

Memorandum



To:	DARREN AMUNDSEN	PROJECT: LILYDALE PARK	DATE: 7/12/10
FROM:	STAN HANSON	CLIENT: CITY OF ST PAUL	
RE:	LILYDALE PARK FILL TECHNICAL MEMORANDUM LILYDALE MARINA DEMOLITION – GRADING PLAN	FILE No: 211-09116	

2335 Highway 36 W
St. Paul, MN 55113

Tel 651-636-4600
Fax 651-636-1311

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This memo summarizes the technical analysis performed to verify the absence of any impact to the Mississippi River's 100-year Base Flood Elevation (BFE) due to floodway fill within a portion of Lilydale Park.

Description of Project

The project consists of proposed grading improvements within Lilydale Park. This project will disturb an area within the park between River Station (RS) 182 and 184. The area being disturbed is 6.8 acres (RS 183 +/-). Approximately 59,000 CY of material is being excavated/filled. No material is being hauled into the Lilydale Park from an outside source.

Technical Background

Federal Emergency Management Administration (FEMA) floodplain information for the City of St Paul consists of floodplain maps used for flood insurance purposes called Flood Insurance Rate Maps (FIRMs). The effective maps for St Paul are dated April 2, 2003. These maps represent the current maps used by FEMA and other state agencies in evaluating flood boundaries for the City of St Paul. The FIRM for St Paul shows Lilydale Park within the floodplain and floodway of the Mississippi River.

Procedure

The HEC-RAS model created for the updated 2003 Mississippi River Floodplain Study was used to calculate the effect of the proposed grading improvements within the floodway. The HEC-RAS model was selected for purposes of this analysis, rather than the HEC-2 model created in the early 1970s, because it incorporates the most recent information available and utilizes a graphical interface which allows for less user input errors.

The cross sections (RS 182 -184) that are nearest to the disturbed areas were modified to simulate the effect of the existing conditions. The HEC RAS model was run under the existing conditions to develop the existing water surface elevation for this scenario. The cross sections (RS 182—184) were then modified to simulate the proposed grading plans for this area. The HECRAS model was then run under the proposed grading plan to determine the 100-year water surface elevations throughout the 2003 study reach.

Results

The results of the model are included in the attachments. "Hec-RAS Output Table" represents the original FEMA water surface elevations, the scenario using the existing conditions with the extra cross sections and the "proposed" scenario with the proposed grading. The proposed grading scenario model results show that the water surface elevations did NOT rise throughout the modeled cross sections.

Therefore, I conclude that the proposed grading improvements with Lilydale Park will not raise the 100-year flood elevation of the Mississippi River.

MINNESOTA "NO-RISE" CERTIFICATION

This is to certify that I am a duly qualified professional engineer licensed to practice in the State of Minnesota.

It is further to certify that the attached technical data supports the fact that the grading improvements to the Lilydale Park Marina proposed by the City of St. Paul in the summer of 2010 between River Stations 182 and 184 within Lilydale Park will not impact the floodway width or 100-year flood elevation (will not raise by more than 0.00 feet) on the Mississippi River at published sections in the Flood Insurance Study for the City of St. Paul dated April 2, 2003 (FIRM date), and will not impact the 100-year flood elevation (will not raise by more than 0.00 feet) at unpublished cross-sections in the vicinity of the proposed development / project.

Attached are the following documents that support my findings:

Technical findings memo which includes maps showing the temporary stockpile location, modeled river cross sections, and HEC-RAS output.

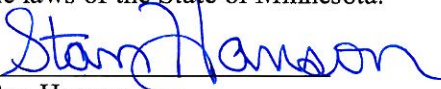
Date: July 9, 2010

Name: Stan Hanson

Signature: 

Title: Project Engineer

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the State of Minnesota.



Stan Hanson

Date: July 9, 2010 Registration No. 26592



Bonestroo

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St. Paul, MN 55113
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I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT
WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION
AND THAT I AM A DULY LICENSED ENGINEER
UNDER THE LAWS OF THE STATE OF MINNESOTA
PRINT NAME: DARREN J. AMUNDSEN
SIGNATURE: _____
DATE: ASST. 1. 2010 I.C. NO. 469281



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City in America

LILYDALE REGIONAL PARK ENVIRONMENTAL CLEAN UP

2010

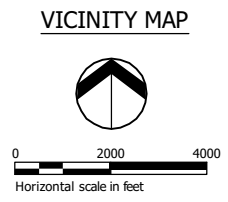
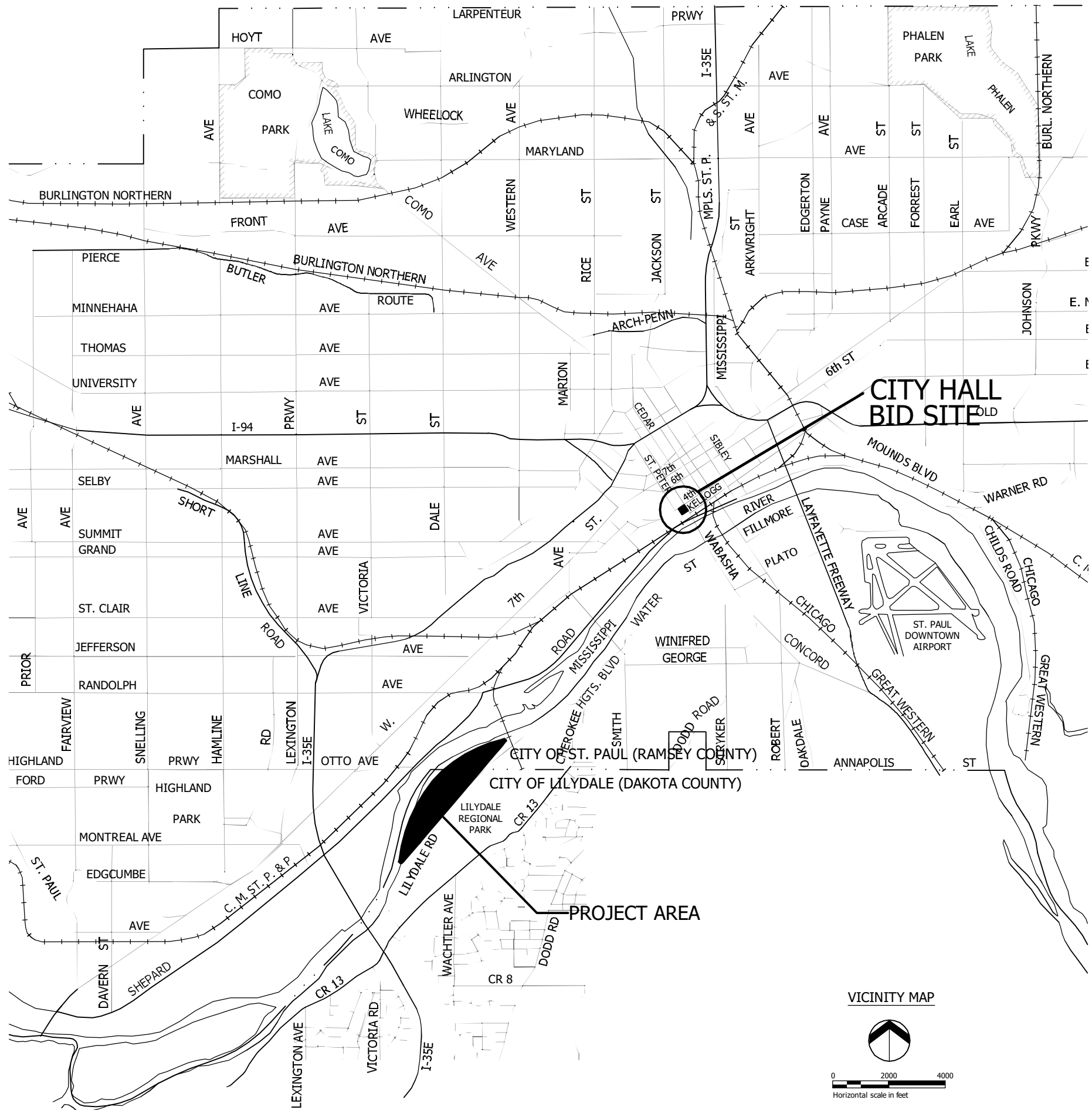
SHEET NUMBER	SHEET TITLE
G0.01	TITLE SHEET
G0.02	LEGEND
C0.01	LOCATION PLAN
C0.02	EXISTING CONDITIONS/EAGLE NEST GUIDELINES
C0.03*	DEMOLITION PLAN
C2.01	TEMPORARY EROSION CONTROL PLAN - MARINA DEMOLITION SITE
C2.02	TEMPORARY EROSION CONTROL PLAN - PARK DUMP SITE
C2.03	PERMANENT EROSION CONTROL PLAN - MARINA DEMOLITION SITE
C2.04	PERMANENT EROSION CONTROL PLAN - PARK DUMP SITE
C3.01	GRADING PLAN - MARINA DEMOLITION SITE
C3.02	GRADING PLAN - PARK DUMP SITE
C3.03	GRADING PLAN - ARMOR COAT SITE
C8.01	STANDARD DETAILS/TYPICAL SECTIONS
C9.01	STAGING AND HAUL ROUTE PLAN
T1.01	TRAFFIC CONTROL PLAN
T1.02	DETOUR PLAN

THIS PLAN SET CONTAINS 16 SHEETS

LILYDALE REGIONAL PARK ENVIRONMENTAL CLEAN UP
SAINT PAUL, MINNESOTA
TITLE SHEET

NO.	REVISION	DATE

PROJECT NO. 211101160
SHEET NUMBER
G0.01



ALICE MESSER
DARREN AMUNDSEN
JOHN CHOI
RICH LALLIER

LANDSCAPE ARCHITECT
PROJECT ENGINEER
ATTORNEY
PUBLIC WORKS DIRECTOR

K:\211101160\CAD\dwg\211101160_G001.dwg 4/9/2010 11:49:06 AM

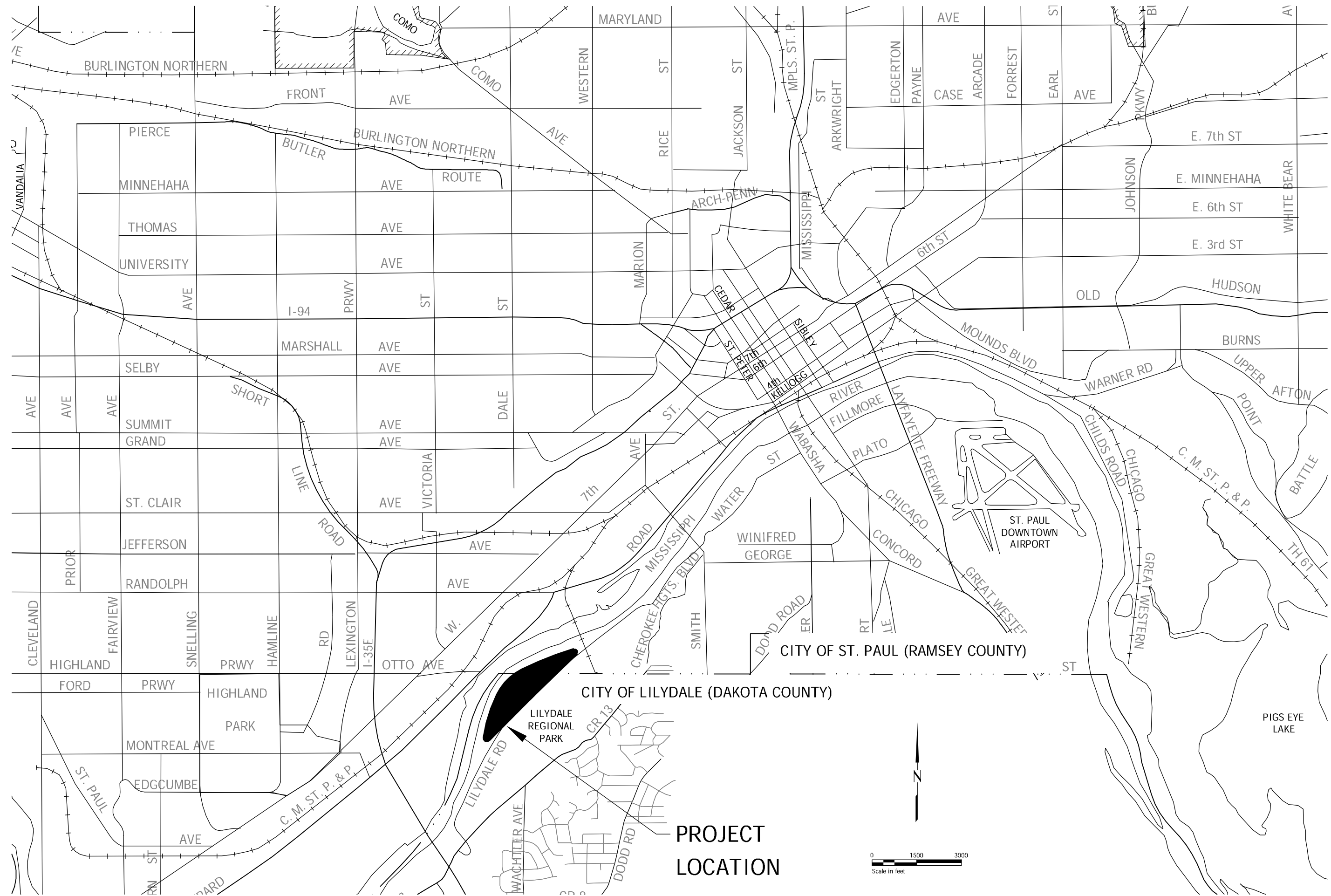


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I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA
PRINT NAME: BARRETT, AMUNDSEN
SIGNATURE: _____
DATE: _____ LIC. NO. _____



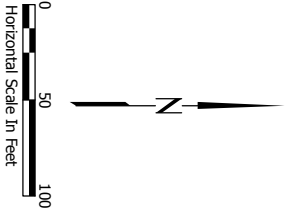
PROJECT LOCATION

ST. PAUL, MINNESOTA
LILYDALE PARK

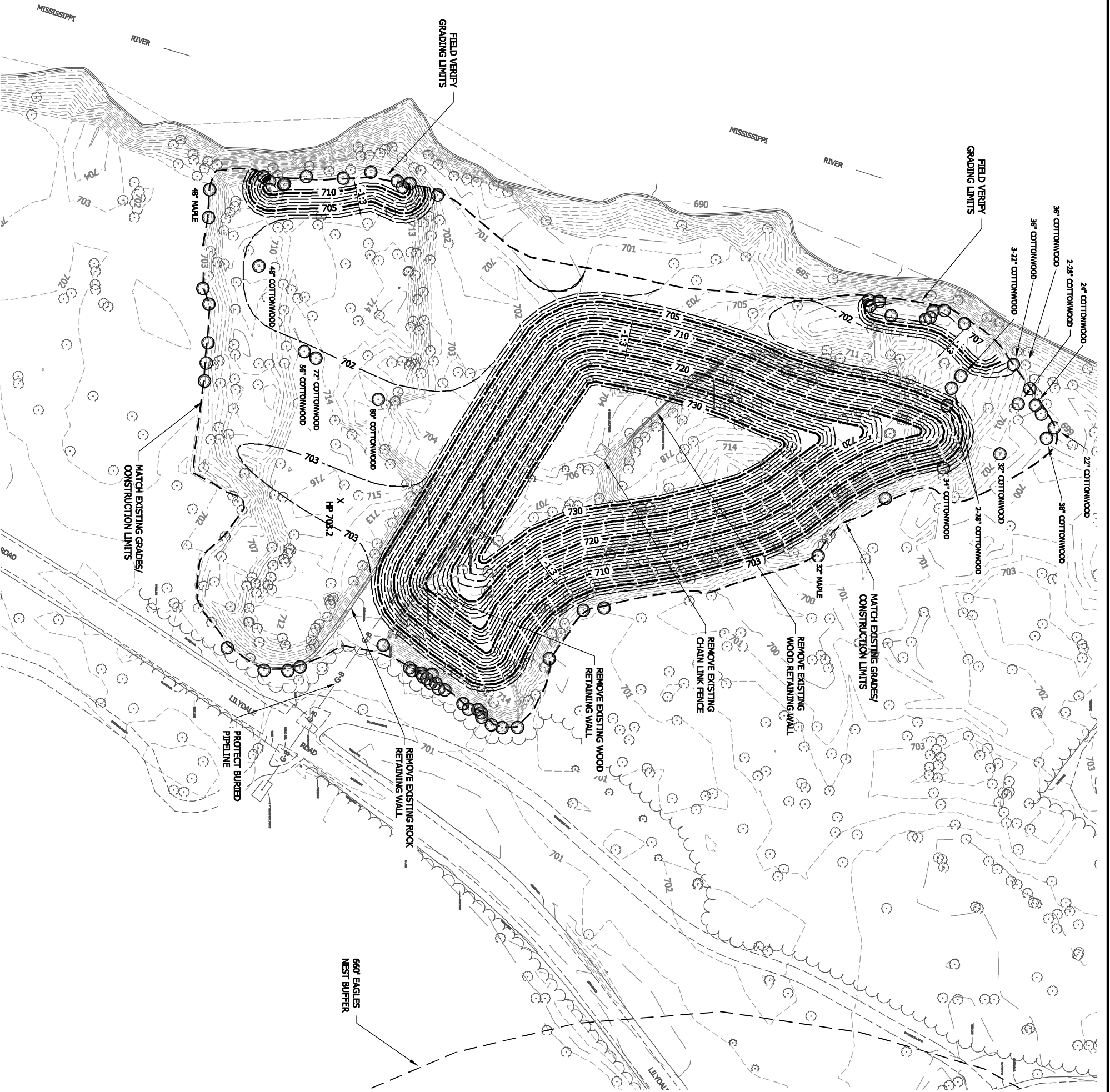
NO.	REVISION	DATE

SURVEY	
DRAWN	KMS
DESIGNED	DTA
APPROVED	DTA
PROJ. NO.	211101160

SHEET NUMBER
C0.01



- NOTES:**
- PERFORM ALL EXCAVATION AND MATERIAL HANDLING OPERATIONS IN ACCORDANCE WITH THE RESPONSE ACTION PLAN (RAP) AND THE CONSTRUCTION CONTINGENCY PLAN (CCP).
 - SALVAGE EXISTING TOPSOIL. RESTORE ALL DISTURBED AREAS WITH MINIMUM 12" SALVAGED TOPSOIL AND SEED AS SHOWN ON C2.03.
 - ALL TREES AND STUMPS WITHIN THE EXCAVATION/GRADING LIMITS ARE TO BE COMPLETELY REMOVED UNLESS OTHERWISE NOTED. PROTECT ALL TREES OUTSIDE OF THE EXCAVATION/GRADING LIMITS AS WELL AS OTHER TREES AS SPECIFIED IN THE PLANS AND AS DIRECTED BY OWNERS REPRESENTATIVE IN THE FIELD. SEE SHEET C8.01 FOR TREE PROTECTION DETAIL. TO BE INSTALLED AFTER ANY REQUIRED EXCAVATION ACTIVITIES.
 - IF DESIGNATED TREES ARE DAMAGED FROM EXCAVATION ACTIVITIES, TREE SHOULD BE REMOVED AS DIRECTED BY THE OWNER'S REPRESENTATIVE. LUMP SUM BID SHOULD INCLUDE ALL WORK ASSOCIATED WITH EITHER REMOVING OR PROTECTING SPECIFICALLY IDENTIFIED TREES.
 - DISPOSAL OF TREES AND STUMPS SHALL BE OUTSIDE OF THE PROJECT AREA AND IS THE RESPONSIBILITY OF THE CONTRACTOR.
 - MAINTAIN A 30' VEGETATIVE BUFFER BETWEEN THE EDGE OF THE RIVER AND THE CONSTRUCTION OPERATIONS.
 - LILYDALE ROAD IS A DAKOTA COUNTY 9 TON ROADWAY. LEGAL TRUCKING LIMITS WILL APPLY, UNLESS OVERTSIZED VEHICLE PERMIT IS PURCHASED. LILYDALE ROAD MAY BE USED FOR TWO-WAY HAULING. ANY DAMAGE DONE TO EXISTING ROAD AS A RESULT OF THIS PROJECT SHALL BE REPAIRED BY CONTRACTOR UPON COMPLETION OF HAULING ACTIVITIES. SEE SHEET C8.01 FOR TYPICAL SECTIONS, ROAD REPAIRS, INCLUDING STRIPING, ARE INCIDENTAL TO THE PROJECT.
 - SAWCUT ALL BITUMINOUS EDGES ADJACENT TO REPAIRED SECTIONS.
 - SALVAGE AND REINSTALL EXISTING GUARDRAIL TO PROVIDE ACCESS TO THE SITE. ANY GUARDRAIL DAMAGED DURING THE PROJECT SHALL BE REPLACED BY THE CONTRACTOR. GUARDRAIL REPLACEMENT/REINSTALLATION IS INCIDENTAL TO THE PROJECT.
 - EXCAVATE WITHIN THE CONSTRUCTION LIMITS TO ELEVATION 700+. PROCESS, CRUSH, AND BLEND TO A WELL GRADED 2" MINUS STOCKPILE.
 - THE STOCKPILE SHOWN IS THE MAXIMUM ALLOWABLE FOOT PRINT. THE MAXIMUM SLOPE SHALL BE 3:1.
- LEGEND:**
- PROTECT TREE



LILYDALE REGIONAL PARK ENVIRONMENTAL CLEAN UP

SAINT PAUL, MINNESOTA
LILYDALE MARINA DEMOLITION
GRADING PLAN

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA

PRINT NAME: DARREN T. AMUNDSEN

SIGNATURE: _____ LIC. NO. 40924

DATE: JULY 1, 2010

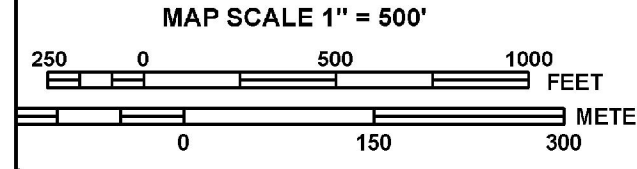
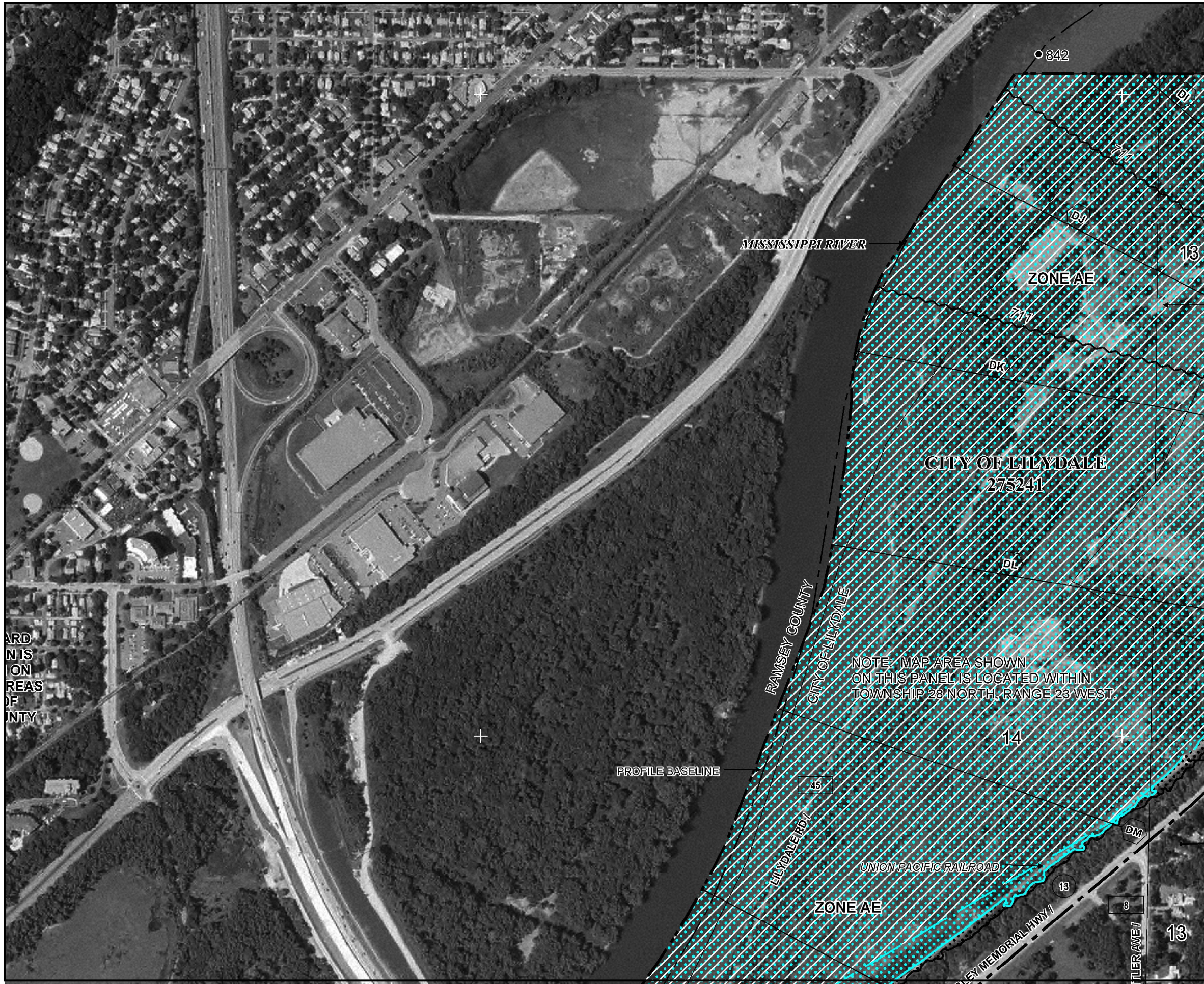
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NO.	REVISION	DATE

SUPERVISOR	
DRAWN	KNS
DESIGNED	DVA
APPROVED	DVA
PROJ. NO.	211101160
SHEET NUMBER	C3.01



NATIONAL FLOOD INSURANCE PROGRAM
 NFIP

PANEL 0017E

FIRM
FLOOD INSURANCE RATE MAP

**DAKOTA COUNTY,
MINNESOTA
AND INCORPORATED AREAS**

PANEL 17 OF 525

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
LILYDALE, CITY OF	275241	0017	E
MENDOTA HEIGHTS, CITY OF	270110	0017	E

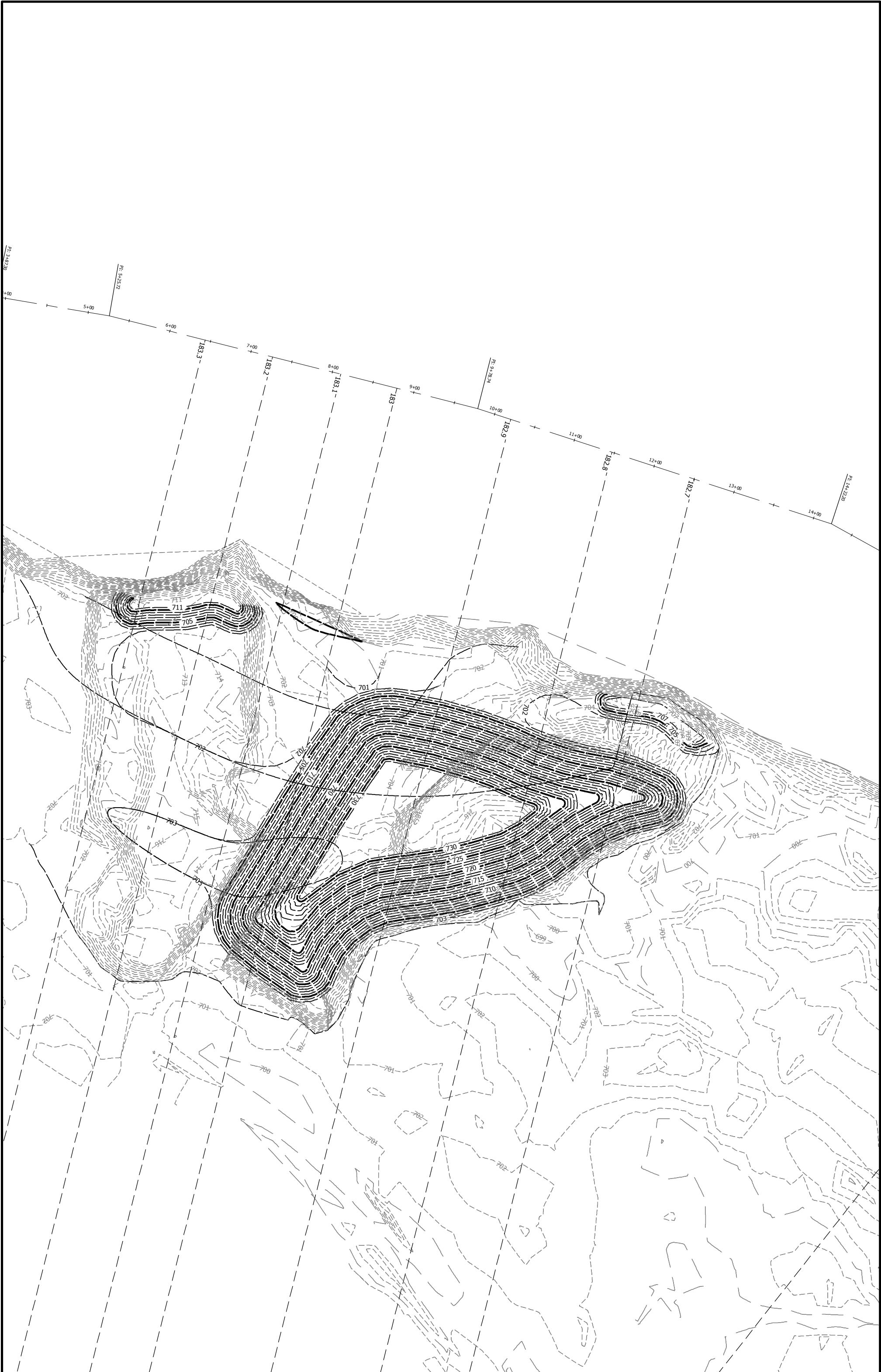
Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
27037C0017E

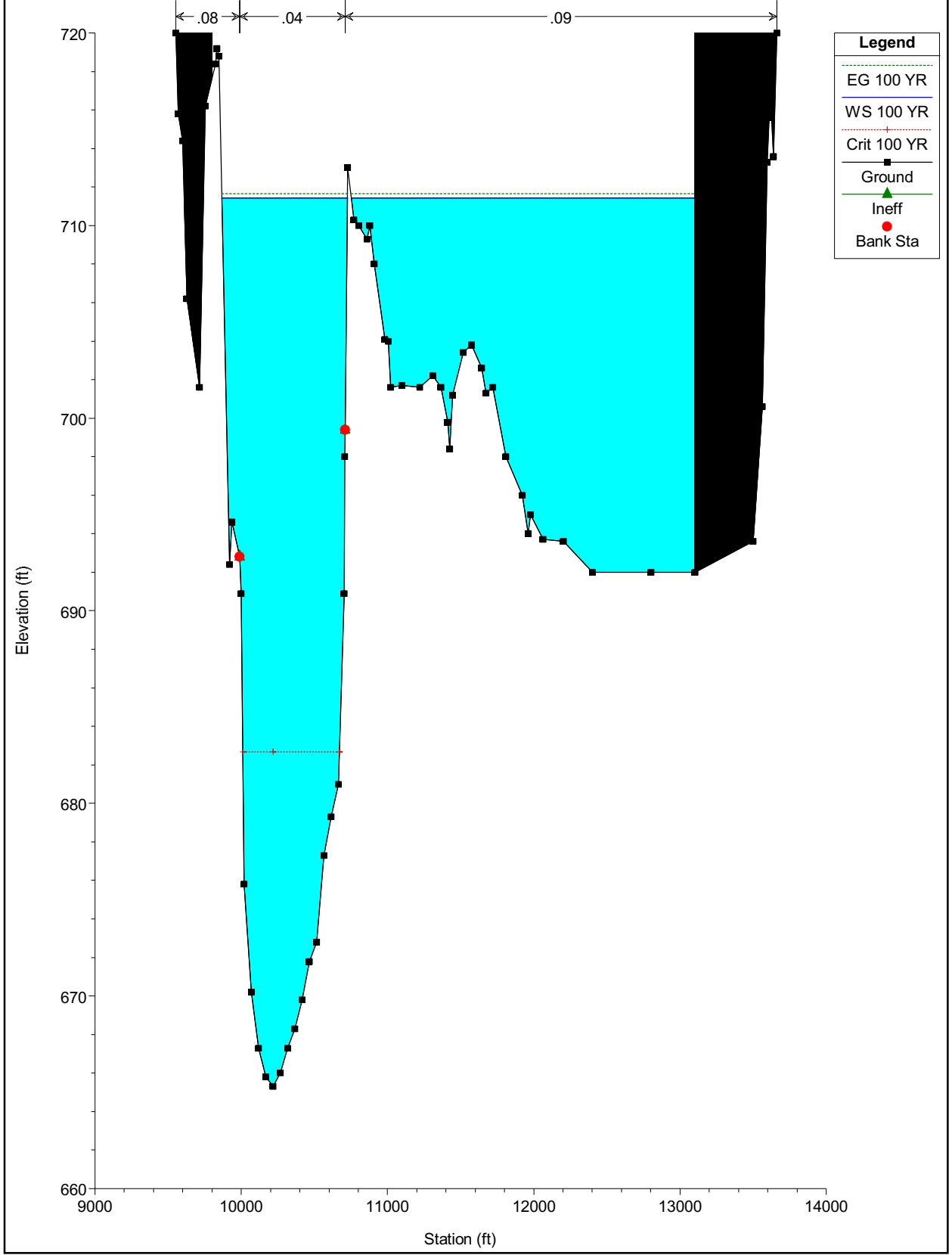
EFFECTIVE DATE
JUNE 18, 2010

Federal Emergency Management Agency

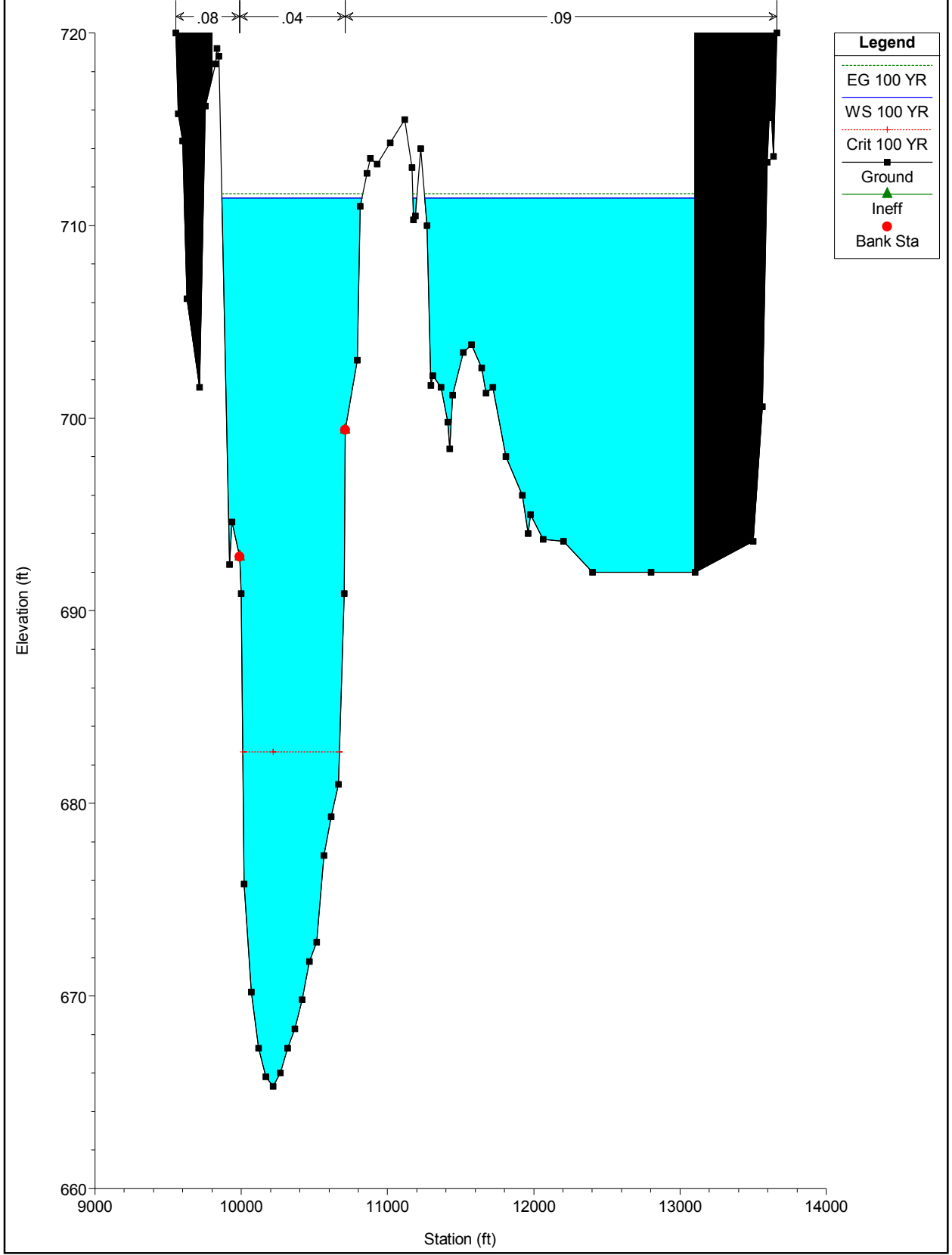
This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov



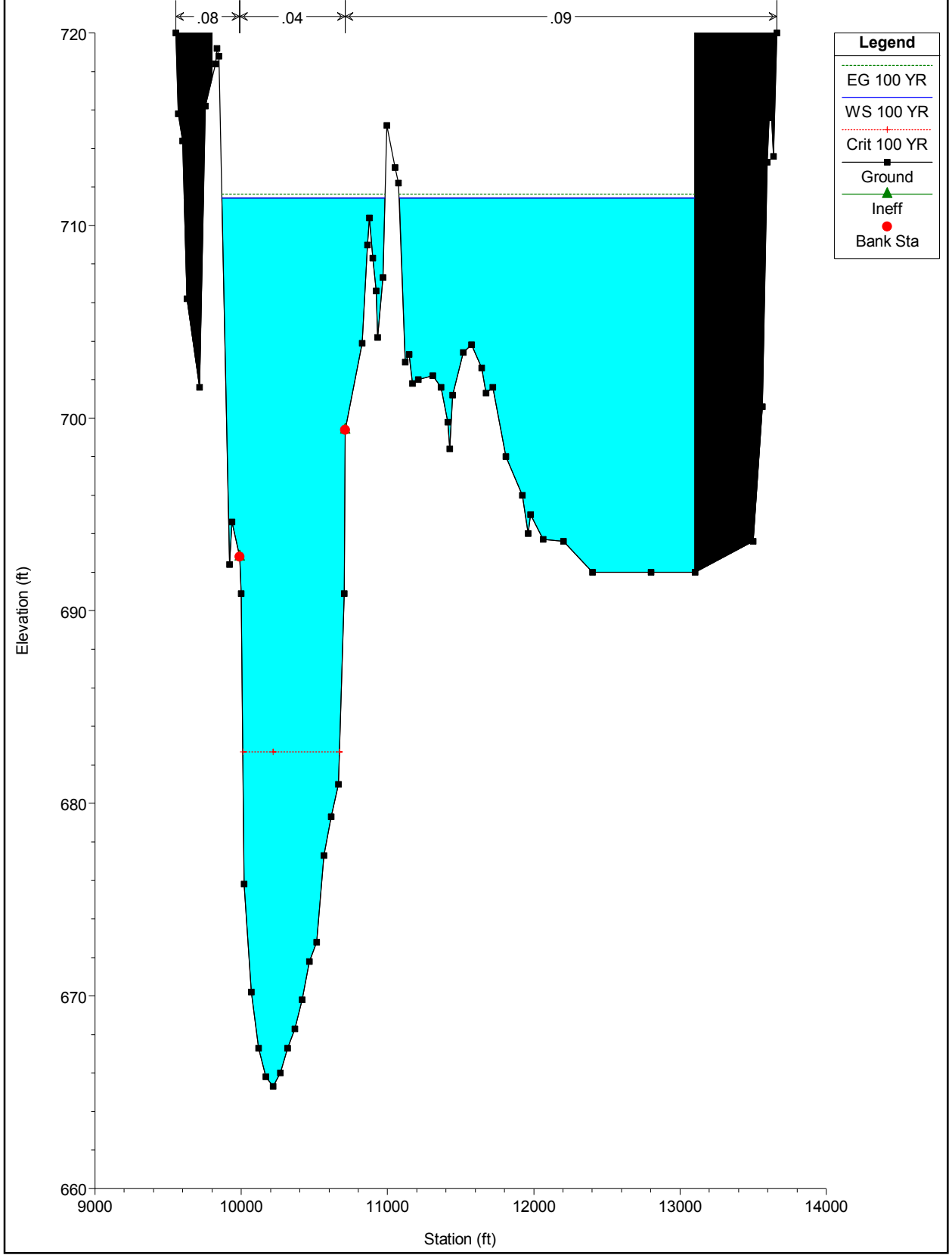
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 RS = 183.3 New X-Section



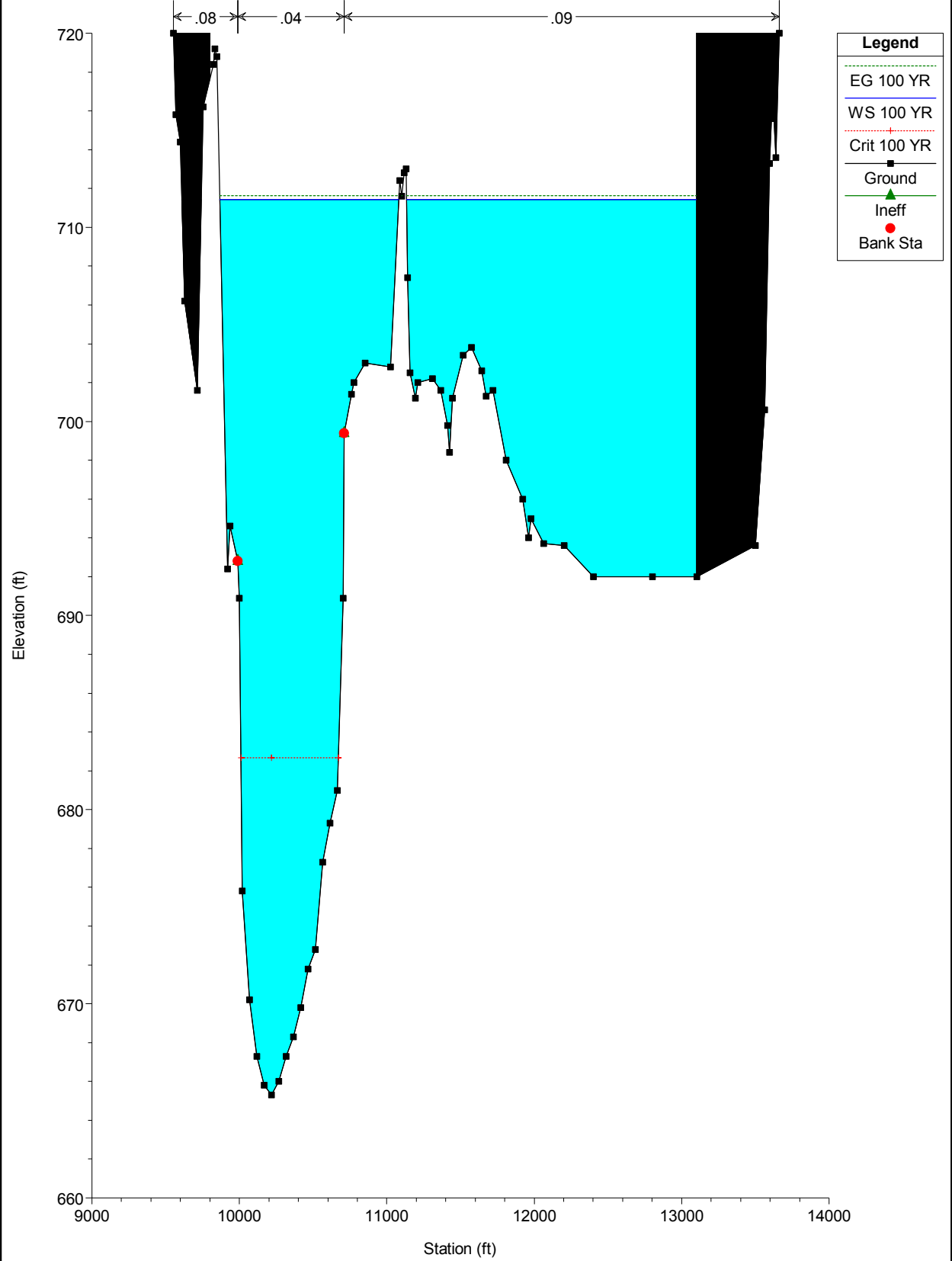
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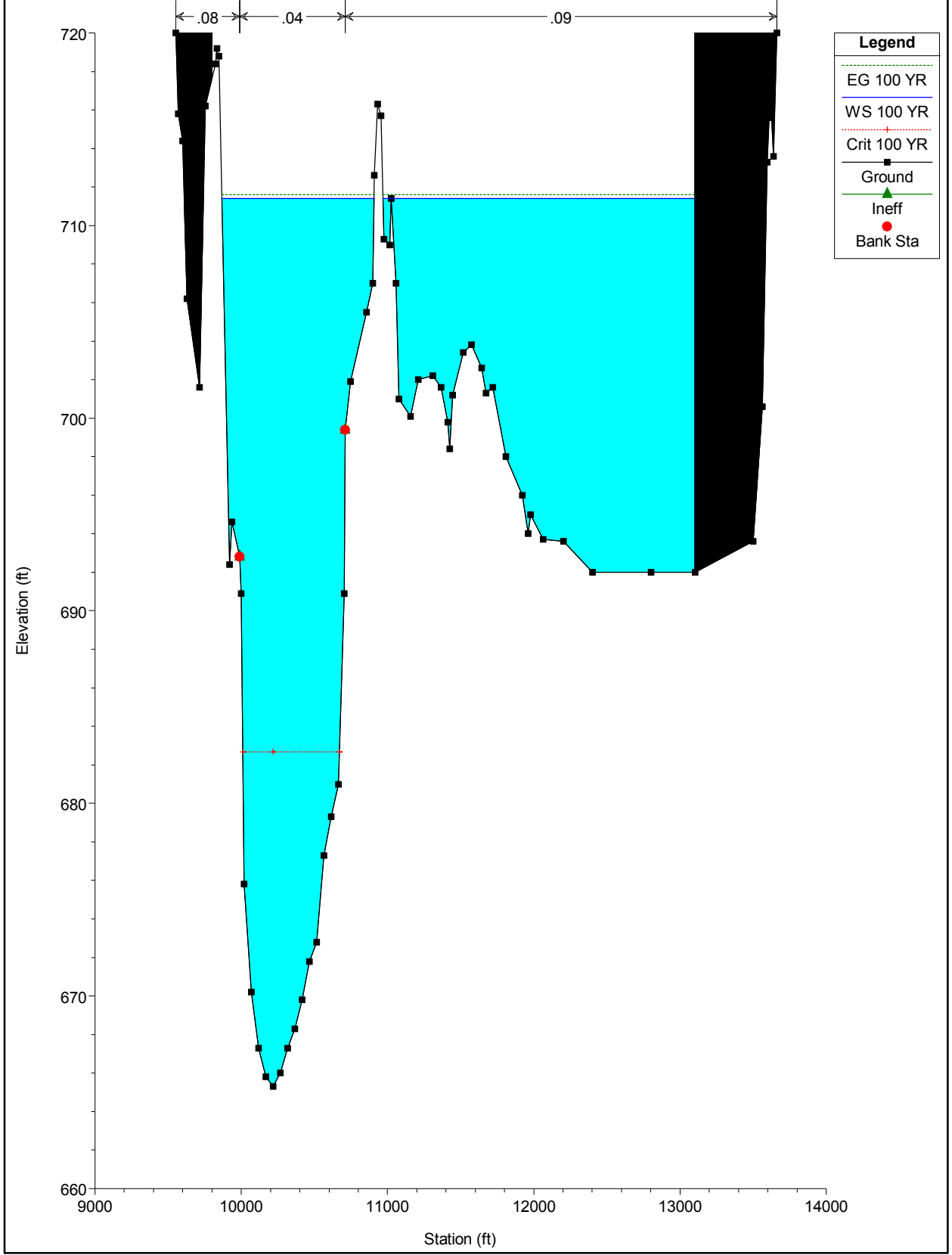
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 RS = 183.1 New X-Section



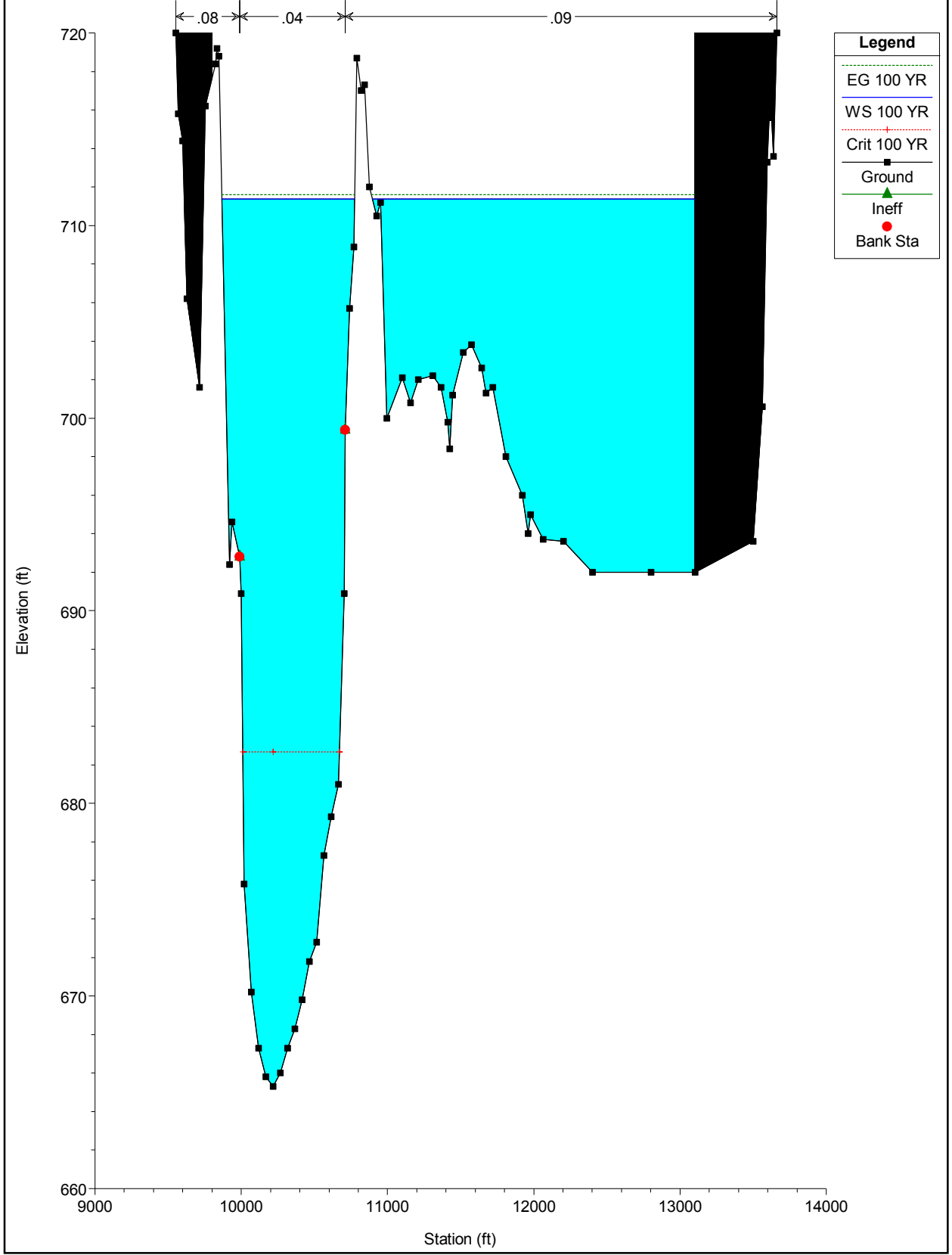
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Revised Final Fwmod Ex 2010_07 Plan: Imported Plan 01 7/8/2010
 RS = 182.9 New X-Section

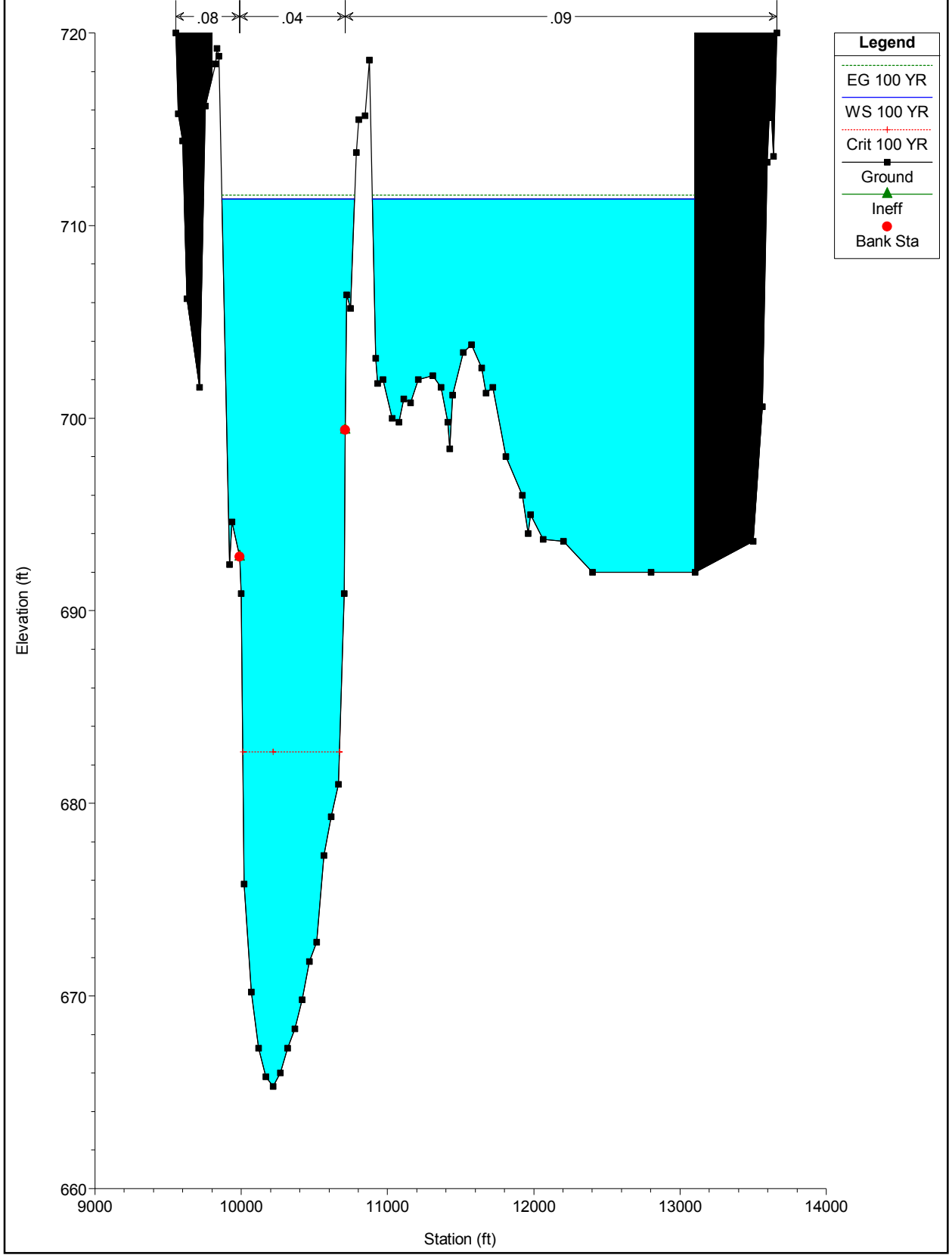


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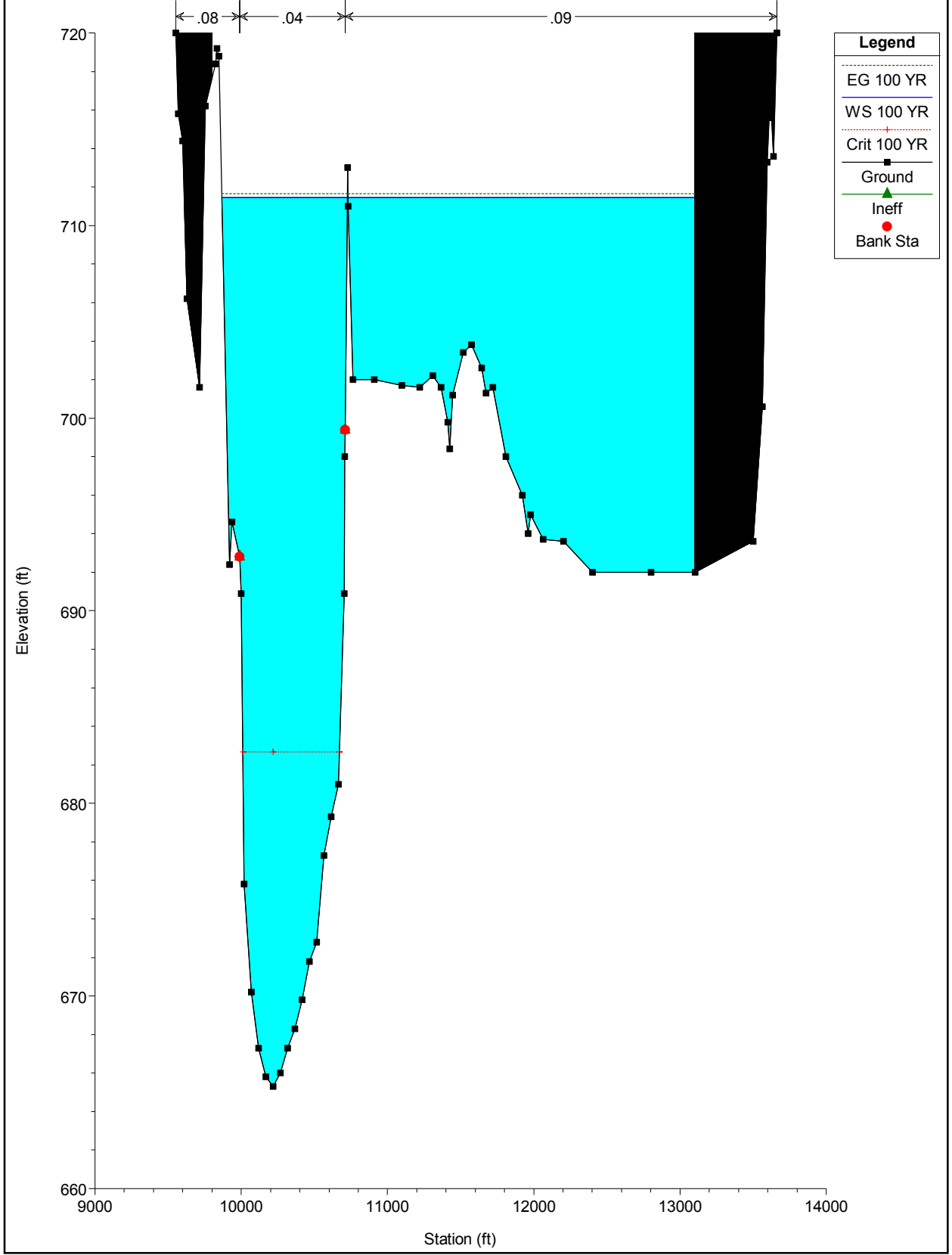


Legend	
EG 100 YR	(Dashed green line)
WS 100 YR	(Solid blue line)
Crit 100 YR	(Dotted red line)
Ground	(Solid black line with square markers)
Ineff	(Green line with triangle markers)
Bank Sta	(Red dot)

Revised Final Fwmod Ex 2010_07 Plan: Imported Plan 01 7/8/2010
 RS = 182.7 New X-Section

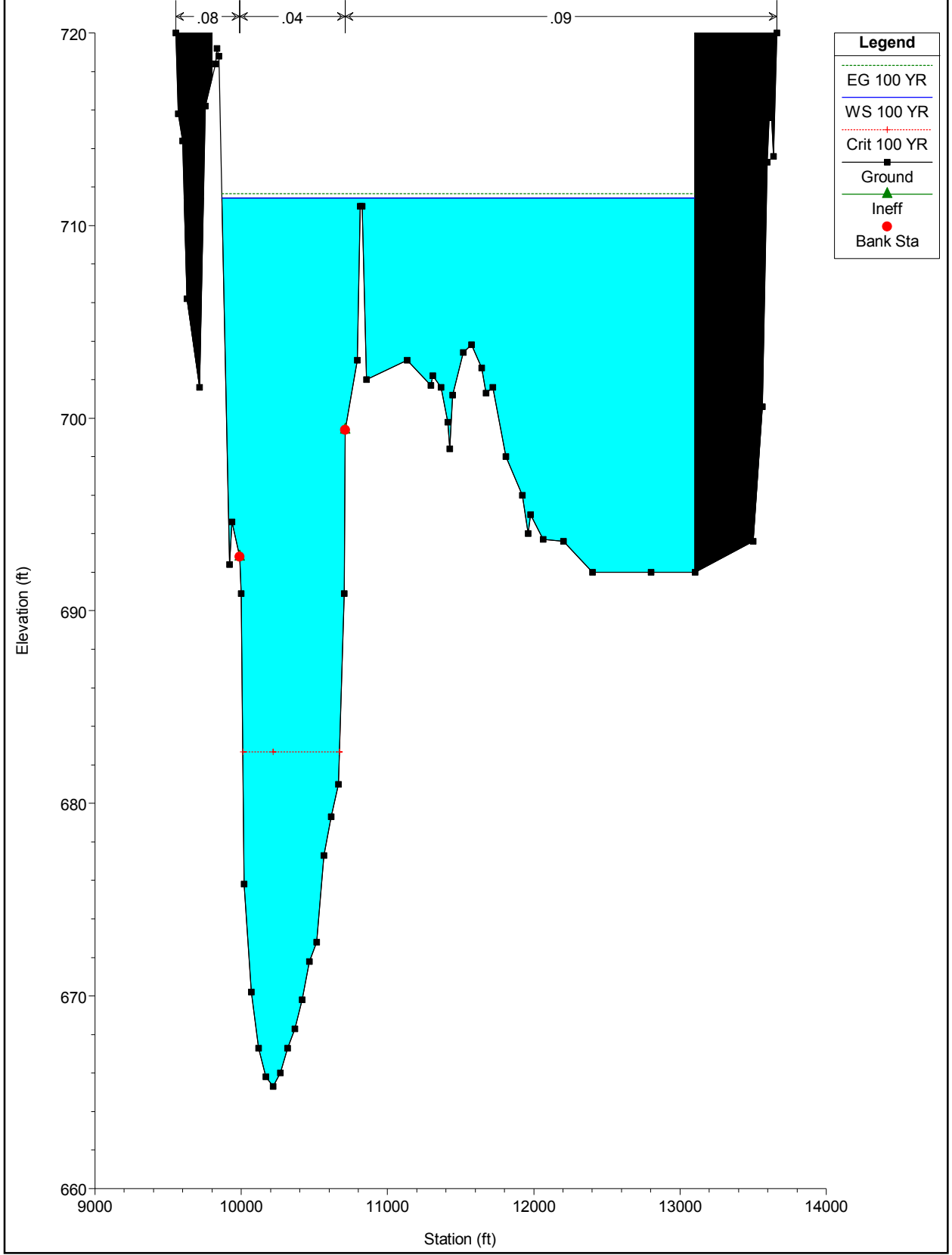


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 RS = 183.3 New X-Section

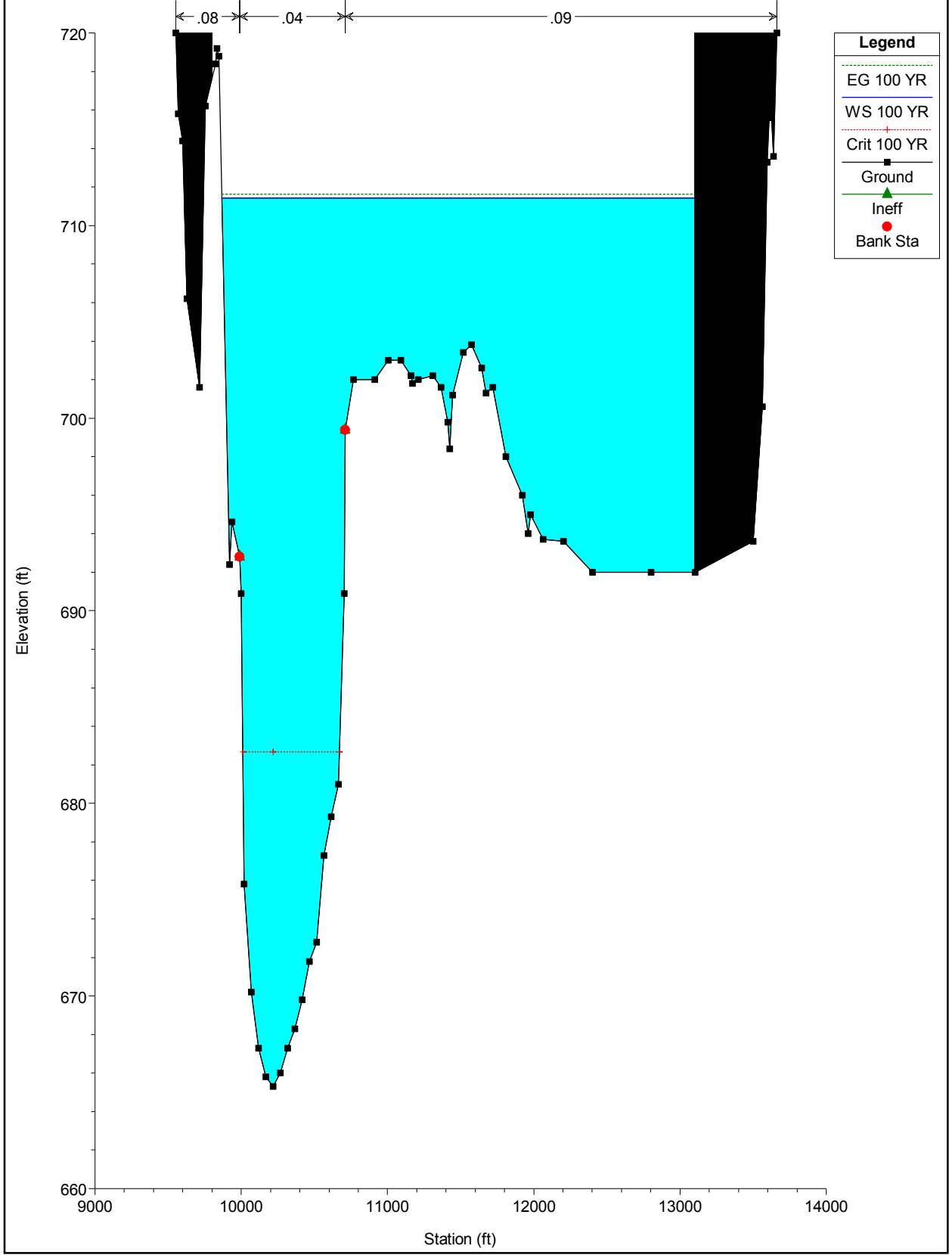


Legend	
EG 100 YR	(Dotted line)
WS 100 YR	(Solid blue line)
Crit 100 YR	(Dotted red line)
Ground	(Black line with square markers)
Ineff	(Green triangle)
Bank Sta	(Red dot)

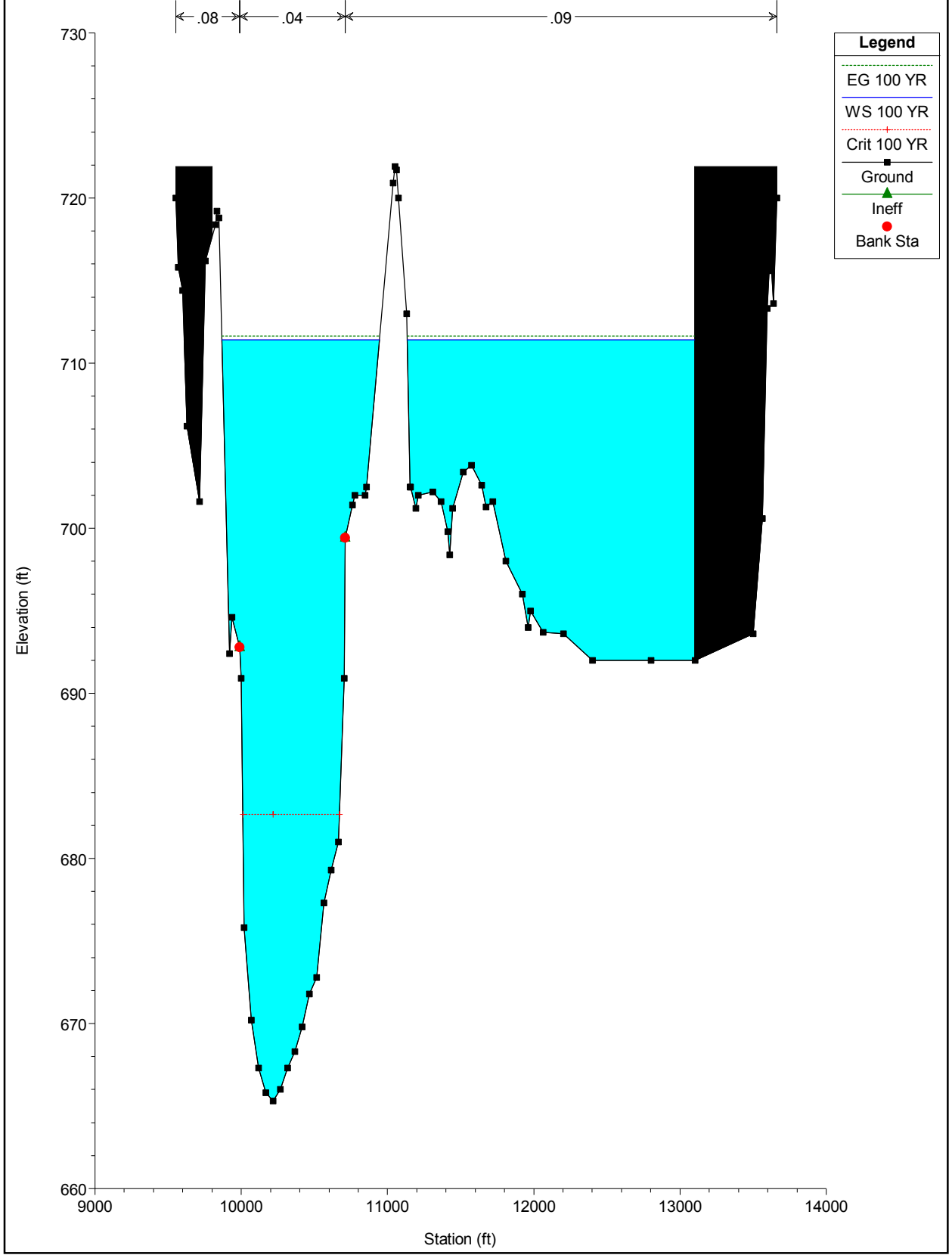
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 RS = 183.2 New X-Section



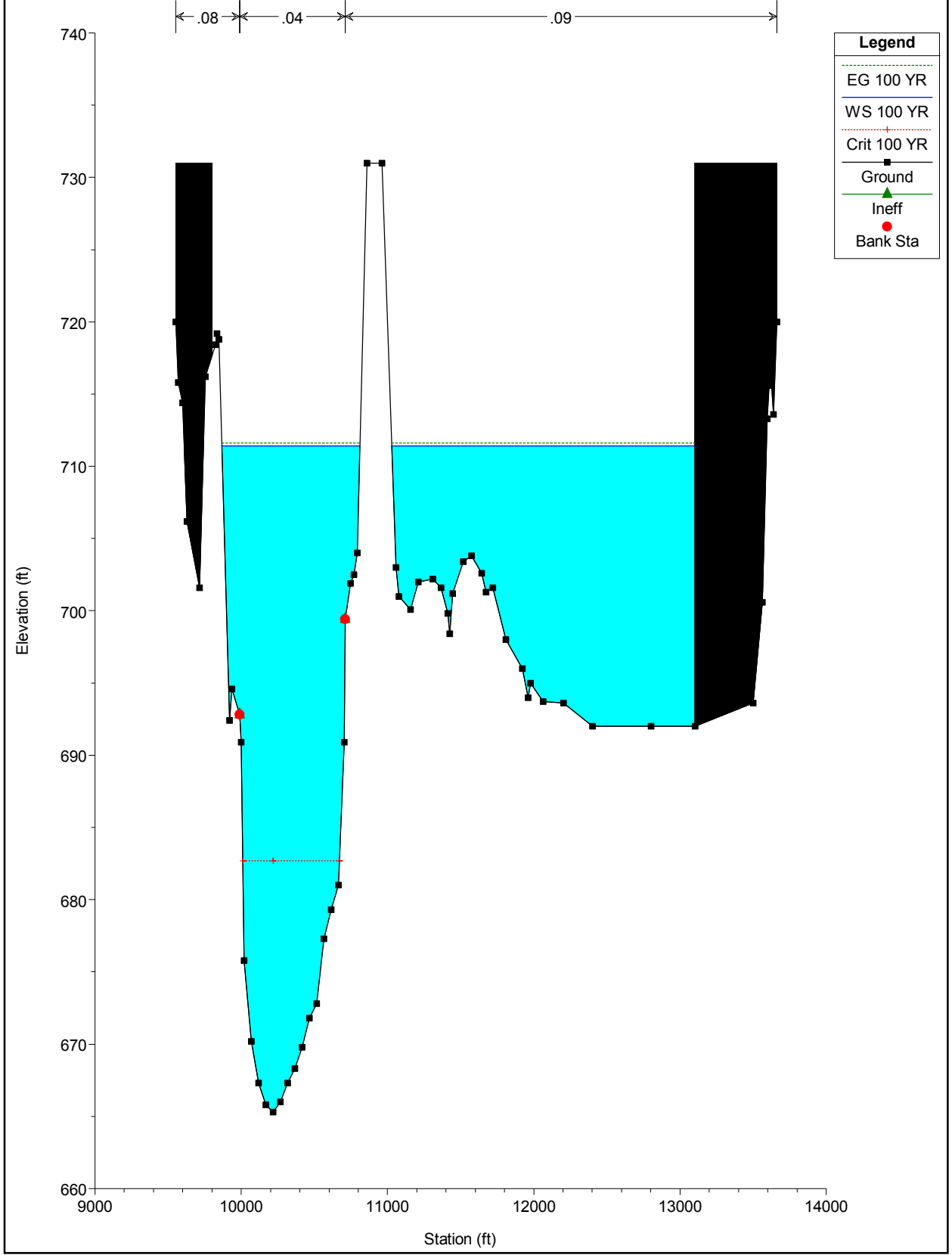
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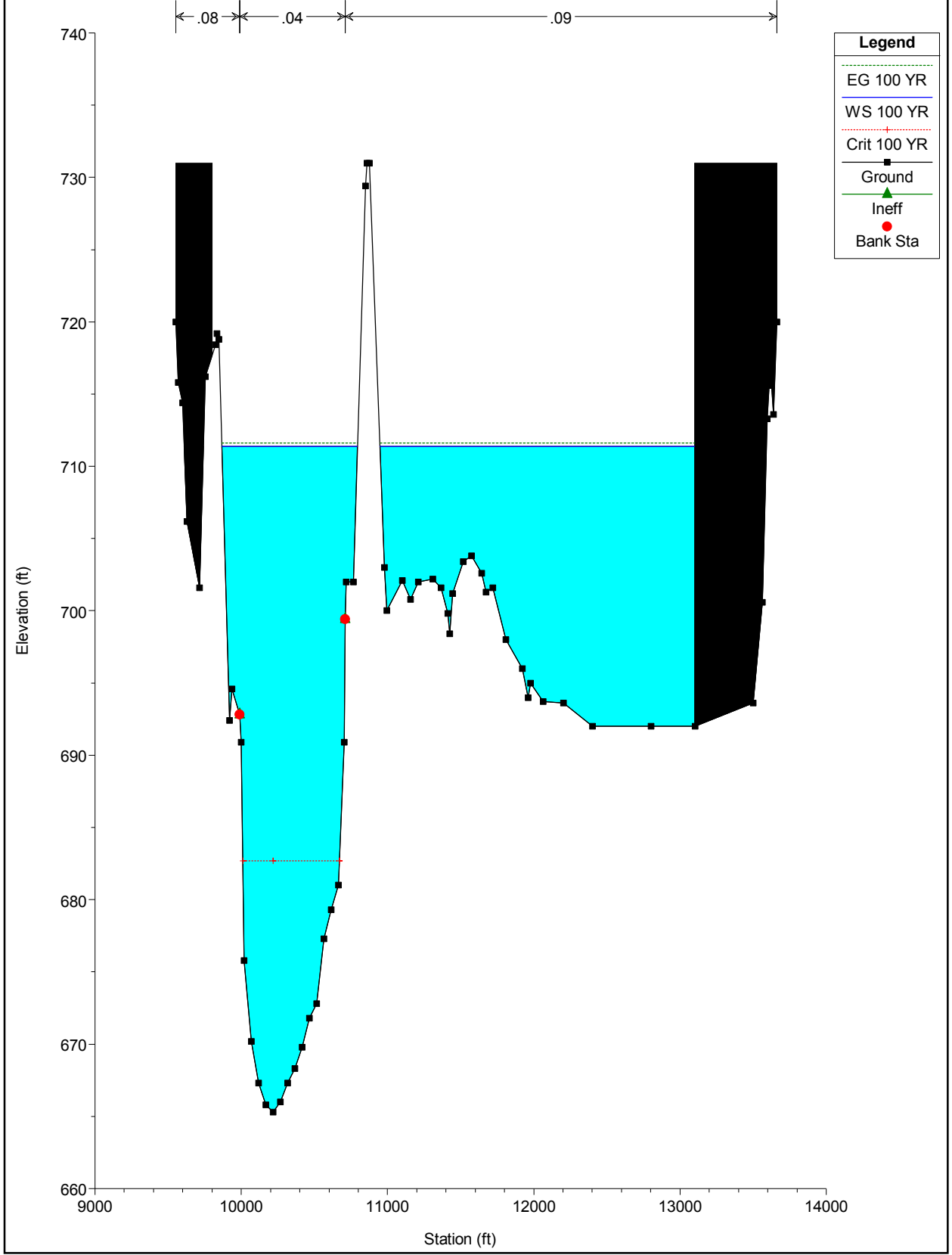
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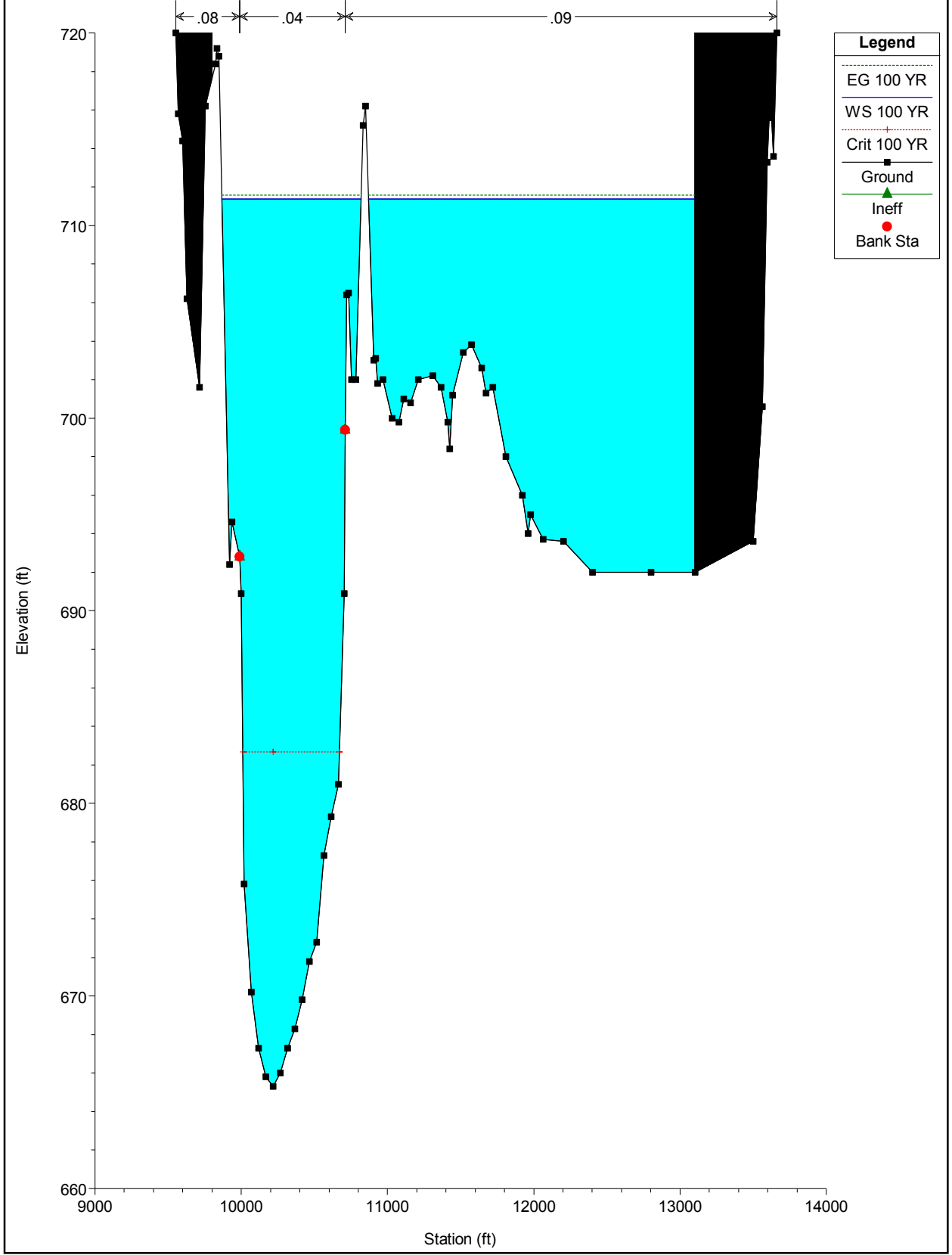
Revised Final Fwmod Prop 2010_07 Plan: Imported Plan 01 7/8/2010
 RS = 182.9 New X-Section



Revised Final Fwmod Prop 2010_07 Plan: Imported Plan 01 7/8/2010
 RS = 182.8 New X-Section



Revised Final Fwmod Prop 2010_07 Plan: Imported Plan 01 7/8/2010
 RS = 182.7 New X-Section



Reach	River Sta	Profile	Q Total (cfs)	Existing W.S. Elev (ft)	Proposed W.S. Elev (ft)
Reach-1	190	100 YR	150000	711.95	711.95
Reach-1	189	100 YR	150000	711.94	711.93
Reach-1	188	100 YR	150000	711.94	711.94
Reach-1	187	100 YR	150000	711.85	711.84
Reach-1	186	100 YR	150000	711.67	711.66
Reach-1	185	100 YR	150000	711.57	711.56
Reach-1	184	100 YR	150000	711.53	711.53
Reach-1	183.3	100 YR	150000	711.44	711.44
Reach-1	183.2	100 YR	150000	711.43	711.43
Reach-1	183.1	100 YR	150000	711.43	711.43
Reach-1	183	100 YR	150000	711.42	711.42
Reach-1	182.9	100 YR	150000	711.4	711.4
Reach-1	182.8	100 YR	150000	711.39	711.39
Reach-1	182.7	100 YR	150000	711.38	711.38
Reach-1	182	100 YR	150000	711.13	711.13
Reach-1	181	100 YR	150000	710.93	710.93
Reach-1	180	100 YR	150000	710.64	710.64

Note: FEMA W.S. elev (ft) - Elevation as calculated in the DNR Model;
Existing W.S. Elev (ft) is calculated using the inputted cross sections at
existing ground elevations; Proposed W.S. Elev (ft) is calculated using the
inputted cross sections at the proposed ground elevations