By: BH - MEH - AML
Asst. Chief Tax Deputy

W. C .Underwood Jr.
Sheriff of Doddridge County

The Person paying Money into the Treasury shall forthwith file one of these Receipts with the County Clerk

Doddridge County, West Virginia

No. 859

Date: November 5, 2013
Customer copy

Received: #13-075 thrasher group, cnx gas co oxford 11 access bridge $1,045.00

In Payment For: 318 Building Permits (LP)

For: 12-Flood Plain Ordinance #20 Fund

By: BH - MEH - AML
Asst. Chief Tax Deputy

W. C .Underwood Jr.
Sheriff of Doddridge County

THE THRASHER GROUP, INC.

10165

Re.

Pay To DODDRIDGE COUNTY COMMISSION

Check No. 10165

Invoice No.	Invoice Date	Invoice Amount	Amount Due	Discount	Apply	Balance
24OCT13	10/24/2013	1,045.00	1,045.00	0.00	1,045.00	0.00

FLOOD PLAIN APPLICATION FEE

#13-075

CNX Gas Co
Oxford 11 Access Bridge

Re.

Pay To DODDRIDGE COUNTY COMMISSION

Check No. 10165

Invoice No.	Invoice Date	Invoice Amount	Amount Due	Discount	Apply	Balance
24OCT13	10/24/2013	1,045.00	1,045.00	0.00	1,045.00	0.00

FLOOD PLAIN APPLICATION FEE

Doddridge County Flood Plain Application Fee	
Estimated Construction Costs	$109,000.00
Amount over $100,000	$9,000.00
Drilling Oil and Gas Well Fee	$1,000.00
Deposit for additional charges	$1,000.00
$5 per $1,000 over $100,000	$45.00
Amount Due with application	$2,045.00

13-075

THRASHER

FILED

2013 OCT 29 PM 1:42

BETH A. ROGERS
COUNTY CLERK
DODDRIDGE COUNTY, WV

October 28, 2013

Ms. Beth Rogers
Doddridge County Clerk
135 Court Street, Room 102
West Union, WV 26456

RE: Doddridge County Flood Development Permit Application
CNX Gas Company, LLC – Oxford 11 Access Bridgeport
Application Fee
Thrasher Project #101-030-2358

Dear Ms. Roger;

We had submitted a flood development permit application back in late September 2013 along with a check for $2,045.00. We recently received a call from Mr. Dan Wellings explaining that we overpaid the permit fee by $1000.00. Therefore, we are attaching new check in the amount of $1045.00 along with a self-addressed envelope so we can have you send back the original check (#79094 - $2045.00) back to us. Sorry for the inconvenience.

If you have any questions, please do not hesitate to call.

Sincerely,
THE THRASHER GROUP, LLC

JEFF GOLA, P.E.
Project Manager

Enclosure

jg

R:\030-2358 CNX Gas- Oxford 11 Bridge\Documents\Correspondence\flood-payment.docx

13-075

THRASHER

September 27, 2013

Mr. Dan Wellings
Doddridge County Commission
118 East Court Street
West Union, WV 26456

2013 OCT -1 PM 2:26

RE: Doddridge County Flood Development Permit
CNX Gas Company, LLC
Oxford 11 Access Bridge, Doddridge County, West Virginia
Thrasher Engineering Project #101-030-2358

Dear Mr. Wellings;

On behalf of CNX Gas Company, Thrasher Group, Inc., is submitting to your office for review and approval an application package for a Doddridge County Flood Development Permit for a proposed project in the USGS Oxford 7.5 minute quadrangle of Doddridge County, WV. The proposed access bridge is located at 39°10'43.01"N/80°45'38.21"W, off of Co. Route 54/1.

The proposed access road and bridge will be located within the 100 year floodplain. Please see attached HEC-RAS floodplain study. The bridge structure will raise the base flood elevation approximately 0.10 feet and will not impact adjacent parcels.

Please see attached permit application, permit fee worksheet and payment.

If any further documentation is required for this project, or if any questions may arise please feel free to contact me at your convenience at (304) 624-4108 or jgola@thrashereng.com.

Sincerely,

THRASHER GROUP, INC.

JEFF GOLA, P.E.
Project Manager

Enclosures

R:\030-2358 CNX Gas- Oxford 11 Bridge\Documents\Reports\Cover Letter.doc

PERMIT NO. 13-075

DODDRIDGE COUNTY

FLOODPLAIN DEVELOPMENT

PERMIT

PURPOSE FOR PERMIT: Bridge - Oxford II Access

ISSUED TO CNX GAS CO. LLC

ADDRESS: 1 Energy Drive
Jane Lew, WV 26378

PROJECT ADDRESS: near Maxwell Station
Puerto Rico

ISSUED BY: Dan Welling

DATE: 11/04/2013

CONSTRUCTION MUST START WITHIN 180 DAYS FROM ISSUED DATE. PERMIT EXPIRES IN 12 MONTHS FROM ISSUED DATE. IF EXTENTION IS NEEDED A REQUEST MUST BE MADE IN WRITING STATING A REASON FOR THE EXTENTION.

THIS PERMIT MUST BE POSTED ON THE PREMISES IN A CONSPICUOUS PLACE SO AS TO BE CLEARLY VISIBLE FROM THE STREET.

CNX GAS COMPANY, LLC

Oxford 11 Access Bridge

THRASHER GROUP, INC. PROJECT # 101-030-2358

DODDRIDGE COUNTY

FLOODPLAIN DEVELOPMENT PERMIT

APPLICATION

September 27, 2013

17-075
CNX Gas Co
Oxford 11 Access Bridge

DODDRIDGE COUNTY
FLOODPLAIN DEVELOPMENT PERMIT APPLICATION

2013 OCT -1 PM 2:26

SECTION 1: GENERAL PROVISIONS (APPLICANT TO READ AND SIGN)

1. No work may start until a permit is issued.
2. The permit may be revoked if any false statements are made herein.
3. If revoked, all work must cease until permit is re-issued.
4. Development shall not be used or occupied until a Certificate of Compliance is issued.
5. The permit will expire if no work is commenced within six months of issuance.
6. Applicant is hereby informed that other permits may be required to fulfill local, state, and federal requirements.
7. Applicant hereby gives consent to the Floodplain Administrator/Manager or his/her representative to make inspections to verify compliance.
8. **I, THE APPLICANT CERTIFY THAT ALL STATEMENTS HEREIN AND IN ATTACHMENTS TO THIS APPLICATION ARE, TO THE BEST OF MY KNOWLEDGE, TRUE AND ACCURATE.**

APPLICANT'S SIGNATURE _____

DATE 9-19-13

SECTION 2: PROPOSE DEVELOPMENT (TO BE COMPLETED BY APPLICANT).

IF THE APPLICANT IS NOT A NATURAL PERSON, THE NAME, ADDRESS, AND TELEPHONE NUMBER OF A NATURAL PERSON WHO SHALL BE APPOINTED BY THE APPLICANT TO RECEIVE NOTICE PURSUANT TO ANY PROVISION OF THE CURRENT DODDRIDGE COUNTY FLOODPLAIN ORDINANCE.

APPLICANT'S NAME: John Sampson - CNX Gas Company, LLC

ADDRESS: 1 Energy Drive, Jane Lew, WV 26378

TELEPHONE NUMBER: 304-884-2000

BUILDER'S NAME: n/a

ADDRESS:

TELEPHONE NUMBER:

ENGINEER'S NAME: The Thrasher Group (PM - Jeff L. Gola, P.E.)

ADDRESS: 30 Columbia Boulevard, P.O. Box 1532, Clarksburg, WV 26301

TELEHONE NUMBER: 304-624-4108

PROJECT LOCATION:

NAME OF SURFACE OWNER/OWNERS (IF NOT THE APPLICANT) I.L. Morris

ADDRESS OF SURFACE OWNER/OWNERS (IF NOT THE APPLICANT)
P.O. Box 397 Glenville, WV 26531

DISTRICT: South West

DATE/FROM WHOM PROPERTY PURCHASED: n/a

LAND BOOK DESCRIPTION: Active Farm

DEED BOOK REFERENCE: DB 230 PG 307

TAX MAP REFERENCE: TM 10 PAR 2

EXISTING BUILDINGS/USES OF PROPERTY: Homesite, Residual, Tillable, Pasture, Woodland

NAME OF AT LEAST ONE ADULT RESIDING IN EACH RESIDENCE LOCATED UPON THE SUBJECT PROPERTY n/a

ADDRESS OF AT LEAST ONE ADULT RESIDING IN EACH RESIDENCE LOCATED UPON THE SUBJECT PROPERTY n/a

To avoid delay in processing the application, please provide enough information to easily identify the project location.

DESCRIPTION OF WORK (CHECK ALL APPLICABLE BOXES)

A. STRUCTURAL DEVELOPMENT

ACTIVITY		STRUCTURAL TYPE	
[X]	New Structure	[]	Residential (1 – 4 Family)
[]	Addition	[]	Residential (more than 4 Family)
[]	Alteration	[X]	Non-residential (floodproofing)
[]	Relocation	[]	Combined Use (res. & com.)
[]	Demolition	[]	Replacement
[]	Manufactured/Mobil Home		

B. OTHER DEVEOPLMENT ACTIVITIES:

[] Fill [] Mining [] Drilling [] Pipelining
[X] Grading
[] Excavation (except for STRUCTURAL DEVELOPMENT checked above)
[] Watercourse Altercation (including dredging and channel modification)
[] Drainage Improvements (including culvert work)
[X] Road, Street, or Bridge Construction
[] Subdivision (including new expansion)
[] Individual Water or Sewer System
[] Other (please specify)

_____

C. STANDARD SITE PLAN OR SKETCH

1. **SUBMIT ALL STANDARD SITE PLANS, IF ANY HAVE BEEN PREPARED.**
2. **IF STANDARD SITE PLANS HAVE NOT BEEN PREPARED:**
   SKETCH ON A SEPARATE 8 ½ X 11 INCH SHEET OF PAPER THE SHAPE AND LOCATION OF THE LOT. SHOW THE LOCATION OF THE INTENDED CONSTRUCTION OR LAND USE INDICATING BUILDING SETBACKS, SIZE & HEIGHT. IDENTIFY EXISTING BUILDINGS, STRUCTURES OR LAND USES ON THE PROPERTY.
3. **SIGN AND DATE THE SKETCH.**

ACTUAL TOTAL CONSTRUCTION COSTS OF THE COMPLETE DEVELOPMENT IRRESPECTIVE OF WHETHER ALL OR ANY PART OF THE SUBJECT PROPOSED CONSTRUCTION PROJECT IS WITHIN THE FLOODPLAIN $ 109,000.00

D. ADJACENT AND/OR AFFECTED LANDOWNERS:

1. **NAME AND ADDRESS OF ALL OWNERS OF SURFACE TRACTS ADJACENT TO THE AREA OF THE SURFACE TRACT (UP & DOWN STREAM) UPON WHICH THE PROPOSED ACTIVITY WILL OCCUR AND ALL OTHER SURFACE OWNERS UP & DOWN STREAM) WHO OWN PROPERTY THAT MAY BE AFFECTED BY FLOODING AS IS DEMONSTRATED BY A FLOODPLAIN STUDY OR SURVEY (IF ONE HAS BEEN COMPLETED).**

NAME: Susan V. Drennan
ADDRESS: 9255 SE Wyandotte Road
Galenda, KS 66739

NAME:
ADDRESS:

NAME:
ADDRESS:

NAME:
ADDRESS:

1. **NAME AND ADDRESS OF AT LEAST ONE ADULT RESIDING IN EACH RESIDENCE LOCATED UPON ANY ADJACENT PROPERTY AT THE TIME THE FLOODPLAIN PERMIT APPLICATION IS FILED AND THE NAME AND ADDRESS OF AT LEAST ONE ADULT RESIDING IN ANY HOME ON ANY PROPERTY THAT MAY BE AFFECTED BY FLOODING AS IS DEMONSTRATED BY A FLOODPLAIN STUDY OR SURVEY.**

NAME:
ADDRESS:

NAME:
ADDRESS:

NAME:
ADDRESS:

NAME:
ADDRESS:

E. CONFIRMATION FORM

THE APPLICANT ACKNOWLEDGES, AGREES, AND CONFIRMS THAT HE/IT WILL PAY WITHIN 30 DAYS OF RECEIPT OF INVOICE BY THE COUNTY FOR ALL EXPENSES RELATIVE TO THE PERMIT APPLICATION PROCESS GREATER THAN THE REQUIRED DEPOSIT FOR EXPENSES INCLUDING:

(A) PERSONAL SERVICE OF PROCESS BY THE DODDRIDGE COUNTY SHERIFF AT THE RATES PERMITTED BY LAW FOR SUCH SERVICE.

(B) SERVICE BY CERTIFIED MAIL RETURN RECEIPT REQUESTED.

(C) PUBLICATION.

(D) COURT REPORTING SERVICES AT ANY HEARINGS REQUESTED BY THE APPLICANT.

(E) CONSULTANTS AND/OR HEARING EXPERTS UTILIZED BY DODDRIDGE COUNTY FLOODPLAIN ADMINISTRATOR/MANAGER OR FLOODPLAIN APPEALS BOARD FOR REVIEW OF MATERIALS AND/OR TESTIMONY REGARDING THE EFFICACY OF GRANTING OR DENYING THE APPLICANT'S FLOODPLAIN PERMIT.

NAME (PRINT): Amanda Wright

SIGNATURE: Amanda Wright **DATE:** 9-19-13

After completing SECTION 2, APPLICANT should submit form to Floodplain Administrator/Manager or his/her representative for review.

SECTION 3: FLOODPLAIN DETERMINATION (to be completed by Floodplain Administrator/Manager or his/her representative)

THE PROPOSED DEVELOPMENT:

THE PROPOSED DEVELOPMENT IS LOCATED ON:

FIRM Panel: 225

Dated: 10/04/2011

[] Is **NOT** located in a Specific Flood Hazard Area (Notify applicant that the application review is complete and **NO FLOOPLAIN DEVELOPMENT PERMIT IS REQUIRED**).

[X] Is located in Special Flood Hazard Area.

FIRM zone designation A

100-Year flood elevation is: N/A NGVD (MSL)

[X] Unavailable

[] The proposed development is located in a floodway.

FBFM Panel No._____ Dated_____

[] See section 4 for additional instructions.

SIGNED Dan Wellons DATE 9-19-13
11/04/2013

SECTION 4: ADDITIONAL INFORMATION REQUIRED (To be completed by Floodplain Administrator/Manager or his/her representative)

The applicant must submit the documents checked below before the application can be processed.

[] A plan showing the location of all existing structures, water bodies, adjacent roads, lot dimensions and proposed development.

[] Development plans, drawn to scale, and specifications, including where applicable: details for anchoring structures, storage tanks, proposed elevation of lowest floor, (including basement or crawl space), types of water resistant materials used below the first floor, details of flood proffing of utilities located below the first floor and details of enclosures below the first floor. Also_____

_____

[] Subdivision or other development plans (If the subdivision or development exceeds 50 lots or 5 acres, whichever is the lesser, the applicant must provide 100-year flood elevations if they are not otherwise available).

[] Plans showing the extent of watercourse relocation and/or landform alterations.

[] Top of new fill elevation_____Ft. NGVD (MSL).
For floodproofing structures applicant must attach certification from registered engineer or architect.

[] Certification from a registered engineer that the proposed activity in a regulatory floodway will not result in any increase in the height of the 100-year flood. A copy of all data and calculations supporting this finding must also be submitted.

[] Manufactured homes located in a floodplain area must have a West Virginia Contractor's License and a Manufactured Home Installation License as required by the Federal Emergency Management Agency (FEMA).

[] Other:

_____

_____

_____

SECTION 5: PERMIT DETERMINATION (To be completed by Floodplain Administrator/Manager or his/her representative)

I have determined that the proposed activity **(type is or is not)** in conformance with provisions of the Floodplain Ordinance adopted by the County Commission of Doddridge County on May 21, 2013. The permit is issued subject to the conditions attached to and made part of this permit.

SIGNED_____DATE_____

If the Floodplain Administrator/Manager found that the above was not in conformance with the provisions of the Doddridge County Floodplain Ordinance and/or denied that application, the applicant may complete an appealing process below.

APPEALS: Appealed to the County Commission of Doddridge County? [] Yes {} No
Hearing Date:_____
County Commission Decision - Approved [] Yes [] No

CONDITIONS:_____

_____

_____

_____

SECTION 6: AS-BUILT ELEVATIONS (To be submitted by APPLICANT before Certificate of Compliance is issued).

The following information must be provided for project structures. This section must be completed by a registered professional engineer or a licensed land surveyor (or attach a certification to this application).

COMPLETE 1 OR 2 BELOW:

1 Actual (As-Built) Elevation of the top of the lowest floor (including basement or crawl space is_____FT. NGVD (MSL)

2 Actual (As Built) elevation of floodproofing is_____FT. NGVD (MSL)

Note: Any work performed prior to submittal of the above information is at risk of the applicant.

SECTION 7: COMPLIANCE ACTION (To be completed by the Floodplain Administrator/Manager or his/her representative).

The Floodplain Administrator/Manager or his/her representative will complete this section as applicable based on inspection of the project to ensure compliance with the Doddridge County Floodplain Ordinance.

INSPECTIONS:

DATE: 12/04/13 **BY:** Dan Nelling

DEFICIENCIES ? Y/(N)

COMMENTS Bridge yet to be started

SECTION 8: CERTIFICATE OF COMPLIANCE (To be completed by Floodplain Administrator/Manager or his/her representative).

Certificate of Compliance issued: DATE:_____ BY:_____

CERTIFICATE OF COMPLIANCE
FOR DEVELOPMENT IN SPECIAL FLOOD HAZARD AREA
(OWNER MUST RETAIN)

PERMIT NUMBER:_____

PERMIT DATE:_____

PURPOSE –

CONSTRUCTION LOCATION:_____

OWNER'S ADDRESS:_____

_____

_____

THE FOLLOWING MUST BE COMPLETED BY THE FLOODPLAIN ADMINISTRATOR/MANAGER OR HIS/HER AGENT.

COMPLIANCE IS HEREBY CERTIFIED WITH THE REQUIREMENT OF THE FLOODPLAIN ORDINANCE ADOPTED BY THE COUNTY COMMISSION OF DODDRIDGE COUNTY ON MAY 21, 2013.

SIGNED_____DATE_____

CNX 13-075

North Fork of
Hugh's River
near Maxwell Station
& Porto Rico

12/04/2013

DJ 2V

STREAM CROSSING
FLOODPLAIN ANALYSIS

CNX GAS – OXFORD 11 ACCESS ROAD/BRIDGE
SOUTH FORK HUGHES RIVER
DODDRIDGE COUNTY, WV

SEPTEMBER 2013

PREPARED FOR:

CNX GAS COMPANY, LLC

OXFORD 11 ACCESS ROAD & BRIDGE
SOUTH FORK HUGHES RIVER
DODDRIDGE COUNTY, WV

TABLE OF CONTENTS

APPENDICES

OXFORD 11 ACCCESS ROAD
SOUTH FORK HUGHES RIVER
DODDRIDGE COUNTY, WEST VIRGINIA

1.0 PROJECT DESCRIPTION

The Thrasher Group has been contracted by CNX Gas Company to perform a hydrologic study on a permanent stream crossing that will allow access to the CNX Gas Oxford 11 Well Site. The access road is proposed off of CR 54/1 in Doddridge County.

2.0 HYDROLOGIC ANAYLSIS

To determine how the proposed bridge crossing and access road may affect the existing flood plain, a hydrology and hydraulic analysis was performed. The site is located in the FEMA Flood Zone 'A.' and therefore, no detailed flood study or base flood elevation has been established. The hydrologic data and flow was gathered by using USGS Quad Maps and the USGS Regional Regression Equations for Rural Areas. The drainage area is 1.23 square miles and produced a flow of 817 cfs for a 100 year storm event. Aerial mapping provided by CNX Gas was used in creating the topographic surface of the surrounding flood plain. Cross sections were created from the surface and inserted into HEC-RAS. A hydraulic model was run on South Fork Hughes River to produce an existing base line elevation.

The proposed bridge crossing was then added to the model to provide a comparison between the existing and proposed stream conditions.

3.0 CONCLUSION

The existing flood plain elevation immediately upstream of the bridge structure was found to be 929.27' and with the bridge structure in place the flood elevation was 929.60. This is a change in elevation of 0.33'. When looking at the analysis further upstream, it can be seen that by river station 1000 the difference in flood plain elevation is 0.10'. According to the aerial mapping of the area this increase in the flood plain elevation still does not appear to impact any structures in the area and the flood plain elevation returns to its normal level relatively quickly. The WVDOH Drainage manual and FEMA states that with no known base flood elevation, the proposed bridge is not to cause more than one foot of cumulative increase to the approximate flood elevation (this was derived through HEC-RAS). However, no increase in backwater is always a goal. Appendix 2 includes a summary table of the 100 year flood plain elevations for both existing and proposed stream conditions and the elevation differences at each analyzed section.

APPENDIX 1

SITE HYDROLOGY CALCULATIONS

Table 4-15

USGS Regional Regression Equations for Rural Areas (2000)

[Q(n) is the discharge in cubic feet per second for the (n)-year recurrence interval; A is the drainage area in square miles; and P is the mean annual precipitation. in inches.]

Regression equation	Standard error of the model, in percent	Avenge standard error of sampling, in percent	Average prediction error, in percent	Equivalent years of record	Number of streamflow stations	Range of drainage area, in square miles
East Region						
$Q(2)=62.6A^{0.842}$	37.7	8.3	38.8	2.3	74	0.22-1,486
$Q(5)=102A^{0.849}$	32.4	8.9	33.7	5.2		
$Q(10)=133A^{0.855}$	30.7	9.5	32.3	8.3		
$Q(25)=174A^{0.863}$	30.3	10.6	32.3	12.6		
$Q(50)=206A^{0.869}$	31.0	11.3	33.2	15.3		
$Q(100)=240A^{0.875}$	32.2	12.0	34.6	17.4		
$Q(200)=276A^{0.881}$	34.0	12.9	36.6	18.8		
$Q(500)=326A^{0.889}$	36.8	14.1	39.8	20.0		
North Region						
$Q(2)=138A^{0.724}$	27.0	6.9	28.0	3.3	62	0.13-1,516
$Q(5)=249A^{0.678}$	26.6	7.3	27.7	4.7		
$Q(10)=341A^{0.653}$	26.7	8.0	28.0	6.3		
$Q(25)=478A^{0.626}$	27.6	8.6	29.0	8.3		
$Q(50)=594A^{0.609}$	28.5	8.9	29.9	9.5		
$Q(100)=722A^{0.594}$	29.7	9.5	31.3	10.5		
$Q(200)=862A^{0.580}$	31.1	10.3	32.9	11.2		
$Q(500)=1069A^{0.563}$	33.2	11.1	35.2	11.8		
South Region						
$Q(2)=95.4A^{0.785}$	38.4	7.3	39.2	1.6	100	0.10-8,371
$Q(5)=153A^{0.772}$	35.8	7.3	36.6	2.7		
$Q(10)=197A^{0.766}$	35.3	8.0	36.3	3.8		
$Q(25)=257A^{0.759}$	35.9	8.6	37.0	5.3		
$Q(50)=305A^{0.755}$	37.0	8.9	38.2	6.2		
$Q(100)=355A^{0.751}$	38.5	9.5	39.9	6.9		
$Q(200)=408A^{0.748}$	40.3	10.0	41.7	7.4		
$Q(500)=481A^{0.744}$	43.1	10.8	44.7	7.9		

Source: USGS WRI Report 00-4080 (2000)

APPENDIX 2

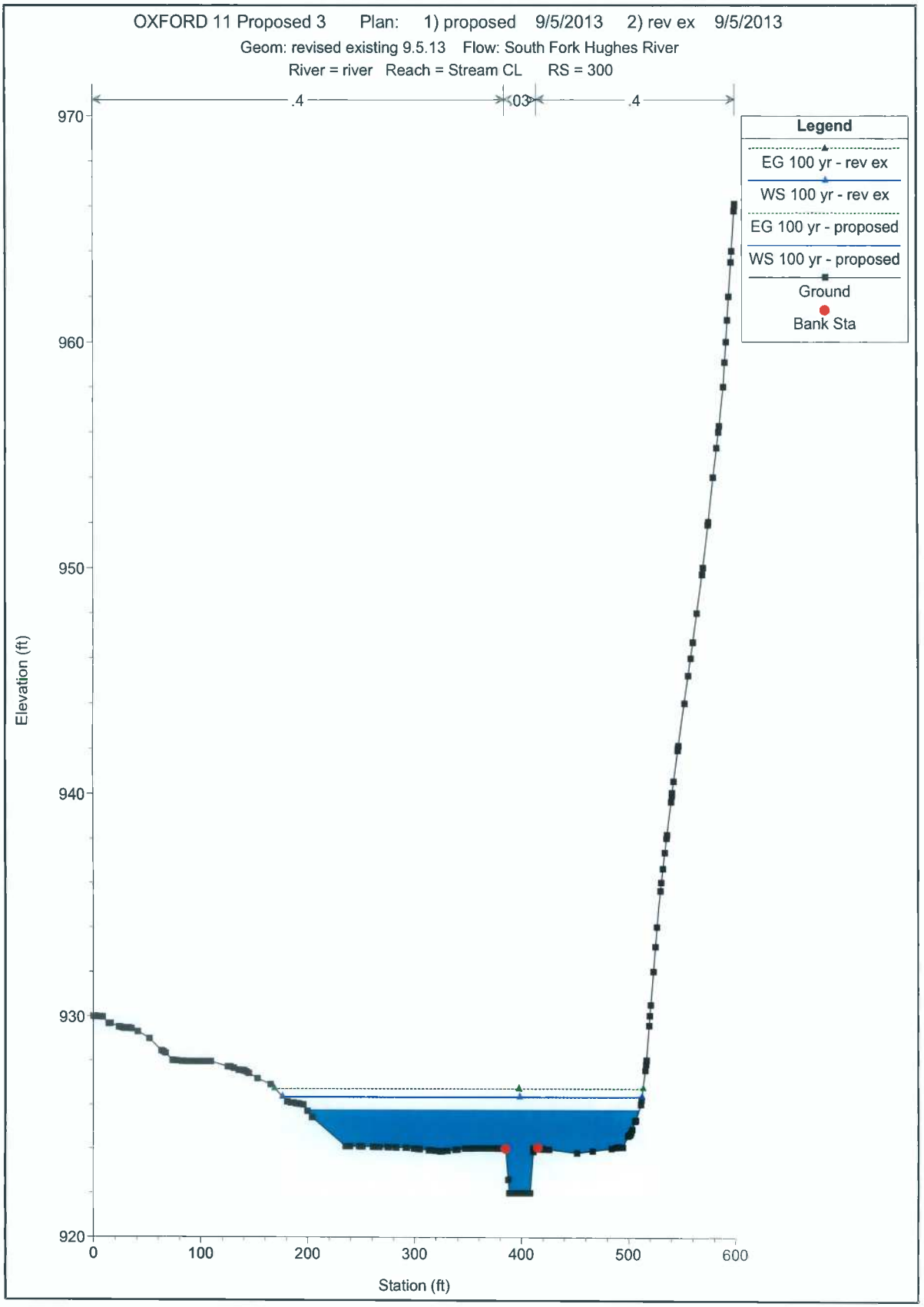
HEC-RAS SUMMARY TABLES

HEC-RAS River: river Reach: Stream CL Profile: 100 yr

Reach	River Sta	Profile	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Stream CL	1150	100 yr	proposed	817.00	926.00	930.08	929.54	931.10	0.005093	8.30	214.42	117.80	0.75
Stream CL	1150	100 yr	rev ex	817.00	926.00	929.97	929.54	931.06	0.005657	8.58	201.58	114.89	0.79
Stream CL	1100	100 yr	proposed	817.00	925.99	930.20		930.76	0.003208	6.15	253.58	116.60	0.59
Stream CL	1100	100 yr	rev ex	817.00	925.99	930.09		930.69	0.003586	6.37	240.56	114.92	0.62
Stream CL	1050	100 yr	proposed	817.00	925.99	930.33		930.57	0.001164	4.01	349.15	157.51	0.37
Stream CL	1050	100 yr	rev ex	817.00	925.99	930.23		930.49	0.001283	4.13	333.12	154.08	0.39
Stream CL	1000	100 yr	proposed	817.00	925.99	930.31		930.51	0.000900	3.71	549.52	217.50	0.33
Stream CL	1000	100 yr	rev ex	817.00	925.99	930.21		930.42	0.000991	3.82	526.41	216.40	0.34
Stream CL	950	100 yr	proposed	817.00	925.97	929.58	928.91	930.36	0.004562	7.34	247.78	115.29	0.70
Stream CL	950	100 yr	rev ex	817.00	925.97	929.26	928.91	930.24	0.006312	8.16	212.00	109.54	0.81
Stream CL	900	100 yr	proposed	817.00	924.00	929.81		930.12	0.001178	4.62	373.32	134.57	0.37
Stream CL	900	100 yr	rev ex	817.00	924.00	929.57		929.92	0.001406	4.88	341.91	130.00	0.40
Stream CL	850	100 yr	proposed	817.00	924.00	929.85		930.05	0.000567	3.65	462.61	148.83	0.27
Stream CL	850	100 yr	rev ex	817.00	924.00	929.62		929.83	0.000659	3.82	429.12	142.48	0.29
Stream CL	800	100 yr	proposed	817.00	924.00	929.76		930.01	0.000728	4.16	551.35	179.82	0.31
Stream CL	800	100 yr	rev ex	817.00	924.00	929.52		929.79	0.000858	4.38	507.50	176.26	0.34
Stream CL	750	100 yr	proposed	817.00	924.00	929.36		929.91	0.002649	6.58	499.46	185.94	0.55
Stream CL	750	100 yr	rev ex	817.00	924.00	928.97		929.67	0.003710	7.33	428.62	177.69	0.64
Stream CL	614.59	100 yr	proposed	817.00	923.92	929.60	926.71	929.68	0.000299	2.29	720.19	220.66	0.19
Stream CL	614.59	100 yr	rev ex	817.00	923.92	929.27		929.36	0.000391	2.49	648.39	214.71	0.22
Stream CL	595			Bridge									
Stream CL	578.62	100 yr	proposed	817.00	922.00	927.62	927.62	929.18	0.006631	11.16	390.02	180.28	0.87
Stream CL	578.62	100 yr	rev ex	817.00	922.00	927.62	927.62	929.18	0.006631	11.16	390.02	180.28	0.87
Stream CL	450	100 yr	proposed	817.00	922.00	926.64		927.03	0.002807	5.97	780.98	326.01	0.55
Stream CL	450	100 yr	rev ex	817.00	922.00	926.84		927.18	0.002271	5.57	847.87	327.89	0.50
Stream CL	400	100 yr	proposed	817.00	922.00	926.31		926.84	0.004563	7.10	716.83	321.86	0.69
Stream CL	400	100 yr	rev ex	817.00	922.00	926.63		927.04	0.003234	6.35	818.00	329.72	0.59
Stream CL	350	100 yr	proposed	817.00	922.00	926.07		926.59	0.005662	7.01	672.07	323.98	0.75
Stream CL	350	100 yr	rev ex	817.00	922.00	926.50		926.86	0.003310	5.91	812.26	329.27	0.59
Stream CL	300	100 yr	proposed	817.00	922.00	925.75		926.34	0.004147	6.83	547.92	310.78	0.67
Stream CL	300	100 yr	rev ex	817.00	922.00	926.35		926.73	0.002153	5.52	744.51	336.22	0.49
Stream CL	250	100 yr	rev ex	817.00	921.99	925.56	925.56	926.48	0.008787	8.97	551.31	353.33	0.94
Stream CL	200	100 yr	proposed	817.00	921.93	925.69		925.98	0.001920	4.53	512.66	306.71	0.46
Stream CL	200	100 yr	rev ex	817.00	921.93	925.69		925.98	0.001913	4.53	513.69	306.97	0.46
Stream CL	150	100 yr	rev ex	817.00	920.00	925.75		925.87	0.000767	3.12	1263.13	600.00	0.29
Stream CL	100	100 yr	proposed	817.00	920.00	925.57		925.81	0.001223	4.84	1252.18	488.72	0.38
Stream CL	100	100 yr	rev ex	817.00	920.00	925.57		925.81	0.001223	4.84	1252.18	488.72	0.38
Stream CL	50	100 yr	proposed	817.00	920.00	924.97	924.15	925.67	0.003615	6.96	321.44	165.28	0.63
Stream CL	50	100 yr	rev ex	817.00	920.00	924.97	924.15	925.67	0.003615	6.96	321.44	165.28	0.63
Stream CL	0	100 yr	proposed	817.00	920.00	924.06	924.06	925.34	0.008656	9.74	306.06	174.75	0.95
Stream CL	0	100 yr	rev ex	817.00	920.00	924.06	924.06	925.34	0.008656	9.74	306.06	174.75	0.95

APPENDIX 3

HEC-RAS CROSS-SECTIONS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Geom: revised existing 9.5.13 Flow: South Fork Hughes River
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.4
.03
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Legend
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WS 100 yr - rev ex
EG 100 yr - proposed
WS 100 yr - proposed
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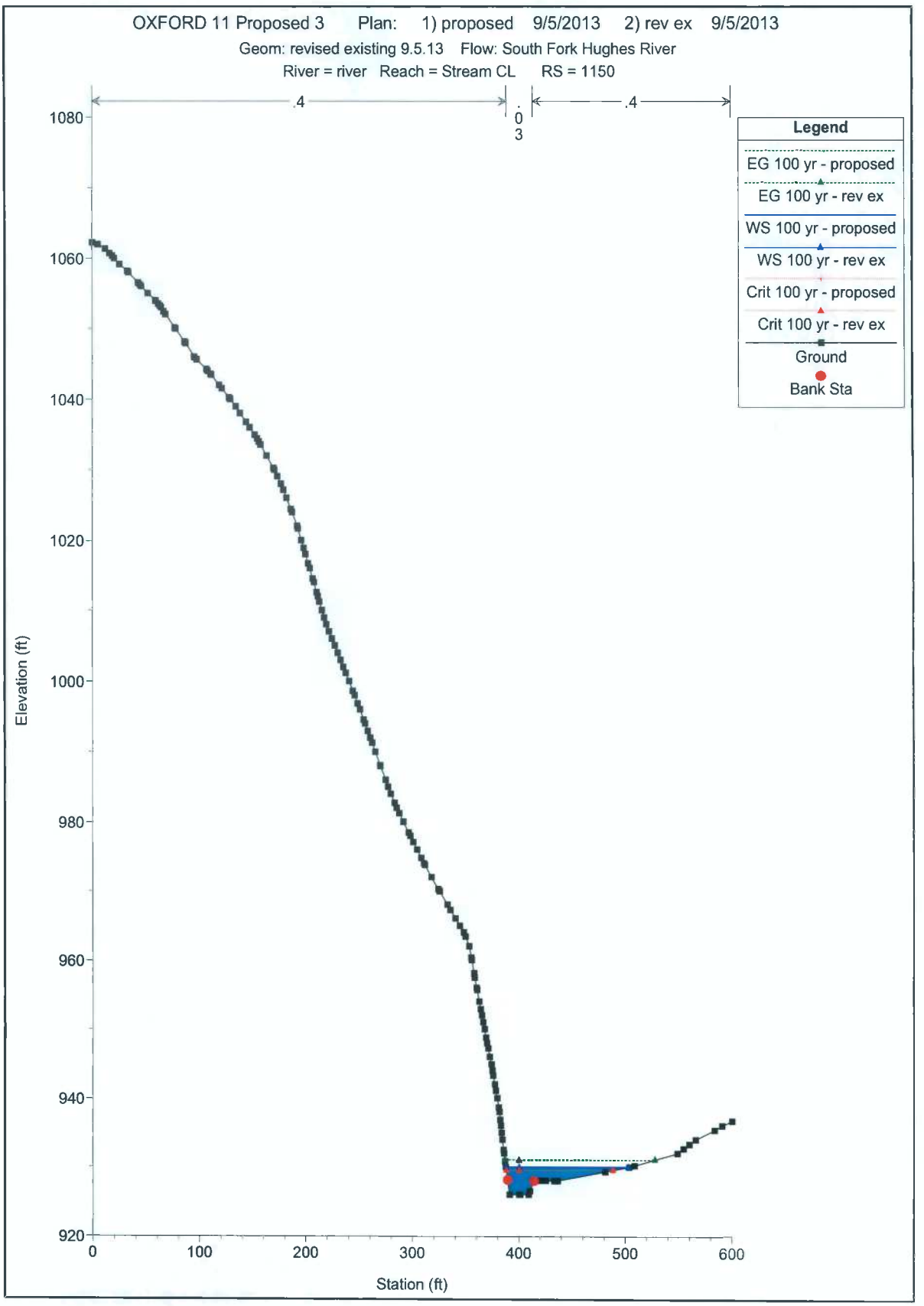
Station (ft)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Geom: revised existing 9.5.13 Flow: South Fork Hughes River
River = river Reach = Stream CL RS = 1150
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Legend
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EG 100 yr - rev ex
WS 100 yr - proposed
WS 100 yr - rev ex
Crit 100 yr - proposed
Crit 100 yr - rev ex
Ground
Bank Sta
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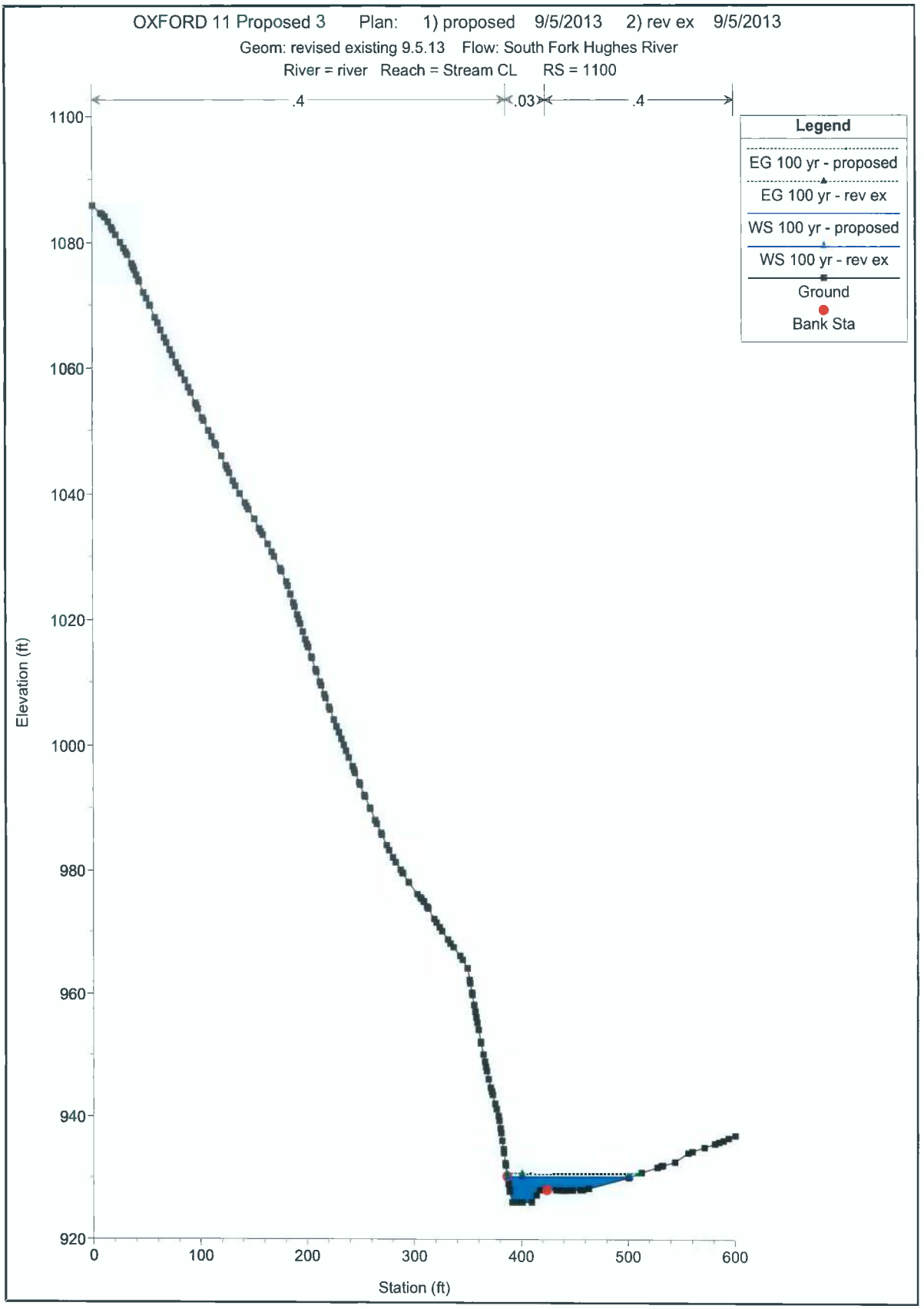
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WS 100 yr - rev ex
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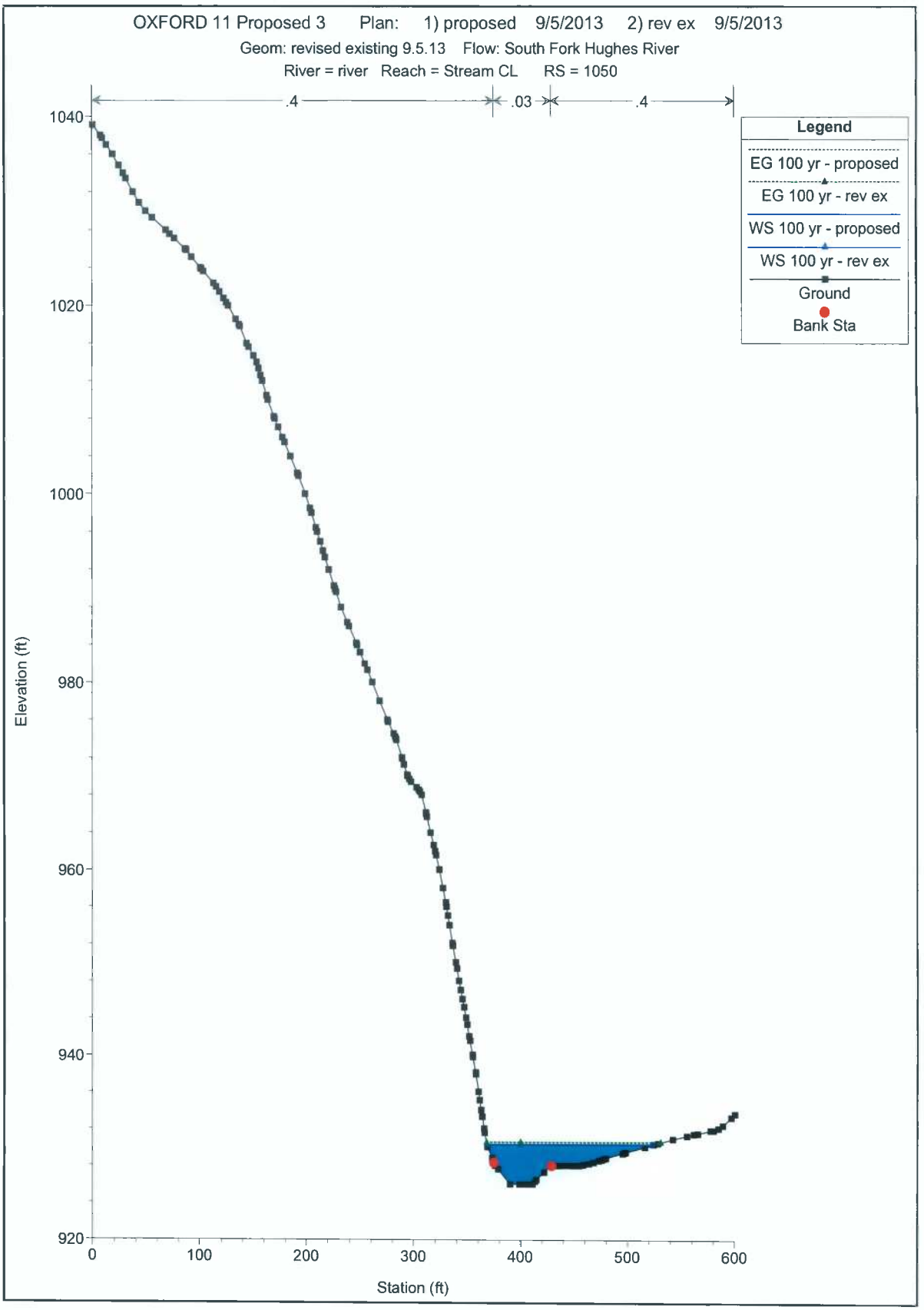
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Geom: revised existing 9.5.13 Flow: South Fork Hughes River
River = river Reach = Stream CL RS = 1050
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.03
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Legend
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WS 100 yr - proposed
WS 100 yr - rev ex
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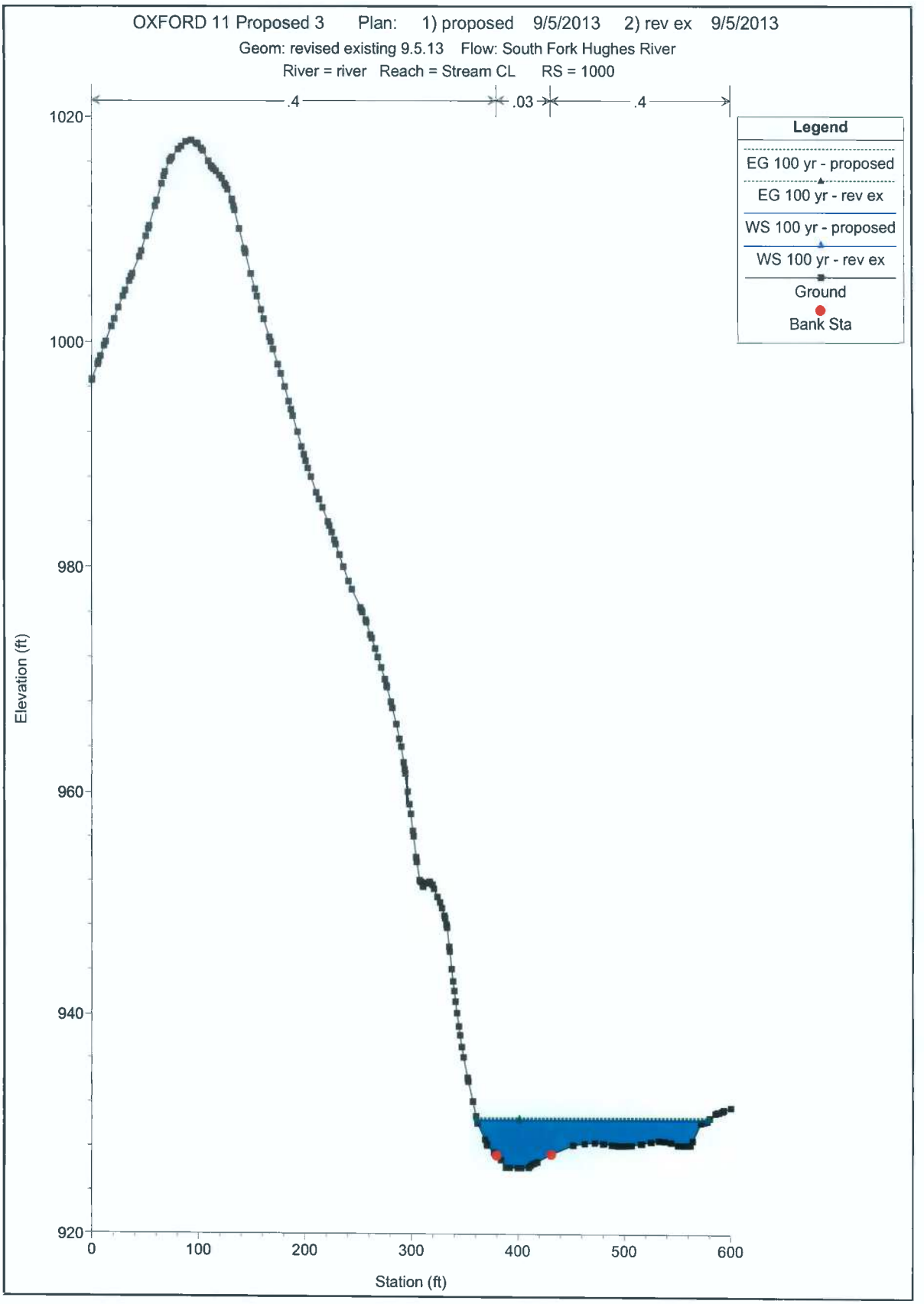
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.4
.03
.4
Legend
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WS 100 yr - proposed
WS 100 yr - rev ex
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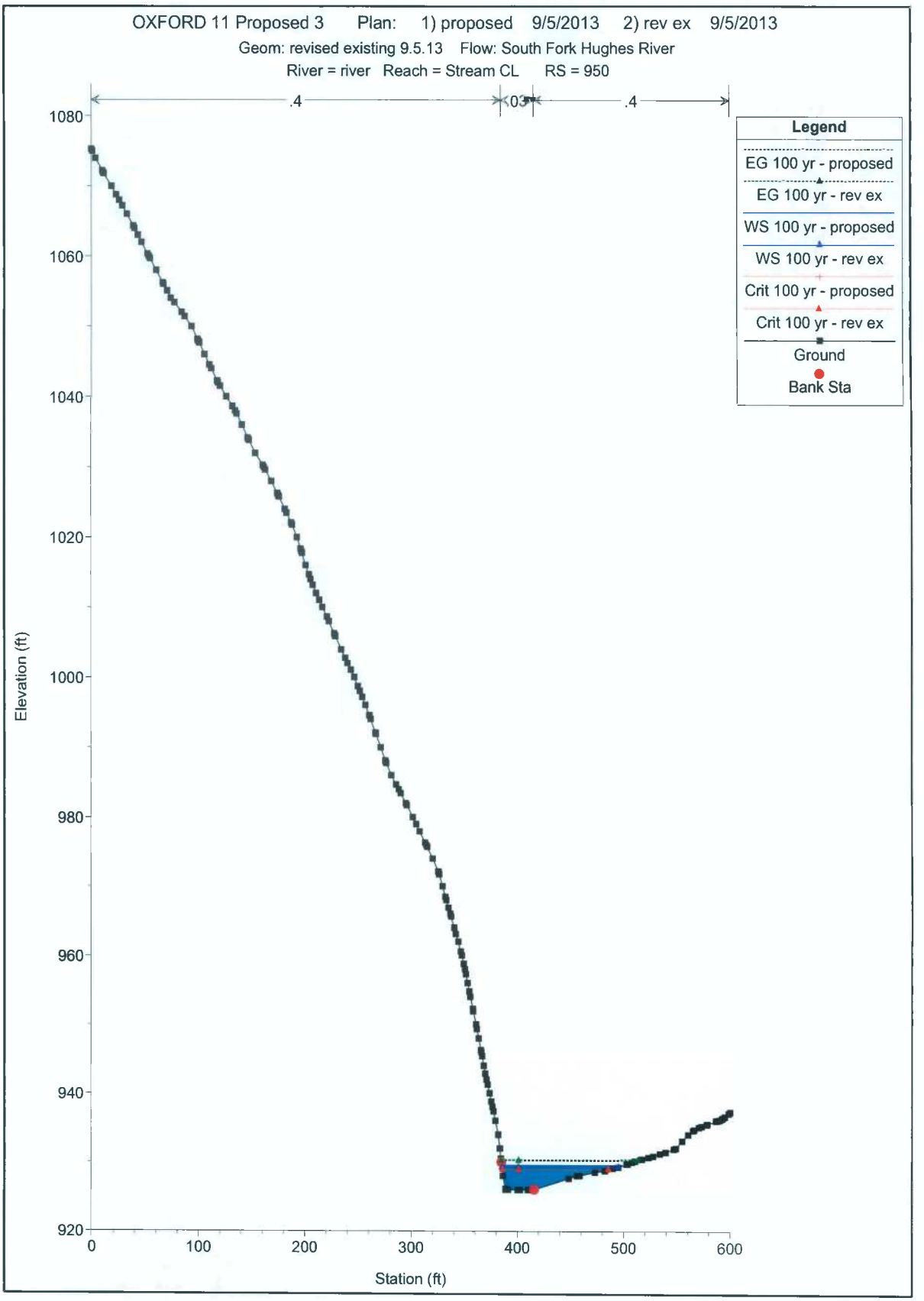
Station (ft)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.4
.03
.4
Legend
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WS 100 yr - proposed
WS 100 yr - rev ex
Crit 100 yr - proposed
Crit 100 yr - rev ex
Ground
Bank Sta
Elevation (ft)
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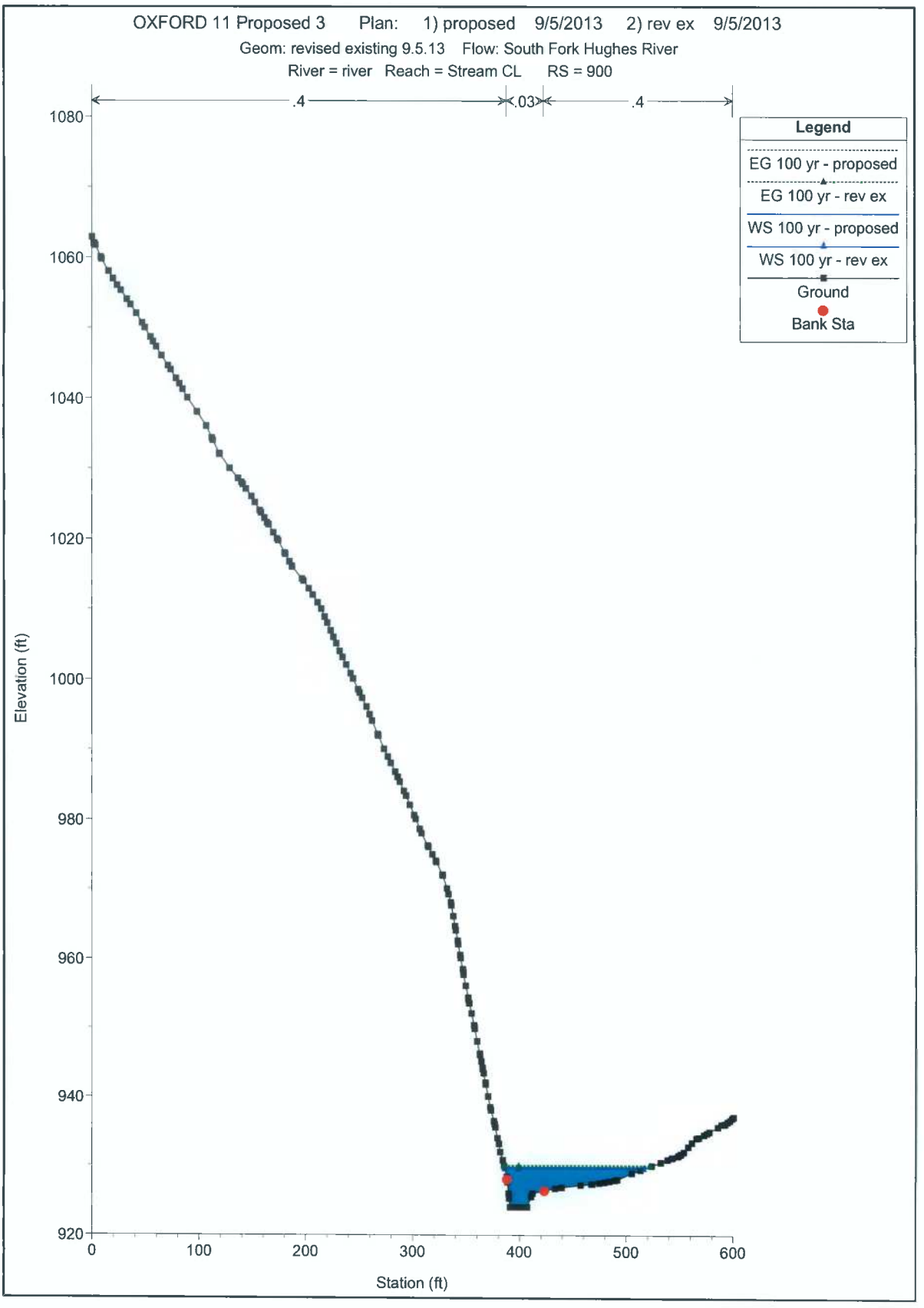
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Legend
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WS 100 yr - rev ex
Ground
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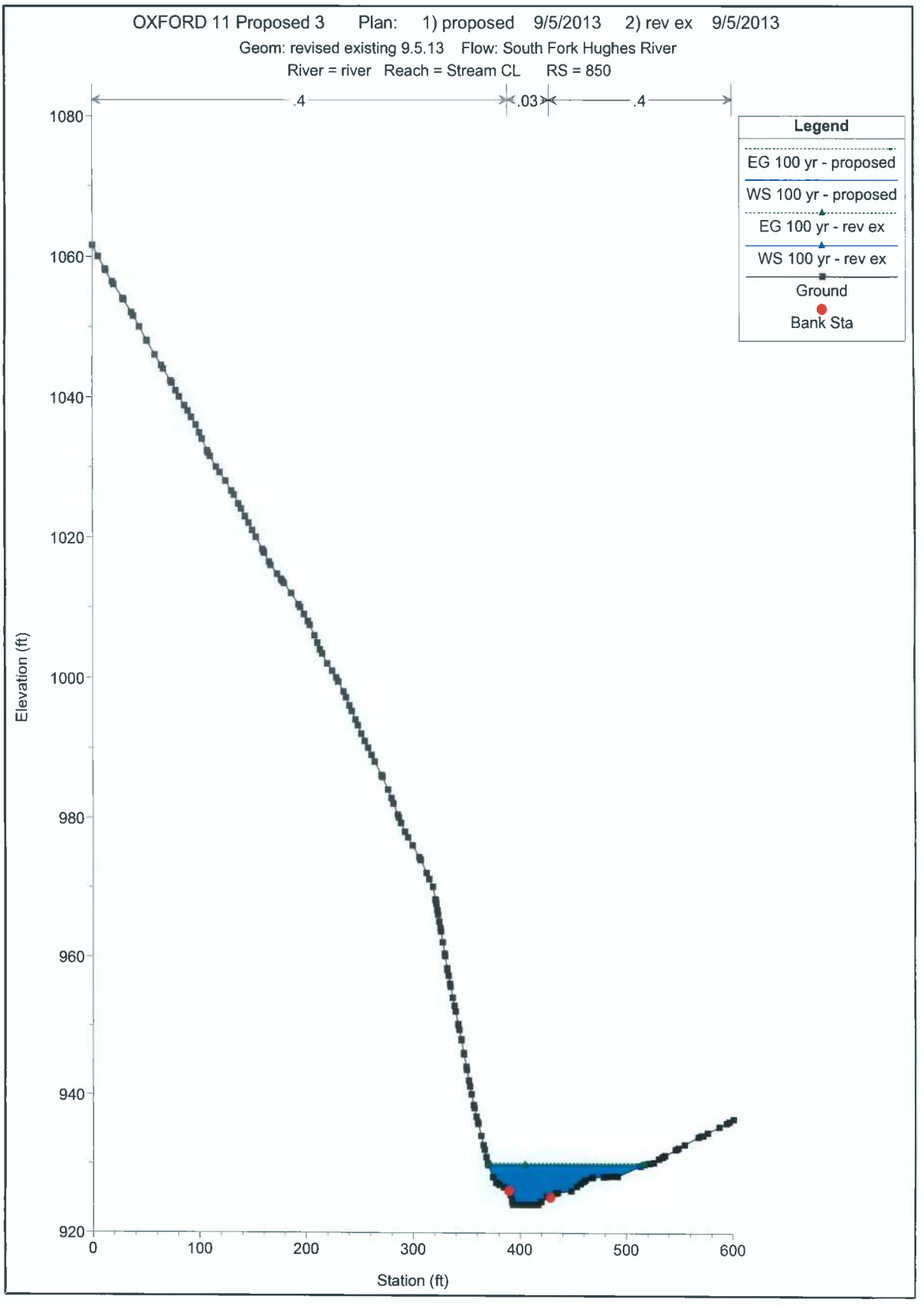
Station (ft)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River = river Reach = Stream CL RS = 850
.4
.03
.4
Legend
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EG 100 yr - rev ex
WS 100 yr - rev ex
Ground
Bank Sta
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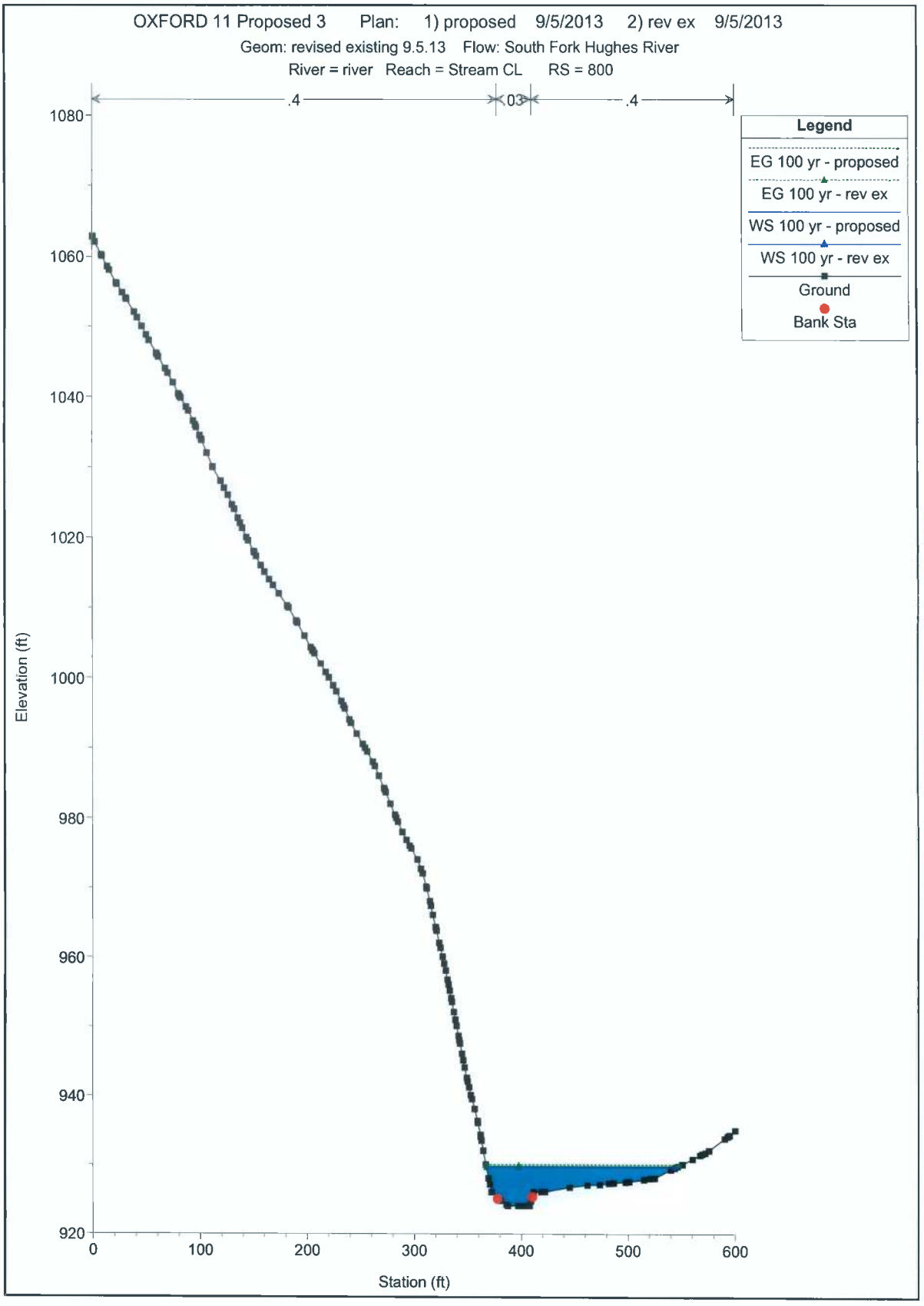
Station (ft)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Geom: revised existing 9.5.13 Flow: South Fork Hughes River
River = river Reach = Stream CL RS = 800
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.03
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Legend
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WS 100 yr - proposed
WS 100 yr - rev ex
Ground
Bank Sta
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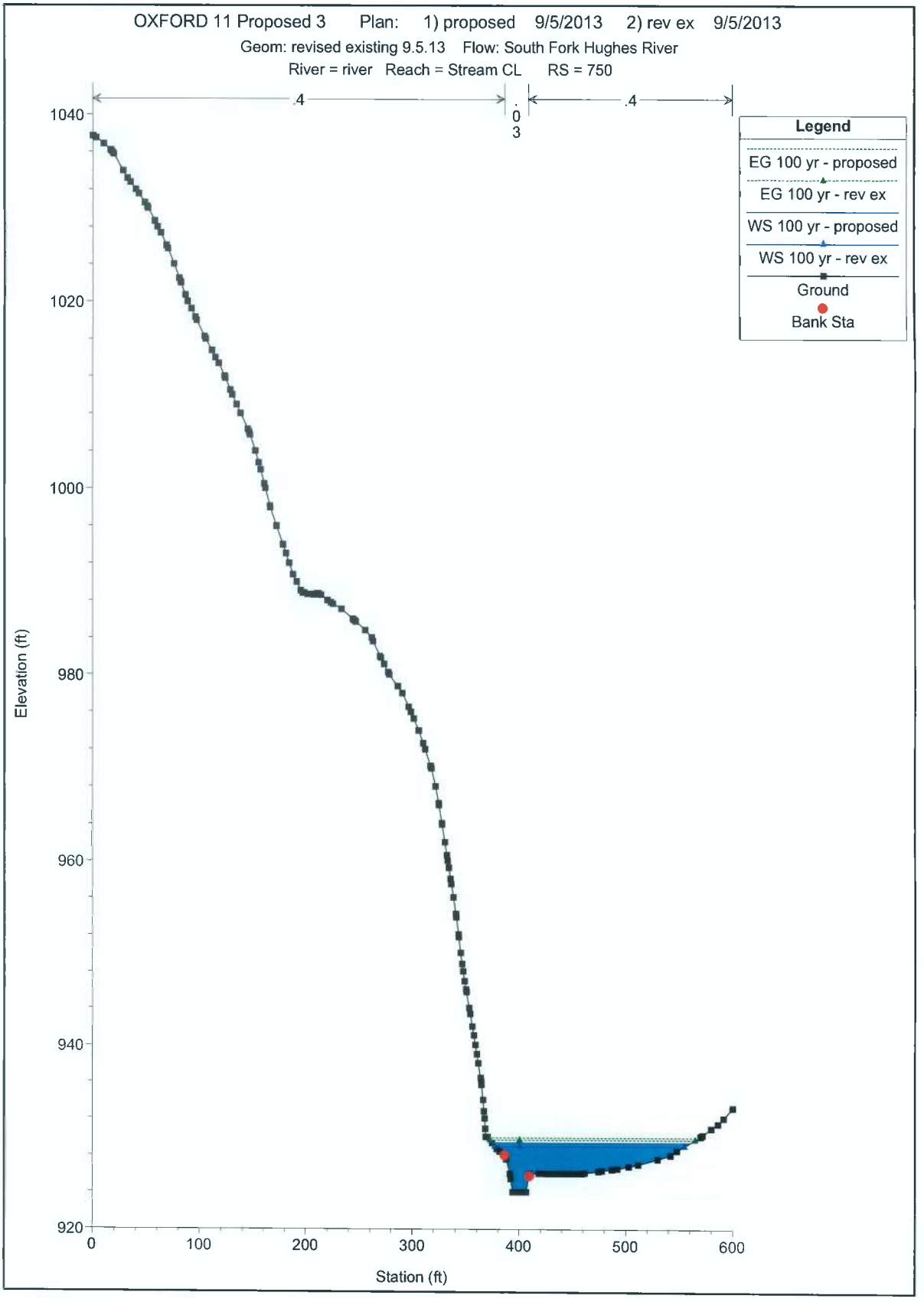
Station (ft)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Geom: revised existing 9.5.13 Flow: South Fork Hughes River
River = river Reach = Stream CL RS = 750
.4
.03
.4
Legend
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WS 100 yr - proposed
WS 100 yr - rev ex
Ground
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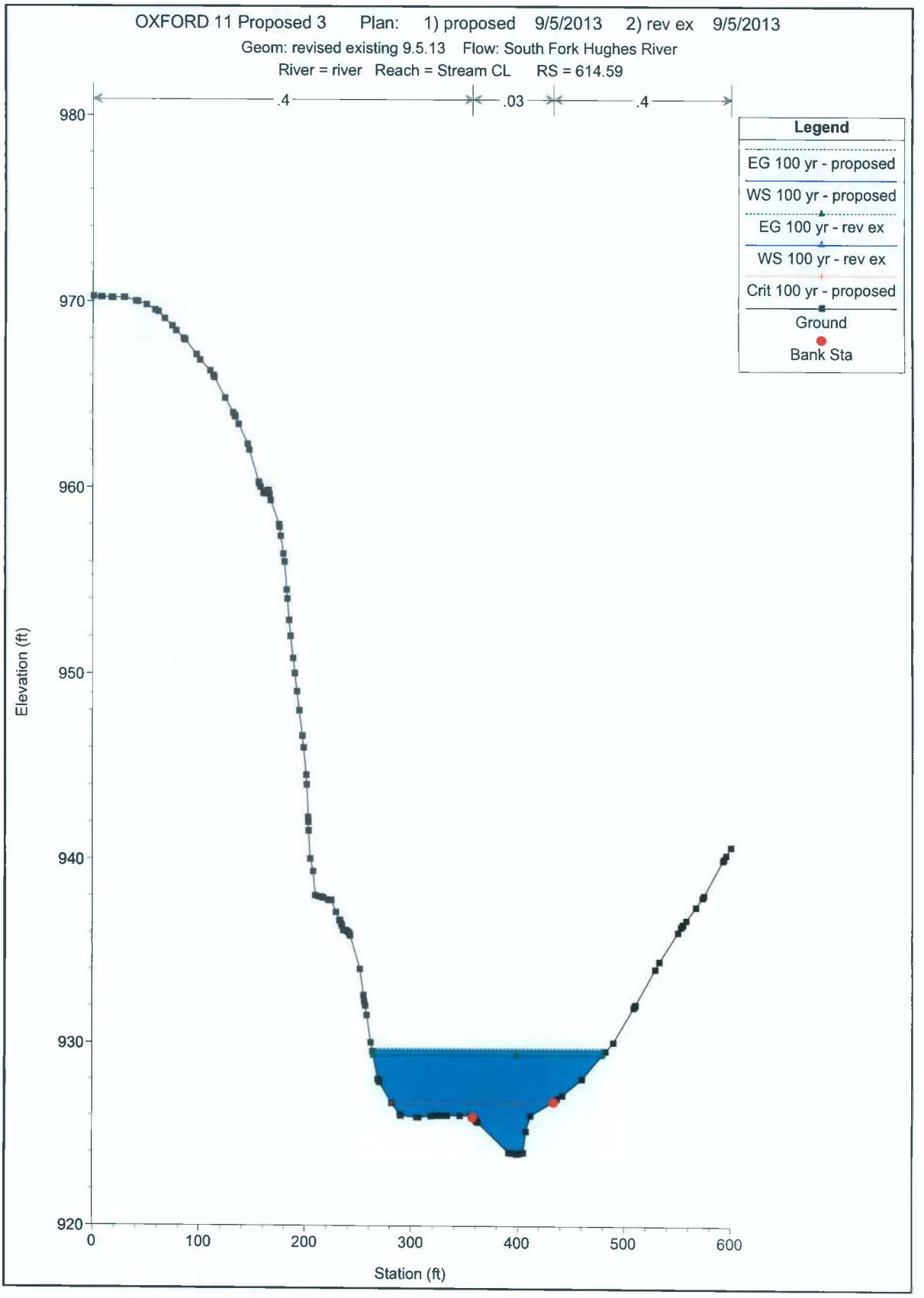
Station (ft)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Geom: revised existing 9.5.13 Flow: South Fork Hughes River
River = river Reach = Stream CL RS = 614.59
.4
.03
.4
Legend
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EG 100 yr - rev ex
WS 100 yr - rev ex
Crit 100 yr - proposed
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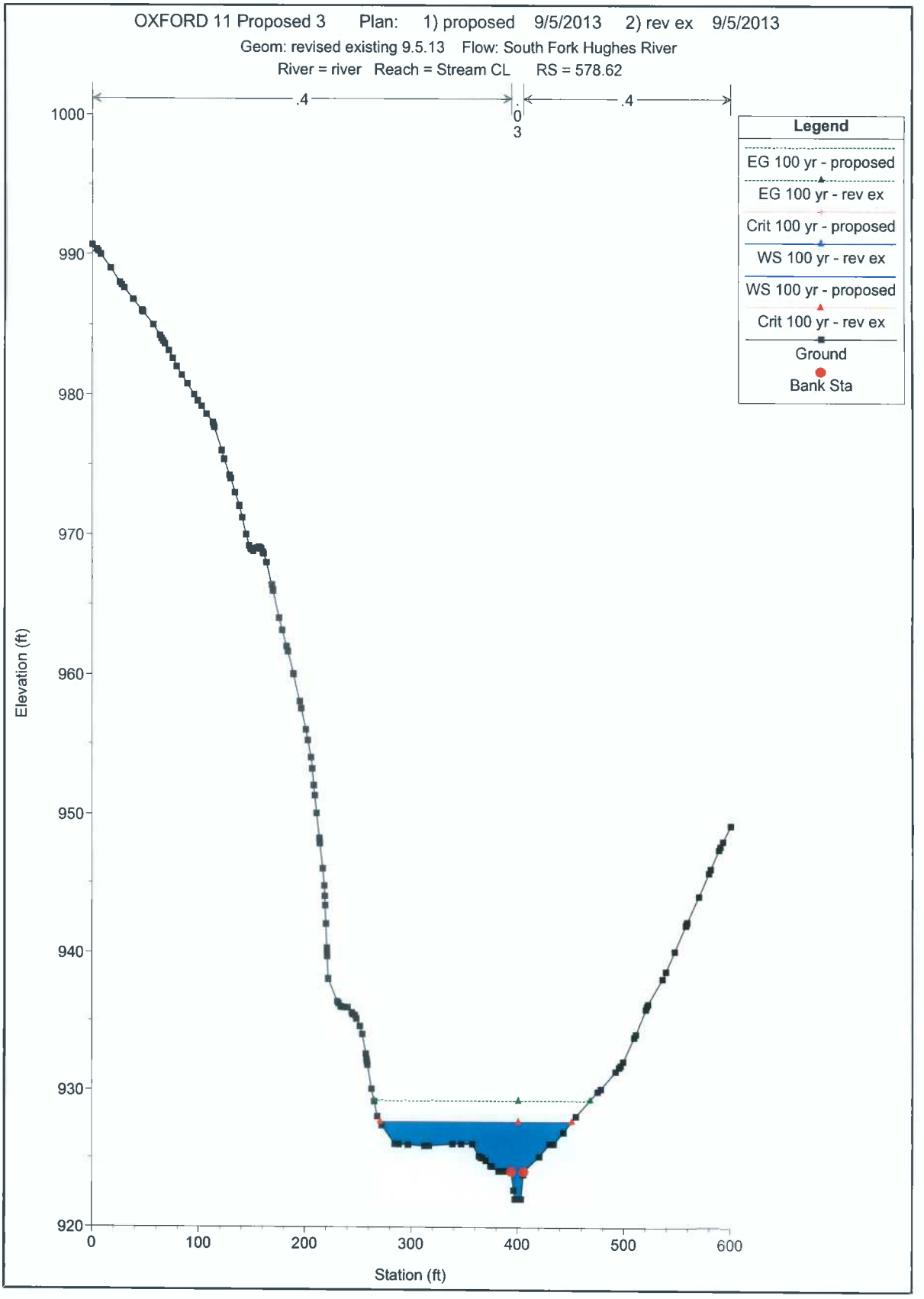
Station (ft)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Geom: revised existing 9.5.13 Flow: South Fork Hughes River
River = river Reach = Stream CL RS = 578.62
.4
.03
.4
Legend
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WS 100 yr - proposed
Crit 100 yr - rev ex
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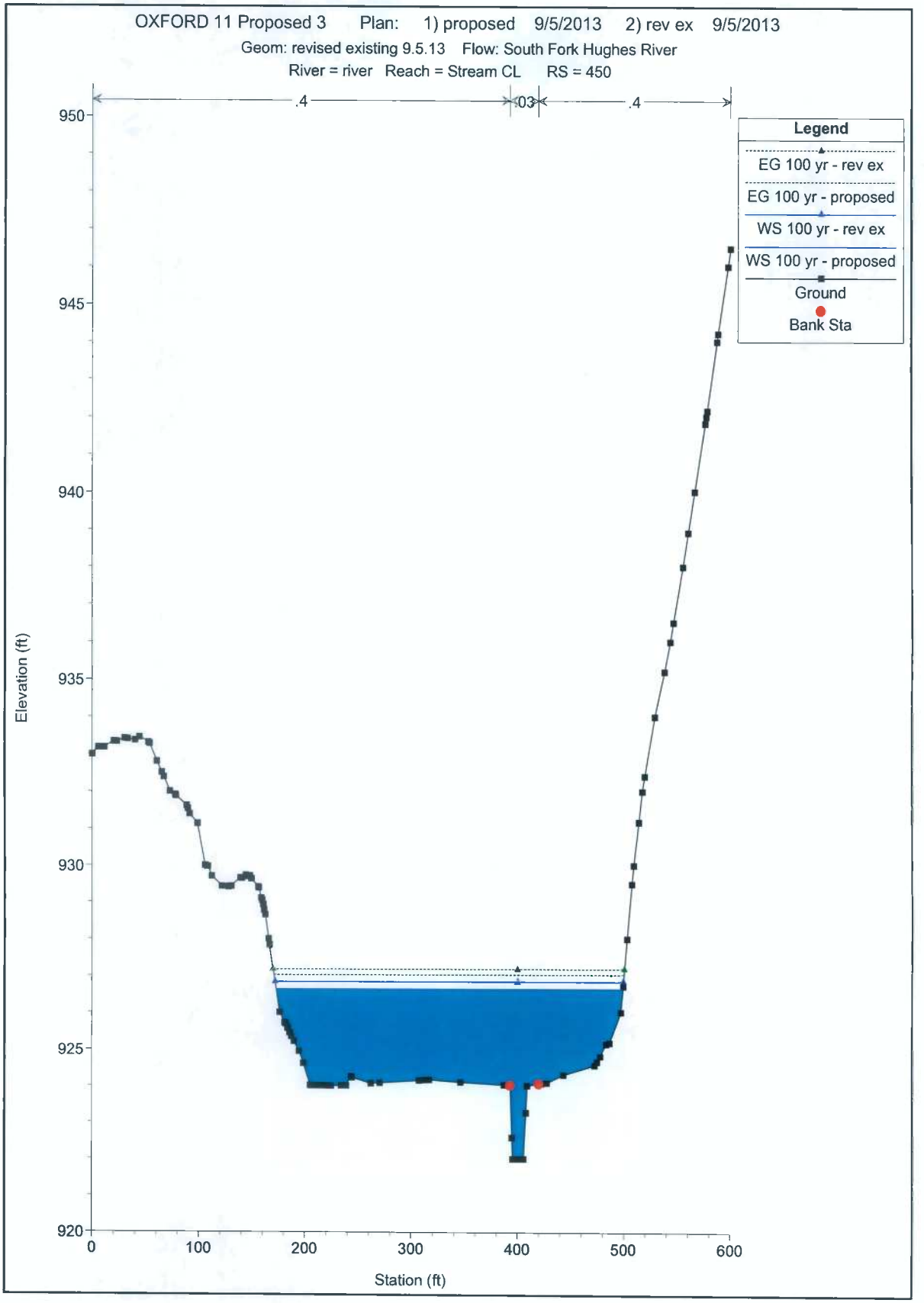
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Geom: revised existing 9.5.13 Flow: South Fork Hughes River
River = river Reach = Stream CL RS = 450
.4
.03
.4
Legend
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WS 100 yr - proposed
Ground
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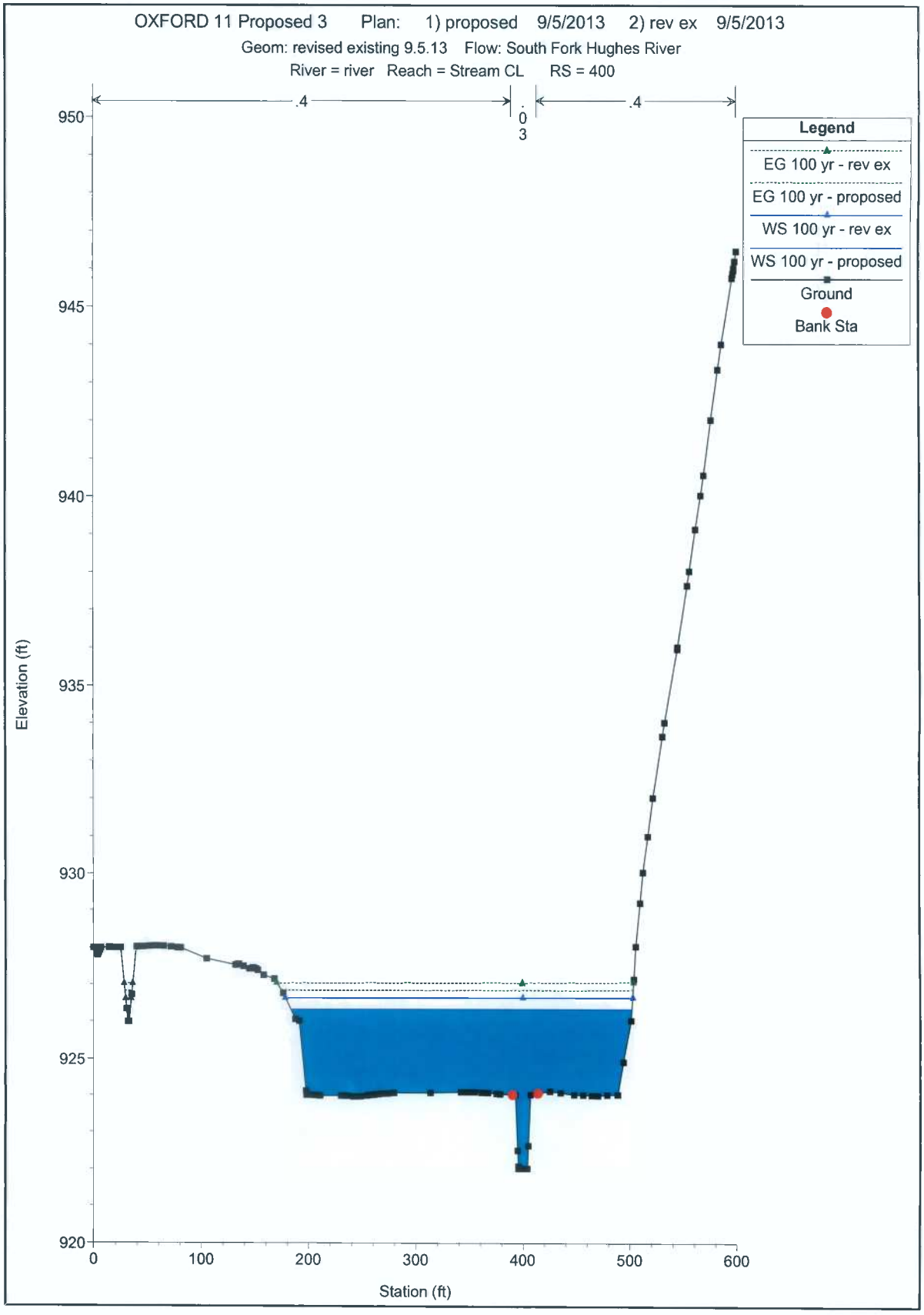
Station (ft)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Geom: revised existing 9.5.13 Flow: South Fork Hughes River
River = river Reach = Stream CL RS = 400
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Legend
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WS 100 yr - proposed
Ground
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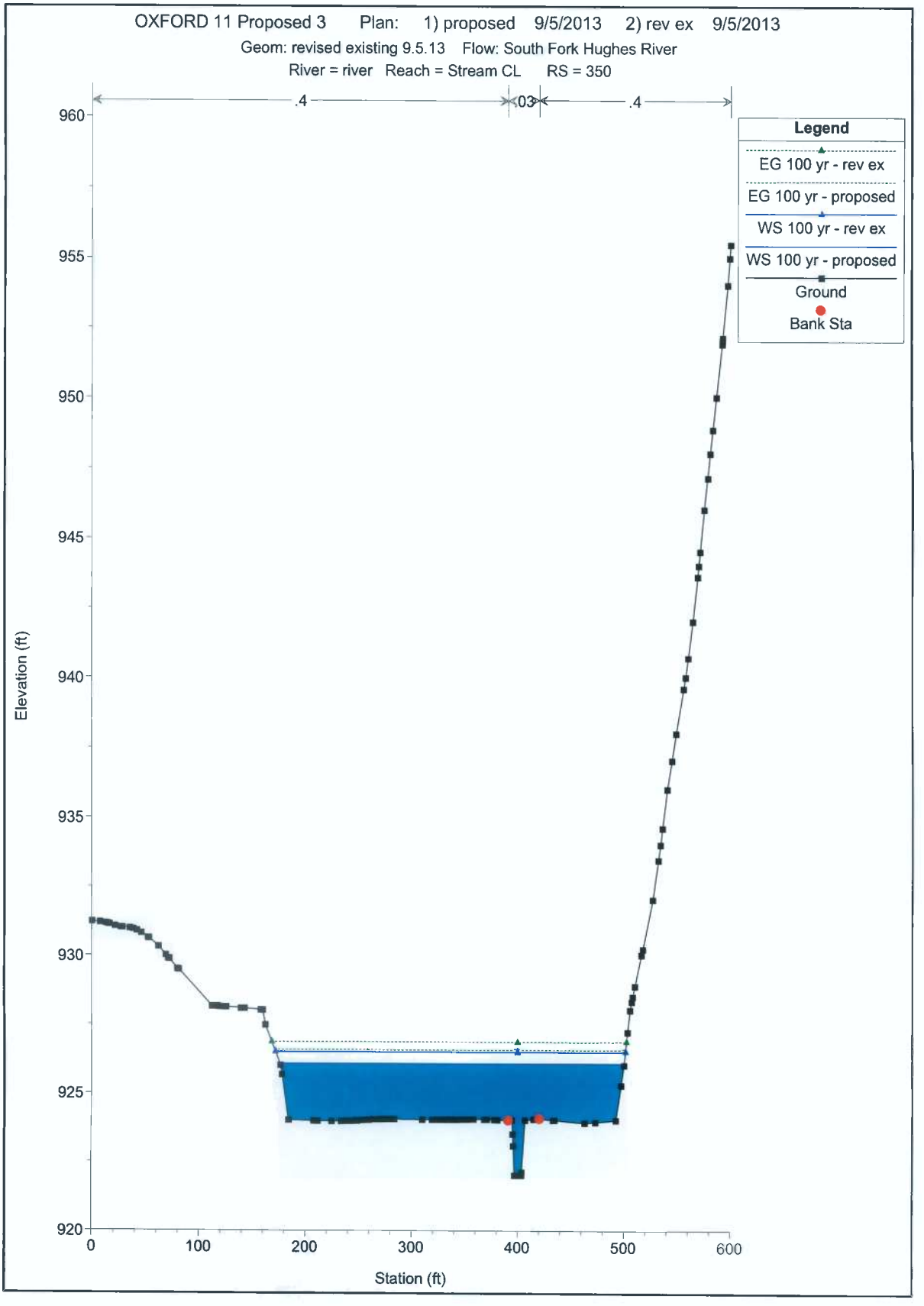
Station (ft)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River = river Reach = Stream CL RS = 350
.4
.03
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WS 100 yr - proposed
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Bank Sta
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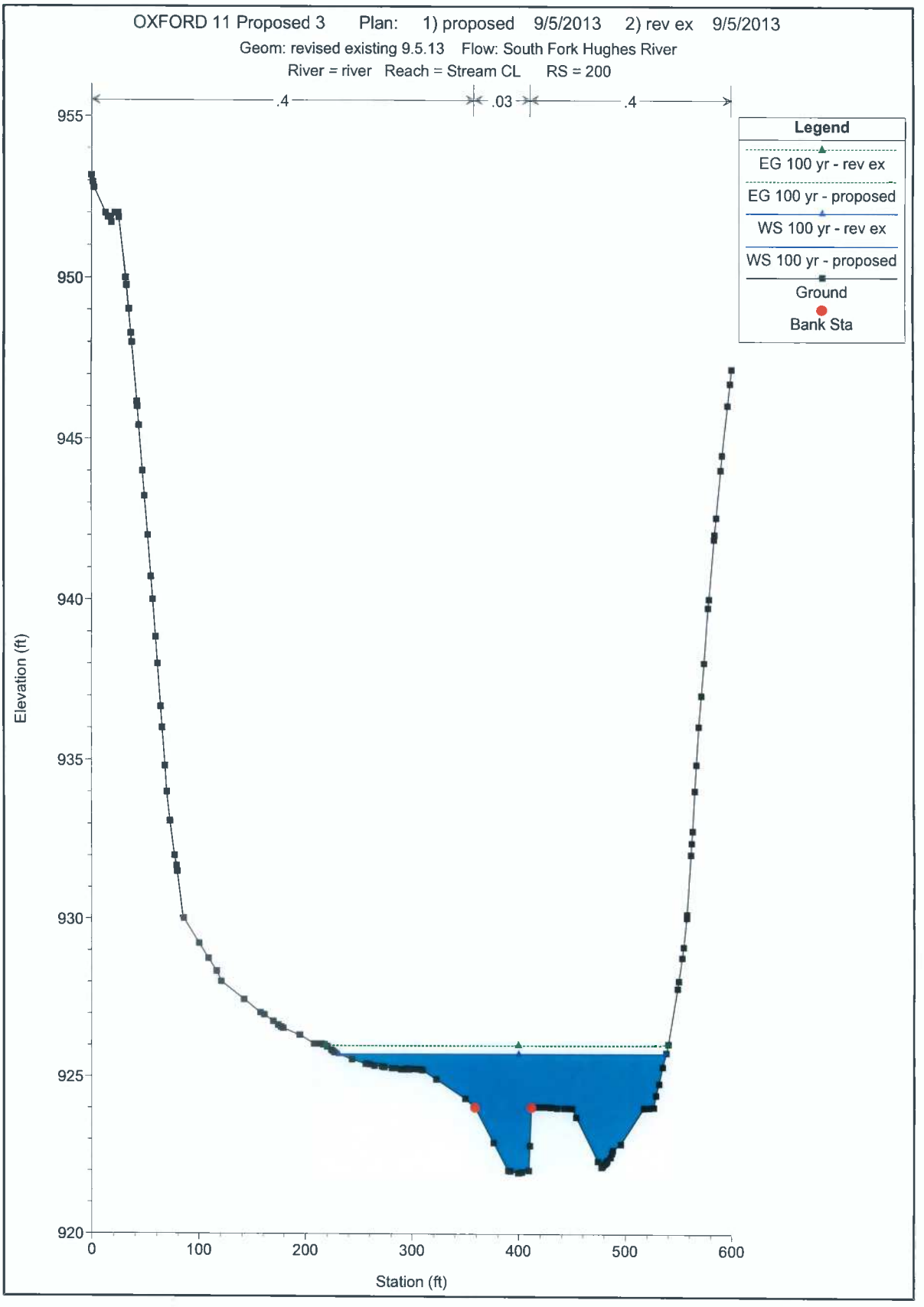
Station (ft)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Ground
Bank Sta
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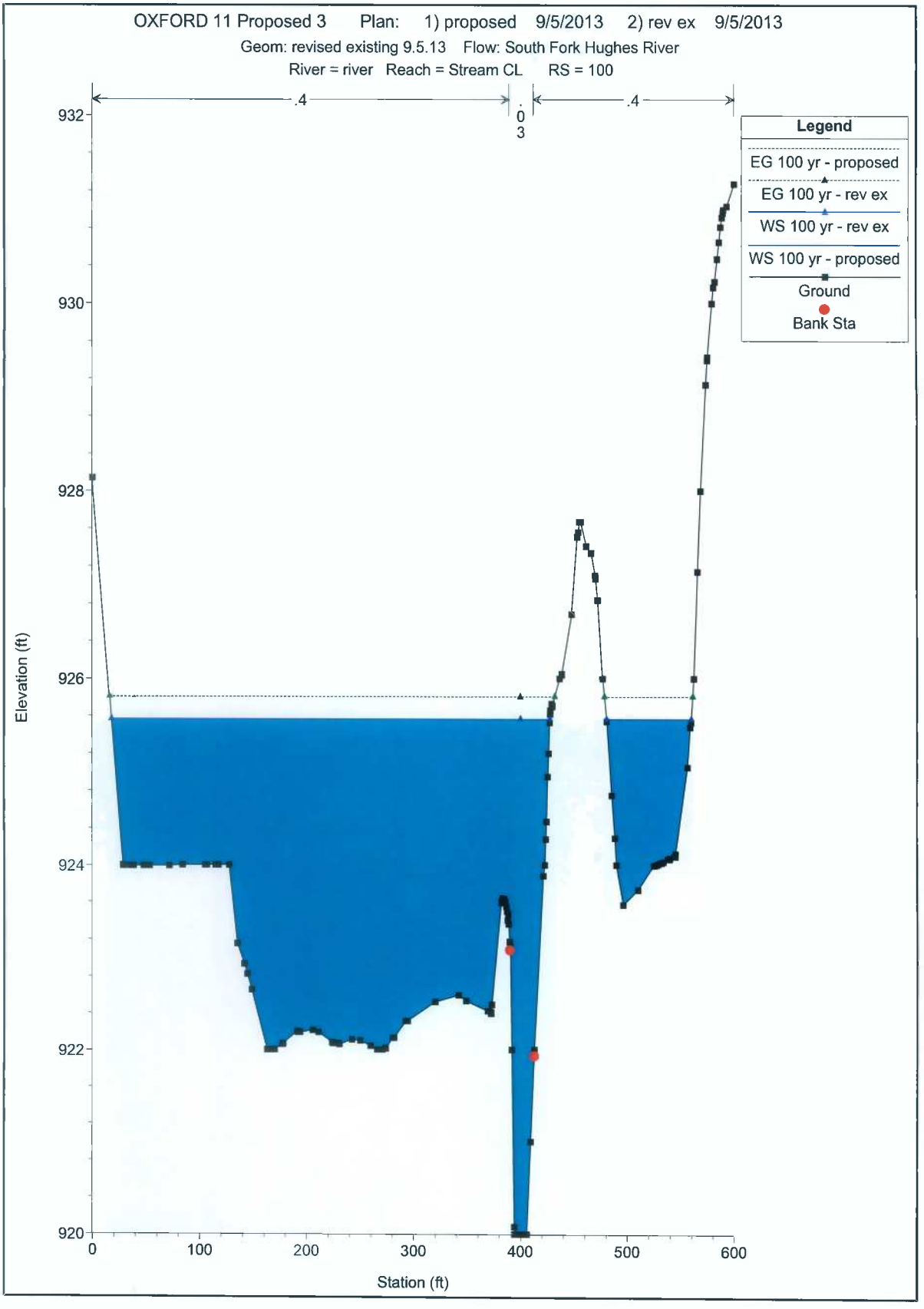
Station (ft)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River = river Reach = Stream CL RS = 100
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WS 100 yr - rev ex
WS 100 yr - proposed
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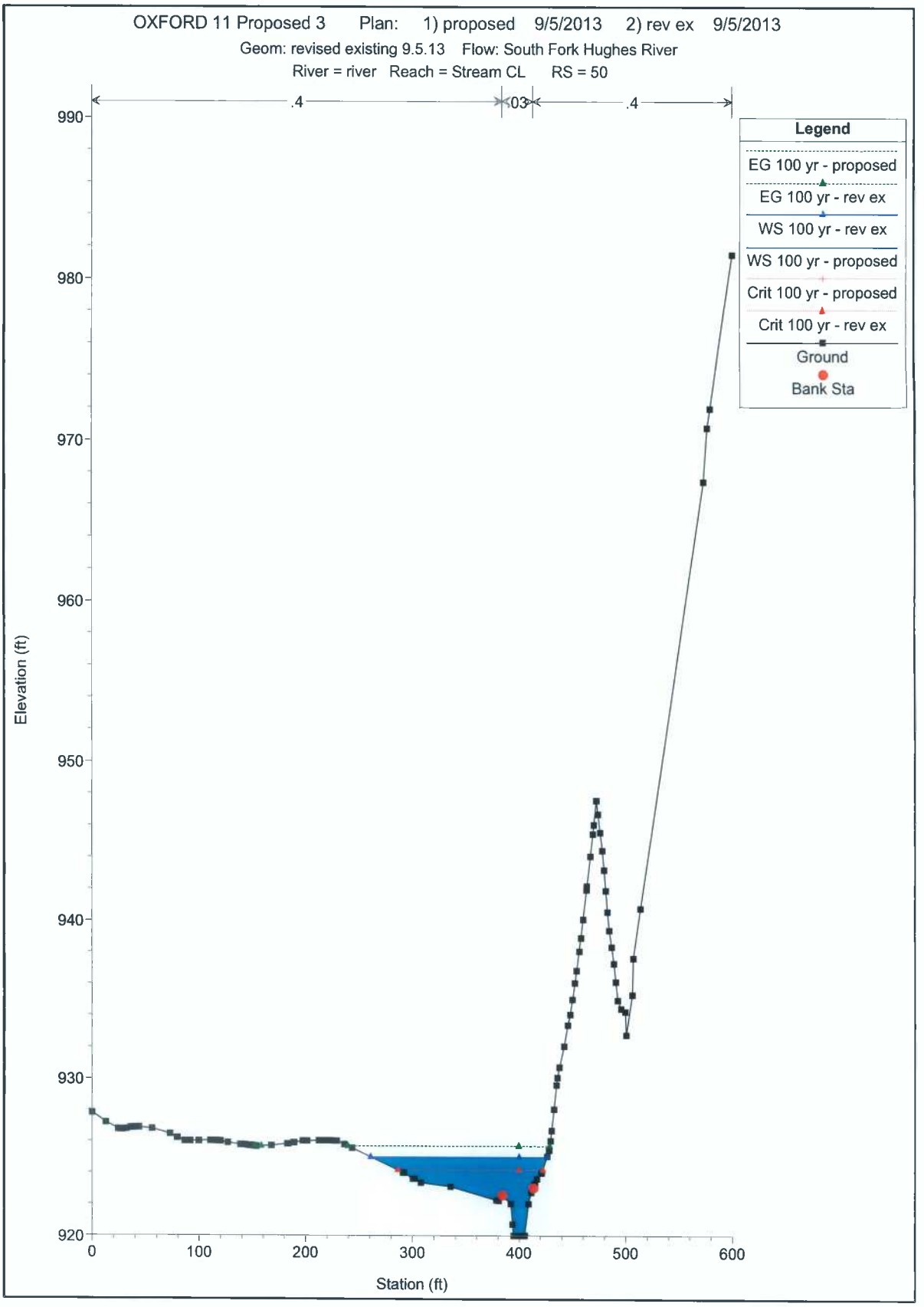
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.4
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Crit 100 yr - proposed
Crit 100 yr - rev ex
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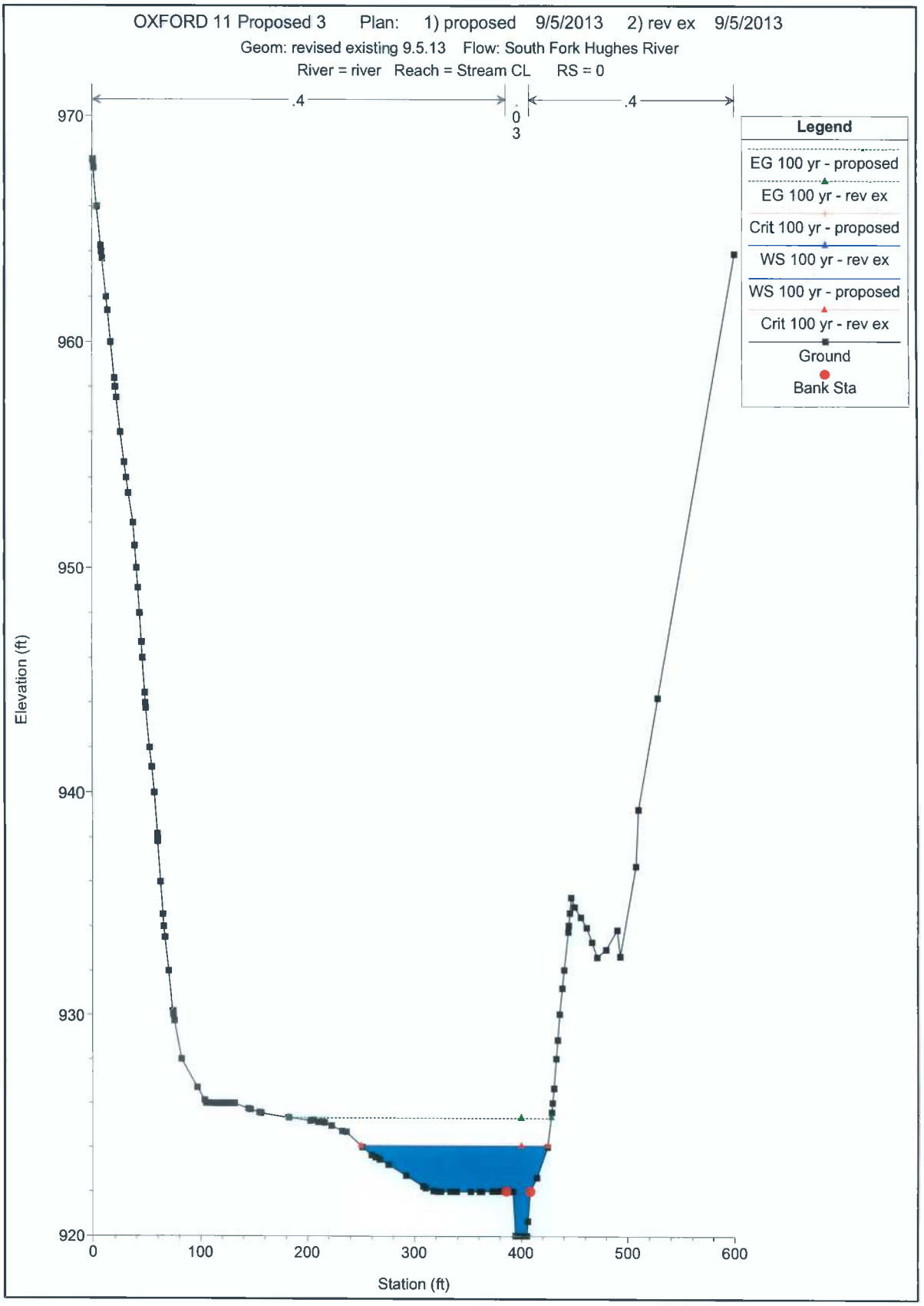
Station (ft)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Geom: revised existing 9.5.13 Flow: South Fork Hughes River
River = river Reach = Stream CL RS = 0
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Crit 100 yr - proposed
WS 100 yr - rev ex
WS 100 yr - proposed
Crit 100 yr - rev ex
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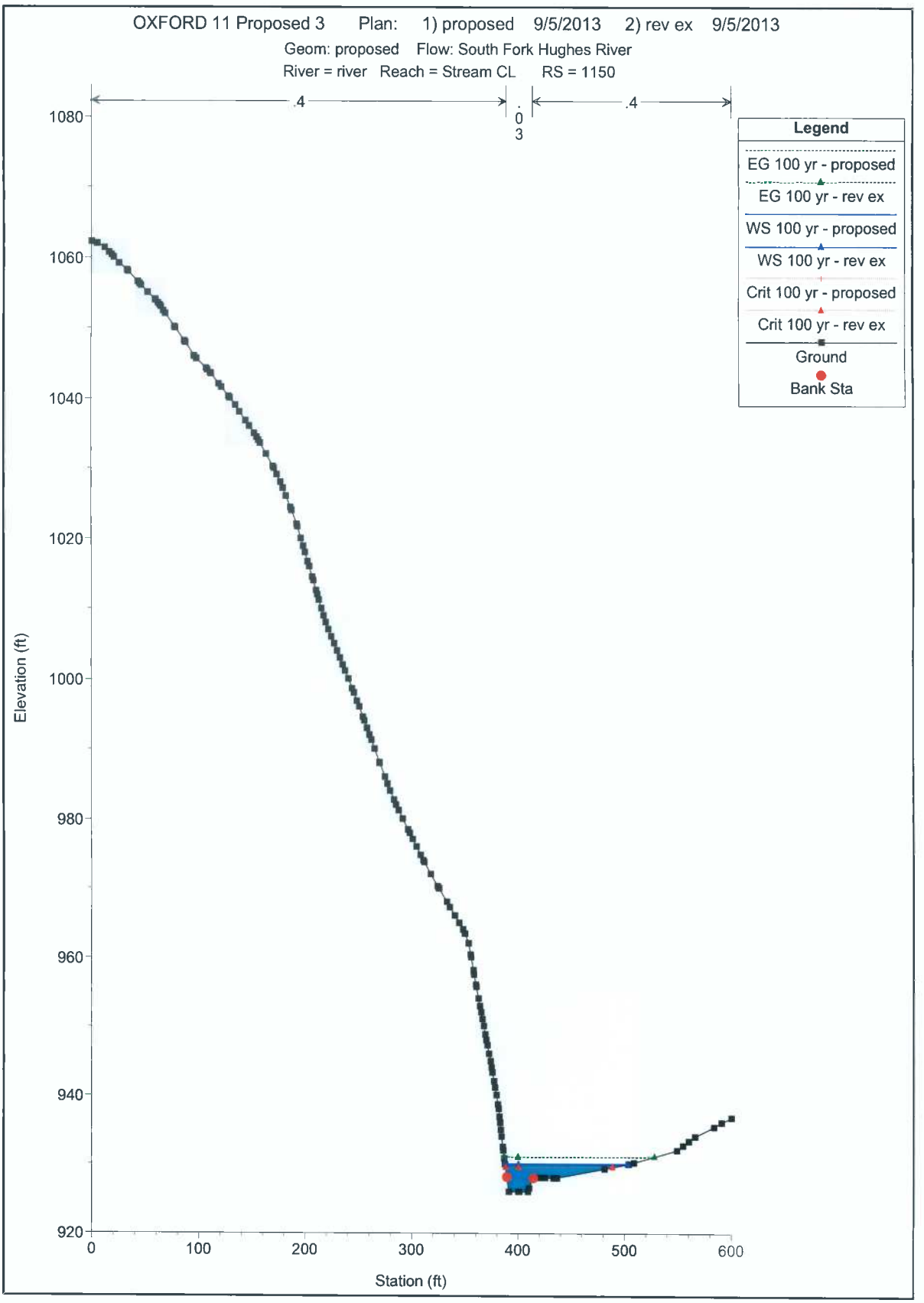
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Geom: proposed Flow: South Fork Hughes River
River = river Reach = Stream CL RS = 1150
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Legend
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WS 100 yr - proposed
WS 100 yr - rev ex
Crit 100 yr - proposed
Crit 100 yr - rev ex
Ground
Bank Sta
Elevation (ft)
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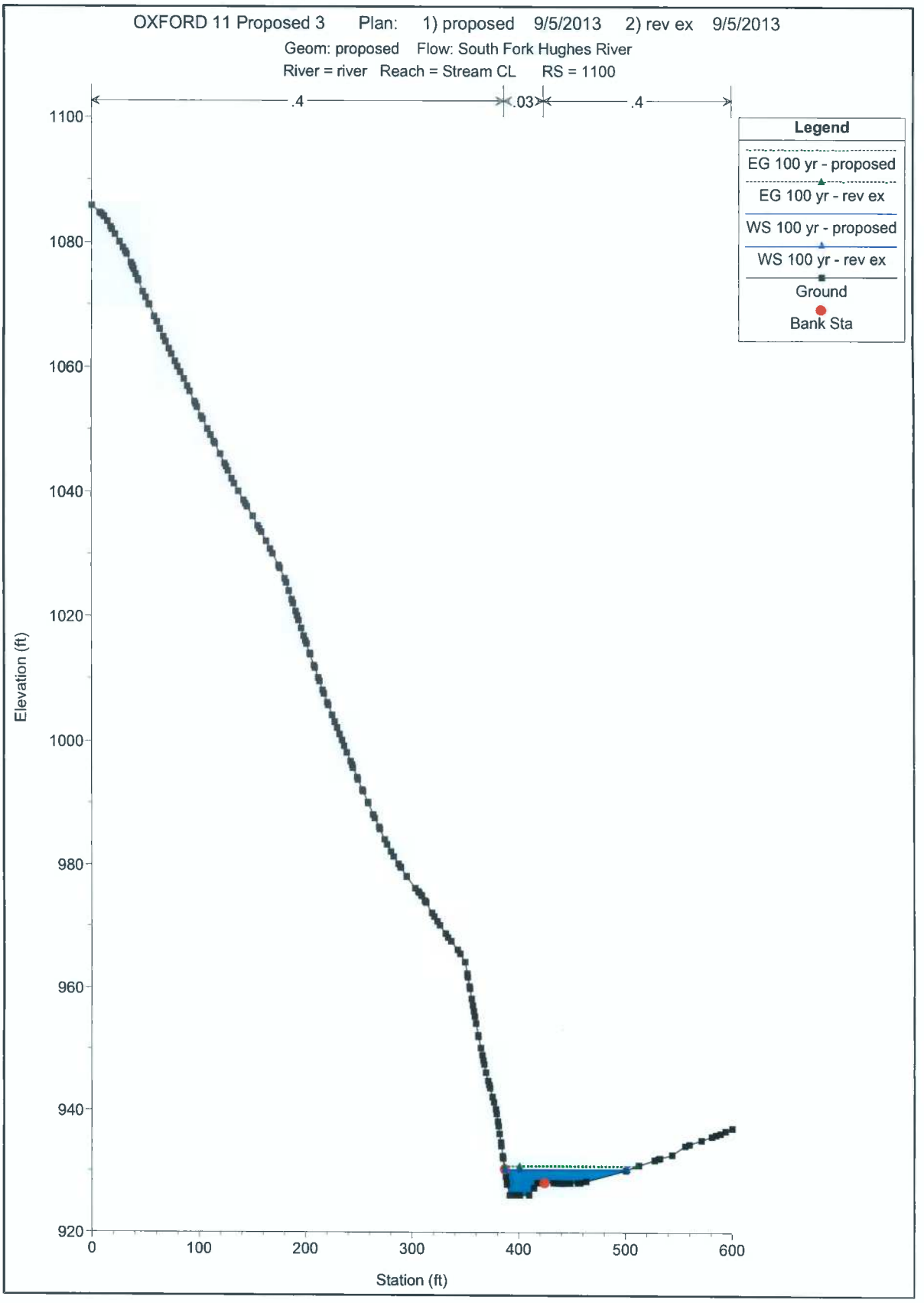
Station (ft)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Geom: proposed Flow: South Fork Hughes River
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WS 100 yr - rev ex
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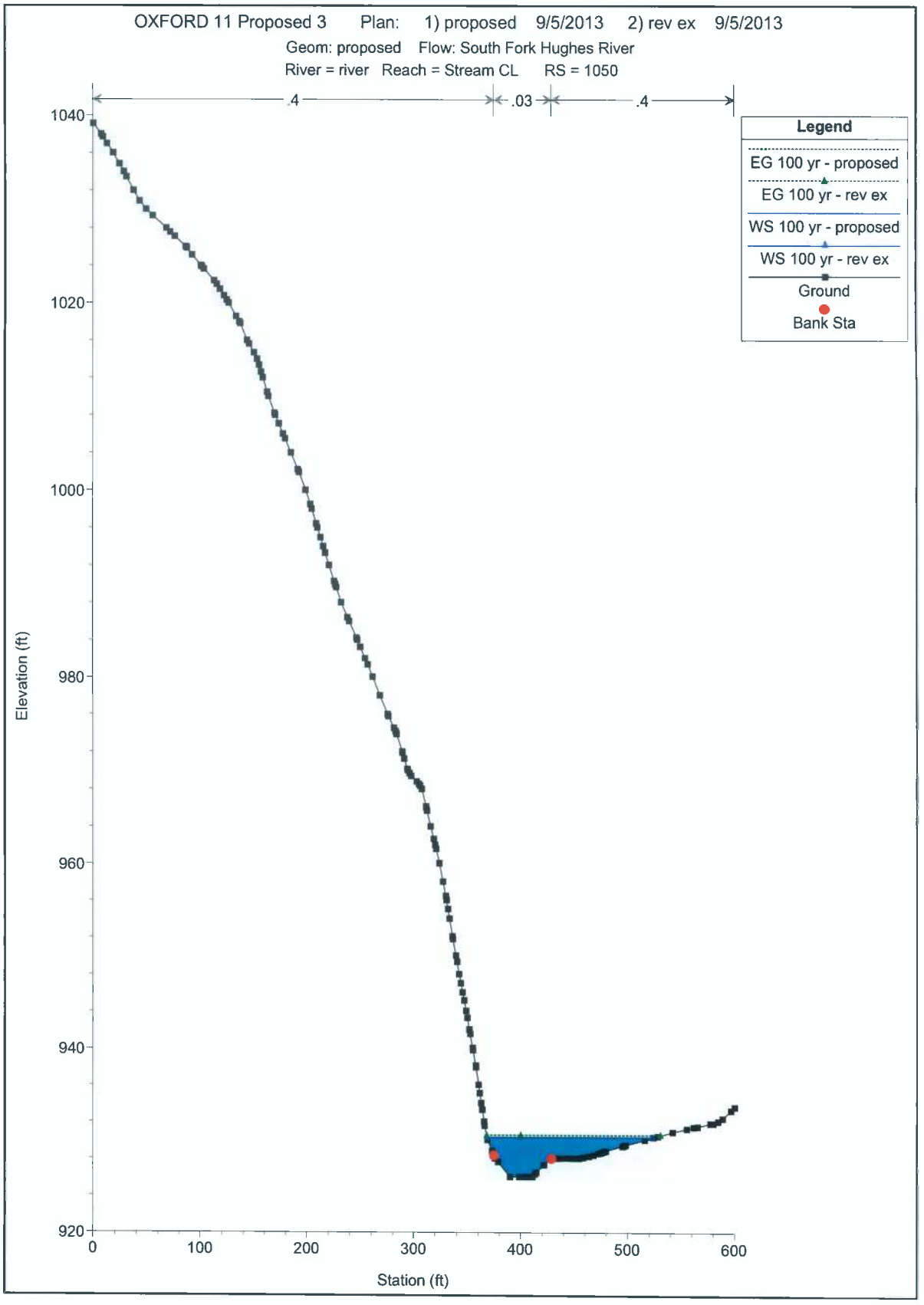
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Geom: proposed Flow: South Fork Hughes River
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.4
.03
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Legend
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WS 100 yr - proposed
WS 100 yr - rev ex
Ground
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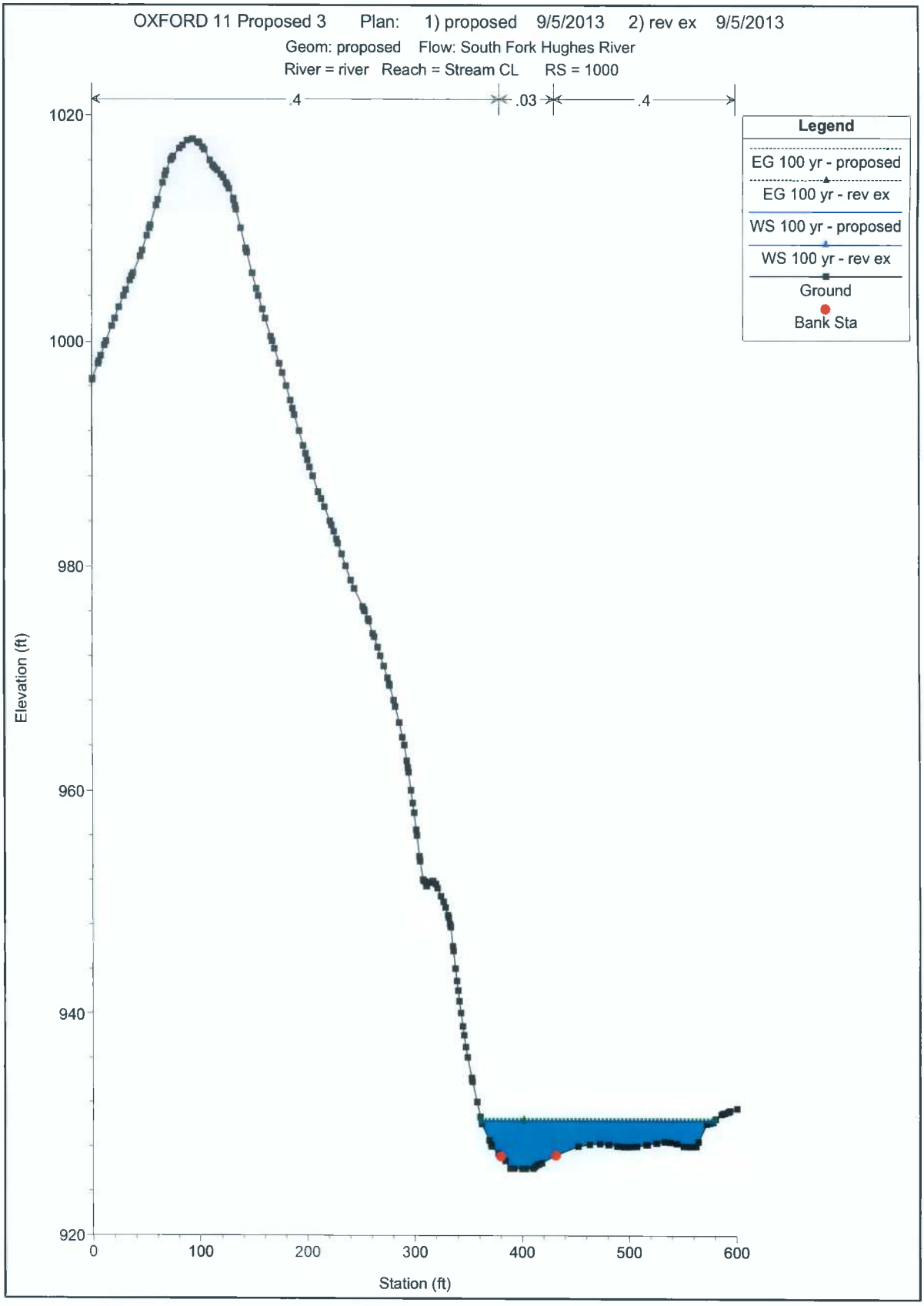
Station (ft)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Geom: proposed Flow: South Fork Hughes River
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Legend
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EG 100 yr - rev ex
WS 100 yr - proposed
WS 100 yr - rev ex
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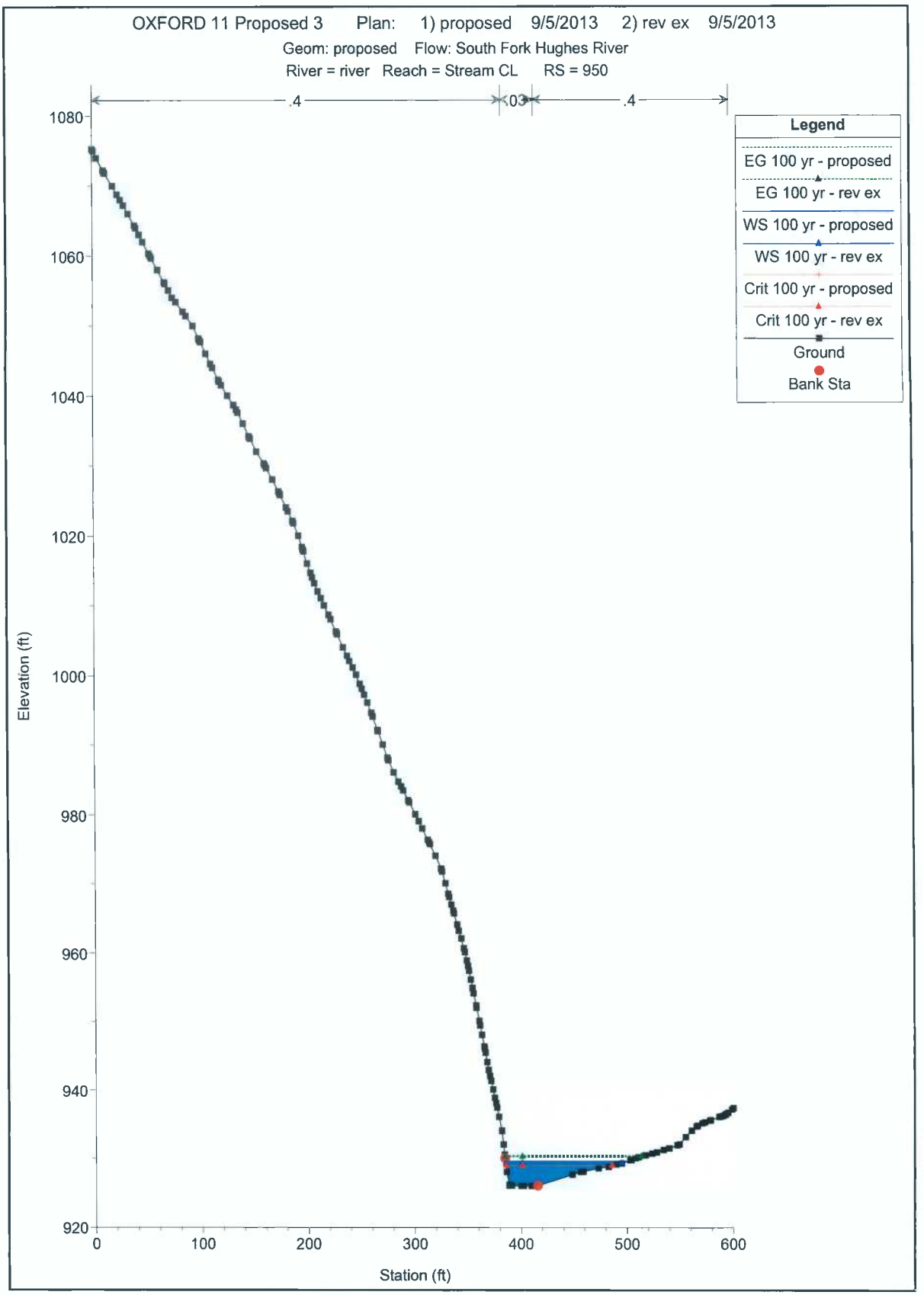
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Geom: proposed Flow: South Fork Hughes River
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.4
.03
.4
Legend
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EG 100 yr - rev ex
WS 100 yr - proposed
WS 100 yr - rev ex
Crit 100 yr - proposed
Crit 100 yr - rev ex
Ground
Bank Sta
Elevation (ft)
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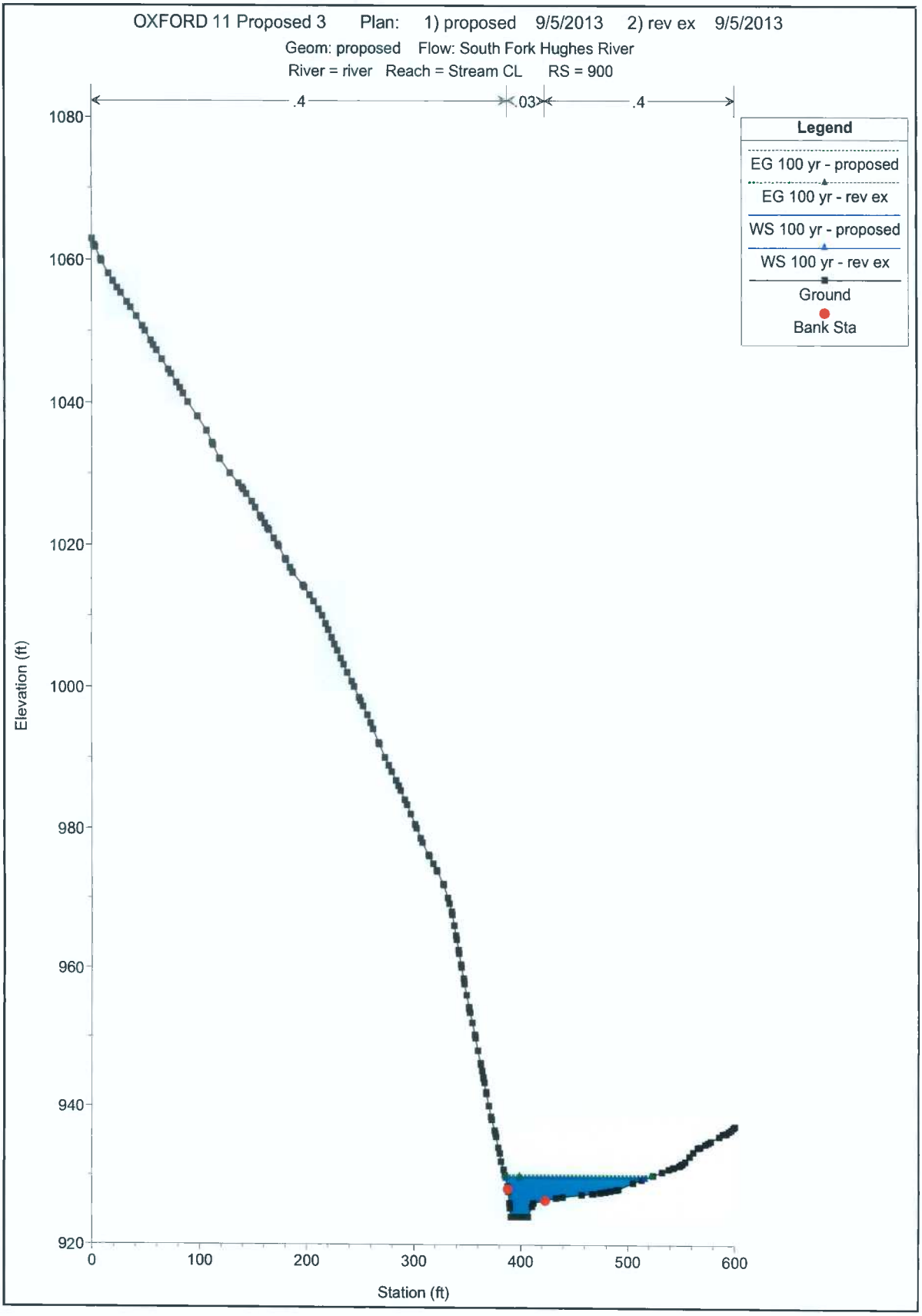
Station (ft)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Geom: proposed Flow: South Fork Hughes River
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Legend
EG 100 yr - proposed
EG 100 yr - rev ex
WS 100 yr - proposed
WS 100 yr - rev ex
Ground
Bank Sta
Elevation (ft)
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1040
1020
1000
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960
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920
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100
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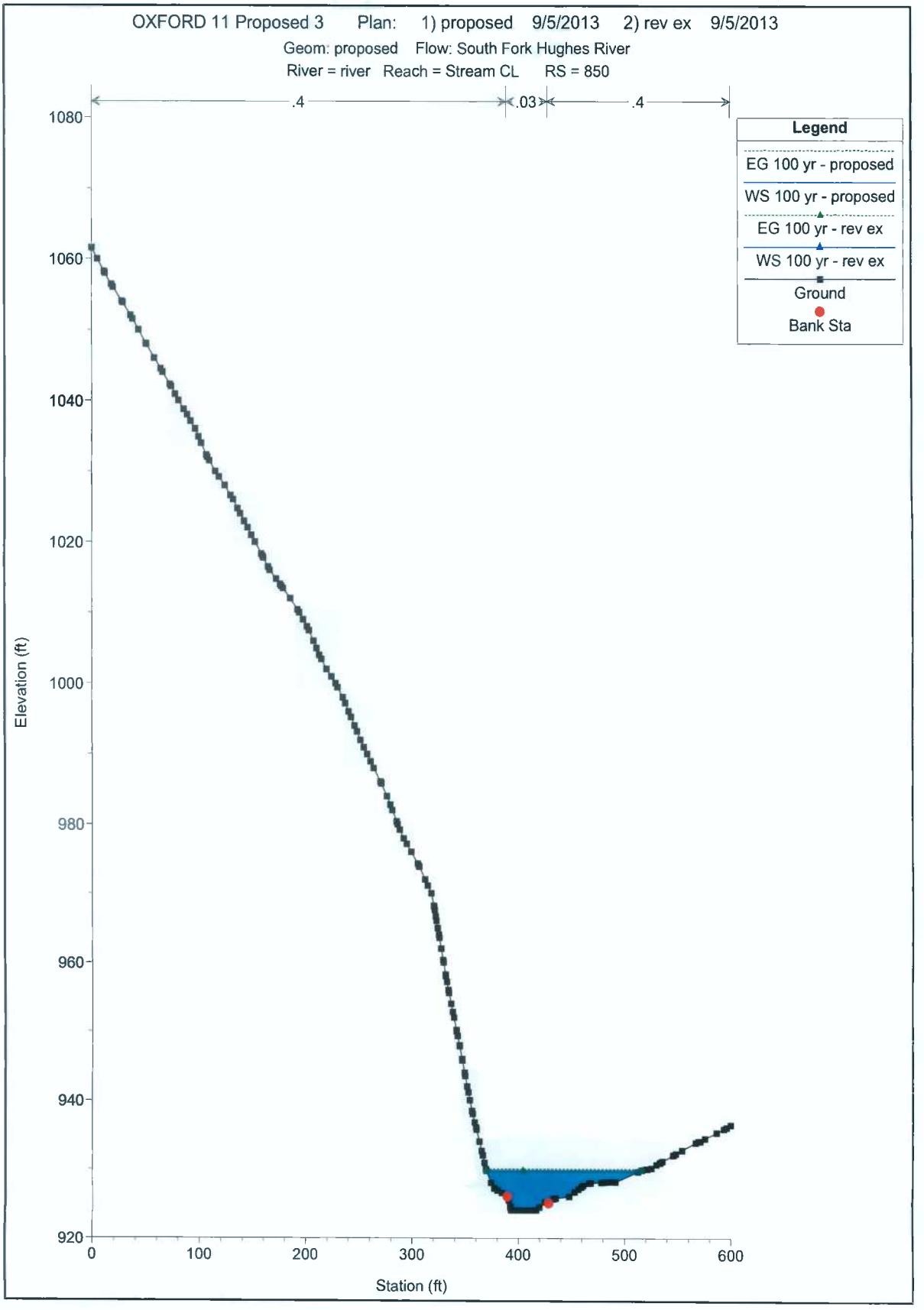
600
Station (ft)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.4
.03
.4
Legend
EG 100 yr - proposed
WS 100 yr - proposed
EG 100 yr - rev ex
WS 100 yr - rev ex
Ground
Bank Sta
Elevation (ft)
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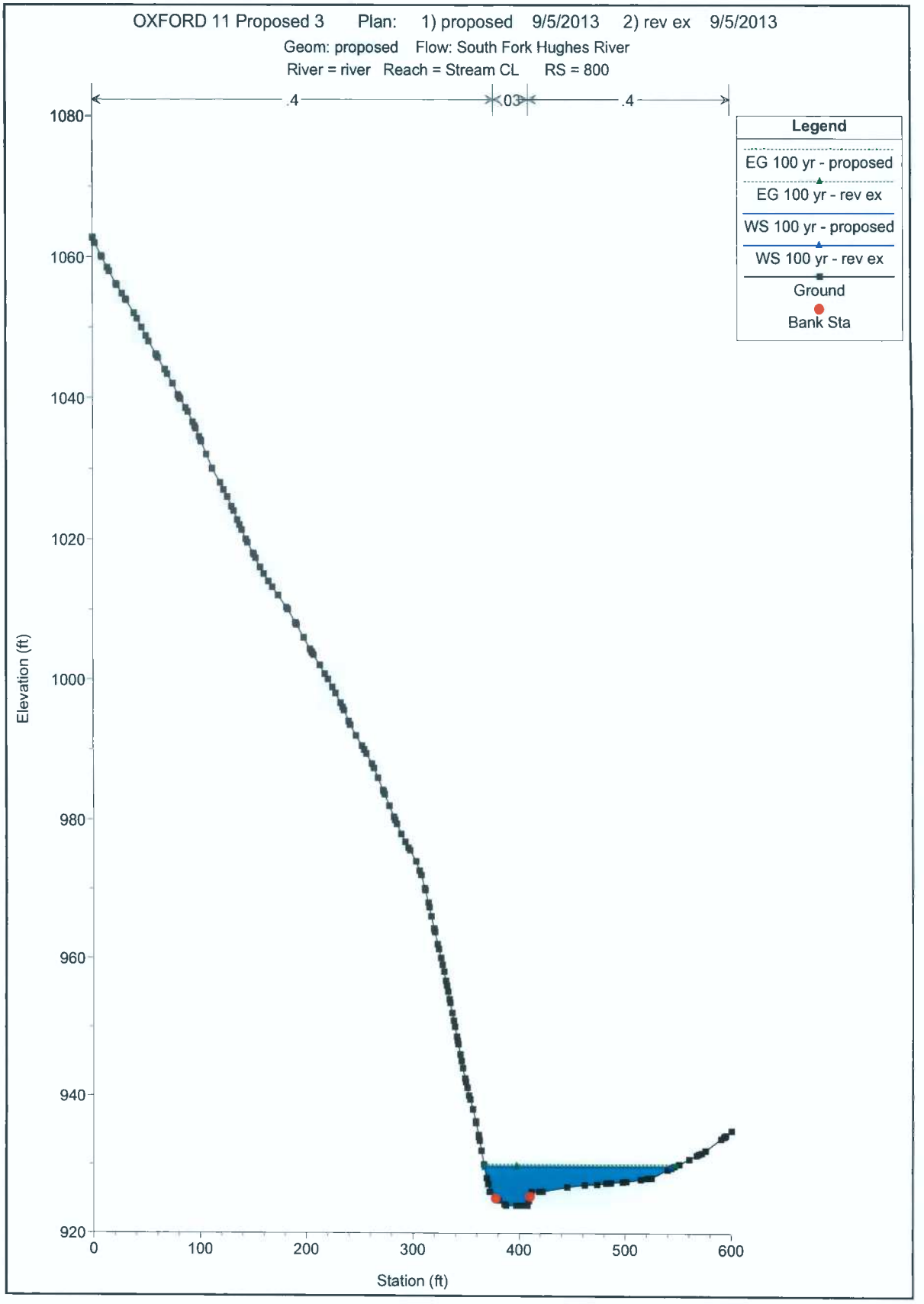
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.4
Legend
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EG 100 yr - rev ex
WS 100 yr - proposed
WS 100 yr - rev ex
Ground
Bank Sta
Elevation (ft)
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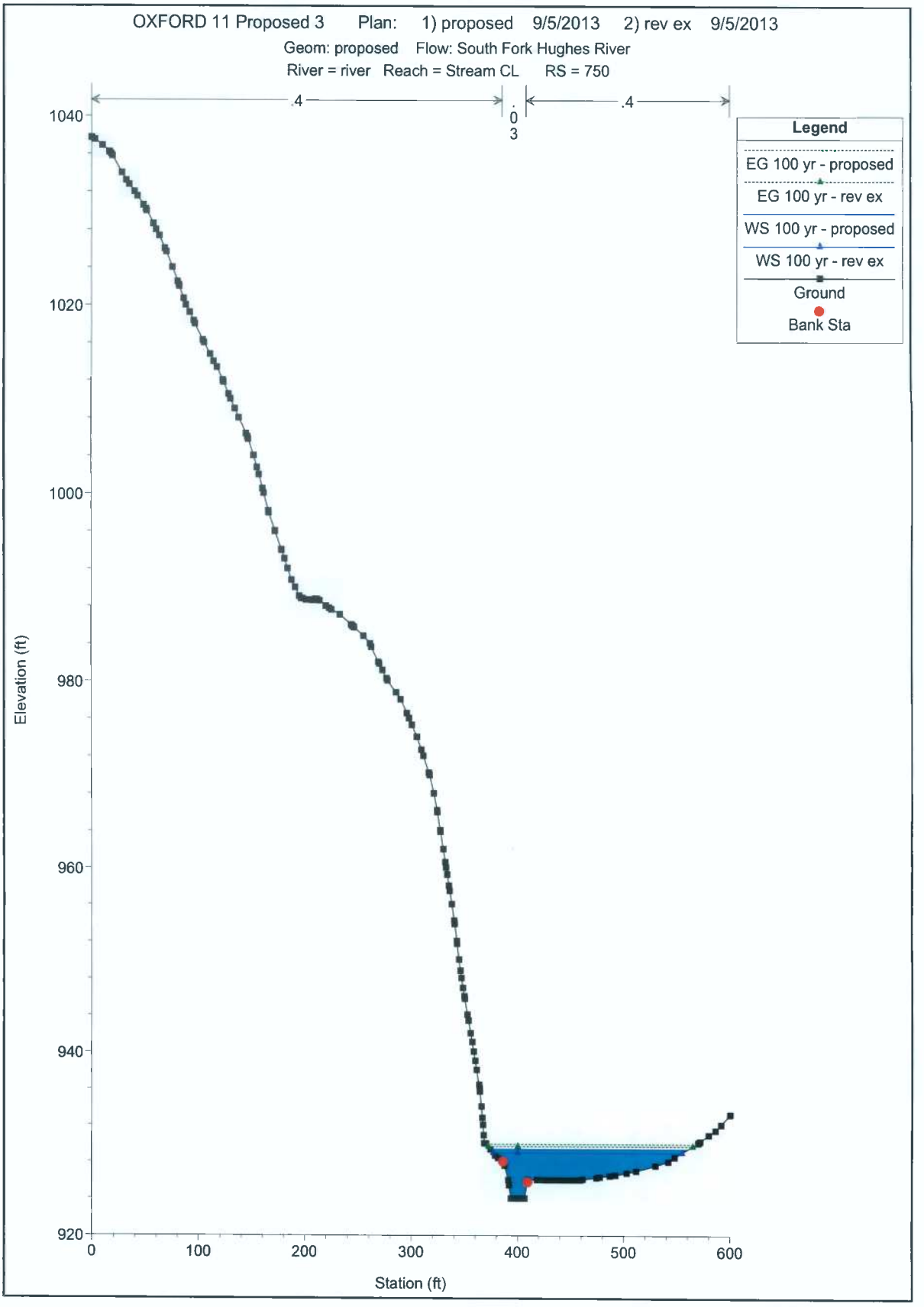
Station (ft)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Legend
EG 100 yr - proposed
EG 100 yr - rev ex
WS 100 yr - proposed
WS 100 yr - rev ex
Ground
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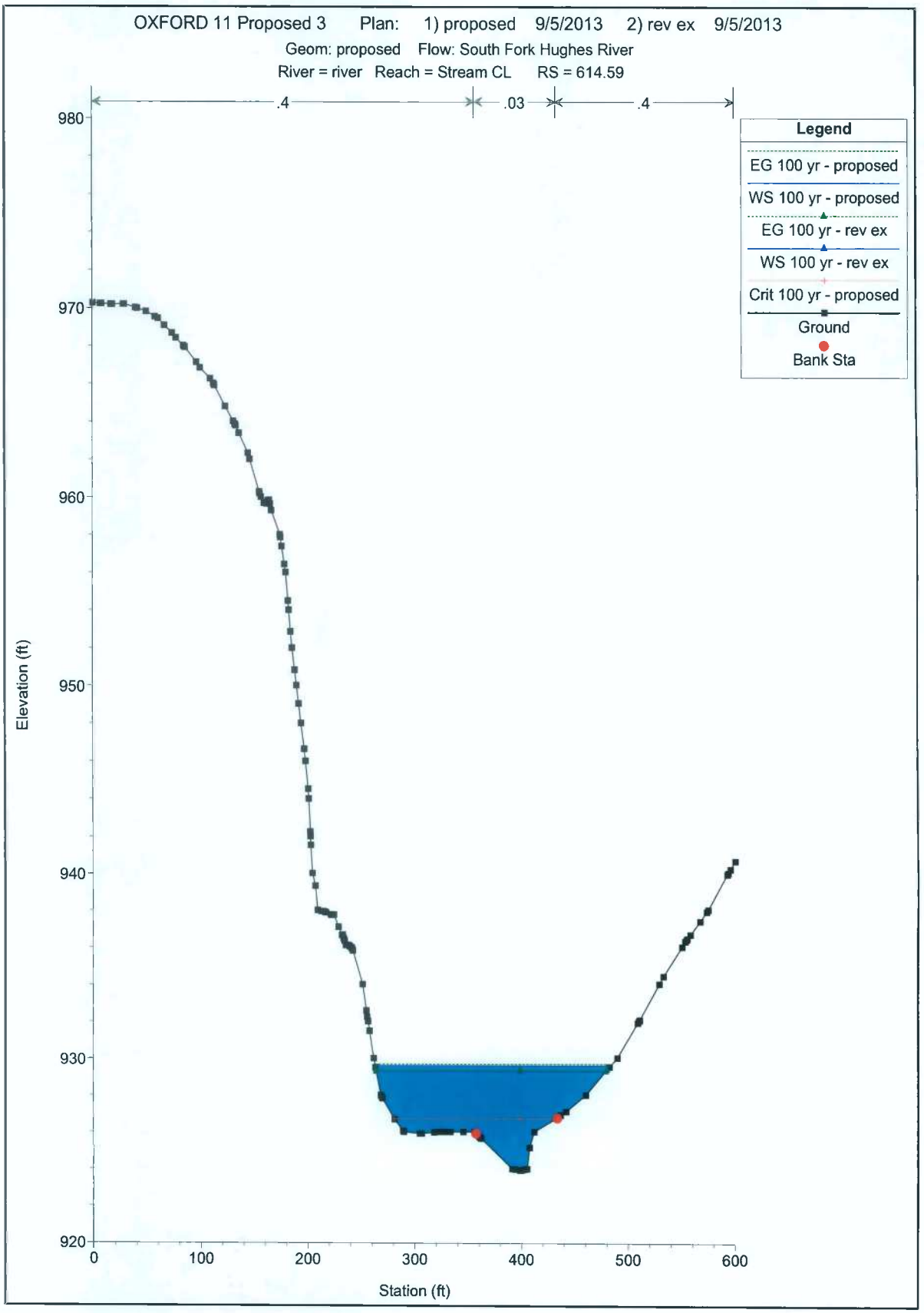
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.03
.4
Legend
EG 100 yr - proposed
WS 100 yr - proposed
EG 100 yr - rev ex
WS 100 yr - rev ex
Crit 100 yr - proposed
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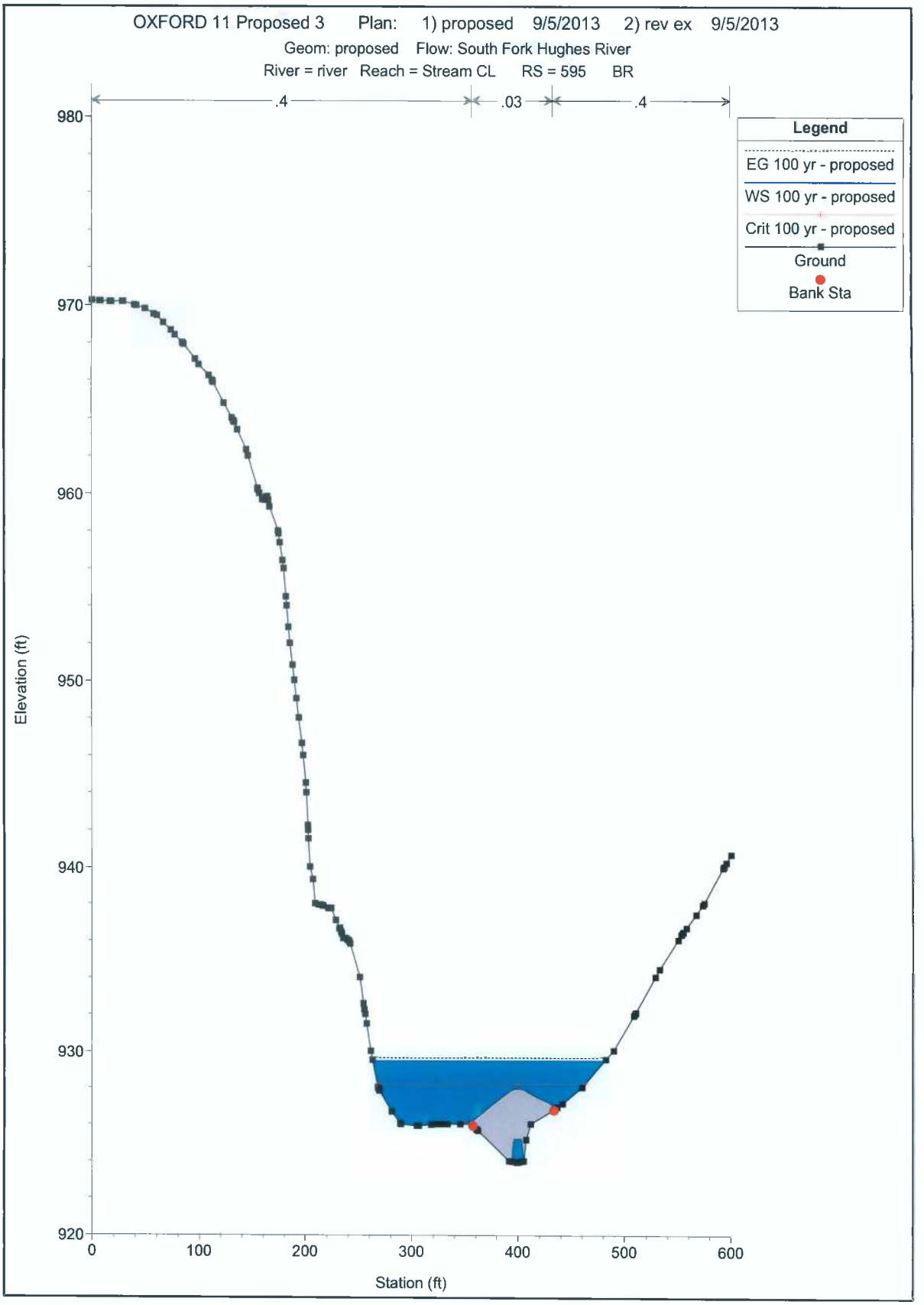
Station (ft)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.03
.4
Legend
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WS 100 yr - proposed
Crit 100 yr - proposed
Ground
Bank Sta
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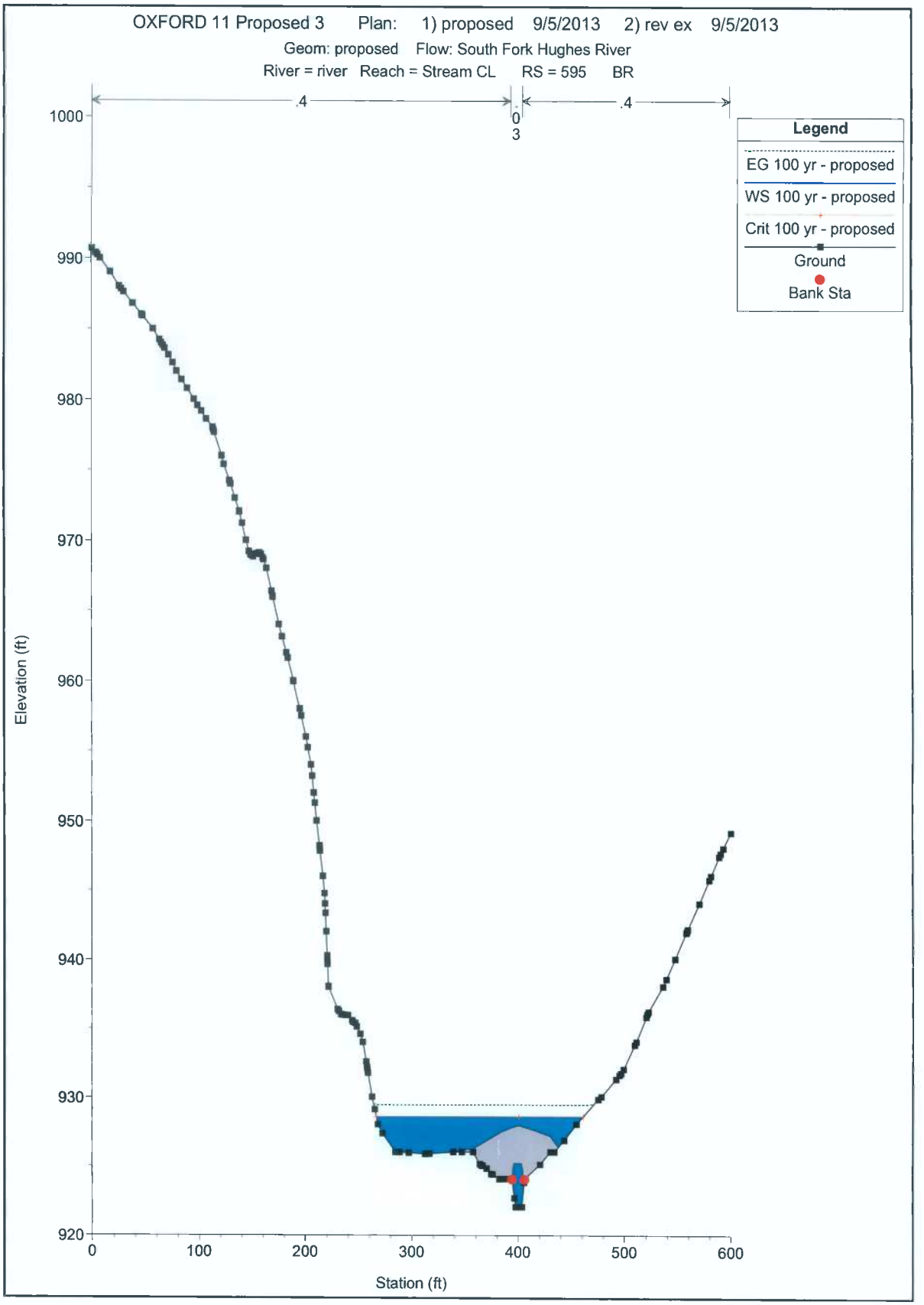
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3
Legend
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Crit 100 yr - proposed
Ground
Bank Sta
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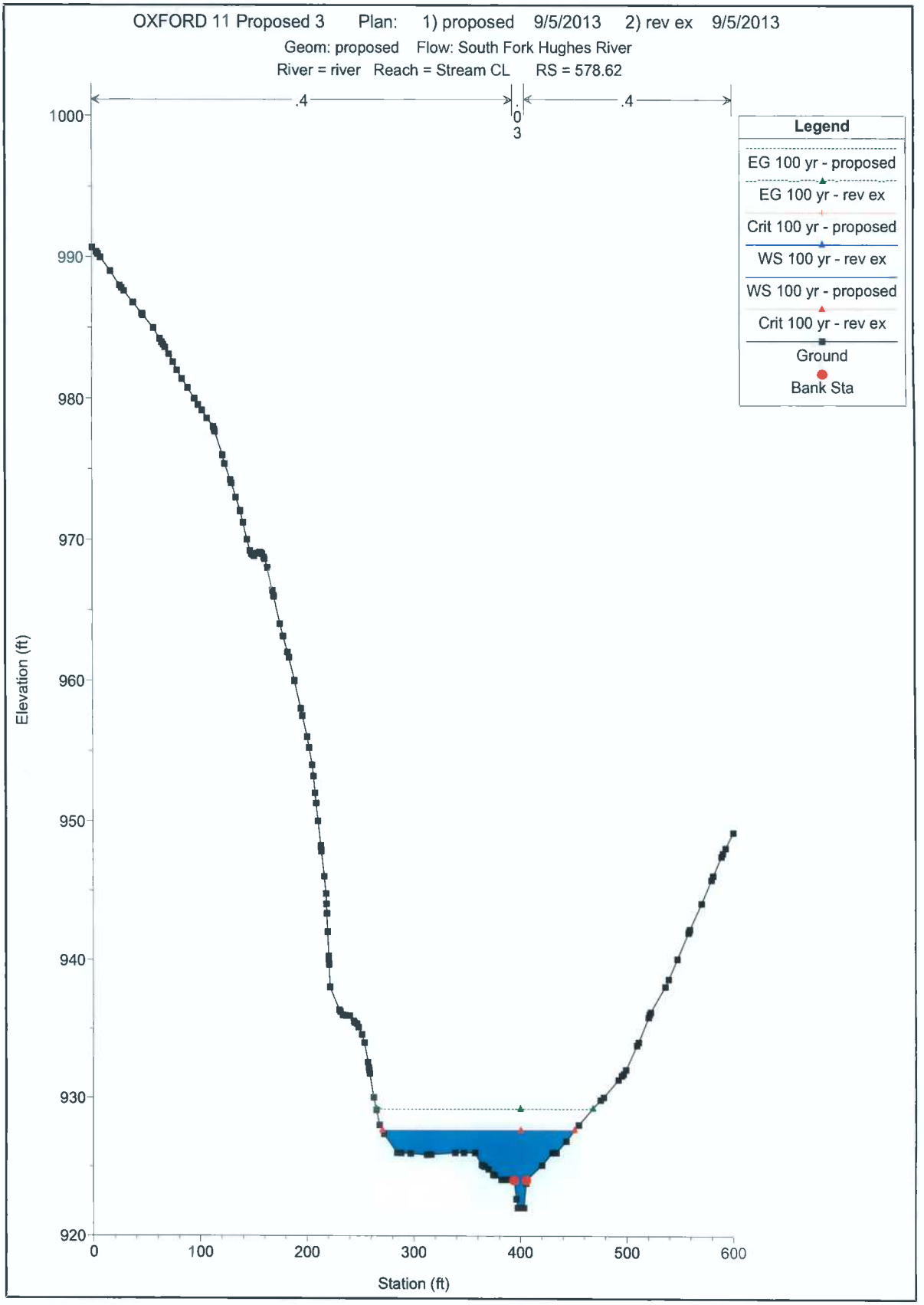
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.4
Legend
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Crit 100 yr - rev ex
Ground
Bank Sta
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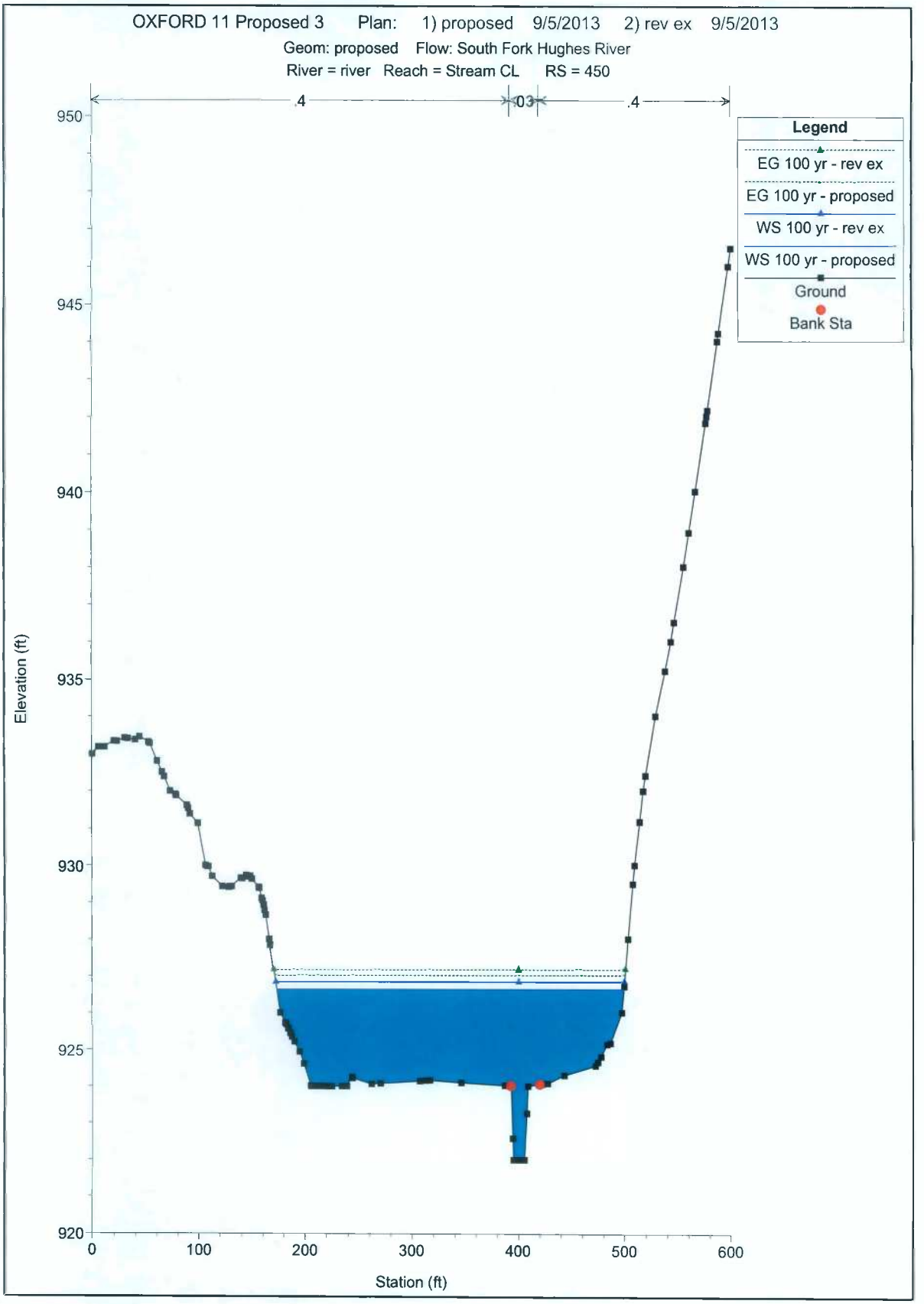
Station (ft)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.03
.4
Legend
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EG 100 yr - proposed
WS 100 yr - rev ex
WS 100 yr - proposed
Ground
Bank Sta
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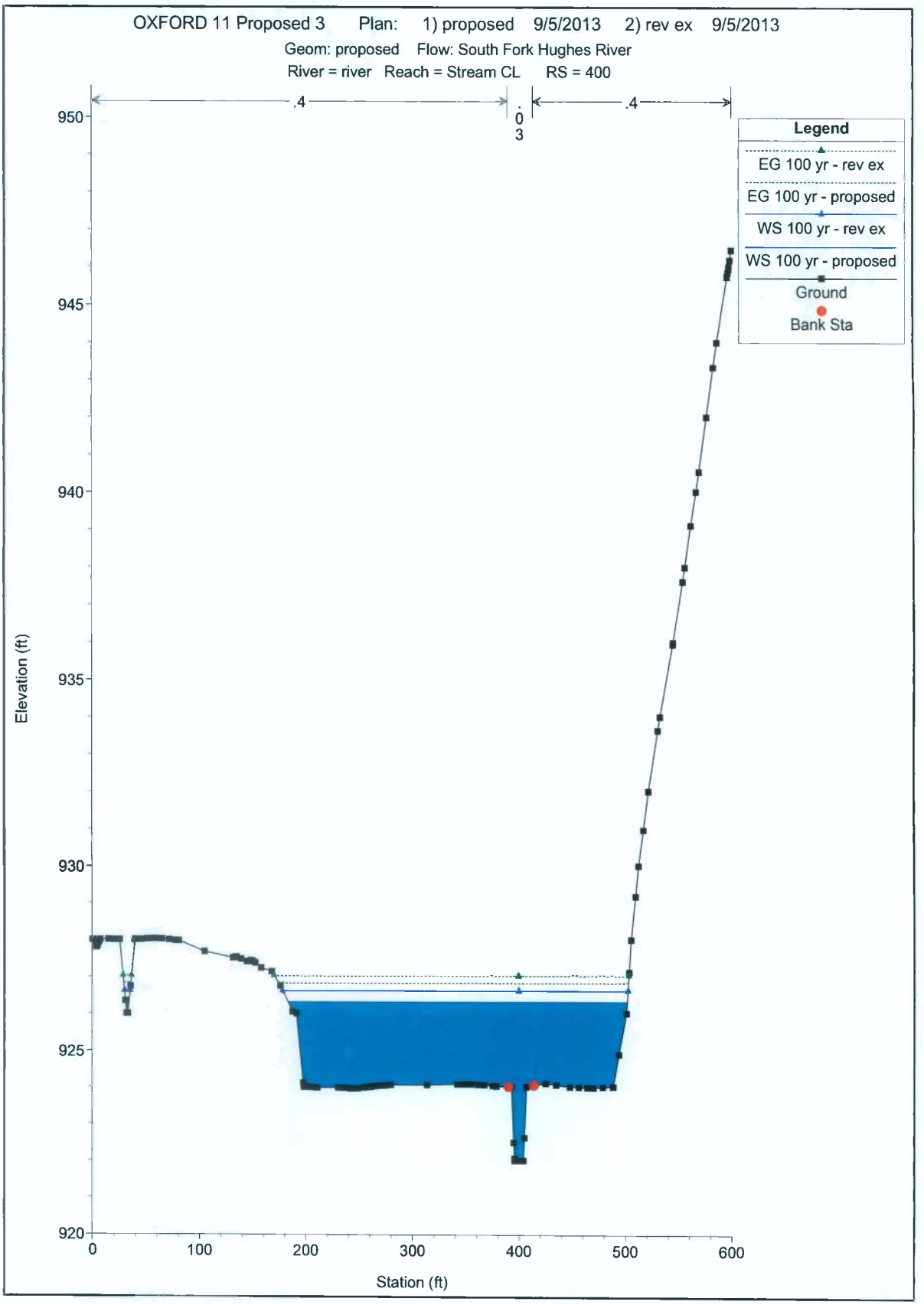
Station (ft)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.4
Legend
EG 100 yr - rev ex
EG 100 yr - proposed
WS 100 yr - rev ex
WS 100 yr - proposed
Ground
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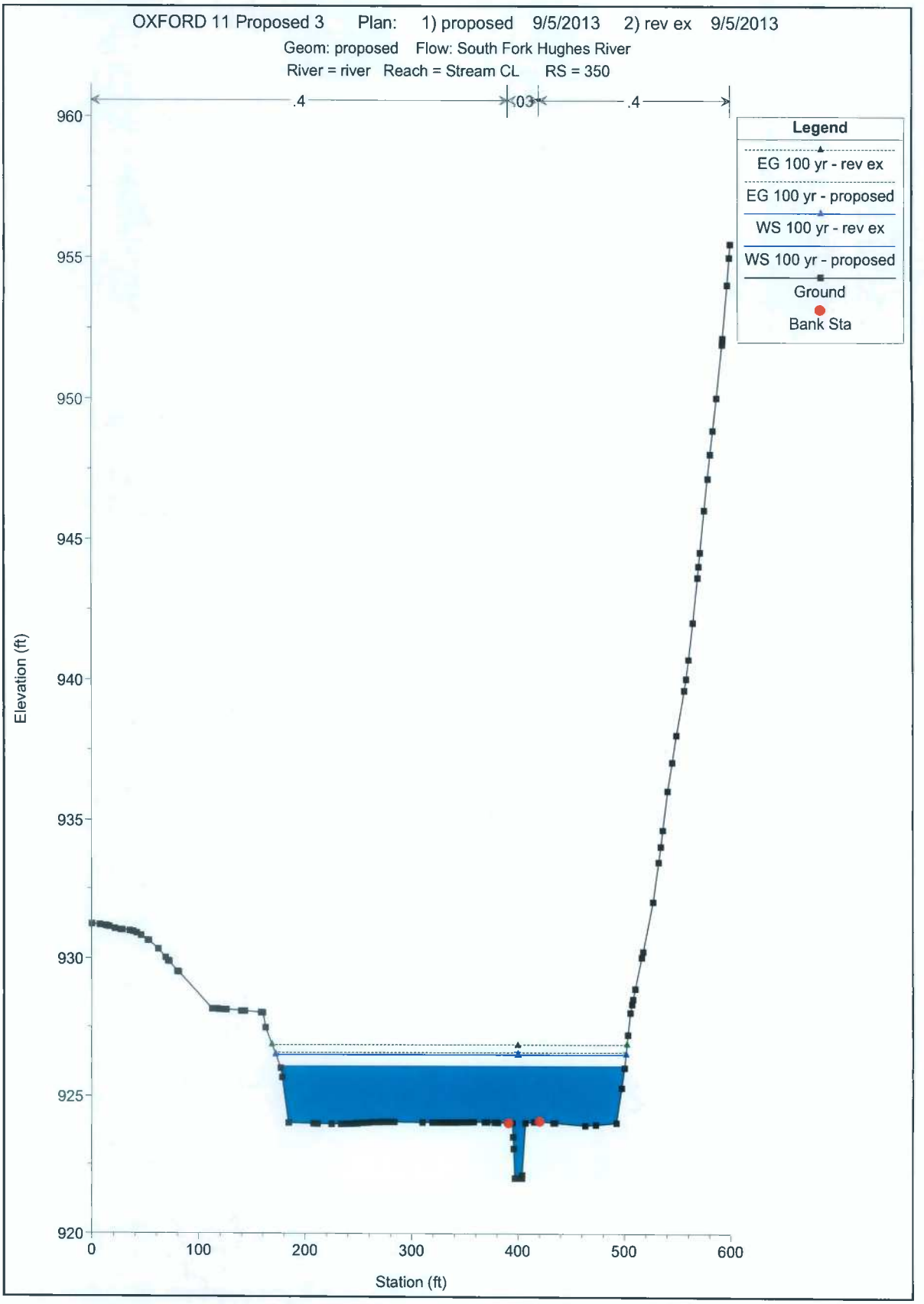
Station (ft)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Legend
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WS 100 yr - rev ex
WS 100 yr - proposed
Ground
Bank Sta
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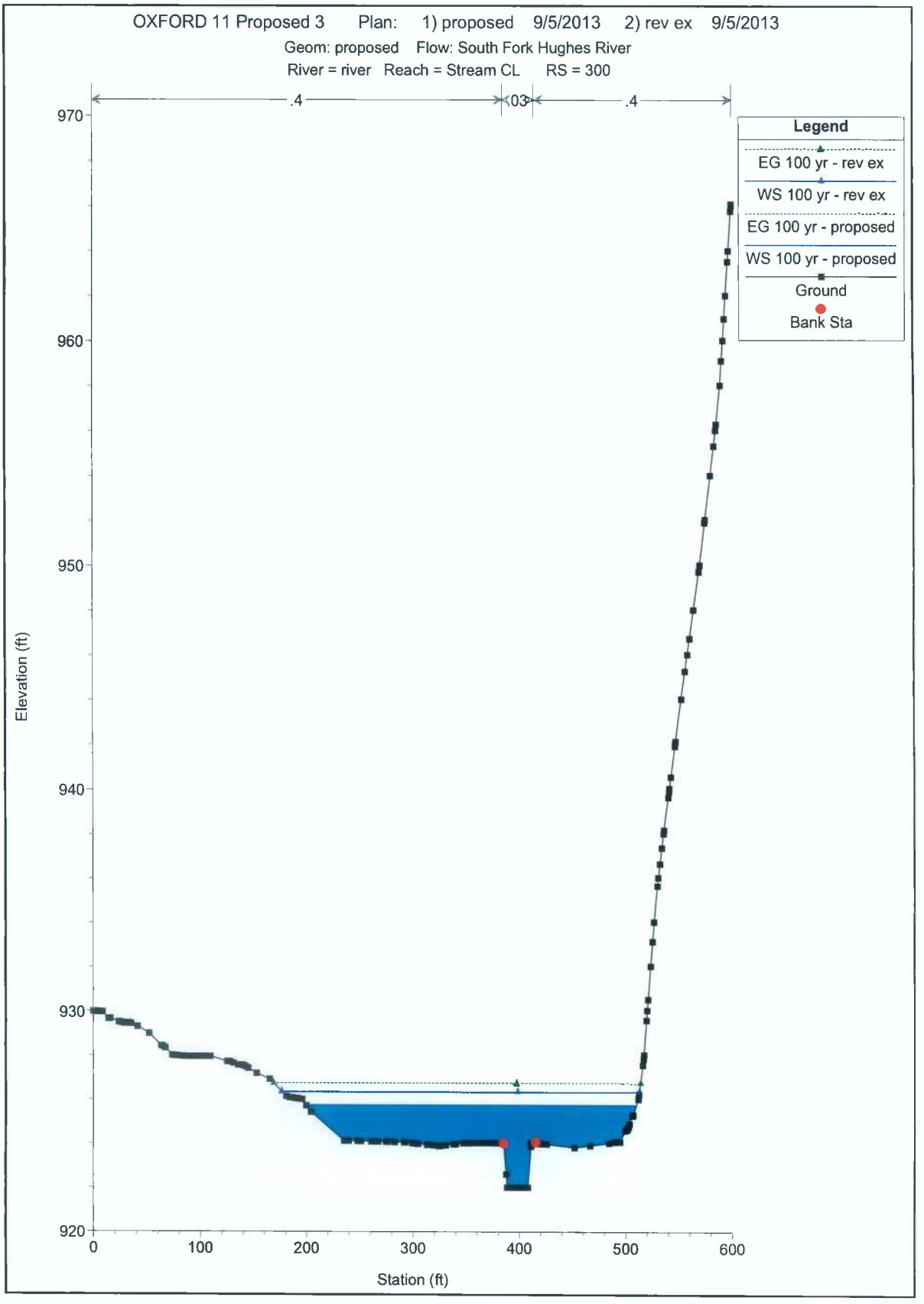
Station (ft)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Legend
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WS 100 yr - rev ex
EG 100 yr - proposed
WS 100 yr - proposed
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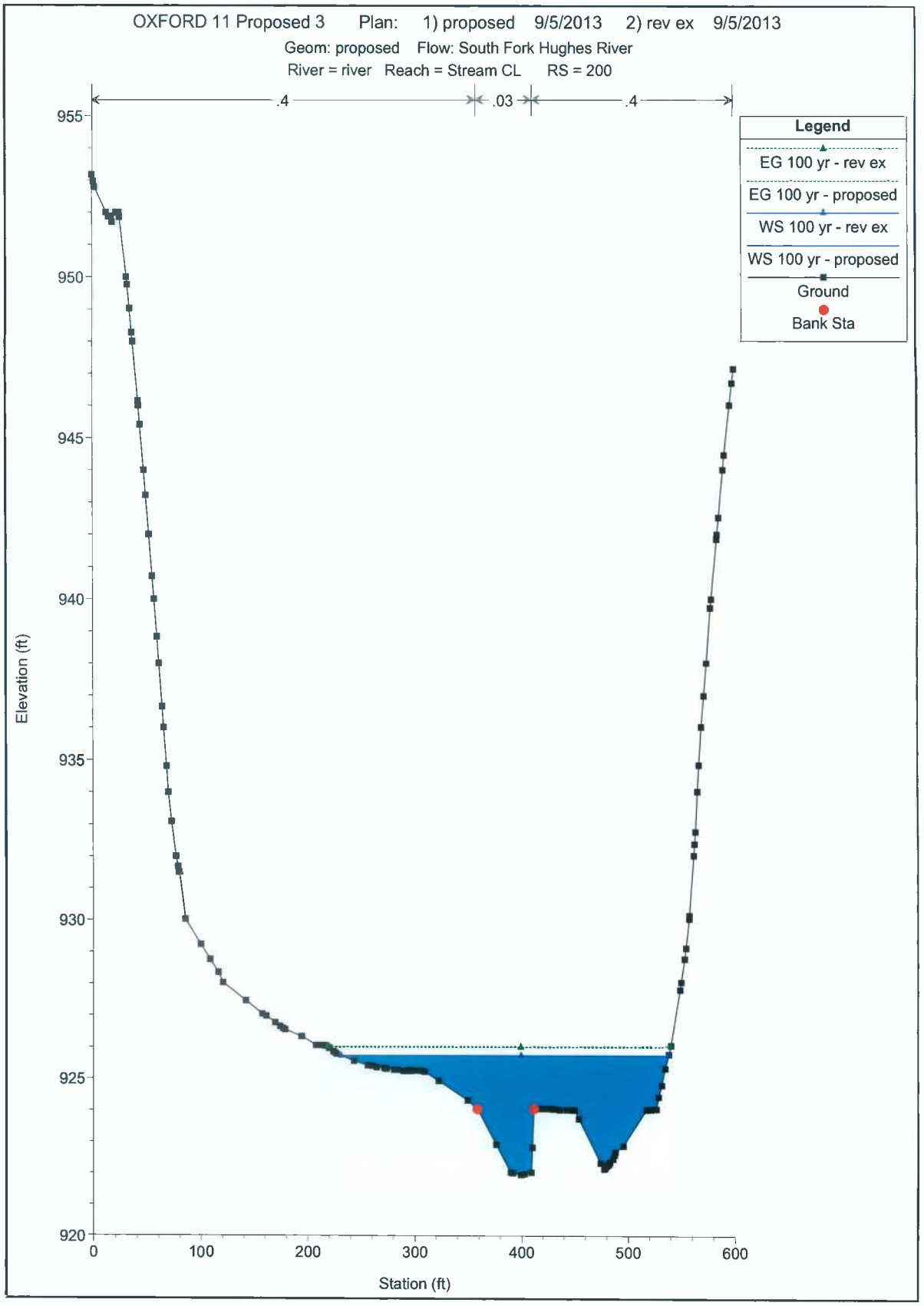
Station (ft)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.4
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.4
Legend
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EG 100 yr - proposed
WS 100 yr - rev ex
WS 100 yr - proposed
Ground
Bank Sta
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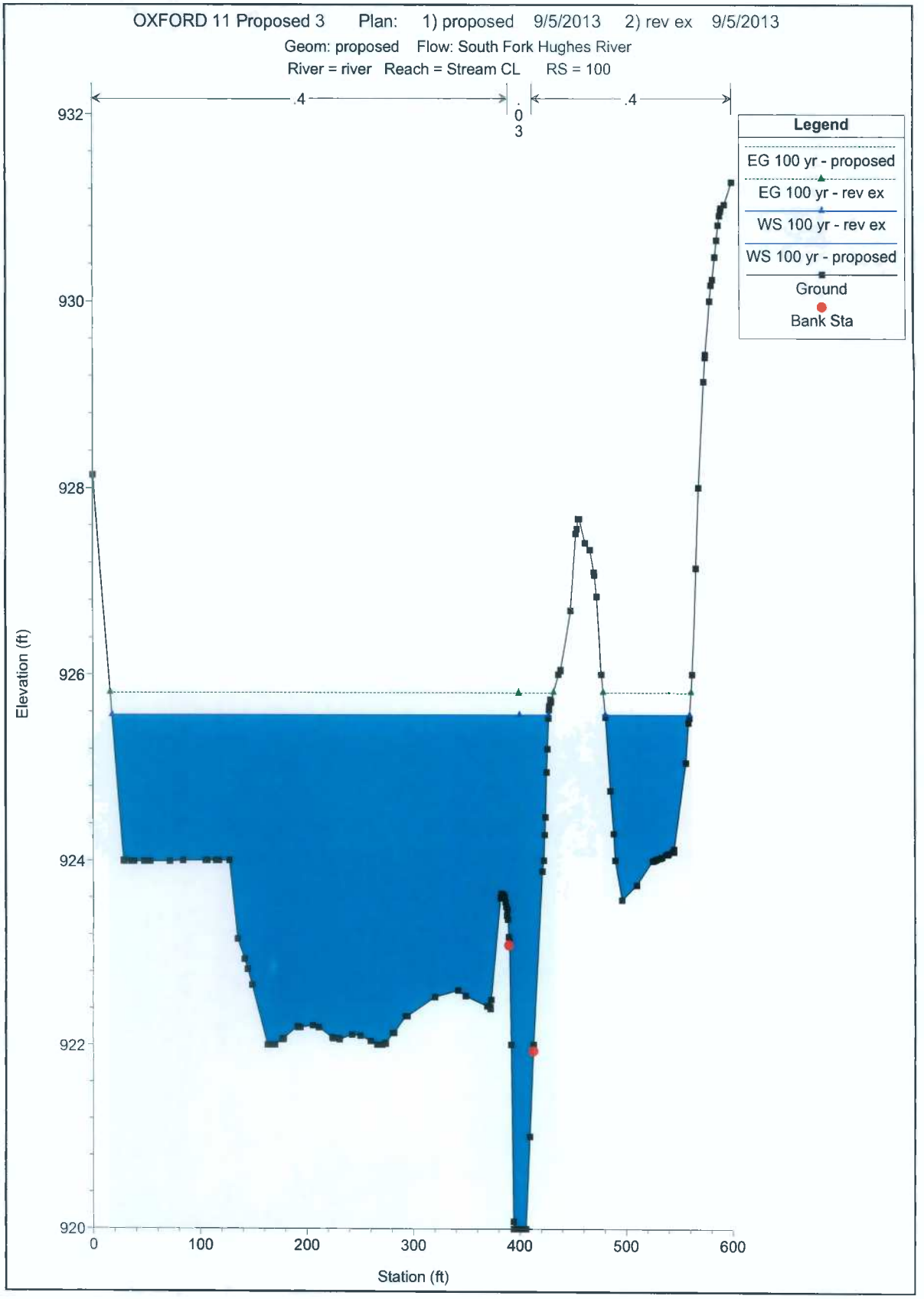
Station (ft)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Legend
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WS 100 yr - rev ex
WS 100 yr - proposed
Ground
Bank Sta
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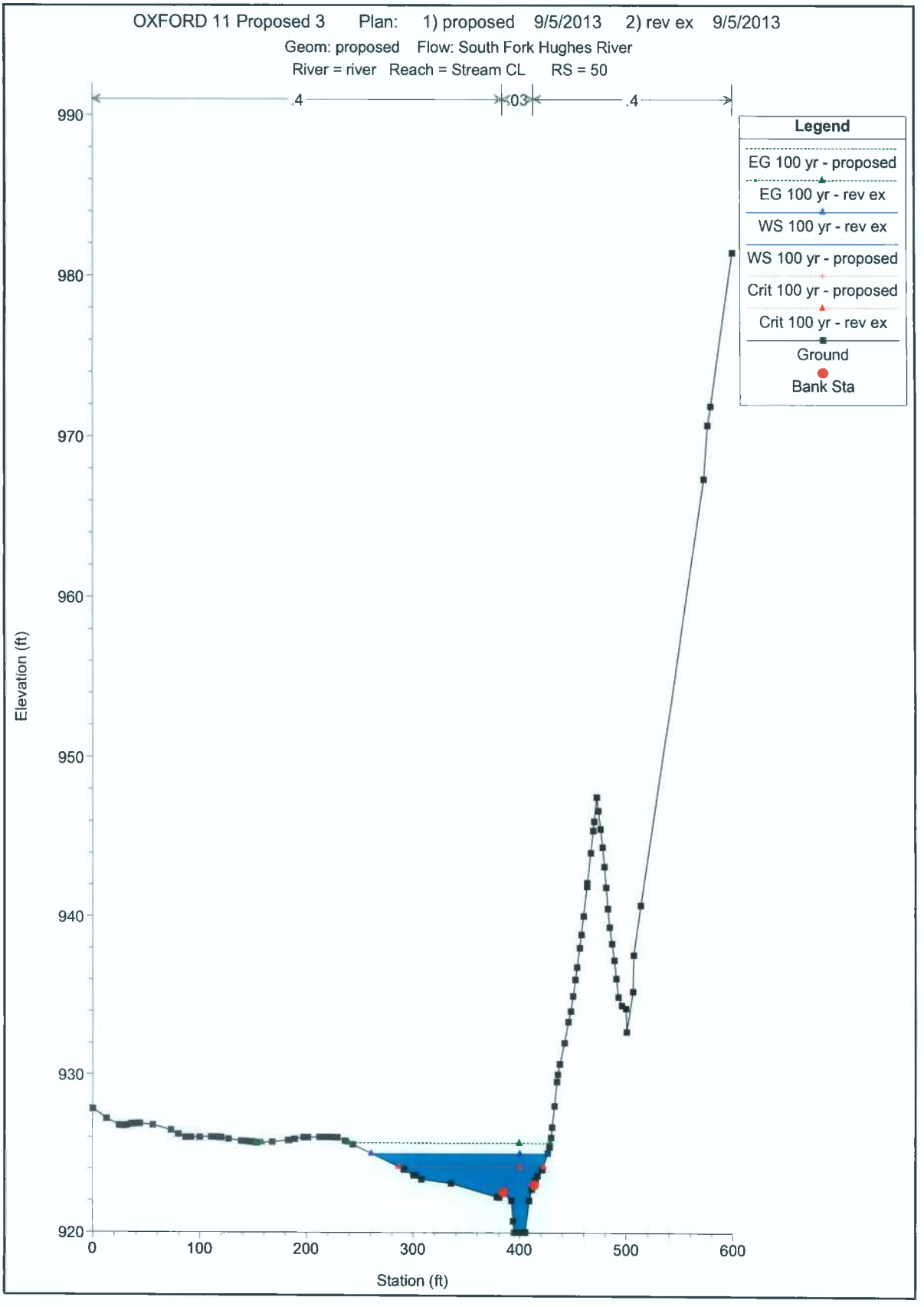
Station (ft)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EG 100 yr - rev ex
WS 100 yr - rev ex
WS 100 yr - proposed
Crit 100 yr - proposed
Crit 100 yr - rev ex
Ground
Bank Sta
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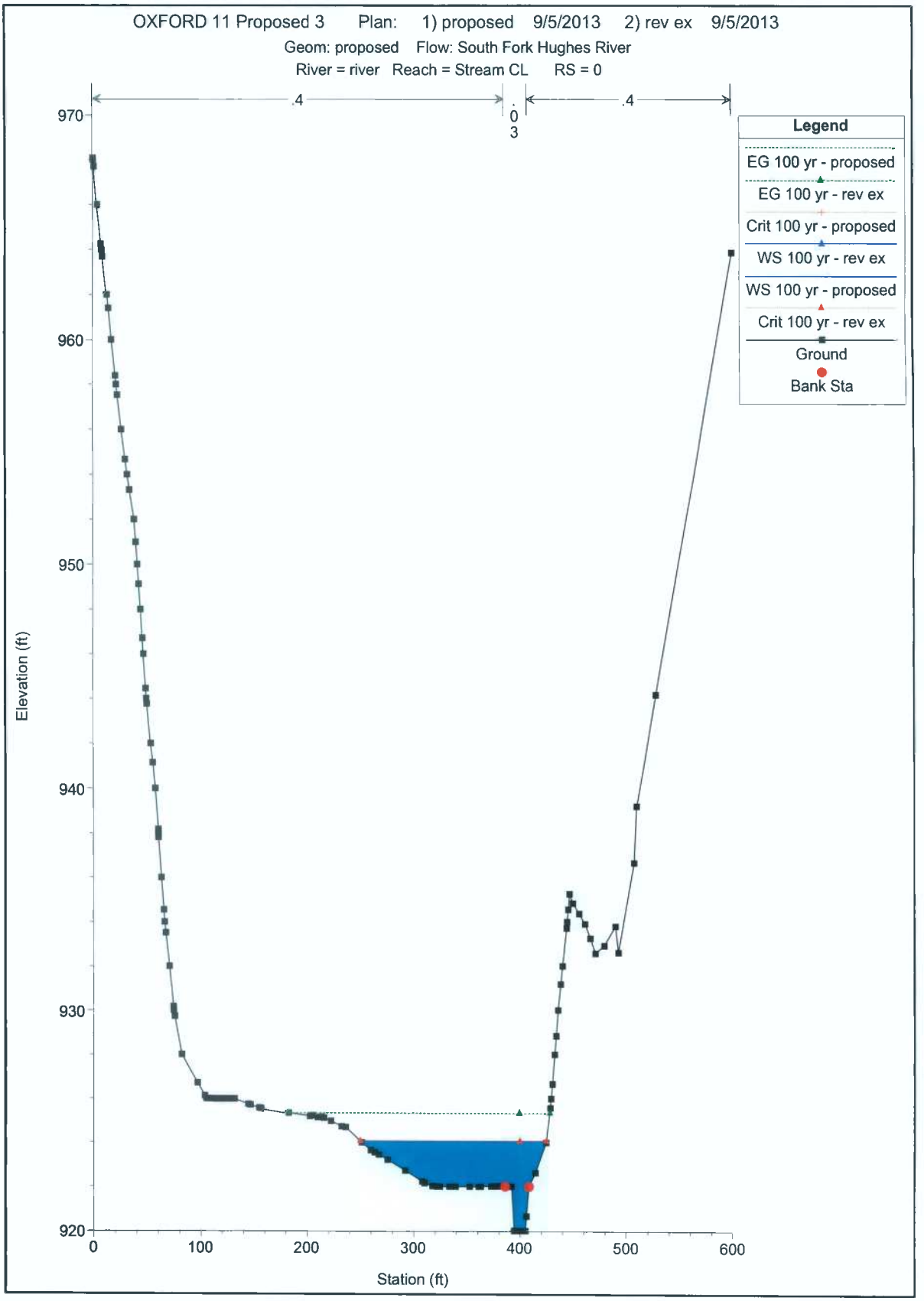
Station (ft)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.4
Legend
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EG 100 yr - rev ex
Crit 100 yr - proposed
WS 100 yr - rev ex
WS 100 yr - proposed
Crit 100 yr - rev ex
Ground
Bank Sta
970
960
950
940
930
920
Elevation (ft)
0
100
200
300
400
500
600
Station (ft)

APPENDIX 4

SITE PLANS

APPENDIX 5

DODDRIDGE COUNTY FEMA FIS

MAP SCALE 1" = 2000'

1000 0 2000 4000 FEET

00 0 600 1200 ME

NFIP NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0225C

FIRM

FLOOD INSURANCE RATE MAP

DODDRIDGE COUNTY, WEST VIRGINIA AND INCORPORATED AREAS

PANEL 225 OF 325

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
DODDRIDGE COUNTY	540024	0225	C

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
54017C0225C

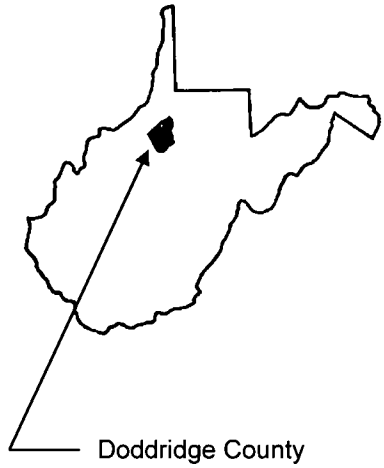
MAP REVISED
OCTOBER 4, 2011

Federal Emergency Management Agency

FLOOD INSURANCE STUDY

DODDRIDGE COUNTY, WEST VIRGINIA
AND INCORPORATED AREAS

COMMUNITY NAME	COMMUNITY NUMBER
WEST UNION, TOWN OF	540025
DODDRIDGE COUNTY (UNINCORPORATED AREAS)	540024



Effective: October 4, 2011

Federal Emergency Management Agency

FLOOD INSURANCE STUDY NUMBER
54017CV000A

NOTICE TO
FLOOD INSURANCE STUDY USERS

Communities participating in the National Flood Insurance Program have established repositories of flood hazard data for floodplain management and flood insurance purposes. This Flood Insurance Study (FIS) report may not contain all data available within the Community Map Repository. Please contact the Community Map Repository for any additional data.

The Federal Emergency Management Agency (FEMA) may revise and republish part or all of this FIS report at any time. In addition, FEMA may revise part of this FIS report by the Letter of Map Revision process, which does not involve republication or redistribution of the FIS report. Therefore, users should consult with community officials and check the Community Map Repository to obtain the most current FIS report components.

Initial Countywide FIS Effective Date: March 18, 1991

Flood Insurance Study Revised: October 4, 2011

TABLE OF CONTENTS – Volume 1 – *October 4, 2011*

TABLE OF CONTENTS – Volume 1 – *October 4, 2011*

FIGURES

TABLES

EXHIBITS

FLOOD INSURANCE STUDY
DODDRIDGE COUNTY, WEST VIRGINIA
AND INCORPORATED AREAS

1.0 INTRODUCTION

1.1 Purpose of Study

This countywide format Flood Insurance Study investigates the existence and severity of flood hazards in the geographic area of Doddridge County, West Virginia, including the Town of West Union and the unincorporated areas of the county (hereinafter referred to collectively as Doddridge County); and aids in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. This study has developed flood-risk data for various areas of the community that will be used to establish actuarial flood insurance rates and to assist the community in its efforts to promote sound floodplain management. Minimum floodplain management requirements for participation in the National Flood Insurance Program (NFIP) are set forth in the Code of Federal Regulations at 44 CFR, 60.3.

In some states or communities, floodplain management criteria or regulations may exist that are more restrictive or comprehensive than the minimum Federal requirements. In such cases, the more restrictive criteria take precedence and the State or other jurisdictional agency will be able to explain them.

1.2 Authority and Acknowledgments

The sources of authority for this Flood Insurance Study are the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973.

The hydrologic and hydraulic analyses in this study were prepared by the U.S. Geological Survey (USGS) for the Federal Emergency Management Agency (FEMA) under Inter-Agency Agreement No. EMW-87-E- 2512. Within the Town of West Union, the work for this study was completed in May 1988; within the unincorporated areas of the county, the work for this study was completed in June 1988.

This digital conversion was prepared by the USACE, Huntington District, for FEMA, under Inter-Agency Agreement No. HSFE03-06-X-0023.

Base map information shown on the FIRM was provided by West Virginia Statewide Addressing and Mapping Board (SAMB). Imagery was captured at a scale of 1:24,000 in the Spring of 2003 for the purpose of producing natural color digital orthophotos at a two-foot pixel resolution.

The projection used in the preparation of this map is Universal Transverse Mercator (UTM) Zone 17, and the horizontal datum used is North American Datum of 1983 (NAD 83), GRS1980 spheroid. Corner coordinates shown on the FIRM are in latitude and longitude referenced to UTM, NAD 1983. Differences in the datum, spheroid, projection, or UTM zones used in the production of FIRMs for adjacent counties may

result in slight positional differences in map features at the county boundaries. These differences do not affect the accuracy of the information shown on the FIRM.

1.3 Coordination

On January 17, 1985, an initial Consultation and Coordination Officer's (CCO) meeting was held with representatives of FEMA, the county, and the USGS (the study contractor) to determine the streams to be studied by detailed methods. The Huntington District of the U. S. Army Corps of Engineers (USACE) and the Soil Conservation Service (SCS) were contacted for information pertinent to this study.

On April 18, 1990, a final CCO meeting was held with representatives of FEMA, the county, and the study contractor to review the results of the study. The final CCO meeting for the unincorporated areas of Doddridge County also served as the final CCO meeting for this countywide study, and was open to representatives from all communities within the county that were covered by this countywide study.

For this countywide FIS, the final CCO meeting was held on April 29, 2010, and attended by representatives of the Town of West Union and Doddridge County, West Virginia. All problems raised at that meeting have been addressed.

2.0 AREA STUDIED

2.1 Scope of Study

This FIS covers the geographic area of Doddridge County, West Virginia, including communities listed in Section 1.1.

Table 1, "Areas Studied by Detailed Methods" lists the streams studied by detailed methods.

Table 1 – Areas Studied by Detailed Methods

Stream	Limits of Detailed Study
Middle Island Creek	From the downstream county boundary to the confluence of Meathouse Fork and Buckeye Creek
Buckeye Creek	From the confluence with Middle Island Creek to a point approximately 240 feet upstream of the confluence of Long Run, and from the confluence of Greenbrier Creek to the confluence of Traugh Fork
Meathouse Fork	From the confluence with Middle Island Creek to County Highway 56, and from a point approximately 1,600 feet downstream of County Highway 25-13 to the confluence of Laurel Run and Big Isaac Creek
McElroy Creek	From the confluence of Flint Run to the confluence of Big Battle Run

Table 1 – Areas Studied by Detailed Methods - continued

Stream	Limits of Detailed Study
Wilhelm Run	From the confluence with Arnold Creek to a point approximately 1.2 miles upstream
Long Run	From the confluence with Buckeye Creek to a point approximately 2.4 miles upstream
Toms Fork	From the confluence with Meathouse Fork to the confluence of Little Toms Fork
Greenbrier Creek	From the confluence with Buckeye Creek to a point approximately 1.9 miles upstream
Big Isaac Creek	From the confluence with Meathouse Fork to the confluence of Little Isaac Creek
Laurel Run	From the confluence with Meathouse Fork to a point approximately 0.9 mile upstream of the confluence with Meathouse Fork

The areas studied by detailed methods were selected with priority given to all known flood hazard areas and areas of projected development and proposed construction through January 1990.

All or portions of the following streams were studied by approximate methods: Broad Run, Arnold Creek, Slaughter Run, Flint Run, Riggins Run, Robinson Fork, Big Battle Run, Skelton Run, Talkington Fork, Long Run, Bluestone Creek, Cove Creek, Indian Fork, Nutter Fork, Jockey Camp Run, Morgans Run, Buckeye Creek, Buffalo Calf Creek, Meathouse Fork, Little Toms Fork, Lick Run, Big Isaac Creek, Middle Fork, Dotson Run, Cabin Run, Leason Creek, Right Fork, Left Fork, Elk Lick Run, Pike Fork, Little Battle Run, Piggin Run, Brushy Fork, Rock Run, Wolfpen Run, Englands Run, Jockeycamp Run, Douglascamp Run, Traugh Fork, Bonnet Fork, the South Fork Hughes River, and Sycamore Fork. Approximate analyses were used to study those areas having a low development potential or minimal flood hazards. The scope and methods of study were proposed to, and agreed upon by, FEMA and Doddridge County.

No Letters of Map Revision (LOMRs) were incorporated for the October 4, 2011, revision.

2.2 Community Description

Doddridge County is located in northern West Virginia. It is bordered by the unincorporated areas of Wetzel and Tyler Counties to the north; the unincorporated areas of Ritchie County to the west; the unincorporated areas of Harrison County to the east; and the unincorporated areas of Gilmer and Lewis Counties to the south. The total land

area contained within the county is approximately 321.6 square miles. In 2000, the population of the county was 7,491 (Reference 1).

The county seat is located in the Town of West Union. The total land area of the town is approximately 0.32 square miles, and the population was 806 in 2000 (Reference 1).

The climate of Doddridge County is temperate with a seasonal variation in temperature. The county is located in a region termed humid continental: humid because of the evenly spaced precipitation, and continental because of the yearly range in temperature. Mean annual precipitation of the county is approximately 45 inches. The average monthly temperatures in degrees Fahrenheit range from the mid-30's in winter to the low 70's in summer (Reference 2).

2.3 Principal Flood Problems

The principal flood problems of Doddridge County are the overflows of Middle Island Creek, Buckeye Creek, and Meathouse Fork. The history of flooding in the county indicates that flooding can occur at any time of the year. Large frontal storms or decaying tropical storms produce the worst flooding on the larger streams, while high intensity thunderstorms produce severe flooding on smaller drainage areas. Major floods have occurred in the county in 1875, 1950, 1963, and 1985.

The mountainous topography of the county is conducive to rapid rises on streams and also to fast runoff best described as flash flooding. This condition has been aggravated by human activities such as timbering in the county.

2.4 Flood Protection Measures

No major structural flood protection measures exist or are planned for the county.

3.0 ENGINEERING METHODS

For the flooding sources studied by detailed methods in the community, standard hydrologic and hydraulic study methods were used to determine the flood hazard data required for this study. Flood events of a magnitude that are expected to be equaled or exceeded once on the average during any 10-, 2-, 1-, or 500-year period (recurrence interval) have been selected as having special significance for floodplain management and for flood insurance rates. These events, commonly termed the 10-, 2-, 1-, and 500-year floods, have a 10-, 2-, 1-, and 0.2-percent-annual-chance, respectively, of being equaled or exceeded during any year. Although the recurrence interval represents the long-term, average period between floods of a specific magnitude, rare floods could occur at short intervals or even within the same year. The risk of experiencing a rare flood increases when periods greater than 1 year are considered. For example, the risk of having a flood that equals or exceeds the 1-percent-annual-chance (100-year) flood in any 50-year period is approximately 40 percent (4 in 10); for any 90-year period, the risk increases to approximately 60 percent (6 in 10). The analyses reported herein reflect flooding potentials based on conditions existing in the community at the time of completion of this study. Maps and flood elevations will be amended periodically to reflect future changes.

3.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish the peak discharge-frequency relationships for each flooding source studied in detail affecting the county.

Discharge-frequency curves were developed on a regional basis that applies to West Virginia (References 3 and 4). For the streams studied by detailed methods, 1-percent-annual-chance flood elevations were determined through discharge-frequency relations and the Manning equation. Within the Town of West Union, flood elevations were determined through streamflow-station data relationships and the Manning's equation.

Peak discharge-drainage area relationships for each stream studied by detailed methods are presented in Table 2, "Summary of Discharges".

Table 2 – Summary of Discharges

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (SQ. MILES)	PEAK DISCHARGE (CFS) 1-PERCENT-ANNUAL- CHANCE
MIDDLE ISLAND CREEK		
Upstream of Doddridge-Tyler County boundary	134.78	15,200
Approximately 0.1 mile downstream of confluence of Piggin Run	120.06	13,080
BUCKEYE CREEK		
At confluence with Middle Island Creek	38.62	7,350
Downstream of confluence of Long Run	22.62	5,150
Upstream of confluence of Greenbrier Creek	9.41	3,050
Downstream of confluence of Traugh Fork	1.52	1,310
MEATHOUSE FORK		
At confluence with Middle Island Creek	66.84	9,600
Downstream of confluence of Toms Fork	50.47	8,200
Downstream of confluence of Brushy Fork	29.87	6,050
Downstream of confluence of Laurel Run and Big Isaac Creek	3.76	2,230
MCELROY CREEK		
Upstream of confluence of Flint Run	61.95	9,250
Upstream of confluence of Rigging Run	51.23	8,300
Downstream of confluence of Talkington Fork	39.18	7,100
Downstream of confluence of Robinson Fork and Big Battle Run	20.75	4,900

Table 2 – Summary of Discharges

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (SQ. MILES)	PEAK DISCHARGE (CFS) 1-PERCENT-ANNUAL- CHANCE
WILHELM RUN		
At confluence with Arnold Creek	3.29	2,070
Approximately 1.2 miles upstream of confluence with Arnold Creek	2.07	1,570
LONG RUN		
At confluence with Buckeye Creek	4.44	2,460
Approximately 2.4 miles upstream of confluence with Buckeye Creek	1.85	1,470
TOMS FORK		
At confluence with Meathouse Fork	15.27	4,100
Downstream of confluence of Little Toms Fork	12.58	3,650
GREENBRIER CREEK		
At confluence with Buckeye Creek	2.80	1,880
Approximately 1.9 miles upstream of confluence with Buckeye Creek	1.09	1,080
BIG ISAAC CREEK		
At confluence with Meathouse Fork	1.79	1,450
LAUREL RUN		
At confluence with Meathouse Fork	1.97	1,530
Upstream of confluence of Big Isaac Creek	1.57	1,340

3.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of flooding from the sources studied were carried out to provide estimates of the elevations of floods of the selected recurrence intervals.

Locations of selected cross sections used in the hydraulic analyses are shown on the Flood Profiles (Exhibit 1) and the FIRM (Exhibit 2) where applicable.

Water-surface elevations of floods of the selected recurrence intervals were computed

using the USACE HEC-2 step-backwater computer program, and the results were published in a special flood hazard information report (References 5 and 6). Flood profiles were drawn showing computed water-surface elevations for floods of the selected recurrence intervals.

Channel roughness factors (Manning's "n") used in the hydraulic computations were assigned on the basis of field surveys of the stream and floodplain areas. For Middle Island Creek, channel "n" values range from 0.040 to 0.045 and overbank "n" values range from 0.050 to 0.070. For Buckeye Creek and Meathouse Fork, channel "n" values range from 0.055 to 0.080.

The hydraulic analyses for this study were based on unobstructed flow. The flood elevations shown on the profiles are thus considered valid only if hydraulic structures remain unobstructed, operate properly, and do not fail.

Qualifying benchmarks within a given jurisdiction that are catalogued by the National Geodetic Survey (NGS) and entered into the National Spatial Reference System (NSRS) as First or Second Order Vertical and have a vertical stability classification of A, B or C are shown and labeled on the FIRM with their 6-character NSRS Permanent Identifier.

Benchmarks catalogued by the NGS and entered into the NSRS vary widely in vertical stability classification. NSRS vertical stability classifications are as follows:

- Stability A: Monuments of the most reliable nature, expected to hold position/elevation (e.g. mounted in bedrock)
- Stability B: Monuments which generally hold their position/elevation (e.g. concrete bridge abutment)
- Stability C: Monuments which may be affected by surface ground movements (e.g. concrete monument below frost line)
- Stability D: Mark of questionable or unknown vertical stability (e.g. concrete monument above frost line, or steel witness post)

In addition to NSRS benchmarks, the FIRM may also show vertical control monuments established by a local jurisdiction; these monuments will be shown on the FIRM with the appropriate designations. Local monuments will only be placed on the FIRM if the community has requested that they be included, and if the monuments meet the aforementioned NSRS inclusion criteria.

To obtain current elevation, description, and/or location information for benchmarks shown on the FIRM for this jurisdiction, please contact the Information Services Branch of the NGS at (301) 713-3242, or visit their Web site at www.ngs.noaa.gov.

It is important to note that temporary vertical monuments are often established during the preparation of a flood hazard analysis for the purpose of establishing local vertical control. Although these monuments are not shown on the FIRM, they may be found in the Technical Support Data Notebook associated with the FIS report and FIRM for this community. Interested individuals may contact FEMA to access these data.

3.3 Vertical Datum

All elevations used in the original Doddridge county FIS reports were referenced to the National Geodetic Vertical Datum of 1929 (NGVD29), formerly referred to as Sea Level Datum of 1929. All flood elevations shown in this FIS report and on the FIRM are referenced to North American Vertical Datum of 1988 (NAVD88). Structure and ground elevations in the community must, therefore, be referenced to NAVD88. Elevation factors used to convert the NGVD29 elevation data of the previous Braxton county FIS reports to NAVD88 are summarized below. Elevation reference marks used in this study are shown on the maps.

The data points used to determine the conversion are listed in Table 3, "Vertical Datum Conversion Values".

Table 3 – Vertical Datum Conversion Values

USGS 7.5-Minute Quadrangle Name	Corner	Latitude (Decimal Degrees)	Longitude (Decimal Degrees)	Conversion from NGVD29 to NAVD88 (foot)
Shirley	SE	39.375	80.750	-0.522
Center Point	SE	39.375	80.625	-0.515
Folsom	SE	39.375	80.500	-0.525
Pennsboro	SE	39.250	80.875	-0.554
West Union	SE	39.250	80.750	-0.515
Smithburg	SE	39.250	80.625	-0.502
Oxford	SE	39.125	80.750	-0.531
New Milton	SE	39.125	80.625	-0.522
			AVERAGE	**-0.500 foot**

All flood elevations shown in this FIS report and on the FIRM are referenced to NAVD88. A conversion factor of -.500 feet was applied to the NGVD29 elevations in Doddridge County to convert to NAVD88. Structure and ground elevations in the county must, therefore, be referenced to NAVD88. It is important to note that adjacent communities and counties may be referenced to NGVD29. This may result in differences in Base Flood Elevations (BFEs) across the community and county boundaries.

For more information on NAVD88, see the FEMA publication entitled "Converting the National Flood Insurance Program to the North American Vertical Datum of 1988" (FEMA, June 1992), or contact the National Geodetic Survey Information Services, NOAA, N/NGS12, National Geodetic Survey, SSMC-3, #9202, 1315 East-West Highway, Silver Spring, MD 20910-3282 (Internet address http://www.ngs.noaa.gov).

4.0 FLOODPLAIN MANAGEMENT APPLICATIONS

The NFIP encourages State and local governments to adopt sound floodplain management programs. Therefore, each FIS provides 1-percent-annual-chance (100-year) flood elevations and

delineations of the 1- and 0.2-percent-annual-chance (500-year) floodplain boundaries and 1-percent-annual-chance floodway to assist communities in developing floodplain management measures. This information is presented on the FIRM and in many components of the FIS report, including Flood Profiles and Floodway Data Table. Users should reference the data presented in the FIS report as well as additional information that may be available at the local map repository before making flood elevation and/or floodplain boundary determinations.

4.1 Floodplain Boundaries

To provide a national standard without regional discrimination, the 1-percent-annual-chance flood has been adopted by FEMA as the base flood for floodplain management purposes. For the streams studied in detail, the 1-percent-annual-chance floodplain boundaries have been delineated using the flood elevations determined at each cross section. Between cross sections, the boundaries were interpolated using topographic maps at a scale of 1:24,000 with a contour interval of 20 feet (Reference 7).

For the streams studied by approximate methods, the boundaries of the 1-percent-annual-chance floodplain were delineated using the Flood Hazard Boundary Map (FHBM) for the Town of West Union and the FIS for the Unincorporated Areas of Doddridge County (References 8 and 9).

The 1-percent-annual-chance floodplain boundaries are shown on the FIRM (Exhibit 2). On this map, the 1-percent-annual-chance floodplain boundary corresponds to the boundary of the areas of special flood hazards (Zones A and AE). Small areas within the floodplain boundaries may lie above the flood elevations but cannot be shown due to limitations of the map scale and/or lack of detailed topographic data.

4.2 Floodways

Encroachment on floodplains, such as structures and fill, reduces flood-carrying capacity, increases flood heights and velocities, and increases flood hazards in areas beyond the encroachment itself. One aspect of floodplain management involves balancing the economic gain from floodplain development against the resulting increase in flood hazard. For purposes of the NFIP, a floodway is used as a tool to assist local communities in this aspect of floodplain management. Under this concept, the area of the 1-percent-annual-chance floodplain is divided into a floodway and a floodway fringe. The floodway is the channel of a stream, plus any adjacent floodplain areas, that must be kept free of encroachment so that the 1-percent-annual-chance flood can be carried without substantial increases in flood heights. Minimum federal standards limit such increases to 1.0 foot, provided that hazardous velocities are not produced.

The area between the floodway and 1-percent-annual-chance floodplain boundaries is termed the floodway fringe. The floodway fringe encompasses the portion of the floodplain that could be completely obstructed without increasing the water-surface elevation of the 1-percent-annual-chance flood by more than 1.0 foot at any point. Typical relationships between the floodway and the floodway fringe and their significance to floodplain development are shown in Figure 1, "Floodway Schematic".

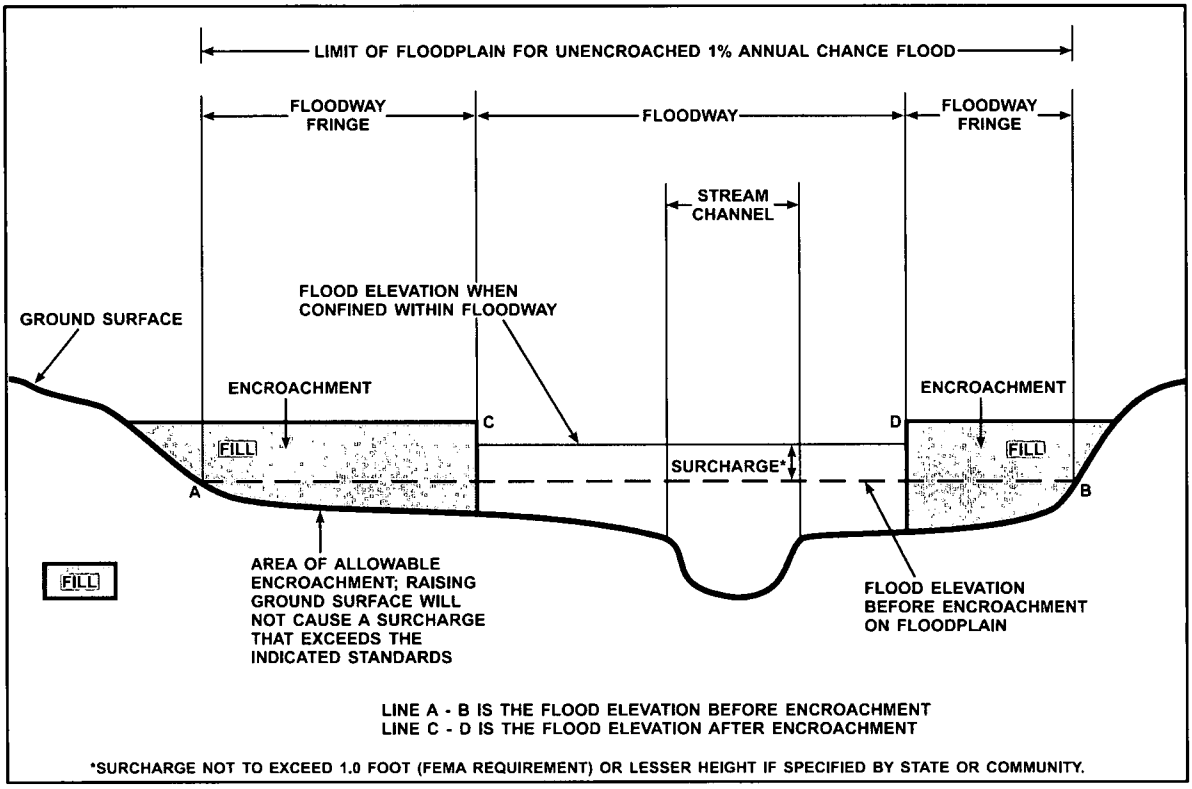


Figure 1 - Floodway Schematic

No floodways were calculated as part of this study.

5.0 INSURANCE APPLICATIONS

For flood insurance rating purposes, flood insurance zone designations are assigned to a community based on the results of the engineering analyses. These zones are as follows:

Zone A

Zone A is the flood insurance risk zone that corresponds to the 1-percent-annual-chance floodplains that are determined in the FIS by approximate methods. Because detailed hydraulic analyses are not performed for such areas, no (1-percent-annual-chance) BFEs or base flood depths are shown within this zone.

Zone AE

Zone AE is the flood insurance risk zone that corresponds to the 1-percent-annual-chance floodplains that are determined in the FIS by detailed methods. In most instances, whole-foot BFEs derived from the detailed hydraulic analyses are shown at selected intervals within this zone.

Zone AH

Zone AH is the flood insurance risk zone that corresponds to the areas of 1-percent-annual-chance shallow flooding (usually areas of ponding) where average depths are between 1 and 3 feet. Whole-foot BFEs derived from the detailed hydraulic analyses are shown at selected intervals within this zone.

Zone AO

Zone AO is the flood insurance risk zone that corresponds to the areas of 1-percent-annual-chance shallow flooding (usually sheet flow on sloping terrain) where average depths are between 1 and 3 feet. Average whole-foot base flood depths derived from the detailed hydraulic analyses are shown within this zone.

Zone AR

Zone AR is the flood insurance risk zone that corresponds to an area of special flood hazard formerly protected from the 1-percent-annual-chance flood event 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-percent-annual-chance or greater flood event.

Zone A99

Zone A99 is the flood insurance risk zone that corresponds to areas of the 1-percent-annual-chance floodplain that will be protected by a Federal flood protection system where construction has reached specified statutory milestones. No BFEs or depths are shown within this zone.

Zone V

Zone V is the flood insurance risk zone that corresponds to the 1-percent-annual-chance coastal floodplains that have additional hazards associated with storm waves. Because approximate hydraulic analyses are performed for such areas, no BFEs are shown within this zone.

Zone VE

Zone VE is the flood insurance risk zone that corresponds to the 1-percent-annual-chance coastal floodplains that have additional hazards associated with storm waves. Whole-foot BFEs derived from the detailed hydraulic analyses are shown at selected intervals within this zone.

Zone X

Zone X is the flood insurance risk zone that corresponds to areas outside the 0.2-percent-annual-chance floodplain, areas within the 0.2-percent-annual-chance floodplain, areas of 1-percent-annual-chance flooding where average depths are less than 1-foot, areas of 1-percent-annual-chance flooding where the contributing drainage area is less than 1 square mile, and areas protected from the 1-percent-annual-chance flood by levees. No BFEs or base flood depths are shown within this zone.

Zone X (Future Base Flood)

Zone X (Future Base Flood) is the flood insurance risk zone that corresponds to the 1-percent-annual-chance floodplains that are determined based on future-conditions hydrology. No BFEs or base flood depths are shown within this zone.

Zone D

Zone D is the flood insurance risk zone that corresponds to unstudied areas where flood hazards are undetermined, but possible.

6.0 FLOOD INSURANCE RATE MAP

The FIRM is designed for flood insurance and floodplain management applications.

For flood insurance applications, the map designates flood insurance rate zones as described in Section 5.0 and, in the 1-percent-annual-chance floodplains that were studied by detailed methods, shows selected whole-foot base flood elevations or average depths. Insurance agents use the zones and base flood elevations in conjunction with information on structures and their contents to assign premium rates for flood insurance policies.

For floodplain management applications, the map shows by tints, screens, and symbols, the 1- and 0.2-percent-annual-chance floodplain. The locations of selected cross sections used in the hydraulic analyses are shown where applicable.

The current FIRM presents flooding information for the entire geographic area of Doddridge County. Previously, separate FHBMs and/or FIRMs were prepared for each incorporated community with identified flood hazard areas and the unincorporated areas of the County. Historical map dates relating to pre-countywide maps prepared for each community are presented in Table 4, "Community Map History".

COMMUNITY NAME	INITIAL NFIP MAP DATE	FLOOD HAZARD BOUNDARY MAP REVISIONS DATE	INITIAL FIRM DATE	FIRM REVISIONS DATE
West Union, Town of	March 29, 1974	NONE	March 18, 1991	
Doddridge County (Unincorporated Areas)	November 8, 1974	June 3, 1977	March 18, 1991	

TABLE 4

FEDERAL EMERGENCY MANAGEMENT AGENCY

DODDRIDGE COUNTY, WV
AND INCORPORATED AREAS

COMMUNITY MAP HISTORY

7.0 OTHER STUDIES

Flood Insurance Studies have been prepared for the unincorporated areas of Tyler, Ritchie and Harrison Counties, and for Lewis County and Incorporated Areas (References 10, 11, 12 and 13). The results of this study are in exact agreement with the results of those studies.

A FIS is currently being prepared for Gilmer County and Incorporated Areas (Reference 14). The results of that study will be in exact agreement with the results of this study.

Because it is based on more up-to-date analyses, this study supersedes the Flood Hazard Boundary Map for the Town of West Union and the FIS for the Unincorporated Areas of Doddridge County (References 8 and 9).

8.0 LOCATION OF DATA

Information concerning the pertinent data used in preparation of this study can be obtained by contacting Federal Insurance and Mitigation Division, FEMA Region III, One Independence Mall, Sixth Floor, 615 Chestnut Street, Philadelphia, PA 19106-4404.

9.0 BIBLIOGRAPHY AND REFERENCES

1. Holmes, Darrell E., West Virginia Blue Book, Chapman Printing, 2005.

2. U. S. Department of the Interior, Geological Survey, Hydrology of Area 8, Eastern Coal Province, West Virginia, January 1987.

3. U. S. Department of the Interior, Water-Resources Investigation 87-4111, Techniques for Estimating Flood-Depth Frequency Relations for Streams in West Virginia, by Jeffrey B. Wiley, 1987.

4. U. S. Department of the Interior, Geological Survey, in cooperation with the West Virginia Department of Highways, Runoff Studies on Small Drainage Areas by G. S. Runner, Washington, D. C., October 1980.

5. U. S. Army Corps of Engineers, Hydrologic Engineering Center, HEC-2 Water Surface Profiles, Generalized Computer Program, Davis, California, April 1984.

6. U. S. Army Corps of Engineers, Huntingdon District, Special Flood Hazard Information Report, Middle Island Creek and Tributaries, Doddridge County, West Virginia, October 1978.

7. U. S. Department of the Interior, Geological Survey, 7.5-Minute Series Topographic Maps, Scale 1:24,000, Contour Interval 20 Feet: Big Isaac, West Virginia, 1964, Photorevised 1976; Center Point, West Virginia, 1961, Photorevised 1976; New Milton, West Virginia, 1965, Photorevised, 1976; Smithburg, West Virginia, 1961, Photorevised 1976; West Union, West Virginia, 1961, Photorevised 1976.

8. U. S. Department of Housing and Urban Development, Federal Insurance Administration, Flood Hazard Boundary Map, Town of West Union, Doddridge County, West Virginia, April 2, 1976.

9. U. S. Department of Housing and Urban Development, Federal Insurance Administration, Flood Insurance Study, Unincorporated Areas of Doddridge County, West Virginia, Washington, D.C., June 3, 1977.

10. Federal Emergency Management Agency, Flood Insurance Study, Unincorporated Areas of Tyler County, West Virginia, Washington, D. C., November 4, 1988.

11. Federal Emergency Management Agency, Flood Insurance Study, Unincorporated Areas of Harrison County, West Virginia, Washington, D. C., July 4, 1988.

12. Federal Emergency Management Agency, Flood Insurance Study, Lewis County and Incorporated Areas, West Virginia, Washington, D.C., July 1, 1987.

13. Federal Emergency Management Agency, Federal Insurance Administration, Flood Insurance Study, Unincorporated Areas of Ritchie County, West Virginia, Washington, D.C., December 11, 1981.

14. Federal Emergency Management Agency, Flood Insurance Study, Gilmer County and Incorporated Areas, West Virginia (Unpublished).

13-075

CNX GAS COMPANY LLC

CONSTRUCTION PLANS

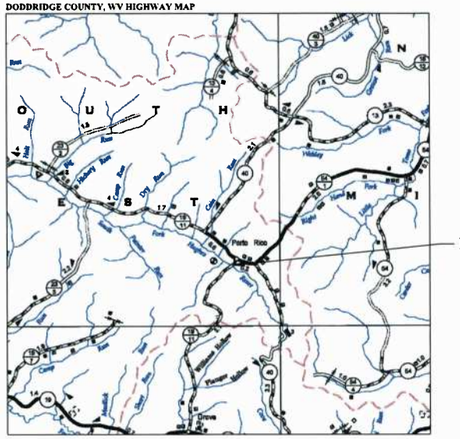
FOR THE

OXFORD 11 ACCESS ROAD AND BRIDGE

DODDRIDGE COUNTY, WEST VIRGINIA

SEPTEMBER 2013

DODDRIDGE COUNTY, WV HIGHWAY MAP

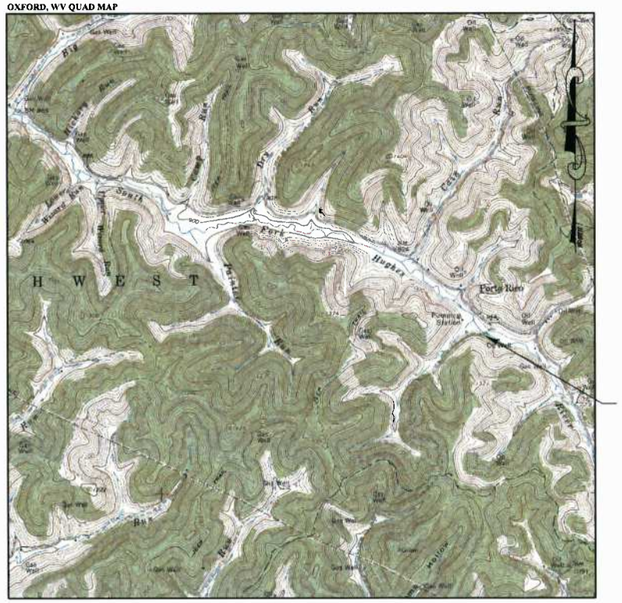


PROJECT LOCATION

VICINITY MAP

5000' 0 5000' 10,000'

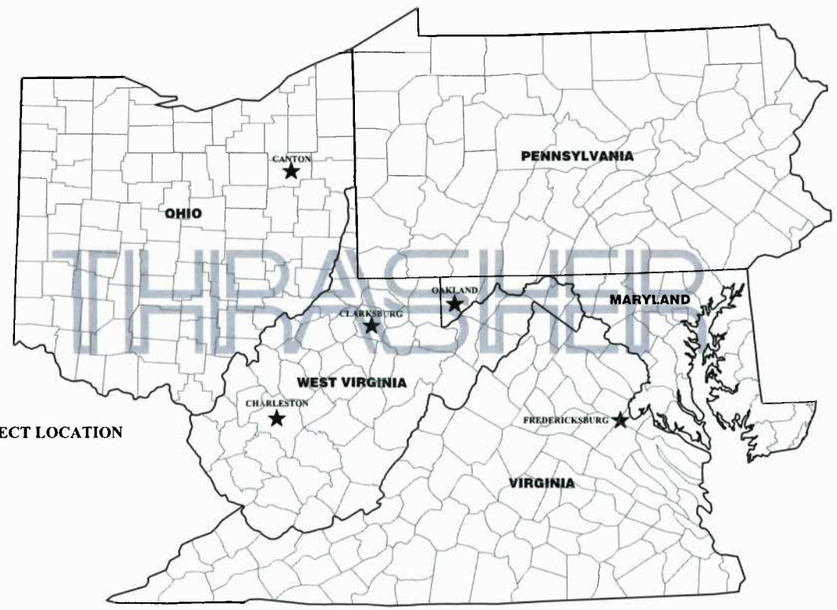
OXFORD, WV QUAD MAP



PROJECT LOCATION

VICINITY MAP

2000' 0 2000' 4000'



PRELIMINARY
NOT FOR CONSTRUCTION

SHEET INDEX

REVISION NUMBER	REVISED SHEETS	BY	DATE	DESCRIPTION

☐ **APPROVED FOR PERMITS** **DATE:** _____ **BY:** _____

☐ **APPROVED FOR CONSTRUCTION** **DATE:** _____ **BY:** _____

THRASHER
THE THRASHER GROUP, INC.
30 COLUMBIA BOULEVARD, CLARKSBURG, WV 26301
PHONE (304) 624-4108
FAX (304) 624-7831

GENERAL NOTES

1. THE GOVERNING SPECIFICATIONS FOR THIS PROJECT ARE THE THRASHER GROUP SPECIFICATIONS THAT ARE INCLUDED WITHIN THESE PLANS. ANY ITEMS NOT COVERED IN THE THRASHER GROUP SPECIFICATIONS SHALL BE COVERED BY THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION, DIVISION OF HIGHWAYS STANDARD SPECIFICATIONS, ROADS AND BRIDGES, ADOPTED 2010 AMENDED BY THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION, DIVISION OF HIGHWAYS, SUPPLEMENTAL SPECIFICATIONS, LATEST EDITION AND THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION, DIVISION OF HIGHWAYS, STANDARD DETAILS BOOKS, VOLUME I, DATED JANUARY 1, 2000 AND VOLUME II, DATED JANUARY 1, 1994. (WVDOH SPECIFICATIONS SHALL BE USED FOR TECHNICAL ASSISTANCE **ONLY**.)
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING A VALID WEST VIRGINIA CONTRACTOR'S LICENSE AND PAYING ALL APPLICABLE STATE AND LOCAL TAXES.
3. THE CONSTRUCTION DRAWINGS REPRESENT THE PROPOSED LINES, GRADES, AND APPURTENANCES TO ACCOMPLISH THE INTENT OF THE SCOPE OF WORK. CERTAIN INCIDENTAL ITEMS TO COMPLETE THE SCOPE OF WORK MAY NOT BE SHOWN.
4. ALL WORK PERFORMED AND ALL MATERIAL FURNISHED SHALL CONFORM TO THE LINES, GRADES, CROSS SECTIONS, DIMENSIONS, AND MATERIAL REQUIREMENTS SHOWN ON THE CONSTRUCTION DRAWINGS. THE CONSTRUCTION DRAWINGS SHOW THE CONSTRUCTION LINES, GRADES, DEPTHS AND DIMENSIONS ON WHICH ESTIMATED QUANTITIES ARE BASED. THE CONSTRUCTION LINES, GRADES, DEPTHS AND DIMENSIONS ARE SUBJECT TO VARIATION NECESSARY TO OBTAIN SUBGRADE AND/OR FINAL GRADE SATISFACTORY TO THE ENGINEER.
5. THE CONTRACTOR IS RESPONSIBLE FOR VERIFICATION OF ALL PLAN AND ELEVATION DIMENSIONS OF THE VARIOUS WORK ITEMS ON THIS PROJECT.
6. BASE MAPPING FOR THIS PROJECT IS FROM AERIAL MAPPING. THE DATUM IS NAD-83 DATUM, ZONE 17, US FOOT.
7. THE CONTRACTOR SHALL PROVIDE ALL REASONABLE FACILITIES AND FURNISH THE OPERATOR, THROUGH THE ENGINEER, THE INFORMATION, ASSISTANCE, AND SAMPLES REQUIRED BY THE ENGINEER FOR PROPER MONITORING AND TESTING OF MATERIALS AND WORKMANSHIP.
8. THE CONTRACTOR SHALL HAVE ON THE SITE AT ALL TIMES A COMPETENT SUPERINTENDENT CAPABLE OF READING AND UNDERSTANDING THE CONSTRUCTION DOCUMENTS AND THOROUGHLY EXPERIENCED IN THE TYPE OF WORK BEING PERFORMED, AND SHALL BE ABLE TO COORDINATE WITH THE ENGINEER.
9. CONTRACTOR IS REQUIRED TO CONDUCT A PRE-CONSTRUCTION CONFERENCE AT THE PROJECT SITE PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION ACTIVITIES. THE CONTRACTOR IS REQUIRED TO CONTACT THE OPERATOR AND THRASHER GROUP A MINIMUM OF 48 HOURS IN ADVANCE PRIOR TO SCHEDULING THE PRE-CONSTRUCTION CONFERENCE. THE FOLLOWING ORGANIZATIONS MUST BE REPRESENTED AT THE PRE-CONSTRUCTION CONFERENCE: THE CONTRACTOR, THE OPERATOR, AND THRASHER.
10. CLEARING SHALL BE COMPLETED IN ACCORDANCE WITH WVDOH SPECIFICATIONS. CLEARING IS DEFINED AS THE REMOVAL OF TREES, BRUSH, DOWN TIMBER, ROTTEN WOOD, RUBBISH, AND OTHER VEGETATION, AND OBJECTIONABLE MATERIALS AT OR ABOVE ORIGINAL GROUND ELEVATION NOT DESIGNATED TO BE RETAINED. CLEARING ALSO INCLUDES REMOVAL OF FENCES, POSTS, SIGNS, AND DEMOLITION OR REMOVAL OF OTHER OBSTRUCTIONS INTERFERING WITH THE PROPOSED WORK.
11. GRUBBING SHALL BE COMPLETED IN ACCORDANCE WITH WVDOH SPECIFICATIONS. REMOVE ALL STUMPS AND ROOTS WITHIN THE CLEARED AREA UNLESS OTHERWISE APPROVED BY THE ENGINEER. GRUBBING IS DEFINED AS THE REMOVAL FROM BELOW THE ORIGINAL GROUND ELEVATION OF STUMPS, ROOTS, STUBS, BRUSH, ORGANIC MATERIALS AND DEBRIS AS WELL AS CONCRETE AND BRICK, AND OTHER OBSTRUCTIONS INTERFERING WITH THE PROPOSED WORK.
12. DO NOT DEPOSIT OR BURY ON THE SITE DEBRIS RESULTING FROM THE CLEARING AND GRUBBING. TREES, LOGS, BRANCHES, STUMPS, AND OTHER DEBRIS RESULTING FROM CLEARING AND GRUBBING OPERATIONS SHALL NOT BE USED IN STRUCTURAL FILL AND IS TO BECOME THE PROPERTY OF THE CONTRACTOR.
13. STRIP TOPSOIL TO WHATEVER DEPTH IT MAY OCCUR FROM AREAS TO BE EXCAVATED, FILLED, OR GRADED IN A MANNER TO PREVENT INTERMIXING WITH UNDERLYING SUBSOIL OR WASTE MATERIALS. STOCKPILE TOPSOIL AS SHOWN ON THE PLANS FOR USE IN FINISH GRADING, SEEDING, AND LANDSCAPING. TOPSOIL REMOVAL VOLUMES FOR THIS PROJECT WERE CALCULATED USING AN ASSUMED THICKNESS OF THREE (3) INCHES IN AREA OF MINED STRIP BENCH AND SIX (6) INCHES ELSEWHERE. STOCKPILE AWAY FROM EDGE OF EXCAVATIONS WITHOUT INTERMIXING WITH SUBSOIL. GRADE AND SHAPE STOCKPILES TO DRAIN SURFACE WATER. PROTECT TOPSOIL STOCKPILES USING EROSION AND SEDIMENT CONTROL MEASURES AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.
14. ALL EARTHWORK SHALL FOLLOW THE LINES AND GRADES SHOWN ON THE CONSTRUCTION DRAWINGS.
15. SUITABLE SOIL MATERIALS ARE AS THOSE COMPLYING WITH WVDOH STANDARD SPECIFICATIONS.
16. ON-SITE MATERIAL FOR USE AS FILL SHALL CONSIST OF EXCAVATED SOIL FROM OTHER PORTIONS OF THE SITE. THE CONTRACTOR SHALL USE THE ON-SITE SOIL JUDICIOUSLY TO FACILITATE THE CONSTRUCTION SCHEDULE INCLUDING THE USE OF THE MOST READILY COMPACTABLE SOIL FOR FILL. TOPSOIL SHALL NOT BE UTILIZED AS ENGINEERED FILL. EXCAVATED MATERIAL CONTAINING ROCK, STONE OR MASONRY DEBRIS SMALLER THAN SIX INCHES IN ITS LARGEST DIMENSION, MAY BE MIXED WITH SUITABLE MATERIAL AND UTILIZED.
17. NO MATERIAL GREATER THAN SIX INCHES IN ITS LARGEST DIMENSION MAY BE UTILIZED INSIDE FILLING OPERATIONS.
18. STOCKPILE EXCAVATED MATERIALS CLASSIFIED AS SATISFACTORY SOIL MATERIAL AS SHOWN ON THE PLANS. GRADE AND SHAPE THE STOCKPILES FOR PROPER DRAINAGE. PROTECT THE STOCKPILES USING EROSION AND SEDIMENT CONTROL MEASURES AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.
19. EXCAVATE UNSUITABLE SOIL MATERIALS ENCOUNTERED THAT EXTEND BELOW THE REQUIRED ELEVATIONS, TO THE ADDITIONAL DEPTH DIRECTED BY THE ENGINEER IN ACCORDANCE WITH WVDOH STANDARD SPECIFICATIONS.
20. FILL SHALL BE PLACED IN LIFTS OF MAXIMUM LOOSE DEPTH OF 8 INCHES. THE MATERIAL SHALL BE COMPACTED TO AT LEAST 95 PERCENT OF MAXIMUM DRY DENSITY AT MOISTURE CONTENT WITHIN PLUS OR MINUS TWO PERCENT (±2%) OF THE OPTIMUM AS DETERMINED BY A MODIFIED PROCTOR MOISTURE-DENSITY TEST ASTM D1557. IF FILL FAILS COMPACTION TESTING, THE CONTRACTOR SHALL REWORK (RE-COMPACT, WATER AND RE-COMPACT, EXCAVATE AND DRY, ETC.) THE MATERIAL TO ACHIEVE THE SPECIFIED COMPACTION. THE CONTRACTOR MAY BE REQUIRED BY THE ENGINEER TO EXCAVATE FILL AND REPLACE WITH MATERIALS CAPABLE OF MEETING THE COMPACTION SPECIFICATIONS.
21. WHERE THE SUBGRADE OR LAYER OF SOIL MATERIAL MUST BE MOISTURE CONDITIONED BEFORE COMPACTION, UNIFORMLY APPLY WATER TO THE SURFACE OF THE SUBGRADE OR LAYER OF SOIL MATERIAL TO PREVENT FREE WATER APPEARING ON THE SURFACE DURING OR SUBSEQUENT TO COMPACTION OPERATIONS.
22. REMOVE AND REPLACE, OR SCARIFY AND AIR DRY, SOIL MATERIAL THAT IS TOO WET TO PERMIT COMPACTION TO SPECIFIED DENSITY. SOIL MATERIAL THAT HAS BEEN REMOVED BECAUSE IT IS TOO WET TO PERMIT COMPACTION MAY BE STOCKPILED OR SPREAD AND ALLOWED TO DRY. ASSIST DRYING BY DISKING, HARROWING OR PULVERIZING, UNTIL THE MOISTURE CONTENT IS REDUCED TO A SATISFACTORY VALUE, AS DETERMINED BY MOISTURE-DENSITY RELATION TESTS.
23. COMPACTOR FOR MASS EARTHWORK SHALL BE MINIMUM FIVE TON STATIC DRUM WEIGHT VIBRATORY ROLLER OR FIVE TON WEIGHT SHEEPSFOOT COMPACTOR AS APPROPRIATE FOR THE TYPE OF SOIL MATERIAL AT THE SITE OR OTHER COMPACTOR APPROVED BY THE ENGINEER.
24. IN AREAS TO RECEIVE FILL AND AT THE FINAL CUT SUBGRADE, PROOF ROLL AND COMPACT THE EXPOSED GROUND SURFACE FOLLOWING CLEARING AND GRUBBING AND ANY REQUIRED EXCAVATION WITH A MINIMUM OF FOUR PASSES OF AN APPROVED COMPACTOR. PROOF ROLLING SHALL BE UNDER THE OBSERVATION OF THE ENGINEER AS DESCRIBED HEREIN. IMMEDIATELY FOLLOWING THE COMPLETION OF EXCAVATION TO PROPOSED SUBGRADES IN CUT AREAS, PROOF ROLLING SHALL BE PERFORMED AS SPECIFIED. ANY AREAS WHICH DEFLECT, RUT, OR PUMP UNDER THE LOADED DUMP TRUCK SHALL BE UNDERCUT AND REPLACED WITH COMPACTED FILL MATERIAL OR STONE BASE COURSE AS DIRECTED BY THE ENGINEER AT NO ADDITIONAL COST TO THE OPERATOR.
25. PROOF ROLLING SHALL BE DONE WITH ONE PASS OF A FULLY LOADED TANDEM DUMP TRUCK EQUAL TO OR EXCEEDING 50,000-LB OR OTHER CONSTRUCTION EQUIPMENT IF APPROVED BY THE ENGINEER. PROOF ROLLING METHODS SHALL BE AS FOLLOWS:
    A. AFTER THE SUBGRADE HAS BEEN COMPLETED THE SUBGRADE SHALL THEN BE PROOF ROLLED. THE COVERAGE AREAS AND METHODS SHALL BE IDENTIFIED BY THE ENGINEER.
    B. THE EQUIPMENT SHALL BE OPERATED AT A SPEED THAT THE ENGINEER CAN COMFORTABLY AND SLOWLY WALK ALONG SIDE THE EQUIPMENT.
    C. IF IT BECOMES NECESSARY TO TAKE CORRECTIVE ACTION, SUCH AS BUT NOT LIMITED TO UNDERDRAIN INSTALLATION, UNDERCUT AND BACKFILL OF AN UNSUITABLE MATERIAL, AND AERATION OF EXCESSIVELY WET MATERIAL IN AREAS THAT HAVE BEEN PROOF ROLLED. THESE AREAS SHALL BE PROOF ROLLED AGAIN FOLLOWING THE COMPLETION OF THE NECESSARY CORRECTIONS. IF THE CORRECTIONS ARE NECESSARY DUE TO THE NEGLIGENCE OF THE CONTRACTOR, THE CORRECTIVE WORK AND ADDITIONAL PROOF ROLLING SHALL BE PERFORMED BY THE CONTRACTOR AT NO COST TO THE OPERATOR.
25. THE CONTRACTOR SHALL LOCATE AND PROTECT EXISTING UTILITIES AND FACILITIES FROM DAMAGE BY EQUIPMENT OR PERSONNEL. THE CONTRACTOR SHALL CONTACT ALL UTILITY AND FACILITY AGENCIES FOR FIELD MARKING PRIOR TO BEGINNING CONSTRUCTION. THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR IT'S REPRESENTATIVE. THE EXISTING UTILITY INFORMATION IS THE BEST AVAILABLE AND MAY NOT BE COMPLETELY ACCURATE OR REPRESENTATIVE OF ACTUAL CONDITIONS. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE UNDERGROUND UTILITIES. THE CONTRACTOR SHALL NOTIFY THE ENGINEER AND/OR OWNER IN WRITING, OF ANY EXISTING DAMAGED UTILITIES PRIOR TO BEGINNING CONSTRUCTION. ANY UTILITIES OR FACILITIES DAMAGED DURING THE PROJECT BY THE CONTRACTOR OR EQUIPMENT SHALL BE PROMPTLY REPAIRED AT THE CONTRACTOR'S EXPENSE. HAND DIGGING TO PROTECT UTILITIES FROM DAMAGE SHOULD BE ANTICIPATED.
26. ALL DISTURBED AREAS, INCLUDING THE CONTRACTORS STAGING AREA, HAUL ROUTES, GRADING LIMITS, ETC. SHALL BE RESTORED TO A SMOOTH LINE AND GRADE WITH POSITIVE DRAINAGE. THE CONTRACTOR SHALL SEED AND MULCH ALL DISTURBED AREAS. THERE WILL BE NO MEASUREMENT FOR PAYMENT OF SEEDING AND MULCHING REQUIRED OUTSIDE THE GRADING LIMITS.
27. THE CONTRACTOR SHALL PROVIDE TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES AND OTHER ACTIONS AS REQUIRED BY LOCAL AND STATE REGULATIONS OR REQUESTED BY THE ENGINEER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING OR MODIFYING EROSION AND SEDIMENT CONTROL MEASURES DURING CONSTRUCTION IN ORDER TO PREVENT EROSION. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IN ACCORDANCE WITH "WEST VIRGINIA EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICE MANUAL". AVAILABLE AT: http://apps.dep.wv.gov/dwwm/stormwater/BMP/index.html

EROSION & SEDIMENT CONTROL NOTES

CONSTRUCTION SEQUENCE NOTES

1. CONTRACTOR SHALL INSTALL ALL REQUIRED COMPOST FILTER SOCK AS SHOWN ON THE PLANS AND AS DIRECTED. ALL COMPOST FILTER SOCK AND/OR COMPOST FILTER SOCK SEDIMENT TRAP ARE TO BE INSTALLED PARALLEL TO THE EXISTING CONTOURS.
2. CONTRACTOR SHALL INSTALL STABILIZED CONSTRUCTION ENTRANCES AND MAINTAIN FOR THE LIFE OF THE PROJECT.
3. STRIP AND STOCKPILE TOPSOIL AS SHOWN ON THE PLANS.
4. PERFORM GRADING OPERATIONS FOR THE ACCESS ROAD.
5. CONTRACTOR SHALL IMMEDIATELY STABILIZE ALL EMBANKMENTS UPON COMPLETION.
6. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IN ACCORDANCE WITH THE WVDEP BEST MANAGEMENT PRACTICES MANUAL.

MAINTENANCE AND INSPECTION NOTES

1. CONTRACTOR SHALL CLEAN OUT SEDIMENT BEHIND THE COMPOST FILTER SOCKS ONCE IT IS ONE THIRD OF THE HEIGHT OF THE FENCE AND/OR SOCK. THE SEDIMENT SHALL BE INCORPORATED INTO THE FILL WITHIN THE DISTURBED AREA.
2. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSPECTED, AT MINIMUM, ONCE EVERY 7 CALENDAR DAYS AND WITHIN 24-HOURS AFTER ANY STORM GREATER THAN 0.5-INCHES PER 24-HOUR PERIOD. ANY REQUIRED REPAIRS OR MAINTENANCE SHALL BE MADE IMMEDIATELY.

SEEDING AND MULCHING

1. TEMPORARY STABILIZATION
   DATES: MARCH 1 THROUGH JUNE 15
   SEED: OATS @ 168 LB/AC
   DATES: AUGUST 15 THROUGH NOVEMBER 1
   SEED: RYE @ 120 LB/AC
   FERTILIZER: 10-10-10 @ 400 LB/AC

   FOR STABILIZATION OUTSIDE SEEDING DATES, USE HAY OR STRAW MULCH AT 3 TONS/AC OR AT 2 TONS/AC IF ASPHALT EMULSION IS APPLIED AT 100 GAL/AC.
2. PERMANENT STABILIZATION
   DATES: MARCH, APRIL, AUGUST, & AUGUST
   SEED: KY-31 TALL FESCUE @ 50 LB/AC
   FERTILIZER: 10-20-10 @ 1000 LB/AC
   LIME: 3 TONS/AC OR PER SOIL TEST RESULTS
   MULCH: HAY OR STRAW @ 2 TONS/AC OR @ 1.5 TONS/AC WITH ASPHALT EMULSION @ 125 GAL/AC
3. SEEDBED PREPARATION: AREAS TO BE SEEDED SHALL BE FREE OF ROCKS AND STONES, DISKED TO A DEPTH OF 4-IN TO 6-IN, AND SMOOTHLY GRADED.
4. SEEDING METHOD: SEED MAY BE BROADCAST BY HYDROSEEDER OR MANUALLY AS FOLLOWS: BY HAND WITH A CYCLONE SEEDER, OR FERTILIZER SPREADER. IF A MANUAL METHOD IS USED, DIVIDE THE SEED INTO TWO LOTS AND BROADCAST THE SECOND PERPENDICULAR TO THE FIRST.
5. TOPSOIL SHALL BE REDISTRIBUTED ON ALL DISTURBED AREAS TO BE STABILIZED PRIOR TO SEEDING.
6. STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS PRACTICABLE IN PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE TEMPORARILY OR PERMANENTLY CEASED, BUT IN NO CASE MORE THAN 36 HOURS AFTER THE CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE HAS PERMANENTLY CEASED.
7. WHERE THE INITIATION OF STABILIZATION MEASURES WITHIN 36 HOURS AFTER CONSTRUCTION ACTIVITY TEMPORARILY OR PERMANENTLY CEASES IS PRECLUDED BY SNOW COVER, STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS CONDITIONS ALLOW.
8. WHERE CONSTRUCTION ACTIVITY WILL RESUME ON A PORTION OF THE SITE WITHIN 14 DAYS FROM WHEN ACTIVITIES CEASED (e.g., THE TOTAL TIME PERIOD THAT CONSTRUCTION ACTIVITY IS TEMPORARILY HALTED IS LESS THAN 14 DAYS), THEN STABILIZATION MEASURES DO NOT HAVE TO BE INITIATED ON THAT PORTION OF THE SITE BY THE SEVENTH DAY AFTER CONSTRUCTION ACTIVITIES HAVE TEMPORARILY CEASED.
9. AREAS WHERE THE SEED HAS FAILED TO GERMINATE ADEQUATELY (UNIFORM PERENNIAL VEGETATIVE COVER WITH A DENSITY OF 70%) WITHIN 30 DAYS AFTER SEEDING AND MULCHING MUST BE RE-SEEDED IMMEDIATELY, OR AS SOON AS WEATHER CONDITIONS ALLOW.

CONSTRUCTION SEQUENCE

1. **INSTALL STABILIZED CONSTRUCTION ENTRANCE.**
2. **INSTALL ALL COMPOST FILTER SOCK.**
3. **REMOVE TIMBER TO THE EXTENT NECESSARY AND WITHIN THE LIMITS OF DISTURBANCE AND STOCKPILE ON SITE.**
4. **CLEAR AND GRUB SITE TO THE EXTENT NECESSARY TO COMPLETE THE PROJECT WITHIN THE LIMITS OF DISTURBANCE.**
5. **REMOVE AND STOCKPILE TOPSOIL AS SHOWN ON THE PLANS.**
6. **COMPLETE ROUGH GRADING OPERATIONS FOR THE ACCESS ROAD**
7. **RE-DISTRIBUTE TOPSOIL THEN SEED AND MULCH ALL DISTURBED AREAS.**
8. **REMOVE TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES ONCE MINIMUM 70% GROWTH HAS BEEN ESTABLISHED OVER THE ENTIRE PROJECT AREA.**
9. **COMPLETE FINAL PROJECT CLEAN UP.**

MISS UTILITY
1-800-245-4848 - http://www.wv811.com

WEST VIRGINIA DIVISION OF HIGHWAYS
DISTRICT FOUR
P.O BOX 4220
CLARKSBURG, WV 26302-4220
304-842-1500

NATIONAL RESPONSE CENTER FOR REPORTING CHEMICAL OR OIL SPILLS
1-800-424-8802

STATE EMERGENCY SPILL NOTIFICATION
1-800-642-3074

AMBULANCE, FIRE, LAW ENFORCEMENT
911

PLAN LEGEND

- FLOOD ELEVATION
- EXISTING WETLAND
- EXISTING EDGE OF GRAVEL
- EXISTING STREAMS
- 1240 EXISTING CONTOURS MAJOR / MINOR
- LOD LIMIT OF DISTURBANCE
- TREELINE
- 1240 PROPOSED CONTOURS MAJOR / MINOR
- C PROPOSED CUT LIMIT
- F PROPOSED FILL LIMIT
- PROPOSED EDGE OF GRAVEL
- COMPOST FILTER SOCK

NO.	BY	DATE	DESCRIPTION

SCALE:
DRAWN: NMJ DATE: SEPT. 2013
CHECKED: JLG DATE: SEPT. 2013
APPROVED: JLG DATE: SEPT. 2013
SURVEY DATE:
SURVEY BY:
FIELD BOOK No.:

THRASHER

PHASE No.
CONTRACT No.
PROJECT No. 101-030-2358

CNX GAS COMPANY LLC
CONSTRUCTION PLANS FOR THE
OXFORD 11 ACCESS ROAD AND BRIDGE
DODDRIDGE COUNTY, WEST VIRGINIA
GENERAL NOTES

SHEET No. 2

LAYOUT TAB: 02-Gen Notes
CAD FILE: R:\030-2358 CNX Gas- Oxford 11 Bridge\Drawing\002-GENERAL NOTES.dwg PLOT DATE/TIME: 9/6/2013 10:15 AM USER: nicole m. jones

13-075

COUNTY ROUTE 19/11

100 YR FLOOD ELEVATION
927.66'

SOUTH FORK
HUGHES RIVER

FLOW

LIMITS OF DISTURBANCE
0.70 ACRES

LOD

930

940

950

960

970

980

990

SOUTH FORK
HUGHES RIVER

DELINEATED WETLAND
0.29 ACRES

COUNTY ROUTE 54/1

20' 0 20' 40'

LAYOUT TAB: EXISTING SITE PLAN
CAD FILE: R:\030-2358 CNX Gas- Oxford 11 Bridge\Drawing\DXF\11 Bridge Analysis.dwg
PLOT DATE/TIME: 9/6/2013 10:59 AM
USER: nicole n_jones

NO.	BY	DATE	DESCRIPTION

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APPROVED: JLG	DATE: SEPT. 2013
SURVEY DATE:	
SURVEY BY:	
FIELD BOOK No.:	

THRASHER

PHASE No.

CONTRACT No.

PROJECT No.
101-030-2358

CNX GAS COMPANY LLC
CONSTRUCTION PLANS FOR THE
OXFORD 11 ACCESS ROAD AND BRIDGE
DODDRIDGE COUNTY, WEST VIRGINIA
EXISTING SITE PLAN

SHEET No.
3

COUNTY ROUTE 19/11

100 YR FLOOD ELEVATION
927.66'

SOUTH FORK
HUGHES RIVER

FLOW

LIMITS OF DISTURBANCE
0.70 ACRES

18' WIDE GRAVEL
ACCESS ROAD

PROPOSED STABILIZED
CONSTRUCTION
ENTRANCE

BEGIN ACCESS ROAD
N: 249997.1212
E:1642709.3392

COUNTY ROUTE 54/1

STREAM CROSSING
CONSPAN BRIDGE
12' X 4'
SEE DETAIL SHEET 9

SOUTH FORK
HUGHES RIVER

DELINEATED WETLAND
0.29 ACRES

61+00
62+00
63+00
64+00
65+00
65+30

LOD
CFS

20' 0 20' 40'

LAYOUT TAB: OVERALL PROPOSED SITE PLAN
CAD FILE: K:\036-2358 CNX Gas - Oxford 11 Bridge\Drawing\DXF\11 Bridge Analysis.dwg
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USER: nicole n. jones

NO.	BY	DATE	DESCRIPTION

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SURVEY DATE:	
SURVEY BY:	
FIELD BOOK No.:	

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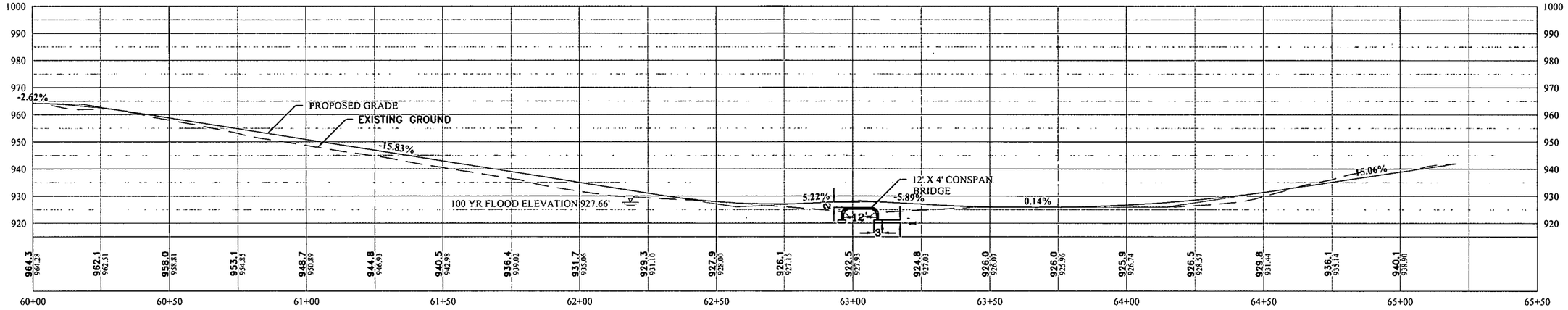
PHASE No.	
CONTRACT No.	
PROJECT No.	101-030-2358

CNX GAS COMPANY LLC
CONSTRUCTION PLANS FOR THE
OXFORD 11 ACCESS ROAD AND BRIDGE
DODDRIDGE COUNTY, WEST VIRGINIA
SITE GRADING AND E&S

SHEET No.
4

ACCESS ROAD PROFILE



20 ft.

VERT. 0

HOR. 0 20 ft.

LAYOUT Tab: PROFILE VIEW
CAD FILE: RVG01-2358 CNX Gas- Oxford 11 Bridge\Drawing\DXF011 Bridge Analysis.dwg
PLOT DATE/TIME: 9/6/2013 11:00 AM
USER: nicole n. jones

NO.	BY	DATE	DESCRIPTION

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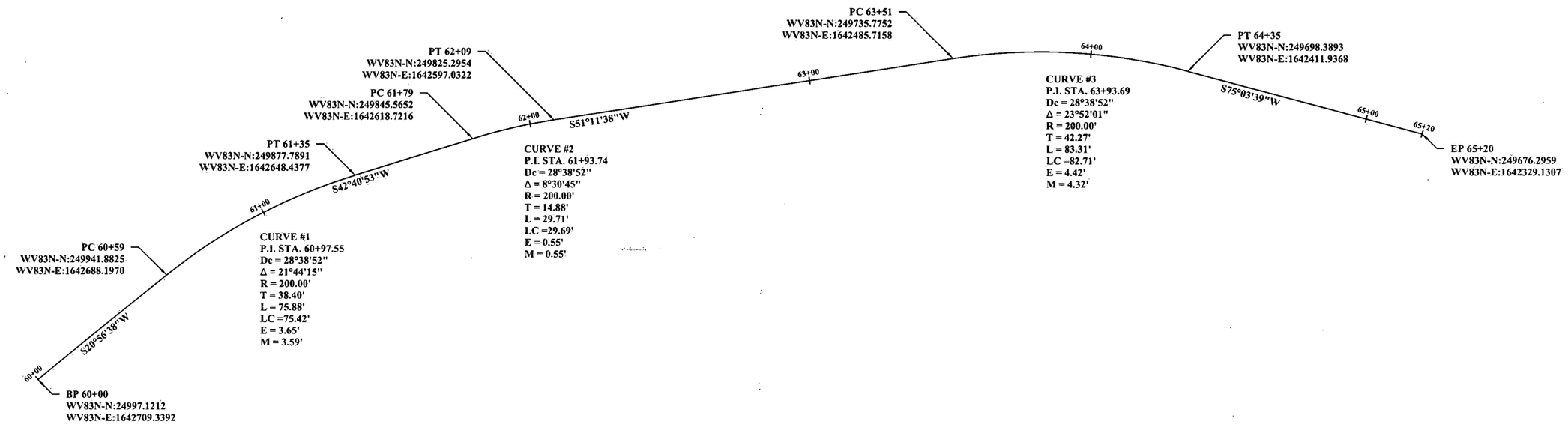
APPROVED: JLG DATE: SEPT. 2013
SURVEY DATE:
SURVEY BY:
FIELD BOOK No.:

THRASHER

PHASE No.
CONTRACT No.
PROJECT No. 101-030-2358

CNX GAS COMPANY LLC
CONSTRUCTION PLANS FOR THE
OXFORD 11 ACCESS ROAD AND BRIDGE
DODDRIDGE COUNTY, WEST VIRGINIA
ACCESS ROAD PROFILE VIEW

SHEET No. 5



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SURVEY BY:
FIELD BOOK No.:

THRASHER

PHASE No.
CONTRACT No.
PROJECT No. 101-030-2358

CNX GAS COMPANY LLC
CONSTRUCTION PLANS FOR THE
OXFORD 11 ACCESS ROAD AND BRIDGE
DODDRIDGE COUNTY, WEST VIRGINIA
GEOMETRIC LAYOUT

SHEET No. 6

LAYOUT TAB: GEOMETRIC PLAN
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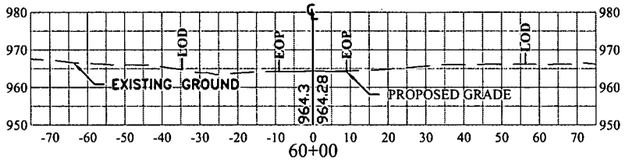
PLOT DATE/TIME: 9/6/2013 11:00 AM
USER: nicole n. jones



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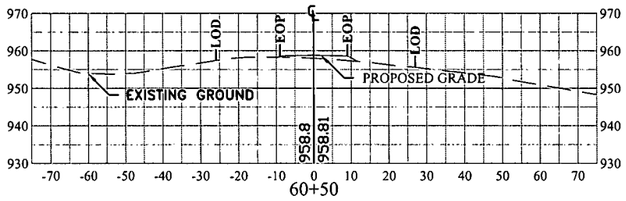

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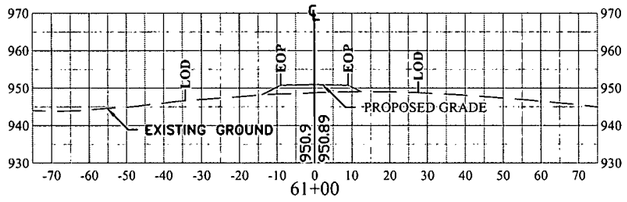

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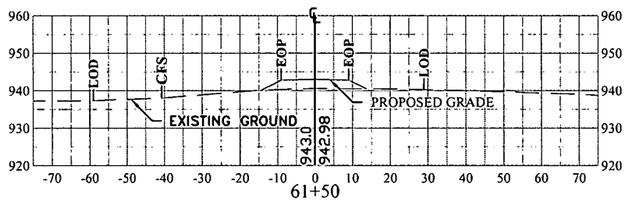

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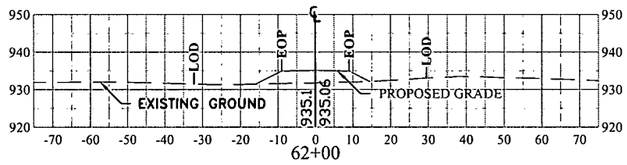

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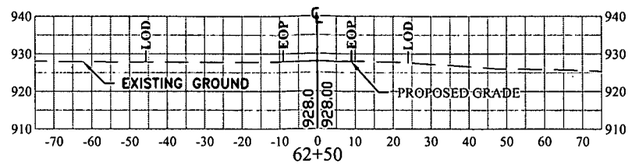

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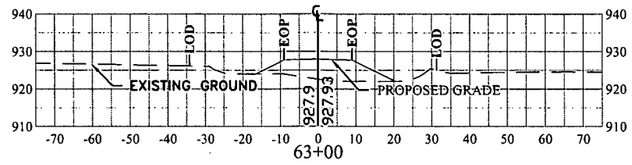

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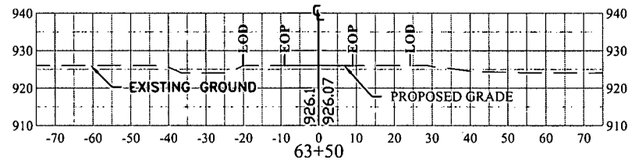

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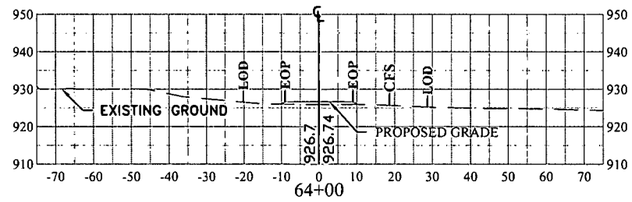

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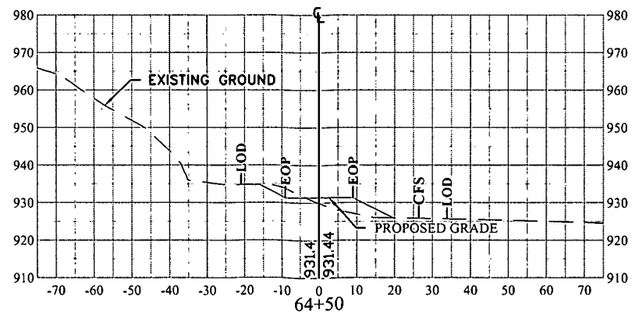

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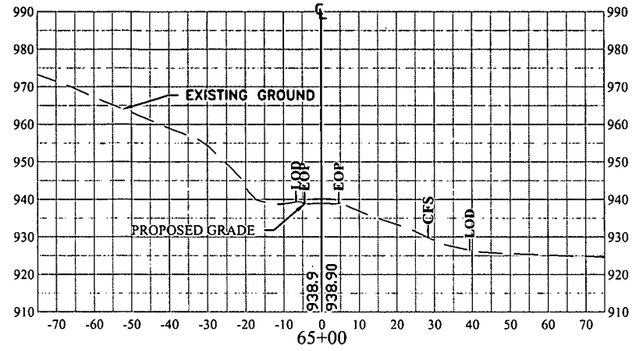
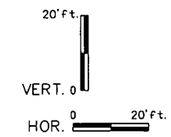


65+00

NOTE:
ALL CUT / FILL SLOPES ARE 2:1
UNLESS OTHERWISE NOTED.



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SURVEY DATE:	
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FIELD BOOK No.:	

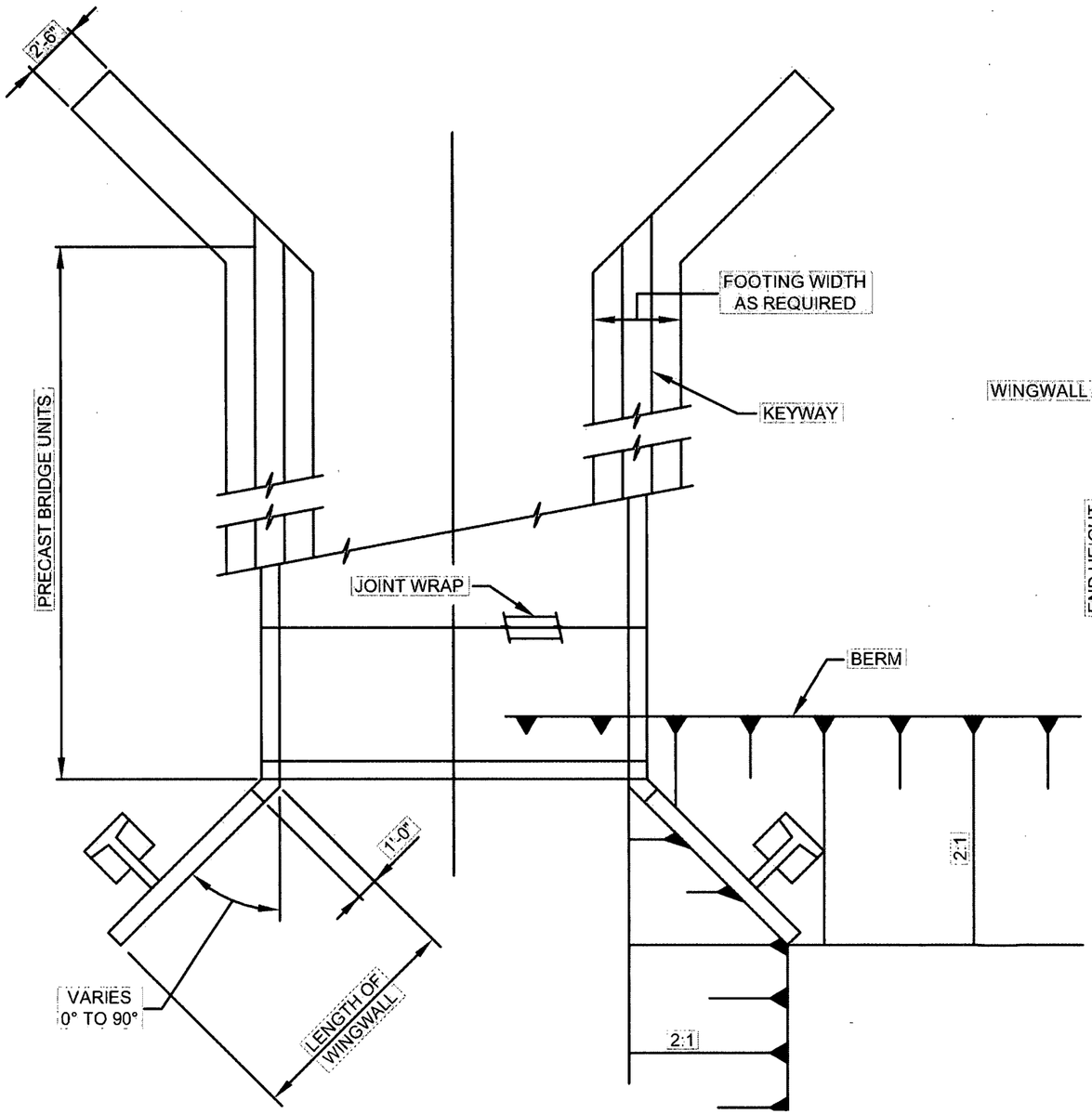
THRASHER

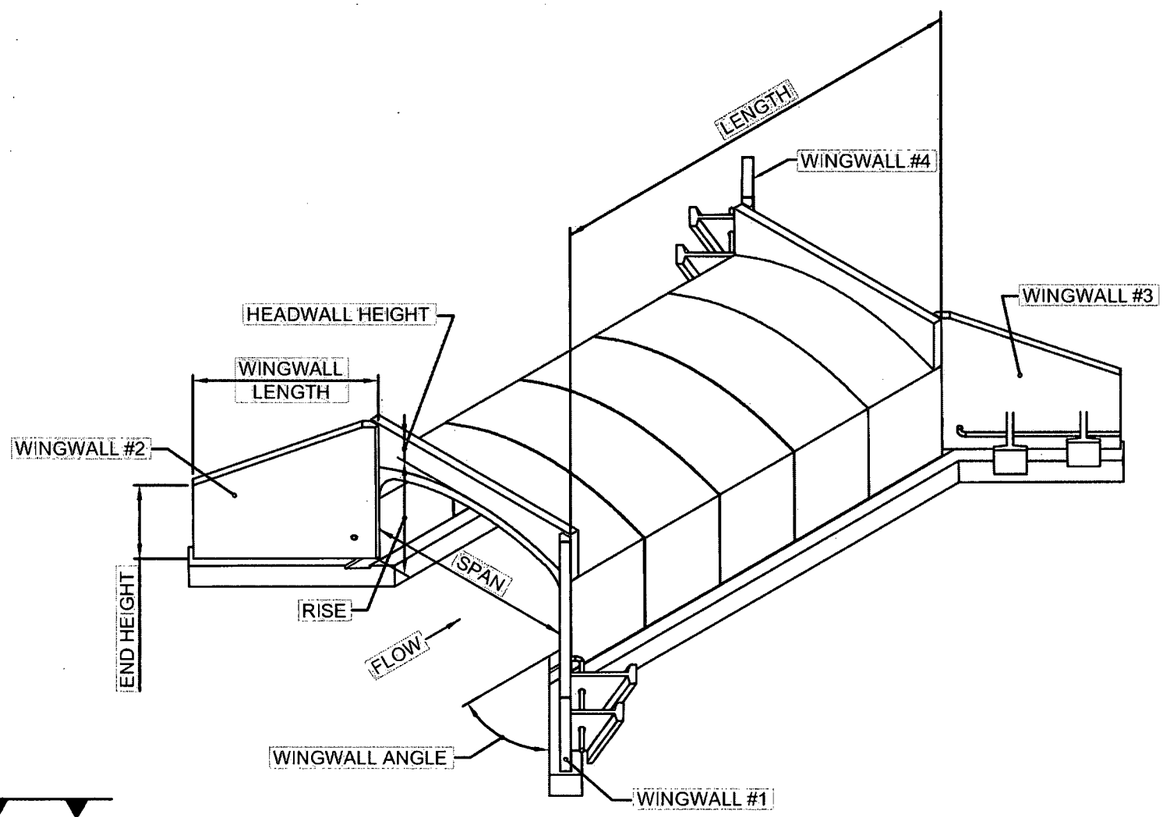
PHASE No.	
CONTRACT No.	
PROJECT No.	101-030-2358

CNX GAS COMPANY LLC
CONSTRUCTION PLANS FOR THE
OXFORD 11 ACCESS ROAD AND BRIDGE
DODDRIDGE COUNTY, WEST VIRIGINIA
ACCESS ROAD CROSS SECTIONS

SHEET No.
7

LAYOUT TAB: CROSS SECTIONS
CAD FILE: R:\030-2358 CNX Gas- Oxford 11 Bridge\Drawing\OXF011 Bridge Analysis.dwg
PLOT DATE/TIME: 9/6/2013 11:01 AM
USER: nicole n. jones





TYPICAL CONSPAN STRUCTURE

NO.	BY	DATE	DESCRIPTION

SCALE:
DRAWN: NMJ DATE: SEPT. 2013
CHECKED: JLG DATE: SEPT. 2013
APPROVED: JLG DATE: SEPT. 2013
SURVEY DATE:
SURVEY BY:
FIELD BOOK No.:

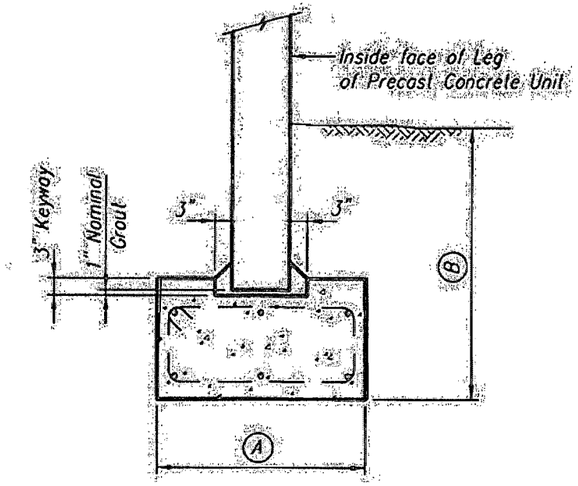
THRASHER

PHASE No.
CONTRACT No.
PROJECT No.
101-030-2358

CNX GAS COMPANY LLC
CONSTRUCTION PLANS FOR THE
OXFORD 11 ACCESS ROAD AND PROFILE
DODDRIDGE COUNTY, WEST VIRGINIA
DETAILS

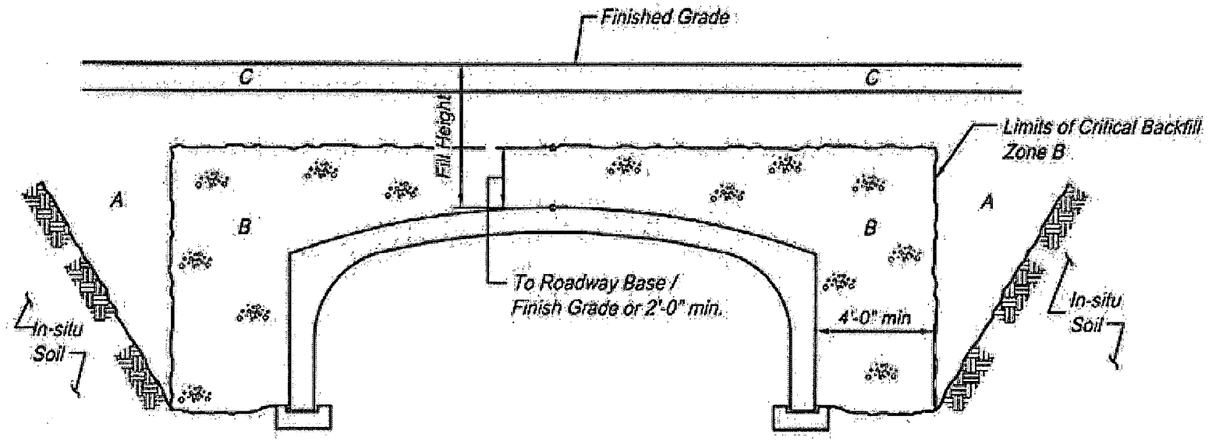
SHEET No.
8

LAYOUT TAB: DETAILS
CAD FILE: PA\030-2358 CNX Gas- Oxford 11 Bridge\Drawing\DXF\11 Bridge Analysis.dwg PLOT DATE/TIME: 9/6/2013 11:02 AM USER: nicole n. jones



Strip Footing

FOOTING DETAIL



PLAN VIEW

NO.	BY	DATE	DESCRIPTION

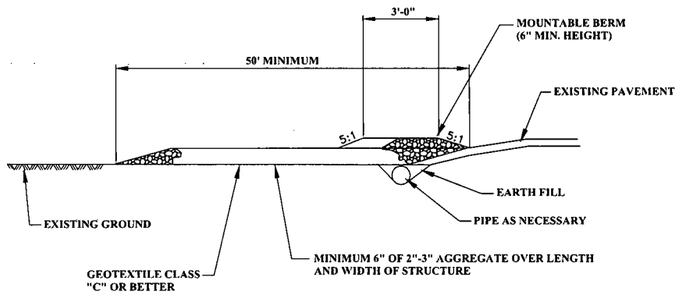
SCALE:
DRAWN: NMJ DATE: SEPT. 2013
CHECKED: JLG DATE: SEPT. 2013
APPROVED: JLG DATE: SEPT. 2013
SURVEY DATE:
SURVEY BY:
FIELD BOOK No.:

THRASHER

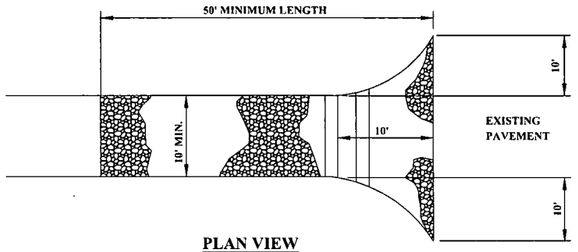
PHASE No.
CONTRACT No.
PROJECT No. 101-030-2358

CNX GAS COMPANY LLC
CONSTRUCTION PLANS FOR THE
OXFORD 11 ACCESS ROAD AND PROFILE
DODDRIDGE COUNTY, WEST VIRGINIA
DETAILS

SHEET No.
9



PROFILE VIEW



PLAN VIEW

NOTES:

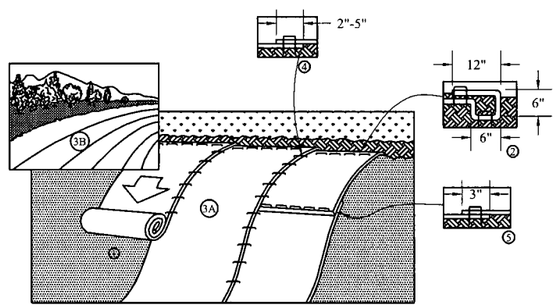
1. **LENGTH - 50' MINIMUM (30' MINIMUM FOR SINGLE RESIDENCE LOT).**
2. **WIDTH - 10' MINIMUM, SHOULD BE FLARED AT THE EXISTING ROAD TO PROVIDE A TURNING RADIUS.**
3. **GEOTEXTILE FABRIC (FILTER CLOTH) SHALL BE PLACED OVER THE EXISTING GROUND PRIOR TO PLACING STONE. THE PLAN APPROVAL AUTHORITY MAY NOT REQUIRE SINGLE FAMILY RESIDENCES TO USE GEOTEXTILE.**
4. **STONE - CRUSHER AGGREGATE (2" - 3") OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT SHALL BE PLACED AT LEAST 6" DEEP OVER THE LENGTH AND WIDTH OF THE ENTRANCE.**
5. **SURFACE WATER - ALL SURFACE WATER FLOWING TO OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED THROUGH THE ENTRANCE MAINTAINING POSITIVE DRAINAGE. PIPE INSTALLED THROUGH THE STABILIZED CONSTRUCTION ENTRANCE SHALL BE PROTECTED WITH A MOUNTABLE BERM WITH 5:1 SLOPES AND A MINIMUM OF 6" OF STONE OVER THE PIPE. PIPE MUST BE SIZED ACCORDING TO THE DRAINAGE AND THE AMOUNT OF RUN OFF TO BE CONVEYED. A 6" DIAMETER MINIMUM WILL BE REQUIRED. WHEN THE STABILIZED CONSTRUCTION ENTRANCE IS LOCATED AT A HIGH SPOT AND HAS NO DRAINAGE TO CONVEY A PIPE WILL NOT BE NECESSARY.**
6. **LOCATION - A STABILIZED CONTRACTION ENTRANCE SHALL BE LOCATED AT EVERY POINT WHERE CONSTRUCTION TRAFFIC ENTERS OR LEAVES A CONSTRUCTION SITE. VEHICLES LEAVING THE SITE MUST TRAVEL THE ENTIRE LENGTH OF THE STABILIZED CONSTRUCTION ENTRANCE.**

STABILIZED CONSTRUCTION ENTRANCE
NOT TO SCALE

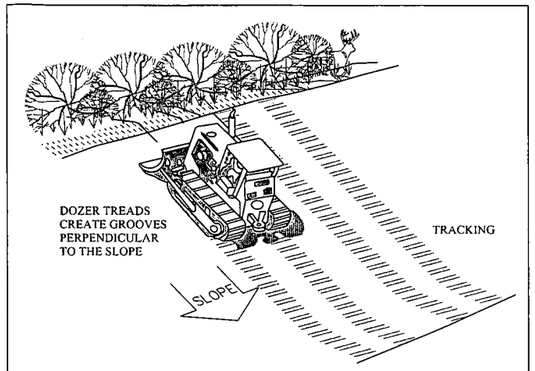
CONSTRUCTION NOTES:

1. INSTALL ON ALL CONSTRUCTED SLOPES WHERE THE SLOPE IS 3:1 OR STEEPER.
2. PREPARE SOIL BEFORE INSTALLING ROLLED EROSION CONTROL PRODUCTS (RECP's), INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED. NOTE: WHEN USING CELL-O-SEED DO NOT SEED PREPARED AREA. CELL-O-SEED MUST BE INSTALLED WITH PAPER SIDE DOWN.
3. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE RECP's IN A 6" DEEP X 6" WIDE TRENCH WITH APPROXIMATELY 12" OF RECP's EXTENDED BEYOND THE UP-SLOPE PORTION OF THE TRENCH. ANCHOR THE RECP's WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" PORTION OF RECP's BACK OVER SEED AND COMPACTED SOIL. SECURE RECP's OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" APART ACROSS THE WIDTH OF THE RECP's.
4. ROLL THE RECP's (A.) DOWN OR (B.) HORIZONTALLY ACROSS THE SLOPE. RECP's WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL RECP's MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE. WHEN USING THE DOT SYSTEM, STAPLES/STAKES SHOULD BE PLACED THROUGH EACH OF THE COLORED DOTS CORRESPONDING TO THE APPROPRIATE STAPLE PATTERN.
5. THE EDGES OF PARALLEL RECP's MUST BE STAPLED WITH APPROXIMATELY 2" - 5" OVERLAP DEPENDING ON RECP's TYPE.
6. CONSECUTIVE RECP's SPLICED DOWN THE SLOPE MUST BE PLACED END OVER END (SHINGLE STYLE) WITH AN APPROXIMATE 3" OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" APART ACROSS ENTIRE RECP's WIDTH.

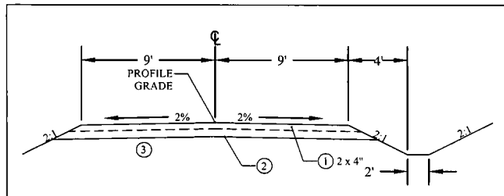
NOTE: *IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" MAY BE NECESSARY TO PROPERLY SECURE THE RECP's.



EROSION CONTROL MATTING FOR SLOPES DETAIL
NOT TO SCALE

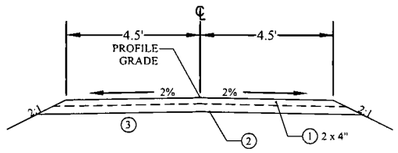


TRACKING A CONSTRUCTED SLOPE
NOT TO SCALE



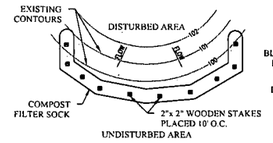
LEGEND
1. AGGREGATE BASE COURSE, I-1/2" CRUSH AND RUN
2. FABRIC FOR SEPARATION
3. COMPACTED SUBGRADE (EXISTING GROUND)

ACCESS ROAD TYPICAL SECTION
STA. 60+00 - STA. 64+60
NOT TO SCALE

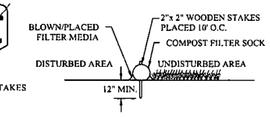


LEGEND
1. AGGREGATE BASE COURSE, I-1/2" CRUSH AND RUN
2. FABRIC FOR SEPARATION
3. COMPACTED SUBGRADE (EXISTING GROUND)

ACCESS ROAD TYPICAL SECTION
STA. 64+91.43 - STA. 65+20.43
NOT TO SCALE



PLAN VIEW



SECTION VIEW

COMPOST SHALL MEET THE FOLLOWING STANDARDS:	
ORGANIC MATTER CONTENT	80% - 100% (DRY WEIGHT BASIS)
ORGANIC PORTION	FIBROUS AND ELONGATED
pH	5.5 - 8.0
MOISTURE CONTENT	35% - 55%
PARTICLE SIZE	98% PASS THROUGH 1" SCREEN
SOLUBBLE SALT CONCENTRATION	5.0 dS MAXIMUM

COMPOST FILTER SOCK TO BE INSTALLED IN ACCORDANCE WITH FILTREXX MANUFACTURER SPECIFICATIONS, OR AN APPROVED EQUAL.

COMPOST FILTER SOCK SHALL BE PLACED AT EXISTING LEVEL GRADE. BOTH ENDS OF THE SOCK SHALL BE EXTENDED AT LEAST 8' UP SLOPE AT 45° TO THE MAIN SOCK ALIGNMENT. MAXIMUM SLOPE LENGTH ABOVE ANY DIAMETER SOCK SHALL NOT EXCEED THAT SHOWN ON BELOW TABLE.

TRAFFIC SHALL NOT BE PERMITTED TO CROSS FILTER SOCKS.

ACCUMULATED SEDIMENT SHALL BE REMOVED WHEN IT REACHES 1/2 THE ABOVE GROUND HEIGHT OF THE SOCK AND DISPOSED IN THE MANNER DESCRIBED ELSEWHERE IN THE PLAN.

SOCKS SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT. DAMAGED SOCKS SHALL BE REPAIRED ACCORDING TO MFR. SPECIFICATIONS OR REPLACED ACCORDING TO MFR. RECOMMENDATIONS.

BIODEGRADABLE FILTER SOCK SHALL BE REPLACED AFTER 6 MONTHS; PHOTODEGRADABLE SOCKS AFTER 1YR. POLYPROPYLENE SOCKS SHALL BE REPLACED ACCORDING TO MFR. RECOMMENDATIONS.

UPON STABILIZATION OF THE AREA TRIBUTARY TO THE SOCK, STAKES SHALLBE REMOVED. THE SOCK MAY BE LEFT IN PLACE AND VEGETATED OR REMOVED. IN THE LATTER CASE THE MESH SHALL BE CUT OPEN AND THE MUCH SPREAD AS A SOIL SUPPLEMENT.

REPRODUCED FROM *FILTREXX LOW IMPACT DESIGN MANUAL* PAGE 324.

Slope Percent	Maximum Slope Length Above Sediment Control in Feet (Meters) *				
	8-IN (200-mm) Sediment Control 6.5-IN (160-mm) **	12-IN (300-mm) Sediment Control 9.5-IN (240-mm) **	18-IN (450-mm) Sediment Control 14.5-IN (360-mm) **	24-IN (600-mm) Sediment Control 19-IN (480-mm) **	32-IN (800-mm) Sediment Control 26-IN (650-mm) **
2 (or less)	600 (180)	750 (225)	1000 (300)	1300 (400)	1650 (500)
5	400 (120)	500 (150)	550 (165)	650 (200)	750 (225)
10	200 (60)	250 (75)	300 (90)	400 (120)	500 (150)
15	140 (40)	170 (50)	200 (60)	325 (100)	450 (140)
20	100 (30)	125 (38)	140 (42)	260 (80)	400 (120)
25	80 (24)	100 (30)	110 (33)	200 (60)	275 (85)
30	60 (18)	75 (23)	90 (27)	130 (40)	200 (60)
35	60 (18)	75 (23)	80 (24)	115 (35)	150 (45)
40	60 (18)	75 (23)	80 (24)	100 (30)	125 (38)
45	40 (12)	50 (15)	60 (18)	80 (24)	100 (30)
50	40 (12)	50 (15)	55 (17)	65 (20)	75 (23)

* Based on a failure point of 36-IN (0.9-m) super silt fence (wire reinforced) at 1000-FT (303-m) of slope, watershed width equivalent to receiving length of sediment control device, 1-IN/24-HR (25-mm/24-HR) rain event.

** Effective height of Sediment Control after installation and with constant head from runoff as determined by Ohio State University.

RESTRICTIONS
(1) FILTER FABRIC FENCE WILL NOT BE PLACED IN ANY AREA OF CONCENTRATED FLOWS SUCH AS SWALES, DITCHES, CHANNELS, ETC.
(2) FILTER FABRIC FENCES WILL NOT BE USED IN AREA WHERE ROCK OR ROCKY SOILS PREVENT THE FULL AND UNIFORM ANCHORING OF THE FENCE TOE.
(3) FILTER FABRIC MATERIAL WILL NOT BE PLACED ACROSS THE ENTRANCES TO PIPES OR CULVERTS AND WILL NOT BE WRAPPED AROUND THE PRINCIPAL SPILLWAY STRUCTURES OF SEDIMENT TRAPS OR BASINS.

INSTALLATION
(1) A TRENCH WILL BE PLOWED OR OTHERWISE EXCAVATED TO THE REQUIRED DEPTH WITH LITTLE, IF ANY DISTURBANCE TO THE DOWNSLOPE SIDE OF THE TRENCH. THE BOTTOM OF THE TRENCH BOTTOM AND FENCE TOP EDGE MAY DEVIATE SLIGHTLY FROM THE LEVEL GRADE.

COMPOST FILTER SOCK DETAILS
NOT TO SCALE

NO.	BY	DATE	DESCRIPTION

SCALE:
DRAWN: NMJ DATE: SEPT. 2013
CHECKED: JLG DATE: SEPT. 2013
APPROVED: JLG DATE: SEPT. 2013
SURVEY DATE:
SURVEY BY:
FIELD BOOK No.:

THRASHER

PHASE No.
CONTRACT No.
PROJECT No. 101-030-2358

CNX GAS COMPANY LLC
CONSTRUCTION PLANS FOR THE
OXFORD 11 ACCESS ROAD AND BRIDGE
DODDRIDGE COUNTY, WEST VIRGINIA
DETAILS

SHEET No. 10

LAYOUT TAB: JG-Details
CAD FILE: K:\000-2358 CNX Gas- Oxford 11 Bridge\Drawing\000-GENERAL NOTES.dwg PLOT DATE/TIME: 9/6/2013 11:06 AM USER: nicole.m. jones