15801	1003.8	15809.3	1007.3
15819.9	1006.1	15842.8	1009.5	15850.1	1008	15855.5	1009.8	15868.1	1009.5
15879.9	1006.9	15895.6	1008.4	15904.2	1005.4	15941.1	1007.3	16035.3	1006.2
16155.5	1005.7	16243.9	1005.6	16347.4	1004.9	16444.6	1004.9	16555.6	1004.8
16645	1004.4	16756.4	1003.6	16845.8	1003.1	16944.2	1003.4	17049.2	1002.3

17143.6	1001.7	17249.3	1001.2	17366.6	1001	17501.5	1003.7	17624.2	1003.7
17723.3	1004.1	17790.8	1004	17818	998.9	17847.9	1003.1	17937.7	1002.9
17956.2	1002.7	17971.4	998.8	17988.6	1001.2	18083.6	1001.7	18173.1	1001.7
18217.2	1001.9	18242.2	997.1	18334.4	996.5	18436.5	995	18542.1	993.8
18633.3	993.9	18742.2	997.5	18817.7	997.8	18852.6	1003.9	18965.8	1004.2
19055.2	1003.8	19184.3	1003.1	19243.2	1000	19325.9	998.4	19358	993.4
19395.9	993.2	19452.5	996.6	19546.1	997.7	19580.1	996.6	19611.2	993.1
19679	993.4	19778	993.3	19846.4	993.3	19854.8	995.6	19874.7	992.9
19953.8	992.1	20043.5	994.5	20146.1	995.4	20262.3	995.5	20371.5	995.1
20435.5	995.1	20475.7	981.8	20489.7	981.8	20608.9	981.8	20609	981.8
20738.4	981.8	20854.4	981.8	20866.2	981.8	20903.7	981.8	20931.2	981.8
20996	981.8	21003.4	981.8	21042	988.8	21050.2	995	21066.25	1002.898
21069.1	1004.3	21182.2	1006.4	21270.7	1006.8	21401.9	1007.6	21495.5	1008
21503.1	1008	21594.4	1008.1	21688	1008.4	21840.4	1008.8	21940.4	1009.3
21957.8	1009.5	21998	1007.2						

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
15752.8	.025	16944.2	.043	18334.4	.032	19546.1	.032	21069.1	.032

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19546.12	1066.25	515 504.63	520	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
15752.8	17847.9	1009	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 206.51

INPUT
Description: 206.51
Station Elevation Data num= 96

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
15913.8	1005.6	15956.7	1007.2	15960.5	1006.2	15969.2	1008	16053.6	1008.2
16067.4	1005.5	16150.9	1004.8	16244	1004.8	16317.6	1004.8	16358.5	1004.6
16454.2	1004.5	16463	1004.5	16544	1004.3	16655.6	1003.2	16728.4	1002.6
16756.4	1002.5	16830	1001.9	16942.4	1001.6	16965.9	1001.5	17053.8	1001.7
17131.5	1001.6	17218.7	1001.1	17306.1	1000.9	17382.1	1001.5	17467	1001.9
17537	1002.2	17549.6	1001.2	17642.5	1001.4	17732.1	999	17805.5	999.3
17867.7	1000	17906.8	1001.8	17982.4	1001.1	18024.8	1000	18113.4	1001
18197.5	1001.3	18210.2	1000.8	18235.8	995.8	18284.9	994.8	18353.6	996.2
18430.7	989.4	18472.3	992.6	18563.8	993.1	18633.6	994.5	18690.9	995.9
18720.1	998	18725.5	999	18780.9	997.9	18793	996.9	18839.1	995.7
18912.5	997.1	18936.6	997.3	18950.4	998.8	18982	1000.3	19017.4	998.8
19041	995.2	19046.4	993.8	19117.4	994.6	19184.9	992.6	19190.6	992.6
19209.6	996.5	19283.6	998.8	19380.8	997	19450	996.8	19458	996.8
19546.2	997.4	19586.4	996.5	19645.9	993.2	19653.5	993.3	19813.4	992.5
19869.8	992.3	19881.5	997.9	19911.8	995.3	19937.5	994.2	19964.8	991.9
19978.6	992.1	20019.7	990.5	20038.1	988.7	20070.3	987.9	20113.5	982.4
20192.5	982	20272.4	981.8	20353.1	981.8	20395.6	982.6	20485.4	993.1
20530.4	997	20546.7	997.4	20554.3	995.6	20599.9	998.6	20622.1	999.3
20634.8	998.6	20716.6	1000	20819.1	1001.3	20897.8	1001.5	20989.4	1002.8
21021	1008								

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
15913.8	.025	17218.7	.043	18235.8	.032	19546.2	.032	20622.1	.032

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19546.2	20622.1	495 496.45	500	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
15913.8	17700	1008	F
20615	21021	1008	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 206.41

INPUT
Description: 206.41

Right Channel Bank Station Interpolated
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
16072.3	1004.6	16106.4	1006.4	16110	1005.1	16145.4	1008.7	16171	1008.7
16201.9	1005.9	16207.2	1004	16245.8	1004.3	16311.3	1003.5	16339	1003.3
16410.7	1003.1	16479.2	1003.2	16504.4	1003.2	16587.4	1003	16660.5	1002.5
16723.1	1001.7	16801.8	1001.5	16828.5	1001.3	16901.2	1001.1	16957.6	1001.1
17046.4	1001	17111	1001.2	17185.4	1001	17248.3	1000.1	17325.6	999.8
17339.6	999.7	17404.5	999.4	17486.4	999.7	17508.2	999.5	17572.4	999.3
17623.9	997.5	17651.1	1000.3	17677.5	1000.2	17744.8	1000	17841.4	1000
17924.2	1000	17975.5	1001.6	18054.4	997.3	18144.7	995.9	18247.4	997.4
18279.8	997.6	18300.2	993.9	18302.9	992.5	18313.4	993.5	18405.6	991.3
18469.8	989.6	18495.7	988.3	18533.5	989.6	18556.8	987.7	18575.5	988.9
18582.4	987.8	18584.3	989.6	18620.5	992.5	18634.5	992.5	18697.7	996.9
18786	998.9	18861.4	999.4	18929.1	999.3	18999.1	996.6	19037	995.4
19069.4	992.6	19082.5	992.4	19169.3	990.8	19285.4	995	19369.2	996.5
19395.7	996.5	19466.6	996.5	19539.8	996.4	19622.9	997.3	19694.4	996.7
19720.5	996.5	19730.2	994.5	19748.7	992.6	19835.1	990.8	19895.8	991.8
19904.5	990.4	19996.1	990.2	20002.5	990.4	20015.5	997.7	20035	990
20091.8	991.6	20171.9	991.2	20269.1	991.6	20343.1	990.4	20356.9	990
20360	988.9	20373.3	988	20379.2	986.7	20421	985.4	20490.4	985.8
20544.3	985.8	20576.7	983.8	20636.9	982.5	20685.22	1001.416	20690.8	1003.6
20719.8	1001.5	20729	1007.4						

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
16072.3	.025	17185.4	.043	18300.2	.032	19622.9	.032	20690.8	.032

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19622.92	20685.22	495	494.64	490	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
16072.3	17111	1008	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 206.32

INPUT
Description: 206.32 - FEMA Section O

Right Channel Bank Station Interpolated
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
16817.7	1002.2	16831.7	1004.4	16847.7	1000.1	16903	997.6	16998.5	999.5
17015.9	999.8	17073.2	995.7	17113.2	998.3	17193.6	998.2	17277.8	999.4
17336.8	998.4	17343.9	998.8	17416.7	997.2	17461	999.1	17530.2	1000
17612	1000.6	17634.8	999.5	17703.3	1001.3	17735.8	1000.4	17761.4	998.4
17843.7	998.5	17853.7	998	17875.9	994.2	17903.4	993.9	17962.9	996.3
18028.7	995.2	18096.2	993.6	18102.6	993.3	18134.8	1001.1	18154.4	1000.2
18192.6	1000.1	18243.3	992.5	18301.4	992.6	18329.8	993.4	18404.3	989.6
18429.4	987.7	18495.6	987.8	18512.7	986.5	18544.6	986.5	18577	989.5
18647	992.5	18707.1	997.1	18782.1	996.8	18869.6	997.5	18885	997.8
18895.7	996.8	18922.1	996.8	18939.9	995.3	18961.5	991.6	18990.7	990
19055.1	991.9	19120.2	992.7	19199.6	995.3	19288	998.1	19351.7	998.3
19433.6	998.5	19488.7	998.2	19527.8	996.5	19535	995.3	19546.5	994.9
19619.6	996.5	19696.3	996.5	19801.3	996.5	19818	996	19830.1	994.5
19917.7	993.3	19992.8	991.2	20076.4	989.2	20107.3	989	20181.4	989.5
20194.5	994.9	20217.3	987.2	20265.3	989.9	20314.9	990.8	20362.4	989.9
20372.9	988.8	20409.1	988.6	20435	986.4	20447.1	986.7	20565.6	989.2
20589.2	986.1	20647.7	982.8	20703.3	983.2	20732.7	988.7	20805.2	991
20816.2	997.6	20847.3	998.3	20854.9	1000.773	20855.6	1001	20889.3	1002
20959.7	1001.8	20988.9	1002.7	21076.4	1002.8	21150.5	1002.8	21226.3	1002.8
21295.2	1002.7	21368	1003.3						

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
16817.7	.043	18404.3	.032	19488.7	.032	20889.3	.032	20988.9	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19488.7	20854.9	515	513.83	520	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
16817.7	17150	1004	F
20899.3	21368	1004	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 206.22

INPUT
Description: 206.22

Right Channel Bank Station Interpolated
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
16557.5	1004.3	16639.4	1004	16713.7	1003.6	16806.6	1001.8	16878.4	999
16892.3	998.9	16946.1	1002.9	16955.9	1004.8	16975.7	997.5	16981.9	999.4
16987.4	998.1	17046.8	996.8	17159.7	997	17260.1	998.5	17320.1	997.5
17343.9	994.5	17380.4	994.5	17400.6	996.8	17408	996.8	17477.4	998.9
17541.1	999.5	17596.5	998.4	17631.6	996.8	17724.8	998.9	17740.4	998.5
17771.5	991.4	17846.4	992.8	17904.5	993.5	17940	995.6	18004.2	995.6
18016.1	997.5	18035.4	995.9	18079.4	996.3	18103.6	997.7	18147.1	997.6
18161.3	993.8	18238.9	993.7	18321.5	992.4	18333.6	991.4	18443.6	991.4
18455.9	991.4	18507.4	994.4	18550.2	989.5	18634.4	989.6	18723.2	987.6
18759.4	986.3	18833.1	991.5	18933.1	991.9	18987.8	992.5	19058	994.5
19110.4	996.4	19138.8	999.5	19223.6	1000.6	19278.4	1001.5	19361.2	1000.2
19370.9	998.6	19381.6	1000.1	19456.3	999.5	19512.1	996.4	19583	994.5
19660.7	994.4	19691.9	994.4	19781.3	994.4	19826.6	994.4	19870	992.6
19877.4	990.6	19912.2	990	20004.6	991.9	20079	991.3	20117.2	990.7
20188.2	986.9	20282	986.7	20306.6	994.7	20332.7	985.9	20338.2	985.9
20423.1	985.1	20525.8	983	20611.1	984.7	20700.7	989.7	20755.5	992.3
20766.6	995.9	20807.8	996.5	20844.2	994.9	20887.6	996.6	20898.1	998.3
20968.3	999	20974.6	999.1	20977.35	999.8	423 20990.9	1003.5	21017.9	1001.7
21148.3	1002.6	21222.8	1003.1	21294.4	1003.3	21307.8	1003.3	21385.2	1003.5
21467.9	1003.9	21480	1004						

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
16557.5	.043	19278.4	.043	19583	.032	20990.9	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19278.4	20977.35	500	502.44	460	.1 .3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
16557.5	16955.9	1004	F
21480	21480	1004	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 206.13

INPUT
Description: 206.13

Right Channel Bank Station Interpolated
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
16722.1	1002.8	16785.1	1002.2	16877.3	1002.1	16908.3	1000.9	16979.6	1000.9
17014.5	1000.3	17057.5	998.5	17070.3	997.5	17183.2	997.5	17222.6	994.5
17342.3	992.1	17417.8	994.4	17490.8	994.6	17494	994.7	17613.2	996.3
17668.4	995.8	17699.1	991.3	17790.1	992.3	17861.7	993.7	17934.2	993.6
17996.1	993.2	18017.5	997.2	18080.8	996.1	18121.2	996.9	18147.1	992.3
18166.8	991.3	18235.4	991.3	18302.6	991.3	18386	991.3	18421.8	989.5
18432	988.4	18469.5	988.4	18475.1	989.5	18500.2	989.3	18504.2	988.4
18568.5	987.1	18688.1	988.4	18765.4	989.5	18782.8	992.5	18860.9	996.5
18915	999.2	18980.4	995.4	19020.4	994.5	19089.1	997.3	19153.9	1000.5
19162	1001.6	19203	1003.8	19205.7	1003.2	19223.2	1003	19263.9	1000.5
19294	999.3	19352.5	999.3	19369.3	998.5	19381.9	996.4	19450.5	995.7
19547.3	995.6	19615.3	994.4	19675.1	990.6	19753.3	990.5	19774.8	990.4
19852.5	988.3	19926.3	986.6	19938.1	987.1	19943.1	987.8	19956	986.6
19959	986.7	20036.9	986.5	20105.4	986.3	20129.5	986.8	20164.8	990.8
20183.5	987.1	20270.6	987.9	20276.8	988.6	20297.8	988.6	20342.4	987.5
20366.8	987.4	20431.3	985.5	20458.7	984.6	20505.9	984.6	20523.1	985.6
20557.7	986.6	20563.2	987.2	20637	987.5	20656	988.4	20660.4	988
20685	996.6	20699.6	998	20710.6	997.6	20766.4	997.9	20788.2	997
20848.3	996.7	20868.5	996	20903.4	995.7	20914.9	999	8.8712 20934.1	1004.1
20964.8	1000.3	20989.1	1000.6						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
16722.1	.043	19203	.033	20934.1	.032

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.

1920320914.99 490 483.44 540 .1 .3

CROSS SECTION

RIVER: 1
REACH: 1 RS: 206.03

INPUT
Description: 206.03
Station Elevation Data num= 96

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
16802.9	1002.4	16810.4	1002	16813.6	1000.9	16824	1002.4	16844.6	1000.6
16890.3	1000.8	16957.6	998.6	16974.2	996.3	17051	996.3	17118.7	996
17158.8	996.3	17238.1	994.4	17268.4	993.9	17337.7	992.2	17429.7	992.2
17531.5	992.2	17538.3	993.5	17547.2	994.4	17602.5	996.5	17662	996.6
17711.8	998.8	17753.6	997.9	17811.8	999.7	17868.4	998.8	17876	996.8
17888.6	992.2	17921.7	991.3	17955.9	991.3	18046.3	991.3	18129	992.2
18208.5	993.4	18309.7	993.6	18420.9	993.3	18447.9	989.4	18457.8	986.4
18517.5	985.1	18549.4	986.9	18588	984	18644.4	992.4	18712.4	995.4
18774.2	998.9	18830	995.4	18904.6	994.2	18908.3	994.2	18995.9	996.3
19086.5	1000.5	19177	1002.9	19201.9	1004.4	19226.8	1002.9	19249.6	1003.2
19274.5	1000.5	19281.8	998.5	19300.1	995.7	19315.7	994.3	19390.1	994.3
19400.5	994.3	19413.5	991.2	19424.9	989.1	19482.5	986.8	19510.1	986.8
19554.4	985.8	19658.8	985.8	19753.3	985.9	19822.1	985.9	19854.2	986.9
19870.5	986.6	19902.2	987.2	19919.6	986.6	19994.1	987.8	20078.9	988.1
20133.4	987.5	20176.6	991.9	20201.4	992.1	20216.4	992.9	20292.1	994.2
20354	993	20378.4	992	20392	989.3	20410.4	989.1	20427.7	986.6
20479.5	986.9	20548	985.1	20601.3	984.5	20610.2	984.8	20660.5	989.4
20711.9	992.7	20772.6	995.4	20851.6	995.1	20876.8	995	20972.6	994.7
21099.7	995.7	21122.5	995.9	21132.1	998.6	21160.4	1005.3	21175.8	999.9
21184.2	999.9								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
16802.9	.043	19201.9	.033	20772.6	.032

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19201.9	20772.6	590	513.6	510	.1 .3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
16802.9	16900	1003	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 205.94

INPUT
Description: 205.94
Station Elevation Data num= 96

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
16903.8	1000.5	16909.4	1000	16920.9	1001.6	16972.5	1001.2	16975.5	1000.3
16985.1	1001.6	17007.6	998.7	17082.9	996.3	17151.6	996.3	17234	996.3
17267.9	996.3	17336.5	996.2	17426	996.4	17508.2	996.2	17592.3	996.3
17688.9	994.4	17733.4	994	17754.7	991.9	17830.3	991.2	17928	993.4
17928.3	993.4	18000.5	993.2	18041.8	993.1	18116.7	993.3	18216.4	993.4
18279.7	991.1	18294.7	987.3	18302.5	986.7	18362.5	986.9	18376.8	985.1
18407.6	986.2	18496.1	984.1	18565.5	985.4	18614.9	987.2	18629.5	988.4
18642.1	988.5	18669.8	994.1	18756.5	994.7	18817.1	995.6	18869.8	993.4
18916.1	992.8	18941.2	994.2	19004.1	991	19053.5	981.9	19123.4	981.8
19199.3	982	19250	981.9	19337.5	981.5	19354.9	982.2	19448.6	985
19535.3	985	19613.6	984.8	19703.6	985.4	19775.9	989.5	19831.1	990.2
19926.3	989.4	19994.7	989.1	20082.6	988.9	20106.6	989.1	20111.2	988.5
20149.5	990.4	20183.7	994.3	20237	990.7	20262.2	991.4	20291.7	989.3
20345	989.3	20445.6	986.5	20507.2	982.5	20519.9	982.9	20520.2	982.1
20569.1	981	20589.6	984	20612	989.6	20643	991.1	20662.1	992.9
20686.6	992.8	20704.4	994.4	20767	996.6	20871.9	997.4	20903.2	996.9
20938.8	991.7	20969.6	993.5	21038.9	995.4	21103	995.9	21150.3	993.9
21195.3	994.9	21265.8	994.7	21288.8	994	21309.9	995.5	21385.6	995.9
21402.4	995.6	21473.1	995.1	21527.7	994.8	21551	998.8	21641.3	999.1
21683	1001.6								

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
16903.8	.043	18817.1	.033	20767	.032	20938.8	.037

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.

```
      18817.1   20767              505  506.69     510             .1       .3
Ineffective Flow     num=       1
   Sta L   Sta R    Elev  Permanent
   21215   21683     999       F

CROSS SECTION


RIVER: 1
REACH: 1                  RS: 205.84

INPUT
Description: 205.84
Station Elevation Data    num=      96
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 17154.7   999.5 17167.6   998.3 17173.7     999 17242.7   999.3 17319.2   999.3
 17395.4   998.8 17445.8   998.6 17482.3   997.2 17534.1   997.5 17544.3   997.1
 17572.5   997.3 17612.4   996.5 17644.3   993.7 17719.4   994.2 17735.7   993.6
   17775   993.6 17842.8   992.3 17862.2   987.5 17958.9   987.6 17969.5   989.4
 18029.4   989.1 18042.3   990.1 18085.3   986.5 18121.7   984.6 18194.4     985
 18242.1   986.4 18267.7   987.9 18304.8   988.6 18343.6   988.3 18423.5   987.9
 18487.6   987.3 18519.2   980.3 18575.4   985.3 18594.1   984.3 18599.2     983
 18611.3   981.7 18624.5   979.5 18698.1   979.6 18782.8   980.6 18852.2   980.4
 18868.5   982.8 18970.3   982.9 19086.6   984.3 19137.9     986 19161.5   987.5
 19244.2   986.1 19262.6   985.8 19339.3   985.7 19420.2   986.1 19521.7   987.3
 19606.4   989.5 19664.7   990.4 19734.4     992 19762.4   991.1 19876.6   990.8
 19965.5   989.4 20028.7   988.2 20132.7   984.3 20147.5   983.5   20176     983
 20199.7   984.8 20287.6   984.2 20364.3   982.3 20417.7   981.2 20446.2   981.5
 20481.4   989.8   20508   994.7 20535.7     996 20575.3   996.4 20613.9   995.2
 20691.5   994.7 20737.2   994.6 20809.8   995.7 20816.4     996   20875   995.1
 20909.1   992.8 20953.5   994.7 21021.3   995.7 21074.7   995.5 21087.2   993.8
 21126.7   992.2 21139.8   993.2 21222.1   993.7 21281.4   994.3 21334.2     993
 21367.3   994.1 21398.1   992.4 21450.5   994.8   21460   991.6 21508.8   993.1
 21563.2   993.7 21607.4   993.3 21622.3   993.7 21634.1   995.7 21671.2   996.7
   21696   999.5

Manning's n Values        num=       5
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
 17154.7    .043 18487.6    .043 18575.4    .032 20535.7    .032   20875    .037

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      18487.6 20535.7              495     496     480             .1       .3
Ineffective Flow     num=       1
   Sta L   Sta R    Elev  Permanent
   21450   21696     999       F

CROSS SECTION


RIVER: 1
REACH: 1                  RS: 205.75

INPUT
Description: 205.75
Station Elevation Data    num=      96
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 17305.3   998.9 17323.7   996.7 17395.5   996.8 17486.9   996.4 17509.8   996.4
 17581.1   996.2 17666.5   995.9 17680.3     996 17753.1   996.5 17853.4   996.5
 17864.9   996.5 17966.3     996   18048   994.8 18136.2   989.8 18199.9   985.9
 18204.5   985.7 18238.3   975.2   18303   975.1 18340.9   977.7 18362.6   983.3
 18414.2   984.2 18425.5   978.9 18465.2   978.9   18482   983.4 18487.5   980.6
 18502.7   981.5 18551.9   977.5 18634.1   978.7 18705.8   979.9 18783.7   983.6
 18852.2   983.7 18938.1   983.3 19031.5   983.4 19132.6   984.5   19156   984.8
 19231.1   986.4 19292.3   989.2 19362.3   991.3 19410.6   989.7 19510.1   990.4
   19547   990.4 19564.3   991.1 19608.3   991.1 19685.9   990.7 19759.4   989.7
 19806.7   989.9 19819.8   990.5 19830.2   990.2 19906.7   988.4 19984.6   988.8
 20051.4   988.1 20065.4   987.5 20101.2   975.7 20131.5   973.9 20148.4   974.7
 20183.3     981 20265.9   982.2 20296.1   983.6 20320.1   985.5 20338.8   985.9
 20373.3   988.6 20450.3     990 20500.5   990.7 20583.6   992.4 20674.8   995.6
 20691.1   996.1 20754.7   995.2 20833.9   994.8 20900.7   994.8 20927.8   993.3
 20929.3   994.1 20943.9   991.9 20951.5   991.7   20989     994 21037.1   991.6
 21060.1   993.2 21120.9   992.7 21131.3   991.3 21198.6   991.5 21306.4   993.9
   21377   994.4 21386.2   994.7 21449.8     995 21502.3   995.3 21567.5   995.7
 21648.1   996.3   21682   996.5   21789   996.8 21807.7   996.8 21902.8   997.4
   21921   997.6   22001   997.7 22076.6   997.7 22142.9   997.7 22143.7     999
   22145   998.9

Manning's n Values        num=       4
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
```

17305.3	.043	18048	.043	20583.6	.043	21131.3	.025		

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
18048 20450.3 825 642 490 .1 .3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
21400	22145	999	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 205.62

INPUT
Description: 205.62
Station Elevation Data num= 96

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
16987.1	998.1	17010.8	998	17131	997.7	17220.3	997.9	17312.3	997.2
17337.5	997.1	17349.7	993.8	17415.9	993.4	17452.1	994.5	17456	993.6
17462.6	995.4	17470.7	993.9	17481.8	995.3	17536.8	995.9	17541.4	995
17548.6	996.6	17570.5	992.9	17606.9	994.3	17705.6	994.3	17778.6	994
17854.3	993.6	17935.8	992.6	18000.5	991.8	18066.9	989.1	18154.7	990.1
18182.6	989.5	18216	991.5	18272.9	988.7	18345.5	987	18362.3	985.3
18364.3	986.4	18412.4	980.4	18471.7	977.8	18582.6	976.6	18682.4	977.6
18758.9	978.6	18831.8	982	18915	981.6	18928.4	981.8	18994.8	981.7
19088.8	983.1	19188.8	983.9	19260.2	983.8	19272.1	983.6	19307.3	987.6
19315.9	987.5	19391.2	986.5	19461.1	986.8	19526.5	987.3	19591.7	987.7
19623.7	987.9	19690.2	986.9	19701.7	986.9	19732.4	983.9	19808.3	985.5
19928.6	988.8	19968.4	987.6	20009.8	976	20075.5	976.6	20117.2	979
20204.9	979.7	20242.3	978.4	20253.8	980.5	20285.7	981	20339.5	984.7
20409.9	988.4	20450.1	989.3	20468.3	987	20504.3	986.9	20542.3	986
20605.7	986.7	20698.9	989.9	20708.2	990.1	20715.6	995	20780.9	994.9
20847	991.9	20932.4	991	21003.2	991.1	21102.3	991.6	21194.4	992
21286.6	992.7	21318.6	992.9	21388	993.6	21473.6	994.3	21596.5	994.7
21668.5	995	21758.9	995.6	21817	996.1	21920.7	996.9	21963.3	997.1
22043.7	997.1	22107.3	997.1	22215.9	997.1	22261	998.1	22277.9	997.6
22288.5	999.4								

Manning's n Values num= 6

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
16987.1	.025	17481.8	.043	18216	.043	18471.7	.032	20715.6	.032
20847	.025								

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
18216 20450.1 560 523 510 .1 .3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
16987.1	17548.6	999.4	F
21480	22288.5	999.4	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 205.52

INPUT
Description: 205.52
Station Elevation Data num= 96

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
17458.9	998.2	17496.2	998.1	17528.6	993.9	17537	994	17538.2	993.3
17605.2	993.8	17611.5	994.9	17615.9	993.3	17622.8	995	17635.1	992.9
17665.3	993	17698.1	994.2	17701.5	993.5	17707.3	995.3	17718.9	995
17731.8	991.3	17820.7	991.9	17894	991.4	17966.9	990.6	18049.9	988.1
18115.3	988.8	18176.3	990.1	18241.5	990	18289.2	989.7	18376.9	989.8
18458.3	990.2	18560.9	990.7	18591.6	991.1	18628.8	988.9	18702.3	978.1
18778	976.8	18843.9	975.9	18919.8	976.6	19003.3	977.9	19078	982
19149.6	982.2	19216.6	981.8	19294.8	981.6	19381.8	980.6	19438.9	979.8
19513.6	979.7	19597.1	981.3	19627.4	982.2	19649.8	981.4	19768.3	982.9
19791.5	982.7	19851.9	983.6	19974.7	981.4	20083.4	978.3	20118	977.6
20126.6	978.1	20161.7	976.5	20215.1	976.5	20237.4	983.2	20307.8	986.1
20375.9	986.4	20411.3	986.8	20436.2	983.2	20454.8	985.7	20472.6	986.8
20567.5	986.1	20573.3	986	20590.7	989.7	20611.5	992.8	20623.9	992.6
20656.5	990.1	20672.2	990.7	20688.3	988.5	20695.2	989.1	20701.5	986.9
20769.2	978.7	20789.2	977.6	20827.6	986.2	20844.7	988.1	20936.4	989.8
21007.2	990.9	21024.7	991.2	21032.1	992.9	21046.7	990.6	21139.1	991.6
21236.4	992	21330.9	992.2	21420.6	992.8	21530.8	993.2	21637.9	993.3
21722.2	993.8	21801	994.3	21909.2	994.5	22026.9	995.2	22127.5	995.8

22175.4	995.9	22246.4	996.2	22303.2	996.7	22383	996.1	22389.5	996.1		
22400	997.5										

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
17458.9	.043	18591.6	.043	18628.8	.032	20611.5	.032	21032.1	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
18591.6	20611.5	430	470	400	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
17458.9	17650	998.2	F
21400	22400	998.2	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 205.43

INPUT
Description: 205.43
Station Elevation Data num= 96

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
17577.6	999	17651.4	999	17676.6	993.3	17745.1	993.5	17753.8	994.9
17756.2	993	17761.9	994.1	17779.1	992.9	17827.8	993.4	17837	994.7
17842	993.6	17850.1	995.1	17856.3	994.6	17874.1	989.8	17945.8	990.5
18015.5	989.2	18089	988.6	18171.5	988.1	18272	989	18345.2	989.6
18417.8	988.9	18513.1	989.6	18555.5	988.8	18590.9	983.9	18653.7	980.2
18675.6	981.9	18718.1	992.1	18755	996.2	18831.5	994	18917.5	994.6
18981	993.6	18995.7	991.7	19013.2	983.5	19029.3	979.6	19078	977.3
19159.1	977.1	19235.8	977	19329.8	976.7	19401.3	976.1	19408.1	977.1
19408.2	976.1	19472.5	977.8	19481.8	976.1	19482.8	979.9	19504.5	976.3
19572.1	976.7	19685.1	976.7	19752	976.5	19776.2	976.6	19871.8	985.4
19922.1	984.5	19948.6	982.8	19969.8	979	19994.4	976.5	20009.7	976.5
20115.4	976.5	20173.1	982	20198.5	982.2	20281.7	985.3	20371.1	985.5
20444.6	985.5	20542.7	985.9	20552.8	986	20628.8	985.9	20672.4	986.4
20739.7	988.8	20745.5	988.9	20770.4	996.3	20821.2	987.3	20830.8	986.4
20857.3	988.8	20888.7	988.5	20910.3	984	20959.4	986.1	21024	983.6
21078.8	987.2	21088.9	990.3	21171.4	991.7	21190.4	992.1	21193.4	991.5
21282.9	992	21368	992.7	21454.5	993.1	21528.9	993.3	21613.1	993.6
21695.1	993.6	21768.9	993.9	21849.3	994.3	21923.6	994.4	21927.2	994.4
21997.3	994.6	22016.9	994.6	22089.4	994.6	22155	995.4	22231.3	997.7
22285	998.6								

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
17577.6	.043	18917.5	.043	18981	.032	20770.4	.032	21088.9	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
18917.5	20770.4	175	171.89	125	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
17577.6	17800	999	F
21400	22285	999	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 205.4

INPUT
Description: 205.4
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
17511.1	996.9	17519.9	996.9	17605.2	997.3	17609	997.3	17712.9	997.8
17756.7	992.2	17854.3	993.8	17914.6	991.3	17916.5	991.2	17968.9	990.2
18031	989.2	18084.1	988.8	18154.5	988.3	18213.4	988.3	18281.7	988.2
18304.7	988.2	18362.5	988.2	18388.7	988.6	18461.3	988.1	18529.4	988.4
18564.6	988.5	18633.4	988.7	18712.8	988.5	18774.2	988.2	18787.4	988.1
18843.8	987.9	18915.9	985.1	18943.3	984.3	19013.3	982.5	19020	982.2985
19079.8	980.5	19133	979.1	19154.8	978.5	19196.1	978.7	19231.1	977.1
19260.1	977.2	19291.7	976.5	19304.1	976.8	19364.1	975.5	19377.1	975.5
19436	975.7	19498.9	975.9	19564	975.7	19635.3	976.2	19694.9	976.3
19718.4	976.2	19774.1	976.1	19840.5	976	19902.9	976	19988.4	976
20047.6	976.1	20060.4	976.2	20120.1	976.4	20173.6	976.9	20230.4	977.5
20290.1	977.8	20348.4	979	20391.6	980.6	20448.9	982.1	20522.8	983.7
20592.3	985.3	20647.3	986.7	20692.4	987.2	20767.8	987.4	20829.1	987.4

20894.3	987.9	20922.5	988.1	20978.2	988.9	21055.7	989.4	21057.2	989.4
21142	989.4	21212	990.9	21270.2	991	21321.8	991.1	21338.9	991.2
21394.1	991.7	21407.6	991.9	21469.8	992.7	21547.3	993.5	21598.6	992.6
21619.5	993.7	21690.3	993.7	21721.2	993.7	21811.7	993.8	21872.4	994.2
21923.6	995.3	21941	995.5	22005.1	996.1	22017	996.2	22078.7	996.7
22181.1	997.7	22194.2	997.8	22249.3	998.6	22318.8	999	22386.3	999.2
22404.4	998.5	22455.6	999.3						

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
17511.1	.043	18843.8	.043	19079.8	.032	20767.8	.032

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19020	20767.8	305	315	370	.1

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
17511.1	17800	999.3	F
21450	22455.6	999.3	F

Blocked Obstructions num= 1

Sta L	Sta R	Elev
17511.1	19020	988

CROSS SECTION

RIVER: 1
REACH: 1 RS: 205.34

INPUT
Description: 205.34 - FEMA Cross Section M
Station Elevation Data num= 268

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
13687.27	990.713918.08	990.6813941.26	990.714074.31	990.7414097.95	990.77
14379.8	991.214502.02	991.2714504.17	991.3214654.78	991.4514667.42	991.12
14692.66	99314709.75	992.96 14715.8	991.19 14721	993.2814723.16	993.14
14738.13	990.914750.87	991.8914755.59	992.514795.12	991.614806.23	991.16
14847.09	991.615017.82	991.6715028.83	991.05 15074.2	990.915389.93	990.38
15426.63	990.415457.08	991.7615497.69	991.9115548.79	991.7415599.83	990.06
15624.82	992.515632.81	992.1815645.65	991.2715655.09	992.7415660.02	991.59
15665.1	993.615682.98	994.8415701.37	993.3215707.96	993.3215720.14	993.51
15863.53	993.415962.36	993.7816143.17	993.716302.48	993.5316434.69	994
16540.11	994.5 16630.9	994.0316710.83	993.4216732.11	994.2916741.14	994.53
16755.65	994.816763.06	993.9916780.42	993.7616789.57	993.416811.41	992.38
16945.01	992.917037.42	993.3817118.17	992.917138.04	992.7817279.36	992.27
17420.37	992.117527.98	992.75 17560.1	992.78 17728.5	991.3317729.54	991.26
17753.81	988.517789.02	988.817833.72	989.117845.57	991.9517853.64	990.8
17860.73	99217869.58	99217881.45	991.8417895.69	992.1317897.64	994.57
17904.21	994.517909.94	991.8217920.11	988.7917940.57	989.6117986.35	989.54
18002.56	989.718065.95	989.1618080.07	988.8318116.41	988.3818122.12	987.76
18187.93	987.418195.48	987.3618246.02	987.5818264.37	987.6418314.54	986.65
18327.91	986.818350.36	988.1118365.79	988.5818392.98	988.6518415.65	990.57
18418	99118432.37	990.8218481.36	991.38 18548.7	990.7218596.12	990.95
18645.9	99518660.36	994.9818676.98	995.0618724.18	991.4718772.07	990.61
18787.28	990.318822.48	988.85 18833.8	988.7918853.31	988.4818883.89	988.52
18895.6	987.7 18912.2	992.1218970.58	990.1619022.37	991.3519035.55	989.07
19043.96	988.619066.14	988.56 19076.9	991.3319096.79	993.0719099.41	993.11
19116.55	988.419170.12	987.719232.28	987.219252.59	986.66 19258.9	986.61
19276.73	986.119284.34	985.9919293.57	985.3919297.05	984.9419318.57	978.71
19328.6	976.919337.34	97619422.11	976.1819470.05	976.22 19524.9	976.33
19562.89	976.719632.66	976.0919705.72	976.4319754.05	976.6319843.53	976.95
19853.47	97719865.48	976.519880.46	976.3619890.89	975.8119912.96	977.83
19933.5	976.919947.42	976.619979.26	976.26 20010.7	976.0820051.63	975.84
20062.33	975.720073.85	975.5720119.54	976.87 20199.2	978.2920212.26	978.81
20258.32	980.920264.39	980.66 20329.9	980.6420332.62	980.4120369.18	979.74
20375	980.1 20380.1	980.6320381.06	981.0320388.75	983.0320395.38	983.51
20436.76	985.120502.38	985.6120525.59	985.520561.61	985.7420587.94	985.95
20626.14	985.820644.89	985.7420678.28	985.5520707.29	986.1820742.96	987
20746.96	986.620752.64	985.5420762.54	985.0520787.99	983.0120822.69	985.52
20836.01	987.120844.69	986.9620890.92	987.1920931.14	987.6220978.97	988.36
21006.5	988.721057.23	989.3821083.41	989.721100.77	990.25 21161.6	990.89
21172.71	99121247.07	990.97 21252.7	990.9921266.22	990.7621277.98	990.73
21290.76	992.8 21299	991.1421333.63	991.1321435.22	991.221524.43	991.65
21554.31	991.6 21567.7	991.7221625.82	992.321657.32	992.4221684.03	992.58
21782.19	993.421851.31	993.7221863.14	993.921872.38	994.1621891.44	994.52
21949.81	994.621975.44	994.9221995.48	994.9122007.76	995.2522037.54	996.24
22051.44	996.622075.07	997.6322125.13	998.6122139.54	998.9522159.57	998.78
22179.58	998.822264.13	998.322280.55	998.0322353.16	997.9122369.37	997.91
22404.01	99822463.45	998.2722491.06	998.822531.57	998.5222560.64	998.76
22593.64	998.8 22617.2	999.0722646.25	999.1222676.56	998.9422686.88	999.19

```
22731.76  1000.522770.23 1000.7922779.44 1001.3422789.67 1000.9722824.65 1001.12
22886.17  1001.722901.04 1001.6722978.01 1002.0623003.78 1002.23 23080.5 1002.51
23154.45  1002.823270.34 1003.4323291.75 1003.5623364.66 1004.1223410.89 1004.31
23481.28  1004.623504.95 1004.7623548.34 1004.8523582.71 1004.8423645.08 1005.05
 23678.1  1005.223738.97 1005.2323762.47 1005.11 23813.7 1005.1223872.53 1005.28
23908.97  1005.423920.45 1005.5423934.72 1004.9423951.14 1004.4623976.71 1005.57
23998.12  1003.624004.04 1002.9424049.64 1002.74

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
13687.27    .04318481.36    .04320931.14    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.    Expan.
      19284.3420742.96              485     492     450             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
13687.27   17900    1000       F
   2140024049.64    1000       F

CROSS SECTION


RIVER: 1
REACH: 1                   RS: 205.25

INPUT
Description: 205.25
Station Elevation Data     num=      96
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
 16580.4      994 16657.1      994 16708.3    993.9 16776.5    993.6 16819.1    994.5
 16845.8    992.8 16892.9    992.2 16971.6    992.3 17154.1    993.1 17172.8    993.1
 17289.2    992.5 17431.5    991.8 17455.8    991.6 17644.6    992.5 17718.9    992.3
 17808.9    991.8 17842.7    989.1 17907.9    989.9 17920.6    992.1 17926.4    990.6
 17933.2    992.4 17964.3    990.4 17989.2    990.3 17999.1    987.6   18061    989.2
 18108.7    990.1   18179    988.3 18216.3      987 18244.2    987.5 18311.6    987.2
 18329.2    987.8 18392.2    987.8 18457.1    988.6 18493.2    989.2 18509.7    988.5
 18583.8      989 18614.2    989.1 18647.4      988 18708.8    987.6 18775.5    989.5
 18807.1      990 18886.3    989.2 18946.4      989 18990.4    988.1 19012.5    989.2
   19101    990.2 19156.3    989.9 19179.1    987.1 19186.7    985.4 19228.7    983.3
 19242.4      982 19306.5    983.4 19368.3    983.9 19442.9    983.5 19503.3    984.6
   19563    981.8 19581.1    985.9 19632.5    986.1 19671.9    987.3 19726.2    975.8
 19815.7    975.6 19878.1    976.2   19957    975.9   20042    975.5 20112.8    975.3
 20121.8    975.7 20160.5    973.8   20242    973.4 20260.5    974.6 20329.5      975
 20404.8    975.5 20471.4    978.3 20486.8    979.5 20522.9    977.9   20526    975.8
 20552.9    975.9 20584.6    974.1 20632.4    973.9   20697    975.7   20712    975.7
 20738.9    981.7 20741.5    980.7 20782.3    986.4 20848.1    987.4 20923.8    989.9
 21014.3    990.6 21121.3    991.6 21201.7    992.1 21283.6    992.1 21338.5    993.1
 21347.9    993.8 21358.2    992.2 21370.3    995.6 21409.5    995.7   21424    994.5
 21499.5    993.3

Manning's n Values         num=       4
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
 16580.4    .025 18108.7    .037 19671.9    .037 20782.3    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.    Expan.
       19671.9 20782.3              505     506     485             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 16580.4   17950   995.7       F
 21347.9 21499.5   995.7       F

CROSS SECTION


RIVER: 1
REACH: 1                   RS: 205.15

INPUT
Description: 205.15
Station Elevation Data     num=      96
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
 18001.2      994 18008.5    992.8 18015.6    994.9 18038.3    990.9 18047.4    991.8
 18061.5    992.1 18077.6    991.6 18146.4    988.8 18170.1    988.9 18200.6    988.3
   18243    988.8 18269.7    988.5 18292.3    988.8 18341.7    989.8 18374.9    990.2
 18415.6    990.6 18438.3    991.1 18547.3      991 18558.8    991.1 18618.4    991.8
 18625.4    991.9 18687.7    991.3 18696.2    991.3 18745.4    991.4 18794.1    991.1
   18810    991.2 18866.4      991 18894.1    991.2 18920.9    990.7 18973.2    990.3
 19018.9    989.8 19055.8    989.7 19109.2    989.4 19141.8    988.8 19181.8    988.8
 19228.5    988.7 19285.2    989.2 19335.5    988.1 19346.3    987.8 19386.8    986.1
```

19394.2	985.9	19440.1	984.4	19443.6	984.3	19490	983.7	19506.7	983.8
19532.2	982.8	19587.2	983.3	19612.4	983.6	19619.1	984.1	19660.7	983.9
19705.1	983.1	19747.1	983.7	19787.1	984.9	19805.2	976.8	19822.3	973.4
19827.6	974.7	19829.5	974.2	19853	974.2	19880.4	973.6	19881.2	973.1
19908.4	980	19918.9	982.2	19934	984.3	19978.1	984.9	20006.4	984.1
20054.3	983.8	20064.2	983.5	20106.6	982	20110.7	981.8	20166.7	979
20196.8	978.1	20246.3	976.6	20250.4	976.4	20298.9	975.4	20340.8	975.5
20371.6	975.7	20436.2	974	20495	974.1	20608.2	975.2	20651	975.7
20691.5	977.2	20705.2	979.5	20746.3	987.3	20793.1	987.9	20838	988.7
20896.6	989.6	20910.7	990.1	20968.3	990.3	20999	990.6	21039.8	990.8
21107	991.7	21127.2	991.3	21170.3	994.1	21206.9	995.7	21258.6	996.3
21293	996.4								

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
18001.2	.025	18146.4	.037	19787.1	.037	20746.3	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19787.1	20746.3	495	495.39	495	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
18001.2	18061.5	995	F
21293	21293	996.4	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 205.06

INPUT
Description: 205.06
Station Elevation Data num= 129

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
17971	990.9	18065.3	988.6	18104.6	990.4	18115.6	988.2	18128.9	991.2
18143.2	991.5	18167.1	990.4	18222.4	988.9	18239	988.9	18268	988.1
18295.2	989	18314.3	988.5	18358.9	987.5	18410.5	986.7	18435.8	988.1
18478.4	994.2	18515	994	18541.2	993.6	18567.7	993	18668.2	993.4
18694.6	996.3	18716.8	994.1	18733	990.9	18773.1	991.2	18799	993.8
18844	996.4	18879.8	994	18912.8	991.3	18929.6	990.6	18948.8	990.9
18974.6	992.4	18989	991.8	18996.9	990.8	19026.5	996.8	19033.3	997.5
19038.3	998.5	19071.8	995.8	19078.5	994.1	19097.2	986.1	19133.8	987
19136.4	990.2	19142.8	992.6	19151.6	994.3	19202.7	994.1	19217.4	994.9
19226.3	988.3	19230.3	986.5	19252.3	985.8	19287.1	985.9	19329.2	986.2
19380.3	987.3	19388.1	987.3	19434.5	987.8	19445.1	987.8	19500.6	988.4
19538.9	988.7	19598.7	988.7	19648.7	990	19669.4	989.9	19722.7	988.3
19771.5	986.5	19803.6	986.4	19827.5	985.6	19841.3	984.7	19887	983.6
19904.2	973.1	19931.3	971.2	19981.6	971.1	19982.8	971.1	20027.4	970.5
20053.2	971.3	20073.5	976.1	20120.4	976.2	20137.3	976.4	20147.5	981
20155.4	983.6	20196	987.3	20208.9	986.1	20221.7	985.3	20253.8	981
20275.4	981	20301.5	975.4	20306.9	975.1	20315.2	975.1	20365	974.5
20425.5	974.6	20470.1	974.5	20497.9	974.4	20563.5	973.5	20601.9	973.2
20671.9	974	20850.2	976	20856.8	977.9	20880.3	977.7	20892.4	984.3
20905.3	990.8	20927.2	991.2	20971.3	992	21020.6	993	21062.7	993.2
21101.6	993.3	21146	993.7	21204.6	993.9	21256.1	994.5	21300.3	994.8
21336.3	994.9	21378.2	995	21414.7	995.2	21457.8	995.2	21484.8	995.4
21512.4	994.7	21514.5	995.9	21516.2	996.3	21518.9	995.5	21525.9	994.3
21532.1	994.6	21537.4	995.2	21546	995	21560.5	995.3	21575	995
21602.5	996.4	21628.8	996.3	21672.8	996.3	21709.9	996.5	21754.4	996.4
21826.9	996.1	21895.5	996.5	21951.4	996.6	21997.9	996.4		

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
17971	.037	19026.5	.037	19669.4	.037	20905.3	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19669.4	20905.3	505	505	530	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
17971	18080	998.5	F
21997.9	21997.9	998.5	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 204.97

INPUT

Description: 204.97

Left Channel Bank Station Interpolated
Station Elevation Data num= 86

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
16000	993.3	16025.7	992.1	16060.7	991.7	16273.1	992.3	16303.1	992.4
16597.7	992.1	16613.7	992	16818.7	992	16912.8	992.3	17061.4	992.3
17169.3	991.7	17232.9	991.8	17259.7	989	17316.4	990.2	17470.6	990.2
17483.4	990.2	17700.5	989.9	17786.2	989.2	17832.4	989	17894.5	988.9
17924.8	989.2	17933.3	990.5	17979.7	992.1	17985.3	991.5	17994.8	988.7
18008.6	988.7	18105.1	987.6	18137.2	986.9	18189.2	987.8	18201.2	986.8
18216.4	989.2	18243.6	989.2	18301.9	989	18377.5	989.6	18462.9	990.2
18523.7	988.6	18573.9	986	18643	986.6	18672	985.8	18672.9	984.9
18697.7	984.3	18729.6	988.3	18807.2	987.9	18833	984	18865.3	987.3
18888.3	985.4	18917	987.8	18955.4	987.9	18987.3	984.9	19046.8	987.1
19093.5	986.8	19152.6	983.5	19285.8	983.8	19317.6	981.5	19332.9	979.1
19418.6	978	19438.3	978.8	19545	978.843	19934.7	979	19938.2	981.1
19945.9	981.9	20008.7	980.8	20068.2	980.2	20091.8	979.6	20151.8	979.3
20225.8	978.1	20300.7	979	20367.2	979.3	20442.3	978.7	20509.6	977.2
20568	974.8	20659.1	973.3	20662.9	973.3	20925.5	975.4	20961.3	988.6
20999.4	990.2	21056.8	990.8	21126.2	991.7	21187	992.8	21200.2	992.9
21265.2	993	21340.5	993	21356.1	993	21427.5	993.4	21492.8	993.1
21496	993.1								

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
16000	.025	18301.9	.037	19046.8	.037	20961.3	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19545	20961.3	510	503	550	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
16000	18200	993.4	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 204.87

INPUT
Description: 204.87

Right Channel Bank Station Interpolated
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
17067.4	991.5	17111.3	991.5	17255	990.6	17291.2	991.6	17298.2	992.1
17315.9	991	17328.2	990.9	17345.3	988.6	17426.3	988	17520.6	988.2
17594.7	988.5	17781.4	988.6	17822.3	988.5	17925.1	988.2	18001	987.2
18108.5	987.1	18221.3	987.3	18261.7	986.3	18269.2	986.9	18279.6	985.4
18296.9	986.8	18325.5	986.8	18352.2	985.5	18429.1	985.3	18501.3	985.6
18553	984.4	18559.8	986.3	18565.9	988.9	18578.6	987.7	18604.1	983.9
18645.9	981.4	18657.3	984	18678.8	986.2	18730	987.6	18832.5	987.5
18855.2	985.7	18859.7	984.6	18874.5	986.6	18920.1	984.6	18942.9	980.4
18960	980.8	18970.7	982.4	19015.9	985.9	19104.6	986.7	19209.9	985.7
19234.9	985	19264.2	982.7	19275.4	983.5	19297.4	981	19382.3	981.4
19462.8	981	19532.8	979	19555.4	979.1	19566	978.5	19579.4	978.5
19588.4	976.2	19598.7	976.3	19623.4	978.5	19628	979.5	19642.3	981
19714.7	981	19730.8	981	19759.9	975.9	19765	976.4	19772.7	975.9
19854.5	975.9	19859.5	975.9	19861.3	977.3	19877.6	980.8	19890	975.9
19903.3	969.9	19909.9	970	19919.2	968.1	20001	968.1	20022.9	968.1
20059.2	975.3	20126.4	976.2	20213.9	975.3	20298.1	974.9	20351	974.8
20377.2	977.3	20393.3	977.5	20505.4	975.8	20559.1	974.3	20612	976.5
20624.2	974.6	20654.3	973.2	20826.7	974.3	20919.3	974.9	20939.9	984.7
20954.34	991.1405	20961.2	994.2	20981.5	994.3	21037.9	989.4	21047	990.3
21137.3	991.2	21197.6	991.4						

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
17067.4	.025	18221.3	.037	19462.8	.037	20961.2	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19462.82	20954.34	495	499	505	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
17067.4	18300	994.3	F
20961.2	21197.6	994.3	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 204.78

INPUT
Description: 204.78

Right Channel Bank Station Interpolated
Station Elevation Data num= 87

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
16026.1	987.6	16094.8	987.3	16113.5	986.9	16143.6	989.2	16147.7	990.2
16176.4	990.8	16200.6	988.8	16231.8	988.4	16338.9	988.8	16416.1	988.9
16579.2	988.9	16686	989.1	16786.7	989.1	16866.8	989.3	17093.1	989.3
17192.6	989.3	17283.5	988	17369.3	988	17407.5	989.7	17420.2	988
17479.3	987	17521.2	986.9	17670.9	988	17754.2	987.8	17912.8	987.4
17952.6	987.1	18028.5	987	18174.7	986.5	18221.6	986.3	18279.6	986.1
18350.4	984.9	18361.8	983	18373.6	985.9	18402.3	985.9	18413.2	983.6
18427.5	987.2	18487.5	986.4	18504	984.4	18585.3	983.7	18598.2	984.9
18667.6	983.9	18753.3	984.6	18756.1	984.9	18767.8	981.3	18836.7	981
19173.1	979.8	19219.1	979.8	19295.8	977.2	19323.7	977.5	19337.5	981
19356.4	981	19398.6	983	19409.2	982.4	19419.8	979.2	19429.6	977.4
19432.3	975.9	19489.4	975.9	19561.1	974.8	19621.6	973	19660.7	972.1
19667.7	970.8	19677.1	967.6	19767.4	968.8	19768	968.8	19935.5	968
19986.5	968	20033.8	975.7	20056.9	977.8	20073.7	975.3	20160.4	975
20170.8	975.3	20229.5	975	20246.7	975	20324.8	974.9	20340	975
20452	975.9	20510.9	973	20530.9	973.1	20662.3	973.7	20706.1	973.8
20782.6	974.9	20801.8	975.1	20832.3	399	0.9976	20840.4	995.2	20866.6	994.5
20921.2	988.9	20982.7	988.3						

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
16026.1	.025	18427.5	.037	19398.6	.037	20840.4	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19398.6	20832.33	505	515	550	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
16026.1	18400	995.2	F
20840.4	20982.7	995.2	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 204.68

INPUT
Description: 204.68

Right Channel Bank Station Interpolated
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
17501.1	986.1	17554.2	985.7	17607.9	985.5	17645.5	987.6	17657	986.8
17668.8	987.1	17674.9	990.2	17682.2	987.8	17691	985.7	17742.4	986.2
17748.2	986.3	17778	988.7	17792.2	990.8	17806.1	988.7	17807.3	988.9
17839.5	987.8	17848.5	986.9	17867.4	986.8	17881.2	986.2	17970.4	985.8
18016.4	985.9	18087.9	985.4	18189.8	985	18231.2	984.8	18295.5	984.9
18354.5	984.6	18412.6	984.3	18437.1	982.9	18472.2	984	18491.1	983.4
18518.9	981.6	18530.8	984.6	18531.9	985.1	18550.1	982.9	18601.2	983.1
18621.4	983.6	18662.6	982.9	18685.1	983	18736.6	981.7	18767.6	980.4
18849.4	980.3	18886.2	980.2	18950.6	980	19029.6	979.9	19057.5	983
19071.2	980.7	19099.7	980.9	19114	981.6	19143.3	981.3	19197.1	981.7
19249.9	983.3	19284.9	981.9	19308.1	982.1	19314.7	984.6	19321.8	985
19357.4	981	19361.7	979.6	19368.2	980.1	19394.4	978.2	19398.6	975.9
19415.9	975.9	19458.6	973.3	19479.3	973.1	19513.5	971.9	19564.9	971.9
19621.8	972.2	19668.2	973.2	19691.4	975.5	19719	976.9	19734.6	976.2
19779.1	971.8	19814.3	971.4	19869.4	971.6	19901	972.5	19927.9	972.8
19942.8	973.9	20011.2	975.3	20053.7	976.3	20121.8	976.1	20137.2	975.6
20206.4	975.5	20256.1	973.7	20273.3	974.7	20295	973	20348.3	973.2
20369.6	973.3	20516.3	974.1	20548.6	199	0.5028	20548.8	990.6	20582.8	991.5
20647	987.5	20715.7	987.8	20786.9	988	20814	988	20872.4	988.2
20904.2	988.1	20971	988.4						

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
17501.1	.025	18472.2	.037	19321.8	.037	20548.8	.037	20582.8	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.

	19321.8	20548.61			325	407	570		.1	.3	
Ineffective Flow			num=	2							
Sta L	Sta R	Elev	Permanent								
17501.1	18455	991.5	F								
20582.8	20971	991.5	F								

CROSS SECTION

RIVER: 1
REACH: 1 RS: 204.61

INPUT
Description: 204.61

Station Elevation Data				num=	96						
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
14501.4	987.8	14573.3	990	14582.2	987.6	14618.2	988.2	14777.3	988.3		
14862.5	988	15060	988.1	15169	988.1	15293.6	988.1	15349.5	988		
15354.3	989.1	15407.2	987.7	15581	987.7	15683.1	987.7	15895.1	987.7		
15973.3	987.8	16138.5	987.8	16253	987.3	16305.2	988.9	16356.5	986.6		
16502.7	987	16642.3	986.6	16753.7	986.8	16913.6	986.7	17015.2	986.4		
17201.6	986.5	17292.3	986.1	17385	986.2	17492.5	986.6	17525.7	986		
17544.8	987	17555.9	984.9	17607.1	987.6	17733.4	988	17760.1	988.2		
17907	986.4	17945.4	985.9	18071.1	985.8	18171.7	984.9	18250.5	986.1		
18300.1	984.4	18402.9	984.9	18466.2	984.6	18493.6	983.5	18498.9	981.8		
18563.6	983.3	18578.3	983	18591.3	980.7	18665.2	981.8	18677.5	983.2		
18687.3	985.4	18775.1	988.2	18821.3	988.9	18834.2	979.9	18973.9	980.4		
19090.8	980.1	19180.1	979.7	19288	980.1	19386.4	980.8	19428.1	982.7		
19471.3	983.1	19479.7	979.4	19500.4	973.3	19642.8	973.3	19760.9	972.7		
19781	972.7	19928.9	973.4	20022	973.4	20085.3	975.2	20097.7	972.6		
20188.3	973	20275.9	973.4	20374.8	973.9	20426.1	974.2	20456.1	987.8		
20482.9	988.5	20507	986.5	20620.9	986.8	20726.9	987	20849.8	987.1		
20944.2	987.1	21033.3	987.2	21060.5	987.3	21176.6	986.9	21261.7	986.8		
21362.3	986.7	21489.6	987	21584.7	987.7	21599.3	987.7	21697.6	987.5		
21835.5	987.5	21887.1	988.6	21890.1	987.2	21897.8	989.2	21930.6	990.8		
21963.1	990.8										

Manning's n Values		num=	4		
Sta	n Val	Sta	n Val	Sta	n Val
14501.4	.025	18498.9	.037	19471.3	.037	20482.9	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19471.3	20482.9	395	449	545	.1	.3

Ineffective Flow		num=	2
Sta L	Sta R	Elev	Permanent
14501.4	18570	990.8	F
20482.9	21963.1	990.8	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 204.53

INPUT
Description: 204.53

Station Elevation Data				num=	96						
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
17504.9	987.8	17516.3	987.9	17522.8	987.1	17597	987.9	17615.7	987.3		
17634.6	987.5	17637.7	988.1	17645.9	986.3	17657.9	988	17704.2	989.7		
17740.1	1006.3	17784.7	1004.7	17850.8	1006.5	17875.5	988.5	17970.4	986.9		
18011.9	987.2	18027.9	986.1	18091.1	986.1	18155.5	985.2	18204.4	984.7		
18283.5	984.5	18320.2	984.4	18443	984.3	18501.9	983.9	18579.8	983.6		
18647	982.6	18678.7	980.4	18706.4	982.9	18747	982.6	18757	983.3		
18815.9	983.6	18827.1	980.6	18916.2	981.2	18927.3	982	19007.2	982.5		
19073.9	982.8	19175.3	983.2	19185.4	983.5	19240.3	981	19276	975.9		
19293	975	19359.2	979.5	19386	976	19409.2	976.4	19468.7	973.1		
19520.6	973	19547.6	973.9	19571.2	975.5	19585.1	972.9	19610.7	972.7		
19729.3	972.9	19787.3	973	19805.5	973.5	19860.6	976.1	19930.7	975.8		
19979.8	973.4	19994.9	973.6	20150.7	974	20174.8	974	20434.3	974.4		
20443.5	974.5	20465.7	985.2	20495.9	987.1	20550.8	986.4	20566	984.8		
20629.6	984.7	20701.1	984.8	20780.4	985	20872.2	985	20943	985.1		
21022.1	985.1	21052.3	985	21118.4	984.9	21183.9	984.8	21260.2	985		
21337.7	986.1	21351.7	986.3	21381.4	984.7	21472.3	984.9	21564.8	985.3		
21626.7	986.2	21653.6	986.5	21678.1	985.5	21716.4	985.3	21781	984.7		
21817.6	987.6	21875.1	987.3	21880.1	988.5	21884.2	988.1	21885	988.9		
21887.9	987.2	21894.1	988.4	21914.7	989.1	21935.1	988.6	21999.2	989.8		
22011	990.1										

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
17504.9	.025	18647	.037	19185.4	.037	20495.9	.037	20566	.025

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

19185.4	20495.9		570	552	525	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
17504.9	18730	1000	F
20495.9	22011	1000	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 204.42

INPUT
Description: 204.42

Right Channel Bank Station Interpolated
Station Elevation Data num= 90

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
17576	985.4	17608.5	985.2	17708	984.7	17783.2	985.9	17832.4	987.2
17853.5	986.1	17871.5	986.6	17926.9	986	17956.8	985.7	18023.8	985.6
18149.3	988.2	18169.7	988.1	18191.3	988.5	18226.7	987.2	18239	992.9
18240.3	993.2	18241.4	992.8	18249.3	987	18255.2	986.8	18279.8	990.2
18308.3	987.7	18322.1	985.5	18347.4	985.3	18488.4	983.7	18517.8	983
18560.8	983.8	18635.1	982.4	18650.1	983	18667.7	983	18723.8	982.5
18733.2	982.4	18795.2	981.7	18839.1	981.2	18874.1	983.2	18899.1	981.9
18955.6	982.5	18998.6	983.3	19025.4	984.6	19040.4	981.3	19045	980.6
19052.9	980.4	19095.4	981.9	19166.1	982.1	19255.9	982	19280.2	982
19341.8	981.8	19381.9	981.6	19437	981.1	19475.3	981	19500.2	980.6
19543.1	978.9	19552.9	979.1	19561.9	978.3	19576.9	979.5	19599.7	980.5
19616.5	980.7	19649.2	979.5	19653	978.6	19672.9	972.5	19732	972.5
19781.3	972.6	19794.7	975.8	19805.4	972.9	19824.4	972.6	19905.9	971.4
19930	972.8	19954.4	972.4	19966.8	973.5	19992	972.4	20006.4	972.1
20057.7	972.3	20101.5	973	20150.5	972	20162.2	972.1	20303.9	972.1
20322.7	972.1	20397.5	972.3	20434.6	971.9	20454.2	972.5	20468.3	973.3
20548.4	973.9	20577.1	973.9	20609.6	973.2	20616.9	972.5	20646	972.8
20682.09	987.6656	20689.7	990.8	20701.7	992.2	20714.4	988.5	20967	988.5

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
17576	.025	18839.1	.037	19025.4	.037	20689.7	.037	20701.7	.025

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

19025.42	20682.09		430	453	500	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
17576	18874.1	993.2	F
20689.7	20967	993.2	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 204.34

INPUT
Description: 204.34

Left and Right Channel Bank Stations Interpolated
Station Elevation Data num= 74

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
18066.2	985.2	18081.3	985	18158.1	983.7	18200	983.2	18226	984
18228.2	983.4	18283.2	983.4	18339.1	987.8	18395.4	986.8	18498.7	986.6
18514.4	986.2	18516	986.7	18586.8	985.6	18638.2	981.3	18678.3	981
18721.9	979.9	18774.5	984.6	18806.4	982.8	18806.6	981.1	18864.9	982.2
18888.3	975.4	18906.9	980.7	18919.1	979.8	18932.5	981.8	18936.3	983.3
18988.6	982.9	19004.9	982.1	19086.4	981.7	19100	981.6723	19184.5	981.5
19245.5	981	19310.8	980.7	19329.3	980.7	19389.4	980.3	19453.4	979.8
19487.9	979.5	19552	979.2	19615.6	978.7	19689.1	978.5	19736.5	978.7
19757.1	988.9	19782.1	971.2	19783.9	970.6	19819.5	969.3	19835.1	971.8
19891	971	19954.9	970.8	20009.4	971.2	20054.1	972.9	20100.5	973.1
20107.5	972.7	20175.2	972.5	20253	971.7	20324.6	971.9	20395.6	971.7
20465.2	971.4	20539.7	971.3	20603.2	971.5	20661.9	971.9	20671.8	972
20743.2	970.2	20773.2	970	20795.3	976.9	20816.23	986.0935	20827.4	991
20878.6	990.5	20887.2	987	22239.1	987.1	22248.4	987.2	22254.3	988.2

```
 22259.5   985.8 22266.1   987.7 22287.1   988.3 22317.8     988

Manning's n Values         num=       4
     Sta   n Val      Sta   n Val      Sta   n Val      Sta   n Val
 18066.2    .025 18774.5    .037 20827.4    .037 20878.6    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        1910020816.23              495     488     480             .1       .3
Ineffective Flow      num=       2
   Sta L   Sta R    Elev  Permanent
 18066.2   19100     991       F
 20827.4 22317.8     991       F

CROSS SECTION


RIVER: 1
REACH: 1                   RS: 204.25

INPUT
Description: 204.25

Left and Right Channel Bank Stations Interpolated
Station Elevation Data     num=     202
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
13993.51   986.914130.56  987.4114486.44  987.43 14755.8  987.0314937.72  987.04
 15050.6   988.115090.94  987.5715102.07  987.5715109.44  988.6415116.98  989.38
15128.77   988.115132.01  987.97   15140  988.4715148.98  986.9315153.86  985.73
15173.36   986.215690.75  986.1815878.25  985.1815889.67  986.2815904.51  988.05
15907.38   988.115919.42  987.92 15924.1  987.4715931.02  985.8315970.22  986.25
   16049   986.116175.22  986.0216450.56  986.1616463.91  986.2916480.31  987.87
16486.56   987.416495.93   987.116504.19  987.7916511.66   987.916518.49  987.78
16535.99   985.816542.09  985.62   16555  985.5516564.89  984.2816584.86  984.26
16687.99   984.816810.65  985.2916823.94  985.32 16873.9  984.7316893.09  984.53
16922.74   984.6 16941.4  984.2616960.75  984.6616990.05  984.3317020.18  984.79
17048.94   986.617091.64  985.2817177.92     98517208.14   985.117249.69  984.95
17398.31   984.317414.87  984.49 17522.6  984.3917556.82  984.2117600.03  984.35
17721.19   984.217812.48  984.25 17851.5  984.8117861.89  984.59 17867.1  984.93
17880.92     98517892.56  984.3517898.26  983.9217932.23  986.4917944.09  986.98
 17988.7   986.718005.49  986.89 18050.6  987.5718083.28  987.6218106.23  986.76
18158.97   986.818174.45   987.118185.88  987.1218240.34  986.9218277.05  986.27
18300.85   986.118323.52  985.5518372.65  985.1418410.49  985.0818449.87  985.08
18490.27   985.5 18520.4  985.1518569.61   985.8 18587.9  985.7618609.93   985.4
18633.73   984.818652.28  984.25 18660.4  983.8518672.96  983.4118703.66  978.51
18719.46   976.218724.94   975.718730.59  976.2818765.73  981.3818788.83  981.86
18812.39     98218851.86  982.6718856.84  982.0218876.79  980.9318917.58  980.72
18958.37   980.818990.64  980.15 19005.3   981.3   19038  982.5519054.34  981.71
19061.47   981.919088.33  981.0319097.24  980.6119117.27  982.08 19126.5  981.33
19134.63   980.819139.73  980.7919178.34  980.9919189.92  980.9119237.27  980.78
19263.33   980.219297.08  979.95   19300 979.93619332.52  979.7819361.32  979.52
19438.75  979.41 19458.3   979.519506.35   978.719519.13  978.8519527.66  978.72
19542.19  978.7319623.64   978.619631.41   978.619649.23  978.6319696.73  978.82
19703.53  975.7119717.53   970.2   19739   971.319747.27  974.51 19771.1  974.27
20035.47  970.8820227.56  972.420273.64  972.3620297.51  972.19 20307.7  971.98
20309.92  971.7420357.54   969.8 20436.7  969.4420448.29  969.4520499.51  969.22
20526.05  969.29 20588.3   969.720612.99  970.1420643.57  971.0820655.61  971.37
20680.85  971.2420705.02   971.520710.67  971.3720740.01  974.1420776.89  977.31
20818.53981.025320830.46  982.09 20922.2   989.620964.06  989.9520995.89  990.41
21004.86  987.3921018.73  981.0821052.72   981.121087.73  980.7921108.33  980.92
21157.66   981.421178.54  981.5221210.73   981.221262.99  982.6321279.42  982.45
21290.06  979.4521361.92  980.42 21408.6   981.221446.51   981.421456.08  981.58
21481.84  981.6121499.03  981.7121649.19   981.921681.55  982.0721787.28  982.66
21862.63   982.921876.61  982.9521939.71   983.421983.01  983.3822043.39  983.78
22083.67  984.1722130.05  984.4322172.04   984.422225.83  984.5822265.02  984.87
22339.34  986.3522389.33  985.4622416.26   985.922438.79  986.0322474.98  986.32
22486.29  987.5222500.35  987.24

Manning's n Values         num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
13993.51    .03518812.39    .03221290.06    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        1930020818.53              510     508     500             .1       .3
Ineffective Flow      num=       2
   Sta L   Sta R    Elev  Permanent
13993.51   19300     990       F
 20922.222500.35     990       F

CROSS SECTION
```

RIVER: 1
REACH: 1 RS: 204.15

INPUT
Description: 204.15

Left and Right Channel Bank Stations Interpolated
Station Elevation Data num= 80

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
16507.2	984.4	16600	985	16650.2	986.1	16657.8	983.8	16666.8	986
16708.7	983.2	16800.2	983.6	16895.3	983.8	16963.7	983.3	17111.7	982.5
17141.8	982.4	17289.1	982.7	17397	983.7	17427.8	983.8	17571.9	983.4
17609.8	983.3	17719.7	983.5	17833.6	983	17949.9	982.8	18031.8	984.3
18081.2	983.6	18087	981.9	18093.6	985.1	18094.5	983.7	18130.3	986
18214.6	985.6	18280.4	986.6	18357.2	984.7	18446.1	985.5	18578.2	984.4
18725.8	984.7	18824.1	985.3	18862.3	983.1	18888.3	980.6	18907	981.1
18955.1	980	19045.1	979.6	19065.5	979.9	19074.1	976.8	19104	969
19192.6	971.7	19200	971.7	19310.3	971.7	19331.3	970.9	19446.3	971.9
19486.8	971.6	19501.3	966.1	19595	966	19644.2	966.2	19661	973.6
19681	970.2	19769.8	971.6	19860.6	972.7	19968.4	974.8	20027.5	972.3
20066.1	967.9	20074.7	967.9	20209.5	968	20337.2	968.2	20441.7	967.7
20540.9	966.7	20554.5	966.5	20580.4	968.8	20679.7	967.8	20753.2	967.1
20790.2	968.9	20795.8	969.9	20814.5	969.5	20911.6	969.2	20940	967.1
20986.5	968.3	21033.3	898	1.5872	21042.6	984.2	21131.4	985.3	21379.2	985.3
22652.4	985.2	22684.9	986.3	22693	983.9	22700.1	985.5	22708.9	985.4

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
16507.2	.035	18824.1	.032	21131.4	.025	21379.2	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
19200	21033.38	510	509	510	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
16507.2	19200	986.6	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 204.05

INPUT
Description: 204.05

Left and Right Channel Bank Stations Interpolated
Station Elevation Data num= 73

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
18304.1	982.1	18322.9	981.3	18412.7	981.2	18490.1	981.1	18499.9	981.4
18523	980.8	18527.4	981.7	18530.5	980.8	18552.5	980.6	18585.3	987.2
18649.8	986.5	18710.4	987.1	18782.2	985.8	18858.9	986.9	18882.3	985.9
18903.8	986.2	18952	984.5	18962.59	980.697	18970.1	978	18992.5	968.5
19020.9	971.4	19097.5	973.6	19099.9	973.6	19168.9	971.6	19234.1	970.7
19315.1	973.1	19401.3	974.1	19432.4	974.2	19453	972.9	19510.9	971.5
19570.9	965.6	19644.7	967.7	19662	968.9	19741.3	971.7	19784.3	975.1
19860.9	975.2	19946.2	976.1	20026.3	975.5	20061.6	973.5	20142.4	974.9
20200.7	974.3	20222.7	972.5	20272.6	972.8	20286.9	973.4	20327.7	971.7
20354.5	969.2	20434.3	970.9	20491.6	971.4	20536	969.7	20605	969.1
20618.5	968.7	20679.5	965	20701.3	965.4	20715.6	967	20746.4	966
20828.1	965.9	20914.2	966.5	20930	968.1	20994	968.4	21024.5	966.7
21045.1	967	21067.8	975.8	21081.76	980.698	1.6	21090.6	983.8	21160.1	983.8
22668.7	984.2	22676.7	984.2	22773.1	984.3	22829	984.6	22836.3	985.6
22843	983.5	22852.2	986	22860.7	985.9				

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
18304.1	.05	18552.5	.035	18858.9	.032	21090.6	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
18962.59	21081.76	510	505	520	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
18304.1	18750	987.2	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 203.96

INPUT
Description: 203.96

Right Channel Bank Staion Interpolated
Station Elevation Data num= 91

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
16511.6	983.5	16713.4	983.8	16774.3	983.9	16908.7	984.4	16963.5	986.3
16968.1	982.5	16973.8	984.3	17039.3	980.6	17126.9	980	17138.9	980
17175.8	974.9	17222.8	980.2	17277.4	983.2	17284.8	982.3	17330	982.5
17366.5	984.4	17465.6	982.2	17576.8	981.2	17680.4	980.6	17774.7	979.6
17869.9	981.4	17958.4	981.2	18010.3	980.8	18015.8	982.2	18024.6	982.8
18047.1	980.2	18070.6	981.5	18128.1	982.9	18242.5	983.3	18284.4	984.3
18384	982.4	18469.6	983.6	18481.1	980.9	18496.2	979.1	18583.4	978
18607.3	975.5	18626.7	976.9	18657.9	976	18690	978.1	18723.2	976.2
18730.8	978.5	18760	974.5	18783.2	969.3	18801.2	968.9	18811.7	967.4
18891.8	971.9	18902.5	971.8	18997.2	971.4	19057.4	972	19069.5	973.6
19145.7	973.5	19201.5	971.8	19284.9	973.5	19375	977.1	19427.1	976
19471.7	976.7	19531.2	976.1	19556.4	976.8	19606.4	965.6	19696.9	968.3
19784.2	968.9	19847.3	971.5	19965.6	970.7	19998.5	972.3	20089.8	973.2
20179.8	972.3	20254.9	970.6	20367	970.8	20411.5	970.7	20421.4	969.4
20435.9	965.4	20451.7	964.7	20529.6	965	20554.9	967	20642.7	965.7
20735.2	964.2	20738.9	964.1	20767.7	971.2	20790.3	8978.7	3 20803.5	983.1
20835.5	994.9	20850.3	995.2	20872.5	997.5	20910.1	984.2	20997.3	981.9
21108.2	981.9	21539.6	982	21552	986.1	21559.4	984.2	21657.7	986.4
21694	988.5								

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
16511.6	.025	17175.8	.043	18469.6	.043	18902.5	.032	20835.5	.037

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
18730.8 20790.38 495 502 505 .1 .3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
16511.6	18730.8	997.5	F
20835.5	21694	997.5	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 203.86

INPUT
Description: 203.86

Right Channel Bank Staion Interpolated
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
17504.9	979.4	17555	980.7	17589.4	982.1	17613.5	980.8	17620.6	979.8
17657.6	978.3	17694.3	979.8	17718.4	978.9	17729	980.8	17762.1	977.4
17780.7	978.7	17821.9	984.3	17861.6	984.2	17888.2	982.4	17897.5	983.2
17930.6	983.2	17969.6	984.1	17989.1	983.6	18013.3	984	18044.9	981.7
18064.4	979.2	18096.7	981.5	18136.8	979.8	18171.7	980	18207.5	982
18243.1	982.7	18290.8	981.3	18353.7	982	18421.5	981.7	18458.6	982.1
18488.1	978.2	18540.3	978.5	18564	971	18599.5	968.8	18660.4	971
18700.2	971.8	18760.2	970	18806.7	971.3	18853.4	969.4	18891.2	969
18974.3	973.5	19064.8	976.5	19077.3	975.8	19161.8	973.4	19223.1	970.5
19246.5	967.4	19268.5	965.8	19288.8	962.4	19365.2	962.6	19365.7	962.6
19450.7	962.8	19451.6	962.8	19539.2	963.1	19611.5	963	19690.6	962.4
19743.6	962.3	19811.2	962.7	19858.2	963.1	19928.9	963.6	19992.8	963.8
20013.5	963.8	20076.4	964	20099.2	964	20196.1	964.2	20254.4	964.2
20298.4	964.5	20318.1	968.2	20429.2	967.6	20486.9	967.6	20543.1	968.6
20555	966.5	20576	964.2	20634.3	964.2	20650.7	964.2	20663.3	965.7
20676.9	965.8	20697.7	967.2	20730.9	976.1	20735.9	978.6	323 20761.9	991.8
20803.3	981	20878.5	982.5	20946.4	982.5	20965.7	981.1	21031.2	980.5
21099.9	980.6	21167.6	980.7	21198.2	981	21258.8	981.1	21324.9	981
21359.8	980.5	21368.4	981	21395.8	980.4	21405.9	982.4	21411.7	980.4
21482.6	980.2	21488.8	980.2						

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
17504.9	.043	18243.1	.043	18891.2	.032	20761.9	.037

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
18488.1 20735.9 505 498 480 .1 .3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
17504.9	18243.1	991.8	F
20761.9	21488.8	991.8	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 203.77

INPUT
Description: 203.77

Left and Right Channel Bank Staions Interpolated
Station Elevation Data num= 98

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
15516.5	980.4	15611.3	979.8	15668.7	980.9	15700.1	979.6	15734.7	982.9
15797.9	987.2	15835	986	15865.2	981.2	15920	981.4	15937.6	976.9
15947.6	978.2	15969.6	982.9	15985.2	984.3	16056.9	984.3	16076.8	983.7
16103.9	981.6	16184.4	981.2	16265.9	982.1	16312.5	981.7	16348.3	982.1
16366.7	978.9	16400.4	980.3	16452.6	980.5	16569.1	980.4	16622.2	980.5
16857.6	980.3	17032.7	979.9	17052.5	979.9	17220.4	979.9	17326.1	979.2
17424.8	979	17450	979.3	17461.6	980.3	17495.9	980.1	17515.6	978.2
17558.9	979.2	17678.1	978.7	17709.3	979.1	17747.1	977.4	17826.8	982.9
17879.9	983.7	17902.1	982.1	17924.4	981.6	18003.9	982.8	18091.9	980.7
18117.2	979.8	18191	981.8	18222.6	1978.2	686 18227.7	977.7	18281.9	974.6
18343.8	974.4	18371.2	970.5	18451.7	968.1	18515.7	969.6	18591.7	968.7
18603.5	969.7	18721.8	967.3	18770.9	970.5	18803.6	971.5	18834.8	974.6
18888.2	976.1	18941.5	973.8	18956.3	972.3	18974.2	976.6	18983.5	976.3
19032.5	965.6	19113.9	965.1	19224	964.8	19282.2	964.6	19290.6	969.7
19307.6	974.2	19313.1	973.7	19322.8	969.5	19338.6	967.2	19345.7	964.7
19426.8	964.5	19492.9	964.4	19606.6	964.2	19685.9	964.3	19717.5	964.1
19865.4	964.1	19957	963.3	20019.3	964.3	20221.9	964.3	20253.9	964.3
20282.3	966.5	20325.8	965.1	20328.7	964.2	20338.6	965.4	20430	966.2
20524.9	966.2	20609.1	966.4	20684.8	966.7	20728.9	97120745.6	1978.2692	
20746.6	978.7	20820.8	981.2	20854	997.6				

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
15516.5	.025	17495.9	.043	18191	.043	18803.6	.032	20820.8	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
18222.6	120745.61	490	498	480	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
15516.5	18191	997.6	F
20820.8	20854	997.6	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 203.67

INPUT
Description: 203.67

Right Channel Bank Staion Interpolated
Station Elevation Data num= 74

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
15401.1	982.5	15424.7	984.1	15508.1	982.3	15591.4	979.1	15681.8	979.9
15787.8	979.3	15920	979.3	16055.7	978.9	16157.5	979.1	16260.6	979.3
16282.2	979.2	16477	979.1	16627.1	979.9	16750.8	980.1	16865.7	979.3
16957.3	981.3	16980.5	980.6	17002.4	977.7	17014.1	979.2	17103.7	973.3
17179.5	973.2	17215.7	975.7	17267.4	969.7	17366.5	975.6	17541.8	974.3
17694.8	973.7	17837.2	974.1	17962.6	973.8	17982.5	973.7	18104.5	972.8
18289.3	972.9	18348.9	975.3	18350.2	973.2	18394.8	968.7	18516.9	971.1
18627.3	969.9	18690.1	970.4	18740.2	966.8	18787.4	966.3	18802.9	968.2
18941.9	973.8	19049	974.1	19155.9	972.4	19180.7	975.8	19211.3	962.3
19411.4	963.8	19519	963.9	19654.3	964.2	19798.6	964.3	19832.9	964.3
20036.1	964.3	20137.2	965.3	20302.2	963	20432.8	965.2	20537.5	965.2
20656.2	965.3	20661.5	965.6	20693.5	975.1	20699.3	977.8	8097 20708.7	982.2
20796	983.8	20827.7	980.1	20837	982.9	20858.2	981.6	21858.6	983.5
21904.3	982.5	23520.4	980	23527.3	982.8	23545.1	983.5	23556.1	980.2
23584.2	981.5	23593	977.2	23603.5	980.1	23621	979.7		

Manning's n Values num= 6

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val

15401.1	.025	16957.3	.037	18348.9	.037	18941.9	.032	20708.7	.032
20796	.025								

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
18348.9 20699.3 470 490 505 .1 .3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
15401.1	17837.2	984.1	F
20708.7	23621	984.1	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 203.58

INPUT
Description: 203.58

Right Channel Bank Staion Interpolated
Station Elevation Data num= 75

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
15526.8	983.1	15573.8	984.7	15577.9	981.7	15586.4	984.8	15648.9	982.8
15684.7	983.7	15735.5	978.7	15806.7	977.9	15925.6	978.3	15954.8	978.2
16031.7	974.4	16204.9	973.9	16321.4	974.3	16490.9	975.4	16570	975.3
16706.6	974.9	16819.9	975.7	16971.3	975.7	17120	975.1	17136.9	976.6
17168.4	976.1	17202.6	978.2	17251.4	973.9	17388.1	976	17458.2	974.6
17489	971.8	17596.3	976.7	17707.8	975.2	17790.7	972.4	17873.7	975.6
17978	974.3	18064.9	975.2	18204	975.9	18355.4	971.3	18433.8	971.3
18553.6	967.4	18636	970.5	18664.8	967.3	18681	970.8	18724	969.1
18765.5	971	18876.6	970.7	18988.9	970	19101.4	968.2	19228.7	965.4
19261.3	964.2	19337.3	967.8	19426.3	965.2	19456.9	967.4	19474	963.9
19482.9	963.9	19725.9	963.6	19842.5	963.6	19929.1	963.8	20222.2	963.5
20355.7	963.9	20380	963.9	20543.8	963.6	20636	963.9	20645.5	962.1
20704.98	977.3868	20706.2	977.7	20767.4	979.5	20782.3	981.3	20788.1	979.3
20818.3	979.5	20825.7	982.3	20859.8	981.5	22062.2	983.3	22098	982.2
23711.2	980	23724.5	982.4	23738.8	982.8	23750.9	979.2	23783	979.2

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
15526.8	.025	17202.6	.037	18204	.037	18681	.032	20782.3	.025

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
18204 20704.98 560 513 495 .1 .3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
15526.8	17707.8	984.8	F
20782.3	23783	984.8	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 203.48

INPUT
Description: 203.48

Right Channel Bank Staion Interpolated
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
15578.8	977.1	15693.5	976.9	15717.9	977	15814.4	976.9	15880.9	978.5
15900.7	978.2	15967.5	973.1	16013.9	973.9	16068.7	973.5	16168.1	973.8
16324.7	974	16419.6	974.1	16584.4	974.1	16657.7	974.3	16810.8	974.5
16932.4	974.5	17066.5	974.6	17177.1	974.2	17201.7	974.2	17312.2	975.1
17331.6	976	17341.7	975.7	17369.6	978.2	17434.9	970.7	17473.9	969.3
17535.6	971.3	17609.4	970.9	17714.8	972.8	17721.6	972.8	17841.5	973.7
17932.6	974	18016.7	972.4	18039.3	972.1	18120.3	973.5	18171.8	968
18184	969.1	18267.5	973.4	18353.5	970.9	18380.1	969.8	18439	969.7
18521.1	965.52	18538.6	965.3	18561.3	969.6	18571.7	970	18619.2	968.6
18635.6	969.2	18675.5	973.1	18730.7	972.2	18817.1	970.9	18956	969.1
18991.1	970.6	19035.5	973.7	19082.7	974.1	19116.8	968.9	19177.6	972.2
19217.3	970.5	19332.9	970.5	19399.6	962.9	19491.7	962.7	19584.5	965.1
19624.3	962.2	19645.8	962.3	19669.3	965	19679.4	965.3	19794.5	963.4
19884.7	963.3	19987.2	964.5	20013.9	964.4	20199.2	964	20220.6	964.7
20227.4	967.6	20231.3	963.9	20325.6	963.9	20342.5	963.9	20345.7	965.5
20353.5	967.3	20358.6	964.3	20404	963.2	20433.1	965.2	20458.7	965
20480	963.1	20588.9	964.7	20638.4	966.8	20725.1	968.7	20785.1	971.2
20856.76	976.9083	20866.7	977.7	20886.7	979.4	20901.8	978.6	20909.2	979.5

20915.7	978.5	20925.9	979.4	20953.9	979.4	20960.7	978.7	20985.4	978.7		
20989.2	980.3	20999	981.2								

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
15578.8	.025	17369.6	.037	17932.6	.037	18619.2	.032	20886.7	.025

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
17932.62 20856.76 500 505.82 515 .1 .3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
15578.8	17369.6	981.2	F
20999	20999	981.2	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 203.39

INPUT
Description: 203.39
Station Elevation Data num= 96

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
15500	974.4	15548.5	978.1	15604.9	974.8	15609.8	975.3	15717.3	976.3
15722.2	976.3	15836.5	975.1	15864.7	976.6	15875.6	973	15888.1	975.4
15914.3	976.1	16076.8	976.1	16271.9	976.2	16290.8	976.1	16376.9	976.2
16390.2	976.2	16520.6	976	16549.4	977.1	16694.9	973.2	16751.5	970.2
16832.2	968.6	16901	973.2	17053.7	971.4	17105.6	971.5	17120	974.9
17136.1	970.9	17147.5	974.3	17212	975.5	17260.9	972.8	17296.2	974.2
17353	971.2	17382.3	974.9	17417.1	974.8	17453.9	976.4	17519.2	968.1
17602.4	973.1	17694.4	971.8	17733.8	970.7	17815.5	973	17901.2	972.3
17947.7	972.1	17970.8	973	18042	972.8	18114	969.5	18199.7	969.1
18207.5	968.6	18224.3	964.4	18259.9	963.8	18330.5	967.6	18418.7	967.4
18507.8	969.8	18601.7	972.8	18629.1	974.7	18686.7	980.9	18738	974.3
18773.9	975.9	18902.4	975	19023.2	970.3	19056.6	971.7	19105.2	965.4
19218.1	968.3	19268.2	972	19346.8	971.4	19370.8	969.4	19397.9	965.7
19418.4	960.4	19479.4	959.9	19491.4	962	19633	960.6	19736.1	965
19770.9	965.7	19800.9	963.8	19816.1	965.5	19916.4	965	20010.4	963.8
20159.5	964.6	20260.9	963.8	20303.7	964.2	20330.3	963.1	20346	964.4
20389.8	962.9	20483.7	964.2	20485.1	964.9	20576.8	964.7	20682.1	965.3
20789.2	969.4	20834.2	971.9	20922.2	969.5	20993.5	968.3	21038.8	975.6
21082.9	975.6	21098.5	976.5	21138.2	977.4	21143.6	978.2	21153.1	976.5
21223	978.3								

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
15500	.025	16832.2	.037	17970.8	.037	18601.7	.032	21038.8	.025

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
17970.8 21038.8 500 505 500 .1 .3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
15500	17519.2	980.9	F
21223.3	21223	980.9	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 203.29

INPUT
Description: 203.29

Right Channel Bank Staion Interpolated
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
14306.7	975.2	14398.4	975.7	14462.6	975.2	14487	977.9	14491.6	976.6
14498.9	977.7	14515.3	976.7	14528	974	14553.9	972.7	14670.7	972.7
14687.5	972.7	14856.4	972.7	14867.5	972.7	15002.5	972.7	15006.1	972.7
15100.1	972.9	15122.5	975.2	15172.8	972.4	15364.8	972.7	15484.5	974
15649.2	973.6	15701.1	973.4	15710	975.9	15724.5	974.3	15776.8	976.4
15815.8	974	15918.9	974.9	15999.4	974.9	16112.9	975.4	16114.8	975.5
16293.6	975.5	16301	975.5	16411.1	976	16465.5	976	16664.1	976
16733.3	975.8	16808.3	976.1	16968.8	976.1	17062.2	976.1	17153	976.2
17251.7	975.1	17286.9	974.6	17327.4	969.3	17410.1	970.5	17467.7	974.5
17469.8	973.6	17539	974.4	17590	968.4	17649.5	971.4	17775.2	971.1
17888.5	970.4	17987.9	968.4	18065.6	972.5	18117.7	969.6	18146.3	971.6

18204.1	968.8	18247.3	971.6	18266.5	967.8	18378.2	963.9	18464	968.2
18535.2	966.5	18593.9	967.2	18627.7	974.8	18719.2	971.5	18838.7	974.7
18920	973.9	18947.9	969.3	19046.6	972.7	19166.7	971.8	19269	971.6
19295.1	965.4	19325.9	960.7	19447.7	960.9	19552.4	961.6	19655.6	961.1
19756.7	962.1	19849.6	963.4	19945.3	963	20028	965.9	20124.9	965.7
20226	965.2	20297.8	963.6	20378.8	964.4	20396.1	961.9	20494.8	962.8
20586	966.7	20676.2	969.1	20796.8	969	20894.8	969.2	20935.1	968.4
20981.6	969.2	21027.6	966.6	21082.5	8975.7	482	21088.3	976.7	21155	977.1
21257.1	975.6	21295	976.3						

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
14306.7	.025	16968.8	.037	18065.6	.037	18535.2	.032	21088.3	.025

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

18065.6	21082.58		620	535	420	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
14306.7	17590	977.9	F
21088.3	21295	977.9	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 203.19

INPUT
Description: 203.19

Right Channel Bank Staion Interpolated
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
16639.2	974.6	16696.5	974.6	16879.5	976.3	16960.6	976.7	16982.2	976.1
16987.1	975.2	16999.5	976.6	17045.2	975.2	17145.4	975	17180.8	974.8
17306.9	974	17389.7	974.5	17513.2	972.9	17539	972.7	17596.6	969.7
17650.2	971	17690.3	968.3	17762.5	967.5	17781.9	968.4	17812.7	966.2
17893.5	967.8	17945.6	971.7	18023.5	971.3	18058.7	964.6	18099.2	971.6
18139.8	972.1	18185.8	967.2	18251.5	970.8	18282.1	971.9	18338.2	971.3
18384.4	969	18406.2	969.7	18445.9	965.2	18495.1	966.4	18521	969
18558.4	964.7	18605.8	963.2	18623.9	961.2	18659	961.4	18701.5	965.4
18712.2	964.5	18734.5	964.5	18797.4	970	18848.7	968.9	18911.7	969.9
18983.1	969.7	19009.9	968.7	19025	967.1	19031	968.2	19080.8	968.8
19095.4	970.3	19159	970.9	19191.3	967.9	19256	967.2	19294.3	960.1
19346.5	959	19442.2	956.7	19471.8	962.7	19542.3	963	19643.7	963.4
19644.6	963.4	19721.9	962.3	19788.7	962.7	19870	964.6	19925.6	962.6
19971.9	966.8	20041.3	966	20111.2	965.3	20142.5	963.8	20233.9	963.3
20336.2	963.2	20384.6	963.4	20398.2	962.6	20462.1	962.2	20541.1	965.2
20570.6	966.9	20635.2	967.1	20669.2	965.5	20696.2	966.5	20752.9	964.7
20795.4	967.4	20825.2	966.9	20848.9	967.5	20865.3	966.7	20898.7	966.8
20928.5	970.1	20952.6	973.8	20965.3	9974.9	827	20981.8	976.5	20999	975.6
21013	977.9	21075.8	975.9	21096.9	975.8	21174.9	976.1	21273.9	975.8
21344.5	975.8	21380	975.6						

Manning's n Values num= 6

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
16639.2	.025	17762.5	.043	18282.1	.043	18734.5	.037	20981.8	.025
21013	.025								

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

18282.1	20965.39		535	520	485	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
16639.2	17587	978	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 203.09

INPUT
Description: 203.09

Right Channel Bank Staion Interpolated
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
16077.3	972.6	16108.8	973.2	16114.5	973.9	16141.2	974.9	16147	976.1
16177.1	975.5	16186.3	974.5	16217.9	974.3	16296.3	973.5	16396.3	973.6

16495.1	973.6	16619.4	973.4	16649.6	973.4	16802.2	973.6	16847.8	974.3		
16927.3	974.4	16967.8	974.4	17063.1	975.3	17138.5	975.2	17150.2	974.9		
17158.9	972.7	17171.5	974	17175.5	975.3	17183.4	974.2	17268	973.7		
17382	973.8	17583.9	974.5	17588.1	974.4	17656.3	973	17724.5	971.9		
17787.2	966	17835	968.2	17878.2	968.6	17889.9	967.6	17960.8	969		
18034.5	970.7	18151.5	966.1	18178.5	966.8	18202.2	966.1	18277.6	970		
18313.5	969.4	18321.1	969.7	18364.1	965.2	18437	969.5	18507	971.4		
18541.2	970.5	18605.3	962.2	18681.6	963	18770.4	960.8	18814.5	971		
18875.7	969	18992.4	969.2	19035.2	968.4	19104.8	968.6	19136.4	968		
19190.2	961.9	19211.5	961.8	19247.1	964	19266.9	960.3	19282.4	958.7		
19461.8	959.9	19573.5	959.6	19585.9	960.2	19653.1	960.1	19682.3	962.4		
19752.6	963.1	19757	963.1	19865.5	961.3	19934.1	962.2	20005.1	964.6		
20113.7	965.7	20184.3	965.7	20264.8	966	20287.7	966.2	20364.7	966.6		
20397.2	966.4	20469.2	966.1	20498.9	964.4	20517.6	961.6	20546.5	960.5		
20610.5	960.6	20636.9	964.4	20681.6	965.4	20709.6	964.4	20742.1	962.1		
20765.3	962.2	20780	963.2	20812.8	959.6	20837.9	961.3	20914.8	2973.8939		
20917.3	974.3	20926.9	975.4	20942.8	974.2	20972.4	973.4	21023.3	975.3		
21111.6	973.6	21171	974.1								

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
16077.3	.025	17588.1	.043	18507	.043	18814.5	.037	20917.3	.025

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

18507	20914.82		520	518	500	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
16077.3	17583.9	976.1	F
20917.3	21171	976.1	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 202.99

INPUT
Description: 202.99
Station Elevation Data num= 96

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
17058.5	973.2	17114.3	973.5	17267.7	973.8	17289	973.9	17305.6	974.4
17316.7	973.3	17329.5	974.7	17397.2	973.4	17508.3	973.5	17530.6	972.5
17571.7	973.2	17646.3	973.1	17659.9	972.5	17696.1	969.8	17713.5	970
17723.9	969.1	17781.1	967.5	17850.9	965.7	17864.6	967.2	17879.9	968
17893	968.2	17922	965.3	17941	964	17984.7	968.4	18035.6	970
18091.7	969.9	18126.6	969.7	18186.5	969.9	18238.3	970	18288.7	964.3
18293.1	963.9	18346.5	968.2	18360.3	967.9	18420.8	969.3	18469.4	969.3
18497.6	968.2	18580.4	968.7	18586.2	968.9	18608.3	967.1	18619.4	964.4
18650.8	965	18666.5	962.2	18686.7	961.6	18748.1	962.5	18789.2	962.8
18875	962.8	18906.3	963.4	18945.7	961.5	18988.8	963.5	19005.4	963.6
19058	964.4	19119.4	964.2	19128.8	964.3	19182	965.3	19208.5	964.3
19269.4	961.7	19318.8	960.3	19334.7	959.8	19391.3	959.8	19415.3	959.6
19435.9	960	19527.6	959.5	19609.2	959.5	19725.7	959.2	19759.9	960.9
19828.4	961.4	19945.2	960.7	19948	960.7	20028.5	959.3	20090	960.7
20131.7	963.1	20172.8	964.1	20227.9	965.4	20241.1	965.3	20304	965
20364.7	965.9	20422.1	964.9	20460.6	964.9	20528.6	963.3	20552.5	959.7
20558.2	959.8	20619.9	962.6	20665.6	962	20682.4	960.6	20692.5	959.3
20713.5	960.1	20748.9	960	20773.8	959.3	20789	960.3	20808	960.6
20818.5	963.8	20841.7	963.9	20894.5	963.1	20926.9	970.2	20960.7	976.4
20976	975.9								

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
17058.5	.025	17646.3	.043	18469.4	.043	19058	.037	20926.9	.043

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

18469.4	20926.9		480	456	424	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
17058.5	17646.3	976	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 202.9

INPUT
Description: 202.9

```
Right Channel Bank Staion Interpolated
Station Elevation Data    num=      97
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 16149.3   972.1   16219   972.6 16381.4   973.3 16446.1   973.3 16495.7   974.5
 16526.4   971.9 16579.2   972.6 16597.9   974.5   16618   973.6 16631.4   972.3
 16699.5   972.9   16755   974.1   16804   971.3 16823.8   973.1 16887.1   972.5
 16957.5   972.2 16968.8   972.6 17046.9   971.4 17089.7   971.9 17151.8     972
 17172.3   972.1 17235.7   971.8 17304.6   971.3 17369.1   970.9 17440.5   971.3
 17504.7     971 17572.9   970.6   17644     970 17676.2   972.2 17699.3   970.6
 17772.5   968.5   17815   965.7 17875.4   965.2 17896.7   963.8 17966.8   965.8
 18000.2   967.5 18046.2     967 18087.7   964.4 18148.3   968.4 18203.5   967.3
 18258.7     965 18308.6   967.1   18383   966.5 18433.6   966.6 18455.6   968.2
 18517.5   967.7   18563   962.4 18611.6   961.8   18646   958.2   18714   961.6
 18808.1   961.6 18872.7   961.1   18917   963.4 18971.7   963.8 19054.2   965.2
 19121.2   965.8 19211.2   964.4 19215.4     966 19303.3   961.5 19368.9   960.3
 19378.2   959.7 19431.8   961.6 19460.5   960.1 19592.2   957.9 19666.6   958.3
 19722.9   960.9 19833.6     959 19903.1   959.5 19944.9     961 20063.7   959.6
 20145.5   959.8 20206.7   960.4 20250.7   959.4 20318.7   958.5 20412.7   962.7
 20460.7   961.4 20488.5   963.8 20502.9     964   20545   960.1   20596   959.7
 20624.3   960.6 20694.4     959 20754.9   958.5 20806.5   956.5 20831.6   957.9
 20858.2   961.1 20861.7   962.3 20936.5   969.5 20988.5   971.9 20993.5   972.3
   21011   973.7 21025.1   975.7 21027.9   980.1 21042.4     977 21052.5   978.4
 21066.1   978.5   21080   974.2

Manning's n Values        num=       5
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
 16149.3    .025   17815    .043 18455.6    .043 18872.7    .037   21011    .043

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       18455.6 20993.5                 575     538     460            .1      .3
Ineffective Flow     num=       1
   Sta L   Sta R    Elev  Permanent
 16149.3   17500   980.1       F

CROSS SECTION


RIVER: 1
REACH: 1                  RS: 202.8

INPUT
Description: 202.8

Right Channel Bank Staion Interpolated
Station Elevation Data    num=      97
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 16524.8   970.3 16556.4   971.5 16586.6   971.3 16591.4   972.2 16622.9   972.3
 16660.4   974.1 16671.5   973.8 16699.8   970.7   16750   971.8 16768.2   970.7
   16810   971.7 16908.3   970.6 16968.5   970.2 16997.3   973.4 17058.9   971.8
   17081   970.9 17148.9     971 17188.6   970.2 17279.5   971.1 17348.6     971
   17423   970.4 17488.6   969.6 17496.3   969.7 17556.3   970.2 17607.5   969.3
 17662.7   971.7 17678.2   969.4 17755.1   968.2 17771.4   968.3 17836.1   965.5
 17897.9   964.9 17974.2   962.8 18017.4   962.7 18037.3   963.4 18039.7     964
 18135.1   964.3 18137.8   964.2   18205   963.3 18273.4   965.1 18313.6   965.5
 18348.1   967.5 18390.8   968.8 18406.9   966.2 18434.5   959.9   18478   958.9
 18492.5   956.4 18526.7   958.4   18618   960.3 18696.7   962.9 18716.3   963.1
 18761.6   962.1 18858.8   963.6 18897.8   963.7 18966.5   960.9 18996.3   959.9
 19072.2   959.5   19083   959.6 19151.4   960.5 19243.7   960.1 19333.5   960.5
 19396.1   960.6 19435.5   960.4 19525.6   959.5 19621.8   960.4 19685.6   961.9
 19750.9   962.5 19813.5   963.5 19828.2   963.6 19893.3   963.5 19985.3   961.5
 20027.7     961 20127.3   961.5 20220.9     962 20261.5   962.8 20325.2   962.5
 20339.8   963.1 20397.5   960.8   20461   959.3 20525.1   958.4 20576.6   957.1
 20634.6   957.7 20682.6   958.4 20759.8   957.1 20823.5   956.8 20855.2   957.6
 20859.5   958.4   20873   957.9 20906.1   958.3 20955.4   956.8 20983.8   959.2
 20987.6   962.6 21013.7     97121014.96971.6307 21019.3   973.8 21057.4   987.6
 21082.8     986   21093   986.3

Manning's n Values        num=       5
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
 16524.8    .025 17771.4    .043 18390.8    .043 19243.7    .037 21019.3    .043

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       18390.821014.96                 600   555.5     450            .1      .3
Ineffective Flow     num=       1
   Sta L   Sta R    Elev  Permanent
 16524.8 17279.5   987.6       F

CROSS SECTION
```

RIVER: 1
REACH: 1 RS: 202.69

INPUT
Description: 202.69

Right Channel Bank Staion Interpolated
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
17011.6	967.7	17023.5	967.7	17027.5	969.7	17103.8	970.9	17146.9	971.1
17176.2	972.4	17191.8	969.4	17194.6	968.5	17229	967.1	17294.2	968.5
17355.9	968.4	17445.9	967	17473.9	966.6	17539	968.1	17612.5	967.1
17670.9	967.5	17744.3	967.8	17814.2	967.3	17864	971	17864.9	969.3
17868	967.6	17892.1	965.9	17941.9	963.7	18000.1	961.6	18034.8	963.6
18086.5	962.2	18149.2	965.2	18155.1	964.6	18181.7	966.5	18238.5	967.5
18278.8	966.4	18296.3	967	18357.8	968.5	18371.8	972.9	18377.8	973.6
18394.4	971.5	18484.4	971	18522.7	971.5	18539.1	964.7	18552.9	960.1
18644.5	957.3	18707	953.7	18734.1	956.4	18813.8	956	18848.2	955.5
18893.1	956.3	18953	954.8	19004.8	957.3	19084.1	957.6	19157.7	958.3
19178.7	958.5	19240.7	959.5	19322.9	960.8	19365.9	962.7	19411.4	962.6
19474.6	962.5	19548.6	961.5	19628.5	961.4	19720.2	962.7	19779.3	961
19788.6	961.1	19848.4	962	19949.8	964.6	20005.6	961.1	20016.8	961.1
20083.2	961	20101.5	960.8	20164.7	959.6	20249.5	962.2	20340.4	963
20436.6	963.5	20463.4	963.4	20522.8	963.7	20592.1	963.4	20658.5	962.2
20698.9	961.2	20768.7	958.6	20856.6	958.8	20890.1	958.6	21023.8	956.8
21070.8	960.8	21077.4	967.1	21081.8	970.8403	21085.4	973.9	21098	980.8
21103.6	981.6	21111.1	978.1	21139.5	981.1	21166.7	979.8	21198.8	976.9
21211.8	978.5	21216.7	978.5	21220.2	977.8	21223.7	977.9	21225.4	978.5
21238.2	975.1	21274	973.3						

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
17011.6	.025	17868	.043	18377.8	.043	19084.1	.037	21103.6	.043

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
18377.8 21081.8 585 566.1 510 .1 .3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
17011.6	17176.2	981.6	F
21274.4	21274	981.6	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 202.59

INPUT
Description: 202.59

Right Channel Bank Staion Interpolated
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
17002.6	972.3	17024.4	972.3	17044.5	970.3	17059.2	968	17094.8	969.6
17174.4	971.6	17206.5	971.5	17240	970.3	17269.6	966.5	17294.8	968.3
17332.9	969.6	17346.3	969	17365.3	965.5	17382.1	965.5	17399.6	966.6
17456.2	967.4	17523.1	966.7	17531.4	966.1	17557.2	966	17651.6	966.7
17719.5	967.2	17792.8	966.6	17824.5	966	17874.3	968.6	17886.2	967.6
17905.4	963.2	17965.1	963.4	18022.2	961.6	18100.5	965.1	18174.1	965.7
18210.5	964.5	18233.1	965.7	18298.3	968.6	18346.1	966.9	18416.7	969.6
18505.8	969.5	18556.9	967.5	18622.3	970	18641.7	970	18695.8	961.6
18704.2	959.5	18757.3	962	18789.4	959.6	18857.2	957.4	18891.5	955.7
18960	953.7	18984.2	957.3	19041.9	957.5	19094.7	960.1	19217.7	959.4
19264.1	960.3	19322.3	963.2	19396.6	964.3	19407.1	961.9	19425.6	960
19426	960.9	19488.2	960.7	19564.4	961.7	19640.1	961.8	19698.4	962.2
19757.8	961.8	19850.5	959.2	19935.3	960.1	19956.2	961	19994.3	961.1
20000.8	960.6	20005.1	959.6	20026.1	957.7	20112.1	958.6	20156.3	960.2
20218.5	960.8	20291.8	962.8	20371.5	961.1	20441.9	962	20501.9	959.5
20592.8	959.1	20699	957.2	20711	957	20803.1	957	20825.8	957.1
20901.9	957.5	20941	958.6	20978.1	956.7	21025	956.8	21152.1	957.5
21195.09	969.8993	21199.6	971.2	21234.1	969.1	21236.8	970.4	21264.7	967.7
21299.7	971.3	21305.5	967.6	21325.7	957.4	21362.7	958.8	21403.9	974
21429.1	977	21478	977.8						

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
17002.6	.025	18022.2	.043	18416.7	.043	19217.7	.037	21403.9	.043

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       18416.721195.09              400   561.2     640            .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 17002.6 17332.9   977.8       F
   21200   21478   977.8       F

CROSS SECTION


RIVER: 1
REACH: 1                 RS: 202.48

INPUT
Description: 202.48

Right Channel Bank Staion Interpolated
Station Elevation Data    num=      97
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 17009.6   967.6 17022.6   967.5 17087.4   968.9 17103.6   970.4 17112.7   969.9
 17147.3     972 17156.9   971.8 17158.2   972.3 17178.9     971 17194.4     968
 17247.5   968.9 17346.9   969.1 17398.9   969.9 17439.3   968.6 17487.9   968.6
 17510.1   966.5 17588.4   966.2 17656.6     965 17699.5   965.1 17766.7   963.2
 17818.3   961.3   17890   963.8 17903.9   964.7 17928.8   961.3 17945.4   959.8
 17990.2   960.1 18038.4   959.4 18049.4   960.1   18123   963.9 18190.8   965.8
 18202.9   966.1 18268.8   964.1 18281.9   963.4 18373.9   966.8 18446.2   967.8
 18518.9   965.4 18575.8   971.2 18611.2   970.9 18639.1   969.5   18713   961.6
 18741.6   959.3 18784.7   961.7 18862.1     959 18930.8   954.4 19044.5   952.5
 19074.6   956.5 19142.6   957.5 19190.4   959.1 19212.4   958.4 19300.6   961.8
 19319.9   962.4 19391.1   961.2 19413.8   960.8 19449.5   958.2 19532.2   958.9
 19643.4     959   19750   959.8   19755   959.8 19836.5   958.7 19940.1   961.4
   20015   957.1 20042.9   956.5 20093.3   957.6   20148   959.8 20169.8   958.7
 20238.1   957.7 20350.9   956.9 20382.1   955.8 20443.3   956.5 20518.7   957.1
 20582.5   957.3   20605   956.3 20635.4   956.3 20720.3   959.3 20738.9   959.4
 20761.4   962.7 20791.3   965.4 20855.9   962.6 20874.6     962 20962.4   963.2
 21037.1   963.2   21067   962.7 21100.7   957.5 21141.9   956.9 21226.2   955.6
 21274.2   959.721307.36 968.958 21309.3   969.5 21365.5   967.8 21385.7   965.3
 21411.6   965.6 21424.5   960.8 21433.2   956.4 21477.4   957.2 21505.2     969
   21532   978.5 21590.9   977.9

Manning's n Values        num=       4
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
 17009.6    .043 18575.8    .043 19074.6    .037   21532    .043

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       18575.821307.36              700   576.2     385            .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 17009.6 17398.9   978.5       F
 21309.3 21590.9   978.5       F

CROSS SECTION


RIVER: 1
REACH: 1                 RS: 202.37

INPUT
Description: 202.37

Right Channel Bank Staion Interpolated
Station Elevation Data    num=      97
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 17046.5     966 17144.2   966.4 17159.7   966.4 17174.6   968.6 17199.8   968.8
 17234.1   972.8 17240.1   970.8 17243.5   970.9 17244.9   973.1 17262.2     972
 17288.2   966.3 17339.4   966.6 17390.7   968.1 17480.2   967.1 17572.6   967.5
 17609.6   965.2 17687.4   964.4   17729   964.2 17762.4   962.8 17818.6   964.2
 17908.4   962.3 17967.5   961.6 18000.2     964 18038.7   964.1 18072.2   959.7
 18099.8   957.9 18104.7   958.4 18151.6   958.4 18194.7   959.1 18243.6   962.8
 18315.7   961.8 18394.4   965.8 18412.7   966.2 18470.8   964.2 18481.7   964.7
 18501.3   969.1 18508.1     970 18598.8   969.5 18602.7   969.6 18648.3   963.8
 18679.8   963.2   18704   957.9 18743.6   960.5 18769.5   961.1 18842.5   955.2
 18917.4   955.9 18993.6   955.2 19026.1   956.5 19078.6   954.6 19116.4   956.7
 19134.5   956.6 19275.2   955.9 19317.5   959.5 19392.9   961.2 19411.7   961.2
 19457.9   957.5 19505.5   956.4 19577.4   956.1 19580.5   956.2 19670.2   956.8
 19746.9   961.5 19839.2   958.9 19936.5   957.1   20045   956.9 20086.7   957.3
 20169.3   956.2 20237.2   955.3 20328.5     958 20334.1   957.4 20399.8     957
 20463.4   959.2 20513.6     962 20602.6   959.9 20704.3   960.7 20742.9     961
```

20844.4	960.5	20908.1	960.2	20950.1	961.7	21049.7	960.9	21054.1	960.9		
21135.1	960.3	21179.1	960.2	21212.7	956.8	21338.5	957.1	21366.3	957.1		
21382.6	961.2	21402.5	967.3	21411.9	966.7	21431.9	963.9	21452.4	962.7		
21480	964.4	21496.8	956	21544.1	956.6	21581.7	896	8.008	21601.9	974.1	
21642.4	975	21693	974.4								

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
17046.5	.025	17390.7	.043	18508.1	.043	18743.6	.037	21601.9	.043

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
18508.1	21581.78	430	400.7	360	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
17046.5	17390.7	975	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 202.29

INPUT
Description: 202.29
Station Elevation Data num= 96

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
17300	969.4	17300.2	969.4	17310.5	971.8	17342.5	971.5	17346.7	971.3
17352.1	970.9	17359.3	970.4	17377.2	970.2	17388.5	970.1	17410.3	969.8
17443.6	969.4	17469.5	969.2	17494.3	969	17512.1	968.3	17537.2	968.2
17551.3	968.6	17580.1	968.2	17588.6	968.1	17610.9	968	17662.1	967.6
17695.1	967.2	17731.2	966.7	17756	966.3	17772.6	965.6	17783.7	965.5
17806	965.9	17845.1	965.4	17859.1	965.2	17870.8	965.1	17909	964.8
17939.7	964.2	17948.3	964	17978	963.3	17983.9	963.1	18035.9	962.8
18043.8	962.7	18050.9	962.7	18093.6	962.3	18093.8	962.8	18107.2	962.7
18151	961.8	18180	961.8	18197.4	961.8	18203.9	961.7	18212.7	961.5
18297.3	960.6	18444	959	18520.4	958	18577.3	957.8	18667.8	958.1
18744.1	957.7	18943.8	956.4	18989.6	956.6	19224.4	957.4	19228.7	957.4
19485.5	956.7	19523.1	956.9	19553.4	956.9	19827.7	956.8	19864.8	956.1
19898	956.1	20171.5	956.3	20383.2	955.7	20442.4	955.9	20499.8	957.2
20499.9	957.2	20696.8	957.3	20777.7	957.4	20879.1	956.5	20964	956.5
21129.5	956.9	21176.5	956.6	21222.8	956.1	21262.9	955.8	21273.6	955.5
21305.8	956.3	21343.7	957	21400.4	957.2	21410.8	957.3	21495.3	956.7
21550.9	957.9	21563.4	959.3	21703.1	961	21803	962.3	21973.7	964.9
22093.3	966.9	22138.1	968.1	22178	968.7	22302.7	970.7	22344.1	970.7
22388.8	970.9	22553.3	971.9	22676.5	971.2	22717.7	971.3	22766.5	972.1
22785.4	971.9								

Manning's n Values num= 6

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
17300	.025	17469.5	.043	18197.4	.043	18989.6	.037	21563.4	.043
21803	.043								

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
18197.4	21803	590	583.1	600	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
21803	22785.4	972.1	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 202.18

INPUT
Description: 202.18

Right Channel Bank Staion Interpolated
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
17052.9	966.6	17168.5	966	17288.7	965.2	17328.5	965.5	17342.3	968
17346	967	17354.3	968	17364.1	966.7	17396.2	967.4	17415.4	969
17507.1	967.7	17613.8	965.1	17631.5	964.7	17747.4	962.9	17748.5	962.9
17865.9	962.4	17961.7	963.1	18017.5	963.4	18100.5	963.8	18139.7	964.7
18194.4	960.2	18256	959.9	18292.6	958.2	18331.5	958.9	18344.2	960.8
18389	961.7	18415.9	960.6	18473.5	964.7	18525.3	966.1	18612.9	966.4
18643.2	962.4	18672.1	961.3	18707.1	957.3	18769	952.6	18804.3	955.4
18910.2	957.1	18976	956.3	19019.3	958.4	19048.9	958.7	19085.4	956.1
19142.3	957	19169.3	958.6	19183.3	960.5	19235.6	960.8	19285.1	963

19369.7	960.1	19472.8	957.3	19559.8	955.6	19630.4	954.7	19686.5	951.8
19727.7	955.4	19747.8	950.7	19844.5	951.9	19893.9	954	19954	950
20009	954	20067.8	952	20110.4	954.4	20177.3	963.5	20231.5	963.4
20240.9	962.3	20277.5	960.8	20351.6	962	20380	959.9	20405.9	959.3
20492.4	961.5	20578.7	962.9	20684.9	962.3	20769.5	960.5	20826.3	963.1
20876.8	962.2	20900.3	963.5	20997.2	958.5	21014.5	957.4	21075.2	957.9
21127.2	959.8	21207.6	957.2	21255	956.2	21287.8	957.6	21353.8	957.8
21374.8	961.6	21414.6	960.9	21415.3	960.1	21444.1	956.6	21527.2	959.6
21591.2	960.1	21643.6	958.8	21685.6	954	21737.8	955.1	21787.2	954.7
21808.8	955.3	21829.3	951.8	21869.4	951.7	21919.3	955.9	21938.4	1966.7695
21957.1	977.4	21992	978.3						

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
17052.9	.025	17415.4	.043	18139.7	.043	18976	.037	21957.1	.043

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
18139.7	21938.41	525	511.84	500	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
17052.9	17415.4	978.3	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 202.09

INPUT
Description: 202.09

Right Channel Bank Staion Interpolated
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
12423.7	965.6	17099.8	965.6	17186	965.4	17264.6	965.3	17349.3	965
17358.9	964.8	17418	967.1	17422.9	965.6	17428.2	966.9	17452	965.9
17476.4	966.1	17491.8	967.5	17574.4	967	17614.9	967.2	17693.5	967.2
17814.7	961.1	17920.2	960.8	17951.8	961.2	18050.9	963.8	18132.1	964.1
18212.9	964.4	18247.5	964.7	18306	959.3	18322.2	960.3	18340.5	958.1
18363.8	957.3	18389.5	962.4	18475.1	961.1	18485.9	960.9	18523.3	964.1
18558.3	962.3	18573.3	963.2	18621.2	963.3	18652.7	957.8	18708.8	958.1
18748.7	952.2	18769.9	955.2	18859.3	957.7	18962.1	957.3	18975.3	957.3
19086	957.5	19165.3	959.6	19217.9	961	19287.9	955.2	19344.8	963
19434.4	961.7	19513.8	958.9	19564.6	953.8	19623.2	957.6	19686.2	956.9
19738.7	957.5	19783.4	954.5	19908.5	952.6	19947.2	952	20093.1	950
20106.3	950	20143.3	952.6	20167.6	955.5	20187.3	956.2	20207.9	958
20254	956.6	20271.4	957.6	20297.7	960.4	20396.6	960.4	20472.8	959.6
20529.3	963.3	20613.6	962.6	20698	962.2	20720.5	961.5	20787.7	964.2
20816.2	959.4	20866.2	961.1	20916.3	960.7	20996.8	963.3	21047.5	963.6
21101.6	961.6	21155	960.7	21221.6	961.5	21280.8	956.9	21370.9	957.5
21444.4	956.7	21456.1	957.6	21466.3	959.4	21503.9	959	21516.7	956.6
21530.5	955.5	21561.3	958	21627.9	959.2	21709	959.7	21751.4	954.3
21825.3	953.8	21856.2	951.2	21912.9	951.7	21928.2	955.7	21938.26	965.332
21947	973.7	21985	973.7						

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
12423.7	.025	17491.8	.043	18212.9	.043	19086	.037	21947	.043

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
18212.9	21938.26	510	509.32	500	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
12423.7	17491.8	973.7	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 201.99

INPUT
Description: 201.99

Right Channel Bank Staion Interpolated
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
12423.7	962.9	12792.3	963.8	13061.9	964.2	13286.8	963.1	13510.3	962
13746.9	961.3	13984	962.2	14217.9	962.9	14443.4	963.1	14690.7	964.7

14908.9	964.6	14956.9	968.1	14966.2	964.3	15216	964.5	15450.3	964.3
15717.5	963.6	15947.7	963	16170.3	962.3	16226.7	962.5	16243.5	964.4
16481.8	963.7	16706	964.8	16931.9	964.5	17163.9	965	17409.1	965.4
17507.7	965.1	17760.7	967.9	18000.5	959.7	18235.1	962.5	18353.1	960.5
18417.7	956.5	18440	960.5	18639.2	962	18674	954.8	18737.7	957.9
18818.4	957.6	18843.9	951.9	18894.5	956	19104.7	956.3	19162.4	959.4
19182	952.7	19244.4	958.4	19290	953.9	19357.8	953.9	19392.3	959.4
19476.2	956.3	19599.7	958.8	19757.3	956.9	19806.8	958.1	19854.1	952.5
20078.1	951.3	20095.8	953	20192.9	950.6	20250.9	959.6	20290.2	950.4
20347.4	962.9	20368.6	965.8	20433.1	963	20465.1	950.1	20577.2	949.5
20589	951.7	20619.5	951.7	20638.1	949.5	20700.3	949.5	20727.6	954.8
20735.3	964.1	20750.8	961.1	20862.1	965.2	20904	975.7	20956.4	975.3
20989.8	964.1	21038.3	963.3	21074.1	972.2	21105.1	970	21109	967.5
21138.5	968.2	21163.6	953.1	21180.4	949.1	21267.5	949.1	21538.3	949.1
21555.3	949.1	21578	958.4	21595.4	955.8	21617.3	955.7	21641.7	951.9
21676.1	954.4	21726.5	948.7	21821.2	953.2	21862.8	963.6	21892.7	1964.4166
21991	967.1	22006.5	964	22019.9	967.9	22243.3	966.9	22585.6	967
22917.2	966.9	23024.3	966.9						

Manning's n Values num= 7

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
12423.7	.025	17507.7	.043	17760.7	.043	19357.8	.032	20250.9	.037
21991	.037	22006.5	.025						

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
18235.1	21892.71	470	477.46	490	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
12423.7	17760.7	975.7	F
21990.9	23024.3	975.7	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 201.9

INPUT
Description: 201.9

Right Channel Bank Staion Interpolated
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
12498	962.4	12680.7	963	12847.7	963.1	13015.1	963.3	13199.8	963.2
13361.7	963.7	13371.9	960.2	13574.5	962.7	13724.8	961.4	13908.8	961.8
14082.1	962.6	14282	963.2	14504.3	963.3	14674.9	963	14875.2	963.6
15026	967.2	15036.6	963.6	15225.9	964.3	15398.3	964.4	15600.8	964.2
15790.8	963.8	15996.8	963.9	16181.7	962.7	16294.9	962.8	16309.4	964.3
16331.6	962	16525.6	962.6	16699.1	963.6	16881.9	964.4	17117.4	963.7
17353.6	965.3	17563.8	966.2	17569	964.3	17769.9	966.6	17941.7	966
17954.3	963.8	18181.9	958.7	18226.6	955.3	18260.2	960.7	18291.8	960.5
18303.9	958.6	18480.2	961.7	18648.9	961.8	18745.5	962	18798.7	956.2
18820.8	957.2	18854.3	951.8	18909.2	955.3	19138.4	956.3	19200	953.3
19336.3	962.3	19389.1	958.9	19449.9	951.5	19624.1	955.9	19782.3	957.2
19911.4	951.6	20081.9	950.6	20221.5	952.6	20269.4	959.3	20331.6	955.1
20356	957.7	20398.9	948.7	20567.7	948.5	20744.7	949.1	20888.3	947.2
20954.4	949.9	21000.8	949	21037.1	957.5	21099.1	956	21139.7	949.7
21300.7	952.4	21411.2	949.7	21444.1	955.9	21487.9	956.1	21503.4	949
21546.8	949	21556.2	952.2	21567.4	960.5	21588	955.9	21628.6	952.2
21667.7	955.7	21698.6	949	21736.9	950	21748.7	952.4	21786.7	952.8
21827.41	963.9898	21842	968	21955.2	963.2	21982.2	967.4	22181.8	966
22228.4	965.8	22400.7	965.8	22432.3	965.9	22634.3	966.5	22801.2	966.1
23008.7	966	23096	965.3						

Manning's n Values num= 7

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
12498	.025	17569	.043	17769.9	.043	19389.1	.032	20331.6	.037
21842	.037	21982.2	.025						

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
17954.32	21827.41	500	495.8	500	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
12498	17769.9	968	F
21842.1	23096	968	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 201.81

INPUT
Description: 201.81

Left and Right Channel Bank Staions Interpolated
Station Elevation Data num= 98

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
12574.1	961.8	12761.8	962	12923.9	962.6	13108.8	962.8	13276.3	963
13435.2	962.8	13461.6	960.9	13640.2	962.7	13758.3	961.2	13887.4	962.7
14049.5	962.4	14230.8	962.1	14408	962.7	14585.1	963.8	14774.2	962.7
14940.9	962.1	15056.2	964.1	15099	967.8	15104.2	963.1	15275.2	964.2
15444.5	964.1	15610.6	963.9	15771.8	963.8	15946.1	963.3	16142.1	962.7
16322.1	962	16382.5	963.6	16475.3	960.8	16709.7	962.1	16947.6	962.4
17136	963	17301	963.8	17538.6	963.1	17700.9	964.2	17890.2	965.6
17935.7	965.6	17946.8	9963.6227	17964	960.6	18130	958	18246.7	956.1
18277.1	959.5	18483.2	960.9	18556.4	960.8	18619.6	964.6	18716.1	963.4
18765	964.3	18860.5	957.6	18955	958.4	19006.4	951.6	19072.9	957.9
19139.8	953.9	19294.5	954.6	19378.9	957.7	19550.9	954.4	19605.4	951.1
19693.5	953.4	19720.4	950.1	19883.7	950.2	20049.4	953	20182.8	953.5
20285.8	953.2	20377.1	957.6	20392.1	962.6	20421.1	948.6	20597	946.8
20665	946.7	20832.3	946.1	20846.8	951.1	20855.6	956.4	20869.8	954.4
20881.2	950.3	20908.5	949.6	20924	952.5	20962.6	950.9	21000.7	946.6
21169.8	946	21187.6	953.2	21244.2	956.3	21263.5	960.4	21295.1	951.3
21322.9	946.6	21496.1	948.5	21522.9	951.7	21690.5	950.7	21775	950.9
21803.2	7963.6213	21811	967.1	21860	969.2	21904.1	961.6	21929.9	965
21975.7	963.6	22175.4	965.3	22352.1	965	22654	963.5	22715.1	963.5
22875.2	962.8	23093.9	964.4	23169.5	964.2				

Manning's n Values num= 7

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
12574.1	.025	17700.9	.065	17935.7	.065	19378.9	.032	20392.1	.037
21860	.025	21975.7	.025						

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
17946.89 21803.27 535 511.61 515 .1 .3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
12574.1	17935.7	969.2	F
21859.6	23169.5	969.2	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 201.71

INPUT
Description: 201.71

Left Channel Bank Staion Interpolated
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
12659.2	961.6	12855.6	961	13000	961	13129.9	960.8	13180.2	962.1
13187.7	959.3	13371.2	960	13521.5	960.3	13689.3	960.5	13844.9	960.6
13979.7	960.3	14193.8	960.9	14324.5	960.9	14461	961	14593.2	960.9
14774.5	961.4	14909.4	960.6	15132.5	961.7	15192.9	963.1	15384.5	962.1
15537.8	962.3	15716.6	961.2	15856.1	961.1	16082.6	960.9	16210.7	961.2
16383	961	16543.7	961	16684.4	961.3	16813.5	961.2	16941.4	961.7
17106.2	961.5	17255.2	962	17388.3	961.5	17585.2	961.5	17706.7	962.1
17766.4	963.8	17769.2	962.5	17794.4	964.5	17957.8	964.3	18096.3	964.8
18107.05	962.8899	18140.2	957	18197.6	953.2	18356.6	956.6	18441.5	961.3
18556.1	957.7	18600.1	958.6	18651.3	956.4	18676.1	956.9	18707	951.3
18764	957	18831.5	958.2	19007.5	955.3	19076.4	952	19279.5	954.1
19409.2	953.7	19475.6	949.9	19555.7	955.6	19660.9	959	19739.3	954.2
19763.1	949.4	19910.3	951	19978.4	951.1	20023.1	954.8	20199	956
20304.5	951.4	20347.1	954.9	20447.3	951.1	20499.8	956.3	20554.9	954.5
20692.6	956.1	20848.5	954.8	20899.8	950.2	20984.5	949.7	21011.3	946
21148.8	948.4	21186.8	951.7	21268.1	954.5	21355	953.1	21433.7	954.9
21490.6	959.4	21528.5	960.3	21661.1	959.7	21837.7	959.7	21975.8	962.2
22098	963.6	22111.4	961.1	22160.6	964.1	22190.7	962.9	22353.1	963.4
22385.7	963.3	22516.6	964.2	22615.8	964.3	22832.1	963.4	22981.6	963.4
23127.8	962.8	23246	962						

Manning's n Values num= 7

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
12659.2	.025	17706.7	.065	18096.3	.065	19660.9	.032	20554.9	.037
21355	.025	21528.5	.025						

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
18107.05 21528.5 505 489.63 495 .1 .3
Ineffective Flow num= 2
Sta L Sta R Elev Permanent
12659.2 18096.3 966 F
22098 23246 966 F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 201.62

INPUT
Description: 201.62

Left Channel Bank Station Interpolated
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
12723.6	960.1	12862.6	960.3	13017.9	960.4	13156.4	960.4	13253.3	961.5
13267.4	959	13436.1	959.9	13621.5	960.4	13766.2	960.5	13909.8	960.4
14075.1	960.4	14269.1	960.4	14410.3	960.9	14542.3	960.9	14677.4	961
14845.4	961.8	15072.7	961	15207.9	961.9	15344.9	961.6	15510.2	961.6
15676.2	961	15821	960.6	15995.5	960.4	16157.9	960.8	16296	961.1
16491.6	961.1	16630.4	960.7	16799.9	960.5	16987.6	960.1	17022.4	962
17197.5	958.5	17331.6	959.3	17350.4	962.3	17555	961.1	17693.7	961.5
17788.7	963.5	17792.9	962.2	17963.6	963.3	18107	962.8	18229.7	963.9
18233.5	962.1	533	18253.2	953.1	18417.5	953.4	18563.5	953.4	18723.5	952.3
18864.3	951.9	18956.1	956.6	19045.2	956.9	19129.4	952.1	19159.3	954.5
19237.7	952.1	19435.3	953.3	19483	951.6	19522	953.4	19577	948.8
19677.3	954.6	19737.2	953.8	19772.7	949.2	19918.1	949.3	20064.6	953.2
20213.3	953.8	20358.7	952.9	20472.9	952	20509.2	950	20584.5	955.3
20619.5	953.2	20653.6	948.7	20723.6	953.3	20794.2	955.3	20904.8	954.6
20962.2	949.9	20990.6	945.6	21150.5	945.9	21165.2	946.9	21199.1	955.3
21351	951.4	21457.3	955.6	21477.5	960.2	21514.2	959.4	21654.6	959.9
21824	959.8	21964.5	960.6	22074.2	961	22085	959.8	22090.5	961.3
22197.1	961.9	22233.4	963.7	22249.4	962.1	22301	963.2	22456.6	963.4
22491.4	963.3	22714.7	962.8	22775.6	962.8	22945.1	962.7	23131.5	962.5
23268.1	960.6	23318.4	961.5						

Manning's n Values num= 9

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
12723.6	.025	16799.9	.15	17197.5	.025	17792.9	.065	18229.7	.065
19577	.032	20509.2	.037	21351	.025	21477.5	.025		

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
18233.5 21477.5 485 486.48 510 .1 .3
Ineffective Flow num= 2
Sta L Sta R Elev Permanent
12723.6 18229.7 965 F
22233.4 23318.4 963.9 F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 201.52

INPUT
Description: 201.52

Left Channel Bank Station Interpolated
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
12786.6	960.2	12939.6	960.1	13099	960.1	13244.9	960.2	13300.5	962.8
13357.3	959.7	13501.3	960.4	13678.7	959.8	13830.9	960	14035.1	959.9
14185.2	959.4	14386.6	959.8	14539	959.6	14722.7	959.3	14894.1	959.5
15114.2	959.2	15254.5	962.1	15427.2	959.8	15592.7	959.9	15779.1	959.7
15959.1	959.6	16138.8	959.3	16313.2	960.4	16492.7	958.5	16665.8	959
16834.1	958	17009.5	957.5	17081.3	959.5	17261.7	956	17408.3	957.9
17566	960	17731.1	959.6	17842.3	960.3	17845.2	962.9	17943.7	3961.3971
18009.1	960.4	18087.6	959.9	18104.5	954	18264.9	951.7	18427.6	949.5
18577.1	948.4	18651.6	946.4	18699.1	952.7	18753.8	949	18784.8	949.1
18848.6	953.1	18893.8	954	18925.3	958	19065.9	958.5	19153	954.3
19223.7	956.3	19377	949.7	19404.1	948.6	19480.7	949.5	19540.9	947.7
19607.6	951.7	19748	954.6	19781.1	954.1	19818.6	949.6	19876.6	948.4
19936	956.7	20100.5	954.2	20244	952.7	20403.3	950.4	20550.4	948.2
20608.4	948	20715.6	953.3	20891.6	948.2	20923.4	941.8	20972.4	940.9

20990.6	945.3	21048.3	948	21178	947.3	21216.5	954.8	21254.9	957		
21391.4	958.4	21554.4	958	21596.8	958.1	21777.9	958.2	21934.4	958.6		
21995.7	958.3	22004.2	960.1	22157.3	959.4	22212.5	961.1	22218.9	959.2		
22225.8	961.6	22299.7	963.1	22311.3	960.4	22338.4	962.5	22478.8	962.4		
22674.4	962.5	22848.1	961.1	22905.9	961.6	23058.8	963.2	23081.5	963.2		
23263.4	961.3	23370	959.8								

Manning's n Values num= 7

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
12786.6	.025	17009.5	.15	17261.7	.025	17845.2	.15	19480.7	.032
20244	.037	21391.4	.025						

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

17943.73	21391.4		495	492.06	495	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
12786.6	17845.2	963.2	F
22212.5	23370	963.2	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 201.43

INPUT
Description: 201.43

Left Channel Bank Station Interpolated
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
12790.4	959.2	12931.7	959.4	13106.1	959.5	13261.9	959.6	13426.6	960.3
13574.8	960.1	13719.2	960	13863.6	960.3	14015.4	959.4	14162.1	960.1
14260	960.7	14418.2	961.9	14556.8	961.4	14697.8	960.6	14846.1	959.1
15008.5	959.1	15194.6	958.6	15331.7	959.1	15511.6	959.4	15657.5	959.5
15799.1	959.9	15827.9	961.5	15973.4	960.8	16110.8	960.5	16254.2	959.9
16478.5	958.1	16617.9	958	16780.3	959.8	16924.1	959.3	17061.9	956
17202.1	956.4	17374.3	959	17594.2	959.4	17734	959.4	17844.3	960.3
17853.5	961.9	17859.2	959.6	18001.4	960.7	18014.9960.4907		18053	959.9
18066.9	952.8	18179.7	952.8	18317	950.6	18459.7	949.9	18597.4	947.5
18738.8	948.8	18799.8	954.8	18924.3	958	19076.8	958.9	19195.5	956.6
19253.6	950.7	19403.4	947	19416.1	948.3	19450.8	947.6	19528.4	954.4
19671.9	955.8	19712.9	955.8	19744.1	948.3	19847.5	947.6	19851.7	953.1
19996.8	955.1	20141.7	954.2	20303.2	954.8	20474.6	951.5	20649	946.3
20689.8	947.9	20719.5	943.8	20747.5	947.5	20911.6	947	20951.8	947.8
20976.3	941.3	21080.6	942.7	21100.4	945.1	21136.4	946.2	21179.1	944.6
21271.5	950.5	21342.1	957.5	21353.3	959.8	21363.1	957.2	21516.4	957.7
21676.7	958.3	21814.1	958.7	21883	958.4	22035.4	957.9	22182.8	959.4
22322.3	960.9	22328.9	958.7	22340	962.3	22362.8	960.4	22606.3	961.2
22648.5	961.2	22787	960.2	22945.6	960.3	23094.6	961.1	23289.3	961
23341.9	960.2	23387.4	958.8						

Manning's n Values num= 7

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
12790.4	.043	15827.9	.065	17202.1	.025	17853.5	.15	19253.6	.032
20649	.037	21342.1	.025						

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

18014.9	21342.1		555	519.88	505	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
12790.4	18000	962.3	F
22322.3	23387.4	962.3	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 201.33

INPUT
Description: 201.33

Left ChannelBank Station Interpolated
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
12785.7	957.8	12951.9	958.1	13134.4	958.1	13293.5	958.1	13493.4	958.4
13649.5	958.9	13744.1	960.9	13758.6	959.4	13925.5	959	14085.7	958.6
14255.8	961.3	14420.6	961.4	14593.6	961.2	14794.8	960.7	14992.6	959.3

15164	957.6	15345.7	958.5	15520.6	959.3	15694.3	959.9	15854.4	959.9
16014.9	960.3	16184.1	960.4	16362.7	960.3	16517.9	960.6	16680.1	958.6
16837.4	958.7	16937	956.7	17109.2	956.2	17266.3	958.7	17288.5	957.8
17465.9	959.2	17667.7	959	17831.2	959.5	17862	961.6	17929.5	961.8
17948.2	960.4	18049.52	959.5	026 18072.4	959.3	18086.6	953	18242.2	954.4
18398.7	954.5	18556.7	954.3	18607.2	952.5	18626.2	948.5	18634.2	950
18715.7	949.6	18791	954.8	18874.7	955.9	18937.2	954.7	18984.3	948
19116.8	949.1	19140.9	943	19269.7	945.9	19315	948.3	19489.9	950.7
19565.6	952.4	19588.8	955.2	19608.2	948.1	19752.9	948	19806.6	953
19969.5	952.2	20134.6	953.3	20171.4	952.2	20226.7	955.4	20293.9	954.2
20341.3	955.5	20424.9	951.7	20512.5	950.6	20548.8	944.7	20652.6	950
20769.7	946.7	20843.2	955	21006.1	948.3	21057.8	946.6	21076.8	943.6
21236.1	944.8	21304.1	946.3	21310.7	945	21357	957.5	21381.8	958.1
21545.7	957.7	21548.3	957.8	21799.8	956.8	21810.6	956.8	22056.9	957.1
22107.8	957.3	22115	958.6	22356.1	957.9	22513.8	959.5	22624.6	962.2
22794.7	960.7	22966.1	961	23037.1	962.1	23192.4	961.3	23366.6	961.5
23397.6	960.4	23444	960.7						

Manning's n Values num= 7

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
12785.7	.043	15854.4	.065	17266.3	.025	17929.5	.15	19116.8	.032
19315	.037	21381.8	.025						

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
18049.52 21381.8 515 514.62 515 .1 .3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
12785.7	17929.5	962.2	F
22624.6	23444	962.2	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 201.24

INPUT
Description: 201.24

Left Channel Bank Station Interpolated
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
12806	955.8	12962.7	956.3	13145.6	957.3	13331.4	956.5	13517.2	956.2
13697.1	957.3	13855.5	957.4	14010.3	957	14164.7	956.7	14318.4	958.2
14482	958.5	14660	956.8	14688.4	957.7	14821.8	955.2	14989	957.8
15156	956.9	15324.8	957.6	15476.8	959	15632.7	959.6	15787	959.8
15939.5	959	16132.2	958.4	16296.2	957.9	16464.6	957.9	16632.1	958.1
16801.9	956.7	16986.8	954.6	17117.8	954.3	17180.2	958.7	17353.5	957.6
17566.1	957.4	17719.1	957.9	17947.6	957.8	18063.5	959.9	18067.36	958.4367
18084.6	951.9	18123.2	954.4	18273.7	954.7	18463.7	954.1	18640.4	954.1
18769.1	951.5	18834.7	946.6	18852.7	947.7	18957	944.8	19101.5	944.9
19190.4	949.6	19365.4	949.8	19479.4	950.7	19501.5	945.5	19659.5	947.2
19709.9	951	19861.9	951.5	20036.3	950.6	20116.5	953	20174.4	956.4
20272.4	956.3	20322.3	953.3	20397.8	952.3	20534.1	946.8	20728.3	949.3
20901.9	952.6	21060.4	953.1	21108.8	948.4	21143.3	943.1	21322.6	943
21477	945.1	21515.7	945.4	21547.4	956.4	21570	957.6	21573.6	955.3
21742.9	955.8	21840.8	955.8	22073.6	956.2	22315.2	956.6	22474.6	957.8
22660.5	959.5	22837.1	960.3	23006	960.7	23189	960.3	23372.7	959.3
23535.3	958.6	23693.7	960.2	23701.8	958.7	23728.6	959.3	23733.9	957.9
23745.1	960.6	23895.9	959.5	24055.3	959.7	24212	959	24364.3	958.6
24523.2	960	24683.9	959.1	24867.9	960.4	25044.2	960.6	25240.9	961.6
25449.6	962.7	25490	964.7						

Manning's n Values num= 9

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
12806	.043	16132.2	.065	17180.2	.025	17947.6	.15	18063.5	.15
18957	.037	19659.5	.032	20174.4	.037	21570	.025		

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
18067.36 21570 485 488.56 490 .1 .3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
12806	18063.5	964.7	F
23006	25490	964.7	F

CROSS SECTION

RIVER: 1

REACH: 1 RS: 201.14

INPUT
Description: 201.14

Left Channel Bank Station Interpolated
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
12823.9	955.7	12999.4	956.2	13212.7	955.6	13428.9	956	13645.2	955.7
13816.9	955.8	13992.2	956	14163.4	956.5	14335.2	955.8	14527.3	956.5
14708.6	956.3	14909.6	955.2	15093.8	955.5	15267	954.8	15439.6	956.4
15609.9	956.4	15791	956.8	15950.3	959	16129.2	957.7	16303.6	956
16475	953.7	16660.8	955	16839.9	953.5	17004.5	951.4	17082.5	958.8
17162.8	956.1	17184.4	958.7	17362.4	957.4	17598.4	957.1	17832.2	956.8
18017.1	960	18032	960.21	18037.86	957.9083	18056.8	950.5	18241.1	949.4
18415.6	950.8	18585.7	951.8	18725.4	952.4	18733.1	949.9	18790.6	949.1
18818.8	941.6	18850.4	943.3	18986.4	943.9	19077.9	949.8	19149.1	948.9
19305.2	951	19389.8	945.3	19562.7	946.4	19610	949.5	19790.7	949.7
19961	950.3	20069.8	955.8	20203.6	953.6	20241.8	949.2	20445.4	947.5
20553.6	952	20738.9	949.5	20840.4	947.3	20887.4	943.5	20941.4	948.4
20992.7	949.8	21019.8	942	21063.4	942.9	21079.7	945.4	21128.6	946
21160	941.1	21202.5	940.4	21278.6	945.6	21455.1	945.3	21569.3	940.9
21644.4	944.5	21697.9	954.5	21721	955.2	21725.6	953.1	21741.2	955
22051.3	955.9	22155.8	956.1	22389.7	956.4	22512.4	956.8	22725.1	956.9
22832.8	959	22857.1	957	23030.8	959	23238.6	958.8	23414	958.9
23606.9	957.7	23803.1	958	24052.9	958.2	24291.1	958.1	24471.3	958.5
24625.1	958.9	24632.8	957.3	24637.8	958.9	24815.7	959.6	25013.4	960.6
25215.4	961.6	25365.2	962.4						

Manning's n Values num= 8

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
12823.9	.043	16303.6	.065	17184.4	.025	18032	.15	18850.4	.037
19610	.032	20553.6	.037	21721	.025				

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
18037.86 21721 480 481.53 485 .1 .3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
12823.9	18032	962.4	F
22832.8	25365.2	962.4	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 201.05

INPUT
Description: 201.05

Left Channel Bank Station Interpolated
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
12848.3	954.5	13055.4	953.7	13276.2	955.4	13483.1	957.1	13684.3	954.7
13886.2	954.5	14079.9	955	14267.8	955.7	14489.3	955.5	14686	954.3
14893.9	954.8	15093.5	953.8	15286.8	955	15508	955.8	15694.8	955.4
15890.9	955.3	16093.3	955.3	16296.5	955.9	16489.7	956.3	16687.2	954.3
16876.1	953.1	17029.6	951.4	17090	955.6	17177.7	953.2	17211.7	959.1
17239.8	956.7	17474.3	956.9	17712.8	956.3	17920.1	957.3	17947.8	957.7
17948.21	957.514	17963.9	950.4	18149.7	948.9	18366.7	949.3	18552.6	947.7
18642	947.2	18662.5	941.8	18877.7	942.9	18965.7	942.8	19025.5	948.9
19069.3	949.7	19115	948	19146.2	943.8	19305.4	944.7	19341.4	942.6
19450.5	944.4	19486	951.1	19656.3	948.4	19742.2	949.2	19800.5	946.7
19926.9	951	19979.4	950.2	20027.5	955.4	20105.3	953.3	20157.5	947.1
20233.6	946.1	20272.3	948.2	20302.6	946.7	20402.5	950.2	20615.4	948.5
20746.4	950.2	20793.3	949	20816.3	941.7	20964.1	941.5	20993.4	945.9
21193.9	949.2	21384.8	948.9	21582.1	946	21750.2	942.4	21815.9	945.1
21849	955.5	21881.2	953.7	21901.6	955.1	21907	953.3	21990.8	953.6
22189.8	954.8	22244.5	955.2	22537.9	955.5	22570.5	955.5	22835	955.8
22894.6	957.1	22905.9	959	22934.1	957.4	23165.2	957.6	23380	958
23414	957	23451.8	959.3	23684.3	956.6	23933.2	957	24126.1	957.5
24400	957.7	24595.1	958.4	24603.3	957.1	24622.7	959.8	24638.5	957.6
24836.5	959.9	24997.1	961.2						

Manning's n Values num= 8

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
12848.3	.043	16687.2	.15	17177.7	.025	17947.8	.15	18965.7	.037
19486	.032	20402.5	.037	21849	.025				

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
17948.21 21849 520 512.89 510 .1 .3
Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
12848.3	17947.8	961.2	F
22905.9	24997.1	961.2	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 200.95

INPUT
Description: 200.95

Left Channel Bank Station Interpolated
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
12874.8	952.5	13039.9	952	13212.3	952.3	13372.8	953.5	13537.8	953.7
13708.5	953.7	13872.8	954	14042.5	953.4	14205.3	953.3	14401.9	953.5
14603.1	953.1	14762	954.2	14934	952.2	15127.8	952.8	15312.6	953.8
15422.3	957.2	15583	954.7	15746.4	955	15906.8	956.3	15988.2	955.4
16164.6	957.4	16332.4	957.6	16504.4	956.6	16673	957.2	16861.4	956.7
17049	953.4	17207.8	951.7	17274	955.6	17440.2	954.4	17613.5	957.4
17631.7	953.8	17653.9	958.1	17824.4	958	17905.8	956.9	17952.4	956.3
17964.6	951.3	18135.4	946.6	18219.9	947	18317.2	949.6	18410.9	946.7
18428.8	949	18651.9	947.8	18690.8	946.2	18729.3	940.1	18914	943.4
19040.9	943.9	19102.9	941.9	19126.2	943.3	19190.9	941.9	19216.4	943.8
19237.2	941.5	19420.9	944.3	19517.6	943.7	19555.3	947.7	19758.1	946.5
19818.9	950.2	19947.1	951.5	20006.8	955.9	20184.2	954.1	20323.1	951.3
20414.3	945.7	20527.8	944.2	20653.3	949.4	20684.2	940.5	20842.4	942.7
20989.1	947.8	21069.4	948.4	21262.3	947.7	21448.8	948.8	21631.4	946.7
21802	942.6	21869.1	939.8	21909.3	943.4	21954	953.2	22148.5	954.1
22306.3	954	22378	955.4	22594.8	954	22757.8	954.9	22935.8	954.8
23107.3	956.2	23275.4	955.9	23411.6	954.8	23573.4	957.7	23629.1	956.7
23796.3	955.8	23971.7	955.8	24129.8	956	24294.4	955.8	24466.5	955.4
24623.6	955.4	24630	955.3	24639.7	957.8	24648.4	954.6	24662.5	958.2
24836.4	959.8	24988.3	960.7						

Manning's n Values num= 6

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
12874.8	.043	17824.4	.15	18729.3	.037	19517.6	.032	20323.1	.037
21954	.035								

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
17905.8 21954 475 474.38 480 .1 .3
Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
12874.8	17824.4	960.7	F
23100	24988.3	960.7	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 200.86

INPUT
Description: 200.86

Left Channel Bank Station Interpolated
Station Elevation Data num= 98

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
12893	952.7	13071.4	952.1	13217.7	954.6	13366.3	951.7	13513.8	953.9
13666	954.4	13820.1	953.4	13963.2	953.3	14149	953.3	14333.5	952.5
14509.1	952.1	14688.3	953.1	14861.7	952.4	15054.1	951.6	15210.6	951.7
15424.6	955	15571.3	952.8	15782.9	955.2	16020.2	955.6	16192.2	953.9
16399.2	952.8	16559.9	953	16714.8	953.3	16760.5	954.7	16916.6	953.9
17003.1	954.6	17168.1	950.1	17285.1	949.5	17360.5	954.6	17520.2	953
17694.7	956	17869.8	957	17934.1	958.1	17992.4	4956.5	698 17995.1	956.5
17996	956.3	408 18052.8	946.3	18288.3	948.1	18449.5	947.1	18628.5	947.7
18762	951.3	18912.7	950.4	19061.6	946.8	19092	945.3	19141.3	938.5
19175.6	940.7	19336.6	941.9	19619.6	944.7	19730.8	944.7	19826.2	949.9
19922.8	951.3	20011.5	955.4	20112.1	951.4	20184.7	943.1	20254	952.1
20308.4	952.8	20438.4	949.3	20464.9	944.1	20568.6	943.9	20744.1	941.1
20840.6	941.3	20896.7	945.9	20979.1	947.3	21100	946.2	21279.3	951.2
21459.1	946.8	21602.1	945.3	21642.4	941.5	21792.5	940.9	21831.9	940.3
21865.4	942.7	21898	952	22032	954.1	22187.6	953.7	22377.3	953.4

22522.7	953.4	22725.4	952.8	22947.9	954.9	23137.5	955	23294.6	956.1
23413.1	955.8	23420	954.5	23482.2	956.5	23641.6	956.7	23647.7	954.4
23806	955.4	23951.6	954.9	24112	954.8	24269.9	954.6	24426.7	954.8
24604.6	954.9	24656.8	954.3	24670.5	956.8	24680.8	954	24693.9	958.2
24856.4	958.5	25029.7	959	25175	960.2				

Manning's n Values num= 6

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
12893	.043	17934.1	.15	19619.6	.032	20308.4	.037	21898	.035
22032	.035								

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
17996	22032	525 523.32	525	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
12893	17750	960.2	F
23360	25175	960.2	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 200.77

INPUT
Description: 200.77
Station Elevation Data num= 96

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
12925.1	950.1	13101.8	952.3	13250.4	951	13436.7	950.7	13651.1	951.4
13804.4	951.9	14027	953.4	14249.5	951.8	14401.1	950.7	14592.6	949.7
14752.3	950.6	14873.3	950.3	15006	952.1	15110.8	950.9	15249.1	953.3
15443.8	954.5	15631.2	955.3	15702.9	951.3	15936.9	951	16108.8	954.5
16172	955.8	16295.1	951.4	16462	950.7	16530.6	949.9	16652.3	952.8
16854.8	954	17022.2	952.1	17185.4	949.9	17349.4	948.1	17402.8	955.2
17473.6	951.6	17660.6	954.4	17828.8	955.3	17926.5	954	17969.3	948
18147.9	944.4	18302.9	946.4	18524.1	946.1	18650.9	949	18815.8	948.8
18902.5	949.8	18913.4	952	19097	950.8	19277	951.3	19280.8	951.9
19280.9	949.5	19321.8	951.3	19557.8	943.7	19720.4	945.1	19857.8	946.5
19911.9	942.9	19989.5	951.1	20140.5	950.2	20288.5	945.2	20339.4	948.6
20362.3	944.7	20388.7	942.6	20487.8	944	20788	936.9	20804.9	937.1
20829.2	942.4	20906.3	944.7	21056	944.4	21222.9	942.6	21375.1	940.2
21524.6	940.4	21559.7	941	21581	950.6	21785.8	951.3	21951	952.4
22102.3	952.1	22329.8	953.2	22461	953	22651.4	953.3	22824.9	954.7
23050.7	954.8	23217.5	954.9	23380.5	954.5	23421.7	954.3	23434.6	956
23439.7	954.3	23489.2	957.2	23506.4	952.5	23514.1	955.4	23706.9	954.3
23876.7	954.3	24057.8	954.4	24216.1	954.4	24385.4	954.2	24554.4	953.9
24685.3	953.1	24698.2	956.8	24704.7	952.7	24723.6	958.6	24886.7	958.9
24978	959.5								

Manning's n Values num= 6

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
12925.1	.043	17828.8	.15	19321.8	.032	19857.8	.037	21785.8	.025
21951	.035								

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
17828.8	21951	500 495.64	520	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
12925.1	17630	960	F
23630	24978	960	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 200.67

INPUT
Description: 200.67
Station Elevation Data num= 96

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
12952.7	947.8	13129.5	948.3	13308.2	948.8	13483.1	949.2	13641	952.6
13766	952	13870.6	949.3	14073.7	950.3	14282	951.5	14535.6	948.8
14746.4	948.7	14899.4	949.8	15045.4	950.6	15138.5	953.1	15312.3	952.8
15471.5	952.2	15651.1	951.4	15730.3	949.9	15964.5	954	16199.7	953.8
16438.6	948.9	16643.2	952.3	16796.2	954	17002.3	953.9	17133.8	952.2
17211.9	946.7	17315.9	947	17376.2	954.8	17384.7	952.3	17551.8	953.1
17732.2	954.1	17919.3	952.9	17950	943.8	18101.5	944.9	18330.6	947.4
18498.9	943.9	18565	943.8	18742.3	948.8	18888.2	952	18925.4	946.6

18962.8	948.9	19023.7	947.4	19040.9	949.6	19238.5	952.4	19366.3	948.8
19569.2	947.1	19719.3	940.8	19796.7	942.1	19832.7	943.8	19969	943
20047.1	949	20111	948.4	20263	939.8	20444.8	942.7	20609	942.6
20782.8	941.1	20963.8	942.2	20998.9	941.8	21090.6	944.3	21256.2	942.8
21298.3	943.3	21316	950.6	21367.7	945.7	21427.5	950.4	21604	951.9
21649.3	952.3	21939.5	952.7	21971.5	952.7	22194	953.4	22217.8	954.7
22233.1	953	22256.3	952.8	22476.8	953.9	22513.4	953.9	22711.5	955.1
22773.4	955.2	22873.4	959.1	23051.6	959.3	23158.6	956.6	23168.5	958.8
23393.6	957.5	23430	957.4	23431.7	955.9	23584.2	954.6	23749.1	953.9
23939.2	954	24125.4	954.8	24292.4	954.6	24492.9	954.3	24643.7	954.1
24725.3	954.1	24731.8	955.7	24741.4	953.7	24755.2	960.7	24923	959.7
24996.7	960								

Manning's n Values num= 8

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
12952.7	.043	17919.3	.15	18962.8	.032	19040.9	.15	19366.3	.032
20263	.043	21604	.025	21649.3	.025				

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
17919.3	21649.3	500 503.34	510	.1	.3

Ineffective Flow num= 3

Sta L	Sta R	Elev	Permanent
12952.7	17540	960	F
22230	23500	960	F
23915	24996.7	960	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 200.58

INPUT
Description: 200.58

Right Channel Bank Station Interpolated
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
13004.2	946.1	13252.7	946	13406.6	945.2	13565.9	944.9	13774.2	944.6
13943.1	945.5	14116.9	945	14279.1	946.6	14438.8	947.7	14609	948.4
14768.3	947.1	14929	947.1	15050.5	947.2	15202.4	950.2	15286.6	950.1
15344.6	952	15501.3	950.2	15638.8	948.6	15758.4	951.1	15992.6	950.5
16109.8	952.6	16227.7	949.4	16451.3	948.4	16610.1	950.8	16708	953.4
16925.1	953.5	17149.3	953.1	17163.9	953.3	17234.2	944.5	17318.9	945.5
17387.8	953.1	17544.8	952.5	17768	953.3	17947	953.3	18120.4	944.7
18239.5	947	18479.6	944.5	18689.4	943	18899.8	947.1	18982.6	947.4
19060.5	950.5	19193.4	946.5	19239.2	951	19272	950.3	19281	947.8
19435	949.5	19481.5	950.8	19780.1	939.9	19839	939.1	20105.5	937.6
20341.3	941.2	20411.6	945.7	20456.8	943.9	20469.2	941.9	20590	941.2
20660	946.3	20712.1	943.5	20803.5	943.1	20830.7	941.2	21002.3	943.4
21117.8	946.3	21272	946.4	21425	950.4	21450	950.6778	21452	950.7
21643	952.3	21667.2	952.4	21820.3	952	21847.8	952	22017.1	952.7
22213.8	952.2	22244.2	960.6	22257.8	957.2	22270.2	958.5	22289.1	952.8
22392.9	953.3	22566.6	953.5	22797.3	954.2	22998.5	955.3	23151	955.4
23322.6	954.9	23399.1	953.2	23498	953.6	23506	952.3	23516.9	955.5
23555.1	955.9	23578.4	953.2	23779.1	953.4	23989.5	954.5	24174.8	954.3
24351.4	954.1	24538.2	953.8	24699.8	953.7	24771.3	955.3	24776.5	952.9
24795.5	960.4	24969.5	959.5						

Manning's n Values num= 7

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
13004.2	.15	14609	.043	17947	.15	19481.5	.032	20105.5	.043
21425	.025	21643	.025						

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
17947	21450	475 479.55	530	.1	.3

Ineffective Flow num= 3

Sta L	Sta R	Elev	Permanent
13004.2	17460	960	F
22800	23380	960	F
24200	24969.5	960	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 200.49

INPUT

Description: 200.49
Station Elevation Data num= 96

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
13048.9	945.6	13261.8	944.9	13471.4	944.9	13640.6	945.6	13821.9	945.7
13998.1	945.5	14204.4	944.8	14399.4	943.8	14586.6	943.4	14763.6	943
14951.3	943.1	15156.1	943.2	15371.2	945.2	15548.1	948.1	15769.6	946.9
15979.3	948.4	16200.3	947.6	16375.3	947.1	16493.4	953	16719	952.8
16949.5	951	17106.4	951.7	17132.4	947.4	17168	952.5	17198.4	950.8
17234.4	945.1	17404.6	947.6	17536.5	952.7	17719.3	953.3	17750.3	952.7
17791.5	947.5	17816.7	949.6	17852.9	949	17862.5	950.8	18012.9	951.3
18153.1	947.1	18273.7	941.6	18480.3	943.2	18739.9	945	18856.4	944.7
19028.1	939.7	19085	944.7	19190.4	945.3	19261.7	948.1	19342.5	943.7
19490.6	939.8	19542	943.5	19650.1	948.1	19854.1	940.8	19947.1	937.5
20192	936.9	20201.4	940.9	20275.4	939.8	20324.1	944	20367.7	939.3
20425.1	937.8	20452	941.7	20573.6	946.4	20608.5	941.9	20627	944.1
20638.3	940.9	20706.1	939.4	20811.1	939.3	20837.1	942.5	20956.7	943.3
20975.1	941.9	21136.8	944.8	21171	950.3	21342.1	950.2	21559.3	950.8
21830.5	950.9	21861.8	951.1	21876.9	959.1	21891.8	959	21905.4	951.7
22133.6	952.2	22336	952.4	22590.8	952.7	22633.1	952.7	22813.2	952.3
23018.2	953.8	23185.8	954.6	23401.6	954.5	23519	954	23540.6	951.9
23589.4	954.7	23609.6	952	23780.4	952.4	23946.1	952.4	24145	952.4
24343.4	952.9	24514.6	953.3	24725.8	953.2	24810.9	953.5	24835.6	958
24956.8	957.1								

Manning's n Values num= 7

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
13048.9	.15	15548.1	.043	17719.3	.043	18273.7	.15	19342.5	.032
20192	.043	21171	.025						

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
17719.3	21171	510 497.59	510	.1	.3

Ineffective Flow num= 4

Sta L	Sta R	Elev	Permanent
13048.9	17380	960	F
21840	22160	960	F
22950	23300	960	F
24485	24956.8	960	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 200.39

INPUT
Description: 200.39
Station Elevation Data num= 96

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
13083.9	945.2	13254.6	945.3	13486.8	945.5	13742.8	945.8	14008.5	946
14273.9	945.9	14454.3	945.6	14637.7	945.4	14834.7	945.2	15022.8	944.7
15192.5	944.4	15417.5	944.4	15642.9	944.4	15819.7	943.9	16016.8	943.5
16254.5	943.6	16478.3	943.8	16652.7	943.9	16819.7	947.8	16875.2	949.8
16928.9	948.8	16992.7	951.1	17168.8	950.1	17242.1	945	17439	948.6
17484.9	949	17507.9	946.2	17527.7	949.5	17682.5	952.2	17714.9	945.6
17726.7	949.9	17781	947.5	17966.7	946.8	18026.8	945.7	18050.3	941.5
18183	941.3	18379.8	942.6	18534.2	941	18751.2	942.5	18800.2	941.7
18918.7	944.9	19025.6	941.5	19161.9	944.8	19220.8	943.5	19267.5	947.7
19444.5	940.9	19506.7	939	19763.7	940.6	19785	940.5	20110.3	939.9
20152.6	937	20199	940.6	20240.6	941.7	20272.3	938.7	20460.6	948.4
20515.5	946.8	20585.3	946.5	20659.8	939.5	20714.2	938.7	20742	943.3
20788.5	938.9	20812.7	939.9	20854.3	937.8	20978.7	940.9	21041	951.3
21062	949.6	21134.2	949.8	21326.6	949.6	21342.1	949.6	21606.3	951
21865.7	950.7	21893.4	950.9	21911.5	958	21918.5	956.7	21925.9	957.8
21937.7	950.6	22152.6	950.7	22336.4	951.5	22566.3	951.6	22807.6	951.9
23031.4	952.1	23203.3	953.2	23429.6	953.3	23573.8	952	23600	955.9
23653.9	951.2	23829	950.5	24004.5	950.7	24185.9	951.4	24362.4	951.7
24572.6	951.5	24742.1	951.6	24842.9	953.7	24848.9	951.1	24857.3	956.6
24952.5	957.6								

Manning's n Values num= 7

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
13083.9	.15	16875.2	.043	17682.5	.043	18751.2	.15	19506.7	.032
20199	.043	21041	.025						

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
17682.5	21041	550 506.5	480	.1	.3

Ineffective Flow num= 3

Sta L	Sta R	Elev	Permanent
13080	17300	960	F

21400	22680	960	F
24775	24952.5	960	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 200.3

INPUT
Description: 200.3
Station Elevation Data num= 96

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
13125.5	945.5	13316	945.5	13495.7	945.7	13687.9	945.9	13882.5	945.7
14123.9	945.2	14361.2	945.8	14546.2	945.8	14737.5	945.3	14938.1	945.4
15122.2	945.1	15335	945.6	15433	945.6	15567.6	939.4	15743.1	943.1
15926.3	943.9	16194.5	945.4	16429.4	944.1	16628.2	944	16879.3	943.5
17113.8	942.4	17377.6	941.9	17498.6	943.3	17607.2	938.9	17628.8	936.3
17658.3	936.3	17675	944.5	17697.5	951.2	17780.4	950.6	17838.1	947
17867.7	942.5	17967.1	945	18084.3	942	18261.2	944.6	18437.1	945.1
18628.2	943.1	18829.4	943.7	19025	944.9	19214.9	946.9	19248.3	947.6
19276.7	941.7	19395.7	940.8	19474.4	946.5	19525.1	941.1	19863.4	942.3
20078.8	940.7	20263.9	939.9	20310.8	939.3	20322.1	942.6	20372.8	938
20488.5	939.3	20499.7	937.7	20594.1	938.9	20626.9	940.5	20657.3	939.8
20690.1	946.3	20711.8	945.7	20725.9	942.7	20819.1	942.7	20861.5	948.6
20879.4	947.5	20896	957	20906	955	20980	955.9	20990	954.6
21051.2	955.9	21071.8	953.9	21206.4	955	21247.3	956.9	21438.7	956
21607.6	952.1	21652.6	956.5	21832	957.6	22017.2	957.7	22136.9	954
22358.1	956.8	22480.5	957.8	22661.3	957.9	22684.8	957.8	22918.3	956.9
22985.5	956.5	23086.3	950.7	23165.3	950.8	23400.3	954	23576.8	954.1
23691	953.2	23717.5	950.5	23919.1	949.7	24108.8	949.5	24379.6	950.1
24590.3	950.3	24795.9	950.7	24878.3	952.9	24883.6	950.7	24903	957.1
24983.7	956.7								

Manning's n Values num= 7

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
13125.5	.15	17780.4	.15	18261.2	.065	19395.7	.032	20263.9	.043
20896	.043	21206.4	.053						

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
17780.4	20896	520	515.72	560	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
13125	17205	960	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 200.2

INPUT
Description: 200.2

Left Channel Bank Station Interpolated
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
13153.3	944.6	13349.8	941	13453.5	941.7	13506.2	944.4	13667.2	944.5
13896.4	944.4	14116.1	944.3	14330.9	944.2	14491.6	944.1	14677.3	943.8
14757.1	939.6	14939.8	944.1	15110.7	943.8	15278.6	943.3	15461.1	943.2
15632.4	943.3	15866.9	943.9	16084.9	943.3	16260.8	943.4	16458.2	942.6
16696.4	943.8	16928.4	942.2	17115942.0292		17146.9	942	17406.4	942.7
17643.4	942.6	17703.7	941.7	17728.1	936.2	17754.7	936.2	17774.2	941
17960.5	949.6	18052.3	948	18086.8	939.2	18113.1	940.7	18233.7	939.8
18402.1	943	18511.7	944.8	18531.7	941.8	18707.3	944.7	18794.8	941.3
19017.2	943.2	19081.1	945.2	19247.5	944.2	19313.2	945.7	19482.3	942.9
19591.6	942.6	20062.3	940.4	20235.8	940	20296.5	940.6	20329.2	937.6
20402.2	940.4	20578.4	937.9	20633	938.7	20676	937	20686.1	939.7
20744	948	20822.3	948	20949.1	954.9	21027.6	947.5	21215	947.3
21338.5	947.2	21527.5	948.5	21746	948.8	21841.7	948.3	22059	949.1
22185.4	949.1	22507.1	948.8	22551.2	949	22836.7	949.8	22992.3	949.2
23156.3	950.7	23327.5	950.2	23492.3	951.2	23633.4	950.7	23641.6	948.8
23667.9	953.3	23785.4	949.4	23980	949	24145.7	948.5	24326	947.5
24336.6	946.6	24353.9	949.4	24529.6	949.2	24626.1	949.5	24679.5	947.3
24861.6	949.3	24983.4	948.5	24990.2	949.6	24999.2	947	25138.6	950
25169.5	955.5	25202.4	950.9	25239.2	950	25434.2	953.6	25474.7	955.9
25481.6	954.7	25498.7	958.4						

Manning's n Values num= 8

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
13153.3	.15	17960.5	.15	18233.7	.065	19482.3	.032	20235.8	.043
20744	.043	21215	.025	23667.9	.053				

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
17960.5 20744 535 525.73 515 .1 .3

Ineffective Flow num= 3

Sta L	Sta R	Elev	Permanent
13150	17115	960	F
20744	23100	960	F
25169.5	25498.7	960	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 200.1

INPUT
Description: 200.1
Station Elevation Data num= 96

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
13401.5	961.6	13404.9	959.9	13406.7	957.2	13436.1	949.3	13438.3	947.2
13608.9	944.8	13771.4	944.1	13861.6	946.2	14093.6	944.2	14363	943.5
14599.1	944	14804.9	943.5	14985.6	943.6	15188.8	942.7	15425.2	942.8
15650.8	942.8	15834.1	942.9	16015.4	942.8	16214.7	941.9	16467.4	941.6
16641.3	942.8	16821.1	944	17077.9	942.2	17313	941.7	17523.7	941.6
17672.5	940.7	17733.3	943.5	17903.5	943	18097	942	18197	940.9
18244	934.9	18278.2	934.7	18280	936.9	18289	936.2	18327.6	941.8
18505.3	941.8	18602	941.2	18752.8	944.8	18927.6	940.3	19044.3	938.9
19072.3	941.3	19130.7	943	19301.3	943.1	19402.1	944.8	19524.2	937.7
19631.9	945.9	19875.1	939.3	20104.9	934.9	20306.5	934.5	20329.5	935.2
20520.9	935.5	20604.1	936.7	20643	947.2	20857.2	946.5	21112.6	946.5
21165.6	945.5	21339.7	946.3	21499.9	947.4	21673.2	947.4	21692.7	947.4
21938.1	947.6	21976.2	947.6	22310	947.7	22366.6	947.7	22620.5	948
22748	948.7	23104.3	950.4	23323.4	950.8	23521	950.1	23671.5	950.7
23677.2	948.1	23730.1	951.6	23754.2	948.1	23760.8	950.1	23949.5	948.5
24132.7	948.8	24309.4	949	24354.9	949.5	24372.1	946.9	24561.3	948.7
24717.9	946.9	24773.6	949.1	24952.8	948.5	25016.6	946.2	25028.8	948.4
25039.1	944.7	25073.4	947.5	25256.1	949.3	25287.2	954.4	25301	949.1
25375.9	953.1	25528.9	956	25539.2	957.4	25551.8	955.4	25735.3	957.8
25963	960								

Manning's n Values num= 8

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
13401.5	.15	15425.2	.043	16821.1	.15	18752.8	.15	19524.2	.032
20643	.043	21165.6	.025	23730.1	.053				

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
17733.3 20643 490 491.65 495 .1 .3

Ineffective Flow num= 3

Sta L	Sta R	Elev	Permanent
13400	17030	960	F
20800	23000	960	F
25287.2	25965	960	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 200

INPUT
Description: 200
Station Elevation Data num= 96

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
13751.9	957.5	13774.9	950.4	13899.2	945.3	14075.2	943.6	14247.4	943.4
14390.2	944.1	14410.8	941.9	14489.5	944.7	14707.6	944.7	14871.6	945
15032.5	944.4	15300.2	944.1	15460.8	944.8	15628	944.3	15784.9	944.2
15958.7	943.4	16114	943.3	16279	942.4	16452	942.3	16652.4	942.7
16843.9	942.3	17008.1	943.8	17197.2	943.5	17388.9	942.5	17552.5	941.8
17738.6	942.2	17904	942.1	18074.8	942.9	18250.5	943.4	18433.6	942.2
18601	942.2	18626	940.2	18638.8	934	18658.5	933.4	18693.5	940.2
18768.9	944.3	18874.7	940.2	19043.7	940.6	19233.3	941.2	19416.4	942.6
19566.9	941.6	19720.1	935.8	19796.8	938.8	19975	934.4	20272.3	934.1
20276.6	934.2	20626.2	936.3	20790.5	935.3	20829	944.5	21085.6	944
21172.7	942.8	21329.4	945.1	21406.2	952.7	21433.8	946.6	21513.2	947.1
21713.7	947	21747.4	947	21906.5	946.8	21920.3	946.8	22147.8	946
22206.3	945.8	22451.9	946.8	22701.3	947.9	22901.9	948.3	23151.7	949.3

23234.2	950.1	23323.5	948.7	23510.9	949.9	23672.1	949.6	23707.3	949.9
23712.7	946.9	23720.9	949.2	23769.1	950.4	23820.8	947.8	23989.1	947.8
24020.6	947.1	24029.2	945.6	24038	947.6	24198.6	947	24361	947.2
24513.5	945.6	24672.5	946.4	24863.2	946.6	25018.9	946.3	25064.3	946
25075.8	943.9	25087.5	947.1	25163.5	947.5	25181.3	953.2	25200.7	953.7
25211	947.8	25384.8	952.1	25573.3	956	25602.8	956.1	25616.3	960.7
25622.7	961.4								

Manning's n Values num= 9

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
13751.9	.15	15628	.043	17008.1	.15	18601	.15	19566.9	.032
20829	.032	21329.4	.043	21713.7	.025	23769.1	.053		

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
17008.1	20829	520 521.67	525	.1	.3

Ineffective Flow num= 3

Sta L	Sta R	Elev	Permanent
13751	16950	960	F
21350	23200	960	F
25200.7	25625	960	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 199.91

INPUT
Description: 199.91
Station Elevation Data num= 96

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
14357	952	14390.5	944.3	14519.8	944.3	14639.2	944	14799.9	943.3
14919	943.3	15064.9	943.3	15201.6	943.3	15338.6	943.4	15454.7	943.3
15584.5	943.3	15701.7	943.3	15826.7	943	15946.8	942.7	16066.9	942.8
16186	942.4	16318.5	941.2	16444.9	941.2	16595	941.2	16734.2	941.2
16862.4	941.9	16985.5	941.6	17123.4	941.2	17256.1	940.2	17418.5	940.8
17583.3	941.1	17747.3	940.1	17924.2	940.7	18048.2	942.2	18185	942.2
18189.1	942.2	18396.1	942.1	18544.2	943.4	18752.1	941	18756.5	940.1
18757.1	941.1	18776.4	938.5	18875.1	932.1	19009.5	940.1	19154.1	941.2
19274.4	940.6	19412.9	940.1	19433.2	938.2	19665	944.1	19683.4	944.3
20122	935.3	20357	935.3	20396.2	935.2	20513.6	938.9	20603.3	938.2
20817.6	934.9	20841.2	934.9	21013	935.1	21078.3	935.1	21141.2	941.5
21181.1	941.5	21315.9	945	21377.5	952.3	21405.6	945.7	21555.3	946.7
21673.9	946.5	21886.3	946.2	22065.2	946.2	22189.8	945.7	22354.3	945.2
22462	946.4	22675.7	948.1	22731	948.3	22992.2	947.3	23079.5	947.2
23195.8	947.1	23332.1	947.2	23499	947.4	23628.6	947.3	23678.5	948.1
23685.3	950.9	23692.1	948.2	23702.9	950.2	23747.7	949.7	23766.7	947.4
23890.2	946.9	24000	946.9	24127.8	946.1	24323.2	945.3	24446.3	945.3
24602.1	944.4	24749.8	944.2	24887.7	943.5	25018.7	945.8	25033.6	942.4
25046.9	947.2	25137.9	947.1	25214.4	951.6	25285.5	947.1	25444.7	950.8
25559.1	953.2								

Manning's n Values num= 10

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
14357	.15	16318.5	.043	17747.3	.15	18544.2	.15	19433.2	.032
21013	.043	21315.9	.043	21377.5	.025	23702.9	.053	25018.7	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
16862.4	21315.9	465 466.41	465	.1	.3

Ineffective Flow num= 3

Sta L	Sta R	Elev	Permanent
14357	16800	960	F
21330	23050	960	F
25200	25559.1	960	F

CROSS SECTION

RIVER: 1
REACH: 1 RS: 199.82

INPUT
Description: 199.82

Left Channel Bank Station Interpolated
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
14626.5	957.7	14665	955.3	14714.8	947.7	14731.9	943.6	14878.2	942.2
15038.4	942.1	15177.1	942.1	15312	942.9	15442.8	943.5	15572.5	942.6

15710.4	942.1	15843.3	942.2	15981.6	942	16111.7	941.9	16269.4	941.3
16337.7	941.1	16490	941.8	16647.8	941.2	16807.1	940.1	16870	940.1
16937.5	940.1	17070.8	940.1	17202.5	940.1	17339.2	940.1	17503.8	940.1
17635.5	940.1	17774.7	939.1	17955.5	939.8	18107	939.8	18236.3	940.2
18376.6	941.1	18554.9	941.8	18684.9	940.6	18768.3	940	18787.7	931.4
18818.1	931.2	18845.4	938.1	18894.5	940	19032.4	940.6	19165.1	939.3
19236.6	938.1	19354.5	941.6	19458.6	938.6	20124.2	939.3	20322.3	939.2
20533.6	938.6	20766.2	939.3	20910.7	936.7	20926	937.9	21009.9	936.6
21146.9	939.7	21241.8	942.2	21405.4	944.5	21551.8	945.7	21756.1	945.8
21937.2	945.7	22121.7	945.7	22347.1	945.6	22491.6	945.9	22657.2	946.2
22790.5	945.6	22925.1	946.5	23055.8	946.4	23218.3	946.1	23364.5	946.1
23514.8	945.8	23642	948.2	23655.7	947.2	23663.6	949.2	23669.7	947
23724.8	949.5	23780.9	946.5	23947	945	24077.1	944.4	24199.5	945.5
24210.3	943.6	24214.2	944.9	24354.9	943.6	24545.8	943	24742.9	943.3
24928.6	944	25002.7	943.7	25010.2	942.2	25023.6	945.4	25153.6	945.8
25304.8	946.9	25434.7	948.1	25588.5	950.5	25663.5	951.7	25798.3	956.3
25810.1	957.9	25834.3	954.9	25859.3	957.7	25991.9	960.7	26149.5	962.1
26241.6	962.1	26277	964.4						

Manning's n Values num= 6

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
14626.5	.15	18554.9	.15	19165.1	.065	21405.4	.025	23724.8	.053
25002.7	.025								

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

16870	21405.4		0	0	0	.1	.3

Ineffective Flow num= 3

Sta L	Sta R	Elev	Permanent
14626.5	16870	960	F
21650	22900	960	F
25350	26127	960	F

SUMMARY OF MANNING'S N VALUES

River:1

Reach	River Sta.	n1	n2	n3	n4	n5	n6	n7	n8	n9	n10
1	214.14	.04	.035	.04							
1	214.04	.04	.035	.04							
1	213.95	.04	.035	.04							
1	213.85	.04	.035	.04							
1	213.75	.037	.032	.037							
1	213.745	Bridge									
1	213.74	.037	.032	.037							
1	213.66	.037	.032	.037							
1	213.57	.037	.032	.037							
1	213.47	.037	.032	.037							
1	213.38	.037	.032	.037							
1	213.33	.037	.032	.037							
1	213.26	.037	.032	.037							
1	213.255	Bridge									
1	213.25	.037	.032	.037							
1	213.21	.037	.032	.037							
1	213.11	.037	.032	.037							
1	213.03	.037	.032	.037							

1	212.93	.037	.032	.037		
1	212.84	.037	.032	.037		
1	212.74	.037	.032	.037		
1	212.68	.037	.032	.037		
1	212.675	Bridge				
1	212.67	.037	.032	.037		
1	212.56	.037	.032	.037		
1	212.46	.037	.032	.037		
1	212.37	.037	.032	.037		
1	212.27	.045	.033	.04		
1	212.18	.045	.033	.04		
1	212.08	.045	.033	.04		
1	211.99	.045	.033	.04		
1	211.89	.045	.033	.04		
1	211.79	.045	.033	.04		
1	211.71	.045	.033	.04		
1	211.64	.045	.033	.04		
1	211.54	.037	.032	.037		
1	211.525	Bridge				
1	211.51	.037	.032	.037		
1	211.41	.037	.032	.037		
1	211.31	.037	.032	.037		
1	211.21	.037	.032	.037		
1	211.12	.037	.032	.037		
1	211.02	.037	.032	.037		
1	210.93	.037	.032	.037		
1	210.83	.037	.032	.037		
1	210.74	.037	.032	.037		
1	210.64	.037	.032	.037		
1	210.55	.037	.032	.037		
1	210.46	.037	.032	.037	.037	.025
1	210.36	.032	.037	.025	.025	
1	210.26	.037	.032	.037	.037	.025
1	210.17	.037	.032	.037	.025	
1	210.07	.032	.037	.02	.037	.025
1	209.98	.037	.032	.035	.037	
1	209.88	.037	.032	.035	.025	
1	209.79	.037	.032	.035	.025	
1	209.69	.037	.032	.035	.025	
1	209.60	.037	.032	.032	.035	.025

1	209.54	.025	.032	.037				
1	209.535	Bridge						
1	209.53	.025	.032	.037				
1	209.42	.037	.015	.037	.032	.032	.025	
1	209.33	.037	.015	.037	.032	.037		
1	209.24	.037	.015	.032	.037	.032	.025	
1	209.14	.037	.015	.032	.037	.032	.025	
1	209.04	.037	.015	.032	.037	.032	.025	
1	208.95	.037	.015	.037	.032	.032	.037	.025
1	208.85	.037	.015	.037	.032	.032	.037	
1	208.75	.037	.015	.037	.032	.032		
1	208.67	.037	.015	.037	.032	.032	.037	
1	208.57	.037	.015	.037	.032	.032	.037	
1	208.48	.043	.015	.043	.032	.032	.037	
1	208.39	.043	.015	.032	.032	.032	.037	.025
1	208.29	.025	.043	.015	.032	.037		
1	208.19	.025	.043	.015	.032	.032	.037	
1	208.10	.025	.043	.015	.032	.032	.032	
1	207.99	.043	.015	.032	.032			
1	207.90	.043	.015	.032	.032			
1	207.80	.043	.015	.032	.032	.032		
1	207.71	.025	.032	.015	.032	.032	.032	
1	207.62	.025	.043	.032	.015	.032	.032	.032
1	207.49	.032	.015	.032	.037			
1	207.485	Bridge						
1	207.48	.032	.037					
1	207.43	.025	.043	.032	.037			
1	207.34	.025	.043	.032	.037			
1	207.27	.025	.043	.032	.032			
1	207.16	.025	.043	.032	.037			
1	207.07	.043	.032	.032	.032			
1	206.97	.025	.043	.032	.032	.032		
1	206.88	.025	.043	.032	.032	.032	.025	
1	206.79	.025	.043	.032	.032	.032		
1	206.7	.025	.043	.032	.032	.032		
1	206.6	.025	.043	.032	.032	.032		
1	206.51	.025	.043	.032	.032	.032		
1	206.41	.025	.043	.032	.032	.032		
1	206.32	.043	.032	.032	.032	.025		

1	206.22	.043	.043	.032	.025		
1	206.13	.043	.033	.032			
1	206.03	.043	.033	.032			
1	205.94	.043	.033	.032	.037		
1	205.84	.043	.043	.032	.032	.037	
1	205.75	.043	.043	.043	.025		
1	205.62	.025	.043	.043	.032	.032	.025
1	205.52	.043	.043	.032	.032	.025	
1	205.43	.043	.043	.032	.032	.025	
1	205.4	.043	.043	.032	.032		
1	205.34	.043	.043	.025			
1	205.25	.025	.037	.037	.025		
1	205.15	.025	.037	.037	.025		
1	205.06	.037	.037	.037	.025		
1	204.97	.025	.037	.037	.025		
1	204.87	.025	.037	.037	.025		
1	204.78	.025	.037	.037	.025		
1	204.68	.025	.037	.037	.037	.025	
1	204.61	.025	.037	.037	.025		
1	204.53	.025	.037	.037	.037	.025	
1	204.42	.025	.037	.037	.037	.025	
1	204.34	.025	.037	.037	.025		
1	204.25	.035	.032	.025			
1	204.15	.035	.032	.025	.025		
1	204.05	.05	.035	.032	.025		
1	203.96	.025	.043	.043	.032	.037	
1	203.86	.043	.043	.032	.037		
1	203.77	.025	.043	.043	.032	.025	
1	203.67	.025	.037	.037	.032	.032	.025
1	203.58	.025	.037	.037	.032	.025	
1	203.48	.025	.037	.037	.032	.025	
1	203.39	.025	.037	.037	.032	.025	
1	203.29	.025	.037	.037	.032	.025	
1	203.19	.025	.043	.043	.037	.025	.025
1	203.09	.025	.043	.043	.037	.025	
1	202.99	.025	.043	.043	.037	.043	
1	202.9	.025	.043	.043	.037	.043	
1	202.8	.025	.043	.043	.037	.043	
1	202.69	.025	.043	.043	.037	.043	
1	202.59	.025	.043	.043	.037	.043	

1			202.48	.043	.043	.037	.043		
1			202.37	.025	.043	.043	.037	.043	
1			202.29	.025	.043	.043	.037	.043	.043
1			202.18	.025	.043	.043	.037	.043	
1			202.09	.025	.043	.043	.037	.043	
1			201.99	.025	.043	.043	.032	.037	.037	.025
1			201.9	.025	.043	.043	.032	.037	.037	.025
1			201.81	.025	.065	.065	.032	.037	.025	.025
1			201.71	.025	.065	.065	.032	.037	.025	.025
1			201.62	.025	.15	.025	.065	.065	.032	.037
1	.025	.025	201.52	.025	.15	.025	.15	.032	.037	.025
1			201.43	.043	.065	.025	.15	.032	.037	.025
1			201.33	.043	.065	.025	.15	.032	.037	.025
1			201.24	.043	.065	.025	.15	.15	.037	.032
1	.037	.025	201.14	.043	.065	.025	.15	.037	.032	.037
1	.025		201.05	.043	.15	.025	.15	.037	.032	.037
1	.025		200.95	.043	.15	.037	.032	.037	.035	
1			200.86	.043	.15	.032	.037	.035	.035	
1			200.77	.043	.15	.032	.037	.025	.035	
1			200.67	.043	.15	.032	.15	.032	.043	.025
1	.025		200.58	.15	.043	.15	.032	.043	.025	.025
1			200.49	.15	.043	.043	.15	.032	.043	.025
1			200.39	.15	.043	.043	.15	.032	.043	.025
1			200.3	.15	.15	.065	.032	.043	.043	.053
1			200.2	.15	.15	.065	.032	.043	.043	.025
1	.053		200.1	.15	.043	.15	.15	.032	.043	.025
1	.053		200	.15	.043	.15	.15	.032	.032	.043
1	.025	.053	199.91	.15	.043	.15	.15	.032	.043	.043
1	.025	.053	.025 199.82	.15	.15	.065	.025	.053	.025	

SUMMARY OF REACH LENGTHS

River: 1

Reach	River Sta.	Left	Channel	Right
1	214.14	475	510.51	570
1	214.04	495	493.12	480
1	213.95	500	504.25	500
1	213.85	521	520.04	541
1	213.75	125	116.36	120
1	213.745	Bridge		
1	213.74	391	373.47	361
1	213.66	490	491.08	495
1	213.57	650	500.37	390

1		213.47	500	493.66	485
1		213.38	210	290.06	395
1		213.33	266	316.41	426
1		213.26	155	152.22	155
1		213.255	Bridge		
1		213.25	121	123.36	121
1		213.21	450	531.57	745
1		213.11	425	459.38	565
1		213.03	475	495	525
1		212.93	495	501.9	535
1		212.84	565	538.19	480
1		212.74	296	242.17	66
1		212.68	155	154.01	155
1		212.675	Bridge		
1		212.67	481	557.08	901
1		212.56	495	502.71	525
1		212.46	495	497.81	510
1		212.37	500	495.84	485
1		212.27	510	495	475
1		212.18	500	502.53	485
1		212.08	510	519.85	475
1		211.99	740	489.19	710
1		211.89	507	527.46	640
1		211.79	680	450.74	290
1		211.71	780	392.06	500
1		211.64	481	521.13	221
1		211.54	125	125.49	120
1		211.525	Bridge		
1		211.51	541	562.88	606
1		211.41	500	501.53	505
1		211.31	540	523.28	460
1		211.21	495	493.11	475
1		211.12	500	505.73	500
1		211.02	485	493.19	495
1		210.93	505	505.14	505
1		210.83	505	505.61	500
1		210.74	495	503.39	500
1		210.64	520	515.29	495
1		210.55	475	473.19	495
1		210.46	520	522.28	505
1		210.36	480	487.62	480
1		210.26	505	512.65	520
1		210.17	505	497.78	495
1		210.07	511	494.01	499
1		209.98	519	492.54	497
1		209.88	504	500.82	498
1		209.79	497	500.22	505
1		209.69	541.3	544.5	578.5
1		209.60	243	288.7	318
1		209.54	114	116.26	106
1		209.535	Bridge		
1		209.53	588	626	654.7
1		209.42	501	486.04	526
1		209.33	563	490.4	583
1		209.24	514	515.61	523
1		209.14	515	499.52	517
1		209.04	495	493.13	531
1		208.95	458	514.75	603
1		208.85	511	479.03	452
1		208.75	565	559.49	569
1		208.67	456	449.63	359
1		208.57	685	539.75	467
1		208.48	521	435.12	469
1		208.39	509	512.43	494
1		208.29	577	525.37	560
1		208.19	537	505.13	617
1		208.10	582	483.64	477
1		207.99	483	482.81	544
1		207.90	539	522.44	631
1		207.80	562	495.85	534
1		207.71	493	488.78	530
1		207.62	493	471.11	510
1		207.49	244	246.48	308
1		207.485	Bridge		
1		207.48	236	236.83	302
1		207.43	493	507.55	548
1		207.34	478	511.15	584
1		207.27	495.6	574	655.3
1		207.16	586	585.23	607

1	207.07	510	514.11	520
1	206.97	480	491.78	480
1	206.88	480	487.71	505
1	206.79	495	489.96	520
1	206.7	500	500.23	500
1	206.6	515	504.63	520
1	206.51	495	496.45	500
1	206.41	495	494.64	490
1	206.32	515	513.83	520
1	206.22	500	502.44	460
1	206.13	490	483.44	540
1	206.03	590	513.6	510
1	205.94	505	506.69	510
1	205.84	495	496	480
1	205.75	825	642	490
1	205.62	560	523	510
1	205.52	430	470	400
1	205.43	175	171.89	125
1	205.4	305	315	370
1	205.34	485	492	450
1	205.25	505	506	485
1	205.15	495	495.39	495
1	205.06	505	505	530
1	204.97	510	503	550
1	204.87	495	499	505
1	204.78	505	515	550
1	204.68	325	407	570
1	204.61	395	449	545
1	204.53	570	552	525
1	204.42	430	453	500
1	204.34	495	488	480
1	204.25	510	508	500
1	204.15	510	509	510
1	204.05	510	505	520
1	203.96	495	502	505
1	203.86	505	498	480
1	203.77	490	498	480
1	203.67	470	490	505
1	203.58	560	513	495
1	203.48	500	505.82	515
1	203.39	500	505	500
1	203.29	620	535	420
1	203.19	535	520	485
1	203.09	520	518	500
1	202.99	480	456	424
1	202.9	575	538	460
1	202.8	600	555.5	450
1	202.69	585	566.1	510
1	202.59	400	561.2	640
1	202.48	700	576.2	385
1	202.37	430	400.7	360
1	202.29	590	583.1	600
1	202.18	525	511.84	500
1	202.09	510	509.32	500
1	201.99	470	477.46	490
1	201.9	500	495.8	500
1	201.81	535	511.61	515
1	201.71	505	489.63	495
1	201.62	485	486.48	510
1	201.52	495	492.06	495
1	201.43	555	519.88	505
1	201.33	515	514.62	515
1	201.24	485	488.56	490
1	201.14	480	481.53	485
1	201.05	520	512.89	510
1	200.95	475	474.38	480
1	200.86	525	523.32	525
1	200.77	500	495.64	520
1	200.67	500	503.34	510
1	200.58	475	479.55	530
1	200.49	510	497.59	510
1	200.39	550	506.5	480
1	200.3	520	515.72	560
1	200.2	535	525.73	515
1	200.1	490	491.65	495
1	200	520	521.67	525
1	199.91	465	466.41	465
1	199.82	0	0	0

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: 1

Reach	River Sta.		Contr.	Expan.
1	214.14		.1	.3
1	214.04		.1	.3
1	213.95		.1	.3
1	213.85		.1	.3
1	213.75		.1	.3
1	213.745	Bridge		
1	213.74		.1	.3
1	213.66		.1	.3
1	213.57		.1	.3
1	213.47		.1	.3
1	213.38		.1	.3
1	213.33		.1	.3
1	213.26		.1	.3
1	213.255	Bridge		
1	213.25		.1	.3
1	213.21		.1	.3
1	213.11		.1	.3
1	213.03		.1	.3
1	212.93		.1	.3
1	212.84		.1	.3
1	212.74		.1	.3
1	212.68		.1	.3
1	212.675	Bridge		
1	212.67		.1	.3
1	212.56		.1	.3
1	212.46		.1	.3
1	212.37		.1	.3
1	212.27		.1	.3
1	212.18		.1	.3
1	212.08		.1	.3
1	211.99		.1	.3
1	211.89		.1	.3
1	211.79		.1	.3
1	211.71		.1	.3
1	211.64		.1	.3
1	211.54		.1	.3
1	211.525	Bridge		
1	211.51		.1	.3
1	211.41		.1	.3
1	211.31		.1	.3
1	211.21		.1	.3
1	211.12		.1	.3
1	211.02		.1	.3
1	210.93		.1	.3
1	210.83		.1	.3
1	210.74		.1	.3
1	210.64		.1	.3
1	210.55		.1	.3
1	210.46		.1	.3
1	210.36		.1	.3
1	210.26		.1	.3
1	210.17		.1	.3
1	210.07		.1	.3
1	209.98		.1	.3
1	209.88		.1	.3
1	209.79		.1	.3
1	209.69		.1	.3
1	209.60		.1	.3
1	209.54		.3	.5
1	209.535	Bridge		
1	209.53		.3	.5
1	209.42		.1	.3
1	209.33		.1	.3
1	209.24		.1	.3
1	209.14		.1	.3
1	209.04		.1	.3
1	208.95		.1	.3
1	208.85		.1	.3
1	208.75		.1	.3
1	208.67		.1	.3

1	208.57	.1	.3
1	208.48	.1	.3
1	208.39	.1	.3
1	208.29	.1	.3
1	208.19	.1	.3
1	208.10	.1	.3
1	207.99	.1	.3
1	207.90	.1	.3
1	207.80	.1	.3
1	207.71	.1	.3
1	207.62	.1	.3
1	207.49	.3	.5
1	207.485	Bridge	
1	207.48	.3	.5
1	207.43	.1	.3
1	207.34	.1	.3
1	207.27	.1	.3
1	207.16	.1	.3
1	207.07	.1	.3
1	206.97	.1	.3
1	206.88	.1	.3
1	206.79	.1	.3
1	206.7	.1	.3
1	206.6	.1	.3
1	206.51	.1	.3
1	206.41	.1	.3
1	206.32	.1	.3
1	206.22	.1	.3
1	206.13	.1	.3
1	206.03	.1	.3
1	205.94	.1	.3
1	205.84	.1	.3
1	205.75	.1	.3
1	205.62	.1	.3
1	205.52	.1	.3
1	205.43	.1	.3
1	205.4	.1	.3
1	205.34	.1	.3
1	205.25	.1	.3
1	205.15	.1	.3
1	205.06	.1	.3
1	204.97	.1	.3
1	204.87	.1	.3
1	204.78	.1	.3
1	204.68	.1	.3
1	204.61	.1	.3
1	204.53	.1	.3
1	204.42	.1	.3
1	204.34	.1	.3
1	204.25	.1	.3
1	204.15	.1	.3
1	204.05	.1	.3
1	203.96	.1	.3
1	203.86	.1	.3
1	203.77	.1	.3
1	203.67	.1	.3
1	203.58	.1	.3
1	203.48	.1	.3
1	203.39	.1	.3
1	203.29	.1	.3
1	203.19	.1	.3
1	203.09	.1	.3
1	202.99	.1	.3
1	202.9	.1	.3
1	202.8	.1	.3
1	202.69	.1	.3
1	202.59	.1	.3
1	202.48	.1	.3
1	202.37	.1	.3
1	202.29	.1	.3
1	202.18	.1	.3
1	202.09	.1	.3
1	201.99	.1	.3
1	201.9	.1	.3
1	201.81	.1	.3
1	201.71	.1	.3
1	201.62	.1	.3
1	201.52	.1	.3
1	201.43	.1	.3

1	201.33	.1	.3
1	201.24	.1	.3
1	201.14	.1	.3
1	201.05	.1	.3
1	200.95	.1	.3
1	200.86	.1	.3
1	200.77	.1	.3
1	200.67	.1	.3
1	200.58	.1	.3
1	200.49	.1	.3
1	200.39	.1	.3
1	200.3	.1	.3
1	200.2	.1	.3
1	200.1	.1	.3
1	200	.1	.3
1	199.91	.1	.3
1	199.82	.1	.3

Profile Output Table - Standard Table 1

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
1	214.14	PF#1	169000.00	1048.70	1075.50	1062.66	1077.01	0.000804	9.84	17180.80	1312.25	0.36
1	214.14	PF#2	169000.00	1048.70	1075.51	1062.66	1077.01	0.000803	9.83	17184.70	726.86	0.36
1	214.04	PF#1	169000.00	1048.80	1075.04	1062.64	1076.58	0.000846	9.95	16977.37	813.60	0.36
1	214.04	PF#2	169000.00	1048.80	1075.05	1062.64	1076.59	0.000845	9.95	16981.74	733.89	0.36
1	213.95	PF#1	169000.00	1049.30	1074.16	1063.67	1076.05	0.001218	11.04	15307.03	777.39	0.43
1	213.95	PF#2	169000.00	1049.30	1074.16	1063.67	1076.05	0.001216	11.04	15312.30	745.19	0.43
1	213.85	PF#1	169000.00	1048.10	1071.66	1065.14	1075.08	0.002230	14.98	11764.97	1017.61	0.58
1	213.85	PF#2	169000.00	1048.10	1071.66	1065.14	1075.09	0.002229	14.98	11769.17	702.59	0.58
1	213.75	PF#1	169000.00	1044.60	1071.97	1060.91	1073.93	0.000919	11.25	15022.38	656.45	0.41
1	213.75	PF#2	169000.00	1044.60	1071.98	1060.91	1073.94	0.000918	11.25	15027.59	656.35	0.41
1	213.745			Bridge								
1	213.74	PF#1	169000.00	1044.60	1071.66	1060.91	1073.68	0.000958	11.40	14818.54	654.76	0.42
1	213.74	PF#2	169000.00	1044.60	1071.67	1060.91	1073.69	0.000957	11.40	14824.14	654.73	0.42
1	213.66	PF#1	169000.00	1047.60	1069.25	1063.62	1072.99	0.002199	15.51	10898.87	586.13	0.62
1	213.66	PF#2	169000.00	1047.60	1069.27	1063.62	1073.00	0.002194	15.50	10906.54	565.99	0.62
1	213.57	PF#1	169000.00	1046.70	1069.19	1063.09	1071.61	0.001831	12.49	13535.50	1275.07	0.55
1	213.57	PF#2	169000.00	1046.70	1069.20	1063.09	1071.62	0.001827	12.47	13548.50	852.16	0.55

1	213.47	PF#1	169000.00	1045.80	1068.60	1061.42	1070.60
0.001694	11.35	14886.18	1423.99	0.52			
1	213.47	PF#2	169000.00	1045.80	1068.62	1061.42	1070.62
0.001691	11.34	14903.41	1023.12	0.52			
1	213.38	PF#1	169000.00	1045.40	1068.60	1059.33	1069.81
0.000809	8.83	19139.19	1251.70	0.37			
1	213.38	PF#2	169000.00	1045.40	1068.61	1059.33	1069.82
0.000810	8.82	19155.46	1101.75	0.37			
1	213.33	PF#1	169000.00	1045.40	1068.57	1057.70	1069.53
0.000606	7.87	21480.53	1371.95	0.33			
1	213.33	PF#2	169000.00	1045.40	1068.58	1057.70	1069.54
0.000608	7.86	21496.88	1185.62	0.33			
1	213.26	PF#1	169000.00	1040.40	1068.16	1055.61	1069.32
0.000568	8.67	19493.06	881.25	0.32			
1	213.26	PF#2	169000.00	1040.40	1068.17	1055.61	1069.34
0.000567	8.66	19505.00	881.21	0.32			
1	213.255		Bridge				
1	213.25	PF#1	169000.00	1040.40	1067.95	1055.61	1069.14
0.000585	8.75	19310.29	880.24	0.33			
1	213.25	PF#2	169000.00	1040.40	1067.96	1055.61	1069.15
0.000584	8.75	19322.64	880.24	0.33			
1	213.21	PF#1	166000.00	1044.90	1067.99	1055.88	1069.03
0.000510	8.17	20359.04	1540.81	0.31			
1	213.21	PF#2	166000.00	1044.90	1068.00	1055.88	1069.04
0.000528	8.17	20314.90	928.20	0.31			
1	213.11	PF#1	166000.00	1047.60	1067.16	1058.35	1068.63
0.000913	9.73	17066.41	927.80	0.40			
1	213.11	PF#2	166000.00	1047.60	1067.16	1058.35	1068.63
0.000912	9.72	17071.96	927.79	0.40			
1	213.03	PF#1	166000.00	1046.70	1066.57	1058.30	1068.17
0.001032	10.14	16391.46	965.60	0.42			
1	213.03	PF#2	166000.00	1046.70	1066.58	1058.30	1068.17
0.001031	10.13	16382.57	919.76	0.42			
1	212.93	PF#1	166000.00	1045.40	1065.48	1058.04	1067.55
0.001316	11.53	14401.99	850.17	0.48			
1	212.93	PF#2	166000.00	1045.40	1065.49	1058.04	1067.55
0.001314	11.52	14408.72	798.99	0.48			
1	212.84	PF#1	166000.00	1043.10	1063.54	1057.57	1066.65
0.001930	14.14	11737.26	635.75	0.58			
1	212.84	PF#2	166000.00	1043.10	1063.56	1057.57	1066.66
0.001926	14.13	11744.94	635.75	0.58			
1	212.74	PF#1	166000.00	1041.60	1063.06	1055.53	1065.57
0.001465	12.71	13064.60	721.72	0.51			
1	212.74	PF#2	166000.00	1041.60	1063.08	1055.53	1065.58
0.001462	12.70	13073.93	676.59	0.51			
1	212.68	PF#1	166000.00	1036.90	1063.02	1052.69	1065.16
0.001030	11.74	14139.83	629.02	0.44			
1	212.68	PF#2	166000.00	1036.90	1063.04	1052.69	1065.17
0.001028	11.73	14148.58	629.03	0.44			
1	212.675		Bridge				

1	212.67	PF#1	166000.00	1036.90	1062.53	1052.69	1064.77
0.001102	12.00	13830.37	626.50	0.45			
1	212.67	PF#2	166000.00	1036.90	1062.54	1052.69	1064.77
0.001101	12.00	13834.12	626.51	0.45			
1	212.56	PF#1	166000.00	1039.30	1056.88	1055.74	1063.23
0.004887	20.23	8207.45	521.49	0.90			
1	212.56	PF#2	166000.00	1039.30	1056.98	1055.74	1063.25
0.004781	20.09	8264.06	521.09	0.89			
1	212.46	PF#1	166000.00	1037.20	1056.23	1052.77	1060.78
0.003034	17.11	9703.74	1555.15	0.72			
1	212.46	PF#2	166000.00	1037.20	1056.29	1052.77	1060.80
0.003114	17.05	9738.24	557.66	0.72			
1	212.37	PF#1	166000.00	1036.60	1053.09	1051.73	1058.81
0.004662	19.19	8648.72	573.57	0.87			
1	212.37	PF#2	166000.00	1036.60	1053.09	1051.73	1058.81
0.004657	19.19	8651.87	573.59	0.87			
1	212.27	PF#1	166000.00	1035.10	1050.67	1049.57	1056.35
0.005236	19.12	8681.71	2800.97	0.89			
1	212.27	PF#2	166000.00	1035.10	1050.67	1049.57	1056.35
0.005237	19.12	8681.12	605.47	0.89			
1	212.18	PF#1	166000.00	1030.80	1050.25	1045.89	1053.95
0.002692	15.42	10762.00	2340.53	0.66			
1	212.18	PF#2	166000.00	1030.80	1050.25	1045.89	1053.94
0.002692	15.43	10761.62	627.48	0.66			
1	212.08	PF#1	166000.00	1025.90	1050.04	1041.45	1052.67
0.001415	13.00	12773.79	2180.71	0.49			
1	212.08	PF#2	166000.00	1025.90	1050.05	1041.45	1052.67
0.001415	12.99	12774.66	589.61	0.49			
1	211.99	PF#1	166000.00	1025.39	1048.55	1041.17	1051.77
0.001822	14.40	11524.16	1310.27	0.55			
1	211.99	PF#2	166000.00	1025.39	1048.55	1041.17	1051.78
0.001822	14.40	11525.23	549.11	0.55			
1	211.89	PF#1	166000.00	1024.19	1047.93	1039.97	1050.85
0.001600	13.70	12113.28	564.71	0.52			
1	211.89	PF#2	166000.00	1024.19	1047.93	1039.97	1050.85
0.001600	13.70	12114.32	564.72	0.52			
1	211.79	PF#1	166000.00	1023.84	1047.07	1039.27	1050.00
0.001620	13.72	12095.82	1185.33	0.52			
1	211.79	PF#2	166000.00	1023.84	1047.08	1039.27	1050.00
0.001619	13.72	12097.07	567.51	0.52			
1	211.71	PF#1	166000.00	1023.19	1046.34	1038.56	1049.27
0.001623	13.72	12101.46	635.05	0.52			
1	211.71	PF#2	166000.00	1023.19	1046.35	1038.56	1049.27
0.001622	13.72	12102.92	569.02	0.52			
1	211.64	PF#1	166000.00	1022.58	1045.45	1038.24	1048.58
0.001783	14.19	11700.18	828.74	0.55			
1	211.64	PF#2	166000.00	1022.58	1045.46	1038.24	1048.58
0.001782	14.19	11701.96	561.65	0.55			
1	211.54	PF#1	166000.00	1021.90	1043.47	1038.07	1047.45
0.002293	15.99	10380.14	525.33	0.63			
1	211.54	PF#2	166000.00	1021.90	1043.48	1038.07	1047.45
0.002291	15.99	10382.84	525.34	0.63			

1 211.525 Bridge

1	211.51	PF#1	166000.00	1021.80	1041.77	1037.98	1046.46
0.002980	17.37	9557.27	520.99	0.71			
1	211.51	PF#2	166000.00	1021.80	1041.78	1037.98	1046.46
0.002975	17.36	9562.61	521.02	0.71			
1	211.41	PF#1	166000.00	1018.30	1041.28		1044.73
0.001987	14.89	11147.29	565.09	0.59			
1	211.41	PF#2	166000.00	1018.30	1041.30		1044.74
0.001984	14.88	11154.04	565.16	0.59			
1	211.31	PF#1	166000.00	1020.80	1039.90	1037.24	1043.44
0.003367	15.11	10987.69	819.03	0.73			
1	211.31	PF#2	166000.00	1020.80	1039.93	1037.24	1043.46
0.003343	15.07	11011.89	819.23	0.72			
1	211.21	PF#1	166000.00	1021.10	1039.00	1035.55	1041.62
0.002620	12.98	12791.68	987.74	0.64			
1	211.21	PF#2	166000.00	1021.10	1039.05	1035.55	1041.64
0.002589	12.93	12837.38	987.92	0.63			
1	211.12	PF#1	166000.00	1015.70	1039.46	1029.88	1040.57
0.000691	8.47	19592.75	1059.20	0.35			
1	211.12	PF#2	166000.00	1015.70	1039.50	1029.88	1040.61
0.000686	8.45	19637.23	1059.34	0.35			
1	211.02	PF#1	166000.00	1019.40	1037.87	1032.11	1039.96
0.001614	11.65	14594.49	1082.08	0.52			
1	211.02	PF#2	166000.00	1019.40	1037.86	1032.11	1039.99
0.001637	11.73	14251.89	945.85	0.52			
1	210.93	PF#1	166000.00	1018.70	1037.32	1034.18	1039.03
0.001712	11.09	17847.84	2652.70	0.52			
1	210.93	PF#2	166000.00	1018.70	1037.34	1034.18	1039.04
0.001702	11.07	17888.93	2037.05	0.52			
1	210.83	PF#1	166000.00	1019.10	1036.07	1032.21	1038.07
0.001947	11.75	16600.59	2245.32	0.55			
1	210.83	PF#2	166000.00	1019.10	1036.08	1032.20	1038.09
0.001951	11.76	16541.59	2196.31	0.56			
1	210.74	PF#1	166000.00	1018.20	1035.64	1029.79	1037.15
0.001242	10.09	17703.16	1394.28	0.45			
1	210.74	PF#2	166000.00	1018.20	1035.66	1029.79	1037.16
0.001237	10.08	17724.10	1394.40	0.45			
1	210.64	PF#1	166000.00	1017.70	1035.03	1029.03	1036.51
0.001266	9.99	18871.19	2977.66	0.45			
1	210.64	PF#2	166000.00	1017.70	1035.05	1029.03	1036.53
0.001260	9.97	18916.74	2362.16	0.45			
1	210.55	PF#1	166000.00	1018.00	1034.00	1028.55	1035.75
0.001591	10.64	15677.24	1804.21	0.50			
1	210.55	PF#2	166000.00	1018.00	1034.02	1028.55	1035.77
0.001584	10.63	15648.99	1394.10	0.50			
1	210.46	PF#1	166000.00	1016.30	1034.52	1025.05	1035.02
0.000444	5.64	29451.81	2040.46	0.25			
1	210.46	PF#2	166000.00	1016.30	1034.54	1025.05	1035.03
0.000448	5.63	29483.97	1881.54	0.25			
1	210.36	PF#1	166000.00	1017.40	1033.85	1027.55	1034.66
0.000895	7.25	22905.46	1899.99	0.37			

1	210.36	PF#2	166000.00	1017.40	1033.87	1027.55	1034.68
0.000891	7.24	22938.39	1900.06	0.37			
1	210.26	PF#1	166000.00	1016.90	1033.53	1026.47	1034.22
0.000771	6.68	24836.70	1932.29	0.33			
1	210.26	PF#2	166000.00	1016.90	1033.55	1026.47	1034.24
0.000768	6.67	24873.50	1932.40	0.33			
1	210.17	PF#1	166000.00	1014.70	1032.77	1027.95	1033.71
0.001214	7.78	21345.12	2172.33	0.42			
1	210.17	PF#2	166000.00	1014.70	1032.79	1027.95	1033.73
0.001206	7.76	21392.45	1968.12	0.41			
1	210.07	PF#1	166000.00	1009.00	1032.58	1025.16	1033.23
0.000548	5.79	28331.99	2494.29	0.26			
1	210.07	PF#2	166000.00	1009.00	1032.65	1024.41	1033.22
0.000570	5.92	28124.73	2015.00	0.27			
1	209.98	PF#1	166000.00	999.33	1032.58	1020.16	1032.98
0.000253	5.36	33592.19	1907.28	0.21			
1	209.98	PF#2	166000.00	999.33	1032.57	1019.84	1032.99
0.000264	5.48	32698.47	1833.88	0.22			
1	209.88	PF#1	166000.00	997.69	1032.30	1018.95	1032.83
0.000280	6.22	29912.61	1598.72	0.23			
1	209.88	PF#2	166000.00	997.69	1032.31	1018.95	1032.84
0.000283	6.25	29714.46	1572.32	0.23			
1	209.79	PF#1	166000.00	1002.93	1032.25	1018.56	1032.66
0.000264	5.58	32665.39	2127.03	0.22			
1	209.79	PF#2	166000.00	1002.93	1032.25	1018.56	1032.67
0.000267	5.61	32457.63	1764.34	0.22			
1	209.69	PF#1	166000.00	1004.31	1031.55	1021.24	1032.41
0.000717	7.09	22376.69	1884.99	0.34			
1	209.69	PF#2	166000.00	1004.31	1031.56	1021.24	1032.42
0.000716	7.09	22389.98	1433.22	0.34			
1	209.60	PF#1	166000.00	1004.15	1030.45	1024.57	1031.81
0.001456	9.48	17878.46	2238.65	0.48			
1	209.60	PF#2	166000.00	1004.15	1030.45	1024.59	1031.82
0.001467	9.51	17875.76	1583.08	0.49			
1	209.54	PF#1	166000.00	1004.27	1030.22	1021.90	1031.46
0.000859	8.93	18578.79	1096.44	0.38			
1	209.54	PF#2	166000.00	1004.27	1030.22	1021.90	1031.46
0.000858	8.93	18582.94	1096.45	0.38			
1	209.535		Bridge				
1	209.53	PF#1	166000.00	1004.27	1029.88	1021.90	1031.17
0.000917	9.12	18207.37	1095.63	0.39			
1	209.53	PF#2	166000.00	1004.27	1029.88	1021.90	1031.17
0.000917	9.11	18211.78	1095.66	0.39			
1	209.42	PF#1	166000.00	998.44	1028.89	1023.49	1030.40
0.001432	9.87	16826.75	1341.49	0.48			
1	209.42	PF#2	166000.00	998.44	1028.89	1023.49	1030.40
0.001430	9.86	16833.66	1258.70	0.48			
1	209.33	PF#1	166000.00	993.71	1028.74	1019.30	1029.68
0.000900	7.81	21286.58	1846.56	0.38			
1	209.33	PF#2	166000.00	993.71	1028.74	1019.30	1029.69
0.000899	7.80	21270.94	1587.64	0.38			

1	209.24	PF#1	166000.00	1003.00	1027.66	1023.98	1029.02
0.001727	7.87	18344.56	3253.96	0.49			
1	209.24	PF#2	166000.00	1003.00	1027.66	1023.97	1029.02
0.001734	7.96	18239.16	1837.81	0.49			
1	209.14	PF#1	166000.00	1002.87	1026.71	1023.37	1028.02
0.002090	8.18	18289.83	2920.92	0.52			
1	209.14	PF#2	166000.00	1002.87	1026.71	1023.40	1028.02
0.002087	8.24	18278.03	2040.18	0.52			
1	209.04	PF#1	166000.00	1007.02	1026.13	1021.52	1027.00
0.001479	7.60	22163.50	2880.31	0.45			
1	209.04	PF#2	166000.00	1007.02	1026.13	1021.52	1027.00
0.001471	7.67	22150.64	2229.67	0.44			
1	208.95	PF#1	166000.00	997.33	1025.59	1018.20	1026.45
0.000833	7.47	22432.89	2457.62	0.36			
1	208.95	PF#2	166000.00	997.33	1025.59	1018.20	1026.45
0.000833	7.47	22433.32	1796.52	0.36			
1	208.85	PF#1	166000.00	998.88	1024.64	1020.18	1025.85
0.001531	8.84	19085.01	2504.30	0.47			
1	208.85	PF#2	166000.00	998.88	1024.65	1020.18	1025.85
0.001528	8.84	19096.66	1908.88	0.47			
1	208.75	PF#1	166000.00	1000.44	1024.13	1017.95	1025.18
0.001097	8.24	20173.12	2367.88	0.43			
1	208.75	PF#2	166000.00	1000.44	1024.14	1017.95	1025.19
0.001096	8.24	20147.45	1732.34	0.43			
1	208.67	PF#1	166000.00	1003.03	1022.73	1019.09	1024.33
0.001929	10.25	16637.54	2042.32	0.54			
1	208.67	PF#2	166000.00	1003.03	1022.74	1019.09	1024.34
0.001922	10.24	16656.72	1612.42	0.54			
1	208.57	PF#1	166000.00	1002.61	1020.28	1018.75	1023.02
0.003954	13.29	12521.85	1408.87	0.77			
1	208.57	PF#2	166000.00	1002.61	1020.30	1018.75	1023.03
0.003935	13.27	12508.58	1338.24	0.76			
1	208.48	PF#1	166000.00	998.70	1019.79	1016.90	1021.03
0.002142	8.93	18579.98	2180.85	0.54			
1	208.48	PF#2	166000.00	998.70	1019.83	1016.90	1021.06
0.002110	8.89	18664.90	2181.00	0.54			
1	208.39	PF#1	166000.00	998.71	1018.93	1015.86	1020.12
0.001995	8.76	18954.06	2230.78	0.53			
1	208.39	PF#2	166000.00	998.71	1018.99	1015.86	1020.16
0.001951	8.70	19086.19	2231.08	0.52			
1	208.29	PF#1	166000.00	1002.85	1017.77	1014.93	1019.02
0.002276	8.97	18505.98	2265.27	0.55			
1	208.29	PF#2	166000.00	1002.85	1017.89	1014.93	1019.10
0.002172	8.84	18769.10	2265.55	0.54			
1	208.19	PF#1	166000.00	1001.01	1016.79	1013.70	1017.86
0.001975	8.31	19980.37	2467.07	0.51			
1	208.19	PF#2	166000.00	1001.01	1016.97	1013.70	1018.00
0.001848	8.12	20443.23	2484.63	0.50			
1	208.10	PF#1	166000.00	999.34	1015.82	1012.75	1016.87
0.001845	8.57	20758.44	2840.52	0.51			
1	208.10	PF#2	166000.00	999.34	1016.12	1012.75	1017.09
0.001633	8.23	21593.66	2790.38	0.48			

1	207.99	PF#1	166000.00	996.98	1014.47	1012.00	1015.86
0.002225	9.93	18378.98	2515.81	0.56			
1	207.99	PF#2	166000.00	996.98	1014.96	1011.99	1016.22
0.001888	9.43	19331.60	2625.91	0.52			
1	207.90	PF#1	166000.00	991.51	1013.80	1010.85	1014.78
0.001712	8.45	21576.97	2939.46	0.49			
1	207.90	PF#2	166000.00	991.51	1014.50	1010.85	1015.31
0.001298	7.72	23691.96	3027.09	0.43			
1	207.80	PF#1	166000.00	992.47	1012.20	1009.50	1013.72
0.001991	10.67	18139.84	2392.35	0.55			
1	207.80	PF#2	166000.00	992.47	1012.87	1009.36	1014.41
0.001831	10.57	17859.34	2093.65	0.53			
1	207.71	PF#1	166000.00	992.51	1010.85	1008.26	1012.65
0.002160	11.50	16829.66	2122.98	0.58			
1	207.71	PF#2	166000.00	992.51	1011.35	1008.53	1013.36
0.002192	11.87	15809.92	1893.38	0.59			
1	207.62	PF#1	166000.00	990.12	1010.08	1007.03	1011.66
0.001607	11.08	17810.42	1910.23	0.51			
1	207.62	PF#2	166000.00	990.12	1010.13	1007.20	1012.30
0.002037	12.51	15031.07	1445.04	0.58			
1	207.49	PF#1	166000.00	984.35	1009.47	1005.22	1010.82
0.001637	9.34	17780.88	1888.92	0.49			
1	207.49	PF#2	166000.00	984.35	1009.99	1005.22	1011.22
0.001409	8.92	18613.61	1662.02	0.46			
1	207.485		Bridge				
1	207.48	PF#1	166000.00	984.35	1008.38	1005.22	1010.05
0.002291	10.34	16048.44	1589.81	0.57			
1	207.48	PF#2	166000.00	984.35	1009.15	1005.22	1010.59
0.001802	9.61	17270.43	1595.23	0.51			
1	207.43	PF#1	166000.00	983.56	1007.86	1004.49	1009.50
0.002218	10.29	16190.36	1661.32	0.56			
1	207.43	PF#2	166000.00	983.56	1008.76	1004.49	1010.15
0.001689	9.47	17531.08	1569.25	0.50			
1	207.34	PF#1	166000.00	983.49	1007.56	1000.99	1008.62
0.000950	8.28	20214.86	1590.24	0.39			
1	207.34	PF#2	166000.00	983.49	1008.50	1000.97	1009.46
0.000787	7.83	21192.27	1422.38	0.36			
1	207.27	PF#1	166000.00	982.68	1007.15	997.48	1008.22
0.000665	8.35	20670.33	1456.46	0.34			
1	207.27	PF#2	166000.00	982.68	1008.10	997.48	1009.11
0.000584	8.06	20594.82	1047.97	0.32			
1	207.16	PF#1	166000.00	969.66	1007.51	986.51	1007.86
0.000127	4.91	37553.66	2625.42	0.16			
1	207.16	PF#2	166000.00	969.66	1008.40	986.51	1008.78
0.000126	4.98	33336.06	1107.07	0.16			
1	207.07	PF#1	166000.00	992.80	1004.30	1004.30	1007.37
0.005291	15.06	12691.58	2119.64	0.86			
1	207.07	PF#2	166000.00	992.80	1004.74	1004.74	1008.25
0.005421	15.68	11729.38	1710.76	0.88			
1	206.97	PF#1	166000.00	981.70	1003.73	995.22	1004.80
0.000773	8.53	21352.72	2153.02	0.36			
1	206.97	PF#2	166000.00	981.70	1004.63	995.22	1005.77

0.000760	8.62	19950.61	1567.65	0.36			
1	206.88	PF#1	166000.00	981.80	1003.59	993.27	1004.41
0.000528	7.55	24354.63	2551.42	0.31			
1	206.88	PF#2	166000.00	981.80	1004.48	993.27	1005.39
0.000533	7.71	22622.40	1800.87	0.31			
1	206.79	PF#1	166000.00	981.80	1003.43	992.85	1004.13
0.000488	6.93	26343.92	3026.52	0.29			
1	206.79	PF#2	166000.00	981.80	1004.34	992.85	1005.10
0.000478	7.08	24760.10	1934.31	0.29			
1	206.7	PF#1	166000.00	981.80	1003.32	994.04	1003.85
0.000441	6.03	29831.77	3518.68	0.27			
1	206.7	PF#2	166000.00	981.80	1004.25	994.03	1004.82
0.000429	6.14	27986.51	2093.13	0.27			
1	206.6	PF#1	166000.00	981.80	1002.90	996.86	1003.56
0.000710	6.91	26877.21	3305.80	0.33			
1	206.6	PF#2	166000.00	981.80	1003.79	996.68	1004.54
0.000695	7.14	24927.56	2185.35	0.33			
1	206.51	PF#1	166000.00	981.80	1002.02	998.52	1003.04
0.001348	8.99	22111.07	4076.34	0.45			
1	206.51	PF#2	166000.00	981.80	1002.84	999.19	1004.02
0.001341	9.36	20116.29	2060.75	0.46			
1	206.41	PF#1	166000.00	982.50	1001.41	997.88	1002.32
0.001436	8.71	23370.94	3862.05	0.46			
1	206.41	PF#2	166000.00	982.50	1002.21	998.36	1003.30
0.001435	9.12	20569.79	2190.50	0.47			
1	206.32	PF#1	166000.00	982.80	1000.76	997.04	1001.56
0.001495	8.05	24553.57	3961.10	0.46			
1	206.32	PF#2	166000.00	982.80	1001.56	997.90	1002.55
0.001498	8.50	21191.37	2377.93	0.47			
1	206.22	PF#1	166000.00	983.00	999.83	996.53	1000.70
0.001855	8.54	24922.29	3819.75	0.52			
1	206.22	PF#2	166000.00	983.00	1000.69	996.71	1001.72
0.001734	8.70	21235.98	2441.76	0.51			
1	206.13	PF#1	166000.00	984.60	998.84		999.71
0.002097	8.44	24241.50	3610.69	0.52			
1	206.13	PF#2	166000.00	984.60	999.43		1000.65
0.002540	9.44	19323.64	2386.31	0.57			
1	206.03	PF#1	166000.00	984.50	997.19	995.40	998.47
0.002920	10.04	20468.71	3627.33	0.61			
1	206.03	PF#2	166000.00	984.50	997.37	995.41	999.15
0.003548	11.22	16111.43	2131.13	0.67			
1	205.94	PF#1	166000.00	981.00	996.28	992.36	997.17
0.001782	8.09	23804.66	3972.87	0.48			
1	205.94	PF#2	166000.00	981.00	996.85	992.30	997.71
0.001519	7.77	22932.47	2567.00	0.45			
1	205.84	PF#1	166000.00	979.50	995.78	991.10	996.43
0.001006	6.80	27802.52	3933.88	0.38			
1	205.84	PF#2	166000.00	979.50	996.39	991.10	997.06
0.000928	6.78	25656.61	2435.70	0.36			
1	205.75	PF#1	166000.00	973.90	995.10	989.59	995.78
0.001766	6.71	25677.88	3323.88	0.37			
1	205.75	PF#2	166000.00	973.90	995.83	989.59	996.48
0.001497	6.46	25689.01	2402.30	0.35			

1	205.62	PF#1	166000.00	976.00	994.55	988.70	995.07
0.000680	5.99	30115.93	4036.33	0.31			
1	205.62	PF#2	166000.00	976.00	995.25	988.65	995.85
0.000671	6.18	26877.98	2234.10	0.31			
1	205.52	PF#1	166000.00	975.90	994.29	987.07	994.75
0.000496	5.67	33142.45	4244.90	0.28			
1	205.52	PF#2	166000.00	975.90	994.95	987.28	995.53
0.000543	6.12	27120.82	2019.90	0.29			
1	205.43	PF#1	166000.00	976.10	994.00	986.93	994.50
0.000544	6.04	31497.31	3841.70	0.29			
1	205.43	PF#2	166000.00	976.10	994.53	986.96	995.24
0.000647	6.76	24572.11	1842.36	0.33			
1	205.4	PF#1	164000.00	975.50	993.99	984.67	994.40
0.000362	5.41	35918.61	4097.72	0.24			
1	205.4	PF#2	164000.00	975.50	994.56	984.67	995.10
0.000413	5.90	27793.06	1747.80	0.26			
1	205.34	PF#1	164000.00	975.57	993.64	986.68	994.20
0.001005	6.45	29523.90	7348.98	0.30			
1	205.34	PF#2	164000.00	975.57	993.98	986.65	994.85
0.001336	7.53	22084.25	1562.96	0.35			
1	205.25	PF#1	164000.00	973.40	993.26	985.25	993.82
0.000623	6.64	30541.15	4512.59	0.28			
1	205.25	PF#2	164000.00	973.40	993.49	985.17	994.34
0.000817	7.64	22667.86	1482.30	0.32			
1	205.15	PF#1	164000.00	973.10	991.76	987.66	993.21
0.002039	10.40	19448.92	3049.25	0.49			
1	205.15	PF#2	164000.00	973.10	992.25	987.65	993.69
0.001819	10.06	17454.25	1445.00	0.47			
1	205.06	PF#1	164000.00	970.50	990.85	984.95	992.22
0.001875	9.62	18539.62	2210.65	0.47			
1	205.06	PF#2	164000.00	970.50	991.36	984.95	992.79
0.001795	9.65	17327.95	1435.30	0.46			
1	204.97	PF#1	164000.00	973.30	990.56	984.97	991.30
0.001134	7.35	24818.88	3736.08	0.36			
1	204.97	PF#2	164000.00	973.30	990.76	985.05	991.87
0.001485	8.49	19456.31	1516.30	0.42			
1	204.87	PF#1	164000.00	968.10	990.19	982.95	990.80
0.000767	6.60	27860.69	3635.74	0.31			
1	204.87	PF#2	164000.00	968.10	990.36	982.85	991.20
0.000942	7.37	22408.61	1542.20	0.34			
1	204.78	PF#1	164000.00	967.60	990.01	980.93	990.45
0.000477	5.68	31874.74	4837.51	0.25			
1	204.78	PF#2	164000.00	967.60	990.13	980.78	990.77
0.000611	6.47	25927.76	1620.43	0.28			
1	204.68	PF#1	164000.00	971.40	989.36	982.91	990.10
0.000903	7.28	24862.56	3375.81	0.33			
1	204.68	PF#2	164000.00	971.40	989.32	982.81	990.31
0.001151	8.21	20999.24	1586.28	0.38			
1	204.61	PF#1	164000.00	972.60	988.59	983.53	989.64
0.001360	8.79	20900.84	7282.60	0.41			
1	204.61	PF#2	164000.00	972.60	988.62	983.47	989.78
0.001462	9.12	19540.62	1602.90	0.42			

1	204.53	PF#1	164000.00	972.70	987.68	982.99	988.93
0.001814	9.22	18844.19	4061.16	0.46			
1	204.53	PF#2	164000.00	972.70	987.68	982.93	989.02
0.001920	9.48	18003.71	1610.90	0.47			
1	204.42	PF#1	164000.00	971.40	986.40	982.76	987.76
0.002432	9.40	17715.45	2778.70	0.51			
1	204.42	PF#2	164000.00	971.40	986.38	982.73	987.80
0.002533	9.58	17125.44	1653.57	0.52			
1	204.34	PF#1	164000.00	969.30	985.28	981.46	986.65
0.002470	9.39	17462.96	2452.20	0.52			
1	204.34	PF#2	164000.00	969.30	985.29	981.46	986.65
0.002472	9.39	17473.86	1701.98	0.52			
1	204.25	PF#1	164000.00	969.22	980.90	980.90	984.46
0.007742	15.13	10836.44	1993.93	1.00			
1	204.25	PF#2	164000.00	969.22	980.90	980.90	984.46
0.007774	15.15	10825.70	1517.10	1.00			
1	204.15	PF#1	164000.00	966.00	981.17	975.82	982.09
0.001058	7.72	21240.53	2149.48	0.40			
1	204.15	PF#2	164000.00	966.00	981.18	975.82	982.11
0.001059	7.71	21274.74	1831.89	0.40			
1	204.05	PF#1	164000.00	965.00	980.27	976.80	981.39
0.001759	8.49	19320.24	2116.76	0.50			
1	204.05	PF#2	164000.00	965.00	980.29	976.80	981.41
0.001744	8.47	19370.37	2116.76	0.49			
1	203.96	PF#1	164000.00	964.10	977.71	976.71	979.86
0.005220	11.77	13938.52	2225.52	0.80			
1	203.96	PF#2	164000.00	964.10	977.98	976.71	979.97
0.004601	11.33	14478.25	2050.76	0.75			
1	203.86	PF#1	164000.00	962.30	977.81	971.84	978.53
0.000902	6.82	24032.60	2201.58	0.36			
1	203.86	PF#2	164000.00	962.30	978.06	971.84	978.75
0.000838	6.67	24588.96	2191.78	0.35			
1	203.77	PF#1	164000.00	963.30	977.43	971.58	978.06
0.000873	6.37	25746.08	2518.55	0.35			
1	203.77	PF#2	164000.00	963.30	977.72	971.58	978.32
0.000799	6.19	26474.14	2511.27	0.34			
1	203.67	PF#1	164000.00	962.30	976.93	971.59	977.61
0.000940	6.66	25645.87	3648.91	0.37			
1	203.67	PF#2	164000.00	962.30	977.23	971.59	977.89
0.000885	6.58	25408.07	2567.43	0.36			
1	203.58	PF#1	164000.00	962.10	976.47	971.52	977.14
0.000946	6.64	25339.94	4630.93	0.37			
1	203.58	PF#2	164000.00	962.10	976.81	971.52	977.46
0.000858	6.46	25597.97	2676.39	0.36			
1	203.48	PF#1	164000.00	962.20	975.92	972.02	976.58
0.001248	6.66	25617.87	4863.76	0.41			
1	203.48	PF#2	164000.00	962.20	976.25	971.97	976.94
0.001196	6.68	24567.98	2911.71	0.40			
1	203.39	PF#1	164000.00	959.90	975.23	971.15	975.93
0.001331	6.81	24862.22	4207.73	0.42			
1	203.39	PF#2	164000.00	959.90	975.62	971.13	976.32
0.001254	6.69	24520.14	2930.05	0.41			

1	203.29	PF#1	164000.00	960.70	974.46	970.77	975.20
0.001572	6.98	24301.95	4967.75	0.45			
1	203.29	PF#2	164000.00	960.70	974.88	970.71	975.63
0.001478	6.94	23633.34	3009.26	0.44			
1	203.19	PF#1	164000.00	956.70	973.59	970.04	974.28
0.001787	6.81	25046.42	3491.37	0.42			
1	203.19	PF#2	164000.00	956.70	973.95	970.04	974.74
0.001849	7.13	23041.46	2689.14	0.43			
1	203.09	PF#1	164000.00	958.70	972.42	969.20	973.25
0.002112	7.51	23337.60	3213.89	0.46			
1	203.09	PF#2	164000.00	958.70	972.75	968.97	973.69
0.002162	7.79	21163.71	2475.85	0.46			
1	202.99	PF#1	164000.00	959.20	971.50	967.56	972.24
0.001726	7.08	24615.47	3260.60	0.42			
1	202.99	PF#2	164000.00	959.20	971.87	967.53	972.66
0.001673	7.15	22949.42	2457.50	0.41			
1	202.9	PF#1	164000.00	956.50	970.92	966.33	971.52
0.001285	6.37	27288.47	3419.52	0.36			
1	202.9	PF#2	164000.00	956.50	971.28	966.26	971.95
0.001315	6.59	24881.82	2511.71	0.37			
1	202.8	PF#1	164000.00	956.40	970.32	965.60	970.84
0.001157	5.94	29050.37	3577.40	0.34			
1	202.8	PF#2	164000.00	956.40	970.64	965.52	971.25
0.001223	6.25	26258.33	2620.78	0.35			
1	202.69	PF#1	164000.00	953.70	969.50	965.26	970.12
0.001416	6.45	27011.89	3716.99	0.37			
1	202.69	PF#2	164000.00	953.70	969.79	965.27	970.49
0.001483	6.73	24379.74	2553.41	0.38			
1	202.59	PF#1	164000.00	953.70	968.55	964.73	969.23
0.001710	6.76	25201.60	3795.66	0.40			
1	202.59	PF#2	164000.00	953.70	968.77	964.70	969.56
0.001832	7.10	23099.99	2606.65	0.42			
1	202.48	PF#1	164000.00	952.50	967.66	963.72	968.30
0.001617	6.64	26503.22	3830.22	0.40			
1	202.48	PF#2	164000.00	952.50	967.77	963.79	968.54
0.001788	7.04	23415.41	2826.15	0.42			
1	202.37	PF#1	164000.00	954.60	966.79	962.99	967.38
0.001487	6.30	27726.06	4026.46	0.39			
1	202.37	PF#2	164000.00	954.60	966.82	963.06	967.52
0.001673	6.70	24843.26	3165.40	0.41			
1	202.29	PF#1	164000.00	955.50	966.51	961.30	966.88
0.000809	4.90	34227.57	4327.50	0.29			
1	202.29	PF#2	164000.00	955.50	966.59	961.30	966.97
0.000812	4.93	33283.39	3605.60	0.29			
1	202.18	PF#1	164000.00	950.00	965.70	961.75	966.23
0.001545	5.88	28639.46	4356.15	0.38			
1	202.18	PF#2	164000.00	950.00	965.77	961.75	966.31
0.001559	5.94	27619.54	3692.06	0.38			
1	202.09	PF#1	164000.00	950.00	964.09	961.98	965.01
0.003848	7.74	21595.00	4052.07	0.57			
1	202.09	PF#2	164000.00	950.00	964.16	961.95	965.09
0.003803	7.75	21163.17	3682.20	0.57			
1	201.99	PF#1	164000.00	948.70	963.29	958.65	963.87

0.001252	6.13	27234.37	5331.53	0.38			
1	201.99	PF#2	164000.00	948.70	963.38	958.65	963.96
0.001241	6.12	26811.01	3219.77	0.37			
1	201.9	PF#1	164000.00	947.20	962.94	957.27	963.35
0.000785	5.15	31873.93	5241.60	0.31			
1	201.9	PF#2	164000.00	947.20	963.05	957.27	963.45
0.000756	5.08	32284.29	3830.97	0.31			
1	201.81	PF#1	164000.00	946.00	962.64	955.84	962.99
0.000619	4.79	34252.18	5916.63	0.28			
1	201.81	PF#2	164000.00	946.00	962.75	955.84	963.10
0.000597	4.73	34684.21	3650.46	0.27			
1	201.71	PF#1	164000.00	946.00	961.87	958.20	962.46
0.001825	6.22	26658.36	8308.26	0.40			
1	201.71	PF#2	164000.00	946.00	961.98	958.20	962.58
0.001807	6.24	26277.08	3415.69	0.40			
1	201.62	PF#1	164000.00	945.60	961.15	956.72	961.66
0.001385	5.78	28773.37	7614.80	0.35			
1	201.62	PF#2	164000.00	945.60	961.28	956.72	961.80
0.001343	5.74	28552.42	3241.81	0.34			
1	201.52	PF#1	164000.00	940.90	960.41	955.39	960.87
0.001854	5.50	30263.04	8984.51	0.33			
1	201.52	PF#2	164000.00	940.90	960.53	955.39	961.02
0.001898	5.61	29242.41	3382.85	0.34			
1	201.43	PF#1	164000.00	941.30	959.46	954.87	960.01
0.001619	5.99	27972.05	6527.26	0.37			
1	201.43	PF#2	164000.00	941.30	959.60	954.87	960.15
0.001604	6.00	27333.81	3288.24	0.37			
1	201.33	PF#1	164000.00	943.00	958.44	954.88	959.06
0.002023	6.40	26135.38	5745.33	0.41			
1	201.33	PF#2	164000.00	943.00	958.60	954.88	959.23
0.001959	6.36	25785.53	3307.45	0.40			
1	201.24	PF#1	164000.00	943.00	957.47	953.61	958.06
0.001852	6.23	26885.37	6935.19	0.40			
1	201.24	PF#2	164000.00	943.00	957.66	953.61	958.26
0.001790	6.21	26420.07	3500.08	0.40			
1	201.14	PF#1	164000.00	940.40	956.91	952.08	957.32
0.001090	5.20	32069.63	8631.40	0.31			
1	201.14	PF#2	164000.00	940.40	957.15	952.08	957.55
0.001017	5.10	32150.13	3680.58	0.30			
1	201.05	PF#1	164000.00	941.50	956.49	950.99	956.80
0.000974	4.50	37110.74	9249.99	0.26			
1	201.05	PF#2	164000.00	941.50	956.74	950.99	957.06
0.000928	4.48	36618.90	3898.52	0.26			
1	200.95	PF#1	164000.00	939.80	956.09	949.86	956.38
0.000668	4.33	39057.77	10045.40	0.25			
1	200.95	PF#2	164000.00	939.80	956.38	949.86	956.66
0.000629	4.27	38407.73	4001.09	0.24			
1	200.86	PF#1	164000.00	938.50	955.63	949.69	955.94
0.001346	4.48	37607.95	11080.61	0.27			
1	200.86	PF#2	164000.00	938.50	955.94	949.69	956.24
0.001276	4.46	36762.91	4032.00	0.26			
1	200.77	PF#1	164000.00	936.90	955.02	949.21	955.35
0.000950	4.62	36841.44	11450.00	0.28			

1	200.77	PF#2	164000.00	936.90	955.38	949.21	955.70
0.000875	4.52	36283.61	4122.20	0.27			
1	200.67	PF#1	164000.00	939.80	954.42	948.98	954.80
0.001288	4.96	33785.32	10368.40	0.30			
1	200.67	PF#2	164000.00	939.80	954.84	948.98	955.20
0.001158	4.82	34281.14	4009.30	0.28			
1	200.58	PF#1	164000.00	937.60	953.76	948.30	954.14
0.001313	5.04	33542.10	10091.16	0.30			
1	200.58	PF#2	164000.00	937.60	954.23	948.30	954.60
0.001187	4.91	33793.82	3940.00	0.28			
1	200.49	PF#1	164000.00	936.90	953.28	946.97	953.59
0.000940	4.59	37370.81	10978.31	0.26			
1	200.49	PF#2	164000.00	936.90	953.77	946.97	954.10
0.000893	4.59	36178.30	3791.00	0.25			
1	200.39	PF#1	164000.00	937.00	952.89	946.26	953.17
0.000739	4.35	39814.10	11315.74	0.24			
1	200.39	PF#2	164000.00	937.00	953.40	946.26	953.70
0.000702	4.37	38317.50	3741.00	0.23			
1	200.3	PF#1	179750.00	937.70	952.12	947.18	952.61
0.001603	5.79	36487.07	9118.91	0.34			
1	200.3	PF#2	179750.00	937.70	952.73	947.17	953.18
0.001382	5.57	36217.73	3683.53	0.31			
1	200.2	PF#1	179750.00	937.00	951.10	946.78	951.67
0.002027	6.37	35619.23	11857.69	0.37			
1	200.2	PF#2	179750.00	937.00	951.83	946.78	952.38
0.001732	6.15	34725.75	3629.00	0.35			
1	200.1	PF#1	179750.00	934.50	950.19	945.22	950.66
0.001730	5.74	37659.50	11254.10	0.32			
1	200.1	PF#2	179750.00	934.50	951.11	945.22	951.53
0.001392	5.36	38392.25	3770.00	0.29			
1	200	PF#1	179750.00	933.40	949.74	944.16	950.01
0.000864	4.29	44537.35	11193.60	0.24			
1	200	PF#2	179750.00	933.40	950.70	944.15	950.98
0.000792	4.23	42550.11	4100.00	0.23			
1	199.91	PF#1	179750.00	932.10	949.39	943.37	949.60
0.000668	3.83	50254.95	10846.61	0.22			
1	199.91	PF#2	179750.00	932.10	950.39	943.36	950.61
0.000573	3.75	48102.12	4530.00	0.20			
1	199.82	PF#1	179750.00	931.20	948.90	943.28	949.09
0.002007	3.30	51778.97	10752.57	0.19			
1	199.82	PF#2	179750.00	931.20	949.90	943.24	950.14
0.002185	3.68	47698.04	4780.00	0.20			

ERRORS WARNINGS AND NOTES
Errors Warnings and Notes for Plan : PostPrj

River: 1 Reach: 1 RS: 214.14 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, energy was used.
River: 1 Reach: 1 RS: 214.14 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 214.04 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, energy was used.
River: 1 Reach: 1 RS: 214.04 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 213.95 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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 213.95 Profile: PF#2
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). 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, energy was used.
River: 1 Reach: 1 RS: 213.85 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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 213.85 Profile: PF#2
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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 213.75 Profile: PF#1
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: 1 Reach: 1 RS: 213.75 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: 1 Reach: 1 RS: 213.745 Profile: PF#1 Upstream
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: 1 Reach: 1 RS: 213.745 Profile: PF#1 Downstream
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: 1 Reach: 1 RS: 213.745 Profile: PF#2 Upstream
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: 1 Reach: 1 RS: 213.745 Profile: PF#2 Downstream
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: 1 Reach: 1 RS: 213.74 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: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: 1 Reach: 1 RS: 213.74 Profile: PF#2
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: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was

used.
River: 1 Reach: 1 RS: 213.66 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 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, energy was used.
River: 1 Reach: 1 RS: 213.66 Profile: PF#2
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 213.57 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, energy was used.
River: 1 Reach: 1 RS: 213.57 Profile: PF#2
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, energy was used.
River: 1 Reach: 1 RS: 213.47 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: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 213.47 Profile: PF#2
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: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 213.38 Profile: PF#1
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 213.38 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 213.33 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, energy was used.
River: 1 Reach: 1 RS: 213.33 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 213.26 Profile: PF#1
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: 1 Reach: 1 RS: 213.26 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: 1 Reach: 1 RS: 213.255 Profile: PF#1 Upstream
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: 1 Reach: 1 RS: 213.255 Profile: PF#1 Downstream
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: 1 Reach: 1 RS: 213.255 Profile: PF#2 Upstream
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was

used.
River: 1 Reach: 1 RS: 213.255 Profile: PF#2 Downstream
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: 1 Reach: 1 RS: 213.25 Profile: PF#1
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: 1 Reach: 1 RS: 213.25 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: 1 Reach: 1 RS: 213.21 Profile: PF#1
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 213.21 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 213.11 Profile: PF#1
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 213.11 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 213.03 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, energy was used.
River: 1 Reach: 1 RS: 213.03 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 212.93 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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 212.93 Profile: PF#2
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). 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, energy was used.
River: 1 Reach: 1 RS: 212.84 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 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, energy was used.
River: 1 Reach: 1 RS: 212.84 Profile: PF#2
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 212.74 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, energy was used.
River: 1 Reach: 1 RS: 212.74 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 212.68 Profile: PF#1
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: 1 Reach: 1 RS: 212.68 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: 1 Reach: 1 RS: 212.675 Profile: PF#1
Note: Momentum answer is not valid if the water surface is above the low chord or if there is weir flow. The momentum
answer has been disregarded.
River: 1 Reach: 1 RS: 212.675 Profile: PF#1 Upstream

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

River: 1 Reach: 1 RS: 212.675 Profile: PF#1 Downstream

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

River: 1 Reach: 1 RS: 212.675 Profile: PF#2 Upstream

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

River: 1 Reach: 1 RS: 212.675 Profile: PF#2 Downstream

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

River: 1 Reach: 1 RS: 212.67 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.

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

River: 1 Reach: 1 RS: 212.67 Profile: PF#2

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.

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

River: 1 Reach: 1 RS: 212.56 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 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, energy was used.

River: 1 Reach: 1 RS: 212.56 Profile: PF#2

Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

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

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

River: 1 Reach: 1 RS: 212.46 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 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, energy was used.

River: 1 Reach: 1 RS: 212.46 Profile: PF#2

Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

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

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

River: 1 Reach: 1 RS: 212.37 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, energy was used.

River: 1 Reach: 1 RS: 212.37 Profile: PF#2
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, energy was used.
River: 1 Reach: 1 RS: 212.27 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 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, energy was used.
River: 1 Reach: 1 RS: 212.27 Profile: PF#2
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 212.18 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 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, energy was used.
River: 1 Reach: 1 RS: 212.18 Profile: PF#2
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 212.08 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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 212.08 Profile: PF#2
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). 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, energy was used.
River: 1 Reach: 1 RS: 211.99 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, energy was used.
River: 1 Reach: 1 RS: 211.99 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 211.89 Profile: PF#1
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 211.89 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 211.79 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, energy was used.
River: 1 Reach: 1 RS: 211.79 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 211.71 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, energy was used.
River: 1 Reach: 1 RS: 211.71 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 211.64 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 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, energy was used.
River: 1 Reach: 1 RS: 211.64 Profile: PF#2
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 211.54 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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: 1 Reach: 1 RS: 211.54 Profile: PF#2
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). 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: 1 Reach: 1 RS: 211.525 Profile: PF#1 Upstream
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). 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: 1 Reach: 1 RS: 211.525 Profile: PF#1 Downstream
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). 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: 1 Reach: 1 RS: 211.525 Profile: PF#2 Upstream
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). 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: 1 Reach: 1 RS: 211.525 Profile: PF#2 Downstream
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). 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: 1 Reach: 1 RS: 211.51 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 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: 1 Reach: 1 RS: 211.51 Profile: PF#2
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: 1 Reach: 1 RS: 211.41 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: 1 Reach: 1 RS: 211.41 Profile: PF#2
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: 1 Reach: 1 RS: 211.31 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 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, energy was used.
River: 1 Reach: 1 RS: 211.31 Profile: PF#2
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 211.21 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.
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, energy was used.
River: 1 Reach: 1 RS: 211.21 Profile: PF#2
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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 211.12 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: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 211.12 Profile: PF#2
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: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 211.02 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, energy was used.
River: 1 Reach: 1 RS: 211.02 Profile: PF#2
Warning:Divided flow computed for this cross-section.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 210.93 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, energy was used.
River: 1 Reach: 1 RS: 210.93 Profile: PF#2
Warning:Divided flow computed for this cross-section.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 210.83 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, energy was used.
River: 1 Reach: 1 RS: 210.83 Profile: PF#2
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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

River: 1 Reach: 1 RS: 210.74 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, energy was used.
River: 1 Reach: 1 RS: 210.74 Profile: PF#2
Warning:Divided flow computed for this cross-section.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 210.64 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, energy was used.
River: 1 Reach: 1 RS: 210.64 Profile: PF#2
Warning:Divided flow computed for this cross-section.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 210.55 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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 210.55 Profile: PF#2
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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 210.46 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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 210.46 Profile: PF#2
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: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 210.36 Profile: PF#1
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 210.36 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 210.26 Profile: PF#1
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 210.26 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 210.17 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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 210.17 Profile: PF#2
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: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 210.07 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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 210.07 Profile: PF#2
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: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 209.98 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, energy was used.
River: 1 Reach: 1 RS: 209.98 Profile: PF#2
Warning:Divided flow computed for this cross-section.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 209.88 Profile: PF#1
Warning:Divided flow computed for this cross-section.
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, energy was used.
River: 1 Reach: 1 RS: 209.88 Profile: PF#2
Warning:Divided flow computed for this cross-section.
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, energy was used.
River: 1 Reach: 1 RS: 209.79 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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 209.79 Profile: PF#2
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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 209.69 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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 209.69 Profile: PF#2
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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 209.60 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, energy was used.
River: 1 Reach: 1 RS: 209.60 Profile: PF#2
Warning:Divided flow computed for this cross-section.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 209.54 Profile: PF#1
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: 1 Reach: 1 RS: 209.54 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: 1 Reach: 1 RS: 209.535 Profile: PF#1 Upstream
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: 1 Reach: 1 RS: 209.535 Profile: PF#1 Downstream
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: 1 Reach: 1 RS: 209.535 Profile: PF#2 Upstream
Note: Multiple critical depths were found at this location. The critical depth with the lowest,

valid, water surface was
used.
River: 1 Reach: 1 RS: 209.535 Profile: PF#2 Downstream
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: 1 Reach: 1 RS: 209.53 Profile: PF#1
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: 1 Reach: 1 RS: 209.53 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: 1 Reach: 1 RS: 209.42 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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 209.42 Profile: PF#2
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). 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, energy was used.
River: 1 Reach: 1 RS: 209.33 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, energy was used.
River: 1 Reach: 1 RS: 209.33 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 209.24 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, energy was used.
River: 1 Reach: 1 RS: 209.24 Profile: PF#2
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, energy was used.
River: 1 Reach: 1 RS: 209.14 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, energy was used.
River: 1 Reach: 1 RS: 209.14 Profile: PF#2
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, energy was used.
River: 1 Reach: 1 RS: 209.04 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, energy was used.
River: 1 Reach: 1 RS: 209.04 Profile: PF#2
Warning:Divided flow computed for this cross-section.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 208.95 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, energy was used.
River: 1 Reach: 1 RS: 208.95 Profile: PF#2
Warning:Divided flow computed for this cross-section.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 208.85 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, energy was used.
River: 1 Reach: 1 RS: 208.85 Profile: PF#2
Warning:Divided flow computed for this cross-section.
Note: Multiple critical depths were found at this location. The critical depth with the lowest,

valid, energy was used.
River: 1 Reach: 1 RS: 208.75 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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 208.75 Profile: PF#2
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). 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, energy was used.
River: 1 Reach: 1 RS: 208.67 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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 208.67 Profile: PF#2
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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 208.57 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 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, energy was used.
River: 1 Reach: 1 RS: 208.57 Profile: PF#2
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 208.48 Profile: PF#1
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 208.48 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 208.39 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, energy was used.
River: 1 Reach: 1 RS: 208.39 Profile: PF#2
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, energy was used.
River: 1 Reach: 1 RS: 208.29 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, energy was used.
River: 1 Reach: 1 RS: 208.29 Profile: PF#2
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, energy was used.
River: 1 Reach: 1 RS: 208.19 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, energy was used.
River: 1 Reach: 1 RS: 208.19 Profile: PF#2
Warning:Divided flow computed for this cross-section.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 208.10 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, energy was used.
River: 1 Reach: 1 RS: 208.10 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 207.99 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, energy was used.
River: 1 Reach: 1 RS: 207.99 Profile: PF#2
Warning:Divided flow computed for this cross-section.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 207.90 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 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, energy was used.
River: 1 Reach: 1 RS: 207.90 Profile: PF#2
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). 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, energy was used.
River: 1 Reach: 1 RS: 207.80 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, energy was used.
River: 1 Reach: 1 RS: 207.80 Profile: PF#2
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, energy was used.
River: 1 Reach: 1 RS: 207.71 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, energy was used.
River: 1 Reach: 1 RS: 207.71 Profile: PF#2
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, energy was used.
River: 1 Reach: 1 RS: 207.62 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, energy was used.
River: 1 Reach: 1 RS: 207.62 Profile: PF#2
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 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, energy was used.
River: 1 Reach: 1 RS: 207.49 Profile: PF#1
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: 1 Reach: 1 RS: 207.49 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: 1 Reach: 1 RS: 207.485 Profile: PF#1 Upstream
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: 1 Reach: 1 RS: 207.485 Profile: PF#1 Downstream
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: 1 Reach: 1 RS: 207.485 Profile: PF#2 Upstream
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: 1 Reach: 1 RS: 207.485 Profile: PF#2 Downstream
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: 1 Reach: 1 RS: 207.48 Profile: PF#1
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: 1 Reach: 1 RS: 207.48 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: 1 Reach: 1 RS: 207.43 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: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 207.43 Profile: PF#2
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: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 207.34 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, energy was used.
River: 1 Reach: 1 RS: 207.34 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 207.27 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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 207.27 Profile: PF#2
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: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 207.16 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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 207.16 Profile: PF#2
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: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 207.07 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 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.
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, energy was used.
River: 1 Reach: 1 RS: 207.07 Profile: PF#2
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 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.
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, energy was used.
River: 1 Reach: 1 RS: 206.97 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, energy was used.
River: 1 Reach: 1 RS: 206.97 Profile: PF#2
Warning:Divided flow computed for this cross-section.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 206.88 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, energy was used.
River: 1 Reach: 1 RS: 206.88 Profile: PF#2
Warning:Divided flow computed for this cross-section.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 206.79 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, energy was used.
River: 1 Reach: 1 RS: 206.79 Profile: PF#2
Warning:Divided flow computed for this cross-section.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 206.7 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, energy was used.
River: 1 Reach: 1 RS: 206.7 Profile: PF#2
Warning:Divided flow computed for this cross-section.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 206.6 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, energy was used.
River: 1 Reach: 1 RS: 206.6 Profile: PF#2
Warning:Divided flow computed for this cross-section.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 206.51 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, energy was used.
River: 1 Reach: 1 RS: 206.51 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 206.41 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, energy was used.
River: 1 Reach: 1 RS: 206.41 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 206.32 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, energy was used.
River: 1 Reach: 1 RS: 206.32 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 206.22 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, energy was used.
River: 1 Reach: 1 RS: 206.22 Profile: PF#2
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, energy was used.
River: 1 Reach: 1 RS: 206.13 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.
River: 1 Reach: 1 RS: 206.13 Profile: PF#2
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 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: 1 Reach: 1 RS: 206.03 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.
River: 1 Reach: 1 RS: 206.03 Profile: PF#2
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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 205.94 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, energy was used.

River: 1 Reach: 1 RS: 205.94 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 205.84 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, energy was used.
River: 1 Reach: 1 RS: 205.84 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 205.75 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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 205.75 Profile: PF#2
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: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 205.62 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, energy was used.
River: 1 Reach: 1 RS: 205.62 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 205.52 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, energy was used.
River: 1 Reach: 1 RS: 205.52 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 205.43 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, energy was used.
River: 1 Reach: 1 RS: 205.43 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 205.4 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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 205.4 Profile: PF#2
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: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 205.34 Profile: PF#1
Warning:Divided flow computed for this cross-section.
Warning:The cross-section end points had to be extended vertically for the computed water surface.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 205.34 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 205.25 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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 205.25 Profile: PF#2
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: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 205.15 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, energy was used.
River: 1 Reach: 1 RS: 205.15 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 205.06 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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 205.06 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 204.97 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, energy was used.
River: 1 Reach: 1 RS: 204.97 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 204.87 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, energy was used.
River: 1 Reach: 1 RS: 204.87 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 204.78 Profile: PF#1
Warning:Divided flow computed for this cross-section.
Warning:The cross-section end points had to be extended vertically for the computed water surface.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 204.78 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 204.68 Profile: PF#1
Warning:Divided flow computed for this cross-section.
Warning:The cross-section end points had to be extended vertically for the computed water surface.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 204.68 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 204.61 Profile: PF#1
Warning:Divided flow computed for this cross-section.
Warning:The cross-section end points had to be extended vertically for the computed water surface.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 204.61 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 204.53 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, energy was used.
River: 1 Reach: 1 RS: 204.53 Profile: PF#2
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, energy was used.
River: 1 Reach: 1 RS: 204.42 Profile: PF#1
Warning:Divided flow computed for this cross-section.
Warning:The cross-section end points had to be extended vertically for the computed water surface.
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, energy was used.
River: 1 Reach: 1 RS: 204.42 Profile: PF#2
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, energy was used.
River: 1 Reach: 1 RS: 204.34 Profile: PF#1
Warning:Divided flow computed for this cross-section.
Warning:The cross-section end points had to be extended vertically for the computed water surface.
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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 204.34 Profile: PF#2
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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 204.25 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 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.
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, energy was used.
River: 1 Reach: 1 RS: 204.25 Profile: PF#2
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The 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, energy was used.
River: 1 Reach: 1 RS: 204.15 Profile: PF#1
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 204.15 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 204.05 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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 204.05 Profile: PF#2
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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 203.96 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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 203.96 Profile: PF#2
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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 203.86 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, energy was used.
River: 1 Reach: 1 RS: 203.86 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 203.77 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, energy was used.
River: 1 Reach: 1 RS: 203.77 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 203.67 Profile: PF#1
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 203.67 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 203.58 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, energy was used.
River: 1 Reach: 1 RS: 203.58 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 203.48 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, energy was used.
River: 1 Reach: 1 RS: 203.48 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 203.39 Profile: PF#1
Warning:Divided flow computed for this cross-section.
Warning:The cross-section end points had to be extended vertically for the computed water surface.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

River: 1 Reach: 1 RS: 203.39 Profile: PF#2
Warning:Divided flow computed for this cross-section.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 203.29 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, energy was used.
River: 1 Reach: 1 RS: 203.29 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 203.19 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, energy was used.
River: 1 Reach: 1 RS: 203.19 Profile: PF#2
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, energy was used.
River: 1 Reach: 1 RS: 203.09 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, energy was used.
River: 1 Reach: 1 RS: 203.09 Profile: PF#2
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, energy was used.
River: 1 Reach: 1 RS: 202.99 Profile: PF#1
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 202.99 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 202.9 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, energy was used.
River: 1 Reach: 1 RS: 202.9 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 202.8 Profile: PF#1
Warning:Divided flow computed for this cross-section.
Warning:The cross-section end points had to be extended vertically for the computed water surface.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 202.8 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 202.69 Profile: PF#1
Warning:Divided flow computed for this cross-section.
Warning:The cross-section end points had to be extended vertically for the computed water surface.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 202.69 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 202.59 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, energy was used.
River: 1 Reach: 1 RS: 202.59 Profile: PF#2
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, energy was used.
River: 1 Reach: 1 RS: 202.48 Profile: PF#1
Warning:Divided flow computed for this cross-section.
Warning:The cross-section end points had to be extended vertically for the computed water surface.
Note: Multiple critical depths were found at this location. The critical depth with the lowest,

valid, energy was used.
River: 1 Reach: 1 RS: 202.48 Profile: PF#2
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, energy was used.
River: 1 Reach: 1 RS: 202.37 Profile: PF#1
Warning:Divided flow computed for this cross-section.
Warning:The cross-section end points had to be extended vertically for the computed water surface.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 202.37 Profile: PF#2
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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 202.29 Profile: PF#1
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 202.29 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 202.18 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, energy was used.
River: 1 Reach: 1 RS: 202.18 Profile: PF#2
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, energy was used.
River: 1 Reach: 1 RS: 202.09 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, energy was used.
River: 1 Reach: 1 RS: 202.09 Profile: PF#2
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, energy was used.
River: 1 Reach: 1 RS: 201.99 Profile: PF#1
Warning:Divided flow computed for this cross-section.
Warning:The cross-section end points had to be extended vertically for the computed water surface.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 201.99 Profile: PF#2
Warning:Divided flow computed for this cross-section.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 201.9 Profile: PF#1
Warning:Divided flow computed for this cross-section.
Warning:The cross-section end points had to be extended vertically for the computed water surface.
Note: Multiple critical depths were found at this location. The critical depth with the lowest,

valid, energy was used.
River: 1 Reach: 1 RS: 201.9 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 201.81 Profile: PF#1
Warning:Divided flow computed for this cross-section.
Warning:The cross-section end points had to be extended vertically for the computed water surface.
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: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 201.81 Profile: PF#2
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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 201.71 Profile: PF#1
Warning:Divided flow computed for this cross-section.
Warning:The cross-section end points had to be extended vertically for the computed water surface.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 201.71 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 201.62 Profile: PF#1
Warning:Divided flow computed for this cross-section.
Warning:The cross-section end points had to be extended vertically for the computed water surface.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 201.62 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 201.52 Profile: PF#1
Warning:Divided flow computed for this cross-section.
Warning:The cross-section end points had to be extended vertically for the computed water surface.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 201.52 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 201.43 Profile: PF#1
Warning:Divided flow computed for this cross-section.
Warning:The cross-section end points had to be extended vertically for the computed water surface.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 201.43 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 201.33 Profile: PF#1
Warning:Divided flow computed for this cross-section.
Warning:The cross-section end points had to be extended vertically for the computed water surface.
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, energy was used.
River: 1 Reach: 1 RS: 201.33 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 201.24 Profile: PF#1
Warning:Divided flow computed for this cross-section.
Warning:The cross-section end points had to be extended vertically for the computed water surface.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 201.24 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 201.14 Profile: PF#1
Warning:Divided flow computed for this cross-section.
Warning:The cross-section end points had to be extended vertically for the computed water surface.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 201.14 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 201.05 Profile: PF#1

```
     Warning:Divided flow computed for this cross-section.
     Warning:The cross-section end points had to be extended vertically for the computed water surface.
     Note:   Multiple critical depths were found at this location.  The critical depth with the lowest,
valid, energy was used.
River: 1  Reach: 1     RS: 201.05     Profile: PF#2
     Note:   Multiple critical depths were found at this location.  The critical depth with the lowest,
valid, energy was used.
River: 1  Reach: 1     RS: 200.95     Profile: PF#1
     Warning:Divided flow computed for this cross-section.
     Warning:The cross-section end points had to be extended vertically for the computed water surface.
     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:   Multiple critical depths were found at this location.  The critical depth with the lowest,
valid, energy was used.
River: 1  Reach: 1     RS: 200.95     Profile: PF#2
     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:   Multiple critical depths were found at this location.  The critical depth with the lowest,
valid, energy was used.
River: 1  Reach: 1     RS: 200.86     Profile: PF#1
     Warning:Divided flow computed for this cross-section.
     Warning:The cross-section end points had to be extended vertically for the computed water surface.
     Note:   Multiple critical depths were found at this location.  The critical depth with the lowest,
valid, energy was used.
River: 1  Reach: 1     RS: 200.86     Profile: PF#2
     Note:   Multiple critical depths were found at this location.  The critical depth with the lowest,
valid, energy was used.
River: 1  Reach: 1     RS: 200.77     Profile: PF#1
     Warning:Divided flow computed for this cross-section.
     Warning:The cross-section end points had to be extended vertically for the computed water surface.
     Note:   Multiple critical depths were found at this location.  The critical depth with the lowest,
valid, energy was used.
River: 1  Reach: 1     RS: 200.77     Profile: PF#2
     Note:   Multiple critical depths were found at this location.  The critical depth with the lowest,
valid, energy was used.
River: 1  Reach: 1     RS: 200.67     Profile: PF#1
     Warning:Divided flow computed for this cross-section.
     Warning:The cross-section end points had to be extended vertically for the computed water surface.
     Note:   Multiple critical depths were found at this location.  The critical depth with the lowest,
valid, energy was used.
River: 1  Reach: 1     RS: 200.67     Profile: PF#2
     Note:   Multiple critical depths were found at this location.  The critical depth with the lowest,
valid, energy was used.
River: 1  Reach: 1     RS: 200.58     Profile: PF#1
     Warning:Divided flow computed for this cross-section.
     Warning:The cross-section end points had to be extended vertically for the computed water surface.
     Note:   Multiple critical depths were found at this location.  The critical depth with the lowest,
valid, energy was used.
River: 1  Reach: 1     RS: 200.58     Profile: PF#2
     Note:   Multiple critical depths were found at this location.  The critical depth with the lowest,
valid, energy was used.
River: 1  Reach: 1     RS: 200.49     Profile: PF#1
     Warning:Divided flow computed for this cross-section.
     Warning:The cross-section end points had to be extended vertically for the computed water surface.
     Note:   Multiple critical depths were found at this location.  The critical depth with the lowest,
valid, energy was used.
River: 1  Reach: 1     RS: 200.49     Profile: PF#2
     Note:   Multiple critical depths were found at this location.  The critical depth with the lowest,
valid, energy was used.
River: 1  Reach: 1     RS: 200.39     Profile: PF#1
     Warning:Divided flow computed for this cross-section.
     Warning:The cross-section end points had to be extended vertically for the computed water surface.
     Note:   Multiple critical depths were found at this location.  The critical depth with the lowest,
valid, energy was used.
River: 1  Reach: 1     RS: 200.39     Profile: PF#2
     Note:   Multiple critical depths were found at this location.  The critical depth with the lowest,
valid, energy was used.
River: 1  Reach: 1     RS: 200.3     Profile: PF#1
     Warning:Divided flow computed for this cross-section.
     Warning:The cross-section end points had to be extended vertically for the computed water surface.
     Note:   Multiple critical depths were found at this location.  The critical depth with the lowest,
valid, energy was used.
River: 1  Reach: 1     RS: 200.3     Profile: PF#2
     Note:   Multiple critical depths were found at this location.  The critical depth with the lowest,
valid, energy was used.
River: 1  Reach: 1     RS: 200.2     Profile: PF#1
     Warning:Divided flow computed for this cross-section.
```

Warning:The cross-section end points had to be extended vertically for the computed water surface.
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, energy was used.
River: 1 Reach: 1 RS: 200.2 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 200.1 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, energy was used.
River: 1 Reach: 1 RS: 200.1 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 200 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, energy was used.
River: 1 Reach: 1 RS: 200 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 199.91 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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 199.91 Profile: PF#2
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: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: 1 Reach: 1 RS: 199.82 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, energy was used.
River: 1 Reach: 1 RS: 199.82 Profile: PF#2
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

cHECk-RAS Report

HEC-RAS Project: *post-project.prj*
Plan File: *post-project.p01*
Geometry File: *post-project.g02*
Flow File: *post-project.f01*
Report Date: *3/5/2014*

Message ID	Message	Cross sections affected	Comments
BR LF 01	This is ($strucname$). The selected profile is $profilename$. Type of flow is low flow because, 1. EGEL 3 of $egel3$ is less than or equal to MinTopRd of $minelweirflow$. 2. EGEL 3 of $egel3$ is less than MxLoCdU of $mxlocdu$.	207.485(Bridge-UP); 209.535(Bridge-UP); 211.525(Bridge-UP); 213.255(Bridge-UP); 213.745(Bridge-UP)	
BR LW 02	This is a Bridge Section. The selected profile is $profilename$. EGEL of $egel3$ at Section 3 is higher than the MinTopRd of $minelweirflow$. However, weir flow is not computed at this structure. Please investigate the problem.	212.675(Bridge-UP)	
BR PW 02	This is a Bridge Section. The selected profile is $profilename$. Type of flow is submerged pressure and weir flow because, 1. EGEL 3 of $egel3$ is greater than MinTopRd of $minelweirflow$. 2. EGEL 3 of $egel3$ is equal to or greater than MxLoCdU of $mxlocdu$. 3. WSEL 2 of $wsel2$ is equal to or greater than MxLoCdD of $mxlocdd$.	212.675(Bridge-UP)	
BR PW 05	This is a Bridge Section. The selected profile is $profilename$. EGEL of $egel3$ at Section 3 is higher than the MinTopRd of $minelweirflow$. However, weir flow is not computed at this structure. Please investigate the problem.	212.675(Bridge-UP)	
FW FW 01L	The Left encroachment station is within the channel. The Left encroachment station $encrstal$ is more than left channel bank station $stalob$. The left encroachment station should be the same as the left channel bank station.	200.86; 200.95; 201.05; 201.14; 201.24; 201.33; 201.43; 201.52; 201.62; 201.71; 201.81; 201.9; 203.77; 203.86; 203.96; 204.05; 209.04; 209.14; 209.24; 210.26; 210.36; 210.55; 210.74; 210.83; 210.93; 211.12; 211.21; 211.31; 211.41; 213.11; 213.66; 213.95; 214.04; 214.14	
FW FW 01R	The Right encroachment station is within the channel. The Right encroachment station $encrstar$ is less than right channel bank station $starob$. The right encroachment station should be the same as the right channel bank station.	201.81; 201.9; 201.99; 202.09; 202.18; 202.37; 202.48; 202.59; 202.69; 202.8; 202.9; 203.09; 203.19; 203.29; 203.39; 203.48; 203.58; 203.67; 203.77; 203.86; 203.96; 204.05; 204.15; 204.25; 204.34; 204.42; 204.68; 204.78; 204.87; 206.13; 206.22; 206.32; 206.41; 207.07; 210.26; 210.36; 211.21; 211.31; 211.79; 211.99; 213.11; 213.33; 213.38; 213.47; 213.57; 213.66; 213.85; 213.95; 214.04; 214.14	

FW FW 03L	The left channel bank elevation of $lobelev$ is higher than the 1-percent-annual-chance WSEL of $wsel$. Relocate the left channel bank station at or below the 1-percent-annual-chance WSEL. Do not place the bank stations at the bottom of the channel. Do not place the bank stations at the low flow channel. Use the Horizontal Variation in "n" Values option in HEC-RAS to assign different "n" values to the left bank slope, low flow channel, and the right bank slope. Let HEC-RAS compute the composite "n" value based on the depth of flow.	200.49; 200.77; 201.05; 201.9; 202.09; 202.37; 202.48; 202.59; 202.69; 203.86; 203.96; 204.05; 205.43; 206.03; 206.13; 206.22; 206.7; 206.79; 206.97; 207.07; 207.62; 207.71; 207.9; 208.1; 208.19; 208.29; 208.39; 208.48; 208.57; 208.67; 208.75; 208.85; 209.04; 209.14; 209.24; 209.33; 209.42; 209.6; 209.69; 209.79; 209.88; 209.98; 210.64; 211.12; 211.41; 211.71; 213.11; 213.66; 213.95; 214.04; 214.14	
FW FW 03R	The right channel bank elevation of $robelev$ is higher than the 1-percent annual chance WSEL of $wsel$. Relocate the right channel bank station at or below the 1-percent annual chance WSEL. Do not place the bank stations at the bottom of the channel. Do not place the bank stations at the low flow channel. Use the Horizontal Variation in "n" Values option in HEC-RAS to assign different "n" values to the left bank slope, low flow channel, and the right bank slope. Let HEC-RAS compute the composite "n" value based on the depth of flow.	200.3; 201.24; 202.09; 202.48; 202.9; 203.39; 205.43; 205.84; 205.94; 206.7; 207.16; 207.27; 207.34; 207.43; 208.1; 208.19; 208.29; 208.39; 208.48; 208.75; 208.85; 208.95; 209.33; 209.42; 209.69; 209.79; 209.88; 209.98; 210.17; 210.46; 210.55; 210.64; 210.74; 210.83; 210.93; 211.02; 211.12; 211.71; 211.89; 212.08; 213.11; 213.33; 213.38; 213.47; 213.57; 213.66; 213.85; 213.95; 214.04; 214.14	
FW FW 04R	The 1-percent-annual-chance floodplain is outside of the channel. The right station effective of $ineffstar$ for the 1-percent-annual-chance floodplain is greater than the right channel bank station $starob$. However, the right encroachment station $encstar$ is outside of the 1-percent-annual-chance floodplain. Adjust the right encroachment station so that it will be within the floodplain.	207.8; 207.99; 208.1; 208.85; 209.69; 210.74	
FW FW 05L	The 1-percent annual chance flood is contained within the channel. The Left encroachment station $encstal$ is outside the channel. The Left channel bank station is $stalob$. Adjust the left encroachment station so that it is the same as the left channel bank station.	208.1; 208.19; 208.39	
FW FW 05R	The 1-percent annual chance flood is contained within the channel. The Right encroachment station $encstar$ is outside the channel. Right channel bank station is $starob$. Adjust the right encroachment station so that it is the same as the right channel bank station..	208.19; 211.12; 212.08	

FW FW 06L	The left side of the floodway boundary is within the channel. The left station effective of $ineffstal$ for the floodway profile is more than the left channel bank station of $stalob$. The left encroachment station of $encstal$ is less than the left channel bank station. Adjust the left encroachment station so that it is the same as the left channel bank station.	208.1; 208.19; 208.29; 208.39	
FW FW 06R	The right side of the floodway boundary is within the channel. The right station effective of $ineffstar$ for the floodway profile is less than the right channel bank station of $starob$. The right encroachment station of $encstar$ is more than the right channel bank station. Adjust the right encroachment station so that it is the same as the right channel bank station.	208.19; 211.12; 212.08	
FW SC 02	The surcharge value of $surcharge$ is greater than the maximum allowable value of $allowsurchrg$. Use the suggestions from the Help section to reduce the computed surcharge value to be no more than $allowsurchrg$.	199.91	
FW ST 04BDL	This is ($strucname$) downstream internal section. The left encroachment station is within the channel. The left encroachment station of $encstal$ is greater than the left bank station of $stalob$. The leftencroachment station should be the same as the left channel bank station.	213.255(Bridge-DN); 213.745(Bridge-DN)	
FW ST 04BUL	This is ($strucname$) upstream internal section. The left encroachment station is within the channel. The left encroachment station of $encstal$ is greater than the left bank station of $stalob$. The left encroachment station should be the same as the left channel bank station.	211.525(Bridge-UP); 213.255(Bridge-UP); 213.745(Bridge-UP)	
FW ST 04S2L	This is Section 2 of a hydraulic structure. The left encroachment station is within the channel. The left encroachment station of $encstal$ is greater than the left bank station of $stalob$. The left encroachment station should be the same as the left channel bank station.	211.51; 213.25; 213.74	
FW ST 04S2R	This is Section 2 of a hydraulic structure. The right encroachment station is within the channel. The right encroachment station of $encstar$ is less than the right bank station of $starob$. The right encroachment station should be the same as right channel bank station.	211.51; 213.25; 213.74	

FW ST 04S3L	This is Section 3 of a hydraulic structure. The Left Channel Bank station is outside the Left Abutment station. The left encroachment station is within the channel. The left encroachment station of $encstal$ is greater than the left bank station of $stalob$. The left encroachment station should be the same as the left channel bank station.	211.54; 213.26; 213.75	
FW ST 04S3R	This is Section 3 of a hydraulic structure. The right encroachment station is within the channel. The right encroachment station of $encstar$ is less than the right bank station of $starob$. The right encroachment station should be the same as the right channel bank station.	211.54; 213.26; 213.75	
FW ST 06BU	This is the Upstream Bridge Internal Section. Negative surcharge value of $negsurchrg$ occurs at this section. Use the suggestions from the Help section such that negative surcharge value will not be less than (-0.09) foot.	212.675(Bridge-UP)	
FW ST 08S3L	This is Section 3 of a hydraulic structure. The left encroachment station is outside the 1%-annual-chance floodplain. The left station effective of $ineffstal$ for the 1%-annual-chance profile is less than the left channel bank station of $stalob$. The 1%-annual-chance floodplain is outside the channel. The left encroachment station of $encstal$ is less than the left station effective of $ineffstal$ for the 1%-annual-chance profile. The Enc_Sta_L must be within the 1%-annual-chance floodplain.	207.49	
MP SW 01DK	The name of the stream is ($streamname$). The flow regime is subcritical or mixed flow. Starting water-surface elevations are computed from Known WSELs as the downstream boundary condition. Provide backup information on Known water-surface elevations or use same energy slope for all the profiles as the starting boundary condition and rerun the plan.		
NT RC 01L	All of the left overbank Manning's "n" values are less than 0.030. The "n" values for the overbank areas are usually larger than 0.030 (Chow, 1959, page 113). The "n" value(s) should be re-evaluated. Follow the procedure outlined to compute the overbank "n" value(s) for a natural floodplain (FHWA, 1984). Or follow the procedure outlined to compute the "n" values for urban development (USGS, 1977). Please submit supporting information on the evaluation of the "n" values.	207.485(Bridge-DN); 207.485(Bridge-UP); 207.49; 207.62; 207.71; 207.8; 207.9; 207.99; 208.1; 208.19; 208.29; 208.39; 208.48; 208.57; 208.67; 208.75; 208.85; 208.95; 209.04; 209.14; 209.24; 209.33; 209.42; 210.07	

NT RC 01R	All of the right overbank "n" values are less than 0.030. Manning's "n" values for the overbank areas are usually larger than 0.030 (Chow, 1959, page 113). The "n" value(s) should be re-evaluated. Follow the procedure on pages 17 and 54 of (FHWA, 1984) to compute the overbank "n" value for the natural floodplain. Or follow the procedure in (USGS, 1977) to compute the "n" value for urban development. Please submit supporting information on the evaluation of "n" value.	208.1	
NT RC 05	The left overbank n-value of $nlob$ and the right overbank n-value of $nrob$ are less than or equal to the channel n-value of nch. Follow the procedure in (FHWA, 1984) to compute the n-value for the natural floodplain and the channel. Or follow the procedure in (USGS, 1977) to compute the n-value for urban development. Please submit supporting information on the evaluation of n-values.	204.42; 204.53; 204.61; 204.68; 204.78; 204.87; 205.06; 205.15; 205.25; 205.75; 206.32; 206.41; 206.51; 206.6; 206.7; 206.79; 206.88; 206.97; 207.07; 207.62; 207.71; 208.1; 208.39; 209.04; 209.14; 209.24; 209.6; 210.07; 210.26; 210.46	
NT RS 02BDC	This is the Downstream Bridge Section (BRD). The channel n value of $chldn$ for the downstream internal bridge opening section is equal to or larger than the channel n value of $chl2$ at Section 2. Usually, the channel "n" value of the bridge opening section represents the area below the bridge deck and is less than the channel "n" value of Section 2. The "n" value for Section 2 represents the natural valley channel section roughness for the reach between Section 3 and Section 4. Please change the "n" value of the internal bridge opening section or provide supporting information for the use of the higher "n" value.	207.485(Bridge-DN); 209.535(Bridge-DN); 211.525(Bridge-DN); 213.255(Bridge-DN); 213.745(Bridge-DN)	
NT RS 02BUC	This is the Upstream Bridge Section (BRU). The channel n value of $chlup$ for the upstream internal bridge opening section is equal to or larger than the channel n value of $chl3$ at Section 3. Usually, the channel "n" value of the bridge opening section represents the area below the bridge deck and is less than the channel "n" value of Section 3. The "n" value for Section 3 represents the natural valley channel section roughness for the reach between Section 3 and Section 4. Please change the "n" value of the internal bridge opening section or provide supporting information for the use of a higher "n" value.	207.485(Bridge-UP); 209.535(Bridge-UP); 211.525(Bridge-UP); 212.675(Bridge-UP); 213.255(Bridge-UP); 213.745(Bridge-UP)	
NT TL 01S2	This is Section2 of a hydraulic structure. The contraction and expansion loss coefficients are cc and ce. They should be equal to 0.3 and 0.5, respectively, for typical structure sections according to page 5-8 of the HEC-RAS Hydraulic Reference Manual (HEC, 2010).	211.51; 212.67; 213.25; 213.74	

NT TL 01S3	This is Section3 of a hydraulic structure. The contraction and expansion loss coefficients are cc and ce. They should be equal to 0.3 and 0.5, respectively, for typical structure sections according to page 5-8 of the HEC-RAS Hydraulic Reference Manual (HEC, 2010).	211.54; 212.68; 213.26; 213.75	
NT TL 01S4	This is Section 4 of a hydraulic structure. The contraction and expansion loss coefficients are cc and ce. They should be equal to 0.3 and 0.5, respectively according to page 5-8 of the HEC-RAS Hydraulic Reference Manual (HEC, 2010)..	207.62; 209.6; 211.64; 212.74; 213.33; 213.85	
ST DT 01B	This is ($strucname$). 'Upstream Dist' of $distup$ in "Bridge Width Table" is less than the height of the bridge opening of $height$. This indicates that Section 3 may not be placed at the foot of the road embankment or wing walls and may not represent the natural valley cross section. Section 3 should be relocated or provide a statement that it represents the natural valley cross section. The HEC-RAS geometry file may need to be recreated using a GIS program. Lengths at Sections 4, 3 and 2 and 'Upstream Dist' should be adjusted.	209.535(Bridge-UP); 211.525(Bridge-UP); 213.255(Bridge-UP); 213.745(Bridge-UP)	
ST DT 02B	This is ($strucname$). 'Downstream Dist' of $distdn$ in 'Bridge Width Table' is less than the height of the bridge opening of $height$. This indicates that Section 2 may not be placed at the foot of the road embankment or wing walls and may not represent the natural valley cross section. Section 2 should be relocated or provide a statement that it represents the natural valley cross section. A HEC-RAS geometry file may need to be recreated using a GIS program. Lengths at Sections 3 and 2 should be adjusted.	209.535(Bridge-DN); 211.525(Bridge-DN); 213.255(Bridge-DN); 213.745(Bridge-DN)	
ST DT 03	This is ($Structure$) section. The Contraction Length is longer than the Expansion Length. Section 4 channel distance of $Length_Chnl4$ is longer than Section 2 channel distance of $Length_Chnl2$. Section 4 and Section 1 should be relocated. The HEC-RAS geometry file may need to be recreated using a GIS program.	207.485(Bridge-UP); 213.255(Bridge-UP); 213.745(Bridge-UP)	
ST GD 06	Left and/or right abutment station computed by the cHECk-RAS program is equal to zero. cHECk-RAS cannot evaluate this structure.	212.675(Bridge)	

ST IF 05S2L	This is Section 2 of a hydraulic structure. The left ineffective flow station is within the opening area of the structure. The left ineffective flow station of $ineffstal$ is greater than the downstream left abutment station of $abutstal$ at ($strucname$). The Left ineffective flow station should be adjusted.	207.48(Bridge); 211.51(Bridge); 212.67(Bridge)	
ST IF 05S2R	This is Section 2 of a hydraulic structure. The right ineffective flow station is within the opening area of the structure. The right ineffective flow station of $ineffstar$ is less than the upstream right abutment station of $abutstar$ at ($strucname$). The Right ineffective flow station should be adjusted.	211.51(Bridge)	
ST IF 05S3L	This is Section 3 of a hydraulic structure. The left ineffective flow station is within the opening area of the structure. The left ineffective flow station of $ineffstal$ is greater than the upstream left abutment station of $abutstal$ at ($strucname$). The Left ineffective flow station should be adjusted.	207.49(Bridge); 212.68(Bridge)	
ST IF 05S3R	This is Section 3 of a hydraulic structure. The right ineffective flow station is within the opening area of the structure. The right ineffective flow station of $ineffstar$ is less than the upstream right abutment station of $abutstar$ at ($strucname$). The Right ineffective flow station should be adjusted.	211.54(Bridge)	
ST IF 06S2L	This is Section 2. The selected profile is $profilename$. Low or pressure flow occurs at ($strucname$). The Dn_Dist of $dndist$ at the structure is less than the opening height of $openheight$ of the structure. The cHECk-RAS computed left ineffective flow station of $compineffstal$ is less than the input left ineffective flow station of $ineffstal$. The left ineffective flow station should be adjusted per the help instructions and the HEC-RAS manual.	209.53(Bridge); 211.51(Bridge); 213.25(Bridge); 213.74(Bridge)	

ST IF 06S2R	This is Section 2. The selected profile is $profilename$. Low or pressure flow occurs at ($strucname$). The Dn_Dist of $dndist$ at the structure is less than the opening height of $openheight$ of the structure. The cHECk-RAS computed right ineffective flow station of $compineffstar$ is greater than the input right ineffective flow station of $ineffstar$. The right ineffective flow station should be adjusted per the help instructions and the HEC-RAS manual.	209.53(Bridge); 211.51(Bridge); 213.25(Bridge); 213.74(Bridge)	
ST IF 06S3L	This is Section 3. The selected profile is $profilename$. Low or pressure flow occurs at ($strucname$). The Up_Dist of $updist$ at the structure is less than the opening height of $openheight$ of the structure. The cHECk-RAS computed left ineffective flow station of $compineffstal$ is less than the input left ineffective flow station of $ineffstal$. The left ineffective flow station should be adjusted per the help instructions and the HEC-RAS manual.	209.54(Bridge); 213.26(Bridge); 213.75(Bridge)	
ST IF 06S3R	This is Section 3. The selected profile is $profilename$. Low or pressure flow occurs at ($strucname$). The Up_Dist of $updist$ at the structure is less than the opening height of $openheight$ of the structure. The cHECk-RAS computed right ineffective flow station of $compineffstar$ is greater than the input right ineffective flow station of $ineffstar$. The right ineffective flow station should be adjusted per the help instructions and the HEC-RAS manual.	209.54(Bridge); 211.54(Bridge); 213.26(Bridge); 213.75(Bridge)	
ST IF 07S1L	This is Section 1. Left Ineffective flow option was considered at this section. However, it should be a fully expanded cross section. Ineffective flow stations and elevations should be cleared from this section, unless the areas beyond the ineffective flow stations are not within the flow path of the stream. This message should be ignored if this section is Section 3 of the downstream structure.	207.43(Bridge); 209.42(Bridge); 212.56(Bridge); 213.21(Bridge); 213.66(Bridge)	

ST IF 07S1R	This is Section 1. Right Ineffective flow option was considered at this section. However, it should be a fully expanded cross section. Ineffective flow stations and elevations should be cleared from this section, unless the areas beyond the ineffective flow stations are not within the flow path of the stream. This message should be ignored if this section is Section 3 of the downstream structure.	207.43(Bridge); 209.42(Bridge); 212.56(Bridge); 213.21(Bridge); 213.66(Bridge)	
ST IF 07S4L	This is Section 4. Left Ineffective flow option was considered at this section. However, it should be a fully expanded cross section. Ineffective flow stations and elevations should be cleared from this section, unless the areas beyond the ineffective flow stations are not within the flow path of the stream. This message should be ignored if this section is Section 2 of the upstream structure.	207.62(Bridge); 209.6(Bridge); 212.74(Bridge); 213.33(Bridge); 213.85(Bridge)	
ST IF 07S4R	This is Section 4. Right Ineffective flow option was considered at this section. However, it should be a fully expanded cross section. Ineffective flow stations and elevations should be cleared from this section, unless the areas beyond the ineffective flow stations are not within the flow path of the stream. This message should be ignored if this section is Section 2 of the upstream structure.	207.62(Bridge); 209.6(Bridge); 212.74(Bridge); 213.33(Bridge); 213.85(Bridge)	
XS CD 01	Critical Depth occurs at $assignedname$ flood. Flow Code will be "C". The Ineffective flow option is used. The Ineffective Flow elevation is equal to or higher than the Critical WSEL. Please investigate whether this selection is appropriate.	204.25; 207.07	
XS DC 01	Discharge decreases in the downstream direction for $assignedname$ flood. There are no lateral structures. Documentation of hydrologic analysis is required or provide explanation.	205.4; 213.21	
XS DT 01	Both the right overbank distance of rob and the left overbank distance of lob are longer than the channel distance of chl . Please review the creation of left overbank, channel and right overbank distances. The HEC-RAS geometry file may need to be recreated using a GIS program. Please resolve the differences among the distances.	207.8; 208.19; 208.29; 208.48; 209.33; 209.53; 211.71; 211.99	
XS IF 03L	The Left Ineffective Flow Station is within the channel. The Left Ineffective Flow Station of $ineffstal$ is greater than the LeftBankSta of $bankstal$. The Left Ineffective Flow Station or the LeftBankSta should be adjusted.	207.48; 209.53; 209.54	

XS IF 03R	The Right Ineffective Flow Station is within the channel. The Right Ineffective Flow Station of $ineffstar$ is less than the RightBankSta of $bankstar$. The Right Ineffective Flow Station or the RightBankSta should be adjusted.	206.51; 207.48; 207.49; 208.29; 208.39; 209.53; 209.54	
XS SW 01DK	The name of the stream is $streamname$. The flow regime is subcritical or mixed flow. Starting WSEL is computed from Known WSEL as the downstream boundary for $Assigned_Name$ flood. Provide backup information on Known WSEL or use energy slope as the downstream boundary.	199.82	

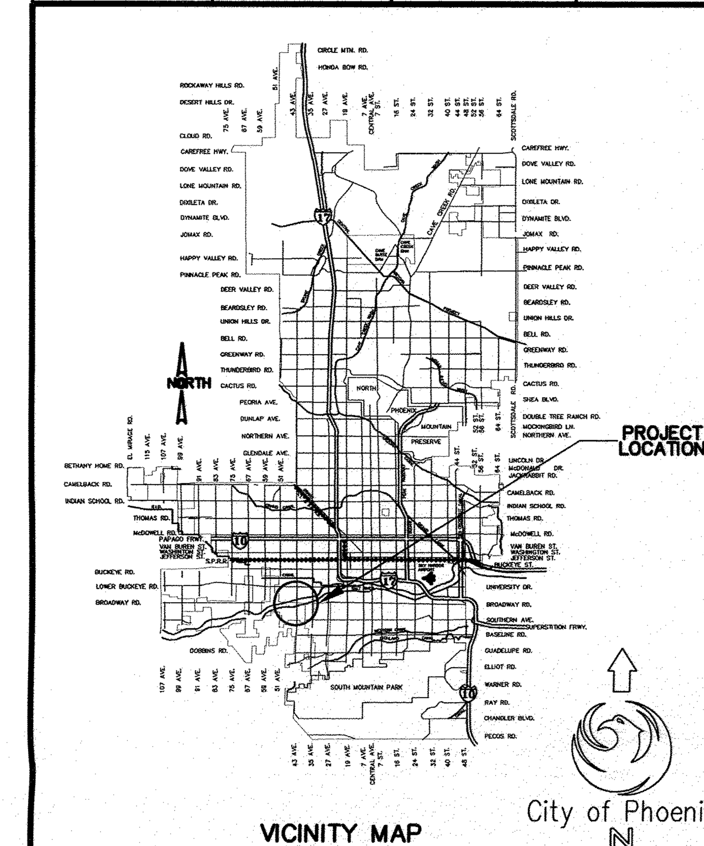
APPENDIX F

EXHIBITS

X-Section	FEMA Designation	Floodplain (NGVD-29)	Floodway (NGVD-29)	Floodplain (NAVD-88)	Floodway (NAVD-88)
207.16	Q	1007.51	1008.40	1009.61	1010.50
207.27		1007.15	1008.10	1009.25	1010.20
207.34		1007.56	1008.50	1009.66	1010.60
207.43		1007.86	1008.76	1009.96	1010.86
207.48		1008.38	1009.15	1010.48	1011.25
207.49	R	1009.47	1009.99	1011.57	1012.09
207.62		1010.08	1010.13	1012.18	1012.23
207.71		1010.85	1011.35	1012.95	1013.45
207.8		1012.20	1012.87	1014.30	1014.97
207.9	S	1013.80	1014.50	1015.90	1016.60
207.99		1014.47	1014.96	1016.57	1017.06
208.1		1015.82	1016.12	1017.92	1018.22
208.19		1016.79	1016.97	1018.89	1019.07
208.29		1017.77	1017.89	1019.87	1019.99
208.39	T	1018.93	1018.99	1021.03	1021.09
208.48		1019.79	1019.83	1021.89	1021.93
208.57		1020.28	1020.30	1022.38	1022.40
208.67		1022.73	1022.74	1024.83	1024.84
208.75		1024.13	1024.14	1026.23	1026.24
208.85		1024.64	1024.65	1026.74	1026.75
208.95		1025.59	1025.59	1027.69	1027.69
209.04		1026.13	1026.13	1028.23	1028.23
209.14		1026.71	1026.71	1028.81	1028.81
209.24		1027.66	1027.66	1029.76	1029.76
209.33	V	1028.74	1028.74	1030.84	1030.84
209.42		1028.89	1028.89	1030.99	1030.99

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
	ARIZ	—			

AZTEC



VICINITY MAP

THE COORDINATE GRID IS BASED ON THE NORTH AMERICAN DATUM OF 1983(NAD 83), CENTRAL ZONE OF ARIZONA STATE PLANE COORDINATE SYSTEM. ELEVATIONS ARE BASED UPON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD). THE CONVERSION FACTOR TO THE NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD 29) IS −2.1'.

LEGEND

- CROSS SECTION DESIGNATION
- 1474' Base Flood Elevation— Elevation in Feet
- PROPOSED FLOODPLAIN
- THALWEG, X−SEC STA 200+00
- PROPOSED FLOODWAY
- FEMA PROFILE BASELINE
- EFFECTIVE FEMA FLOODPLAIN
- EFFECTIVE FEMA FLOODWAY

602-263-1100
1-800-STAKE-IT

"PER CITY OF PHOENIX CITY CODE CHAPTER 3, SECTION 2−28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."

FLOODPLAIN DELINEATION

CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT
SALT RIVER
AVENIDA RIO SALADO/BROADWAY ROAD
PROPOSED WORK MAP
EXHIBIT 1

DR: SAH	DES: SAS	CK: MHM	SHEET NO.	TOTAL SHEETS	AS BUILT
DATE: 03/14	DATE: 03/14	DATE: 03/14	1	2	

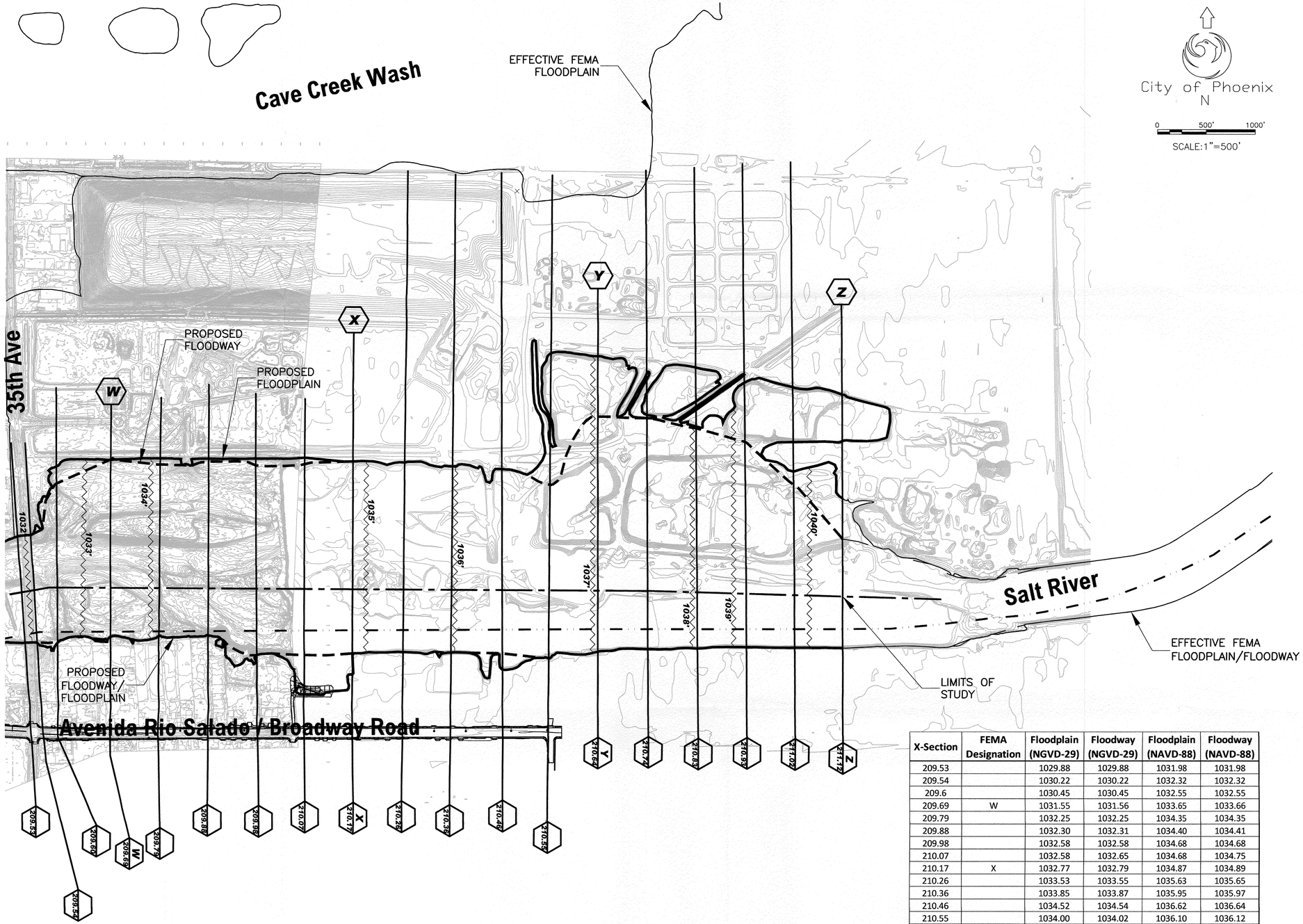
SCALE: 1"=500' HORIZONTAL, 1' CONTOUR INTERVALS

NO.	DESCRIPTION	REV BY	CKD BY	DATE
REVISION BY CITY OF PHOENIX				
REVISION BY CITY OF PHOENIX				
REVISION BY CITY OF PHOENIX				
REVISION BY CITY OF PHOENIX				

REVISION BY CITY OF PHOENIX					
NO.	DESCRIPTION	REV BY	CKD BY	DATE	

REVISION BY CITY OF PHOENIX					
NO.	DESCRIPTION	REV BY	CKD BY	DATE	

REVISION BY CITY OF PHOENIX					
NO.	DESCRIPTION	REV BY	CKD BY	DATE	



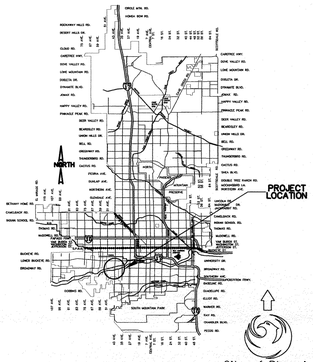
City of Phoenix
N

0 500' 1000'

SCALE:1"=500'

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
	ARIZ	AZ03007			

AZTEC



City of Phoenix
N

VICINITY MAP

THE COORDINATE GRID IS BASED ON THE NORTH AMERICAN DATUM OF 1983(NAD 83), CENTRAL ZONE OF ARIZONA STATE PLANE COORDINATE SYSTEM. ELEVATIONS ARE BASED UPON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD). THE CONVERSION FACTOR TO THE NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD 29) IS −2.1'.

LEGEND

- CROSS SECTION DESIGNATION
- 1474' Base Flood Elevation—Elevation in Feet
- PROPOSED FLOODPLAIN
- THALWEG, X−SEC STA 200+00
- PROPOSED FLOODWAY
- FEMA PROFILE BASELINE
- EFFECTIVE FEMA FLOODPLAIN
- EFFECTIVE FEMA FLOODWAY

X-Section	FEMA Designation	Floodplain (NGVD-29)	Floodway (NGVD-29)	Floodplain (NAVD-88)	Floodway (NAVD-88)
209.53		1029.88	1029.88	1031.98	1031.98
209.54		1030.22	1030.22	1032.32	1032.32
209.6		1030.45	1030.45	1032.55	1032.55
209.69	W	1031.55	1031.56	1033.65	1033.66
209.79		1032.25	1032.25	1034.35	1034.35
209.88		1032.30	1032.31	1034.40	1034.41
209.98		1032.58	1032.58	1034.68	1034.68
210.07		1032.58	1032.65	1034.68	1034.75
210.17	X	1032.77	1032.79	1034.87	1034.89
210.26		1033.53	1033.55	1035.63	1035.65
210.36		1033.85	1033.87	1035.95	1035.97
210.46		1034.52	1034.54	1036.62	1036.64
210.55		1034.00	1034.02	1036.10	1036.12
210.64	Y	1035.03	1035.05	1037.13	1037.15
210.74		1035.64	1035.66	1037.74	1037.76
210.83		1036.07	1036.08	1038.17	1038.18
210.93		1037.32	1037.34	1039.42	1039.44
211.02		1037.87	1037.86	1039.97	1039.96
211.12	Z	1039.46	1039.50	1041.56	1041.60

CALL TWO WORKING DAYS BEFORE YOU DIG
CALL FOR THE BLUE STAKES
602-263-1100
1-800-STAKE-IT
OUTSIDE MARICOPA COUNTY

"PER CITY OF PHOENIX CITY CODE CHAPTER 3, SECTION 2−28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."

FLOODPLAIN DELINEATION

CITY OF PHOENIX, ARIZONA

STREET TRANSPORTATION DEPARTMENT

SALT RIVER

AVENIDA RIO SALADO/BROADWAY ROAD

PROPOSED WORK MAP

EXHIBIT 1

DR: SAH	DES: SAS	CK: MHM	SHEET NO.	TOTAL SHEETS	AS BUILT
DATE: 03/14	DATE: 03/14	DATE: 03/14			
SCALE: 1"=500' HORIZONTAL 1' CONTOUR INTERVALS			2	2	

NOTES TO USERS

This map is for use in administering the Nation Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures.** Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Arizona State Plane Central zone (FIPSZONE 0202). The **horizontal datum** was NAD 83 HARN, GRS1980 spheroid. Differences in datum, spheroid, projection or State Plane zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988 (NAVD 88). These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. Map users wishing to obtain flood elevations referenced to the National Geodetic Vertical Datum of 1929 (NGVD 29) may use the following Maricopa County website application: http://www.fcd.maricopa.gov/Maps/gismaps/apps/gdacs/application/index.cfm

This web tool allows users to obtain point-specific datum conversion values by zooming in and hovering over a VERTCON checkbox on the layers menu on the *left side of the screen. The VERTCON grid referenced in this web application* was also used to convert existing flood elevations from NGVD 29 to NAVD 88.

To obtain current elevation, description, and/or location information for National Geodetic Survey bench marks shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242, or visit its website at http://www.ngs.noaa.gov. To obtain information about Geodetic Densification and Cadastral Survey bench marks produced by the Maricopa County Department of Transportation, please visit the Flood Control District of Maricopa County website at: http://www.fcd.maricopa.gov/Maps/gismaps/apps/gdacs/application/index.cfm.

Base map information shown on this FIRM was derived from multiple sources. Aerial imagery was provided in digital format by the Maricopa County Department of Public Works, Flood Control District. The imagery is dated October 2009 to November 2009. Additional National Agricultural Imagery Program (NAIP) imagery was provided by the Arizona State Land Department (ALRIS) and is dated 2007. The coordinate system used for the production of the digital FIRM is State Plane Arizona Central NAD83 HARN, International Feet.

The **profile base line** depicted on this map represents the hydraulic modeling baselines that match flood profiles in the FIS report. As a result of improved topographic data, the profile base line, in some cases, may deviate significantly from the channel centerline or appear outside the SFHA.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community, as well as a listing of the panels on which each community is located.

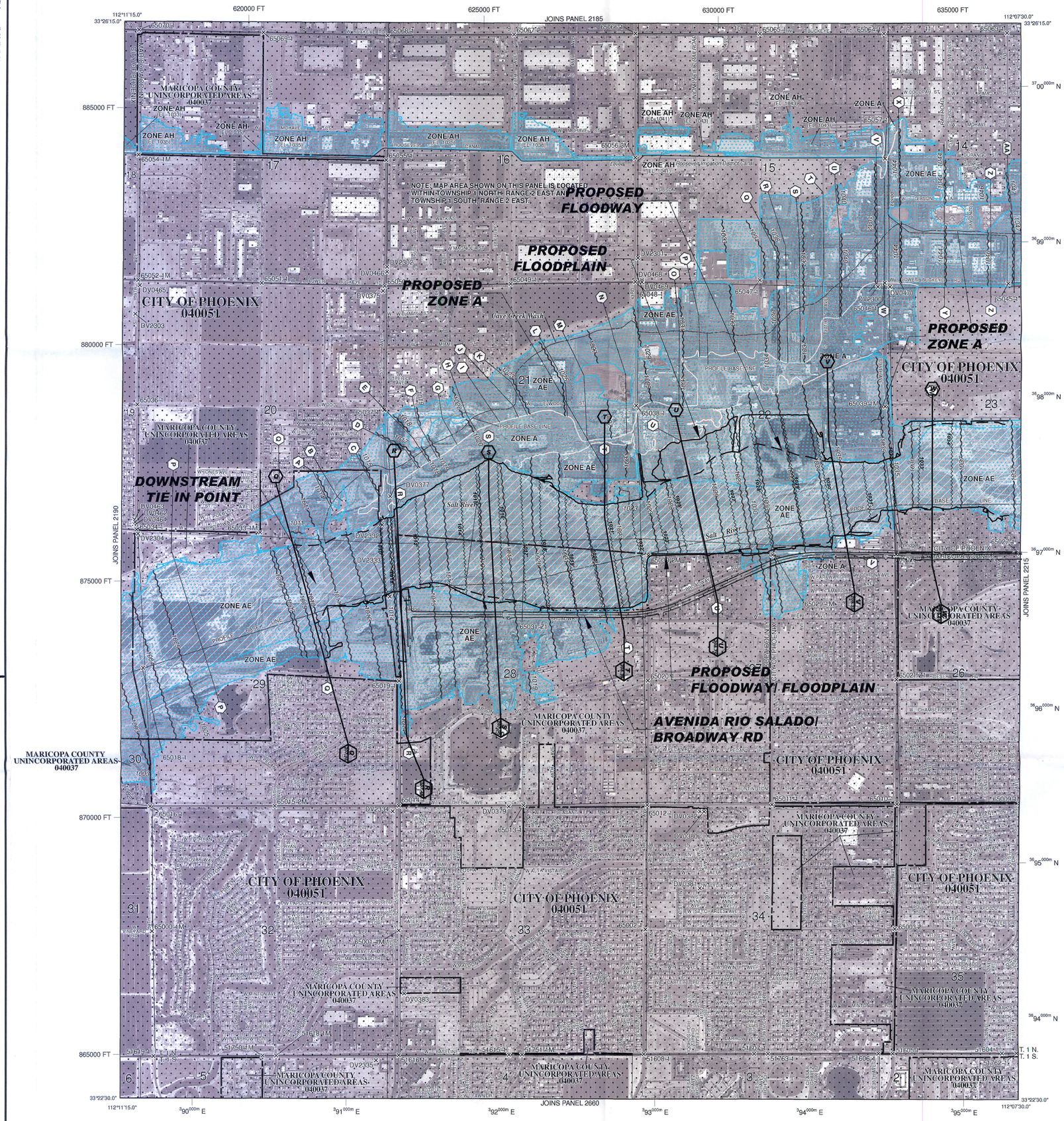
For Information on available products associated with this FIRM, visit the **FEMA Map Service Center (MSC)** website at http://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, or digital versions of this map. Many of these products can be ordered or obtained directly from the MSC website.

If you have **questions about this map,** how to order products, or the National Flood Insurance Program in general, please call the **FEMA Map Information eXchange (FMIX)** at **1-877-FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/.

LEGEND

- CROSS SECTION DESIGNATION (e.g. 24.300)
- 1474' Base Flood Elevation—Elevation in Feet
- PROPOSED FLOODPLAIN
- PROPOSED FLOODWAY

EXHIBIT 2
ANNOTATED FIRM PANEL



LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

- ZONE A — No Base Flood Elevations determined.
- ZONE AE — Base Flood Elevations determined.
- ZONE AH — Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
- ZONE AO — Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- ZONE AR — Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
- ZONE A99 — Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
- ZONE V — Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
- ZONE VE — Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

- ZONE X — Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

- ZONE X — Areas determined to be outside the 0.2% annual chance floodplain.
- ZONE D — Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- 1% annual chance floodplain boundary
- 0.2% annual chance floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- 513 — Base Flood Elevation line and value; elevation in feet*
- (EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988 (NAVD 88)

- A — A — Cross section line
- 23 — 23 — Transect line
- 97°07'30", 32°22'30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
- 4275 000m N — 1000-meter Universal Transverse Mercator grid ticks, zone 12
- 6000000 M — 5000-foot grid ticks: Arizona State Plane coordinate system, central zone (FIPSZONE 0202), Transverse Mercator
- DX5510 × — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5 — River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
April 15, 1988

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
September 4, 1991, September 30, 1995, July 19, 2001, September 30, 2005
October 16, 2013 - to add special flood hazard areas, to add roads and road names, to update corporate limits, to change base flood elevations, to change floodway, to advance suffix, to add floodway, to add base flood elevation, and to incorporate previously issued letters of map revision.

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 1000'
500 0 1000 2000 FEET
300 0 300 600 METERS

NFIP
NATIONAL FLOOD INSURANCE PROGRAM

PANEL 2195L

FIRM
FLOOD INSURANCE RATE MAP
MARICOPA COUNTY, ARIZONA
AND INCORPORATED AREAS

PANEL 2195 OF 4425
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
MARICOPA COUNTY	040037	2195	L
PHOENIX, CITY OF	040051	2195	L

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

MAP NUMBER
04013C2195L

MAP REVISED
OCTOBER 16, 2013

Federal Emergency Management Agency

NOTES TO USERS

This map is for use in administering the Nation Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Arizona State Plane Central zone (FIPSZONE 0202). The **horizontal datum** was NAD 83 HARN, GRS1980 spheroid. Differences in datum, spheroid, projection or State Plane zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988 (NAVD 88). These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. Map users wishing to obtain flood elevations referenced to the National Geodetic Vertical Datum of 1929 (NGVD 29) may use the following Maricopa County website application: http://www.fcd.maricopa.gov/Maps/gismaps/apps/gdacs/application/index.cfm

This web tool allows users to obtain point-specific datum conversion values by zooming in and hovering over a VERTCON checkbox on the layers menu on the left side of the screen. The VERTCON grid referenced in this web application was also used to convert existing flood elevations from NGVD 29 to NAVD 88.

To obtain current elevation, description, and/or location information for National Geodetic Survey bench marks shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242, or visit its website at http://www.ngs.noaa.gov. To obtain information about Geodetic Densification and Cadastral Survey bench marks produced by the Maricopa County Department of Transportation, please visit the Flood Control District of Maricopa County website at: http://www.fcd.maricopa.gov/Maps/gismaps/apps/gdacs/application/index.cfm.

Base map information shown on this FIRM was derived from multiple sources. Aerial imagery was provided in digital format by the Maricopa County Department of Public Works, Flood Control District. The imagery is dated October 2009 to November 2009. Additional National Agricultural Imagery Program (NAIP) imagery was provided by the Arizona State Land Department (ALRIS) and is dated 2007. The coordinate system used for the production of the digital FIRM is State Plane Arizona Central NAD83 HARN, International Feet.

The **profile base line** depicted on this map represents the hydraulic modeling baselines that match flood profiles in the FIS report. As a result of improved topographic data, the profile base line, in some cases, may deviate significantly from the channel centerline or appear outside the SFHA.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community, as well as a listing of the panels on which each community is located.

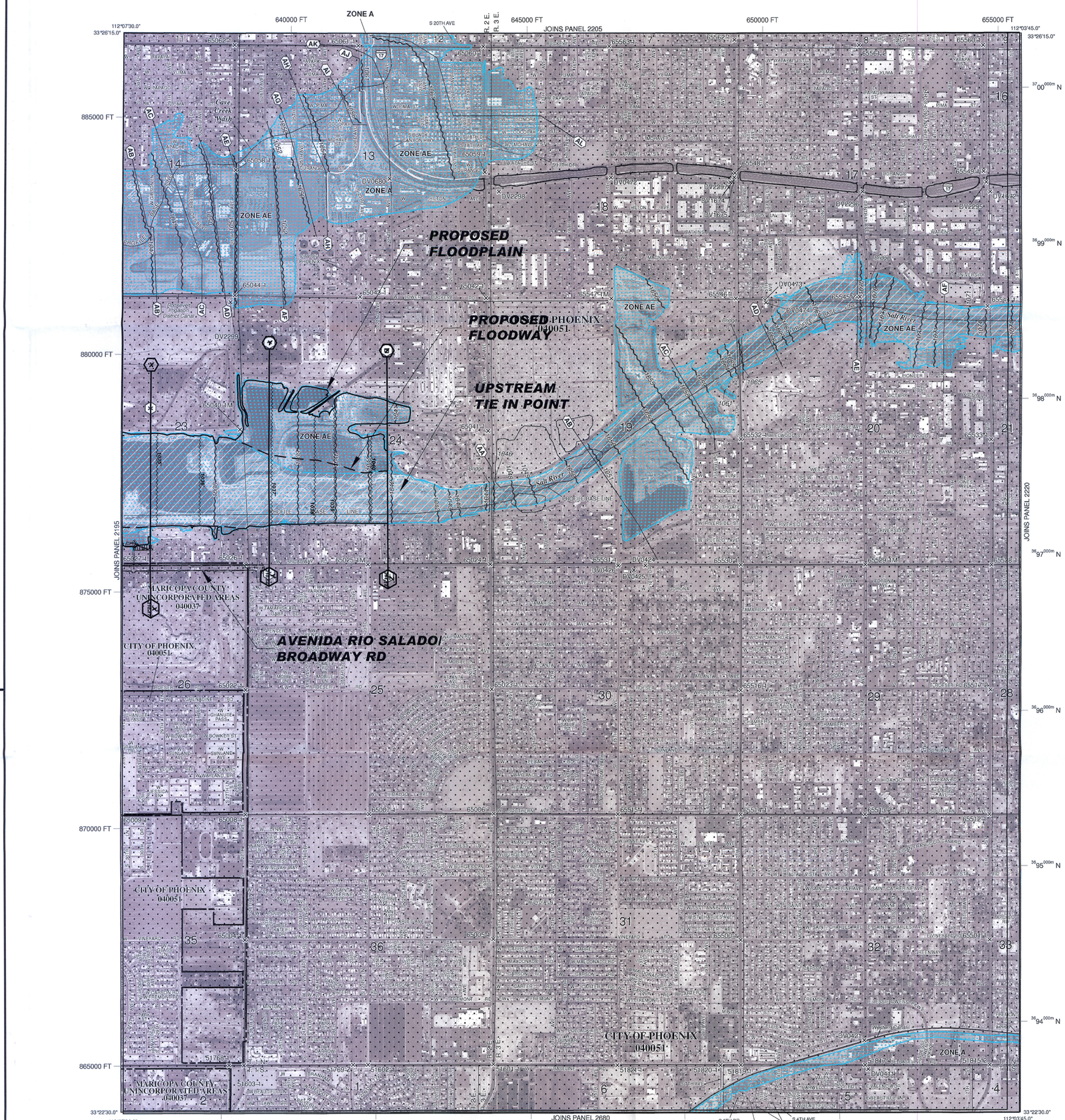
For Information on available products associated with this FIRM, visit the **FEMA Map Service Center (MSC)** website at http://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, or digital versions of this map. Many of these products can be ordered or obtained directly from the MSC website.

If you have **questions about this map,** how to order products, or the National Flood Insurance Program in general, please call the **FEMA Map Information eXchange (FMIX)** at **1-877-FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/.

LEGEND

- CROSS SECTION DESIGNATION (24.300)
- 1474' Base Flood Elevation—Elevation in Feet
- PROPOSED FLOODPLAIN
- PROPOSED FLOODWAY

EXHIBIT 2
ANNOTATED FIRM PANEL



LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- 1% annual chance floodplain boundary
- 0.2% annual chance floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- 513 Base Flood Elevation line and value; elevation in feet*
- (EL 987) Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988 (NAVD 88)

- A—A Cross section line
- 23—23 Transect line
- 97°07'30", 32°22'30" Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
- 4275000mN 1000-meter Universal Transverse Mercator grid ticks, zone 12
- 6000000 M 5000-foot grid ticks: Arizona State Plane coordinate system, central zone (FIPSZONE 0202), Transverse Mercator
- DX5510 Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5 River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
April 15, 1988

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
September 4, 1991, September 30, 1995
October 16, 2013 -to incorporate previously issued letters of map revision, to add floodway, to add base flood elevation, to advance suffix, to update corporate limits, to add special flood hazard areas, to change floodway, to change base flood elevations, and to add roads and road names.

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 1000'
500 0 1000 2000 FEET
300 0 300 600 METERS

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 2215L

FIRM
FLOOD INSURANCE RATE MAP
MARICOPA COUNTY, ARIZONA
AND INCORPORATED AREAS

PANEL 2215 OF 4425
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
MARICOPA COUNTY	040037	2215	L
PHOENIX, CITY OF	040051	2215	L

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

MAP NUMBER
04013C2215L

MAP REVISED
OCTOBER 16, 2013

Federal Emergency Management Agency

APPENDIX G

ESA DOCUMENTS

Avenida Río Salado/
Broadway Road
www.avenidariosalado.com

Biological Evaluation

CITY OF PHOENIX PROJECT NO. ST85100259
HPS-PHX-0(055)A
ADOT TRACS NO. 0000 MA PHX SS606 01C

August 28, 2009

Prepared for:

CITY OF PHOENIX

Prepared by:

AZTEC
4561 East McDowell Road
Phoenix, Arizona 85008

Biological Evaluation

FOR

Avenida Rio Salado/Broadway Road

HPS-PHX-0(055)A
ADOT TRACS Number: 0000 MA PHX SS606 01C
City of Phoenix Project Number: ST85100259

Prepared for:

City of Phoenix
Street Transportation Department
200 W. Washington Street
Phoenix, Arizona 85003

Prepared by:

AZTEC
4561 East McDowell Road
Phoenix, Arizona 85008
AZTEC Project Number: 05118

August 28, 2009

TABLE OF CONTENTS

1. Project Location 1
2. Project Description 1
3. Location Description 4
4. Species Identification 7
5. Species Evaluation 8
Bald Eagle 8
California Brown Pelican 9
California Least Tern 10
Southwestern Willow Flycatcher 11
Yuma Clapper Rail 13
Roundtail chub 15
6. Cumulative Effects 16
7. Mitigation Measures 17
8. Coordination and Personal Communication 18
9. Literature Cited 18
10. Additional Information 20
11. Signatures 20

LIST OF FIGURES

Figure 1. State Location Map 2
Figure 2. Project Vicinity Map 3
Figure 3. Riparian and Wetland Vegetation Within or Near Project Limits 6

LIST OF TABLES

Table 1. US Fish and Wildlife Service Species List for Maricopa County 7

LIST OF APPENDICES

Appendix A. Photographs
Appendix B. State Sensitive Species and Protected Native Plants
Appendix C. Agency Coordination

1. Project Location

The project is located in south-central Phoenix, Maricopa County, Arizona, in the vicinity of Broadway Road between 67th Avenue and 7th Street (Figures 1 and 2). The cadastral location description for the project includes Township 1 North, Range 2 East, portions of Sections 18–30; and Range 3 East, portions of Sections 19–21, and 28–30. The project would occur on lands currently owned by the City of Phoenix, Maricopa County Department of Transportation (MCDOT), Arizona Department of Transportation (ADOT), Arizona State Land Department (ASLD), and private land owners. Adjacent landowners include the City of Phoenix, Maricopa County, MCDOT, ADOT, ASLD, Arizona Department of Economic Security, US Bureau of Reclamation, US Bureau of Land Management, US Department of Veterans Affairs, US Department of Housing and Urban Development, private land owners, and small parcels where ownership is unknown.

Throughout this Biological Evaluation, the term "project limits" is used to represent the construction footprint (area of disturbance), while the term "project area" also includes surrounding lands, outside but adjacent to the project limits. The term "project vicinity" is used to denote a more expansive landscape context.

2. Project Description

The City of Phoenix proposes to widen and realign Broadway Road between 7th Street and 43rd Avenue and construct a new segment of Broadway Road between 43rd Avenue and 67th Avenue. At the western end, the project would connect to the proposed State Route (SR) 801 freeway and the SR 202 Loop. The purpose of the project is to increase the traffic capacity and improve the circulation for the current and projected traffic demands of motorists in this portion of Phoenix by providing improved transportation options for motorists traveling both locally and regionally. Currently, Broadway Road does not exist between 51st Avenue and 43rd Avenue. Broadway Road has a minimum of one travel lane in each direction from 43rd Avenue east to 19th Avenue, and includes a center left-turn lane beginning at 35th Avenue. From 19th Avenue east to 7th Street, Broadway Road expands to an urban arterial with three travel lanes in each direction and a center left-turn lane. The existing R/W or easement width varies from approximately 66 to 130 feet. The project scope of work includes the following:

<u>67th Avenue to 43rd Avenue</u>:

- Construct an eastbound on-ramp and a westbound off-ramp at the proposed SR 801 and SR 202 traffic interchange (TI)
- Construct a 6-lane arterial roadway (three travel lanes in each direction and a raised center median with break-outs and turn bays)
- Construct a new bridge structure across the Salt River between approximately 59th Avenue and 51st Avenue

<u>43rd Avenue to 17th Avenue</u>

- Widen the existing Broadway Road symmetrically from two lanes to six lanes (three travel lanes in each direction and a raised center median with break-outs and turn bays) except between 39th Avenue and 35th Avenue and at the 19th Avenue intersection, where the roadway will be widened to the north

<u>17th Avenue to 7th Street</u>:

- Make minor intersection improvements to include reconstruction of substandard radius returns and installing bus bays. At Central Avenue, Broadway Road would be widened to the south to eliminate an existing lane reduction in the eastbound direction

Additional construction features common to all three segments include: installing new street lighting where they are non-existent and relocating existing street lighting where necessary; modifying existing storm drain systems and constructing new storm drain systems with storm drain trunk line, catch basins, and lateral and outfall pipes

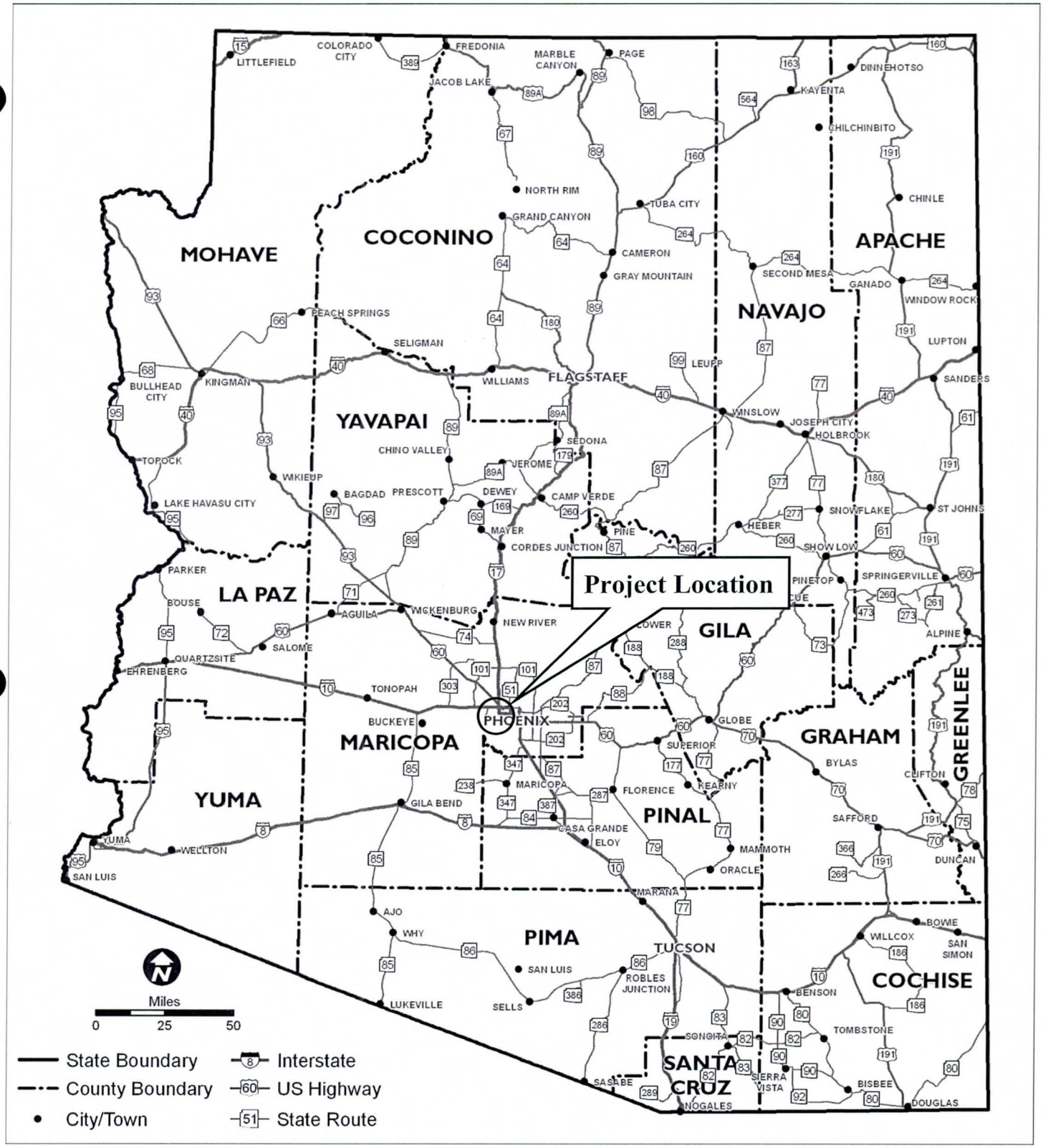


Figure 1. State Location Map

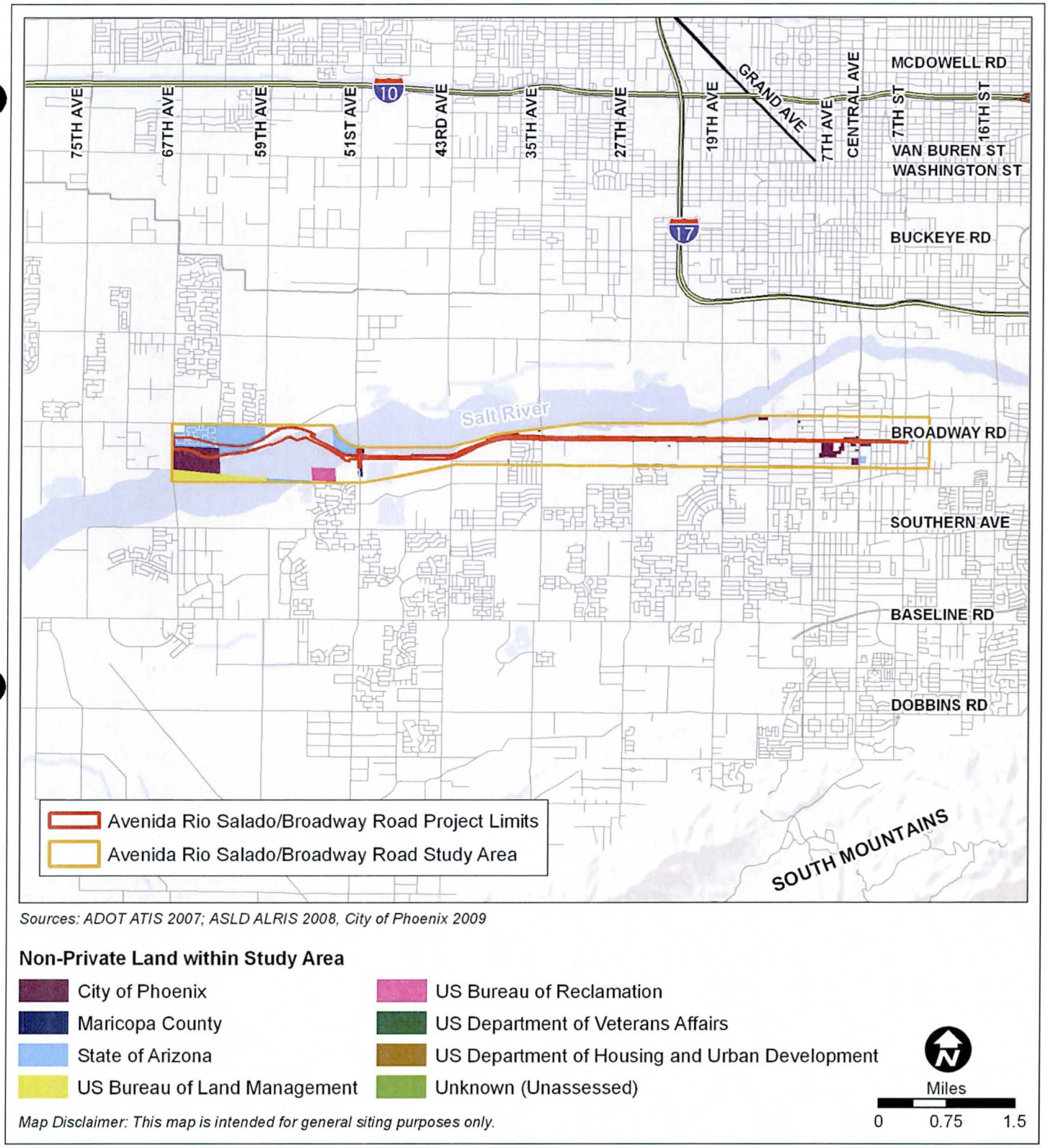


Figure 2. Project Vicinity Map

where non-existent; installing new traffic signals or relocating existing signals where needed; installing new pavement markings as needed; and landscaping.

New R/W, slope easements, and temporary construction easements (TCE) would be required, and these requirements would be finalized during final design. Most of the new R/W required would occur west of 43rd Avenue. The final R/W width would vary along the length of the project, but the typical width is expected to generally be 130 feet. All construction activities, including staging and stockpiling, are anticipated to occur within the existing or acquired City of Phoenix R/W, ADOT R/W, slope easements, and TCEs.

Construction of the bridge over the Salt River between 51st and 59th Avenue would require the construction of drilled shafts and piers within the Salt River channel. Temporary access roads would likely be constructed along each side of the bridge within the river channel when no surface water is present. Drainage pipes would be placed under the temporary construction access roads to provide conveyance of low river flows during the bridge construction activities. Once construction is completed, the temporary access roads would be removed, and temporary disturbance areas would be returned to pre-construction conditions to the extent possible.

Construction is expected to occur with conventional equipment; no blasting is anticipated to be required. At the time this document was completed, construction was expected to begin between 2013 and 2015. The project would be federally funded.

The project would involve impacts to waters of the US as regulated by the US Army Corps of Engineers (Corps); therefore, a Clean Water Act Section 404 permit is required. The type of permit would be determined during final design. Because the project would result in disturbance to more than 1.0 acre of land, an Arizona Pollution Discharge Elimination System permit and a Storm Water Pollution Prevention Plan (SWPPP) would be required.

3. Location Description

Site visits were conducted on July 24, 2008, and March 5, March 23, April 3, and April 11, 2009. See Appendix A for representative photographs of the project area. The project is located in the Phoenix metropolitan area within the Lower Colorado River Valley subdivision of the Sonoran Desertscrub Biotic Community (Turner and Brown 1994) at elevations ranging from 985 to 1,085 feet above mean sea level. Terrain is flat and geologic formations in the area consist of surficial deposits and young alluvium (Reynolds 1988). Soils in the project limits are of the Torrifluvents Association, consisting of floodplain alluvial sand, gravel, and cobble within the Salt River floodplain and lower alluvial fans (Hendricks 1985).

There are no perennial sources of water within the project limits. The Salt River is normally dry aside from water that collects in pits associated with material source operations. These pits hold water on a semi-permanent basis depending on surface and groundwater flow into these pits. There are no existing pits within the current project limits that support surface water on a semi-permanent or permanent basis.

Most of the project area east of 43rd Avenue is highly developed with little or no natural vegetation. West of 43rd Avenue, the project area largely consists of the Salt River channel and floodplain, adjacent agricultural fields, material source operations, and disturbed undeveloped parcels. Vegetation in the undeveloped parcels outside the Salt River channel and material source pits is dominated by a sparse assemblage of burro brush (*Hymenoclea salsola*), desertbroom (*Baccharis sarothroides*), goldenrod (*Isocoma* spp.), and Russian thistle (*Salsola iberica*), with the occasional mesquite (*Prosopis* spp.), paloverde (*Parkinsonia* spp.), or cottonwood tree (*Populus fremontii*). The Salt River bottom is largely sand and cobble and is routinely disturbed by human activity and occasional flooding. Vegetation in the river channel is dominated by low-lying shrubs such as burro brush and goldenrod, with several other species including brittlebush (*Encelia farinosa*), desertbroom,

wolfberry (*Lycium* spp.), and sweetbush (*Bebbia juncea*) scattered throughout. The channel periphery and depressed areas support an assemblage of weedy forbs and grasses with several brush and tree species, many of which are nonnative. This vegetation is dominated by tamarisk (*Tamarix* spp.) and mesquite trees along with non-native varieties of paloverde and acacia (*Acacia* spp.) trees that mostly occur as isolated individuals or small, short, linear patches. Wetter areas along the river can support giant reed (*Arundo donax*) and the occasional willow (*Salix gooddingii*) or cottonwood tree. Several material source pits occurring within and adjacent to the Salt River retain surface water that can support wetland-obligate aquatic vegetation such as cattail (*Typha* spp.).

The Salt River channel, agricultural fields, material source pits, and undeveloped parcels west of 43rd Avenue, while not high-quality wildlife habitat overall, do provide good habitat for some species. Species observed or expected to occur in these areas include small to mid-sized mammal species such as mice (*Peromyscus* spp.), cottontail rabbits (*Austragalus audubonii*), black-tailed jackrabbits (*Lepus californicus*), and coyotes (*Canis latrans*); reptiles such as gophersnakes (*Pituophis catenifer*) and sideblotched lizards (*Uta stansburiana*); and a variety of bird species, including typical urban species such as the house sparrow (*Passer domesticus*), house finch (*Carpodacus mexicanus*), mourning dove (*Zenaida macrura*), and great-tailed grackle (*Quiscalus mexicanus*), in addition to several species of blackbirds, wading birds such as the white-faced ibis (*Plegadis chihi*) and various egret species, and raptors such as northern harriers (*Circus cyaneus*) and burrowing owls (*Athene cunicularia*).

East of 43rd Avenue, the project area is more urbanized, with a mixture of commercial and industrial properties, residential properties, and undeveloped parcels. Vegetation in this portion is mostly limited to landscaped ornamentals such as fan palms (*Washingtonia* spp.) in developed areas, and weedy annuals, forbs, and grasses such as Russian thistle, cheeseweed (*Malva parviflora*), and bermuda grass (*Cynodon* spp.) in vacant lots. Wildlife is typically limited to the more urban adapted bird species (pigeons, sparrows, grackles), along with small mammals such as mice and cottontail rabbits, but may include raptors such as burrowing owls.

West of 43rd Avenue, the project would result in ground disturbance to approximately 111 acres of disturbed vacant parcels or material source operations, 17 acres of the Salt River channel, 17 acres of agricultural fields, and 3 acres of existing paved, gravel, or dirt roads. Construction would result in removal of most of the vegetation in these disturbance areas and may result in direct injury, death, or displacement to any wildlife present on the ground during construction, such as small mammals and reptiles, as well as the eggs or young of any nesting birds. Ground disturbance east of 43rd Avenue would be limited to highly disturbed areas adjacent to existing pavement that typically do not support native vegetation or wildlife habitat. General vegetation and wildlife species present in the project area are widespread and relatively common, and the project would not result in a substantial loss of vegetation or high-quality wildlife habitat.

A 4.0 acre patch of riparian vegetation dominated by tamarisk mixed with mesquite occurs in the Salt River channel within and adjacent to project limits northwest of the 43rd Avenue and Broadway Road intersection (Figure 3 and Appendix A, photograph 4). A 0.08 acre patch of dead or dying cattail is located at the eastern end of that patch approximately 200 feet north of the project limits. Although approximately 1.4 acres of the tamarisk/mesquite mixed vegetation would be cleared, none of the cattail would be removed. Based on existing conditions and the current project limits, no other cohesive patches of riparian vegetation would be impacted, and no cattail or other similar marsh type habitat would be impacted. However, the characteristics of the Salt River and material source pits change through time, sometimes rapidly and drastically due to flooding. Periodic flow events remove vegetation, allow vegetation to grow in new areas, or modify vegetation species composition. The locations and dimensions of material source pits also are affected by periodic flows, as well as constant changes in operations at the source pits. New pits are excavated and old pits are abandoned or filled in, which also influences the distribution, abundance, and species composition of vegetation along the Salt River.

Figure 3. Riparian and Wetland Vegetation Within or Near Project Limits

4. Species Identification

Table 1 is the US Fish and Wildlife Service (USFWS) list of threatened, endangered, proposed, candidate, and conservation agreement species potentially occurring in Maricopa County. A qualified biologist reviewed this list to determine species potentially occurring in the project area. Only the highlighted species are evaluated in detail. Justifications for excluding the remaining species from further evaluation are included in Table 1. This project and the resulting SWPPP will have no effect to those species excluded from further evaluation.

Table 1. US Fish and Wildlife Service Species List for Maricopa County

Species	Status[1]	Habitat Requirements	Exclusion Justification
Arizona cliffrose (*Purshia subintegra*)	ESA LE	Characteristic white soils of tertiary limestone lakebed deposits below 4,000 feet.	No suitable habitat. No tertiary limestone deposits. Outside species current distribution.
Bald eagle (*Haliaeetus leucocephalus*)	ESA LT	See Species Evaluation Section.	Evaluated in detail. See Species Evaluation Section.
California brown pelican (*Pelecanus occidentalis californicus*)	ESA LE PD	See Species Evaluation Section.	Evaluated in detail. See Species Evaluation Section.
California least tern (*Sterna antillarum browni*)	ESA LE	See Species Evaluation Section.	Evaluated in detail. See Species Evaluation Section.
Desert pupfish (*Cyprinodon macularius*)	ESA LE	Shallow springs, small streams, and marshes below 5,000 feet. Tolerates saline and warm water.	No suitable habitat. No appropriate water sources. Outside species current distribution.
Gila topminnow (*Poeciliopsis occidentalis occidentalis*)	ESA LE	Vegetated shallows of small streams, springs, and cienegas below 4,500 feet.	No suitable habitat. No appropriate water sources. Outside species current distribution.
Lesser long-nosed bat (*Leptonycteris curasoae yerbabuenae*)	ESA LE	From desertscrub to oak transition areas with agave and columnar cacti below 6,000 feet.	No suitable habitat. No suitable day roost sites. No columnar cactus or agave within project limits. Northern limit of the species range is primarily south of the metropolitan Phoenix area.
Mexican spotted owl (*Strix occidentalis lucida*)	ESA LT	Canyons and dense forests with multi-layered foliage structure from 4,100 to 9,000 feet.	No suitable habitat. No canyons or dense forest. Out of elevation range.
Razorback sucker (*Xyrauchen texanus*)	ESA LE	Slow-moving riverine, lacustrine, and backwater areas below 6,000 feet.	No suitable habitat. No appropriate water sources. Outside species current distribution.
Sonoran pronghorn Antilocapra Americana sonoriensis	ESA LE	Broad intermountain alluvial valleys with creosote-bursage and paloverde-mixed cacti associations	No suitable habitat. No broad (undeveloped) intermountain alluvial valleys. Outside species range.
Southwestern willow flycatcher (*Empidonax traillii extimus*)	ESA LE	See Species Evaluation Section.	Evaluated in detail. See Species Evaluation Section.
Woundfin (*Plagopterus Argentissimus*)	ESA LE	Runs and quiet waters adjacent to riffles over sand and gravel substrates below 4,500 feet. Experimental populations introduced in the Hassayampa River in July 2007.	No suitable habitat. No appropriate water sources. Outside species current distribution.

Table 1. US Fish and Wildlife Service Species List for Maricopa County			
Species	**Status[1]**	**Habitat Requirements**	**Exclusion Justification**
Yuma clapper rail (*Rallus longirostris yumanensis*)	ESA LE	See Species Evaluation Section.	Evaluated in detail. See Species Evaluation Section.
Roundtail chub (*Gila robusta*)	ESA C	See Species Evaluation Section.	Evaluated in detail. See Species Evaluation Section.
Yellow-billed cuckoo (*Coccyzus americanus*)	ESA C	Large blocks of dense riparian vegetation (cottonwood, willow, or tamarisk galleries) below 6,500 feet.	No suitable habitat. No large blocks of dense riparian vegetation.

[1] Status Definitions: ESA=Endangered Species Act, LE=Listed Endangered, LT=Listed Threatened, PD=Proposed Delisted, C=Candidate. *Source*: US Fish and Wildlife Service list of threatened, endangered, proposed, candidate, and conservation agreement species for Maricopa County, AZ. List Date: July 16, 2009 (http://www.fws.gov/arizonaes/).

5. Species Evaluation

Bald Eagle

Life History Information

The bald eagle is a large raptor, with adults weighing 6 to 14 pounds and having wingspans of 71 to 89 inches. Adult bald eagles have dark brown to blackish bodies and a white head and tail. In Arizona, wintering bald eagles can be seen statewide at elevations ranging from 460 to 7,390 feet in a variety of habitats and vegetation associations. Currently, bald eagles are known to breed in Arizona from the lower deserts (1,100 feet) to higher elevation woodlands (5,600 feet), with the majority of breeding sites occurring at lower elevations along the Salt and Verde rivers in the central part of the state (Arizona Game and Fish Department [AGFD] 2002b).

Although bald eagle habitat varies greatly throughout its range, the bald eagle's main diet is fish; thus, it generally prefers areas near large, permanent water sources such as rivers and lakes with tall trees or cliffs that serve as perches and provide unimpeded views (AGFD 2002b). Bald eagles will, however, feed on mammals, birds, and carrion (AGFD 2002b), including roadkill (USFWS 1999). Arizona bald eagles most often build their nests on cliff edges, rock pinnacles, and in cottonwood trees, but artificial structures, juniper (*Juniperus* spp.), pinyon pine (*Pinus edulis*), sycamore (*Platanus wrightii*), willow, and ponderosa pine (*Pinus ponderosa*), including snags, have also been used (Southwestern Bald Eagle Management Committee [SBEMC] 2008). Nests are usually built within a mile of the water source (SBEMC 2008), and cliff nests are often located within 600 feet of the water source (AGFD 2002b).

USFWS published a final rule delisting the bald eagle in the lower 48 States on July 9, 2007 (USFWS 2007a); however, due to a March 6, 2008 court order, bald eagles in the Sonoran Desert region of central Arizona are currently protected as a threatened species under the Endangered Species Act (ESA), with no critical habitat designated or proposed (USFWS 2008a). Threats include loss of habitat, reproductive impairment from pesticides and heavy metals, illegal shooting, trapping, food poisoning, collisions, and electrocution from power lines (AGFD 2002b).

Survey History

In Arizona, bald eagle nest surveys have been conducted annually by various state, tribal, and federal agencies since 1972, with the exception of 1976 and 1977. No known formal surveys have been conducted for bald eagles within or near the project area. Bald eagles are known to occasionally forage along the Salt River in the

Phoenix metro area, but they have not been regularly documented foraging or roosting in the project area. AGFD had no records of bald eagles within 2 miles of the project area (Appendix C).

Until recently, no bald eagle nesting attempts have been documented in the Phoenix metro area, though an active bald eagle nest was discovered in January 2009 near the Salt River approximately 11 miles east of the project area (K. Jacobson, AGFD, personal communication 2009). The nesting pair has been reported foraging along the Salt River as far west as Tempe Town Lake, located approximately 7 miles east of the project area.

Habitat Evaluation and Suitability

Although a few large trees capable of supporting a bald eagle nest are present, the project area currently does not provide suitable nesting habitat due to the lack of a dependable water source with an adequate fish population to support nesting bald eagles. However, eagles could use the Salt River in the project area for opportunistic foraging during flow events.

Analysis and Determination of Effects

Direct and Indirect Effects: Based on existing conditions in the project area and current project design, no direct or indirect effects are anticipated. The project would not impact bald eagle nesting habitat, though the proposed new bridge over the Salt River between 51st and 59th Avenues would result in alteration of marginal opportunistic foraging habitat along the Salt River. However, the bridge would not alter flow regimes in the Salt River such that bald eagle foraging would be affected. In addition, higher quality foraging habitat would remain available along the Salt River in the greater project vicinity, including the more undisturbed perennial reaches downstream of 91st Avenue, and more perennial reaches upstream (e.g., Tempe Town Lake).

Interrelated and Interdependent Actions: Interrelated actions are actions that are part of a larger action and depend on the larger action for their justification. Interdependent actions are actions having no independent utility apart from the proposed action. No interrelated or interdependent actions are associated with the proposed project. Sand and gravel operations and their associated disturbance of the Salt River bed would continue regardless of the Avenida Rio Salado/Broadway Road project, and are therefore not interrelated or interdependent activities.

Determination: The project will have no effect to the bald eagle or its habitat.

California Brown Pelican

Life History Information

The California brown pelican is a large (up to 8 lb), dark gray-brown water bird with webbed feet, a pouch underneath its long bill, and a wingspan of up to 7 feet. Adults have a white head and neck, a brownish-black breast and belly, and silver-grayish upper parts (USFWS 2001).

Although the brown pelican primarily occurs in coastal areas, with nesting typically occurring on islands, this species is occasionally found along Arizona's lakes and rivers, particularly on the Lower Colorado River as an annual post-breeding wanderer. Most Arizona records are along the Colorado River north to Lake Mead, the Gila River, and the Salt River and Salt River Lakes (including Tempe Town Lake), but stragglers have been sighted over much of the state. In Arizona, suitable habitat includes large rivers or large open bodies of water such as reservoirs and lakes that contain fish (USFWS 2001).

The California brown pelican was listed as endangered without critical habitat in 1970 as a result of reproductive failure caused by pesticides. A Recovery Plan was completed in 1983, and recovery is progressing as a result of reduced pesticide levels (USFWS 2001). A petition to delist the California brown pelican was

submitted to USFWS on behalf of the Endangered Species Recovery Council in December 2005. In February 2008, USFWS issued a proposed rule to delist the brown pelican, concluding that the species has recovered to the point where it no longer meets the definition of a threatened or endangered species (USFWS 2008b), however, the species is currently still listed as endangered.

Survey History

No known formal surveys have been conducted for brown pelicans within or near the project area. AGFD had no records of brown pelicans within 2 miles of the project area (Appendix C). The California brown pelican is known to be an occasional visitor to the Salt River in the Phoenix metropolitan area wherever surface water supporting an adequate fish population is present, and have been regularly documented foraging near Tempe Town Lake, approximately 7 miles east of the project area. Although nesting behavior has been documented along the Salt River in Tempe (USFWS 2007b), no known successful nesting attempts have been documented in Arizona.

Habitat Evaluation and Suitability

The project area currently does not provide suitable nesting habitat due to the lack of a dependable water source with an adequate fish population, though brown pelicans could use the Salt River in the area for opportunistic foraging during flow events.

Analysis and Determination of Effects

Direct and Indirect Effects: Based on existing conditions in the project area and current project design, no direct or indirect effects are anticipated. The project would not impact brown pelican nesting habitat, though the proposed new bridge over the Salt River between 51st and 59th Avenues would result in alteration of marginal opportunistic foraging habitat along the Salt River. However, the bridge would not alter flow regimes in the Salt River such that brown pelican foraging would be affected. In addition, higher quality foraging habitat would remain available along the Salt River in the greater project vicinity, including the more undisturbed perennial reaches downstream of 91st Avenue, and more perennial reaches upstream (e.g., Tempe Town Lake).

Interrelated and Interdependent Actions: As previously discussed, there are no interrelated or interdependent actions associated with the proposed project.

Determination: The project will have no effect to the California brown pelican, or its habitat.

California Least Tern

Life History Information

The California least tern is a shore bird measuring 8 to 9 inches in length with an 18 to 20 inch wingspan. It has a black crown and loral stripe on the head, a snowy white forehead and underside with gray upperparts. The outer two primary wing feathers are black, the bill is yellow or orange with a black tip, the tail is deeply forked, and legs are orange. Males have a wider dark loral stripe but sexes are mostly distinguished by behavior. Juveniles have extensive U- or V- shaped markings on gray to yellowish-brown shoulder feathers (USFWS 2009b).

This species occurs primarily in California coastal areas, but may occur in Arizona where habitat components are adequate for nesting or feeding such as large lakes, recharge basins, or wetland areas. Transient migrants have been documented in Mohave and Pima counties, and the first documented nest site for the species in Arizona occurred in June 2009 in Maricopa County (USFWS 2009b).

California least terns feed primarily on fish in shallow waters, but invertebrates are a secondary food source. These birds are generally gregarious, forming nesting colonies on barren to sparsely vegetated areas, with nests occurring in scrapes or shallow depressions on open sandy beaches, sandbars, gravel pits, or exposed flats along shorelines of inland rivers, lakes, reservoirs, and drainage systems below 2,000 feet (USFWS 2009b).

The California least tern was listed as endangered without critical habitat in 1970. A primary threat is nesting habitat loss or degradation associated with coastal or shoreline development and other human activities, which also increases their vulnerability to predation (USFWS 2009b).

Survey History

No known formal surveys have been conducted for California least terns within or near the project area. The California least tern is an occasional transient to Arizona, and AGFD had no records of this species within 2 miles of the project area (Appendix C). However, a nesting pair was discovered in Maricopa County in June, 2009 near the Glendale Municipal Airport, located approximately 10 miles northwest of the project area.

Habitat Evaluation and Suitability

The project limits currently do not provide suitable nesting habitat due to the lack of a dependable water source with a dependable fish population, though transient California least terns could use the Salt River in the project area for opportunistic foraging when surface water is present.

Analysis and Determination of Effects

Direct and Indirect Effects: Based on existing conditions in the project area, the current project design, and the fact that the nesting pair near the Glendale Municipal airport is the only record of this species nesting in Arizona, no direct or indirect effects are anticipated. The project would not impact California tern nesting habitat, though the proposed new bridge over the Salt River between 51st and 59th Avenues would result in alteration of marginal opportunistic foraging habitat along the Salt River. However, the bridge would not alter the Salt River such that tern foraging would be affected. In addition, higher quality foraging habitat would remain available along the Salt River in the greater project vicinity, including the more undisturbed perennial reaches downstream of 91st Avenue, and more perennial reaches upstream (e.g., Tempe Town Lake).

Interrelated and Interdependent Actions: As previously discussed, there are no interrelated or interdependent actions associated with the proposed project.

Determination: The project will have no effect to the California least tern, or its habitat.

Southwestern Willow Flycatcher

Life History Information

The Southwestern willow flycatcher (SWFL) is a small songbird that winters in Central America but migrates north to breed in the US and Canada during summer. Four subspecies of willow flycatcher are generally recognized in North America, with each subspecies occupying distinctly different breeding ranges and varying slightly in color and morphology. SWFL is a riparian obligate, breeding only in dense riparian vegetation near a permanent or semipermanent source of water or saturated soil throughout the Southwestern US below 8,530 feet (Sogge et al. 1997).

Historical breeding habitat in Arizona was typically mature cottonwood-willow riparian forest at lower elevations or willow thickets at higher elevations (Sogge et al. 1997). Both of these types of riparian habitat are now mostly degraded or destroyed throughout the state due to the damming and diverting of rivers and streams; groundwater pumping; overgrazing by cattle; recreational vehicle use; and invasion by tamarisk (also known as

salt cedar), an exotic tree species that has replaced most historical cottonwood-willow riparian forests in the Southwest. However, SWFL populations at lower elevations have adapted to breed in dense stands of tamarisk. As the name suggests, flycatchers predominantly consume flies and other flying insects (USFWS 2002).

Generally, suitable breeding habitat for SWFL includes dense riparian vegetation that can be organized into three broad types: native plant species dominated, exotic plant species dominated, and native-exotic mixed. Common native plant species include willow, seepwillow (*Baccharis salicifolia*), boxelder (*Acer negundo*), buttonbush (*Cephalanthus occidentalis* var. *californicus*), cottonwood, and arrowweed (*Pluchea sericea*). Common exotic plant species include tamarisk and Russian olive (*Elaeagnus angustifolia*). Suitable native-dominated breeding habitat can be found at most elevations within the SWFL breeding elevation range, whereas potentially suitable exotic-dominated or native-exotic mixed breeding habitats are generally found at elevations below 3,940 feet (USFWS 2002).

The riparian patches used by breeding flycatchers vary in size, shape, configuration, and species composition. However, lower elevation patches used for breeding in Arizona are generally at least 0.25 acre in size, 4 meters tall, 10 meters wide, exhibit at least 80 percent canopy cover; and exhibit dense foliage or branches in the patch interior, often within the 4 meters above ground. Slow-moving or still surface water and/or saturated soil is also generally present near breeding habitat during wet or normal precipitation years (USFWS 2002).

Some riparian habitat types are not suitable breeding habitat for willow flycatchers. Cottonwood-willow gallery forests without an understory, or tamarisk stands that are sparse or uniformly short (<4 meters) do not provide suitable breeding habitat. In addition, isolated, linear riparian "stringers" less than approximately 10 meters wide do not provide breeding habitat, although aggregations of these stringers can be used for nesting, particularly at higher elevations. During migration, willow flycatchers may occur in non-riparian habitats and/or riparian habitats unsuitable for breeding. Although not used for breeding, these migration habitats may be important resources affecting local and regional flycatcher productivity and survival (USFWS 2002).

SWFL typically arrives at breeding sites in Arizona from late April to mid-June. Males generally arrive before females and claim territories by constantly singing at favored perches within the territory. When females arrive, pairs are established and mating begins. Females build a tightly woven, open-cup nest, typically in tight forks of the substrate tree. Average clutch size is three eggs, which generally hatch in 12 days. Fledging usually occurs in 12 days, and fledglings are dependent on parents for food for approximately 2 weeks. Only the female incubates the eggs, although both parents feed nestlings and fledglings. SWFL typically begin their southward migration in early August (USFWS 2002).

SWFL was listed as endangered in 1995, a Recovery Plan was drafted in 2002, and final critical habitat was designated in October 2005. In Arizona, critical habitat was designated along sections of the Big Sandy, Gila, Little Colorado, San Pedro, Verde, and Virgin rivers, and the Salt River and Tonto Creek arms of Roosevelt Lake (USFWS 2005). There is no critical habitat for SWFL within or near the project area.

Threats to this species include riparian habitat loss and degradation due to invasion by nonnative species; livestock grazing; and water management practices such as damming or diverting water, flood control, channelization, and bank protection. Another threat to SWFL is brood parasitism by the brown-headed cowbird. Female cowbirds, rather than raise their own young, lay eggs in the nests of other species, which incubate the cowbird eggs and raise the cowbird young. Cowbird eggs hatch after a relatively short incubation period; thus cowbird nestlings often out-compete the host's own young for parental care by developing quicker. In addition, cowbirds may also act as predators by removing eggs from the host species' nest (USFWS 2002).

Survey History

No known formal surveys have been conducted for SWFL within or near the project area. AGFD had no records of SWFL within 2 miles of the project area (Appendix C). Surveys of many known and possible SWFL breeding sites have been conducted on a yearly basis since 1993, and the results of those surveys were compiled by AGFD in a summary report (Ellis et al. 2008). The nearest known surveys were conducted along the Gila and Salt rivers near their confluence approximately 5 miles west of the project area, where suitable habitat is present. Surveys were conducted 1994–2003 and one migrant SWFL was detected in 1996 (Ellis et al. 2008).

Habitat Evaluation and Suitability

The only cohesive patch of riparian vegetation of sufficient height within or near the project limits is located in the Salt River channel north of 43rd Avenue (Figure 3 and Appendix A, photograph 3). This isolated linear patch is approximately 4.0 acres in size and primarily dominated by a mixture of tamarisk and mesquite, but does not exhibit at least 80 percent canopy cover or uniformly dense foliage/branches in the understory, and is therefore unsuitable.

Analysis and Determination of Effects

Direct and Indirect Effects: Based on existing conditions in the project area and current project design, no direct or indirect effects are anticipated. The project would not result in disturbance to suitable Southwestern willow flycatcher habitat because no suitable habitat currently occurs within or adjacent to the project limits.

Interrelated and Interdependent Actions: As previously discussed, there are no interrelated or interdependent actions associated with the proposed project.

Determination: The project will have no effect to the Southwestern willow flycatcher or its habitat.

Yuma Clapper Rail

Life History Information

The Yuma clapper rail is a marsh bird distinguished by its short tail, long legs, downcurved beak, short rounded wings, rust-colored breast, and bold, vertical gray and white bars on the flanks. The species inhabits freshwater or brackish marshes under 4,500 feet with a wet substrate that supports cattail and bulrush stands of moderate to high density adjacent to shorelines. In Arizona, Yuma clapper rails are known to occur along the lower Colorado River and tributaries (AGFD 2001).

This species generally prefers the tallest (greater than 0.4m tall), densest patches of cattail or giant bulrush, mostly within the Lower Colorado subdivision of the Sonoran Desertscrub Biotic Community (AGFD 2001). Patches of common reed stands bordered or mixed with cattail are also occasionally occupied (AGFD 2001). Although some deeper water sites are used by YUCR, water depth in occupied patches is usually less than 30.0 cm. Within these marshes, the interface between water, soil, and vegetation seems more important than overall plant species composition, as YUCR territories are typically distributed along the zone where standing water gives way to saturated soil within the patch (AGFD 2001).

Most over-wintering Yuma clapper rails are found in heavily overgrown, relatively narrow wet sloughs and backwaters, typically with more varied vegetation cover consisting of mature herbaceous and woody vegetation. Smaller cattail or bulrush-choked sloughs seem to be important during the breeding season. A mosaic of variable-aged stands of emergent vegetation interspersed with shallow open-water pools is necessary for year-round clapper rail habitat. As soon as the marsh ground surface dries out, clapper rails move elsewhere. Factors

influencing habitat suitability include scour from flooding, channel shifting, changes in riverbed elevation, and volume and rate of water flow (AGFD 2001).

At the time of the 1983 Recovery Plan, 68 percent of rails located were in habitat areas larger than 19.8 acres (USFWS 1983). However, it has since been determined that the basic habitat requirements can be met within a very small area of wet marsh, often no larger than 0.29 acre. Estimates of home range size vary from 0.24 to 106.25 acres, depending on location, breeding status, and method of determination; and average home range size is 18.53 acres (AGFD 2001).

The rail prefers crustaceans, including amphipods, but also eats fish, frogs, clams, spiders, grasshoppers, crickets, dragonflies, aquatic plant seeds, and bird eggs. On the lower Colorado River in the United States, introduced crayfish are the most common food consumed by rails. It has been suggested that crayfish abundance may be a limiting factor in determining present-day rail occurrence, and seasonal shifts in crayfish habitat use may influence rail habitat use (AGFD 2001).

Yuma clapper rails generally establish breeding territories in March and April and are highly territorial during the breeding season. Pairs are monogamous breeders and both sexes assist in territory defense, incubation, and brood-rearing. Nests are usually built in dense vegetation near water's edge or, on a small high site within the marsh. Nests are often elevated over vegetation or soil, usually consist of dry sedges and grasses, and often have runways leading to them that the pair habitually use (AGFD 2001).

The Yuma clapper rail was listed by the USFWS as endangered without critical habitat in 1967 in the United States only. Threats to this species include habitat destruction, primarily due to stream channelization; drying and flooding of marshes resulting from water flow management on the lower Colorado River; contaminants from agricultural tailwaters; vulnerability to heavy metal poisoning; and vulnerability of prey base, including crayfish, to pesticides (AGFD 2001).

Survey History

Since 1992, marsh bird surveys have been conducted annually along the Salt and Gila rivers by personnel from various agencies and organizations (Burger 2009). Not all suitable habitat along the Salt River is surveyed, and there are past records of clapper rails occurring along the Salt River well east of the project area. However, several sites with suitable habitat well upstream of the project area have been surveyed in recent years with no detections, and the results of the annual surveys indicate that the current eastern range limit of clapper rails along the Salt River is approximately five miles southwest of the project area near 107th Avenue. AGFD had no records of clapper rails within 2 miles of the project area (Appendix C).

Habitat Evaluation and Suitability

No marsh habitat consisting of cattail or bulrush currently occurs within the project limits. A small patch dead or dying cattail occurs approximately 200 feet north of the project limits in the Salt River channel northwest of the intersection of 43rd Avenue and Broadway Road (Figure 3 and Appendix A, photograph 4). However, this patch is too small (0.08 acre) and is of insufficient height and density for clapper rail use. In addition, the water source that supported the initial growth of the cattail (an outfall pipe) appears to be unstable.

Analysis and Determination of Effects

Direct and Indirect Effects: Based on existing conditions in the project area and current project design, no direct or indirect effects are anticipated. The project would not result in disturbance to suitable clapper rail habitat because no suitable habitat currently occurs within or adjacent to the project limits.

Interrelated and Interdependent Actions: As previously discussed, there are no interrelated or interdependent actions associated with the proposed project.

Determination: The project will have no effect to the Yuma clapper rail or its habitat.

Roundtail chub

Life History Information

The roundtail chub is a fish that may reach up to 19.3 inches in length with a deep, compressed body, flat head, slender caudal peduncle, and a large forked caudal fin. The species is typically dark olive-gray above with silver sides. Breeding males may develop red orange coloration on the cheeks and paired fin bases (AGFD 2002a).

These fish occupy cool to warm water, mid-elevation streams, rivers, and reservoirs at elevations ranging from 1,210 to 7,220 feet, but are more commonly found between 2,000 and 5,000 feet. Typical adult microhabitat consists of pools up to 6.6 feet deep adjacent to swifter riffles and runs, with cover usually present that may consist of large boulders, tree rootwads, submerged large trees and branches, undercut cliff walls, or deep water. Smaller individuals generally occupy shallower, lower velocity water adjacent to overhead bank cover (AGFD 2002a).

In Arizona, this species was historically found in the mainstems and tributaries of the Black, Colorado (though likely only as a transient), Little Colorado, Bill Williams, Gila, San Francisco, San Carlos, San Pedro, Salt, Verde, White, and Zuni Rivers in Arizona (USFWS 2009a). Current range in the lower Colorado River basin in Arizona and New Mexico appears to be 18 to 32 percent of the historic range (USFWS 2009a). Roundtail chub are known to occur in the mainstem and tributaries of the Verde and Salt Rivers, as well as canals in the Phoenix metropolitan area that are fed by the lower Salt and Verde Rivers (USFWS 2009a).

The roundtail chub does not currently receive federal ESA protection, but the Lower Colorado River Basin population is a candidate for listing as a threatened or endangered under the federal ESA (USFWS 2009a). Roundtail chub populations have declined due to a combination of habitat loss and degradation related to dams, diversions, groundwater pumping, mining, recreation, livestock grazing, and competition and predation from non-native fishes. In the Colorado River basin, roundtail chub occupy only 18% of their historical range (USFWS 2009c).

Survey History

No known formal surveys have been conducted for roundtail chub within or near the project area. AGFD had no records of this species within 2 miles of the project area (Appendix C), though a Heritage Data Management System distribution map (AGFD 2004) indicates one record of roundtail chub in the general project vicinity. Because this species is known to occur in the lower Salt River east of the Phoenix metro area, roundtail chub could be flushed into the project area from farther upstream during dam releases and/or precipitation events.

Habitat Evaluation and Suitability

Due to the lack of adequate water sources, the project limits do not support sustained suitable habitat for the roundtail chub, though the Salt River may provide temporary habitat during flows due to upstream dam releases and precipitation events. However, as the water recedes, any fish stranded in the river bed would die without available refugia.

Analysis and Determination of Impacts

Direct and Indirect Impacts: Based on existing conditions in the project area and current project design, no direct or indirect impacts are anticipated. The Salt River and the remainder of the project limits currently do not

support any adequate sources of surface water. Construction of the proposed new bridge over the Salt River between 51st and 59th Avenues would result in disturbance to the river bed, though construction activities would not occur in-stream while surface flow is present (i.e., when roundtail chub could be present), and the completed bridge would not alter the Salt River channel such that it would be rendered unsuitable for roundtail chub use.

Interrelated and Interdependent Actions: As previously discussed, there are no interrelated or interdependent actions associated with the proposed project.

Determination: The project has no impact on the roundtail chub.

6. Cumulative Effects

Cumulative effects are those effects of future nonfederal (state, tribal, local, or private) actions that are reasonably certain to occur in the project area. Future federal actions unrelated to the proposed project are not considered cumulative because they require separate consultation pursuant to Section 7 of the ESA (USFWS and NMFS 1998). No known future federal actions related to the proposed project are currently planned in the project area.

Lands in the project area are primarily City of Phoenix and privately owned lands. Future City of Phoenix activities reasonably certain to occur in the project area include the Rio Salado Oeste Project (in conjunction with the Corps and the Flood Control District of Maricopa County), improvements to various streets in the project area, and roadway maintenance activities. The Rio Salado Oeste Project involves Salt River habitat restoration as well as recreation development and redevelopment of areas along the Salt River between 19th Avenue and 83rd Avenue. A Final Environmental Impact Statement (EIS) for the Rio Salado Oeste Project was published by the Corps in September 2006. The EIS documents consultation with the USFWS resulting in a determination of "may affect, but not likely to adversely affect" for threatened and endangered species. The EIS also documents the 404(r) exemption from the Clean Water Act, as based on the 404(b)(1) evaluation in the EIS. Because the Rio Salado Oeste Project is an unrelated federal action subject to separate Section 7 consultation, it is not considered cumulative to the Avenida Rio Salado/Broadway Road project.

The City of Phoenix is also undertaking an environmental restoration project, the Rio Salado Oeste Low Flow Channel Project, within the boundaries, but in advance of the Rio Salado Oeste Project. The Rio Salado Oeste Low Flow Channel Project is located in the Salt River from approximately 37th Avenue to 51st Avenue. The City of Phoenix is in the process of obtaining a Clean Water Act Section 404 permit for this project (Corps File Number: SPL-2003-1303-SDM) and the Corps has determined "no effect" to threatened and endangered species for this project. Because the Rio Salado Oeste Low Flow Channel Project is an unrelated federal action subject to separate Section 7 consultation, it is not considered cumulative to the Avenida Rio Salado/Broadway Road project.

City of Phoenix street improvement projects and roadway maintenance activities in the area have low potential to affect ESA-protected species unless work within the Salt River is required. However, as previously discussed, work within the Salt River would likely require a federal Clean Water Act permit, and would therefore not be considered cumulative to the Avenida Rio Salado/Broadway Road project

Other projects reasonably certain to occur in the area are ADOT projects currently anticipated to receive federal funding, which would require separate Section 7 consultation and are therefore not considered cumulative. Future activities on private lands in the area include additional development and continuing material source pit operation. Development in the area occurring outside the Salt River has low potential to affect ESA-protected species. Most material source operations in the area occur in or adjacent to the Salt River, and some would

require federal Clean Water Act permits subject to Section 7 consultation. Other actions on private lands may also require federal permits (such as a Clean Water Act permit), and thus would be subject to Section 7 consultation. When no federal lands, funds, or permits are involved, the section 10(a)(1)(B) permit process can be used to ensure ESA compliance.

7. Mitigation Measures

Based on existing conditions in the project area and current project design, the project will have no effect to any species protected by the federal Endangered Species Act (ESA). However, the project is tentatively scheduled for construction between 2013 and 2015, and due to the dynamic nature of the Salt River and associated vegetation, potential habitat for threatened and endangered species could develop prior to construction. Therefore, to ensure project compliance with ESA, the following measure shall be adhered to:

- During final design and prior to construction, the City of Phoenix, in coordination with the Arizona Department of Transportation and the Federal Highway Administration, shall reevaluate potential project-related effects to species protected by the federal Endangered Species Act and ensure that any necessary Section 7 consultation is completed.

To avoid or minimize potential impacts to other special-status species (See Appendix B), the following measures shall be adhered to:

- The contractor shall employ a biologist to complete a pre-construction survey for burrowing owls 96 hours prior to construction in all suitable habitat that will be disturbed. The biologist shall possess a burrowing owl survey protocol training certificate issued by the Arizona Game and Fish Department. Upon completion of the surveys, the contractor shall contact the City of Phoenix Street Transportation Department Environmental Section (602.534.6030) and the Office of Environmental Programs 404 Program Coordinator (602.534.1775) to provide survey results.

- If any burrowing owls are located during preconstruction surveys or construction, the contractor shall employ a biologist holding a permit from the US Fish & Wildlife Service to relocate burrowing owls from the project area, as appropriate.

- If burrowing owls or active burrows are identified during the pre-construction surveys or during construction, no construction activities shall take place within 100 feet of any active burrow until the owls are relocated.

- Pre-construction surveys for active migratory bird nests shall be conducted in all suitable habitat that would be disturbed and measures shall be implemented to avoid disturbing any active nests found. If impacts to active nests cannot be avoided, a permitted wildlife rehabilitator shall be contacted to remove active nests, eggs, or nestlings prior to construction.

Protected native plants within the construction limits would be impacted by the project (See Appendix B). Therefore, the following measure shall be adhered to:

- The City of Phoenix shall notify the Arizona Department of Agriculture at least 60 days prior to the start of construction so that the Arizona Department of Agriculture can determine the disposition of these plants.

Construction activities have the potential to introduce and/or spread invasive species (See Appendix B). Therefore, the following measures shall be adhered to:

- All disturbed soils that would not be landscaped or otherwise permanently stabilized by construction shall be seeded using species native to the project vicinity.

- To prevent the introduction of invasive species seeds, all construction equipment shall be washed at the contractor's storage facility prior to entering the construction site.

- To prevent invasive species seeds from leaving the construction site, the contractor shall inspect all construction equipment and remove all attached plant/vegetation debris prior to allowing that equipment to leave the construction site.

8. Coordination and Personal Communication

As part of the environmental review process, a letter describing the project was sent to the following agencies to inform them of the project and to solicit comments.

Arizona Game and Fish Department
Rebecca Davidson, Project Evaluation Program Supervisor, Phoenix Office

US Bureau of Reclamation
Carol Erwin, Phoenix Area Manager

US Bureau of Land Management
Tim Hughes, Biologist, Hassayampa Field Office

US Fish and Wildlife Service
Steve Spangle, Field Supervisor, Arizona Ecological Services Field Office
Debra Bills, Assistant Field Supervisor for Central Arizona, Arizona Ecological Services Field Office

AGFD responded with a letter identifying special status species documented as occurring in the project area, as well as general concerns regarding the project (See Appendices B and C). None of the other agencies responded to the letters. Agency correspondence regarding biological resources is included in Appendix C.

Jamie Driscoll (AGFD Arizona Bald Eagle Management Coordinator), Kenneth Jacobson (AGFD Arizona Bald Eagle Management Biologist) and Troy Corman (AGFD Non-Game Avian Biologist) were contacted by phone for species-specific information.

9. Literature Cited

Arizona Game and Fish Department. 2001. *Rallus longirostris yumanensis*. Unpublished abstract compiled and edited by Heritage Data Management System, Arizona Game and Fish Department, Phoenix.

———. 2002a. *Gila robusta*. Unpublished abstract compiled and edited by Heritage Data Management System, Arizona Game and Fish Department, Phoenix.

———. 2002b. *Haliaeetus leucocephalus*. Unpublished abstract compiled and edited by Heritage Data Management System, Arizona Game and Fish Department, Phoenix.

———. 2004. *Gila robusta* occurrences in Arizona. Unpublished map produced by Heritage Data Management System, Arizona Game and Fish Department, Phoenix.

Burger, W.M. 2009. 2009 Yuma Clapper Rail and Multi-species Marsh Bird Surveys in AGFD Region VI. Letter Report to Leslie Fitzpatrick, US Fish and Wildlife Service Arizona Ecological Services Species Lead for Yuma Clapper Rail. June 23, 2009.

Ellis, L. A., D. M. Weddle, S. D. Stump, H. C. English, and A. E. Graber. 2008. Southwestern willow flycatcher final survey and monitoring report. Arizona Game and Fish Department, Research Technical Guidance Bulletin #10, Phoenix, Arizona, USA.

Hendricks, D.M. 1985. Arizona Soils. A Centennial Publication of the College of Agriculture, University of Arizona, Tucson.

Reynolds, S.J., 1988. Geologic Map of Arizona: Arizona Geological Survey Map 26, scale 1:1,000,000.

Sogge, M.K., R.M. Marshall, S.J. Sferra, and T.J. Tibbets. 1997. *A Southwestern Willow Flycatcher Natural History Summary and Survey Protocol.* Technical Report NPS/NAUCPRS/NRTR-97/12. US Department of the Interior, National Park Service and the Colorado Plateau Research Station at Northern Arizona University, Flagstaff.

Southwestern Bald Eagle Management Committee. 2008. Website (http://www.usbr.gov/lc/Phoenix/SWBEMC/index.html). Accessed September 30, 2008.

Turner, R. M. and D. E. Brown. 1994. "Sonoran Desertscrub" in *Biotic Communities: Southwestern United States and Northwestern Mexico* (edited by D. E. Brown). University of Utah Press, Salt Lake City, Nevada. Section 154.1, pp. 181–192.

US Fish and Wildlife Service. 1983. Yuma Clapper Rail Recovery Plan. US Fish and Wildlife Service, Albuquerque, New Mexico.

———. 1999. "Endangered and Threatened Wildlife and Plants; Proposed Rule To Remove the Bald Eagle in the Lower 48 States From the List of Endangered and Threatened Wildlife; Proposed Rule". Federal Register 64(128):36454–36464.

———. 2001. California Brown Pelican (*Pelecanus occidentalis californicus*). General Species Information. Arizona Ecological Services Field Office website (http://www.fws.gov/arizonaes/Brown_Pelican.htm). Accessed September 30, 2008.

———. 2002. Southwestern Willow Flycatcher Recovery Plan. Albuquerque, New Mexico.

———. 2005. "Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the Southwestern Willow Flycatcher (*Empidonax traillii extimus*); Final Rule". *Federal Register* 70(201):60886–61009.

———. 2007a. "Endangered and Threatened Wildlife and Plants; Removing the Bald Eagle in the Lower 48 States From the List of Endangered and Threatened Wildlife. Federal Register 72(130):37346–37372.

———. 2007b. Biological Opinion for Phoenix Sky Harbor International Airport Critical Zone – Emergency. AESO/SE 22410-FE-2007-0405, November 29, 2007.

———. 2008a. "Endangered and Threatened Wildlife and Plants; Listing the Potential Sonoran Desert Bald Eagle Distinct Population Segment as Threatened Under the Endangered Species Act". Federal Register 73(85):23966–23970.

———. 2008b. "Endangered and Threatened Wildlife and Plants; 12-Month Petition Finding and Proposed Rule To Remove the Brown Pelican (*Pelecanus occidentalis*) From the Federal List of Endangered and Threatened Wildlife; Proposed Rule". Federal Register 73(34):9407–9433.

———. 2009a. "Endangered and Threatened Wildlife and Plants; 12-Month Finding on a Petition To List a Distinct Population Segment of the Roundtail Chub (*Gila robusta*) in the Lower Colorado River Basin". Federal Register 74(128): 32352–32387

———. 2009b. California Least Tern (*Sterna antillarum browni*). Unpublished general species information abstract compiled and edited by the US Fish and Wildlife Service Arizona Ecological Services Field Office.

———. 2009c. Roundtail Chub (*Gila robusta*). Unpublished general species information abstract compiled and edited by the US Fish and Wildlife Service Arizona Ecological Services Field Office.

US Fish and Wildlife Service and National Marine Fisheries Service. 1998. Consultation Handbook. *Procedures for Conducting Consultation and Conference Activities Under Section 7 of the Endangered Species Act*.

10. Additional Information

Additional photographs and field notes are on file at the Phoenix office of AZTEC.

11. Signatures

Prepared by : Date: 8/28/09

Mike Myers
Senior Wildlife Biologist
AZTEC

APPENDIX A

Photographs

Photograph 1. View of the uplands north of the Salt River at 59th Avenue.

Photograph 2. View to the east of the Salt River channel at 67th Avenue.

Photograph 3. View to the west of south bank of Salt River near 43rd Avenue.

Photograph 4. Cattail patch in front of giant reeds in Salt River channel north of 43rd Avenue.

APPENDIX B

State Sensitive Species and Protected Native Plants

I. State Sensitive Species

The AGFD On-line Environmental Review Tool was accessed to determine special status species known to occur in the project vicinity. As part of the environmental review process, a letter describing the project was sent to AGFD to inform the agency of the project and to solicit comments. The letter requested any specific concerns, suggestions or recommendations the agency may have related to the project.

The AGFD On-line Environmental Review Tool included a list of special status species known to occur within the project vicinity, and AGFD returned a response letter (Appendix C). The agency did not include any specific concerns related to this project. The AGFD response letter and review tool identified records for the following species within 3 miles of the project area:

- Western burrowing owl (*Athene cunicularia hypugaea*)
- Black-bellied whistling duck (*Dendrocygna autumnalis*)
- Sonoran desert tortoise (*Gopherus agassizii*)
- A bat colony

Western burrowing owl

Suitable foraging and nesting habitat for the Western burrowing owl occurs in the project area within and adjacent to the agricultural fields, earthen ditches, vacant lots, Salt River banks, and other open areas. The project would result in disturbance to suitable Western burrowing owl nesting and foraging habitat, and could result in injury or death to burrowing owl adults, eggs, or young if active burrows are present in the project limits during construction. Because the Western burrowing owl is widespread and relatively common in the Phoenix area in appropriate habitat, and the project would not result in a substantial loss of suitable habitat, the proposed project may impact individual Western burrowing owls, but is not likely to result in a trend toward federal listing or loss of viability. To avoid or minimize potential impacts to the Western burrowing owl, the following measures shall be adhered to:

- Pre-construction surveys for the Western burrowing owl shall be conducted in all suitable habitat that would be disturbed in accordance with Arizona Game and Fish Department's Burrowing Owl Clearance Guidance for Landowners or currently accepted protocol.
- If any burrowing owls are located during pre-construction surveys or construction, a biologist holding a permit from the US Fish and Wildlife Service to relocate burrowing owls shall be contacted to relocate those burrowing owls from the project area, as appropriate.
- If burrowing owls or active burrows are identified during the pre-construction surveys or during construction, no construction activities shall take place within 100 feet of any active burrow until the owls are relocated.

Sonoran Desert tortoise

Due to the developed, disturbed nature of the ARS project area and its location relative to natural desert habitat, the area does not contain suitable habitat for the Sonoran desert tortoise. AGFD occurrence records for Sonoran desert tortoise identified by the On-line Environmental Review Tool are likely from the foothills of the South Mountain Park, located approximately three miles to the south. Due to the lack of suitable habitat for this species in the project area, the proposed project has no impact on the Sonoran desert tortoise, and no mitigation is necessary.

Black-bellied whistling duck

Potential foraging and nesting habitat exists for the Black-bellied whistling duck along the Salt River in the project area, particularly in vegetation associated with material source pits and agricultural fields. The project would result in disturbance to potential Black-bellied whistling duck nesting and foraging habitat, and could result in injury or death to whistling duck eggs or young if active nests are present in the construction limits

during construction. Because the project would not result in a substantial loss of habitat, the proposed project may impact individual Black-bellied whistling ducks, but is not likely to result in a trend toward federal listing or loss of viability. The mitigation measure identified in the Migratory Birds section below will avoid or minimize potential impacts to the Black-bellied whistling duck.

A bat colony

Although the project area does not contain caves, abandoned mines, or larger box culverts or bridge structures that could support a large colony of bats, smaller drainage structures in the project area could be used as temporary roosts for small numbers of bats, and the project area provides foraging habitat for a variety of bat species. Because bat species occurring in the project area are widespread and relatively common, the proposed project may impact individual bats, but is not likely to result in a trend toward federal listing or loss of viability for any bat species.

The AGFD On-line Environmental Review Tool included a standard response for treatment and management of invasive species. This project will incorporate the following measures in order to prevent the introduction and spread of invasive species.

- To prevent the introduction of invasive species, all earth-moving and hauling equipment shall be washed at the contractor's storage facility prior to entering the construction site.
- To prevent invasive species seeds from leaving the site, the contractor shall inspect all construction equipment and remove all attached plant/vegetation debris prior to leaving the construction site.
- All disturbed soils that will not be landscaped or otherwise permanently stabilized by construction shall be seeded using species native to the project vicinity.

The AGFD On-line Environmental Review Tool included a standard response regarding local or regional needs of wildlife movement, connectivity, access to habitat needs and design of various roadway features such as culverts and bridges. ADOT, AGFD, the Federal Highway Administration and representatives from other agencies have completed a Wildlife Linkages Assessment to address important wildlife movement corridors in Arizona. The project area has been identified as a wildlife linkage zone (Gila/Salt River Corridor – Granite Reef Dam). ADOT is planning to continue working with partners involved, including AGFD, and has considered wildlife movement patterns during the planning of this project. In addition, ADOT has provided an opportunity for the AGFD to be involved with the design of roadway features and has considered AGFD recommendations during project development.

II. Protected Native Plants

Protected native plants (mesquite trees) were observed in the project limits during several site visits. Therefore, the following measure shall be adhered to:

- The City of Phoenix shall notify the Arizona Department of Agriculture at least 60 days prior to the start of construction so that the Arizona Department of Agriculture can determine the disposition of these plants.

III. Migratory Birds

Most bird species occurring in the project area are protected by the federal Migratory Bird Treaty Act. No nests or signs of nesting activity were observed during site visits, though birds are likely nesting in the area, particularly in vegetation occurring along the Salt River and adjacent undeveloped lands. To avoid or minimize potential impacts to migratory birds, the following measures shall be adhered to:

- Pre-construction surveys for active migratory bird nests shall be conducted in all suitable habitat that would be disturbed and measures shall be implemented to avoid disturbing any active nests found. If impacts to active nests cannot be avoided, a permitted wildlife rehabilitator shall be contacted to remove active nests, eggs, or nestlings prior to construction.

APPENDIX C

Agency Coordination

City of Phoenix
STREET TRANSPORTATION DEPARTMENT
DESIGN AND CONSTRUCTION MANAGEMENT DIVISION

February 1, 2006

Ms. Rebecca Davidson
Project Evaluation Program Supervisor
Arizona Game and Fish Department
2221 W. Greenway Road
Phoenix, AZ 85023-4312

Re: Project Name: Avenida Rio Salado
City of Phoenix Project Number: ST85100259
Federal Project Number: HPS-PHX-0(055)A
ADOT TRACS Number: 0000 MA PHX SS606 03D

Dear Ms. Davidson:

With the current and predicted population growth in the Southwest portion of the Phoenix Metropolitan area, the City of Phoenix has identified the need for more transportation options for local and regional traffic. As a result, the City of Phoenix has initiated a study to evaluate the design and construction of a new roadway in the southwest portion of the Valley. The current study limits are from approximately 59th Avenue on the west to 7th Street on the east, the south bank of the Salt River on the north and Southern Avenue on the south. In addition, the study would consider the connection to the proposed Arizona Department of Transportation South Mountain and I-10 Reliever Freeway projects. The cadastral locations for the project area includes Township 1 North, Range 2 East and portions of Sections 19, 20 and 30; Township 1 North, Range 3 East and portions of Sections 20, 22, 23, 24, 25, 27, 28, 29. See the attached Project Area Maps for more detailed information on the study area.

This letter serves both as a request for a list of potential species occurring in the proposed project area and as our agency's invitation to review the proposed project based upon the scope of work outlined above. If you or others in your agency have any specific concerns, suggestions or recommendations pertaining to this specific proposed project, please let us know. This can include information on wildlife movement, habitat issues, or seasonal concerns, to name a few.

The consulting firm of AZTEC is under contract with the City of Phoenix to perform a design concept study and environmental analysis for this proposed project. If you have questions, comments or would like additional information please contact Mr. Karim Dada via mail at AZTEC, 4561 E. McDowell Road, Phoenix, AZ 85008; via phone at 602.458.9265; via email at kdada@aztec.us; or via fax at 602.454.0403.

We would appreciate your response by **March 3, 2006**. Thank you for your time and assistance.

Sincerely,

Syd Anderson
Engineering Supervisor
Street Transportation Department
City of Phoenix

Enclosures (2)

C: Belinda Cummings/Ray Dovalina/Ed Checkley, City of Phoenix
Bill Vachon/Steve Thomas, Federal Highway Administration
Adrian Rodriguez, Arizona Department of Transportation
Rob Lemke/Karim Dada, AZTEC

THE STATE OF ARIZONA
GAME AND FISH DEPARTMENT
2221 WEST GREENWAY ROAD, PHOENIX, AZ 85023-4399
(602) 942-3000 • AZGFD.GOV

GOVERNOR
JANET NAPOLITANO
COMMISSIONERS
CHAIRMAN, W. HAYS GILSTRAP, PHOENIX
JOE MELTON, YUMA
MICHAEL M. GOLIGHTLY, FLAGSTAFF
WILLIAM H. MCLEAN, GOLD CANYON
BOB HERNBRODE, TUCSON
DIRECTOR
DUANE L. SHROUFE
DEPUTY DIRECTOR
STEVE K. FERRELL

2006 FEB 10 PM 1:50
CITY OF PHOENIX
STREET TRANSPORTATION
DOM DIVISION

February 9, 2006

Mr. Syd Anderson
Street Transportation Department
City of Phoenix
1034 E. Madison St.
Phoenix, AZ 85034

Re: Special Status Species Information for **Township 1 North, Range 2 East, Sections 20, 22-25, 27-29 and Township 1 North, Range 3 East, Sections 19, 20, and 30; Proposed Roadway. ADOT Project: Avenida Rio Salado, Project # HPS-PHX-0(055)A, TRACS #0000 MA PHX SS606 03D. Phoenix Project #ST85100259.**

Dear Mr. Anderson:

The Arizona Game and Fish Department (Department) has reviewed your request, dated February 1, 2006, regarding special status species information associated with the above-referenced project area. The Department's Heritage Data Management System (HDMS) has been accessed and current records show that the special status species listed on the attachment have been documented as occurring in the project vicinity (3-mile buffer). In addition this project does not occur in the vicinity of any Proposed or Designated Critical Habitats.

The Department's HDMS data are not intended to include potential distribution of special status species. Arizona is large and diverse with plants, animals, and environmental conditions that are ever changing. Consequently, many areas may contain species that biologists do not know about or species previously noted in a particular area may no longer occur there. Not all of Arizona has been surveyed for special status species, and surveys that have been conducted have varied greatly in scope and intensity.

Making available this information does not substitute for the Department's review of project proposals, and should not decrease our opportunities to review and evaluate new project proposals and sites. The Department is also concerned about other resource values, such as other wildlife, including game species, and wildlife-related recreation. The Department would appreciate the opportunity to provide an evaluation of impacts to wildlife or wildlife habitats associated with project activities occurring in the subject area, when specific details become available.

CITY OF PHOENIX
STREET TRANSPORTATION
DCM DIVISION

2006 FEB 10 PM 1:50

If you have any questions regarding this letter, please contact me at (602) 789-3618. General status information, county and watershed distribution lists and abstracts for some special status species are also available on our web site at http://www.azgfd.gov/hdms.

Sincerely,

Sabra Schwartz

Sabra S. Schwartz
Heritage Data Management System, Program Supervisor

SSS:ss

cc: Rebecca Davidson, Project Evaluation Program Supervisor
Russ Haughey, Habitat Program Manager, Region VI

AGFD# M06-02075551

Special Status Species within 3 Miles of T1N,R2E Sec 20, 22-25, 27-29; T1N,R3E Sec 19, 20, 30

Arizona Game and Fish Department, Heritage Data Management System
February 9, 2006

Scientific Name	Common Name	ESA	USFS	BLM	State
Athene cunicularia hypugaea	Western Burrowing Owl	SC		S	
Gopherus agassizii (Sonoran Population)	Sonoran Desert Tortoise	SC			WSC

No Critical Habitats in project area. AGFD #M06-02075551, Proposed New Roadway Study, City of Phoenix. ADOT Project: Avenida Rio Salado, Project #HPS-PHX-0(055)S, TRACS #0000 MA PHX SS606 03D. City of Phoenix Project #ST85100259.

GUIDELINES FOR HANDLING SONORAN DESERT TORTOISES ENCOUNTERED ON DEVELOPMENT PROJECTS

Arizona Game and Fish Department
Revised January 17, 1997

The Arizona Game and Fish Department (Department) has developed the following guidelines to reduce potential impacts to desert tortoises, and to promote the continued existence of tortoises throughout the state. These guidelines apply to short-term and/or small-scale projects, depending on the number of affected tortoises and specific type of project.

Desert tortoises of the Sonoran population are those occurring south and east of the Colorado River. Tortoises encountered in the open should be moved out of harm's way to adjacent appropriate habitat. If an occupied burrow is determined to be in jeopardy of destruction, the tortoise should be relocated to the nearest appropriate alternate burrow or other appropriate shelter, as determined by a qualified biologist. Tortoises should be moved less than 48 hours in advance of the habitat disturbance so they do not return to the area in the interim. Tortoises should be moved quickly, kept in an upright position at all times and placed in the shade. Separate disposable gloves should be worn for each tortoise handled to avoid potential transfer of disease between tortoises. Tortoises must not be moved if the ambient air temperature exceeds 105 degrees Fahrenheit unless an alternate burrow is available or the tortoise is in imminent danger.

A tortoise may be moved up to two miles, but no further than necessary from its original location. If a release site, or alternate burrow, is unavailable within this distance, and ambient air temperature exceeds 105 degrees Fahrenheit, the Department should be contacted to place the tortoise into a Department-regulated desert tortoise adoption program. Tortoises salvaged from projects which result in substantial permanent habitat loss (e.g. housing and highway projects), or those requiring removal during long-term (longer than one week) construction projects, will also be placed in desert tortoise adoption programs. *Managers of projects likely to affect desert tortoises should obtain a scientific collecting permit from the Department to facilitate temporary possession of tortoises.* Likewise, if large numbers of tortoises (>5) are expected to be displaced by a project, the project manager should contact the Department for guidance and/or assistance.

Please keep in mind the following points:

- These guidelines do not apply to the Mohave population of desert tortoises (north and west of the Colorado River). Mohave desert tortoises are specifically protected under the Endangered Species Act, as administered by the U.S. Fish and Wildlife Service.

- These guidelines are subject to revision at the discretion of the Department. We recommend that the Department be contacted during the planning stages of any project that may affect desert tortoises.

- Take, possession, or harassment of wild desert tortoises is prohibited by state law. Unless specifically authorized by the Department, or as noted above, project personnel should avoid disturbing any tortoise.

RAC:NLO:rc

STATUS DEFINITIONS

ARIZONA GAME AND FISH DEPARTMENT (AGFD)
HERITAGE DATA MANAGEMENT SYSTEM (HDMS)

CITY OF PHOENIX
STREET TRANSPORTATION
DCM DIVISION

2006 FEB 10 PM 1:50

FEDERAL US STATUS

ESA **Endangered Species Act** (1973 as amended)
US Department of Interior, Fish and Wildlife Service (http://arizonaes.fws.gov)

Listed

- **LE** Listed Endangered: imminent jeopardy of extinction.
- **LT** Listed Threatened: imminent jeopardy of becoming Endangered.
- **XN** Experimental Nonessential population.

Proposed for Listing

- **PE** Proposed Endangered.
- **PT** Proposed Threatened.

Candidate (Notice of Review: 1999)

- **C** Candidate. Species for which USFWS has sufficient information on biological vulnerability and threats to support proposals to list as Endangered or Threatened under ESA. However, proposed rules have not yet been issued because such actions are precluded at present by other listing activity.
- **SC** Species of Concern. The terms "Species of Concern" or "Species at Risk" should be considered as terms-of-art that describe the entire realm of taxa whose conservation status may be of concern to the US Fish and Wildlife Service, but neither term has official status (currently all former C2 species).

Critical Habitat (check with state or regional USFWS office for location details)

- **Y** Yes: Critical Habitat has been designated.
- **P** Proposed: Critical Habitat has been proposed.

[\N No Status: certain populations of this taxon do not have designated status (check with state or regional USFWS office for details about which populations have designated status)**]**.

USFS **US Forest Service** (1999 Animals, 1999 Plants: corrected 2000)
US Department of Agriculture, Forest Service, Region 3 (http://www.fs.fed.us/r3/)

- **S** Sensitive: those taxa occurring on National Forests in Arizona which are considered sensitive by the Regional Forester.

BLM **US Bureau of Land Management** (2000 Animals, 2000 Plants)
US Department of Interior, Bureau of Land Management, Arizona State Office (http://azwww.az.blm.gov)

- **S** Sensitive: those taxa occurring on BLM Field Office Lands in Arizona which are considered sensitive by the Arizona State Office.
- **P** Population: only those populations of Banded Gila monster (*Heloderma suspectum cinctum*) that occur north and west of the Colorado River, are considered sensitive by the Arizona State Office.

STATE STATUS

STATE:

Plants - NPL Arizona Native Plant Law (1999)
Arizona Department of Agriculture (http://agriculture.state.az.us/ESD/nativeplants.htm)

HS Highly Safeguarded: no collection allowed.
SR Salvage Restricted: collection only with permit.
ER Export Restricted: transport out of State prohibited.
SA Salvage Assessed: permits required to remove live trees.
HR Harvest Restricted: permits required to remove plant by-products.

Wildlife - WSCA Wildlife of Special Concern in Arizona (in prep)
Arizona Game and Fish Department (http://www.azgfd.gov)

WSC Wildlife of Special Concern in Arizona. Species whose occurrence in Arizona is or may be in jeopardy, or with known or perceived threats or population declines, as described by the Arizona Game and Fish Department's listing of Wildlife of Special Concern in Arizona (WSCA, in prep). Species indicated on printouts as WSC are currently the same as those in **Threatened Native Wildlife in Arizona** (1988).

Burrowing Owl Artificial Nest Box Project

An Arizona Partners in Flight Habitat Substitution Project

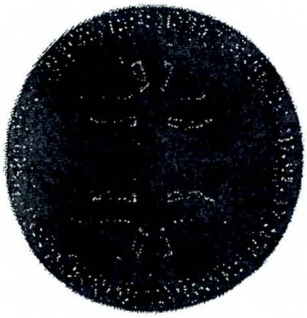


Photo by Greg Clark

Project and Problem Summary:

In the Eastern United States artificial nest boxes were built by volunteers and organizations to try to increase the populations of Bluebirds. The nest boxes replaced natural tree cavities that had been lost when the trees were lost. The effort was a huge success. The same thing can be done for Burrowing Owls, except the cavity is in the ground. If someone chops down all the trees in a forest, everyone understands that this will have a devastating effect on the wildlife. It is not as obvious that as much damage can be done to some species when holes in the ground are covered up. Efforts are under way to figure out where replacement burrows can be installed that will have the most benefit. Some burrows have been installed to replace burrows lost nearby to development, and much of the following material shows this work. However, these burrows are part of rescue work done in conjunction with Wild At Heart (a rehabilitation group in Cave Creek, Arizona). As important to the owl as rescue work is, it is different from figuring out where to install burrows to attract new populations of owls. Phase I of the project is about finding landowners who will provide burrow sites and learning which sites the Burrowing Owl prefers. We need your help finding sites and installing burrows. Surprisingly, this is not some problem to be solved in the "wilderness." The burrows need to be installed in urban areas where development is already completed . That means all around where people live. We need niche areas, like around commercial buildings or urban greenbelts, where the burrows can be installed away from trees and buildings but near possible food sources (mice and insects). There is still time to reverse the steep decline in the Burrowing Owl population, with your help. If you live in the greater Phoenix area, you can help us directly with this project. Because Arizona is the winter home for many owls that breed in Canada and the states north of Arizona, this project can affect the entire owl population of North America. We need burrow sites and help digging the holes. If you can help, or if you would like more information about how to help the owls in your area, contact Greg Clark at:

480-961-4046 (or manually type in the e-mail address b i r d i n f o @ m i r r o r - p o l e . com without spaces)

The Burrowing Owl is Federally protected by U.S. Laws pertaining to Migratory Species. If you are contemplating an operation that could destroy a burrow, or cover up a burrow with dirt, possibly killing the owl inside, this is against the law. You can find out more about this where the list of protected birds

bend horizontally 90 degrees. The photograph below shows the bucket and tubing in place before being buried. The section from the buurow to the bend should be at a 4-foot depth. If you want to proceed on your own, contact us for more detailed information.

This is an example of a burrow dug by hand, rather than by backhoe. There must be at least two feet of dirt on top of the over-turned bucket. The photo shows the bucket and hose before being buried.

This burrow in Chandler became the home for owls that were displaced for a 200-home development project.

Once an area is slated for development where there are Burrowing Owls present, someone must carefully investigate all the burrows to make sure no owls are inside and then carefully collapse the burrow so no owl can return to be trapped inside. One of the first things that happens at a development site is land preparation that moves all the surface dirt around. Sadly, this can trap the owls in the burrow. Investigating these burrows is where Wild At Heart comes in. Holders of both Arizona Game and Fish and U.S. Fish and Wildlife permits for doing this type of work, Wild At Heart can investigate and safely collapse the burrows and, where necessary, relocate the owls to new sites. Follow the next link to see some burrow sites in Chandler, Arizona where the burrows had to be collapsed. Fortunately, a nearby homeowner offered to help us with our artificial burrow project and so the owls were able to relocate only a few hundred feet from where they were born, in habitat much like where they lived before.

Additional Burrow Construction Information and Protection Needed for Domestic Dog Attacks

Arizona Burrowing Owl Distribution

More Burrow Sites and Owl Photos

Red_Hawk Power_Plant_Release_Site New June, 2002. See where 25 Burrowing Owls were released.

Paseo Verde School New May, 2003. See the owls in one of the burrows using infrared video cameras.

mirror-pole.com home

Copyright Greg Clark, 2001

City of Phoenix
STREET TRANSPORTATION DEPARTMENT
DESIGN AND CONSTRUCTION MANAGEMENT DIVISION

October 23, 2007

Ms. Rebecca Davidson
Project Evaluation Program Supervisor
Arizona Game & Fish Department
2221 West Greenway Road
Phoenix, AZ 85023

Re: **Agency Scoping Letter and Meeting Invitation**
Project Name: Avenida Rio Salado/Broadway Road
City of Phoenix Project No.: ST85100259
Federal ID No.: HPS-PHX-0(055)A
ADOT Project No.: 0000 MA PHX SS606 01C

Dear Ms. Davidson:

With the current and predicted population growth in the southwest portion of the Phoenix metropolitan area, the City of Phoenix (City) has identified the need for more transportation options for local and regional traffic. As a result, the City, in cooperation with the Federal Highway Administration (FHWA) and the Arizona Department of Transportation (ADOT), has initiated a study to evaluate the potential environmental impacts from designing and constructing the proposed Avenida Rio Salado/Broadway Road (ARS) widening project in Phoenix, Maricopa County, Arizona. The current study limits are from approximately 59th Avenue on the west to 7th Street on the east along existing Broadway Road; this includes a new crossing of the Salt River. The cadastral location for this project is Township 1 North, Range 2 East, portions of Sections 18–30; and Range 3 East, portions of Sections 19, 20, 21, 28, 29, and 30. The project mainly consists of providing a continuous 5- to 6-lane roadway within these limits. The study would also consider connecting to the proposed ADOT State Route 202L (South Mountain Freeway) and State Route 801 projects. See the attached project area maps and the project newsletter (Issue No. 1) for more detailed information on the study area.

This explosive population growth in southwest Phoenix has put a strain on the existing arterial street network by increasing traffic congestion and delays. The need to improve traffic capacity within the project area is anticipated to continue over the next two decades as the area is fully developed. In recognition of the need for additional traffic capacity for travel between the southwest portion of Phoenix and downtown Phoenix, governmental officials rallied together to develop an area-specific transportation plan to improve the circulation for this project study area. Subsequently, the ARS project was included in the Maricopa Association of Governments Regional Transportation Plan (Prop. 400) approved by the Maricopa County voters in November 2004. Without the additional capacity that would be provided by this project, the east-west arterial streets parallel to Broadway Road, such as Southern Avenue, Baseline Road, Buckeye Road, and Lower Buckeye Road, would become severely congested during peak traffic hours.

Properties adjacent to the ARS study area consist of mainly commercial and residential developments; some undeveloped parcels are also present. New right-of-way and/or temporary construction easements may be necessary for this project; however, it is undetermined at this time. Currently, the study is anticipated to be completed by the fall of 2009.

This letter serves as our agency's invitation to discuss this project. If you or others in your organization have any specific concerns, comments, or recommendations pertaining to this proposed project, please let us know. This can include information on wildlife movement, habitat issues, or seasonal concerns to name a few. If your agency would like to have continued involvement in this proposed project, please expressly state such, along with a description of your specific concerns, in your response. If your response does not include a request for continued involvement and a statement of your concerns, the City will not send additional information and the coordination process will be complete with your agency based upon responses received.

As part of this study, you are invited to attend an **agency scoping meeting** to be conducted for this project. This meeting is scheduled for **November 8, 2007** from **10:00 a.m. to 11:30 a.m.** at **AZTEC Engineering** located at **4561 East McDowell Road, Phoenix, AZ 85008, telephone number 602.454.0402.** A public scoping meeting has also been scheduled for November 15, 2007 (see newsletter for more details).

Please provide your comments or concerns by **November 30, 2007** to: Mr. Karim Dada, AZTEC Engineering, 4561 E. McDowell Road, Phoenix, AZ 85008; 602.458.9265, direct line; 602.454.0403, fax; kdada@aztec.us, email

Thank you for your time and assistance.

Sincerely,

Syd Anderson
City of Phoenix

Enclosures: Figure 1 – County Location Map
Figure 2 – Project Vicinity Map
Project Newsletter – Issue No. 1

Copy:

City of Phoenix
- Belinda Cummings, Design Construction Management
- Ray Dovalina/Angie Brooks, Street Transportation
- Wendy Wonderley, Environmental Programs
- Ambika Adhikari, Planning
- Lionel Lyons, Development Services
- Jerome Miller, Neighborhood Services
- Wylie Bearup, Engineering Architectural Services
- Mark Leonard, Public Works
- Tammy Perkins, Water Services
- Debra Stark, Planning
- Todd Bostwick, Archeologist
- Barbara Stocklin, Historic Preservation Office

FHWA
- Bill Vachon
- Steve Thomas

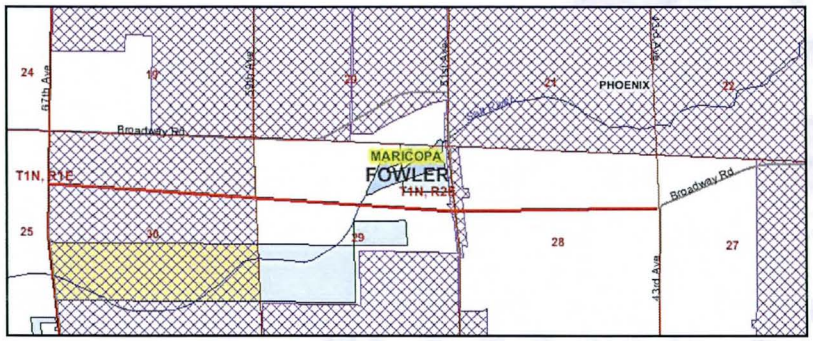
ADOT
- Raegan Ball
- Meagan Bloomer
- John Dickson
- Mary Frye

USFWS
- Steve Spangle
- Debra Bills

AZTEC Engineering
- Rob Lemke
- Karim Dada

Arizona's On-line Environmental Review Tool
Search ID: 20090327008433
Project Name: Avenida Rio Salado a
Date: 3/27/2009 4:55:46 PM

Project Location



Project Name: Avenida Rio Salado a
Submitted By: Mike Myers
On behalf of: ADOT
Project Search ID: 20090327008433
Date: 3/27/2009 4:55:35 PM
Project Category: Transportation & Infrastructure,Road construction (including staging areas),Realignment/ new roads
Project Coordinates (UTM Zone 12-NAD 83): 390746.871, 3696644.267 meter
Project Length: 4920.417 meter
County: MARICOPA
USGS 7.5 Minute Quadrangle ID: 1297
Quadrangle Name: FOWLER
Project locality is not anticipated to change

Location Accuracy Disclaimer

Project locations are assumed to be both precise and accurate for the purposes of environmental review. The creator/owner of the Project Review Receipt is solely responsible for the project location and thus the correctness of the Project Review Receipt content.

The Department appreciates the opportunity to provide in-depth comments and project review when additional information or environmental documentation becomes available.

Special Status Species Occurrences/Critical Habitat/Tribal Lands within 3 miles of Project Vicinity:

Name	Common Name	ESA	USFS	BLM	State
Athene cunicularia hypugaea	Western Burrowing Owl	SC		S	
Dendrocygna autumnalis	Black-bellied Whistling-Duck				WSC
Gila River Indian Reservation	Gila River Indian Reservation				

 APPLICATION INITIALS: _____

Please review the entire receipt for project type recommendations and/or species or location information and retain a copy for future reference. If any of the information you provided did not accurately reflect this project, or if project plans change, another review should be conducted, as this determination may not be valid.

Arizona's On-line Environmental Review Tool:

1. This On-line Environmental Review Tool inquiry has generated recommendations regarding the potential impacts of your project on Special Status Species (SSS) and other wildlife of Arizona. SSS include all U.S. Fish and Wildlife Service federally listed, U.S. Bureau of Land Management sensitive, U.S. Forest Service sensitive, and Arizona Game and Fish Department (Department) recognized species of concern.
2. These recommendations have been made by the Department, under authority of Arizona Revised Statutes Title 5 (Amusements and Sports), 17 (Game and Fish), and 28 (Transportation). These recommendations are preliminary in scope, designed to provide early considerations for all species of wildlife, pertinent to the project type you entered.
3. This receipt, generated by the automated On-line Environmental Review Tool does not constitute an official project review by Department biologists and planners. Further coordination may be necessary as appropriate under the National Environmental Policy Act (NEPA) and/or the Endangered Species Act (ESA).

The U.S. Fish and Wildlife Service (USFWS) has regulatory authority over all federally listed species under the ESA. Contact USFWS Ecological Services Offices: http://arizonaes.fws.gov/.

Phoenix Main Office
2321 W. Royal Palm Road, Suite 103
Phoenix, AZ 85021
Phone 602-242-0210
Fax 602-242-2513

Tucson Sub-Office
201 North Bonita, Suite 141
Tucson, AZ 85745
Phone 520-670-6144
Fax 520-670-6154

Flagstaff Sub-Office
323 N. Leroux Street, Suite 101
Flagstaff, AZ 86001
Phone 928-226-0614
Fax 928-226-1099

Disclaimer:

1. This is a preliminary environmental screening tool. It is not a substitute for the potential knowledge gained by having a biologist conduct a field survey of the project area.
2. The Department's Heritage Data Management System (HDMS) data is not intended to include potential distribution of special status species. Arizona is large and diverse with plants, animals, and environmental conditions that are ever changing. Consequently, many areas may contain species that biologists do not know about or species previously noted in a particular area may no longer occur there.
3. Not all of Arizona has been surveyed for special status species, and surveys that have been conducted have varied greatly in scope and intensity. Such surveys may reveal previously undocumented population of species of special concern.
4. HDMS data contains information about species occurrences that have actually been reported to the Department.

Arizona Game and Fish Department Mission

To conserve, enhance, and restore Arizona's diverse wildlife resources and habitats through aggressive protection and

 APPLICATION INITIALS: _____

management programs, and to provide wildlife resources and safe watercraft and off-highway vehicle recreation for the enjoyment, appreciation, and use by present and future generations.

Project Category: Transportation & Infrastructure,Road construction (including staging areas),Realignment/ new roads

Project Type Recommendations:

All degraded and disturbed lands should be restored to their natural state. Vegetation restoration projects (including treatments of invasive or exotic species) should have a completed site-evaluation plan (identifying environmental conditions necessary to re-establish native vegetation), a revegetation plan (species, density, method of establishment), a short and long-term monitoring plan, including adaptive management guidelines to address needs for replacement vegetation.

Based on the project type entered; coordination with State Historic Preservation Office may be required http://www.pr.state.az.us/partnerships/shpo/shpo.html#anchor561695

Based on the project type entered; coordination with U.S. Army Corps of Engineers may be required (http://www.spl.usace.army.mil/regulatory/phonedir.html)

During planning and construction, minimize potential introduction or spread of exotic invasive species. Invasive species can be plants, animals (exotic snails), and other organisms (e.g. microbes), which may cause alteration to ecological functions or compete with or prey upon native species and can cause social impacts (e.g. livestock forage reduction, increase wildfire risk). The terms noxious weed or invasive plants are often used interchangeably. Precautions should be taken to wash all equipment utilized in the project activities before and after project activities to reduce the spread of invasive species. Arizona has noxious weed regulations (Arizona Revised Statutes, Rules R3-4-244 and R3-4-245). See Arizona Department of Agriculture website for restricted plants http://www.azda.gov/PSD/quarantine5.htm. Additionally, the U.S. Department of Agriculture has information regarding pest and invasive plant control methods including: pesticide, herbicide, biological control agents, and mechanical control: http://www.usda.gov/wps/portal/usdahome. The Department regulates the importation, purchasing, and transportation of wildlife and fish (Restricted Live Wildlife), please refer to the hunting regulations for further information http://www.azgfd.gov/h_f/hunting_rules.shtml.

During the planning stages of your project, please consider the local or regional needs of wildlife in regards to movement, connectivity, and access to habitat needs. Loss of this permeability prevents wildlife from accessing resources, finding mates, reduces gene flow, prevents wildlife from re-colonizing areas where local extirpations may have occurred, and ultimately prevents wildlife from contributing to ecosystem functions, such as pollination, seed dispersal, control of prey numbers, and resistance to invasive species. In many cases, streams and washes provide natural movement corridors for wildlife and should be maintained in their natural state. Uplands also support a large diversity of species, and should be contained within important wildlife movement corridors. In addition, maintaining biodiversity and ecosystem functions can be facilitated through improving designs of structures, fences, roadways, and culverts to promote passage for a variety of wildlife.

Hydrological considerations: design culverts to minimize impacts to channel geometry, or design channel geometry (low flow, overbank,

 APPLICATION INITIALS: _____

floodplains) and substrates to carry expected discharge using local drainages of appropriate size as templates. Aquatic wildlife considerations: reduce/minimize barriers to migration of amphibians or fish (e.g. eliminate falls). Terrestrial wildlife: washes and stream corridors often provide important corridors for movement. Overall culvert width, height, and length should be optimized for movement of the greatest number and diversity of species expected to utilize the passage. Culvert designs should consider moisture, light, and noise, while providing clear views at both ends to maximize utilization. For many species, fencing is an important design feature that can be utilized with culverts to funnel wildlife into these areas and minimize the potential for roadway collisions. Guidelines for culvert designs to facilitate wildlife passage can be found at http://www.azgfd.gov/hgis/guidelines.aspx.

Recommendations will be dependant upon goals of the fence project and the wildlife species expected to be impacted by the project. General guidelines for ensuring wildlife-friendly fences include: barbless wire on the top and bottom with the maximum fence height 42", minimum height for bottom 16". Modifications to this design may be considered for fencing anticipated to be routinely encountered by elk, bighorn sheep or pronghorn (e.g., Pronghorn fencing would require 18" minimum height on the bottom). Please refer to the Department's Fencing Guidelines located at http://www.azgfd.gov/hgis/guidelines.aspx.

The Department recommends that wildlife surveys are conducted to determine if noise-sensitive species occur within the project area. Avoidance or minimization measures could include conducting project activities outside of breeding seasons.

The Department requests further coordination to provide project/species specific recommendations, please contact Project Evaluation Program directly.

Project Location and/or Species recommendations:

Tribal Lands are within the vicinity of your project area (refer to page 1 of the receipt) and may require further coordination. Please contact:

Gila River Indian Community

P.O. Box 97
Sacaton, AZ 85247
Phone: 520-562-6000
Fax: 520-562-6010

Recommendations Disclaimer:

1. Potential impacts to fish and wildlife resources may be minimized or avoided by the recommendations generated from information submitted for your proposed project.
2. These recommendations are proposed actions or guidelines to be considered during **preliminary project development**.
3. Additional site specific recommendations may be proposed during further NEPA/ESA analysis or through coordination with affected agencies.
4. Making this information directly available does not substitute for the Department's review of project proposals, and should not decrease our opportunity to review and evaluate additional project information and/or new project proposals.
5. The Department is interested in the conservation of all fish and wildlife resources, including those Special Status Species listed on this receipt, and those that may have not been documented within the project vicinity as well as other game and nongame wildlife.
6. **Further coordination requires the submittal of this initialed and signed Environmental Review Receipt with a cover letter and project plans or documentation that includes project narrative, acreage to be impacted, how construction or project activity(s)**

 APPLICATION INITIALS: _____

are to be accomplished, and project locality information (including site map).
7. Upon receiving information by AZGFD, please allow 30 days for completion of project reviews. Mail requests to:

Project Evaluation Program, Habitat Branch
Arizona Game and Fish Department
5000 West Carefree Highway
Phoenix, Arizona 85086-5000
Phone Number: (623) 236-7600
Fax Number: (623) 236-7366

Terms of Use

By using this site, you acknowledge that you have read and understand the terms of use. Department staff may revise these terms periodically. If you continue to use our website after we post changes to these terms, it will mean that you accept such changes. If at any time you do not wish to accept the Terms, you may choose not to use the website.

1. This Environmental Review and project planning website was developed and intended for the purpose of screening projects for potential impacts on resources of special concern. By indicating your agreement to the terms of use for this website, you warrant that you will not use this website for any other purpose.
2. Unauthorized attempts to upload information or change information on this website are strictly prohibited and may be punishable under the Computer Fraud and Abuse Act of 1986 and/or the National Information Infrastructure Protection Act .
3. The Department reserves the right at any time, without notice, to enhance, modify, alter, or suspend the website and to terminate or restrict your access to the website.
4. This Environmental Review is based on the project study area that was entered. The review must be redone if the project study area, location, or the type of project changes. If additional information becomes available, this review may need to be reconsidered.
5. A signed and initialed copy of the Environmental Review Receipt indicates that the entire receipt has been read by the signer of the Environmental Review Receipt.

Security:

The Environmental Review and project planning web application operates on a complex State computer system. This system is monitored to ensure proper operation, to verify the functioning of applicable security features, and for other like purposes. Anyone using this system expressly consents to such monitoring and is advised that if such monitoring reveals possible evidence of criminal activity, system personnel may provide the evidence of such monitoring to law enforcement officials. Unauthorized attempts to upload or change information; to defeat or circumvent security measures; or to utilize this system for other than its intended purposes are prohibited.

This website maintains a record of each environmental review search result as well as all contact information. This information is maintained for internal tracking purposes. Information collected in this application will not be shared outside of the purposes of the Department.

If the Environmental Review Receipt and supporting material are not mailed to the Department or other appropriate agencies within six (6) months of the Project Review Receipt date, the receipt is considered to be null and void, and a new review must be initiated.

Print this Environmental Review Receipt using your Internet browser's print function and keep it for your records. Signature of this receipt indicates the signer has read and understands the information provided.

 APPLICATION INITIALS: _____

Signature:_____

Date: _____

Proposed Date of Implementation: _____

Please provide point of contact information regarding this Environmental Review.

Application or organization responsible for project implementation

Agency/organization:_____

Contact Name: _____

Address: _____

City, State, Zip: _____

Phone: _____

E-mail: _____

Person Conducting Search (if not applicant)

Agency/organization:_____

Contact Name: _____

Address: _____

City, State, Zip: _____

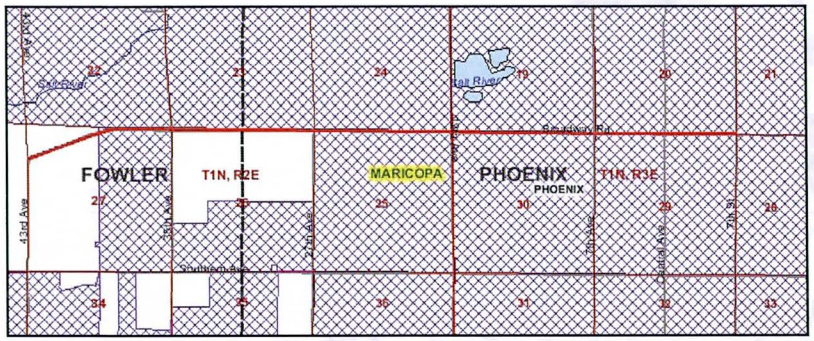
Phone: _____

E-mail: _____

 APPLICATION INITIALS: _____

Arizona's On-line Environmental Review Tool
Search ID: 20090327008434
Project Name: Avenida Rio Salado b
Date: 3/27/2009 5:07:15 PM

Project Location



Project Name: Avenida Rio Salado b
Submitted By: Mike Myers
On behalf of: ADOT
Project Search ID: 20090327008434
Date: 3/27/2009 5:07:06 PM
Project Category: Transportation & Infrastructure,Road construction (including staging areas),Road widening (shoulders or additional or new lanes)
Project Coordinates (UTM Zone 12-NAD 83): 395833.575, 3696831.263 meter
Project Length: 8110.878 meter
County: MARICOPA
USGS 7.5 Minute Quadrangle ID: 1297
Quadrangle Name: FOWLER
Project locality is not anticipated to change

Location Accuracy Disclaimer

Project locations are assumed to be both precise and accurate for the purposes of environmental review. The creator/owner of the Project Review Receipt is solely responsible for the project location and thus the correctness of the Project Review Receipt content.

The Department appreciates the opportunity to provide in-depth comments and project review when additional information or environmental documentation becomes available.

Special Status Species Occurrences/Critical Habitat/Tribal Lands within 3 miles of Project Vicinity:

Name	Common Name	ESA	USFS	BLM	State
Athene cunicularia hypugaea	Western Burrowing Owl	SC		S	
Bat Colony					
Gopherus agassizii (Sonoran Population)	Sonoran Desert Tortoise	SC			WSC

 APPLICATION INITIALS: _____

Please review the entire receipt for project type recommendations and/or species or location information and retain a copy for future reference. If any of the information you provided did not accurately reflect this project, or if project plans change, another review should be conducted, as this determination may not be valid.

Arizona's On-line Environmental Review Tool:

1. This On-line Environmental Review Tool inquiry has generated recommendations regarding the potential impacts of your project on Special Status Species (SSS) and other wildlife of Arizona. SSS include all U.S. Fish and Wildlife Service federally listed, U.S. Bureau of Land Management sensitive, U.S. Forest Service sensitive, and Arizona Game and Fish Department (Department) recognized species of concern.
2. These recommendations have been made by the Department, under authority of Arizona Revised Statutes Title 5 (Amusements and Sports), 17 (Game and Fish), and 28 (Transportation). These recommendations are preliminary in scope, designed to provide early considerations for all species of wildlife, pertinent to the project type you entered.
3. This receipt, generated by the automated On-line Environmental Review Tool does not constitute an official project review by Department biologists and planners. Further coordination may be necessary as appropriate under the National Environmental Policy Act (NEPA) and/or the Endangered Species Act (ESA).

The U.S. Fish and Wildlife Service (USFWS) has regulatory authority over all federally listed species under the ESA. Contact USFWS Ecological Services Offices: http://arizonaes.fws.gov/.

Phoenix Main Office
2321 W. Royal Palm Road, Suite 103
Phoenix, AZ 85021
Phone 602-242-0210
Fax 602-242-2513

Tucson Sub-Office
201 North Bonita, Suite 141
Tucson, AZ 85745
Phone 520-670-6144
Fax 520-670-6154

Flagstaff Sub-Office
323 N. Leroux Street, Suite 101
Flagstaff, AZ 86001
Phone 928-226-0614
Fax 928-226-1099

Disclaimer:

1. This is a preliminary environmental screening tool. It is not a substitute for the potential knowledge gained by having a biologist conduct a field survey of the project area.
2. The Department's Heritage Data Management System (HDMS) data is not intended to include potential distribution of special status species. Arizona is large and diverse with plants, animals, and environmental conditions that are ever changing. Consequently, many areas may contain species that biologists do not know about or species previously noted in a particular area may no longer occur there.
3. Not all of Arizona has been surveyed for special status species, and surveys that have been conducted have varied greatly in scope and intensity. Such surveys may reveal previously undocumented population of species of special concern.
4. HDMS data contains information about species occurrences that have actually been reported to the Department.

Arizona Game and Fish Department Mission

To conserve, enhance, and restore Arizona's diverse wildlife resources and habitats through aggressive protection and

 APPLICATION INITIALS: _____

management programs, and to provide wildlife resources and safe watercraft and off-highway vehicle recreation for the enjoyment, appreciation, and use by present and future generations.

Project Category: Transportation & Infrastructure,Road construction (including staging areas),Road widening (shoulders or additional or new lanes)

Project Type Recommendations:

All degraded and disturbed lands should be restored to their natural state. Vegetation restoration projects (including treatments of invasive or exotic species) should have a completed site-evaluation plan (identifying environmental conditions necessary to re-establish native vegetation), a revegetation plan (species, density, method of establishment), a short and long-term monitoring plan, including adaptive management guidelines to address needs for replacement vegetation.

Based on the project type entered; coordination with State Historic Preservation Office may be required http://www.pr.state.az.us/partnerships/shpo/shpo.html#anchor561695

Based on the project type entered; coordination with U.S. Army Corps of Engineers may be required (http://www.spl.usace.army.mil/regulatory/phonedir.html)

During planning and construction, minimize potential introduction or spread of exotic invasive species. Invasive species can be plants, animals (exotic snails), and other organisms (e.g. microbes), which may cause alteration to ecological functions or compete with or prey upon native species and can cause social impacts (e.g. livestock forage reduction, increase wildfire risk). The terms noxious weed or invasive plants are often used interchangeably. Precautions should be taken to wash all equipment utilized in the project activities before and after project activities to reduce the spread of invasive species. Arizona has noxious weed regulations (Arizona Revised Statutes, Rules R3-4-244 and R3-4-245). See Arizona Department of Agriculture website for restricted plants http://www.azda.gov/PSD/quarantine5.htm. Additionally, the U.S. Department of Agriculture has information regarding pest and invasive plant control methods including: pesticide, herbicide, biological control agents, and mechanical control: http://www.usda.gov/wps/portal/usdahome. The Department regulates the importation, purchasing, and transportation of wildlife and fish (Restricted Live Wildlife), please refer to the hunting regulations for further information http://www.azgfd.gov/h_f/hunting_rules.shtml.

During the planning stages of your project, please consider the local or regional needs of wildlife in regards to movement, connectivity, and access to habitat needs. Loss of this permeability prevents wildlife from accessing resources, finding mates, reduces gene flow, prevents wildlife from re-colonizing areas where local extirpations may have occurred, and ultimately prevents wildlife from contributing to ecosystem functions, such as pollination, seed dispersal, control of prey numbers, and resistance to invasive species. In many cases, streams and washes provide natural movement corridors for wildlife and should be maintained in their natural state. Uplands also support a large diversity of species, and should be contained within important wildlife movement corridors. In addition, maintaining biodiversity and ecosystem functions can be facilitated through improving designs of structures, fences, roadways, and culverts to promote passage for a variety of wildlife.

 APPLICATION INITIALS: _____

Hydrological considerations: design culverts to minimize impacts to channel geometry, or design channel geometry (low flow, overbank, floodplains) and substrates to carry expected discharge using local drainages of appropriate size as templates. Aquatic wildlife considerations: reduce/minimize barriers to migration of amphibians or fish (e.g. eliminate falls). Terrestrial wildlife: washes and stream corridors often provide important corridors for movement. Overall culvert width, height, and length should be optimized for movement of the greatest number and diversity of species expected to utilize the passage. Culvert designs should consider moisture, light, and noise, while providing clear views at both ends to maximize utilization. For many species, fencing is an important design feature that can be utilized with culverts to funnel wildlife into these areas and minimize the potential for roadway collisions. Guidelines for culvert designs to facilitate wildlife passage can be found at http://www.azgfd.gov/hgis/guidelines.aspx.

Recommendations will be dependant upon goals of the fence project and the wildlife species expected to be impacted by the project. General guidelines for ensuring wildlife-friendly fences include: barbless wire on the top and bottom with the maximum fence height 42", minimum height for bottom 16". Modifications to this design may be considered for fencing anticipated to be routinely encountered by elk, bighorn sheep or pronghorn (e.g., Pronghorn fencing would require 18" minimum height on the bottom). Please refer to the Department's Fencing Guidelines located at http://www.azgfd.gov/hgis/guidelines.aspx.

The Department recommends that wildlife surveys are conducted to determine if noise-sensitive species occur within the project area. Avoidance or minimization measures could include conducting project activities outside of breeding seasons.

The Department requests further coordination to provide project/species specific recommendations, please contact Project Evaluation Program directly.

Project Location and/or Species recommendations:

HDMS records indicate that western burrowing owls have been documented within the vicinity of your project area (refer to the species list on page 1 of the receipt). Please review the relocation procedures recommended for burrowing owls found on the Environmental Review Home Page.

http://mirror-pole.com/burr_owl/bur_owl1.htm

,

Recommendations Disclaimer:

1. Potential impacts to fish and wildlife resources may be minimized or avoided by the recommendations generated from information submitted for your proposed project.
2. These recommendations are proposed actions or guidelines to be considered during **preliminary project development**.
3. Additional site specific recommendations may be proposed during further NEPA/ESA analysis or through coordination with affected agencies.
4. Making this information directly available does not substitute for the Department's review of project proposals, and should not decrease our opportunity to review and evaluate additional project information and/or new project proposals.
5. The Department is interested in the conservation of all fish and wildlife resources, including those Special Status Species listed on this receipt, and those that may have not been documented within the project vicinity as well as other game and nongame wildlife.
6. **Further coordination requires the submittal of this initialed and**

 APPLICATION INITIALS: _____

signed Environmental Review Receipt with a cover letter and project plans or documentation that includes project narrative, acreage to be impacted, how construction or project activity(s) are to be accomplished, and project locality information (including site map).
7. Upon receiving information by AZGFD, please allow 30 days for completion of project reviews. Mail requests to:

Project Evaluation Program, Habitat Branch
Arizona Game and Fish Department
5000 West Carefree Highway
Phoenix, Arizona 85086-5000
Phone Number: (623) 236-7600
Fax Number: (623) 236-7366

Terms of Use

By using this site, you acknowledge that you have read and understand the terms of use. Department staff may revise these terms periodically. If you continue to use our website after we post changes to these terms, it will mean that you accept such changes. If at any time you do not wish to accept the Terms, you may choose not to use the website.

1. This Environmental Review and project planning website was developed and intended for the purpose of screening projects for potential impacts on resources of special concern. By indicating your agreement to the terms of use for this website, you warrant that you will not use this website for any other purpose.
2. Unauthorized attempts to upload information or change information on this website are strictly prohibited and may be punishable under the Computer Fraud and Abuse Act of 1986 and/or the National Information Infrastructure Protection Act .
3. The Department reserves the right at any time, without notice, to enhance, modify, alter, or suspend the website and to terminate or restrict your access to the website.
4. This Environmental Review is based on the project study area that was entered. The review must be redone if the project study area, location, or the type of project changes. If additional information becomes available, this review may need to be reconsidered.
5. A signed and initialed copy of the Environmental Review Receipt indicates that the entire receipt has been read by the signer of the Environmental Review Receipt.

Security:

The Environmental Review and project planning web application operates on a complex State computer system. This system is monitored to ensure proper operation, to verify the functioning of applicable security features, and for other like purposes. Anyone using this system expressly consents to such monitoring and is advised that if such monitoring reveals possible evidence of criminal activity, system personnel may provide the evidence of such monitoring to law enforcement officials. Unauthorized attempts to upload or change information; to defeat or circumvent security measures; or to utilize this system for other than its intended purposes are prohibited.

This website maintains a record of each environmental review search result as well as all contact information. This information is maintained for internal tracking purposes. Information collected in this application will not be shared outside of the purposes of the Department.

If the Environmental Review Receipt and supporting material are not mailed to the Department or other appropriate agencies within six (6) months of the Project Review Receipt date, the receipt is considered to be null and void, and a new review must be initiated.

Print this Environmental Review Receipt using your Internet browser's

 APPLICATION INITIALS: _____

print function and keep it for your records. Signature of this receipt indicates the signer has read and understands the information provided.

Signature:_____

Date: _____

Proposed Date of Implementation: _____

Please provide point of contact information regarding this Environmental Review.

Application or organization responsible for project implementation

Agency/organization:_____

Contact Name: _____

Address: _____

City, State, Zip: _____

Phone: _____

E-mail: _____

Person Conducting Search (if not applicant)

Agency/organization:_____

Contact Name: _____

Address: _____

City, State, Zip: _____

Phone: _____

E-mail: _____

 APPLICATION INITIALS: _____

City of Phoenix
STREET TRANSPORTATION DEPARTMENT
DESIGN AND CONSTRUCTION MANAGEMENT DIVISION

October 23, 2007

Mr. Tim Hughes
Wildlife Biologist
BLM - Hassayampa Field Office
21605 N. 7th Avenue
Phoenix, AZ 85027-2929

Re: **Agency Scoping Letter and Meeting Invitation**
Project Name: Avenida Rio Salado/Broadway Road
City of Phoenix Project No.: ST85100259
Federal ID No.: HPS-PHX-0(055)A
ADOT Project No.: 0000 MA PHX SS606 01C

Dear Mr. Hughes:

With the current and predicted population growth in the southwest portion of the Phoenix metropolitan area, the City of Phoenix (City) has identified the need for more transportation options for local and regional traffic. As a result, the City, in cooperation with the Federal Highway Administration (FHWA) and the Arizona Department of Transportation (ADOT), has initiated a study to evaluate the potential environmental impacts from designing and constructing the proposed Avenida Rio Salado/Broadway Road (ARS) widening project in Phoenix, Arizona. The current study limits are from approximately 59th Avenue on the west to 7th Street on the east along existing Broadway Road; this includes a new crossing of the Salt River. The project mainly consists of providing a continuous 5- to 6-lane roadway within these limits. The study would also consider connecting to the proposed ADOT State Route 202L (South Mountain Freeway) and State Route 801 projects. See the attached project area maps and the project newsletter (Issue No. 1) for more detailed information on the study area.

This explosive population growth in southwest Phoenix has put a strain on the existing arterial street network by increasing traffic congestion and delays. The need to improve traffic capacity within the project area is anticipated to continue over the next two decades as the area is fully developed. In recognition of the need for additional traffic capacity for travel between the southwest portion of Phoenix and downtown Phoenix, governmental officials rallied together to develop an area-specific transportation plan to improve the circulation for this project study area. Subsequently, the ARS project was included in the Maricopa Association of Governments Regional Transportation Plan (Prop. 400) approved by the Maricopa County voters in November 2004. Without the additional capacity that would be provided by this project, the east-west arterial streets parallel to Broadway Road, such as Southern Avenue, Baseline Road, Buckeye Road, and Lower Buckeye Road, would become severely congested during peak traffic hours.

Properties adjacent to the ARS study area consist of mainly commercial and residential developments; some undeveloped parcels are also present. New right-of-way and/or temporary construction easements may be necessary for this project; however, it is undetermined at this time. Currently, the study is anticipated to be completed by the fall of 2009.

This letter serves as our agency's invitation to discuss this project. If you or others in your organization have any specific concerns, comments, or recommendations pertaining to this proposed project, please let us know. If your agency would like to have continued involvement in this proposed project, please expressly state such, along with a description of your specific concerns, in your response. If your response does not include a request for continued involvement and a statement of your concerns, the City will not send additional information and the coordination process will be complete with your agency based upon responses received.

As part of this study, you are invited to attend an **agency scoping meeting** to be conducted for this project. This meeting is scheduled for **November 8, 2007** from **10:00 a.m. to 11:30 a.m.** at **AZTEC Engineering** located at **4561 East McDowell Road, Phoenix, AZ 85008, telephone number 602.454.0402**. A public scoping meeting has also been scheduled for November 15, 2007 (see newsletter for more details).

Please provide your comments or concerns by **November 30, 2007** to: Mr. Karim Dada, AZTEC Engineering, 4561 E. McDowell Road, Phoenix, AZ 85008; 602.458.9265, direct line; 602.454.0403, fax; kdada@aztec.us, email

Thank you for your time and assistance.

Sincerely,

Syd Anderson
City of Phoenix

Enclosures: Figure 1 – County Location Map
Figure 2 – Project Vicinity Map
Project Newsletter – Issue No. 1

Copy:

City of Phoenix
- Belinda Cummings, Design Construction Management
- Ray Dovalina/Angie Brooks, Street Transportation
- Wendy Wonderley, Environmental Programs
- Ambika Adhikari, Planning
- Lionel Lyons, Development Services
- Jerome Miller, Neighborhood Services
- Wylie Bearup, Engineering Architectural Services
- Mark Leonard, Public Works
- Tammy Perkins, Water Services
- Debra Stark, Planning
- Todd Bostwick, Archeologist
- Barbara Stocklin, Historic Preservation Office

FHWA
- Bill Vachon
- Steve Thomas

ADOT
- Raegan Ball
- Meagan Bloomer
- John Dickson
- Mary Frye

AZTEC Engineering
- Rob Lemke
- Karim Dada

City of Phoenix
STREET TRANSPORTATION DEPARTMENT
DESIGN AND CONSTRUCTION MANAGEMENT DIVISION

October 23, 2007

Ms. Carol Lynn Erwin
Area Manager
Bureau of Reclamation
P.O. Box 81169
Phoenix, AZ 85069-1169

Re: **Agency Scoping Letter and Meeting Invitation**
Project Name: Avenida Rio Salado/Broadway Road
City of Phoenix Project No.: ST85100259
Federal ID No.: HPS-PHX-0(055)A
ADOT Project No.: 0000 MA PHX SS606 01C

Dear Ms. Erwin:

With the current and predicted population growth in the southwest portion of the Phoenix metropolitan area, the City of Phoenix (City) has identified the need for more transportation options for local and regional traffic. As a result, the City, in cooperation with the Federal Highway Administration (FHWA) and the Arizona Department of Transportation (ADOT), has initiated a study to evaluate the potential environmental impacts from designing and constructing the proposed Avenida Rio Salado/Broadway Road (ARS) widening project in Phoenix, Arizona. The current study limits are from approximately 59th Avenue on the west to 7th Street on the east along existing Broadway Road; this includes a new crossing of the Salt River. The project mainly consists of providing a continuous 5- to 6-lane roadway within these limits. The study would also consider connecting to the proposed ADOT State Route 202L (South Mountain Freeway) and State Route 801 projects. See the attached project area maps and the project newsletter (Issue No. 1) for more detailed information on the study area.

This explosive population growth in southwest Phoenix has put a strain on the existing arterial street network by increasing traffic congestion and delays. The need to improve traffic capacity within the project area is anticipated to continue over the next two decades as the area is fully developed. In recognition of the need for additional traffic capacity for travel between the southwest portion of Phoenix and downtown Phoenix, governmental officials rallied together to develop an area-specific transportation plan to improve the circulation for this project study area. Subsequently, the ARS project was included in the Maricopa Association of Governments Regional Transportation Plan (Prop. 400) approved by the Maricopa County voters in November 2004. Without the additional capacity that would be provided by this project, the east-west arterial streets parallel to Broadway Road, such as Southern Avenue, Baseline Road, Buckeye Road, and Lower Buckeye Road, would become severely congested during peak traffic hours.

Properties adjacent to the ARS study area consist of mainly commercial and residential developments; some undeveloped parcels are also present. New right-of-way and/or temporary construction easements may be necessary for this project; however, it is undetermined at this time. Currently, the study is anticipated to be completed by the fall of 2009.

This letter serves as our agency's invitation to discuss this project. If you or others in your organization have any specific concerns, comments, or recommendations pertaining to this proposed project, please let us know. If your agency would like to have continued involvement in this proposed project, please expressly state such, along with a description of your specific concerns, in your response. If your response does not include a request for continued involvement and a statement of your concerns, the City will not send additional information and the coordination process will be complete with your agency based upon responses received.

As part of this study, you are invited to attend an **agency scoping meeting** to be conducted for this project. This meeting is scheduled for **November 8, 2007** from **10:00 a.m. to 11:30 a.m.** at **AZTEC Engineering** located at **4561 East McDowell Road, Phoenix, AZ 85008, telephone number 602.454.0402**. A public scoping meeting has also been scheduled for November 15, 2007 (see newsletter for more details).

Please provide your comments or concerns by **November 30, 2007** to: Mr. Karim Dada, AZTEC Engineering, 4561 E. McDowell Road, Phoenix, AZ 85008; 602.458.9265, direct line; 602.454.0403, fax; kdada@aztec.us, email

Thank you for your time and assistance.

Sincerely,

Syd Anderson
City of Phoenix

Enclosures: Figure 1 – County Location Map
Figure 2 – Project Vicinity Map
Project Newsletter – Issue No. 1

Copy:

City of Phoenix
- Belinda Cummings, Design Construction Management
- Ray Dovalina/Angie Brooks, Street Transportation
- Wendy Wonderley, Environmental Programs
- Ambika Adhikari, Planning
- Lionel Lyons, Development Services
- Jerome Miller, Neighborhood Services
- Wylie Bearup, Engineering Architectural Services
- Mark Leonard, Public Works
- Tammy Perkins, Water Services
- Debra Stark, Planning
- Todd Bostwick, Archeologist
- Barbara Stocklin, Historic Preservation Office

FHWA
- Bill Vachon
- Steve Thomas

ADOT
- Raegan Ball
- Meagan Bloomer
- John Dickson
- Mary Frye

AZTEC Engineering
- Rob Lemke
- Karim Dada

City of Phoenix
STREET TRANSPORTATION DEPARTMENT
DESIGN AND CONSTRUCTION MANAGEMENT DIVISION

October 23, 2007

Mr. Steve Spangle
Field Supervisor
U.S. Fish & Wildlife Service
2321 W. Royal Palm Road, Suite 103
Phoenix, AZ 85021

Re: **Agency Scoping Letter and Meeting Invitation**
Project Name: Avenida Rio Salado/Broadway Road
City of Phoenix Project No.: ST85100259
Federal ID No.: HPS-PHX-0(055)A
ADOT Project No.: 0000 MA PHX SS606 01C

Dear Mr. Spangle:

With the current and predicted population growth in the southwest portion of the Phoenix metropolitan area, the City of Phoenix (City) has identified the need for more transportation options for local and regional traffic. As a result, the City, in cooperation with the Federal Highway Administration (FHWA) and the Arizona Department of Transportation (ADOT), has initiated a study to evaluate the potential environmental impacts from designing and constructing the proposed Avenida Rio Salado/Broadway Road (ARS) widening project in Phoenix, Maricopa County, Arizona. The current study limits are from approximately 59th Avenue on the west to 7th Street on the east along existing Broadway Road; this includes a new crossing of the Salt River. The cadastral location for this project is Township 1 North, Range 2 East, portions of Sections 18–30; and Range 3 East, portions of Sections 19, 20, 21, 28, 29, and 30. The project mainly consists of providing a continuous 5- to 6-lane roadway within these limits. The study would also consider connecting to the proposed ADOT State Route 202L (South Mountain Freeway) and State Route 801 projects. See the attached project area maps and the project newsletter (Issue No. 1) for more detailed information on the study area.

This explosive population growth in southwest Phoenix has put a strain on the existing arterial street network by increasing traffic congestion and delays. The need to improve traffic capacity within the project area is anticipated to continue over the next two decades as the area is fully developed. In recognition of the need for additional traffic capacity for travel between the southwest portion of Phoenix and downtown Phoenix, governmental officials rallied together to develop an area-specific transportation plan to improve the circulation for this project study area. Subsequently, the ARS project was included in the Maricopa Association of Governments Regional Transportation Plan (Prop. 400) approved by the Maricopa County voters in November 2004. Without the additional capacity that would be provided by this project, the east-west arterial streets parallel to Broadway Road, such as Southern Avenue, Baseline Road, Buckeye Road, and Lower Buckeye Road, would become severely congested during peak traffic hours.

Properties adjacent to the ARS study area consist of mainly commercial and residential developments; some undeveloped parcels are also present. New right-of-way and/or temporary construction easements may be necessary for this project; however, it is undetermined at this time. Currently, the study is anticipated to be completed by the fall of 2009.

This letter serves as our agency's invitation to discuss this project. If you or others in your organization have any specific concerns, comments, or recommendations pertaining to this proposed project, please let us know. This can include information on wildlife movement, habitat issues, or seasonal concerns to name a few. If your agency would like to have continued involvement in this proposed project, please expressly state such, along with a description of your specific concerns, in your response. If your response does not include a request for continued involvement and a statement of your concerns, the City will not send additional information and the coordination process will be complete with your agency based upon responses received.

As part of this study, you are invited to attend an **agency scoping meeting** to be conducted for this project. This meeting is scheduled for **November 8, 2007** from **10:00 a.m. to 11:30 a.m.** at **AZTEC Engineering** located at **4561 East McDowell Road, Phoenix, AZ 85008, telephone number 602.454.0402**. A public scoping meeting has also been scheduled for November 15, 2007 (see newsletter for more details).

Please provide your comments or concerns by **November 30, 2007** to: Mr. Karim Dada, AZTEC Engineering, 4561 E. McDowell Road, Phoenix, AZ 85008; 602.458.9265, direct line; 602.454.0403, fax; kdada@aztec.us, email

Thank you for your time and assistance.

Sincerely,

Syd Anderson
City of Phoenix

Enclosures: Figure 1 – County Location Map
Figure 2 – Project Vicinity Map
Project Newsletter – Issue No. 1

Copy:

City of Phoenix
- Belinda Cummings, Design Construction Management
- Ray Dovalina/Angie Brooks, Street Transportation
- Wendy Wonderley, Environmental Programs
- Ambika Adhikari, Planning
- Lionel Lyons, Development Services
- Jerome Miller, Neighborhood Services
- Wylie Bearup, Engineering Architectural Services
- Mark Leonard, Public Works
- Tammy Perkins, Water Services
- Debra Stark, Planning
- Todd Bostwick, Archeologist
- Barbara Stocklin, Historic Preservation Office

FHWA
- Bill Vachon
- Steve Thomas

ADOT
- Raegan Ball
- Meagan Bloomer
- John Dickson
- Mary Frye

USFWS
- Debra Bills

AZTEC Engineering
- Rob Lemke
- Karim Dada

AZTEC
www.aztec.us TYPSA group
4561 E. McDowell Road
Phoenix, AZ 85008
602.454.0402
602.454.0403 (fax)

Memo

To:	Tricia Balluff, City of Phoenix	**Date:**	February 20, 2014
Copy:	Wendy Wonderley, City of Phoenix	**Subject:**	Biological Evaluation Update
From:	Mike Myers	**Project:**	Avenida Rio Salado/Broadway Road HPS-PHX-0(055)A 0000 MA PHX SS606 01C

Tricia,

As you are aware, the City of Phoenix, in conjunction with the Federal Highway Administration (FHWA) and the Arizona Department of Transportation (ADOT), are planning to widen and realign Broadway Road between 7th Street and 43rd Avenue and construct a new segment of Broadway Road between 43rd Avenue and 51st Avenue. The project would occur within the City of Phoenix and unincorporated portions of Maricopa County. The purpose of this memo is to serve as an update to the August 28, 2009 Biological Evaluation (BE) completed as part of the Environmental Assessment, and the December 28, 2012 Urban BE form completed specifically for construction of the project between 7th Street and 51st Avenue. It was determined through these documents that the project will have no affect to any species or habitat protected by the federal Endangered Species Act (ESA).

A review of the most recent US Fish and Wildlife Service (USFWS) Maricopa County species list (list date October 30, 2013) identified the following changes since the December 28, 2012 Urban BE form was completed:

- Acuna cactus is now included on the Maricopa County list
- Yellow-billed cuckoo status changed from candidate for listing to proposed threatened

No critical habitat has been designated or proposed for any species in the project vicinity. The project is located outside the distribution for Acuna cactus and no suitable habitat is present within or adjacent to the project area for either the Acuna cactus or yellow-billed cuckoo. In addition, there have been no design changes that would result in impacts not addressed in the August 28, 2009 BE or the December 28, 2012 Urban BE. Therefore, the project will still have no affect to any species or habitat protected by the federal ESA.

The Arizona Game and Fish Department (AGFD) online environmental review tool was re-accessed on February 17, 2014 (Search ID: 20140217022506) and the attached results do not identify any ESA-protected species as occurring within 3 miles of the project vicinity.

The AGFD review tool results did identify Western burrowing owl, a bat colony, Sonoran desert tortoise, and bald eagle occurrences within 3 miles of the project vicinity. Due to the lack of suitable habitat in the project area for bat colonies, Sonoran desert tortoise, and bald eagle, no protection measures are necessary for these species. However, as identified in the August 28, 2009 Biological BE

and the December 28, 2012 Urban BE, suitable habitat for the Western burrowing owl is present in the project area; therefore, protection measures will be implemented, including pre-construction surveys and avoidance of any owls or owl burrows found until the owls can be relocated by a properly permitted wildlife rehabilitator.

If you have any comments or need any additional information, please contact me at 602.458.9296 or mmyers@aztec.us. Thank you.

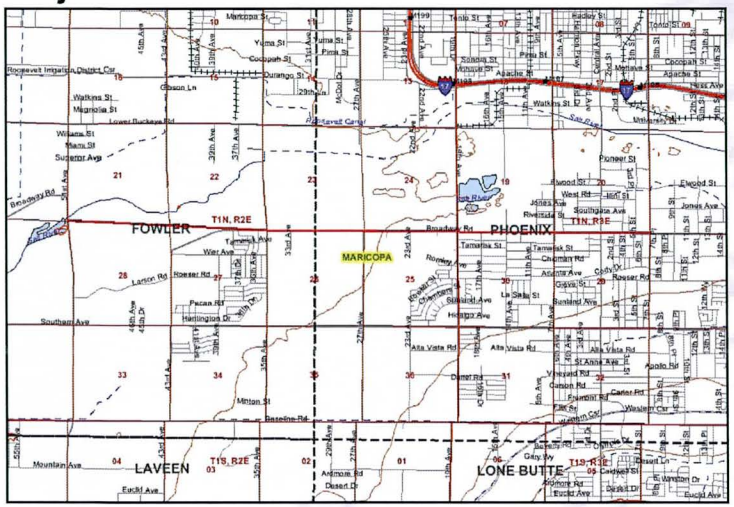
Mike Myers

Michael J. Myers

Senior Wildlife Biologist
AZTEC Engineering Group, Inc.

Arizona's On-line Environmental Review Tool
Search ID: 20140217022506
Project Name: SS606 ARS Feb2014 Update
Date: 2/17/2014 1:08:46 PM

Project Location



Project Name: SS606 ARS Feb2014 Update
Submitted By: Mike Myers
On behalf of: CITY
Project Search ID: 20140217022506
Date: 2/17/2014 1:08:38 PM
Project Category: Transportation & Infrastructure,Road construction (including staging areas),Realignment/ new roads
Project Coordinates (UTM Zone 12-NAD 83): 395621.202, 3696981.671 meter
Project Length: 9757.367 meter
County: MARICOPA
USGS 7.5 Minute Quadrangle ID: 1299
Quadrangle Name: PHOENIX
Project locality is not anticipated to change

Location Accuracy Disclaimer

Project locations are assumed to be both precise and accurate for the purposes of environmental review. The creator/owner of the Project Review Receipt is solely responsible for the project location and thus the correctness of the Project Review Receipt content.

The Department appreciates the opportunity to provide in-depth comments and project review when additional information or environmental documentation becomes available.

Special Status Species Occurrences/Critical Habitat/Tribal Lands within 3 miles of Project Vicinity:

Name	Common Name	FWS	USFS	BLM	State
Athene cunicularia hypugaea	Western Burrowing Owl	SC	S	S	
Bat Colony					
Gopherus morafkai	Sonoran Desert Tortoise	C*	S		WSC
Haliaeetus leucocephalus pop. 3	Bald Eagle - Sonoran Desert Population	SC,BGA	S	S	WSC

 APPLICATION INITIALS: _____

Please review the entire receipt for project type recommendations and/or species or location information and retain a copy for future reference. If any of the information you provided did not accurately reflect this project, or if project plans change, another review should be conducted, as this determination may not be valid.

Arizona's On-line Environmental Review Tool:

1. This On-line Environmental Review Tool inquiry has generated recommendations regarding the potential impacts of your project on Special Status Species (SSS) and other wildlife of Arizona. SSS include all U.S. Fish and Wildlife Service federally listed, U.S. Bureau of Land Management sensitive, U.S. Forest Service sensitive, and Arizona Game and Fish Department (Department) recognized species of concern.
2. These recommendations have been made by the Department, under authority of Arizona Revised Statutes Title 5 (Amusements and Sports), 17 (Game and Fish), and 28 (Transportation). These recommendations are preliminary in scope, designed to provide early considerations for all species of wildlife, pertinent to the project type you entered.
3. This receipt, generated by the automated On-line Environmental Review Tool does not constitute an official project review by Department biologists and planners. Further coordination may be necessary as appropriate under the National Environmental Policy Act (NEPA) and/or the Endangered Species Act (ESA).

The U.S. Fish and Wildlife Service (USFWS) has regulatory authority over all federally listed species under the ESA. Contact USFWS Ecological Services Offices: http://arizonaes.fws.gov/.

Phoenix Main Office
2321 W. Royal Palm Road, Suite 103
Phoenix, AZ 85021
Phone 602-242-0210
Fax 602-242-2513

Tucson Sub-Office
201 North Bonita, Suite 141
Tucson, AZ 85745
Phone 520-670-6144
Fax 520-670-6154

Flagstaff Sub-Office
323 N. Leroux Street, Suite 101
Flagstaff, AZ 86001
Phone 928-226-0614
Fax 928-226-1099

Disclaimer:

1. This is a preliminary environmental screening tool. It is not a substitute for the potential knowledge gained by having a biologist conduct a field survey of the project area.
2. The Department's Heritage Data Management System (HDMS) data is not intended to include potential distribution of special status species. Arizona is large and diverse with plants, animals, and environmental conditions that are ever changing. Consequently, many areas may contain species that biologists do not know about or species previously noted in a particular area may no longer occur there.
3. Not all of Arizona has been surveyed for special status species, and surveys that have been conducted have varied greatly in scope and intensity. Such surveys may reveal previously undocumented population of species of special concern.
4. HDMS data contains information about species occurrences that have actually been reported to the Department.

Arizona Game and Fish Department Mission

To conserve, enhance, and restore Arizona's diverse wildlife resources and habitats through aggressive protection and

 APPLICATION INITIALS: _____

management programs, and to provide wildlife resources and safe watercraft and off-highway vehicle recreation for the enjoyment, appreciation, and use by present and future generations.

Project Category: Transportation & Infrastructure,Road construction (including staging areas),Realignment/ new roads

Project Type Recommendations:

All degraded and disturbed lands should be restored to their natural state. Vegetation restoration projects (including treatments of invasive or exotic species) should have a completed site-evaluation plan (identifying environmental conditions necessary to re-establish native vegetation), a revegetation plan (species, density, method of establishment), a short and long-term monitoring plan, including adaptive management guidelines to address needs for replacement vegetation.

Based on the project type entered; coordination with Arizona Department of Environmental Quality may be required (http://www.azdeq.gov/).

Based on the project type entered; coordination with County Flood Control districts may be required.

Based on the project type entered; coordination with State Historic Preservation Office may be required http://azstateparks.com/SHPO/index.html

Based on the project type entered; coordination with U.S. Army Corps of Engineers may be required (http://www.spl.usace.army.mil/regulatory/phonedir.html)

During planning and construction, minimize potential introduction or spread of exotic invasive species. Invasive species can be plants, animals (exotic snails), and other organisms (e.g. microbes), which may cause alteration to ecological functions or compete with or prey upon native species and can cause social impacts (e.g. livestock forage reduction, increase wildfire risk). The terms noxious weed or invasive plants are often used interchangeably. Precautions should be taken to wash all equipment utilized in the project activities before and after project activities to reduce the spread of invasive species. Arizona has noxious weed regulations (Arizona Revised Statutes, Rules R3-4-244 and R3-4-245). See Arizona Department of Agriculture website for restricted plants http://www.azda.gov/PSD/quarantine5.htm. Additionally, the U.S. Department of Agriculture has information regarding pest and invasive plant control methods including: pesticide, herbicide, biological control agents, and mechanical control: http://www.usda.gov/wps/portal/usdahome. The Department regulates the importation, purchasing, and transportation of wildlife and fish (Restricted Live Wildlife), please refer to the hunting regulations for further information http://www.azgfd.gov/h_f/hunting_rules.shtml.

During the planning stages of your project, please consider the local or regional needs of wildlife in regards to movement, connectivity, and access to habitat needs. Loss of this permeability prevents wildlife from accessing resources, finding mates, reduces gene flow, prevents wildlife from re-colonizing areas where local extirpations may have occurred, and ultimately prevents wildlife from contributing to ecosystem functions, such as pollination, seed dispersal, control of prey numbers, and resistance to invasive species. In many cases, streams and washes provide natural movement corridors for wildlife and should be maintained in their natural state. Uplands also support a large diversity of species, and should be contained within important

 APPLICATION INITIALS: _____

wildlife movement corridors. In addition, maintaining biodiversity and ecosystem functions can be facilitated through improving designs of structures, fences, roadways, and culverts to promote passage for a variety of wildlife.

Hydrological considerations: design culverts to minimize impacts to channel geometry, or design channel geometry (low flow, overbank, floodplains) and substrates to carry expected discharge using local drainages of appropriate size as templates. Aquatic wildlife considerations: reduce/minimize barriers to migration of amphibians or fish (e.g. eliminate falls). Terrestrial wildlife: washes and stream corridors often provide important corridors for movement. Overall culvert width, height, and length should be optimized for movement of the greatest number and diversity of species expected to utilize the passage. Culvert designs should consider moisture, light, and noise, while providing clear views at both ends to maximize utilization. For many species, fencing is an important design feature that can be utilized with culverts to funnel wildlife into these areas and minimize the potential for roadway collisions. Guidelines for culvert designs to facilitate wildlife passage can be found at http://www.azgfd.gov/hgis/guidelines.aspx.

Minimization and mitigation of impacts to wildlife and fish species due to changes in water quality, quantity, chemistry, temperature, and alteration to flow regimes (timing, magnitude, duration, and frequency of floods) should be evaluated. Minimize impacts to springs, in-stream flow, and consider irrigation improvements to decrease water use. If dredging is a project component, consider timing of the project in order to minimize impacts to spawning fish and other aquatic species (including spawning seasons), and to reduce spread of exotic invasive species. We recommend early direct coordination with Project Evaluation Program for projects that could impact water resources, wetlands, streams, springs, and/or riparian habitats.

Planning: consider impacts of lighting intensity on mammals and birds and develop measures or alternatives that can be taken to increase human safety while minimizing potential impacts to wildlife. Conduct wildlife surveys to determine species within project area, and evaluate proposed activities based on species biology and natural history to determine if artificial lighting may disrupt behavior patterns or habitat use.

Preconstruction - Consider design structures and construction plans that minimize impacts to channel geometry (i.e. width/depth ratio, sinuosity, allow overflow channels) to avoid alteration of hydrological function. Identify whether wildlife species use the structure for roosting or nesting during anticipated construction period. Plan the timing of construction/maintenance to minimize impacts to wildlife species. In addition to the species list generated by the Arizona's On-line Environmental Review Tool, the Department recommends that surveys be conducted at the bridge and in the vicinity of the bridge to identify additional or currently undocumented bat, bird, or aquatic species in the project area. To minimize impacts to birds and bats, as well as aquatic species, consider conducting maintenance and construction activities outside the breeding/maternity season (breeding seasons for birds and bats usually occur spring - summer). Examining the crevices for the presence of bats prior to pouring new paving materials. When bats are present, the top of the crevices should be sealed to prevent material from dripping or falling through the cracks and potentially onto bats. If bats are present, maintenance and construction (including paving and milling) activities should be conducted during nighttime hours, if possible, when the fewest number of bats will be roosting. Consider incorporating roosting habitat for bats into bridge designs. Minimize impacts to the vegetation community. A revegetation plan should be developed to replace impacted communities. Unavoidable impacts to vegetation should be mitigated on-site whenever possible. During construction: Erosion control structures and drainage features should be used to prevent introduction of sediment laden runoff into the waterway. Minimize instream construction activity. If culverts are planned, mitigate impacts to wildlife and fish movement. Guidelines for bridge designs to facilitate wildlife passage can be found at http://www.azgfd.gov/hgis/guidelines.aspx.

 APPLICATION INITIALS: _____

Recommendations will be dependant upon goals of the fence project and the wildlife species expected to be impacted by the project. General guidelines for ensuring wildlife-friendly fences include: barbless wire on the top and bottom with the maximum fence height 42", minimum height for bottom 16". Modifications to this design may be considered for fencing anticipated to be routinely encountered by elk, bighorn sheep or pronghorn (e.g., Pronghorn fencing would require 18" minimum height on the bottom). Please refer to the Department's Fencing Guidelines located at http://www.azgfd.gov/hgis/guidelines.aspx.

The Department recommends that wildlife surveys are conducted to determine if noise-sensitive species occur within the project area. Avoidance or minimization measures could include conducting project activities outside of breeding seasons.

The Department requests further coordination to provide project/species specific recommendations, please contact Project Evaluation Program directly.

Trenches should be covered or back-filled as soon as possible. Incorporate escape ramps in ditches or fencing along the perimeter to deter small mammals and herptefauna (snakes, lizards, tortoise) from entering ditches.

Project Location and/or Species recommendations:

Heritage Data Management System records indicate that one or more listed, proposed, or candidate species or Critical Habitat (Designated or Proposed) have been documented in the vicinity of your project (refer to page 1 of the receipt). Please contact:
Ecological Services Office
US Fish and Wildlife Service
2321 W. Royal Palm Rd.
Phoenix, AZ 85021-4951
Phone: 602-242-0210
Fax: 602-242-2513

Heritage Data Management System records indicate that western burrowing owls have been documented within the vicinity of your project area (refer to the species list on page 1 of the receipt). Please review the relocation procedures recommended for burrowing owls found on the Environmental Review Home Page: http://mirror-pole.com/burr_owl/bur_owl1.htm.

Recommendations Disclaimer:

1. Potential impacts to fish and wildlife resources may be minimized or avoided by the recommendations generated from information submitted for your proposed project.
2. These recommendations are proposed actions or guidelines to be considered during **preliminary project development**.
3. Additional site specific recommendations may be proposed during further NEPA/ESA analysis or through coordination with affected agencies.
4. Making this information directly available does not substitute for the Department's review of project proposals, and should not decrease our opportunity to review and evaluate additional project information and/or new project proposals.
5. The Department is interested in the conservation of all fish and wildlife resources, including those Special Status Species listed on this receipt, and those that may have not been documented within the project vicinity as well as other game and nongame wildlife.
6. **Further coordination requires the submittal of this initialed and signed Environmental Review Receipt with a cover letter and project plans or documentation that includes project narrative, acreage to be impacted, how construction or project activity(s) are to be accomplished, and project locality information**

 APPLICATION INITIALS: _____

(including site map).
7. Upon receiving information by AZGFD, please allow 30 days for completion of project reviews. Mail requests to:

Project Evaluation Program, Habitat Branch
Arizona Game and Fish Department
5000 West Carefree Highway
Phoenix, Arizona 85086-5000
Phone Number: (623) 236-7600
Fax Number: (623) 236-7366

Terms of Use

By using this site, you acknowledge that you have read and understand the terms of use. Department staff may revise these terms periodically. If you continue to use our website after we post changes to these terms, it will mean that you accept such changes. If at any time you do not wish to accept the Terms, you may choose not to use the website.

1. This Environmental Review and project planning website was developed and intended for the purpose of screening projects for potential impacts on resources of special concern. By indicating your agreement to the terms of use for this website, you warrant that you will not use this website for any other purpose.
2. Unauthorized attempts to upload information or change information on this website are strictly prohibited and may be punishable under the Computer Fraud and Abuse Act of 1986 and/or the National Information Infrastructure Protection Act .
3. The Department reserves the right at any time, without notice, to enhance, modify, alter, or suspend the website and to terminate or restrict your access to the website.
4. This Environmental Review is based on the project study area that was entered. The review must be redone if the project study area, location, or the type of project changes. If additional information becomes available, this review may need to be reconsidered.
5. A signed and initialed copy of the Environmental Review Receipt indicates that the entire receipt has been read by the signer of the Environmental Review Receipt.

Security:

The Environmental Review and project planning web application operates on a complex State computer system. This system is monitored to ensure proper operation, to verify the functioning of applicable security features, and for other like purposes. Anyone using this system expressly consents to such monitoring and is advised that if such monitoring reveals possible evidence of criminal activity, system personnel may provide the evidence of such monitoring to law enforcement officials. Unauthorized attempts to upload or change information; to defeat or circumvent security measures; or to utilize this system for other than its intended purposes are prohibited.

This website maintains a record of each environmental review search result as well as all contact information. This information is maintained for internal tracking purposes. Information collected in this application will not be shared outside of the purposes of the Department.

If the Environmental Review Receipt and supporting material are not mailed to the Department or other appropriate agencies within six (6) months of the Project Review Receipt date, the receipt is considered to be null and void, and a new review must be initiated.

Print this Environmental Review Receipt using your Internet browser's print function and keep it for your records. Signature of this receipt indicates the signer has read and understands the information provided.

 APPLICATION INITIALS: _____

Signature:_____

Date: _____

Proposed Date of Implementation: _____

Please provide point of contact information regarding this Environmental Review.

Application or organization responsible for project implementation

Agency/organization:_____

Contact Name: _____

Address: _____

City, State, Zip: _____

Phone: _____

E-mail: _____

Person Conducting Search (if not applicant)

Agency/organization:_____

Contact Name: _____

Address: _____

City, State, Zip: _____

Phone: _____

E-mail: _____

 APPLICATION INITIALS: _____

Arizona Department of Transportation
Environmental Planning Group
Urban Project Biological Evaluation Form

Date: December 28, 2012	Project Name: Avenida Rio Salado/Broadway Road
TRACS #: 0000 MA PHX SS606 01C	Land Ownership: City of Phoenix, Maricopa County Department of Transportation, Private
Project #: HPS-PHX-0(055)A City of Phoenix Project #: ST85100259	Local Gov't : City of Phoenix

Location Description: The project is located along Broadway Road between 7th Street and 51st Avenue in south-central Phoenix, Maricopa County, Arizona. The cadastral location description for the project includes Township 1 North, Range 2 East, portions of Sections 22-29; and Township 1 North, Range 3 East, portions of Sections 19–21, and 28–30. (Gila and Salt River Baseline and Meridian). The project would occur within and adjacent to the City of Phoenix (COP) and Maricopa County Department of Transportation (MCDOT) right-of-way (ROW) through private lands.

Project Description: The City of Phoenix proposes to widen and realign Broadway Road between 7th Street and 43rd Avenue and construct a new segment of Broadway Road between 43rd Avenue and 51st Avenue.
Currently, Broadway Road does not exist between 51st Avenue and 43rd Avenue. Broadway Road has a minimum of one travel lane in each direction from 43rd Avenue east to 19th Avenue, and includes a center left-turn lane beginning at 35th Avenue. From 19th Avenue east to 7th Street, Broadway Road expands to an urban arterial roadway with three travel lanes in each direction and a center left-turn lane. The scope of work for the project includes the following:

- Construct a 6-lane arterial roadway with three travel lanes in each direction and a raised center median containing breakouts and turn bays between 51st Avenue and 43rd Avenue
- Widen Broadway Road between 43rd Avenue and 17th Avenue from two lanes to six lanes with three travel lanes in each direction and a raised center median containing breakouts and turn bays
- Broadway Road would be widened symmetrically except between 39th Avenue and 35th Avenue and at the 19th Avenue intersection, where the roadway will be widened entirely to the north
- Minor intersection improvements including reconstruction of sub-standard radius returns and installing bus bays would occur from 17th Avenue to 7th Street
- At Central Avenue, Broadway Road would be widened to the south to eliminate an existing lane reduction in the eastbound direction
- Installing new street lighting and relocating existing street lighting where necessary
- Modifying existing storm drain systems and constructing new storm drain systems where necessary
- Installing new traffic signals or relocating existing signals where necessary
- Installing new pavement markings and landscaping as needed.

New ROW and temporary construction easements would be required. Most of the new ROW would be acquired between 43rd and 51st Avenues. Construction is expected to occur with conventional equipment; no blasting is anticipated to be required. Construction is anticipated to begin in Winter of 2013 and would occur for approximately 1 year. The project would be federally funded.

Vegetation/Habitat Type: The project is located in the Phoenix metropolitan area within the Lower Colorado River Valley subdivision of the Sonoran Desertscrub Biotic Community. Terrain within the project area is relatively flat with a slight northwest slope and elevations ranging from 985 to 1,085 feet above mean sea level. Developed areas from 7th Street to 43rd Avenue, are characterized by landscaped gravel surfaces and trees such as mesquite (*Prosopis sp.*) and palo verde (*Parkinsonia sp.*). Vacant lots in the same reach consist of bare ground interspersed with patches weedy annuals, forbs, and grasses such as Russian thistle (Salsola sp.), cheeseweed (*Malva parviflora*), and bermuda grass (*Cynodon* spp.). The project area west of 43rd Avenue consists of a gravel mining operation in the Salt River floodplain that is highly disturbed and generally lacking vegetation. Sparse patches of weedy annuals containing species such as Russian thistle, cheeseweed, and London Rocket (*Sisymbrium irio*), and occasional shrubs such as burro brush (*Hymenoclea salsola*), and snakeweed (Gutierezzia sarothrae) are scattered throughout this portion of the project area.

Project Evaluation Checklist

I. Previous Biological Evaluation (BE)	No	Yes
1. Prior Project BE – Name: Avenida Rio Salado/Broadway Road TRACS#:0000 MA PHX SS606 01C Date: 08/28/09		X
2. Update to BE Required	X	
II. Species and/or Habitat	**No**	**Yes**
1. Survey Completed: August 1, 2012 By: Jessica Rybczynski		X
2. Previous Species Observation - attach AZ Game and Fish Environmental Review On-Line Tool		X
3. Federally Listed Species Present	X	
4. Habitat for Federally Listed Species Present	X	
5. Sensitive Species Present (Tribal or Federal Lands)	X	
6. Habitat for Sensitive Species Present (Tribal or Federal Lands)	X	
III. Analysis of Effects	**No**	**Yes**
1. Substantial Habitat Alteration	X	
2. Impacts Outside the Project Area	X	
3. Impacts to Native Vegetation	X	
4. Impacts to Riparian, Wetland and/or Water Resources	X	
IV. Determination of Effects	**No**	**Yes**
1. No effect on listed species or habitat		X
2. May affect, not likely to adversely affect listed species or habitat	X	
3. May affect, likely to adversely affect listed species or habitat	X	
4. No impact to individual sensitive species		X
5. May impact individual sensitive species or sensitive species' population viability	X	
V. USFWS/Agency Consultation Requirements	**No**	**Yes**
1. Informal Consultation Required	X	
2. Formal Consultation Required	X	
3. Agency Review Required	X	

Prepared By: Angela Jordan, Wildlife Biologist, AZTEC Date: 12/28/2012

Reviewed By: Jessica Rybczynski, Wildlife Biologist, AZTEC Date: 12/28/2012

Based on the findings above a detailed evaluation and further consultation are not required.

Attachments: Additional notes or analysis, On-line tool printout, maps and project photographs

Additional Notes, Analysis or Mitigation Measures: (include brief discussion of any potential impacts to nesting migratory birds)

Vegetation removal may be required; however due to the disturbed nature of the project limits, removal would be minimal and would be limited to landscaped plants, small disturbance species, and weedy annuals.

As previously mentioned, a Biological Evaluation (BE) was completed for this project on August 28, 2009. Since 2009, the bald eagle and California brown pelican have been delisted, and the Sonoran desert tortoise (Gopherus agassizii), Sprague's pipit (Anthus spragueii) and Tucson shovel-nosed snake (Chionactis occipitalis klauber) have been added as candidates for listing under the Endangered Species Act. Suitable habitat for Sonoran desert tortoise, Sprague's pipit and Tucson shovel-nosed snakes is not present within or adjacent to the project area. All areas impacted by project activities are located within the 2009 study area and would cause no new affects from those evaluated in the 2009 BE. Therefore, the current project activities would have no new impacts or effects to listed species from those evaluated in 2009.

The BE also discusses the presence of suitable foraging and nesting habitat for the Western burrowing owl within the project area. There still is a potential for take to occur and in order to avoid or minimize this potential, the following measures should be adhered to:

- Pre-construction surveys for the Western burrowing owl shall be conducted in all suitable habitat that would be disturbed in accordance with Arizona Game and Fish Department's Burrowing Owl Clearance Guidance for Landowners or currently accepted protocol.
- If any burrowing owls are located during pre-construction surveys or construction, a biologist holding a permit from the US Fish and Wildlife Service to relocate burrowing owls shall be contacted to relocate those burrowing owls from the project area, as appropriate.
- If burrowing owls or active burrows are identified during the pre-construction surveys or during construction, no construction activities shall take place within 100 feet of any active burrow until the owls are relocated.

The attached updated AGFD online environmental review tool was accessed on December 13, 2012 and identified the Western burrowing owl (*Athene cunicularia hypugaea*), a bat colony, the black-bellied whistling-duck (*Dendrocygna autumnalis*), Sonoran desert tortoise (*Gopherus agassizii*), the Sonoran and wintering populations of bald eagles (*Haliaeetus leucocephalus*) and the least bittern (*Ixobrychus exilis*) as occurring within 3 miles of the project vicinity (Search ID: 20121213019218). The current review differs from the previous 2009 AGFD online environmental review tool by including the Sonoran and wintering populations of bald eagles and the least bittern. As previously discussed in the 2009 BE, marginal opportunistic foraging habitat for bald eagles and the least bittern is located along the Salt River between 51st and 59th Avenues. The current project limits do not extend past 51st Avenue, therefore no suitable habitat is located within the project limits and no impacts to bald eagles or least bitterns are anticipated.

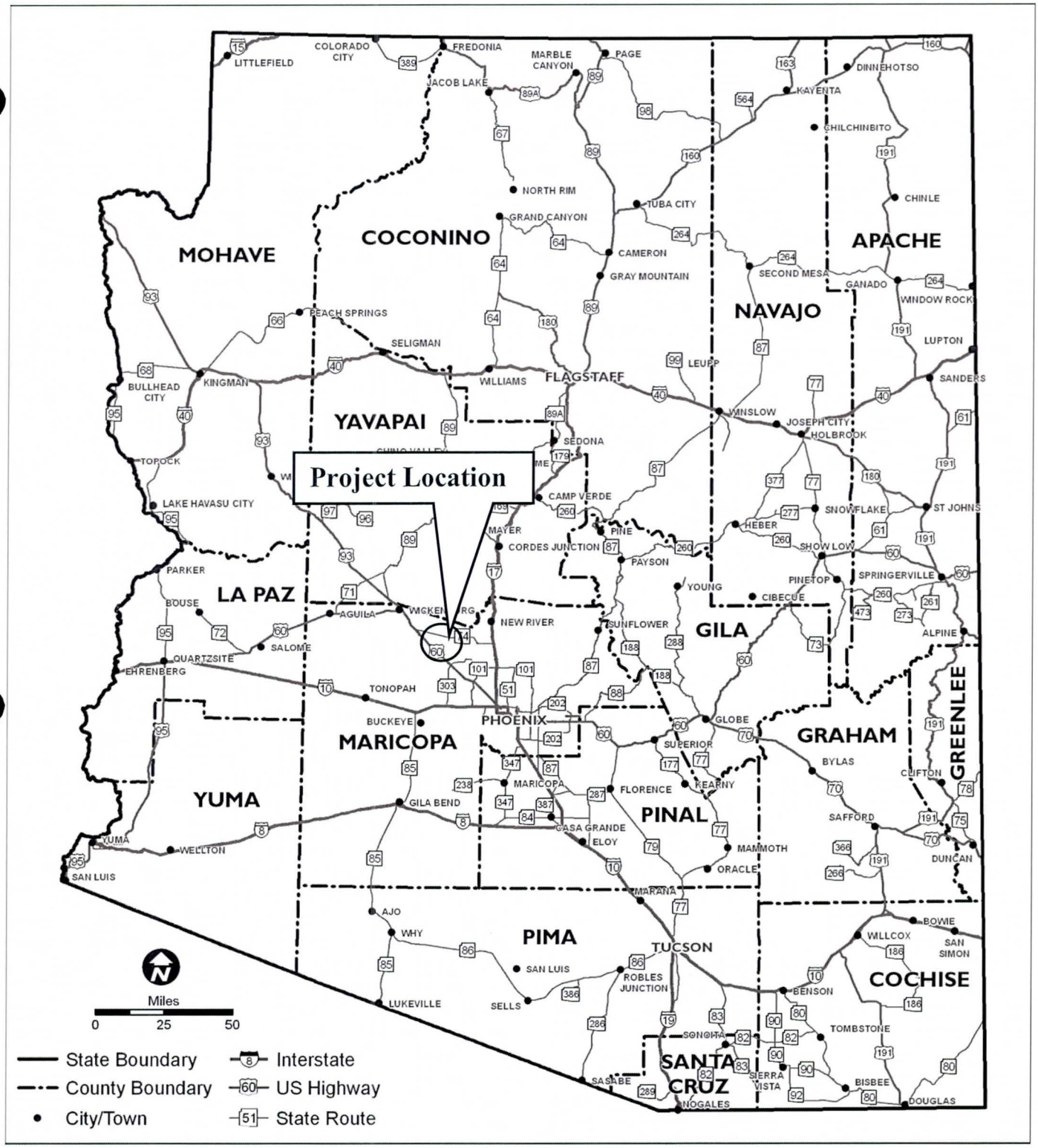
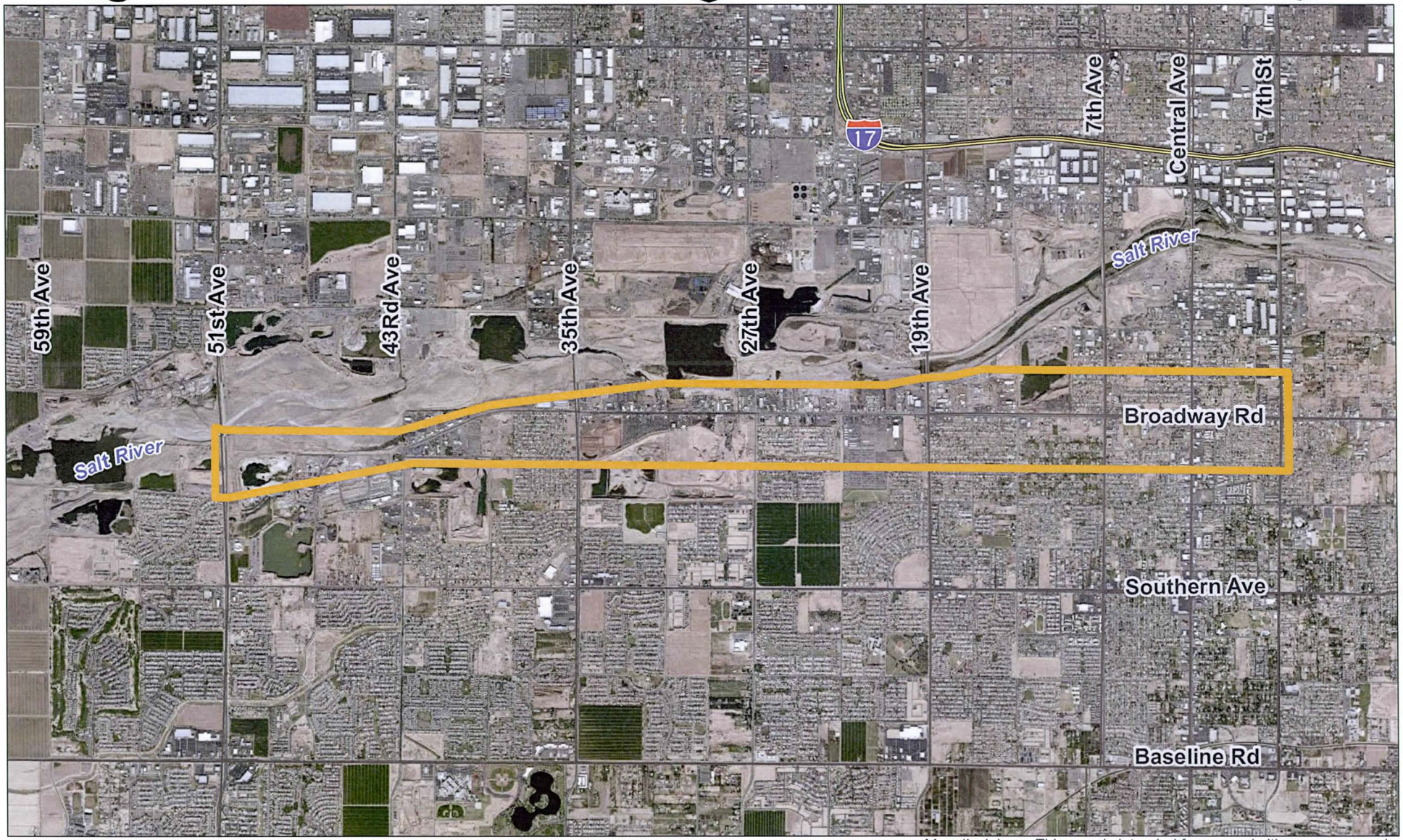


Figure 1. State Location Map
HPS-PHX-0(055)A
0000 MA PHX SS606 01C
Avenida Rio Salado/Broadway Road



Map disclaimer: This map is intended for general siting purposes only.

Sources:
Bing (2011)
City of Phoenix (2008)

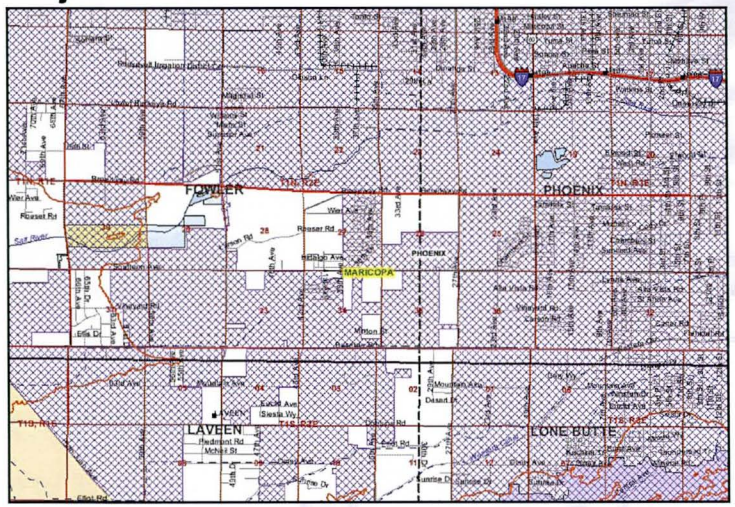
Project Area

Figure 2. Project Vicinity Map
HPS-PHX-0(055)A
0000 MA PHX SS606 01C
Avenida Rio Salado/Broadway Road

mile
0 0.5 1

Arizona's On-line Environmental Review Tool
Search ID: 20121213019218
Project Name: SS606, ARS Broadway Road
Date: 12/13/2012 11:38:37 AM

Project Location



Project Name: SS606, ARS Broadway Road
Submitted By: Mike Myers
On behalf of: ADOT
Project Search ID: 20121213019218
Date: 12/13/2012 11:38:31 AM
Project Category: Transportation & Infrastructure,Road construction (including staging areas),Realignment/ new roads
Project Coordinates (UTM Zone 12-NAD 83): 394747.929, 3697017.013 meter
Project Length: 12955.663 meter
County: MARICOPA
USGS 7.5 Minute Quadrangle ID: 1299
Quadrangle Name: PHOENIX
Project locality is not anticipated to change

Location Accuracy Disclaimer

Project locations are assumed to be both precise and accurate for the purposes of environmental review. The creator/owner of the Project Review Receipt is solely responsible for the project location and thus the correctness of the Project Review Receipt content.

The Department appreciates the opportunity to provide in-depth comments and project review when additional information or environmental documentation becomes available.

Special Status Species Occurrences/Critical Habitat/Tribal Lands within 3 miles of Project Vicinity:

Name	Common Name	FWS	USFS	BLM	State
Athene cunicularia hypugaea	Western Burrowing Owl	SC	S	S	
Bat Colony					
Dendrocygna autumnalis	Black-bellied Whistling-Duck				WSC
Gila River Indian Reservation	Gila River Indian Reservation				
Gopherus agassizii (Sonoran Population)	Sonoran Desert Tortoise	C	S		WSC
Haliaeetus leucocephalus (wintering pop.)	Bald Eagle - Winter Population	SC,BGA	S	S	WSC
Haliaeetus leucocephalus pop. 3	Bald Eagle - Sonoran Desert Population	SC,BGA	S	S	WSC
Ixobrychus exilis	Least Bittern				WSC

 APPLICATION INITIALS: _____

Please review the entire receipt for project type recommendations and/or species or location information and retain a copy for future reference. If any of the information you provided did not accurately reflect this project, or if project plans change, another review should be conducted, as this determination may not be valid.

Arizona's On-line Environmental Review Tool:

1. This On-line Environmental Review Tool inquiry has generated recommendations regarding the potential impacts of your project on Special Status Species (SSS) and other wildlife of Arizona. SSS include all U.S. Fish and Wildlife Service federally listed, U.S. Bureau of Land Management sensitive, U.S. Forest Service sensitive, and Arizona Game and Fish Department (Department) recognized species of concern.
2. These recommendations have been made by the Department, under authority of Arizona Revised Statutes Title 5 (Amusements and Sports), 17 (Game and Fish), and 28 (Transportation). These recommendations are preliminary in scope, designed to provide early considerations for all species of wildlife, pertinent to the project type you entered.
3. This receipt, generated by the automated On-line Environmental Review Tool does not constitute an official project review by Department biologists and planners. Further coordination may be necessary as appropriate under the National Environmental Policy Act (NEPA) and/or the Endangered Species Act (ESA).

The U.S. Fish and Wildlife Service (USFWS) has regulatory authority over all federally listed species under the ESA. Contact USFWS Ecological Services Offices: http://arizonaes.fws.gov/.

Phoenix Main Office
2321 W. Royal Palm Road, Suite 103
Phoenix, AZ 85021
Phone 602-242-0210
Fax 602-242-2513

Tucson Sub-Office
201 North Bonita, Suite 141
Tucson, AZ 85745
Phone 520-670-6144
Fax 520-670-6154

Flagstaff Sub-Office
323 N. Leroux Street, Suite 101
Flagstaff, AZ 86001
Phone 928-226-0614
Fax 928-226-1099

Disclaimer:

1. This is a preliminary environmental screening tool. It is not a substitute for the potential knowledge gained by having a biologist conduct a field survey of the project area.
2. The Department's Heritage Data Management System (HDMS) data is not intended to include potential distribution of special status species. Arizona is large and diverse with plants, animals, and environmental conditions that are ever changing. Consequently, many areas may contain species that biologists do not know about or species previously noted in a particular area may no longer occur there.
3. Not all of Arizona has been surveyed for special status species, and surveys that have been conducted have varied greatly in scope and intensity. Such surveys may reveal previously undocumented population of species of special concern.
4. HDMS data contains information about species occurrences that have actually been reported to the Department.

Arizona Game and Fish Department Mission

To conserve, enhance, and restore Arizona's diverse wildlife resources and habitats through aggressive protection and

 APPLICATION INITIALS: _____

management programs, and to provide wildlife resources and safe watercraft and off-highway vehicle recreation for the enjoyment, appreciation, and use by present and future generations.

Project Category: Transportation & Infrastructure,Road construction (including staging areas),Realignment/ new roads

Project Type Recommendations:

All degraded and disturbed lands should be restored to their natural state. Vegetation restoration projects (including treatments of invasive or exotic species) should have a completed site-evaluation plan (identifying environmental conditions necessary to re-establish native vegetation), a revegetation plan (species, density, method of establishment), a short and long-term monitoring plan, including adaptive management guidelines to address needs for replacement vegetation.

Based on the project type entered; coordination with Arizona Department of Environmental Quality may be required (http://www.azdeq.gov/).

Based on the project type entered; coordination with County Flood Control districts may be required.

Based on the project type entered; coordination with State Historic Preservation Office may be required http://azstateparks.com/SHPO/index.html

Based on the project type entered; coordination with U.S. Army Corps of Engineers may be required (http://www.spl.usace.army.mil/regulatory/phonedir.html)

During planning and construction, minimize potential introduction or spread of exotic invasive species. Invasive species can be plants, animals (exotic snails), and other organisms (e.g. microbes), which may cause alteration to ecological functions or compete with or prey upon native species and can cause social impacts (e.g. livestock forage reduction, increase wildfire risk). The terms noxious weed or invasive plants are often used interchangeably. Precautions should be taken to wash all equipment utilized in the project activities before and after project activities to reduce the spread of invasive species. Arizona has noxious weed regulations (Arizona Revised Statutes, Rules R3-4-244 and R3-4-245). See Arizona Department of Agriculture website for restricted plants http://www.azda.gov/PSD/quarantine5.htm. Additionally, the U.S. Department of Agriculture has information regarding pest and invasive plant control methods including: pesticide, herbicide, biological control agents, and mechanical control: http://www.usda.gov/wps/portal/usdahome. The Department regulates the importation, purchasing, and transportation of wildlife and fish (Restricted Live Wildlife), please refer to the hunting regulations for further information http://www.azgfd.gov/h_f/hunting_rules.shtml.

During the planning stages of your project, please consider the local or regional needs of wildlife in regards to movement, connectivity, and access to habitat needs. Loss of this permeability prevents wildlife from accessing resources, finding mates, reduces gene flow, prevents wildlife from re-colonizing areas where local extirpations may have occurred, and ultimately prevents wildlife from contributing to ecosystem functions, such as pollination, seed dispersal, control of prey numbers, and resistance to invasive species. In many cases, streams and washes provide natural movement corridors for wildlife and should be maintained in their natural state. Uplands also support a large diversity of species, and should be contained within important

 APPLICATION INITIALS: _____

wildlife movement corridors. In addition, maintaining biodiversity and ecosystem functions can be facilitated through improving designs of structures, fences, roadways, and culverts to promote passage for a variety of wildlife.

Hydrological considerations: design culverts to minimize impacts to channel geometry, or design channel geometry (low flow, overbank, floodplains) and substrates to carry expected discharge using local drainages of appropriate size as templates. Aquatic wildlife considerations: reduce/minimize barriers to migration of amphibians or fish (e.g. eliminate falls). Terrestrial wildlife: washes and stream corridors often provide important corridors for movement. Overall culvert width, height, and length should be optimized for movement of the greatest number and diversity of species expected to utilize the passage. Culvert designs should consider moisture, light, and noise, while providing clear views at both ends to maximize utilization. For many species, fencing is an important design feature that can be utilized with culverts to funnel wildlife into these areas and minimize the potential for roadway collisions. Guidelines for culvert designs to facilitate wildlife passage can be found at http://www.azgfd.gov/hgis/guidelines.aspx.

Minimization and mitigation of impacts to wildlife and fish species due to changes in water quality, quantity, chemistry, temperature, and alteration to flow regimes (timing, magnitude, duration, and frequency of floods) should be evaluated. Minimize impacts to springs, in-stream flow, and consider irrigation improvements to decrease water use. If dredging is a project component, consider timing of the project in order to minimize impacts to spawning fish and other aquatic species (including spawning seasons), and to reduce spread of exotic invasive species. We recommend early direct coordination with Project Evaluation Program for projects that could impact water resources, wetlands, streams, springs, and/or riparian habitats.

Planning: consider impacts of lighting intensity on mammals and birds and develop measures or alternatives that can be taken to increase human safety while minimizing potential impacts to wildlife. Conduct wildlife surveys to determine species within project area, and evaluate proposed activities based on species biology and natural history to determine if artificial lighting may disrupt behavior patterns or habitat use.

Preconstruction - Consider design structures and construction plans that minimize impacts to channel geometry (i.e. width/depth ratio, sinuosity, allow overflow channels) to avoid alteration of hydrological function. Identify whether wildlife species use the structure for roosting or nesting during anticipated construction period. Plan the timing of construction/maintenance to minimize impacts to wildlife species. In addition to the species list generated by the Arizona's On-line Environmental Review Tool, the Department recommends that surveys be conducted at the bridge and in the vicinity of the bridge to identify additional or currently undocumented bat, bird, or aquatic species in the project area. To minimize impacts to birds and bats, as well as aquatic species, consider conducting maintenance and construction activities outside the breeding/maternity season (breeding seasons for birds and bats usually occur spring - summer). Examining the crevices for the presence of bats prior to pouring new paving materials. When bats are present, the top of the crevices should be sealed to prevent material from dripping or falling through the cracks and potentially onto bats. If bats are present, maintenance and construction (including paving and milling) activities should be conducted during nighttime hours, if possible, when the fewest number of bats will be roosting. Consider incorporating roosting habitat for bats into bridge designs. Minimize impacts to the vegetation community. A revegetation plan should be developed to replace impacted communities. Unavoidable impacts to vegetation should be mitigated on-site whenever possible. During construction: Erosion control structures and drainage features should be used to prevent introduction of sediment laden runoff into the waterway. Minimize instream construction activity. If culverts are planned, mitigate impacts to wildlife and fish movement. Guidelines for bridge designs to facilitate wildlife passage can be found at http://www.azgfd.gov/hgis/guidelines.aspx.

 APPLICATION INITIALS: _____

Recommendations will be dependant upon goals of the fence project and the wildlife species expected to be impacted by the project. General guidelines for ensuring wildlife-friendly fences include: barbless wire on the top and bottom with the maximum fence height 42", minimum height for bottom 16". Modifications to this design may be considered for fencing anticipated to be routinely encountered by elk, bighorn sheep or pronghorn (e.g., Pronghorn fencing would require 18" minimum height on the bottom). Please refer to the Department's Fencing Guidelines located at http://www.azgfd.gov/hgis/guidelines.aspx.

The Department recommends that wildlife surveys are conducted to determine if noise-sensitive species occur within the project area. Avoidance or minimization measures could include conducting project activities outside of breeding seasons.

The Department requests further coordination to provide project/species specific recommendations, please contact Project Evaluation Program directly.

Trenches should be covered or back-filled as soon as possible. Incorporate escape ramps in ditches or fencing along the perimeter to deter small mammals and herptefauna (snakes, lizards, tortoise) from entering ditches.

Project Location and/or Species recommendations:

Tribal Lands are within the vicinity of your project area (refer to page 1 of the receipt) and may require further coordination. Please contact:
Gila River Indian Community
P.O. Box 97
Sacaton, AZ 85247
Phone: 520-562-6000
Fax: 520-562-6010

Heritage Data Management System records indicate that one or more listed, proposed, or candidate species or Critical Habitat (Designated or Proposed) have been documented in the vicinity of your project (refer to page 1 of the receipt). Please contact:
Ecological Services Office
US Fish and Wildlife Service
2321 W. Royal Palm Rd.
Phoenix, AZ 85021-4951
Phone: 602-242-0210
Fax: 602-242-2513

Heritage Data Management System records indicate that western burrowing owls have been documented within the vicinity of your project area (refer to the species list on page 1 of the receipt). Please review the relocation procedures recommended for burrowing owls found on the Environmental Review Home Page: http://mirror-pole.com/burr_owl/bur_owl1.htm.

Recommendations Disclaimer:

1. Potential impacts to fish and wildlife resources may be minimized or avoided by the recommendations generated from information submitted for your proposed project.
2. These recommendations are proposed actions or guidelines to be considered during **preliminary project development**.
3. Additional site specific recommendations may be proposed during further NEPA/ESA analysis or through coordination with affected agencies.
4. Making this information directly available does not substitute for the Department's review of project proposals, and should not decrease our opportunity to review and evaluate additional project information and/or new project proposals.
5. The Department is interested in the conservation of all fish and

 APPLICATION INITIALS: _____

wildlife resources, including those Special Status Species listed on this receipt, and those that may have not been documented within the project vicinity as well as other game and nongame wildlife.
6. **Further coordination requires the submittal of this initialed and signed Environmental Review Receipt with a cover letter and project plans or documentation that includes project narrative, acreage to be impacted, how construction or project activity(s) are to be accomplished, and project locality information (including site map).**
7. Upon receiving information by AZGFD, please allow 30 days for completion of project reviews. Mail requests to:

Project Evaluation Program, Habitat Branch
Arizona Game and Fish Department
5000 West Carefree Highway
Phoenix, Arizona 85086-5000
Phone Number: (623) 236-7600
Fax Number: (623) 236-7366

Terms of Use

By using this site, you acknowledge that you have read and understand the terms of use. Department staff may revise these terms periodically. If you continue to use our website after we post changes to these terms, it will mean that you accept such changes. If at any time you do not wish to accept the Terms, you may choose not to use the website.

1. This Environmental Review and project planning website was developed and intended for the purpose of screening projects for potential impacts on resources of special concern. By indicating your agreement to the terms of use for this website, you warrant that you will not use this website for any other purpose.
2. Unauthorized attempts to upload information or change information on this website are strictly prohibited and may be punishable under the Computer Fraud and Abuse Act of 1986 and/or the National Information Infrastructure Protection Act .
3. The Department reserves the right at any time, without notice, to enhance, modify, alter, or suspend the website and to terminate or restrict your access to the website.
4. This Environmental Review is based on the project study area that was entered. The review must be redone if the project study area, location, or the type of project changes. If additional information becomes available, this review may need to be reconsidered.
5. A signed and initialed copy of the Environmental Review Receipt indicates that the entire receipt has been read by the signer of the Environmental Review Receipt.

Security:

The Environmental Review and project planning web application operates on a complex State computer system. This system is monitored to ensure proper operation, to verify the functioning of applicable security features, and for other like purposes. Anyone using this system expressly consents to such monitoring and is advised that if such monitoring reveals possible evidence of criminal activity, system personnel may provide the evidence of such monitoring to law enforcement officials. Unauthorized attempts to upload or change information; to defeat or circumvent security measures; or to utilize this system for other than its intended purposes are prohibited.

This website maintains a record of each environmental review search result as well as all contact information. This information is maintained for internal tracking purposes. Information collected in this application will not be shared outside of the purposes of the Department.

If the Environmental Review Receipt and supporting material are not mailed to the Department or other appropriate agencies within six (6) months of the Project Review Receipt date, the receipt is considered to be null and void, and a new review must be initiated.

 APPLICATION INITIALS: _____

Print this Environmental Review Receipt using your Internet browser's print function and keep it for your records. Signature of this receipt indicates the signer has read and understands the information provided.

Signature:_____

Date: _____

Proposed Date of Implementation: _____

Please provide point of contact information regarding this Environmental Review.

Application or organization responsible for project implementation

Agency/organization:_____

Contact Name: _____

Address: _____

City, State, Zip: _____

Phone: _____

E-mail: _____

Person Conducting Search (if not applicant)

Agency/organization:_____

Contact Name: _____

Address: _____

City, State, Zip: _____

Phone: _____

E-mail: _____

 APPLICATION INITIALS: _____

APPENDIX H

ARS IMPROVEMENT PLANS

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST85100332	1	164	

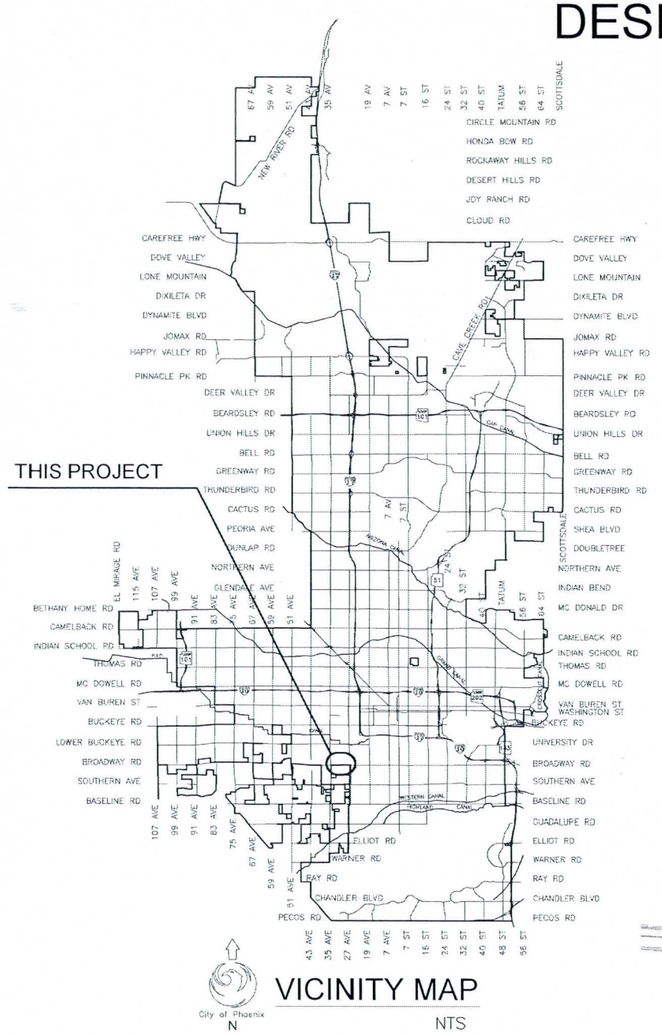
Dibble Engineering — DIBBLE ENGINEERING, CONSULTING ENGINEER

DES: DHD | DR: CDF | CK: GPH | DATE: 01/14

33425 GREGORY P. HAGGERTY — Date Signed 1/20/14 — Arizona U.S.A. — Expires 09/31/14

CITY OF PHOENIX
STREET TRANSPORTATION DEPARTMENT
DESIGN & CONSTRUCTION MANAGEMENT DIVISION
PAVING AND STORM DRAIN
AVENIDA RIO SALADO/BROADWAY ROAD
35TH AVENUE TO 27TH AVENUE
ST85100332
FEDERAL AID NO. HPS-PHX-0(055)A
ADOT TRACS NO. 0000 MA PHX SS606 03D

2014



VICINITY MAP

NTS

COP INSPECTION STAMP

CITY PROJECT MANAGER _____

CITY INSPECTOR _____

CONTRACTOR _____

DATE OF FINAL COMPLETION _____

APPROVED _____ DATE _____
ASSISTANT STREET TRANSPORTATION DIRECTOR

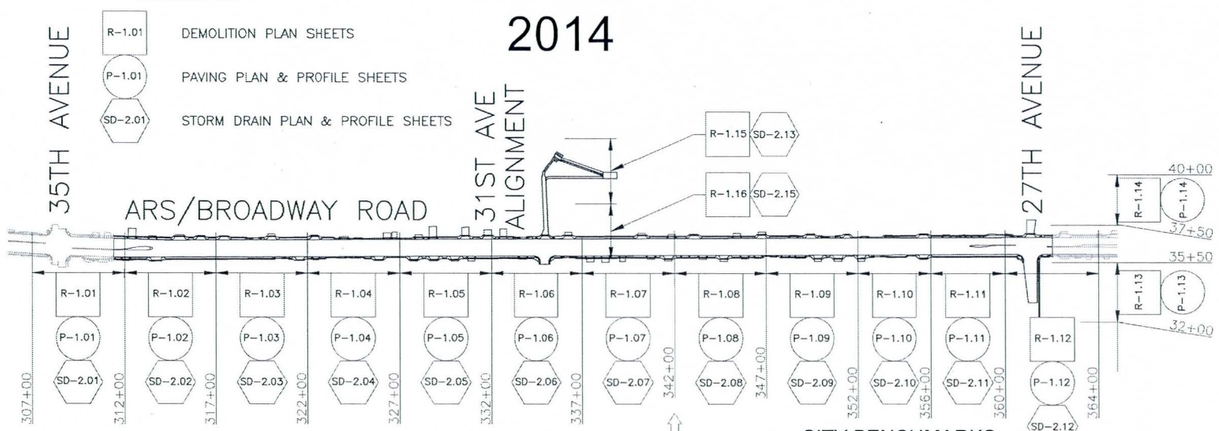
APPROVED _____ DATE _____
DEPUTY STREET TRANSPORTATION DIRECTOR

LEGEND

R-1.01 — DEMOLITION PLAN SHEETS

P-1.01 — PAVING PLAN & PROFILE SHEETS

SD-2.01 — STORM DRAIN PLAN & PROFILE SHEETS



KEY MAP

NTS

N

LENGTH OF PROJECT=5108.96 LF=0.95 MILES

AREA OF DISTURBANCE=17.84 ACRES

Call at least two full working days before you begin excavation. ARIZONA 811 Arizona Blue Stake, Inc. Dial 8-1-1 or 1-800-STAKE-IT (782-5348) In Maricopa County (602) 263-1100

CITY BENCHMARKS

▲ COP BC IN NORTH HH, ABOUT 15' WEST OF SECOND COP BC IN HH AT THE INTERSECTION OF 35TH AVE AND BROADWAY RD EL 1034.96
PT# 104

▲ COP BC IN HH AT THE INTERSECTION OF 27TH AVE AND BROADWAY RD
EL 1046.63
PT# 101

▲ COP BC IN HH AT THE INTERSECTION OF 31ST AVE AND BROADWAY RD
EL 1034.96
PT# 102

MAYOR
GREG STANTON

CITY MANAGER
ED ZUERCHER

CITY COUNCIL

DISTRICT NO 1.	THELDA WILLIAMS
DISTRICT NO 2.	JIM WARING
DISTRICT NO 3.	BILL GATES
DISTRICT NO 4.	LAURA PASTOR
DISTRICT NO 5.	DANIEL VALENZUELA
DISTRICT NO 6.	SAL DICICCIO
DISTRICT NO 7.	MICHAEL NOWAKOWSKI
DISTRICT NO 8.	KATE GALLEGO

INDEX OF SHEETS

SHEET NO.	DWG SERIES NO.	SHEET TITLE
1	G-1.01	COVER SHEET
2	G-1.02	LEGEND & NOTES
3-6	G-2.01 - G-2.04	ROADWAY SUMMARY SHEETS
7-8	G-3.01 - G-3.02	TYPICAL SECTIONS
9	G-4.01	MEDIAN ISLAND GEOMETRIC SHEET
10	G-5.01	SURVEY CONTROL
11-26	R-1.01 - R-1.16	REMOVAL PLAN
27-40	P-1.01 - P-1.14	PAVING PLAN & PROFILE
41-56	DP-1.01 - DP-1.16	DRIVEWAY PROFILES
57-73	XS-1.01 - XS-1.17	CROSS SECTIONS
74-75	DT-1.01 - DT-1.02	PAVING DETAILS
76	DT-1.03	INTERSECTION STAKING PLAN
77	SD-1.01	HYDRAULIC & ENERGY GRADE LINE
78	DS-1.01	STORM DRAIN DESIGN SUMMARY
79-84	SB-1.01 - SB-1.06	SOIL BORING LOGS
85-99	SD-2.01 - SD-2.15	STORM DRAIN PLAN & PROFILE
100-106	CP-1.01 - CP-1.07	CONNECTOR PIPE PROFILES
107	AP-1.01	ALTERNATE PIPE CHART
108	DD-1.01	WATERLINE REALIGNMENT DETAIL
109-122	SL-1.01 - SL-1.14	STREET LIGHT PLANS
123-139	-	TRAFFIC SIGNAL PLANS
140-147	-	SIGNING & MARKING PLANS
148-152	LD-1.01 - LD-1.05	LANDSCAPE DETAILS
153-158	LS-1.01 - LS-1.06	LANDSCAPE PLAN
159-164	LS-2.01 - LS-2.06	IRRIGATION PLAN
-	-	SRP POWER PLANS
-	-	SRP IRRIGATION PLANS

"PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."

ST85100332: AVENIDA RIO SALADO/BROADWAY ROAD: 35TH AVENUE TO 27TH AVENUE

ST85100332GS.dwg, Jan. 20, 14

QS 4-21, 4-22, 4-23, 5-21, 5-22, 5-23

AVENIDA RIO SALADO/BROADWAY RD
35TH AVENUE TO 27TH AVENUE
PHOENIX STREETS – MARICOPA CO.

LEGEND AND NOTES

LEGEND

- BENCHMARK
- NEW SURVEY MONUMENT – MAG DETAIL 120-1 TYPE "B"
- NEW SURVEY MONUMENT – MAG DETAIL 120-1 TYPE "A"
- COMBINED CURB & GUTTER – MAG DETAIL 220 TYPE "A"
- BACKFILL TYPE & SQ YD PVMT REPLACEMENT – COP DETAIL P1200
- EXISTING CONCRETE PAVEMENT OR SIDEWALK
- NEW CONCRETE SIDEWALK – STD DETAIL P1230
- NEW CONCRETE DRIVEWAY OR ALLEY ENT PER DETAIL ON PLANS
- NEW CONCRETE SIDEWALK RAMP PER DETAIL ON PLANS
- AVERAGE GROUND ELEVATION AT R/W LINE
- BACKFILL COMPACTION TYPE
- EXISTING DITCH
- EXISTING IRRIGATION LINE W/SIZE (NOTE PRIVATE, SALT RIVER OR RID)
- EXISTING IRRIGATION STRUCTURE
- EXISTING IRRIGATION STANDPIPE
- NEW IRRIGATION STANDPIPE – MAG DETAIL 503
- NEW IRRIGATION VALVE – MAG DETAIL 506 W/ CONC. SCOURING BASIN
- IRRIGATION BERM
- NEW IRRIGATION STRUCTURE PER DETAIL ON PLANS
- EXISTING WATER LINE W/SIZE & TYPE (12" & SMALLER)
- EXISTING WATER LINE W/SIZE & TYPE (GREATER THAN 12")
- ADJUST EXISTING WATER VALVE BOX – COP DETAIL P1391
- 3/4" W — WATER SERVICE W/SIZE & WATER METER BOX
- EXISTING FIRE HYDRANT
- NEW OR RELOCATED FIRE HYDRANT BY CONTRACTOR
- EXISTING WATER VALVE W/TOP OF OPERATING NUT ELEVATION
- EXISTING SANITARY SEWER LINE W/SIZE & TYPE (12" & SMALLER)
- EXISTING SANITARY SEWER LINE W/SIZE & TYPE (GREATER THAN 12")
- EXISTING MANHOLE
- NEW MANHOLE
- CATCH BASIN, GUTTER INLET (LENGTH TO SCALE)
- CATCH BASIN, CURB INLET (LENGTH TO SCALE)
- CATCH BASIN, CURB & GUTTER INLET (LENGTH TO SCALE)
- EXISTING STORM DRAIN LINE W/SIZE & TYPE (GREATER THAN 12")
- NEW PIPE FOR STORM DRAIN OR IRRIGATION LINE
- EXISTING GAS LINE W/SIZE
- E — EXISTING UNDERGROUND ELECTRIC CABLE OR SINGLE CONDUIT
- E-#D — EXISTING UNDERGROUND ELECTRIC DUCT (SPECIFY NUMBER)
- T — EXISTING TELEPHONE BURIED CABLE OR SINGLE CONDUIT
- T-#D — EXISTING UNDERGROUND TELEPHONE DUCT (SPECIFY NUMBER)
- CATV — EXISTING UNDERGROUND CABLE TV
- FO — EXISTING UNDERGROUND FIBER OPTIC LINE
- EXISTING TRAFFIC SIGNAL POLE W/MAST ARM & SIGNAL INDICATIONS
- EXISTING STREET OR TRAFFIC SIGN
- EXISTING UTILITY POLE W/LINE INDICATING WIRE DIRECTION
- EXISTING WIRE FENCE
- EXISTING BLOCK FENCE
- EXISTING WOOD FENCE
- MAIL BOX
- EXISTING POWER POLE DOWN GUY ANCHOR
- EXISTING STREET LIGHT & POLE
- EXISTING TREE OR STUMP TO BE REMOVED – MORE THAN 12" DIA
- EXISTING TREE TO BE TRANSPLANTED BY CONTRACTOR
- EASEMENT LINE
- EXISTING OR NEW R/W LINE
- PAVEMENT CENTER LINE
- EXISTING TREE OR STUMP TO BE REMOVED 12" DIA OR LESS (NON PAY ITEM)
- EXISTING TREE TO REMAIN
- CB — EXISTING CATCH BASIN

NOTES

ALL CONSTRUCTION SHALL BE PERFORMED IN ACCORDANCE WITH CONTRACT SPECIFICATIONS; PLANS; CITY OF PHOENIX SUPPLEMENTS TO MAG STANDARD SPECIFICATIONS & DETAILS; & MAG STANDARD SPECIFICATIONS & DETAILS, IN THAT ORDER OF PRECEDENCE, AT THE TIME OF CONSTRUCTION BID.

ALL STORM SEWER MANHOLES ARE TO BE CONSTRUCTED WITHOUT STEPS.

PIPE CONNECTIONS TO EXISTING CONCRETE PIPE MAINS SHALL BE MADE IN ACCORDANCE WITH DETAILS CALLED OUT ON THE PLANS. CONNECTION TO MAINS SHALL NOT BE CLOSER THAN 5', CENTER TO CENTER.

PIPE CONNECTIONS TO NEW PRECAST CONCRETE PIPE MAINS SHALL BE MADE WITH FACTORY MADE WYES OR TEES. THE DETAIL OF THE FITTINGS MUST BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO MANUFACTURE. PIPE CONNECTIONS TO NEW CAST IN PLACE CONCRETE PIPE MAINS SHALL BE MADE PER COP DETAIL P1576.

CATCH BASIN CONNECTOR PIPES SHALL BE LAID ON A STRAIGHT ALIGNMENT & SLOPE UNLESS OTHERWISE SPECIFIED. IF BREAKS IN ALIGNMENT OR SLOPE ARE NECESSARY TO MEET FIELD CONDITIONS, THE MAXIMUM DEFLECTION SHALL BE 22-1/2°. THE BEND SHALL BE COLLARED ACCORDING TO COP DETAIL P1505. ANY ANGLE BENDS GREATER THAN 22-1/2° SHALL BE PREFABRICATED.

CONNECTOR PIPES SHALL CONNECT TO CATCH BASIN WALLS AT AN ANGLE NOT TO EXCEED 22-1/2° FROM PERPENDICULAR.

FACILITIES WHICH ARE NOT SPECIFICALLY LOCATED WITH ACTUAL VERTICAL & HORIZONTAL CONTROLS, ARE LOCATED ONLY APPROXIMATELY & TO THE BEST AVAILABLE INFORMATION PROVIDED BY VARIOUS OWNERS OF THE FACILITIES & SUPPLEMENTED BY VISUAL SURFACE INFORMATION WHERE APPROPRIATE. ACCURACY, LOCATION & COMPLETENESS OF THIS INFORMATION SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO INITIATION OF CONSTRUCTION.

AT LEAST TWO WORKING DAYS BEFORE CONSTRUCTION, THE CONTRACTOR SHALL CONTACT BLUESTAKE TO FIND & FLAG UNDERGROUND UTILITIES. THE CONTRACTOR SHALL CONTACT OTHER APPROPRIATE UTILITIES DIRECTLY IF THEY ARE NOT ON BLUESTAKE SYSTEM.

VERTICAL CONTROL IS BASED ON NATIONAL GEODETIC SURVEY.

UNLESS OTHERWISE NOTED, STATIONS SHOWN ON PIPE PROFILES ARE ALONG CENTERLINE OF PIPE.

UNLESS OTHERWISE NOTED, PIPE SHALL BE BEDDED IN ACCORDANCE WITH CITY OF PHOENIX DETAIL P1200.

CATCH BASINS ARE STATIONED PERPENDICULAR TO THE CENTERLINE OF THE STREET AT THE CENTERLINE OF THE MAINTENANCE BASIN.

SANITARY SEWER MAINS & TAPS CROSSING OVER STORM DRAIN MAINS SHALL BE SUPPORTED PER MAG DETAIL 403-1, 403-2, OR 403-3.

ALL EXISTING PRECAST CONCRETE SAFETY CURBS & ALL EXISTING WOODEN PARKING CURBS WHICH ARE INSIDE THE RIGHT OF WAY & APPROXIMATELY PARALLEL TO THE NEW CURB LINE SHALL BE RESET ON THE RIGHT OF WAY DIRECTLY OPPOSITE THEIR EXISTING LOCATION, WITH THE BACK EDGE ON THE RIGHT OF WAY LINE. ALL OTHER PRECAST CONCRETE SAFETY CURBS INSIDE THE STREET RIGHT OF WAY SHALL BE SALVAGED & STOCK PILED FOR THE OWNER AT THE RIGHT OF WAY LINE.

EXISTING PRECAST CONCRETE SAFETY CURBS OUTSIDE THE RIGHT OF WAY WHICH ARE DISTURBED BY NEW CONSTRUCTION SHALL BE RESET IN THEIR ORIGINAL POSITION BY THE CONTRACTOR.

ALL EXISTING DRIVEWAYS & ALL EXISTING ALLEYS SHALL BE GRADED TO MATCH THE NEW WORK IN ACCORDANCE WITH STD DETAIL P1164, UNLESS OTHERWISE SPECIFIED. EXISTING SURFACING SHALL BE REMOVED & REPLACED AS NECESSARY.

UTILITY COMPANY EMERGENCY CONTACT INFORMATION

COMPANY	NAME	E-MAIL	EMERGENCY #
COP STREET TRANSPO UTIL COORDINATION	CATHERINE ROGERS	CATHERINE.ROGERS@PHOENIX.GOV	(602) 262-4972
COP WATER SERVICES	JAMI ERICKSON	JAMI.ERICKSON@PHOENIX.GOV	(602) 261-8229
COP STREET LIGHTS	JASON FERNANDEZ	JASON.FERNANDEZ@PHOENIX.GOV	(602) 256-4168
CENTURYLINK	KAREN BROWN	KAREN.BROWN1@CENTURYLINK.COM	(480) 768-4398
COX COAX	BEN BAICH	BENJAMIN.BAICH@COX.COM	(623) 328-3538
COX FO	RANDY SIMS	RANDY.SIMS@COX.COM	(623) 328-4058
SOUTHWEST GAS	VALERIE GALLARDO-WELLER	VALERIE.GALLARDO-WELLER@SWGAS.COM	(480) 484-5342
SRPE	DORIAN SPEED	DORIAN.SPEED@SRPNET.COM	(602) 236-8679
SRPI	GARY BRUNO	GARY.BRUNO@SRPNET.COM	(602) 236-5182

DESIGN CRITERIA

- STREET CLASSIFICATION – ARTERIAL
- DESIGN SPEED – 60 MPH
- NORMAL CROSS SLOPE – 2%
- ROADWAY CROSS SECTION – COP CROSS SECTION B – MODIFIED (NO RAISED MEDIAN)

NOTES (CONT)

UNLESS OTHERWISE PROVIDED ON THE PLANS:

- THE SPACE BETWEEN THE BACK OF NEW DRIVEWAY ENTRANCES & EXISTING AC DRIVEWAYS SHALL BE FILLED WITH A MINIMUM OF 3" ACSC ON 100% COMPACTED NATIVE SOIL. WHERE EXISTING PAVEMENT & BASE THICKNESS EXCEED THE MINIMUMS, MATCH THE EXISTING.
- THE SPACE BETWEEN THE BACK OF NEW SIDEWALKS & EXISTING PRIVATE SIDEWALKS, & THE SPACE BETWEEN THE BACK OF NEW DRIVEWAY ENTRANCES & EXISTING PCC DRIVEWAYS SHALL BE FILLED WITH PCC. THE THICKNESS & CLASS SHALL MATCH THAT OF THE NEW SIDEWALK OR DRIVEWAY ENTRANCE.
- THE SPACE BETWEEN THE BACK OF THE NEW SIDEWALKS, & EXISTING AC PARKING LOTS, WHICH FALL WITHIN OR ABUT THE R/W SHALL BE FILLED WITH 2" ACSC ON 100% COMPACTED NATIVE SOIL.

EXISTING IRRIGATION BERMS DISTURBED BY NEW CONSTRUCTION SHALL BE RECONSTRUCTED AS SHOWN ON PLANS.

CATCH BASIN ACCESS FRAME & COVERS SHALL BE CONSTRUCTED PER COP DETAIL P1561.

STRUCTURAL NOTES

"CLEAR" DIMENSIONS FOR DEPTH OF REINFORCING STEEL ARE FROM FACE OF CONCRETE TO FACE OF BARS.

ALL EXPOSED EDGES OF CONCRETE SHALL BE BEVELED OR ROUNDED.

ALL EXPOSED CONCRETE SURFACES SHALL BE FINISHED IN ACCORDANCE WITH ARIZONA DEPT. OF TRANSPORTATION STANDARD SPECIFICATION 601-3.05 – FINISHING CONCRETE, UNLESS OTHERWISE SPECIFIED.

ABBREVIATIONS

AC	ASPHALT CONCRETE	FND-BCF	FOUND-BRASS CAP FLUSH
AP	ANGLE POINT	FND-MAG	FOUND-MAG NAIL
ARS	AVENIDA RIO SALADO	FO	FIBER OPTIC
BC	BRASS CAP	FP	FLAGPOLE
BCHH	BRASS CAP IN HAND HOLE	F-WI	FENCE-WROUGHT IRON
BCR	BEGIN CURB RETURN	G	GUTTER
B/C	BACK OF CURB	GM	GAS METER
BLDC	BUILDING CORNER	GMK	GAS MARKER SIGN
BLDL	BUILDING LINE	GR	GUARD RAIL
BM	BENCHMARK	GRATE	STORM DRAIN GRATE
BOL	BOLLARD/GUARD POST	GV	GAS VALVE
C	CONCRETE	HDWL	HDWL
CAC-SAG	CACTUS-SAGUARO	HH	HAND HOLE
CATVPB	CABLE TV PULL BOX	IBX	IRRIGATION CONTROL BOX
CATVPED	CABLE TV PEDESTAL	ICV	IRRIGATION CONTROL VALVE
CCL	CITY/COUNTY LIMITS	IRR	IRRIGATION
CI	CURB INLET	IRRMH	IRRIGATION MANHOLE
COL	COLUMN	JT	JOINT
COMMMH	COMMUNICATION MANHOLE	L	LIP OF GUTTER
CONST	CONSTRUCTION	LT	LEFT
DE	DRAINAGE EASEMENT	LPD	LIGHT POLE DOUBLE LIGHT
DNGY	DOWN GUY	LPS	LIGHT POLE SINGLE LIGHT
D/W	DRIVEWAY	MBX	MAILBOX
EA	EACH	OHE	OVERHEAD ELECTRIC LINE
EC	ELECTRICAL CABINET	OHT	OVERHEAD TELEPHONE LINE
ECR	END CURB RETURN	OHTV	OVERHEAD CABLE TELEVISION LINE
EE	ELECTRICAL EASEMENT	P	PAVEMENT
EM	ELECTRICAL METER	PC	POINT OF CURVATURE
EMH	ELECTRICAL MANHOLE	PCC	PORTLAND CEMENT CONCRETE
EOP	EDGE OF PAVEMENT	PERP	PERPENDICULAR
EPB	ELECTRICAL PULL BOX	PLTR	PLANTER
ESMT	EASEMENT	POE	POINT OF ENDING
EXST	EXISTING	POT	POINT ON TANGENT
F	FENCE	PP	POWER POLE
F/B	FACE OF BARRIER	PT	POINT OF TANGENT
F/C	FACE OF CURB	PVMT	PAVEMENT
F-CL	FENCE-CHAIN LINK	RCBC	REINFORCED CONCRETE BOX CULVERT
F-EL	FENCE-ELECTRIC	REN	REAL ESTATE NUMBER
FF	FACE TO FACE	RE	ROADWAY EASEMENT
FH	FIRE HYDRANT	R/W	RIGHT-OF-WAY
FL	FLOW LINE	RT	RIGHT

ADDITIONAL SYMBOLS

- CITY/COUNTY LIMITS LINE
- C — CUT LINE
- F — FILL LINE
- NEW BLOCK WALL
- EXST AC PAVEMENT
- DECORATIVE PAVEMENT
- S — SAWCUT & MATCH EXISTING
- M — MATCH EXISTING
- 3231 — PROPERTY ADDRESS NUMBER

ABBREVIATIONS (CONT)

SCPR	SCUPPER
SDMH	STORM DRAIN MANHOLE
SE	SLOPE EASEMENT
SET-CP-RB	SET CONTROL POINT-REBAR & CAP
SGN	SIGN
SSMH	SANITARY SEWER MANHOLE
STA	STATION
STCO	STORM DRAIN CLEANOUT
STLT	STREET LIGHT
S/W	SIDEWALK
SWE	SIDEWALK EASEMENT
TBM	TEMPORARY BENCHMARK
TC	TOP OF CURB
TCE	TEMPORARY CONSTRUCTION EASEMENT
TE	TELEPHONE EASEMENT
TMH	TELEPHONE MANHOLE
TN	TOP OF NUT
TPED	TELEPHONE PEDESTAL
TS	TRAFFIC SIGNAL
TSC	TRAFFIC SIGNAL CABINET
TSPB	TRAFFIC SIGNAL PULL BOX
TVPB	TV PULL BOX
TYP	TYPICAL
UP	UTILITY POLE
VLT-TV	VAULT-CABLE TV
VNAE	VEHICULAR NON-ACCESS EASEMENT
W	WATERLINE
WALL-BLK	WALL-BLOCK
WALL-C	WALL-CONCRETE
WBV	WATER BLOW-OFF VALVE
WE	WATER EASEMENT
WM	WATER METER
WMH	WATER MANHOLE
WV	WATER VALVE

Call at least two full working days before you begin excavation. ARIZONA 811 Arizona Blue Stake, Inc. Dial 8-1-1 or 1-800-STAKE-IT (782-5348) In Maricopa County (602) 263-1100

"PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."

33425 GREGORY P. HAGGERTY — Expires 03/31/14

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL
9	ARIZ.	ST85100332	2	164

Dibble Engineering — DIBBLE ENGINEERING — CONSULTING ENGINEER

DES: DHD | DR: CDF | CK: GPH | DATE: 01/14

LEGEND AND NOTES

CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

AVENIDA RIO SALADO/BROADWAY ROAD
35TH AVENUE TO 27TH AVENUE
ST85100332

DR: STAFF	DES: DHD	CK: GPH	DWG SERIES NO.
DATE: 01/14	DATE: 01/14	DATE: 01/14	
SCALE: N/A			G-1.02

ST85100332LN.dwg 1/20/14

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

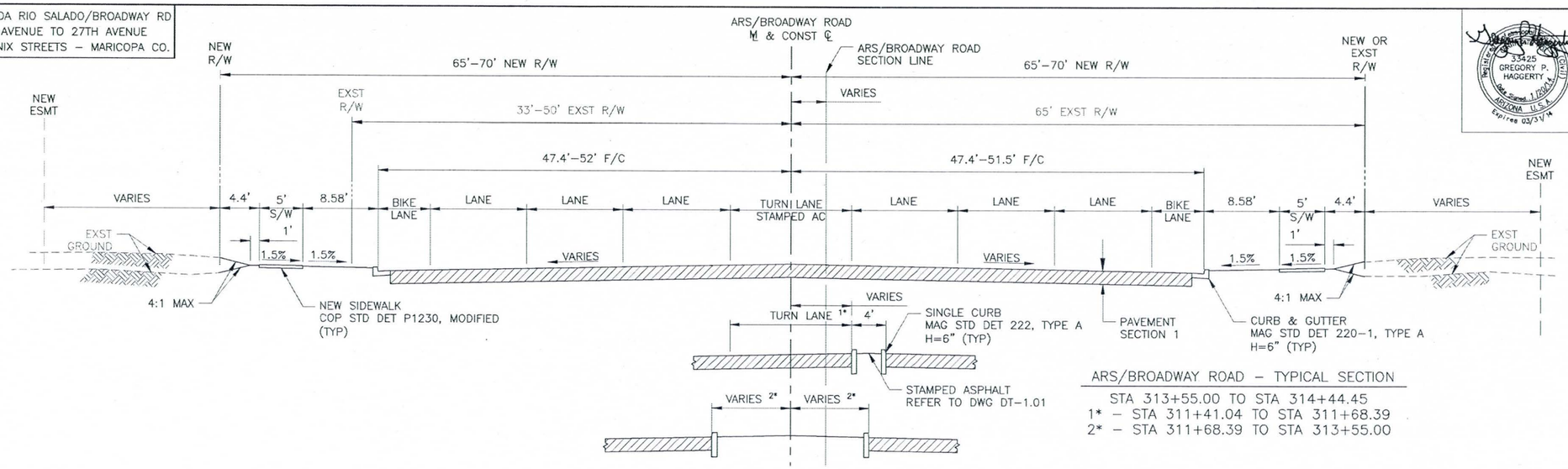
REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

REVISION BY CITY OF PHOENIX

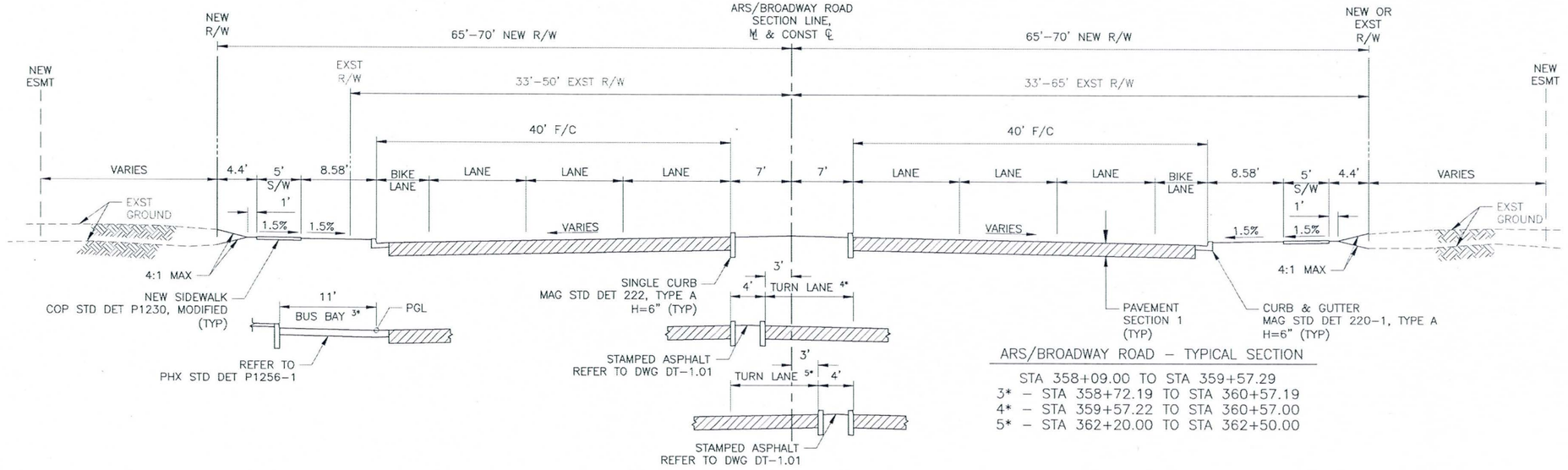
NO.	DESCRIPTION	REV BY	CKD BY	DATE

AVENIDA RIO SALADO/BROADWAY RD
35TH AVENUE TO 27TH AVENUE
PHOENIX STREETS – MARICOPA CO.



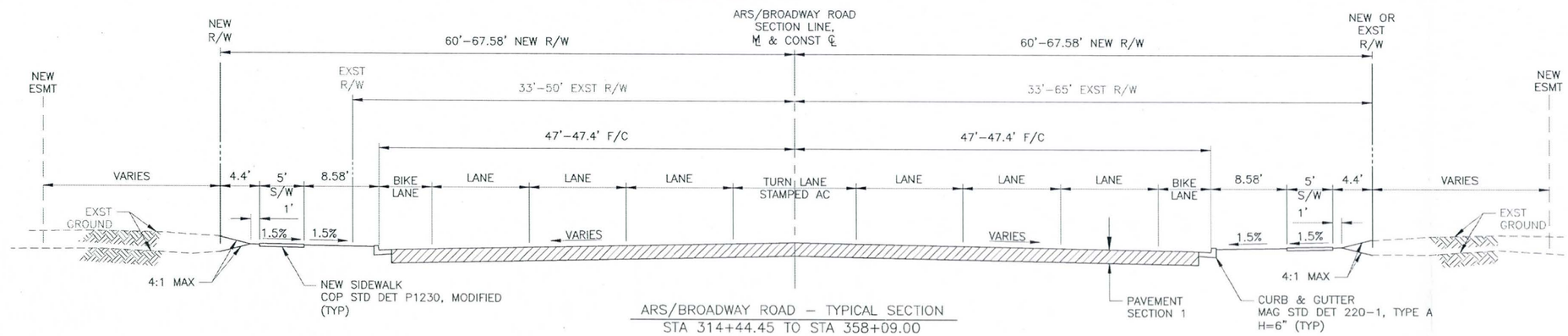
ARS/BROADWAY ROAD – TYPICAL SECTION

STA 313+55.00 TO STA 314+44.45
1* – STA 311+41.04 TO STA 311+68.39
2* – STA 311+68.39 TO STA 313+55.00



ARS/BROADWAY ROAD – TYPICAL SECTION

STA 358+09.00 TO STA 359+57.29
3* – STA 358+72.19 TO STA 360+57.19
4* – STA 359+57.22 TO STA 360+57.00
5* – STA 362+20.00 TO STA 362+50.00



ARS/BROADWAY ROAD – TYPICAL SECTION

STA 314+44.45 TO STA 358+09.00
STA 360+57.00 TO STA 362+20.00

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

33425
GREGORY P. HAGGERTY
Date Signed 1/20/14
ARIZONA U.S.A.
Expires 03/31/14

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL
9	ARIZ.	ST85100332	7	164

Dibble Engineering
7500 N. Dreamy Draw Drive, Suite 260, Phoenix, AZ 85020, P: 602.957.1188
DIBBLE ENGINEERING
CONSULTING ENGINEER

DES: DHD	DR: CDF	CK: GPH	DATE: 01/14

Call at least two full working days before you begin excavation.
ARIZONA 811
Arizona Blue Stake, Inc.
Dial 8-1-1 or 1-800-STAKE-IT (782-5348)
In Maricopa County (602) 263-1100

"PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."

TYPICAL SECTIONS

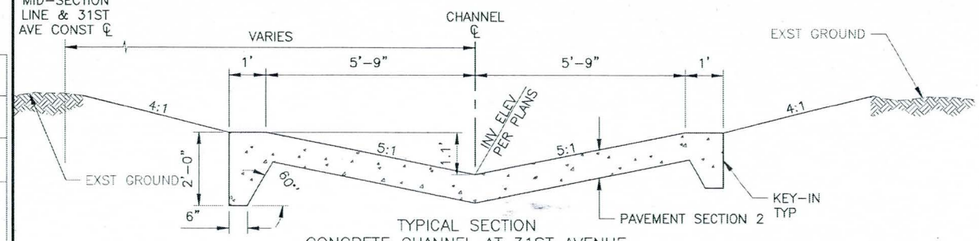
CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

AVENIDA RIO SALADO/BROADWAY ROAD
35TH AVENUE TO 27TH AVENUE
ST85100332

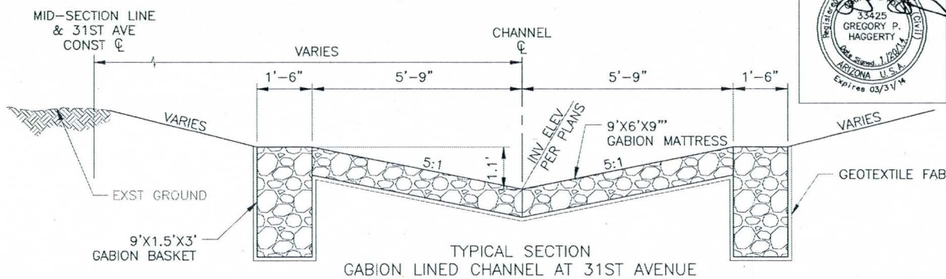
DR: STAFF	DES: DHD	CK: GPH	DWG SERIES NO.
DATE: 01/14	DATE: 01/14	DATE: 01/14	
SCALE: NTS			G–3.01

ST85100332TY1.dwg 1/20/14

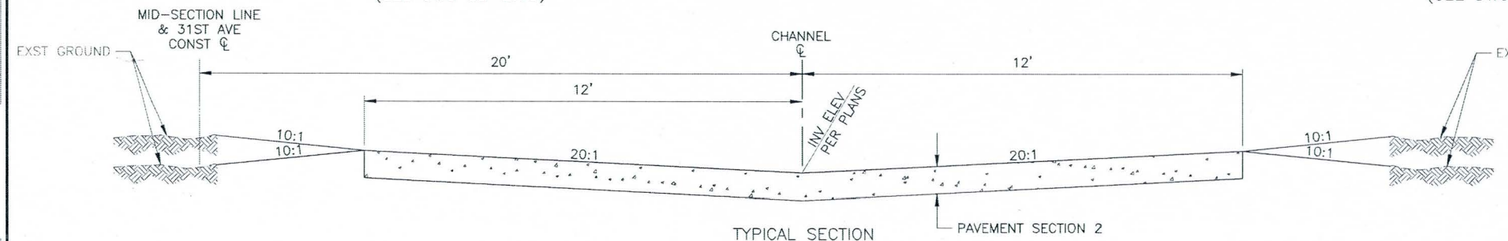
AVENIDA RIO SALADO/BROADWAY RD
35TH AVENUE TO 27TH AVENUE
PHOENIX STREETS – MARICOPA CO.



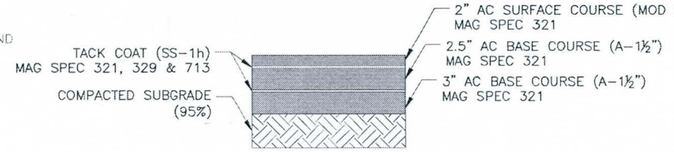
TYPICAL SECTION
CONCRETE CHANNEL AT 31ST AVENUE
STA 403+87.39 TO STA 404+20.57
(SEE DWG SD–2.13)



TYPICAL SECTION
GABION LINED CHANNEL AT 31ST AVENUE
STA 403+16.97 TO STA 403+87.39
(SEE DWG SD–2.13)

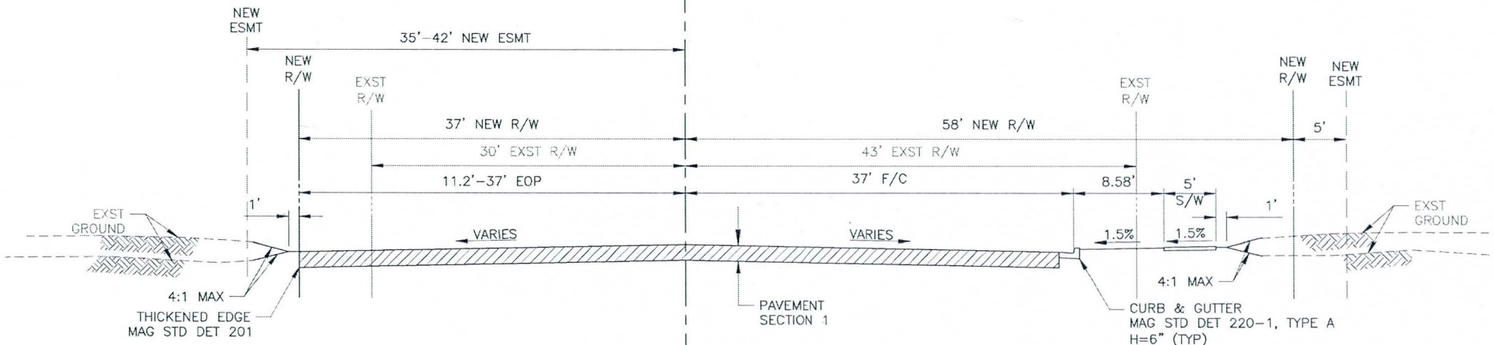


TYPICAL SECTION
CONCRETE CHANNEL AT 31ST AVENUE
STA 404+20.57 TO STA 407+33.15
(SEE DRAWINGS SD–2.13 & SD–2.15)

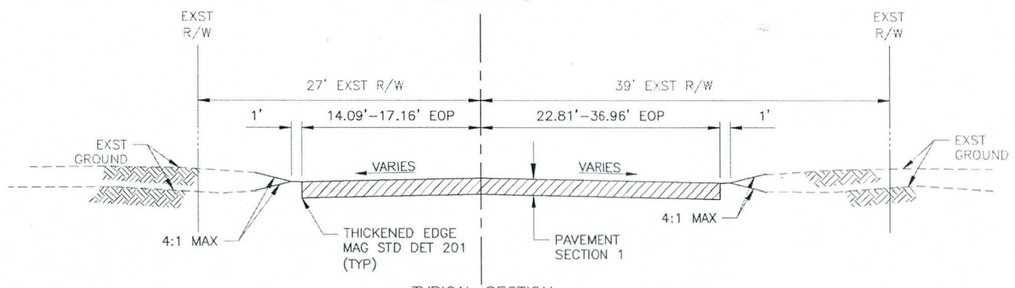


PAVEMENT SECTION 1
TOTAL = 7.5"

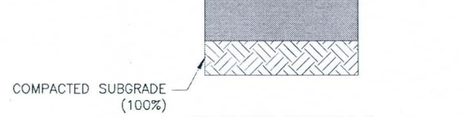
NOTE: SAME TYPICAL SECTION FOR STAMPED ASPHALT TREATMENT AT FLUSH MEDIAN LOCATIONS



TYPICAL SECTION
27TH AVENUE
STA 33+30.00 TO STA 35+49.10



TYPICAL SECTION
27TH AVENUE
STA 37+08.15 TO STA 37+83.23



PAVEMENT SECTION 2
TOTAL = 9"

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL
9	ARIZ.	ST85100332	8	164

Dibble Engineering — DIBBLE ENGINEERING — CONSULTING ENGINEER

DES: DHD	DR: CDF	CK: GPH	DATE: 01/14

33425 GREGORY P. HAGGERTY — Date Signed 1/20/14 — ARIZONA U.S.A. — Expires 09/30/14

Call at least two full working days before you begin excavation. ARIZONA 811 Arizona Blue Stake, Inc. Dial 8-1-1 or 1-800-STAKE-IT (782-5348) In Maricopa County: (602) 263-1100

"PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2–28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."

TYPICAL SECTIONS

CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

AVENIDA RIO SALADO/BROADWAY ROAD
35TH AVENUE TO 27TH AVENUE
ST85100332

DR: STAFF	DES: DHD	CK: GPH	DWG SERIES NO.
DATE: 01/14	DATE: 01/14	DATE: 01/14	
SCALE: NTS			G–3.02

ST85100332TY2.dwg 1/20/14

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

AVENIDA RIO SALADO/BROADWAY RD
35TH AVENUE TO 27TH AVENUE
PHOENIX STREETS – MARICOPA CO.

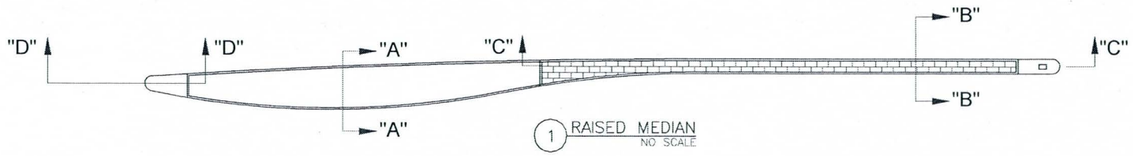
F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL
9	ARIZ.	ST85100332	9	164

Dibble Engineering — DIBBLE ENGINEERING, CONSULTING ENGINEER

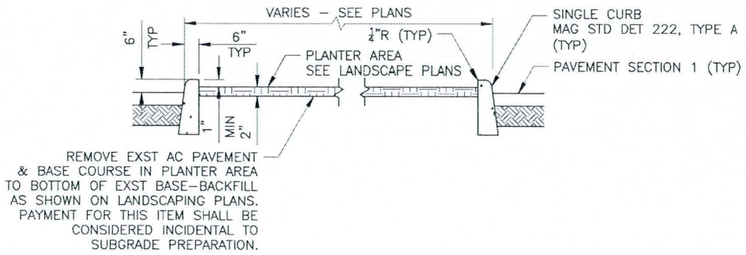
DES: DHD	DR: CDF	CK: GPH	DATE: 01/14

REVISION BY CITY OF PHOENIX

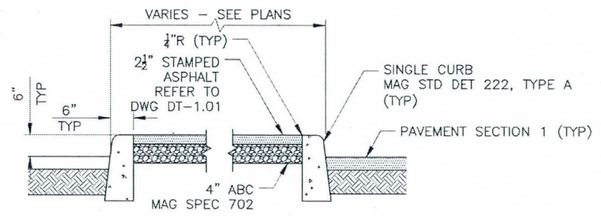
NO.	DESCRIPTION	REV BY	CKD BY	DATE



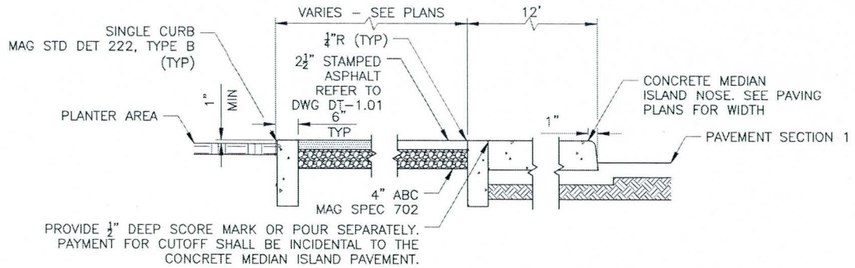
1 RAISED MEDIAN
NO SCALE



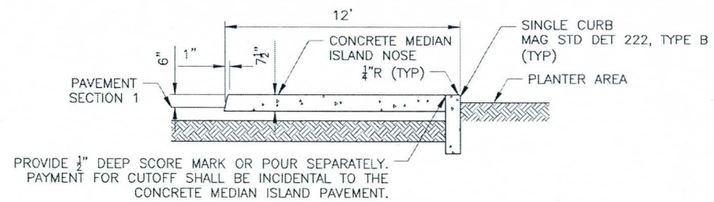
SECTION "A – A"
NO SCALE



SECTION "B – B"
NO SCALE



SECTION "C – C"
NO SCALE



SECTION "D – D"
NO SCALE

Call at least two full working days before you begin excavation. ARIZONA 811 Arizona Blue Stake, Inc. Dial 8-1-1 or 1-800-STAKE-IT (782-5348) In Maricopa County: (602) 263-1100

"PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2–28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."

MEDIAN ISLAND GEOMETRIC SHEET

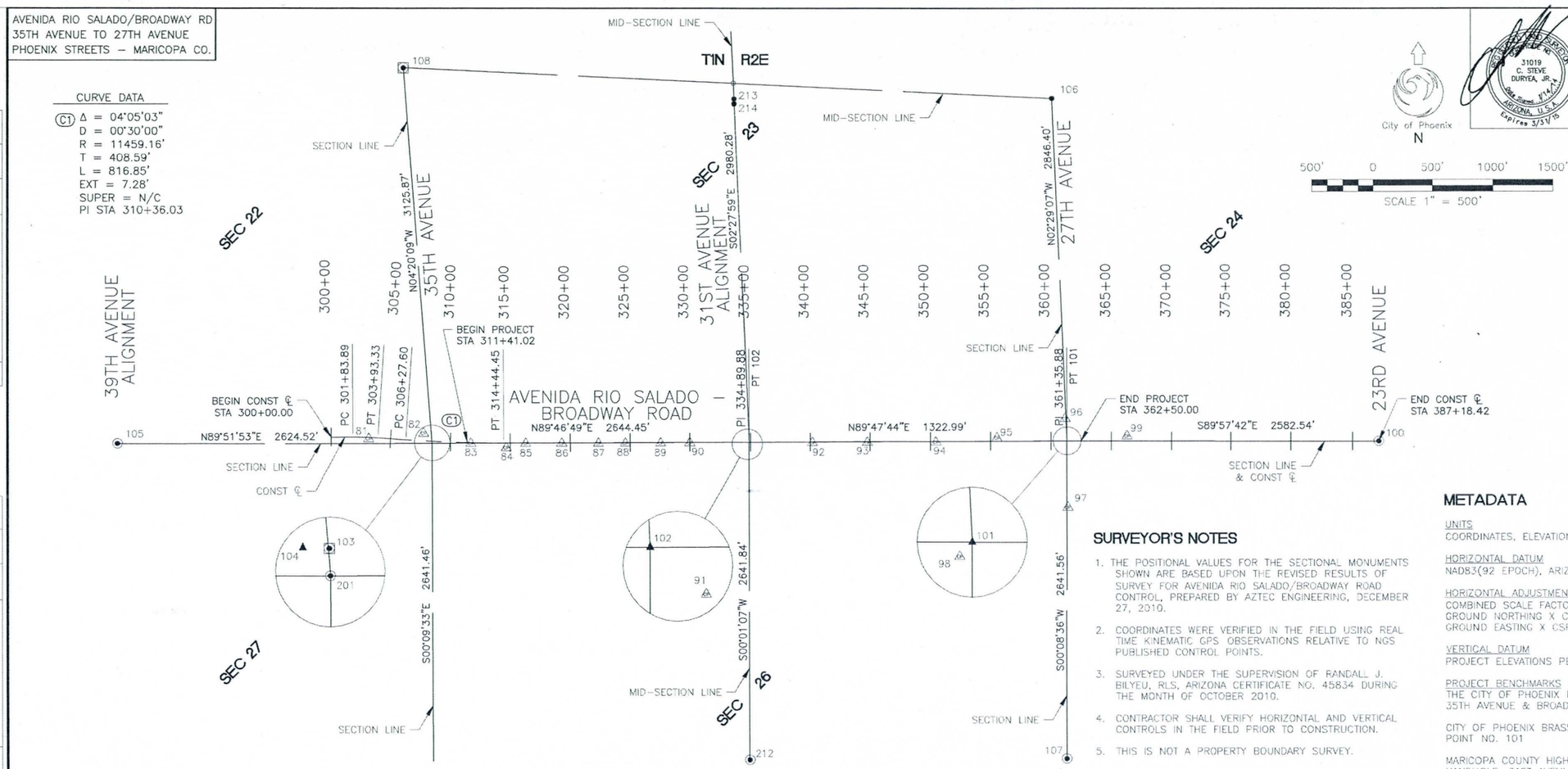
CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

AVENIDA RIO SALADO/BROADWAY ROAD
35TH AVENUE TO 27TH AVENUE
ST85100332

DR: STAFF	DES: DHD	CK: GPH	DWG SERIES NO.
DATE: 01/14	DATE: 01/14	DATE: 01/14	
SCALE: NTS			G–4.01

ST85100332T3.dwg 1/20/14

AVENIDA RIO SALADO/BROADWAY RD
35TH AVENUE TO 27TH AVENUE
PHOENIX STREETS – MARICOPA CO.



CURVE DATA

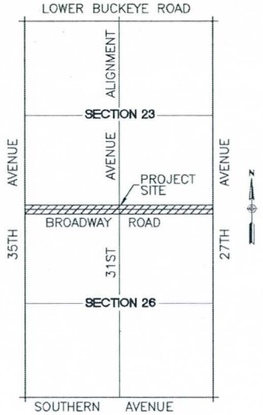
(C1) Δ = 04°05'03"
D = 00°30'00"
R = 11459.16'
T = 408.59'
L = 816.85'
EXT = 7.28'
SUPER = N/C
PI STA 310+36.03

City of Phoenix

N

500' 0 500' 1000' 1500'

SCALE 1" = 500'



VICINITY MAP

SECTIONS 23 & 26
T1N, R2E

NOT TO SCALE

SURVEYOR'S NOTES

1. THE POSITIONAL VALUES FOR THE SECTIONAL MONUMENTS SHOWN ARE BASED UPON THE REVISED RESULTS OF SURVEY FOR AVENIDA RIO SALADO/BROADWAY ROAD CONTROL, PREPARED BY AZTEC ENGINEERING, DECEMBER 27, 2010.
2. COORDINATES WERE VERIFIED IN THE FIELD USING REAL TIME KINEMATIC GPS OBSERVATIONS RELATIVE TO NGS PUBLISHED CONTROL POINTS.
3. SURVEYED UNDER THE SUPERVISION OF RANDALL J. BILYEU, RLS, ARIZONA CERTIFICATE NO. 45834 DURING THE MONTH OF OCTOBER 2010.
4. CONTRACTOR SHALL VERIFY HORIZONTAL AND VERTICAL CONTROLS IN THE FIELD PRIOR TO CONSTRUCTION.
5. THIS IS NOT A PROPERTY BOUNDARY SURVEY.

METADATA

UNITS
COORDINATES, ELEVATIONS AND DISTANCES SHOWN IN INTERNATIONAL FEET (IFT)

HORIZONTAL DATUM
NAD83(92 EPOCH), ARIZONA CENTRAL ZONE

HORIZONTAL ADJUSTMENT
COMBINED SCALE FACTOR (CSF): 0.999840026
GROUND NORTHING X CSF = GRID NORTHING
GROUND EASTING X CSF = GRID EASTING

VERTICAL DATUM
PROJECT ELEVATIONS PER CITY OF PHOENIX PUBLISHED BENCHMARKS (NGVD 1929)

PROJECT BENCHMARKS
THE CITY OF PHOENIX PUBLISHED BENCHMARK SHOWN AS:
35TH AVENUE & BROADWAY ROAD, POINT NO. 104

CITY OF PHOENIX BRASS CAP IN HANDHOLE, 27TH AVENUE & BROADWAY ROAD, POINT NO. 101

MARICOPA COUNTY HIGHWAY DEPARTMENT BRASS CAP IN HANDHOLE, 31ST AVENUE & BROADWAY ROAD, POINT NO. 102

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL
9	ARIZ.	ST85100332	10	164

Dibble Engineering — DIBBLE ENGINEERING — CONSULTING ENGINEER

DES: N/A | DR: DBB | CK: CSD | DATE: 1/14

31019 C. STEVE DURYEA, JR. — Expires 3/31/15

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

POINT DATA TABLE				
POINT NO.	GROUND NORTHING	GROUND EASTING	ELEVATION	DESCRIPTION
1	883513.366	637340.575	1047.06	FOUND GDACS MONUMENT "MCDOT". NOT SHOWN
2	879298.798	660154.945	1090.54	FOUND GDACS MONUMENT "1BF1". NOT SHOWN
81	875725.750	633347.886	1035.16	SET MAG NAIL
82	875771.462	633806.867	1036.16	SET 1/2" REBAR
83	875685.743	634201.789	1035.71	SET MAG NAIL
84	875650.091	634498.292	1036.20	SET MAG NAIL
85	875686.305	634661.725	1037.22	SET MAG NAIL
86	875686.808	634960.576	1039.15	SET MAG NAIL
87	875687.810	635264.584	1039.97	SET MAG NAIL
88	875688.607	635490.179	1040.94	SET MAG NAIL
89	875690.083	635785.192	1041.23	SET MAG NAIL
90	875690.884	636031.030	1039.24	SET MAG NAIL
91	875693.142	636532.095	1038.55	SET MAG NAIL
92	875694.209	637049.951	1040.58	SET MAG NAIL
93	875695.978	637509.652	1042.67	SET MAG NAIL
94	875698.265	638078.445	1045.40	SET MAG NAIL
95	875734.782	638585.549	1045.93	SET MAG NAIL
96	875895.496	639151.770	1048.11	SET MAG NAIL
97	875160.523	639173.286	1047.15	SET MAG NAIL
98	875669.974	639132.923	1046.96	SET MAG NAIL

POINT DATA TABLE				
POINT NO.	GROUND NORTHING	GROUND EASTING	ELEVATION	DESCRIPTION
99	875750.533	639664.253	1048.25	SET MAG NAIL
100	875708.528	641749.611	1051.28	FOUND 3" CITY OF PHOENIX BRASS CAP FLUSH
101	875710.114	639167.059	1046.63	FOUND 3" CITY OF PHOENIX BRASS CAP IN HANDHOLE (PROJECT BENCHMARK)
102	875700.766	636521.124	1037.44	FOUND 3" MARICOPA COUNTY HIGHWAY DEPARTMENT BRASS CAP IN HANDHOLE (PROJECT BENCHMARK)
103	875704.298	633876.091	1034.91	FOUND 3" CITY OF PHOENIX BRASS CAP IN HANDHOLE
104	875704.670	633871.029	1034.96	FOUND 3" CITY OF PHOENIX BRASS CAP IN HANDHOLE (PROJECT BENCHMARK)
105	875684.371	631252.149	1027.77	FOUND 2" MARICOPA COUNTY ALUMINUM CAP
106	878553.819	639043.666	1035.53	FOUND UNMARKED REBAR
107	873068.700	639160.653	1044.14	FOUND 3" CITY OF PHOENIX BRASS CAP FLUSH
108	878807.555	633640.357	1030.49	FOUND 3" CITY OF PHOENIX BRASS CAP IN HANDHOLE
201	875690.617	633876.711	1035.19	FOUND BRASS CAP FLUSH (RLS 25396)
212	873058.935	636520.242	1036.22	FOUND ALUMINUM CAP FLUSH (RLS 27239)
213	878527.453	636399.488	1043.84	FOUND REBAR (RLS 37258)
214	878527.080	636399.465	1044.29	FOUND UNMARKED REBAR

CONSTRUCTION CENTERLINE			
STATION	DESCRIPTION	GROUND NORTHING	GROUND EASTING
300+00.00	BEGIN	875741.071	633032.513
301+83.89	PC	875741.506	633216.400
303+93.33	PT	875734.693	633425.686
306+27.60	PC	875718.903	633659.432
314+44.45	PT	875692.932	634475.691
334+89.88	PI	875700.776	636521.105
361+35.88	PI	875710.217	639167.089
387+18.42	END	875708.528	641749.611

LEGEND

- ◉ ⊙ • MONUMENT FOUND AS NOTED
- ⧋ SET CONTROL POINT AS NOTED
- ▲ PROJECT BENCHMARK FOUND AS NOTED
- ○ CALCULATED POSITION

Call at least two full working days before you begin excavation. ARIZONA 811 Arizona Blue Stake, Inc. Dial 8-1-1 or 1-800-STAKE-IT (782-5348) In Maricopa County (602) 263-1100

"PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."

SURVEY CONTROL

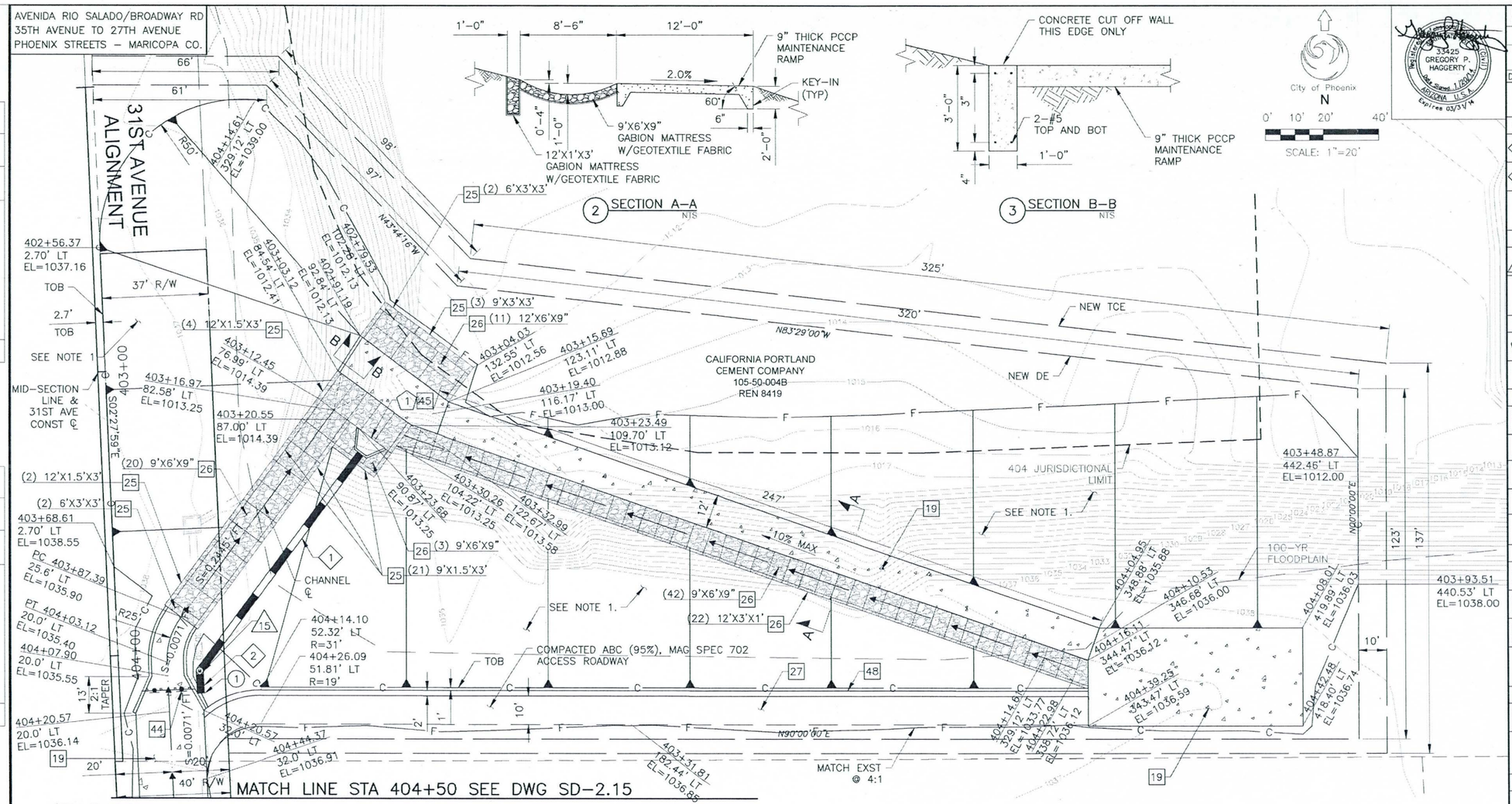
CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

AVENIDA RIO SALADO/BROADWAY ROAD
35TH AVENUE TO 27TH AVENUE
ST85100332

DR: DBB	DES: N/A	CK: CSD	DWG SERIES NO.
DATE: 1/14	DATE: N/A	DATE: 1/14	
SCALE: 1" = 500'			G-5.01

ST85100332_SC.dwg 1/13/11

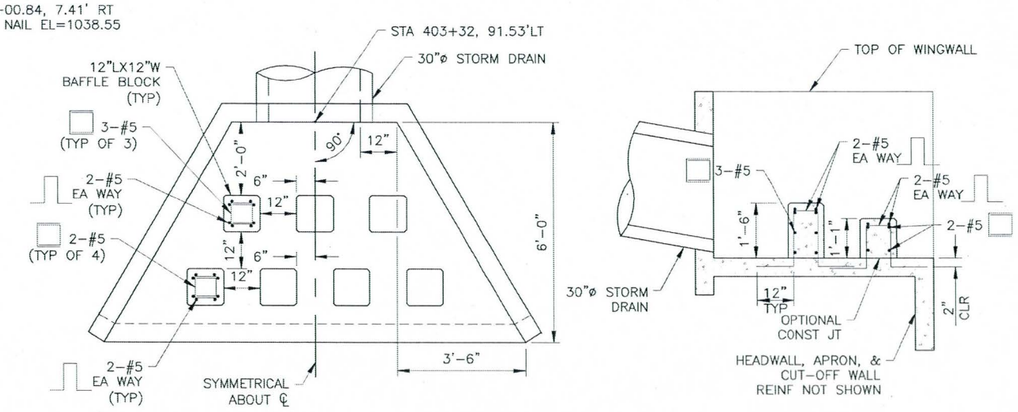
AVENIDA RIO SALADO/BROADWAY RD
35TH AVENUE TO 27TH AVENUE
PHOENIX STREETS – MARICOPA CO.



2 SECTION A–A
NTS

3 SECTION B–B
NTS

▲TBM PT NO 91
STA 335+00.84, 7.41' RT
SET MAG NAIL EL=1038.55



1 HEADWALL & APRON
MAG 501–4 MODIFIED
1"=2

NOTES

1. EARTHWORK SHALL CONFORM TO REQUIREMENTS OF MAG STD SPEC SECTION 215: EARTHWORK FOR OPEN CHANNELS. MAXIMUM EMBANKMENT SLOPE SHALL BE 3H:1V.
2. REFER TO SPECIAL PROVISIONS FOR ADDITIONAL DETAILED REQUIREMENTS OF GABION AND GABION MATTRESS CONSTRUCTION.
3. ROCK DIAMETER SIZE SHALL BE AS FOLLOWS:
   GABIONS: 4" TO 8"
   GABION MATTRESS: 3" TO 5"
4. GABION AND GABION MATTRESSES SHALL BE TRIMMED AND FOLDED PER MANUFACTURERS RECOMMENDATIONS TO MATCH DIMENSIONS OF PIPE AND HEADWALL PROTRUSIONS.
5. CONCRETE HEADWALL WITH APRON SHALL BE CONSTRUCTED ACCORDING TO MAG STD DET 501–4 EXCEPT AS NOTED HERE.
6. A CLEAN AND ROUGHENED SURFACE SHALL BE PROVIDED AT CONCRETE CONST JT'S.
7. PROVIDE 3/4" CHAMFER AT ALL EXPOSED CONCRETE CORNERS.
8. PROVIDE 2" CLR FROM REINF TO FACE OF CONCRETE, TYPICAL.
9. ACCESS BARRIER NUTS SHALL NOT BE WELDED. PROXIMITY OF BAFFLE BLOCKS REQUIRES THAT ACCESS BARRIER BE REMOVED BY UNFASTENING NUTS AT ANCHOR BOLTS.
10. PCC PAVEMENT EXPANSION AND CONTRACTION JTS SHALL BE CONSTRUCTED PER MAG STD DET 230 IN A STRAIGHT LINE AND VERTICAL PLANE PERP TO THE LONGITUDINAL LINE OF THE STRUCTURE. EXPANSION JT MAX SPACING SHALL BE 50'. CONTRACTION JT MAX SPACING SHALL BE 15', DOWELS ARE NOT REQUIRED.

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL
9	ARIZ.	ST85100332	97	164

Dibble Engineering — 7500 N. Dreamy Draw Drive, Suite 200, Phoenix, AZ 85020, P 602.957.1155
DIBBLE ENGINEERING
CONSULTING ENGINEER

DES: DHD | DR: CDF | CK: GPH | DATE: 01/14

Registered Professional Engineer — 33425 GREGORY P. HAGGERTY — Date Signed 1/20/14 — ARIZONA U.S.A. — Expires 03/31/14

STORM DRAIN PIPE

NO	STA TO STA	SIZE	LF
1	403+32, 91.53'LT TO 404+07, 31.17'LT	30	96
2	404+07, 31.17'LT TO 404+15, 31.21'LT	30	8

STORM DRAIN MANHOLE

NO	STATION	TYPE
15	404+07	P1520 & MAG 522

STORM DRAIN HEADWALL

NO	STATION	TYPE
1	403+32 91.53' LT	MAG 501–4 MOD SEE DETAIL 1

PAVING

NO	DESCRIPTION	UNIT	QUAN
19	PCC PAVEMENT CLASS A, 9" THICK	SY	820
27	AGGREGATE BASE COURSE, 4" THICK	TON	79
44	TRAFFIC BARRICADE COP DET P1106, TYPE B	LF	18
48	CONCRETE RIBBON CURB MAG STD DET 220, TYPE B	LF	313

EROSION PROTECTION

NO	DESCRIPTION	UNIT	QUAN
25	GABIONS	CY	90
26	GABION MATTRESS	SY	472
42	GEOTEXTILE FABRIC	SY	920

ACCESS BARRIER

NO	DESCRIPTION	UNIT	QUAN
45	ACCESS BARRIER COP DET P1564	EA	1

STORM DRAIN PIPE COLLAR

NO	STATION	TYPE	SIZE
1	404+15	P1505	30"

SHEET REFERENCES

1. SEE DWG R–1.15 FOR REMOVAL PLAN
2. SEE DWG SD–2.14 FOR STORM DRAIN PROFILE
3. SEE DWG G–3.02 FOR TYPICAL SECTIONS

Call at least two full working days before you begin excavation. ARIZONA 811 Arizona Blue Stake, Inc. Dial 8-1-1 or 1-800-STAKE-IT (782-5348) In Maricopa County: (602) 263-1100

"PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2–28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."

STORM DRAIN PLAN

CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

AVENIDA RIO SALADO/BROADWAY ROAD
35TH AVENUE TO 27TH AVENUE
ST85100332

DR: STAFF	DES: DHD	CK: GPH	DWG SERIES NO.
DATE: 01/14	DATE: 01/14	DATE: 01/14	
SCALE: 1" = 20' HORIZONTAL			SD–2.13

ST85100332SD13.dwg 1/20/14

AVENIDA RIO SALADO/BROADWAY RD
35TH AVENUE TO 27TH AVENUE
PHOENIX STREETS – MARICOPA CO.

0' 10' 20' 40'
SCALE: 1"=20'

City of Phoenix
N

33425
GREGORY P.
HAGGERTY
Date Signed 1/20/14
ARIZONA U.S.A.
Expires 03/31/14

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL
9	ARIZ.	ST85100332	98	164

Dibble Engineering — DIBBLE ENGINEERING
CONSULTING ENGINEER

DES: DHD	DR: CDF	CK: GPH	DATE: 01/14

REVISION BY CITY OF PHOENIX

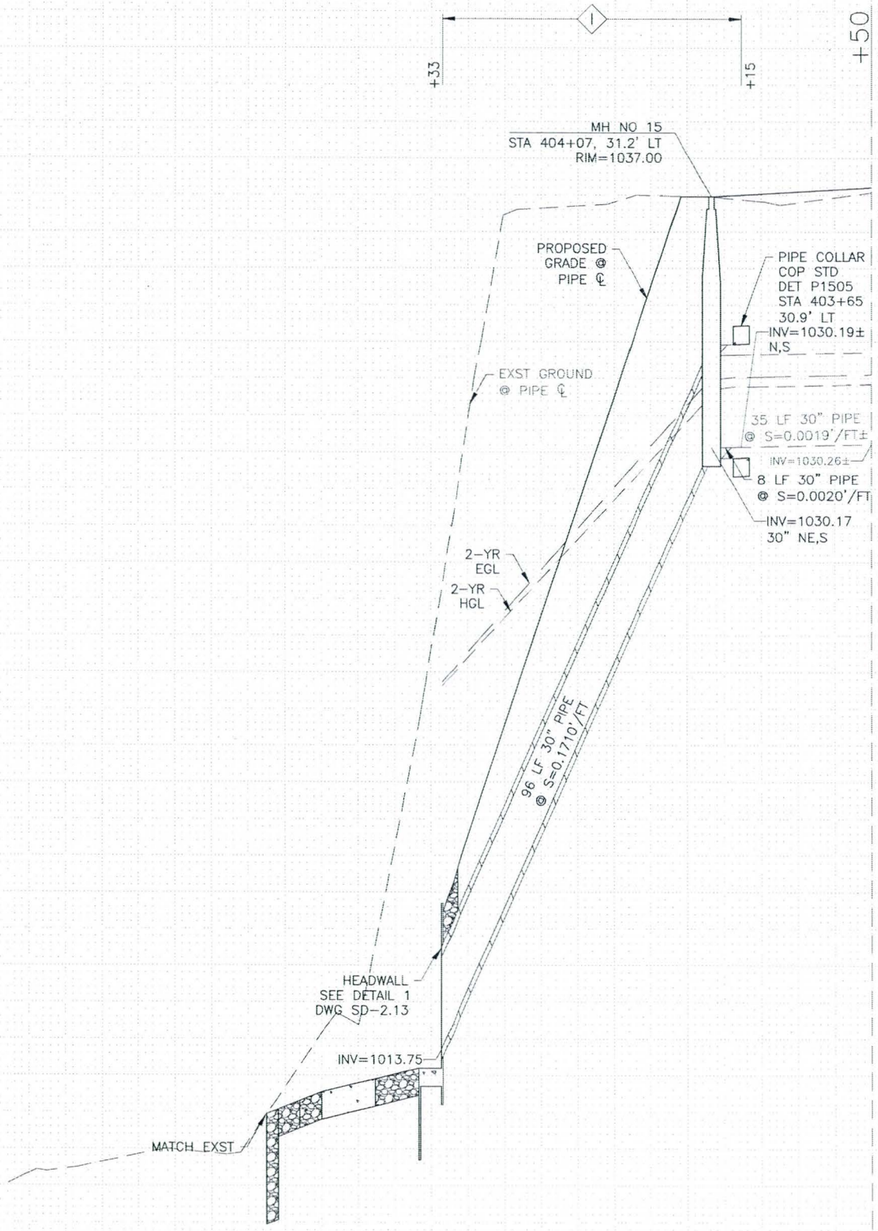
NO.	DESCRIPTION	REV BY	CKD BY	DATE

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE



SHEET REFERENCES

1. SEE DWG R-1.15 FOR REMOVAL PLAN
2. SEE DWG SD-2.13 FOR HEADWALL DETAILS

Call at least two full working days before you begin excavation.
ARIZONA 811
Arizona Blue Stake, Inc.
Dial 8-1-1 or 1-800-STAKE-IT (782-5348)
In Maricopa County: (602) 263-1100

"PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."

STORM DRAIN PROFILE

CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

AVENIDA RIO SALADO/BROADWAY ROAD
35TH AVENUE TO 27TH AVENUE
ST85100332

DR: STAFF	DES: DHD	CK: GPH	DWG SERIES NO.
DATE: 01/14	DATE: 01/14	DATE: 01/14	
SCALE: 1" = 20' HORIZONTAL, 1" = 2' VERTICAL			SD-2.14

ST85100332SD14.dwg 1/20/14

AVENIDA RIO SALADO/BROADWAY RD
35TH AVENUE TO 27TH AVENUE
PHOENIX STREETS – MARICOPA CO.

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV. BY	CKD. BY	DATE

REVISION BY CITY OF PHOENIX

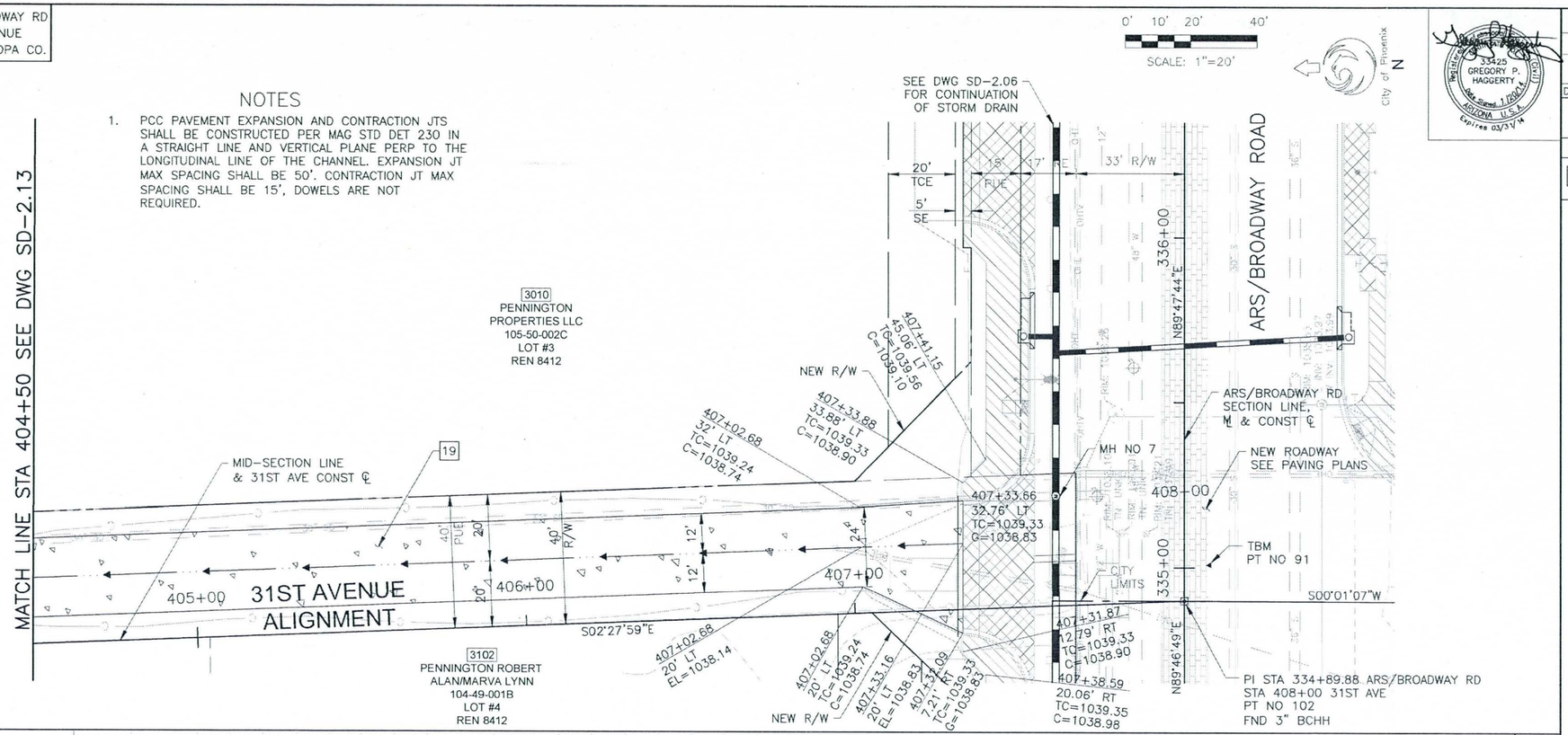
NO.	DESCRIPTION	REV. BY	CKD. BY	DATE

REVISION BY CITY OF PHOENIX

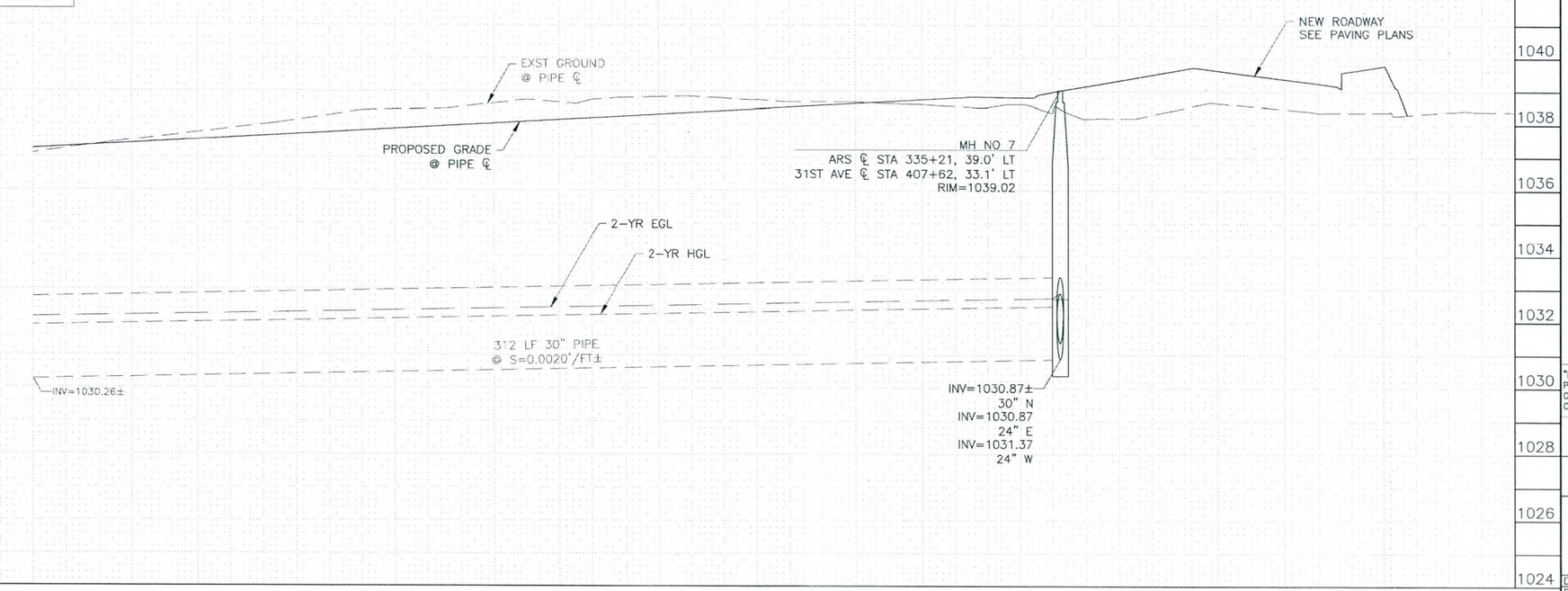
NO.	DESCRIPTION	REV. BY	CKD. BY	DATE

NOTES

1. PCC PAVEMENT EXPANSION AND CONTRACTION JTS SHALL BE CONSTRUCTED PER MAG STD DET 230 IN A STRAIGHT LINE AND VERTICAL PLANE PERP TO THE LONGITUDINAL LINE OF THE CHANNEL. EXPANSION JT MAX SPACING SHALL BE 50'. CONTRACTION JT MAX SPACING SHALL BE 15', DOWELS ARE NOT REQUIRED.



▲ TBM PT NO 91
STA 335+00.84, 7.41' RT
SET MAG NAIL EL=1038.55



F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL
9	ARIZ.	ST85100332	99	164

Dibble Engineering — DIBBLE ENGINEERING — CONSULTING ENGINEER

DES: DHD	DR: CDF	CK: GPH	DATE: 01/14

33425 GREGORY P. HAGGERTY — Date Signed 1/20/14 — ARIZONA U.S.A. — Expires 03/31/14

CONCRETE CHANNEL

NO	DESCRIPTION	UNIT	QUAN
19	PCC PAVEMENT CLASS A, 9" THICK 404+50 TO 407+33.16	SY	780

SHEET REFERENCES

1. SEE DWG R-1.16 FOR REMOVAL PLAN
2. SEE DWG G-3.02 FOR TYPICAL SECTIONS

Call at least two full working days before you begin excavation. ARIZONA 811 Arizona Blue Stake, Inc. Dial 8-1-1 or 1-800-STAKE-IT (782-5348) In Maricopa County: (602) 263-1100

"PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."

STORM DRAIN PLAN & PROFILE

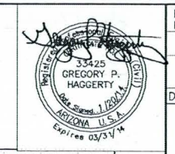
CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

AVENIDA RIO SALADO/BROADWAY ROAD
35TH AVENUE TO 27TH AVENUE
ST85100332

DR: STAFF	DES: DHD	CK: GPH	DWG SERIES NO.
DATE: 01/14	DATE: 01/14	DATE: 01/14	
SCALE: 1" = 20' HORIZONTAL, 1" = 2' VERTICAL			SD-2.15

ST85100332SD15.dwg 1/20/14

AVENIDA RIO SALADO/BROADWAY RD
35TH AVENUE TO 27TH AVENUE
PHOENIX STREETS – MARICOPA CO.



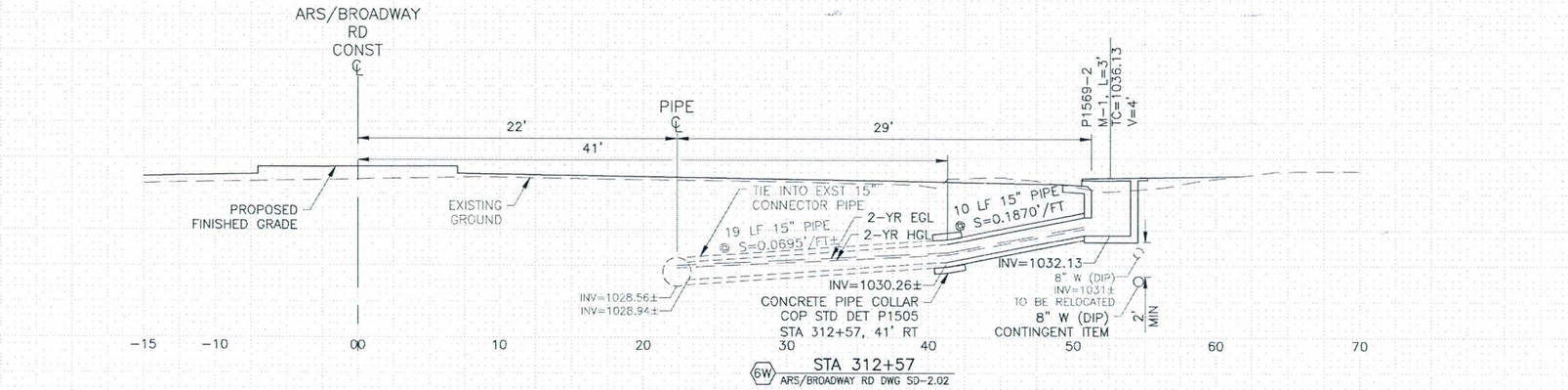
F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL
9	ARIZ.	ST85100332	100	164

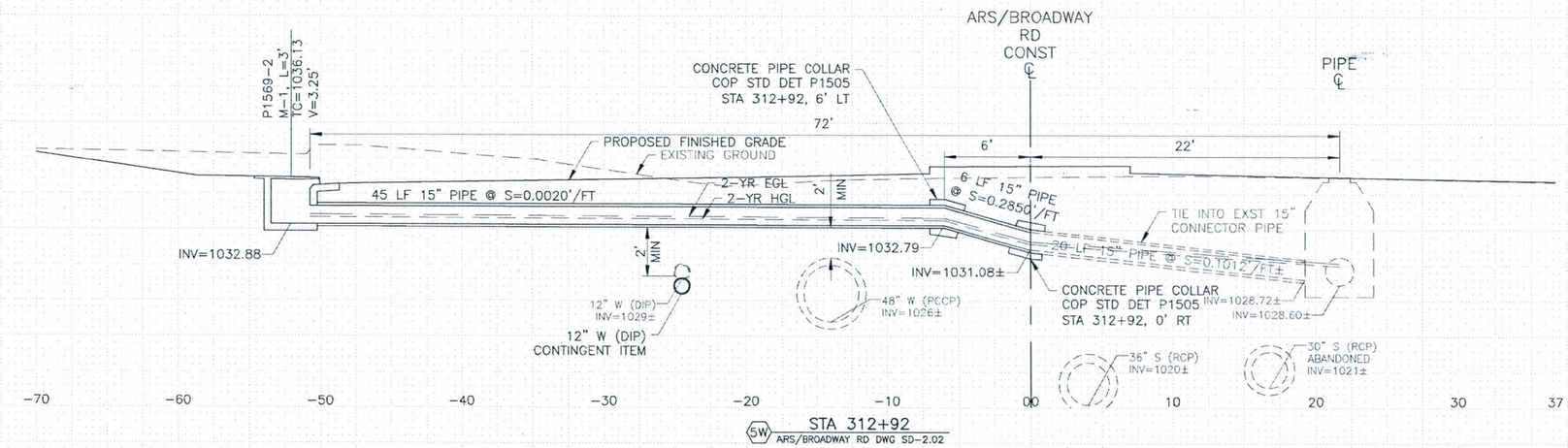
Dibble Engineering — DIBBLE ENGINEERING — CONSULTING ENGINEER

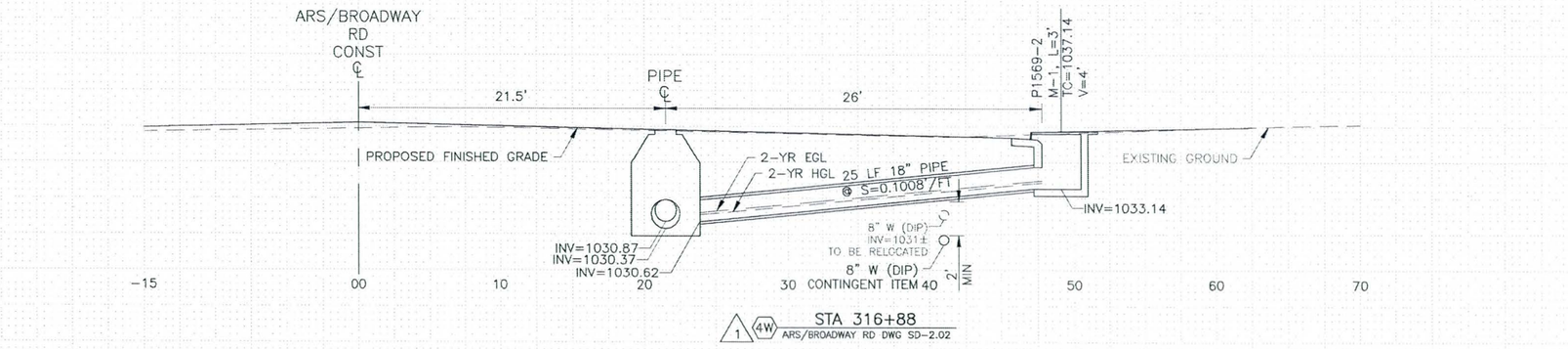
DES: DHD	DR: CDF	CK: GPH	DATE: 01/14

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE







REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

Call at least two full working days before you begin excavation.
ARIZONA 811
Arizona Blue Stake, Inc.
Dial 8-1-1 or 1-800-STAKE-IT (782-5348)
In Maricopa County: (602) 263-1100

"PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."

CONNECTOR PIPE PROFILES

CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

AVENIDA RIO SALADO/BROADWAY ROAD
35TH AVENUE TO 27TH AVENUE
ST85100332

DR: STAFF	DES: DHD	CK: GPH	DWG SERIES NO.
DATE: 01/14	DATE: 01/14	DATE: 01/14	
SCALE: 1" = 5' HORIZONTAL 1" = 5' VERTICAL			CP-1.01

ST85100332CPP1.dwg 1/20/14

CITY OF PHOENIX
STREET TRANSPORTATION DEPARTMENT
DESIGN & CONSTRUCTION MANAGEMENT DIVISION
PAVING AND STORM DRAIN

AVENIDA RIO SALADO/BROADWAY ROAD
43RD AVENUE TO 35TH AVENUE

ST85100333

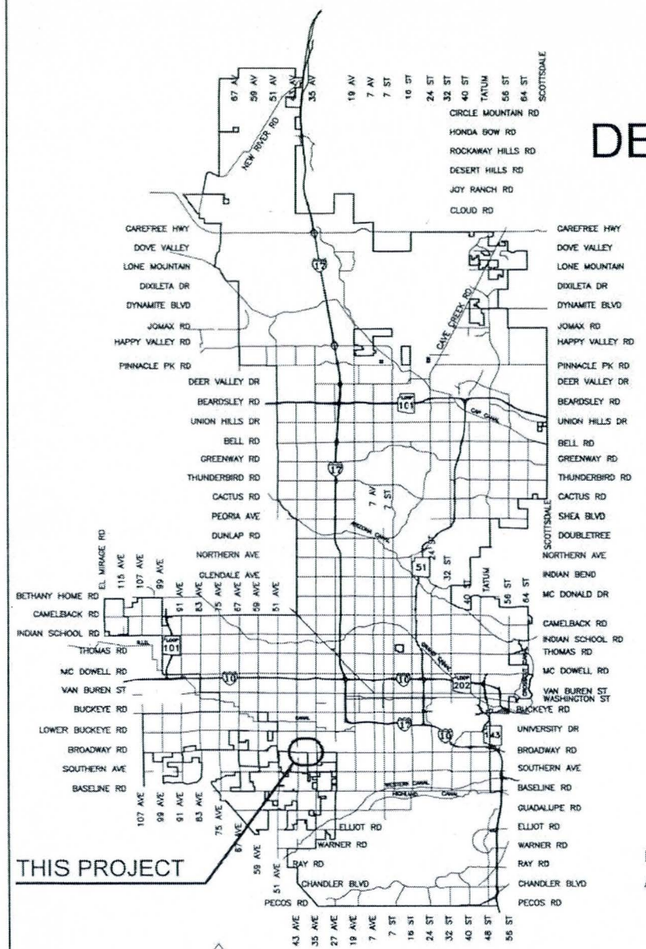
FEDERAL AID NO. HPS-PHX-0(005)A

ADOT TRACS NO. 0000 MA PHX SS606 01C

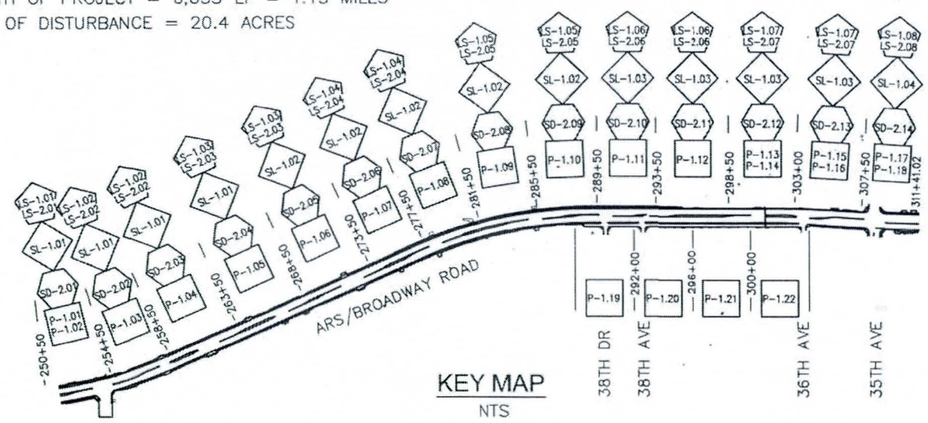
2014

GMP 2
VOLUME 1

LENGTH OF PROJECT = 6,053 LF = 1.15 MILES
AREA OF DISTURBANCE = 20.4 ACRES



VICINITY MAP
NTS



KEY MAP
NTS

PAVING PLAN/PROFILE SHEETS
STORM DRAIN PLAN/PROFILE SHEETS
STREET LIGHT PLAN SHEETS
LANDSCAPE/IRRIGATION PLAN SHEETS

COP INSPECTION STAMP

CITY PROJECT MANAGER _____

CITY INSPECTOR _____

CONTRACTOR _____

DATE OF FINAL COMPLETION _____

APPROVED _____ 1/29/14
ASSISTANT STREET TRANSPORTATION DIRECTOR — DATE

APPROVED _____ 2/4/14
DEPUTY STREET TRANSPORTATION DIRECTOR — DATE

Registered Professional Engineer (Civil) 34588 MARK V. LEE 1/23/14 Date Signed ARIZONA, U.S.A. EXPIRES 3-31-15

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST85100333	1	161	

PROJECT ENGINEERING CONSULTANTS, LTD.
2310 W. MISSION LANE, STE. 4 PHOENIX, AZ 85021
PHONE (602) 906-1901

DES	MVL	DR:	JG	CK:	SM	DATE:	01/14

MAYOR
GREG STANTON

CITY MANAGER
ACTING CITY MANAGER – ED ZUERCHER

CITY COUNCIL

DISTRICT NO 1.	THELDA WILLIAMS
DISTRICT NO 2.	JIM WARING
DISTRICT NO 3.	BILL GATES
DISTRICT NO 4.	LAURA PASTOR
DISTRICT NO 5.	DANIEL VALENZUELA
DISTRICT NO 6.	SAL DICICCIO
DISTRICT NO 7.	MICHAEL NOWAKOWSKI
DISTRICT NO 8.	KATE GALLEGO

INDEX OF SHEETS

SHEET NO.	DWG. SERIES NO.	SHEET TITLE
1	G-1.01	COVER SHEET
2 – 3	G-1.02 – G-1.03	LEGEND AND NOTES SHEET
4 – 6	G-2.01 – G-2.03	ROADWAY SUMMARY SHEETS
7	G-2.04	STORM DRAIN SUMMARY
8	G-2.05	ROADWAY LIGHTING SUMMARY
9 – 10	G-3.01 – G-3.02	TYPICAL SECTIONS
11 –, 13	G-4.01 – G-4.04	MEDIAN ISLAND GEOMETRIC SHEETS
14	G-5.01	SURVEY CONTROL SHEETS
15 – 16	G-6.01 – G-6.02	INTERSECTION WORKSHEETS
17 – 34	P-1.01 – P-1.18	PAVING PLAN & PROFILE SHEETS – ARS/BROADWAY RD
35 – 38	P-1.19 – P-1.22	PAVING PLAN & PROFILE – FRONTAGE RD
39 – 42	DT-1.01 – DT-1.04	SPECIAL DETAILS – PAVING
43 – 44	DT-2.01 – DT-2.02	MEDIAN ISLAND DETAIL SHEETS
45 – 49	DT-3.01 – DT-3.04	DRIVEWAY CROSS SECTION SHEETS
50 – 62	DT-4.01 – DT-4.13	ROADWAY CROSS SECTIONS
63	SD-1.01	STORM DRAIN HYDRAULIC GRADE LINE PROFILE
64	DS-1.01	STORM DRAIN DESIGN SUMMARY SHEET
65 – 67	SB-1.01 – SB-1.03	GEOTECHNICAL INFORMATION
68 – 81	SD-2.01 – SD-2.14	STORM DRAIN PLAN & PROFILE
82 – 95	CP-1.01 – CP-1.14	CATCH BASIN CONNECTOR PIPE PROFILES
96	AP-1.01	ALTERNATE PIPE CHART
97	DD-1.01	SPECIAL DETAILS (STORM DRAIN)
98 – 102	LD-1.01 – LD-1.05	LANDSCAPE DETAILS
103 – 110	LS-1.01 – LS-1.08	LANDSCAPE PLANS
111 – 118	LS-2.01 – LS-2.08	IRRIGATION PLANS
119	SC-1.01	STREET LIGHT COVER SHEET
120 – 123	SL-1.01 – SL-1.04	STREET LIGHT PLAN SHEETS
124	ST-1.01	STREET LIGHT DETAIL SHEET
125 –144		TRAFFIC SIGNAL PLANS
145 – 153		PAINT AND SIGNING PLANS
154 – 155	WD-1.01 – WD-1.02	WATER LINE RELOCATION SHEETS
156 – 161	SP-1.01 – SP-1.06	SANITARY SEWER PLANS
		SRP ELECTRICAL PLANS

CITY BENCHMARKS:

MARICOPA COUNTY BRASS CAP IN HANDHOLE AT INTERSECTION OF BROADWAY ROAD AND 31ST AVENUE. ELEV 1037.44 (COP DATUM)

MARICOPA COUNTY BRASS CAP FLUSH AT WIER AVENUE AND 43RD AVENUE ELEV 1025.92 (COP DATUM)

CALL TWO WORKING DAYS BEFORE YOU DIG CALL FOR THE BLUE STAKES
602-263-1100
1-800-STAKE-IT
OUTSIDE MARICOPA COUNTY

"PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."

ST85100333: Q.S. 4-19, 4-20, 4-21, 5-20, 5-21: AVENIDA RIO SALADO/ BROADWAY ROAD: 43RD AVENUE TO 35TH AVENUE

ST85100333 CS.DWG, 1/20/14

AVENIDA RIO SALADO/BROADWAY RD
PHOENIX STREET – MARICOPA CO.
43RD AVENUE TO 35TH AVENUE

LEGEND

- BENCHMARK
- NEW SURVEY MONUMENT – M.A.G. DETAIL 120-1 TYPE "B"
- EXISTING SURVEY MONUMENT – M.A.G. DETAIL 120-1 TYPE "B"
- NEW SURVEY MONUMENT – M.A.G. DETAIL 120-1 TYPE "A"
- EXISTING SURVEY MONUMENT – M.A.G. DETAIL 120-1 TYPE "A"
- NEW COMBINED CURB & GUTTER – M.A.G. DETAIL 220 TYPE "A"
- EXISTING COMBINED CURB & GUTTER
- NEW CONCRETE SIDEWALK – STD. DETAIL P1230
- EXISTING CONCRETE SIDEWALK
- NEW CONCRETE DRIVEWAY OR ALLEY ENT. PER DETAIL NO. ON PLANS
- EXISTING CONCRETE DRIVEWAY OR ALLEY ENT.
- NEW CONCRETE SIDEWALK RAMP PER DETAIL ON PLANS
- EXISTING CONCRETE SIDEWALK RAMP
- NEW SLOPE EASEMENT
- EXISTING SLOPE EASEMENT
- NEW TCE
- EXISTING EASEMENT LINE
- NEW R/W LINE
- EXISTING R/W LINE
- NEW PAVEMENT CENTER LINE OR MONUMENT LINE
- EXISTING PAVEMENT CENTER LINE OR MONUMENT LINE
- NEW DECORATIVE PAVEMENT
- EXISTING DECORATIVE PAVEMENT
- C — NEW CUT LINE
- F — NEW FILL LINE
- NEW BLOCK WALL
- EXISTING BLOCK FENCE
- X — NEW WIRE FENCE
- — X — EXISTING WIRE FENCE
- NEW CHAIN LINK FENCE
- RTW — NEW RETAINING WALL
- EXISTING AC PAVEMENT
- AVERAGE GROUND ELEVATION AT R/W LINE (SHOW IN PROFILE)
- NEW MAIL BOX
- EXISTING MAIL BOX
- 3/4" W — M — NEW WATER SERVICE W/SIZE AND WATER METER BOX
- 3/4" W — M — EXISTING WATER SERVICE W/SIZE AND WATER METER BOX
- 12" DIP W — NEW UTILITY LINE W/SIZE & TYPE (12" AND SMALLER)
- 12" DIP W — EXISTING UTILITY LINE W/SIZE & TYPE (12" AND SMALLER)
- 36" DIP W — NEW UTILITY LINE W/SIZE & TYPE (GREATER THAN 12")
- 36" DIP W — EXISTING UTILITY LINE W/SIZE & TYPE (GREATER THAN 12")
- NEW MANHOLE (UTILITY DESIGNATION IN CENTER)
- EXISTING MANHOLE (UTILITY DESIGNATION IN CENTER)
- NEW STORM SEWER (GREATER THAN 12")
- EXISTING STORM SEWER OR NEW STORM SEWER SHOWN ON SEPARATE PLANS (GREATER THAN 12")
- NEW CATCH BASIN, GUTTER INLET (LENGTH TO SCALE)
- EXISTING CATCH BASIN, GUTTER INLET
- NEW CATCH BASIN, CURB INLET (LENGTH TO SCALE)
- EXISTING CATCH BASIN, CURB INLET
- NEW CATCH BASIN, CURB & GUTTER INLET (LENGTH TO SCALE)
- EXISTING CATCH BASIN, CURB & GUTTER INLET
- NEW IRRIGATION STANDPIPE – M.A.G. DETAIL 503
- EXISTING IRRIGATION STANDPIPE
- NEW OR RELOCATED FIRE HYDRANT BY CONTRACTOR
- EXISTING FIRE HYDRANT
- NEW OR RELOCATED UTILITY VALVE BY CONTRACTOR
- EXISTING UTILITY VALVE
- NEW OR RELOCATED IRRIGATION BOX BY CONTRACTOR
- EXISTING IRRIGATION BOX

- ADJUST EXIST. WATER VALVE BOX – C.O.P. DETAIL P1391
- T.N.= — EXISTING WATER VALVE W/TOP OF OPERATING NUT ELEVATION
- NEW STREET OR TRAFFIC SIGN
- EXISTING STREET OR TRAFFIC SIGN
- NEW TRAFFIC SIGNAL POLE W/MAST ARM & SIGNAL INDICATIONS
- EXISTING TRAFFIC SIGNAL POLE W/MAST ARM & SIGNAL INDICATIONS
- NEW OR RELOCATED UTILITY POLE W/LINE INDICATING WIRE DIRECTION
- EXISTING UTILITY POLE W/LINE INDICATING WIRE DIRECTION
- NEW OR RELOCATED POWER POLE DOWN GUY ANCHOR
- EXISTING POWER POLE DOWN GUY ANCHOR
- NEW STREET LIGHT & POLE
- EXISTING STREET LIGHT & POLE
- NEW STREET LIGHT
- EXISTING STREET LIGHT
- EXISTING TREE OR STUMP TO BE REMOVED (GREATER THAN 12" DIA.)
- EXISTING TREE OR STUMP TO BE REMOVED 12" DIA. OR LESS (NPI)
- EXISTING TREE TO BE TRANSPLANTED BY CONTRACTOR
- EXISTING TREE TO REMAIN (GREATER THAN 12" DIA.)
- EXISTING TREE TO REMAIN (12" DIA. AND SMALLER)
- EXISTING PINE TREE
- EXISTING PALM TREE
- EXISTING LARGE SHRUB
- EXISTING SMALL SHRUB
- EXISTING BUSH
- S — SAWCUT & MATCH EXISTING
- M — MATCH EXISTING
- 3231 — PROPERTY ADDRESS NUMBER

STRUCTURAL NOTES

"CLEAR" DIMENSIONS FOR DEPTH OF REINFORCING STEEL ARE FROM FACE OF CONCRETE TO FACE OF BARS.

ALL EXPOSED EDGES OF CONCRETE SHALL BE BEVELED OR ROUNDED.

ALL EXPOSED CONCRETE SURFACES SHALL BE FINISHED IN ACCORDANCE WITH ARIZONA DEPT. OF TRANSPORTATION STANDARD SPECIFICATION 601-3.05 – FINISHING CONCRETE, UNLESS OTHERWISE SPECIFIED.

NOTES

ALL CONSTRUCTION SHALL BE PERFORMED IN ACCORDANCE WITH CONTRACT SPECIFICATIONS; PLANS; CITY OF PHOENIX SUPPLEMENTS TO MAG STANDARD SPECIFICATIONS AND DETAILS; AND MAG STANDARD SPECIFICATIONS AND DETAILS, IN THAT ORDER OF PRECEDENCE, AT THE TIME OF CONSTRUCTION BID.

ALL STORM SEWER MANHOLES ARE TO BE CONSTRUCTED WITHOUT STEPS.

PIPE CONNECTIONS TO EXISTING CONCRETE PIPE MAINS SHALL BE MADE IN ACCORDANCE WITH DETAILS CALLED OUT ON THE PLANS. CONNECTION TO MAINS SHALL NOT BE CLOSER THAN 5', CENTER TO CENTER.

PIPE CONNECTIONS TO NEW PRECAST CONCRETE PIPE MAINS, SHALL BE MADE WITH FACTORY MADE WYES OR TEES. THE DETAIL OF THE FITTINGS MUST BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO MANUFACTURE. PIPE CONNECTIONS TO NEW CAST IN PLACE CONCRETE PIPE MAINS SHALL BE MADE PER C.O.P. DETAIL P1576.

CATCH BASIN CONNECTOR PIPES SHALL BE LAID ON A STRAIGHT ALIGNMENT AND SLOPE UNLESS OTHERWISE SPECIFIED. IF BREAKS IN ALIGNMENT OR SLOPE ARE NECESSARY TO MEET FIELD CONDITIONS. THE MAXIMUM DEFLECTION SHALL BE 22-1/2° . THE BEND SHALL BE COLLARED ACCORDING TO C.O.P. DETAIL P1505. ANY ANGLE BENDS GREATER THAN 22-1/2° SHALL BE PREFABRICATED.

CONNECTOR PIPES SHALL CONNECT TO CATCH BASIN WALLS AT AN ANGLE NOT TO EXCEED 22-1/2° FROM PERPENDICULAR.

FACILITIES WHICH ARE NOT SPECIFICALLY LOCATED WITH ACTUAL VERTICAL AND HORIZONTAL CONTROLS, ARE LOCATED ONLY APPROXIMATELY AND TO THE BEST AVAILABLE INFORMATION PROVIDED BY VARIOUS OWNERS OF THE FACILITIES, AND SUPPLEMENTED BY VISUAL SURFACE INFORMATION WHERE APPROPRIATE. ACCURACY, LOCATION AND COMPLETENESS OF THIS INFORMATION SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO INITIATION OF CONSTRUCTION.

AT LEAST TWO WORKING DAYS BEFORE CONSTRUCTION, THE CONTRACTOR SHALL CONTACT BLUESTAKE TO FIND AND FLAG UNDERGROUND UTILITIES. THE CONTRACTOR SHALL CONTACT OTHER APPROPRIATE UTILITIES DIRECTLY IF THEY ARE NOT ON BLUESTAKE SYSTEM.

VERTICAL CONTROL IS BASED ON NATIONAL GEODETIC SURVEY.

UNLESS OTHERWISE NOTED, STATIONS SHOWN ON PIPE PROFILES ARE ALONG CENTERLINE OF PIPE.

ABBREVIATIONS

AC	ALUMINUM CAP
ALIGN	ALIGNMENT
AP	ANGLE POINT
APN	ASSESSORS PARCEL NUMBER
APRN	APRON – CONCRETE
ARS	AVENIDA RIO SALADO
B	BEGIN
BAR	BARRICADE
BC	BRASS CAP
BCF	BRASS CAP FLUSH
B/C	BACK OF CURB
BFP	BACK FLOW PREVENTER
BLDG	BUILDING
BLOIWL	BLOCK/ORNAMENTAL IRON WALL
BLWL	BLOCK WALL
BM	BENCHMARK
BOL	BOLLARD OR GUARD POST
BOU	BOTTOM OF UTILITY
C	CONCRETE
CLF	CHAIN LINK FENCE
CMU	CONCRETE MASONRY UNIT
COP	CITY OF PHOENIX
COR	CORNER
CPLR	CONCRETE PILLAR
CRB	CURB
CST	CONSTRUCTION
DE	DRAINAGE EASEMENT
DELIN	DELINEATOR
DNGY	DOWN GUY
DTL / DET	DETAIL
E	END OR EAST
EC	ELECTRICAL CABINET
EE	ELECTRICAL EASEMENT
EGL	ENERGY GRADE LINE
ELEC	ELECTRIC OR ELECTRICAL
EM	ELECTRICAL METER
EMH	ELECTRICAL MANHOLE
ENT	ENTRANCE
EP	EDGE OF PAVEMENT
EPB	ELECTRICAL PULL BOX
EPNG	EL PASO NATURAL GAS
F/C	FACE OF CURB
FG	FINISHED GRADE
FL	FLOW LINE OR FIRE LINE
FNC	FENCE
FO	FIBER OPTIC
G	GUTTER
GM	GAS METER
GRATE	STORM DRAIN GRATE
GV	GAS VALVE
HDG	HEDGE
HDRL	HANDRAIL
HGL	HYDRAULIC GRADE LINE
HH	HANDHOLE
IBX	IRRIGATION CONTROL BOX
L	LIP OF GUTTER
LP	LIGHT POLE
MB	MAILBOX
MCDOT	MARICOPA COUNTY DEPARTMENT OF TRANSPORTATION
MCHD	MARICOPA COUNTY HIGHWAY DEPARTMENT
MFNC	METAL FENCE
MSAG	METAL SAGUARO CACTUS SCULPTURE
NOM	NOMINAL
P	PAVEMENT
POE	POINT OF ENDING
RCBC	REINFORCED CONCRETE BOX CULVERT
SAG	SAGUARO
SCPR	SCUPPER
SD	STORM DRAIN
SDMH	STORM DRAIN MANHOLE
SE	SLOPE EASEMENT
SHT	SHEET
SIM	SIMILAR
SRP	SALT RIVER PROJECT
SSMH	SANITARY SEWER MANHOLE
STLT	STREET LIGHT
S/W	SIDEWALK
SWE	SIDEWALK EASEMENT
TBM	TEMPORARY BENCH MARK
TC	TOP OF CURB
TCE	TEMPORARY CONSTRUCTION EASEMENT
TFBRL	TRAFFIC BARREL
TMH	TELEPHONE MANHOLE
TN	TOP OF NUT
TNF	TIN FENCE
TOU	TOP OF UTILITY
TPED	TELEPHONE PEDESTAL
TSP	TRAFFIC SIGNAL POLE
TSC	TRAFFIC SIGNAL CABINET
TSPB	TRAFFIC SIGNAL PULL BOX
TVPB	TV PULL BOX
UBOX	UTILITY BOX
VEG	VEGETATION
VG	VALLEY GUTTER
W/	WITH
WDPST	WOOD POST
WM	WATER METER
WMH	WATER MANHOLE
WS	WATER SERVICE
WV	WATER VALVE
XMER	TRANSFORMER

Registered Professional Engineer (Civil) 34588 MARK V. LEE 1-23-14 Date Signed ARIZONA, U.S.A.
EXPIRES 3-31-15

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST85100333	2	161	

PROJECT ENGINEERING CONSULTANTS, LTD.
2310 W. MISSION LANE, STE. 4 PHOENIX, AZ 85021
PHONE (602) 906-1901

NOTES (CONTINUED)

UNLESS OTHERWISE NOTED, PIPE SHALL BE BEDDED IN ACCORDANCE WITH CITY OF PHOENIX DETAIL P1200.

CATCH BASINS ARE STATIONED PERPENDICULAR TO THE CENTERLINE OF THE STREET AT THE CENTERLINE OF THE MAINTENANCE BASIN.

SANITARY SEWER MAINS AND TAPS CROSSING OVER STORM DRAIN MAINS SHALL BE SUPPORTED PER M.A.G. DETAIL 403-1, 403-2, OR 403-3.

ALL EXISTING PRECAST CONCRETE SAFETY CURBS AND ALL EXISTING WOODEN PARKING CURBS, WHICH ARE INSIDE THE RIGHT OF WAY AND APPROXIMATELY PARALLEL TO THE NEW CURB LINE, SHALL BE RESET ON THE RIGHT OF WAY DIRECTLY OPPOSITE THEIR EXISTING LOCATION, WITH THE BACK EDGE ON THE RIGHT OF WAY LINE. ALL OTHER PRECAST CONCRETE SAFETY CURBS INSIDE THE STREET RIGHT OF WAY SHALL BE SALVAGED AND STOCK PILED FOR THE OWNER AT THE RIGHT OF WAY LINE.

EXISTING PRECAST CONCRETE SAFETY CURBS OUTSIDE THE RIGHT OF WAY, WHICH ARE DISTURBED BY NEW CONSTRUCTION SHALL BE RESET IN THEIR ORIGINAL POSITION BY THE CONTRACTOR.

ALL EXISTING DRIVEWAYS AND ALL EXISTING ALLEYS SHALL BE GRADED TO MATCH THE NEW WORK IN ACCORDANCE WITH STD. DETAIL P1164, UNLESS OTHERWISE SPECIFIED. EXISTING SURFACING SHALL BE REMOVED AND REPLACED AS NECESSARY.

UNLESS OTHERWISE PROVIDED ON THE PLANS:

THE SPACE BETWEEN THE BACK OF NEW DRIVEWAY ENTRANCES AND EXISTING A.C. DRIVEWAYS SHALL BE FILLED WITH A MINIMUM OF 3" A.C.S.C. ON 100% COMPACTED NATIVE SOIL. WHERE EXISTING PAVEMENT AND BASE THICKNESS EXCEED THE MINIMUMS, MATCH THE EXISTING.

THE SPACE BETWEEN THE BACK OF NEW SIDEWALKS AND EXISTING PRIVATE SIDEWALKS, AND THE SPACE BETWEEN THE BACK OF NEW DRIVEWAY ENTRANCES AND EXISTING P.C.C. DRIVEWAYS SHALL BE FILLED WITH P.C.C.. THE THICKNESS AND CLASS SHALL MATCH THAT OF THE NEW SIDEWALK OR DRIVEWAY ENTRANCE.

THE SPACE BETWEEN THE BACK OF THE NEW SIDEWALKS, AND EXISTING A.C. PARKING LOTS, WHICH FALL WITHIN OR ABUT THE R/W SHALL BE FILLED WITH 2" A.C.S.C. ON 100% COMPACTED NATIVE SOIL.

EXISTING IRRIGATION BERMS DISTURBED BY NEW CONSTRUCTION SHALL BE RECONSTRUCTED AS SHOWN ON PLANS.

CATCH BASIN ACCESS FRAME AND COVERS SHALL BE CONSTRUCTED PER C.O.P. DETAIL P1561.

"PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2-28. THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."

LEGEND AND NOTES

CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

AVENIDA RIO SALADO / BROADWAY RD
43RD AVENUE TO 35TH AVENUE
ST85100333

DR: JG	DES: MVL	CK: SM	DWG SERIES NO.
DATE: 01/14	DATE: 01/14	DATE: 01/14	
SCALE: HORIZ N/A VERT N/A			G-1.02

ST85100333 LN02.DWG

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

AVENIDA RIO SALADO/BROADWAY RD
PHOENIX STREET – MARICOPA CO.
43RD AVENUE TO 35TH AVENUE

REVISION BY CITY OF PHOENIX					
NO.	DESCRIPTION	REV BY	CKD BY	DATE	

REVISION BY CITY OF PHOENIX					
NO.	DESCRIPTION	REV BY	CKD BY	DATE	

REVISION BY CITY OF PHOENIX					
NO.	DESCRIPTION	REV BY	CKD BY	DATE	

UTILITY COMPANY EMERGENCY CONTACT INFORMATION

COMPANY	NAME	E-MAIL	EMERGENCY NUMBER
CENTURY LINK	KAREN BROWN	karen.brown1@centurylink.com	480-768-4398
CITY OF PHOENIX STREET LIGHTS DEPARTMENT	JASON FERNANDEZ	jason.fernandez@phoenix.gov	602-256-4168
CITY OF PHOENIX STREET TRANSPORTATION UTILITY COORDINATION	CATHERINE ROGERS UTILITY COORDINATOR	catherine.rogers@phoenix.gov	602-262-4972
CITY OF PHOENIX WATER SERVICES DEPARTMENT (WSD)	JAMI ERICKSON	jami.erickson@phoenix.gov	602-261-8229
COX COAXIAL CABLE	BEN BAICH	benjamin.baich@cox.com	623-328-3538
COX FIBER OPTIC CABLE	RANDY SIMS	randy.sims@cox.com	623-328-4058
KINDER MORGAN ENERGY/NATURAL GAS PIPELINE (FORMERLY EPNG)	NICKEY LOWDER	nickey_lowder@kindermorgan.com	602-438-4429
SOUTHWEST GAS (SWG)	VALERIE GALLARDO-WELLER	valerie.gallardo-weller@swgas.com	602-484-5342
SRP ELECTRIC (SRPP)/DISTRIBUTION	KEITH FAULKNER	keith.faulkner@srpnet.com	602-653-1387
SRP ELECTRIC (SRPP)/TRANSMISSION	BEN COX	ben.cox@srpnet.com	602-236-3725
SRP IRRIGATION (SRPI)	GARY BRUNO	gary.bruno@srpnet.com	602-236-5182

Registered Professional Engineer (Civil)
34588
MARK V.
LEE
1-23-14
Date Signed
ARIZONA, U.S.A.
EXPIRES 3-31-15

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST85100333	3	161	

PROJECT ENGINEERING CONSULTANTS, LTD.
2310 W. MISSION LANE, STE. 4 PHOENIX, AZ 85021
PHONE (602) 906-1901

"PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2-28. THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."

UTILITY CONTACTS

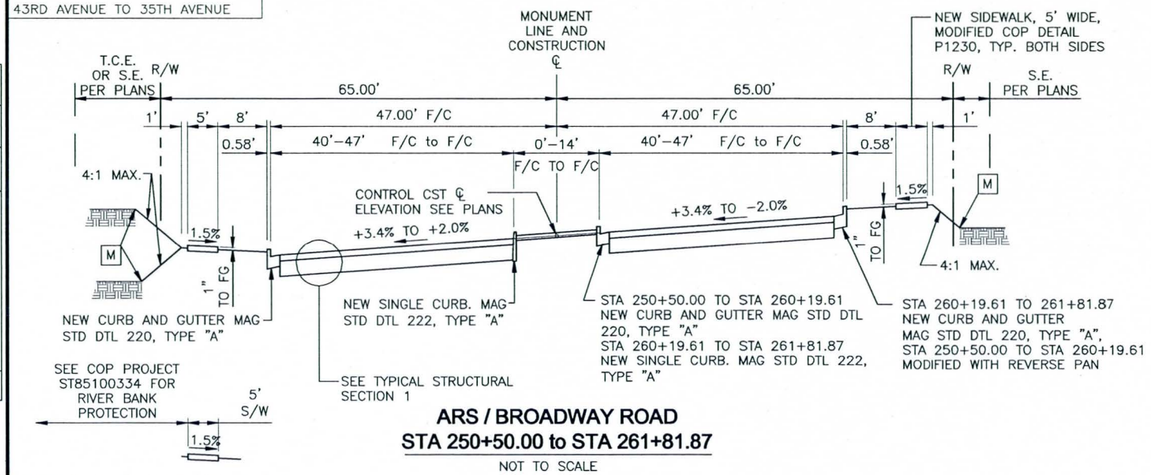
CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

AVENIDA RIO SALADO / BROADWAY RD
43RD AVENUE TO 35TH AVENUE
ST85100333

DR: JG	DES: MVL	CK: SM	DWG SERIES NO.
DATE: 01/14	DATE: 01/14	DATE: 01/14	
SCALE: HORIZ N/A VERT N/A			G-1.03

ST85100333_LN03.DWG

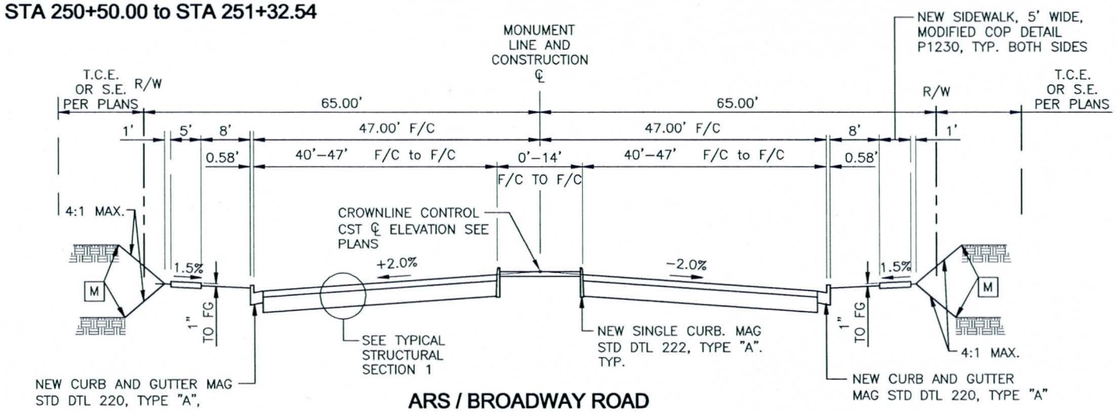
AVENIDA RIO SALADO/BROADWAY RD
PHOENIX STREET – MARICOPA CO.
43RD AVENUE TO 35TH AVENUE



ARS / BROADWAY ROAD
STA 250+50.00 to STA 261+81.87

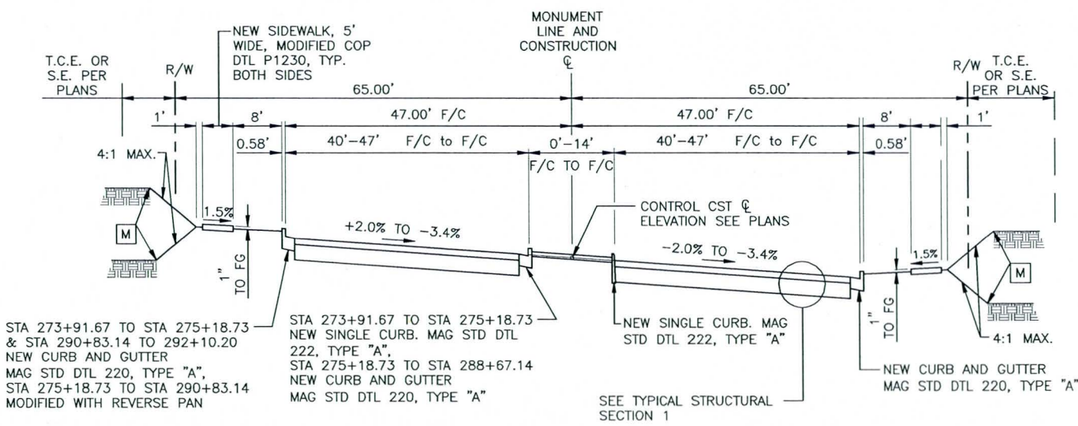
NOT TO SCALE

STA 250+50.00 to STA 251+32.54



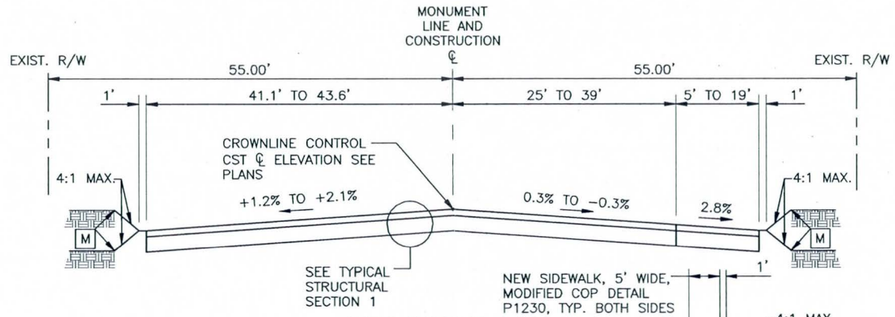
ARS / BROADWAY ROAD
STA 261+81.87 to STA 273+91.67

NOT TO SCALE



ARS / BROADWAY ROAD
STA 273+91.67 to STA 288+67.14

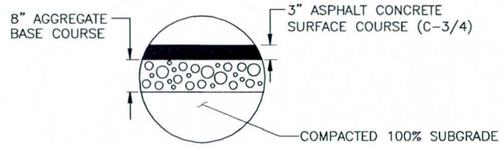
NOT TO SCALE



43RD AVENUE
STA 17+85.00 to STA 20+00.00

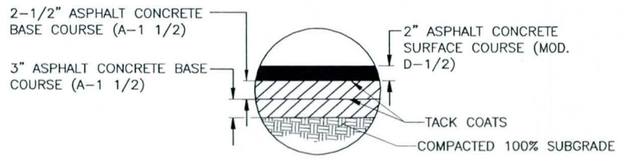
NOT TO SCALE

STA 18+78.96 to STA 19+35.29



TYPICAL STRUCTURAL SECTION 2

NOT TO SCALE



TYPICAL STRUCTURAL SECTION 1

NOT TO SCALE

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

Registered Professional Engineer Certificate
34588 MARK V. LEE 1-23-14 Date Signed
ARIZONA, U.S.A.
EXPIRES 3-31-15

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST85100333	9	161	

PROJECT ENGINEERING CONSULTANTS, LTD.
2310 W. MISSION LANE, STE. 4 PHOENIX, AZ 85021
PHONE (602) 906–1901

"PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2–28. THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."

TYPICAL SECTIONS

CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

AVENIDA RIO SALADO / BROADWAY RD
43RD AVENUE TO 35TH AVENUE
ST85100333

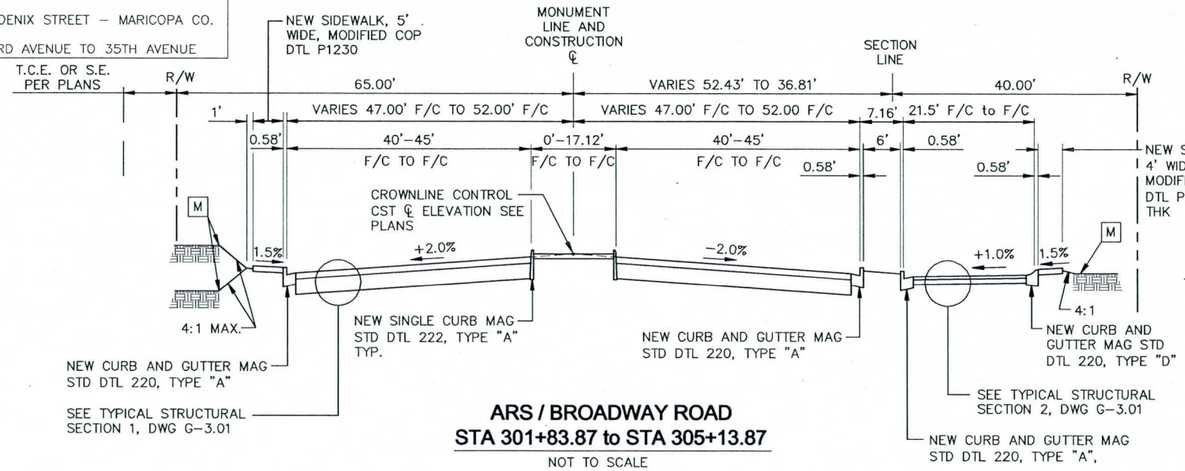
DR:	DES:	CK:	DWG SERIES NO.
JG	MVL	SM	
DATE: 01/14	DATE: 01/14	DATE: 01/14	
SCALE: HORIZ NO SCALE VERT			G–3.01

ST85100333_TY05.DWG

AVENIDA RIO SALADO/BROADWAY RD

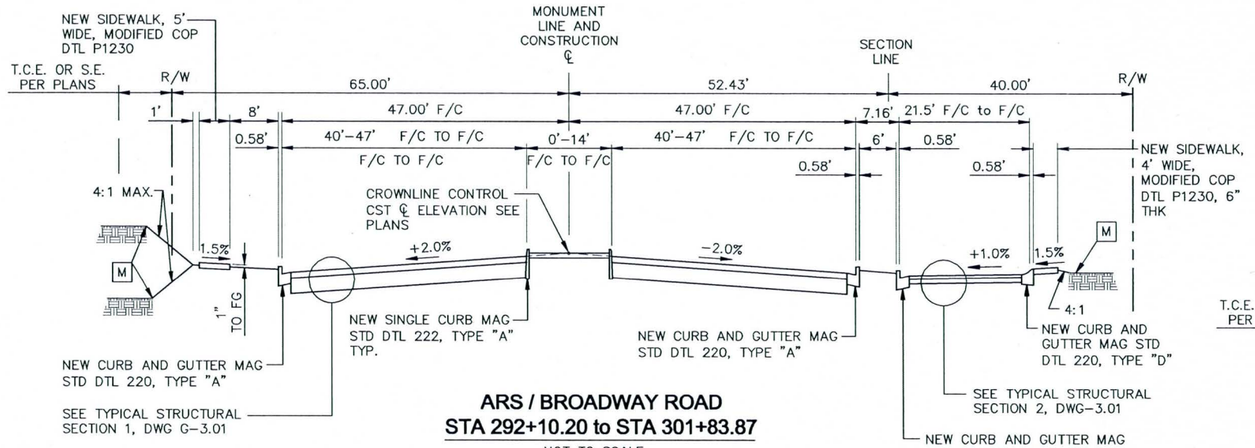
PHOENIX STREET – MARICOPA CO.

43RD AVENUE TO 35TH AVENUE



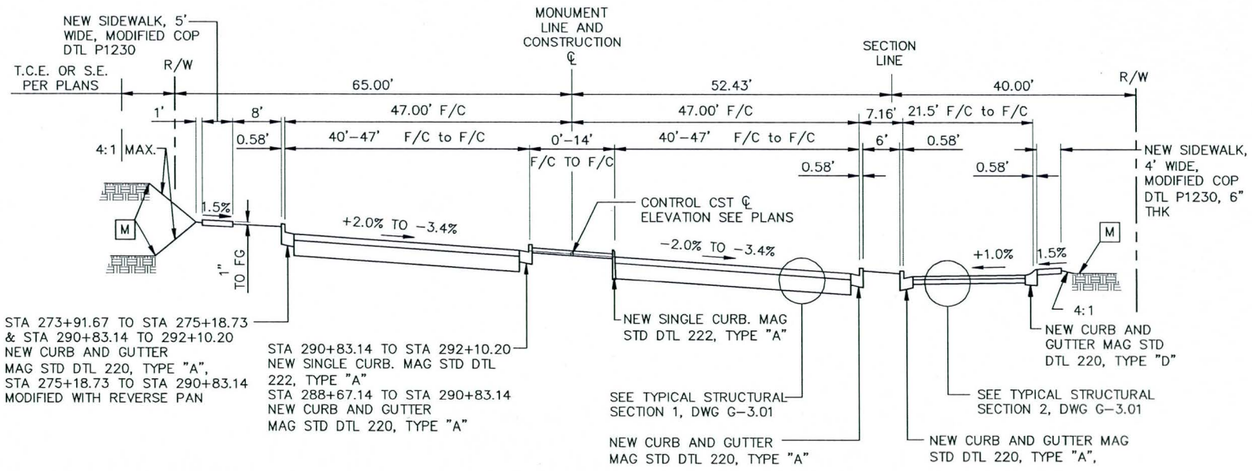
ARS / BROADWAY ROAD
STA 301+83.87 to STA 305+13.87

NOT TO SCALE



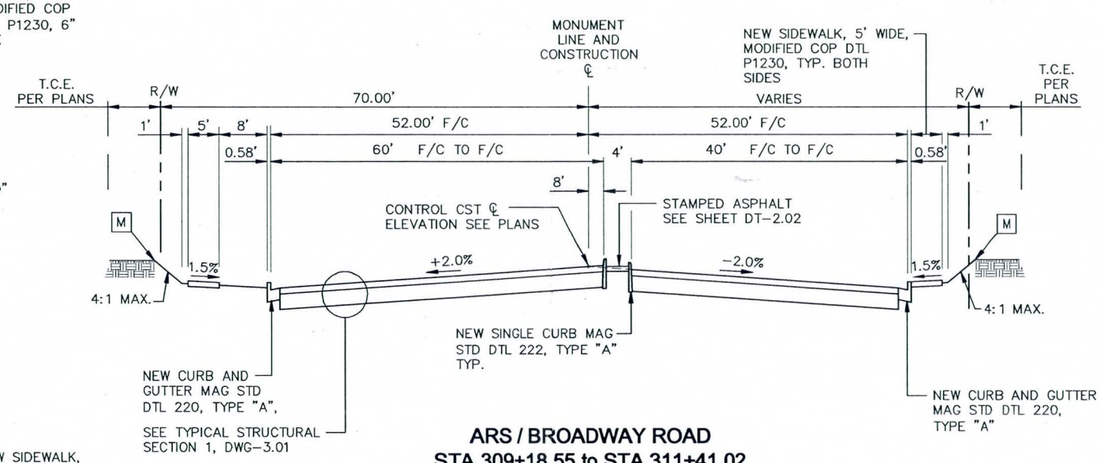
ARS / BROADWAY ROAD
STA 292+10.20 to STA 301+83.87

NOT TO SCALE



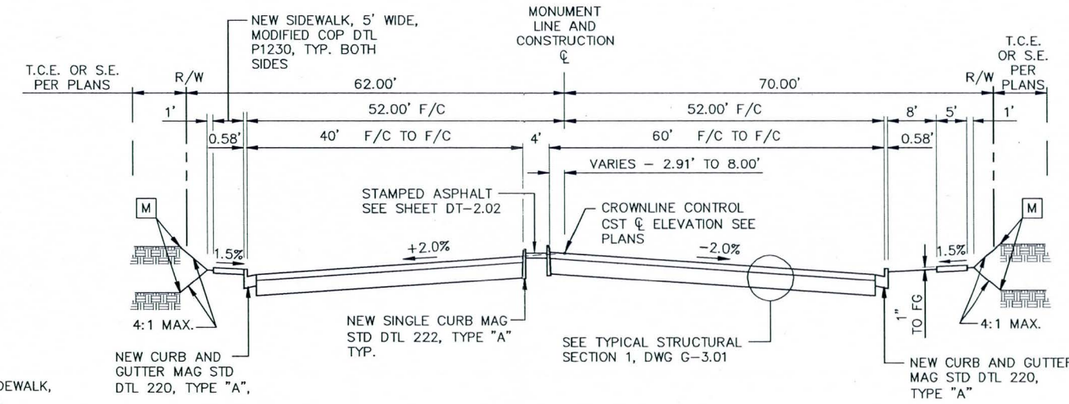
ARS / BROADWAY ROAD
STA 288+67.14 to STA 292+10.20

NOT TO SCALE



ARS / BROADWAY ROAD
STA 309+18.55 to STA 311+41.02

NOT TO SCALE



ARS / BROADWAY ROAD
STA 305+13.87 to STA 307+63.94

NOT TO SCALE

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

Registered Professional Engineer — Certificate No. 34588 — MARK V. LEE — Date Signed 1-23-14 — ARIZONA, U.S.A. — EXPIRES 3-31-15

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST85100333	10	161	

PROJECT ENGINEERING CONSULTANTS, LTD.
2310 W. MISSION LANE, STE. 4 PHOENIX, AZ 85021
PHONE (602) 906–1901

"PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2–28. THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."

TYPICAL SECTIONS

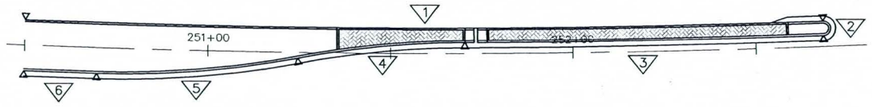
CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

AVENIDA RIO SALADO / BROADWAY RD
43RD AVENUE TO 35TH AVENUE
ST85100333

DR:	DES:	CK:	DWG SERIES NO.
JG	MVL	SM	
DATE: 01/14	DATE: 01/14	DATE: 01/14	
SCALE: HORIZ NO SCALE VERT			G–3.02

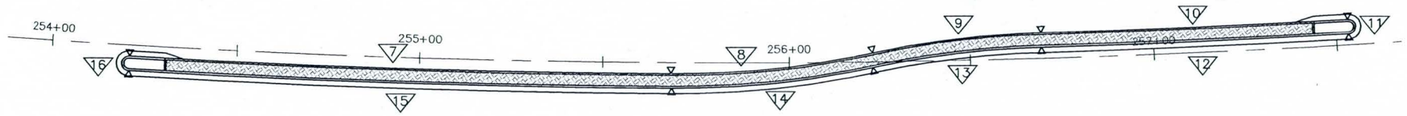
ST85100333 TY06.DWG

AVENIDA RIO SALADO/BROADWAY RD
PHOENIX STREET – MARICOPA CO.
43RD AVENUE TO 35TH AVENUE



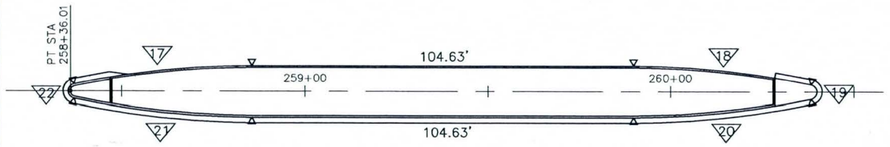
CURVE DATA

CURVE	1	2	3	4	5	6
△	04°22'09"	180°00'00"	01°57'45"	10°27'41"	12°28'04"	00°24'03"
RADIUS	2857.79'	2.00'	2861.79'	252.50'	252.50'	2871.79'
TANGENT	109.02'	–	49.01'	23.12'	27.58'	10.04'
LENGTH	217.93'	6.28'	98.02'	46.10'	54.94'	20.08'



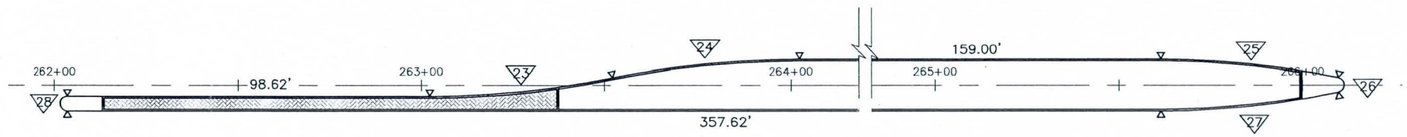
CURVE DATA

CURVE	7	8	9	10	11	12	13	14	15	16
△	2°57'17"	12°28'09"	10°27'37"	1°40'55"	180°00'00"	1°40'55"	10°27'41"	12°28'04"	2°57'27"	180°00'00"
RADIUS	2867.79'	252.50'	252.50'	2857.79'	2.00'	2861.79'	252.50'	252.50'	2871.79'	2.00'
TANGENT	73.96'	27.58'	23.11'	41.95'	–	42.00'	23.12'	27.58'	74.14'	–
LENGTH	147.89'	54.95'	46.10'	83.89'	6.28'	84.00'	46.10'	54.94'	148.24'	6.28'



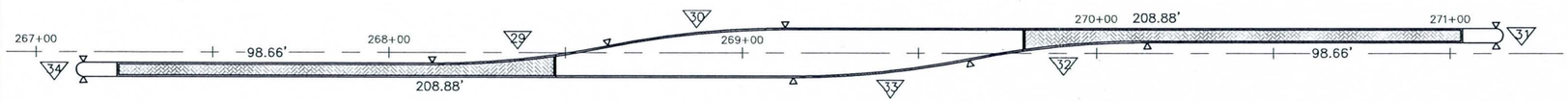
CURVE DATA

CURVE	17	18	19	20	21	22
△	11°53'37"	11°53'37"	156°12'45"	11°53'37"	11°53'37"	156°12'45"
RADIUS	234.90'	234.90'	2.00'	234.90'	234.90'	2.00'
TANGENT	24.47'	24.47'	9.50'	24.47'	24.47'	9.50'
LENGTH	48.76'	48.76'	5.45'	48.76'	48.76'	5.45'



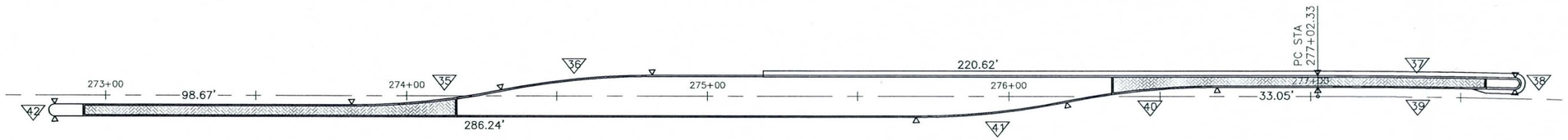
CURVE DATA

CURVE	23	24	25	26	27	28
△	11°25'16"	11°25'16"	11°53'37"	156°12'45"	11°53'37"	180°00'00"
RADIUS	252.50'	252.50'	234.90'	2.00'	234.90'	2.00'
TANGENT	25.25'	25.25'	24.47'	9.50'	24.47'	–
LENGTH	50.33'	50.33'	48.76'	5.45'	48.76'	6.28'



CURVE DATA

CURVE	29	30	31	32	33	34
△	11°25'16"	11°25'16"	180°00'00"	11°25'16"	11°25'16"	180°00'00"
RADIUS	252.50'	252.50'	2.00'	252.50'	252.50'	2.00'
TANGENT	25.25'	25.25'	–	25.25'	25.25'	–
LENGTH	50.33'	50.33'	6.28'	50.33'	50.33'	6.28'



CURVE DATA

CURVE	35	36	37	38	39	40	41	42
△	11°25'16"	11°25'16"	1°18'36"	180°00'00"	01°18'36"	11°25'16"	11°25'16"	180°00'00"
RADIUS	252.50'	252.50'	2871.79'	2.00'	2867.79'	252.50'	252.50'	2.00'
TANGENT	25.25'	25.25'	32.83'	INFINITE	32.79'	25.25'	25.25'	INFINITE
LENGTH	50.33'	50.33'	65.66'	6.28'	65.57'	50.33'	50.33'	6.28'

SHEET REFERENCES

1. SEE DT-2.01 & DT-2.02 FOR MEDIAN DETAILS

"PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2-28. THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."

MEDIAN ISLAND GEOMETRIC SHEET

CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

AVENIDA RIO SALADO / BROADWAY RD
43RD AVENUE TO 35TH AVENUE
ST85100333

DR: JG	DES: MVL	CK: SM	DWG SERIES NO.
DATE: 01/14	DATE: 01/14	DATE: 01/14	
SCALE: HORIZ NO SCALE VERT			G-4.01

ST85100333 G08.DWG

Registered Professional Engineer
34588
MARK V. LEE
Date Signed 1-23-14
ARIZONA, U.S.A.
EXPIRES 3-31-15

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST85100333	11	161	

PROJECT ENGINEERING CONSULTANTS, LTD.
2310 W. MISSION LANE, STE. 4 PHOENIX, AZ 85021
PHONE (602) 906-1901

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

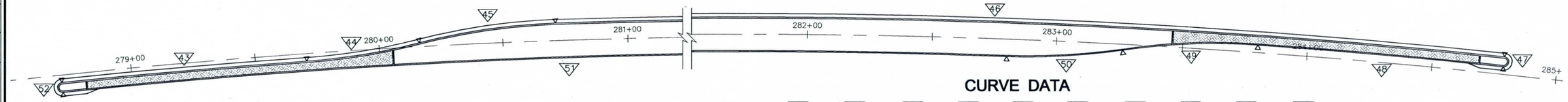
REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

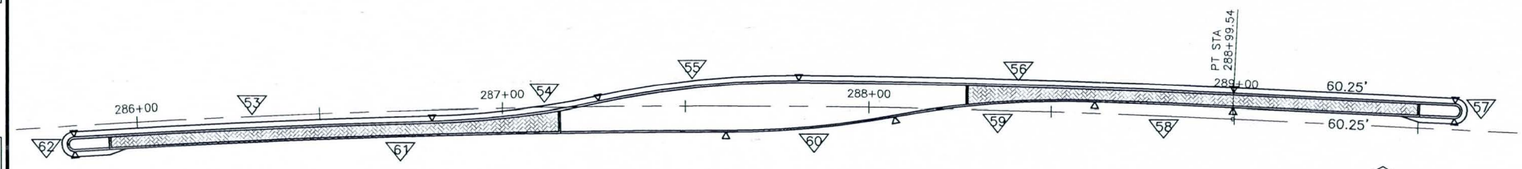
AVENIDA RIO SALADO/BROADWAY RD
PHOENIX STREET – MARICOPA CO.
43RD AVENUE TO 35TH AVENUE



CURVE DATA

CURVE	43	44	45	46	47	48	49	50	51	52
△	01°58'38"	10°27'41"	12°28'04"	08°09'01"	180°00'00"	01°57'39"	12°27'47"	10°27'18"	08°09'54"	180°00'00"
RADIUS	2861.79'	252.50'	252.50'	2871.79'	2.00'	2867.87'	252.50'	252.50'	2857.79'	2.00'
TANGENT	49.39'	23.12'	27.58'	204.60'	–	49.08'	27.57'	23.10'	203.97'	–
LENGTH	98.76'	46.10'	54.94'	408.52'	6.28'	98.15'	54.92'	46.07'	407.25'	6.28'

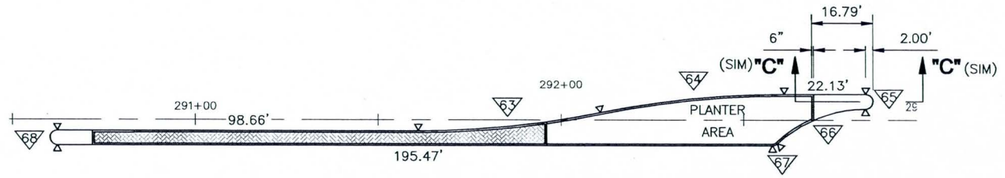
N



CURVE DATA

CURVE	53	54	55	56	57	58	59	60	61	62
△	01°57'45"	10°27'41"	12°28'03"	02°22'16"	180°00'00"	00°45'18"	12°28'09"	10°27'37"	03°34'34"	180°00'00"
RADIUS	2861.87'	252.50'	252.50'	2871.79'	2.00'	2867.79'	252.50'	252.50'	2857.79'	2.00'
TANGENT	49.02'	23.12'	27.58'	59.43'	–	18.89'	27.58'	23.11'	89.21'	–
LENGTH	98.03'	46.10'	54.94'	118.84'	6.28'	37.78'	54.95'	46.10'	178.37'	6.28'

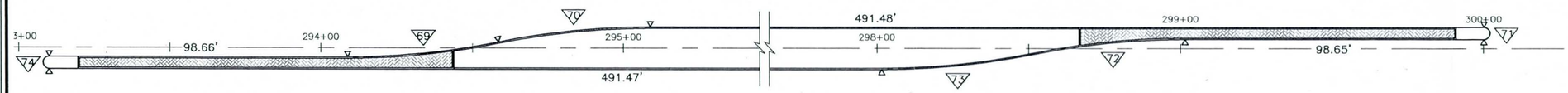
N



CURVE DATA

CURVE	63	64	65	66	67	68
△	11°25'16"	11°25'16"	179°57'06"	43°07'21"	43°08'11"	180°14'52"
RADIUS	252.50'	252.50'	2.00'	35.00'	2.00'	2.00'
TANGENT	25.25'	25.25'	INFINITE	13.83'	0.79'	INFINITE
LENGTH	50.33'	50.33'	6.28'	26.34'	1.51'	6.29'

N



CURVE DATA

CURVE	69	70	71	72	73	74
△	11°25'16"	11°25'16"	180°00'00"	11°25'16"	11°25'16"	180°00'00"
RADIUS	252.50'	252.50'	2.00'	252.50'	252.50'	2.00'
TANGENT	25.25'	25.25'	–	25.25'	25.25'	–
LENGTH	50.33'	50.33'	6.28'	50.33'	50.33'	6.28'

N

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

Registered Professional Engineer (Civil)
34588
MARK V.
LEE
1-23-14
Date Signed
ARIZONA, U.S.A.
EXPIRES 3-31-15

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST85100333	12	161	

PROJECT ENGINEERING CONSULTANTS, LTD.
2310 W. MISSION LANE, STE. 4 PHOENIX, AZ 85021
PHONE (602) 906-1901

SHEET REFERENCES

1. SEE DT-2.01 & DT-2.02 FOR MEDIAN DETAILS

"PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2-28. THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."

MEDIAN ISLAND GEOMETRIC SHEET

CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

AVENIDA RIO SALADO / BROADWAY RD
43RD AVENUE TO 35TH AVENUE
ST85100333

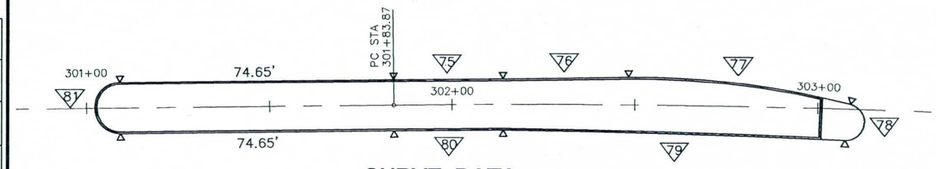
DR: JG	DES: MVL	CK: SM	DWG SERIES NO.
DATE: 01/14	DATE: 01/14	DATE: 01/14	
SCALE: HORIZ NO SCALE VERT			G-4.02

ST85100333_G09.DWG

AVENIDA RIO SALADO/BROADWAY RD

PHOENIX STREET – MARICOPA CO.

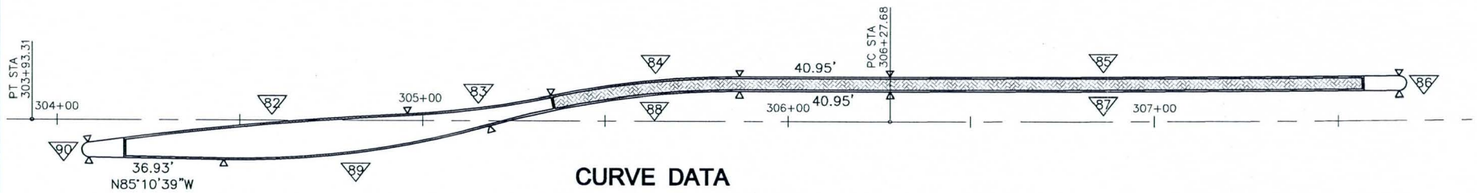
43RD AVENUE TO 35TH AVENUE



CURVE DATA

CURVE	75	76	77	78	79	80	81
△	0°34'19"	00°39'31"	14°52'34"	168°09'54"	1°47'26"	0°34'19"	180°00'00"
RADIUS	3007.00'	3008.04'	234.90'	5.00'	2991.13'	2993.00'	7.00'
TANGENT	15.01'	17.29'	30.67'	48.24'	46.74'	14.94'	INFINITE
LENGTH	30.02'	34.58'	60.99'	14.66'	93.48'	29.88'	21.99'

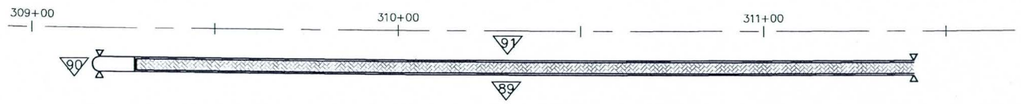
N



CURVE DATA

CURVE	82	83	84	85	86	87	88	89	90
△	05°12'33"	08°57'53"	11°38'24"	00°41'42"	180°00'00"	00°41'42"	15°43'23"	16°40'51"	171°09'28"
RADIUS	964.90'	252.50'	256.50'	11447.16'	2.00'	11451.16'	252.50'	252.50'	2.00'
TANGENT	43.89'	19.79'	26.14'	69.44'	–	69.47'	34.86'	37.02'	25.87'
LENGTH	87.72'	39.51'	52.11'	138.88'	6.28'	138.93'	69.29'	73.51'	5.97'

N



CURVE DATA

CURVE	89	90	91
△	01°06'45"	180°00'00"	01°06'45"
RADIUS	11471.16'	2.00'	11467.16'
TANGENT	111.36'	–	111.32'
LENGTH	222.71'	6.28'	222.63'

N

SHEET REFERENCES

1. SEE DT-2.01 & DT-2.02 FOR MEDIAN DETAILS

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

Registered Professional Engineer (Civil)
34588
MARK V. LEE
1-23-14
Date Signed
ARIZONA, U.S.A.
EXPIRES 3-31-15

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST85100333	13	161	

PROJECT ENGINEERING CONSULTANTS, LTD.
2310 W. MISSION LANE, STE. 4 PHOENIX, AZ 85021
PHONE (602) 906-1901

"PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2-28. THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."

MEDIAN ISLAND GEOMETRIC SHEET

CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

AVENIDA RIO SALADO / BROADWAY RD
43RD AVENUE TO 35TH AVENUE
ST85100333

DR: JG	DES: MVL	CK: SM	DWG SERIES NO.
DATE: 01/14	DATE: 01/14	DATE: 01/14	
SCALE: HORIZ NO SCALE VERT			G-4.03

ST85100333 G10.DWG

AVENIDA RIO SALADO/BROADWAY RD
PHOENIX STREET – MARICOPA CO.
43RD AVENUE TO 35TH AVENUE

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST85100333	14	161	

Registered Professional Engineer
34588
MARK V. LEE
1-23-14
Date Signed
ARIZONA, U.S.A.
EXPIRES 3-31-15

PROJECT ENGINEERING CONSULTANTS, LTD.
2310 W. MISSION LANE, STE. 4 PHOENIX, AZ 85021
PHONE (602) 906-1901

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

REVISION BY CITY OF PHOENIX

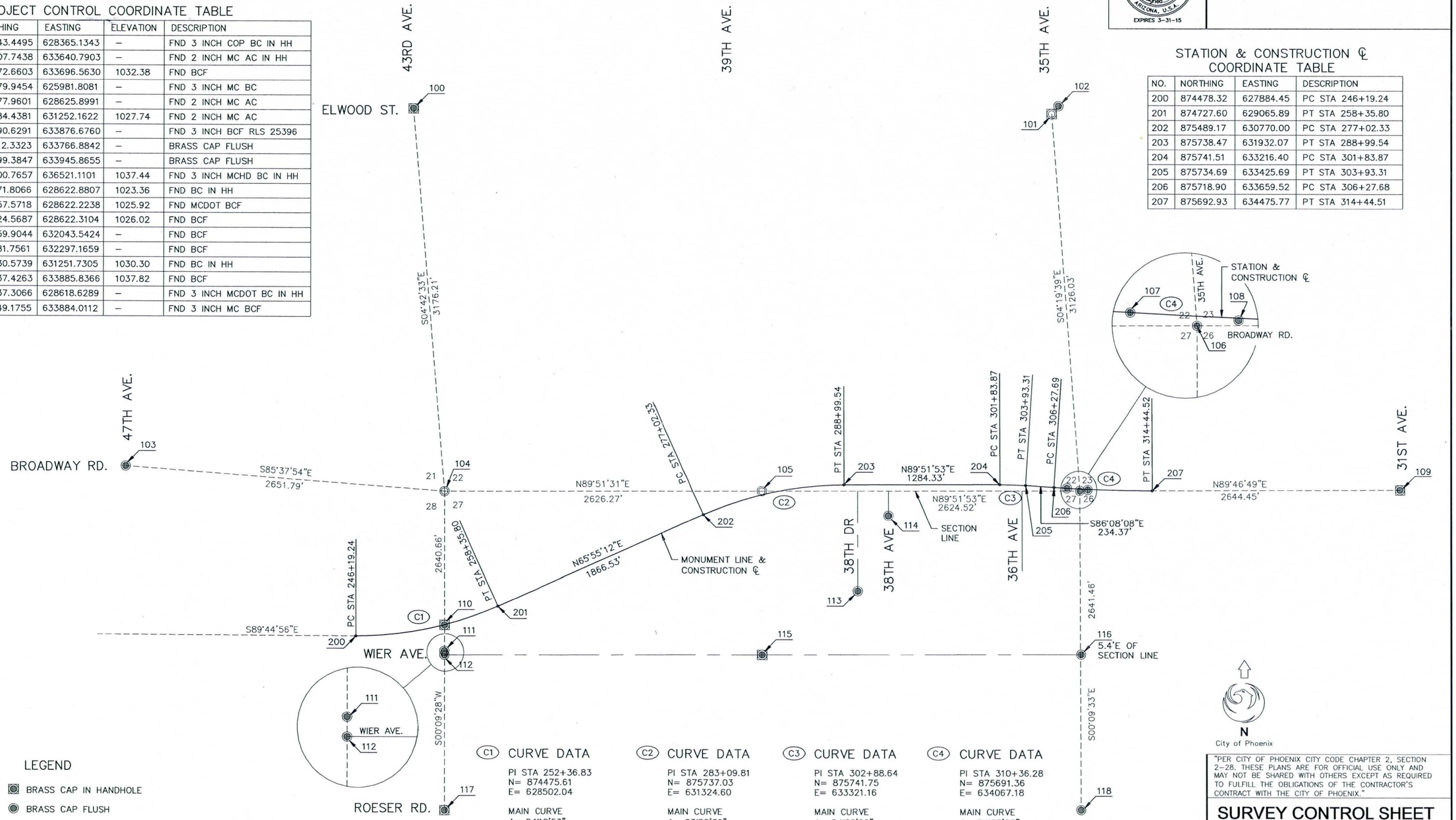
NO.	DESCRIPTION	REV BY	CKD BY	DATE

PROJECT CONTROL COORDINATE TABLE

NO.	NORTHING	EASTING	ELEVATION	DESCRIPTION
100	878843.4495	628365.1343	–	FND 3 INCH COP BC IN HH
101	878807.7438	633640.7903	–	FND 2 INCH MC AC IN HH
102	878872.6603	633696.5630	1032.38	FND BCF
103	875879.9454	625981.8081	–	FND 3 INCH MC BC
104	875677.9601	628625.8991	–	FND 2 INCH MC AC
105	875684.4381	631252.1622	1027.74	FND 2 INCH MC AC
106	875690.6291	633876.6760	–	FND 3 INCH BCF RLS 25396
107	875712.3323	633766.8842	–	BRASS CAP FLUSH
108	875699.3847	633945.8655	–	BRASS CAP FLUSH
109	875700.7657	636521.1101	1037.44	FND 3 INCH MCHD BC IN HH
110	874571.8066	628622.8807	1023.36	FND BC IN HH
111	874357.5718	628622.2238	1025.92	FND MCDOT BCF
112	874324.5687	628622.3104	1026.02	FND BCF
113	874859.9044	632043.5424	–	FND BCF
114	875481.7561	632297.1659	–	FND BCF
115	874330.5739	631251.7305	1030.30	FND BC IN HH
116	874337.4263	633885.8366	1037.82	FND BCF
117	873037.3066	628618.6289	–	FND 3 INCH MCDOT BC IN HH
118	873049.1755	633884.0112	–	FND 3 INCH MC BCF

STATION & CONSTRUCTION ℄ COORDINATE TABLE

NO.	NORTHING	EASTING	DESCRIPTION
200	874478.32	627884.45	PC STA 246+19.24
201	874727.60	629065.89	PT STA 258+35.80
202	875489.17	630770.00	PC STA 277+02.33
203	875738.47	631932.07	PT STA 288+99.54
204	875741.51	633216.40	PC STA 301+83.87
205	875734.69	633425.69	PT STA 303+93.31
206	875718.90	633659.52	PC STA 306+27.68
207	875692.93	634475.77	PT STA 314+44.51



LEGEND

- BRASS CAP IN HANDHOLE
- BRASS CAP FLUSH
- ALUMINUM CAP IN HANDHOLE
- ALUMINUM CAP FLUSH

C1 CURVE DATA

PI STA 252+36.83
N= 874475.61
E= 628502.04

MAIN CURVE
Δ= 24°19'53"
D= 02°00'00"
R= 2864.79'
L= 1216.56'
T= 617.59'
EXT= 65.81'
SUPER= 0.034'/ft

C2 CURVE DATA

PI STA 283+09.81
N= 875737.03
E= 631324.60

MAIN CURVE
Δ= 23°56'39"
D= 02°00'00"
R= 2864.79'
L= 1197.20'
T= 607.47'
EXT= 63.70'
SUPER= 0.034'/ft

C3 CURVE DATA

PI STA 302+88.64
N= 875741.75
E= 633321.16

MAIN CURVE
Δ= 04°00'00"
D= 01°54'35"
R= 3000.00'
L= 209.44'
T= 104.76'
EXT= 1.83'
SUPER= N/C

C4 CURVE DATA

PI STA 310+36.28
N= 875691.36
E= 634067.18

MAIN CURVE
Δ= 04°05'03"
D= 00°30'00"
R= 11459.16'
L= 816.83'
T= 408.59'
EXT= 7.28'
SUPER= N/C

N
City of Phoenix

"PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2-28. THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."

SURVEY CONTROL SHEET

CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

AVENIDA RIO SALADO / BROADWAY RD
43RD AVENUE TO 35TH AVENUE
ST85100333

DR: JG	DES: MVL	CK: SM	DWG SERIES NO.
DATE: 01/14	DATE: 01/14	DATE: 01/14	
SCALE: HORIZ VERT			G-5.01

ST85100333 G08.DWG

AVENIDA RIO SALADO/BROADWAY RD
PHOENIX STREET – MARICOPA CO.
43RD AVENUE TO 35TH AVENUE

REVISION BY CITY OF PHOENIX

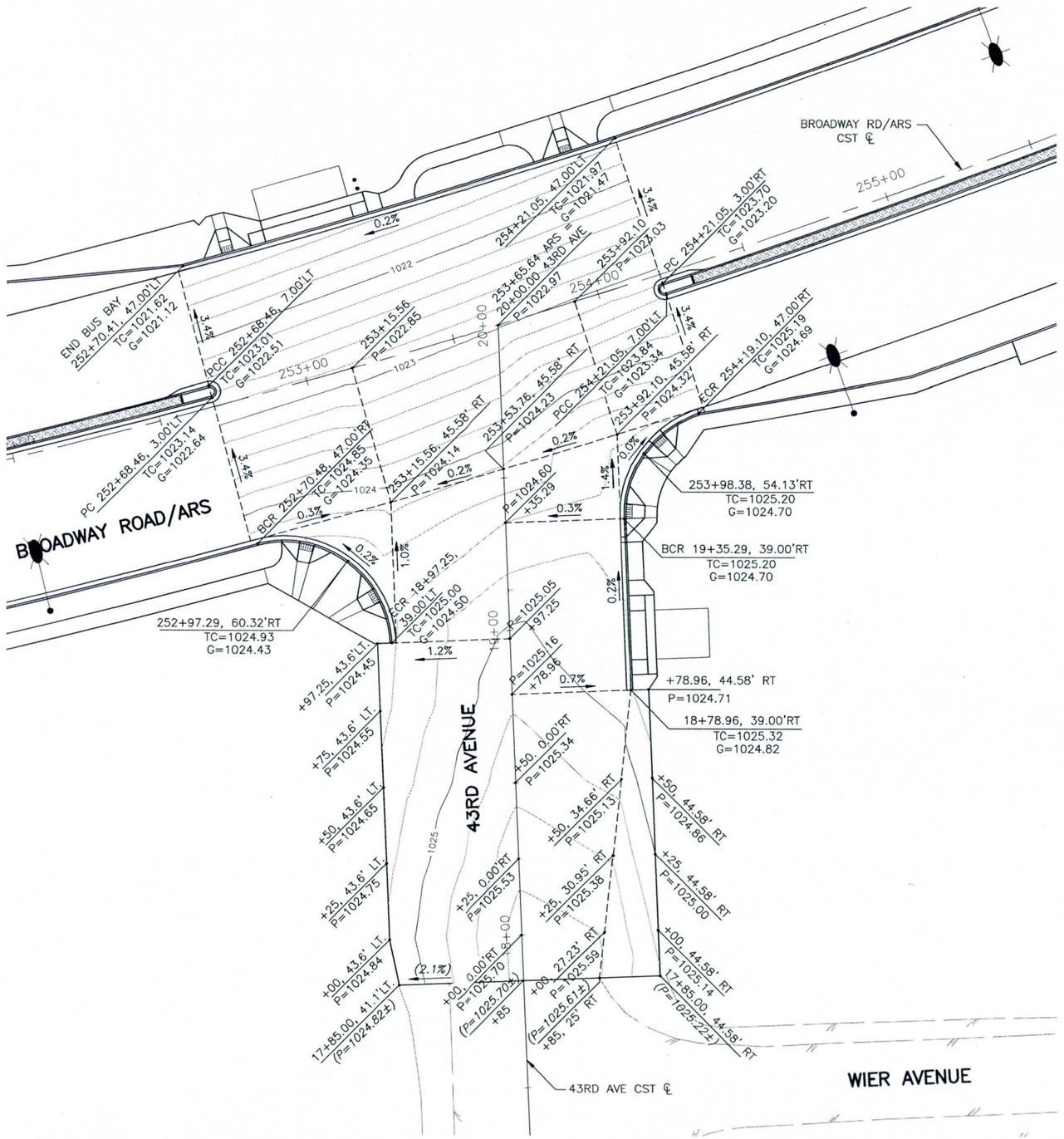
NO.	DESCRIPTION	REV BY	CKD BY	DATE

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE



N
City of Phoenix

Registered Professional Engineer
34588
MARK V. LEE
Date Signed 1-23-14
ARIZONA, U.S.A.
EXPIRES 3-31-15

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST85100333	15	161	

PROJECT ENGINEERING CONSULTANTS, LTD.
2310 W. MISSION LANE, STE. 4 PHOENIX, AZ 85021
PHONE (602) 906-1901

(P=1035.58) EXISTING SURFACE ELEVATION

P=1035.64 NEW SURFACE ELEVATION

(0.76%) EXISTING SLOPE

0.7% NEW SLOPE

SHEET REFERENCES

1. SEE SHEET P-1.01 FOR PAVING PLAN

"PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2-28. THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."

INTERSECTION WORKSHEET

CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

AVENIDA RIO SALADO / BROADWAY RD
43RD AVENUE TO 35TH AVENUE
ST85100333

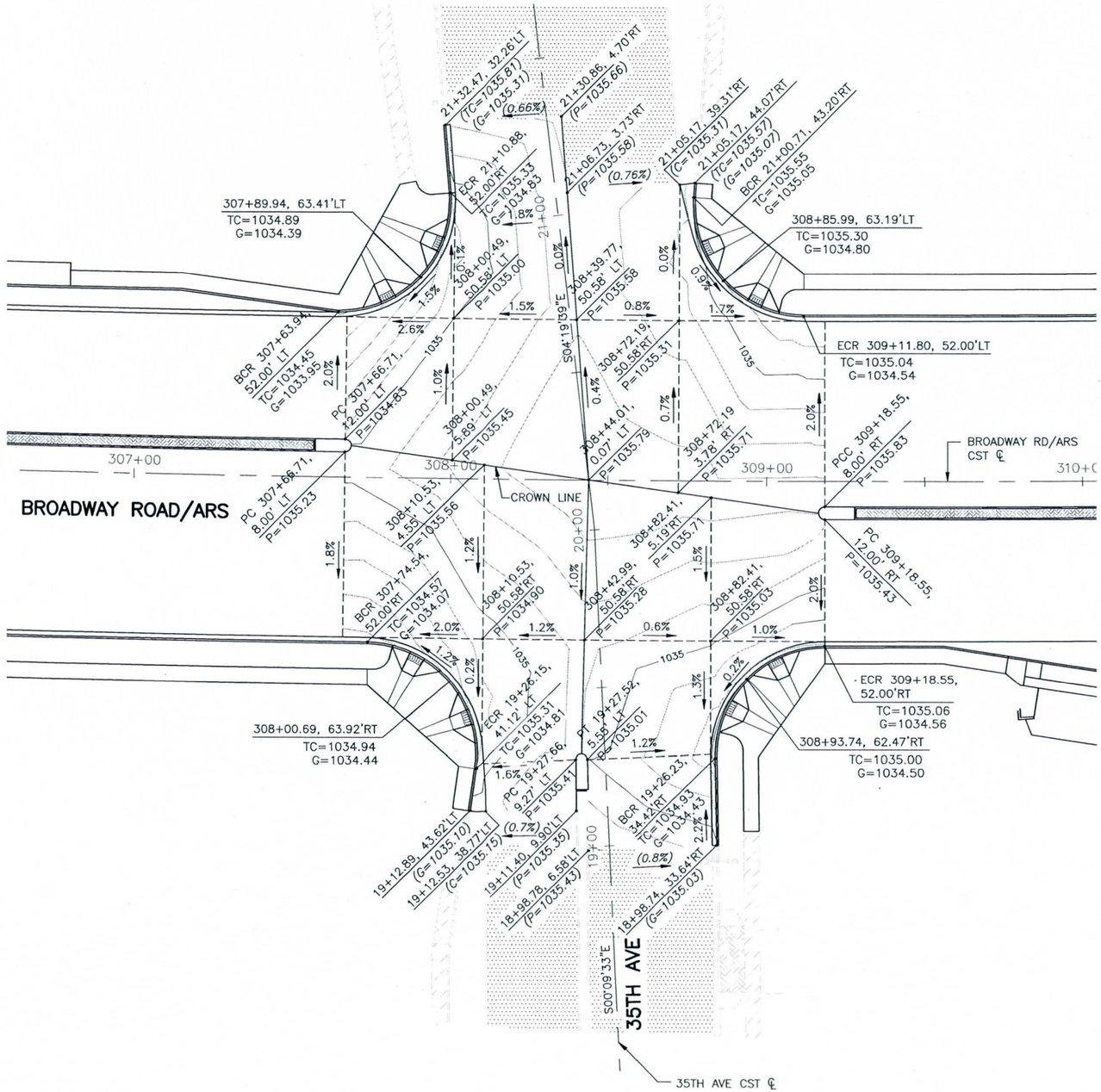
DR: JG	DES: MVL	CK: SM	DWG SERIES NO.
DATE: 01/14	DATE: 01/14	DATE: 01/14	
SCALE: HORIZ 1"= 20' VERT N/A			G-6.01

AVENIDA RIO SALADO/BROADWAY RD
PHOENIX STREET – MARICOPA CO.
43RD AVENUE TO 35TH AVENUE

REVISION BY CITY OF PHOENIX				
NO.	DESCRIPTION	REV BY	CKD BY	DATE

REVISION BY CITY OF PHOENIX				
NO.	DESCRIPTION	REV BY	CKD BY	DATE

REVISION BY CITY OF PHOENIX				
NO.	DESCRIPTION	REV BY	CKD BY	DATE



N
City of Phoenix

(P=1035.58) EXISTING SURFACE ELEVATION

P=1035.64 NEW SURFACE ELEVATION

(0.76%) EXISTING SLOPE

0.7% NEW SLOPE

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST85100333	16	161	

PROJECT ENGINEERING CONSULTANTS, LTD.
2310 W. MISSION LANE, STE. 4 PHOENIX, AZ 85021
PHONE (602) 906-1901

34588 MARK V. LEE Date Signed 1-23-14
Registered Professional Engineer (Civil)
ARIZONA, U.S.A.
EXPIRES 3-31-15

SHEET REFERENCES

1. SEE SHEET P-1.17 FOR PAVING PLAN

"PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2-28. THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."

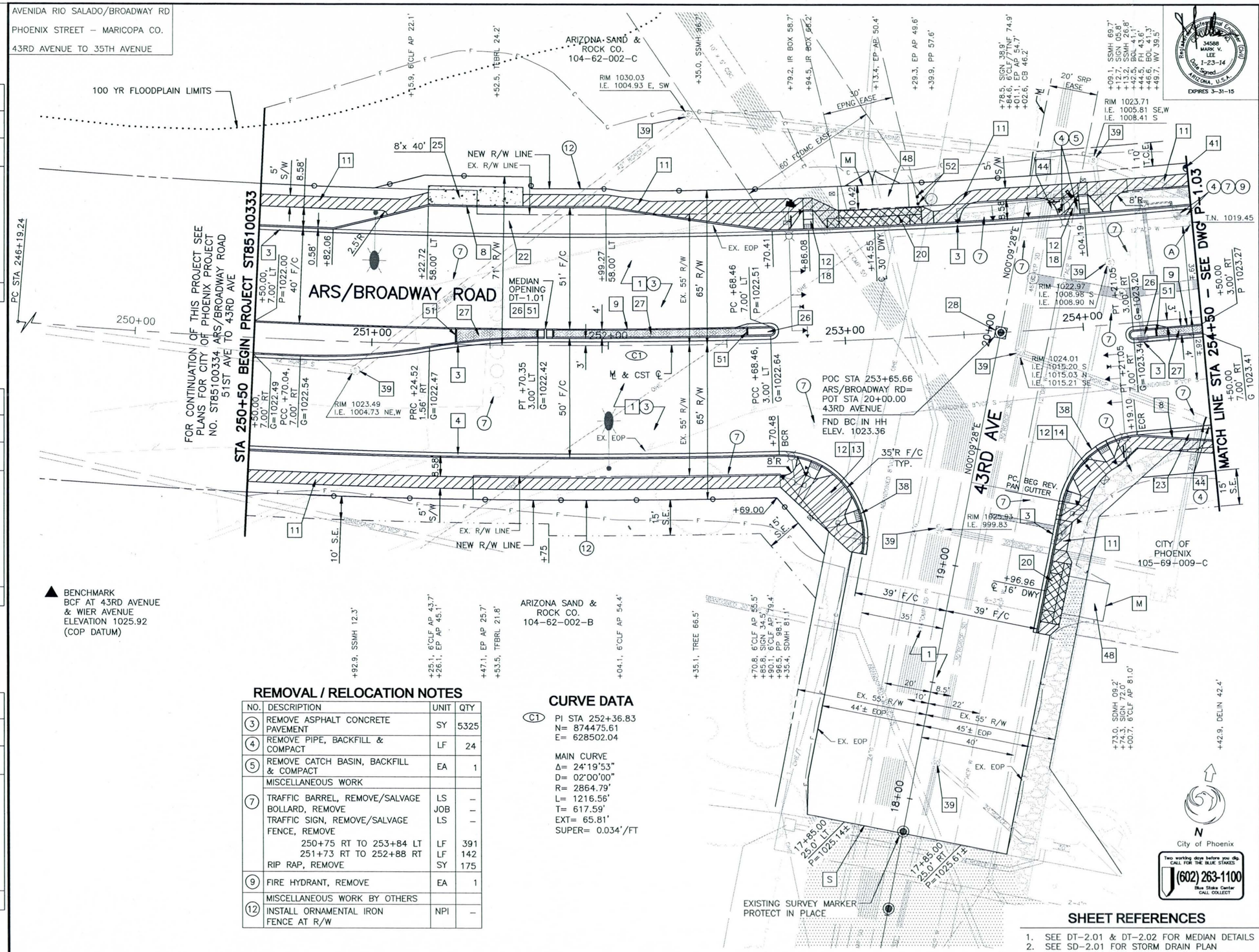
INTERSECTION WORKSHEET

CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

AVENIDA RIO SALADO / BROADWAY RD
43RD AVENUE TO 35TH AVENUE
ST85100333

DR: JG	DES: MVL	CK: SM	DWG SERIES NO.
DATE: 01/14	DATE: 01/14	DATE: 01/14	
SCALE: HORIZ 1"= 20' VERT N/A			G-6.02

AVENIDA RIO SALADO/BROADWAY RD
PHOENIX STREET – MARICOPA CO.
43RD AVENUE TO 35TH AVENUE



▲ BENCHMARK
BCF AT 43RD AVENUE
& WIER AVENUE
ELEVATION 1025.92
(COP DATUM)

REMOVAL / RELOCATION NOTES

NO.	DESCRIPTION	UNIT	QTY
(3)	REMOVE ASPHALT CONCRETE PAVEMENT	SY	5325
(4)	REMOVE PIPE, BACKFILL & COMPACT	LF	24
(5)	REMOVE CATCH BASIN, BACKFILL & COMPACT	EA	1
	MISCELLANEOUS WORK		
(7)	TRAFFIC BARREL, REMOVE/SALVAGE	LS	–
	BOLLARD, REMOVE	JOB	–
	TRAFFIC SIGN, REMOVE/SALVAGE	LS	–
	FENCE, REMOVE		
	250+75 RT TO 253+84 LT	LF	391
	251+73 RT TO 252+88 RT	LF	142
	RIP RAP, REMOVE	SY	175
(9)	FIRE HYDRANT, REMOVE	EA	1
	MISCELLANEOUS WORK BY OTHERS		
(12)	INSTALL ORNAMENTAL IRON FENCE AT R/W	NPI	–

CURVE DATA

(C1) PI STA 252+36.83
N= 874475.61
E= 628502.04

MAIN CURVE
Δ= 24°19'53"
D= 02°00'00"
R= 2864.79'
L= 1216.56'
T= 617.59'
EXT= 65.81'
SUPER= 0.034'/FT

SHEET REFERENCES

1. SEE DT-2.01 & DT-2.02 FOR MEDIAN DETAILS
2. SEE SD-2.01 FOR STORM DRAIN PLAN
3. SEE CP-1.01 FOR CB CONN PIPE PROFILE
4. SEE P-1.02 FOR PAVING PROFILE
5. SEE G-6.01 FOR INTERSECTION WORKSHEET
6. SEE DT-3.01 FOR DRIVEWAY PROFILES
7. SEE SL-1.01 FOR STREET LIGHT PLANS

Registered Professional Engineer (Civil) 34588 MARK V. LEE 1-23-14 Date Signed ARIZONA, U.S.A. EXPIRES 3-31-15

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST85100333	17	161	

PROJECT ENGINEERING CONSULTANTS, LTD.
2310 W. MISSION LANE, STE. 4 PHOENIX, AZ 85021
PHONE (602) 906-1901

CONSTRUCTION NOTES

NO.	DESCRIPTION	UNIT	QTY
	SUBGRADE PREPARATION	SY	5426
1	2" ASPHALT CONCRETE SURFACE COURSE, MOD. TYPE D 1/2	TON	611
	5-1/2" ASPHALT CONCRETE BASE COURSE, TYPE A 1-1/2	TON	1679
	TACK COAT	TON	5
3	VERTICAL CURB & GUTTER, MAG STD DET 220, TYPE 'A', H=6"	LF	555
4	VERTICAL CURB & GUTTER, MAG STD DET 220, TYPE 'A', H=6", MODIFIED WITH REVERSE PAN	LF	224
8	SINGLE CURB, MAG STD DET 222, TYPE 'A', MODIFIED FOR BUS BAY	LF	219
9	SINGLE CURB, MAG STD DET 222, TYPE 'A'	LF	218
11	5' CONCRETE SIDEWALK, MOD. COP STD DET P1230, 6" THK, CLASS 'A'	SF	2911
12	TRUNCATED DOMES, COP STD DET P1232	SF	60
13	CONC SIDEWALK, 9" THICK	SF	706
	CURB RAMP, 35' RADII, COP STD DET P1235		
	CONC SIDEWALK, 9" THICK	SF	425
14	CURB RAMP, 35' RADII, COP STD DET P1236		
18	CURB RAMP, MID BLOCK WITH DETACHED SIDEWALK, COP STD DET P1241-2	SF	703
20	DRIVEWAY ENTRANCE – TYPE 1, COP STD DETAIL P1255-1, 9" THICK	SF	473
	CONCRETE PAVEMENT, 9" THICK	SF	1782
22	BUS BAY, TYPE I, COP STD DETAIL P1256-1		
	CONCRETE PAVEMENT, 9" THICK	SF	122
23	BUS BAY, TYPE I, COP STD DET P1256-1, MOD. WITH NO FLOWLINE DEPRESSION		
25	BUS SHELTER / ACCESSORY PAD, COP STANDARD DETAIL P1260	SF	320
26	CONCRETE MEDIAN NOSE	SF	75
	STAMPED ASPHALT PAVEMENT	SF	424
27	2-1/2" ASPHALT CONCRETE SURFACE COURSE, (D 1/2)	TON	7
	AGGREGATE BASE COURSE	TON	10
28	SURVEY MARKER, MAG STD DETAIL 120-1, TYPE 'A'	EA	1
38	VERT. CURB & GUTTER, MAG STD DET 220, TYPE 'A', H=6". 9" THICK	LF	109
39	ADJUST EXISTING MANHOLE FRAME & COVER, COP STD. DET. P1422	EA	6
	6" D.I.P., RESTRAINED	LF	28
41	FIRE HYDRANT, FURNISHED BY CITY OF PHOENIX	EA	1
	6" VALVE, BOX AND COVER	EA	1
44	PIPE PLUG, MAG STD DET 427	EA	2
48	AGGREGATE BASE CONN. (6" THK)	TON	21
51	SINGLE CURB, MAG STD DET 222, TYPE 'B',	LF	18
52	BOLLARD, SEE DETAIL 8 ON SHEET DT-1.04	EA	2
(A)	ADJUST WATER VALVE BOX PER COP STD DET P1391, TYPE 'A' & P1391-1	EA	1

"PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2-28. THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."

Two working days before you dig, CALL FOR THE BLUE STAKES (602) 263-1100 Blue Stake Center CALL COLLECT

PAVING PLAN SHEET
STA 250+50 TO STA 254+50
CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

AVENIDA RIO SALADO / BROADWAY RD
43RD AVENUE TO 35TH AVENUE
ST85100333

DR: JG	DES: MVL	CK: SM	DWG SERIES NO.
DATE: 01/14	DATE: 01/14	DATE: 01/14	
SCALE: HORIZ 1"= 20' VERT 1"= 2'			P-1.01

ST85100333 PP12.DWG

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

AVENIDA RIO SALADO/BROADWAY RD
PHOENIX STREET – MARICOPA CO.
43RD AVENUE TO 35TH AVENUE

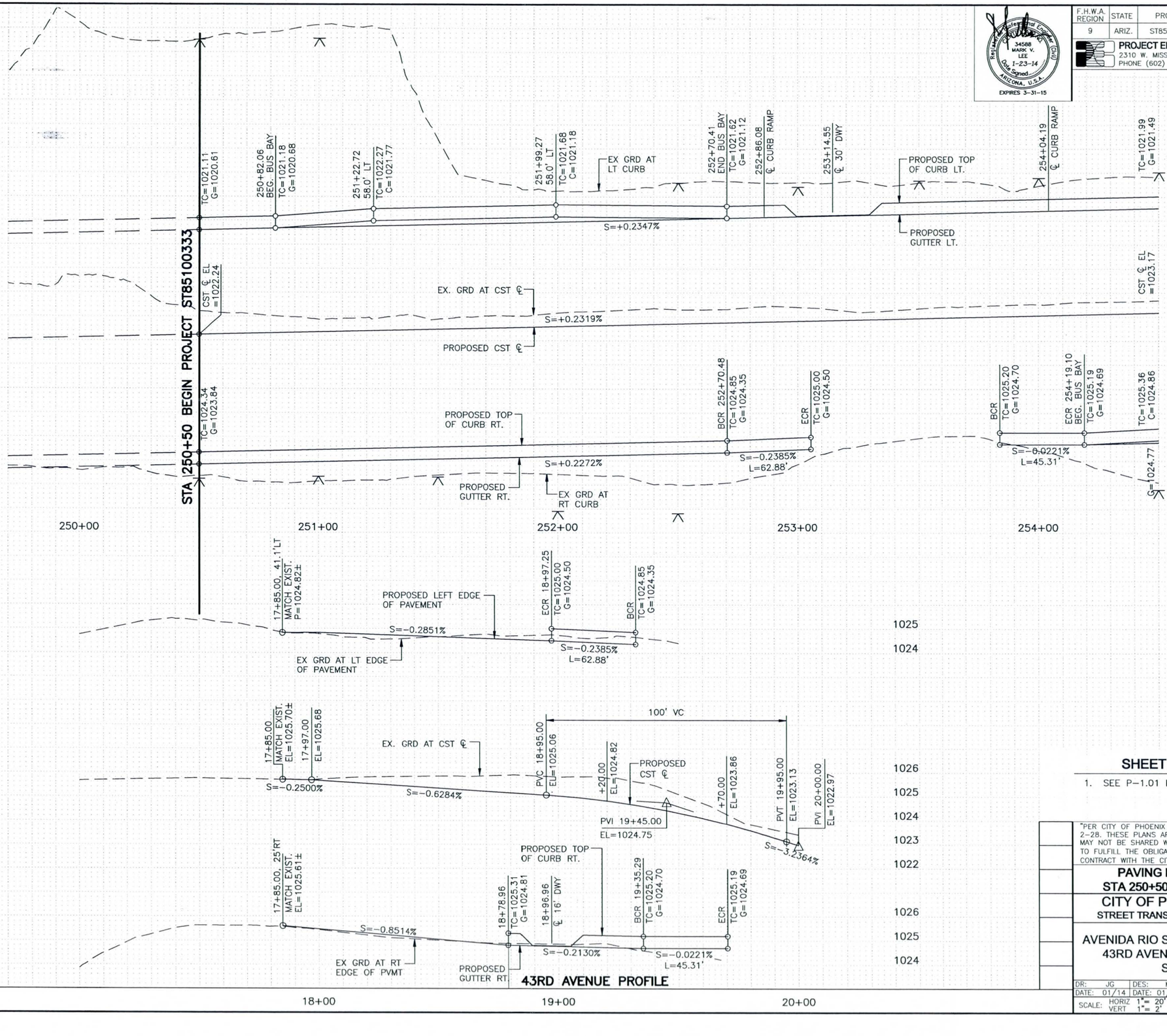
F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST85100333	18	161	

PROJECT ENGINEERING CONSULTANTS, LTD.
2310 W. MISSION LANE, STE. 4 PHOENIX, AZ 85021
PHONE (602) 906-1901

Registered Professional Engineer — 34588 MARK V. LEE — 1-23-14 Date Signed — ARIZONA, U.S.A. — EXPIRES 3-31-15

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE



43RD AVENUE PROFILE

SHEET REFERENCES

1. SEE P-1.01 FOR PAVING PLAN

"PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2-28. THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."

PAVING PROFILE SHEET
STA 250+50 TO STA 254+19.05

CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

AVENIDA RIO SALADO / BROADWAY RD
43RD AVENUE TO 35TH AVENUE
ST85100333

DR:	DES:	CK:	DWG SERIES NO.
JG	MVL	SM	
DATE: 01/14	DATE: 01/14	DATE: 01/14	
SCALE: HORIZ 1"= 20' VERT 1"= 2'			P-1.02

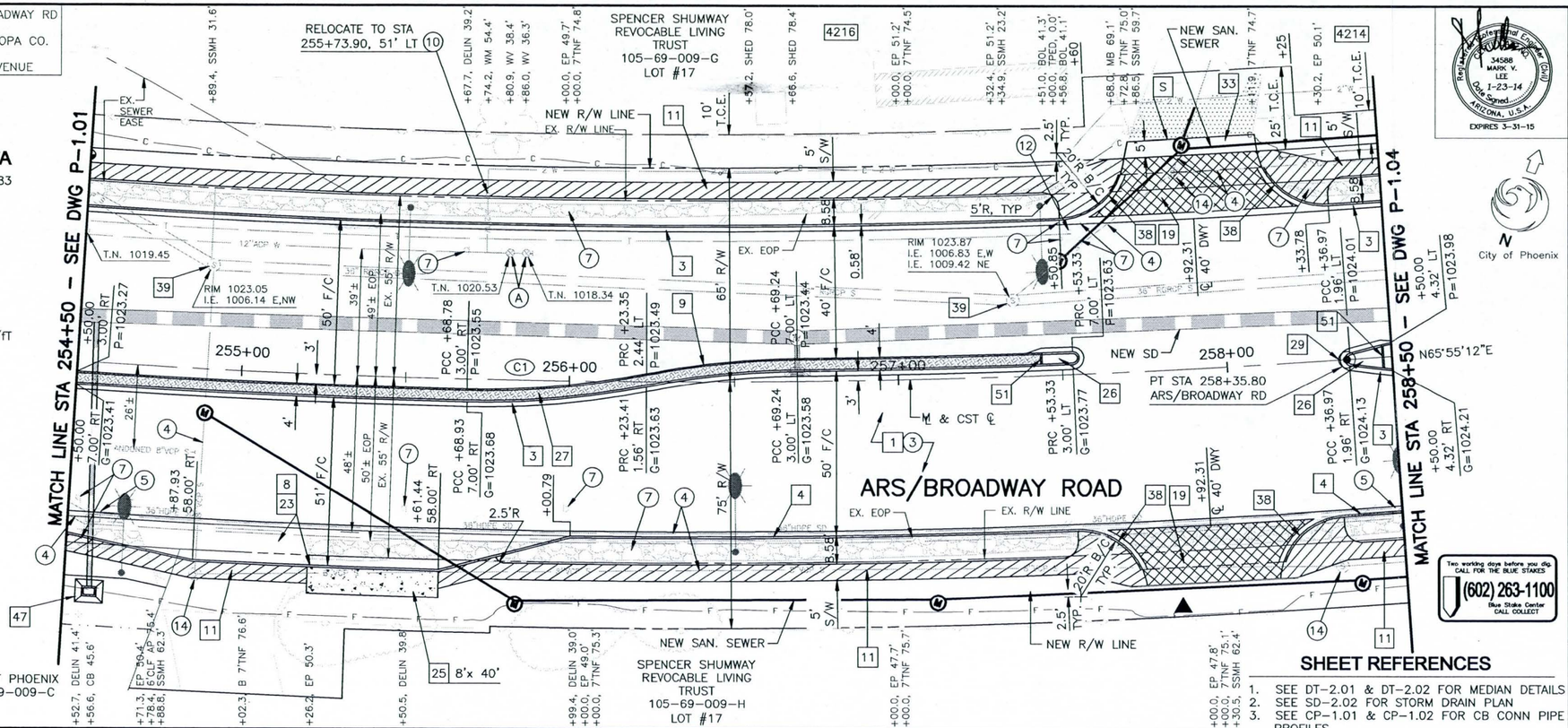
ST85100333 PP13.DWG

AVENIDA RIO SALADO/BROADWAY RD
PHOENIX STREET – MARICOPA CO.
43RD AVENUE TO 35TH AVENUE

CURVE DATA

(C1) PI STA 252+36.83
N= 874475.61
E= 628502.04

MAIN CURVE
Δ= 24°19'53"
D= 02°00'00"
R= 2864.79'
L= 1216.56'
T= 617.59'
EXT= 65.81'
SUPER= 0.034'/ft

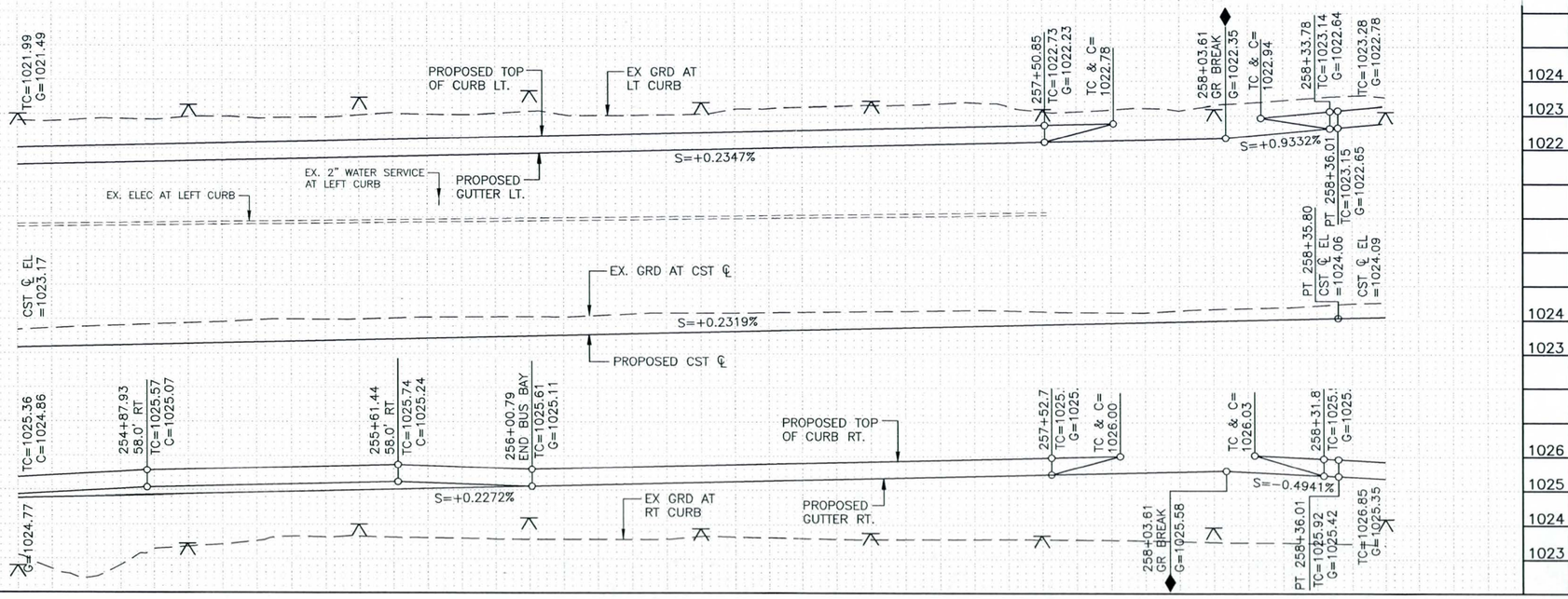


Two working days before you dig. CALL FOR THE BLUE STAKES (602) 263-1100 Blue Stake Center CALL COLLECT

SHEET REFERENCES

1. SEE DT-2.01 & DT-2.02 FOR MEDIAN DETAILS
2. SEE SD-2.02 FOR STORM DRAIN PLAN
3. SEE CP-1.01 & CP-1.02 FOR CB CONN PIPE PROFILES
4. SEE SP-1.01 FOR SANITARY SEWER PLAN
5. SEE DT-3.01 FOR DRIVEWAY PROFILES
6. SEE SL-1.01 FOR STREET LIGHT PLANS

▲ T.B.M.
STA 257+83.06, 69.17' RT
SET 1/2" REBAR W/ PEC CAP
ELEVATION 1023.70



REVISION BY CITY OF PHOENIX				
NO.	DESCRIPTION	REV BY	CKD BY	DATE

REVISION BY CITY OF PHOENIX				
NO.	DESCRIPTION	REV BY	CKD BY	DATE

REVISION BY CITY OF PHOENIX				
NO.	DESCRIPTION	REV BY	CKD BY	DATE

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST85100333	19	161	

PROJECT ENGINEERING CONSULTANTS, LTD.
2310 W. MISSION LANE, STE. 4 PHOENIX, AZ 85021
PHONE (602) 906-1901

REMOVAL / RELOCATION NOTES

NO.	DESCRIPTION	UNIT	QTY
(3)	REMOVE ASPHALT CONCRETE PAVEMENT	SY	4675
(4)	REMOVE PIPE, BACKFILL & COMPACT	LF	913
(5)	REMOVE CATCH BASIN, BACKFILL & COMPACT	EA	2
	MISCELLANEOUS WORK		
(7)	DELINEATOR, REMOVE BOLLARD, REMOVE RIP RAP, REMOVE	LS JOB SY	– – 358
(10)	RELOCATE WATER METER, BOX AND COVER PER COP SUPP. 610.11 AND COP DET P1363	EA	1
(12)	MISCELLANEOUS WORK BY OTHERS		
	TELEPHONE PEDESTAL, RELOCATE	NPI	–
(14)	REMOVE MANHOLE, BACKFILL & COMPACT	EA	3

CONSTRUCTION NOTES

NO.	DESCRIPTION	UNIT	QTY
	SUBGRADE PREPARATION	SY	3856
1	2" ASPHALT CONCRETE SURFACE COURSE, MOD. TYPE D 1/2	TON	434
	5-1/2" ASPHALT CONCRETE BASE COURSE, TYPE A 1-1/2	TON	1193
	TACK COAT	TON	4
3	VERTICAL CURB & GUTTER, MAG STD DET 220, TYPE 'A', H=6"	LF	669
4	VERTICAL CURB & GUTTER, MAG STD DET 220, TYPE 'A', H=6", MODIFIED WITH REVERSE PAN	LF	173
8	SINGLE CURB, MAG STD DET 222, TYPE 'A', MODIFIED FOR BUS BAY	LF	156
9	SINGLE CURB, MAG STD DET 222, TYPE 'A',	LF	290
11	5' CONCRETE SIDEWALK, MOD. COP STD DET P1230, 6" THK, CLASS 'A'	SF	4004
19	RETURN TYPE DRIVEWAY, MODIFIED COP STD DET. P1243, 9" THICK	SF	1616
	CONCRETE PAVEMENT, 9" THICK	SF	1652
23	BUS BAY, TYPE I, COP STD DET P1256-1, MOD. WITH NO FLOWLINE DEPRESSION		
25	BUS SHELTER / ACCESSORY PAD, COP STD DET. P1260	SF	321
26	CONCRETE MEDIAN NOSE	SF	79
	STAMPED ASPHALT PAVEMENT	SF	880
27	2-1/2" ASPHALT CONCRETE SURFACE COURSE, (D 1/2)	TON	14
	AGGREGATE BASE COURSE	TON	21
29	SURVEY MARKER, MAG STD DETAIL 120-1, TYPE 'B'	EA	1
33	DRIVEWAY CONNECTION, ASPHALT	TON	4
38	VERT. CURB & GUTTER, MAG STD DET 220, TYPE 'A', H=6". 9" THICK	LF	225
39	ADJUST EXISTING MANHOLE FRAME & COVER, COP STD DET. P1422	EA	2
47	CONCRETE APRON, SEE DET. 1, ON DT-1.01	EA	1
51	SINGLE CURB, MAG STD DET 222, TYPE 'B',	LF	10
(A)	ADJUST WATER VALVE BOX PER COP STD DET P1391, TYPE 'A' & P1391-1	EA	2

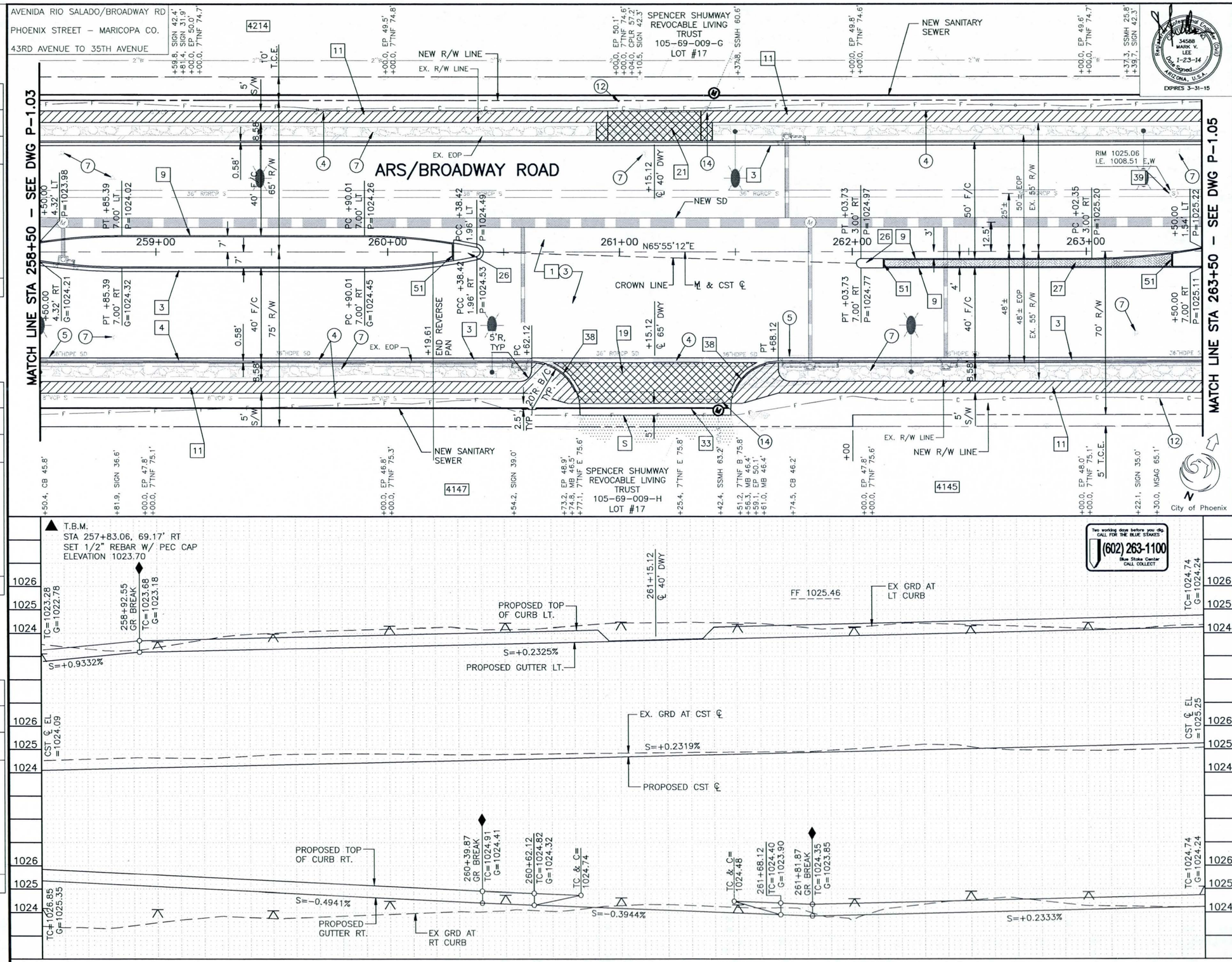
"PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2-28. THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."

PAVING PLAN & PROFILE
STA 254+50 TO STA 258+50
CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

AVENIDA RIO SALADO / BROADWAY RD
43RD AVENUE TO 35TH AVENUE
ST85100333

DR: JG	DES: MVL	CK: SM	DWG SERIES NO.
DATE: 01/14	DATE: 01/14	DATE: 01/14	
SCALE: HORIZ 1"= 20' VERT 1"= 2'			P-1.03

ST85100333 PP14.DWG



F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST85100333	20	161	

PROJECT ENGINEERING CONSULTANTS, LTD.
2310 W. MISSION LANE, STE. 4 PHOENIX, AZ 85021
PHONE (602) 906–1901

Registered Professional Engineer — 34588 MARK V. LEE — 1-23-14 — Date Signed — ARIZONA, U.S.A. — EXPIRES 3–31–15

REMOVAL / RELOCATION NOTES

NO.	DESCRIPTION	UNIT	QTY
3	REMOVE ASPHALT CONCRETE PAVEMENT	SY	5597
4	REMOVE PIPE, BACKFILL & COMPACT	LF	1287
5	REMOVE CATCH BASIN, BACKFILL & COMPACT	EA	2
	MISCELLANEOUS WORK		
7	TRAFFIC SIGN, REMOVE AND SALVAGE	LS	–
	DELINEATOR, REMOVE	LS	–
	RIP RAP, REMOVE	SY	554
	MISCELLANEOUS WORK BY OTHERS		
12	METAL SAGUARO SCULPTURE, RELOCATED BY OTHERS	NPI	–
	CONC. PIPE LANDSCAPE FEATURE RELOCATED BY OTHERS	NPI	–
14	REMOVE MANHOLE, BACKFILL & COMPACT	EA	2

CONSTRUCTION NOTES

NO.	DESCRIPTION	UNIT	QTY
	SUBGRADE PREPARATION	SY	4696
1	2" ASPHALT CONCRETE SURFACE COURSE, MOD. TYPE D 1/2	TON	529
	5–1/2" ASPHALT CONCRETE BASE COURSE, TYPE A 1–1/2	TON	1453
	TACK COAT	TON	4
3	VERTICAL CURB & GUTTER, MAG STD DET 220, TYPE 'A', H=6"	LF	930
4	VERTICAL CURB & GUTTER, MAG STD DET 220, TYPE 'A', H=6", MODIFIED WITH REVERSE PAN	LF	170
9	SINGLE CURB, MAG STD DET 222, TYPE 'A',	LF	453
11	5' CONCRETE SIDEWALK, MOD. COP STD DET P1230, 6" THK, CLASS 'A'	SF	4745
19	RETURN TYPE DRIVEWAY, MODIFIED COP STD DETAIL P1243, 9" THICK	SF	1239
21	DRIVEWAY ENTRANCE – TYPE II, COP STD DETAIL P1255–2, 9" THK	SF	600
26	CONCRETE MEDIAN NOSE	SF	93
	STAMPED ASPHALT PAVEMENT	SF	397
27	2–1/2" ASPHALT CONCRETE SURFACE COURSE, (D 1/2)	TON	7
	AGGREGATE BASE COURSE	TON	10
33	DRIVEWAY CONNECTION, ASPHALT	TON	6
38	VERT. CURB & GUTTER, MAG STD DET 220, TYPE 'A', H=6", 9" THICK	LF	138
39	ADJUST EXISTING MANHOLE FRAME & COVER, COP STD. DET. P1422	EA	1
51	SINGLE CURB, MAG STD DET 222, TYPE 'B',	LF	16

SHEET REFERENCES

1. SEE DT–2.01 & DT–2.02 FOR MEDIAN DETAILS
2. SEE SD–2.03 FOR STORM DRAIN PLAN
3. SEE CP–1.02, CP–1.03 & CP–1.04 FOR CB CONN PIPE PROFILES
4. SEE SP–1.02 FOR SANITARY SEWER PLAN
5. SEE DT–3.01 FOR DRIVEWAY PROFILES
6. SEE SL–1.01 FOR STREET LIGHT PLANS

"PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2–28. THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."

PAVING PLAN & PROFILE
STA 258+50 TO STA 263+50
CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

AVENIDA RIO SALADO / BROADWAY RD
43RD AVENUE TO 35TH AVENUE
ST85100333

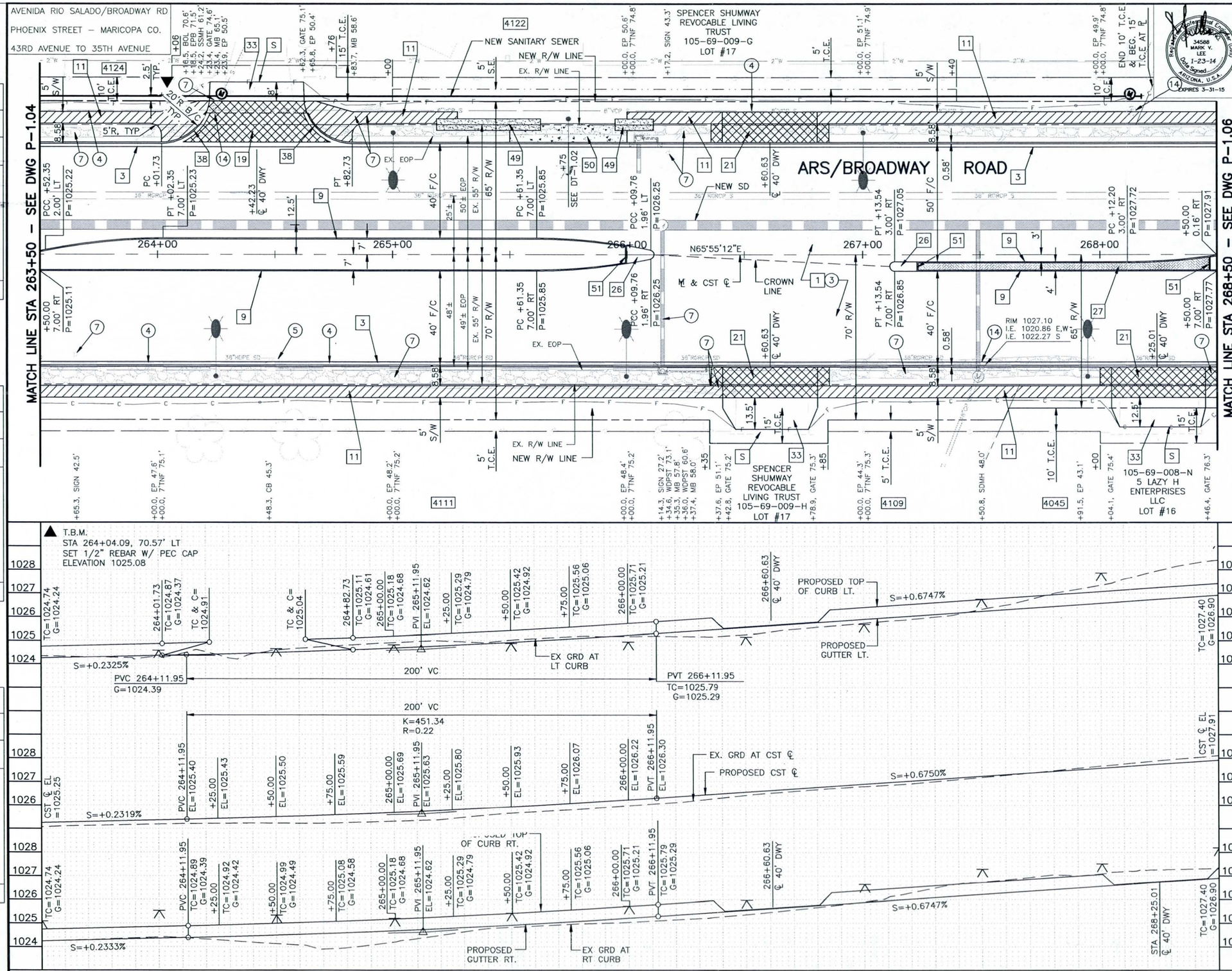
DR:	DES:	CK:	DWG SERIES NO.
JG	MVL	SM	
DATE: 01/14	DATE: 01/14	DATE: 01/14	
SCALE: HORIZ 1"= 20' VERT 1"= 2'			P–1.04

ST85100333 PP15.DWG

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

AVENIDA RIO SALADO/BROADWAY RD
PHOENIX STREET – MARICOPA CO.
43RD AVENUE TO 35TH AVENUE



REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST85100333	21	161	

PROJECT ENGINEERING CONSULTANTS, LTD.
2310 W. MISSION LANE, STE. 4 PHOENIX, AZ 85021
PHONE (602) 906–1901

Registered Professional Engineer Certificate 34588 MARK V. LEE Date Signed 1-23-14 ARIZONA, U.S.A. EXPIRES 3-31-15

REMOVAL / RELOCATION NOTES

NO.	DESCRIPTION	UNIT	QTY
(3)	REMOVE ASPHALT CONCRETE PAVEMENT	SY	5631
(4)	REMOVE PIPE, BACKFILL & COMPACT	LF	960
(5)	REMOVE CATCH BASIN, BACKFILL & COMPACT	EA	1
	MISCELLANEOUS WORK		
(7)	MAILBOX, RELOCATE	EA	5
	TRAFFIC SIGN, REMOVE & SALVAGE	LS	1
	RIP RAP, REMOVE	SY	570
(14)	REMOVE MANHOLE, BACKFILL & COMPACT	EA	3

CONSTRUCTION NOTES

NO.	DESCRIPTION	UNIT	QTY
	SUBGRADE PREPARATION	SY	4624
1	2" ASPHALT CONCRETE SURFACE COURSE, MOD. TYPE D 1/2	TON	521
	5–1/2" ASPHALT CONCRETE BASE COURSE, TYPE A 1–1/2	TON	1431
	TACK COAT	TON	4
3	VERTICAL CURB & GUTTER, MAG STD DET 220, TYPE 'A', H=6"	LF	919
9	SINGLE CURB, MAG STD DET 222, TYPE 'A',	LF	755
11	5' CONCRETE SIDEWALK, MOD. COP STD DET P1230, 6" THK, CLASS 'A'	SF	4092
19	RETURN TYPE DRIVEWAY, MODIFIED COP STD DETAIL P1243, 9" THICK	SF	804
21	DRIVEWAY ENTRANCE – TYPE II, COP STD DETAIL P1255–2, 9" THICK	SF	1800
26	CONCRETE MEDIAN NOSE	SF	107
	STAMPED ASPHALT PAVEMENT	SF	397
27	2–1/2" ASPHALT CONCRETE SURFACE COURSE, (D 1/2)	TON	7
	AGGREGATE BASE COURSE	TON	10
33	DRIVEWAY CONNECTION, ASPHALT	TON	24
38	VERT. CURB & GUTTER, MAG STD DET 220, TYPE 'A', H=6", 9" THICK	LF	113
49	DECORATIVE CONC. SIDEWALK MOD. COP STD DETAIL P–1230, 6" THK	SF	300
50	CONCRETE BUS PAD PAVEMENT PER COP STD DETAIL P–1260	SF	346
51	SINGLE CURB, MAG STD DET 222, TYPE 'B',	LF	16

SHEET REFERENCES

1. SEE DT–2.01 & DT–2.02 FOR MEDIAN DETAILS
2. SEE SD–2.04 FOR STORM DRAIN PLAN
3. SEE CP–1.04 FOR CB CONN PIPE PROFILE
4. SEE SP–1.03 FOR SANITARY SEWER PLAN
5. SEE DT–3.01 & DT–3.02 FOR DRIVEWAY PROFILES
6. SEE SL–1.01 FOR STREET LIGHT PLANS

City of Phoenix

Two working days before you dig, CALL FOR THE BLUE STAKES (602) 263-1100 Blue Stake Center CALL COLLECT

"PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2–28, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."

PAVING PLAN & PROFILE
STA 263+50 TO STA 268+50

CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

AVENIDA RIO SALADO / BROADWAY RD
43RD AVENUE TO 35TH AVENUE
ST85100333

DR:	DES:	CK:	DWG SERIES NO.
JG	MVL	SM	
DATE: 01/14	DATE: 01/14	DATE: 01/14	P–1.05
SCALE: HORIZ 1"= 20' VERT 1"= 2'			

ST85100333 PP16.DWG

AVENIDA RIO SALADO/BROADWAY RD
PHOENIX STREET – MARICOPA CO.
43RD AVENUE TO 35TH AVENUE

MATCH LINE STA 268+50 – SEE DWG P–1.05

MATCH LINE STA 273+50 – SEE DWG P–1.07

ARS/BROADWAY ROAD

SPENCER SHUMWAY REVOCABLE LIVING TRUST 105–69–008–Q LOT #16

5 LAZY H ENTERPRISES LLC 105–69–008– N LOT #16

City of Phoenix

34588 MARK V. LEE 1–23–14 Date Signed ARIZONA, U.S.A. EXPIRES 3–31–15

▲ T.B.M.
STA 271+00.56, 70.21' RT
SET 1/2" REBAR W/ PEC CAP
ELEVATION 1029.96

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST85100333	22	161	

PROJECT ENGINEERING CONSULTANTS, LTD.
2310 W. MISSION LANE, STE. 4 PHOENIX, AZ 85021
PHONE (602) 906–1901

REMOVAL / RELOCATION NOTES

NO.	DESCRIPTION	UNIT	QTY
(3)	REMOVE ASPHALT CONCRETE PAVEMENT	SY	5481
(4)	REMOVE PIPE, BACKFILL & COMPACT	LF	500
(7)	MISCELLANEOUS WORK		
	TRAFFIC SIGN, REMOVE AND SALVAGE	LS	–
	RIP RAP, REMOVE	SY	712
(12)	MISCELLANEOUS WORK BY OTHERS		
	METAL SAGUARO SCULPTURE, RELOCATED BY OTHERS	NPI	–
	CONC. PIPE LANDSCAPE FEATURE, RELOCATED BY OTHERS	NPI	–
	BOULDERS, REMOVE	NPI	–

CONSTRUCTION NOTES

NO.	DESCRIPTION	UNIT	QTY
	SUBGRADE PREPARATION	SY	4807
1	2" ASPHALT CONCRETE SURFACE COURSE, MOD. TYPE D 1/2	TON	541
	5–1/2" ASPHALT CONCRETE BASE COURSE, TYPE A 1–1/2	TON	1488
	TACK COAT	TON	4
3	VERTICAL CURB & GUTTER, MAG STD DET 220, TYPE 'A', H=6"	LF	828
9	SINGLE CURB, MAG STD DET 222, TYPE 'A',	LF	624
11	5' CONCRETE SIDEWALK, MOD. COP STD DET P1230, 6" THK, CLASS 'A'	SF	4714
19	RETURN TYPE DRIVEWAY, MODIFIED COP STD DETAIL P1243, 9" THICK	SF	1782
26	CONCRETE MEDIAN NOSE	SF	89
	STAMPED ASPHALT PAVEMENT	SF	568
27	2–1/2" ASPHALT CONCRETE SURFACE COURSE, (D 1/2)	TON	9
	AGGREGATE BASE COURSE	TON	14
33	DRIVEWAY CONNECTION, ASPHALT	TON	20
38	VERT. CURB & GUTTER, MAG STD DET 220, TYPE 'A', H=6", 9" THICK	LF	234
39	ADJUST EXISTING MANHOLE FRAME & COVER, COP STD DET. P1422	EA	2
49	DECORATIVE CONC. SIDEWALK MOD. COP STD DETAIL P–1230, 6" THK	SF	300
50	CONCRETE BUS PAD PAVEMENT PER COP STD DETAIL P–1260	SF	346
51	SINGLE CURB, MAG STD DET 222, TYPE 'B',	LF	12

SHEET REFERENCES

1. SEE DT–2.01 & DT–2.02 FOR MEDIAN DETAILS
2. SEE SD–2.05 FOR STORM DRAIN PLAN
3. SEE DT–3.02 FOR DRIVEWAY PROFILES
4. SEE SL–1.02 FOR STREET LIGHT PLANS

Two working days before you dig, CALL FOR THE BLUE STAKES (602) 263-1100 Blue Stake Center CALL COLLECT

"PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2–28. THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."

PAVING PLAN & PROFILE
STA 268+50 TO STA 273+50

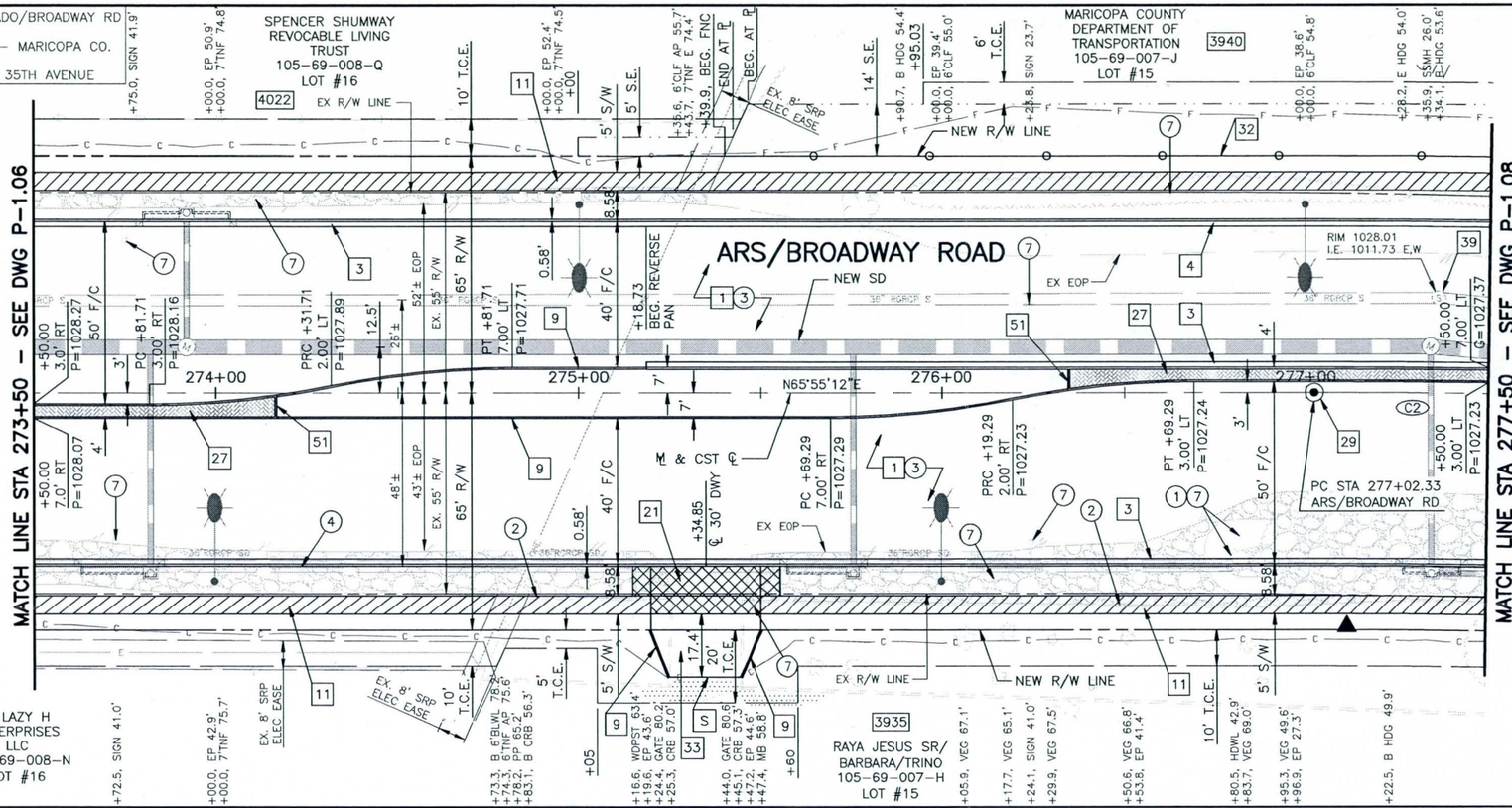
CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

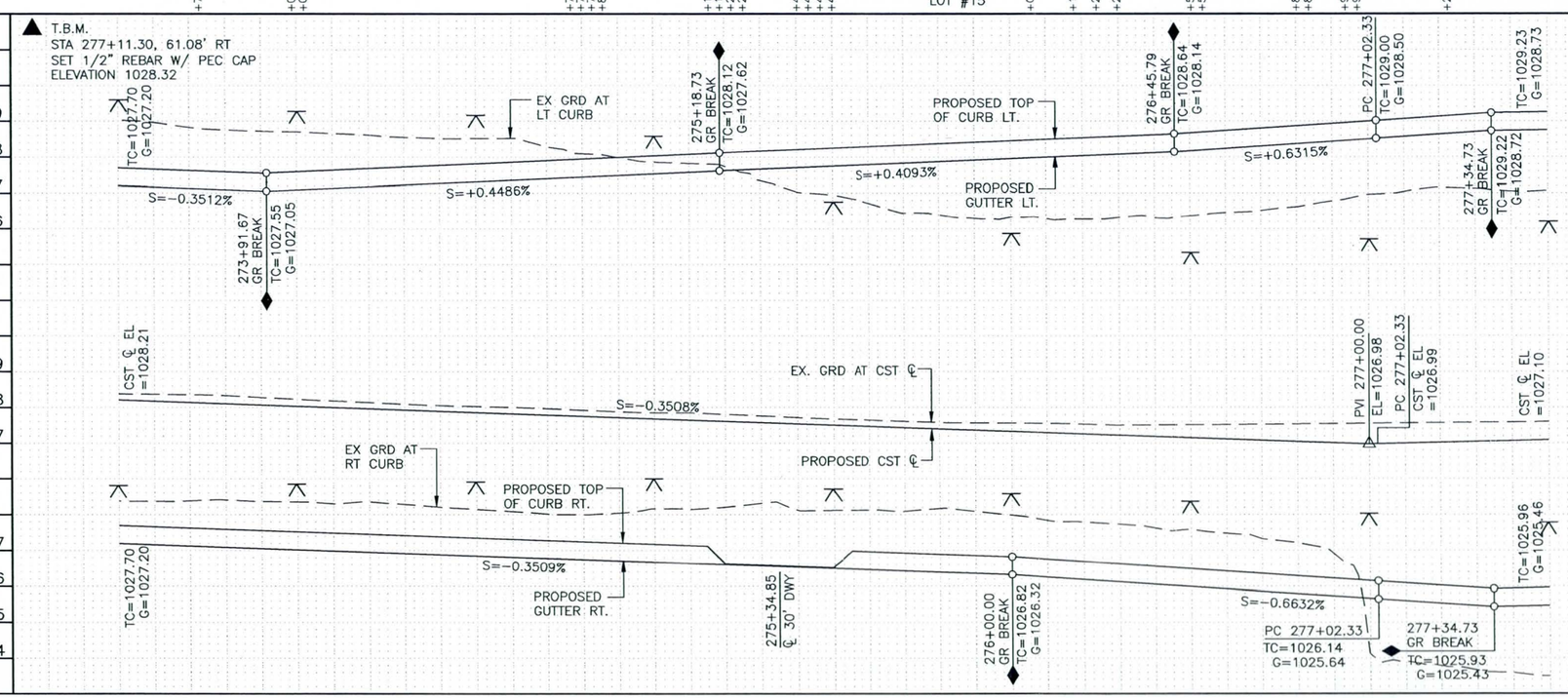
AVENIDA RIO SALADO / BROADWAY RD
43RD AVENUE TO 35TH AVENUE
ST85100333

DR: JG	DES: MVL	CK: SM	DWG SERIES NO.
DATE: 01/14	DATE: 01/14	DATE: 01/14	
SCALE: HORIZ 1"= 20' VERT 1"= 2'			P–1.06

ST85100333 PP17.DWG

AVENIDA RIO SALADO/BROADWAY RD
PHOENIX STREET – MARICOPA CO.
43RD AVENUE TO 35TH AVENUE





(C2) CURVE DATA

PI STA 283+09.81
N= 875737.03
E= 631324.60

MAIN CURVE
Δ= 23°56'39"
D= 02°00'00"
R= 2864.79'
L= 1197.20'
T= 607.47'
EXT= 63.70'
SUPER= 0.034'/ft

City of Phoenix

Registered Professional Engineer (Civil) 34588 MARK V. LEE 1-23-14 Date Signed ARIZONA, U.S.A. EXPIRES 3-31-15

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST85100333	23	161	

PROJECT ENGINEERING CONSULTANTS, LTD.
2310 W. MISSION LANE, STE. 4 PHOENIX, AZ 85021
PHONE (602) 906-1901

REMOVAL / RELOCATION NOTES

NO.	DESCRIPTION	UNIT	QTY
1	REMOVE CONCRETE SIDEWALK, DRIVEWAY, VALLEY GUTTER & SLAB		
	276+71 TO 276+91 RT	SF	250
2	REMOVE CONCRETE SINGLE CURB AND CURB & GUTTER		
	274+83 TO 277+50 RT	LF	289
3	REMOVE ASPHALT CONCRETE PAVEMENT	SY	3887
4	REMOVE PIPE, BACKFILL & COMPACT	LF	329
7	MISCELLANEOUS WORK		
	MAILBOX, RELOCATE	EA	1
	HEADWALL, REMOVE	EA	1
	TRAFFIC SIGN, REMOVE & SALVAGE	LS	–
	RIP RAP, REMOVE	SY	740
	FENCE, REMOVE		
	275+40 TO 277+50 LT	LF	226

CONSTRUCTION NOTES

NO.	DESCRIPTION	UNIT	QTY
	SUBGRADE PREPARATION	SY	3629
1	2" ASPHALT CONCRETE SURFACE COURSE, MOD. TYPE D 1/2	TON	409
	5-1/2" ASPHALT CONCRETE BASE COURSE, TYPE A 1-1/2	TON	1123
	TACK COAT	TON	3
3	VERTICAL CURB & GUTTER, MAG STD DET 220, TYPE 'A', H=6"	LF	800
4	VERTICAL CURB & GUTTER, MAG STD DET 220, TYPE 'A', H=6", MODIFIED WITH REVERSE PAN	LF	232
9	SINGLE CURB, MAG STD DET 222, TYPE 'A',	LF	599
11	5' CONCRETE SIDEWALK, MOD. COP STD DET P1230, 6" THK, CLASS 'A'	SF	3850
21	DRIVEWAY ENTRANCE – TYPE II, COP STD DETAIL P1255-2, 9" THK	SF	470
	STAMPED ASPHALT PAVEMENT	SF	599
27	2-1/2" ASPHALT CONCRETE SURFACE COURSE, (D 1/2)	TON	10
	AGGREGATE BASE COURSE	TON	14
29	SURVEY MARKER, MAG STD DETAIL 120-1, TYPE 'B'	EA	1
32	NEW 6 FOOT CHAIN LINK FENCE	LF	212
33	DRIVEWAY CONNECTION, ASPHALT	TON	9
39	ADJUST EXISTING MANHOLE FRAME & COVER, COP STD DET. P1422	EA	1
51	SINGLE CURB, MAG STD DET 222, TYPE 'B',	LF	11

SHEET REFERENCES

1. SEE DT-2.01 & DT-2.02 FOR MEDIAN DETAILS
2. SEE SD-2.06 FOR STORM DRAIN PLAN
3. SEE CP-1.05 & CP-1.06 FOR CB CONN PIPE PROFILE
4. SEE DT-3.02 FOR DRIVEWAY PROFILES
5. SEE SL-1.02 FOR STREET LIGHT PLAN

Two working days before you dig, CALL FOR THE BLUE STAKES (602) 263-1100 Blue Stake Center CALL COLLECT

"PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2-28. THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."

PAVING PLAN & PROFILE
STA 273+50 TO STA 277+50

CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

AVENIDA RIO SALADO / BROADWAY RD
43RD AVENUE TO 35TH AVENUE
ST85100333

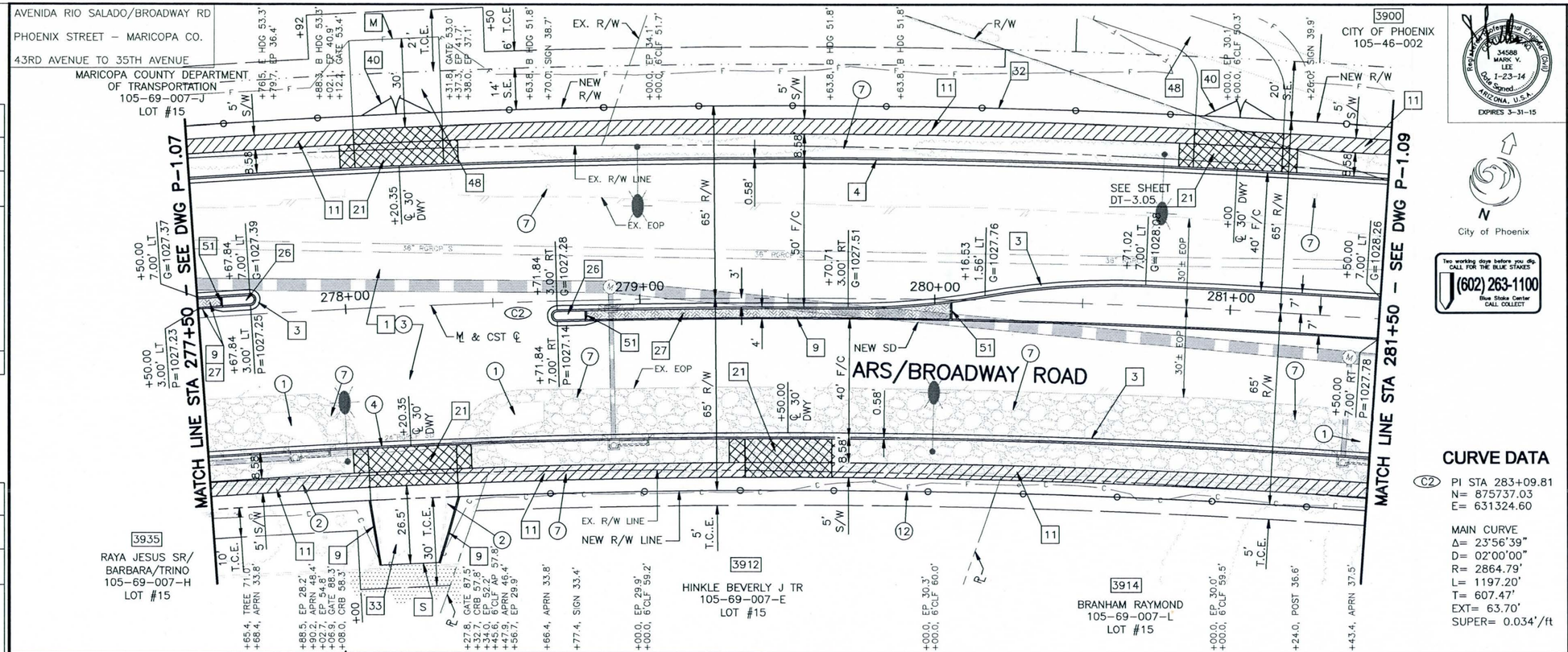
DR: JG	DES: MVL	CK: SM	DWG SERIES NO.
DATE: 01/14	DATE: 01/14	DATE: 01/14	
SCALE: HORIZ 1"= 20' VERT 1"= 2'			P-1.07

ST85100333 PP18.DWG

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

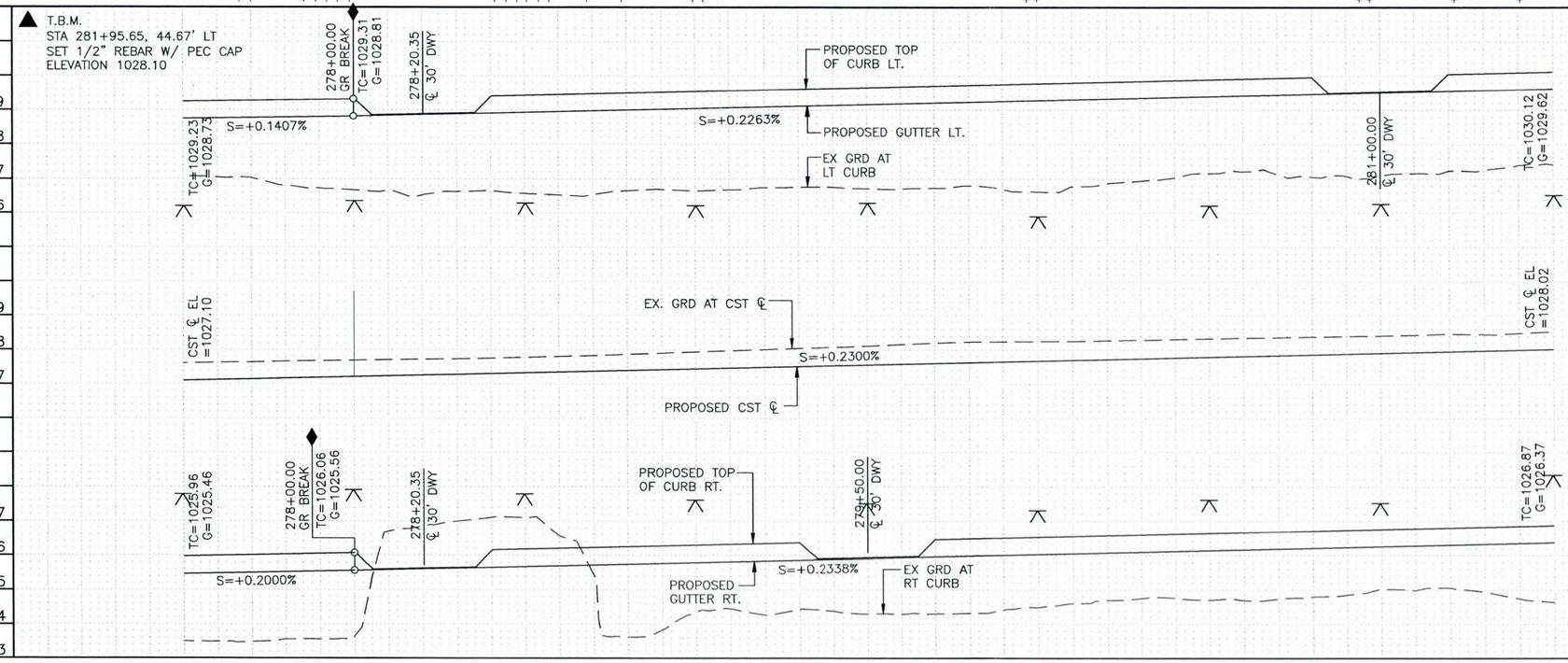
AVENIDA RIO SALADO/BROADWAY RD
PHOENIX STREET – MARICOPA CO.
43RD AVENUE TO 35TH AVENUE



CURVE DATA

C2 PI STA 283+09.81
N= 875737.03
E= 631324.60

MAIN CURVE
Δ= 23°56'39"
D= 02°00'00"
R= 2864.79'
L= 1197.20'
T= 607.47'
EXT= 63.70'
SUPER= 0.034'/ft



F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST85100333	24	161	

PROJECT ENGINEERING CONSULTANTS, LTD.
2310 W. MISSION LANE, STE. 4 PHOENIX, AZ 85021
PHONE (602) 906-1901

Registered Professional Engineer Certificate 34588 MARC V. LEE Date Signed 1-23-14 ARIZONA, U.S.A. EXPIRES 3-31-15

City of Phoenix

Two working days before you dig CALL FOR THE BLUE STAKES (602) 263-1100 Blue Stake Center CALL COLLECT

REMOVAL / RELOCATION NOTES

NO.	DESCRIPTION	UNIT	QTY
1	REMOVE CONCRETE SIDEWALK, DRIVEWAY, VALLEY GUTTER & SLAB		
	277+69 TO 277+91 RT	SF	259
	277+47 TO 278+67 RT	SF	256
	281+43 TO 281+50 RT	SF	41
2	REMOVE CONCRETE SINGLE CURB AND CURB & GUTTER		
	277+50 TO 278+46 RT	LF	127
3	REMOVE ASPHALT CONCRETE PAVEMENT	SY	3056
4	REMOVE PIPE, BACKFILL & COMPACT	LF	69
7	MISCELLANEOUS WORK		
	TRAFFIC SIGN, REMOVE & SALVAGE	LS	–
	RIP RAP, REMOVE	SY	1053
	FENCE, REMOVE		
	277+50 TO 281+50 LT	LF	409
	278+44 TO 281+50 RT	LF	300
12	MISCELLANEOUS WORK BY OTHERS		
	INSTALL 6' CHAIN LINK FENCE/GATE	NPI	–

CONSTRUCTION NOTES

NO.	DESCRIPTION	UNIT	QTY
	SUBGRADE PREPARATION	SY	3723
1	2" ASPHALT CONCRETE SURFACE COURSE, MOD. TYPE D 1/2	TON	419
	5-1/2" ASPHALT CONCRETE BASE COURSE, TYPE A 1-1/2	TON	1152
	TACK COAT	TON	3
3	VERTICAL CURB & GUTTER, MAG STD DET 220, TYPE 'A', H=6"	LF	732
4	VERTICAL CURB & GUTTER, MAG STD DET 220, TYPE 'A', H=6", MODIFIED WITH REVERSE PAN	LF	407
9	SINGLE CURB, MAG STD DET 222, TYPE 'A',	LF	313
11	5' CONCRETE SIDEWALK, MOD. COP STD DET P1230, 6" THK, CLASS 'A'	SF	3297
21	DRIVEWAY ENTRANCE – TYPE II, COP STD DETAIL P1255-2, 9" THK	SF	1880
26	CONCRETE MEDIAN NOSE	SF	61
	STAMPED ASPHALT PAVEMENT	SF	423
27	2-1/2" ASPHALT CONCRETE SURFACE COURSE, (D 1/2)	TON	7
	AGGREGATE BASE COURSE	TON	10
32	NEW 6 FOOT CHAIN LINK FENCE	LF	361
33	DRIVEWAY CONNECTION, ASPHALT	TON	13
40	DBL GATE,MAG STD 160 (24' WIDE)	EA	2
48	AGGREGATE BASE CONN. (6" THK)	TON	50
51	SINGLE CURB, MAG STD DET 222, TYPE 'B',	LF	12

SHEET REFERENCES

1. SEE DT-2.01 & DT-2.02 FOR MEDIAN DETAILS
2. SEE SD-2.07' FOR STORM DRAIN PLAN
3. SEE CP-1.06 & CP1.07 FOR CB CONN PIPE PROFILES
4. SEE DT-3.02 & DT-3.05 FOR DRIVEWAY PROFILES
5. SEE SL-1.02 FOR STREET LIGHT PLAN

"PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2-28. THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."

PAVING PLAN & PROFILE
STA 277+50 TO STA 281+50
CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

AVENIDA RIO SALADO / BROADWAY RD
43RD AVENUE TO 35TH AVENUE
ST85100333

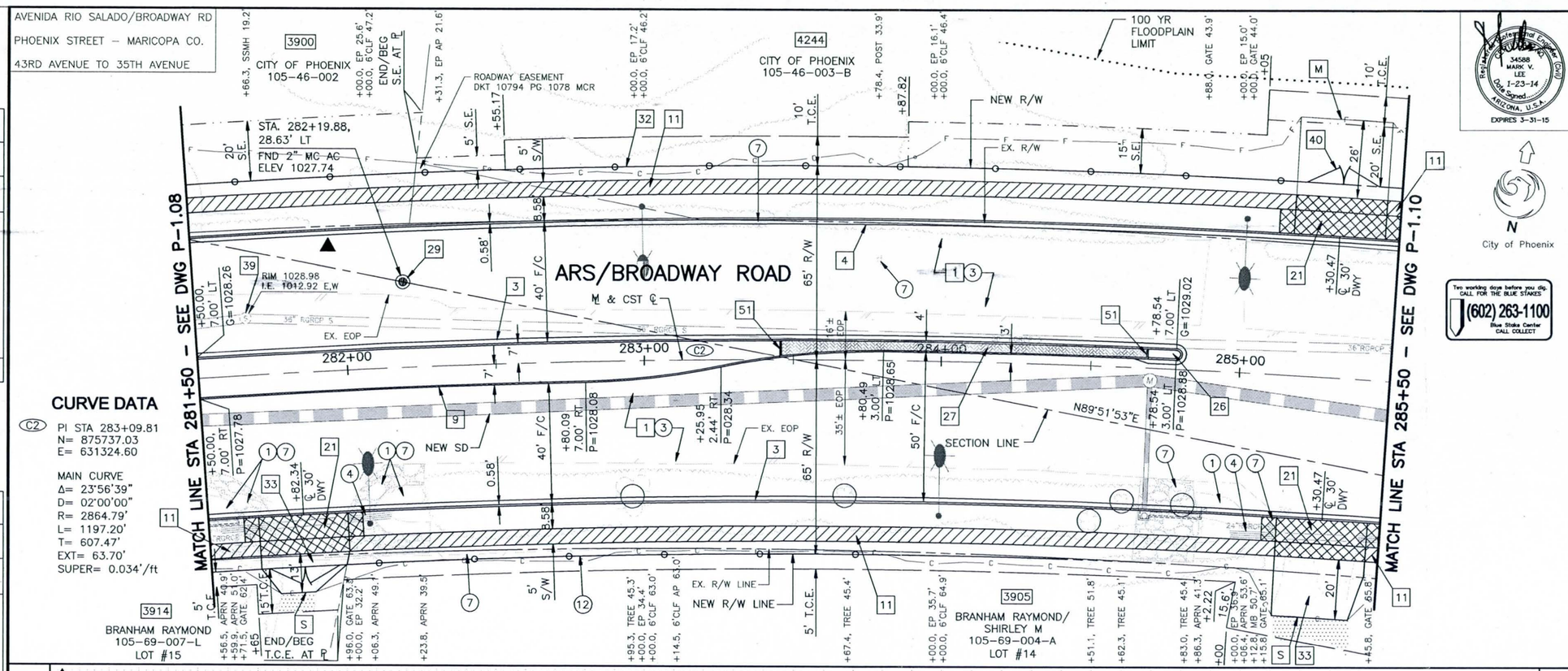
DR:	DES:	CK:	DWG SERIES NO.
JG	MVL	SM	
DATE: 01/14	DATE: 01/14	DATE: 01/14	
SCALE: HORIZ 1"= 20' VERT 1"= 2'			P-1.08

ST85100333_PP19.DWG

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

AVENIDA RIO SALADO/BROADWAY RD
PHOENIX STREET – MARICOPA CO.
43RD AVENUE TO 35TH AVENUE

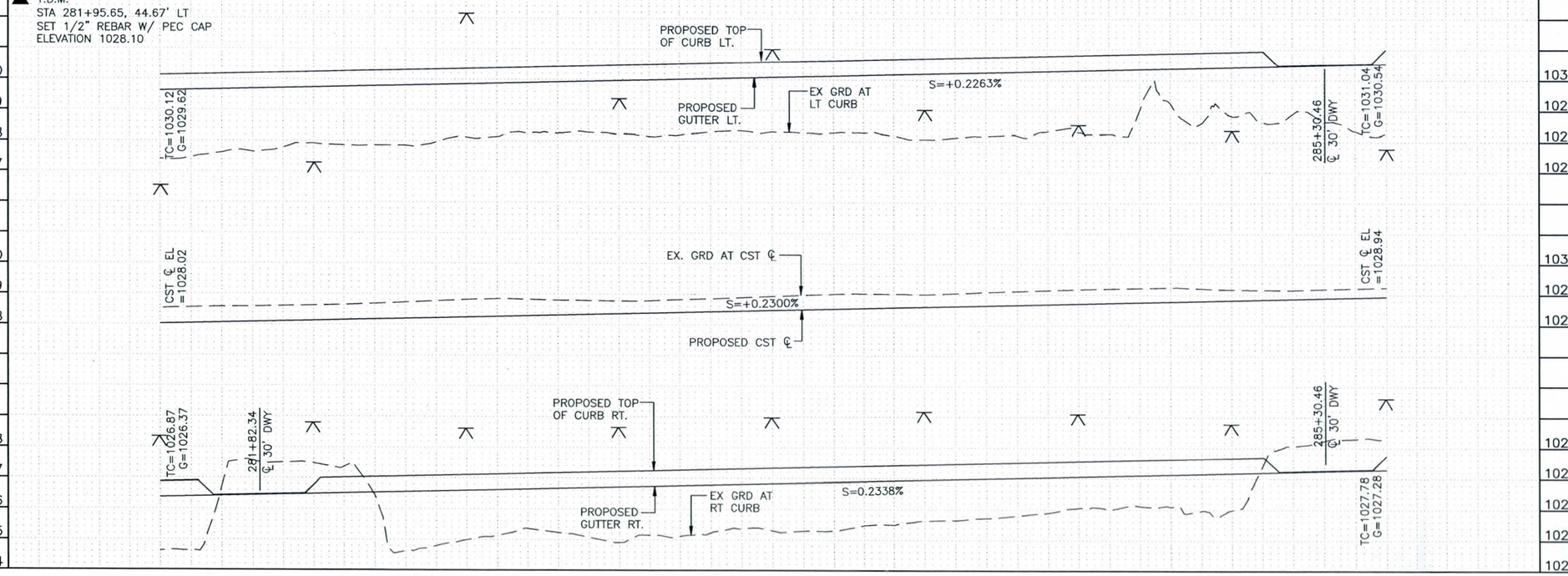


CURVE DATA

C2
PI STA 283+09.81
N= 875737.03
E= 631324.60

MAIN CURVE
Δ= 23°56'39"
D= 02°00'00"
R= 2864.79'
L= 1197.20'
T= 607.47'
EXT= 63.70'
SUPER= 0.034'/ft

▲ T.B.M.
STA 281+95.65, 44.67' LT
SET 1/2" REBAR W/ PEC CAP
ELEVATION 1028.10



REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

Registered Professional Engineer (Civil)
34588
MARK V. LEE
Date Signed 1-23-14
ARIZONA, U.S.A.
EXPIRES 3-31-15

Two working days before you dig CALL FOR THE BLUE STAKES
(602) 263-1100
Blue Stake Center CALL COLLECT

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST85100333	25	161	

PROJECT ENGINEERING CONSULTANTS, LTD.
2310 W. MISSION LANE, STE. 4 PHOENIX, AZ 85021
PHONE (602) 906-1901

REMOVAL / RELOCATION NOTES

NO.	DESCRIPTION	UNIT	QTY
1	REMOVE CONCRETE SIDEWALK, DRIVEWAY, VALLEY GUTTER , & SLAB		
	281+50 TO 281+60 RT	SF	131
	282+06 TO 282+25 RT	SF	195
	284+86 TO 285+07 RT	SF	260
3	REMOVE ASPHALT CONCRETE PAVEMENT	SF	2640
4	REMOVE PIPE, BACKFILL & COMPACT	LF	108
7	MISCELLANEOUS WORK		
	MAILBOX, RELOCATE	EA	1
	WOOD POST, REMOVE	JOB	–
	RIP RAP, REMOVE	SY	163
	FENCE, REMOVE		
	281+50 TO 285+50 LT	LF	406
	281+50 TO 284+73 RT	LF	316
12	MISCELLANEOUS WORK BY OTHERS		
	NEW 6' CHAIN LINK FENCE/GATE	NPI	–

CONSTRUCTION NOTES

NO.	DESCRIPTION	UNIT	QTY
	SUBGRADE PREPARATION	SY	3653
1	2" ASPHALT CONCRETE SURFACE COURSE, MOD.TYPE D 1/2	TON	411
	5-1/2" ASPHALT CONCRETE BASE COURSE, TYPE A 1-1/2	TON	1131
	TACK COAT	TON	3
3	VERTICAL CURB & GUTTER, MAG STD DET 220, TYPE 'A', H=6"	LF	744
4	VERTICAL CURB & GUTTER, MAG STD DET 220, TYPE 'A', H=6", MODIFIED WITH REVERSE PAN	LF	407
9	SINGLE CURB, MAG STD DET 222, TYPE 'A',	LF	315
11	5' CONCRETE SIDEWALK, MOD. COP STD DET P1230, 6" THK, CLASS 'A'	SF	3552
21	DRIVEWAY ENTRANCE – TYPE II, COP STD DETAIL P1255-2, 9" THK	SF	1409
26	CONCRETE MEDIAN NOSE	SF	31
	STAMPED ASPHALT PAVEMENT	SF	394
27	2-1/2" ASPHALT CONCRETE SURFACE COURSE, (D 1/2)	TON	7
	AGGREGATE BASE COURSE	TON	10
29	SURVEY MARKER, MAG STD DETAIL 120-1, TYPE 'B'	EA	1
32	NEW 6 FOOT CHAIN LINK FENCE	LF	385
33	DRIVEWAY CONNECTION, ASPHALT	TON	16
39	ADJUST EXISTING MANHOLE FRAME & COVER, COP STD DET P1422	EA	1
40	DBL GATE, MAG STD 160 (24' WIDE)	EA	1
51	SINGLE CURB, MAG STD DET 222, TYPE 'B',	LF	9

SHEET REFERENCES

1. SEE DT-2.01 & DT-2.02 FOR MEDIAN DETAILS
2. SEE SD-2.08 FOR STORM DRAIN PLAN
3. SEE CP-1.07 FOR CB CONN PIPE PROFILE
4. SEE DT-3.03 FOR DRIVEWAY PROFILES
5. SEE SL-1.02 FOR STREET LIGHT PLAN

"PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2-28. THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."

PAVING PLAN & PROFILE
STA 281+50 TO STA 285+50

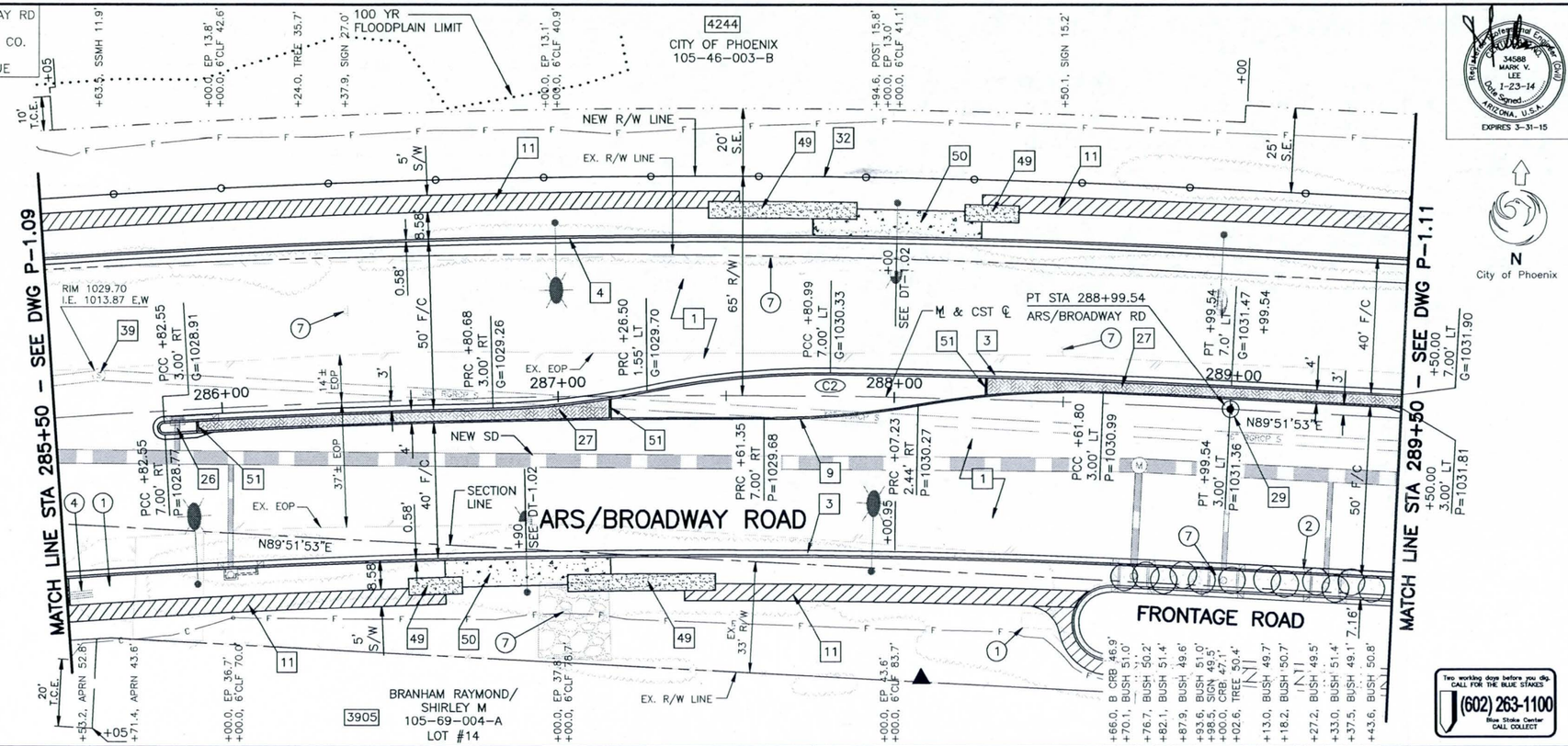
CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

AVENIDA RIO SALADO / BROADWAY RD
43RD AVENUE TO 35TH AVENUE
ST85100333

DR: JG	DES: MVL	CK: SM	DWG SERIES NO.
DATE: 01/14	DATE: 01/14	DATE: 01/14	
SCALE: HORIZ 1"= 20' VERT 1"= 2'			P-1.09

ST85100333 PP20.DWG

AVENIDA RIO SALADO/BROADWAY RD
PHOENIX STREET – MARICOPA CO.
43RD AVENUE TO 35TH AVENUE

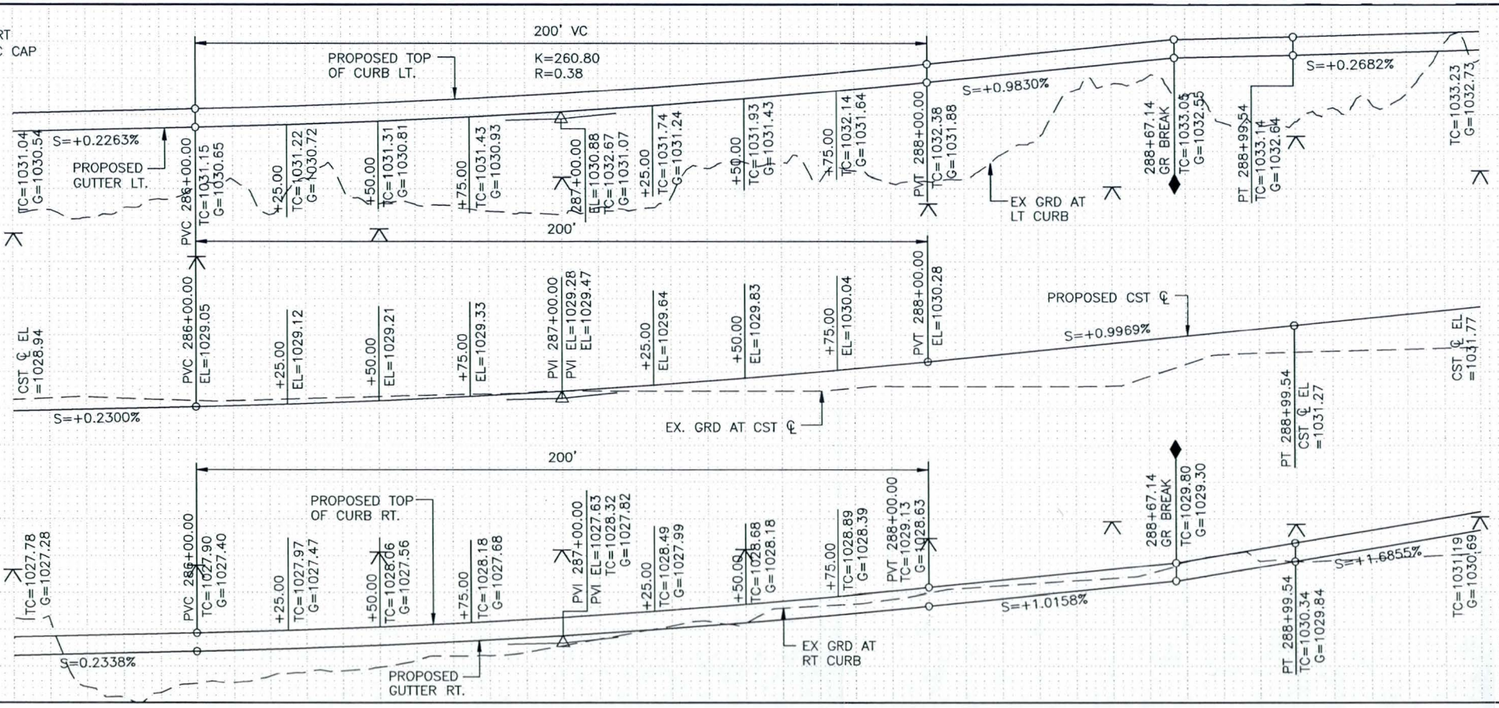


CURVE DATA

C2 PI STA 283+09.81
N= 875737.03
E= 631324.60

MAIN CURVE
Δ= 23°56'39"
D= 02°00'00"
R= 2864.79'
L= 1197.20'
T= 607.47'
EXT= 63.70'
SUPER= 0.034'/ft

N
City of Phoenix



F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST85100333	26	161	

PROJECT ENGINEERING CONSULTANTS, LTD.
2310 W. MISSION LANE, STE. 4 PHOENIX, AZ 85021
PHONE (602) 906-1901

34588 MARK V. LEE Date Signed 1-23-14 ARIZONA, U.S.A. EXPIRES 3-31-15

REMOVAL / RELOCATION NOTES

NO.	DESCRIPTION	UNIT	QTY
1	REMOVE CONCRETE SIDEWALK, DRIVEWAY, VALLEY GUTTER, & SLAB		
	285+53 TO 285+72 RT	SF	272
	288+39 TO 288+56 RT	SF	104
2	REMOVE CONCRETE SINGLE CURB, AND CURB AND GUTTER		
	288+66 TO 289+50 RT	LF	84
3	REMOVE ASPHALT CONCRETE PAVEMENT	SY	2414
4	REMOVE PIPE, BACKFILL & COMPACT	LF	8
7	MISCELLANEOUS WORK		
	TRAFFIC SIGN, REMOVE & SALVAGE	LS	–
	RIP RAP, REMOVE	SY	52
	FENCE, REMOVE		
	285+50 TO 289+50 LT	LF	405

CONSTRUCTION NOTES

NO.	DESCRIPTION	UNIT	QTY
1	SUBGRADE PREPARATION	SY	3738
	2" ASPHALT CONCRETE SURFACE COURSE, MOD. TYPE D 1/2	TON	421
	5–1/2" ASPHALT CONCRETE BASE COURSE, TYPE A 1–1/2	TON	1157
	TACK COAT	TON	3
3	VERTICAL CURB & GUTTER, MAG STD DET 220, TYPE 'A', H=6"	LF	789
4	VERTICAL CURB & GUTTER, MAG STD DET 220, TYPE 'A', H=6", MODIFIED WITH REVERSE PAN	LF	406
9	SINGLE CURB, MAG STD DET 222, TYPE 'A',	LF	349
11	5' CONCRETE SIDEWALK, MOD. COP STD DET P1230, 6" THK, CLASS 'A'	SF	2769
26	CONCRETE MEDIAN NOSE	SF	30
27	STAMPED ASPHALT PAVEMENT	SF	788
	2–1/2" ASPHALT CONCRETE SURFACE COURSE, (D 1/2)	TON	13
	AGGREGATE BASE COURSE	TON	19
29	SURVEY MARKER, MAG STD DETAIL 120–1, TYPE 'B'	EA	1
32	NEW 6 FOOT CHAIN LINK FENCE	LF	408
39	ADJUST EXISTING MANHOLE FRAME & COVER, COP STD DET. P1422	EA	1
49	DECORATIVE CONC. SIDEWALK, MOD. COP STD DETAIL P–1230, 6" THICK	SF	600
50	CONCRETE BUS PAD PAVEMENT PER COP STD DETAIL P–1260	SF	686
51	SINGLE CURB, MAG STD DET 222, TYPE 'B',	LF	15

SHEET REFERENCES

1. SEE DT–2.01 & DT–2.02 FOR MEDIAN DETAILS
2. SEE SD–2.09 FOR STORM DRAIN PLAN
3. SEE CP–1.07 & CP–1.08 FOR CB CONN PIPE PROFILES
4. SEE P–1.19 FOR FRONTAGE ROAD PLAN & PROFILE
5. SEE SL–1.02 FOR STREET LIGHT PLAN

Two working days before you dig. CALL FOR THE BLUE STAKES (602) 263-1100 Blue Stake Center CALL COLLECT

"PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2–28. THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."

PAVING PLAN & PROFILE
STA 285+50 TO STA 289+50
CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

AVENIDA RIO SALADO / BROADWAY RD
43RD AVENUE TO 35TH AVENUE
ST85100333

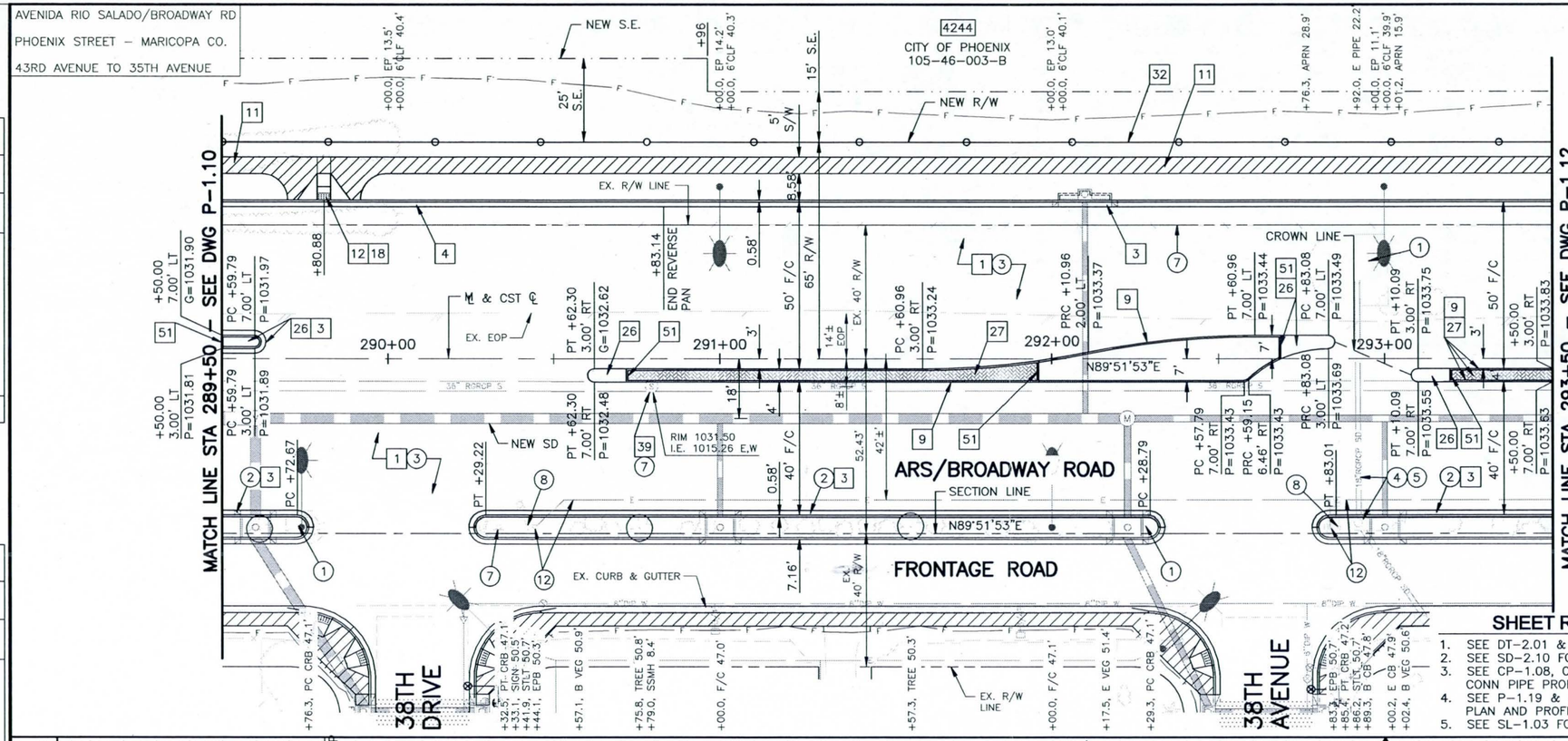
DR: JG	DES: MVL	CK: SM	DWG SERIES NO.
DATE: 01/14	DATE: 01/14	DATE: 01/14	
SCALE: HORIZ 1"= 20' VERT 1"= 2'			P–1.10

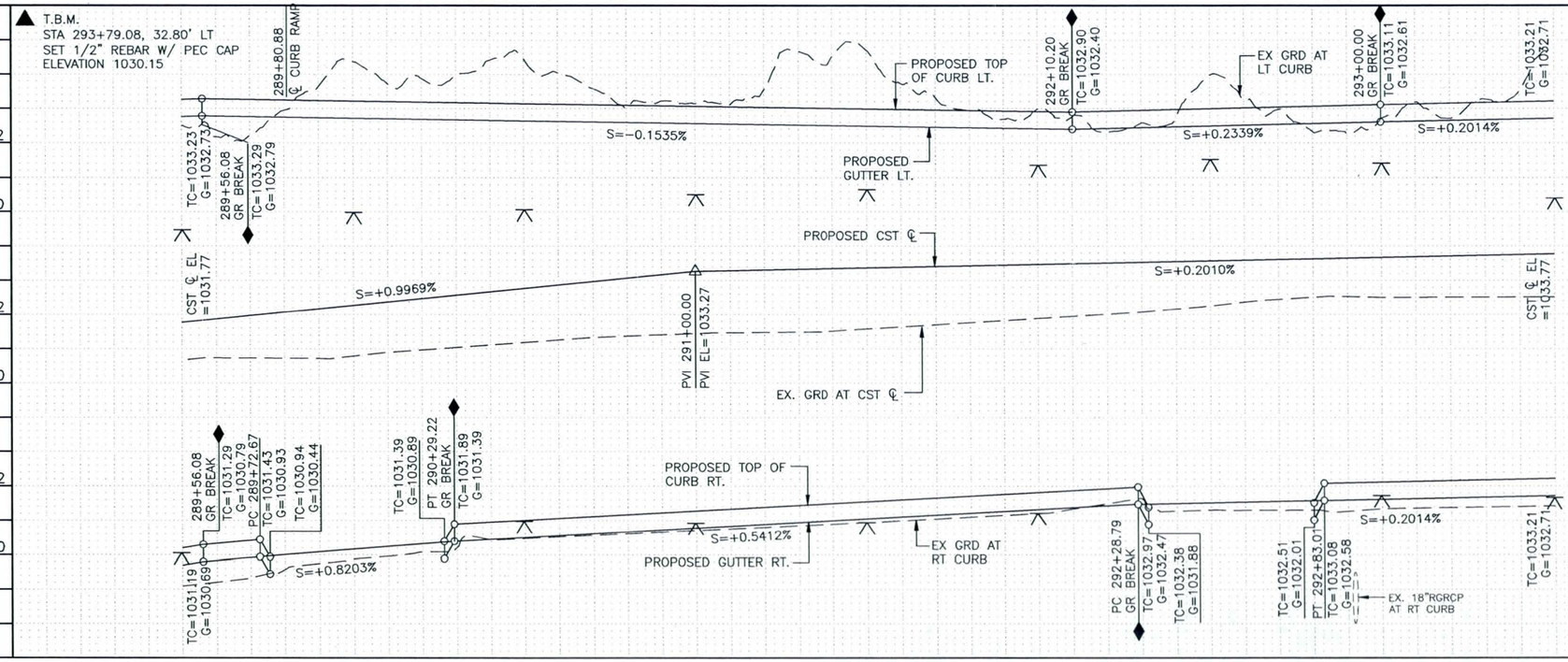
ST85100333 PP21.DWG

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

AVENIDA RIO SALADO/BROADWAY RD
PHOENIX STREET – MARICOPA CO.
43RD AVENUE TO 35TH AVENUE





SHEET REFERENCES

1. SEE DT-2.01 & DT-2.02 FOR MEDIAN DETAILS
2. SEE SD-2.10 FOR STORM DRAIN PLAN
3. SEE CP-1.08, CP-1.09 & CP-1.10 FOR CB CONN PIPE PROFILES
4. SEE P-1.19 & P-1.20 FOR FRONTAGE ROAD PLAN AND PROFILE
5. SEE SL-1.03 FOR STREET LIGHT PLANS

Registered Professional Engineer (Civil) 34588 MARK V. LEE 1-23-14 Date Signed ARIZONA, U.S.A. EXPIRES 3-31-15

N
City of Phoenix

Two working days before you dig CALL FOR THE BLUE STAKES (602) 263-1100 Blue Stake Center CALL COLLECT

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST85100333	27	161	

PROJECT ENGINEERING CONSULTANTS, LTD.
2310 W. MISSION LANE, STE. 4 PHOENIX, AZ 85021
PHONE (602) 906-1901

REMOVAL / RELOCATION NOTES

NO.	DESCRIPTION	UNIT	QTY
1	REMOVE CONCRETE SIDEWALK, DRIVEWAY, VALLEY GUTTER, & SLAB		
	MEDIAN NOSE 292+76 TO 293+01 RT	SF	104
		SF	457
2	REMOVE CONCRETE SINGLE CURB AND CURB & GUTTER		
	289+50 TO 289+78 RT	LF	28
	290+26 TO 292+32 RT	LF	206
	292+80 TO 293+50 RT	LF	70
3	REMOVE ASPHALT CONCRETE PAVEMENT	SY	2614
4	REMOVE PIPE, BACKFILL & COMPACT	LF	71
5	REMOVE CATCH BASIN, BACKFILL & COMPACT	EA	1
7	MISCELLANEOUS WORK		
	TRAFFIC SIGN, REMOVE & SALVAGE FENCE, REMOVE 289+50 TO 293+50 LT	LF	400
	MANHOLE CONE, ROTATE, SEE DETAIL ON SHEET DT-1.04	EA	1
8	STREET LIGHT, REMOVE SEE STREET LIGHT PLANS		
12	MISCELLANEOUS WORK BY OTHERS		
	ELECTRIC PULLBOX & CONDUCTORS, RELOCATE	NPI	–

CONSTRUCTION NOTES

NO.	DESCRIPTION	UNIT	QTY
1	SUBGRADE PREPARATION	SY	3860
	2" ASPHALT CONCRETE SURFACE COURSE, MOD. TYPE D 1/2	TON	435
	5-1/2" ASPHALT CONCRETE BASE COURSE, TYPE A 1-1/2	TON	1195
	TACK COAT	TON	4
3	VERTICAL CURB & GUTTER, MAG STD DET 220, TYPE 'A', H=6"	LF	605
4	VERTICAL CURB & GUTTER, MAG STD DET 220, TYPE 'A', H=6", MODIFIED WITH REVERSE PAN	LF	133
9	SINGLE CURB, MAG STD DET 222, TYPE 'A'	LF	458
11	5' CONCRETE SIDEWALK, MOD. COP STD DET P1230, 6" THK, CLASS 'A'	SF	1923
12	TRUNCATED DOMES, COP STD DET P1232	SF	10
18	CURB RAMP, MID BLOCK WITH DETACHED SIDEWALK, COP STD DET P1241-2	SF	340
26	CONCRETE MEDIAN NOSE	SF	198
	STAMPED ASPHALT PAVEMENT	SF	487
27	2-1/2" ASPHALT CONCRETE SURFACE COURSE, (D 1/2)	TON	8
	AGGREGATE BASE COURSE	TON	12
32	NEW 6 FOOT CHAIN LINK FENCE	LF	400
39	ADJUST EXISTING MANHOLE FRAME & COVER. COP STD DET. P1422	EA	1
51	SINGLE CURB, MAG STD DET 222, TYPE 'B'	LF	20

"PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2-28. THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."

PAVING PLAN & PROFILE
STA 289+50 TO 293+50
CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

AVENIDA RIO SALADO / BROADWAY RD
43RD AVENUE TO 35TH AVENUE
ST85100333

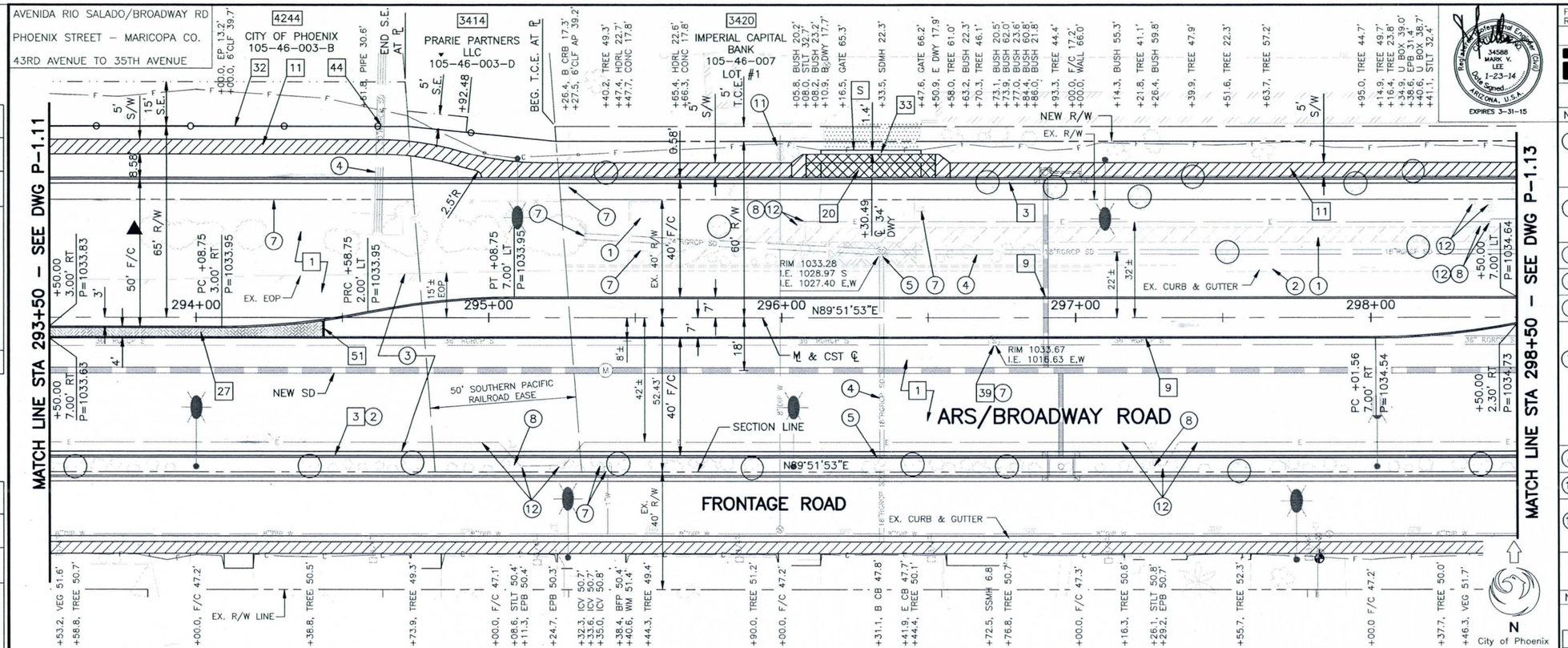
DR: JG	DES: MVL	CK: SM	DWG SERIES NO.
DATE: 01/14	DATE: 01/14	DATE: 01/14	
SCALE: HORIZ 1"= 20' VERT 1"= 2'			P-1.11

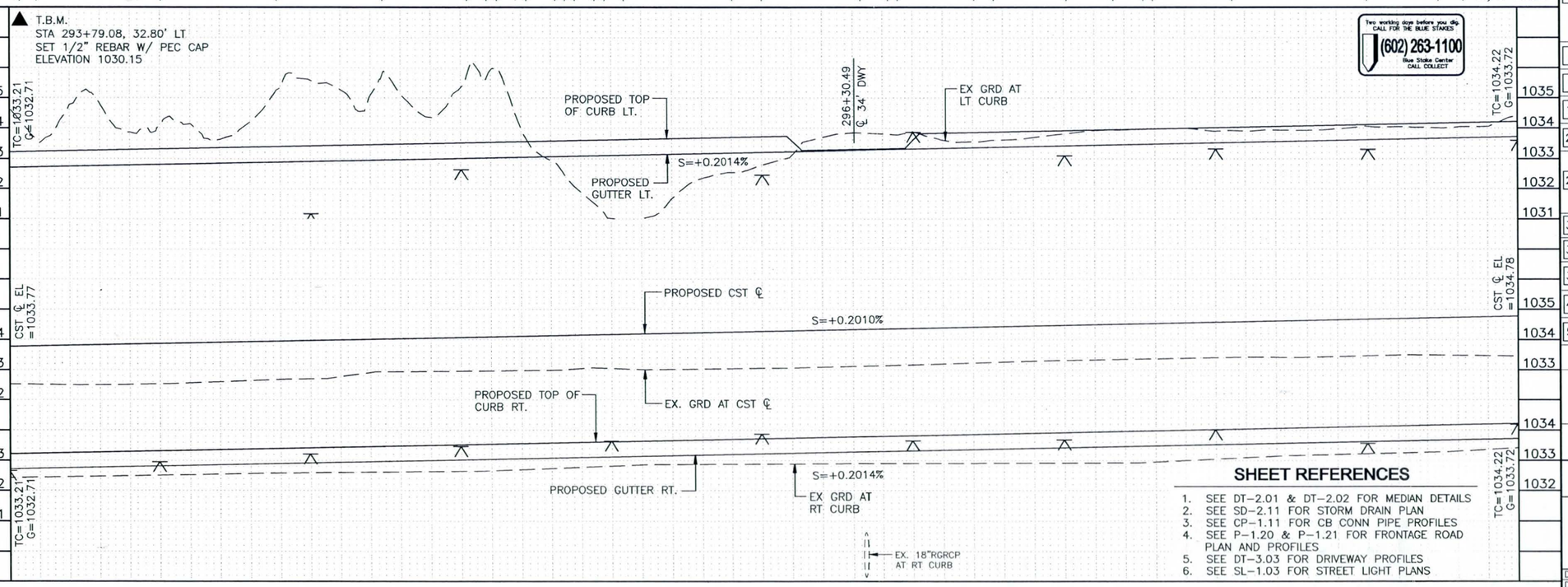
ST85100333 PP22.DWG

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

AVENIDA RIO SALADO/BROADWAY RD
PHOENIX STREET – MARICOPA CO.
43RD AVENUE TO 35TH AVENUE





SHEET REFERENCES

1. SEE DT-2.01 & DT-2.02 FOR MEDIAN DETAILS
2. SEE SD-2.11 FOR STORM DRAIN PLAN
3. SEE CP-1.11 FOR CB CONN PIPE PROFILES
4. SEE P-1.20 & P-1.21 FOR FRONTAGE ROAD PLAN AND PROFILES
5. SEE DT-3.03 FOR DRIVEWAY PROFILES
6. SEE SL-1.03 FOR STREET LIGHT PLANS

Two working days before you dig. CALL FOR THE BLUE STAKES
(602) 263-1100 Blue Stake Center CALL COLLECT

Registered Professional Engineer (Civil) 34588 MARK V. LEE Date Signed 1-23-14 ARIZONA, U.S.A. EXPIRES 3-31-15

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST85100333	28	161	

PROJECT ENGINEERING CONSULTANTS, LTD.
2310 W. MISSION LANE, STE. 4 PHOENIX, AZ 85021
PHONE (602) 906-1901

REMOVAL / RELOCATION NOTES

NO.	DESCRIPTION	UNIT	QTY
1	REMOVE CONCRETE SIDEWALK, DRIVEWAY, VALLEY GUTTER, & SLAB		
	295+47 TO 295+66 LT	SF	302
	S/W 295+47 TO 298+50 LT	SF	1500
	D/W 296+11 TO 296+51 LT	SF	297
2	REMOVE CONCRETE SINGLE CURB AND CURB & GUTTER		
	295+26 TO 298+50 LT	LF	324
	293+50 TO 298+50 RT	LF	500
3	REMOVE ASPHALT CONCRETE PAVEMENT	SY	3475
4	REMOVE PIPE, BACKFILL & COMPACT	LF	485
5	REMOVE CATCH BASIN, BACKFILL & COMPACT	EA	3
	MISCELLANEOUS WORK		
7	TRAFFIC SIGN, REMOVE & SALVAGE	LS	–
	HANDRAIL, REMOVE	NPI	–
	LANDSCAPE IRR. SYSTEM, REMOVE	LS	–
	HEADWALL, REMOVE	NPI	–
	FENCE, REMOVE		
	293+50 TO 295+28 LT	LF	196
	MANHOLE CONE, ROTATE SEE DETAIL ON SHEET DT-1.04	EA	1
8	STREET LIGHT, REMOVE SEE STREET LIGHT PLANS		
11	BACKFLOW PREVENTER, RELOCATE	EA	1
	MISCELLANEOUS WORK BY OTHERS		
12	IRRIGATION CONTROL VALVE, REMOVE	NPI	–
	ELECTRIC PULLBOX & CONDUCTORS, RELOCATE	NPI	–

CONSTRUCTION NOTES

NO.	DESCRIPTION	UNIT	QTY
	SUBGRADE PREPARATION	SY	4417
1	2" ASPHALT CONCRETE SURFACE COURSE, MOD. TYPE D 1/2	TON	497
	5-1/2" ASPHALT CONCRETE BASE COURSE, TYPE A 1-1/2	TON	1367
	TACK COAT	TON	4
3	VERTICAL CURB & GUTTER, MAG STD DET 220, TYPE 'A', H=6"	LF	1000
9	SINGLE CURB, MAG STD DET 222, TYPE 'A'	LF	1000
11	5' CONCRETE SIDEWALK, MOD. COP STD DET P1230. 6" THK, CLASS 'A'	SF	2317
20	DRIVEWAY ENTRANCE– TYPE 1, COP STD DETAIL P1255-1, 9" THK	SF	352
	STAMPED ASPHALT PAVEMENT	SF	307
27	2-1/2" ASPHALT CONCRETE SURFACE COURSE, (D 1/2)	TON	5
	AGGREGATE BASE COURSE	TON	7
32	NEW 6 FOOT CHAIN LINK FENCE	LF	174
33	DRIVEWAY CONNECTION, ASPHALT	TON	1
39	ADJUST EXISTING MANHOLE FRAME & COVER, COP STD DET P1422	EA	1
44	PIPE PLUG, MAG STD DET 427	EA	1
51	SINGLE CURB, MAG STD DET 222, TYPE 'B'	LF	6

"PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2-28. THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."

PAVING PLAN & PROFILE
STA 293+50 TO STA 298+50
CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

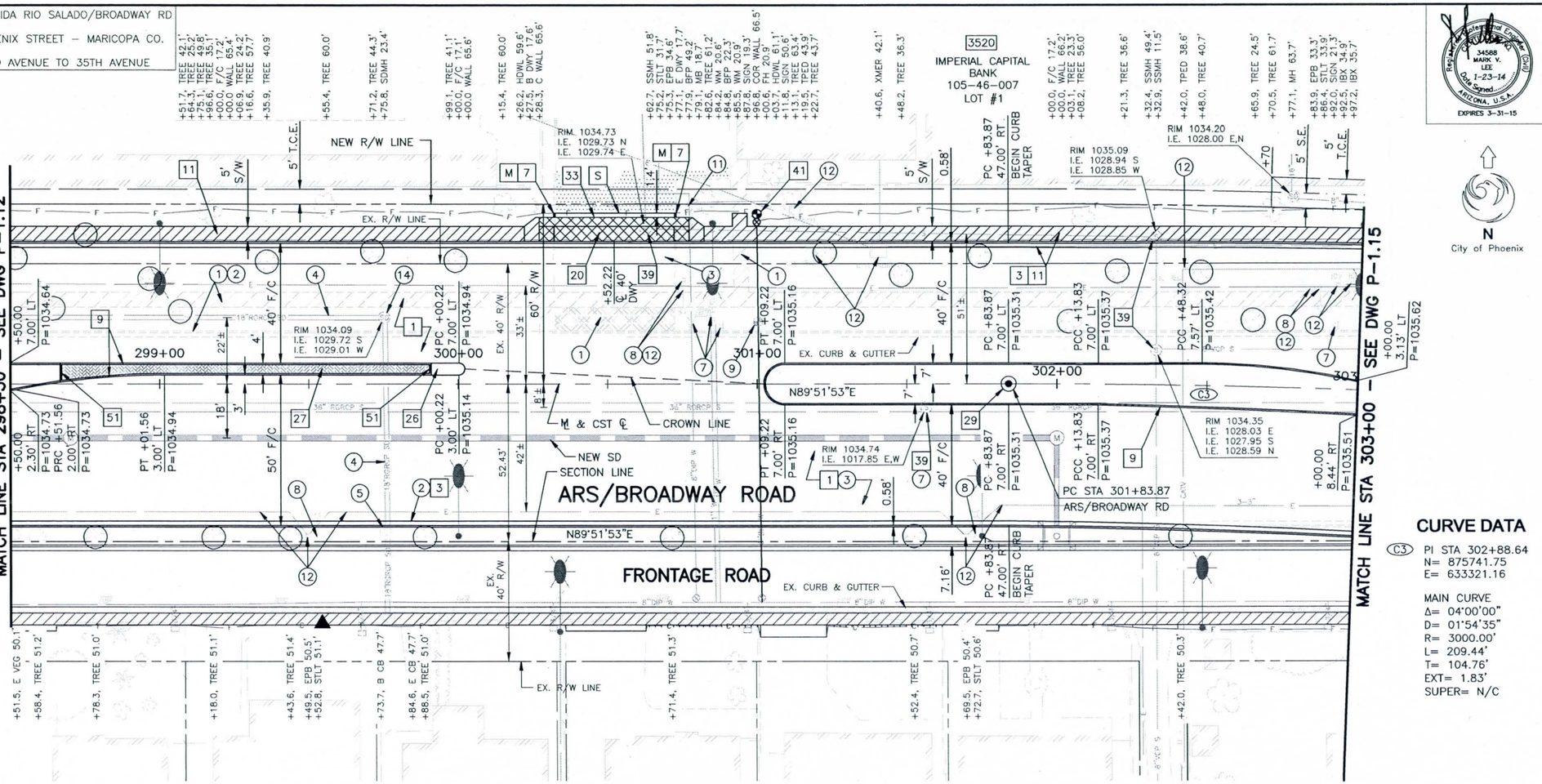
AVENIDA RIO SALADO / BROADWAY RD
43RD AVENUE TO 35TH AVENUE
ST85100333

DR: JG	DES: MVL	CK: SM	DWG SERIES NO.
DATE: 01/14	DATE: 01/14	DATE: 01/14	
SCALE: HORIZ 1"= 20' VERT 1"= 2'			P-1.12

ST85100333 PP23.DWG

REVISION BY CITY OF PHOENIX
NO. | DESCRIPTION | REV BY | CKD BY | DATE

AVENIDA RIO SALADO/BROADWAY RD
PHOENIX STREET – MARICOPA CO.
43RD AVENUE TO 35TH AVENUE



REMOVAL / RELOCATION NOTES

NO.	DESCRIPTION	UNIT	QTY
(1)	REMOVE CONCRETE SIDEWALK, DRIVEWAY, VALLEY GUTTER, & SLAB		
	S/W 298+50 TO 303+00 LT	SF	2408
	D/W 300+27 TO 300+77 LT	SF	379
(2)	REMOVE CONCRETE SINGLE CURB AND CURB & GUTTER		
	298+50 TO 303+00 LT	LF	450
	298+50 TO 303+00 RT	LF	450
(3)	REMOVE ASPHALT CONCRETE PAVEMENT	SY	3197
(4)	REMOVE PIPE, BACKFILL & COMPACT	LF	197
(5)	REMOVE CATCH BASIN, BACKFILL & COMPACT	EA	1
(7)	MISCELLANEOUS WORK		
	MAILBOX, RELOCATE	EA	1
	TRAFFIC SIGN, REMOVE & SALVAGE	LS	–
	LANDSCAPE IRRIGATION SYSTEM, REMOVE	LS	–
	MANHOLE CONE, ROTATE SEE DETAIL ON SHEET DT–1.04	EA	1

NO.	DESCRIPTION	UNIT	QTY
(8)	STREET LIGHT, REMOVE SEE STREET LIGHT PLANS		
(9)	FIRE HYDRANT, REMOVE	EA	1
(11)	BACKFLOW PREVENTER, RELOCATE	EA	1
(12)	MISCELLANEOUS WORK BY OTHERS		
	IRRIGATION CONTROL VALVE, REMOVE	NPI	–
	ELECTRIC TRANSFORMER, RELOCATE	NPI	–
	ELECTRIC PULLBOX & CONDUCTORS, RELOCATE	NPI	–
	TELEPHONE PEDESTAL, RELOCATE	NPI	–
	CATV PEDESTAL, RELOCATE	NPI	–
	PRIVATE SIGN, RELOCATE	NPI	–
(14)	REMOVE MANHOLE, BACKFILL & COMPACT	EA	1

CURVE DATA

(C3) PI STA 302+88.64
N= 875741.75
E= 633321.16

MAIN CURVE
Δ= 04°00'00"
D= 01°54'35"
R= 3000.00'
L= 209.44'
T= 104.76'
EXT= 1.83'
SUPER= N/C

N
City of Phoenix

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

Registered Professional Engineer
Certificate
34568
MARK V.
LEE
1-23-14
Date Signed
ARIZONA, U.S.A.
EXPIRES 3-31-15

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST85100333	29	161	

PROJECT ENGINEERING CONSULTANTS, LTD.
2310 W. MISSION LANE, STE. 4 PHOENIX, AZ 85021
PHONE (602) 906–1901

CONSTRUCTION NOTES

NO.	DESCRIPTION	UNIT	QTY
	SUBGRADE PREPARATION	SY	4185
1	2" ASPHALT CONCRETE SURFACE COURSE, MOD. TYPE D 1/2	TON	471
	5–1/2" ASPHALT CONCRETE BASE COURSE, TYPE A 1–1/2	TON	1295
	TACK COAT	TON	4
3	VERTICAL CURB & GUTTER, MAG STD DET 220, TYPE 'A', H=6"	LF	900
7	SINGLE CURB, MAG STD DET 222, CURB TERMINATION	LF	3
9	SINGLE CURB, MAG STD DET 222, TYPE 'A'	LF	686
11	5' CONCRETE SIDEWALK, MOD. COP STD DET P1230, 6" THK, CLASS 'A'	SF	2028
20	DRIVEWAY ENTRANCE– TYPE 1, COP STD DETAIL P1255–1, 9" THICK	SF	400
26	CONCRETE MEDIAN NOSE	SF	45
	STAMPED ASPHALT PAVEMENT	SF	397
27	2–1/2" ASPHALT CONCRETE SURFACE COURSE, (D 1/2)	TON	7
	AGGREGATE BASE COURSE	TON	10
29	SURVEY MARKER, MAG STD DETAIL 120–1, TYPE 'B'	EA	1
33	DRIVEWAY CONNECTION, ASPHALT	TON	1
39	ADJUST EXISTING MANHOLE FRAME & COVER. COP STD DET P1422	EA	4
	6" D.I.P., RESTRAINED	LF	131
41	FIRE HYDRANT, FURNISHED BY CITY OF PHOENIX	EA	1
	6" VALVE, BOX AND COVER	EA	1
51	SINGLE CURB, MAG STD DET 222, TYPE 'B'	LF	9

SHEET REFERENCES

1. SEE DT–2.01 & DT–2.02 FOR MEDIAN DETAILS
2. SEE SD–2.12 FOR STORM DRAIN PLAN
3. SEE CP–1.11 FOR CB CONN PIPE PROFILE
4. SEE P–1.14 FOR PAVING PROFILE
5. SEE P–1.21 & P–1.22 FOR FRONTAGE ROAD PLAN AND PROFILE
6. SEE DT–3.03 FOR DRIVEWAY PROFILES
7. SEE SL–1.03 FOR STREET LIGHT PLANS

Two working days before you dig CALL FOR THE BLUE STAKES (602) 263-1100 Blue Stake Center CALL COLLECT

"PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2–28. THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."

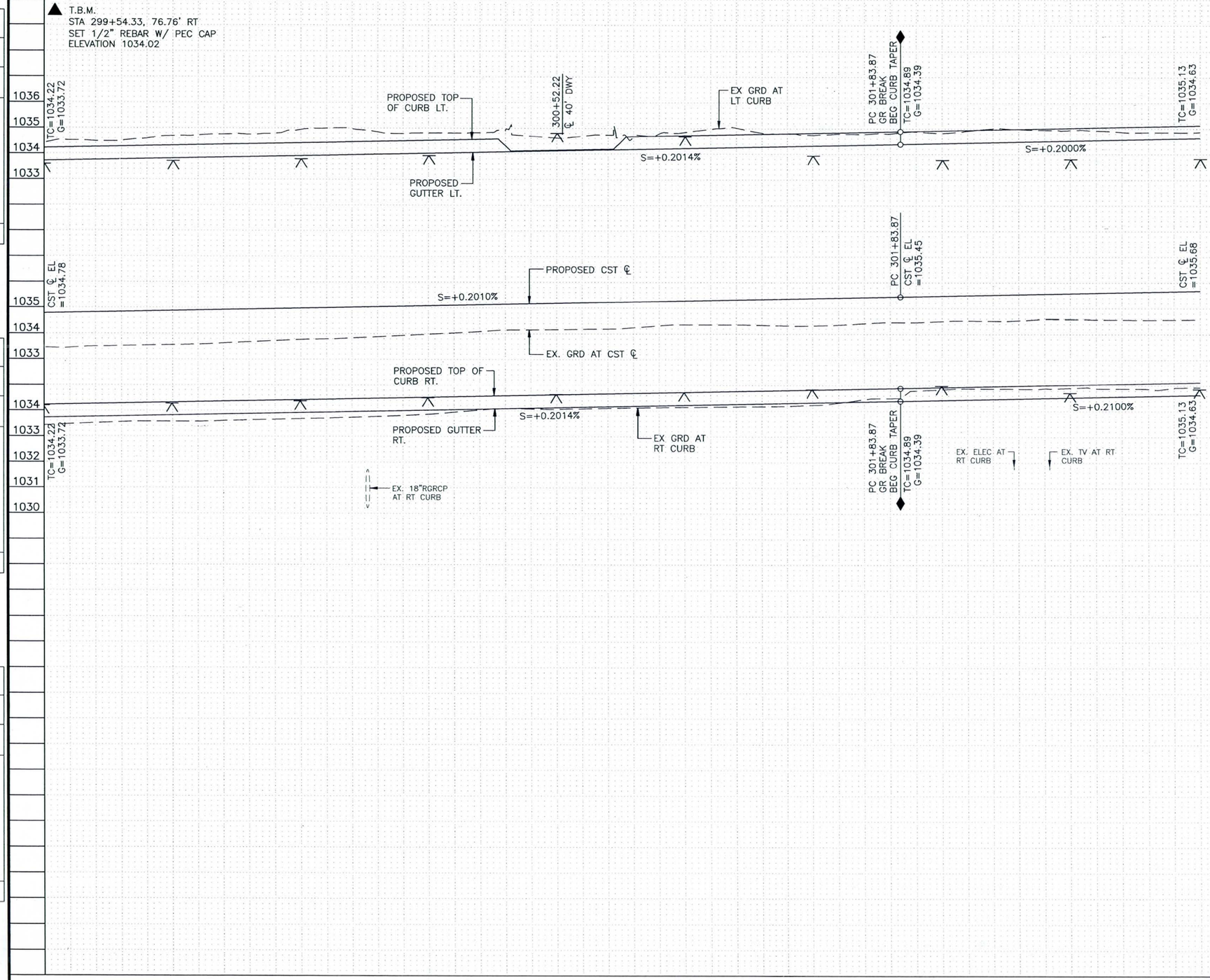
PAVING PLAN
STA 298+50 TO STA 303+00
CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

AVENIDA RIO SALADO / BROADWAY RD
43RD AVENUE TO 35TH AVENUE
ST85100333

DR: JG	DES: MVL	CK: SM	DWG SERIES NO.
DATE: 01/14	DATE: 01/14	DATE: 01/14	
SCALE: HORIZ 1"= 20' VERT 1"= 2'			P–1.13

ST85100333_PP24.DWG

AVENIDA RIO SALADO/BROADWAY RD
PHOENIX STREET – MARICOPA CO.
43RD AVENUE TO 35TH AVENUE



F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST85100333	30	161	

Registered Professional Engineer
34588
MARK V.
LEE
Date Signed
1-23-14
ARIZONA, U.S.A.
EXPIRES 3-31-15

PROJECT ENGINEERING CONSULTANTS, LTD.
2310 W. MISSION LANE, STE. 4 PHOENIX, AZ 85021
PHONE (602) 906-1901

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

SHEET REFERENCES

1. SEE P-1.13 FOR PAVING PLAN

"PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2-28. THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."

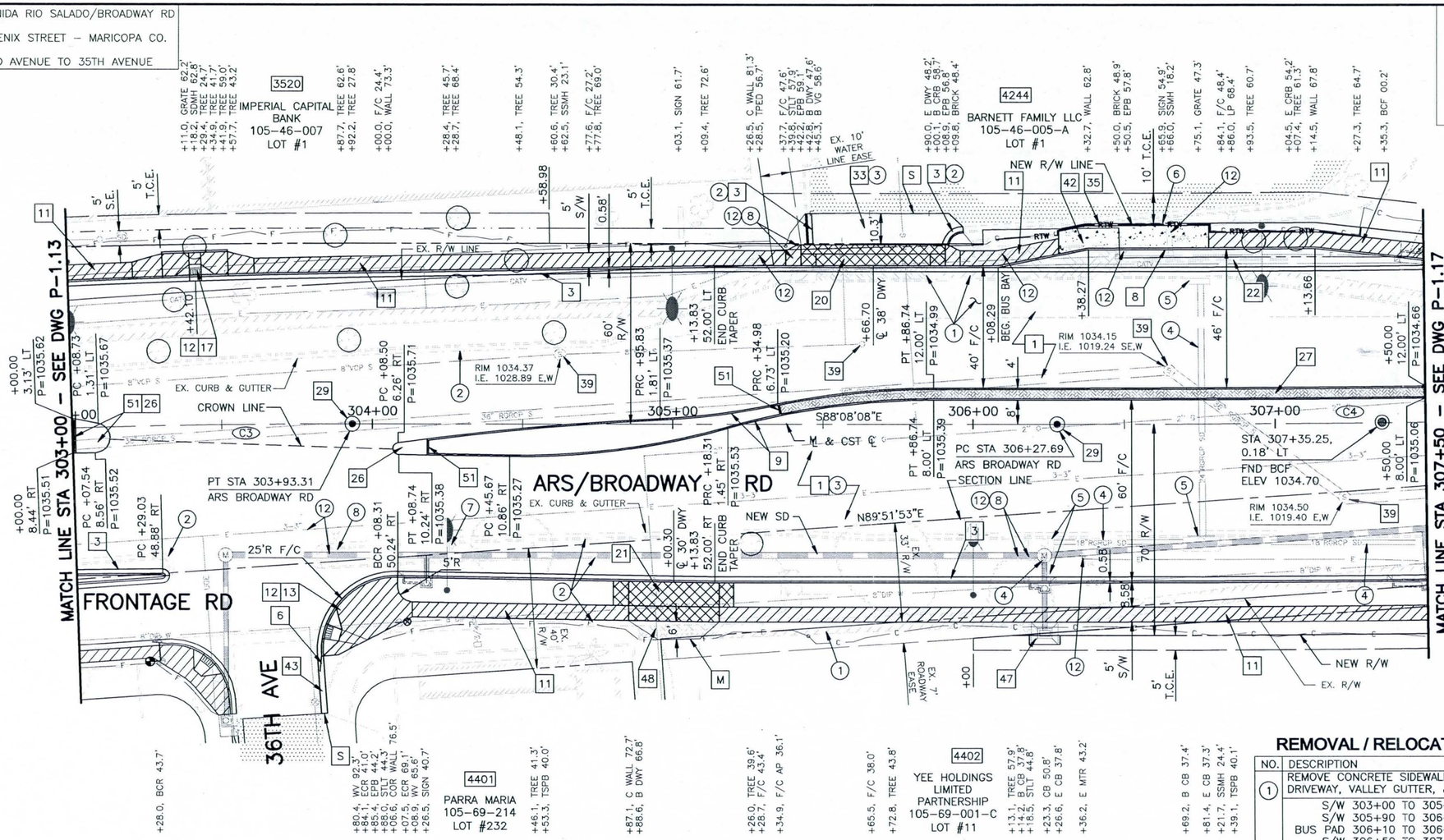
PAVING PROFILE
STA 298+50 TO STA 303+00
CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

AVENIDA RIO SALADO / BROADWAY RD
43RD AVENUE TO 35TH AVENUE
ST85100333

DR: JG	DES: MVL	CK: SM	DWG SERIES NO.
DATE: 01/14	DATE: 01/14	DATE: 01/14	
SCALE: HORIZ 1"= 20' VERT 1"= 2'			P-1.14

ST85100333_PP25.DWG

AVENIDA RIO SALADO/BROADWAY RD
PHOENIX STREET – MARICOPA CO.
43RD AVENUE TO 35TH AVENUE



CURVE DATA

(C3) PI STA 302+88.64
N= 875741.75
E= 633321.16

MAIN CURVE
Δ= 04°00'00"
D= 01°54'35"
R= 3000.00'
L= 209.44'
T= 104.76'
EXT= 1.83'
SUPER= N/C

(C4) PI STA 310+36.28
N= 875691.36
E= 634067.18

MAIN CURVE
Δ= 04°05'03"
D= 00°30'00"
R= 11459.16'
L= 816.83'
T= 408.59'
EXT= 7.28'
SUPER= N/C

REMOVAL / RELOCATION NOTES

NO.	DESCRIPTION	UNIT	QTY
(1)	REMOVE CONCRETE SIDEWALK, DRIVEWAY, VALLEY GUTTER, & SLAB		
	S/W 303+00 TO 305+43 LT	SF	1254
	S/W 305+90 TO 306+10 LT	SF	127
	BUS PAD 306+10 TO 306+50 LT	SF	410
	S/W 306+50 TO 307+50 LT	SF	500
	S/W 305+13 TO 307+50 RT	SF	1267
	DWY 305+43 TO 305+90 LT	SF	510
	DWY 304+88 TO 305+13 RT	SF	115
	BUS BAY 304+87 TO 307+44 LT	SF	2719
	VG 303+81 TO 304+08 RT	SF	176
(2)	REMOVE CONCRETE SINGLE CURB AND CURB & GUTTER		
	303+00 TO 307+50 LT	LF	467
	303+00 TO 303+31 RT	LF	36
	303+81 TO 307+50 RT	LF	714
(3)	REMOVE ASPHALT CONCRETE PAVEMENT	SY	3778
(4)	REMOVE PIPE, BACKFILL & COMPACT	LF	220
(5)	REMOVE CATCH BASIN, BACKFILL & COMPACT	EA	4
(6)	REMOVE EXISTING BLOCK WALL (MISCELLANEOUS REMOVALS)		
	306+00 TO 306+82 LT	LF	86
(7)	MISCELLANEOUS WORK		
	TRAFFIC SIGN, REMOVE & SALVAGE	LS	–
(8)	STREET LIGHT, REMOVE SEE STREET LIGHT PLANS		
(12)	MISCELLANEOUS WORK BY OTHERS		
	ELECTRIC METER, RELOCATE	NPI	–
	ELECTRIC PULLBOX & CONDUCTORS, RELOCATE	NPI	–
	TELEPHONE PEDESTAL, RELOCATE	NPI	–
	PRIVATE SIGN WITH ELEC, RELOCATE	NPI	–

Two working days before you dig CALL FOR THE BLUE STAKES (602) 263-1100 Blue Stake Center CALL COLLECT

34588 MARK V. LEE 1-23-14 Date Signed ARIZONA, U.S.A. EXPIRES 3-31-15

N City of Phoenix

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST85100333	31	161	

PROJECT ENGINEERING CONSULTANTS, LTD.
2310 W. MISSION LANE, STE. 4 PHOENIX, AZ 85021
PHONE (602) 906-1901

CONSTRUCTION NOTES

NO.	DESCRIPTION	UNIT	QTY
	SUBGRADE PREPARATION	SY	4753
1	2" ASPHALT CONCRETE SURFACE COURSE, MOD. TYPE D 1/2	TON	535
	5-1/2" ASPHALT CONCRETE BASE COURSE, TYPE A 1-1/2	TON	1471
	TACK COAT	TON	4
3	VERTICAL CURB & GUTTER, MAG STD DET 220, TYPE 'A', H=6"	LF	724
6	CURB TRANSITION, MAG STD DET 221	–	–
8	SINGLE CURB, MAG STD DET 222, TYPE 'A', MODIFIED FOR BUS BAY	LF	142
9	SINGLE CURB, MAG STD DET 222, TYPE 'A',	LF	668
11	5' CONCRETE SIDEWALK, MOD. COP STD DET P1230, 6" THK, CLASS 'A'	SF	3231
12	TRUNCATED DOMES, COP STD DET P1232	SF	20
13	CURB RAMP, 25' RADII, COP STD DET P1235	SF	448
17	CURB RAMP, MID BLOCK, COP STD DETAIL P1241-1	SF	178
20	DRIVEWAY ENTRANCE- TYPE 1, COP STD DETAIL P1255-1, 9" THICK	SF	336
21	DRIVEWAY ENTRANCE – TYPE II, COP STD DETAIL P1255-2, 9" THICK	SF	472
22	CONCRETE PAVEMENT, 9" THICK	SF	729
	BUS BAY, TYPE I, COP STD DETAIL P1256-1, SEE DET 3, DT-1.01		
26	CONCRETE MEDIAN NOSE	SF	161
	STAMPED ASPHALT PAVEMENT	SF	638
27	2-1/2" ASPHALT CONCRETE SURFACE COURSE, (D 1/2)	TON	10
	AGGREGATE BASE COURSE	TON	15
29	SURVEY MARKER, MAG STD DETAIL 120-1, TYPE 'B'	EA	2
33	DRIVEWAY CONNECTION, ASPHALT	TON	8
35	NEW RETAINING WALL, SEE DWG DT-1.03	LF	127
39	ADJUST EXISTING MANHOLE FRAME & COVER, COP STD DET P1422	EA	2
42	BUS SHELTER / ACCESSORY PAD, COP STANDARD DETAIL P1261	SF	373
43	ROLL CURB & GUTTER, MAG STD DET 220, TYPE 'C'	LF	19
47	CONCRETE APRON, SEE DET 1 ON DT-1.01	EA	1
48	AGGREGATE BASE CONN. (6" THK)	TON	5
51	SINGLE CURB, MAG STD DET 222, TYPE 'B',	LF	18

SHEET REFERENCES

1. SEE DT-2.01 & DT-2.02 FOR MEDIAN DETAILS
2. SEE SD-2.13 FOR STORM DRAIN PLAN
3. SEE CP-1.12 FOR CB CONN PIPE PROFILE
4. SEE P-1.16 FOR ROADWAY PROFILE
5. SEE P-1.19, P-1.20 AN P-1.21 FOR FRONTAGE RD PLANS
6. SEE TS-1.02 FOR TRAFFIC SIGNAL ITEMS
7. SEE DT-3.03 & DT-3.04 FOR DRIVEWAY PROFILES
8. SEE SL-1.03 FOR STREET LIGHT PLAN

"PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2-28. THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."

PAVING PLAN
STA 303+00 TO STA 307+50
CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

AVENIDA RIO SALADO / BROADWAY RD
43RD AVENUE TO 35TH AVENUE
ST85100333

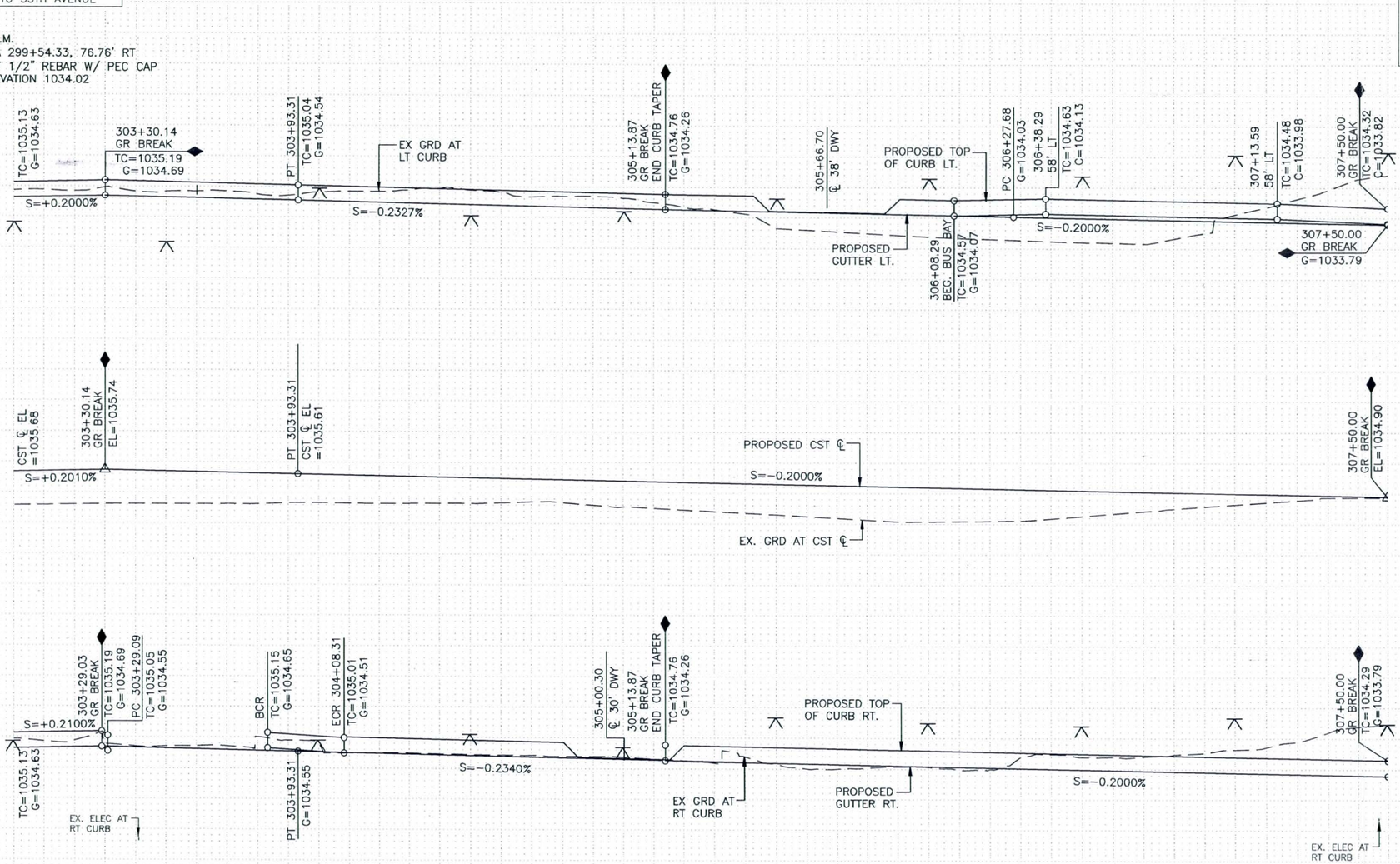
DR: JG	DES: MVL	CK: SM	DWG SERIES NO.
DATE: 01/14	DATE: 01/14	DATE: 01/14	
SCALE: HORIZ 1"= 20' VERT 1"= 2'			P-1.15

ST85100333 PP26.DWG

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

AVENIDA RIO SALADO/BROADWAY RD
PHOENIX STREET – MARICOPA CO.
43RD AVENUE TO 35TH AVENUE



REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

Registered Professional Engineer
MARK V. LEE
34588
Date Signed 1-23-14
ARIZONA, U.S.A.
EXPIRES 3-31-15

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST85100333	32	161	

PROJECT ENGINEERING CONSULTANTS, LTD.
2310 W. MISSION LANE, STE. 4 PHOENIX, AZ 85021
PHONE (602) 906-1901

SHEET REFERENCES

1. SEE P-1.15 FOR PAVING PLAN

"PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2-28. THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."

PAVING PROFILE
STA 303+00 TO STA 307+50
CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

AVENIDA RIO SALADO / BROADWAY RD
43RD AVENUE TO 35TH AVENUE
ST85100333

DR:	DES:	CK:	DWG SERIES NO.
JG	MVL	SM	
DATE: 01/14	DATE: 01/14	DATE: 01/14	
SCALE: HORIZ 1"= 20' VERT 1"= 2'			P-1.16

ST85100333 PP22.DWG

AVENIDA RIO SALADO/BROADWAY RD
PHOENIX STREET – MARICOPA CO.
43RD AVENUE TO 35TH AVENUE

RELOCATED WATER METERS

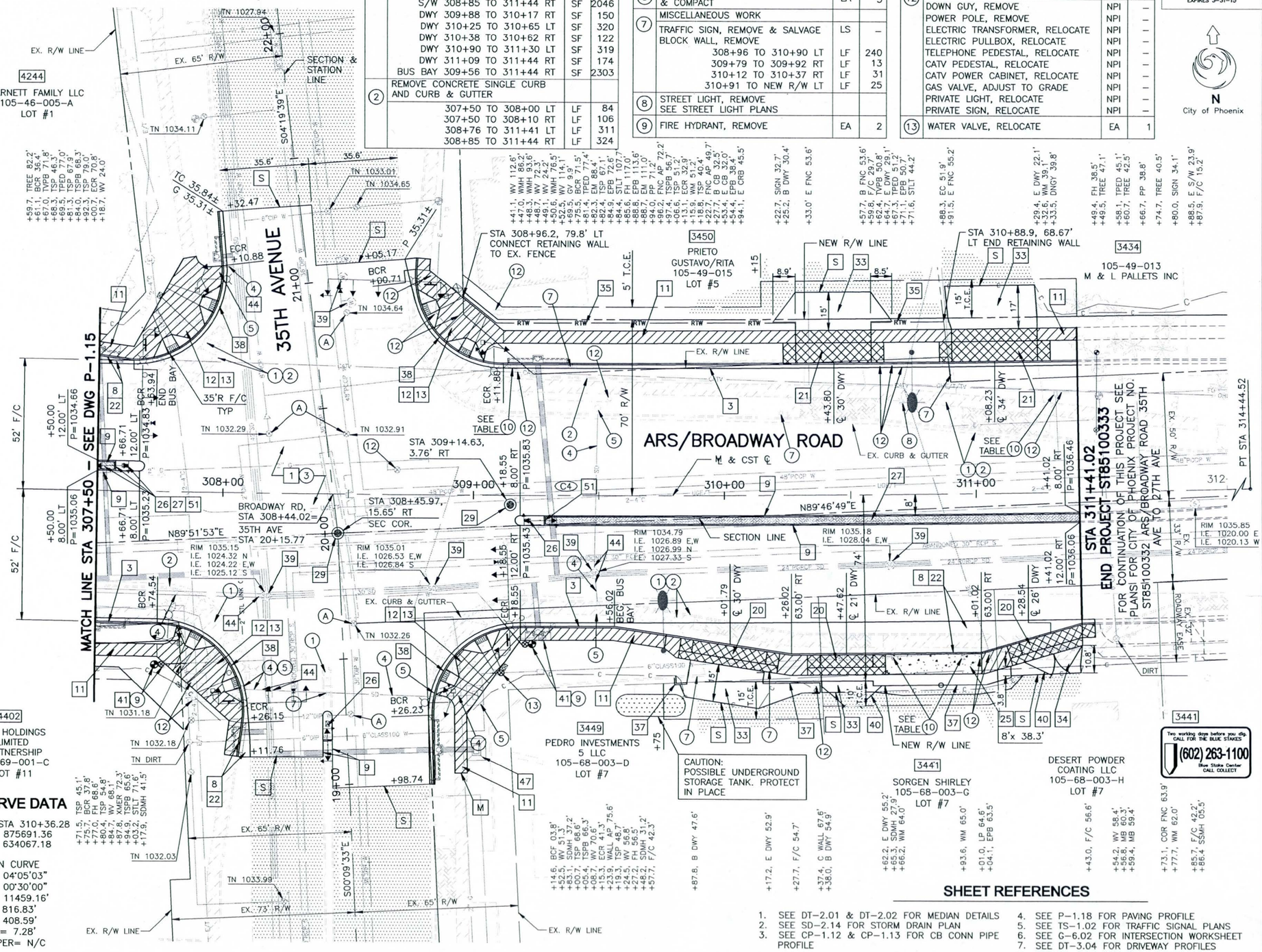
STA 20+65.9, 78' RT
STA 310+63.8, 73' RT
STA 310+91.4, 73' RT
STA 311+33.2, 67' LT

REMOVAL / RELOCATION NOTES

NO.	DESCRIPTION	UNIT	QTY
1	REMOVE CONCRETE SIDEWALK, DRIVEWAY, VALLEY GUTTER, & SLAB		
	S/W 307+50 TO 308+00 LT	SF	637
	S/W 307+50 TO 308+10 RT	SF	659
	S/W 308+76 TO 311+41 LT	SF	1823
	S/W 308+85 TO 311+44 RT	SF	2046
	DWY 309+88 TO 310+17 RT	SF	150
	DWY 310+25 TO 310+65 LT	SF	320
	DWY 310+38 TO 310+62 RT	SF	122
	DWY 310+90 TO 311+30 LT	SF	319
	DWY 311+09 TO 311+44 RT	SF	174
	BUS BAY 309+56 TO 311+44 RT	SF	2303
2	REMOVE CONCRETE SINGLE CURB AND CURB & GUTTER		
	307+50 TO 308+00 LT	LF	84
	307+50 TO 308+10 RT	LF	106
	308+76 TO 311+41 LT	LF	311
	308+85 TO 311+44 RT	LF	324

NO.	DESCRIPTION	UNIT	QTY
3	REMOVE ASPHALT CONCRETE PAVEMENT	SY	4250
4	REMOVE PIPE, BACKFILL & COMPACT	LF	179
5	REMOVE CATCH BASIN, BACKFILL & COMPACT	EA	5
7	MISCELLANEOUS WORK		
	TRAFFIC SIGN, REMOVE & SALVAGE	LS	–
	BLOCK WALL, REMOVE		
	308+96 TO 310+90 LT	LF	240
	309+79 TO 309+92 RT	LF	13
	310+12 TO 310+37 RT	LF	31
	310+91 TO NEW R/W LT	LF	25
8	STREET LIGHT, REMOVE SEE STREET LIGHT PLANS		
9	FIRE HYDRANT, REMOVE	EA	2

NO.	DESCRIPTION	UNIT	QTY
10	RELOCATE WATER METER, BOX AND COVER PER COP SUPP 610.11 AND COP DET P1363, SEE TABLE THIS SHEET	EA	4
12	MISCELLANEOUS WORK BY OTHERS		
	DOWN GUY, REMOVE	NPI	–
	POWER POLE, REMOVE	NPI	–
	ELECTRIC TRANSFORMER, RELOCATE	NPI	–
	ELECTRIC PULLBOX, RELOCATE	NPI	–
	TELEPHONE PEDESTAL, RELOCATE	NPI	–
	CATV PEDESTAL, RELOCATE	NPI	–
	CATV POWER CABINET, RELOCATE	NPI	–
	GAS VALVE, ADJUST TO GRADE	NPI	–
	PRIVATE LIGHT, RELOCATE	NPI	–
	PRIVATE SIGN, RELOCATE	NPI	–
13	WATER VALVE, RELOCATE	EA	1



CURVE DATA

(C4) PI STA 310+36.28
N= 875691.36
E= 634067.18

MAIN CURVE
Δ= 04°05'03"
D= 00°30'00"
R= 11459.16'
L= 816.83'
T= 408.59'
EXT= 7.28'
SUPER= N/C

SHEET REFERENCES

1. SEE DT-2.01 & DT-2.02 FOR MEDIAN DETAILS
2. SEE SD-2.14 FOR STORM DRAIN PLAN
3. SEE CP-1.12 & CP-1.13 FOR CB CONN PIPE PROFILE
4. SEE P-1.18 FOR PAVING PROFILE
5. SEE TS-1.02 FOR TRAFFIC SIGNAL PLANS
6. SEE G-6.02 FOR INTERSECTION WORKSHEET
7. SEE DT-3.04 FOR DRIVEWAY PROFILES
8. SEE SL-1.04 FOR STREET LIGHT PLAN

Registered Professional Engineer (Civil) 34588 MARK V. LEE 1-23-14 Date Signed ARIZONA, U.S.A. EXPIRES 3-31-15

N
City of Phoenix

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST85100333	33	161	

PROJECT ENGINEERING CONSULTANTS, LTD.
2310 W. MISSION LANE, STE. 4 PHOENIX, AZ 85021
PHONE (602) 906-1901

CONSTRUCTION NOTES

NO.	DESCRIPTION	UNIT	QTY
	SUBGRADE PREPARATION	SY	5301
1	1-1/2" ASPHALT CONCRETE SURFACE COURSE, TYPE D 1/2	TON	597
	6-1/2" ASPHALT CONCRETE BASE COURSE, TYPE A 1-1/2	TON	1640
	TACK COAT	TON	5
3	VERTICAL CURB & GUTTER, MAG STD DET 220, TYPE 'A', H=6"	LF	340
8	SINGLE CURB, MAG STD DET 222, TYPE 'A', MODIFIED FOR BUS BAY	LF	220
9	SINGLE CURB, MAG STD DET 222, TYPE 'A'	LF	439
11	5' CONCRETE SIDEWALK, MOD. COP STD DET P1230, 6" THK, CLASS 'A'	SF	1722
12	TRUNCATED DOMES, COP STD DET P1232	SF	80
	CONC SIDEWALK, MOD. 9" THICK	SF	2594
13	CURB RAMP, 35' RADII, COP STD DET P1235		
20	DRIVEWAY ENTRANCE– TYPE 1, COP STD DETAIL P1255–1, 9" THICK	SF	835
21	DRIVEWAY ENTRANCE – TYPE II, COP STD DETAIL P1255–2, 9" THICK	SF	992
22	CONCRETE PAVEMENT, 9" THICK	SF	1835
25	BUS BAY, TYPE I, COP STD DETAIL P1256–1		
26	BUS SHELTER / ACCESSORY PAD, COP STANDARD DETAIL P1260	SF	307
	CONCRETE MEDIAN NOSE	SF	133
27	STAMPED ASPHALT PAVEMENT	SF	658
	2-1/2" ASPHALT CONCRETE SURFACE COURSE, (D 1/2)	TON	11
29	AGGREGATE BASE COURSE	TON	16
33	SURVEY MARKER, MAG STD DETAIL 120–1, TYPE 'B'	EA	2
34	DRIVEWAY CONNECTION, ASPHALT	TON	42
35	DRIVEWAY CONNECTION, CONCRETE, 6" THICK	SF	204
37	NEW RETAINING WALL, SEE DETAIL ON DT–1.03	LF	166
38	NEW MASONRY BLOCK WALL, SEE DETAIL ON DT–1.03	SF	522
39	VERT. CURB & GUTTER, MAG STD DET 220, TYPE 'A', H=6" , 9" THICK	LF	231
40	ADJUST EXISTING MANHOLE FRAME & COVER, COP STD DET P1422	EA	6
	DOUBLE GATE, MAG STD DET 160 (24' WIDE)	EA	2
	6" D.I.P., RESTRAINED	LF	120
41	FIRE HYDRANT, FURNISHED BY CITY OF PHOENIX	EA	2
	6" VALVE, BOX AND COVER	EA	2
44	PIPE PLUG, MAG STD DET 427	EA	6
47	CONCRETE APRON, SEE DET 1 ON DT–1.01	EA	1
51	SINGLE CURB, MAG STD DET 222, TYPE 'B'	LF	6
(A)	ADJUST WATER VALVE BOX PER COP STD DET P1391 ,TYPE 'A' & P1391–1	EA	5

"PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2–28. THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."

PAVING PLAN SHEET
STA 307+50 TO STA 311+41.02
CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

AVENIDA RIO SALADO / BROADWAY RD
43RD AVENUE TO 35TH AVENUE
ST85100333

DR: JG	DES: MVL	CK: SM	DWG SERIES NO.
DATE: 01/14	DATE: 01/14	DATE: 01/14	
SCALE: HORIZ 1"= 20' VERT N/A			P–1.17

ST85100333 PL23.DWG

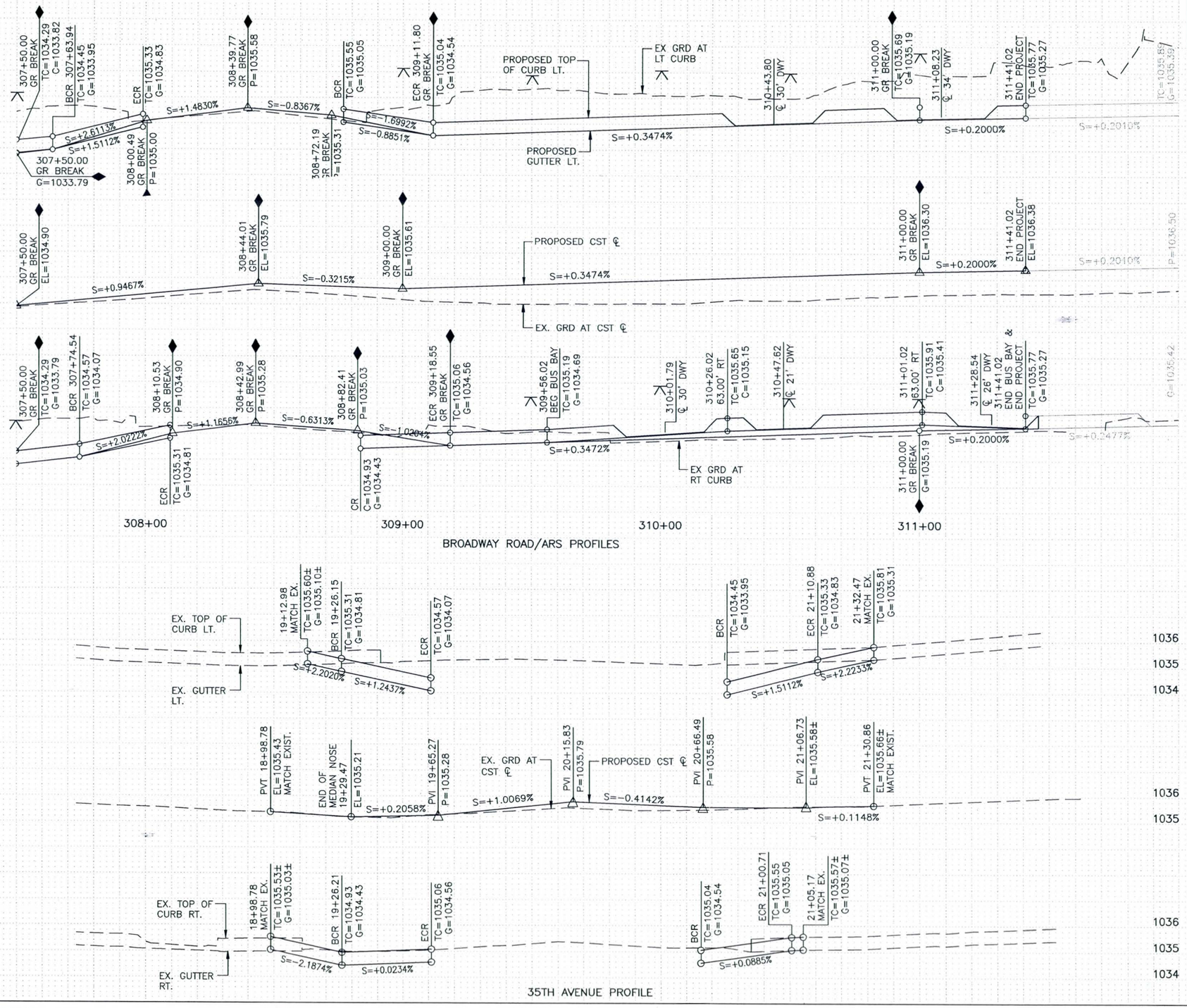
REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

AVENIDA RIO SALADO/BROADWAY RD

PHOENIX STREET – MARICOPA CO.

43RD AVENUE TO 35TH AVENUE



BROADWAY ROAD/ARS PROFILES

35TH AVENUE PROFILE

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CK'D BY	DATE

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CK'D BY	DATE

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CK'D BY	DATE

Registered Professional Engineer (Civil) 34588 MARK V. LEE Date Signed 1-23-14 ARIZONA, U.S.A.

EXPIRES 3-31-15

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL	AS BUILT
9	ARIZ.	ST85100333	34	161	

PROJECT ENGINEERING CONSULTANTS, LTD.
2310 W. MISSION LANE, STE. 4 PHOENIX, AZ 85021
PHONE (602) 906-1901

SHEET REFERENCES

1. SEE P-1.17 FOR PAVING PLAN

"PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2-28. THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF THE CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX."

PAVING PROFILE SHEET
STA 307+50 TO STA 311+41.02

CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

AVENIDA RIO SALADO / BROADWAY RD
43RD AVENUE TO 35TH AVENUE
ST85100333

DR: JG	DES: MVL	CK: SM	DWG SERIES NO.
DATE: 01/14	DATE: 01/14	DATE: 01/14	
SCALE: HORIZ N/A VERT 1"= 2'			P-1.18

ST85100333 P29.DWG

CITY OF PHOENIX
STREET TRANSPORTATION DEPARTMENT
DESIGN & CONSTRUCTION MANAGEMENT DIVISION
PAVING AND STORM DRAIN

AVENIDA RIO SALADO/BROADWAY ROAD
51ST AVENUE TO 43RD AVENUE
ST85100334
FEDERAL AID NO.HPS-PHX-0(055)A
ADOT PROJECT NO. 0000 MA PHX SS606 01C

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL
9	ARIZ.	ST85100334	01	157

PREMIER
ENGINEERING CORPORATION
6437 W. CHANDLER BLVD., SUITE 1
CHANDLER, AZ 85226; 480-829-6000
CONSULTING ENGINEER

DR: JRR | DES: DVV | CK: SHM | DATE: 01/14

50080 DANIEL V VOIGT — Date Signed 1-23-14 — ARIZONA, U.S.A. — Expires 6/30/15

GMP 1
VOLUME 2

Project Benchmarks:
Point #5 (AZTEC #30032)
25' West of Curb @
Vulcan Materials office
Found 1 1/4" rebar
Elevation=1019.43
Northing=874320.9662'
Easting=626078.182'

Point #12 (AZTEC #1006)
39th Ave. and Broadway Rd
Found 2" Maricopa County
Aluminum Cap
Elevation=1027.74
Northing=875684.4381'
Easting=631252.1622'

2014

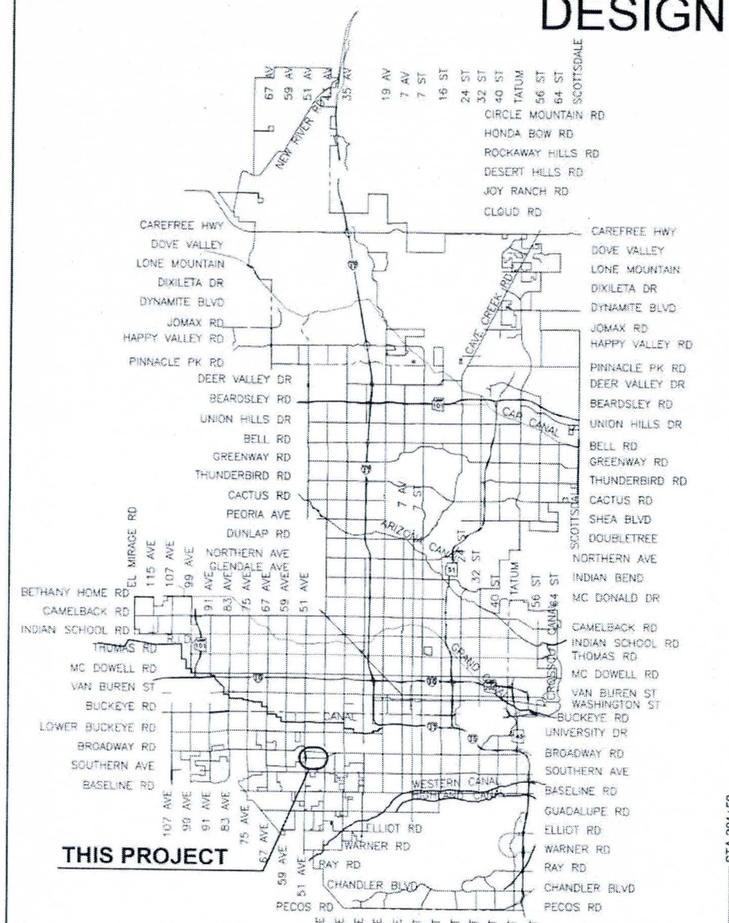
Revised Index

MAYOR
GREG STANTON

ACTING CITY MANAGER
ED ZUERCHER

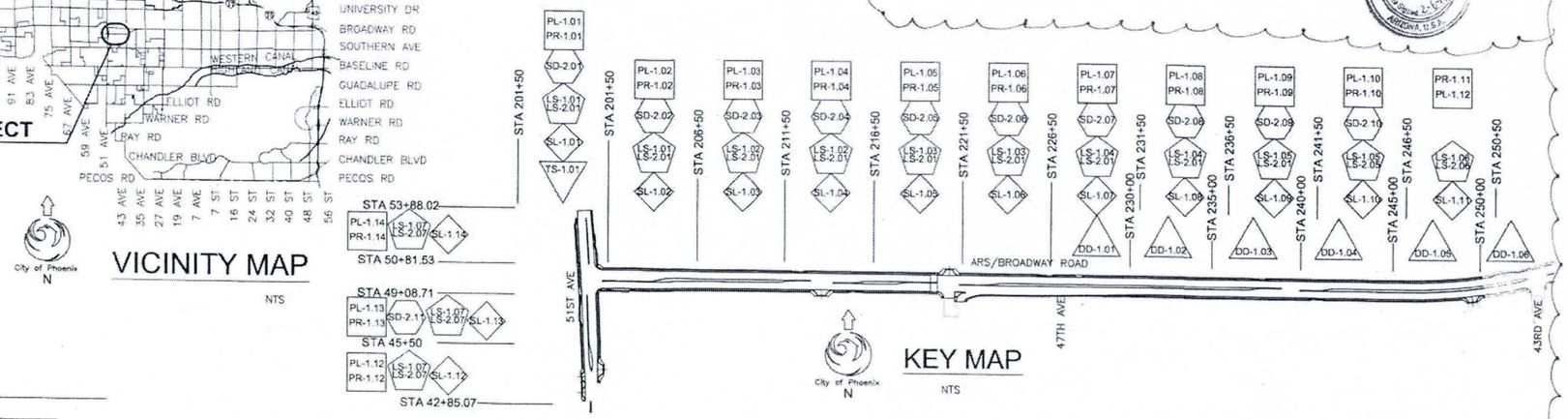
CITY COUNCIL

DISTRICT NO 1.	THELDA WILLIAMS
DISTRICT NO 2.	JIM WARING
DISTRICT NO 3.	BILL GATES
DISTRICT NO 4.	LAURA PASTOR
DISTRICT NO 5.	DANIEL VALENZUELA
DISTRICT NO 6.	SAL DICICCIO
DISTRICT NO 7.	MICHAEL NOWAKOWSKI
DISTRICT NO 8.	KATE GALLEGO



City of Phoenix N

VICINITY MAP
NTS



City of Phoenix N

KEY MAP
NTS

COP INSPECTION STAMP

CITY PROJECT MANAGER _____
CITY INSPECTOR _____
CONTRACTOR _____
DATE OF FINAL COMPLETION _____

APPROVED _____ 1/29/14
ASSISTANT STREET TRANSPORTATION DIRECTOR — DATE

APPROVED _____ 2/4/14
DEPUTY STREET TRANSPORTATION DIRECTOR — DATE

- ☐ PAVING PLAN/PROFILE SHEETS
- ⬡ STORM DRAIN PLAN/PROFILE SHEETS
- ⬠ LANDSCAPE & LANDSCAPE IRRIGATION PLAN SHEETS
- ◇ STREET LIGHT PLAN SHEETS
- ▽ TRAFFIC SIGNAL PLAN SHEETS
- △ SALT RIVER BANK PROTECTION PLAN

CITY BENCHMARKS:
1. C.O.P. B.C. IN NORTH H.H., ABOUT 15' NORTH OF SECOND C.O.P. B.C. IN H.H. AT THE INTERSECTION OF 35TH AVE. AND BROADWAY RD. EL. 1034.893

2. C.O.P B.C. IN H.H. AT THE INTERSECTION OF 27TH AVE AND BROADWAY RD. EL. 1046.695

LENGTH OF PROJECT = 6,154 LF = 1.1655 MILES

AREA OF DISTURBANCE =34.02 ACRES

CALL TWO WORKING DAYS BEFORE YOU DIG
CALL FOR THE BLUE STAKES
602-263-1100
1-800-STAKE-IT
OUTSIDE MARICOPA COUNTY

*PER CITY OF PHOENIX, CITY CODE CHAPTER 2, SECTION 2028, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF CONTRACTOR'S CONTRACT WITH THE CITY OF PHOENIX.

INDEX OF SHEETS

SHEET No.	DWG SERIES No.	SHEET TITLE
01	G-1.01	COVER SHEET
02	G-1.02	LEGEND & NOTES SHEET
03-04	G-1.03 - G-1.04	QUANTITY SUMMARY SHEET
05-08	G-2.01 - G-2.04	TYPICAL SECTIONS
09	G-3.01	SURVEY CONTROL SHEET
10	G-4.01	STAMPED ASPHALT DETAILS
11	G-4.02	MEDIAN DETAILS
12 - 14	G-5.01 - G-5.03	MEDIAN GEOMETRY
15 - 41	PL-1.01 - PL-1.14	PAVING PLAN (ODD)
16 - 42	PR-1.01 - PR-1.14	PAVING PROFILE (EVEN)
43	PL-2.01	JOINTING PLAN
44	DT-1.01	PAVING DETAILS
45	DT-1.02	BUS PAD DETAIL
46	PR-2.01	DRIVEWAY PROFILES
47	IX-1.01	INTERSECTION DETAIL
48	ST-1.01	CBC GENERAL NOTES & QUANTITIES
49	ST-1.02	CBC PLAN & ELEVATION
50	DT-2.01	STRUCTURAL DETAILS
51 - 56	XS-1.01 - XS-1.06	ROADWAY CROSS SECTIONS
57	DS-1.01	STORM DRAIN DESIGN SUMMARY SHEET
58	SD-1.01	HYDRAULIC & ENERGY GRADE LINE
59 - 69	SD-2.01 - SD-2.11	STORM DRAIN PLAN & PROFILE
70	DT-3.01	DRAINAGE DETAIL
71 - 79	CP-1.01 - CP-1.09	CONNECTOR PIPE PROFILES
80	AP-1.01	ALTERNATE PIPE CHART
81 - 86	DD-1.01 - DD-1.06	BANK PROTECTION PLAN
87	DD-1.07	BANK PROTECTION DETAILS
88 - 95	BH-1.01 - BH-1.08	BORING LOG
96	DT-4.01	STREET LIGHT NOTES
97	DT-4.02	STREET LIGHT DETAILS
98-111	SL-1.01 - SL-1.14	STREET LIGHT LAYOUT
112	LD-1.01	LANDSCAPING & IRRIGATION SUMMARY
113	LD-1.02	LANDSCAPING & IRRIGATION NOTES
114	LD-1.03	LANDSCAPING DETAILS
115 - 116	LD-1.04 - LD-1.05	IRRIGATION DETAILS
117 - 123	LS-1.01 - LS-1.07	LANDSCAPE PLANS
124 - 130	LS-2.01 - LS-2.07	IRRIGATION PLANS
131 - 132	G-2.01	TRAFFIC SUMMARY
133 - 135	TS-1.01 - TS-1.03	TRAFFIC SIGNAL PLAN
136 - 147	DT-5.01 - DT-5.12	TRAFFIC SIGNAL DETAILS
148	NONE	STRIPING & SIGNING NOTES & QUANTITIES
149 - 152	NONE	PAINT & SIGN PLANS
153 - 157	NONE	STRIPING DETAILS
-	-	SRP POWER

ST85100334: QS 4-17: AVENIDA RIO SALADO/BROADWAY ROAD - 51ST AVENUE TO 43RD AVENUE

p:\2010011\CADD\Civil\Sheets\ST85100334CS.dwg, 1/22/2014

AVENIDA RIO SALADO/BROADWAY ROAD
51ST AVENUE TO 43RD AVENUE
PHOENIX STREETS – MARICOPA CO.

REVISION BY CITY OF PHOENIX				
NO.	DESCRIPTION	REV BY	CKD BY	DATE

REVISION BY CITY OF PHOENIX				
NO.	DESCRIPTION	REV BY	CKD BY	DATE

REVISION BY CITY OF PHOENIX				
NO.	DESCRIPTION	REV BY	CKD BY	DATE

LEGEND

- BENCHMARK
- NEW SURVEY MONUMENT – M.A.G. DETAIL 120–1 TYPE "B"
- NEW SURVEY MONUMENT – M.A.G. DETAIL 120–1 TYPE "A"
- COMBINED CURB & GUTTER – M.A.G. DETAIL 220 TYPE "A"
- BACKFILL TYPE & SQ. YD. PVMT. REPLACEMENT – C.O.P. DETAIL P1200
- EXISTING CONCRETE PAVEMENT OR SIDEWALK
- NEW CONCRETE SIDEWALK – STD. DETAIL P1230
- NEW CONCRETE DRIVEWAY OR ALLEY ENT. PER DETAIL NO. ON PLANS
- NEW CONCRETE SIDEWALK RAMP PER DETAIL ON PLANS
- AVERAGE GROUND ELEVATION AT R/W LINE
- BACKFILL COMPACTION TYPE
- EXISTING DITCH
- EXISTING IRRIGATION LINE W/SIZE (NOTE PRIVATE, SALT RIVER OR R.I.D.)
- EXISTING IRRIGATION STRUCTURE
- EXISTING IRRIGATION STANDPIPE
- NEW IRRIGATION STANDPIPE – M.A.G. DETAIL 503
- NEW IRRIGATION VALVE – M.A.G. DETAIL 506 W/ CONC. SCOURING BASIN
- IRRIGATION BERM
- NEW IRRIGATION STRUCTURE PER DETAIL ON PLANS
- EXISTING WATER LINE W/SIZE & TYPE (12" AND SMALLER)
- EXISTING WATER LINE W/SIZE & TYPE (GREATER THAN 12")
- ADJUST EXIST. WATER VALVE BOX – C.O.P. DETAIL P1391
- WATER SERVICE W/SIZE AND WATER METER BOX
- EXISTING FIRE HYDRANT
- NEW OR RELOCATED FIRE HYDRANT BY CONTRACTOR
- EXISTING WATER VALVE W/TOP OF OPERATING NUT ELEVATION
- EXISTING SANITARY SEWER LINE W/SIZE & TYPE (12" AND SMALLER)
- EXISTING SANITARY SEWER LINE W/SIZE & TYPE (GREATER THAN 12")
- EXISTING MANHOLE
- NEW MANHOLE
- CATCH BASIN, GUTTER INLET (LENGTH TO SCALE)
- CATCH BASIN, CURB INLET (LENGTH TO SCALE)
- CATCH BASIN, CURB & GUTTER INLET (LENGTH TO SCALE)
- EXISTING STORM DRAIN LINE W/SIZE & TYPE (GREATER THAN 12")
- NEW PIPE FOR STORM DRAIN OR IRRIGATION LINE
- EXISTING GAS LINE W/SIZE
- EXISTING UNDERGROUND ELECTRIC CABLE OR SINGLE CONDUIT
- EXISTING UNDERGROUND ELECTRIC DUCT (SPECIFY NUMBER)
- EXISTING TELEPHONE BURIED CABLE OR SINGLE CONDUIT
- EXISTING UNDERGROUND TELEPHONE DUCT (SPECIFY NUMBER)
- EXISTING UNDERGROUND CABLE TV
- EXISTING UNDERGROUND FIBER OPTIC LINE
- EXISTING TRAFFIC SIGNAL POLE W/MAST ARM & SIGNAL INDICATIONS
- EXISTING STREET OR TRAFFIC SIGN
- EXISTING UTILITY POLE W/LINE INDICATING WIRE DIRECTION
- EXISTING WIRE FENCE
- EXISTING BLOCK FENCE
- EXISTING WOOD FENCE
- MAIL BOX
- EXISTING POWER POLE DOWN GUY ANCHOR
- EXISTING STREET LIGHT & POLE
- EXISTING TREE OR STUMP TO BE REMOVED – MORE THAN 12" DIA.
- EXISTING TREE TO BE TRANSPLANTED BY CONTRACTOR
- EASEMENT LINE
- EXISTING OR NEW R/W LINE
- PAVEMENT CENTER LINE OR MONUMENT LINE
- PROPERTY LINE
- SECTION LINE
- EXISTING TREE OR STUMP TO BE REMOVED 12" DIA. OR LESS (NON PAY ITEM)
- EXISTING TREE TO REMAIN
- EXISTING AC PAVEMENT TO BE REMOVED

LEGEND AND NOTES

NOTES

ALL CONSTRUCTION SHALL BE PERFORMED IN ACCORDANCE WITH CONTRACT SPECIFICATIONS; PLANS; CITY OF PHOENIX SUPPLEMENTS TO MAG STANDARD SPECIFICATIONS AND DETAILS; AND MAG STANDARD SPECIFICATIONS AND DETAILS, IN THAT ORDER OF PRECEDENCE, AT THE TIME OF CONSTRUCTION BID.

ALL STORM SEWER MANHOLES ARE TO BE CONSTRUCTED WITHOUT STEPS.

PIPE CONNECTIONS TO EXISTING CONCRETE PIPE MAINS SHALL BE MADE IN ACCORDANCE WITH DETAILS CALLED OUT ON THE PLANS. CONNECTION TO MAINS SHALL NOT BE CLOSER THAN 5', CENTER TO CENTER.

PIPE CONNECTIONS TO NEW PRECAST CONCRETE PIPE MAINS, SHALL BE MADE WITH FACTORY MADE WYES OR TEES. THE DETAIL OF THE FITTINGS MUST BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO MANUFACTURE. PIPE CONNECTIONS TO NEW CAST IN PLACE CONCRETE PIPE MAINS SHALL BE MADE PER C.O.P. DETAIL P1576.

CATCH BASIN CONNECTOR PIPES SHALL BE LAID ON A STRAIGHT ALIGNMENT AND SLOPE UNLESS OTHERWISE SPECIFIED. IF BREAKS IN ALIGNMENT OR SLOPE ARE NECESSARY TO MEET FIELD CONDITIONS, THE MAXIMUM DEFLECTION SHALL BE 22–1/2°. THE BEND SHALL BE COLLARED ACCORDING TO C.O.P. DETAIL P1505. ANY ANGLE BENDS GREATER THAN 22–1/2° SHALL BE PREFABRICATED.

CONNECTOR PIPES SHALL CONNECT TO CATCH BASIN WALLS AT AN ANGLE NOT TO EXCEED 22–1/2° FROM PERPENDICULAR.

FACILITIES WHICH ARE NOT SPECIFICALLY LOCATED WITH ACTUAL VERTICAL AND HORIZONTAL CONTROLS, ARE LOCATED ONLY APPROXIMATELY AND TO THE BEST AVAILABLE INFORMATION PROVIDED BY VARIOUS OWNERS OF THE FACILITIES, AND SUPPLEMENTED BY VISUAL SURFACE INFORMATION WHERE APPROPRIATE. ACCURACY, LOCATION AND COMPLETENESS OF THIS INFORMATION SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO INITIATION OF CONSTRUCTION.

AT LEAST TWO WORKING DAYS BEFORE CONSTRUCTION, THE CONTRACTOR SHALL CONTACT BLUESTAKE TO FIND AND FLAG UNDERGROUND UTILITIES. THE CONTRACTOR SHALL CONTACT OTHER APPROPRIATE UTILITIES DIRECTLY IF THEY ARE NOT ON BLUESTAKE SYSTEM.

VERTICAL CONTROL IS BASED ON NATIONAL GEODETIC SURVEY.

UNLESS OTHERWISE NOTED, STATIONS SHOWN ON PIPE PROFILES ARE ALONG CENTERLINE OF PIPE.

UNLESS OTHERWISE NOTED, PIPE SHALL BE BEDDED IN ACCORDANCE WITH CITY OF PHOENIX DETAIL P1200.

CATCH BASINS ARE STATIONED PERPENDICULAR TO THE CENTERLINE OF THE STREET AT THE CENTERLINE OF THE MAINTENANCE BASIN.

SANITARY SEWER MAINS AND TAPS CROSSING OVER STORM DRAIN MAINS SHALL BE SUPPORTED PER M.A.G. DETAIL 403–1, 403–2, OR 403–3.

ALL EXISTING PRECAST CONCRETE SAFETY CURBS AND ALL EXISTING WOODEN PARKING CURBS, WHICH ARE INSIDE THE RIGHT OF WAY AND APPROXIMATELY PARALLEL TO THE NEW CURB LINE, SHALL BE RESET ON THE RIGHT OF WAY DIRECTLY OPPOSITE THEIR EXISTING LOCATION, WITH THE BACK EDGE ON THE RIGHT OF WAY LINE. ALL OTHER PRECAST CONCRETE SAFETY CURBS INSIDE THE STREET RIGHT OF WAY SHALL BE SALVAGED AND STOCK PILED FOR THE OWNER AT THE RIGHT OF WAY LINE.

EXISTING PRECAST CONCRETE SAFETY CURBS OUTSIDE THE RIGHT OF WAY, WHICH ARE DISTURBED BY NEW CONSTRUCTION SHALL BE RESET IN THEIR ORIGINAL POSITION BY THE CONTRACTOR.

ALL EXISTING DRIVEWAYS AND ALL EXISTING ALLEYS SHALL BE GRADED TO MATCH THE NEW WORK IN ACCORDANCE WITH STD. DETAIL P1164, UNLESS OTHERWISE SPECIFIED. EXISTING SURFACING SHALL BE REMOVED AND REPLACED AS NECESSARY.

ADDITIONAL SYMBOLS

- C — CUT LINE
- F — FILL LINE
- NEW BLOCK WALL
- DECORATIVE PAVEMENT
- S — SAWCUT & MATCH EXISTING
- M — MATCH EXISTING
- 3231 — PROPERTY ADDRESS NUMBER
- PCC PAVEMENT

NOTES (cont.)

UNLESS OTHERWISE PROVIDED ON THE PLANS:

- THE SPACE BETWEEN THE BACK OF NEW DRIVEWAY ENTRANCES AND EXISTING A.C. DRIVEWAYS SHALL BE FILLED WITH A MINIMUM OF 3" A.C.S.C. ON 100% COMPACTED NATIVE SOIL. WHERE EXISTING PAVEMENT AND BASE THICKNESS EXCEED THE MINIMUMS, MATCH THE EXISTING.
- THE SPACE BETWEEN THE BACK OF NEW SIDEWALKS AND EXISTING PRIVATE SIDEWALKS, AND THE SPACE BETWEEN THE BACK OF NEW DRIVEWAY ENTRANCES AND EXISTING P.C.C. DRIVEWAYS SHALL BE FILLED WITH P.C.C., THE THICKNESS AND CLASS SHALL MATCH THAT OF THE NEW SIDEWALK OR DRIVEWAY ENTRANCE.
- THE SPACE BETWEEN THE BACK OF THE NEW SIDEWALKS, AND EXISTING A.C. PARKING LOTS, WHICH FALL WITHIN OR ABUT THE R/W SHALL BE FILLED WITH 2" A.C.S.C. ON 100% COMPACTED NATIVE SOIL.

EXISTING IRRIGATION BERMS DISTURBED BY NEW CONSTRUCTION SHALL BE RECONSTRUCTED AS SHOWN ON PLANS.

CATCH BASIN ACCESS FRAME AND COVERS SHALL BE CONSTRUCTED PER C.O.P. DETAIL P1561.

STRUCTURAL NOTES

"CLEAR" DIMENSIONS FOR DEPTH OF REINFORCING STEEL ARE FROM FACE OF CONCRETE TO FACE OF BARS.

ALL EXPOSED EDGES OF CONCRETE SHALL BE BEVELED OR ROUNDED.

ALL EXPOSED CONCRETE SURFACES SHALL BE FINISHED IN ACCORDANCE WITH ARIZONA DEPT. OF TRANSPORTATION STANDARD SPECIFICATION 601–3.05 – FINISHING CONCRETE, UNLESS OTHERWISE SPECIFIED.

UTILITY COMPANY EMERGENCY CONTACT INFORMATION

COMPANY	NAME	EMAIL	EMERGENCY NUMBER
CITY OF PHOENIX STREET TRANSPORTATION UTILITY COORDINATION	CATHERINE RODGERS	CATHERINE.RODGERS@PHOENIX.GOV	602–262–4972
CITY OF PHOENIX WATER SERVICES DEPARTMENT	JAMI ERICKSON	JAMI.ERICKSON@PHOENIX.GOV	602–261–8229
SRP TRANSMISSION	BEN COX	BENJAMIN.COX@SRPNET.COM	602–236–3725
SRP ELECTRIC (SRPP)/DISTRIBUTION	KEITH FAULKNER	KEITH.FAULKNER@SRPNET.COM	602–653–1387
COX COAXIAL CABLE	BEN BAICH	BENJAMIN.BAICH@COX.COM	623–328–3538
COX FIBER OPTIC CABLE	RANDY SIMS	RANDY.SIMS@COX.COM	623–328–4058
KINDER MORGAN ENERGY, NATURAL GAS PIPELINE (FORMERLY EPNG)	NICKEY LOWDER	NICKEY_LOWDER@KINDERMORGAN.COM	602–438–4229
KINDER MORGAN ENERGY, PETROLEUM PIPELINE	HEATH TOWNSEND	HEATH_TOWNSEND@KINDERMORGAN.COM	602–438–4229
CENTURY LINK	KAREN BROWN	KAREN.BROWN1@CENTURYLINK.COM	480–768–4398
SRP IRRIGATION (SRPI)	SUSANA ORTEGA	SUSANA.ORTEGA@SRPNET.COM	602–236–5799
COP STREET LIGHTING	JASON FERNANDEZ	JASON.FERNANDEZ@PHOENIX.GOV	602–256–4168

ABBREVIATIONS

AP	ANGLE POINT	INV	INVERT	VNAE	VEHICULAR NON–ACCESS EASEMENT
BC	BRASS CAP	JB	JUNCTION BOX	WBV	WATER BLOW–OFF VALVE
BCF	BRASS CAP FLUSH	L	LIP OF GUTTER	WE	WATER EASEMENT
BCR	BEGIN CURB RETURN	LT	LEFT	WM	WATER METER
B/C	BACK OF CURB	PGL	PROFILE GRADE LINE	WMH	WATER MANHOLE
BM	BENCHMARK	POE	POINT OF ENDING	WV	WATER VALVE
BOL	BOLLARD / GUARD POST	RCBC	REINFORCED CONCRETE BOX CULVERT		
CB	CATCH BASIN	RE	ROADWAY EASEMENT		
CST	CONSTRUCTION	RGRCP	RUBBER GASKET REINFORCED CONCRETE PIPE		
℄	CENTERLINE	RT	RIGHT		
DE	DRAINAGE EASEMENT	R/W	RIGHT OF WAY		
DNGY	DOWN GUY	SCPR	SCUPPER		
EC	ELECTRICAL CABINET	SDMH	STORM DRAIN MANHOLE		
ECR	END CURB RETURN	SGN	SIGN		
EE	ELECTRICAL EASEMENT	SE	SUPERELEVATION		
EM	ELECTRICAL METER	SLE	SLOPE EASEMENT		
EMH	ELECTRICAL MANHOLE	SSMH	SANITARY SEWER MANHOLE		
EOP	EDGE OF PAVEMENT	STLT	STREET LIGHT		
EPB	ELECTRICAL PULL BOX	S/W	SIDEWALK		
F	FENCE	SWE	SIDEWALK EASEMENT		
F/B	FACE OF BARRIER	TC	TOP OF CURB		
F/C	FACE OF CURB	TCE	TEMPORARY CONSTRUCTION EASEMENT		
FF	FACE TO FACE	TE	TELEPHONE EASEMENT		
FL	FLOW LINE	TMH	TELEPHONE MANHOLE		
FO	FIBER OPTIC	TON	TOP OF NUT		
G	GUTTER	TPED	TELEPHONE PEDESTAL		
GM	GAS METER	TS	TRAFFIC SIGNAL		
GMK	GAS MARKER SIGN	TSC	TRAFFIC SIGNAL CABINET		
GRATE	STORM DRAIN GRATE	TSPB	TRAFFIC SIGNAL PULL BOX		
GV	GAS VALVE	TVPB	TV PULL BOX		
HH	HANDHOLE	TYP	TYPICAL		
IBX	IRRIGATION CONTROL BOX				
ICV	IRRIGATION CONTROL VALVE				

Registered Professional Engineer – Certificate No. 50080 – Daniel V. Voigt – Arizona, U.S.A. – Expires 9/30/15

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL
9	ARIZ.	ST85100334	02	157

PREMIER
ENGINEERING CORPORATION
6437 W. CHANDLER BLVD., SUITE 1
CHANDLER, AZ 85226; 480–829–6000
CONSULTING ENGINEER

DR: JRR	DES: DVV	CK: SHM	DATE: 01/14

CALL TWO WORKING DAYS BEFORE YOU DIG! CALL FOR THE BLUE STAKES
602-263-1100
1-800-STAKE-IT
OUTSIDE MARICOPA COUNTY

PREMIER ENGINEERING
PROJECT NO.: 2010011

LEGEND & NOTES SHEET

CITY OF PHOENIX STREET TRANSPORTATION DEPARTMENT DESIGN AND CONSTRUCTION MANAGEMENT DIVISION

AVENIDA RIO SALADO/BROADWAY ROAD
51ST AVENUE TO 43RD AVENUE
ST85100334

DR: JRR	DES: DVV	CK: SHM	DWG
DATE: 01/14	DATE: 01/14	DATE: 01/14	NO:
SCALE: NONE			G–1.02

ST85100334

P:\2010011\CADD\Civil\Sheets\ST85100334LN.dwg dvoigt Jan 23, 2014 – 7:43am

AVENIDA RIO SALADO/BROADWAY ROAD
51ST AVENUE TO 43RD AVENUE
PHOENIX STREETS – MARICOPA CO.

T.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL
9	ARIZ.	ST85100334	05	157

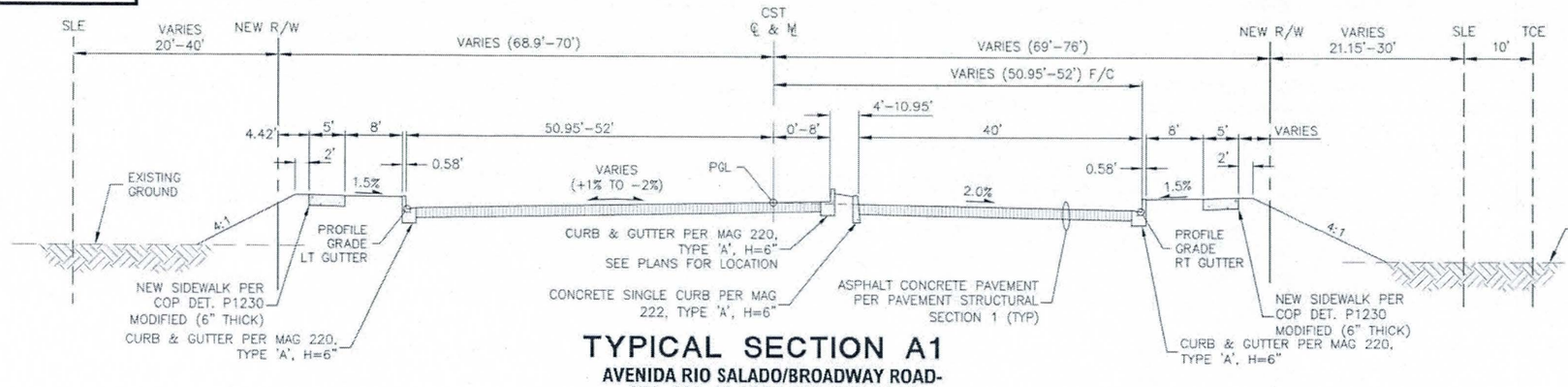
PREMIER
ENGINEERING CORPORATION
6437 W. CHANDLER BLVD., SUITE 1
CHANDLER, AZ 85226; 480-829-6000
CONSULTING ENGINEER

DR: JRR | DES: DW | CK: SHM | DATE: 01/14

50080 DANIEL V VOIGT — Registered Professional Engineer — CERTIFICATE NO. — Civil — State of Arizona, U.S.A. — Expires 9/30/15

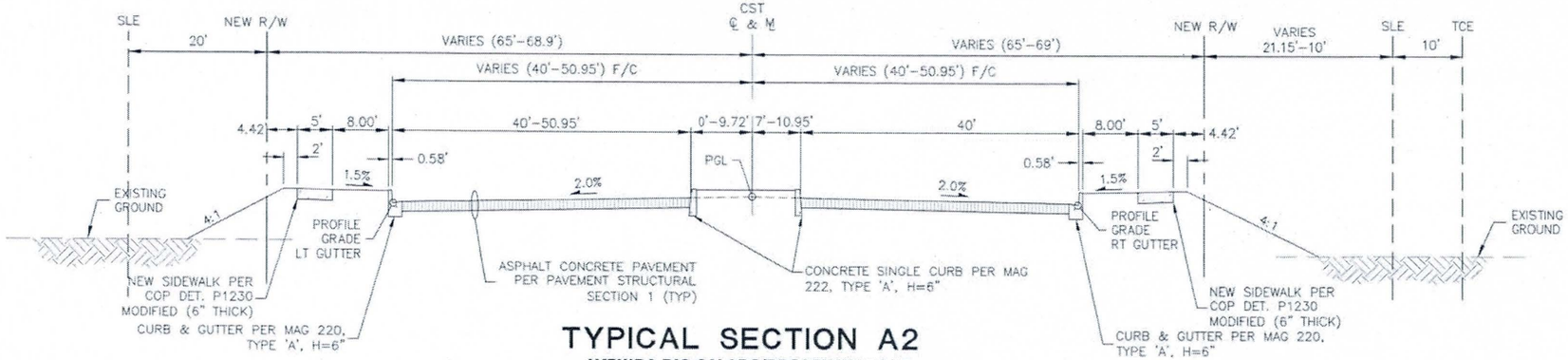
REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE



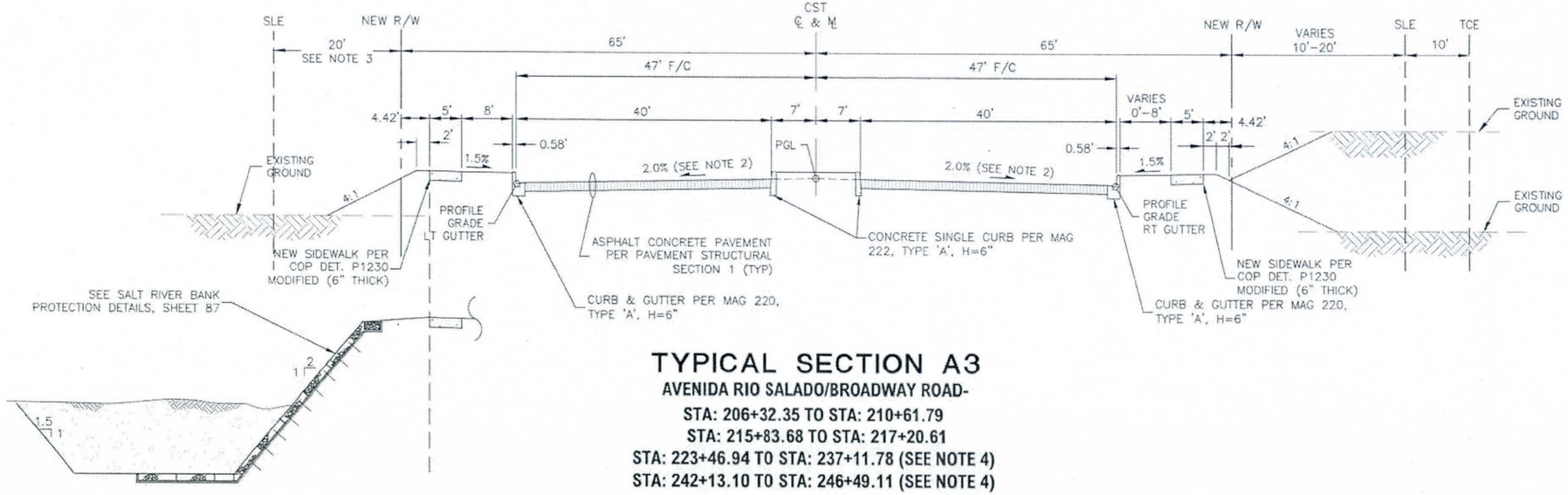
TYPICAL SECTION A1

AVENIDA RIO SALADO/BROADWAY ROAD-
STA: 200+82.35 TO STA: 203+94.69



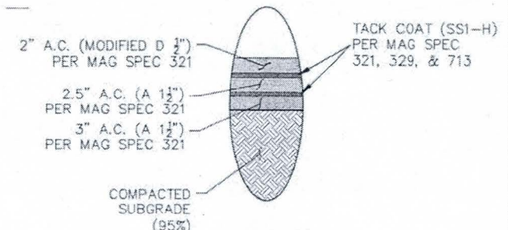
TYPICAL SECTION A2

AVENIDA RIO SALADO/BROADWAY ROAD-
STA: 203+94.69 TO STA: 206+32.35

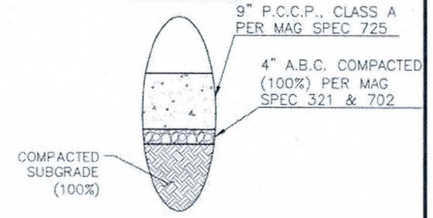


TYPICAL SECTION A3

AVENIDA RIO SALADO/BROADWAY ROAD-
STA: 206+32.35 TO STA: 210+61.79
STA: 215+83.68 TO STA: 217+20.61
STA: 223+46.94 TO STA: 237+11.78 (SEE NOTE 4)
STA: 242+13.10 TO STA: 246+49.11 (SEE NOTE 4)



PAVEMENT STRUCTURAL SECTION 1



PAVEMENT STRUCTURAL SECTION 2

NOTES

1. MEDIANS ARE UNPAVED UNLESS NOTED OTHERWISE (SEE DETAILS, SHEET 11)
2. PAVEMENT SUPERELEVATION TRANSITION FROM –2% @ STA 245+05.06 TO –3.4% @ STA 246+49.11 (LEFT)
   –2% @ STA 243+31.12 TO +3.4% @ STA 246+49.11 (RIGHT)
3. SLE AND TCE TERMINATE AT STA 227+14.50. ADDITIONAL 150' OF QC DEED PRESENT. SEE R/W PLANS.
4. STA 228+50 TO 252+00 SEE BANK PROTECTION DETAILS
5. STRUCTURAL SECTION #2 FROM STA 218+68.92 TO STA 222+71.09

CALL TWO WORKING DAYS BEFORE YOU DIG! CALL FOR THE BLUE STAKES
602-263-1100
1-800-STAKE-IT
OUTSIDE MARICOPA COUNTY

PREMIER ENGINEERING
PROJECT NO.: 2010011

TYPICAL SECTIONS

CITY OF PHOENIX STREET TRANSPORTATION DEPARTMENT DESIGN AND CONSTRUCTION MANAGEMENT DIVISION

AVENIDA RIO SALADO/BROADWAY ROAD
51ST AVENUE TO 43RD AVENUE
ST85100334

DR: JRR	DES: DW	CK: SHM	DWG NO:
DATE: 01/14	DATE: 01/14	DATE: 01/14	
SCALE: N.T.S.			G-2.01

ST85100334

P:\2010011\CADD\Civil\Sheets\ST85100334TY01.dwg dvoigt Jan 23, 2014 – 7:44am

AVENIDA RIO SALADO/BROADWAY ROAD
51ST AVENUE TO 43RD AVENUE
PHOENIX STREETS – MARICOPA CO.

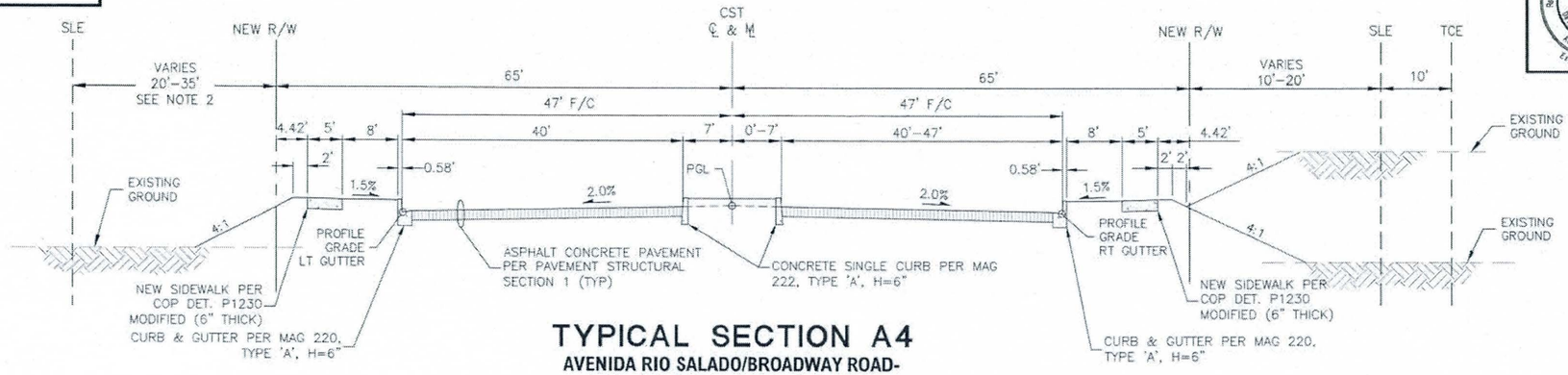
F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL
9	ARIZ.	ST85100334	06	157

PREMIER
ENGINEERING CORPORATION
6437 W. CHANDLER BLVD., SUITE 1
CHANDLER, AZ 85226; 480-829-6000
CONSULTING ENGINEER

DR: JRR	DES: DVV	CK: SHM	DATE: 01/14

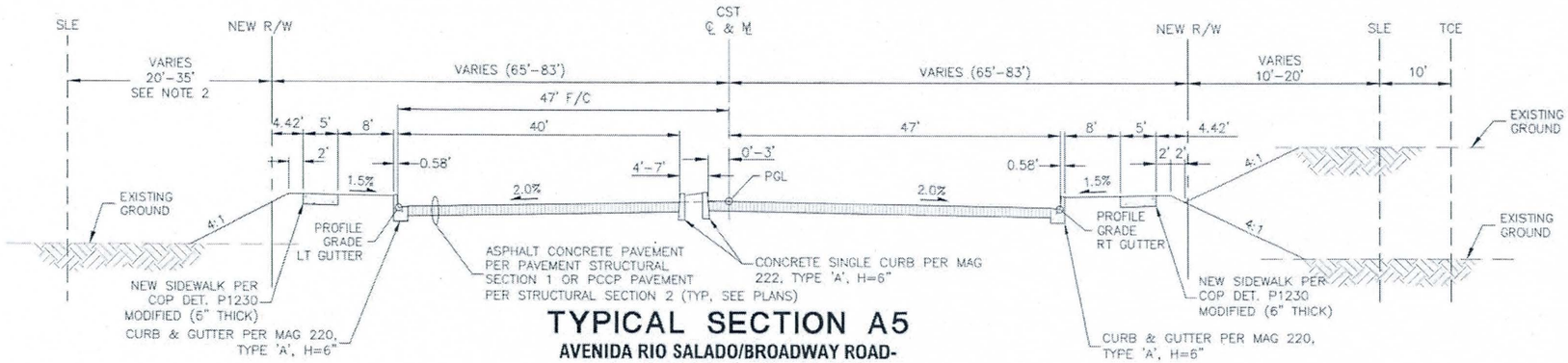
REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE



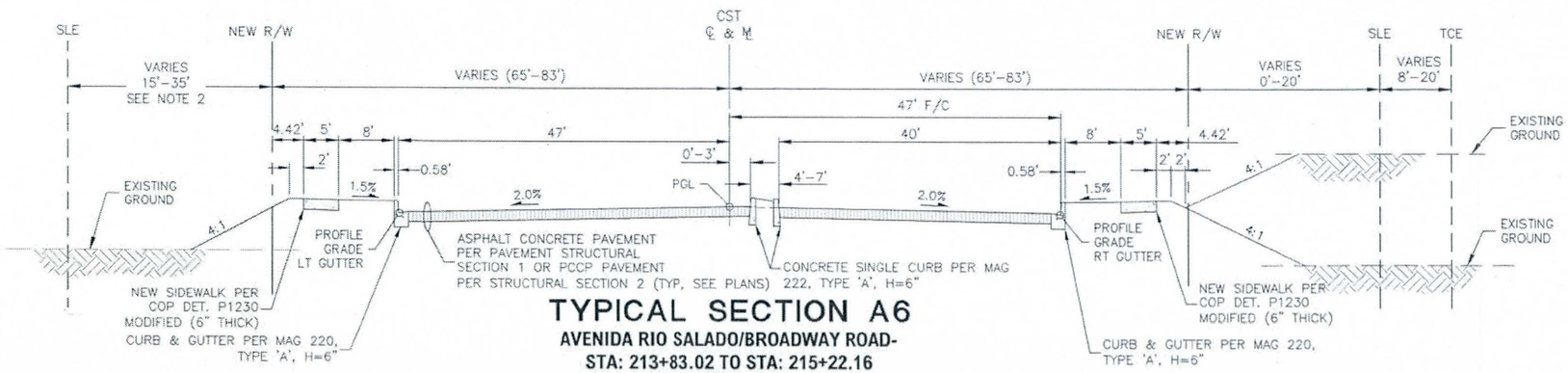
TYPICAL SECTION A4

AVENIDA RIO SALADO/BROADWAY ROAD-
STA: 210+61.79 TO STA: 211+23.31
STA: 217+20.61 TO STA: 217+82.13
STA: 237+11.78 TO STA: 237+73.31 (SEE NOTE 3)



TYPICAL SECTION A5

AVENIDA RIO SALADO/BROADWAY ROAD-
STA: 211+23.31 TO STA: 212+62.45
STA: 217+82.13 TO STA: 219+73.27
STA: 237+73.31 TO STA: 239+12.44 (SEE NOTE 3)



TYPICAL SECTION A6

AVENIDA RIO SALADO/BROADWAY ROAD-
STA: 213+83.02 TO STA: 215+22.16
STA: 220+94.28 TO STA: 222+85.41
STA: 240+12.44 TO STA: 242+13.10 (SEE NOTE 3)

NOTES

1. MEDIANS ARE UNPAVED UNLESS NOTED OTHERWISE (SEE DETAILS, SHEET 11)
2. SLE AND TCE TERMINATE AT STA 227+14.50. ADDITIONAL 150' OF QC DEED PRESENT. SEE R/W PLANS.
3. STRUCTURAL SECTION #2 FROM STA 218+68.92 TO STA 222+71.09

CALL TWO WORKING DAYS BEFORE YOU DIG
CALL FOR THE BLUE STAKES
602-263-1100
1-800-STAKE-IT
OUTSIDE MARICOPA COUNTY

PREMIER ENGINEERING
PROJECT NO.: 2010011

TYPICAL SECTIONS

CITY OF PHOENIX STREET TRANSPORTATION DEPARTMENT DESIGN AND CONSTRUCTION MANAGEMENT DIVISION

AVENIDA RIO SALADO/BROADWAY ROAD
51ST AVENUE TO 43RD AVENUE
ST85100334

DR: JRR	DES: DVV	CK: SHM	DWG NO:
DATE: 01/14	DATE: 01/14	DATE: 01/14	
SCALE: N.T.S.			G-2.02

ST85100334

P:\2010011\CADD\Civil\Sheets\ST85100334TY03.dwg dvoigt Jan 23, 2014 – 7:44am

AVENIDA RIO SALADO/BROADWAY ROAD
51ST AVENUE TO 43RD AVENUE
PHOENIX STREETS – MARICOPA CO.

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL
9	ARIZ.	ST85100334	07	157

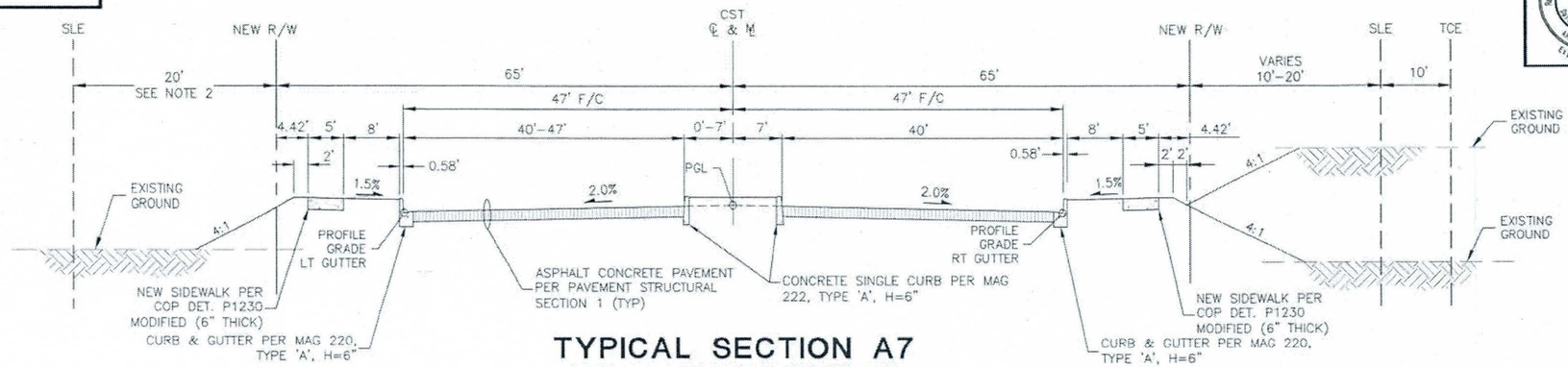
50080 DANIEL V VOIGT — Registered Professional Engineer (Civil) — Certificate No. — Date Signed 01-07-14 — Arizona, U.S.A. — Expires 9/30/15

PREMIER
ENGINEERING CORPORATION
6437 W. CHANDLER BLVD., SUITE 1
CHANDLER, AZ 85226; 480-829-6000
CONSULTING ENGINEER

DR: JRR	DES: DVV	CK: SHM	DATE: 01/14

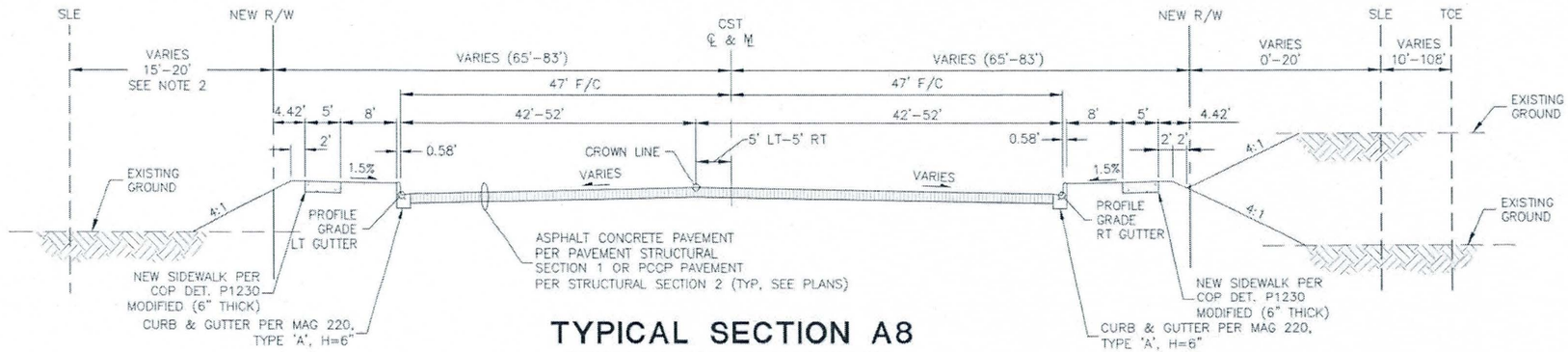
REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE



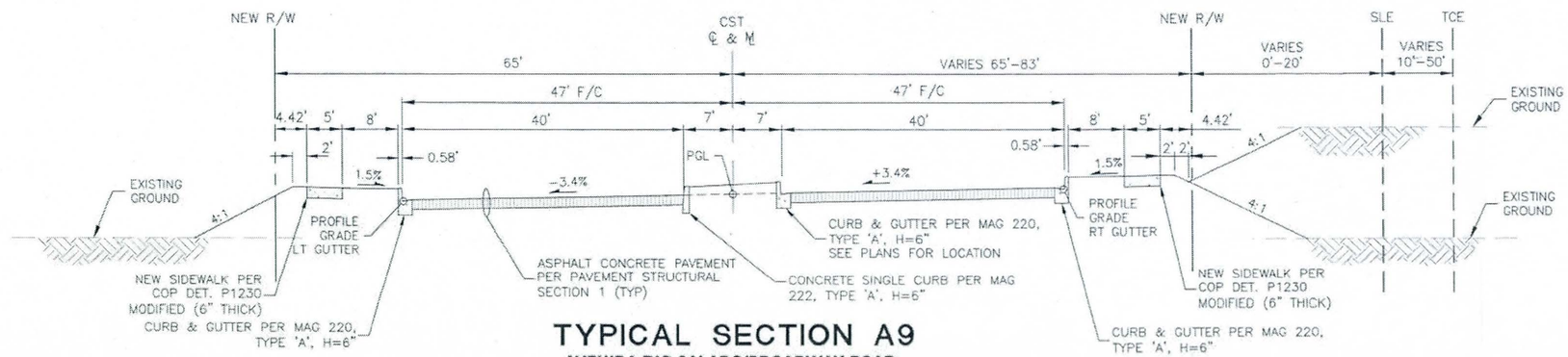
TYPICAL SECTION A7

AVENIDA RIO SALADO/BROADWAY ROAD-
STA: 215+22.16 TO STA: 215+83.68
STA: 222+85.41 TO STA: 223+46.94
STA: 241+51.58 TO STA: 242+13.10 (SEE NOTE 3)



TYPICAL SECTION A8

AVENIDA RIO SALADO/BROADWAY ROAD-
STA: 212+62.45 TO STA: 213+83.02
STA: 219+73.27 TO STA: 220+94.28
STA: 239+12.44 TO STA: 240+12.44 (SEE NOTE 3)



TYPICAL SECTION A9

AVENIDA RIO SALADO/BROADWAY ROAD-
STA: 246+49.11 TO STA: 250+50.00 (SEE NOTE 3)

NOTES

1. MEDIANS ARE UNPAVED UNLESS NOTED OTHERWISE (SEE DETAILS, SHEET 11)
2. SLE AND TCE TERMINATE AT STA 227+14.50. ADDITIONAL 150' OF QC DEED PRESENT. SEE R/W PLANS.
3. STRUCTURAL SECTION #2 FROM STA 218+68.92 TO STA 222+71.09

CALL TWO WORKING DAYS BEFORE YOU DIG! CALL FOR THE BLUE STAKES
602-263-1100
1-800-STAKE-IT
OUTSIDE MARICOPA COUNTY

PREMIER ENGINEERING
PROJECT NO.: 2010011

TYPICAL SECTIONS

CITY OF PHOENIX STREET TRANSPORTATION DEPARTMENT DESIGN AND CONSTRUCTION MANAGEMENT DIVISION

AVENIDA RIO SALADO/BROADWAY ROAD
51ST AVENUE TO 43RD AVENUE
ST85100334

DR: JRR	DES: DVV	CK: SHM	DWG NO:
DATE:01/14	DATE: 01/14	DATE: 01/14	
SCALE: N.T.S.			G-2.03

ST85100334

P:\2010011\CADD\Civil\Sheets\ST85100334TY04.dwg dvoigt Jan 23, 2014 – 7:45am

AVENIDA RIO SALADO/BROADWAY ROAD
51ST AVENUE TO 43RD AVENUE
PHOENIX STREETS – MARICOPA CO.

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL
9	ARIZ.	ST85100334	08	157

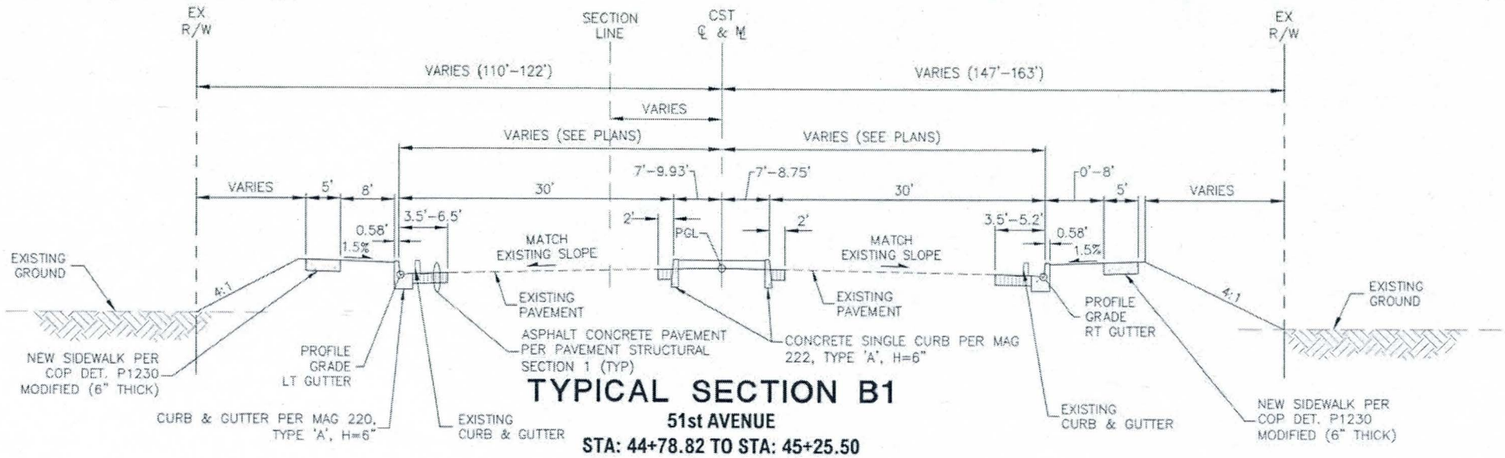
50080 DANIEL V VOIGT — CERTIFICATE NO. — REGISTERED PROFESSIONAL ENGINEER (CIVIL) — DATE SIGNED 9/30/15 — ARIZONA, U.S.A.

PREMIER
ENGINEERING CORPORATION
6437 W. CHANDLER BLVD., SUITE 1
CHANDLER, AZ 85226; 480-829-5000
CONSULTING ENGINEER

DR: JRR	DES: DVV	CK: SHM	DATE: 01/14

REVISION BY CITY OF PHOENIX

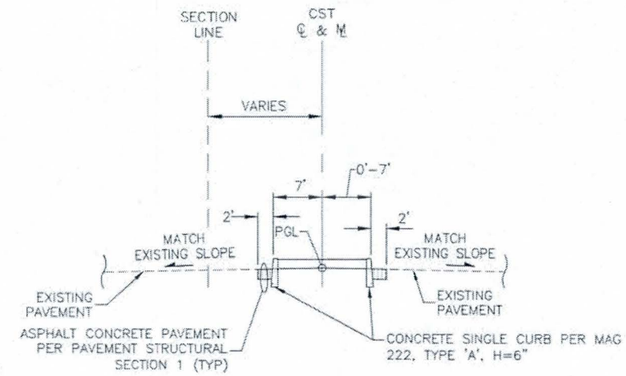
NO.	DESCRIPTION	REV BY	CKD BY	DATE



TYPICAL SECTION B1

51st AVENUE

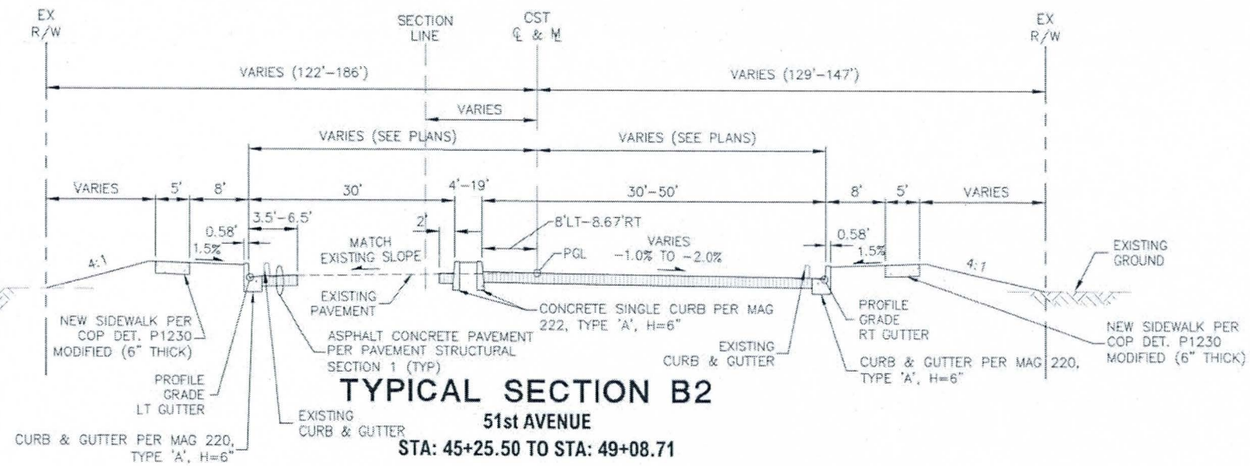
STA: 44+78.82 TO STA: 45+25.50



TYPICAL SECTION B4

51st AVENUE

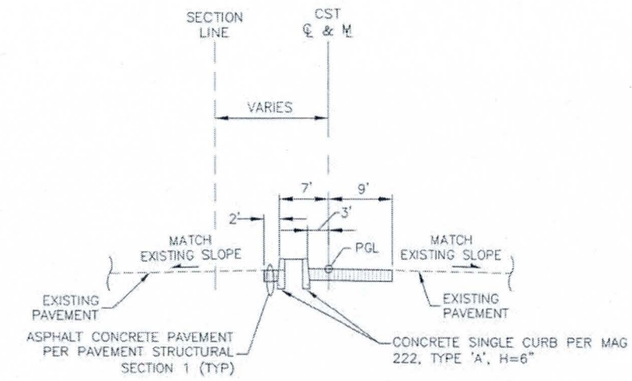
STA: 42+85.07 TO STA: 41+68.19



TYPICAL SECTION B2

51st AVENUE

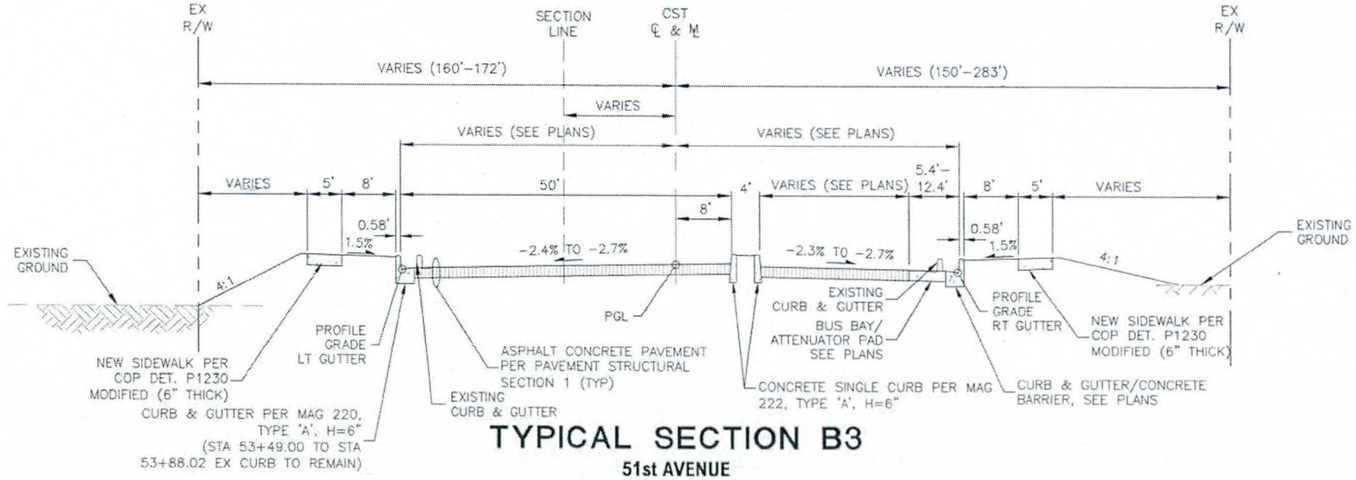
STA: 45+25.50 TO STA: 49+08.71



TYPICAL SECTION B5

51st AVENUE

STA: 41+68.19 TO STA: 43+07.40



TYPICAL SECTION B3

51st AVENUE

STA: 50+89.86 TO STA: 53+88.02

NOTES

1. MEDIANS ARE UNPAVED UNLESS NOTED OTHERWISE (SEE DETAILS, SHEET 11)

602-263-1100
1-800-STAKE-IT

PREMIER ENGINEERING
PROJECT NO.: 2010011

TYPICAL SECTIONS

CITY OF PHOENIX STREET TRANSPORTATION DEPARTMENT DESIGN AND CONSTRUCTION MANAGEMENT DIVISION

AVENIDA RIO SALADO/BROADWAY ROAD
51ST AVENUE TO 43RD AVENUE
ST85100334

DR: JRR	DES: DVV	CK: SHM	DWG NO:
DATE: 01/14	DATE: 01/14	DATE: 01/14	
SCALE: N.T.S.			G-2.04

ST85100334

AVENIDA RIO SALADO/BROADWAY ROAD
51ST AVENUE TO 43RD AVENUE
PHOENIX STREETS – MARICOPA CO.

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL
9	ARIZ.	ST85100334	09	157

PREMIER
ENGINEERING CORPORATION
6437 W. CHANDLER BLVD., SUITE 1
CHANDLER, AZ 85226; 480-829-6000
CONSULTING ENGINEER

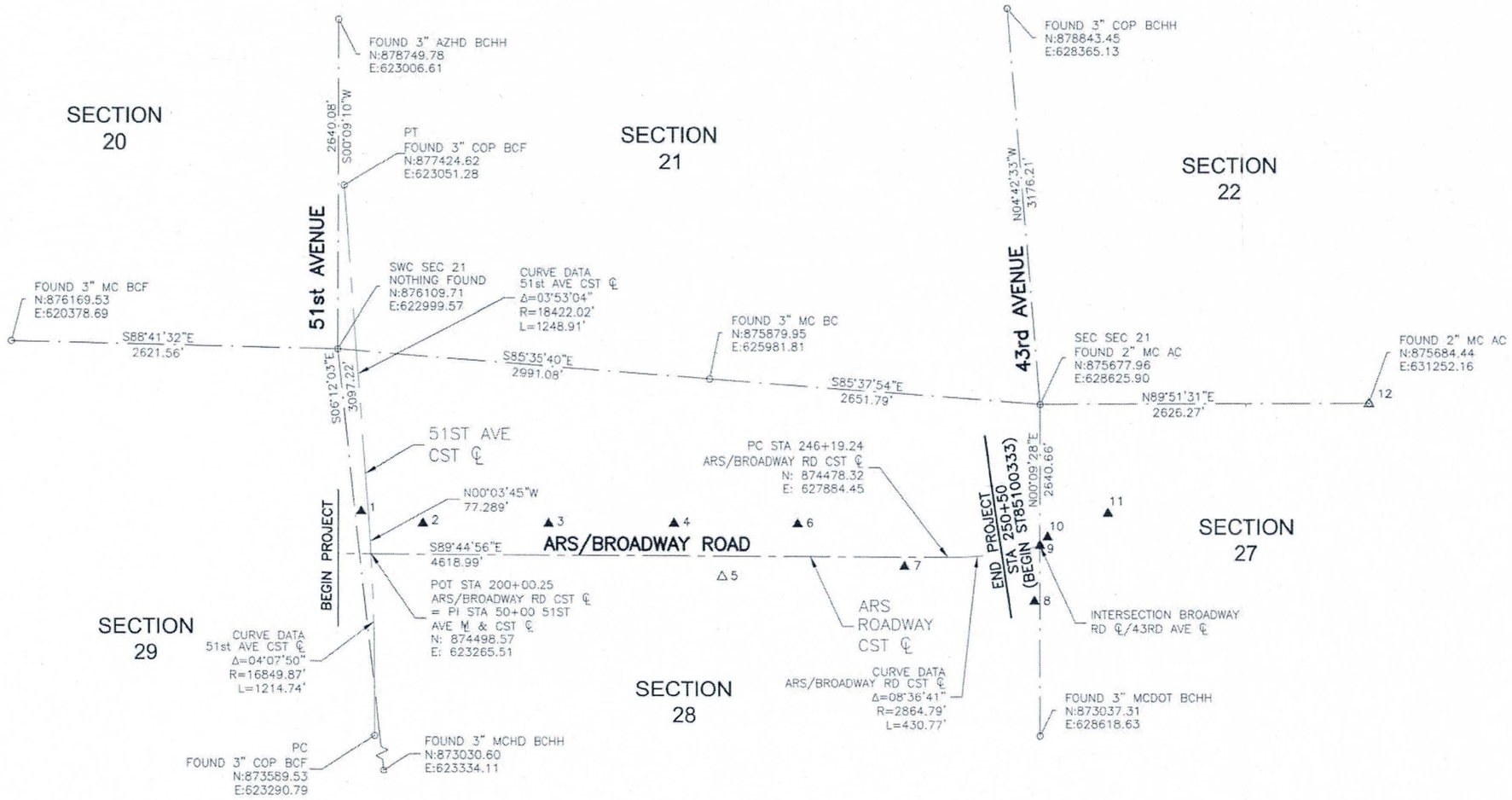
DR: DG | DES: MAL | CK: SHM | DATE: 01/14

Registered Professional Engineer CERTIFICATE NO. 50080 DANIEL V VOIGT ARIZONA U.S.A. Expires 6/30/15

City of Phoenix
N

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE



PROJECT BENCHMARKS

No.	TYPE	ELEVATION	NORTHING	EASTING	STA	OFFSET	DESCRIPTION
1	SET 1/2" REBAR	1021.91	874834.62	623189.22	199+22.48	335.71 LT	TEMPORARY BENCHMARK
2	SET 1/2" REBAR	1011.14	874743.11	623682.63	204+16.30	246.36' LT	TEMPORARY BENCHMARK
3	SET 1/2" REBAR	1013.85	874741.84	624688.23	214+21.89	249.50' LT	TEMPORARY BENCHMARK
4	SET 1/2" REBAR	1010.48	874745.35	625691.69	224+25.33	257.42' LT	TEMPORARY BENCHMARK
5	FND 1 1/4" REBAR AZTEC BM	1019.43	874320.97	626078.18	228+13.67	165.27' RT	PROJECT BENCHMARK
6	SET 1/2" REBAR	1009.30	874742.20	626682.47	234+16.10	258.60' LT	TEMPORARY BENCHMARK
7	SET 1/2" REBAR	1024.47	874402.95	627538.20	242+73.32	76.89' RT	TEMPORARY BENCHMARK
8	SET 1/2" REBAR	1024.91	874121.54	628577.24	252+27.94	427.78' RT	TEMPORARY BENCHMARK
9	FND 3" BCHH COP C-0.4_D	1023.40	874571.88	628622.87	253+65.68	0.10' LT	TEMPORARY BENCHMARK
10	SET PK NAIL	1023.10	874639.91	628685.02	N/A	N/A	TEMPORARY BENCHMARK
11	SET PK NAIL	1023.91	874826.23	629168.65	N/A	N/A	TEMPORARY BENCHMARK
12	2" MC AC	1027.74	875684.44	631252.16	N/A	N/A	PROJECT BENCHMARK

LEGEND

- SECTION LINE
- SECTION/QUARTER CORNER
- CENTERLINE
- ▲ TEMPORARY BENCHMARK
- △ PROJECT BENCHMARK

City of Phoenix
N

GRAPHIC SCALE
500 0 250 500
1 INCH = 500 FT

CALL TWO WORKING DAYS BEFORE YOU DIG
CALL FOR THE BLUE STAKES
602-263-1100
1-800-STAKE-IT
OUTSIDE MARICOPA COUNTY

PREMIER ENGINEERING
PROJECT NO.: 2010011

SURVEY CONTROL SHEET

CITY OF PHOENIX STREET TRANSPORTATION DEPARTMENT DESIGN AND CONSTRUCTION MANAGEMENT DIVISION

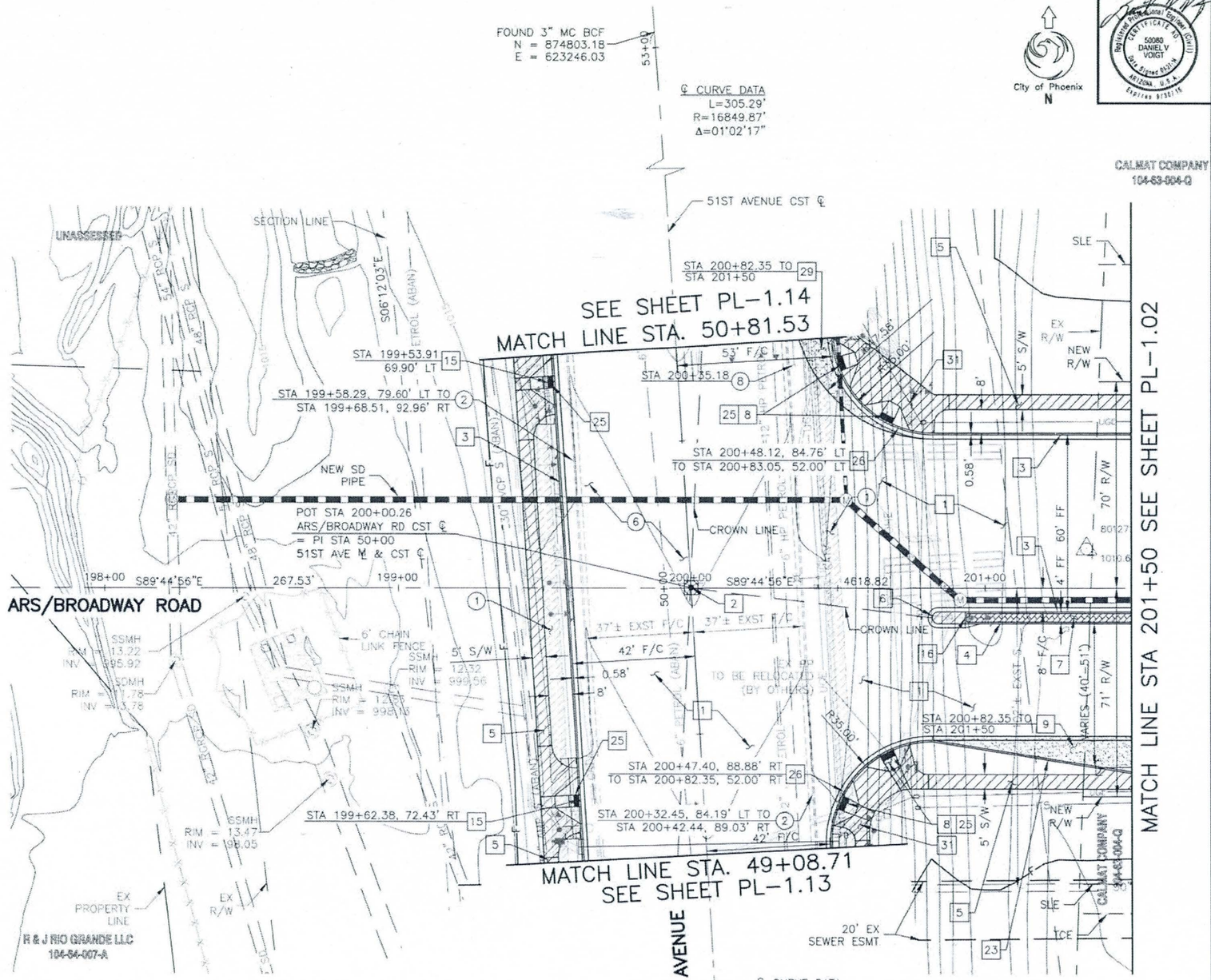
AVENIDA RIO SALADO/BROADWAY ROAD
51ST AVENUE TO 43RD AVENUE
ST85100334

DR: DG	DES: MAL	CK: SHM	DWG NO:
DATE: 01/14	DATE: 01/14	DATE: 01/14	G-3.01
SCALE: 1"=500'			

ST85100334

P:\20100111\CADD\Civil\Sheets\ST85100334GE01.dwg dvoigt Jan 23, 2014 - 7:45am

AVENIDA RIO SALADO/BROADWAY ROAD
51ST AVENUE TO 43RD AVENUE
PHOENIX STREETS – MARICOPA CO.



▲ T.B.M.: SET 1/2" REBAR AT
STA 199+22.48, 335.71' LT
ELEV = 1021.91

NOTES:
1. ATTACH SIDEWALK ADJACENT TO SRP EQUIPMENT PADS, SEE SRP PLANS FOR PAD LOCATIONS. MAINTAIN 12" CLEAR FROM EDGE OF PAD TO BACK OF SIDEWALK. MAINTAIN 3' CLEAR FROM EDGE OF PAD ON EACH SIDE.
2. FOR LANDSCAPE IRRIGATION SLEEVE SIZES AND LOCATIONS SEE LANDSCAPE IRRIGATION PLAN SHEETS.

SHEET REFERENCES

1. SEE SHEET 12 FOR MEDIAN DETAILS
2. SEE SHEET 59 FOR STORM DRAIN PLAN
3. SEE SHEET 71 FOR CB CONN PIPE PROFILE
4. SEE SHEET 47 FOR INTERSECTION STAKING

City of Phoenix
N

50080 DANIEL V VOIGT
Professional Engineer
CERTIFICATE NO.
Date Signed 8/31/15
ARIZONA, U.S.A.
Expires 8/31/15

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL
9	ARIZ.	ST85100334	15	157

PREMIER
ENGINEERING CORPORATION
6437 W. CHANDLER BLVD., SUITE 1
CHANDLER, AZ 85226, 480-829-6000
CONSULTING ENGINEER

DR: JRR | DES: DW | CK: SHM | DATE: 01/14

REMOVAL/RELOCATION NOTES

NO	DESCRIPTION	UNIT	QTY
1	REMOVE PORTLAND CEMENT CONCRETE SIDEWALK, DRIVEWAY, VALLEY GUTTER, & SLAB	SF	1735
2	REMOVE PORTLAND CEMENT CONCRETE SINGLE CURB AND CURB & GUTTER	LF	347
6	REMOVE ASPHALT CONCRETE PAVEMENT	SY	1367
8	REMOVE EXISTING GUARD RAIL	LF	11

CONSTRUCTION NOTES

NO	DESCRIPTION	UNIT	QTY
	SUBGRADE PREPARATION	SY	2813
1	ASPHALTIC CONCRETE SURFACE COURSE, (D 1/2), 2" THICK	TON	321
1	ASPHALTIC CONCRETE BASE COURSE, (A1-1/2), 5-1/2" THICK	TON	882
1	EMULSIFIED ASPHALT FOR TACK COAT, TYPE SS-1H	TON	1.9
2	SURVEY MARKER, M.A.G. DET. 120-1, TYPE A	EA	1
3	CURB & GUTTER, M.A.G. DET. 220 TYPE A, H=6"	LF	436
4	SINGLE CURB, M.A.G. DET. 222 TYPE A, H=6"	LF	63
5	CONCRETE SIDEWALK, C.O.P. DET. P1230 (6" THICK)	SF	1809
6	CONCRETE MEDIAN NOSE, SEE DETAIL SHEET 11	SF	42
	ASPHALT CONCRETE SURFACE COURSE, TYPE D ½, 2-½" THICK	TON	2.2
7	AGGREGATE BASE COURSE, 4" THICK	TON	3.5
	STAMPED ASPHALT DECORATIVE PAVEMENT	SF	145
8	CONCRETE SIDEWALK RAMP, C.O.P. DET. P1233 (9" THICK)	N/A	–
9	9" THICK CONC. PVMT. CLASS "A" PER M.A.G. SPECS & C.O.P. DET. P1256-1	SF	255
15	CONSTRUCT SIDEWALK RAMP, C.O.P. DET. P1241-2	N/A	–
16	SINGLE CURB, M.A.G. DET. 222 TYPE B, H=6"	LF	4
23	CONCRETE SINGLE CURB, M.A.G. DET. 222, TYPE 'A' MOD FOR BUS BAYS	LF	69
25	CONSTRUCT TRUNCATED DOMES PER C.O.P. DET. P1232	SF	48
26	CURB & GUTTER, M.A.G. DET. 220 TYPE A, H=6" (9" THICK)	LF	110
29	9" THICK CONC. PVMT. CLASS "A" PER MAG SPECS & C.O.P. DET. P1256-1 (PAVEMENT ONLY)	SF	204
31	CONCRETE SIDEWALK, C.O.P. DET. P1233 (9" THICK)	SF	1142

CALL TWO WORKING DAYS BEFORE YOU DIG
CALL FOR THE BLUE STAKES
602-263-1100
1-800-STAKE-IT
OUTSIDE MARICOPA COUNTY

PREMIER ENGINEERING
PROJECT NO.: 20100011

PAVING PLAN

CITY OF PHOENIX STREET TRANSPORTATION
DEPARTMENT DESIGN AND CONSTRUCTION
MANAGEMENT DIVISION

AVENIDA RIO SALADO/BROADWAY ROAD
51ST AVENUE TO 43RD AVENUE
ST85100334

DR: JRR	DES: DW	CK: SHM	DWG NO:
DATE: 01/14	DATE: 01/14	DATE: 01/14	
SCALE: 1"=20'			PL-1.01

ST85100334

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

AVENIDA RIO SALADO/BROADWAY ROAD
51ST AVENUE TO 43RD AVENUE
PHOENIX STREETS – MARICOPA CO.

▲ T.B.M.: SET 1/2" REBAR AT STA 199+22.48, 335.71' LT ELEV = 1021.91

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL
9	ARIZ.	ST85100334	16	157

50080 DANIEL V VOIGT — Registered Professional Engineer — CERTIFICATE NO. — ARIZONA, U.S.A. — Expires 9/30/15

PREMIER
ENGINEERING CORPORATION
6437 W. CHANDLER BLVD., SUITE 1
CHANDLER, AZ 85226; 480-829-6000
CONSULTING ENGINEER

DR: JRR	DES: DVV	CK: SHM	DATE: 01/14

REVISION BY CITY OF PHOENIX

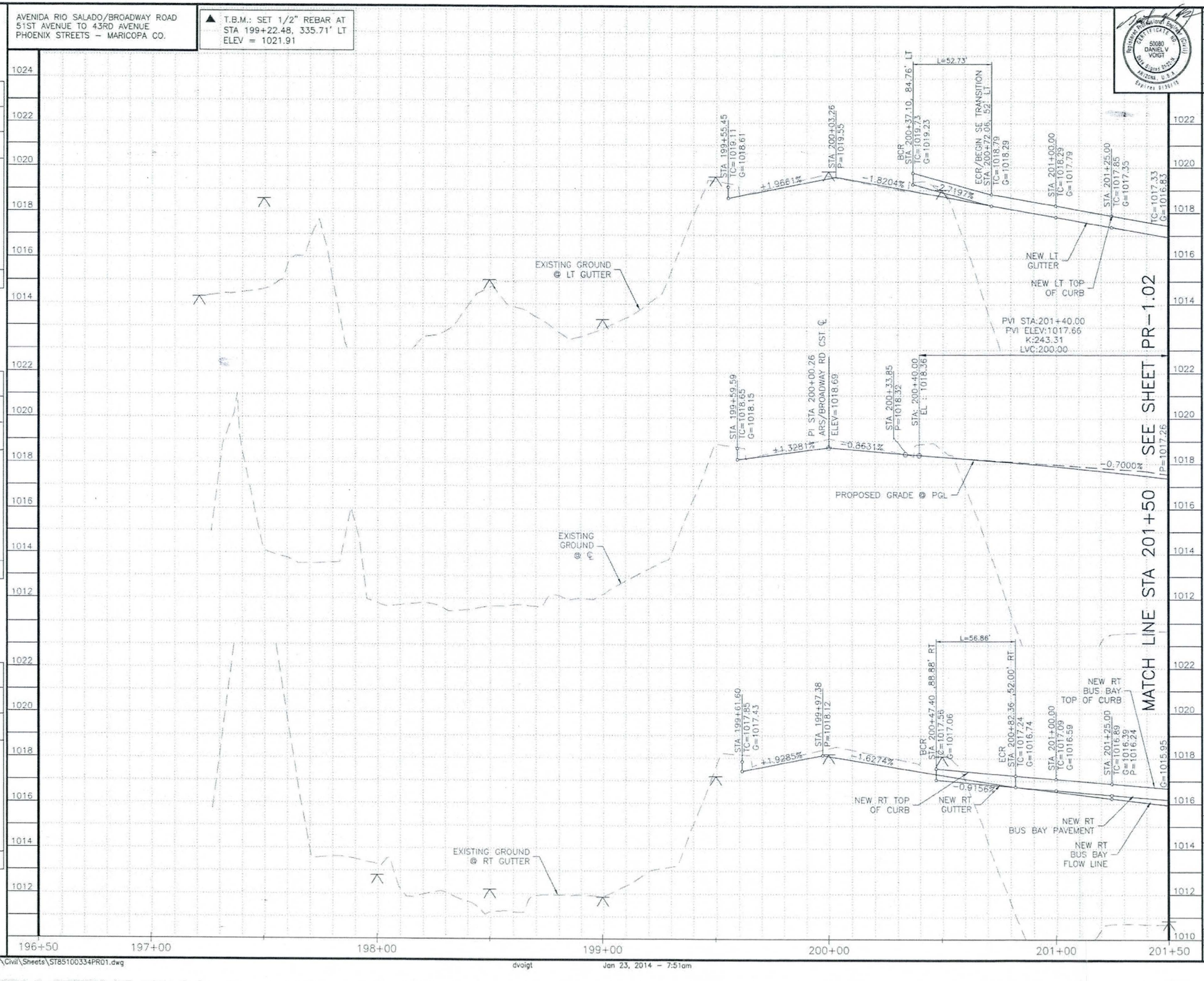
NO.	DESCRIPTION	REV BY	CKD BY	DATE

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE



NOTE

SEE PAVING PLAN SHEETS FOR MEDIAN ISLAND CONSTRUCTION.

602-263-1100
1-800-STAKE-IT
OUTSIDE MARICOPA COUNTY

PREMIER ENGINEERING
PROJECT NO.: 20100011

PAVING PROFILE

CITY OF PHOENIX STREET TRANSPORTATION DEPARTMENT DESIGN AND CONSTRUCTION MANAGEMENT DIVISION

AVENIDA RIO SALADO/BROADWAY ROAD
51ST AVENUE TO 43RD AVENUE
ST85100334

DR: JRR	DES: DVV	CK: SHM	DWG NO:
DATE: 01/14	DATE: 01/14	DATE: 01/14	
SCALE: 1"=20' H, 1"= 2' V			PR-1.01

ST85100334

P:\2010011\CADD\Civil\Sheets\ST85100334PR01.dwg dvoigt Jan 23, 2014 – 7:51am

AVENIDA RIO SALADO/BROADWAY ROAD
51ST AVENUE TO 43RD AVENUE
PHOENIX STREETS – MARICOPA CO.

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL
9	ARIZ.	ST85100334	17	157

PREMIER
ENGINEERING CORPORATION
6437 W. CHANDLER BLVD., SUITE 1
CHANDLER, AZ 85226; 480-829-6000
CONSULTING ENGINEER

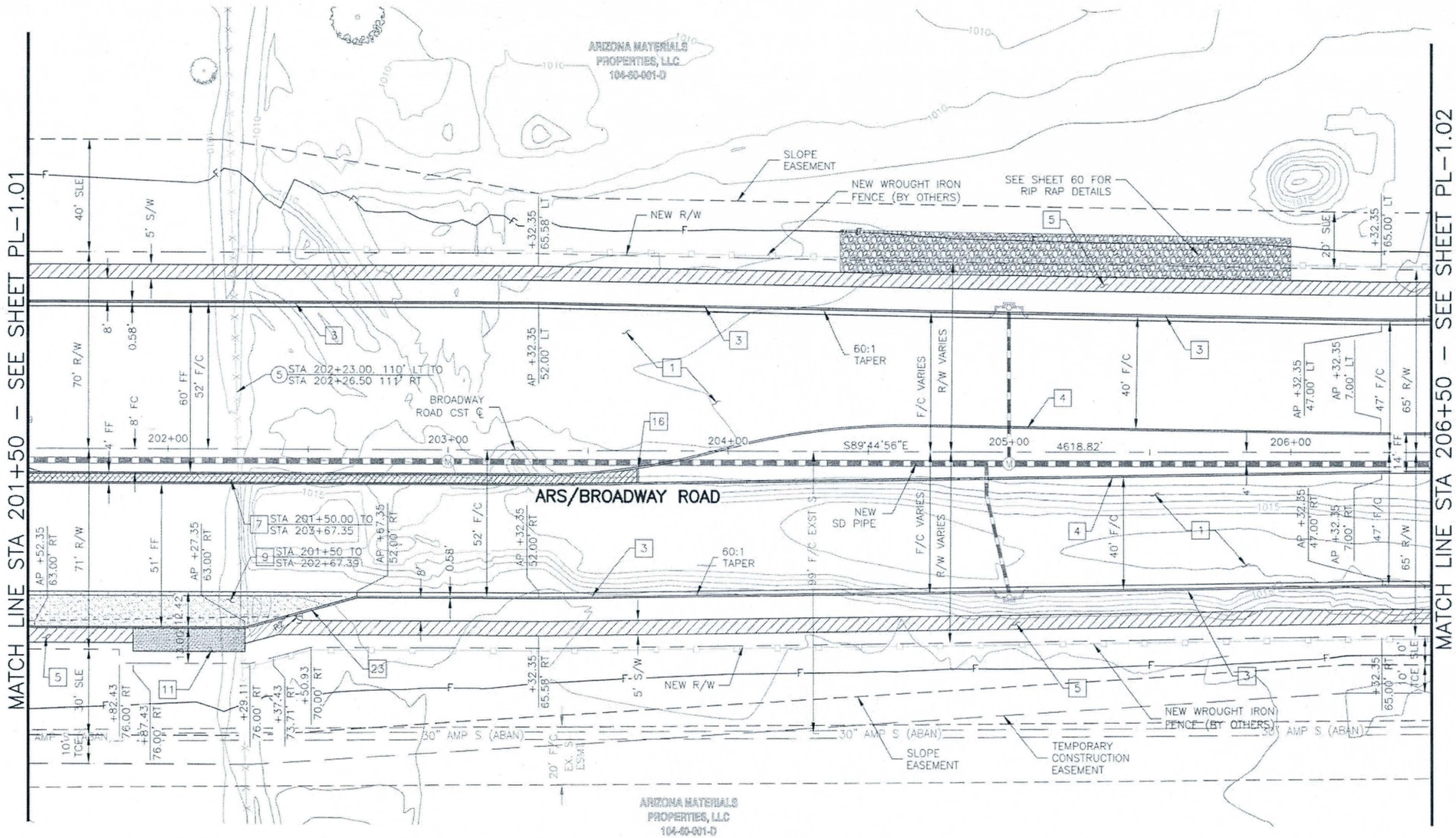
DR: JRR | DES: DVV | CK: SHM | DATE: 01/14

City of Phoenix
N

50080 DANIEL V VOIGT — Registered Professional Engineer — CERTIFICATE NO. — Date Signed 5/30/13 — ARIZONA, U.S.A. — Expires 6/30/15

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV. BY	CK'D BY	DATE



REMOVAL/RELOCATION NOTES

NO	DESCRIPTION	UNIT	QTY
(5)	REMOVE EXISTING FENCE	LF	221

CONSTRUCTION NOTES

NO	DESCRIPTION	UNIT	QTY
	SUBGRADE PREPARATION	SY	4800
	ASPHALTIC CONCRETE SURFACE COURSE, (D 1/2), 2" THICK	TON	547
1	ASPHALTIC CONCRETE BASE COURSE, (A1–1/2), 5–1/2" THICK	TON	1505
	EMULSIFIED ASPHALT FOR TACK COAT, TYPE SS–1H	TON	3.2
3	CURB & GUTTER, M.A.G. DET. 220 TYPE A, H=6"	LF	878
4	SINGLE CURB, M.A.G. DET. 222 TYPE A, H=6"	LF	1006
5	CONCRETE SIDEWALK, C.O.P. DET. P1230 (6" THICK)	SF	4759
	ASPHALT CONCRETE SURFACE COURSE, TYPE D ½, 2–½" THICK	TON	9.6
7	AGGREGATE BASE COURSE, 4" THICK	TON	15.4
	STAMPED ASPHALT DECORATIVE PAVEMENT	SF	637
9	9" THICK CONC. PVMT. CLASS "A" PER M.A.G. SPECS & C.O.P. DET. P1256–1	SF	1237
11	BUS SHELTER PAD, C.O.P. DET. P1261	SF	625
16	SINGLE CURB, M.A.G. DET. 222 TYPE B, H=6"	LF	5
23	CONSTRUCT CONCRETE SINGLE CURB, M.A.G. DET 222, TYPE 'A' MODIFIED (FOR BUS BAYS)	LF	119

SHEET REFERENCES

1. SEE SHEET 12 FOR MEDIAN DETAILS
2. SEE SHEET 60 FOR STORM DRAIN PLAN
3. SEE SHEETS 71 & 73 FOR CONNECTOR PIPE PROFILE

NOTES:
1. ATTACH SIDEWALK ADJACENT TO SRP EQUIPMENT PADS, SEE SRP PLANS FOR PAD LOCATIONS. MAINTAIN 12" CLEAR FROM EDGE OF PAD TO BACK OF SIDEWALK. MAINTAIN 3' CLEAR FROM EDGE OF PAD ON EACH SIDE.
2. FOR LANDSCAPE IRRIGATION SLEEVE SIZES AND LOCATIONS SEE LANDSCAPE IRRIGATION PLAN SHEETS.

▲ T.B.M.: SET 1/2" REBAR AT STA 204+16.30, 246.36' LT ELEV = 1011.14

PREMIER ENGINEERING
PROJECT NO.: 2010011

602-263-1100
1-800-STAKE-IT
OUTSIDE MARICOPA COUNTY

PAVING PLAN

CITY OF PHOENIX STREET TRANSPORTATION DEPARTMENT DESIGN AND CONSTRUCTION MANAGEMENT DIVISION

AVENIDA RIO SALADO/BROADWAY ROAD
51ST AVENUE TO 43RD AVENUE
ST85100334

DR: JRR	DES: DVV	CK: SHM	DWG NO:
DATE: 01/14	DATE: 01/14	DATE: 01/14	
SCALE: 1"=20'			PL–1.02

ST85100334

P:\2010011\CADD\Civil\Sheets\ST85100334PL02.dwg dvoigt Jan 23, 2014 – 7:52am

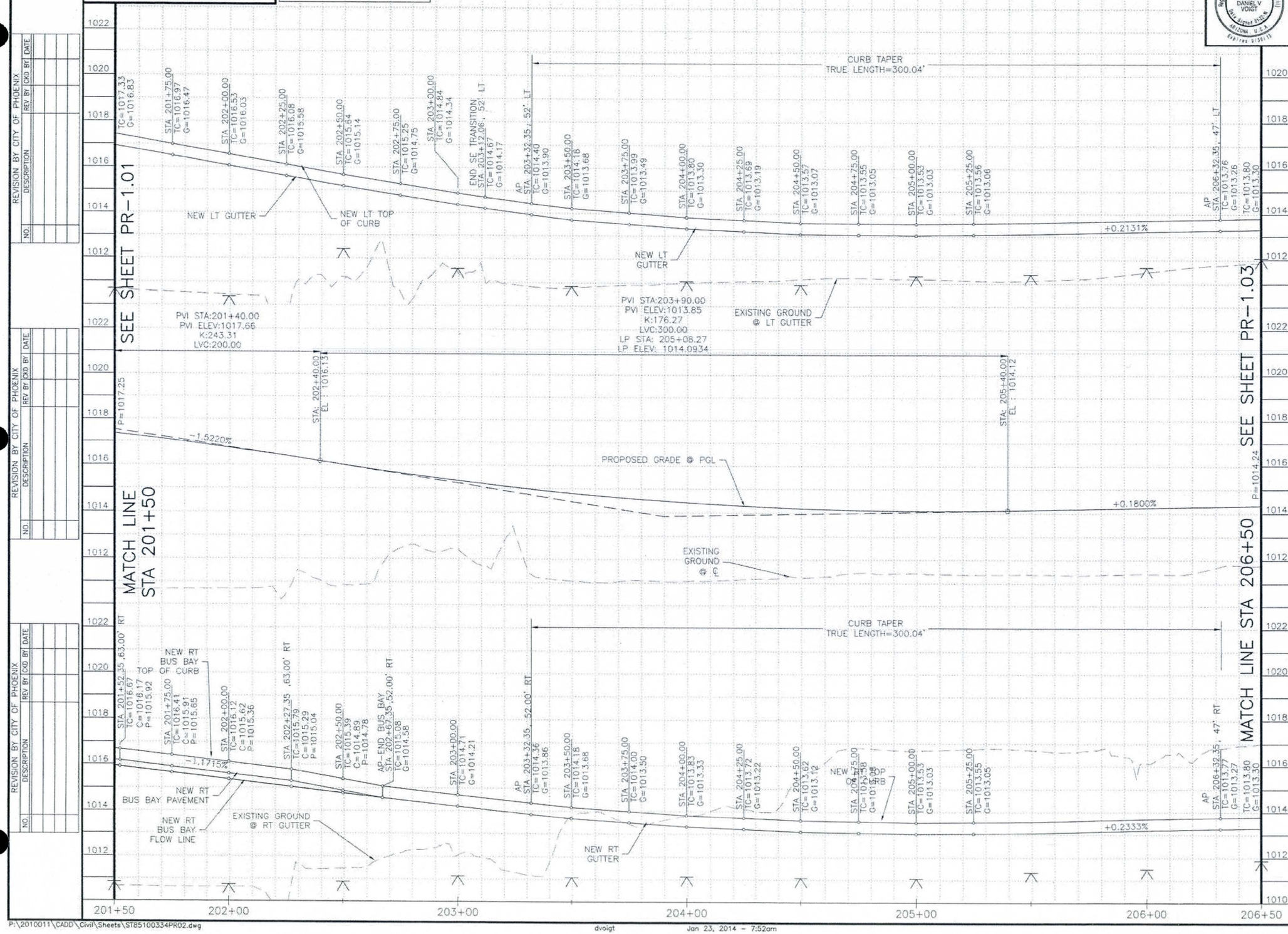
AVENIDA RIO SALADO/BROADWAY ROAD
51ST AVENUE TO 43RD AVENUE
PHOENIX STREETS – MARICOPA CO.

▲ T.B.M.: SET 1/2" REBAR AT
STA 204+16.30, 246.36' LT
ELEV = 1011.14

REVISION BY CITY OF PHOENIX				
NO.	DESCRIPTION	REV BY	CKD BY	DATE

REVISION BY CITY OF PHOENIX				
NO.	DESCRIPTION	REV BY	CKD BY	DATE

REVISION BY CITY OF PHOENIX				
NO.	DESCRIPTION	REV BY	CKD BY	DATE



F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL
9	ARIZ.	ST85100334	18	157

Registered Professional Engineer
CERTIFICATE NO.
55080
DANIEL V VOIGT
Date Signed 9/30/13
ARIZONA U.S.A.
Expires 9/30/15

PREMIER
ENGINEERING CORPORATION
6437 W. CHANDLER BLVD., SUITE 1
CHANDLER, AZ 85226; 480-829-6000
CONSULTING ENGINEER

DR: JRR	DES: DVV	CK: SHM	DATE: 01/14

NOTE

SEE PAVING PLAN SHEETS FOR MEDIAN ISLAND CONSTRUCTION.

CALL TWO WORKING DAYS BEFORE YOU DIG
ONLY FOR THE BLUE STAKES
602-263-1100
1-800-STAKE-IT
OUTSIDE MARICOPA COUNTY

PREMIER ENGINEERING
PROJECT NO.: 2010011

PAVING PROFILE

CITY OF PHOENIX STREET TRANSPORTATION
DEPARTMENT DESIGN AND CONSTRUCTION
MANAGEMENT DIVISION

AVENIDA RIO SALADO/BROADWAY ROAD
51ST AVENUE TO 43RD AVENUE
ST85100334

DR: JRR	DES: DVV	CK: SHM	DWG NO:
DATE: 01/14	DATE: 01/14	DATE: 01/14	
SCALE: 1"=20' H, 1"= 2' V			PR-1.02

ST85100334

P:\2010011\CADD\Civil\Sheets\ST85100334PR02.dwg
dvoigt
Jan 23, 2014 - 7:52am

AVENIDA RIO SALADO/BROADWAY ROAD
51ST AVENUE TO 43RD AVENUE
PHOENIX STREETS – MARICOPA CO.

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL
9	ARIZ.	ST85100334	19	157

PREMIER
ENGINEERING CORPORATION
6437 W. CHANDLER BLVD., SUITE 1
CHANDLER, AZ 85226; 480-829-8000
CONSULTING ENGINEER

DR: JRR | DES: DW | CK: SHM | DATE: 01/14

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV. BY	CKD. BY	DATE

REMOVAL/RELOCATION NOTES

NO	DESCRIPTION	UNIT	QTY
(6)	REMOVE ASPHALT CONCRETE PAVEMENT	SY	169

CONSTRUCTION NOTES

NO	DESCRIPTION	UNIT	QTY
	SUBGRADE PREPARATION	SY	4329
1	ASPHALTIC CONCRETE SURFACE COURSE, (D 1/2), 2" THICK	TON	494
	ASPHALT CONCRETE BASE COURSE (A1-1/2), 5-1/2" THICK	TON	1357
	EMULSIFIED ASPHALT FOR TACK COAT, TYPE SS-1H	TON	2.9
3	CURB & GUTTER, M.A.G. DET. 220 TYPE A, H=6"	LF	1000
4	SINGLE CURB, M.A.G. DET. 222 TYPE A, H=6"	LF	1001
5	CONCRETE SIDEWALK, C.O.P. DET. P1230 (6" THICK)	SF	4970
	ASPHALT CONCRETE SURFACE COURSE, TYPE D ½, 2-½" THICK	TON	1.4
7	AGGREGATE BASE COURSE, 4" THICK	TON	2.2
	STAMPED ASPHALT DECORATIVE PAVEMENT	SF	90
14	ADJUST EXISTING MANHOLE FRAME AND COVER, MAG STD DETAIL 422 AND COP DETAIL P1422	EA	1
16	SINGLE CURB, M.A.G. DET. 222 TYPE B, H=6"	LF	5
	BUS SHELTER PAD PER DETAIL, SEE SHEET 45	NPI	–
24	CONCRETE BUS PAD PAVEMENT PER COP DET P1260	SF	0
	CONCRETE SIDEWALK, C.O.P. DET P1230, MODIFIED (EXPOSED AGGREGATE)	SF	30

SHEET REFERENCES

1. SEE SHEET 12 FOR MEDIAN DETAILS
2. SEE SHEET 61 FOR STORM DRAIN PLAN

PREMIER ENGINEERING
PROJECT NO.: 2010011

602-263-1100
1-800-STAKE-IT

PAVING PLAN

CITY OF PHOENIX STREET TRANSPORTATION DEPARTMENT DESIGN AND CONSTRUCTION MANAGEMENT DIVISION

AVENIDA RIO SALADO/BROADWAY ROAD
51ST AVENUE TO 43RD AVENUE
ST85100334

DR: JRR	DES: DW	CK: SHM	DWG NO:
DATE: 01/14	DATE: 01/14	DATE: 01/14	
SCALE: 1"=20'			PL-1.03

ST85100334

MATCH LINE STA 206+50 – SEE SHEET PL-1.02

MATCH LINE STA 211+50 – SEE SHEET PL-1.04

City of Phoenix
N

CALMAT COMPANY
104-63-004-Q

SLOPE EASEMENT
NEW R/W
NEW WROUGHT IRON FENCE (BY OTHERS)
5' S/W
20' SLE
8'
0.58'
65' R/W
ARS/BROADWAY ROAD CST ℄
ARS/BROADWAY ROAD
207+00
208+00
209+00
S89°44'56"E
210+00
211+00
4618.82'
NEW SD PIPE
40' FF
47' F/C
7' F/C
4'
STA 211+37.44 TO STA 211+50.00
AP 211+45.00 47.00' LT
SSMH
RIM= 15.72 (R)
INV E= 01.18 (R)
INV SW= 01.12 (R)
42"
37'±
10' TCE
10' SLE
15' SLE
NEW R/W
NEW WROUGHT IRON FENCE (BY OTHERS)
EX R/W ESMT
20' EX S ESMT
30" AMP S (ABAN)
SLOPE EASEMENT
TEMPORARY CONSTRUCTION EASEMENT
SSMH
RIM = 13.15 (R)
INV = 00.89 (R)
EX EOP
EX R/W ESMT
CALMAT COMPANY
104-63-004-Q
208+24.97, 119.207 RT, POWER POLE
208+31.76, 119.800 RT, ELEC XFMR
208+44.95, 119.156 RT, SEWER MANHOLE
211+14.91, 17.804 RT, SEWER MANHOLE

▲ T.B.M.: SET 1/2" REBAR AT STA 204+16.30, 246.36' LT ELEV = 1011.14

NOTES:
1. ATTACH SIDEWALK ADJACENT TO SRP EQUIPMENT PADS, SEE SRP PLANS FOR PAD LOCATIONS. MAINTAIN 12" CLEAR FROM EDGE OF PAD TO BACK OF SIDEWALK. MAINTAIN 3' CLEAR FROM EDGE OF PAD ON EACH SIDE.
2. FOR LANDSCAPE IRRIGATION SLEEVE SIZES AND LOCATIONS SEE LANDSCAPE IRRIGATION PLAN SHEETS.

P:\2010011\CADD\Civil\Sheets\ST85100334PL03.dwg dvoigt Jan 23, 2014 - 7:53am

AVENIDA RIO SALADO/BROADWAY ROAD
51ST AVENUE TO 43RD AVENUE
PHOENIX STREETS – MARICOPA CO.

▲ T.B.M.: SET 1/2" REBAR AT
STA 204+16.30, 246.36' LT
ELEV = 1011.14

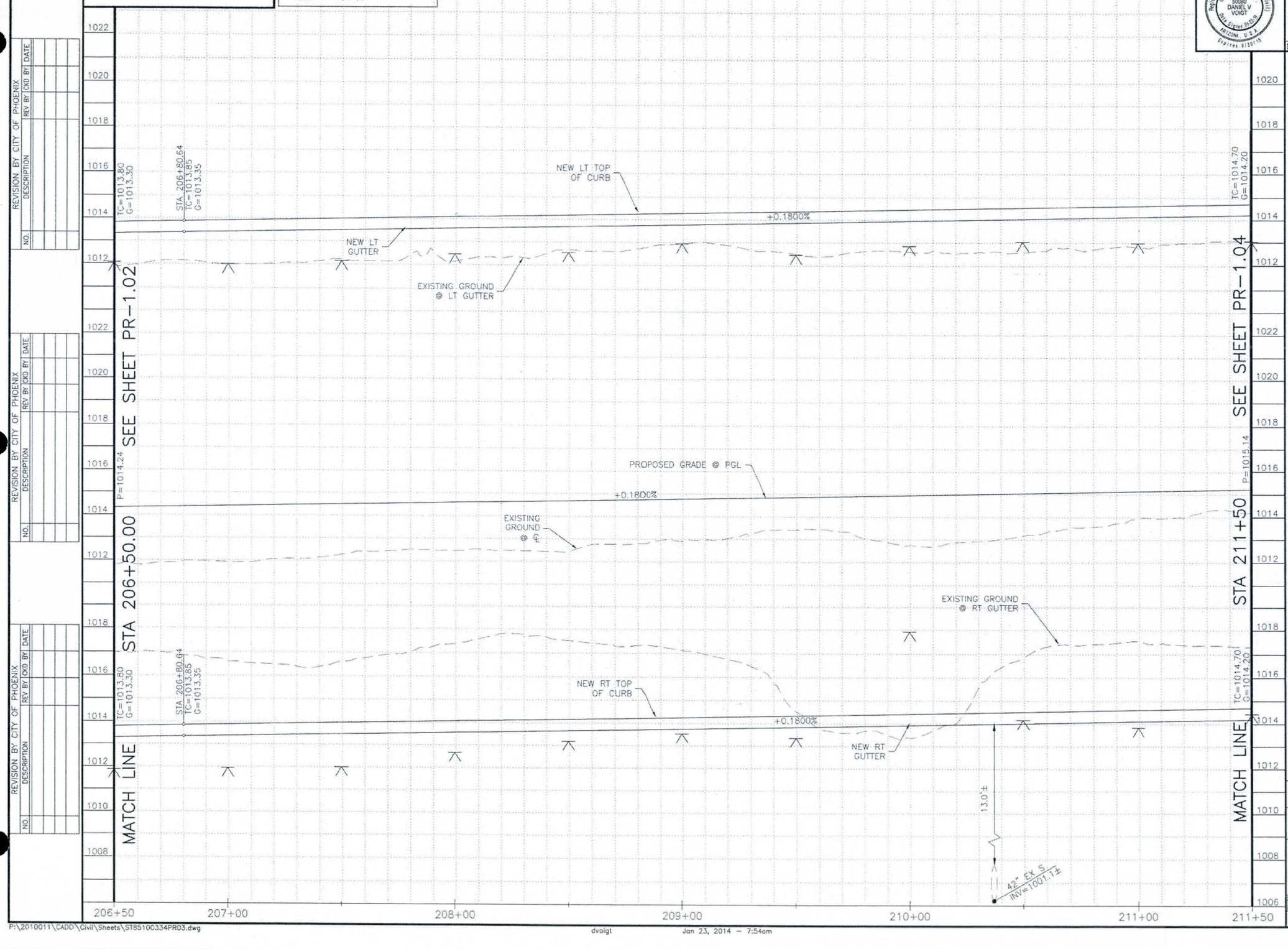
F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL
9	ARIZ.	ST85100334	20	157

PREMIER
ENGINEERING CORPORATION
6437 W. CHANDLER BLVD., SUITE 1
CHANDLER, AZ 85226; 480-829-6000
CONSULTING ENGINEER

DR: JRR	DES: DVV	CK: SHM	DATE: 01/14

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE



NOTE

SEE PAVING PLAN SHEETS FOR MEDIAN ISLAND CONSTRUCTION.

PREMIER ENGINEERING
PROJECT NO.: 2010011

CALL FOR MARICOPA COUNTY
602-263-1100
1-800-STAKE-IT
OUTSIDE MARICOPA COUNTY

PAVING PROFILE

CITY OF PHOENIX STREET TRANSPORTATION
DEPARTMENT DESIGN AND CONSTRUCTION
MANAGEMENT DIVISION

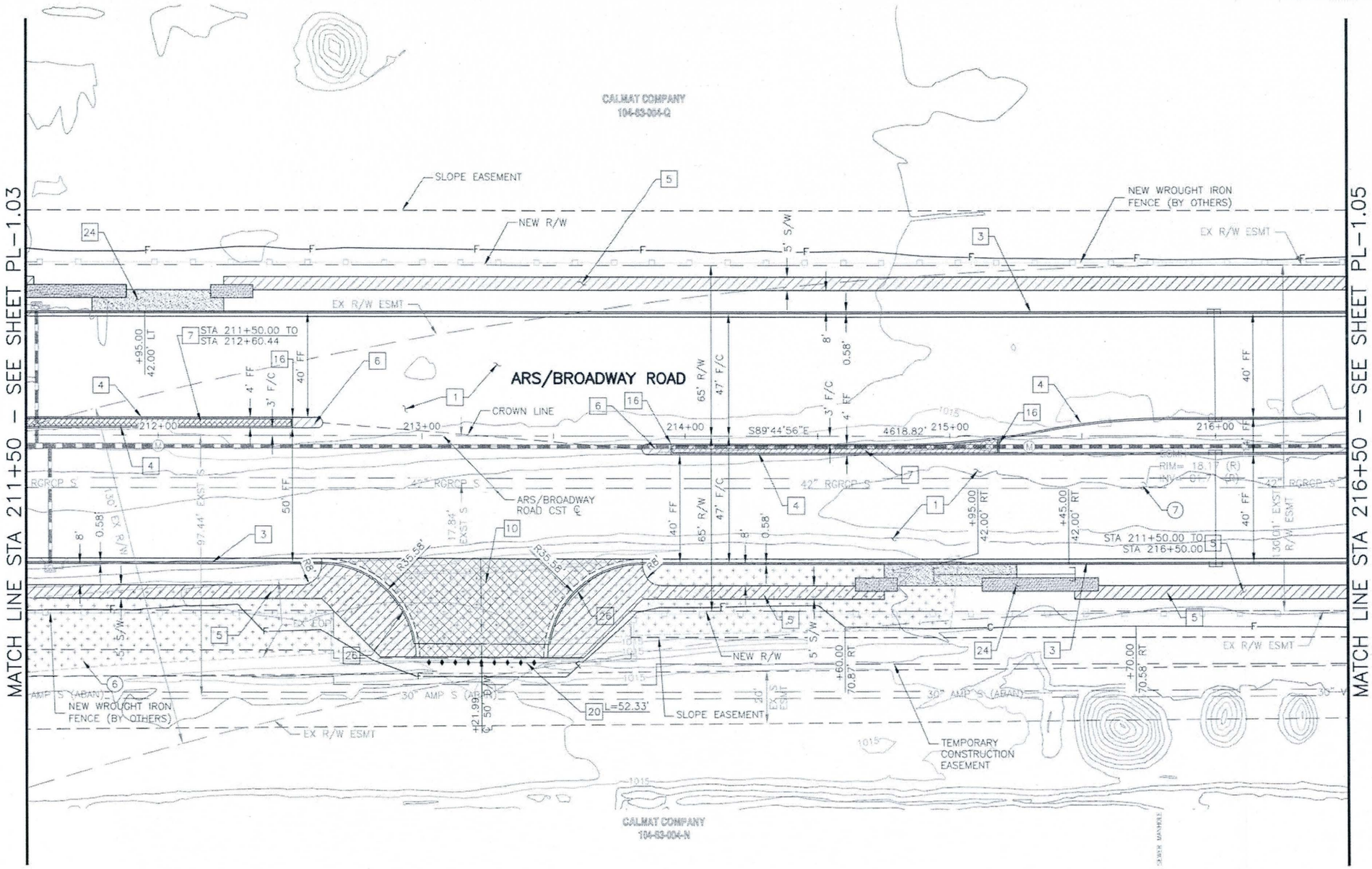
AVENIDA RIO SALADO/BROADWAY ROAD
51ST AVENUE TO 43RD AVENUE
ST85100334

DR: JRR	DES: DVV	CK: SHM	DWG NO:
DATE: 01/14	DATE: 01/14	DATE: 01/14	
SCALE: 1"=20' H 1"= 2' V			PR-1.03

ST85100334

P:\2010011\CADD\Civil\Sheets\ST85100334PR03.dwg dvoigt Jan 23, 2014 – 7:54am

AVENIDA RIO SALADO/BROADWAY ROAD
51ST AVENUE TO 43RD AVENUE
PHOENIX STREETS – MARICOPA CO.



NOTES:
1. ATTACH SIDEWALK ADJACENT TO SRP EQUIPMENT PADS, SEE SRP PLANS FOR PAD LOCATIONS. MAINTAIN 12" CLEAR FROM EDGE OF PAD TO BACK OF SIDEWALK. MAINTAIN 3' CLEAR FROM EDGE OF PAD ON EACH SIDE.
2. FOR LANDSCAPE IRRIGATION SLEEVE SIZES AND LOCATIONS SEE LANDSCAPE IRRIGATION PLAN SHEETS.

▲ T.B.M.: SET 1/2" REBAR AT STA 214+21.89, 249.50' LT ELEV = 1013.85

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL
9	ARIZ.	ST85100334	21	157

PREMIER
ENGINEERING CORPORATION
6437 W. CHANDLER BLVD., SUITE 1
CHANDLER, AZ 85226; 480-829-6000
CONSULTING ENGINEER

DR: JRR | DES: DW | CK: SHM | DATE: 01/14

50080 DANIEL V VOIGT — Registered Professional Engineer (Civil) — CERTIFICATE NO. — ARIZONA, U.S.A. — Expires 9/30/15

REMOVAL/RELOCATION NOTES

NO	DESCRIPTION	UNIT	QTY
6	REMOVE ASPHALT CONCRETE PAVEMENT	SY	1020
7	REBUILD MANHOLE GRADE ADJUSTMENT	EA	1

CONSTRUCTION NOTES

NO	DESCRIPTION	UNIT	QTY
	SUBGRADE PREPARATION	SY	4767
1	ASPHALTIC CONCRETE SURFACE COURSE, (D 1/2), 2" THICK	TON	543
	ASPHALT CONCRETE BASE COURSE (A1–1/2), 5–1/2" THICK	TON	1495
	EMULSIFIED ASPHALT FOR TACK COAT, TYPE SS–1H	TON	3.2
3	CURB & GUTTER, M.A.G. DET. 220 TYPE A, H=6"	LF	879
4	SINGLE CURB, M.A.G. DET. 222 TYPE A, H=6"	LF	764
5	CONCRETE SIDEWALK, C.O.P. DET. P1230 (6" THICK)	SF	3825
6	CONCRETE MEDIAN NOSE, SEE DETAIL SHEET 11	SF	84
	ASPHALT CONCRETE SURFACE COURSE, TYPE D ½, 2–½" THICK	TON	10.0
7	AGGREGATE BASE COURSE, 4" THICK	TON	16.0
	STAMPED ASPHALT DECORATIVE PAVEMENT	SF	664
10	CONCRETE DRIVEWAY ENTRANCE , C.O.P. DET. P1243 (9" THICK)	SF	3999
16	SINGLE CURB, M.A.G. DET. 222 TYPE B, H=6"	LF	11
20	BARRICADE, STANDARD DETAIL P–1106, TYPE 'B'	LF	52
	BUS SHELTER PAD PER DETAIL, SEE SHEET 45	NPI	–
24	CONCRETE BUS PAD PAVEMENT PER COP DET P1260	SF	692
	CONCRETE SIDEWALK, C.O.P. DET P1230, MODIFIED (EXPOSED AGGREGATE)	SF	570
26	CURB & GUTTER, M.A.G. DET. 220 TYPE A, H=6" (9" THICK)	LF	100

SHEET REFERENCES

1. SEE SHEET 12 FOR MEDIAN DETAILS
2. SEE SHEET 62 FOR STORM DRAIN PLAN
3. SEE SHEET 72 FOR CONNECTOR PIPE PROFILE

PREMIER ENGINEERING
PROJECT NO.: 2010011

CALL TWO WORKING DAYS BEFORE YOU DIG — CALL FOR THE BLUE STAKERS — 602-263-1100 — 1-800-STAKE-IT — OUTSIDE MARICOPA COUNTY

PAVING PLAN

CITY OF PHOENIX STREET TRANSPORTATION DEPARTMENT DESIGN AND CONSTRUCTION MANAGEMENT DIVISION

AVENIDA RIO SALADO/BROADWAY ROAD
51ST AVENUE TO 43RD AVENUE
ST85100334

DR: JRR	DES: DW	CK: SHM	DWG NO:
DATE: 01/14	DATE: 01/14	DATE: 01/14	
SCALE: 1"=20'			PL–1.04

ST85100334

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

P:\2010011\CADD\Civil\Sheets\ST85100334PL04.dwg dvoigt Jan 23, 2014 – 7:55am

AVENIDA RIO SALADO/BROADWAY ROAD
51ST AVENUE TO 43RD AVENUE
PHOENIX STREETS – MARICOPA CO.

▲ T.B.M.: SET 1/2" REBAR AT
STA 214+21.89, 249.50' LT
ELEV = 1013.85

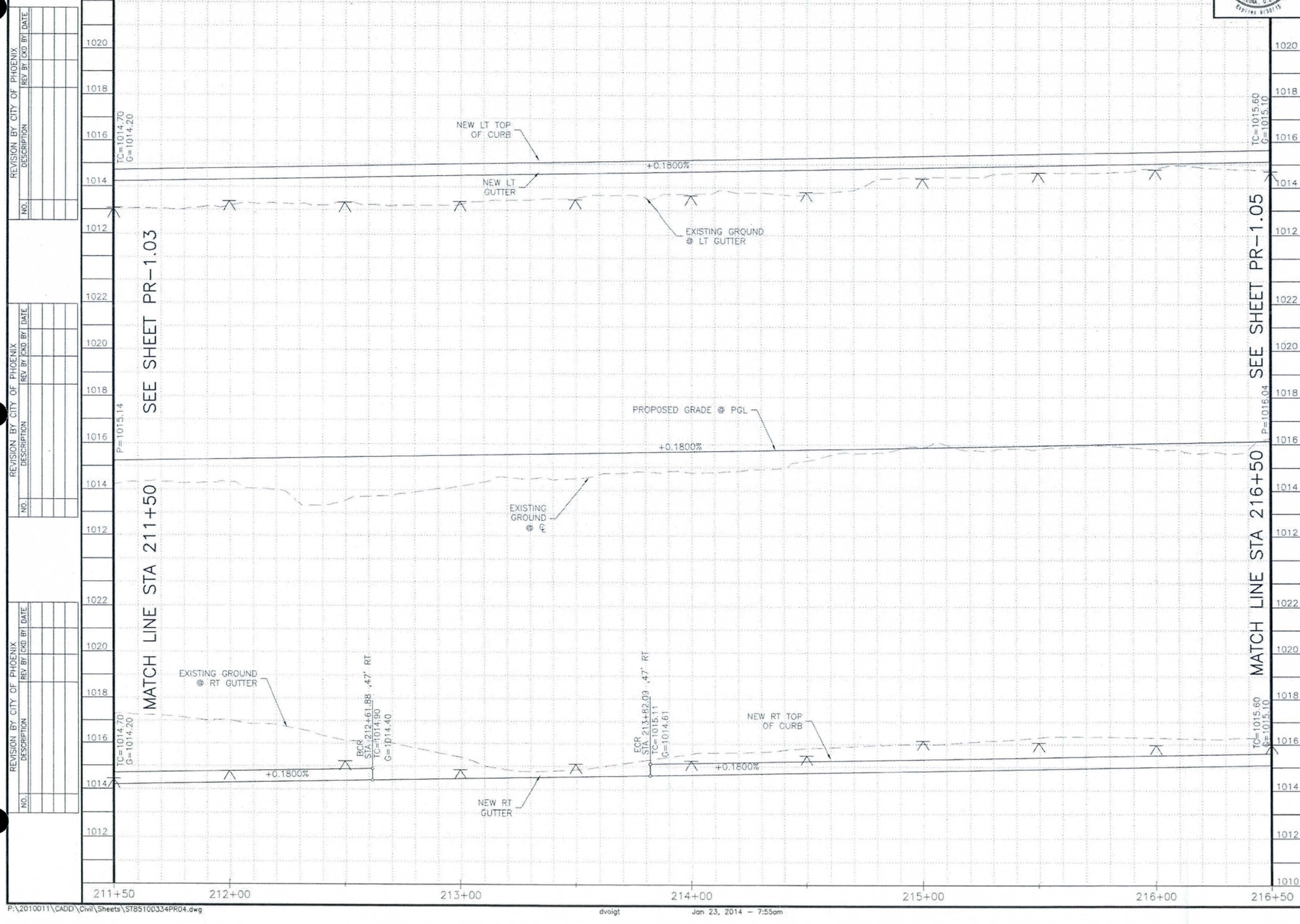
F.H.W.A REGION	STATE	PROJ. NO.	NO.	TOTAL
9	ARIZ.	ST85100334	22	157

PREMIER
ENGINEERING CORPORATION
6437 W. CHANDLER BLVD., SUITE 1
CHANDLER, AZ 85226; 480-829-6000
CONSULTING ENGINEER

DR: JRR	DES: DVV	CK: SHM	DATE: 01/14

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV. BY	CKD BY	DATE



NOTE

SEE PAVING PLAN SHEETS FOR MEDIAN ISLAND CONSTRUCTION.

PREMIER ENGINEERING
PROJECT NO.: 2010011

602-263-1100
1-800-STAKE-IT

PAVING PROFILE

CITY OF PHOENIX STREET TRANSPORTATION
DEPARTMENT DESIGN AND CONSTRUCTION
MANAGEMENT DIVISION

AVENIDA RIO SALADO/BROADWAY ROAD
51ST AVENUE TO 43RD AVENUE
ST85100334

DR: JRR	DES: DVV	CK: SHM	DWG NO:
DATE: 01/14	DATE: 01/14	DATE: 01/14	
SCALE: 1"=20' H, 1"=2' V			PR-1.04

ST85100334

P:\2010011\CADD\Civil\Sheets\ST85100334PR04.dwg dvoigt Jan 23, 2014 – 7:55am

AVENIDA RIO SALADO/BROADWAY ROAD
51ST AVENUE TO 43RD AVENUE
PHOENIX STREETS – MARICOPA CO.

City of Phoenix
N

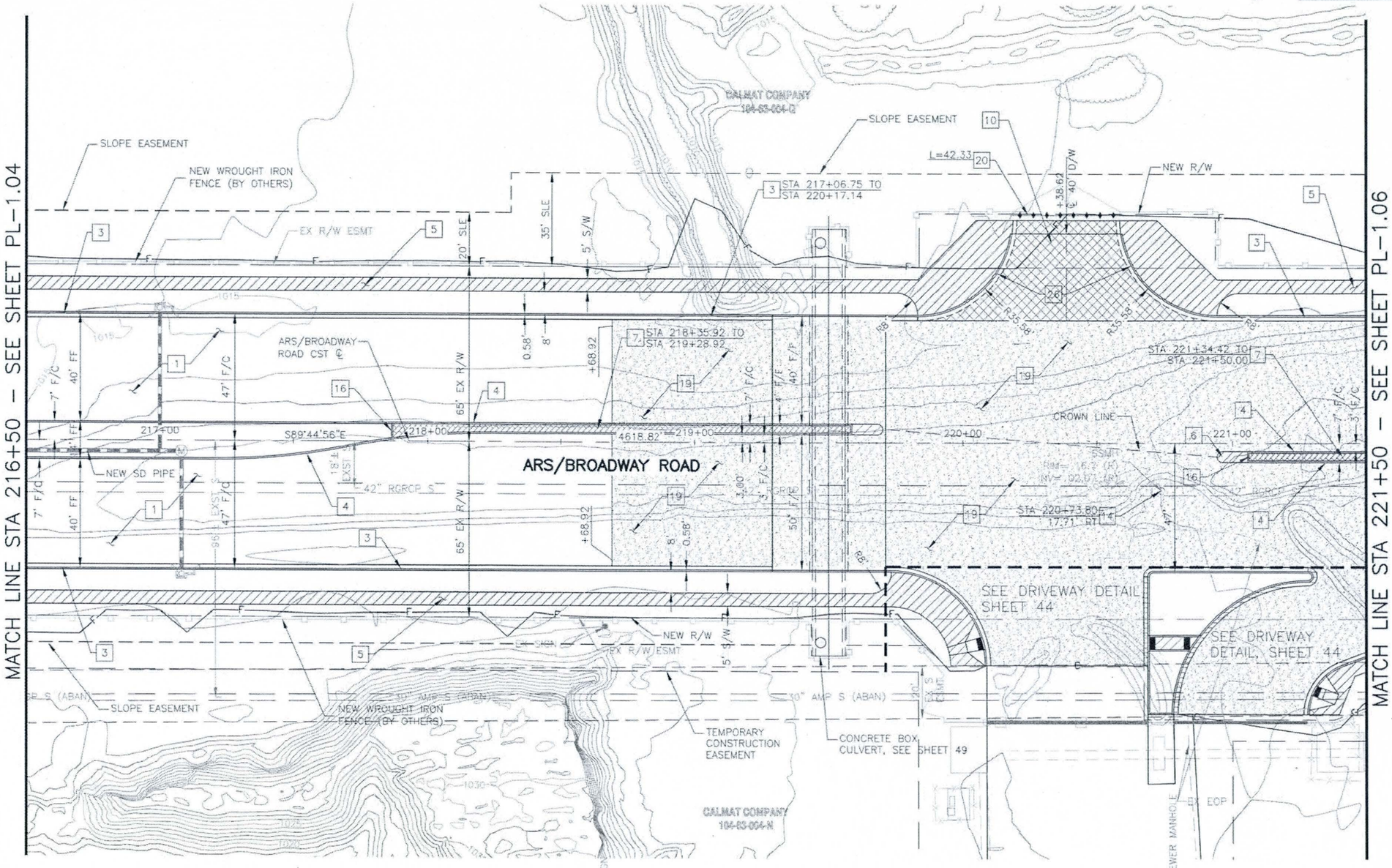
F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL
9	ARIZ.	ST85100334	23	157

PREMIER
ENGINEERING CORPORATION
6437 W. CHANDLER BLVD., SUITE 1
CHANDLER, AZ 85226; 480-829-6000
CONSULTING ENGINEER

DR: JRR | DES: DVV | CK: SHM | DATE: 01/14

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE



NOTES:
1. ATTACH SIDEWALK ADJACENT TO SRP EQUIPMENT PADS, SEE SRP PLANS FOR PAD LOCATIONS. MAINTAIN 12" CLEAR FROM EDGE OF PAD TO BACK OF SIDEWALK. MAINTAIN 3' CLEAR FROM EDGE OF PAD ON EACH SIDE.
2. FOR LANDSCAPE IRRIGATION SLEEVE SIZES AND LOCATIONS SEE LANDSCAPE IRRIGATION PLAN SHEETS.

▲ T.B.M.: SET 1/2" REBAR AT STA 214+21.89, 249.50' LT ELEV = 1013.85

CONSTRUCTION NOTES

NO	DESCRIPTION	UNIT	QTY
	SUBGRADE PREPARATION	SY	2000
1	ASPHALTIC CONCRETE SURFACE COURSE, (D 1/2), 2" THICK	TON	228
1	ASPHALT CONCRETE BASE COURSE (A1–1/2), 5–1/2" THICK	TON	627
	EMULSIFIED ASPHALT FOR TACK COAT, TYPE SS–1H	TON	1.3
3	CURB & GUTTER, M.A.G. DET. 220 TYPE A, H=6"	LF	628
4	SINGLE CURB, M.A.G. DET. 222 TYPE A, H=6"	LF	672
5	CONCRETE SIDEWALK, C.O.P. DET. P1230 (6" THICK)	SF	3601
6	CONCRETE MEDIAN NOSE, SEE DETAIL SHEET 11	SF	84
	ASPHALT CONCRETE SURFACE COURSE, TYPE D ½, 2–½" THICK	TON	7.5
7	AGGREGATE BASE COURSE, 4" THICK	TON	12.0
	STAMPED ASPHALT DECORATIVE PAVEMENT	SF	475
10	CONCRETE DRIVEWAY ENTRANCE, C.O.P. DET. P1243 (9" THICK)	SF	3629
14	ADJUST EXISTING MANHOLE FRAME AND COVER, MAG STD DETAIL 422 AND COP DETAIL P1422	EA	1
16	SINGLE CURB, M.A.G. DET. 222 TYPE B, H=6"	LF	8
	SUBGRADE PREPARATION	SY	2354
19	PORTLAND CEMENT CONCRETE PAVEMENT, 9" THICK	SY	2354
	AGGREGATE BASE COURSE, 4" THICK	TON	512
20	BARRICADE, STANDARD DETAIL P–1106, TYPE 'B'	LF	42
26	CURB & GUTTER, M.A.G. DET. 220 TYPE A, H=6" (9" THICK)	LF	100

SHEET REFERENCES

1. SEE SHEET 13 FOR MEDIAN DETAILS
2. SEE SHEET 63 FOR STORM DRAIN PLAN
3. SEE SHEET 73 FOR CB CONN PIPE PROFILE
4. SEE SHEET 49 FOR CBC PLAN AND PROFILE
5. SEE SHEET 43 FOR JOINTING PLAN

CALL TWO WORKING DAYS BEFORE YOU DIG! CALL FOR THE BLUE STAKES
602-263-1100
1-800-STAKE-IT
OUTSIDE MARICOPA COUNTY

PREMIER ENGINEERING
PROJECT NO.: 2010011

PAVING PLAN

CITY OF PHOENIX STREET TRANSPORTATION DEPARTMENT DESIGN AND CONSTRUCTION MANAGEMENT DIVISION

AVENIDA RIO SALADO/BROADWAY ROAD
51ST AVENUE TO 43RD AVENUE
ST85100334

DR: JRR	DES: DVV	CK: SHM	DWG NO:
DATE: 01/14	DATE: 01/14	DATE: 01/14	
SCALE: 1"=20'			PL–1.05

ST85100334

P:\2010011\CADD\Civil\Sheets\ST85100334PL05.dwg dvoigt Jan 23, 2014 - 7:56am

AVENIDA RIO SALADO/BROADWAY ROAD
51ST AVENUE TO 43RD AVENUE
PHOENIX STREETS – MARICOPA CO.

▲ T.B.M.: SET 1/2" REBAR AT
STA 214+21.89, 249.50' LT
ELEV = 1013.85

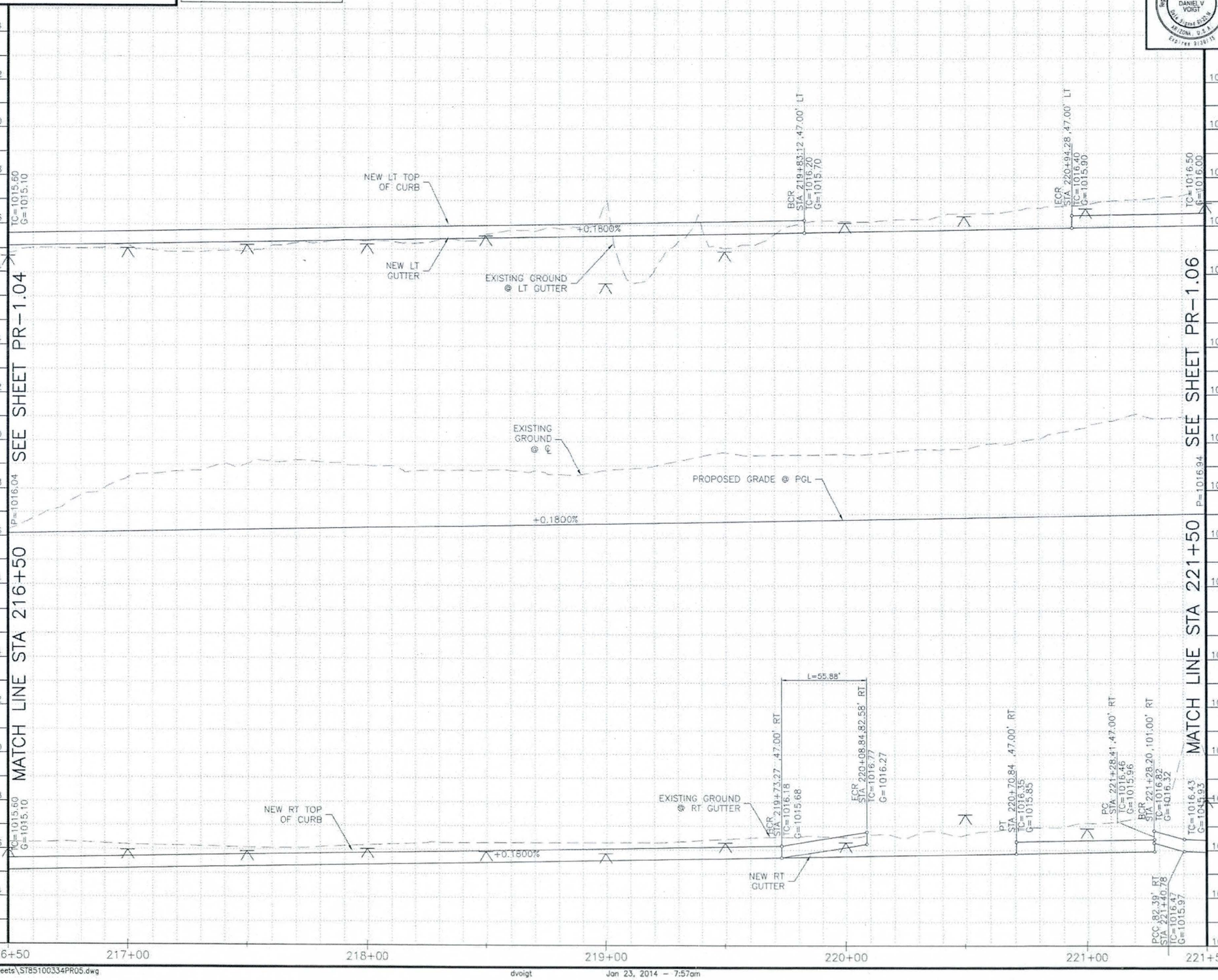
F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL
9	ARIZ.	ST85100334	24	157

PREMIER
ENGINEERING CORPORATION
6437 W. CHANDLER BLVD., SUITE 1
CHANDLER, AZ 85226; 480-829-8000
CONSULTING ENGINEER

DR: JRR | DES: DVV | CK: SHM | DATE: 01/14

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV. BY	CKD. BY	DATE



NOTE

SEE PAVING PLAN SHEETS FOR MEDIAN ISLAND CONSTRUCTION.

CALL TWO WORKING DAYS BEFORE YOU DIG
CALL FOR THE BLUE STAKERS
602-263-1100
1-800-STAKE-IT
OUTSIDE MARICOPA COUNTY

PREMIER ENGINEERING
PROJECT NO.: 2010011

PAVING PROFILE

CITY OF PHOENIX STREET TRANSPORTATION
DEPARTMENT DESIGN AND CONSTRUCTION
MANAGEMENT DIVISION

AVENIDA RIO SALADO/BROADWAY ROAD
51ST AVENUE TO 43RD AVENUE
ST85100334

DR: JRR	DES: DVV	CK: SHM	DWG NO:
DATE: 01/14	DATE: 01/14	DATE: 01/14	
SCALE: 1"=20' H, 1"= 2' V			PR-1.05

ST85100334

P:\2010011\CADD\Civil\Sheets\ST85100334PR05.dwg dvoigt Jan 23, 2014 – 7:57am

AVENIDA RIO SALADO/BROADWAY ROAD
51ST AVENUE TO 43RD AVENUE
PHOENIX STREETS – MARICOPA CO.

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL
9	ARIZ.	ST85100334	25	157

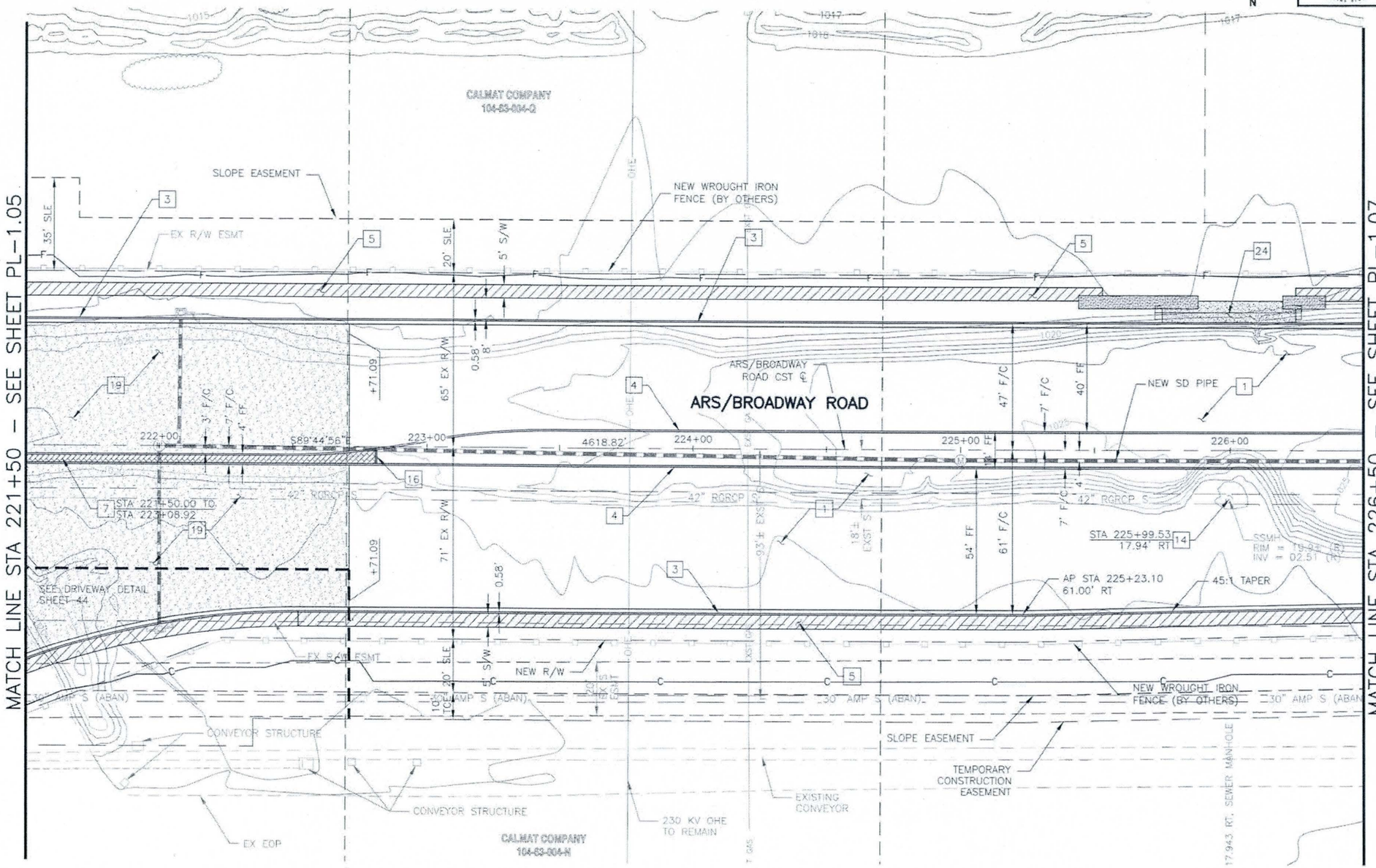
PREMIER
ENGINEERING CORPORATION
6437 W. CHANDLER BLVD., SUITE 1
CHANDLER, AZ 85226; 480-829-6000
CONSULTING ENGINEER

DR: JRR | DES: DVV | CK: SHM | DATE: 01/14

50080 DANIEL V VOIGT — CERTIFICATE NO. — REGISTERED PROFESSIONAL ENGINEER — ARIZONA, U.S.A. — Expires 6/30/15

City of Phoenix

N



NOTES:
1. ATTACH SIDEWALK ADJACENT TO SRP EQUIPMENT PADS, SEE SRP PLANS FOR PAD LOCATIONS. MAINTAIN 12" CLEAR FROM EDGE OF PAD TO BACK OF SIDEWALK. MAINTAIN 3' CLEAR FROM EDGE OF PAD ON EACH SIDE.
2. FOR LANDSCAPE IRRIGATION SLEEVE SIZES AND LOCATIONS SEE LANDSCAPE IRRIGATION PLAN SHEETS.

▲ T.B.M.: SET 1/2" REBAR AT STA 224+25.33, 257.42' LT ELEV = 1010.48

CONSTRUCTION NOTES

NO	DESCRIPTION	UNIT	QTY
	SUBGRADE PREPARATION	SY	3810
1	ASPHALTIC CONCRETE SURFACE COURSE, (D 1/2), 2" THICK	TON	434
	ASPHALT CONCRETE BASE COURSE (A1-1/2), 5-1/2" THICK	TON	1194
	EMULSIFIED ASPHALT FOR TACK COAT, TYPE SS-1H	TON	2.3
3	CURB & GUTTER, M.A.G. DET. 220 TYPE A, H=6"	LF	876
4	SINGLE CURB, M.A.G. DET. 222 TYPE A, H=6"	LF	1001
5	CONCRETE SIDEWALK, C.O.P. DET. P1230 (6" THICK)	SF	4047
	ASPHALT CONCRETE SURFACE COURSE, TYPE D ½, 2-½" THICK	TON	6.0
7	AGGREGATE BASE COURSE, 4" THICK	TON	9.6
	STAMPED ASPHALT DECORATIVE PAVEMENT	SF	398
14	ADJUST EXISTING MANHOLE FRAME AND COVER, MAG STD DETAIL 422 AND COP DETAIL P1422	EA	1
16	SINGLE CURB, M.A.G. DET 222 TYPE B, H=6"	LF	5
	SUBGRADE PREPARATION	SY	1204
19	PORTLAND CEMENT CONCRETE PAVEMENT, 9" THICK	SY	1204
	AGGREGATE BASE COURSE, 4" THICK	TON	262
	BUS SHELTER PAD PER DETAIL, SEE SHEET 45	NPI	–
24	CONCRETE BUS PAD PAVEMENT PER COP DET P1260	SF	346
	CONCRETE SIDEWALK, C.O.P. DET P1230, MODIFIED (EXPOSED AGGREGATE)	SF	300

SHEET REFERENCES

1. SEE SHEET 13 FOR MEDIAN DETAILS
2. SEE SHEET 64 FOR STORM DRAIN PLAN
3. SEE SHEET 74 FOR CB CONN PIPE PROFILE
4. SEE SHEET 79 FOR STORM DRAIN OUTFALL

PREMIER ENGINEERING
PROJECT NO.: 2010011

CALL TWO WORKING DAYS BEFORE YOU DIG OR FILL FOR THE BLUE STAKES
602-263-1100
1-800-STAKE-IT
OUTSIDE MARICOPA COUNTY

PAVING PLAN

CITY OF PHOENIX STREET TRANSPORTATION DEPARTMENT DESIGN AND CONSTRUCTION MANAGEMENT DIVISION

AVENIDA RIO SALADO/BROADWAY ROAD
51ST AVENUE TO 43RD AVENUE
ST85100334

DR: JRR	DES: DVV	CK: SHM	DWG NO:
DATE: 01/14	DATE: 01/14	DATE: 01/14	
SCALE: 1"=20'			PL-1.06

S185100334

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

P:\2010011\CADD\Civil\Sheets\STB5100334PL06.dwg dvoigt Jan 23, 2014 – 7:57am

AVENIDA RIO SALADO/BROADWAY ROAD
51ST AVENUE TO 43RD AVENUE
PHOENIX STREETS – MARICOPA CO.

▲ T.B.M.: SET 1/2" REBAR AT
STA 224+25.33, 257.42' LT
ELEV = 1010.48

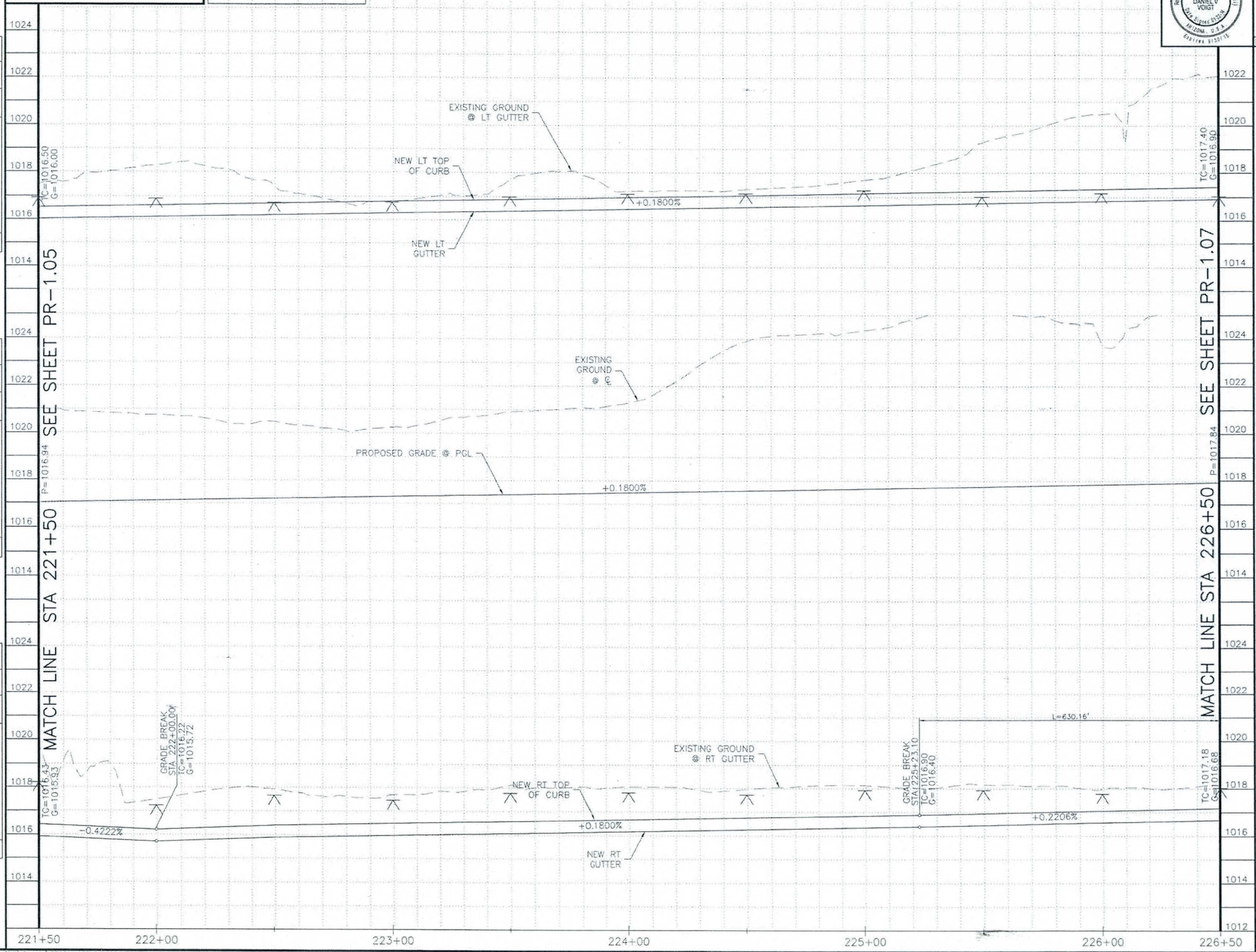
F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL
9	ARIZ.	ST85100334	26	157

PREMIER
ENGINEERING CORPORATION
6437 W. CHANDLER BLVD., SUITE 1
CHANDLER, AZ 85226, 480-829-6000
CONSULTING ENGINEER

DR: JRR	DES: DVV	CK: SHM	DATE: 01/14

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE



NOTE

SEE PAVING PLAN SHEETS FOR MEDIAN ISLAND CONSTRUCTION.

CALL TWO WORKING DAYS BEFORE YOU DIG
CALL FOR THE SIDE STAKES
602-263-1100
1-800-STAKE-IT
OUTSIDE MARICOPA COUNTY

PREMIER ENGINEERING
PROJECT NO.: 2010011

PAVING PROFILE

CITY OF PHOENIX STREET TRANSPORTATION
DEPARTMENT DESIGN AND CONSTRUCTION
MANAGEMENT DIVISION

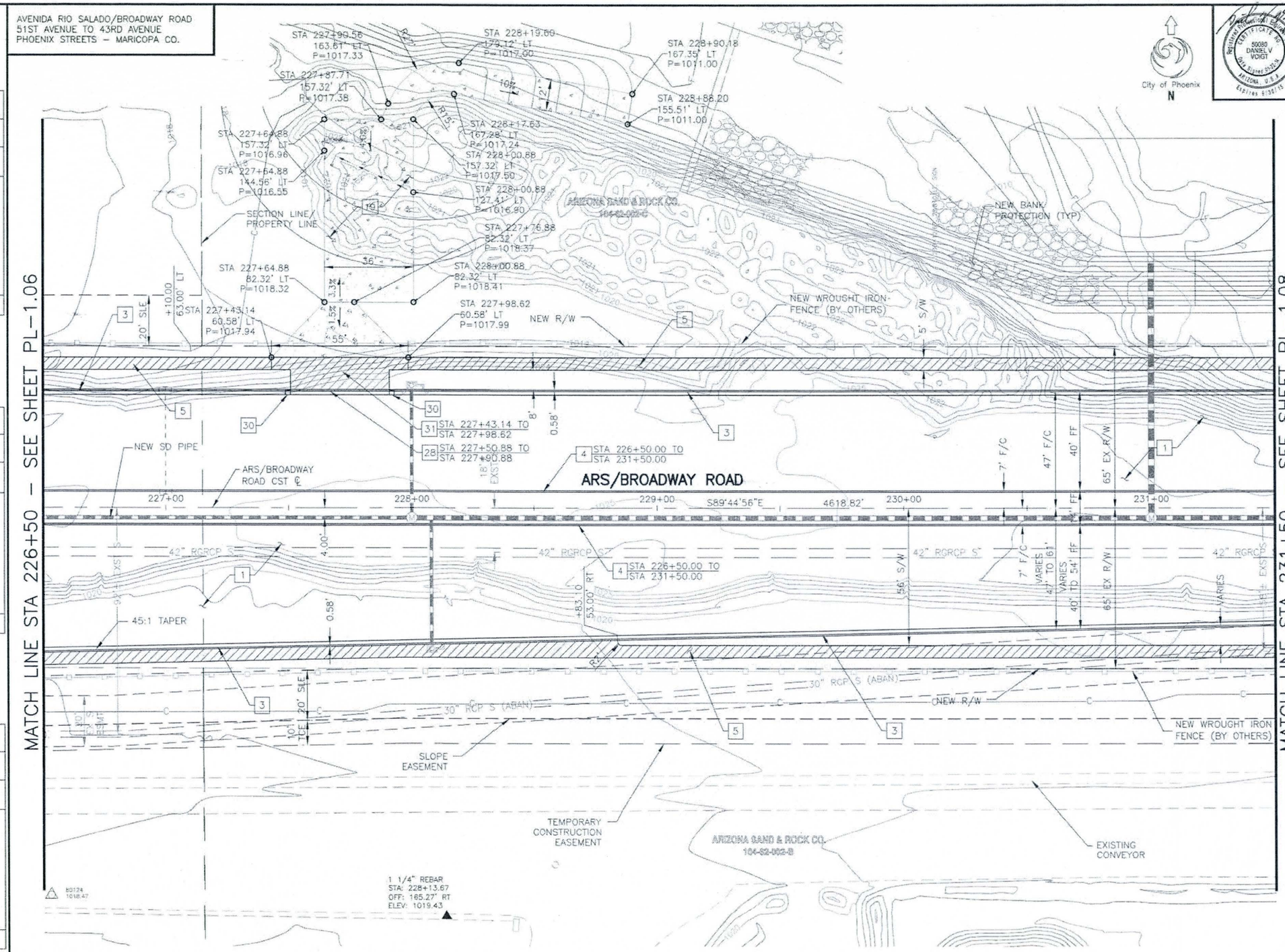
AVENIDA RIO SALADO/BROADWAY ROAD
51ST AVENUE TO 43RD AVENUE
ST85100334

DR: JRR	DES: DVV	CK: SHM	DWG NO:
DATE: 01/14	DATE: 01/14	DATE: 01/14	
SCALE: 1"=20' H 1"= 2' V			PR-1.06

ST85100334

P:\2010011\CADD\Civil\Sheets\ST85100334PR06.dwg dvoigt Jan 23, 2014 – 7:58am

AVENIDA RIO SALADO/BROADWAY ROAD
51ST AVENUE TO 43RD AVENUE
PHOENIX STREETS – MARICOPA CO.



▲ B.M.: FND 1 1/4" REBAR AT
STA 228+13.67, 165.27' RT
ELEV = 1019.43

NO.	DESCRIPTION	REV BY	CKD BY	DATE

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

REVISION BY CITY OF PHOENIX

City of Phoenix
N

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL
9	ARIZ.	ST85100334	27	157

PREMIER
ENGINEERING CORPORATION
6437 W. CHANDLER BLVD., SUITE 1
CHANDLER, AZ 85226; 480-829-6000
CONSULTING ENGINEER

DR: JRR	DES: DW	CK: SHM	DATE: 01/14

Registered Professional Engineer (Civil)
CERTIFICATE NO.
60080
DANIEL V
VOIGT
Date Signed 01/31/14
ARIZONA U.S.A.
Expires 6/30/15

CONSTRUCTION NOTES

NO	DESCRIPTION	UNIT	QTY
	SUBGRADE PREPARATION	SY	4599
	ASPHALTIC CONCRETE SURFACE COURSE, (D 1/2), 2" THICK	TON	524
1	ASPHALT CONCRETE BASE COURSE (A 1–1/2), 5–1/2" THICK	TON	1442
	EMULSIFIED ASPHALT FOR TACK COAT, TYPE SS–1H	TON	3.1
3	CURB & GUTTER, M.A.G. DET. 220 TYPE A, H=6"	LF	960
4	SINGLE CURB, M.A.G. DET. 222 TYPE A, H=6"	LF	1000
5	CONCRETE SIDEWALK, C.O.P. DET. P1230 (6" THICK)	SF	4494
	SUBGRADE PREPARATION	SY	467
19	PORTLAND CEMENT CONCRETE PAVEMENT, 9" THICK	SY	467
	AGGREGATE BASE COURSE	TON	102
28	CURB & GUTTER, M.A.G. DET. 220 TYPE E, H=6"	LF	40
30	CURB & GUTTER TRANSITION, M.AG. DET. 220–2	NPI	–
31	CONCRETE SIDEWALK, C.O.P. DET. P1231 (9" THICK)	SF	597

NOTES:
1. ATTACH SIDEWALK ADJACENT TO SRP EQUIPMENT PADS, SEE SRP PLANS FOR PAD LOCATIONS. MAINTAIN 12" CLEAR FROM EDGE OF PAD TO BACK OF SIDEWALK. MAINTAIN 3' CLEAR FROM EDGE OF PAD ON EACH SIDE.
2. FOR LANDSCAPE IRRIGATION SLEEVE SIZES AND LOCATIONS SEE LANDSCAPE IRRIGATION PLAN SHEETS.

SHEET REFERENCES

1. SEE SHEET 65 FOR STORM DRAIN PLAN
2. SEE SHEET 75 & 79 FOR CB CONN PIPE PROFILE
3. SEE SHEET 81 FOR BANK PROTECTION

PREMIER ENGINEERING
PROJECT NO.: 2010011

CALL TWO WORKING DAYS BEFORE YOU DIG
CALL FOR PUBLIC UTILITIES
602-263-1100
1-800-STAKE-IT
OUTSIDE MARICOPA COUNTY

PAVING PLAN

CITY OF PHOENIX STREET TRANSPORTATION
DEPARTMENT DESIGN AND CONSTRUCTION
MANAGEMENT DIVISION

AVENIDA RIO SALADO/BROADWAY ROAD
51ST AVENUE TO 43RD AVENUE
ST85100334

DR: JRR	DES: DW	CK: SHM	DWG NO:
DATE: 01/14	DATE: 01/14	DATE: 01/14	
SCALE: 1"=20'			PL–1.07

ST85100334

P:\2010011\CADD\Civil\Sheets\ST85100334PL07.dwg dvoigt Jan 23, 2014 – 7:58am

AVENIDA RIO SALADO/BROADWAY ROAD
51ST AVENUE TO 43RD AVENUE
PHOENIX STREETS – MARICOPA CO.

▲ B.M.: FND 1 1/4" REBAR AT
STA 228+13.67, 165.27' RT
ELEV = 1019.43

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL
9	ARIZ.	ST85100334	28	157

PREMIER
ENGINEERING CORPORATION
6437 W. CHANDLER BLVD., SUITE 1
CHANDLER, AZ 85226; 480-829-6000
CONSULTING ENGINEER

DR: JRR	DES: DVV	CK: SHM	DATE: 01/14

50080 DANIEL V VOIGT
REGISTERED PROFESSIONAL ENGINEER
ARIZONA, U.S.A.
Expires 9/30/15

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

EXISTING GROUND @ LT GUTTER

NEW LT TOP OF CURB

NEW LT GUTTER

EXISTING GROUND @ ℄

PROPOSED GRADE @ PGL

EXISTING GROUND @ RT GUTTER

NEW RT TOP OF CURB

NEW RT GUTTER

+0.1800%

+0.2206%

L=630.16'

TC=1017.40
G=1016.90

P=1017.84

TC=1018.30
G=1017.80

P=1018.74

TC=1017.18
G=1016.68

TC=1018.28
G=1017.78

SEE SHEET PR-1.06

MATCH LINE STA 226+50

SEE SHEET PR-1.08

MATCH LINE STA 231+50

1026
1024
1022
1020
1018
1016
1014

226+50 227+00 228+00 229+00 230+00 231+00 231+50

602-263-1100
1-800-STAKE-IT
OUTSIDE MARICOPA COUNTY

PREMIER ENGINEERING
PROJECT NO.: 2010011

PAVING PROFILE

CITY OF PHOENIX STREET TRANSPORTATION
DEPARTMENT DESIGN AND CONSTRUCTION
MANAGEMENT DIVISION

AVENIDA RIO SALADO/BROADWAY ROAD
51ST AVENUE TO 43RD AVENUE
ST85100334

DR: JRR	DES: DVV	CK: SHM	DWG NO:
DATE: 01/14	DATE: 01/14	DATE: 01/14	
SCALE: 1"=20' H, 1"= 2' V			PR-1.07

ST85100334

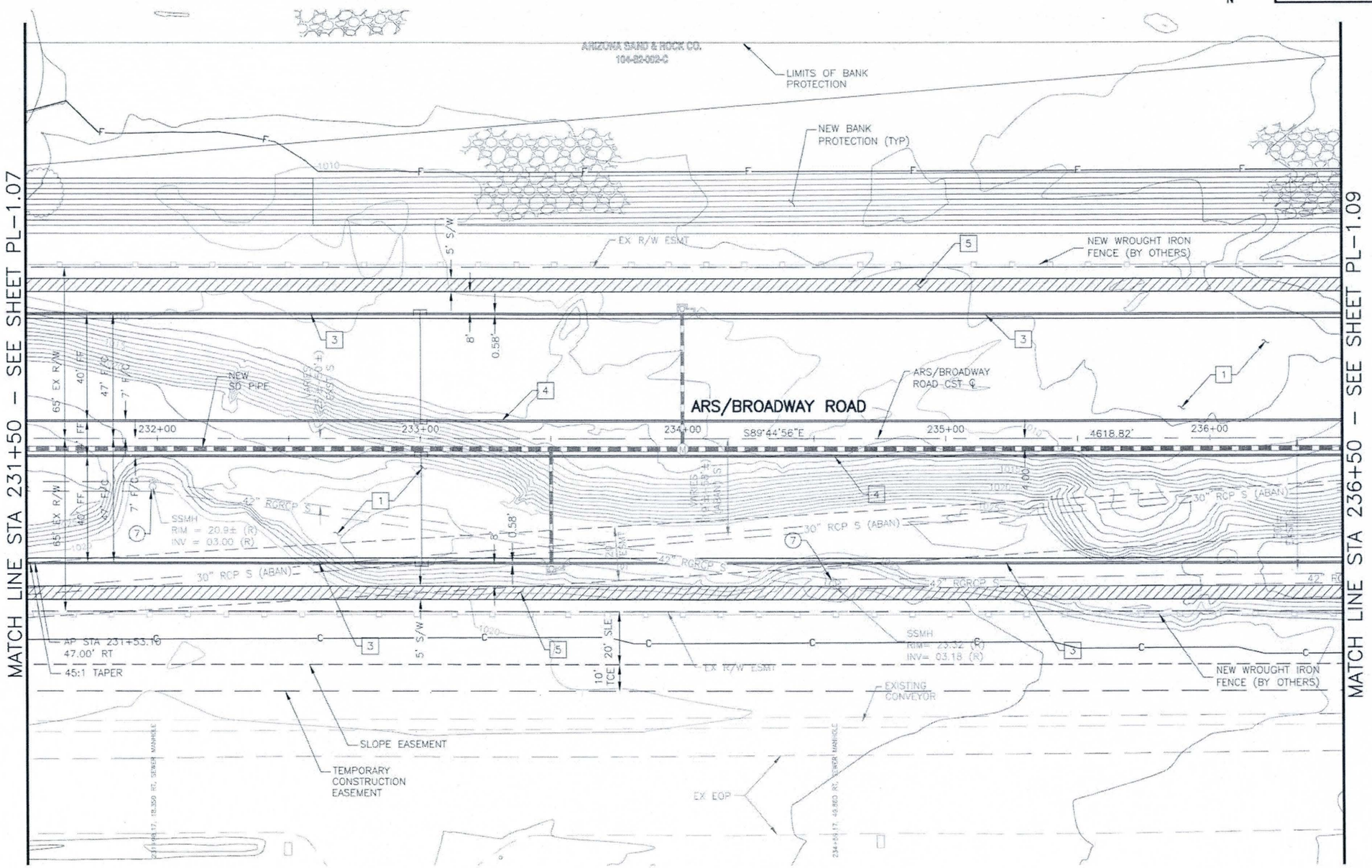
P:\2010011\CADD\Civil\Sheets\ST85100334PR07.dwg
dvoigt Jan 23, 2014 – 7:59am

AVENIDA RIO SALADO/BROADWAY ROAD
51ST AVENUE TO 43RD AVENUE
PHOENIX STREETS – MARICOPA CO.

REVISION BY CITY OF PHOENIX					
NO.	DESCRIPTION	REV BY	CKD BY	DATE	

REVISION BY CITY OF PHOENIX					
NO.	DESCRIPTION	REV BY	CKD BY	DATE	

REVISION BY CITY OF PHOENIX					
NO.	DESCRIPTION	REV BY	CKD BY	DATE	



▲ T.B.M.: SET 1/2" REBAR AT STA 234+16.10, 258.60' LT ELEV = 1009.30

NOTES:
1. ATTACH SIDEWALK ADJACENT TO SRP EQUIPMENT PADS, SEE SRP PLANS FOR PAD LOCATIONS. MAINTAIN 12" CLEAR FROM EDGE OF PAD TO BACK OF SIDEWALK. MAINTAIN 3' CLEAR FROM EDGE OF PAD ON EACH SIDE.
2. FOR LANDSCAPE IRRIGATION SLEEVE SIZES AND LOCATIONS SEE LANDSCAPE IRRIGATION PLAN SHEETS.

City of Phoenix
N

Registered Professional Engineer (Civil) CERTIFICATE NO. 50380 DANIEL V. VOIGT Date Signed 01/31/14 ARIZONA, U.S.A.

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL
9	ARIZ.	ST85100334	29	157

PREMIER
ENGINEERING CORPORATION
6437 W. CHANDLER BLVD., SUITE 1
CHANDLER, AZ 85226; 480-829-6000
CONSULTING ENGINEER

DR: JRR	DES: DVV	CK: SHM	DATE: 01/14

REMOVAL/RELOCATION NOTES

NO	DESCRIPTION	UNIT	QTY
7	REBUILD MANHOLE GRADE ADJUSTMENT	EA	2

CONSTRUCTION NOTES

NO	DESCRIPTION	UNIT	QTY
	SUBGRADE PREPARATION	SY	4287
1	ASPHALTIC CONCRETE SURFACE COURSE, (D 1/2), 2" THICK	TON	489
	ASPHALT CONCRETE BASE COURSE (A1–1/2), 5–1/2" THICK	TON	1344
	EMULSIFIED ASPHALT FOR TACK COAT, TYPE SS–1H	TON	2.9
3	CURB & GUTTER, M.A.G. DET. 220 TYPE A, H=6"	LF	1000
4	SINGLE CURB, M.A.G. DET. 222 TYPE A, H=6"	LF	1000
5	CONCRETE SIDEWALK, C.O.P. DET. P1230 (6" THICK)	SF	5000

SHEET REFERENCES

1. SEE SHEET 66 FOR STORM DRAIN PLAN
2. SEE SHEET 76 FOR CB CONN PIPE PROFILE
3. SEE SHEET 82 FOR BANK PROTECTION

CALL TWO WORKING DAYS BEFORE YOU DIG CALL FOR THE BLUE STAKES 602-263-1100 1-800-STAKE-IT OUTSIDE MARICOPA COUNTY

PREMIER ENGINEERING
PROJECT NO.: 2010011

PAVING PLAN

CITY OF PHOENIX STREET TRANSPORTATION DEPARTMENT DESIGN AND CONSTRUCTION MANAGEMENT DIVISION

AVENIDA RIO SALADO/BROADWAY ROAD
51ST AVENUE TO 43RD AVENUE
ST85100334

DR: JRR	DES: DVV	CK: SHM	DWG NO:
DATE: 01/14	DATE: 01/14	DATE: 01/14	
SCALE: 1"=20'			PL–1.08

ST85100334

P:\2010011\CADD\Civil\Sheets\ST85100334PL08.dwg dvoigt Jan 23, 2014 – 8:00am

AVENIDA RIO SALADO/BROADWAY ROAD
51ST AVENUE TO 43RD AVENUE
PHOENIX STREETS – MARICOPA CO.

▲ T.B.M.: SET 1/2" REBAR AT
STA 234+16.10, 258.60' LT
ELEV = 1009.30

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL
9	ARIZ.	ST85100334	30	157

PREMIER
ENGINEERING CORPORATION
6437 W. CHANDLER BLVD., SUITE 1
CHANDLER, AZ 85226; 480-829-5000
CONSULTING ENGINEER

DR: JRR | DES: DVV | CK: SHM | DATE: 01/14

50080 DANIEL V VOIGT
Registered Professional Engineer
CERTIFICATE NO.
State Engineer STATE OF
ARIZONA, U.S.A.
Expires 9/30/15

REVISION BY CITY OF PHOENIX

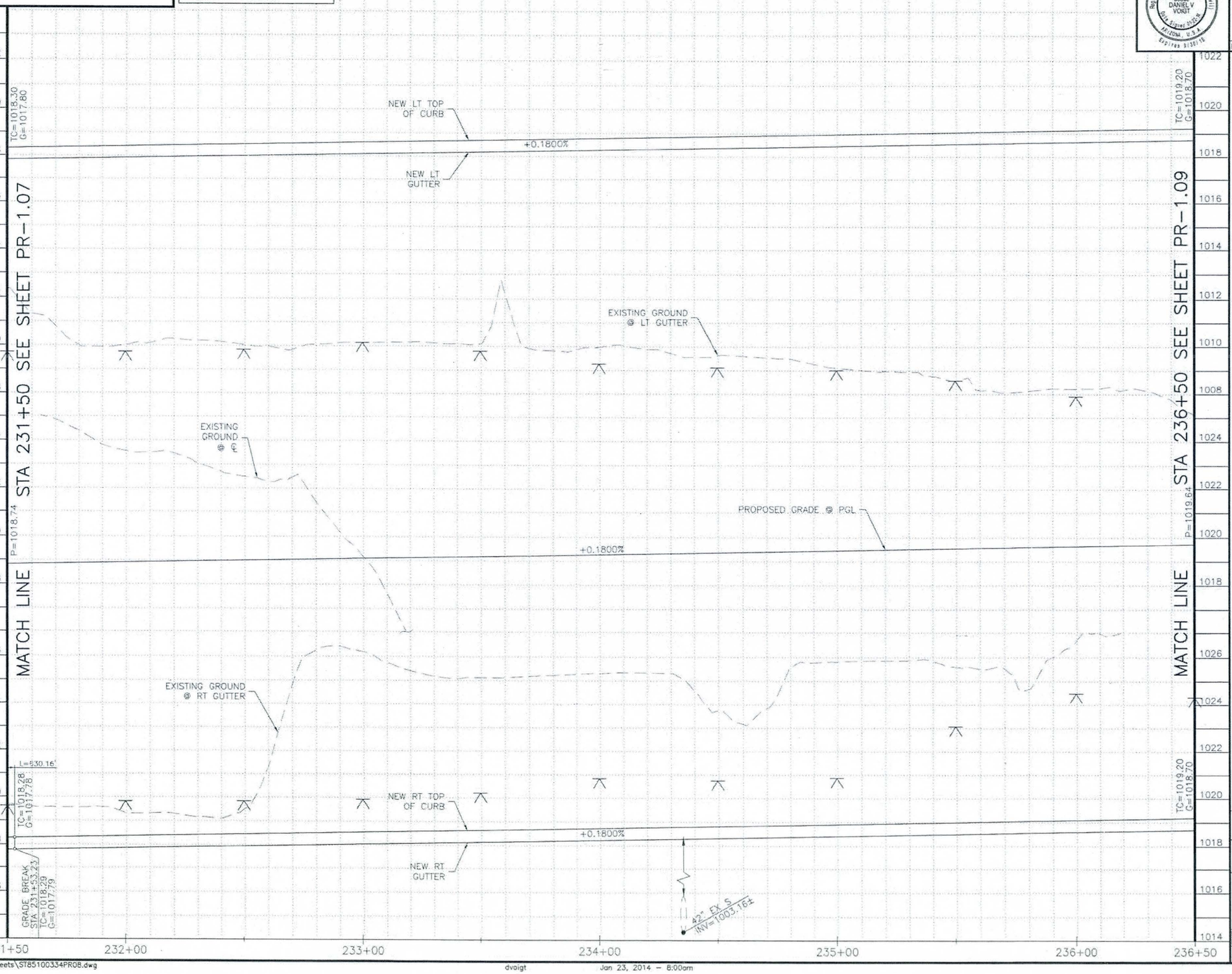
NO.	DESCRIPTION	REV BY	CKD BY	DATE

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE



PREMIER ENGINEERING
PROJECT NO.: 2010011

602-263-1100
1-800-STAKE-IT
OUTSIDE MARICOPA COUNTY

PAVING PROFILE

CITY OF PHOENIX STREET TRANSPORTATION
DEPARTMENT DESIGN AND CONSTRUCTION
MANAGEMENT DIVISION

AVENIDA RIO SALADO/BROADWAY ROAD
51ST AVENUE TO 43RD AVENUE
ST85100334

DR: JRR	DES: DVV	CK: SHM	DWG NO:
DATE: 01/14	DATE: 01/14	DATE: 01/14	
SCALE: 1"=20' H, 1"= 2' V			PR-1.08

ST85100334

P:\2010011\CADD\Civil\Sheets\ST85100334PR08.dwg dvoigt Jan 23, 2014 – 8:00am

AVENIDA RIO SALADO/BROADWAY ROAD
51ST AVENUE TO 43RD AVENUE
PHOENIX STREETS – MARICOPA CO.

City of Phoenix
N

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL
9	ARIZ.	ST85100334	31	157

PREMIER
ENGINEERING CORPORATION
6437 W. CHANDLER BLVD., SUITE 1
CHANDLER, AZ 85226, 480-829-5000
CONSULTING ENGINEER

DR: JRR | DES: DVV | CK: SHM | DATE: 01/14

REVISION BY CITY OF PHOENIX

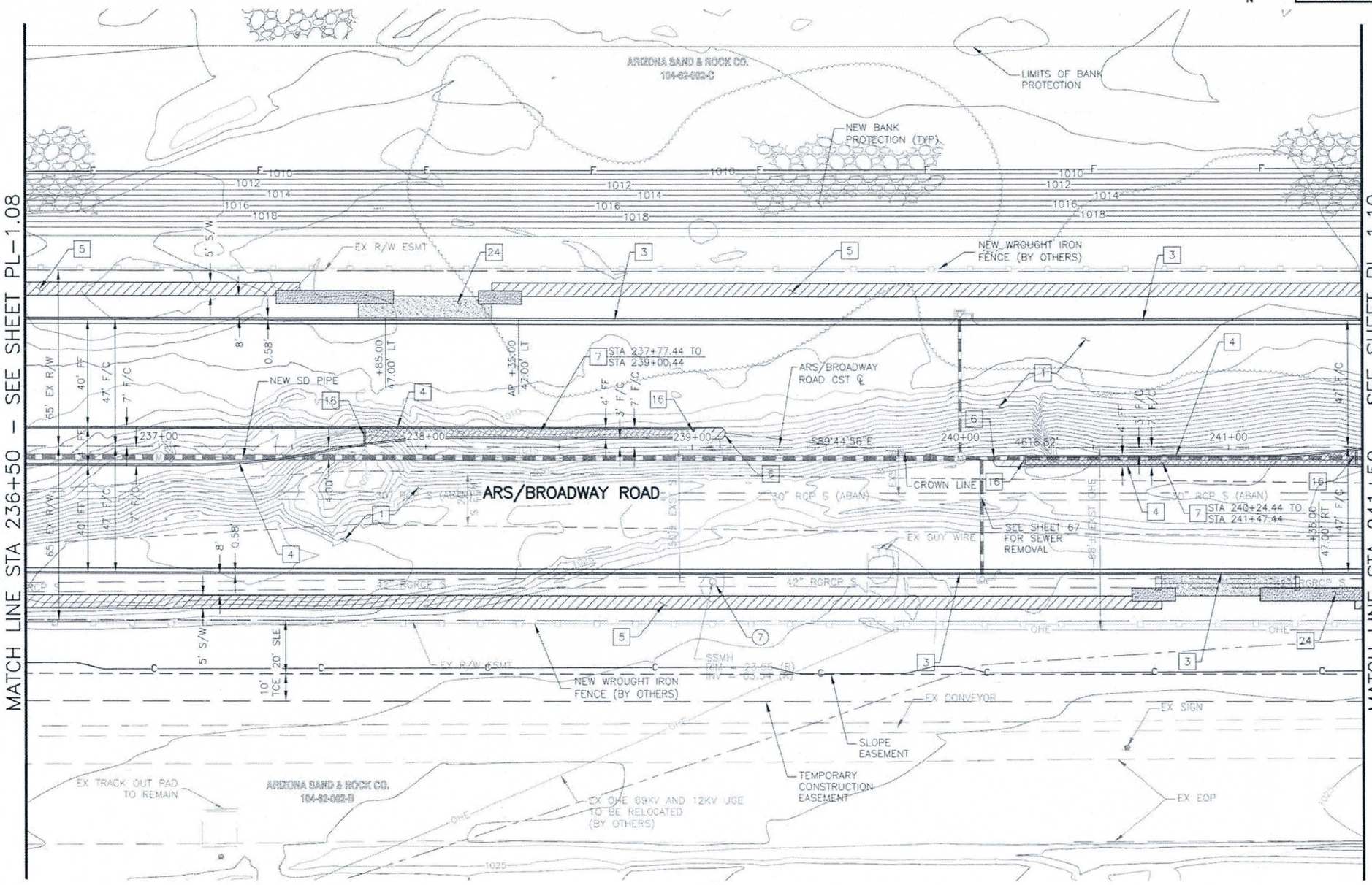
NO.	DESCRIPTION	REV BY	CKD BY	DATE

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE



▲ T.B.M.: SET 1/2" REBAR AT STA 242+73.32, 76.89' RT ELEV = 1024.47

REMOVAL/RELOCATION NOTES

NO	DESCRIPTION	UNIT	QTY
(7)	REBUILD ~~MANHOLE~~ GRADE ADJUSTMENT	EA	1

CONSTRUCTION NOTES

NO	DESCRIPTION	UNIT	QTY
	SUBGRADE PREPARATION	SY	4759
1	ASPHALT CONCRETE SURFACE COURSE, (D 1/2), 2" THICK	TON	543
	ASPHALT CONCRETE BASE COURSE (A 1–1/2), 5–1/2" THICK	TON	1492
	EMULSIFIED ASPHALT FOR TACK COAT, TYPE SS–1H	TON	3.2
3	CURB & GUTTER, M.A.G. DET. 220 TYPE A, H=6"	LF	1000
4	SINGLE CURB, M.A.G. DET. 222 TYPE A, H=6"	LF	805
5	CONCRETE SIDEWALK, C.O.P. DET. P1230 (6" THICK)	SF	4196
6	CONCRETE MEDIAN NOSE, SEE DETAIL SHEET 11	SF	84
	ASPHALT CONCRETE SURFACE COURSE, TYPE D ½, 2–½" THICK	TON	11.4
7	AGGREGATE BASE COURSE, 4" THICK	TON	18.2
	STAMPED ASPHALT DECORATIVE PAVEMENT	SF	754
16	SINGLE CURB, M.A.G. DET 222 TYPE B, H=6"	LF	8
	BUS SHELTER PAD PER DETAIL, SEE SHEET 45	NPI	–
24	CONCRETE BUS PAD PAVEMENT PER COP DET P1260	SF	692
	CONCRETE SIDEWALK, C.O.P. DET P1230, MODIFIED (EXPOSED AGGREGATE)	SF	572

NOTES:
1. ATTACH SIDEWALK ADJACENT TO SRP EQUIPMENT PADS, SEE SRP PLANS FOR PAD LOCATIONS. MAINTAIN 12" CLEAR FROM EDGE OF PAD TO BACK OF SIDEWALK. MAINTAIN 3' CLEAR FROM EDGE OF PAD ON EACH SIDE.
2. FOR LANDSCAPE IRRIGATION SLEEVE SIZES AND LOCATIONS SEE LANDSCAPE IRRIGATION PLAN SHEETS.

SHEET REFERENCES

1. SEE SHEET 13 FOR MEDIAN DETAILS
2. SEE SHEET 67 FOR STORM DRAIN PLAN
3. SEE SHEET 77 FOR CB CONN PIPE PROFILE
4. SEE SHEET 83 FOR BANK PROTECTION

CALL TWO WORKING DAYS BEFORE YOU DIG
CALL FOR THE LOCATION OF UNDERGROUND UTILITIES
602-263-1100
1-800-STAKE-IT
OUTSIDE MARICOPA COUNTY

PREMIER ENGINEERING
PROJECT NO.: 2010011

PAVING PLAN

CITY OF PHOENIX STREET TRANSPORTATION DEPARTMENT DESIGN AND CONSTRUCTION MANAGEMENT DIVISION

AVENIDA RIO SALADO/BROADWAY ROAD
51ST AVENUE TO 43RD AVENUE
ST85100334

DR: JRR	DES: DVV	CK: SHM	DWG NO:
DATE: 01/14	DATE: 01/14	DATE: 01/14	
SCALE: 1"=20'			PL–1.09

ST85100334

P:\2010011\CADD\Civil\Sheets\ST85100334PL09.dwg dvoigt Jan 23, 2014 – 8:02am

AVENIDA RIO SALADO/BROADWAY ROAD
51ST AVENUE TO 43RD AVENUE
PHOENIX STREETS – MARICOPA CO.

▲ T.B.M.: SET 1/2" REBAR AT
STA 242+73.32, 76.89' RT
ELEV = 1024.47

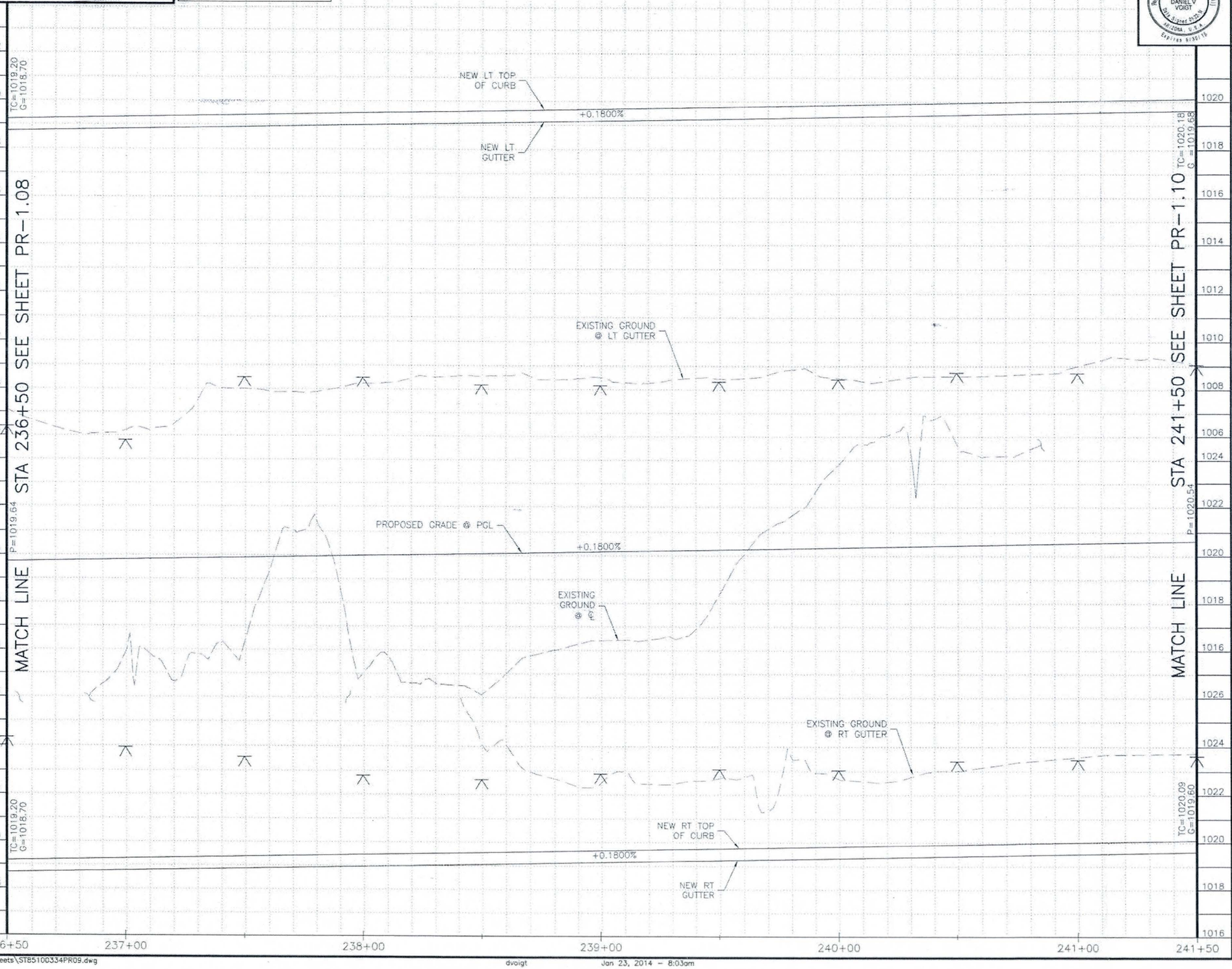
F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL
9	ARIZ.	ST85100334	32	157

PREMIER
ENGINEERING CORPORATION
6437 W. CHANDLER BLVD., SUITE 1
CHANDLER, AZ 85226; 480-829-6000
CONSULTING ENGINEER

DR: JRR | DES: DVV | CK: SHM | DATE: 01/14

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE



NOTE

SEE PAVING PLAN SHEETS FOR MEDIAN ISLAND CONSTRUCTION.

602-263-1100
1-800-STAKE-IT

PREMIER ENGINEERING
PROJECT NO.: 2010011

PAVING PROFILE

CITY OF PHOENIX STREET TRANSPORTATION
DEPARTMENT DESIGN AND CONSTRUCTION
MANAGEMENT DIVISION

AVENIDA RIO SALADO/BROADWAY ROAD
51ST AVENUE TO 43RD AVENUE
ST85100334

DR: JRR	DES: DVV	CK: SHM	DWG NO:
DATE: 01/14	DATE: 01/14	DATE: 01/14	
SCALE: 1"=20' H, 1"=2' V			PR-1.09

ST85100334

P:\2010011\CADD\Civil\Sheets\ST85100334PR09.dwg dvoigt Jan 23, 2014 - 8:03am

AVENIDA RIO SALADO/BROADWAY ROAD
51ST AVENUE TO 43RD AVENUE
PHOENIX STREETS – MARICOPA CO.

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL
9	ARIZ.	ST85100334	33	157

PREMIER
ENGINEERING CORPORATION
6437 W. CHANDLER BLVD., SUITE 1
CHANDLER, AZ 85226; 480-829-6000
CONSULTING ENGINEER

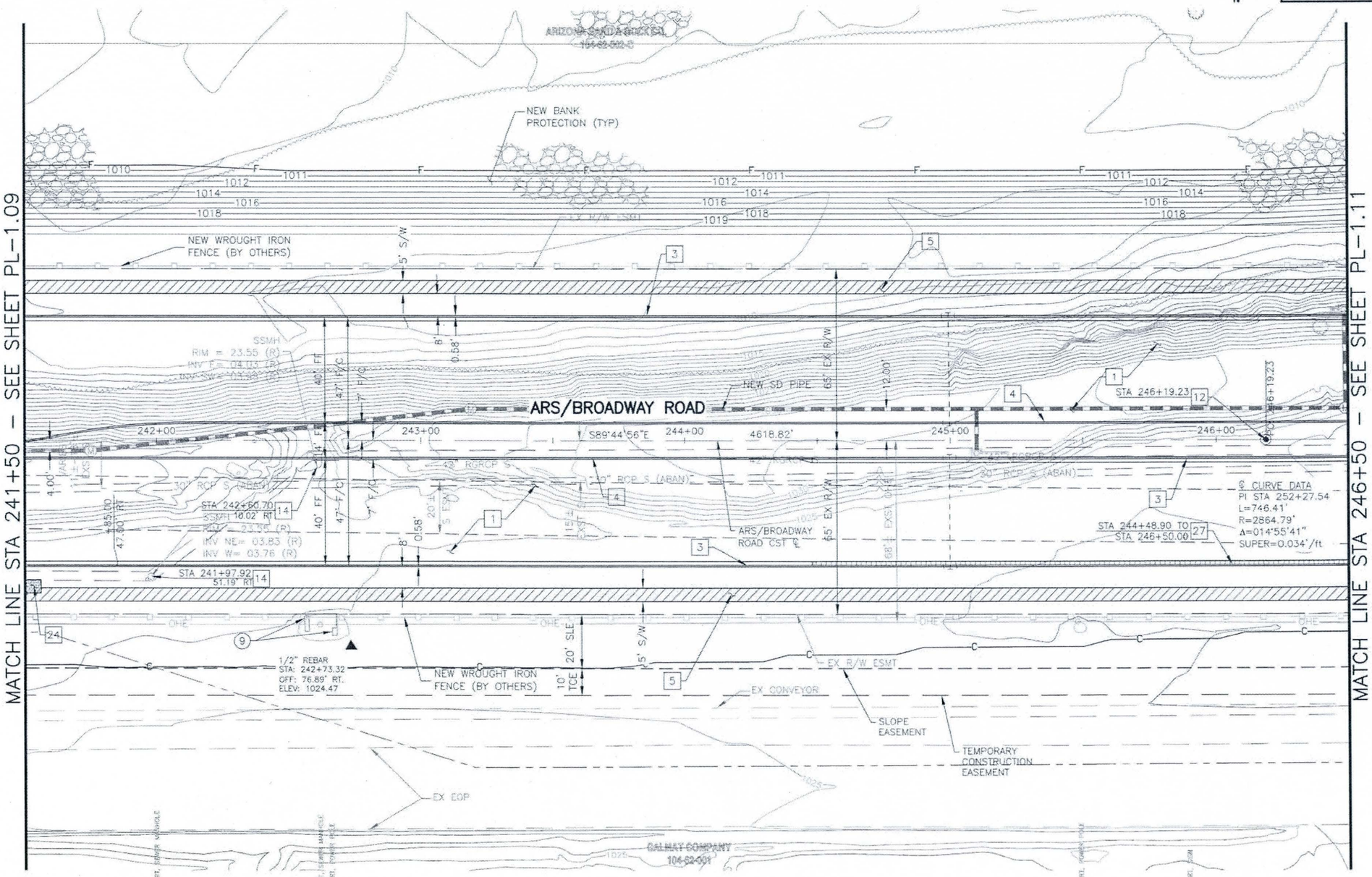
DR: JRR	DES: DVV	CK: SHM	DATE: 01/14

50080 DANIEL V VOIGT — Registered Professional Engineer — CERTIFICATE NO. — State of Arizona — U.S.A. — Expires 9/30/15

City of Phoenix
N

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE



▲ T.B.M.: SET 1/2" REBAR AT STA 242+73.32, 76.89' RT ELEV = 1024.47

NOTES:
1. ATTACH SIDEWALK ADJACENT TO SRP EQUIPMENT PADS, SEE SRP PLANS FOR PAD LOCATIONS. MAINTAIN 12" CLEAR FROM EDGE OF PAD TO BACK OF SIDEWALK. MAINTAIN 3' CLEAR FROM EDGE OF PAD ON EACH SIDE.
2. FOR LANDSCAPE IRRIGATION SLEEVE SIZES AND LOCATIONS SEE LANDSCAPE IRRIGATION PLAN SHEETS.

REMOVAL/RELOCATION NOTES

NO	DESCRIPTION	UNIT	QTY
9	REMOVE CONCRETE BARRIER	LF	15

CONSTRUCTION NOTES

NO	DESCRIPTION	UNIT	QTY
	SUBGRADE PREPARATION	SY	4290
1	ASPHALT CONCRETE SURFACE COURSE, (D 1/2), 2" THICK	TON	489
	ASPHALT CONCRETE BASE COURSE (A 1–1/2), 5–1/2" THICK	TON	1345
	EMULSIFIED ASPHALT FOR TACK COAT, TYPE SS–1H	TON	2.9
3	CURB & GUTTER, M.A.G. DET. 220 TYPE A, H=6"	LF	1002
4	SINGLE CURB, M.A.G. DET. 222 TYPE A, H=6"	LF	797
5	CONCRETE SIDEWALK, C.O.P. DET. P1230 (6" THICK)	SF	4982
12	SURVEY MARKER, M.A.G. DET. 120–1, TYPE B	EA	1
14	ADJUST EXISTING MANHOLE FRAME AND COVER, MAG STD DETAIL 422 AND COP DETAIL P1422	EA	2
	BUS SHELTER PAD PER DETAIL, SEE SHEET 45	NPI	–
24	CONCRETE BUS PAD PAVEMENT PER COP DET P1260	SF	0
	CONCRETE SIDEWALK, C.O.P. DET P1230, MODIFIED (EXPOSED AGGREGATE)	SF	28
27	CURB & GUTTER, M.A.G. DET. 220 TYPE A, H=6", DEPRESSED LIP	LF	201

SHEET REFERENCES

1. SEE SHEET 13 FOR MEDIAN DETAILS
2. SEE SHEET 68 FOR STORM DRAIN PLAN
3. SEE SHEET 78 FOR CB CONN PIPE PROFILE
4. SEE SHEET 84 FOR BANK PROTECTION

CALL TWO WORKING DAYS BEFORE YOU DIG
CALL FOR THE BLUE STAKES
602-263-1100
1-800-STAKE-IT
OUTSIDE MARICOPA COUNTY

PREMIER ENGINEERING
PROJECT NO.: 2010011

PAVING PLAN

CITY OF PHOENIX STREET TRANSPORTATION DEPARTMENT DESIGN AND CONSTRUCTION MANAGEMENT DIVISION

AVENIDA RIO SALADO/BROADWAY ROAD
51ST AVENUE TO 43RD AVENUE
ST85100334

DR: JRR	DES: DVV	CK: SHM	DWG NO:
DATE: 01/14	DATE: 01/14	DATE: 01/14	
SCALE: 1"=20'			PL–1.10

ST85100334

P:\2010011\CADD\Civil\Sheets\ST85100334PL10.dwg dvoigt Jan 23, 2014 – 8:04am

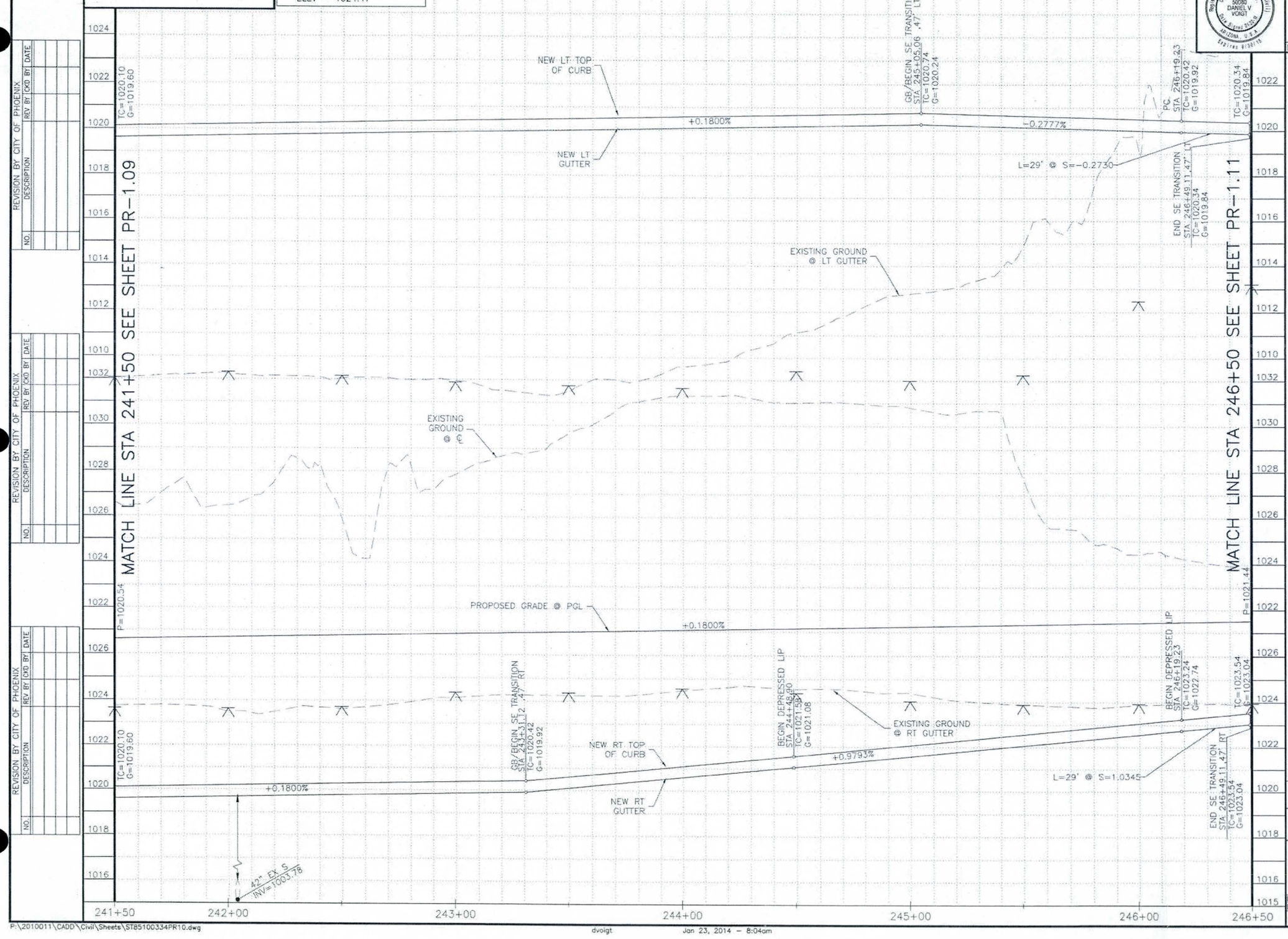
AVENIDA RIO SALADO/BROADWAY ROAD
51ST AVENUE TO 43RD AVENUE
PHOENIX STREETS – MARICOPA CO.

▲ T.B.M.: SET 1/2" REBAR AT
STA 242+73.32, 76.89' RT
ELEV = 1024.47

REVISION BY CITY OF PHOENIX				
NO.	DESCRIPTION	REV BY	CKD BY	DATE

REVISION BY CITY OF PHOENIX				
NO.	DESCRIPTION	REV BY	CKD BY	DATE

REVISION BY CITY OF PHOENIX				
NO.	DESCRIPTION	REV BY	CKD BY	DATE



F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL
9	ARIZ.	ST85100334	34	157

Registered Professional Engineer
CERTIFICATE NO.
50080
DANIEL V VOIGT
Date Signed 01/23/14
ARIZONA, U.S.A.

PREMIER
ENGINEERING CORPORATION
6437 W. CHANDLER BLVD., SUITE 1
CHANDLER, AZ 85226; 480-829-6000
CONSULTING ENGINEER

DR: JRR	DES: DVV	CK: SHM	DATE: 01/14

CALL TWO WORKING DAYS BEFORE YOU DIG
CALL FOR THE BLUE STAKERS
602-263-1100
1-800-STAKE-IT
OUTSIDE MARICOPA COUNTY

PREMIER ENGINEERING
PROJECT NO.: 2010011

PAVING PROFILE

CITY OF PHOENIX STREET TRANSPORTATION
DEPARTMENT DESIGN AND CONSTRUCTION
MANAGEMENT DIVISION

AVENIDA RIO SALADO/BROADWAY ROAD
51ST AVENUE TO 43RD AVENUE
ST85100334

DR: JRR	DES: DVV	CK: SHM	DWG NO:
DATE: 01/14	DATE: 01/14	DATE: 01/14	
SCALE: 1"=20' H 1"= 2' V			PR-1.10

ST85100334

P:\2010011\CADD\Civil\Sheets\ST85100334PR10.dwg
dvoigt
Jan 23, 2014 – 8:04am

AVENIDA RIO SALADO/BROADWAY ROAD
51ST AVENUE TO 43RD AVENUE
PHOENIX STREETS – MARICOPA CO.

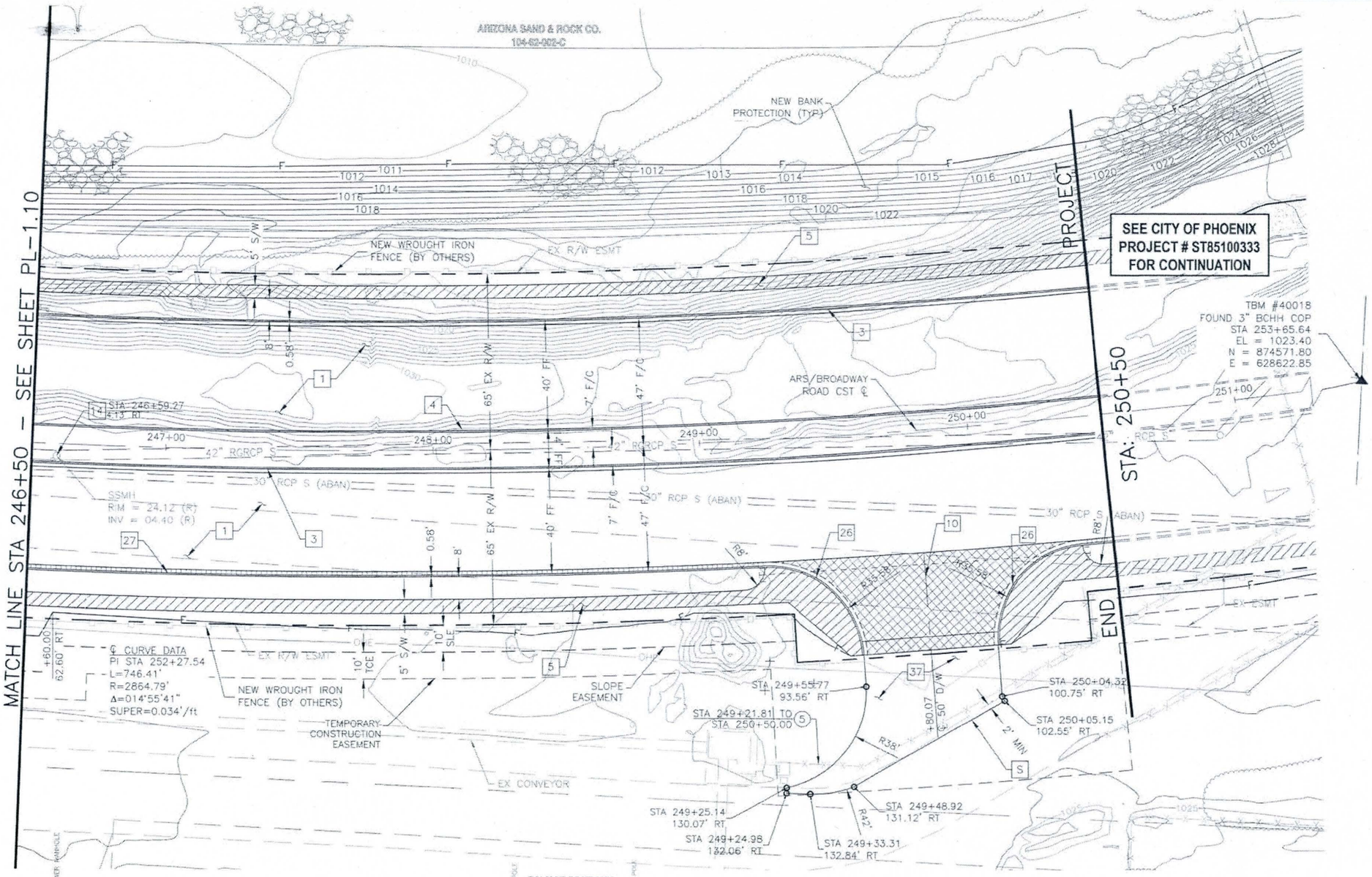
F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL
9	ARIZ.	ST85100334	35	157

PREMIER
ENGINEERING CORPORATION
6439 W. CHANDLER BLVD., SUITE 1
CHANDLER, AZ 85226, 480-829-6000
CONSULTING ENGINEER

DR: JRR | DES: DVV | CK: SHM | DATE: 01/14

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE



▲ T.B.M.: FND 3" BCHH COP
C-0.4_D AT STA 253+65.67,
0.07" LT, ELEV = 1023.40

NOTES:
1. ATTACH SIDEWALK ADJACENT TO SRP EQUIPMENT PADS, SEE SRP PLANS FOR PAD LOCATIONS. MAINTAIN 12" CLEAR FROM EDGE OF PAD TO BACK OF SIDEWALK. MAINTAIN 3' CLEAR FROM EDGE OF PAD ON EACH SIDE.
2. FOR LANDSCAPE IRRIGATION SLEEVE SIZES AND LOCATIONS SEE LANDSCAPE IRRIGATION PLAN SHEETS.

REMOVAL/RELOCATION NOTES

NO	DESCRIPTION	UNIT	QTY
5	REMOVE EXISTING FENCE	LF	58

CONSTRUCTION NOTES

NO	DESCRIPTION	UNIT	QTY
	SUBGRADE PREPARATION	SY	3367
1	ASPHALT CONCRETE SURFACE COURSE, (D 1/2), 2" THICK	TON	384
	ASPHALT CONCRETE BASE COURSE (A1-1/2), 5-1/2" THICK	TON	1056
	EMULSIFIED ASPHALT FOR TACK COAT, TYPE SS-1H	TON	2.2
3	CURB & GUTTER, M.A.G. DET. 220 TYPE A, H=6"	LF	800
4	SINGLE CURB, M.A.G. DET. 222 TYPE A, H=6"	LF	399
5	CONCRETE SIDEWALK, C.O.P. DET. P1230 (6" THICK)	SF	3539
10	CONCRETE DRIVEWAY ENTRANCE , C.O.P. DET. P1243 (9" THICK)	SF	3388
14	ADJUST EXISTING MANHOLE FRAME AND COVER, MAG STD DETAIL 422 AND COP DETAIL P1422	EA	1
26	CURB & GUTTER, M.A.G. DET. 220 TYPE A, H=6" (9" THICK)	LF	109
27	CURB & GUTTER, M.A.G. DET. 220 TYPE A, H=6", DEPRESSED LIP	LF	295
37	ASPHALT CONCRETE SURFACE COURSE TYPE D ½ FOR DRIVEWAY CONNECTIONS	TON	37

SHEET REFERENCES

1. SEE SHEET 13 FOR MEDIAN DETAILS
2. SEE SHEET 85 FOR BANK PROTECTION

PREMIER ENGINEERING
PROJECT NO.: 2010011

602-263-1100
1-800-STAKE-IT
OUTSIDE MARICOPA COUNTY

PAVING PLAN

CITY OF PHOENIX STREET TRANSPORTATION
DEPARTMENT DESIGN AND CONSTRUCTION
MANAGEMENT DIVISION

AVENIDA RIO SALADO/BROADWAY ROAD
51ST AVENUE TO 43RD AVENUE
ST85100334

DR: JRR	DES: DVV	CK: SHM	DWG NO:
DATE: 01/14	DATE: 01/14	DATE: 01/14	
SCALE: 1"=20'			PL-1.11

ST85100334

P:\2010011\CADD\Civil\Sheets\ST85100334PL11.dwg dvoigt Jan 23, 2014 – 8:05am

AVENIDA RIO SALADO/BROADWAY ROAD
51ST AVENUE TO 43RD AVENUE
PHOENIX STREETS – MARICOPA CO.

▲ T.B.M.: FND 3" BCHH COP
C-0.4_D AT STA 253+65.67,
0.07" LT, ELEV = 1023.40

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL
9	ARIZ.	ST85100334	36	157

PREMIER
ENGINEERING CORPORATION
6437 W. CHANDLER BLVD., SUITE 1
CHANDLER, AZ 85226; 480-829-5000
CONSULTING ENGINEER

DR: JRR | DES: DVV | CK: SHM | DATE: 01/14

50080 DANIEL V VOIGT — Registered Professional Engineer (Civil) — CERTIFICATE NO. — Date Signed 8/31/15 — ARIZONA, U.S.A. — Expires 9/30/15

REVISION BY CITY OF PHOENIX

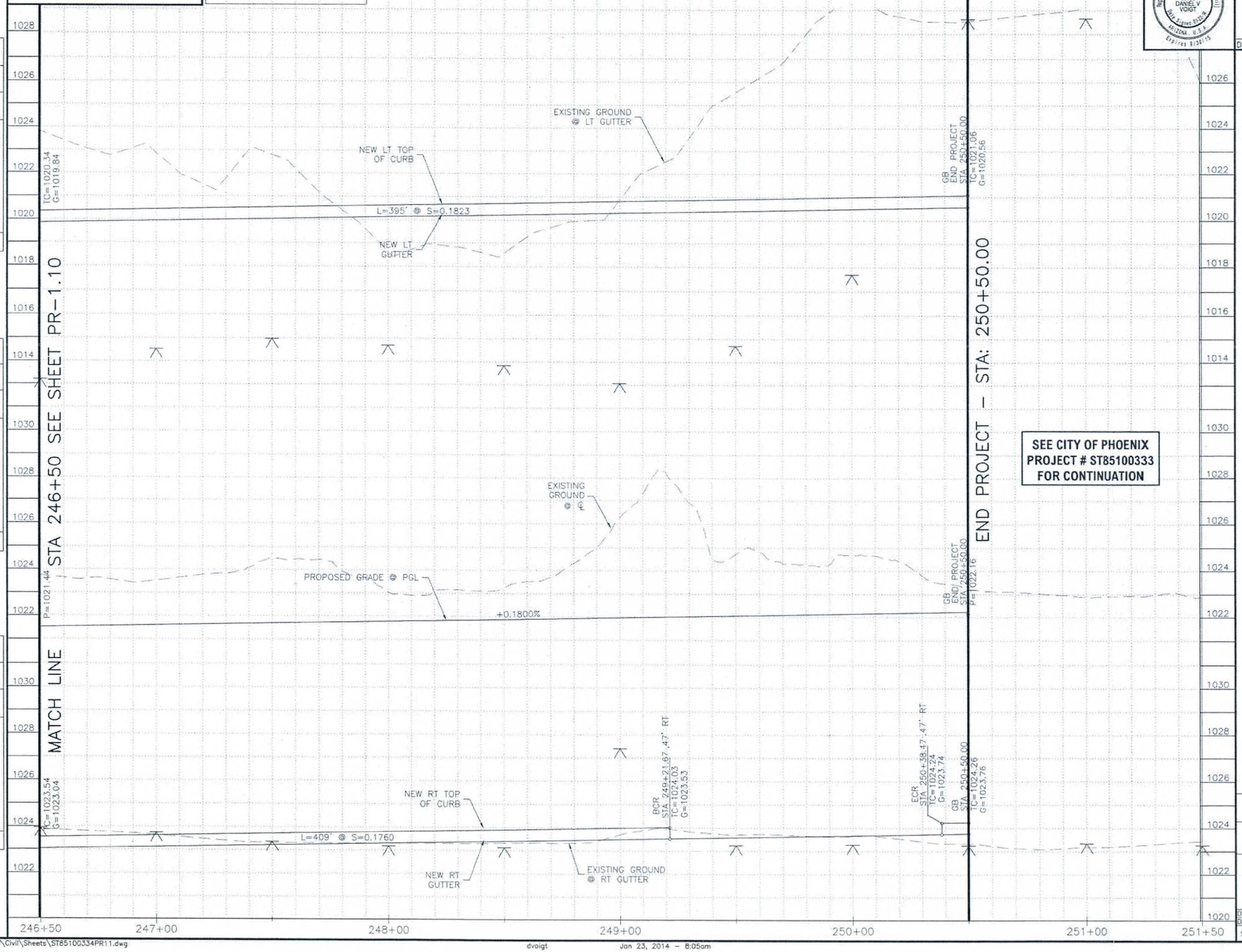
NO.	DESCRIPTION	REV BY	CKD BY	DATE

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE



PREMIER ENGINEERING
PROJECT NO.: 2010011

602-263-1100
1-800-STAKE-IT

PAVING PROFILE

CITY OF PHOENIX STREET TRANSPORTATION
DEPARTMENT DESIGN AND CONSTRUCTION
MANAGEMENT DIVISION

AVENIDA RIO SALADO/BROADWAY ROAD
51ST AVENUE TO 43RD AVENUE
ST85100334

DR: JRR	DES: DVV	CK: SHM	DWG NO:
DATE: 01/14	DATE: 01/14	DATE: 01/14	
SCALE: 1"=20' H, 1"= 2' V			PR-1.11

ST85100334

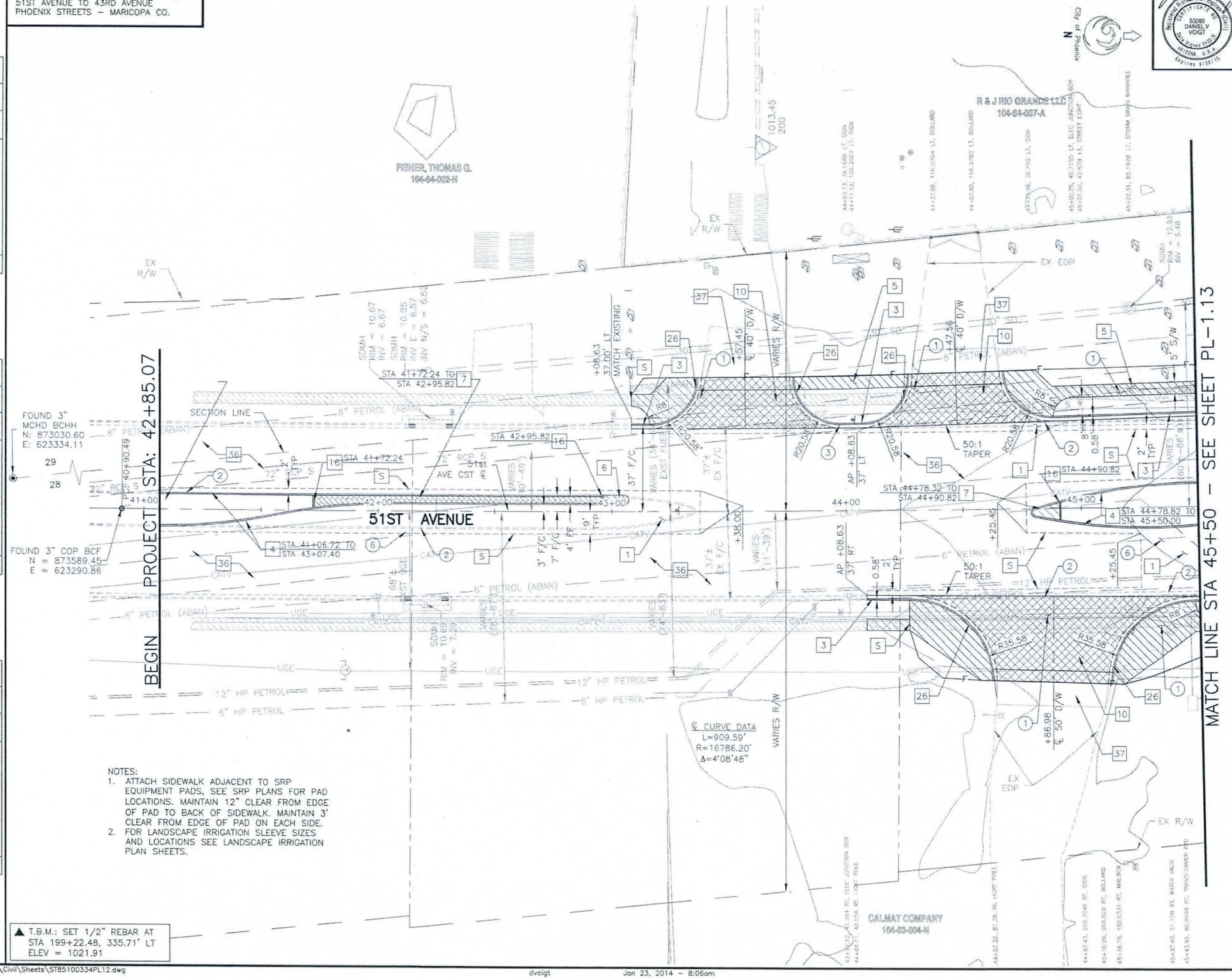
P:\2010011\CADD\Civil\Sheets\ST85100334PR11.dwg dvoigt Jan 23, 2014 – 8:05am

AVENIDA RIO SALADO/BROADWAY ROAD
51ST AVENUE TO 43RD AVENUE
PHOENIX STREETS – MARICOPA CO.

NO.	DESCRIPTION	REV BY	CKD BY	DATE
	REVISION BY CITY OF PHOENIX			

NO.	DESCRIPTION	REV BY	CKD BY	DATE
	REVISION BY CITY OF PHOENIX			

NO.	DESCRIPTION	REV BY	CKD BY	DATE
	REVISION BY CITY OF PHOENIX			



NOTES:
1. ATTACH SIDEWALK ADJACENT TO SRP EQUIPMENT PADS, SEE SRP PLANS FOR PAD LOCATIONS. MAINTAIN 12" CLEAR FROM EDGE OF PAD TO BACK OF SIDEWALK. MAINTAIN 3' CLEAR FROM EDGE OF PAD ON EACH SIDE.
2. FOR LANDSCAPE IRRIGATION SLEEVE SIZES AND LOCATIONS SEE LANDSCAPE IRRIGATION PLAN SHEETS.

▲ T.B.M.: SET 1/2" REBAR AT STA 199+22.48, 335.71' LT
ELEV = 1021.91

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL
9	ARIZ.	ST85100334	37	157

Registered Professional Engineer (Civil) CERTIFICATE NO. 50080 DANIEL V VOIGT Date Signed 01/31/14 ARIZONA, U.S.A. Expires 9/30/15

PREMIER
ENGINEERING CORPORATION
6437 W. CHANDLER BLVD., SUITE 1
CHANDLER, AZ 85226; 480-829-6000
CONSULTING ENGINEER

DR: JRR	DES: DVV	CK: SHM	DATE: 01/14

REMOVAL/RELOCATION NOTES

NO	DESCRIPTION	UNIT	QTY
1	REMOVE PORTLAND CEMENT CONCRETE SIDEWALK, DRIVEWAY, VALLEY GUTTER & SLAB	SF	3521
2	REMOVE PORTLAND CEMENT CONCRETE SINGLE CURB AND CURB & GUTTER	LF	499
3	REMOVE AND SALVAGE TRAFFIC SIGN (MISC)	EA	1
6	REMOVE ASPHALT CONCRETE PAVEMENT	SY	670

CONSTRUCTION NOTES

NO	DESCRIPTION	UNIT	QTY
	SUBGRADE PREPARATION	SY	502
1	ASPHALT CONCRETE SURFACE COURSE, (D 1/2), 2" THICK	TON	57
	ASPHALT CONCRETE BASE COURSE (A 1–1/2), 5–1/2" THICK	TON	157
	EMULSIFIED ASPHALT FOR TACK COAT, TYPE SS–1H	TON	.3
3	CURB & GUTTER, M.A.G. DET. 220 TYPE A, H=6"	LF	98
4	SINGLE CURB, M.A.G. DET. 222 TYPE A, H=6"	LF	545
5	CONCRETE SIDEWALK, C.O.P. DET. P1230 (6" THICK)	SF	2487
6	CONCRETE MEDIAN NOSE, SEE DETAIL SHEET 11	SF	42
	ASPHALT CONCRETE SURFACE COURSE, TYPE D ½, 2–½" THICK	TON	6.4
7	AGGREGATE BASE COURSE, 4" THICK	TON	10.3
	STAMPED ASPHALT DECORATIVE PAVEMENT	SF	426
10	CONCRETE DRIVEWAY ENTRANCE, C.O.P. DET. P1243 (9" THICK)	SF	6925
16	SINGLE CURB, M.A.G. DET. 222 TYPE B, H=6"	LF	19
26	CURB & GUTTER, M.A.G. DET. 220 TYPE A, H=6" (9" THICK)	LF	240
36	MICROSEAL EXISTING PAVEMENT AS SHOWN	SY	2516
37	ASPHALT CONCRETE SURFACE COURSE, TYPE D ½ FOR DRIVEWAY CONNECTIONS	TON	22

SHEET REFERENCES

1. SEE SHEET 14 FOR MEDIAN DETAILS

CALL TWO WORKING DAYS BEFORE YOU DIG CALL FOR THE BLUE STAKES
602-263-1100
1-800-STAKE-IT
OUTSIDE MARICOPA COUNTY

PREMIER ENGINEERING
PROJECT NO.: 2010011

PAVING PLAN

CITY OF PHOENIX STREET TRANSPORTATION DEPARTMENT DESIGN AND CONSTRUCTION MANAGEMENT DIVISION

AVENIDA RIO SALADO/BROADWAY ROAD
51ST AVENUE TO 43RD AVENUE
ST85100334

DR: JRR	DES: DVV	CK: SHM	DWG
DATE: 01/14	DATE: 01/14	DATE: 01/14	NO:
SCALE: 1"=20'			PL–1.12

ST85100334

P:\2010011\CADD\Civil\Sheets\ST85100334PL12.dwg dvoigt Jan 23, 2014 – 8:06am

AVENIDA RIO SALADO/BROADWAY ROAD
51ST AVENUE TO 43RD AVENUE
PHOENIX STREETS – MARICOPA CO.

▲ T.B.M.: SET 1/2" REBAR AT
STA 199+22.48, 335.71' LT
ELEV = 1021.91

P.M.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL
9	ARIZ.	ST85100334	38	157

50080
DANIEL V VOIGT
Date Signed 01-31-14
ARIZONA U.S.A.

PREMIER
ENGINEERING CORPORATION
6437 W. CHANDLER BLVD., SUITE 1
CHANDLER, AZ 85226; 480-829-6000
CONSULTING ENGINEER

DR: JRR | DES: DVV | CK: SHM | DATE: 01/14

REVISION BY CITY OF PHOENIX

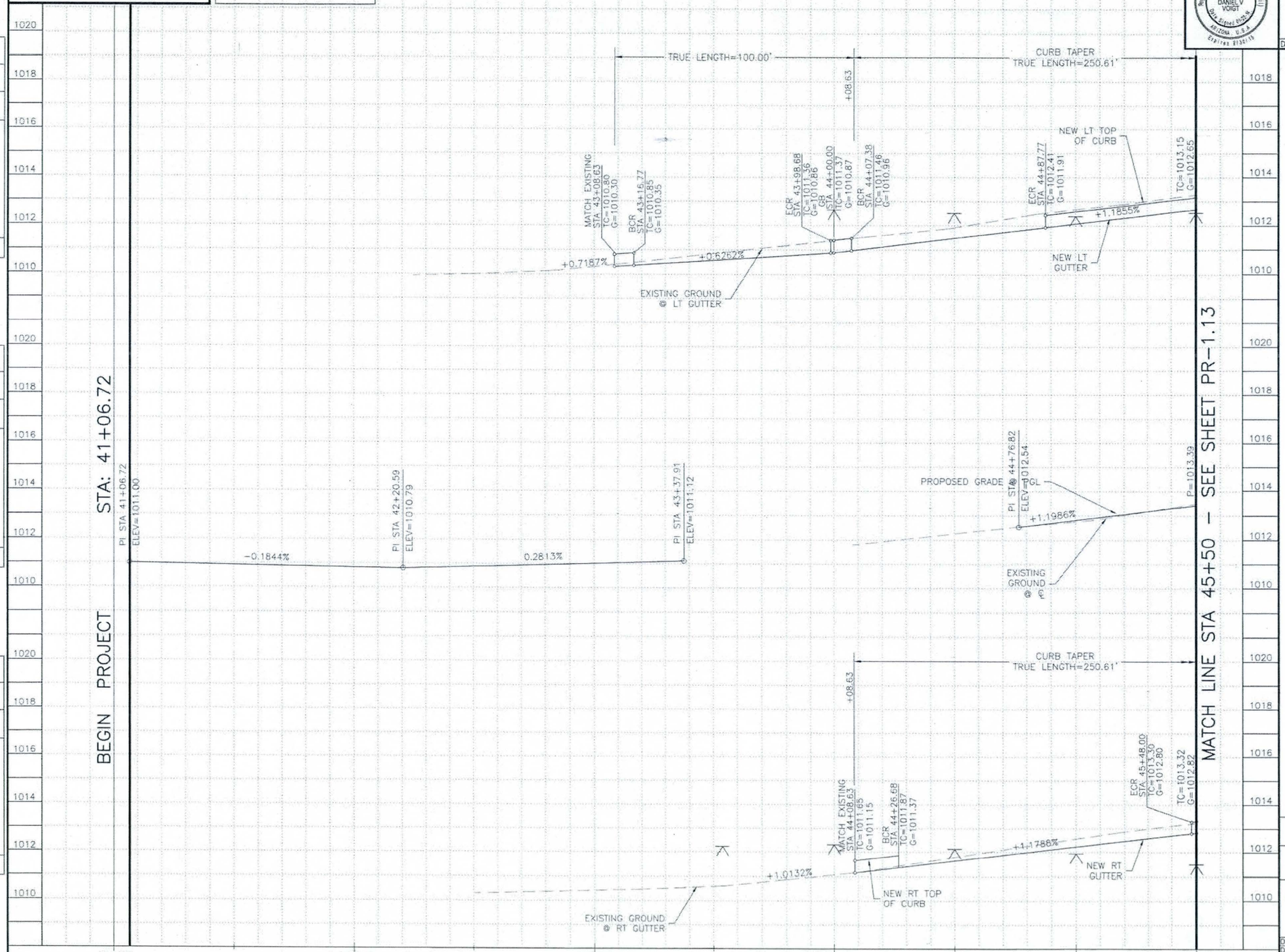
NO.	DESCRIPTION	REV BY	CKD BY	DATE

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE



PREMIER ENGINEERING
PROJECT NO.: 2010011

CALL TWO WORKING DAYS BEFORE YOU DIG
CALL FOR THE BLUE STAKES
602-263-1100
1-800-STAKE-IT
OUTSIDE MARICOPA COUNTY

PAVING PROFILE

CITY OF PHOENIX STREET TRANSPORTATION
DEPARTMENT DESIGN AND CONSTRUCTION
MANAGEMENT DIVISION

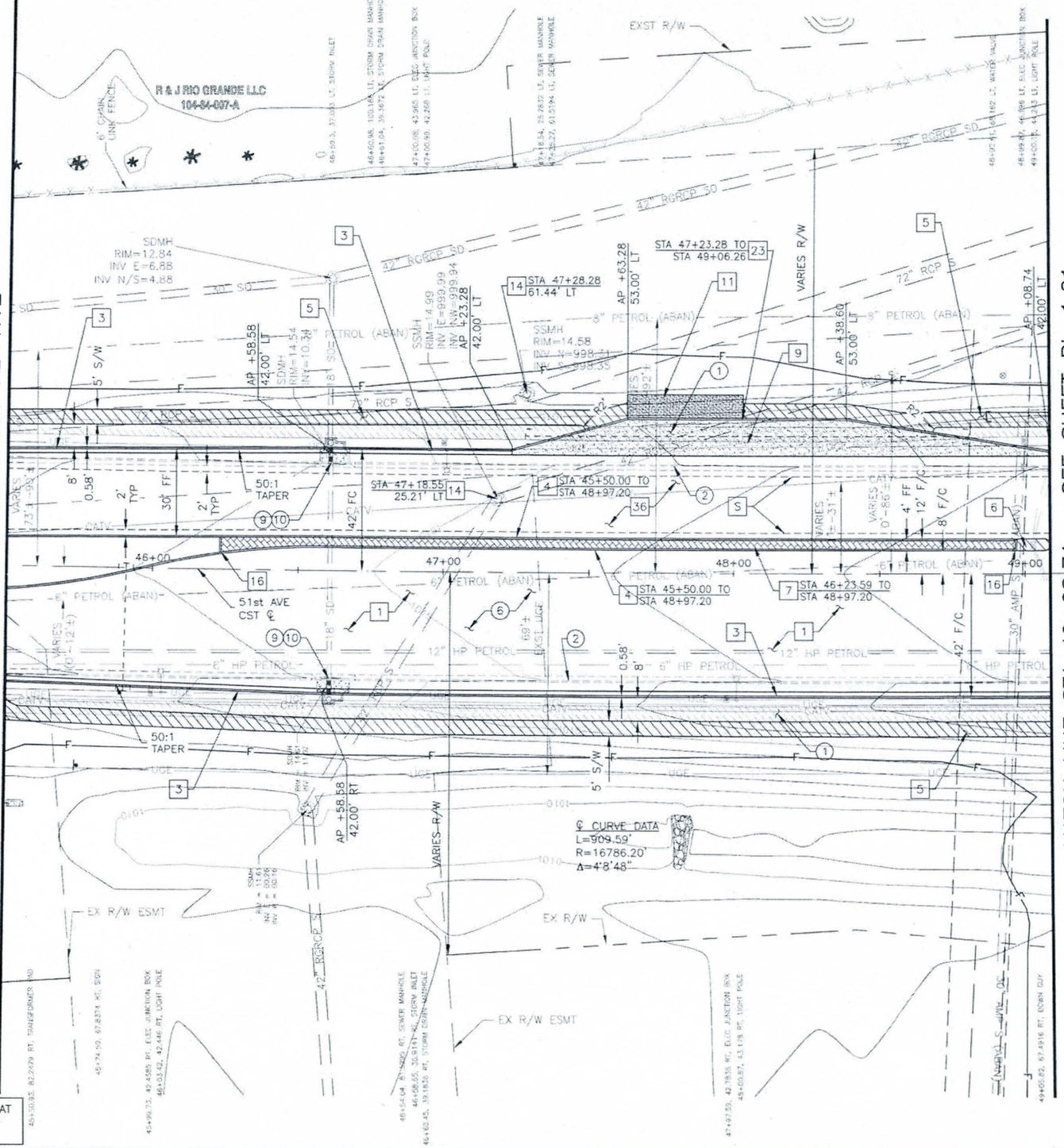
AVENIDA RIO SALADO/BROADWAY ROAD
51ST AVENUE TO 43RD AVENUE
ST85100334

DR: JRR	DES: DVV	CK: SHM	DWG NO: PR-1.12
DATE: 01/14	DATE: 01/14	DATE: 01/14	
SCALE: 1"=20' H 1"= 2' V			

ST85100334

P:\2010011\CADD\Civil\Sheets\ST85100334PR12.dwg
dvoigt
Jan 23, 2014 – 8:06am

AVENIDA RIO SALADO/BROADWAY ROAD
51ST AVENUE TO 43RD AVENUE
PHOENIX STREETS – MARICOPA CO.



▲ T.B.M.: SET 1/2" REBAR AT STA 53+40.79, 54.33' LT ELEV = 1021.91

NOTES:
1. ATTACH SIDEWALK ADJACENT TO SRP EQUIPMENT PADS, SEE SRP PLANS FOR PAD LOCATIONS. MAINTAIN 12" CLEAR FROM EDGE OF PAD TO BACK OF SIDEWALK. MAINTAIN 3' CLEAR FROM EDGE OF PAD ON EACH SIDE.
2. FOR LANDSCAPE IRRIGATION SLEEVE SIZES AND LOCATIONS SEE LANDSCAPE IRRIGATION PLAN SHEETS.

REVISION BY CITY OF PHOENIX				
NO.	DESCRIPTION	REV BY	CKD BY	DATE

REVISION BY CITY OF PHOENIX				
NO.	DESCRIPTION	REV BY	CKD BY	DATE

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL
9	ARIZ.	ST85100334	39	157

PREMIER ENGINEERING CORPORATION
6437 W. CHANDLER BLVD., SUITE 1
CHANDLER, AZ 85226 480-829-6000
CONSULTING ENGINEER

DR: JRR | DES: DVV | CK: SHM | DATE: 01/14

REMOVAL/RELOCATION NOTES

NO	DESCRIPTION	UNIT	QTY
1	REMOVE PORTLAND CEMENT CONCRETE SIDEWALK, DRIVEWAY, VALLEY GUTTER & SLAB	SF	3588
2	REMOVE PORTLAND CEMENT CONCRETE SINGLE CURB AND CURB & GUTTER	LF	717
6	REMOVE ASPHALT CONCRETE PAVEMENT	SY	2046
9	REMOVE PIPE, BACKFILL AND COMPACT	LF	10
10	REMOVE CATCH BASIN	EA	2

CONSTRUCTION NOTES

NO	DESCRIPTION	UNIT	QTY
	SUBGRADE PREPARATION	SY	2189
1	ASPHALT CONCRETE SURFACE COURSE, (D 1/2), 2" THICK	TON	250
	ASPHALT CONCRETE BASE COURSE (A 1–1/2), 5–1/2" THICK	TON	686
	EMULSIFIED ASPHALT FOR TACK COAT, TYPE SS–1H	TON	1.5
3	CURB & GUTTER, M.A.G. DET. 220 TYPE A, H=6"	LF	532
4	SINGLE CURB, M.A.G. DET. 222 TYPE A, H=6"	LF	721
5	CONCRETE SIDEWALK, C.O.P. DET. P1230 (6" THICK)	SF	3364
6	CONCRETE MEDIAN NOSE, SEE DETAIL SHEET 11	SF	42
	ASPHALT CONCRETE SURFACE COURSE, TYPE D ½, 2–½" THICK	TON	12.1
7	AGGREGATE BASE COURSE, 4" THICK	TON	19.3
	STAMPED ASPHALT DECORATIVE PAVEMENT	SF	798
9	9" THICK CONC. PVMT. CLASS "A" PER MAG SPECS & C.O.P. DET. P1256–1	SF	1687
11	BUS SHELTER PAD, C.O.P. DET. P1261	SF	622
14	ADJUST EXISTING MANHOLE FRAME AND COVER, MAG STD DETAIL 422 AND COP DETAIL P1430	EA	2
16	SINGLE CURB, M.A.G. DET. 222 TYPE B, H=6"	LF	8
20	BARRICADE, STANDARD DETAIL P–1106, TYPE 'B'	EA	–
23	CONCRETE SINGLE CURB, MAG DET. 222, TYPE A MOD FOR BUS BAYS	LF	187
36	MICROSEAL EXISTING PAVEMENT AS SHOWN	SY	808

SHEET REFERENCES

1. SEE SHEET 14 FOR MEDIAN DETAILS

PREMIER ENGINEERING
PROJECT NO.: 2010011

CALL TWO WORKING DAYS BEFORE YOU DIG
CALL FOR ON-THE-BLUE STAKES
602-263-1100
1-800-STAKE-IT
OUTSIDE MARICOPA COUNTY

PAVING PLAN

CITY OF PHOENIX STREET TRANSPORTATION DEPARTMENT DESIGN AND CONSTRUCTION MANAGEMENT DIVISION

AVENIDA RIO SALADO/BROADWAY ROAD
51ST AVENUE TO 43RD AVENUE
ST85100334

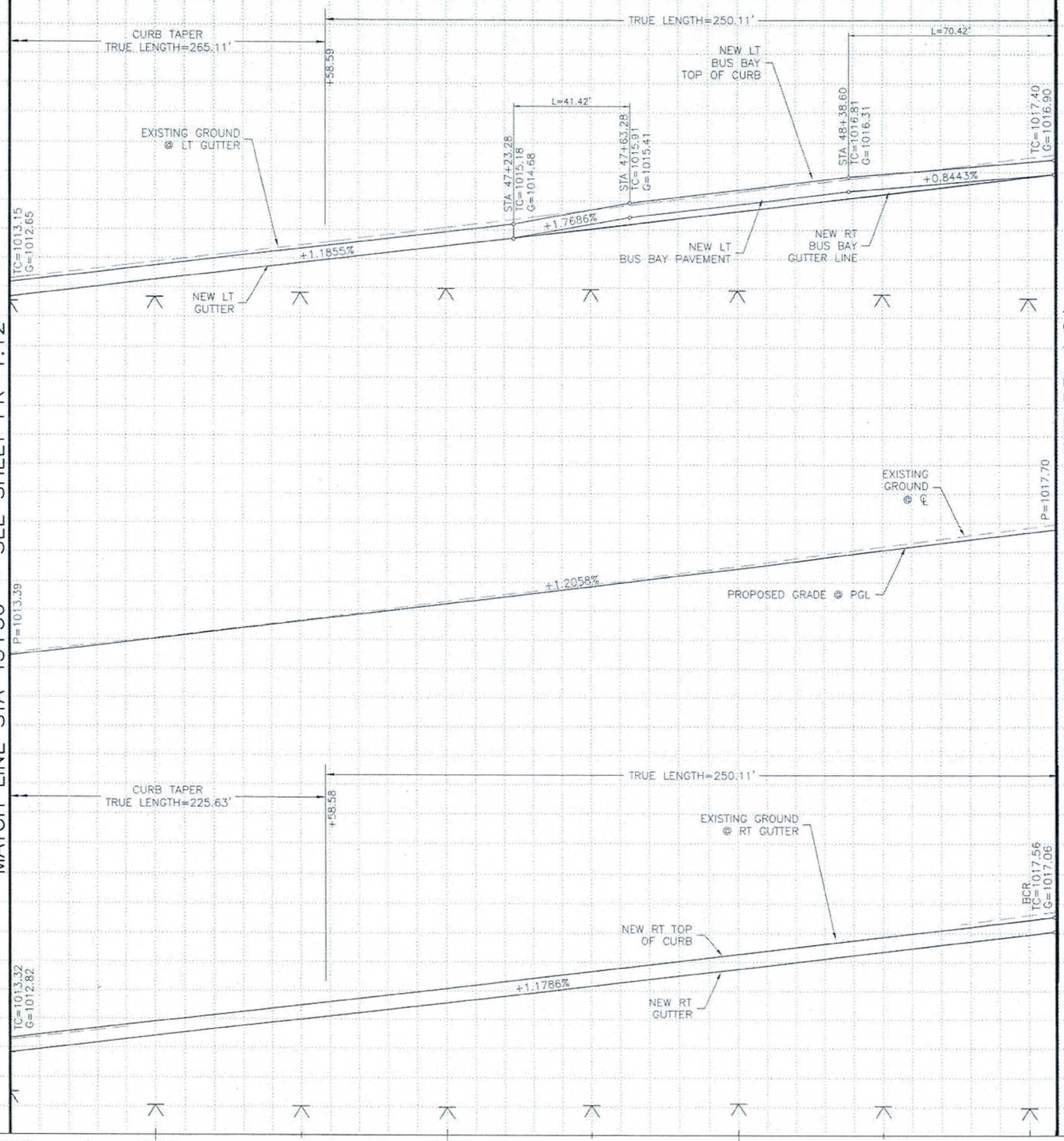
DR: JRR	DES: DVV	CK: SHM	DWG NO:
DATE: 01/14	DATE: 01/14	DATE: 01/14	
SCALE: 1"=20'			PL–1.13

ST85100334

P:\2010011\CADD\Civil\Sheets\ST85100334PL13.dwg dvoigt Jan 27, 2014 – 4:05pm

AVENIDA RIO SALADO/BROADWAY ROAD
51ST AVENUE TO 43RD AVENUE
PHOENIX STREETS – MARICOPA CO.

▲ T.B.M.: SET 1/2" REBAR AT
STA 199+22.48, 335.71' LT
ELEV = 1021.91



REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL
9	ARIZ.	ST85100334	40	157

55080
DANIEL V
VOIGT
Registered Professional Engineer
CERTIFICATE NO.
State of Arizona, U.S.A.
Expires 6/30/15

PREMIER
ENGINEERING CORPORATION
6437 W. CHANDLER BLVD., SUITE 1
CHANDLER, AZ 85226; 480-829-6000
CONSULTING ENGINEER

DR: JRR	DES: DVV	CK: SHM	DATE: 01/14

602-263-1100
1-800-STAKE-IT
OUTSIDE MARICOPA COUNTY

PREMIER ENGINEERING
PROJECT NO.: 2010011

PAVING PROFILE

CITY OF PHOENIX STREET TRANSPORTATION
DEPARTMENT DESIGN AND CONSTRUCTION
MANAGEMENT DIVISION

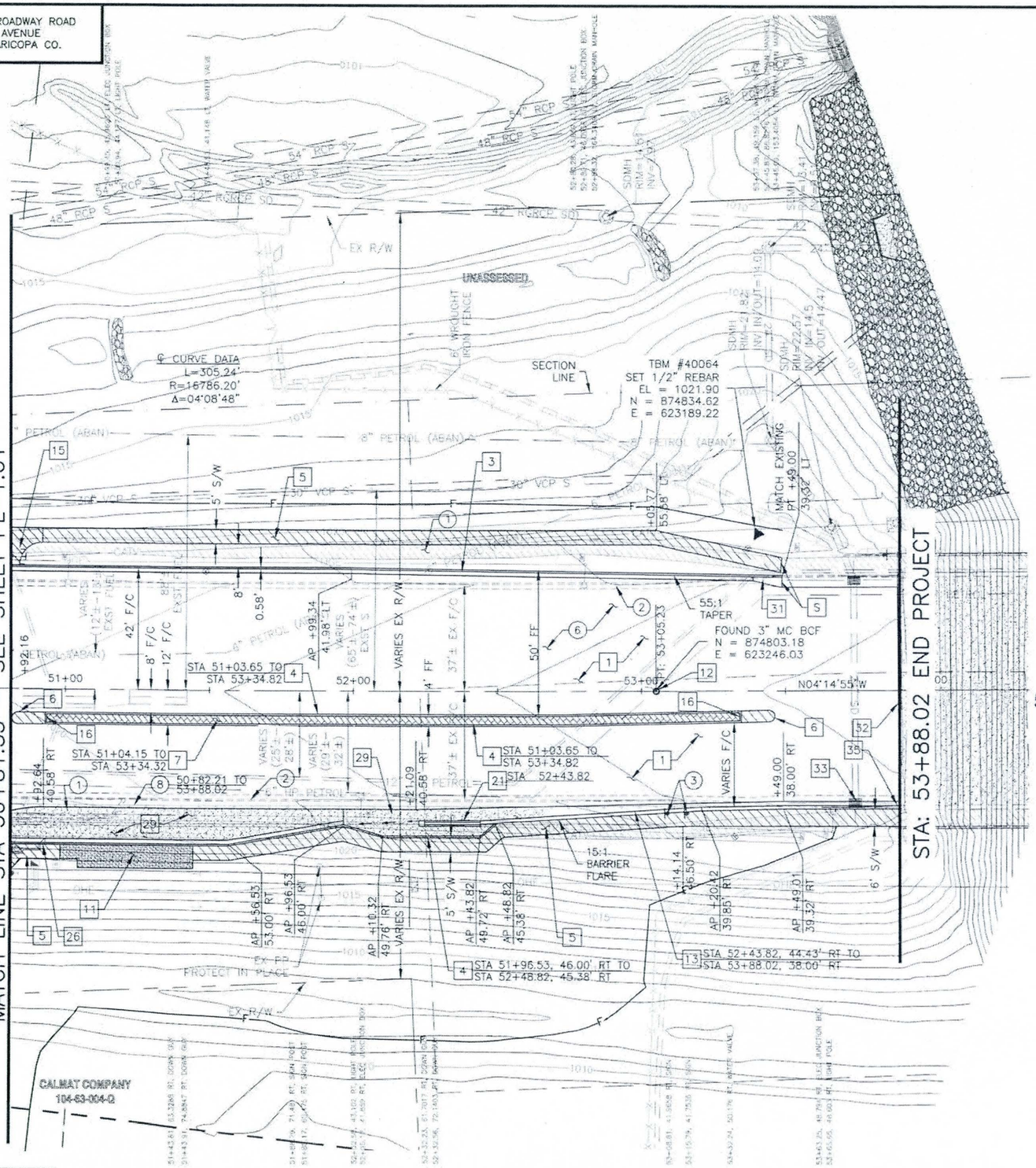
AVENIDA RIO SALADO/BROADWAY ROAD
51ST AVENUE TO 43RD AVENUE
ST85100334

DR: JRR	DES: DVV	CK: SHM	DWG NO:
DATE: 01/14	DATE: 01/14	DATE: 01/14	
SCALE: 1"=20' H, 1"= 2' V			PR-1.13

ST85100334

P:\2010011\CADD\Civil\Sheets\ST85100334PR13.dwg
dvoigt
Jan 23, 2014 – 8:07am

AVENIDA RIO SALADO/BROADWAY ROAD
51ST AVENUE TO 43RD AVENUE
PHOENIX STREETS – MARICOPA CO.



▲ T.B.M.: SET 1/2" REBAR AT
STA 53+40.79, 54.33' LT
ELEV = 1021.90

NOTES:
1. ATTACH SIDEWALK ADJACENT TO SRP EQUIPMENT PADS, SEE SRP PLANS FOR PAD LOCATIONS. MAINTAIN 12" CLEAR FROM EDGE OF PAD TO BACK OF SIDEWALK. MAINTAIN 3' CLEAR FROM EDGE OF PAD ON EACH SIDE.
2. FOR LANDSCAPE IRRIGATION SLEEVE SIZES AND LOCATIONS SEE LANDSCAPE IRRIGATION PLAN SHEETS.

29	9" THICK CONC. PVMT. CLASS "A" PER MAG SPECS & C.O.P. DET. P1256-1 (PAVEMENT ONLY)	SF	1567
31	CONSTRUCT GUTTER TRANSITION PER DETAIL C, SEE SHEET 44	NPI	–
32	CONSTRUCT JOINT AT APPROACH SLAB PER ADOT SD 2.01	LF	80
33	REMOVE & REBUILD TOP 1-FOOT OF CATCH BASIN AS NEEDED PER ADOT C-10.51 & C-15.30 TO INSTALL CONCRETE BARRIER.	EA	1
35	CONNECT BARRIER TO EXISTING BRIDGE BARRIER PER ADOT SD C-10.70	EA	1

SHEET REFERENCES

1. SEE SHEET 14 FOR MEDIAN DETAILS
2. SEE SHEET 71 FOR CB CONN PIPE PROFILE

REVISION BY CITY OF PHOENIX				
NO.	DESCRIPTION	REV BY	CKD BY	DATE

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL
9	ARIZ.	ST85100334	41	157

PREMIER
ENGINEERING CORPORATION
6437 W. CHANDLER BLVD., SUITE 1
CHANDLER, AZ 85226, 480-829-6000
CONSULTING ENGINEER

DR: JRR | DES: DVV | CK: SHM | DATE: 01/14

REMOVAL/RELOCATION NOTES

NO	DESCRIPTION	UNIT	QTY
1	REMOVE PORTLAND CEMENT CONCRETE SIDEWALK, DRIVEWAY, VALLEY GUTTER & SLAB	SF	2669
2	REMOVE PORTLAND CEMENT CONCRETE SINGLE CURB AND CURB & GUTTER	LF	534
3	REMOVE AND SALVAGE TRAFFIC SIGN (MISC)	EA	2
6	REMOVE EXISTING ASPHALT CONCRETE	SY	2498
8	REMOVE EXISTING GUARD RAIL	LF	324

CONSTRUCTION NOTES

NO	DESCRIPTION	UNIT	QTY
	SUBGRADE PREPARATION	SY	2581
	ASPHALT CONCRETE SURFACE COURSE, (D 1/2), 2" THICK	TON	294
1	ASPHALT CONCRETE BASE COURSE (A 1-1/2), 5-1/2" THICK	TON	809
	EMULSIFIED ASPHALT FOR TACK COAT, TYPE SS-1H	TON	1.7
3	CURB & GUTTER, M.A.G. DET. 220 TYPE A, H=6"	LF	323
4	SINGLE CURB, M.A.G. DET. 222 TYPE A, H=6"	LF	568
5	CONCRETE SIDEWALK, C.O.P. DET. P1230 (6" THICK)	SF	2400
6	CONCTETE MEDIAN NOSE, SEE DETAIL SHEET 11	SF	84
	ASPHALT CONCRETE SURFACE COURSE, TYPE D ½, 2-½" THICK	TON	7.7
7	AGGREGATE BASE COURSE, 4" THICK	TON	12.3
	STAMPED ASPHALT DECORATIVE PAVEMENT	SF	510
11	BUS SHELTER PAD, C.O.P. DET. P1261	SF	607
12	SURVEY MARKER, M.A.G. DET. 120-1, TYPE B	EA	1
13	CONSTRUCT 32", TYPE F CONCRETE BARRIER PER DETAIL B ON SHEET 44	LF	123
15	CONSTRUCT SIDEWALK RAMP, C.O.P. DET. P1241-2	N/A	–
16	SINGLE CURB, M.A.G. DET. 222 TYPE B, H=6"	LF	6
21	CONSTRUCT TRACC ENERGY ABSORBING TERMINAL	EA	1
26	CURB & GUTTER, M.A.G. DET 220 TYPE A, H=6" (9" THICK)	LF	214

PREMIER ENGINEERING
PROJECT NO.: 2010011

CALL TWO WORKING DAYS BEFORE YOU DIG
CALL FOR THE BLUE STAKES
602-263-1100
1-800-STAKE-IT
OUTSIDE MARICOPA COUNTY

PAVING PLAN

CITY OF PHOENIX STREET TRANSPORTATION DEPARTMENT DESIGN AND CONSTRUCTION MANAGEMENT DIVISION

AVENIDA RIO SALADO/BROADWAY ROAD
51ST AVENUE TO 43RD AVENUE
ST85100334

DR: JRR	DES: DVV	CK: SHM	DWG NO:
DATE: 01/14	DATE: 01/14	DATE: 01/14	
SCALE: 1"=20'			PL-1.14

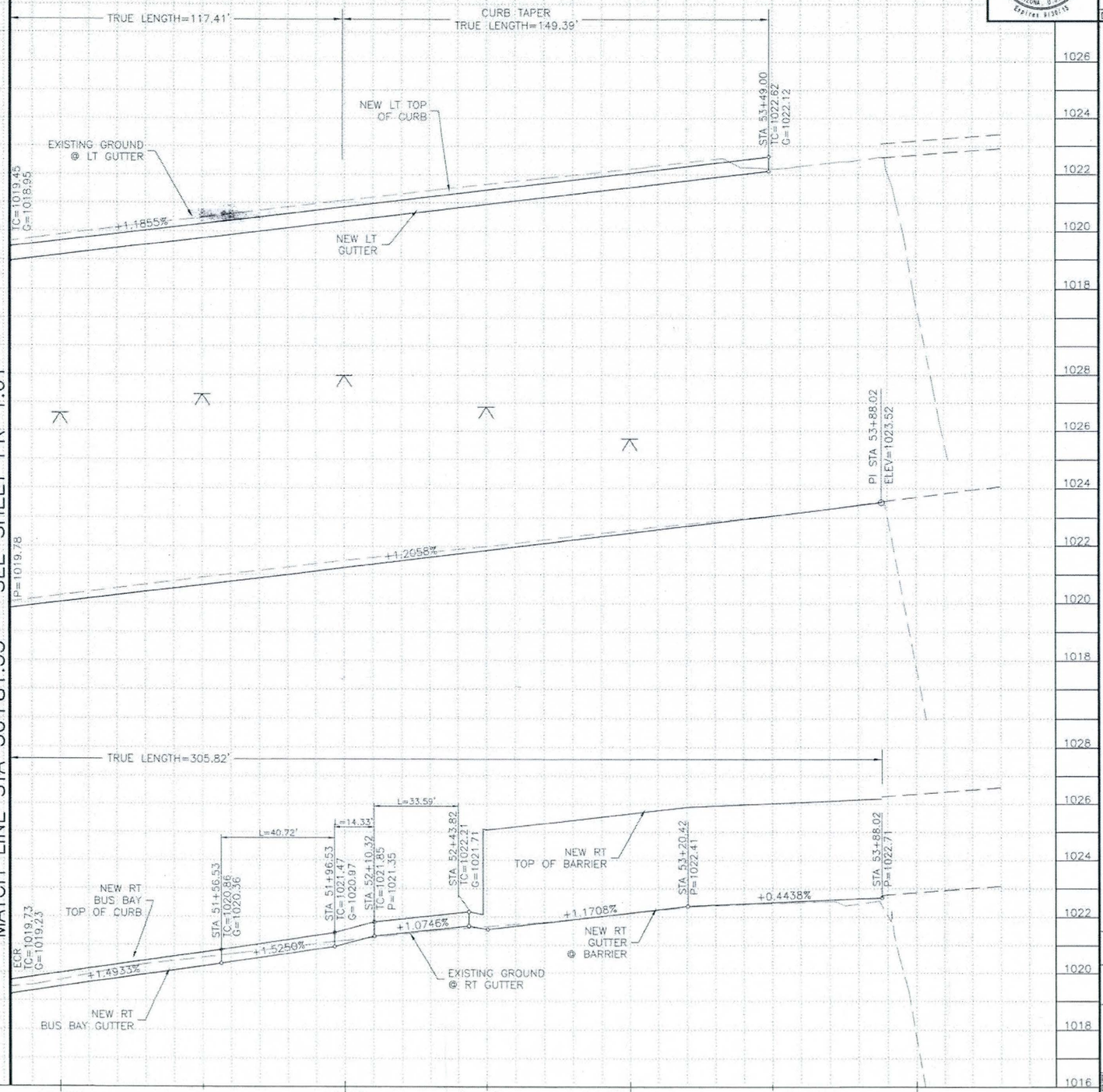
ST85100334

P:\2010011\CADD\Civil\Sheets\ST85100334PL14.dwg dvoigt Jan 27, 2014 – 4:06pm

AVENIDA RIO SALADO/BROADWAY ROAD
51ST AVENUE TO 43RD AVENUE
PHOENIX STREETS – MARICOPA CO.

▲ T.B.M.: SET 1/2" REBAR AT STA 199+22.48, 335.71' LT ELEV = 1021.91

MATCH LINE STA 50+81.53 – SEE SHEET PR-1.01



REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

Registered Professional Engineer (Civil) CERTIFICATE NO. 50080 DANIEL V VOIGT Date Signed 6/30/15 ARIZONA, U.S.A.

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL
9	ARIZ.	ST85100334	42	157

PREMIER
ENGINEERING CORPORATION
6437 W. CHANDLER BLVD., SUITE 1
CHANDLER, AZ 85226; 480-829-6000
CONSULTING ENGINEER

DR: JRR	DES: DVV	CK: SHM	DATE: 01/14

PREMIER ENGINEERING
PROJECT NO.: 2010011

602-263-1100
1-800-STAKE-IT
OUTSIDE MARICOPA COUNTY

PAVING PROFILE

CITY OF PHOENIX STREET TRANSPORTATION DEPARTMENT DESIGN AND CONSTRUCTION MANAGEMENT DIVISION

AVENIDA RIO SALADO/BROADWAY ROAD
51ST AVENUE TO 43RD AVENUE
ST85100334

DR: JRR	DES: DVV	CK: SHM	DWG NO:
DATE: 01/14	DATE: 01/14	DATE: 01/14	
SCALE: 1"=20' H 1"= 2' V			PR-1.14

ST85100334

P:\2010011\CADD\Civil\Sheets\ST85100334PR14.dwg dvoigt Jan 23, 2014 - 8:08am

APPENDIX I

DIGITAL FILES