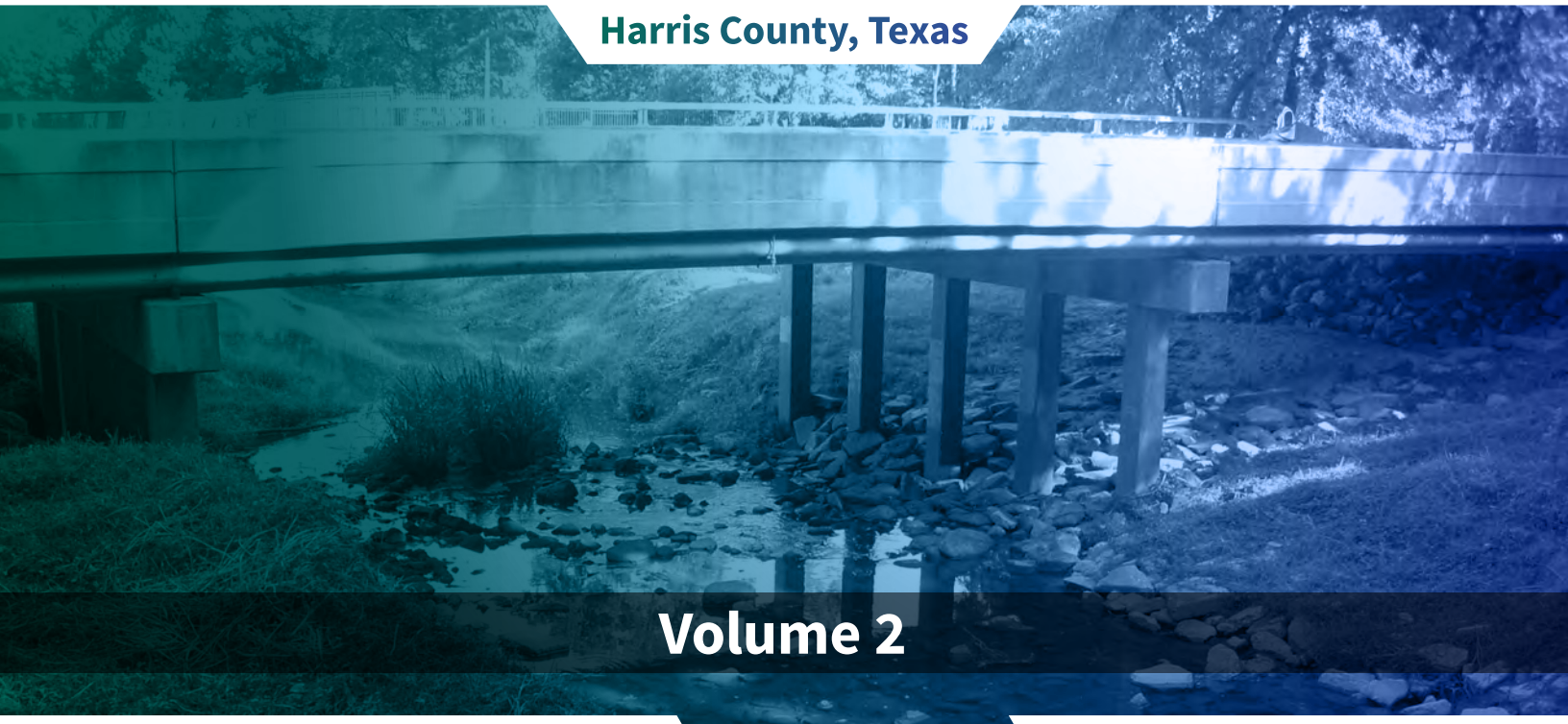
Kingwood Drainage Study

Conceptual Watershed Plan for Flood Damage Reduction in Kingwood

HCFCD Project ID#: Z100-00-00-P027
Bond Program Map ID F-14

Harris County, Texas



Volume 2

Project No. 15327.000

July **2020**

Prepared for

HARRIS COUNTY FLOOD CONTROL DISTRICT

CITY OF HOUSTON TEXAS

Lake Houston Redevelopment Authority TIRZ #10

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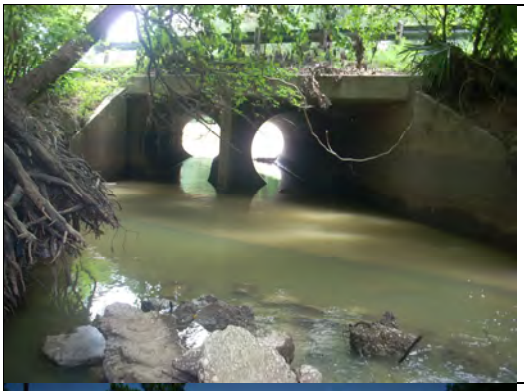
FIRM Registration No. **2697**

APPENDIX A

PHOTO LOG

SITE PHOTOGRAPHS DOCUMENTATION FORM
Kingwood Drainage Study

	**Photo #:** 1	**Photo Date:** 7/22/19
	Location: Northpark Drive	
	Description: G103-33-00 culvert crossing Northpark Drive.	
	**Photo #:** 2	**Photo Date:** 7/24/19
	Location: Woodland Hills Drive	
	Description: G103-33-00 bridge crossing at Woodland Hills Drive.	
	**Photo #:** 3	**Photo Date:** 7/24/19
	Location: Woodland Hills Drive	
	Description: G103-33-00 looking downstream.	
	**Photo #:** 4	**Photo Date:** 7/24/19
	Location: Woodland Hills Drive	
	Description: G103-33-00 bridge crossing	

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SITE PHOTOGRAPHS DOCUMENTATION FORM
Kingwood Drainage Study



Photo #: 5	**Photo Date:** 10/18/19
Location: Pedestrian crossing upstream of Tree Lane	
Description: G103-33-00 pedestrian low flow culvert crossing.	



Photo #: 6	**Photo Date:** 10/18/19
Location: Pedestrian crossing upstream of Tree Lane	
Description: G103-33-00 culvert crossing upstream.	



Photo #: 7	**Photo Date:** 10/18/19
Location: Pedestrian crossing upstream of Tree Lane	
Description: G103-33-00 looking upstream of the pedestrian culvert crossing.	



Photo #: 8	**Photo Date:** 10/18/19
Location: Pedestrian crossing upstream of Tree Lane	
Description: G103-33-00 looking downstream of the pedestrian culvert crossing.	

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SITE PHOTOGRAPHS DOCUMENTATION FORM	
Kingwood Drainage Study	

	**Photo #:** 9	**Photo Date:** 7/24/19
	Location: Tree Lane	
	Description: G103-33-00 bridge crossing at Tree lane.	
	**Photo #:** 10	**Photo Date:** 7/24/19
	Location: Kingwood Drive	
	Description: G103-33-00 eastbound bridge crossing.	
	**Photo #:** 11	**Photo Date:** 7/24/19
	Location: Kingwood Drive	
	Description: G103-33-00 westbound bridge crossing.	
	**Photo #:** 12	**Photo Date:** 7/24/19
	Location: Kingwood Drive	
	Description: G103-33-00 looking upstream.	

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Kingwood Drainage Study



Photo #: 13	**Photo Date:** 7/24/19
Location: West Lake Houston Parkway	
Description: G103-33-00 lookup upstream.	



Photo #: 14	**Photo Date:** 7/24/19
Location: West Lake Houston Parkway	
Description: G103-33-00 bridge looking downstream.	

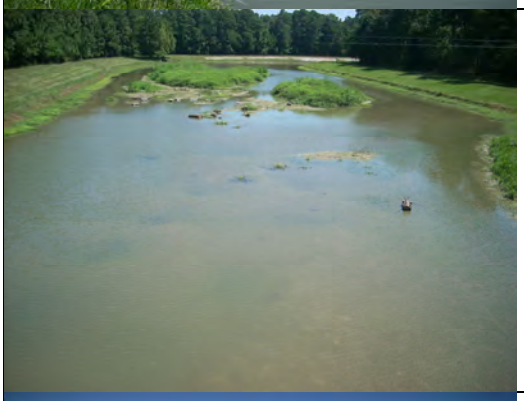

Photo #: 15	**Photo Date:** 7/24/19
Location: West Lake Houston Parkway	
Description: G103-33-00 looking downstream.	



Photo #: 16	**Photo Date:** 7/24/19
Location: West Lake Houston Parkway	
Description: G103-33-00 bridge crossing looking upstream.	

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SITE PHOTOGRAPHS DOCUMENTATION FORM
Kingwood Drainage Study

	**Photo #:** 17	**Photo Date:** 7/24/19
	Location: Park Garden Drive	
	Description: G103-33-01 looking downstream.	
	**Photo #:** 18	**Photo Date:** 7/24/19
	Location: Park Garden Drive	
	Description: G103-33-01 pedestrian bridge at Park Garden Drive looking upstream.	
	**Photo #:** 19	**Photo Date:** 7/24/19
	Location: Sandy Forks Drive	
	Description: G103-33-01 looking downstream.	
	**Photo #:** 20	**Photo Date:** 7/24/19
	Location: Sandy Forks Drive	
	Description: G103-33-02 bridge crossing looking downstream.	

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Kingwood Drainage Study

	**Photo #:** 21	**Photo Date:** 7/22/19
	Location: Kingwood Drive	
	Description: G103-33-04 looking upstream.	
	**Photo #:** 22	**Photo Date:** 7/22/19
	Location: Kingwood Drive	
	Description: G103-33-04 culvert crossing looking upstream.	
	**Photo #:** 23	**Photo Date:** 7/22/19
	Location: Kingwood Drive	
	Description: G103-33-04 culvert crossing looking upstream.	
	**Photo #:** 24	**Photo Date:** 7/22/19
	Location: Kingwood Drive	
	Description: G103-33-04 looking downstream.	

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SITE PHOTOGRAPHS DOCUMENTATION FORM
Kingwood Drainage Study

	**Photo #:** 25	**Photo Date:** 7/23/19
	Location: Kingwood Drive	
	Description: G103-36-00 looking upstream.	
	**Photo #:** 26	**Photo Date:** 7/23/19
	Location: Kingwood Drive	
	Description: G103-36-00 looking downstream.	
	**Photo #:** 27	**Photo Date:** 7/23/19
	Location: Kingwood Drive	
	Description:	
	**Photo #:** 28	**Photo Date:** 7/23/19
	Location: Club of Kingwood Golf Course	
	Description: Pedestrian bridge along G103-36-00	

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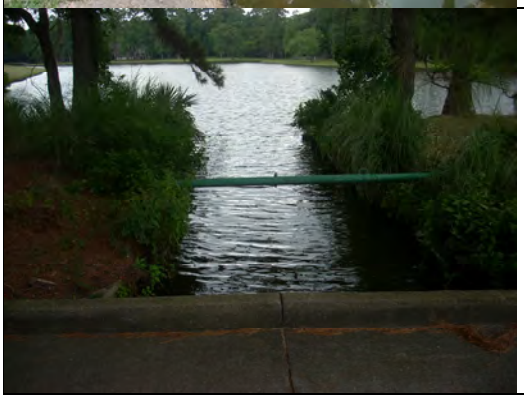
SITE PHOTOGRAPHS DOCUMENTATION FORM
Kingwood Drainage Study

	**Photo #:** 29	**Photo Date:** 7/23/19
	Location: Clubs of Kingwood Golf Course	
	Description: G103-36-00 looking upstream.	
	**Photo #:** 30	**Photo Date:** 7/23/19
	Location: Clubs of Kingwood Golf Course	
	Description: Pedestrian bridge crossing along G103-36-00 looking downstream.	
	**Photo #:** 31	**Photo Date:** 7/23/19
	Location: Clubs of Kingwood Golf Course	
	Description: Pedestrian bridge crossing along G103-36-00.	
	**Photo #:** 32	**Photo Date:** 7/23/19
	Location: Clubs of Kingwood Golf Course	
	Description: G103-36-00 looking upstream.	

SITE PHOTOGRAPHS DOCUMENTATION FORM
Kingwood Drainage Study

	**Photo #:** 33	**Photo Date:** 7/23/19
	Location: Clubs of Kingwood Golf Course	
	Description: Bridge crossing along G103-36-00.	
	**Photo #:** 34	**Photo Date:** 7/23/19
	Location: Clubs of Kingwood Golf Course	
	Description: G103-36-00 looking downstream.	
	**Photo #:** 35	**Photo Date:** 7/23/19
	Location: Kingwood Drive	
	Description: G103-36-01 culvert crossing along Kingwood Drive.	
	**Photo #:** 36	**Photo Date:** 7/23/19
	Location: Kingwood Drive	
	Description: G103-36-01 culvert crossing along Kingwood Drive looking upstream.	

SITE PHOTOGRAPHS DOCUMENTATION FORM	
Kingwood Drainage Study	

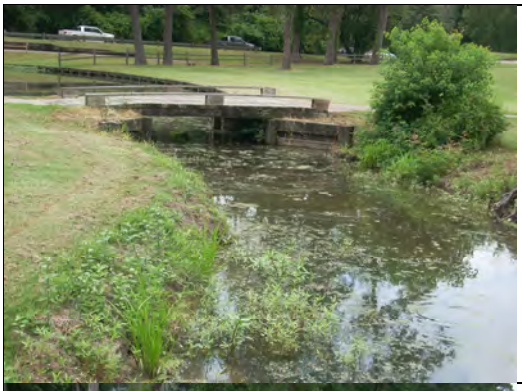


Photo #: 37	**Photo Date:** 7/23/19
Location: Clubs of Kingwood Golf Course	
Description: Pedestrian bridge crossing over G103-36-01.	



Photo #: 38	**Photo Date:** 7/23/19
Location: Clubs of Kingwood Golf Course	
Description: G103-36-01 looking downstream.	



Photo #: 39	**Photo Date:** 7/23/19
Location: Kingwood Drive	
Description: G103-36-02.1 culvert crossing looking downstream.	



Photo #: 40	**Photo Date:** 7/23/19
Location: Kingwood Drive	
Description: G103-36-02.1 culvert crossing looking upstream.	

SITE PHOTOGRAPHS DOCUMENTATION FORM	
Kingwood Drainage Study	

	**Photo #:** 41	**Photo Date:** 7/23/19
	Location: Kingwood Drive	
	Description: G103-36-02.1 looking downstream.	
	**Photo #:** 42	**Photo Date:** 7/23/19
	Location: Royal Circle Drive	
	Description: G103-36-03 culvert crossing looking upstream.	
	**Photo #:** 43	**Photo Date:** 7/23/19
	Location: Kingwood Drive	
	Description: G103-36-03 culvert crossing westbound lanes looking upstream.	
	**Photo #:** 44	**Photo Date:** 7/23/19
	Location: Kingwood Drive	
	Description: G103-36-03 culvert crossing eastbound lanes looking upstream.	

SITE PHOTOGRAPHS DOCUMENTATION FORM	
Kingwood Drainage Study	

	**Photo #:** 45	**Photo Date:** 7/23/19
	Location: Clubs of Kingwood Golf Course	
	Description: Pedestrian bridge over G103-36-03.	
	**Photo #:** 46	**Photo Date:** 7/24/19
	Location: Northpark Drive	
	Description: G103-38-00 bridge crossing looking downstream.	
	**Photo #:** 47	**Photo Date:** 7/24/19
	Location: Northpark Drive	
	Description: G103-38-00 bridge crossing looking upstream.	
	**Photo #:** 48	**Photo Date:** 7/24/19
	Location: Northpark Drive	
	Description: G103-38-00 looking downstream.	

SITE PHOTOGRAPHS DOCUMENTATION FORM	
Kingwood Drainage Study	

	**Photo #:** 49	**Photo Date:** 7/24/19
	Location: Kingwood Drive	
	Description: Bridge crossing G103-38-00 looking downstream	
	**Photo #:** 50	**Photo Date:** 7/24/19
	Location: Kingwood Drive	
	Description: Eastbound bridge crossing G103-38-00 looking upstream.	
	**Photo #:** 51	**Photo Date:** 7/24/19
	Location: Kingwood Drive	
	Description: G103-38-00 looking downstream.	
	**Photo #:** 52	**Photo Date:** 7/24/19
	Location: Lake Village Drive	
	Description: Pedestrian bridge crossing G103-38-00 looking upstream.	

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SITE PHOTOGRAPHS DOCUMENTATION FORM
Kingwood Drainage Study



Photo #: 53	**Photo Date:** 7/24/19
Location: Walnut Lane	
Description: Bridge crossing G103-38-00 looking upstream.	



Photo #: 54	**Photo Date:** 7/24/19
Location: Walnut Lane	
Description: G103-38-00 looking downstream.	



Photo #: 55	**Photo Date:** 7/24/19
Location: Deer Springs Drive	
Description: Bridge crossing G103-38-00 looking upstream.	



Photo #: 56	**Photo Date:** 7/24/19
Location: Woodland Hills Drive	
Description: Culvert crossing G103-38-00 looking upstream.	

SITE PHOTOGRAPHS DOCUMENTATION FORM
Kingwood Drainage Study

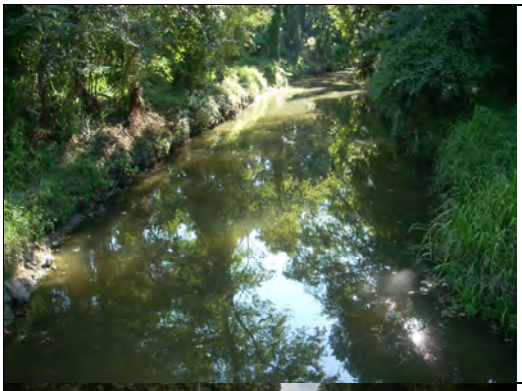


Photo #: 57	**Photo Date:** 7/24/19
Location: Woodland Hills Drive	
Description: G103-38-00 looking downstream.	



Photo #: 58	**Photo Date:** 7/22/19
Location: Players Path	
Description: G103-38-01 looking downstream.	



Photo #: 59	**Photo Date:** 7/22/19
Location: Players Path	
Description: G103-38-01 culvert crossing looking upstream.	



Photo #: 60	**Photo Date:** 7/22/19
Location: Chestnut Ridge Road	
Description: G103-38-01 culvert crossing looking downstream.	

SITE PHOTOGRAPHS DOCUMENTATION FORM	
Kingwood Drainage Study	



Photo #: 61	**Photo Date:** 7/22/19
Location: Chestnut Ridge Road	
Description: G103-38-01 looking downstream.	



Photo #: 62	**Photo Date:** 7/22/19
Location: Greenberry Drive	
Description: G103-38-02 culvert crossing looking downstream.	



Photo #: 63	**Photo Date:** 7/22/19
Location: Hamblen Road	
Description: G103-39-00 looking downstream.	



Photo #: 64	**Photo Date:** 7/22/19
Location: Hamblen Road	
Description: G103-39-00 culvert crossing looking downstream.	

SITE PHOTOGRAPHS DOCUMENTATION FORM	
Kingwood Drainage Study	

	**Photo #:** 65	**Photo Date:** 7/22/19
	Location: Sunrise Trail	
	Description: G103-39-00 looking downstream.	
	**Photo #:** 66	**Photo Date:** 7/22/19
	Location: Sunrise Trail	
	Description: G103-39-00 culvert crossing looking downstream.	
	**Photo #:** 67	**Photo Date:** 7/22/19
	Location: Hamblen Road	
	Description: G103-45-00 looking downstream.	
	**Photo #:** 68	**Photo Date:** 7/22/19
	Location: Hamblen Road	
	Description: G103-45-00 culvert crossing looking downstream.	

SITE PHOTOGRAPHS DOCUMENTATION FORM	
Kingwood Drainage Study	

	**Photo #:** 69	**Photo Date:** 7/22/19
	Location: Hamblen Road	
	Description: G103-46-00 looking downstream	
	**Photo #:** 70	**Photo Date:** 7/22/19
	Location: Hamblen Road	
	Description: G103-46-00 culvert crossing looking downstream.	
	**Photo #:** 71	**Photo Date:** 7/22/19
	Location: Forest Cove Drive	
	Description: G103-46-00 culvert crossing looking downstream.	
	**Photo #:** 72	**Photo Date:** 7/22/19
	Location: Mistletoe Lane	
	Description: G103-46-01 culvert crossing looking upstream.	

SITE PHOTOGRAPHS DOCUMENTATION FORM	
Kingwood Drainage Study	



Photo #: 73	**Photo Date:** 7/22/19
Location: Walnut Lane	
Description: G103-46-01 culvert crossing looking upstream.	



Photo #: 74	**Photo Date:** 7/22/19
Location: Magnolia Lane	
Description: G103-46-01 culvert crossing looking downstream.	



Photo #: 75	**Photo Date:** 7/22/19
Location: Sycamore Lane	
Description: G103-46-01 culvert crossing looking downstream.	



Photo #: 76	**Photo Date:** 7/22/19
Location: Cypress Lane	
Description: G103-46-01 culvert crossing looking downstream.	

SITE PHOTOGRAPHS DOCUMENTATION FORM
Kingwood Drainage Study



Photo #: 77	**Photo Date:** 9/20/19
Location: Hidden Lakes Drive	
Description: G103-80-04 bridge crossing looking downstream.	



Photo #: 78	**Photo Date:** 9/20/19
Location: Between Hidden Lakes Drive and High Valley Drive	
Description: G103-80-04 looking downstream.	



Photo #: 79	**Photo Date:** 9/20/19
Location: Upstream of High Valley Drive	
Description: G103-80-04 looking downstream.	

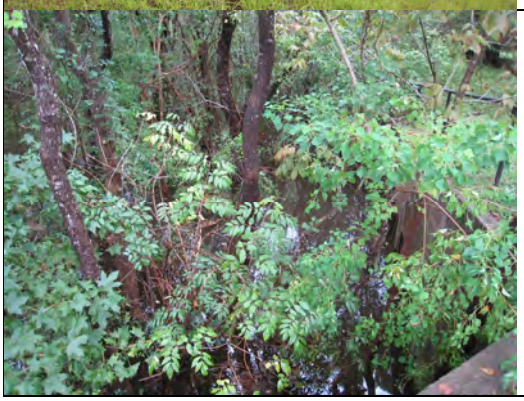
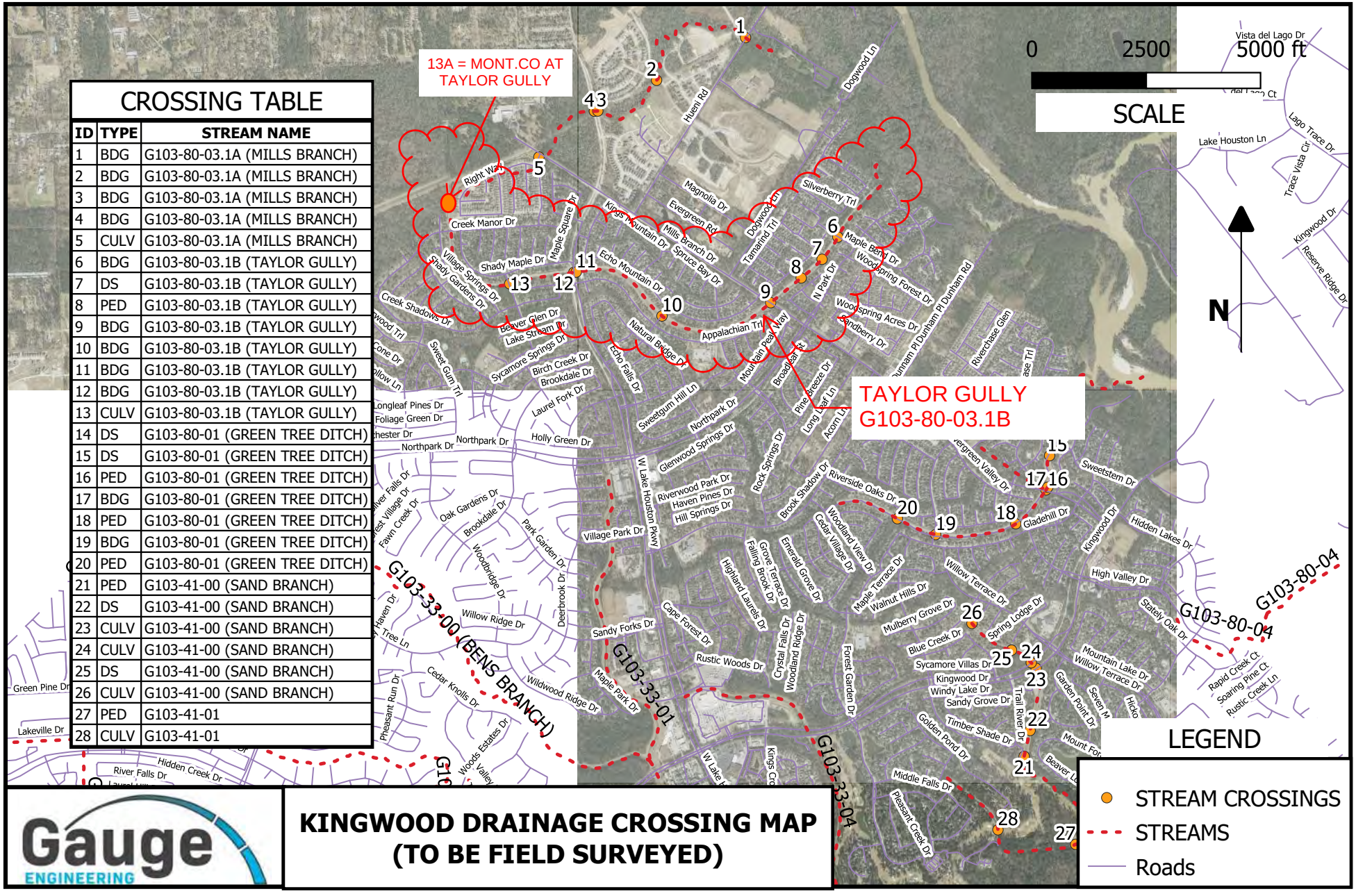


Photo #: 80	**Photo Date:** 9/20/19
Location: Downstream of High Valley Drive	
Description: G103-80-04 looking downstream.	



CROSSING TABLE

ID	TYPE	STREAM NAME
1	BDG	G103-80-03.1A (MILLS BRANCH)
2	BDG	G103-80-03.1A (MILLS BRANCH)
3	BDG	G103-80-03.1A (MILLS BRANCH)
4	BDG	G103-80-03.1A (MILLS BRANCH)
5	CULV	G103-80-03.1A (MILLS BRANCH)
6	BDG	G103-80-03.1B (TAYLOR GULLY)
7	DS	G103-80-03.1B (TAYLOR GULLY)
8	PED	G103-80-03.1B (TAYLOR GULLY)
9	BDG	G103-80-03.1B (TAYLOR GULLY)
10	BDG	G103-80-03.1B (TAYLOR GULLY)
11	BDG	G103-80-03.1B (TAYLOR GULLY)
12	BDG	G103-80-03.1B (TAYLOR GULLY)
13	CULV	G103-80-03.1B (TAYLOR GULLY)
14	DS	G103-80-01 (GREEN TREE DITCH)
15	DS	G103-80-01 (GREEN TREE DITCH)
16	PED	G103-80-01 (GREEN TREE DITCH)
17	BDG	G103-80-01 (GREEN TREE DITCH)
18	PED	G103-80-01 (GREEN TREE DITCH)
19	BDG	G103-80-01 (GREEN TREE DITCH)
20	PED	G103-80-01 (GREEN TREE DITCH)
21	PED	G103-41-00 (SAND BRANCH)
22	DS	G103-41-00 (SAND BRANCH)
23	CULV	G103-41-00 (SAND BRANCH)
24	CULV	G103-41-00 (SAND BRANCH)
25	DS	G103-41-00 (SAND BRANCH)
26	CULV	G103-41-00 (SAND BRANCH)
27	PED	G103-41-01
28	CULV	G103-41-01

Gauge ENGINEERING

KINGWOOD DRAINAGE CROSSING MAP (TO BE FIELD SURVEYED)

Taylor Gully at Maple Bend



Fig 6.1- DS – Looking US



Fig 6.2 - DS Looking US

Taylor Gully at Maple Bend



Fig 6.3- DS Channel



Fig 6.4-DS Channel

Taylor Gully at Maple Bend



Fig 6.5-Near Natural Channel outfall



Fig 6.6- Looking upstream towards Drop Structure

TAYLOR GULLY DROP STRUCTRE



Fig 7.1- DS – Looking US at drop



Fig 7.2 - DS Looking US at drop

TAYLOR GULLY DROP STRUCTRE



Fig 7.3- Transition from Trapezoid channel to rectangular before drop



Fig 7.4-At US side of Drop

TAYLOR GULLY DROP STRUCTRE



Fig 7.5-Looking downstream of drop structure



Fig 7.6- Looking upstream towards Turtle Bridge (Pedestrian)

TAYLOR GULLY AT TURTLE BRIDGE



Fig 8.1- DS – Looking US



Fig 8.2 - US Looking South

TAYLOR GULLY AT TURTLE BRIDGE



Fig 8.3- North Abutment



Fig 8.4-DS-Side Looking South

TAYLOR GULLY AT MILLS BRANCH ROAD



Fig 9.1- DS – Looking US



Fig 9.2 – DS Looking US

TAYLOR GULLY AT MILLS BRANCH ROAD



Fig 9.3- US Looking South



Fig 9.4-US-Looking South

TAYLOR GULLY AT MILLS BRANCH ROAD



Fig 9.5- US Slope paving



Fig 9.6-US- Outfall near lift station

TAYLOR GULLY AT MILL BRIDGE WAY



Fig 10.1- DS – Looking US



Fig 10.2 – DS Looking US

TAYLOR GULLY AT MILL BRIDGE WAY



Fig 10.3- US Looking DS



Fig 10.4-US-Looking DS

TAYLOR GULLY AT MILL BRIDGE WAY



Fig 10.5- US Looking DS

PEDESTRIAN BRIDGE AND LAKE HOUSTON BRIDGES



Fig 11.1- DS – Looking US



Fig 11.2 – DS Looking US

PEDESTRIAN BRIDGE AND LAKE HOUSTON BRIDGES



Fig 12.1- DS Bridge Looking US



Fig 12.2-DS Bridge Looking DS

PEDESTRIAN BRIDGE AND LAKE HOUSTON BRIDGES



Fig 12.3- US Bridge Looking US



Fig 12.4- US Bridge Looking DS

PEDESTRIAN BRIDGE AND LAKE HOUSTON BRIDGES



Fig 12.5- US Looking DS



Fig 12.6- Turtles between bridges

TAYLOR GULLY AT RUSTLING ELMS



Fig 13.1- DS – Looking US



Fig 13.2 – DS Looking US

RUSTLING ELMS DRIVE



Fig 13.3- US Bridge Looking DS



Fig 13.4-DS Bridge Looking North

RUSTLING ELMS DRIVE



Fig 13.5- DS Bridge Looking US



Fig 13.6- Resident Sign on Bridge

END OF TAYLOR GULLY AT MONT. COUNTY



Fig 13A.1- HW from Detention



Fig 13A.2 – HW from Detention looking DS

END OF TAYLOR GULLY AT MONT. COUNTY



Fig 13A.3- US of Restrictor – weir to the left (west) into detention basin looking north



Fig 13A.4-Same channel looking south towards Harris County

END OF TAYLOR GULLY AT MONT. COUNTY



Fig 13A.5- Large backslope ditch on east side from Mont. County to B/S Drain



Fig 13A.6- Large swale looking north to Mont. County

END OF TAYLOR GULLY AT MONT. COUNTY

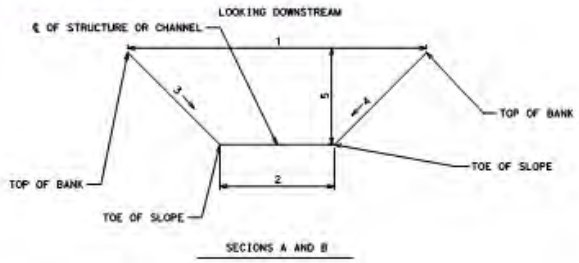


Fig 13A.7- Large area from trees draining into ditch on east side from Mont. County to B/S Drain

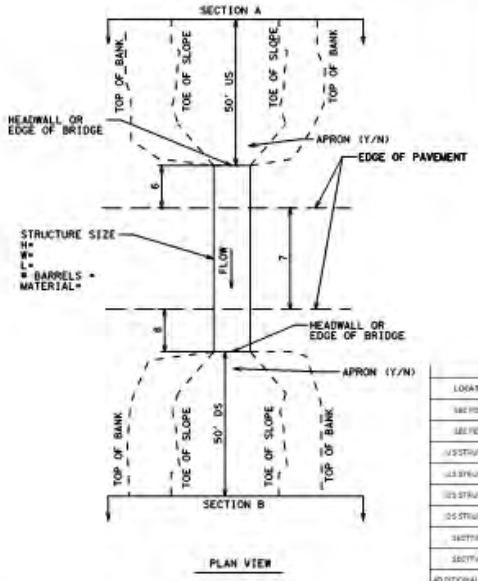


Fig 13A.8- Debris from tree removal clogging silt fence to large swale draining along east side of development to B/S Drain in Harris County

1- Bridge (G103-80-03.1A)



SECIONS A AND B



PLAN VIEW

CROSS SECTION MEASUREMENT NOTES	
ID	DESCRIPTION
1	CHANNEL TOP WIDTH (FT)
2	CHANNEL BOTOM WIDTH (FT)
3	LENGTH ALONG LEFT SIDE SLOPE (FT)
4	LENGTH ALONG RIGHT SIDE SLOPE (FT)
5	DEPTH OF CHANNEL (FT)
6	EDGE OF PAVEMENT TO UPSTREAM HEADWALL OR EDGE OF BRIDGE (FT)
7	ROAWAY WIDTH (FT)
8	EDGE OF PAVEMENT TO DOWNSTREAM HEADWALL OR EDGE OF BRIDGE (FT)

NOTES:
1) TAKE PHOTO LOOKING UPSTREAM AND DOWNSTREAM AT THE FOUR SECTIONS.
2) MEASURE DEPTH OF WATER WHEN POSSIBLE.
3) DOCUMENT THE VEGETATION IN THE CHANNEL (E.G. GRASS HEIGHT, TREE DIA AND HEIGHT).
4) DOCUMENT SEDIMENT/SCOUR IN THE CHANNEL.
5) IF XS A AND B CANNOT BE TAKEN AT 50', PLEASE DOCUMENT THEIR MODIFIED DISTANCE.
6) USE ADDITIONAL SHEETS AS NEEDED PER CROSSING.

XS MEASUREMENT TABLE

LOCATION	ID	LENGTH (FT)	NOTES
SECTION A	1		
SECTION A	2		
SECTION A	3		
SECTION A	4		
SECTION A	5		
SECTION A	6		
US STRUCTURE	1		
US STRUCTURE	2		
US STRUCTURE	3		
US STRUCTURE	4		
US STRUCTURE	5		
US STRUCTURE	6		
DS STRUCTURE	1		
DS STRUCTURE	2		
DS STRUCTURE	3		
DS STRUCTURE	4		
DS STRUCTURE	5		
DS STRUCTURE	6		
SECTION B	1	31	
SECTION B	2	5	
SECTION B	3	1/2	Ref to Fig1.1(point B)
SECTION B	4		Ref to Fig1.1(point B)
SECTION B	5	6.6	
SECTION B	6		

PHOTO CATALOG TABLE

LOCATION	DIRECTION OF PHOTO	PHOTO #	NOTES
SECTION A	US		
SECTION A	DS		
US STRUCTURE	US	1.2	
US STRUCTURE	DS		
DS STRUCTURE	US	1.7	
DS STRUCTURE	DS		
SECTION B	US	1.3	
SECTION B	DS		
ADDITIONAL PHOTO 1	DS	1.4	DS Channel
ADDITIONAL PHOTO 2	US	1.5	US Channel
ADDITIONAL PHOTO 3	DS	1.6	DS Side View
ADDITIONAL PHOTO 4	US	1.8	US Channel Detail
ADDITIONAL PHOTO 5		1.9	Section Detail
ADDITIONAL PHOTO 6			
ADDITIONAL PHOTO 7			
ADDITIONAL PHOTO 8			
ADDITIONAL PHOTO 9			
ADDITIONAL PHOTO 10			

PLAN VIEW MEASUREMENT TABLE

ID	LENGTH (FT)	NOTES
6		
7		
8		

BRIDGE TABLE

OPENING WIDTH (FT)	OPENING HEIGHT (FT)	LENGTH (FT)	PEIR SPACING (FT)	PIER WIDTH (FT)	# PIERS	ABUTMENT SLOPE (FT)	NOTES
61	6.67				0		See Fig 1.1 (point A)

CULVERT TABLE

RISE (FT)	SPAN (FT)	LENGTH (FT)	# BARRELS	MATERIAL	NOTES

OTHER NOTES:

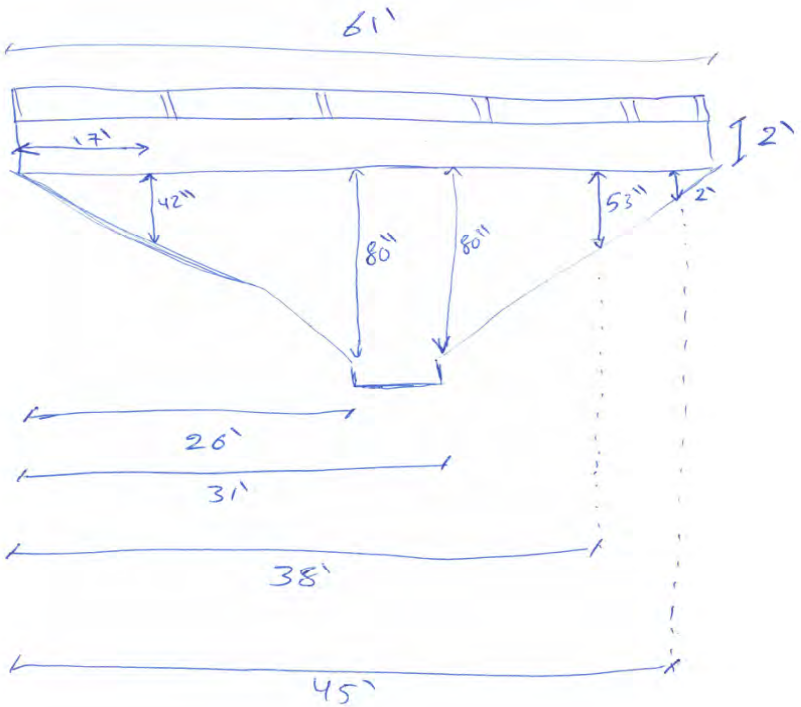
Cross-Section- Bridge



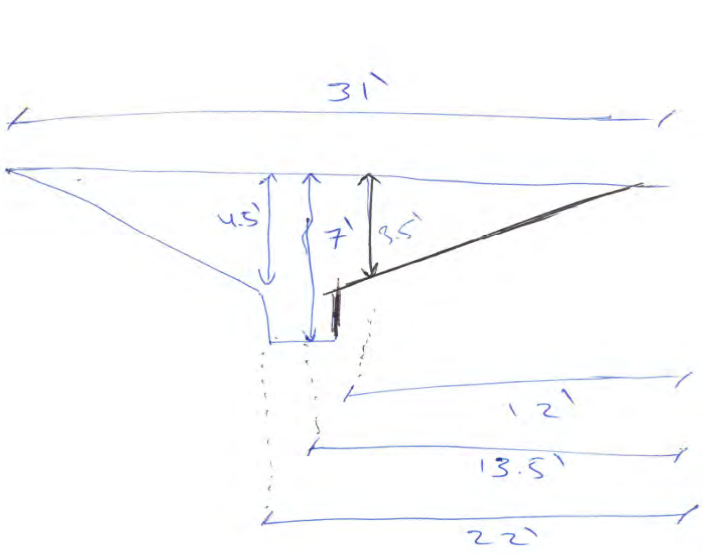
Gauge ENGINEERING

DATE:	
PROJECT #	
SURVEYED BY:	
CROSSING ID:	
SHEET #	

(1)



Note:
- looking U.S.



Note
- looking D.S.
- 30° from Bridge

Fig 1.1



Fig 1.2 Bridge Section US



Fig 1.3- Section B



Fig 1.4-DS Channel



Fig 1.5- US Channel



Fig 1.6-DS Side View



Fig 1.7- DS Structure

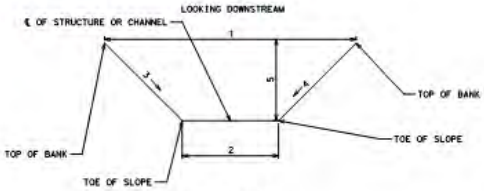


Fig 1.8- US Channel Detail

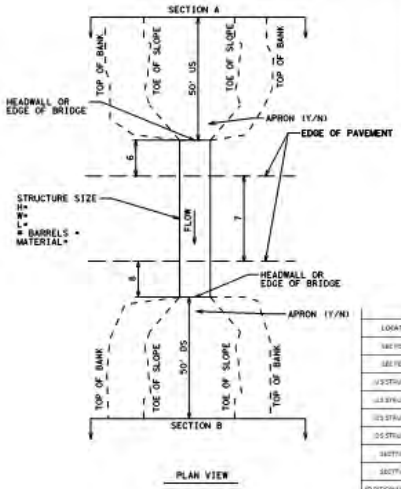


Fig 1.9 - Section Detail

2 - Culvert (G103-80-03.1A)



SECIONS A AND B



PLAN VIEW

CROSS SECTION MEASUREMENT NOTES	
ID	DESCRIPTION
1	CHANNEL TOP WIDTH (FT)
2	CHANNEL BOTTOM WIDTH (FT)
3	LENGTH ALONG LEFT SIDE SLOPE (FT)
4	LENGTH ALONG RIGHT SIDE SLOPE (FT)
5	DEPTH OF CHANNEL (FT)
6	EDGE OF PAVEMENT TO UPSTREAM HEADWALL OR EDGE OF BRIDGE (FT)
7	ROADWAY WIDTH (FT)
8	EDGE OF PAVEMENT TO DOWNSTREAM HEADWALL OR EDGE OF BRIDGE (FT)

NOTES:
1) TAKE PHOTO LOOKING UPSTREAM AND DOWNSTREAM AT THE FOUR SECTIONS.
2) MEASURE DEPTH OF WATER WHEN POSSIBLE.
3) DOCUMENT THE VEGETATION IN THE CHANNEL (E.G. GRASS HEIGHT, TREE DIA AND HEIGHT).
4) DOCUMENT SEDIMENT/SCOUR IN THE CHANNEL.
5) IF XS A AND B CANNOT BE TAKEN AT 50', PLEASE DOCUMENT THEIR MODIFIED DISTANCE.
6) USE ADDITIONAL SHEETS AS NEEDED PER CROSSING.

XS MEASUREMENT TABLE

LOCATION	ID	LENGTH (FT)	NOTES
SECTION A	1		
SECTION A	2		
SECTION A	3		
SECTION A	4		
SECTION A	5		
SECTION A	6		
US STRUCTURE	1		
US STRUCTURE	2		
US STRUCTURE	3		
US STRUCTURE	4		
US STRUCTURE	5		
US STRUCTURE	6		
DS STRUCTURE	1		
DS STRUCTURE	2		
DS STRUCTURE	3		
DS STRUCTURE	4		
DS STRUCTURE	5		
DS STRUCTURE	6		
SECTION B	1		
SECTION B	2		
SECTION B	3		
SECTION B	4		
SECTION B	5		
SECTION B	6		

PHOTO CATALOG TABLE

LOCATION	DIRECTION OF PHOTO	PHOTO #	NOTES
SECTION A	US		
SECTION A	DS		
US STRUCTURE	US		
US STRUCTURE	DS	2.4	
DS STRUCTURE	US		
DS STRUCTURE	DS	2.2	
SECTION B	US		
SECTION B	DS		
ADDITIONAL PHOTO 1	DS	2.3	Channel DS
ADDITIONAL PHOTO 2	US	2.5	Channel US
ADDITIONAL PHOTO 3			
ADDITIONAL PHOTO 4			
ADDITIONAL PHOTO 5			
ADDITIONAL PHOTO 6			
ADDITIONAL PHOTO 7			
ADDITIONAL PHOTO 8			
ADDITIONAL PHOTO 9			
ADDITIONAL PHOTO 10			

PLAN VIEW MEASUREMENT TABLE

ID	LENGTH (FT)	NOTES
6		
7		
8		

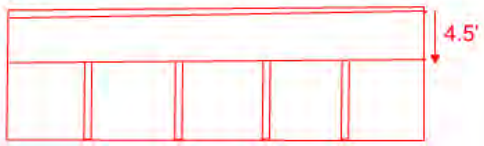
BRIDGE TABLE

OPENING WIDTH (FT)	OPENING HEIGHT (FT)	LENGTH (FT)	PIER SPACING (FT)	PIER WIDTH (FT)	# PIERS	ABUTMENT SLOPE (FT)	NOTES

CULVERT TABLE

RISE (FT)	SPAN (FT)	LENGTH (FT)	# BARRELS	MATERIAL	NOTES
5	6	43	5		See Fig 2.1

OTHER NOTES:



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PROJECT #	
SURVEYED BY:	
CROSSING ID:	
SHEET #	

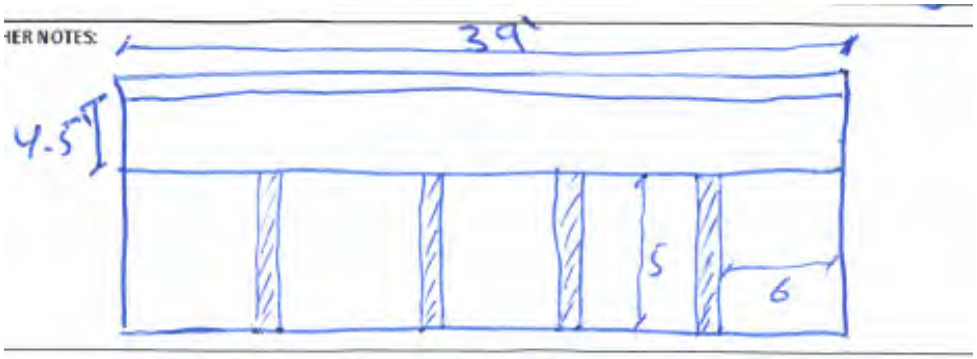


Fig 2.1



Fig 2.2 Culvert Section DS



Fig 2.3- DS Channel

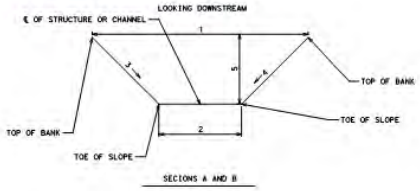


Fig 2.4- Culvert Section US

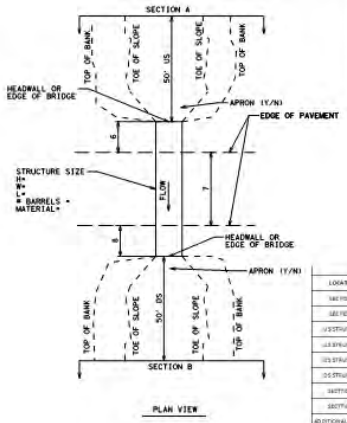


Fig 2.5- US Channel

3- Bridge (G103-80-03.1A)



SECIONS A AND B



PLAN VIEW

CROSS SECTION MEASUREMENT NOTES	
ID	DESCRIPTION
1	CHANNEL TOP WIDTH (FT)
2	CHANNEL BOTOM WIDTH (FT)
3	LENGTH ALONG LEFT SIDE SLOPE (FT)
4	LENGTH ALONG RIGHT SIDE SLOPE (FT)
5	DEPTH OF CHANNEL (FT)
6	EDGE OF PAVEMENT TO UPSTREAM HEADWALL OR EDGE OF BRIDGE (FT)
7	ROADWAY WIDTH (FT)
8	EDGE OF PAVEMENT TO DOWNSTREAM HEADWALL OR EDGE OF BRIDGE (FT)

NOTES:
1) TAKE PHOTO LOOKING UPSTREAM AND DOWNSTREAM AT THE FOUR SECTIONS.
2) MEASURE DEPTH OF WATER WHEN POSSIBLE.
3) DOCUMENT THE VEGETATION IN THE CHANNEL (E.G. GRASS HEIGHT, TREE DIA AND HEIGHT).
4) DOCUMENT SEDIMENT/SCOUR IN THE CHANNEL.
5) IF XS A AND B CANNOT BE TAKEN AT 50', PLEASE DOCUMENT THEIR MODIFIED DISTANCE.
6) USE ADDITIONAL SHEETS AS NEEDED PER CROSSING.

XS MEASUREMENT TABLE

LOCATION	ID	LENGTH (FT)	NOTES
SECTION A	1		
SECTION A	2		
SECTION A	3		
SECTION A	4		
SECTION A	5		
SECTION A	6		
US STRUCTURE	1		
US STRUCTURE	2		
US STRUCTURE	3		
US STRUCTURE	4		
US STRUCTURE	5		
US STRUCTURE	6		
DS STRUCTURE	1		
DS STRUCTURE	2		
DS STRUCTURE	3		
DS STRUCTURE	4		
DS STRUCTURE	5		
DS STRUCTURE	6		
SECTION B	1		
SECTION B	2		
SECTION B	3		
SECTION B	4		
SECTION B	5		
SECTION B	6		

PHOTO CATALOG TABLE

LOCATION	DIRECTION OF PHOTO	PHOTO #	NOTES
SECTION A	US		
SECTION A	DS		
US STRUCTURE	US		
US STRUCTURE	DS	3.4	DS & US Structure Identical
DS STRUCTURE	US		
DS STRUCTURE	DS	3.2	DS & US Structure Identical
SECTION B	US		
SECTION B	DS		
ADDITIONAL PHOTO 1	DS	3.3	DS channel
ADDITIONAL PHOTO 2	US	3.5	Section Detail
ADDITIONAL PHOTO 3	US	3.6	Section Detail
ADDITIONAL PHOTO 4	US	3.7	US Channel
ADDITIONAL PHOTO 5		3.8	Side View
ADDITIONAL PHOTO 6			
ADDITIONAL PHOTO 7			Distance B/W 3 & 4
ADDITIONAL PHOTO 8			Bridges= 32'
ADDITIONAL PHOTO 9			
ADDITIONAL PHOTO 10			

PLAN VIEW MEASUREMENT TABLE

ID	LENGTH (FT)	NOTES
6		
7		
8		

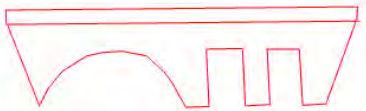
BRIDGE TABLE

OPENING WIDTH (FT)	OPENING HEIGHT (FT)	LENGTH (FT)	PIER SPACING (FT)	PIER WIDTH (FT)	# PIERS	ABUTMENT SLOPE (FT)	NOTES
31.5	9.5						See Fig 3.1 for dimentions

CULVERT TABLE

RISE (FT)	SPAN (FT)	LENGTH (FT)	# BARRELS	MATERIAL	NOTES

OTHER NOTES:



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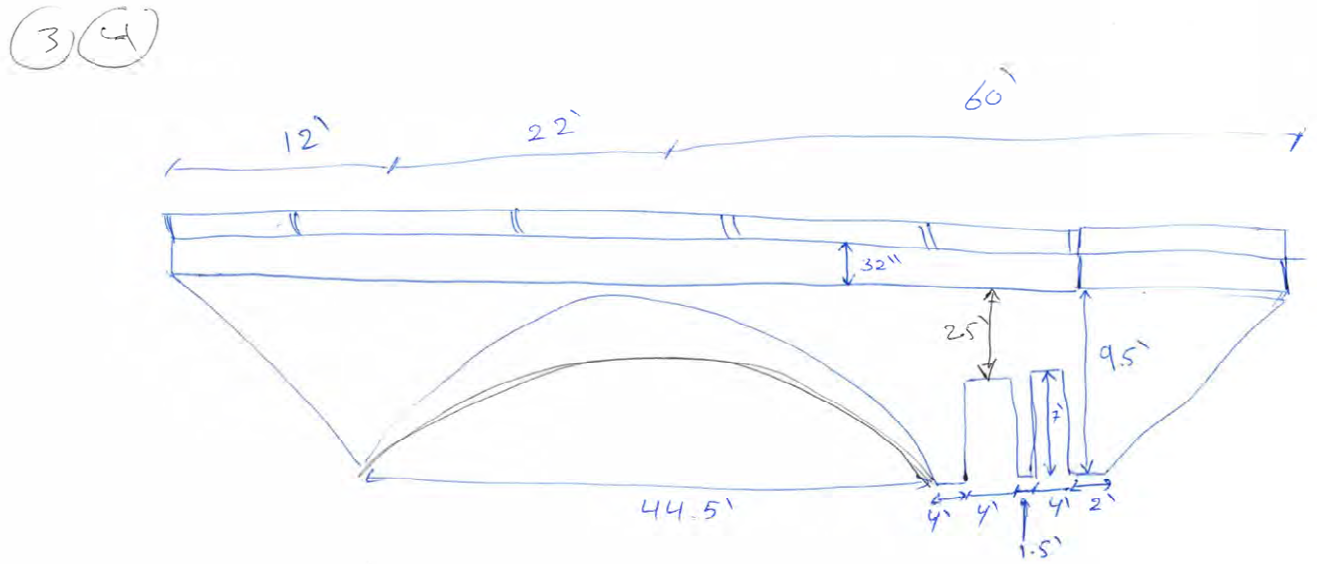


(3) Note:
- looking U.S
- Bridge width 31.5'

(4) Note
- looking D.S
- Bridge width = 34'
- Distance between Bridges are 32'

Fig 3.1



Fig 3.2 Bridge Section DS



Fig 3.3- DS Channel



Fig 3.4- Bridge Section US



Fig 3.5- US Section Detail



Fig 3.6-US Section Detail

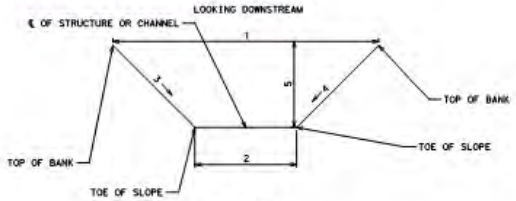


Fig 3.7- US Bridge

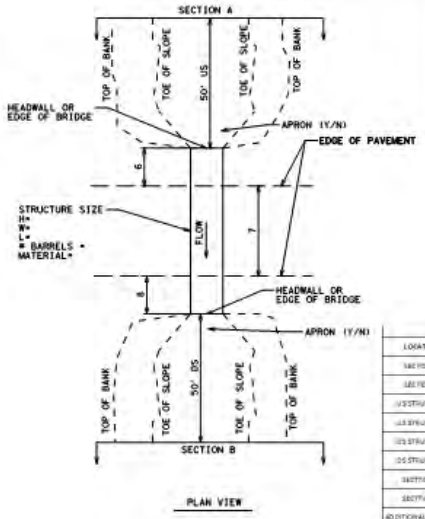


Fig 3.8-Side View

4 - Bridge (G103-80-03.1A)



SECTIONS A AND B



PLAN VIEW

CROSS SECTION MEASUREMENT NOTES	
ID	DESCRIPTION
1	CHANNEL TOP WIDTH (FT)
2	CHANNEL BOTTOM WIDTH (FT)
3	LENGTH ALONG LEFT SIDE SLOPE (FT)
4	LENGTH ALONG RIGHT SIDE SLOPE (FT)
5	DEPTH OF CHANNEL (FT)
6	EDGE OF PAVEMENT TO UPSTREAM HEADWALL OR EDGE OF BRIDGE (FT)
7	ROAWAY WIDTH (FT)
8	EDGE OF PAVEMENT TO DOWNSTREAM HEADWALL OR EDGE OF BRIDGE (FT)

NOTES:
1) TAKE PHOTO LOOKING UPSTREAM AND DOWNSTREAM AT THE FOUR SECTIONS.
2) MEASURE DEPTH OF WATER WHEN POSSIBLE.
3) DOCUMENT THE VEGETATION IN THE CHANNEL (E.G. GRASS HEIGHT, TREE DIA AND HEIGHT).
4) DOCUMENT SEDIMENT/SCOUR IN THE CHANNEL.
5) IF XS A AND B CANNOT BE TAKEN AT 50', PLEASE DOCUMENT THEIR MODIFIED DISTANCE.
6) USE ADDITIONAL SHEETS AS NEEDED PER CROSSING.

XS MEASUREMENT TABLE

LOCATION	ID	LENGTH (FT)	NOTES
SECTION A	1		
SECTION A	2		
SECTION A	3		
SECTION A	4		
SECTION A	5		
SECTION A	6		
US STRUCTURE	1		
US STRUCTURE	2		
US STRUCTURE	3		
US STRUCTURE	4		
US STRUCTURE	5		
US STRUCTURE	6		
DS STRUCTURE	1		
DS STRUCTURE	2		
DS STRUCTURE	3		
DS STRUCTURE	4		
DS STRUCTURE	5		
DS STRUCTURE	6		
SECTION B	1		
SECTION B	2		
SECTION B	3		
SECTION B	4		
SECTION B	5		
SECTION B	6		

PLAN VIEW MEASUREMENT TABLE

ID	LENGTH (FT)	NOTES
6		
7		
8		

PHOTO CATALOG TABLE

LOCATION	DIRECTION OF PHOTO	PHOTO #	NOTES
SECTION A	US		
SECTION A	DS		
US STRUCTURE	US		
US STRUCTURE	DS	4.4	DS & US Structure Identical
US STRUCTURE	US		
DS STRUCTURE	DS	4.2	DS & US Structure Identical
SECTION B	US		
SECTION B	DS		
ADDITIONAL PHOTO 1	DS	4.3	DS channel
ADDITIONAL PHOTO 2	DS	4.5	Section Detail
ADDITIONAL PHOTO 3	US	4.6	Section Detail
ADDITIONAL PHOTO 4	US	4.7	US Channel
ADDITIONAL PHOTO 5	US	4.8	US Channel
ADDITIONAL PHOTO 6		4.9	Side View
ADDITIONAL PHOTO 7			Distance B/W 3 & 4
ADDITIONAL PHOTO 8			Bridges= 32'
ADDITIONAL PHOTO 9			
ADDITIONAL PHOTO 10			

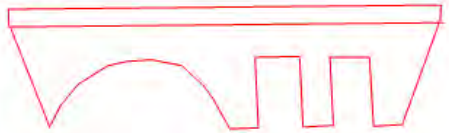
BRIDGE TABLE

OPENING WIDTH (FT)	OPENING HEIGHT (FT)	LENGTH (FT)	PIER SPACING (FT)	PIER WIDTH (FT)	# PIERS	ABUTMENT SLOPE (FT)	NOTES
31.5	9.5						See Fig 4.1 for dimentions

CULVERT TABLE

RISE (FT)	SPAN (FT)	LENGTH (FT)	# BARRELS	MATERIAL	NOTES

OTHER NOTES:



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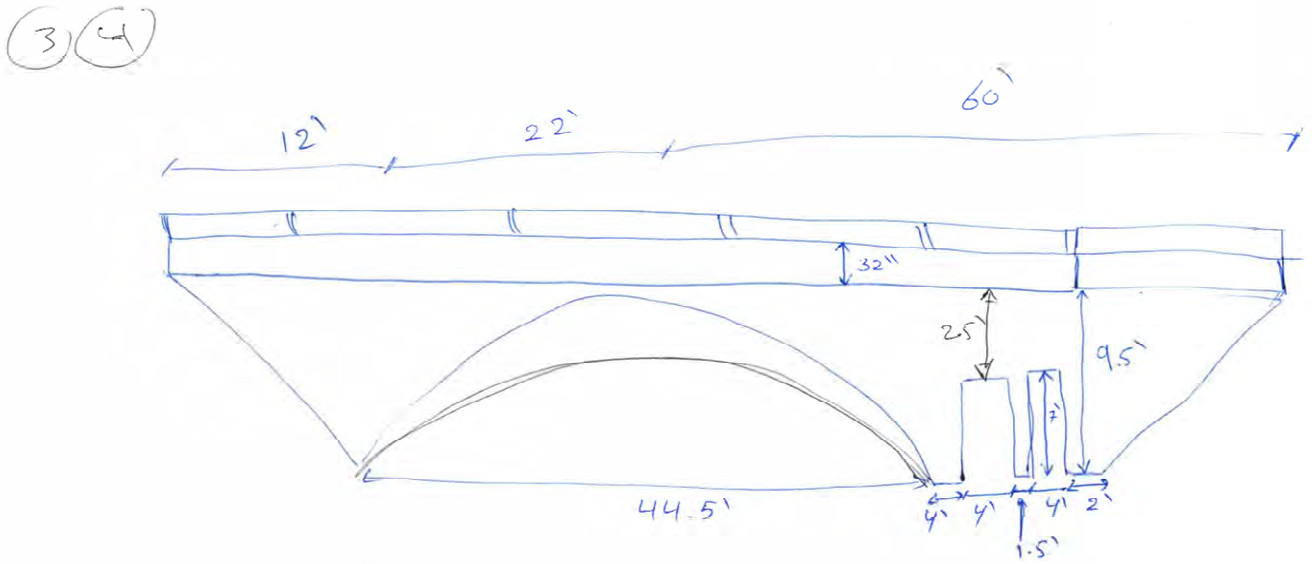
SHEET #	



(3) Note :
- looking U.S
- Bridge width 31.5'

(4) Note
- looking D.S
- Bridge width = 34'
- Distance between Bridges are 32'

Fig 4.1



Fig 4.2 Bridge Section DS



Fig 4.3- DS Channel



Fig 4.4- Bridge Section US



Fig 4.5- DS Section Detail



Fig 4.6-Section Detail



Fig 4.7- US Bridge

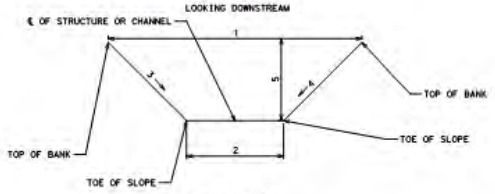


Fig 4.8-US Channel

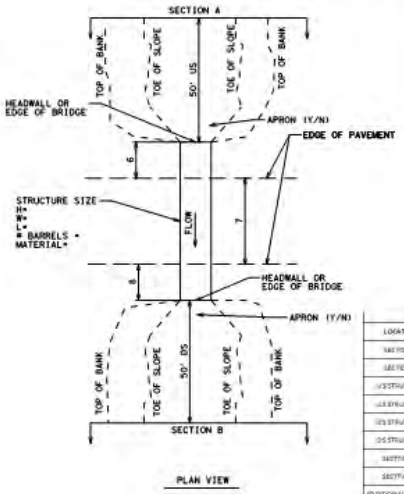


Fig 4.9-Side View between 3 &4

5 - Culvert (G103-80-03-1A)



SECTIONS A AND B



PLAN VIEW

CROSS SECTION MEASUREMENT NOTES	
ID	DESCRIPTION
1	CHANNEL TOP WIDTH (FT)
2	CHANNEL BOTTOM WIDTH (FT)
3	LENGTH ALONG LEFT SIDE SLOPE (FT)
4	LENGTH ALONG RIGHT SIDE SLOPE (FT)
5	DEPTH OF CHANNEL (FT)
6	EDGE OF PAVEMENT TO UPSTREAM HEADWALL OR EDGE OF BRIDGE (FT)
7	ROADWAY WIDTH (FT)
8	EDGE OF PAVEMENT TO DOWNSTREAM HEADWALL OR EDGE OF BRIDGE (FT)

NOTES:
1) TAKE PHOTO LOOKING UPSTREAM AND DOWNSTREAM AT THE FOUR SECTIONS.
2) MEASURE DEPTH OF WATER WHEN POSSIBLE.
3) DOCUMENT THE VEGETATION IN THE CHANNEL (E.G. GRASS HEIGHT, TREE DIA AND HEIGHT).
4) DOCUMENT SEDIMENT/SCOUR IN THE CHANNEL.
5) IF XS A AND B CANNOT BE TAKEN AT 50', PLEASE DOCUMENT THEIR MODIFIED DISTANCE.
6) USE ADDITIONAL SHEETS AS NEEDED PER CROSSING.

XS MEASUREMENT TABLE

LOCATION	ID	LENGTH (FT)	NOTES
SECTION A	1		
SECTION A	2		
SECTION A	3		
SECTION A	4		
SECTION A	5		
SECTION A	6		
US STRUCTURE	1		
US STRUCTURE	2		
US STRUCTURE	3		
US STRUCTURE	4		
US STRUCTURE	5		
US STRUCTURE	6		
DS STRUCTURE	1		
DS STRUCTURE	2		
DS STRUCTURE	3		
DS STRUCTURE	4		
DS STRUCTURE	5		
DS STRUCTURE	6		
SECTION B	1		
SECTION B	2		
SECTION B	3		
SECTION B	4		
SECTION B	5		
SECTION B	6		

PHOTO CATALOG TABLE

LOCATION	DIRECTION OF PHOTO	PHOTO #	NOTES
SECTION A	US		
SECTION A	DS		
US STRUCTURE	US	5.2	
US STRUCTURE	DS		
DS STRUCTURE	US	5.7	
DS STRUCTURE	DS		
SECTION B	US		
SECTION B	DS		
ADDITIONAL PHOTO 1	DS	5.3	DS Section Detail
ADDITIONAL PHOTO 2	DS	5.4	DS Channel
ADDITIONAL PHOTO 3	DS	5.5	DS Channel
ADDITIONAL PHOTO 4	US	5.6	US Channel
ADDITIONAL PHOTO 5			
ADDITIONAL PHOTO 6			
ADDITIONAL PHOTO 7			
ADDITIONAL PHOTO 8			
ADDITIONAL PHOTO 9			
ADDITIONAL PHOTO 10			

PLAN VIEW MEASUREMENT TABLE

ID	LENGTH (FT)	NOTES
6		
7		
8		

BRIDGE TABLE

OPENING WIDTH (FT)	OPENING HEIGHT (FT)	LENGTH (FT)	PIER SPACING (FT)	PIER WIDTH (FT)	# PIERS	ABUTMENT SLOPE (FT)	NOTES

CULVERT TABLE

RISE (FT)	SPAN (FT)	LENGTH (FT)	# BARRELS	MATERIAL	NOTES
3.5	5.5	52	3		Circular Culverts (See Fig 5.1)

OTHER NOTES:



Gauge ENGINEERING

DATE:	
PROJECT #	
SURVEYED BY:	
CROSSING ID:	
SHEET #	

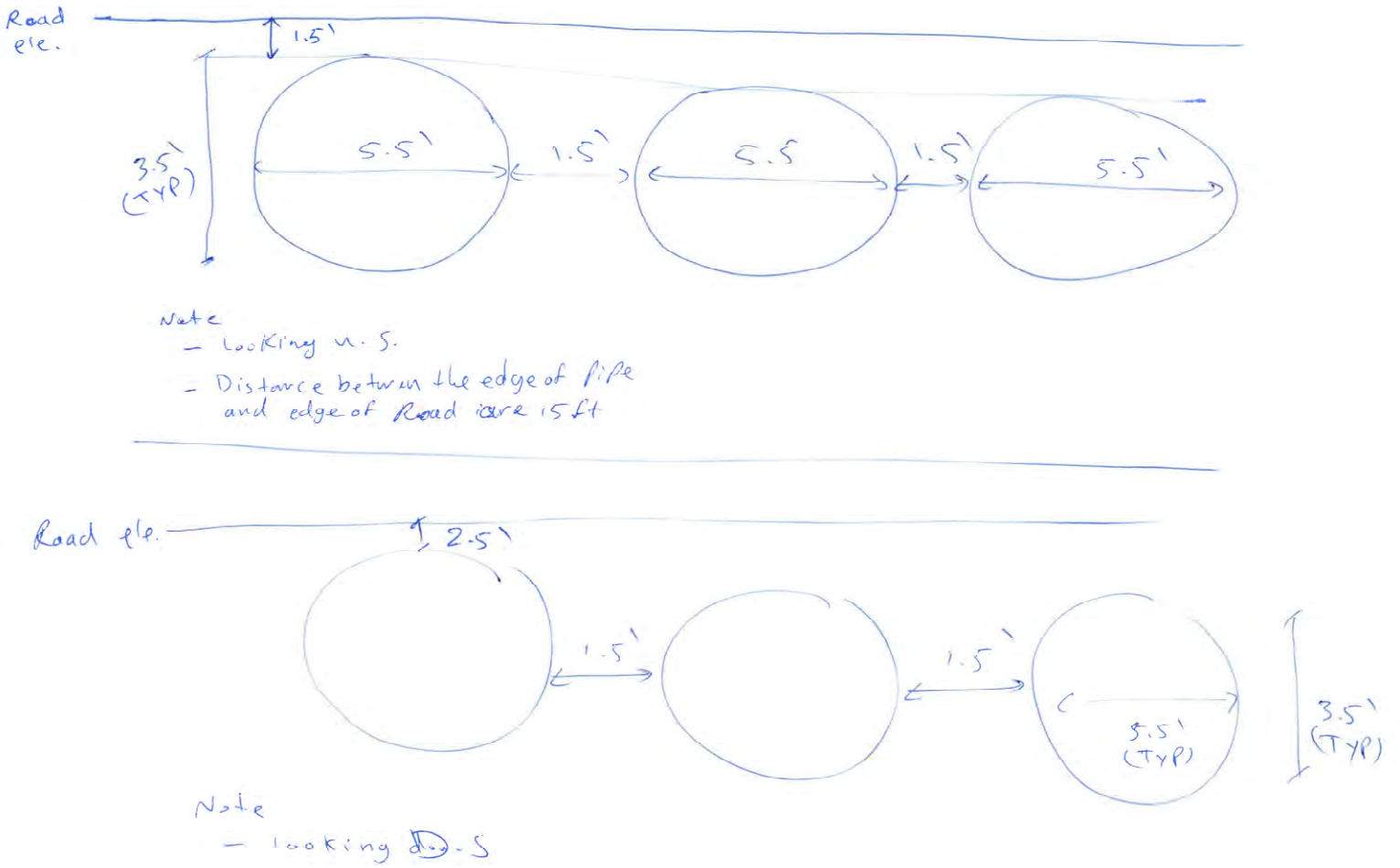


Fig 5.1 Hand Drawing and Dimensions



Fig 5.2- Culvert Section DS



Fig 5.3 - DS Section Detail



Fig 5.4- DS Channel



Fig 5.5-DS Channel

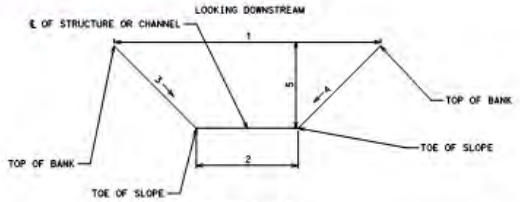


Fig 5.6-US Channel

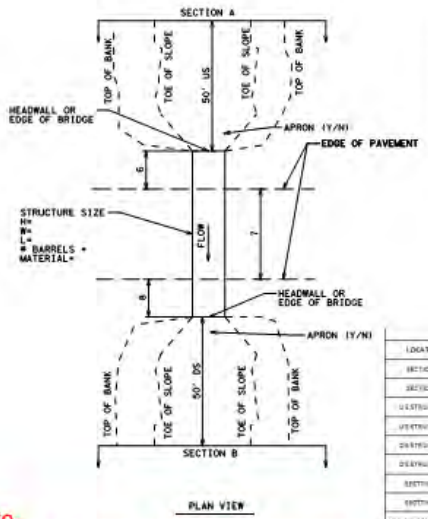


Fig 5.7- Culvert Section US

14 - DS (G103-80-01)



SECTIONS A AND B



PLAN VIEW

CROSS SECTION MEASUREMENT NOTES	
ID	DESCRIPTION
1	CHANNEL TOP WIDTH (FT)
2	CHANNEL BOTTOM WIDTH (FT)
3	LENGTH ALONG LEFT SIDE SLOPE (FT)
4	LENGTH ALONG RIGHT SIDE SLOPE (FT)
5	DEPTH OF CHANNEL (FT)
6	EDGE OF PAVEMENT TO UPSTREAM HEADWALL OR EDGE OF BRIDGE (FT)
7	ROADWAY WIDTH (FT)
8	EDGE OF PAVEMENT TO DOWNSTREAM HEADWALL OR EDGE OF BRIDGE (FT)

NOTES:
1) TAKE PHOTO LOOKING UPSTREAM AND DOWNSTREAM AT THE FOUR SECTIONS.
2) MEASURE DEPTH OF WATER WHEN POSSIBLE.
3) DOCUMENT THE VEGETATION IN THE CHANNEL (E.G. GRASS HEIGHT, TREE DIA AND HEIGHT).
4) DOCUMENT SEDIMENT/SCOUR IN THE CHANNEL.
5) IF XS A AND B CANNOT BE TAKEN AT 50', PLEASE DOCUMENT THEIR MODIFIED DISTANCE.
6) USE ADDITIONAL SHEETS AS NEEDED PER CROSSING.

XS MEASUREMENT TABLE

LOCATION	ID	LENGTH (FT)	NOTES
SECTION A	1		
SECTION A	2		
SECTION A	3		
SECTION A	4		
SECTION A	5		
SECTION A	6		
US STRUCTURE	1		
US STRUCTURE	2		
US STRUCTURE	3		
US STRUCTURE	4		
US STRUCTURE	5		
US STRUCTURE	6		
DS STRUCTURE	1		
DS STRUCTURE	2		
DS STRUCTURE	3		
DS STRUCTURE	4		
DS STRUCTURE	5		
DS STRUCTURE	6		
SECTION B	1		
SECTION B	2		
SECTION B	3		
SECTION B	4		
SECTION B	5		
SECTION B	6		

Note-
Refer Fig 14.1 & 14.2 for Dimensions

PHOTO CATALOG TABLE

LOCATION	DIRECTION OF PHOTO	PHOTO #	NOTES
SECTION A			
SECTION A			
U/S STRUCTURE		14.6	
U/S STRUCTURE			
D/S STRUCTURE		14.3	
D/S STRUCTURE			
SECTION B			
SECTION B			
ADDITIONAL PHOTO 1	DS	14.4	DS Structure Side View
ADDITIONAL PHOTO 2	DS	14.5	DS Channel
ADDITIONAL PHOTO 3	US	14.7	US Structure Side View
ADDITIONAL PHOTO 4	US	14.8	US Channel
ADDITIONAL PHOTO 5			
ADDITIONAL PHOTO 6			
ADDITIONAL PHOTO 7			
ADDITIONAL PHOTO 8			
ADDITIONAL PHOTO 9			
ADDITIONAL PHOTO 10			

PLAN VIEW MEASUREMENT TABLE

ID	LENGTH (FT)	NOTES
6		
7		
8		

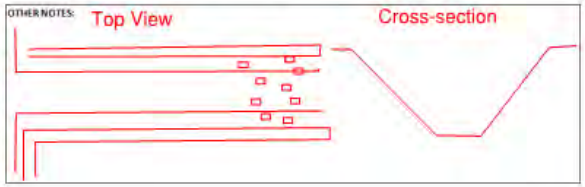
BRIDGE TABLE

OPENING WIDTH (FT)	OPENING HEIGHT (FT)	LENGTH (FT)	PIER SPACING (FT)	PIER WIDTH (FT)	# PIERS	ABUTMENT SLOPE (FT)	NOTES

CULVERT TABLE

RISE (FT)	SPAN (FT)	LENGTH (FT)	# BARRELS	MATERIAL	NOTES

OTHER NOTES:



Gauge ENGINEERING

DATE:	
PROJECT #	
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CROSSING ID:	
SHEET #	

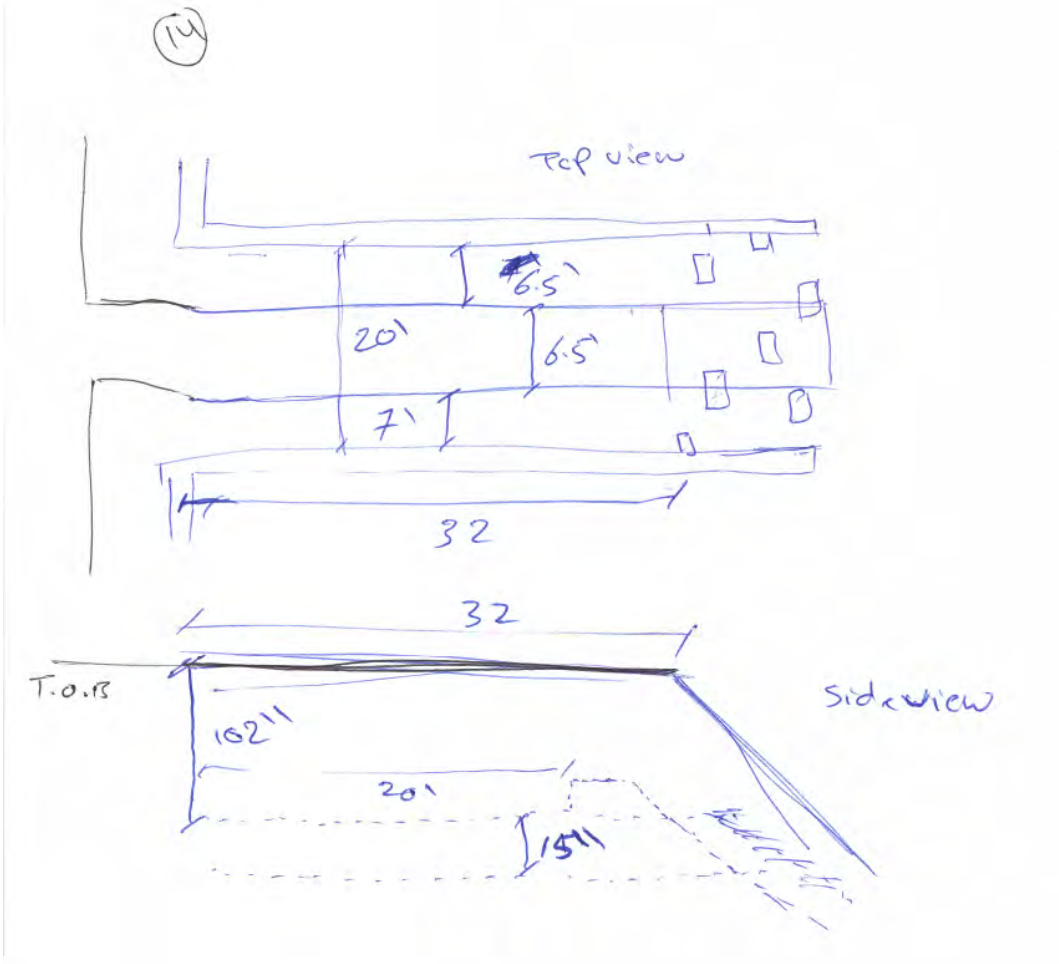


Fig 14.1

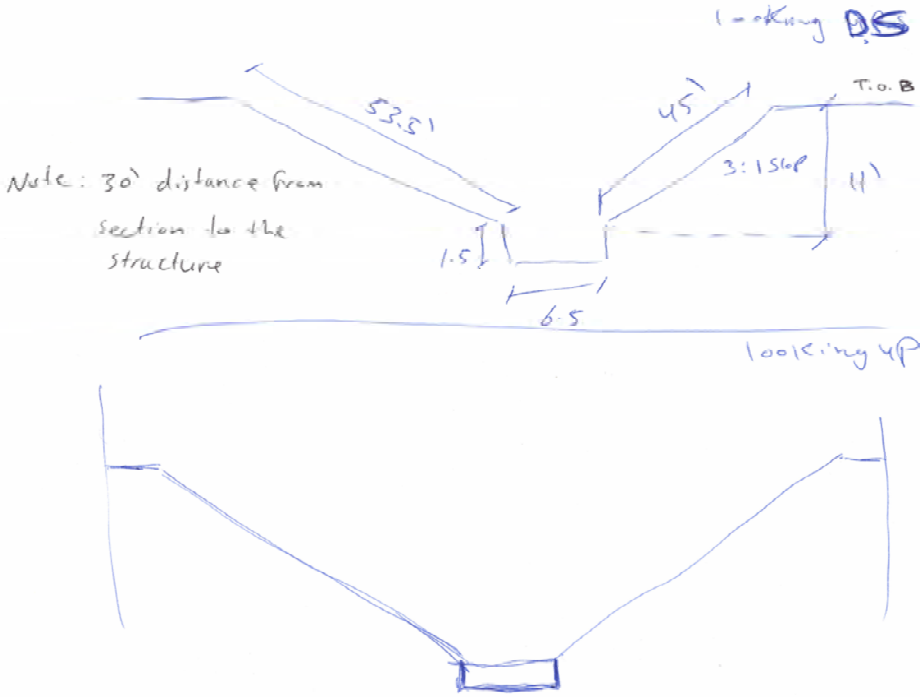


Fig 14.2



Fig 14.3 DS Structure



Fig 14.4- DS Structure Side view



Fig 14.5- DS Channel



Fig 14.6- US Structure

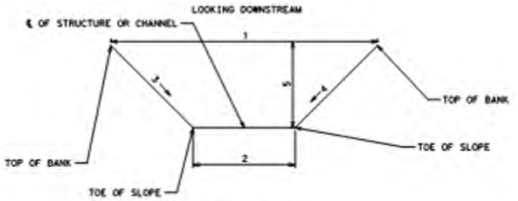


Fig 14.7-US Structure Side View

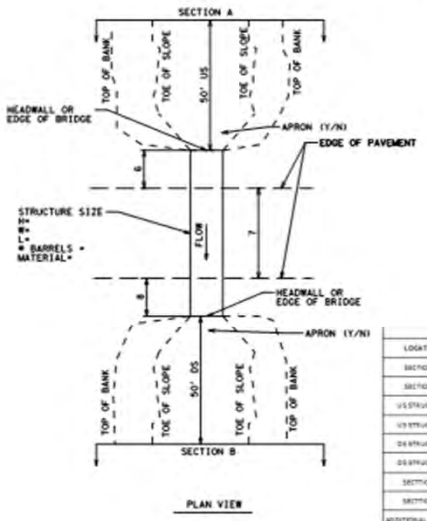


Fig 14.8- US Channel

15- Bridge (G-103-80-01)



SECIONS A AND B



PLAN VIEW

CROSS SECTION MEASUREMENT NOTES	
ID	DESCRIPTION
1	CHANNEL TOP WIDTH (FT)
2	CHANNEL BOTTOM WIDTH (FT)
3	LENGTH ALONG LEFT SIDE SLOPE (FT)
4	LENGTH ALONG RIGHT SIDE SLOPE (FT)
5	DEPTH OF CHANNEL (FT)
6	EDGE OF PAVEMENT TO UPSTREAM HEADWALL OR EDGE OF BRIDGE (FT)
7	ROADWAY WIDTH (FT)
8	EDGE OF PAVEMENT TO DOWNSTREAM HEADWALL OR EDGE OF BRIDGE (FT)

NOTES:
1) TAKE PHOTO LOOKING UPSTREAM AND DOWNSTREAM AT THE FOUR SECTIONS.
2) MEASURE DEPTH OF WATER WHEN POSSIBLE.
3) DOCUMENT THE VEGETATION IN THE CHANNEL (E.G. GRASS HEIGHT, TREE DIA AND HEIGHT).
4) DOCUMENT SEDIMENT/SCOUR IN THE CHANNEL.
5) IF XS A AND B CANNOT BE TAKEN AT 50', PLEASE DOCUMENT THEIR MODIFIED DISTANCE.
6) USE ADDITIONAL SHEETS AS NEEDED PER CROSSING.

XS MEASUREMENT TABLE

LOCATION	ID	LENGTH (FT)	NOTES
SECTION A	1		
SECTION A	2		
SECTION A	3		
SECTION A	4		
SECTION A	5		
SECTION A	6		
US STRUCTURE	1		
US STRUCTURE	2		
US STRUCTURE	3		
US STRUCTURE	4		
US STRUCTURE	5		
US STRUCTURE	6		
DS STRUCTURE	1		
DS STRUCTURE	2		
DS STRUCTURE	3		
DS STRUCTURE	4		
DS STRUCTURE	5		
DS STRUCTURE	6		
SECTION B	1		
SECTION B	2		
SECTION B	3		
SECTION B	4		
SECTION B	5		
SECTION B	6		

PHOTO CATALOG TABLE

LOCATION	DIRECTION OF PHOTO	PHOTO #	NOTES
SECTION A	US		
SECTION A	DS		
US STRUCUTRE	US		
US STRUCUTRE	DS		
DS STRUCTURE	US		
DS STRUCTURE	DS	15.2	
SECTION B	US		
SECTION B	DS		
ADDITIONAL PHOTO 1			
ADDITIONAL PHOTO 2	US	15.3	US Channel
ADDITIONAL PHOTO 3	DS	15.4	DS Channel
ADDITIONAL PHOTO 4		15.5	Bridge Top
ADDITIONAL PHOTO 5			
ADDITIONAL PHOTO 6			
ADDITIONAL PHOTO 7			
ADDITIONAL PHOTO 8			
ADDITIONAL PHOTO 9			
ADDITIONAL PHOTO 10			

PLAN VIEW MEASUREMENT TABLE

ID	LENGTH (FT)	NOTES
6		
7		
8		

BRIDGE TABLE

OPENING WIDTH (FT)	OPENING HEIGHT (FT)	LENGTH (FT)	PIER SPACING (FT)	PIER WIDTH (FT)	# PIERS	ABUTMENT SLOPE (FT)	NOTES
115	17	6					See Fig 15.1

CULVERT TABLE

RISE (FT)	SPAN (FT)	LENGTH (FT)	# BARRELS	MATERIAL	NOTES

OTHER NOTES:

Cross-Section



Gauge ENGINEERING

DATE:	
PROJECT #	
SURVEYED BY:	
CROSSING ID:	
SHEET #	

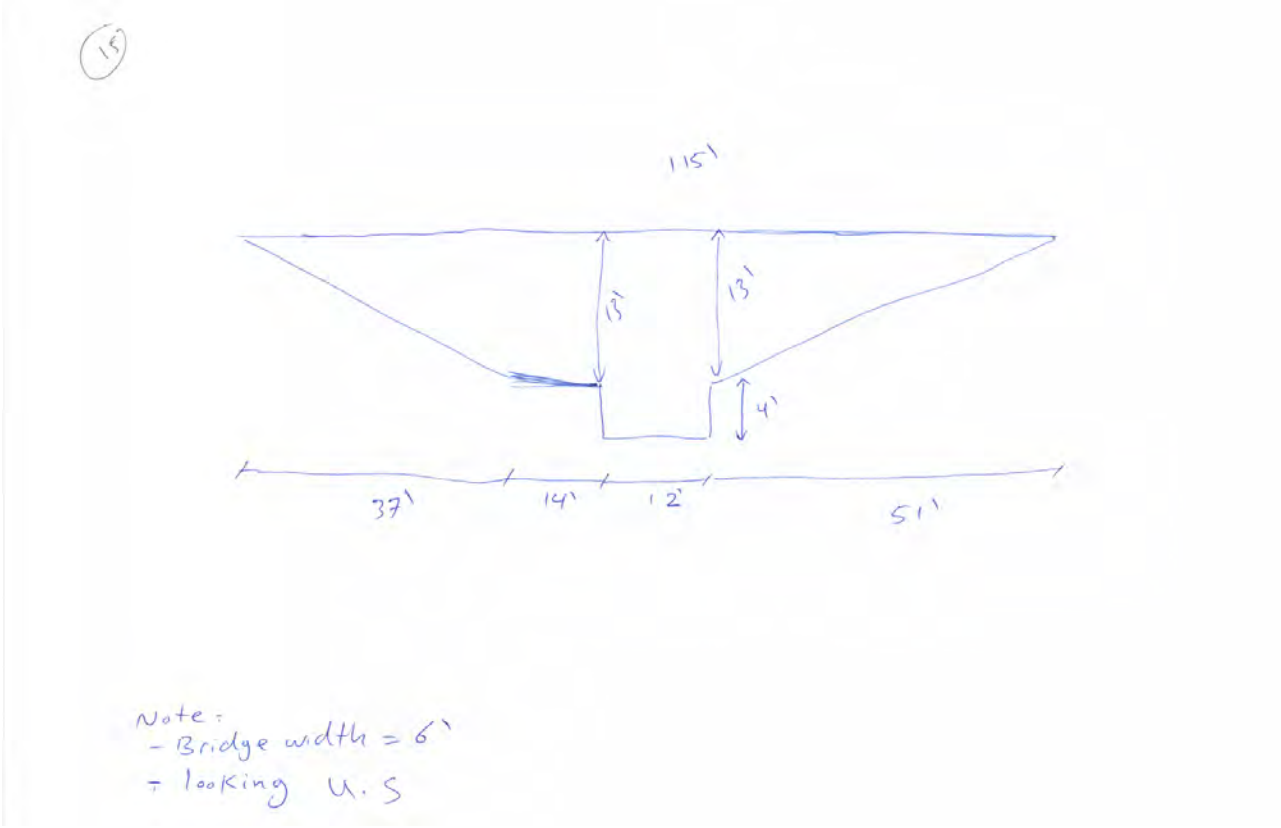


Fig 15.1



Fig 15.2 Bridge Section US



Fig 15.3-US Channel

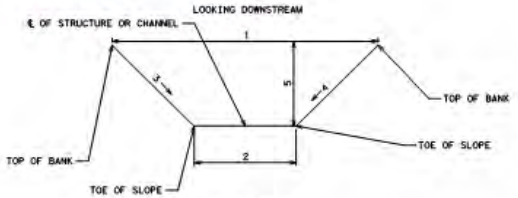


Fig 15.4- DS Channel

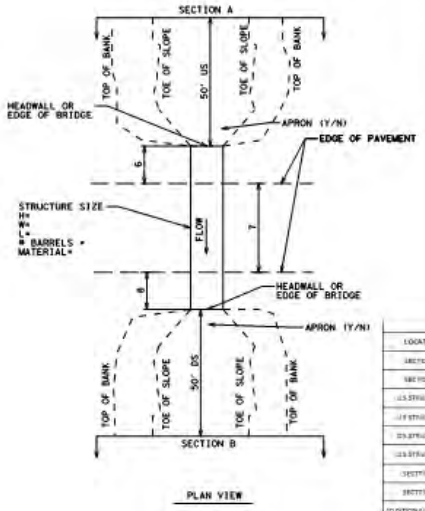


Fig 15.5- Bridge Top

16 - Bridge (G103-80-01)



SECIONS A AND B



PLAN VIEW

CROSS SECTION MEASUREMENT NOTES	
ID	DESCRIPTION
1	CHANNEL TOP WIDTH (FT)
2	CHANNEL BOTOM WIDTH (FT)
3	LENGTH ALONG LEFT SIDE SLOPE (FT)
4	LENGTH ALONG RIGHT SIDE SLOPE (FT)
5	DEPTH OF CHANNEL (FT
6	EDGE OF PAVEMENT TO UPSTREAM HEADWALL OR EDGE OF BRIDGE (FT)
7	ROAWAY WIDTH (FT)
8	EDGE OF PAVEMENT TO DOWNSTREAM HEADWALL OR EDGE OF BRIDGE (FT)

NOTES:
1) TAKE PHOTO LOOKING UPSTREAM AND DOWNSTREAM AT THE FOUR SECTIONS.
2) MEASURE DEPTH OF WATER WHEN POSSIBLE.
3) DOCUMENT THE VEGETATION IN THE CHANNEL (E.G. GRASS HEIGHT, TREE DIA AND HEIGHT).
4) DOCUMENT SEDIMENT/SCOUR IN THE CHANNEL.
5) IF XS A AND B CANNOT BE TAKEN AT 50', PLEASE DOCUMENT THEIR MODIFIED DISTANCE.
6) USE ADDITIONAL SHEETS AS NEEDED PER CROSSING.

XS MEASUREMENT TABLE

LOCATION	ID	LENGTH (FT)	NOTES
SECTION A	1		
SECTION A	2		
SECTION A	3		
SECTION A	4		
SECTION A	5		
SECTION A	6		
US STRUCTURE	1		
US STRUCTURE	2		
US STRUCTURE	3		
US STRUCTURE	4		
US STRUCTURE	5		
US STRUCTURE	6		
DS STRUCTURE	1		
DS STRUCTURE	2		
DS STRUCTURE	3		
DS STRUCTURE	4		
DS STRUCTURE	5		
DS STRUCTURE	6		
SECTION B	1		
SECTION B	2		
SECTION B	3		
SECTION B	4		
SECTION B	5		
SECTION B	6		

PHOTO CATALOG TABLE

LOCATION	DIRECTION OF PHOTO	PHOTO #	NOTES
SECTION A	US		
SECTION A	DS		
US STRUCTURE	US	16.7	
US STRUCTURE	DS		
DS STRUCTURE	US	16.2	
DS STRUCTURE	DS		
SECTION B	US		
SECTION B	DS		
ADDITIONAL PHOTO 1	DS	16.3	Section Detail LOB
ADDITIONAL PHOTO 2	DS	16.4	Section Detail ROB
ADDITIONAL PHOTO 3	DS	16.5	DS Channel
ADDITIONAL PHOTO 4	US	16.6	DS Section Detail Main Channel
ADDITIONAL PHOTO 5	DS	16.8	US Channel
ADDITIONAL PHOTO 6	DS	16.9	Outfall Cross-Section
ADDITIONAL PHOTO 7	US	16.10	Bridge Top
ADDITIONAL PHOTO 8			
ADDITIONAL PHOTO 9			
ADDITIONAL PHOTO 10			

PLAN VIEW MEASUREMENT TABLE

ID	LENGTH (FT)	NOTES
6		
7		
8		

BRIDGE TABLE

OPENING WIDTH (FT)	OPENING HEIGHT (FT)	LENGTH (FT)	PIER SPACING (FT)	PIER WIDTH (FT)	# PIERS	ABUTMENT SLOPE (FT)	NOTES
78	25				2		See Fig 16.1

CULVERT TABLE

RISE (FT)	SPAN (FT)	LENGTH (FT)	# BARRELS	MATERIAL	NOTES

OTHER NOTES: Cross-Section



Gauge ENGINEERING

DATE:	
PROJECT #:	
SURVEYED BY:	
CROSSING ID:	
SHEET #:	

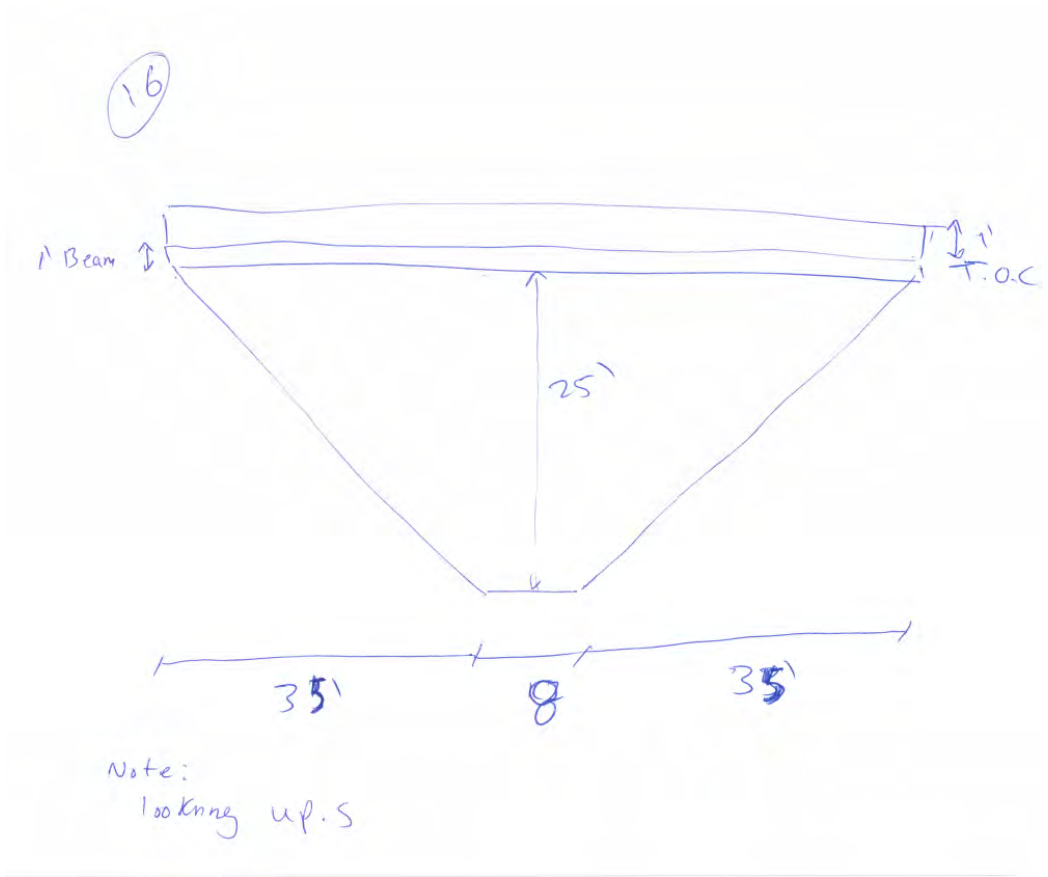


Fig 16.1



Fig 16.2 Bridge Section DS



Fig 16.3- Section Detail LOB



Fig 16.4- Section Detail ROB



Fig 16.5- DS Channel



Fig 16.6- DS Section Detail Main Channel



Fig 16.7- Bridge Section US



Fig 16.8-US Channel

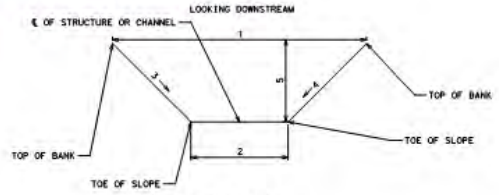


Fig 16.9- Outfall

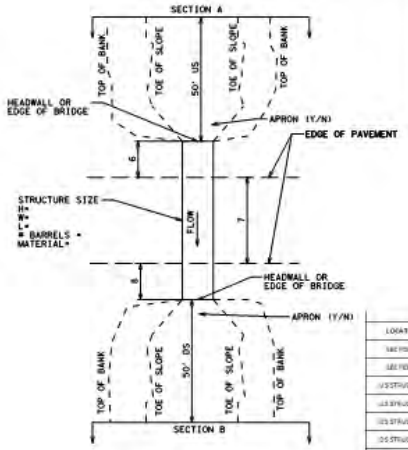


Fig 16.10-Bridge Top

17- Bridge (G103-80-01)



SECIONS A AND B



PLAN VIEW

CROSS SECTION MEASUREMENT NOTES	
ID	DESCRIPTION
1	CHANNEL TOP WIDTH (FT)
2	CHANNEL BOTOM WIDTH (FT)
3	LENGTH ALONG LEFT SIDE SLOPE (FT)
4	LENGTH ALONG RIGHT SIDE SLOPE (FT)
5	DEPTH OF CHANNEL (FT
6	EDGE OF PAVEMENT TO UPSTREAM HEADWALL OR EDGE OF BRIDGE (FT)
7	ROAWAY WIDTH (FT)
8	EDGE OF PAVEMENT TO DOWNSTREAM HEADWALL OR EDGE OF BRIDGE (FT)

NOTES:
1) TAKE PHOTO LOOKING UPSTREAM AND DOWNSTREAM AT THE FOUR SECTIONS.
2) MEASURE DEPTH OF WATER WHEN POSSIBLE.
3) DOCUMENT THE VEGETATION IN THE CHANNEL (E.G. GRASS HEIGHT, TREE DIA AND HEIGHT).
4) DOCUMENT SEDIMENT/SCOUR IN THE CHANNEL.
5) IF XS A AND B CANNOT BE TAKEN AT 50', PLEASE DOCUMENT THEIR MODIFIED DISTANCE.
6) USE ADDITIONAL SHEETS AS NEEDED PER CROSSING.

XS MEASUREMENT TABLE

LOCATION	ID	LENGTH (FT)	NOTES
SECTION A	1		
SECTION A	2		
SECTION A	3		
SECTION A	4		
SECTION A	5		
SECTION A	6		
US STRUCTURE	1		
US STRUCTURE	2		
US STRUCTURE	3		
US STRUCTURE	4		
US STRUCTURE	5		
US STRUCTURE	6		
DS STRUCTURE	1		
DS STRUCTURE	2		
DS STRUCTURE	3		
DS STRUCTURE	4		
DS STRUCTURE	5		
DS STRUCTURE	6		
SECTION B	1		
SECTION B	2		
SECTION B	3		
SECTION B	4		
SECTION B	5		
SECTION B	6		

PHOTO CATALOG TABLE

LOCATION	DIRECTION OF PHOTO	PHOTO #	NOTES
SECTION A	US		
SECTION A	DS		
US STRUCTURE	US		
US STRUCTURE	DS		
DS STRUCTURE	US		
DS STRUCTURE	DS		
SECTION B	US		
SECTION B	DS		
ADDITIONAL PHOTO 1			
ADDITIONAL PHOTO 2			
ADDITIONAL PHOTO 3			
ADDITIONAL PHOTO 4			
ADDITIONAL PHOTO 5			
ADDITIONAL PHOTO 6			
ADDITIONAL PHOTO 7			
ADDITIONAL PHOTO 8			
ADDITIONAL PHOTO 9			
ADDITIONAL PHOTO 10			

See Figures in Section 16

PLAN VIEW MEASUREMENT TABLE

ID	LENGTH (FT)	NOTES
6		
7		
8		

BRIDGE TABLE

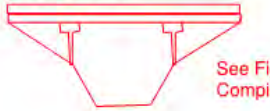
OPENING WIDTH (FT)	OPENING HEIGHT (FT)	LENGTH (FT)	PIER SPACING (FT)	PIER WIDTH (FT)	# PIERS	ABUTMENT SLOPE (FT)	NOTES
78	12		25		2		See Fig 17.1

CULVERT TABLE

RISE (FT)	SPAN (FT)	LENGTH (FT)	# BARRELS	MATERIAL	NOTES

OTHER NOTES:

Cross-Section



See Figures in Section 16 - Compiled Power point file.

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PROJECT #	
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CROSSING ID:	
SHEET #	

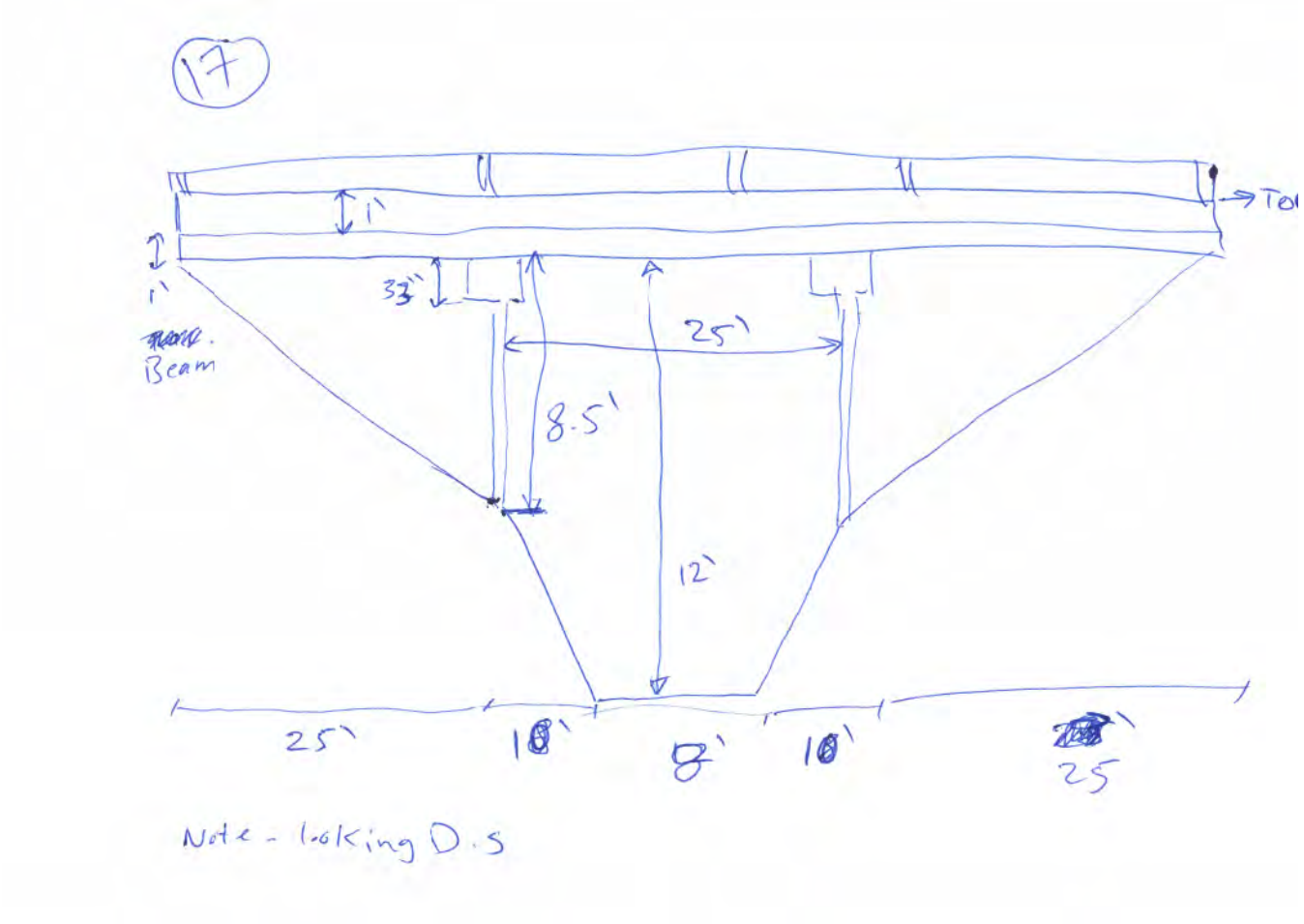
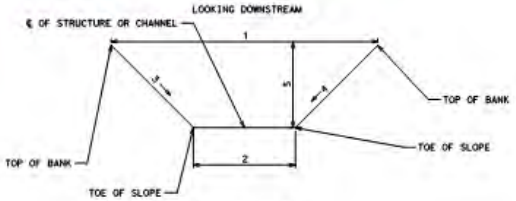
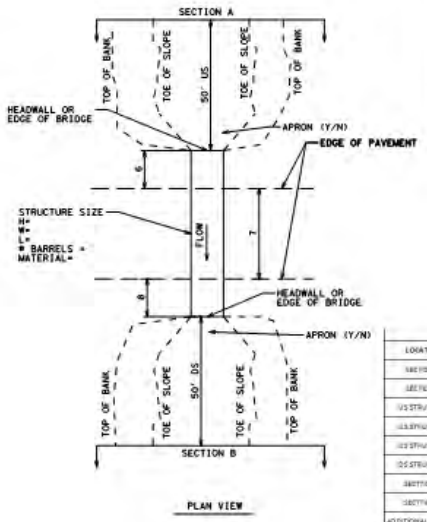


Fig 17.1

18- Pedestrian Bridge (G103-80-01)



SECIONS A AND B



PLAN VIEW

CROSS SECTION MEASUREMENT NOTES	
ID	DESCRIPTION
1	CHANNEL TOP WIDTH (FT)
2	CHANNEL BOTTOM WIDTH (FT)
3	LENGTH ALONG LEFT SIDE SLOPE (FT)
4	LENGTH ALONG RIGHT SIDE SLOPE (FT)
5	DEPTH OF CHANNEL (FT)
6	EDGE OF PAVEMENT TO UPSTREAM HEADWALL OR EDGE OF BRIDGE (FT)
7	ROAWAY WIDTH (FT)
8	EDGE OF PAVEMENT TO DOWNSTREAM HEADWALL OR EDGE OF BRIDGE (FT)

NOTES:
1) TAKE PHOTO LOOKING UPSTREAM AND DOWNSTREAM AT THE FOUR SECTIONS.
2) MEASURE DEPTH OF WATER WHEN POSSIBLE.
3) DOCUMENT THE VEGETATION IN THE CHANNEL (E.G. GRASS HEIGHT, TREE DIA AND HEIGHT).
4) DOCUMENT SEDIMENT/SCOUR IN THE CHANNEL.
5) IF XS A AND B CANNOT BE TAKEN AT 50', PLEASE DOCUMENT THEIR MODIFIED DISTANCE.
6) USE ADDITIONAL SHEETS AS NEEDED PER CROSSING.

XS MEASUREMENT TABLE

LOCATION	ID	LENGTH (FT)	NOTES
SECTION A	1		
SECTION A	2		
SECTION A	3		
SECTION A	4		
SECTION A	5		
SECTION A	6		
US STRUCTURE	1		
US STRUCTURE	2		
US STRUCTURE	3		
US STRUCTURE	4		
US STRUCTURE	5		
US STRUCTURE	6		
DS STRUCTURE	1		
DS STRUCTURE	2		
DS STRUCTURE	3		
DS STRUCTURE	4		
DS STRUCTURE	5		
DS STRUCTURE	6		
SECTION B	1		
SECTION B	2		
SECTION B	3		
SECTION B	4		
SECTION B	5		
SECTION B	6		

PHOTO CATALOG TABLE

LOCATION	DIRECTION OF PHOTO	PHOTO #	NOTES
SECTION A	US		
SECTION A	DS		
US STRUCTURE	US	18.4	
US STRUCTURE	DS		
US STRUCTURE	US	18.2	
DS STRUCTURE	DS		
SECTION B	US	1.3	
SECTION B	DS		
ADDITIONAL PHOTO 1	DS	18.3	DS Channel
ADDITIONAL PHOTO 2	US	18.5	US Channel Detail
ADDITIONAL PHOTO 3	US	18.6	US Channel
ADDITIONAL PHOTO 4	US	18.7	US Bank
ADDITIONAL PHOTO 5	DS	18.8	PED Bridge Top
ADDITIONAL PHOTO 6			
ADDITIONAL PHOTO 7			
ADDITIONAL PHOTO 8			
ADDITIONAL PHOTO 9			
ADDITIONAL PHOTO 10			

PLAN VIEW MEASUREMENT TABLE

ID	LENGTH (FT)	NOTES
6		
7		
8		

BRIDGE TABLE

OPENING WIDTH (FT)	OPENING HEIGHT (FT)	LENGTH (FT)	PIER SPACING (FT)	PIER WIDTH (FT)	# PIERS	ABUTMENT SLOPE (FT)	NOTES
78	14	6			0		See Fig 18.1 (Concrete Lined Channel)

CULVERT TABLE

RISE (FT)	SPAN (FT)	LENGTH (FT)	# BARRELS	MATERIAL	NOTES

OTHER NOTES:

Cross-Section



Gauge ENGINEERING

DATE:	
PROJECT #	
SURVEYED BY:	
CROSSING ID:	
SHEET #	

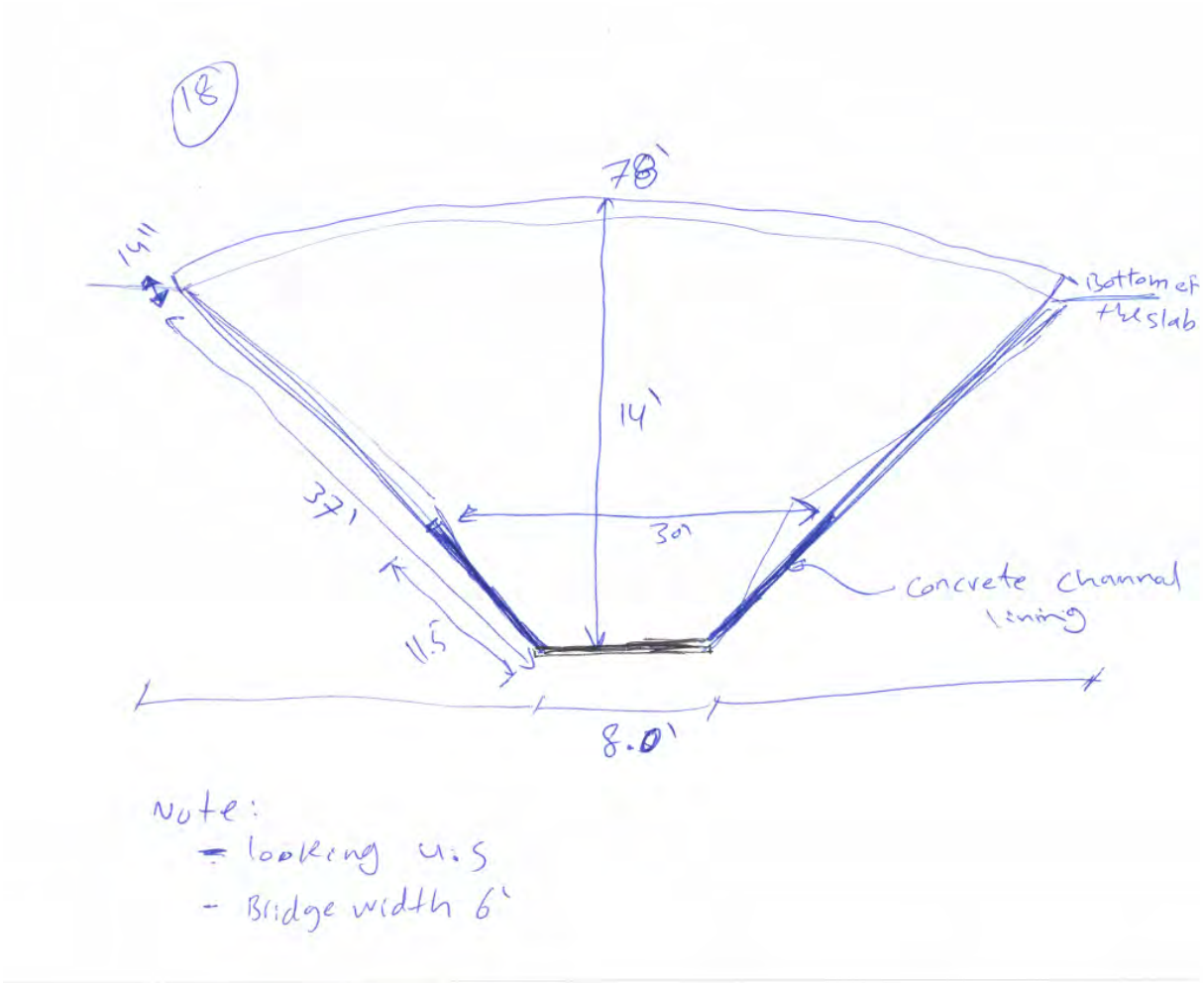

18
78'
14'
Bottom of the slab
14'
37'
30'
11.5'
concrete channal lining
8.0'
Note:
- looking u.s
- Bridge width 6'

Fig 18.1



Fig 18.2 PED Section DS



Fig 18.3- DS Channel



Fig 18.4- PED Section US



Fig 18.5- US Channel Detail



Fig 18.6-US Channel

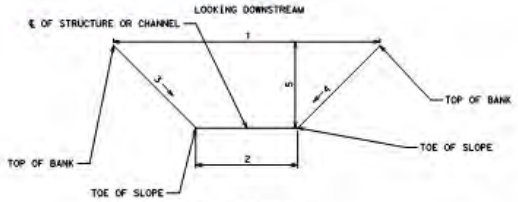


Fig 18.7- US Bank

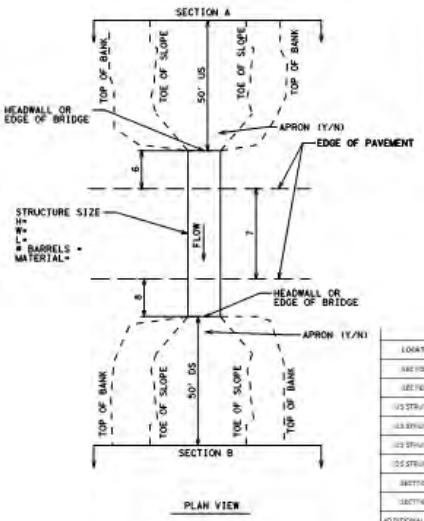


Fig 18.8- Pedestrian Bridge Top

19 - Bridge (G103-80-01)



SECTIONS A AND B



PLAN VIEW

CROSS SECTION MEASUREMENT NOTES	
ID	DESCRIPTION
1	CHANNEL TOP WIDTH (FT)
2	CHANNEL BOTTOM WIDTH (FT)
3	LENGTH ALONG LEFT SIDE SLOPE (FT)
4	LENGTH ALONG RIGHT SIDE SLOPE (FT)
5	DEPTH OF CHANNEL (FT)
6	EDGE OF PAVEMENT TO UPSTREAM HEADWALL OR EDGE OF BRIDGE (FT)
7	ROAWAY WIDTH (FT)
8	EDGE OF PAVEMENT TO DOWNSTREAM HEADWALL OR EDGE OF BRIDGE (FT)

NOTES:
1) TAKE PHOTO LOOKING UPSTREAM AND DOWNSTREAM AT THE FOUR SECTIONS.
2) MEASURE DEPTH OF WATER WHEN POSSIBLE.
3) DOCUMENT THE VEGETATION IN THE CHANNEL (E.G. GRASS HEIGHT, TREE DIA AND HEIGHT).
4) DOCUMENT SEDIMENT/SCOUR IN THE CHANNEL.
5) IF XS A AND B CANNOT BE TAKEN AT 50', PLEASE DOCUMENT THEIR MODIFIED DISTANCE.
6) USE ADDITIONAL SHEETS AS NEEDED PER CROSSING.

XS MEASUREMENT TABLE

LOCATION	ID	LENGTH (FT)	NOTES
SECTION A	1		
SECTION A	2		
SECTION A	3		
SECTION A	4		
SECTION A	5		
SECTION A	6		
US STRUCTURE	1		
US STRUCTURE	2		
US STRUCTURE	3		
US STRUCTURE	4		
US STRUCTURE	5		
US STRUCTURE	6		
DS STRUCTURE	1		
DS STRUCTURE	2		
DS STRUCTURE	3		
DS STRUCTURE	4		
DS STRUCTURE	5		
DS STRUCTURE	6		
SECTION B	1	66	30' Downstream from Bridge
SECTION B	2	6	See Fig 19.2
SECTION B	3	11/30	Side Slope
SECTION B	4	11/30	Side Slope
SECTION B	5	11	
SECTION B	6		

PHOTO CATALOG TABLE

LOCATION	DIRECTION OF PHOTO	PHOTO #	NOTES
SECTION A	US		
SECTION A	DS		
US STRUCTURE	US	19.3	
US STRUCTURE	DS		
US STRUCTURE	US		
DS STRUCTURE	DS		
SECTION B	US	19.8	
SECTION B	DS		
ADDITIONAL PHOTO 1	US	19.4	Channel Detail
ADDITIONAL PHOTO 2	US	19.5	LOB Looking US
ADDITIONAL PHOTO 3	US	19.6	ROB looking US
ADDITIONAL PHOTO 4	US	19.7	Section Detail
ADDITIONAL PHOTO 5			
ADDITIONAL PHOTO 6			
ADDITIONAL PHOTO 7			
ADDITIONAL PHOTO 8			
ADDITIONAL PHOTO 9			
ADDITIONAL PHOTO 10			

PLAN VIEW MEASUREMENT TABLE

ID	LENGTH (FT)	NOTES
6		
7		
8		

BRIDGE TABLE

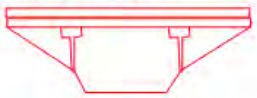
OPENING WIDTH (FT)	OPENING HEIGHT (FT)	LENGTH (FT)	PIER SPACING (FT)	PIER WIDTH (FT)	# PIERS	ABUTMENT SLOPE (FT)	NOTES
61	11	39	20	1.3	2		See Fig 19.1

CULVERT TABLE

RISE (FT)	SPAN (FT)	LENGTH (FT)	# BARRELS	MATERIAL	NOTES

OTHER NOTES:

Bridge Cross-Section



Section B Cross-Section



Gauge ENGINEERING

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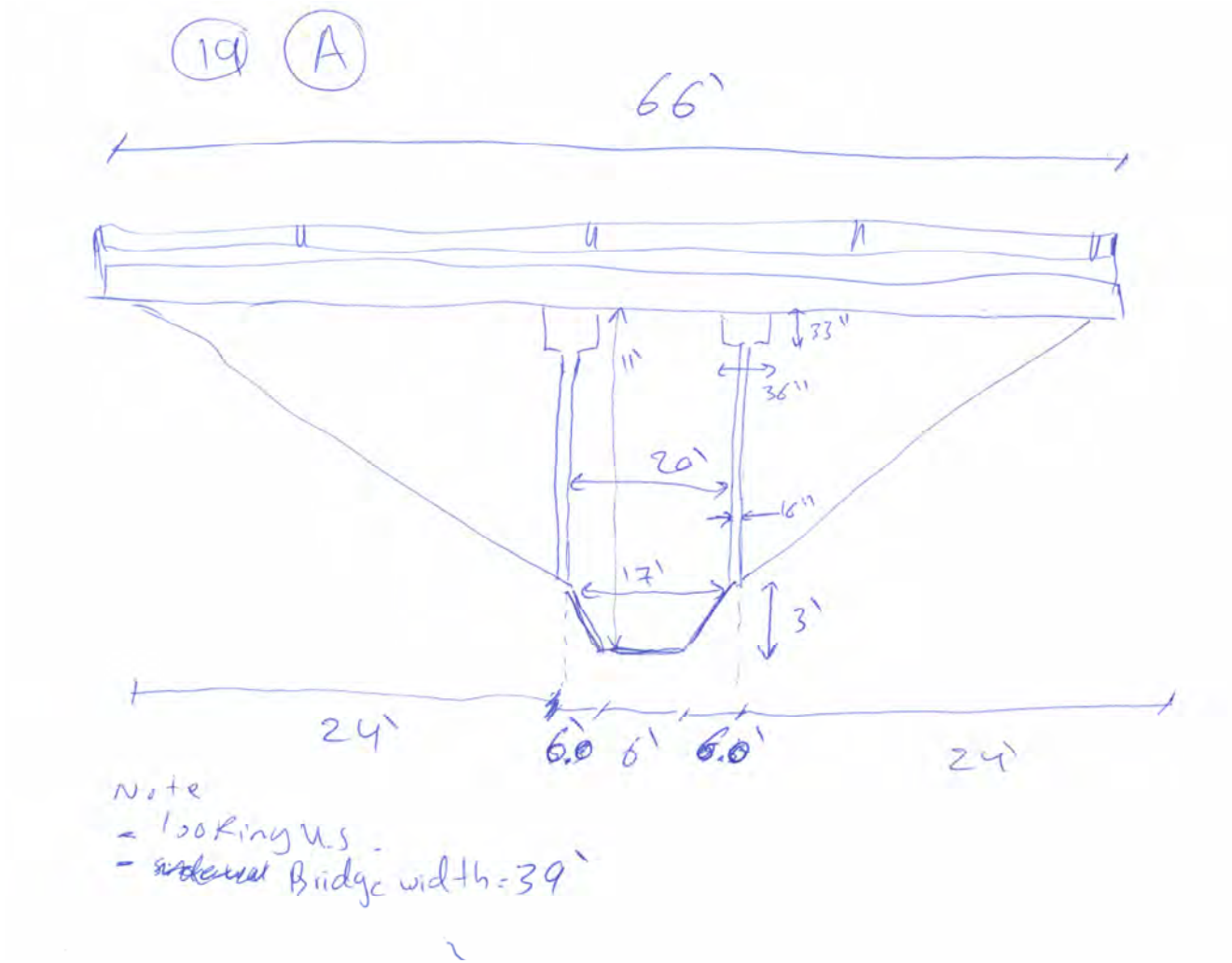
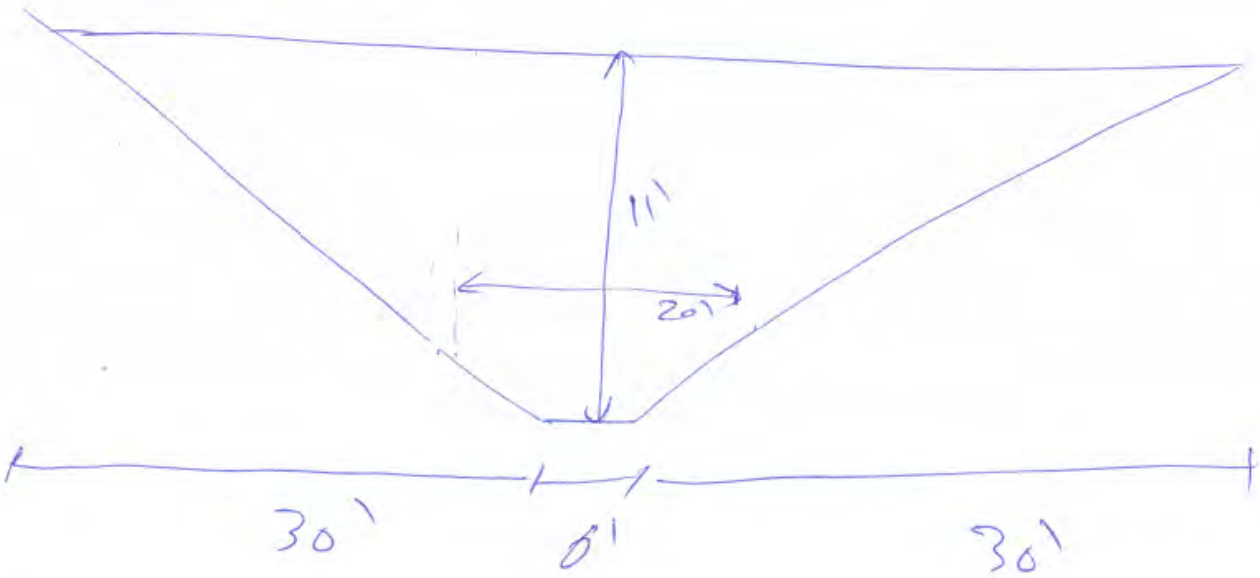

19
A
66'
33"
11'
36"
20'
16"
17'
3'
24'
6.0
6'
6.0
24'
Note
- looking U.S.
- Bridge width = 39'

Fig 19.1



Note:
- looking U.S
- 30' from the Bridge

Fig 19.2



Fig 19.3 Bridge Section US



Fig 19.4- Channel Detail



Fig 19.5- LOB looking US



Fig 19.6- ROB Looking US

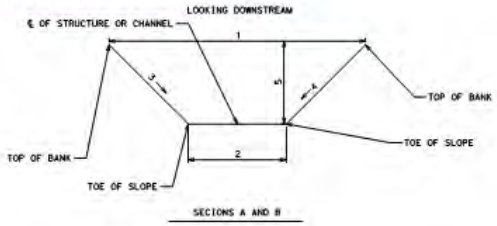


Fig 19.7-Section Detail

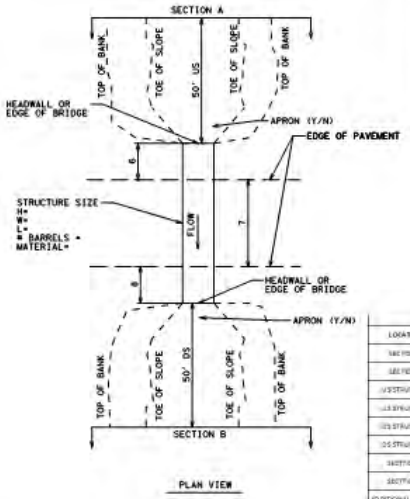


Fig 19.8- DS Channel

20- Pedestrian Bridge (G103-80-01)



SECTIONS A AND B



PLAN VIEW

CROSS SECTION MEASUREMENT NOTES	
ID	DESCRIPTION
1	CHANNEL TOP WIDTH (FT)
2	CHANNEL BOTTOM WIDTH (FT)
3	LENGTH ALONG LEFT SIDE SLOPE (FT)
4	LENGTH ALONG RIGHT SIDE SLOPE (FT)
5	DEPTH OF CHANNEL (FT)
6	EDGE OF PAVEMENT TO UPSTREAM HEADWALL OR EDGE OF BRIDGE (FT)
7	ROADWAY WIDTH (FT)
8	EDGE OF PAVEMENT TO DOWNSTREAM HEADWALL OR EDGE OF BRIDGE (FT)

NOTES:
1) TAKE PHOTO LOOKING UPSTREAM AND DOWNSTREAM AT THE FOUR SECTIONS.
2) MEASURE DEPTH OF WATER WHEN POSSIBLE.
3) DOCUMENT THE VEGETATION IN THE CHANNEL (E.G. GRASS HEIGHT, TREE DIA AND HEIGHT).
4) DOCUMENT SEDIMENT/SCOUR IN THE CHANNEL.
5) IF XS A AND B CANNOT BE TAKEN AT 50', PLEASE DOCUMENT THEIR MODIFIED DISTANCE.
6) USE ADDITIONAL SHEETS AS NEEDED PER CROSSING.

XS MEASUREMENT TABLE

LOCATION	ID	LENGTH (FT)	NOTES
SECTION A	1		
SECTION A	2		
SECTION A	3		
SECTION A	4		
SECTION A	5		
SECTION A	6		
US STRUCTURE	1		
US STRUCTURE	2		
US STRUCTURE	3		
US STRUCTURE	4		
US STRUCTURE	5		
US STRUCTURE	6		
DS STRUCTURE	1		
DS STRUCTURE	2		
DS STRUCTURE	3		
DS STRUCTURE	4		
DS STRUCTURE	5		
DS STRUCTURE	6		
SECTION B	1		
SECTION B	2		
SECTION B	3		
SECTION B	4		
SECTION B	5		
SECTION B	6		

PHOTO CATALOG TABLE

LOCATION	DIRECTION OF PHOTO	PHOTO #	NOTES
SECTION A	US		
SECTION A	DS		
US STRUCTURE	US	20.4	
US STRUCTURE	DS		
DS STRUCTURE	US	20.2	
DS STRUCTURE	DS		
SECTION B	US	1.3	
SECTION B	DS		
ADDITIONAL PHOTO 1	DS	20.2	DS Channel
ADDITIONAL PHOTO 2	US	20.4	Section Detail LOB
ADDITIONAL PHOTO 3	US	20.5	Section Detail ROB
ADDITIONAL PHOTO 4	US	20.6	US Channel
ADDITIONAL PHOTO 5		20.7	Bridge Structure Detail
ADDITIONAL PHOTO 6	DS	20.8	Bridge Top
ADDITIONAL PHOTO 7			
ADDITIONAL PHOTO 8			
ADDITIONAL PHOTO 9			
ADDITIONAL PHOTO 10			

PLAN VIEW MEASUREMENT TABLE

ID	LENGTH (FT)	NOTES
6		
7		
8		

BRIDGE TABLE

OPENING WIDTH (FT)	OPENING HEIGHT (FT)	LENGTH (FT)	PIER SPACING (FT)	PIER WIDTH (FT)	# PIERS	ABUTMENT SLOPE (FT)	NOTES
76	13.5	6			0		See Fig 20.1

CULVERT TABLE

RISE (FT)	SPAN (FT)	LENGTH (FT)	# BARRELS	MATERIAL	NOTES

OTHER NOTES:

Channel Cross-Section



Gauge ENGINEERING

DATE:	
PROJECT #	
SURVEYED BY:	
CROSSING ID:	
SHEET #	

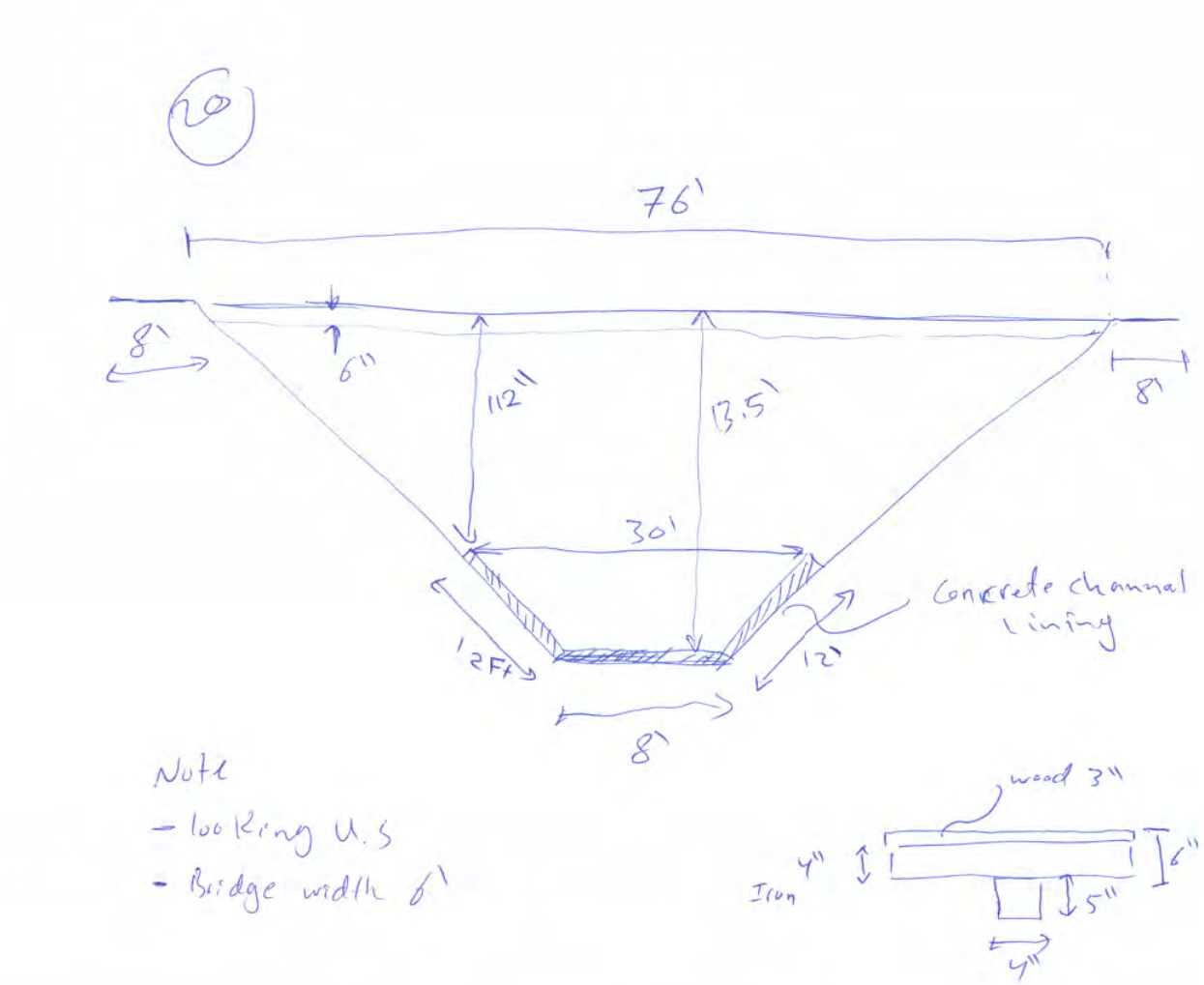

20
76'
8'
6"
112"
13.5'
8'
30'
Concrete channal lining
12Ft
12'
8'
Note
- looking U.S
- Bridge width 6'
wood 3"
Iron
4"
6"
5"
4"

Fig 20.1



Fig 20.2 Bridge Section DS



Fig 20.3- DS Channel



Fig 20.4- US Section Detail - LOB



Fig 20.5- US Section Detail ROB



Fig 20.6-US Channel

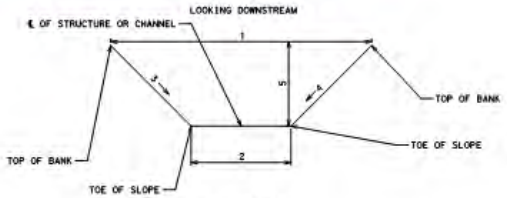


Fig 20.7- Bridge Structure Detail

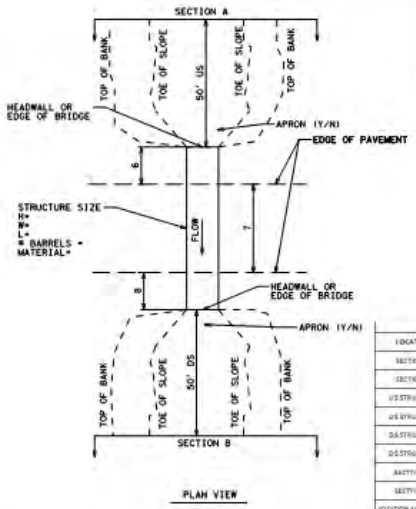


Fig 20.8 Bridege Top

21- Pedestrian Bridge (G103-41-00)



SECIONS A AND B



PLAN VIEW

CROSS SECTION MEASUREMENT NOTES	
ID	DESCRIPTION
1	CHANNEL TOP WIDTH (FT)
2	CHANNEL BOTTOM WIDTH (FT)
3	LENGTH ALONG LEFT SIDE SLOPE (FT)
4	LENGTH ALONG RIGHT SIDE SLOPE (FT)
5	DEPTH OF CHANNEL (FT)
6	EDGE OF PAVEMENT TO UPSTREAM HEADWALL OR EDGE OF BRIDGE (FT)
7	ROADWAY WIDTH (FT)
8	EDGE OF PAVEMENT TO DOWNSTREAM HEADWALL OR EDGE OF BRIDGE (FT)

NOTES:
1) TAKE PHOTO LOOKING UPSTREAM AND DOWNSTREAM AT THE FOUR SECTIONS.
2) MEASURE DEPTH OF WATER WHEN POSSIBLE.
3) DOCUMENT THE VEGETATION IN THE CHANNEL (E.G. GRASS HEIGHT, TREE DIA AND HEIGHT).
4) DOCUMENT SEDIMENT/SCOUR IN THE CHANNEL.
5) IF XS A AND B CANNOT BE TAKEN AT 50', PLEASE DOCUMENT THEIR MODIFIED DISTANCE.
6) USE ADDITIONAL SHEETS AS NEEDED PER CROSSING.

XS MEASUREMENT TABLE

LOCATION	ID	LENGTH (FT)	NOTES
SECTION A	1		
SECTION A	2		
SECTION A	3		
SECTION A	4		
SECTION A	5		
SECTION A	6		
US STRUCTURE	1		
US STRUCTURE	2		
US STRUCTURE	3		
US STRUCTURE	4		
US STRUCTURE	5		
US STRUCTURE	6		
DS STRUCTURE	1		
DS STRUCTURE	2		
DS STRUCTURE	3		
DS STRUCTURE	4		
DS STRUCTURE	5		
DS STRUCTURE	6		
SECTION B	1		
SECTION B	2		
SECTION B	3		
SECTION B	4		
SECTION B	5		
SECTION B	6		

PHOTO CATALOG TABLE

LOCATION	DIRECTION OF PHOTO	PHOTO #	NOTES
SECTION A	US		
SECTION A	DS		
US STRUCTURE	US	21.2	
US STRUCTURE	DS		
DS STRUCTURE	US		
DS STRUCTURE	DS		
SECTION B	US		
SECTION B	DS		
ADDITIONAL PHOTO 1	US	21.3	US Channel
ADDITIONAL PHOTO 2	DS	21.4	DS Channel
ADDITIONAL PHOTO 3		21.5	Bridge Top
ADDITIONAL PHOTO 4			
ADDITIONAL PHOTO 5			
ADDITIONAL PHOTO 6			
ADDITIONAL PHOTO 7			
ADDITIONAL PHOTO 8			
ADDITIONAL PHOTO 9			
ADDITIONAL PHOTO 10			

PLAN VIEW MEASUREMENT TABLE

ID	LENGTH (FT)	NOTES
6		
7		
8		

BRIDGE TABLE

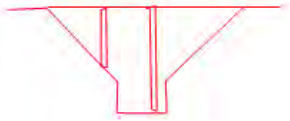
OPENING WIDTH (FT)	OPENING HEIGHT (FT)	LENGTH (FT)	PIER SPACING (FT)	PIER WIDTH (FT)	# PIERS	ABUTMENT SLOPE (FT)	NOTES
72	12		19		2		See Fig 21.1

CULVERT TABLE

RISE (FT)	SPAN (FT)	LENGTH (FT)	# BARRELS	MATERIAL	NOTES

OTHER NOTES:

Bridge Cross-Section



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PROJECT #	
SURVEYED BY:	
CROSSING ID:	
SHEET #	

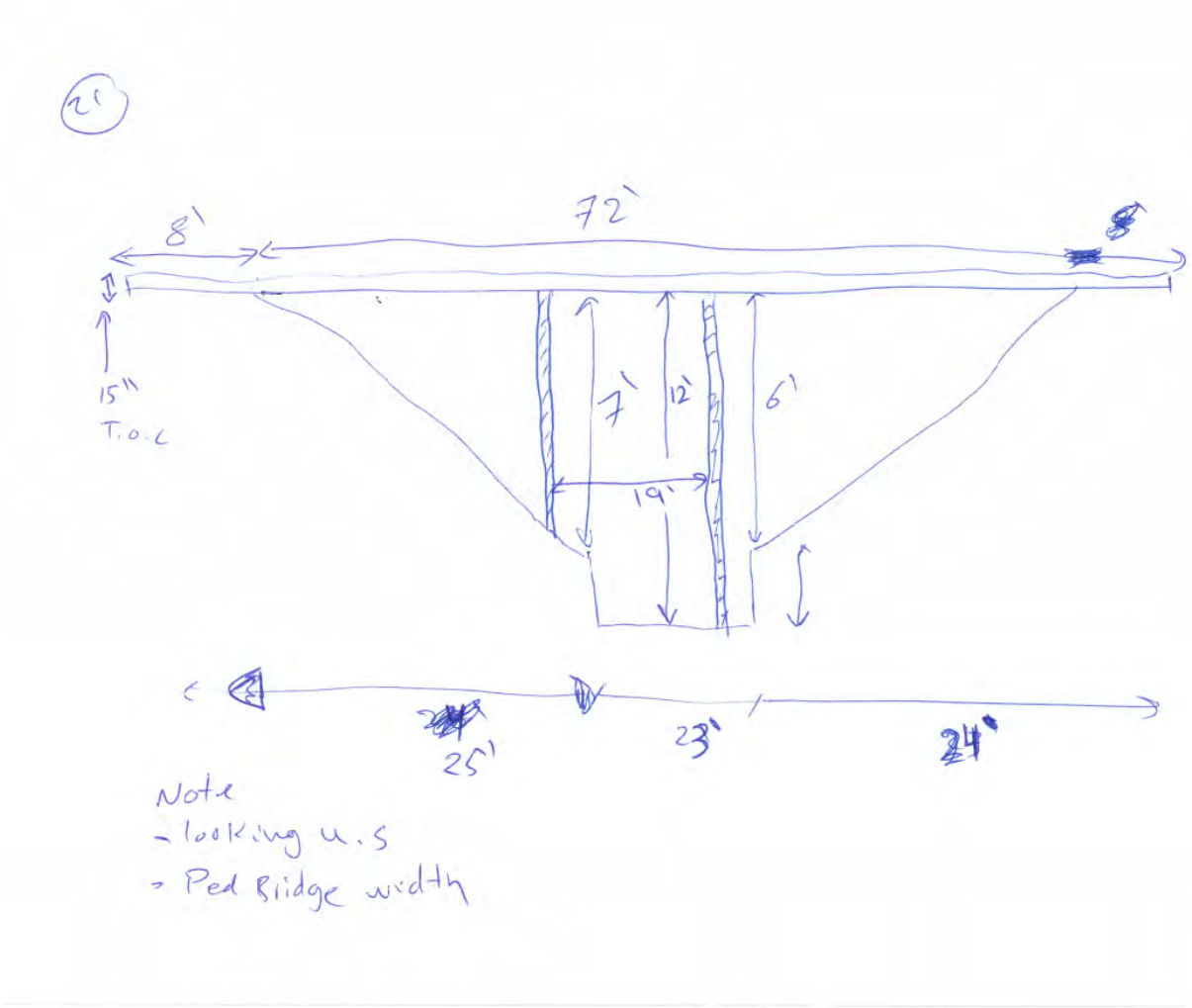


Fig 21.1



Fig 21.2 Bridge Section US



Fig 21.3- US Channel

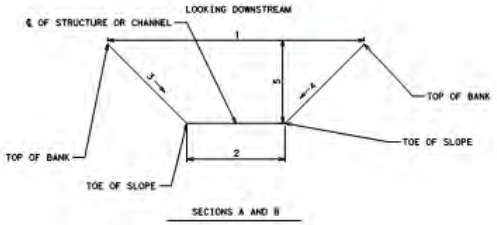


Fig 21.4- DS Channel

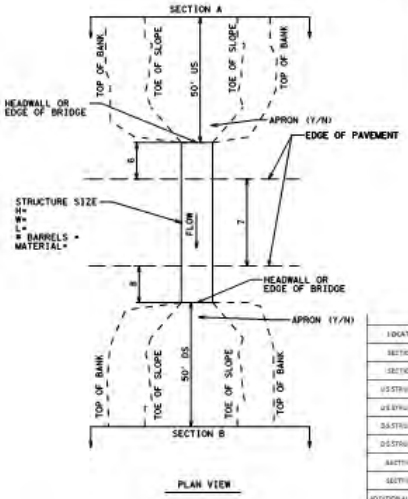


Fig 21.5- Bridge Top

22- Drop Structure (G103-41-00)



SECTIONS A AND B



PLAN VIEW

CROSS SECTION MEASUREMENT NOTES	
ID	DESCRIPTION
1	CHANNEL TOP WIDTH (FT)
2	CHANNEL BOTTOM WIDTH (FT)
3	LENGTH ALONG LEFT SIDE SLOPE (FT)
4	LENGTH ALONG RIGHT SIDE SLOPE (FT)
5	DEPTH OF CHANNEL (FT)
6	EDGE OF PAVEMENT TO UPSTREAM HEADWALL OR EDGE OF BRIDGE (FT)
7	ROADWAY WIDTH (FT)
8	EDGE OF PAVEMENT TO DOWNSTREAM HEADWALL OR EDGE OF BRIDGE (FT)

NOTES:
1) TAKE PHOTO LOOKING UPSTREAM AND DOWNSTREAM AT THE FOUR SECTIONS.
2) MEASURE DEPTH OF WATER WHEN POSSIBLE.
3) DOCUMENT THE VEGETATION IN THE CHANNEL (E.G. GRASS HEIGHT, TREE DIA AND HEIGHT).
4) DOCUMENT SEDIMENT/SCOUR IN THE CHANNEL.
5) IF XS A AND B CANNOT BE TAKEN AT 50', PLEASE DOCUMENT THEIR MODIFIED DISTANCE.
6) USE ADDITIONAL SHEETS AS NEEDED PER CROSSING.

XS MEASUREMENT TABLE

LOCATION	ID	LENGTH (FT)	NOTES
SECTION A	1	62	
SECTION A	2	8	
SECTION A	3		See Fig 22.1
SECTION A	4		See Fig 22.1
SECTION A	5		See Fig 22.1
SECTION A	6		
US STRUCTURE	1		
US STRUCTURE	2		
US STRUCTURE	3		
US STRUCTURE	4		
US STRUCTURE	5		
US STRUCTURE	6		
DS STRUCTURE	1		
DS STRUCTURE	2		
DS STRUCTURE	3		
DS STRUCTURE	4		
DS STRUCTURE	5		
DS STRUCTURE	6		
SECTION B	1		
SECTION B	2		
SECTION B	3		
SECTION B	4		
SECTION B	5		
SECTION B	6		

PHOTO CATALOG TABLE

LOCATION	DIRECTION OF PHOTO	PHOTO #	NOTES
SECTION A	US		
SECTION B	DS		
US STRUCTURE	US	22.2	
US STRUCTURE	DS		
DS STRUCTURE	US		
DS STRUCTURE	DS		
SECTION B	US		
SECTION B	DS		
ADDITIONAL PHOTO 1	US	22.3	US Channel
ADDITIONAL PHOTO 2	US	22.4	US channel detail
ADDITIONAL PHOTO 3	DS	22.5	DS Channel (Looking US)
ADDITIONAL PHOTO 4	DS	22.6	DS Channel Detail
ADDITIONAL PHOTO 5			
ADDITIONAL PHOTO 6			
ADDITIONAL PHOTO 7			
ADDITIONAL PHOTO 8			
ADDITIONAL PHOTO 9			
ADDITIONAL PHOTO 10			

PLAN VIEW MEASUREMENT TABLE

ID	LENGTH (FT)	NOTES
6		
7		
8		

BRIDGE TABLE

OPENING WIDTH (FT)	OPENING HEIGHT (FT)	LENGTH (FT)	PIER SPACING (FT)	PIER WIDTH (FT)	# PIERS	ABUTMENT SLOPE (FT)	NOTES

CULVERT TABLE

RISE (FT)	SPAN (FT)	LENGTH (FT)	# BARRELS	MATERIAL	NOTES

OTHER NOTES:

Section A- Cross-Section



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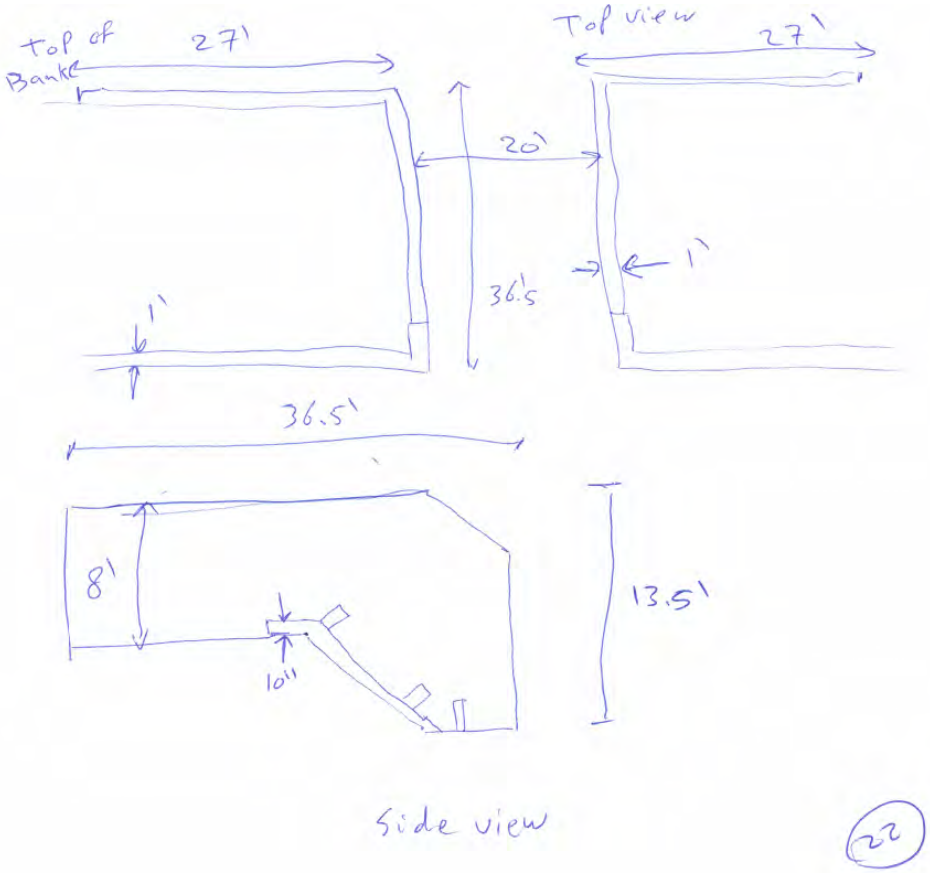
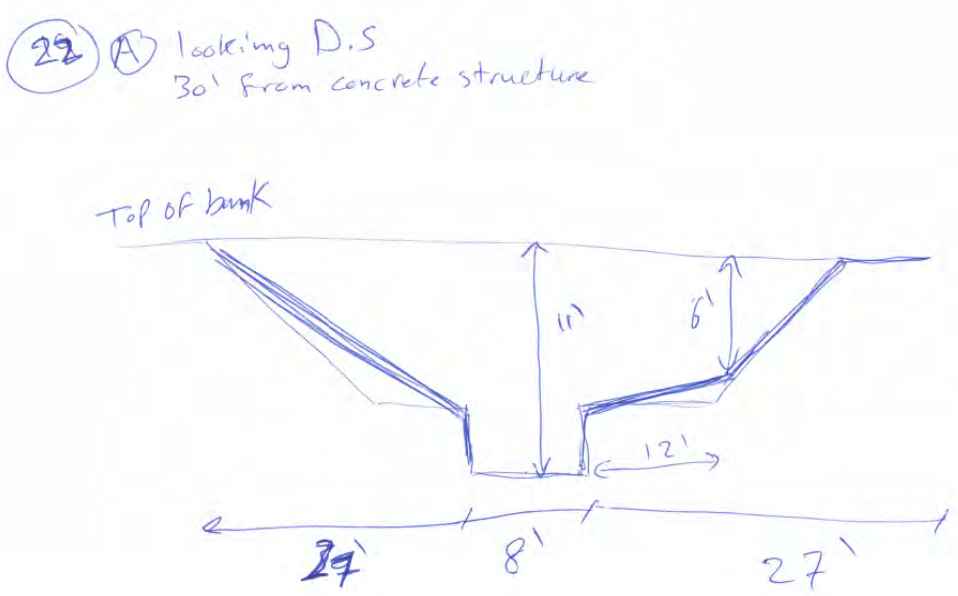
DATE:	
PROJECT #	
SURVEYED BY:	
CROSSING ID:	
SHEET #	





Section A – 30' Upstream of Structure

Fig 1.1



Fig 22.2 Structure Section US



Fig 22.3- US Channel



Fig 22.4- US Channel

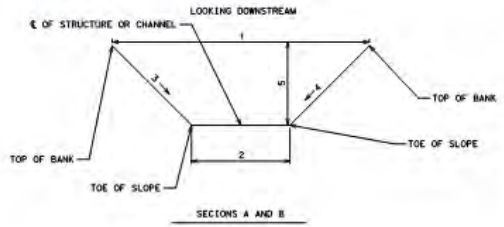


Fig 22.5- DS Channel (looking US)

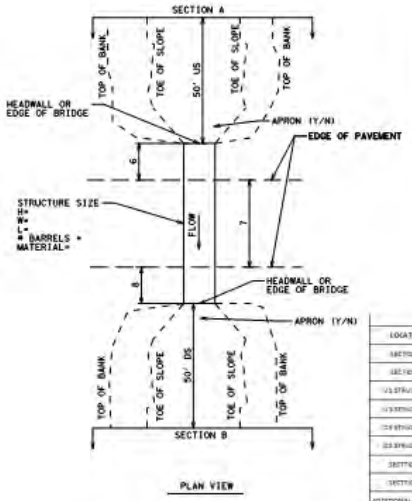


Fig 22.6-DS Channel Detail

23 - Culvert (G103-41-00)



SECTIONS A AND B



PLAN VIEW

CROSS SECTION MEASUREMENT NOTES	
ID	DESCRIPTION
1	CHANNEL TOP WIDTH (FT)
2	CHANNEL BOTTOM WIDTH (FT)
3	LENGTH ALONG LEFT SIDE SLOPE (FT)
4	LENGTH ALONG RIGHT SIDE SLOPE (FT)
5	DEPTH OF CHANNEL (FT)
6	EDGE OF PAVEMENT TO UPSTREAM HEADWALL OR EDGE OF BRIDGE (FT)
7	ROADWAY WIDTH (FT)
8	EDGE OF PAVEMENT TO DOWNSTREAM HEADWALL OR EDGE OF BRIDGE (FT)

NOTES:
1) TAKE PHOTO LOOKING UPSTREAM AND DOWNSTREAM AT THE FOUR SECTIONS.
2) MEASURE DEPTH OF WATER WHEN POSSIBLE.
3) DOCUMENT THE VEGETATION IN THE CHANNEL (E.G. GRASS HEIGHT, TREE DIA AND HEIGHT).
4) DOCUMENT SEDIMENT/SCOUR IN THE CHANNEL.
5) IF XS A AND B CANNOT BE TAKEN AT 50', PLEASE DOCUMENT THEIR MODIFIED DISTANCE.
6) USE ADDITIONAL SHEETS AS NEEDED PER CROSSING.

XS MEASUREMENT TABLE

LOCATION	ID	LENGTH (FT)	NOTES
SECTION A	1		
SECTION A	2		
SECTION A	3		
SECTION A	4		
SECTION A	5		
SECTION A	6		
US STRUCTURE	1		
US STRUCTURE	2		
US STRUCTURE	3		
US STRUCTURE	4		
US STRUCTURE	5		
US STRUCTURE	6		
DS STRUCTURE	1		
DS STRUCTURE	2		
DS STRUCTURE	3		
DS STRUCTURE	4		
DS STRUCTURE	5		
DS STRUCTURE	6		
SECTION B	1		
SECTION B	2		
SECTION B	3		
SECTION B	4		
SECTION B	5		
SECTION B	6		

PHOTO CATALOG TABLE

LOCATION	DIRECTION OF PHOTO	PHOTO #	NOTES
SECTION A	US		
SECTION A	DS		
US STRUCTURE	US		
US STRUCTURE	DS	23.4	Pedestrian Bridge at this end
DS STRUCTURE	US		
DS STRUCTURE	DS	23.2	
SECTION B	US		
SECTION B	DS		
ADDITIONAL PHOTO 1			
ADDITIONAL PHOTO 2	DS	23.3	DS Channel
ADDITIONAL PHOTO 3	US	23.5	US Channel
ADDITIONAL PHOTO 4	US	23.6	US Channel (shows crossing 24)
ADDITIONAL PHOTO 5			
ADDITIONAL PHOTO 6			
ADDITIONAL PHOTO 7			
ADDITIONAL PHOTO 8			
ADDITIONAL PHOTO 9			
ADDITIONAL PHOTO 10			

PLAN VIEW MEASUREMENT TABLE

ID	LENGTH (FT)	NOTES
6		
7		
8		

BRIDGE TABLE

OPENING WIDTH (FT)	OPENING HEIGHT (FT)	LENGTH (FT)	PIER SPACING (FT)	PIER WIDTH (FT)	# PIERS	ABUTMENT SLOPE (FT)	NOTES

CULVERT TABLE

RISE (FT)	SPAN (FT)	LENGTH (FT)	# BARRELS	MATERIAL	NOTES
8	8	38	2		See Fig 23.1

OTHER NOTES:

Culvert Section



A pedestrian bridge at the downstream end of Culvert.
Width of Bridge= 6'
(see fig 23.4)

Gauge ENGINEERING

DATE:	
PROJECT #	
SURVEYED BY:	
CROSSING ID:	
SHEET #	

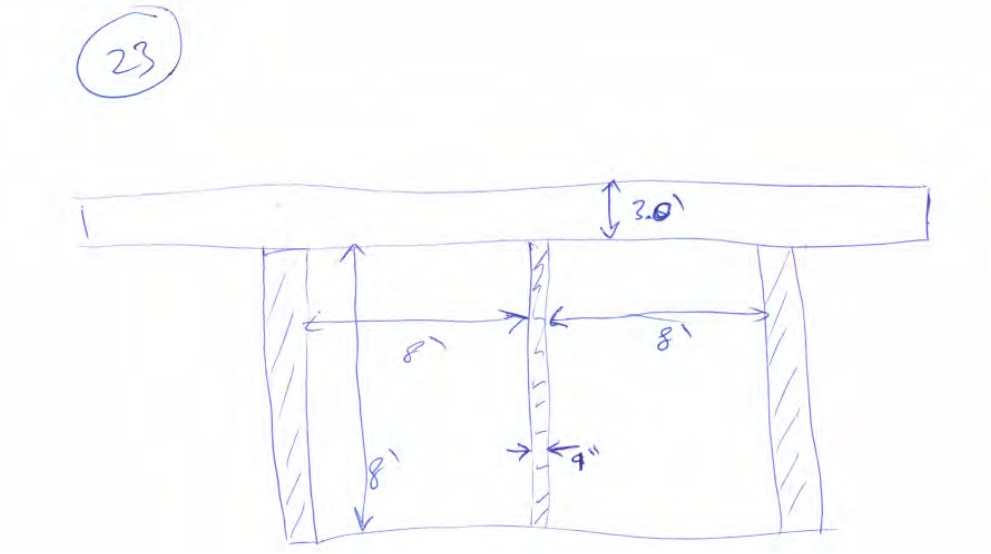

23
3.0'
8'
8'
8'
9"
looking D.S
Ped. width = 6'
Distance between Edge of culvert to face of curb = 7'
Street width = 24'

Fig 23.1



Fig 23.2 Culvert Section DS



Fig 23.3- DS Channel



Fig 23.4- Culvert Section US

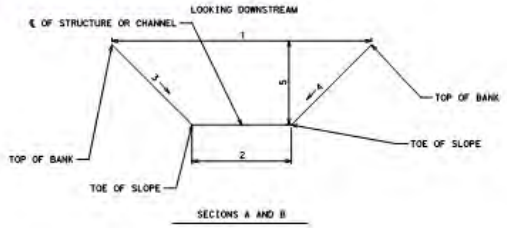


Fig 23.5- US Channel

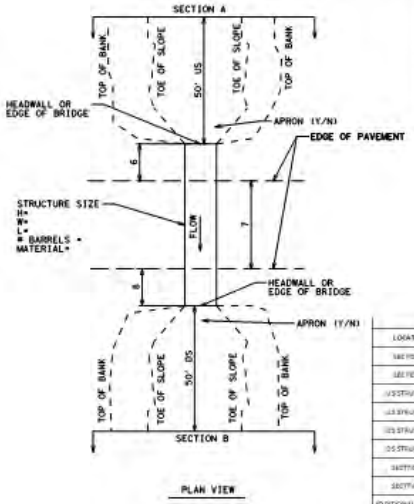


Fig 23.6-US Channel

24- Culvert (G103-41-00)



SECTIONS A AND B



PLAN VIEW

CROSS SECTION MEASUREMENT NOTES	
ID	DESCRIPTION
1	CHANNEL TOP WIDTH (FT)
2	CHANNEL BOTOM WIDTH (FT)
3	LENGTH ALONG LEFT SIDE SLOPE (FT)
4	LENGTH ALONG RIGHT SIDE SLOPE (FT)
5	DEPTH OF CHANNEL (FT
6	EDGE OF PAVEMENT TO UPSTREAM HEADWALL OR EDGE OF BRIDGE (FT)
7	ROAWAY WIDTH (FT)
8	EDGE OF PAVEMENT TO DOWNSTREAM HEADWALL OR EDGE OF BRIDGE (FT)

NOTES:
1) TAKE PHOTO LOOKING UPSTREAM AND DOWNSTREAM AT THE FOUR SECTIONS.
2) MEASURE DEPTH OF WATER WHEN POSSIBLE.
3) DOCUMENT THE VEGETATION IN THE CHANNEL (E.G. GRASS HEIGHT, TREE DIA AND HEIGHT).
4) DOCUMENT SEDIMENT/SCOUR IN THE CHANNEL.
5) IF XS A AND B CANNOT BE TAKEN AT 50', PLEASE DOCUMENT THEIR MODIFIED DISTANCE.
6) USE ADDITIONAL SHEETS AS NEEDED PER CROSSING.

XS MEASUREMENT TABLE

LOCATION	ID	LENGTH (FT)	NOTES
SECTION A	1		
SECTION A	2		
SECTION A	3		
SECTION A	4		
SECTION A	5		
SECTION A	6		
US STRUCTURE	1		
US STRUCTURE	2		
US STRUCTURE	3		
US STRUCTURE	4		
US STRUCTURE	5		
US STRUCTURE	6		
DS STRUCTURE	1		
DS STRUCTURE	2		
DS STRUCTURE	3		
DS STRUCTURE	4		
DS STRUCTURE	5		
DS STRUCTURE	6		
SECTION B	1		
SECTION B	2		
SECTION B	3		
SECTION B	4		
SECTION B	5		
SECTION B	6		

PHOTO CATALOG TABLE

LOCATION	DIRECTION OF PHOTO	PHOTO #	NOTES
SECTION A	US		
SECTION A	DS		
US STRUCTURE	US	24.2	
US STRUCTURE	DS		
US STRUCTURE	US		
DS STRUCTURE	DS		
SECTION B	US		
SECTION B	DS		
ADDITIONAL PHOTO 1	US	24.3	US Channel
ADDITIONAL PHOTO 2	US	24.4	US Channel (Wide View)
ADDITIONAL PHOTO 3	DS	24.5	Side View (DS Side)
ADDITIONAL PHOTO 4		24.5	Top Road
ADDITIONAL PHOTO 5			
ADDITIONAL PHOTO 6			
ADDITIONAL PHOTO 7			
ADDITIONAL PHOTO 8			
ADDITIONAL PHOTO 9			
ADDITIONAL PHOTO 10			

PLAN VIEW MEASUREMENT TABLE

ID	LENGTH (FT)	NOTES
6		
7		
8		

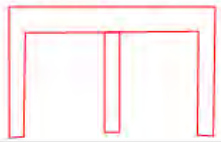
BRIDGE TABLE

OPENING WIDTH (FT)	OPENING HEIGHT (FT)	LENGTH (FT)	PIER SPACING (FT)	PIER WIDTH (FT)	# PIERS	ABUTMENT SLOPE (FT)	NOTES

CULVERT TABLE

RISE (FT)	SPAN (FT)	LENGTH (FT)	# BARRELS	MATERIAL	NOTES
8	8	38	2		See Fig- 24.1

OTHER NOTES: Culvert Cross- Section



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CROSSING ID:	
SHEET #	

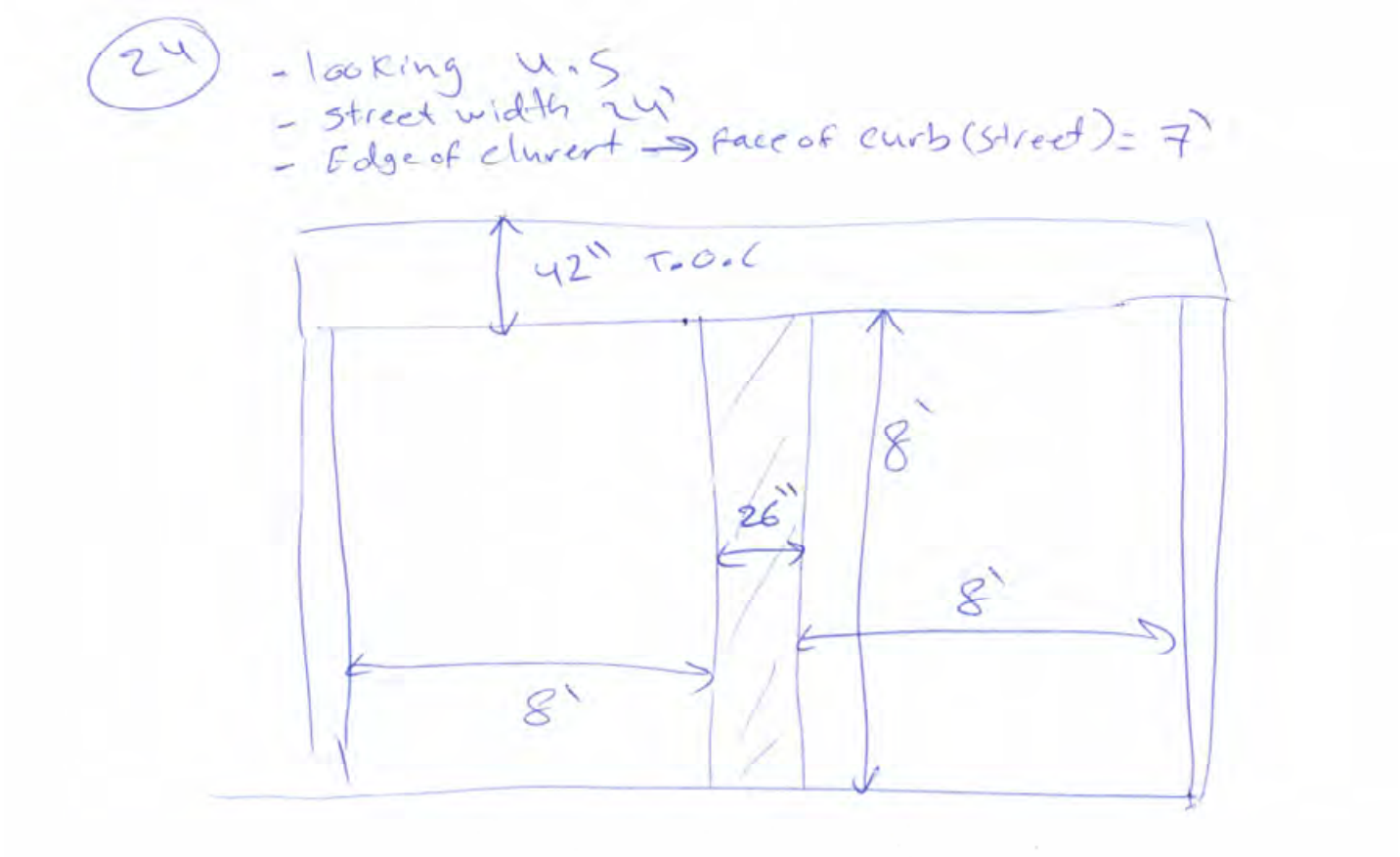

24
- looking U.S
- street width 24'
- Edge of culvert → face of curb (street) = 7'
42" T.O.C
8'
26"
8'
8'

Fig 1.1



Fig 24.2 Culvert Section US



Fig 24.3- US Channel



Fig 24.4- US Channel (Wide View)

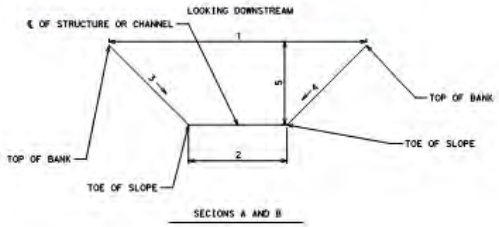


Fig 24.5- Side View (DS Side)

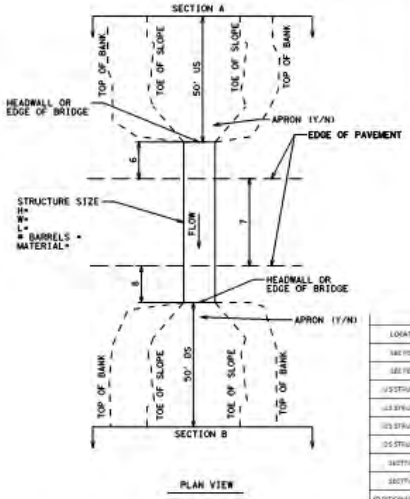


Fig 24.6- Top Road

25- Drop Structure (G103-41-00)



SECIONS A AND B



PLAN VIEW

CROSS SECTION MEASUREMENT NOTES	
ID	DESCRIPTION
1	CHANNEL TOP WIDTH (FT)
2	CHANNEL BOTTOM WIDTH (FT)
3	LENGTH ALONG LEFT SIDE SLOPE (FT)
4	LENGTH ALONG RIGHT SIDE SLOPE (FT)
5	DEPTH OF CHANNEL (FT)
6	EDGE OF PAVEMENT TO UPSTREAM HEADWALL OR EDGE OF BRIDGE (FT)
7	ROADWAY WIDTH (FT)
8	EDGE OF PAVEMENT TO DOWNSTREAM HEADWALL OR EDGE OF BRIDGE (FT)

NOTES:
1) TAKE PHOTO LOOKING UPSTREAM AND DOWNSTREAM AT THE FOUR SECTIONS.
2) MEASURE DEPTH OF WATER WHEN POSSIBLE.
3) DOCUMENT THE VEGETATION IN THE CHANNEL (E.G. GRASS HEIGHT, TREE DIA AND HEIGHT).
4) DOCUMENT SEDIMENT/SCOUR IN THE CHANNEL.
5) IF XS A AND B CANNOT BE TAKEN AT 50', PLEASE DOCUMENT THEIR MODIFIED DISTANCE.
6) USE ADDITIONAL SHEETS AS NEEDED PER CROSSING.

XS MEASUREMENT TABLE

LOCATION	ID	LENGTH (FT)	NOTES
SECTION A	1	62	See Fig 25.2 For details
SECTION A	2	10	
SECTION A	3	8/26	
SECTION A	4	8/26	
SECTION A	5	8	
SECTION A	6		
US STRUCTURE	1		
US STRUCTURE	2		
US STRUCTURE	3		
US STRUCTURE	4		
US STRUCTURE	5		
US STRUCTURE	6		
DS STRUCTURE	1		
DS STRUCTURE	2		
DS STRUCTURE	3		
DS STRUCTURE	4		
DS STRUCTURE	5		
DS STRUCTURE	6		
SECTION B	1		
SECTION B	2		
SECTION B	3		
SECTION B	4		
SECTION B	5		
SECTION B	6		

PHOTO CATALOG TABLE

LOCATION	DIRECTION OF PHOTO	PHOTO #	NOTES
SECTION A	US		
SECTION A	DS		
US STRUCTURE	US		
US STRUCTURE	DS		
DS STRUCTURE	US		
DS STRUCTURE	DS	25.3	
SECTION B	US		
SECTION B	DS		
ADDITIONAL PHOTO 1	US	25.4	DS Structure Detail
ADDITIONAL PHOTO 2	US	25.5	DS Channel
ADDITIONAL PHOTO 3	US	25.6	US Channel
ADDITIONAL PHOTO 4	DS	25.7	DS Channel
ADDITIONAL PHOTO 5			
ADDITIONAL PHOTO 6			
ADDITIONAL PHOTO 7			
ADDITIONAL PHOTO 8			
ADDITIONAL PHOTO 9			
ADDITIONAL PHOTO 10			

PLAN VIEW MEASUREMENT TABLE

ID	LENGTH (FT)	NOTES
6		
7		
8		

BRIDGE TABLE

OPENING WIDTH (FT)	OPENING HEIGHT (FT)	LENGTH (FT)	PIER SPACING (FT)	PIER WIDTH (FT)	# PIERS	ABUTMENT SLOPE (FT)	NOTES

CULVERT TABLE

RISE (FT)	SPAN (FT)	LENGTH (FT)	# BARRELS	MATERIAL	NOTES

OTHER NOTES:

Section A



Refer to Fig 25.2 & 25.3 for main structure Details

Gauge ENGINEERING

DATE:	
PROJECT #	
SURVEYED BY:	
CROSSING ID:	
SHEET #	

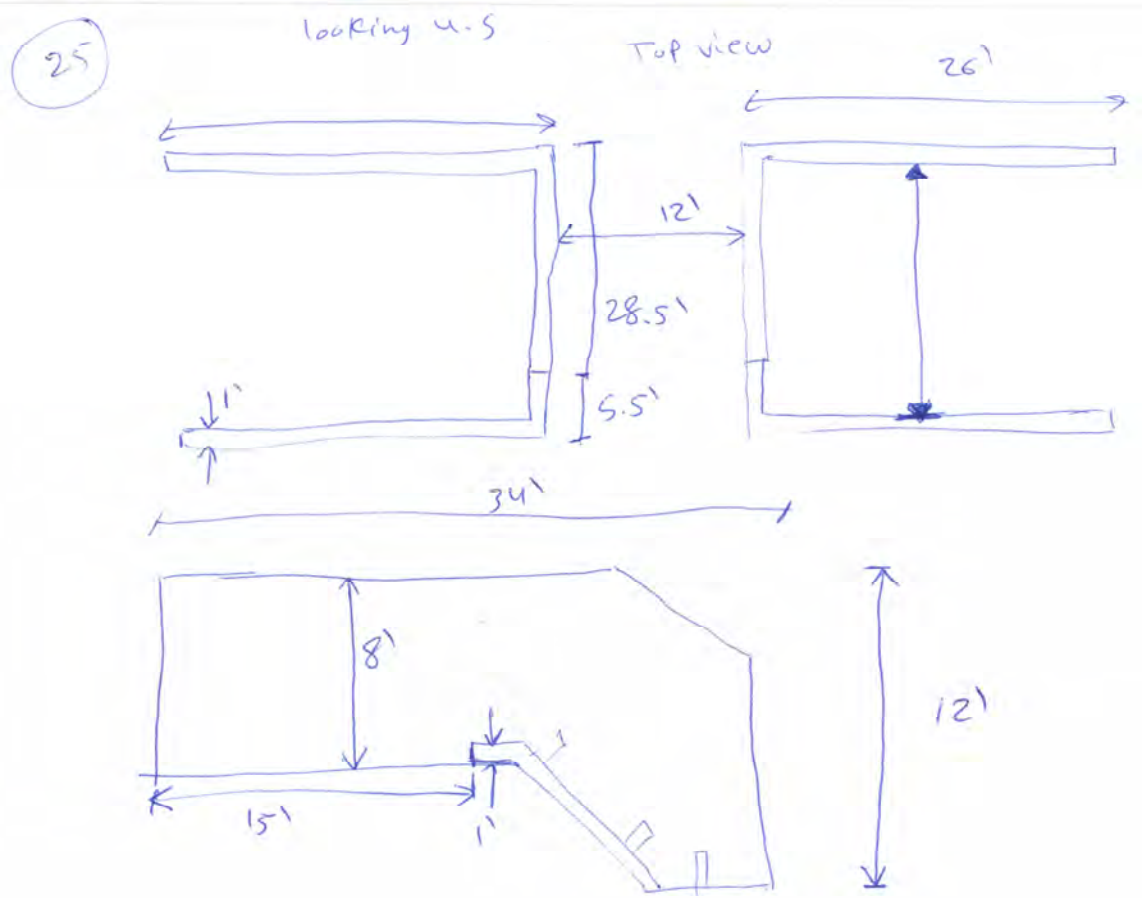


Fig 25.1 – Structure Dimension

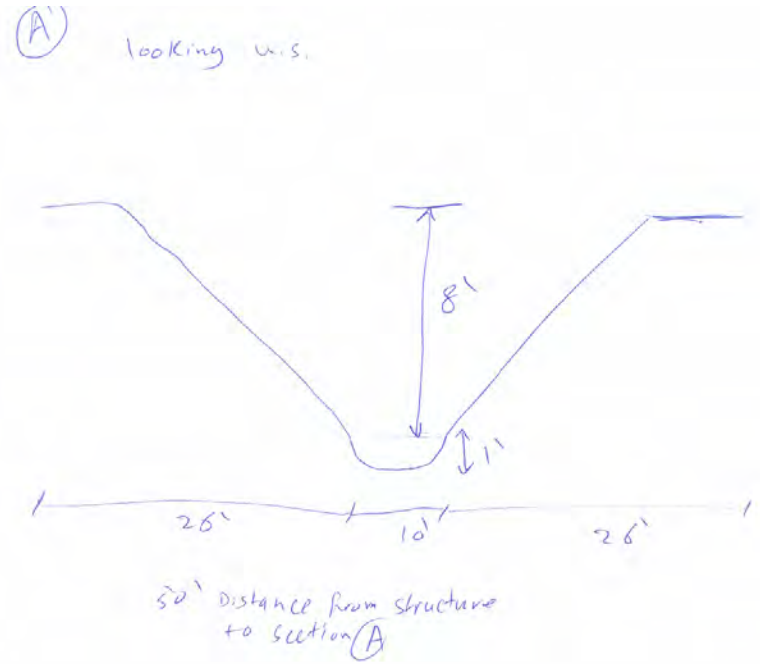


Fig 25.2 – Section A Dimension



Fig 25.3 DS Structure



Fig 25.4- DS Structure Detail



Fig 25.5 - DS Channel

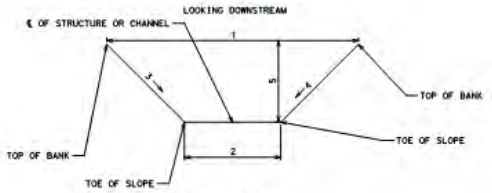


Fig 25.6 – US Channel

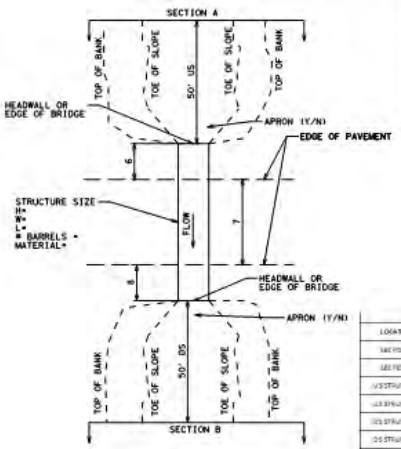


Fig 25.7 - DS Channel

26- Culvert Outfall (G103-41-00)



SECTIONS A AND B



PLAN VIEW

CROSS SECTION MEASUREMENT NOTES	
ID	DESCRIPTION
1	CHANNEL TOP WIDTH (FT)
2	CHANNEL BOTTOM WIDTH (FT)
3	LENGTH ALONG LEFT SIDE SLOPE (FT)
4	LENGTH ALONG RIGHT SIDE SLOPE (FT)
5	DEPTH OF CHANNEL (FT)
6	EDGE OF PAVEMENT TO UPSTREAM HEADWALL OR EDGE OF BRIDGE (FT)
7	ROADWAY WIDTH (FT)
8	EDGE OF PAVEMENT TO DOWNSTREAM HEADWALL OR EDGE OF BRIDGE (FT)

NOTES:
1) TAKE PHOTO LOOKING UPSTREAM AND DOWNSTREAM AT THE FOUR SECTIONS.
2) MEASURE DEPTH OF WATER WHEN POSSIBLE.
3) DOCUMENT THE VEGETATION IN THE CHANNEL (E.G. GRASS HEIGHT, TREE DIA AND HEIGHT).
4) DOCUMENT SEDIMENT/SCOUR IN THE CHANNEL.
5) IF XS A AND B CANNOT BE TAKEN AT 50', PLEASE DOCUMENT THEIR MODIFIED DISTANCE.
6) USE ADDITIONAL SHEETS AS NEEDED PER CROSSING.

XS MEASUREMENT TABLE

LOCATION	ID	LENGTH (FT)	NOTES
SECTION A	1		
SECTION A	2		
SECTION A	3		
SECTION A	4		
SECTION A	5		
SECTION A	6		
US STRUCTURE	1		
US STRUCTURE	2		
US STRUCTURE	3		
US STRUCTURE	4		
US STRUCTURE	5		
US STRUCTURE	6		
DS STRUCTURE	1		
DS STRUCTURE	2		
DS STRUCTURE	3		
DS STRUCTURE	4		
DS STRUCTURE	5		
DS STRUCTURE	6		
SECTION B	1		
SECTION B	2		
SECTION B	3		
SECTION B	4		
SECTION B	5		
SECTION B	6		

PHOTO CATALOG TABLE

LOCATION	DIRECTION OF PHOTO	PHOTO #	NOTES
SECTION A	US		
SECTION A	DS		
US STRUCTURE	US		
US STRUCTURE	DS		
US STRUCTURE	US	26.4	
DS STRUCTURE	DS		
SECTION B	US		
SECTION B	DS		
ADDITIONAL PHOTO 1	DS	26.2	DS Channel
ADDITIONAL PHOTO 2		26.3	Outfall side view
ADDITIONAL PHOTO 3		26.5	Structure Side View
ADDITIONAL PHOTO 4			
ADDITIONAL PHOTO 5			
ADDITIONAL PHOTO 6			
ADDITIONAL PHOTO 7			
ADDITIONAL PHOTO 8			
ADDITIONAL PHOTO 9			
ADDITIONAL PHOTO 10			

PLAN VIEW MEASUREMENT TABLE

ID	LENGTH (FT)	NOTES
6		
7		
8		

BRIDGE TABLE

OPENING WIDTH (FT)	OPENING HEIGHT (FT)	LENGTH (FT)	PIER SPACING (FT)	PIER WIDTH (FT)	# PIERS	ABUTMENT SLOPE (FT)	NOTES

CULVERT TABLE

RISE (FT)	SPAN (FT)	LENGTH (FT)	# BARRELS	MATERIAL	NOTES
5.5	5.5		1		See Fig. 26.1

OTHER NOTES:

Culvert Cross-section

Ground Level



Gauge ENGINEERING

DATE:	
PROJECT #	
SURVEYED BY:	
CROSSING ID:	
SHEET #	

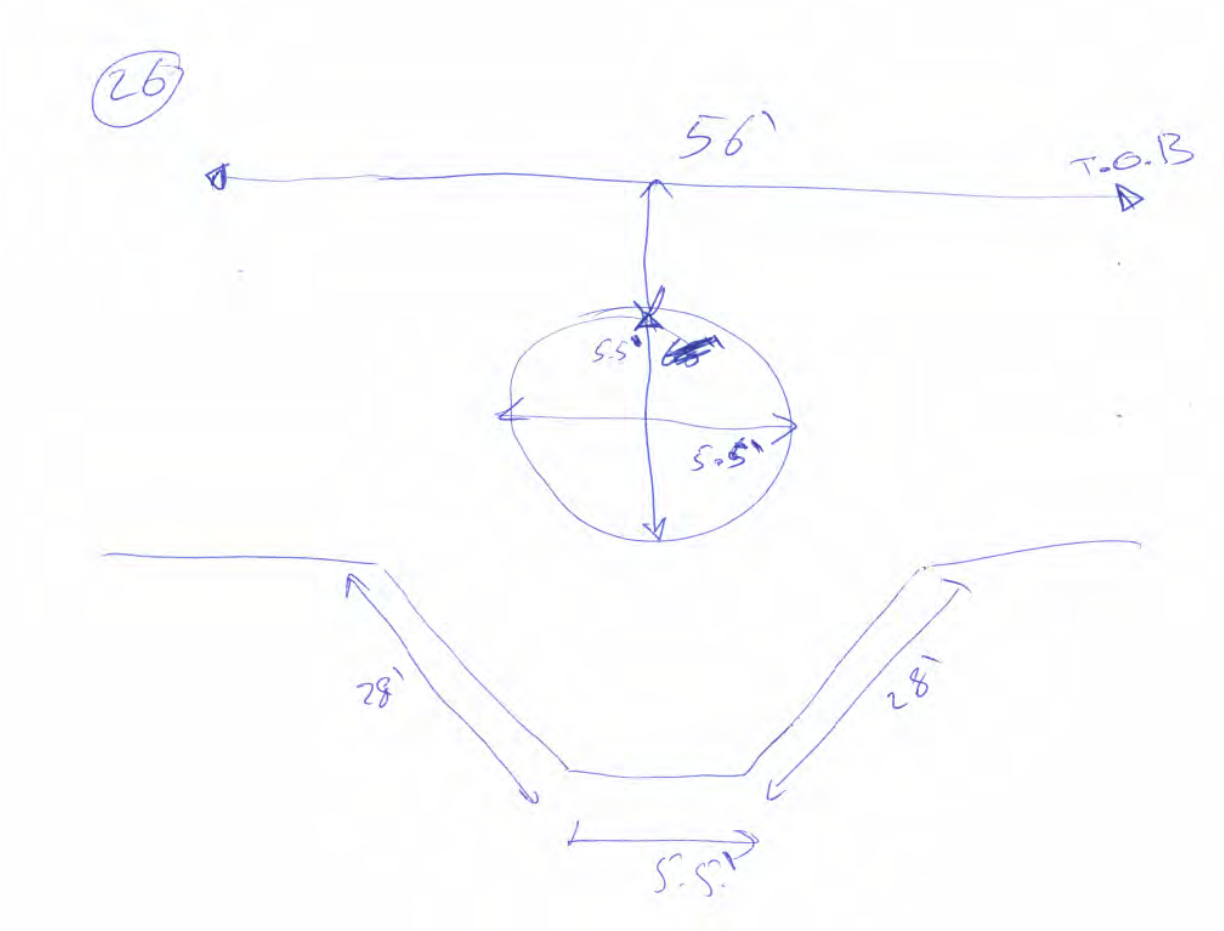


Fig 26.1



Fig 26.2 – DS Channel



Fig 26.3 – Outfall Side View

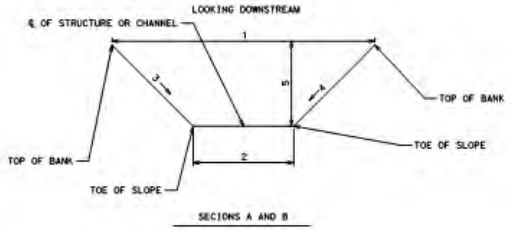


Fig 26.4- DS Structure

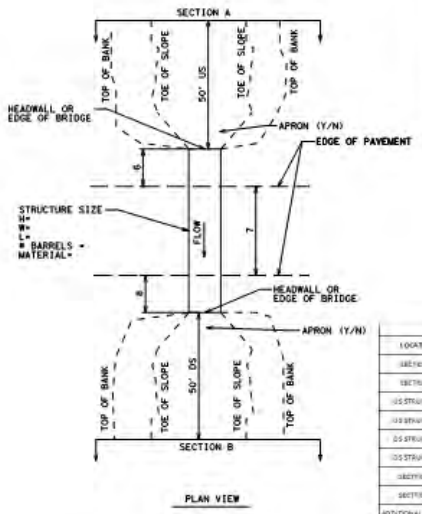


Fig 26.5-Structure
Side view

27- Pedestrian Bridge (G103-41-01)



SECTIONS A AND B



PLAN VIEW

CROSS SECTION MEASUREMENT NOTES	
ID	DESCRIPTION
1	CHANNEL TOP WIDTH (FT)
2	CHANNEL BOTTOM WIDTH (FT)
3	LENGTH ALONG LEFT SIDE SLOPE (FT)
4	LENGTH ALONG RIGHT SIDE SLOPE (FT)
5	DEPTH OF CHANNEL (FT
6	EDGE OF PAVEMENT TO UPSTREAM HEADWALL (IN EDGE OF BRIDGE (FT)
7	ROAWAY WIDTH (FT)
8	EDGE OF PAVEMENT TO DOWNSTREAM HEADWALL OR EDGE OF BRIDGE (FT)

NOTES:
1) TAKE PHOTO LOOKING UPSTREAM AND DOWNSTREAM AT THE FOUR SECTIONS.
2) MEASURE DEPTH OF WATER WHEN POSSIBLE.
3) DOCUMENT THE VEGETATION IN THE CHANNEL (E.G. GRASS HEIGHT, TREE DIA AND HEIGHT).
4) DOCUMENT SEDIMENT/SCOUR IN THE CHANNEL.
5) IF XS A AND B CANNOT BE TAKEN AT 50', PLEASE DOCUMENT THEIR MODIFIED DISTANCE.
6) USE ADDITIONAL SHEETS AS NEEDED PER CROSSING.

XS MEASUREMENT TABLE

LOCATION	ID	LENGTH (FT)	NOTES
SECTION A	1		
SECTION A	2		
SECTION A	3		
SECTION A	4		
SECTION A	5		
SECTION A	6		
US STRUCTURE	1		
US STRUCTURE	2		
US STRUCTURE	3		
US STRUCTURE	4		
US STRUCTURE	5		
US STRUCTURE	6		
DS STRUCTURE	1		
DS STRUCTURE	2		
DS STRUCTURE	3		
DS STRUCTURE	4		
DS STRUCTURE	5		
DS STRUCTURE	6		
SECTION B	1		
SECTION B	2		
SECTION B	3		
SECTION B	4		
SECTION B	5		
SECTION B	6		

PHOTO CATALOG TABLE

LOCATION	DIRECTION OF PHOTO	PHOTO #	NOTES
SECTION A	DS		
SECTION A	DS		
US STRUCTURE	US	27.6	
US STRUCTURE	DS		
DS STRUCTURE	US	27.2	
DS STRUCTURE	DS		
SECTION B	US		
SECTION B	DS		
ADDITIONAL PHOTO 1	DS	27.3	Section Detail LOB
ADDITIONAL PHOTO 2	DS	27.4	Section Detail ROB
ADDITIONAL PHOTO 3	DS	27.5	DS Channel
ADDITIONAL PHOTO 4	US	27.7	US Channel
ADDITIONAL PHOTO 5		27.8	Bridge Top
ADDITIONAL PHOTO 6			
ADDITIONAL PHOTO 7			
ADDITIONAL PHOTO 8			
ADDITIONAL PHOTO 9			
ADDITIONAL PHOTO 10			

PLAN VIEW MEASUREMENT TABLE

ID	LENGTH (FT)	NOTES
6		
7		
8		

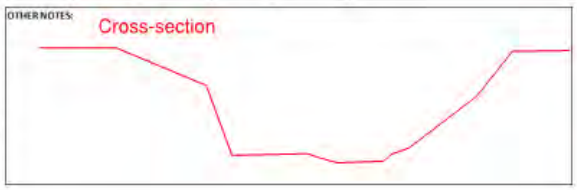
BRIDGE TABLE

OPENING WIDTH (FT)	OPENING HEIGHT (FT)	LENGTH (FT)	PIER SPACING (FT)	PIER WIDTH (FT)	# PIERS	ABUTMENT SLOPE (FT)	NOTES
58	7.5	12	26.5		2		See Fig 27.1

CULVERT TABLE

RISE (FT)	SPAN (FT)	LENGTH (FT)	# BARRELS	MATERIAL	NOTES

OTHER NOTES:



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PROJECT #	
SURVEYED BY:	
CROSSING ID:	
SHEET #	

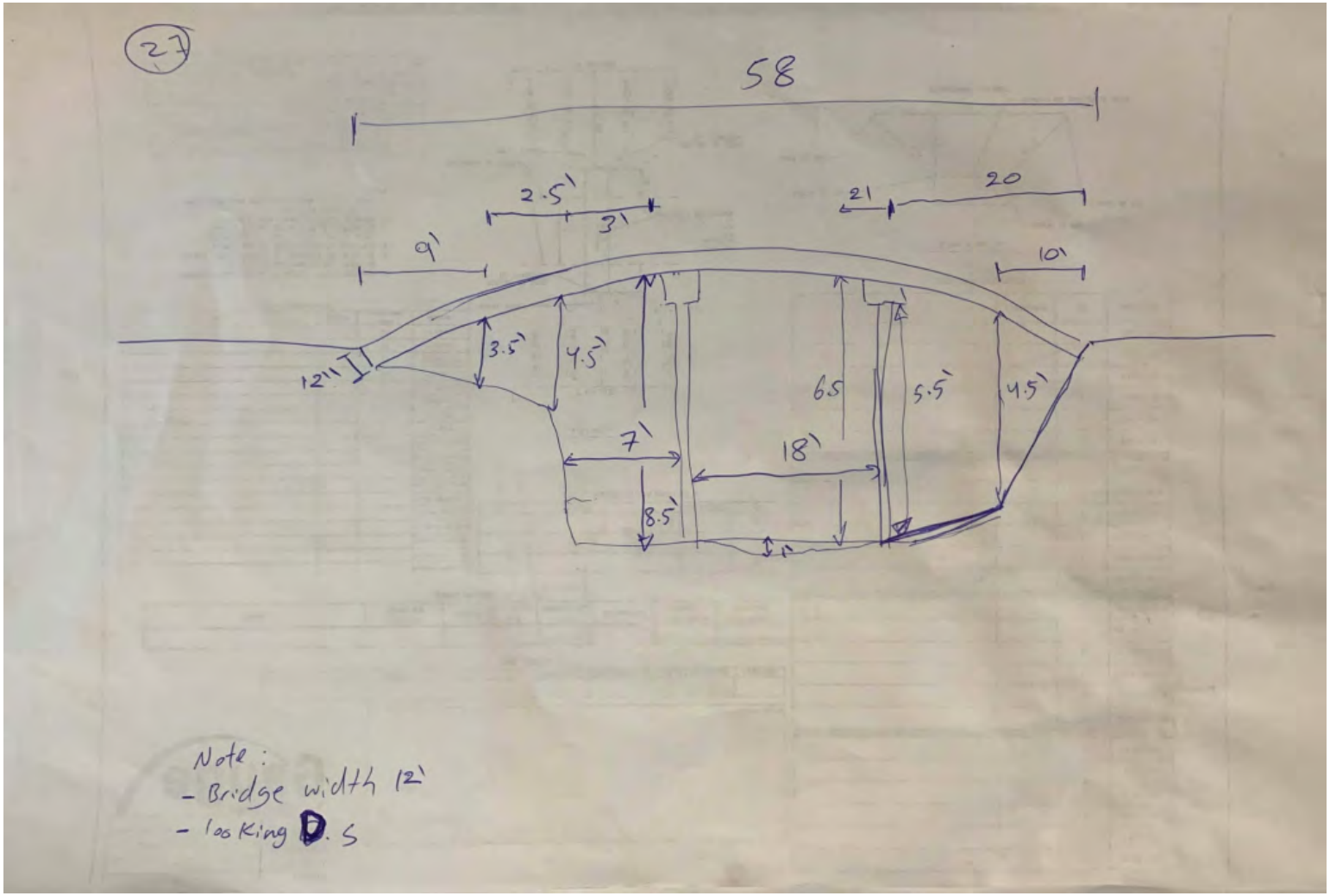

27
58
2.5'
3'
21
20
9'
10'
3.5'
4.5'
12'
6.5
5.5'
4.5'
7'
18'
8.5'
Note :
- Bridge width 12'
- looking D. S

Fig 27.1



Fig 27.2 Bridge Section DS



Fig 27.3- Section Detail LOB



Fig 27.4- Section Detail ROB



Fig 27.5- DS Channel



Fig 27.6-Bridge Section US

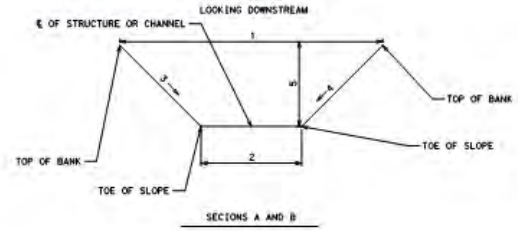


Fig 27.7- Upstream Channel

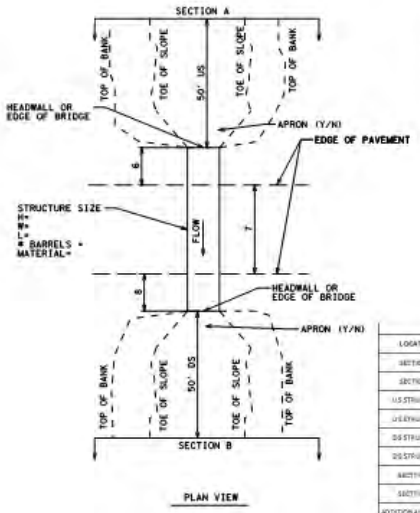


Fig 27.8-Bridge Top

28 - Culvert (G103-41-01)



SECTIONS A AND B



PLAN VIEW

CROSS SECTION MEASUREMENT NOTES	
ID	DESCRIPTION
1	CHANNEL TOP WIDTH (FT)
2	CHANNEL BOTTOM WIDTH (FT)
3	LENGTH ALONG LEFT SIDE SLOPE (FT)
4	LENGTH ALONG RIGHT SIDE SLOPE (FT)
5	DEPTH OF CHANNEL (FT)
6	EDGE OF PAVEMENT TO UPSTREAM HEADWALL OR EDGE OF BRIDGE (FT)
7	ROADWAY WIDTH (FT)
8	EDGE OF PAVEMENT TO DOWNSTREAM HEADWALL OR EDGE OF BRIDGE (FT)

NOTES:
1) TAKE PHOTO LOOKING UPSTREAM AND DOWNSTREAM AT THE FOUR SECTIONS.
2) MEASURE DEPTH OF WATER WHEN POSSIBLE.
3) DOCUMENT THE VEGETATION IN THE CHANNEL (E.G. GRASS HEIGHT, TREE DIA AND HEIGHT).
4) DOCUMENT SEDIMENT/SCOUR IN THE CHANNEL.
5) IF XS A AND B CANNOT BE TAKEN AT 50', PLEASE DOCUMENT THEIR MODIFIED DISTANCE.
6) USE ADDITIONAL SHEETS AS NEEDED PER CROSSING.

XS MEASUREMENT TABLE

LOCATION	ID	LENGTH (FT)	NOTES
SECTION A	1		
SECTION A	2		
SECTION A	3		
SECTION A	4		
SECTION A	5		
SECTION A	6		
US STRUCTURE	1		
US STRUCTURE	2		
US STRUCTURE	3		
US STRUCTURE	4		
US STRUCTURE	5		
US STRUCTURE	6		
DS STRUCTURE	1		
DS STRUCTURE	2		
DS STRUCTURE	3		
DS STRUCTURE	4		
DS STRUCTURE	5		
DS STRUCTURE	6		
SECTION B	1		
SECTION B	2		
SECTION B	3		
SECTION B	4		
SECTION B	5		
SECTION B	6		

PLAN VIEW MEASUREMENT TABLE

ID	LENGTH (FT)	NOTES
6		
7		
8		

PHOTO CATALOG TABLE

LOCATION	DIRECTION OF PHOTO	PHOTO #	NOTES
SECTION A	US		
SECTION A	DS		
US STRUCTURE	US	28.2	
US STRUCTURE	DS		
DS STRUCTURE	US		
DS STRUCTURE	DS		
SECTION B	US		
SECTION B	DS		
ADDITIONAL PHOTO 1	US	28.3	Other Side of US
ADDITIONAL PHOTO 2	DS	28.4	DS Channel
ADDITIONAL PHOTO 3			
ADDITIONAL PHOTO 4			
ADDITIONAL PHOTO 5			
ADDITIONAL PHOTO 6			
ADDITIONAL PHOTO 7			
ADDITIONAL PHOTO 8			
ADDITIONAL PHOTO 9			
ADDITIONAL PHOTO 10			

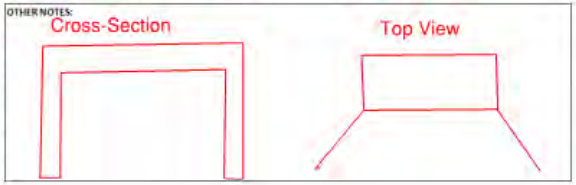
BRIDGE TABLE

OPENING WIDTH (FT)	OPENING HEIGHT (FT)	LENGTH (FT)	PIER SPACING (FT)	PIER WIDTH (FT)	# PIERS	ABUTMENT SLOPE (FT)	NOTES

CULVERT TABLE

RISE (FT)	SPAN (FT)	LENGTH (FT)	# BARRELS	MATERIAL	NOTES
4.5	11		1		See Fig 28.1

OTHER NOTES:



Gauge ENGINEERING

DATE:	
PROJECT #	
SURVEYED BY:	
CROSSING ID:	
SHEET #	

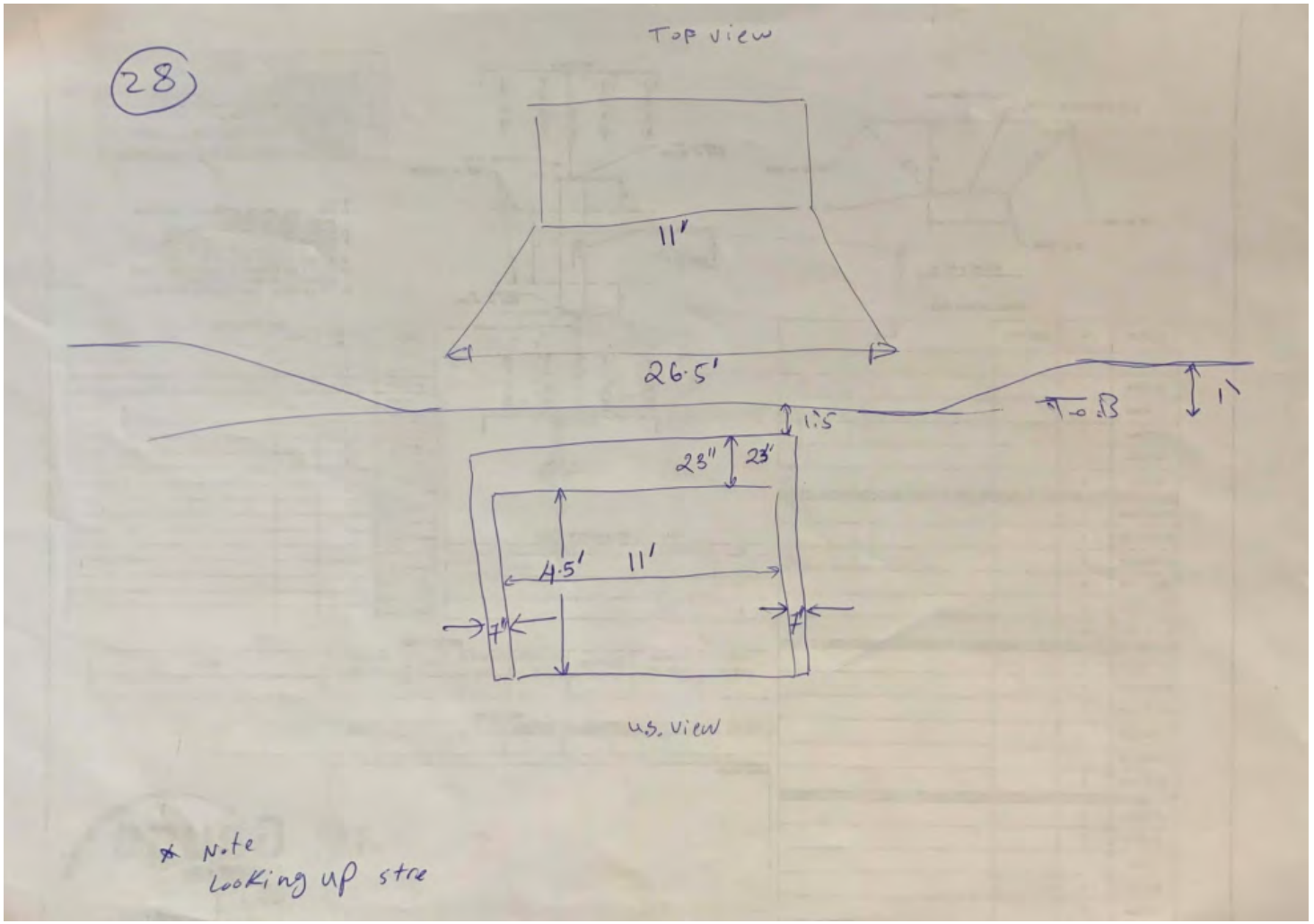

28
Top view
11'
26.5'
T.O.B
1'
1.5
23"
23"
4.5'
11'
4"
4"
u.s. view
* Note
Looking up stre

Fig 28.1



Fig 28.2 Culvert Section US



Fig 28.3- US Other Side



Fig 28.4-DS Channel

APPENDIX B

EXISTING CONDITIONS HYDROLOGY

DATA ENTRY TO BE ENTERED IN **UNSHADED CELLS ONLY**

Watershed (G100-00-00)

Subwatershed	Drainage Area (acres)	Drainage Area (sq.mi.)	Channel Improvements (Total Lengths or Percent)			Weighted Conveyance BDF	Land Classification Areas												Composite BDF	Tc (Unadjusted)	R (Unadjusted)	Channel Slope(ft./mi)	Overland Slope(ft./mi.)	Slope Adj	Watershed Detention Volume not Modeled Directly (ac-ft)	Detention Rate	Detention Adj	Percent Ponding	Percent Impervious 2018	TC"	R"	Ponding Adjustments for Storage Values (R")						
							Undeveloped		Open Space		Developed Roadside Ditch		Developed Storm Sewer Pre 1984		Developed Storm Sewer Post 1984																							
			Natural Channel	Improved	Concrete		Area (ac)	BDF	Area (ac)	BDF	Area (ac)	BDF	Area (ac)	BDF	Area (ac)	BDF	AREA CHECK				S	So	S_{xSo}	K_a		DR	C_f	DPP		(Slope and Detention Adjusted)	(Slope and Detention Adjusted)	20% (5-Yr)	10% (100-Yr)	4% (25-Yr)	2% (50-Yr)	1% (100-Yr)	0.2% (500-Yr)
G1033300A	291.2	0.4550363	0	4336	0	3.00	84.52	0.0	14.61	1.0	10.84	1.5	75.36	3.0	105.90	6.0	0.0	6.1	1.20	3.01	12.00	8.94	107.33	0.77	38.60	84.83	1.14	0	28.28	1.04	2.62	2.62	2.62	2.62	2.62	2.62
G1033300B	167.6	0.2619095	1188	2191	0	1.95	39.13	0.0	5.10	1.0	0.21	1.5	114.91	3.0	8.28	6.0	0.0	4.3	1.11	2.98	2.46	15.36	37.71	0.94	0.00	0.00	1.00	0	34.09	1.03	2.78	2.78	2.78	2.78	2.78	2.78
G1033300C	190.0	0.2969142	2490	42	0	0.05	33.75	0.0	0.05	1.0	0.00	1.5	156.22	3.0	0.00	6.0	0.0	2.5	1.39	3.86	3.62	15.59	56.49	0.87	0.00	0.00	1.00	0	34.91	1.21	3.36	3.36	3.36	3.36	3.36	3.36
G1033300D	207.4	0.3240076	2282	0	0	0.00	29.38	0.0	0.00	1.0	0.00	1.5	177.98	3.0	0.00	6.0	0.0	2.6	1.43	3.97	4.63	10.89	50.40	0.89	0.00	0.00	1.00	0	33.72	1.27	3.52	3.52	3.52	3.52	3.52	3.52
G1033300E	135.4	0.2115922	3047	30	0	0.03	38.88	0.0	0.00	1.0	40.05	1.5	56.49	3.0	0.00	6.0	0.0	1.7	1.30	3.72	2.23	24.43	54.48	0.88	0.00	0.00	1.00	0	24.07	1.14	3.25	3.25	3.25	3.25	3.25	3.25
G1033300F	161.0	0.2514920	0	3745	0	3.00	49.63	0.0	14.57	1.0	24.04	1.5	72.71	3.0	0.00	6.0	0.0	4.7	1.05	2.82	4.84	22.38	108.37	0.76	0.00	0.00	1.00	0	27.91	0.80	2.15	2.15	2.15	2.15	2.15	2.15
G1033300G	98.4	0.1537563	0	3629	0	3.00	1.63	0.0	61.85	1.0	0.00	1.5	0.02	3.0	34.91	6.0	0.0	5.8	0.77	2.05	15.46	7.12	110.13	0.76	0.00	0.00	1.00	0	34.64	0.59	1.56	1.56	1.56	1.56	1.56	1.56
G1033300H	192.2	0.3003042	0	4603	0	3.00	8.76	0.0	57.50	1.0	0.00	1.5	0.02	3.0	125.91	6.0	0.0	7.2	0.90	2.24	0.24	11.97	2.91	1.00	0.00	0.00	1.00	0	44.05	0.90	2.24	2.24	2.24	2.24	2.24	2.24
G1033300I	204.0	0.3186844	11	4375	0	2.99	0.59	0.0	112.92	1.0	0.00	1.5	29.87	3.0	60.58	6.0	0.0	5.8	1.05	2.71	2.64	11.65	30.75	0.97	0.00	0.00	1.00	0	27.78	1.02	2.63	2.63	2.63	2.63	2.63	2.63
G1033301A	191.6	0.2993163	0	0	4460	6.00	8.82	0.0	0.13	1.0	0.00	1.5	182.61	3.0	0.00	6.0	0.0	8.9	0.79	1.85	5.39	9.25	49.88	0.89	0.00	0.00	1.00	0	41.47	0.70	1.64	1.64	1.64	1.64	1.64	1.64
G1033301B	182.5	0.2851485	2.49	1705	35	3.06	13.19	0.0	6.76	1.0	0.00	1.5	147.95	3.0	14.59	6.0	0.0	6.0	0.98	2.53	5.36	6.50	34.88	0.95	0.00	0.00	1.00	0	40.59	0.93	2.40	2.40	2.40	2.40	2.40	2.40
G1033301C	264.9	0.4139232	0	1913	0	3.00	29.22	0.0	12.01	1.0	0.00	1.5	216.11	3.0	7.57	6.0	0.0	5.7	1.19	3.04	5.64	8.61	48.53	0.89	0.00	0.00	1.00	0	33.20	1.06	2.72	2.72	2.72	2.72	2.72	2.72
G1033301D	158.1	0.2470307	0	3142	0	3.00	33.46	0.0	13.75	1.0	0.00	1.5	100.16	3.0	10.73	6.0	0.0	5.4	0.98	2.57	6.89	28.73	197.78	0.67	0.00	0.00	1.00	0	36.65	0.65	1.71	1.71	1.71	1.71	1.71	1.71
G1033302A	242.4	0.3788040	0	1042	0	3.00	3.99	0.0	3.46	1.0	0.00	1.5	234.99	3.0	0.00	6.0	0.0	5.9	1.12	2.85	5.98	9.83	58.77	0.86	0.00	0.00	1.00	0	43.43	0.97	2.46	2.46	2.46	2.46	2.46	2.46
G1033302B	68.3	0.1066992	0	410	0	3.00	4.39	0.0	0.78	1.0	0.00	1.5	63.12	3.0	0.00	6.0	0.0	5.8	0.66	1.78	10.18	10.63	108.25	0.76	0.00	0.00	1.00	0	35.29	0.50	1.36	1.36	1.36	1.36	1.36	1.36
G1033304A	110.1	0.1719938	0	213	2756	5.78	4.85	0.0	0.78	1.0	0.00	1.5	62.85	3.0	41.60	6.0	0.0	9.8	0.58	1.34	4.17	20.30	84.59	0.80	0.00	0.00	1.00	0	59.23	0.46	1.08	1.08	1.08	1.08	1.08	1.08
G1033304B	149.3	0.2333139	0	1935	0	3.00	26.12	0.0	5.77	1.0	0.00	1.5	85.18	3.0	32.25	6.0	0.0	6.0	0.90	2.33	5.06	31.13	157.45	0.70	8.90	38.15	1.01	0	38.49	0.64	1.65	1.65	1.65	1.65	1.65	1.65
G1033304C	192.3	0.3004744	0	361	1141	5.28	19.64	0.0	1.17	1.0	0.00	1.5	136.67	3.0	34.82	6.0	0.0	8.5	0.81	1.93	7.39	19.44	143.66	0.72	12.30	40.94	1.01	0	39.91	0.59	1.40	1.40	1.40	1.40	1.40	1.40
G1033304D	95.6	0.1493227	0	2569	0	3.00	47.05	0.0	8.32	1.0	0.00	1.5	14.02	3.0	26.17	6.0	0.0	5.2	0.80	2.17	0.72	22.35	16.07	1.00	12.60	84.38	1.13	0	31.33	0.91	2.46	2.46	2.46	2.46	2.46	2.46
G1033 3A	3061.9	4.7841636	0	24314	998	3.12	327.99	0.0	348.83	1.0	1963.39	1.5	0.00	3.0	421.65	6.0	0.0	5.0	3.61	8.42	6.15	9.85	60.54	0.86	141.80	29.64	1.00	0	20.44	3.09	7.21	7.21	7.21	7.21	7.21	7.21
G1033 3B	2987.9	4.6686162	3811	20424	0	2.53	652.55	0.0	249.63	1.0	1376.83	1.5	0.00	3.0	708.91	6.0	0.0	4.7	3.66	8.63	5.10	11.66	59.41	0.86	576.20	123.42	1.34	0	35.08	4.23	9.96	9.96	9.96	9.96	9.96	9.96
G1033600A	236.4	0.3725292	0	0	1948	6.00	5.18	0.0	0.00	1.0	6.40	1.5	226.84	3.0	0.00	6.0	0.0	8.9	0.87	2.00	4.37	5.55	24.23	1.00	0.00	0.00	1.00	0	35.62	0.87	2.00	2.00	2.00	2.00	2.00	2.00
G1033600B	285.9	0.4466661	7038	661	26	0.28	42.30	0.0	2.59	1.0	94.82	1.5	146.16	3.0	0.00	6.0	0.0	2.3	1.68	4.63	6.57	19.21	126.24	0.74	0.00	0.00	1.00	0	28.23	1.24	3.42	3.42	3.42	3.42	3.42	3.42
G1033600C	151.2	0.2362303	0	1306	0	3.00	69.65	0.0	53.03	1.0	0.00	1.5	24.41	3.0	4.10	6.0	0.0	4.0	1.09	2.97	3.65	16.27	59.37	0.86	0.00	0.00	1.00	0	15.60	0.94	2.56	2.56	2.56	2.56	2.56	2.56
G1033600D	126.8	0.1981772	0	2816	0	3.00	6.03	0.0	56.27	1.0	0.00	1.5	14.43	3.0	50.10	6.0	0.0	6.2	0.83	2.16	N/A	16.64	16.64	1.00	0.00	0.00	1.00	0	42.32	0.83	2.16	2.16	2.16	2.16	2.16	2.16
G1033600E	125.4	0.1959770	0	1856	0	3.00	8.79	0.0	116.64	1.0	0.00	1.5	0.00	3.0	3.59	1.02	2.79	N/A	1.09	2.97	N/A	19.41	19.41	1.00	50.20	256.15	2.73	0	20.98	2.77	7.60	7.60	7.60	7.60	7.60	7.60
G1033601A	77.9	0.1217956	2378	1652	0	1.23	12.83	0.0	15.64	1.0	38.54	1.5	8.84	3.0	2.11	6.0	0.0	2.7	0.94	2.69	6.29	19.96	125.59	0.74	0.00	0.00	1.00	0	19.41	0.69	1.99	1.99	1.99	1.99	1.99	1.99
G10336021A	105.4	0.1646499	0	2011	0	3.00	0.00	0.0	0.80	1.0	13.45	1.5	91.12	3.0	0.00	6.0	0.0	5.8	0.79	2.10	9.91	25.26	250.30	0.63	0.00	0.00	1.00	0	22.65	0.50	1.32	1.32	1.32	1.32	1.32	1.32
G1033602A	206.8	0.3230704	0	2190	1345	4.14	53.10	0.0	5.70	1.0	0.00	1.5	147.96	3.0	0.00	6.0	0.0	6.3	1.01	2.56	8.88	26.69	237.07	0.64	0.00	0.00	1.00	0	26.77	0.64	1.63	1.63	1.63	1.63	1.63	1.63
G1033602B	84.0	0.1312987	0	3805	0	3.00	4.76	0.0	51.03	1.0	0.00	1.5	28.24	3.0	0.00	6.0	0.0	4.6	0.80	2.21	N/A	20.44	26.44	0.99	0.00	0.00	1.00	0	50.99	0.80	2.19	2.19	2.19	2.19	2.19	2.19
G1033603A	52.8	0.0824403	0	1438	0	3.00	0.00	0.0	2.88	1.0	28.89	1.5	21.00	3.0	0.00	6.0	0.0	5.1	0.63	1.75	N/A	21.84	21.84	1.00	0.00	0.00	1.00	0	22.35	0.63	1.75	1.75	1.75	1.75	1.75	1.75
G1033800A	98.0	0.1531545	0	5743	0	3.00	0.21	0.0	1.46	1.0	94.47	1.5	0.78	3.0	1.10	6.0	0.0	4.6	0.86	2.36	4.41	14.78	65.13	0.85	0.90	5.88	1.00	0	42.97	0.73	2.00	2.00	2.00	2.00	2.00	2.00
G1033800B	94.6	0.1478170	0	3376	0	3.00	3.85	0.0	31.04	1.0	10.81	1.5	48.91	3.0	0.00	6.0	0.0	5.1	0.81	2.20	1.83	10.96	20.03	1.00	0.00	0.00	1.00	0	28.97	0.81	2.20	2.20	2.20	2.20	2.20	2.20
G1033800C	110.1	0.1607304	0	7046	0	3.00	3.47	0.0	23.25	1.0	29.70	1.5	0.00	3.0	353.64	6.0	0.0	8.3	1.15	2.63	4.92	9.08	44.53	0.91	90.40	141.09	1.46	0	52.46	1.52	3.50	3.50	3.50	3.50	3.50	3.50
G1033800D	265.0	0.4140261	0	3319	0	3.00	1.13	0.0	17.19	1.0	33.77	1.5	152.54	3.0	60.34	6.0	0.0	6.3	1.12	2.81	0.31	4.40	1.35	1.00	25.60	61.83	1.06	0	40.29	1.18	2.96	2.96	2.96	2.96	2.96	2.96
G1033800E	280.8	0.4387684	0	3417	104	3.09	1.84	0.0	17.03	1.0	0.00	1.5	146.30	3.0	115.64	6.0	0.0	7.2	1.07	2.60	1.22	4.08	4.99	1.00	2.40	5.47	1.00	0	41.65	1.07	2.60	2.60	2.60	2.60	2.60	2.60
G1033800F	378.7	0.5916542	0	7427	86	3.03	34.69	0.0	74.68	1.0	134.23	1.5	75.13	3.0	59.92	6.0	0.0	5.3	1.43	3.64	6.86	30.49	209.28	0.66	0.00	0.00	1.00	0	20.68	0.94	2.39	2.39	2.39	2.39	2.39	2.39
G1033800G	364.4	0.5694352	0	3271	0	3.00	120.11	0.0	123.76	1.0	8.69	1.5	36.20	3.0	75.68	6.0	0.0	4.9	1.46	3.75	N/A	21.48	21.48	1.00	88.40	155.24	1.58	0	22.77	2.30	5.91	5.91	5.91	5.91	5.91	5.91
G10338011A	51.9	0.0811129	0	1569	0	3.00	0.00	0.0	1.41	1.0	48.16	1.5	0.00	3.0	2.34	6.0	0.0	4.7	0.65	1.82	3.28	5.33	17.49	1.00	0.00	0.00	1.00	0	21.24	0.65	1.82	1.82	1.82	1.82	1.82	1.82
G1033801A	274.6	0.4290893	0	2692	1746	4.18	3.33	0.0	49.54	1.0	221.55	1.5	0.20	3.0	0.20	6.0	0.0	5.6	1.22	3.11	7.07	7.93	56.11	0.87	0.00	0.00	1.00	0	25.28	1.06	2.71	2.71	2.71	2.71	2.71	2.71
G1033801B	65.7	0.1026927	0	0	2520	6.00	0.00	0.0	2.33	1.0	63.29	1.5	0.00	3.0	0.10	6.0	0.0	7.5	0.56	1.43	3.47	19.26	66.82	0.84	0.00	0.00	1.00	0	23.87	0.47	1.21	1.21	1.21	1.21	1.21	1.21
G1033802A	233.6	0.3649300	0	345	3559	5.74	10.44	0.0	4.44	1.0	8.58	1.5	118.20	3.0	91.90	6.0	0.0	8.7	0.81	1.81	4.35	4.50	19.56	1.00	3.50	9.59	1.00	0	50.56	0.81	1.81	1.81	1.81	1.81	1.81	1.81
G1033802B	117.7	0.1839737	0	2437	965	3.85	0.00	0.0	10.10	1.0	21.32	1.5	86.31	3.0	0.01	6.0	0.0	6.4	0.79	2.04	9.53	5.52	52.56	0.88	0.00	0.00	1.00	0	52.85	0.69	1.80	1.80	1.80	1.80	1.80	1.80
G1033900A	69.6	0.1086969	409	0	0	0.00	0.00	0.0	0.00	1.0	69.53	1.5	0.00	3.0	0.04	6.0	0.0	1.5	1.01	2.95	17.36	17.38	301.73	0.60	0.00	0.00	1.00	0	24.36	0.60	1.76	1.76	1.76	1.76	1.76	1.76
G1033900B	51.0	0.0797092	2203	0	0	0.00	0.00	0.0	4.02	1.0	46.99	1.5	0.00	3.0	0.00	6.0	0.0	1.5	0.89	2.63	48.51	46.76	2258.39	0.27	0.00	0.00	1.00	0	16.59	0.24	0.71	0.71	0.71	0.71	0.71	0.71
G1033900C	98.9	0.1544588	3135	0	0	0.00	42.71	0.0	23.16	1.0	32.99	1.5	0.00	3.0	0.00	6.0	0.0	0.7	1.26	3.69	N/A	66.80	66.80	0.84	0.00	0.00	1.00	0	20.89	1.06	3.11	3.11	3.11	3.11	3.11	3.11
G1034500A	250.3	0.3911306	0	1793	0	3.00	98.65	0.0	24.47	1.0	69.92	1.5	0.00	3.0	57.28	6.0	0.0	4.9	1.25	3.25	13.31	43.36	577.29	0.49	51.80	132.44	1.40	0	26.33	0.86	2.25	2.25	2.25	2.25	2.25	2.25
G1034600A	29.1	0.0454531	1	0	0	0.00	0.00	0.0	2.48	1.0	26.61	1.5	0.00	3.0	0.00	6.0	0.0	1.5	0.70	2.12	10.04	66.91	672.06	0.47	0.00	0.00	1.00	0	17.50	0.33	0.99	0.99	0.99	0.99	0.99	0.99
G1034600B	6.4	0.0099375	0	1011	0	0.00	0.00	0.0	6.36	1.0	0.00	1.5	0.00	3.0	0.00	6.0	0.0	4.5	0.27	0.83	10.88	77.40	841.75	0.43	0.00	0.00	1.00	0	9.75	0.12	0.36	0.36	0.36	0.36	0.36	0.36
G1034600C	10.2	0.0159063	0	618	0	3.00	0.00	0.0	0.00	1.0	10.18	1.5	0.00	3.0	0.00	6.0	0.0	4.5	0.33	0.99	16.88	59.12	998.05	0.40	0.00	0.00	1.00	0	16.42	0.13	0.40	0.40	0.40	0.40	0.40	0.40
G1034600D	30.5	0.0476563	0	891	178	3.50	0.00	0.0	4.77	1.0	25.73	1.5	0.00	3.0	0.00	6.0	0.0	4.9	0.51	1.44	36.87	59.12	2180.09	0.28	0.00	0.00	1.00	0	11.25	0.14	0.40	0.40	0.40	0.40	0.40	0.40
G1034601A	114.4	0.1786981	2558	0	431	0.87	0.00	0.0	0.03	1.0	114.34	1.5	0.00	3.0	0.00	6.0	0.0	2.4	1.14	3.23	32.98	22.55	743.72	0.45	0.00	0.00	1.00	0	19.37	0.51	1.46	1.46	1.46	1.46	1.46	1.46
G1038004A	267.7	0.4183441	2117	1526	0	1.26	57.43	0.0	9.20	1.0	0.00	1.5	0.00	3.0	201.10	6.0	0.0	5.8	1.18	3.00	13.90	39.44	548.04	0.50	0.00	0.00	1.00	0	36.94	0.59	1.51	1.51	1.51	1.51	1.51	1.51
TOTAL	14369.7	22.4527111																5.19																		

50% AEP Existing HEC-HMS Output

Project: Kingwood Simulation Run: Exist_50

Start of Run: 01Sep2019, 00:00 Basin Model: Existing
End of Run: 08Sep2019, 00:00 Meteorologic Model: 50% (2-Year)
Compute Time: DATA CHANGED, RECOMPUTE Control Specifications:Control 5

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
G1033304_0000_J	0.8551000	443.45	01Sep2019, 17:30	4.28
G1033300_0001A_J	14.2937000	636.18	01Sep2019, 17:25	2.00
G10333B	4.6686000	853.58	01Sep2019, 20:15	4.18
G10333A	4.7842000	1113.69	01Sep2019, 19:10	3.97
G1033300_9902_D	4.7842000	0.00	01Sep2019, 00:00	0.00
G1033300_9902_R	4.7842000	0.00	01Sep2019, 00:00	0.00
G1033300_0009_J	9.4528000	853.58	01Sep2019, 20:15	2.07
G1033300_9901_D	9.4528000	412.20	01Sep2019, 20:15	1.00
G1033300_0008_R	9.4528000	197.57	02Sep2019, 05:35	1.00
G1033300A	0.4550000	237.27	01Sep2019, 17:10	4.08
G1033300_0008_J	9.9078000	258.80	01Sep2019, 17:10	1.14
G1033303A	0.1067000	89.07	01Sep2019, 16:35	4.18
G1033300_0008A_J	10.0145000	335.12	01Sep2019, 17:05	1.17
G1033300_0007_R	10.0145000	166.32	02Sep2019, 13:20	1.17
G1033300B	0.2619000	131.79	01Sep2019, 17:10	4.17
G1033300_0007_J	10.2764000	172.75	01Sep2019, 17:35	1.25
G1033302A	0.3788000	209.40	01Sep2019, 17:05	4.30
G1033300_0007A_J	10.6552000	377.67	01Sep2019, 17:10	1.36
G1033300_0006_R	10.6552000	155.05	02Sep2019, 20:25	1.36
G1033300C	0.2969000	130.01	01Sep2019, 17:20	4.18
G1033300_0006_J	10.9521000	183.63	01Sep2019, 18:20	1.43
G1033300_0005_R	10.9521000	145.13	03Sep2019, 05:40	1.43
G1033300D	0.3240000	136.81	01Sep2019, 17:25	4.16
G1033300_0005_J	11.2761000	159.62	01Sep2019, 17:40	1.51
G1033300_0004_R	11.2761000	136.94	03Sep2019, 15:45	1.50
G1033300E	0.2116000	94.12	01Sep2019, 17:15	4.02
G1033300_0004_J	11.4877000	136.94	03Sep2019, 15:45	1.55

NEEL-SCHAFFER
Solutions you can build upon

50% AEP Existing HEC-HMS Output

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
G1033300_0003_R	11.4877000	129.97	04Sep2019, 02:25	1.53
G1033300F	0.2515000	151.89	01Sep2019, 16:55	4.08
G1033300_0003_J	11.7392000	161.20	01Sep2019, 16:55	1.59
G1033301A	0.2993000	218.89	01Sep2019, 16:45	4.27
G1033301_0002_R	0.2993000	213.16	01Sep2019, 17:05	4.27
G1033301B	0.2851000	160.13	01Sep2019, 17:00	4.26
G1033301_0002_J	0.5844000	373.22	01Sep2019, 17:05	4.27
G1033301_0001_R	0.5844000	366.19	01Sep2019, 17:15	4.27
G1033301C	0.4139000	211.05	01Sep2019, 17:10	4.15
G1033301_0001_J	0.9983000	576.61	01Sep2019, 17:15	4.22
G1033301_0000_R	0.9983000	563.49	01Sep2019, 17:35	4.22
G1033301D	0.2470000	176.25	01Sep2019, 16:45	4.20
G1033301_0000_J	1.2453000	708.17	01Sep2019, 17:30	4.22
G1033300_0003A_J	12.9845000	860.93	01Sep2019, 17:25	1.84
G1033300_0002_R	12.9845000	217.63	01Sep2019, 22:35	1.81
G1033300G	0.1538000	116.77	01Sep2019, 16:40	4.18
G1033300_0002_J	13.1383000	230.40	01Sep2019, 21:25	1.84
G1033300_0001_R	13.1383000	144.55	02Sep2019, 09:15	1.79
G1033300H	0.3003000	177.53	01Sep2019, 17:00	4.31
G1033300_0001_J	13.4386000	199.70	01Sep2019, 17:05	1.85
G1033304B	0.2333000	170.66	01Sep2019, 16:45	4.23
G1033304A	0.1720000	167.50	01Sep2019, 16:35	4.53
G1033304_0002_R	0.1720000	59.36	01Sep2019, 18:25	4.53
G1033304_0002_J	0.4053000	215.70	01Sep2019, 16:50	4.36
G1033304_0001_R	0.4053000	212.93	01Sep2019, 17:00	4.36
G1033304C	0.3005000	245.36	01Sep2019, 16:40	4.25
G1033304_0001_J	0.7058000	448.95	01Sep2019, 16:45	4.31
G1033304_0000_R	0.7058000	367.82	01Sep2019, 17:35	4.31
G1033304D	0.1493000	82.00	01Sep2019, 17:00	4.13
G1033300_0000_R	14.2937000	189.46	02Sep2019, 00:35	1.94
G1033300I	0.3187000	165.77	01Sep2019, 17:10	4.08

NEEL-SCHAFFER
Solutions you can build upon

50% AEP Existing HEC-HMS Output

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
G1033300_0000_J	14.6124000	248.16	01Sep2019, 18:45	1.98
G1033801B	0.1027000	92.00	01Sep2019, 16:35	4.02
G1033801A	0.4291000	217.93	01Sep2019, 17:10	4.04
G1033800_0000_R	3.5480000	200.40	03Sep2019, 01:35	7.03
G1033800_0001_R	2.9563000	214.39	02Sep2019, 03:35	7.67
G1033800_0002_R	1.9046000	201.03	02Sep2019, 15:15	9.64
G1033800C	0.6407000	274.08	01Sep2019, 17:35	4.43
G1033800A	0.1532000	98.48	01Sep2019, 16:50	4.29
G1033800_0004_R	0.1532000	225.88	02Sep2019, 04:55	70.18
G1033800_0004_J	0.3010000	226.58	02Sep2019, 04:40	37.73
G1033800_0005_J	0.1532000	474.46	01Sep2019, 20:10	70.18
G1033800B	0.1478000	87.90	01Sep2019, 16:55	4.09
G1033800_0004A_J	0.9417000	393.93	01Sep2019, 17:35	15.07
G1033800_0003_R	0.9417000	207.10	02Sep2019, 10:40	15.07
G1033802A	0.3649000	250.13	01Sep2019, 16:55	4.40
G1033802_0000_R	0.3649000	241.84	01Sep2019, 17:15	4.40
G1033802B	0.1840000	127.71	01Sep2019, 16:50	4.44
G10338011A	0.0811000	55.01	01Sep2019, 16:45	3.98
G1033802_0000_J	0.5489000	359.09	01Sep2019, 17:10	4.41
G1033801_0000_J	0.6129000	343.22	01Sep2019, 17:05	4.03
G1033801_0000_R	0.5102000	268.50	01Sep2019, 17:10	4.03
G1033800G	0.5694000	157.53	01Sep2019, 18:25	4.01
G1033800F	0.5917000	328.12	01Sep2019, 17:05	3.98
G1033800E	0.4388000	232.25	01Sep2019, 17:10	4.28
G1033800D	0.4140000	199.24	01Sep2019, 17:15	4.26
G1033801_0001_J	0.5102000	269.22	01Sep2019, 17:05	4.03
G1033800_0001_J	3.5480000	393.20	01Sep2019, 17:15	7.06
G1033800_0002_J	2.9563000	636.74	01Sep2019, 17:10	7.68
G1033800_0003_J	1.9046000	602.01	01Sep2019, 17:15	9.65
G1033800_0000_J	4.1174000	244.67	01Sep2019, 20:15	6.61
G1033600_0001_J	2.0767704	608.10	01Sep2019, 19:40	4.09

NEEL-SCHAFFER
Solutions you can build upon

50% AEP Existing HEC-HMS Output

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
G1033600A	0.3725000	236.07	01Sep2019, 16:55	4.19
G1033600_0004_R	0.3725000	214.65	01Sep2019, 18:15	4.19
G1033600B	0.4467000	191.63	01Sep2019, 17:20	4.08
G1033600_0004_J	0.8192000	388.01	01Sep2019, 18:10	4.13
G1033602A	0.3230704	236.62	01Sep2019, 16:45	4.06
G10336021A	0.1646000	139.24	01Sep2019, 16:35	4.00
G1033602_0001_J	0.4876704	373.25	01Sep2019, 16:40	4.04
G1033602_0000_R	0.4876704	29.90	01Sep2019, 22:40	3.99
G1033602B	0.1313000	79.58	01Sep2019, 16:55	4.41
G1033602_0000_J	0.6189704	92.49	01Sep2019, 17:05	4.08
G1033603A	0.0824000	57.48	01Sep2019, 16:45	4.00
G1033600_0003_J	1.5205704	505.72	01Sep2019, 18:10	4.10
G1033600_0003_R	1.5205704	473.55	01Sep2019, 18:35	4.10
G1033601A	0.1218000	77.52	01Sep2019, 16:50	3.96
G1033600_0002A_J	1.6423704	519.90	01Sep2019, 18:30	4.09
G1033600_0002_R	1.6423704	491.16	01Sep2019, 18:55	4.09
G1033600C	0.2362000	124.48	01Sep2019, 17:05	3.90
G1033600_0002_J	1.8785704	573.11	01Sep2019, 18:50	4.07
G1033600_0000_R	2.0767704	591.51	01Sep2019, 20:10	4.09
G1033600_0001_R	1.8785704	553.63	01Sep2019, 19:45	4.07
G1033600D	0.1982000	120.33	01Sep2019, 16:55	4.28
G1033600E	0.1960000	44.21	01Sep2019, 18:55	3.98
G1033600_0000_J	2.2727704	632.80	01Sep2019, 20:10	4.08
G1038004A	0.4183000	324.83	01Sep2019, 16:40	4.21
G1038004_0000_J	0.4183000	324.83	01Sep2019, 16:40	4.21
G1034500A	0.3911000	227.93	01Sep2019, 17:00	4.06
G1033900B	0.0797000	100.43	01Sep2019, 16:20	3.92
G1033900A	0.1087000	75.74	01Sep2019, 16:45	4.03
G1033900_0001_R	0.1087000	72.90	01Sep2019, 17:05	4.03
G1033900_0001_J	0.1884000	143.43	01Sep2019, 16:40	3.98
G1033900_0000_R	0.1884000	4.71	02Sep2019, 00:40	3.36

NEEL-SCHAFFER
Solutions you can build upon

50% AEP Existing HEC-HMS Output

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
G1033900C	0.1545000	70.90	01Sep2019, 17:10	3.98
G1033900_0000_J	0.3429000	73.76	01Sep2019, 17:15	3.64
G1034601A	0.1787000	141.09	01Sep2019, 16:40	3.96
G1034600A	0.0455000	46.56	01Sep2019, 16:25	3.93
G1034600_0002_R	0.0455000	23.62	01Sep2019, 17:40	3.93
G1034600B	0.0099000	17.97	01Sep2019, 16:15	3.82
G1034600_0002_J	0.2341000	172.06	01Sep2019, 16:35	3.95
G1034600_0001_R	0.2341000	157.03	01Sep2019, 17:00	3.95
G1034600C	0.0159000	27.57	01Sep2019, 16:15	3.91
G1034600_0001_J	0.2500000	167.83	01Sep2019, 16:55	3.94
G1034600_0000_R	0.2500000	167.34	01Sep2019, 17:00	3.94
G1034600D	0.0477000	82.73	01Sep2019, 16:15	3.84
G1034600_0000_J	0.2977000	212.36	01Sep2019, 16:30	3.93

NEEL-SCHAFFER
Solutions you can build upon

10% AEP Existing HEC-HMS Output

Project: Kingwood Simulation Run: Exist_10

Start of Run: 01Sep2019, 00:00 Basin Model: Existing
End of Run: 08Sep2019, 00:00 Meteorologic Model: 10% (10-Year)
Compute Time: DATA CHANGED, RECOMPUTE Control Specifications:Control 5

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
G1033304_0000_J	0.8551000	696.80	01Sep2019, 17:35	7.77
G1033300_0001A_J	14.2937000	1015.31	01Sep2019, 17:30	3.71
G10333B	4.6686000	1469.27	01Sep2019, 20:20	7.66
G10333A	4.7842000	1903.42	01Sep2019, 19:15	7.42
G1033300_9902_D	4.7842000	0.00	01Sep2019, 00:00	0.00
G1033300_9902_R	4.7842000	0.00	01Sep2019, 00:00	0.00
G1033300_0009_J	9.4528000	1469.27	01Sep2019, 20:20	3.78
G1033300_9901_D	9.4528000	811.19	01Sep2019, 20:20	1.92
G1033300_0008_R	9.4528000	384.20	02Sep2019, 04:55	1.92
G1033300A	0.4550000	377.36	01Sep2019, 17:10	7.55
G1033300_0008_J	9.9078000	429.48	01Sep2019, 17:15	2.18
G1033303A	0.1067000	136.32	01Sep2019, 16:35	7.66
G1033300_0008A_J	10.0145000	547.19	01Sep2019, 17:05	2.24
G1033300_0007_R	10.0145000	320.34	02Sep2019, 13:00	2.24
G1033300B	0.2619000	209.72	01Sep2019, 17:10	7.64
G1033300_0007_J	10.2764000	320.46	02Sep2019, 12:55	2.37
G1033302A	0.3788000	329.91	01Sep2019, 17:05	7.79
G1033300_0007A_J	10.6552000	613.95	01Sep2019, 17:15	2.57
G1033300_0006_R	10.6552000	296.07	02Sep2019, 20:30	2.56
G1033300C	0.2969000	209.14	01Sep2019, 17:25	7.66
G1033300_0006_J	10.9521000	318.95	01Sep2019, 18:55	2.70
G1033300_0005_R	10.9521000	275.66	03Sep2019, 06:00	2.70
G1033300D	0.3240000	220.94	01Sep2019, 17:25	7.64
G1033300_0005_J	11.2761000	275.66	03Sep2019, 06:00	2.84
G1033300_0004_R	11.2761000	259.30	03Sep2019, 16:10	2.83
G1033300E	0.2116000	151.78	01Sep2019, 17:20	7.48
G1033300_0004_J	11.4877000	259.30	03Sep2019, 16:10	2.91

NEEL-SCHAFFER
Solutions you can build upon

10% AEP Existing HEC-HMS Output

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
G1033300_0003_R	11.4877000	245.65	04Sep2019, 02:45	2.88
G1033300F	0.2515000	238.43	01Sep2019, 16:55	7.54
G1033300_0003_J	11.7392000	259.58	01Sep2019, 17:00	2.98
G1033301A	0.2993000	337.72	01Sep2019, 16:45	7.76
G1033301_0002_R	0.2993000	330.96	01Sep2019, 17:00	7.76
G1033301B	0.2851000	252.15	01Sep2019, 17:05	7.75
G1033301_0002_J	0.5844000	582.94	01Sep2019, 17:00	7.75
G1033301_0001_R	0.5844000	575.02	01Sep2019, 17:15	7.75
G1033301C	0.4139000	335.63	01Sep2019, 17:10	7.63
G1033301_0001_J	0.9983000	910.24	01Sep2019, 17:15	7.70
G1033301_0000_R	0.9983000	899.68	01Sep2019, 17:30	7.70
G1033301D	0.2470000	272.55	01Sep2019, 16:45	7.68
G1033301_0000_J	1.2453000	1137.36	01Sep2019, 17:25	7.70
G1033300_0003A_J	12.9845000	1389.70	01Sep2019, 17:20	3.43
G1033300_0002_R	12.9845000	387.04	01Sep2019, 22:55	3.38
G1033300G	0.1538000	179.87	01Sep2019, 16:40	7.65
G1033300_0002_J	13.1383000	410.87	01Sep2019, 21:40	3.43
G1033300_0001_R	13.1383000	263.71	02Sep2019, 09:25	3.35
G1033300H	0.3003000	278.17	01Sep2019, 17:00	7.80
G1033300_0001_J	13.4386000	325.77	01Sep2019, 17:05	3.45
G1033304B	0.2333000	263.34	01Sep2019, 16:45	7.71
G1033304A	0.1720000	252.61	01Sep2019, 16:35	8.05
G1033304_0002_R	0.1720000	81.64	01Sep2019, 18:50	8.05
G1033304_0002_J	0.4053000	324.90	01Sep2019, 16:50	7.86
G1033304_0001_R	0.4053000	317.77	01Sep2019, 17:10	7.86
G1033304C	0.3005000	375.68	01Sep2019, 16:40	7.74
G1033304_0001_J	0.7058000	676.13	01Sep2019, 16:50	7.80
G1033304_0000_R	0.7058000	575.55	01Sep2019, 17:40	7.80
G1033304D	0.1493000	129.56	01Sep2019, 17:00	7.60
G1033300_0000_R	14.2937000	339.42	02Sep2019, 01:25	3.59
G1033300I	0.3187000	263.75	01Sep2019, 17:10	7.54

NEEL-SCHAFFER
Solutions you can build upon

10% AEP Existing HEC-HMS Output

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
G1033300_0000_J	14.6124000	430.78	01Sep2019, 19:10	3.68
G1033801B	0.1027000	140.32	01Sep2019, 16:35	7.48
G1033801A	0.4291000	347.53	01Sep2019, 17:10	7.50
G1033800_0000_R	3.5480000	360.13	02Sep2019, 22:30	12.60
G1033800_0001_R	2.9563000	389.03	02Sep2019, 03:40	13.69
G1033800_0002_R	1.9046000	353.75	02Sep2019, 14:10	17.09
G1033800C	0.6407000	440.17	01Sep2019, 17:40	7.94
G1033800A	0.1532000	153.24	01Sep2019, 16:50	7.79
G1033800_0004_R	0.1532000	383.91	02Sep2019, 05:40	122.76
G1033800_0004_J	0.3010000	385.06	02Sep2019, 05:25	66.19
G1033800_0005_J	0.1532000	716.75	01Sep2019, 20:05	122.77
G1033800B	0.1478000	138.10	01Sep2019, 16:55	7.56
G1033800_0004A_J	0.9417000	656.16	01Sep2019, 17:40	26.56
G1033800_0003_R	0.9417000	359.25	02Sep2019, 10:45	26.56
G1033802A	0.3649000	387.18	01Sep2019, 16:55	7.91
G1033802_0000_R	0.3649000	378.32	01Sep2019, 17:15	7.91
G1033802B	0.1840000	197.24	01Sep2019, 16:50	7.95
G10338011A	0.0811000	85.66	01Sep2019, 16:45	7.43
G1033802_0000_J	0.5489000	563.71	01Sep2019, 17:10	7.92
G1033801_0000_J	0.6129000	541.97	01Sep2019, 17:10	7.49
G1033801_0000_R	0.5102000	426.91	01Sep2019, 17:15	7.49
G1033800G	0.5694000	264.99	01Sep2019, 18:30	7.46
G1033800F	0.5917000	520.24	01Sep2019, 17:05	7.42
G1033800E	0.4388000	367.51	01Sep2019, 17:10	7.76
G1033800D	0.4140000	317.88	01Sep2019, 17:20	7.74
G1033801_0001_J	0.5102000	428.37	01Sep2019, 17:10	7.49
G1033800_0001_J	3.5480000	655.47	01Sep2019, 17:25	12.65
G1033800_0002_J	2.9563000	1033.47	01Sep2019, 17:15	13.71
G1033800_0003_J	1.9046000	967.75	01Sep2019, 17:15	17.10
G1033800_0000_J	4.1174000	439.15	01Sep2019, 21:00	11.89
G1033600_0001_J	2.0767704	1113.98	01Sep2019, 19:05	7.54

NEEL-SCHAFFER
Solutions you can build upon

10% AEP Existing HEC-HMS Output

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
G1033600A	0.3725000	368.83	01Sep2019, 17:00	7.67
G1033600_0004_R	0.3725000	340.86	01Sep2019, 18:25	7.67
G1033600B	0.4467000	309.75	01Sep2019, 17:25	7.55
G1033600_0004_J	0.8192000	623.59	01Sep2019, 18:15	7.60
G1033602A	0.3230704	365.96	01Sep2019, 16:45	7.52
G10336021A	0.1646000	213.38	01Sep2019, 16:35	7.46
G1033602_0001_J	0.4876704	575.57	01Sep2019, 16:40	7.50
G1033602_0000_R	0.4876704	103.19	01Sep2019, 21:15	7.41
G1033602B	0.1313000	124.14	01Sep2019, 16:55	7.92
G1033602_0000_J	0.6189704	163.41	01Sep2019, 19:25	7.52
G1033603A	0.0824000	89.29	01Sep2019, 16:45	7.45
G1033600_0003_J	1.5205704	820.52	01Sep2019, 18:10	7.56
G1033600_0003_R	1.5205704	785.82	01Sep2019, 18:40	7.56
G1033601A	0.1218000	121.38	01Sep2019, 16:50	7.40
G1033600_0002A_J	1.6423704	863.76	01Sep2019, 18:35	7.55
G1033600_0002_R	1.6423704	858.66	01Sep2019, 18:45	7.55
G1033600C	0.2362000	198.36	01Sep2019, 17:05	7.34
G1033600_0002_J	1.8785704	1007.49	01Sep2019, 18:35	7.52
G1033600_0000_R	2.0767704	1105.40	01Sep2019, 19:30	7.54
G1033600_0001_R	1.8785704	1001.78	01Sep2019, 19:10	7.52
G1033600D	0.1982000	188.13	01Sep2019, 16:55	7.78
G1033600E	0.1960000	75.52	01Sep2019, 19:00	7.43
G1033600_0000_J	2.2727704	1180.14	01Sep2019, 19:30	7.53
G1038004A	0.4183000	499.36	01Sep2019, 16:40	7.69
G1038004_0000_J	0.4183000	499.36	01Sep2019, 16:40	7.69
G1034500A	0.3911000	359.17	01Sep2019, 17:00	7.52
G1033900B	0.0797000	150.41	01Sep2019, 16:20	7.36
G1033900A	0.1087000	117.59	01Sep2019, 16:45	7.48
G1033900_0001_R	0.1087000	114.09	01Sep2019, 17:05	7.48
G1033900_0001_J	0.1884000	224.51	01Sep2019, 16:40	7.43
G1033900_0000_R	0.1884000	7.43	02Sep2019, 01:20	6.00

NEEL-SCHAFFER
Solutions you can build upon

10% AEP Existing HEC-HMS Output

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
G1033900C	0.1545000	114.14	01Sep2019, 17:15	7.43
G1033900_0000_J	0.3429000	118.77	01Sep2019, 17:15	6.64
G1034601A	0.1787000	217.33	01Sep2019, 16:35	7.40
G1034600A	0.0455000	70.60	01Sep2019, 16:25	7.37
G1034600_0002_R	0.0455000	30.53	01Sep2019, 18:05	7.37
G1034600B	0.0099000	26.41	01Sep2019, 16:15	7.25
G1034600_0002_J	0.2341000	258.82	01Sep2019, 16:35	7.39
G1034600_0001_R	0.2341000	221.08	01Sep2019, 17:15	7.39
G1034600C	0.0159000	40.61	01Sep2019, 16:15	7.36
G1034600_0001_J	0.2500000	234.35	01Sep2019, 17:05	7.39
G1034600_0000_R	0.2500000	234.01	01Sep2019, 17:10	7.39
G1034600D	0.0477000	121.92	01Sep2019, 16:15	7.27
G1034600_0000_J	0.2977000	295.93	01Sep2019, 16:35	7.37

4% AEP Existing HEC-HMS Output

Project: Kingwood Simulation Run: Exist_04

Start of Run: 01Sep2019, 00:00 Basin Model: Existing
End of Run: 08Sep2019, 00:00 Meteorologic Model: 4% (25-Year)
Compute Time: DATA CHANGED, RECOMPUTE Control Specifications:Control 5

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
G1033304_0000_J	0.8551000	876.02	01Sep2019, 17:35	10.53
G1033300_0001A_J	14.2937000	1289.68	01Sep2019, 17:30	5.10
G10333B	4.6686000	1933.03	01Sep2019, 20:25	10.41
G10333A	4.7842000	2488.42	01Sep2019, 19:15	10.17
G1033300_9902_D	4.7842000	0.00	01Sep2019, 00:00	0.00
G1033300_9902_R	4.7842000	0.00	01Sep2019, 00:00	0.00
G1033300_0009_J	9.4528000	1933.03	01Sep2019, 20:25	5.14
G1033300_9901_D	9.4528000	1138.06	01Sep2019, 20:25	2.71
G1033300_0008_R	9.4528000	552.13	02Sep2019, 04:55	2.71
G1033300A	0.4550000	474.14	01Sep2019, 17:10	10.30
G1033300_0008_J	9.9078000	575.93	02Sep2019, 02:45	3.06
G1033303A	0.1067000	167.68	01Sep2019, 16:35	10.42
G1033300_0008A_J	10.0145000	702.25	01Sep2019, 17:10	3.14
G1033300_0007_R	10.0145000	453.44	02Sep2019, 12:50	3.14
G1033300B	0.2619000	263.73	01Sep2019, 17:10	10.40
G1033300_0007_J	10.2764000	453.63	02Sep2019, 12:45	3.33
G1033302A	0.3788000	412.89	01Sep2019, 17:05	10.55
G1033300_0007A_J	10.6552000	785.46	01Sep2019, 17:20	3.58
G1033300_0006_R	10.6552000	415.88	02Sep2019, 20:35	3.58
G1033300C	0.2969000	264.89	01Sep2019, 17:25	10.41
G1033300_0006_J	10.9521000	424.87	01Sep2019, 19:20	3.77
G1033300_0005_R	10.9521000	385.72	03Sep2019, 06:15	3.76
G1033300D	0.3240000	280.29	01Sep2019, 17:30	10.39
G1033300_0005_J	11.2761000	385.72	03Sep2019, 06:15	3.95
G1033300_0004_R	11.2761000	362.03	03Sep2019, 16:25	3.93
G1033300E	0.2116000	192.19	01Sep2019, 17:20	10.23
G1033300_0004_J	11.4877000	362.03	03Sep2019, 16:25	4.05

NEEL-SCHAFFER
Solutions you can build upon

4% AEP Existing HEC-HMS Output

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
G1033300_0003_R	11.4877000	342.48	04Sep2019, 03:05	4.01
G1033300F	0.2515000	297.35	01Sep2019, 16:55	10.29
G1033300_0003_J	11.7392000	342.48	04Sep2019, 03:05	4.14
G1033301A	0.2993000	417.51	01Sep2019, 16:45	10.52
G1033301_0002_R	0.2993000	411.30	01Sep2019, 17:00	10.52
G1033301B	0.2851000	315.48	01Sep2019, 17:05	10.51
G1033301_0002_J	0.5844000	726.34	01Sep2019, 17:00	10.51
G1033301_0001_R	0.5844000	717.20	01Sep2019, 17:15	10.51
G1033301C	0.4139000	421.87	01Sep2019, 17:10	10.38
G1033301_0001_J	0.9983000	1139.01	01Sep2019, 17:15	10.46
G1033301_0000_R	0.9983000	1126.74	01Sep2019, 17:30	10.46
G1033301D	0.2470000	337.27	01Sep2019, 16:45	10.44
G1033301_0000_J	1.2453000	1425.40	01Sep2019, 17:25	10.45
G1033300_0003A_J	12.9845000	1747.93	01Sep2019, 17:25	4.75
G1033300_0002_R	12.9845000	518.34	01Sep2019, 23:00	4.68
G1033300G	0.1538000	222.06	01Sep2019, 16:40	10.41
G1033300_0002_J	13.1383000	551.64	01Sep2019, 21:45	4.74
G1033300_0001_R	13.1383000	357.63	02Sep2019, 09:20	4.63
G1033300H	0.3003000	347.04	01Sep2019, 17:00	10.56
G1033300_0001_J	13.4386000	419.21	01Sep2019, 17:10	4.76
G1033304B	0.2333000	325.51	01Sep2019, 16:45	10.47
G1033304A	0.1720000	308.57	01Sep2019, 16:30	10.82
G1033304_0002_R	0.1720000	96.00	01Sep2019, 19:10	10.82
G1033304_0002_J	0.4053000	398.22	01Sep2019, 16:50	10.62
G1033304_0001_R	0.4053000	387.15	01Sep2019, 17:10	10.62
G1033304C	0.3005000	462.35	01Sep2019, 16:40	10.49
G1033304_0001_J	0.7058000	824.02	01Sep2019, 16:50	10.56
G1033304_0000_R	0.7058000	721.97	01Sep2019, 17:40	10.56
G1033304D	0.1493000	162.35	01Sep2019, 17:05	10.35
G1033300_0000_R	14.2937000	456.15	02Sep2019, 01:45	4.94
G1033300I	0.3187000	331.45	01Sep2019, 17:10	10.29

NEEL-SCHAFFER
Solutions you can build upon

4% AEP Existing HEC-HMS Output

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
G1033300_0000_J	14.6124000	571.76	01Sep2019, 19:20	5.06
G1033801B	0.1027000	172.14	01Sep2019, 16:35	10.23
G1033801A	0.4291000	437.15	01Sep2019, 17:10	10.25
G1033800_0000_R	3.5480000	484.71	02Sep2019, 20:00	16.84
G1033800_0001_R	2.9563000	526.39	02Sep2019, 03:35	18.25
G1033800_0002_R	1.9046000	468.70	02Sep2019, 11:00	22.65
G1033800C	0.6407000	557.93	01Sep2019, 17:40	10.70
G1033800A	0.1532000	190.39	01Sep2019, 16:50	10.54
G1033800_0004_R	0.1532000	486.12	02Sep2019, 06:05	160.35
G1033800_0004_J	0.3010000	487.50	02Sep2019, 05:50	86.68
G1033800_0005_J	0.1532000	875.74	01Sep2019, 19:50	160.35
G1033800B	0.1478000	172.31	01Sep2019, 16:55	10.31
G1033800_0004A_J	0.9417000	852.17	01Sep2019, 17:45	34.99
G1033800_0003_R	0.9417000	467.52	02Sep2019, 10:30	34.98
G1033802A	0.3649000	479.93	01Sep2019, 16:55	10.67
G1033802_0000_R	0.3649000	470.46	01Sep2019, 17:15	10.67
G1033802B	0.1840000	244.20	01Sep2019, 16:50	10.71
G10338011A	0.0811000	106.29	01Sep2019, 16:45	10.18
G1033802_0000_J	0.5489000	702.11	01Sep2019, 17:10	10.68
G1033801_0000_J	0.6129000	680.02	01Sep2019, 17:10	10.24
G1033801_0000_R	0.5102000	536.69	01Sep2019, 17:15	10.24
G1033800G	0.5694000	343.49	01Sep2019, 18:35	10.21
G1033800F	0.5917000	652.07	01Sep2019, 17:05	10.17
G1033800E	0.4388000	461.02	01Sep2019, 17:10	10.52
G1033800D	0.4140000	400.75	01Sep2019, 17:20	10.50
G1033801_0001_J	0.5102000	538.37	01Sep2019, 17:10	10.24
G1033800_0001_J	3.5480000	850.89	01Sep2019, 17:35	16.90
G1033800_0002_J	2.9563000	1318.18	01Sep2019, 17:15	18.28
G1033800_0003_J	1.9046000	1227.96	01Sep2019, 17:15	22.66
G1033800_0000_J	4.1174000	592.15	01Sep2019, 21:25	15.93
G1033600_0001_J	2.0767704	1460.33	01Sep2019, 19:15	10.29

NEEL-SCHAFFER
Solutions you can build upon

4% AEP Existing HEC-HMS Output

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
G1033600A	0.3725000	459.20	01Sep2019, 17:00	10.42
G1033600_0004_R	0.3725000	427.11	01Sep2019, 18:30	10.42
G1033600B	0.4467000	392.78	01Sep2019, 17:25	10.30
G1033600_0004_J	0.8192000	789.99	01Sep2019, 18:20	10.35
G1033602A	0.3230704	452.58	01Sep2019, 16:45	10.27
G10336021A	0.1646000	262.45	01Sep2019, 16:35	10.20
G1033602_0001_J	0.4876704	710.56	01Sep2019, 16:40	10.25
G1033602_0000_R	0.4876704	147.07	01Sep2019, 21:10	10.15
G1033602B	0.1313000	154.58	01Sep2019, 16:55	10.68
G1033602_0000_J	0.6189704	236.09	01Sep2019, 18:10	10.26
G1033603A	0.0824000	110.65	01Sep2019, 16:45	10.20
G1033600_0003_J	1.5205704	1102.09	01Sep2019, 18:15	10.31
G1033600_0003_R	1.5205704	1051.89	01Sep2019, 18:50	10.31
G1033601A	0.1218000	151.05	01Sep2019, 16:50	10.15
G1033600_0002A_J	1.6423704	1148.53	01Sep2019, 18:45	10.30
G1033600_0002_R	1.6423704	1141.54	01Sep2019, 18:55	10.30
G1033600C	0.2362000	249.20	01Sep2019, 17:05	10.09
G1033600_0002_J	1.8785704	1327.20	01Sep2019, 18:45	10.27
G1033600_0000_R	2.0767704	1455.56	01Sep2019, 19:35	10.29
G1033600_0001_R	1.8785704	1320.72	01Sep2019, 19:25	10.27
G1033600D	0.1982000	234.38	01Sep2019, 16:55	10.53
G1033600E	0.1960000	98.77	01Sep2019, 19:05	10.18
G1033600_0000_J	2.2727704	1553.54	01Sep2019, 19:35	10.28
G1038004A	0.4183000	615.87	01Sep2019, 16:40	10.44
G1038004_0000_J	0.4183000	615.87	01Sep2019, 16:40	10.44
G1034500A	0.3911000	448.85	01Sep2019, 17:00	10.27
G1033900B	0.0797000	182.52	01Sep2019, 16:20	10.10
G1033900A	0.1087000	145.70	01Sep2019, 16:45	10.23
G1033900_0001_R	0.1087000	140.81	01Sep2019, 17:10	10.23
G1033900_0001_J	0.1884000	274.13	01Sep2019, 16:35	10.18
G1033900_0000_R	0.1884000	9.55	02Sep2019, 01:35	7.90

NEEL-SCHAFFER
Solutions you can build upon

4% AEP Existing HEC-HMS Output

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
G1033900C	0.1545000	144.29	01Sep2019, 17:15	10.18
G1033900_0000_J	0.3429000	150.11	01Sep2019, 17:20	8.93
G1034601A	0.1787000	268.13	01Sep2019, 16:35	10.15
G1034600A	0.0455000	86.31	01Sep2019, 16:25	10.12
G1034600_0002_R	0.0455000	34.85	01Sep2019, 18:20	10.12
G1034600B	0.0099000	31.68	01Sep2019, 16:15	9.99
G1034600_0002_J	0.2341000	315.87	01Sep2019, 16:35	10.14
G1034600_0001_R	0.2341000	262.44	01Sep2019, 17:25	10.14
G1034600C	0.0159000	48.77	01Sep2019, 16:15	10.10
G1034600_0001_J	0.2500000	277.88	01Sep2019, 17:10	10.13
G1034600_0000_R	0.2500000	277.19	01Sep2019, 17:20	10.13
G1034600D	0.0477000	146.45	01Sep2019, 16:15	10.01
G1034600_0000_J	0.2977000	350.26	01Sep2019, 16:25	10.12

2% AEP Existing HEC-HMS Output

Project: Kingwood Simulation Run: Exist_02

Start of Run: 01Sep2019, 00:00 Basin Model: Existing
End of Run: 08Sep2019, 00:00 Meteorologic Model: 2% (50-Year)
Compute Time: DATA CHANGED, RECOMPUTE Control Specifications: Control 5

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
G1033304_0000_J	0.8551000	1021.66	01Sep2019, 17:35	13.01
G1033300_0001A_J	14.2937000	1517.38	01Sep2019, 17:35	6.40
G10333B	4.6686000	2337.87	01Sep2019, 20:30	12.90
G10333A	4.7842000	2993.76	01Sep2019, 19:20	12.65
G1033300_9902_D	4.7842000	0.00	01Sep2019, 00:00	0.00
G1033300_9902_R	4.7842000	0.00	01Sep2019, 00:00	0.00
G1033300_0009_J	9.4528000	2337.87	01Sep2019, 20:30	6.37
G1033300_9901_D	9.4528000	1473.52	01Sep2019, 20:30	3.50
G1033300_0008_R	9.4528000	717.55	02Sep2019, 04:55	3.50
G1033300A	0.4550000	553.12	01Sep2019, 17:10	12.78
G1033300_0008_J	9.9078000	747.92	02Sep2019, 02:30	3.93
G1033303A	0.1067000	192.40	01Sep2019, 16:35	12.90
G1033300_0008A_J	10.0145000	833.93	01Sep2019, 17:10	4.02
G1033300_0007_R	10.0145000	584.69	02Sep2019, 12:45	4.02
G1033300B	0.2619000	307.98	01Sep2019, 17:15	12.88
G1033300_0007_J	10.2764000	584.96	02Sep2019, 12:40	4.25
G1033302A	0.3788000	480.40	01Sep2019, 17:05	13.04
G1033300_0007A_J	10.6552000	930.73	01Sep2019, 17:25	4.56
G1033300_0006_R	10.6552000	532.35	02Sep2019, 20:50	4.56
G1033300C	0.2969000	311.06	01Sep2019, 17:25	12.90
G1033300_0006_J	10.9521000	532.35	02Sep2019, 20:50	4.78
G1033300_0005_R	10.9521000	491.92	03Sep2019, 06:30	4.77
G1033300D	0.3240000	329.69	01Sep2019, 17:30	12.88
G1033300_0005_J	11.2761000	491.92	03Sep2019, 06:30	5.01
G1033300_0004_R	11.2761000	460.71	03Sep2019, 16:45	4.98
G1033300E	0.2116000	225.58	01Sep2019, 17:25	12.71
G1033300_0004_J	11.4877000	460.71	03Sep2019, 16:45	5.13

NEEL-SCHAFFER
Solutions you can build upon

2% AEP Existing HEC-HMS Output

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
G1033300_0003_R	11.4877000	435.24	04Sep2019, 03:25	5.07
G1033300F	0.2515000	344.86	01Sep2019, 16:55	12.78
G1033300_0003_J	11.7392000	435.24	04Sep2019, 03:25	5.24
G1033301A	0.2993000	481.05	01Sep2019, 16:45	13.01
G1033301_0002_R	0.2993000	474.42	01Sep2019, 17:00	13.01
G1033301B	0.2851000	366.92	01Sep2019, 17:05	12.99
G1033301_0002_J	0.5844000	840.67	01Sep2019, 17:00	13.00
G1033301_0001_R	0.5844000	831.48	01Sep2019, 17:15	13.00
G1033301C	0.4139000	492.70	01Sep2019, 17:15	12.87
G1033301_0001_J	0.9983000	1324.19	01Sep2019, 17:15	12.94
G1033301_0000_R	0.9983000	1312.65	01Sep2019, 17:30	12.94
G1033301D	0.2470000	388.84	01Sep2019, 16:45	12.93
G1033301_0000_J	1.2453000	1662.22	01Sep2019, 17:25	12.94
G1033300_0003A_J	12.9845000	2044.83	01Sep2019, 17:25	5.98
G1033300_0002_R	12.9845000	636.08	01Sep2019, 23:05	5.89
G1033300G	0.1538000	255.55	01Sep2019, 16:40	12.89
G1033300_0002_J	13.1383000	677.75	01Sep2019, 21:50	5.97
G1033300_0001_R	13.1383000	442.20	02Sep2019, 09:20	5.82
G1033300H	0.3003000	402.79	01Sep2019, 17:00	13.05
G1033300_0001_J	13.4386000	498.80	01Sep2019, 17:15	5.98
G1033304B	0.2333000	374.95	01Sep2019, 16:45	12.96
G1033304A	0.1720000	352.49	01Sep2019, 16:30	13.31
G1033304_0002_R	0.1720000	105.41	01Sep2019, 19:25	13.31
G1033304_0002_J	0.4053000	454.93	01Sep2019, 16:50	13.11
G1033304_0001_R	0.4053000	438.68	01Sep2019, 17:15	13.11
G1033304C	0.3005000	530.74	01Sep2019, 16:40	12.98
G1033304_0001_J	0.7058000	938.05	01Sep2019, 16:50	13.05
G1033304_0000_R	0.7058000	841.09	01Sep2019, 17:40	13.05
G1033304D	0.1493000	189.01	01Sep2019, 17:05	12.84
G1033300_0000_R	14.2937000	560.35	02Sep2019, 01:55	6.20
G1033300I	0.3187000	386.71	01Sep2019, 17:10	12.77

NEEL-SCHAFFER
Solutions you can build upon

2% AEP Existing HEC-HMS Output

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
G1033300_0000_J	14.6124000	696.17	01Sep2019, 19:25	6.34
G1033801B	0.1027000	197.03	01Sep2019, 16:35	12.71
G1033801A	0.4291000	510.71	01Sep2019, 17:15	12.73
G1033800_0000_R	3.5480000	595.74	02Sep2019, 18:05	20.49
G1033800_0001_R	2.9563000	649.71	02Sep2019, 03:35	22.15
G1033800_0002_R	1.9046000	572.45	02Sep2019, 04:45	27.33
G1033800C	0.6407000	656.06	01Sep2019, 17:40	13.19
G1033800A	0.1532000	220.25	01Sep2019, 16:50	13.03
G1033800_0004_R	0.1532000	562.36	02Sep2019, 06:05	190.20
G1033800_0004_J	0.3010000	564.22	02Sep2019, 05:45	103.09
G1033800_0005_J	0.1532000	963.89	01Sep2019, 19:45	190.20
G1033800B	0.1478000	199.94	01Sep2019, 16:55	12.79
G1033800_0004A_J	0.9417000	1019.57	01Sep2019, 17:50	41.93
G1033800_0003_R	0.9417000	553.95	02Sep2019, 10:05	41.92
G1033802A	0.3649000	554.17	01Sep2019, 16:55	13.16
G1033802_0000_R	0.3649000	544.77	01Sep2019, 17:15	13.16
G1033802B	0.1840000	281.72	01Sep2019, 16:50	13.20
G10338011A	0.0811000	122.78	01Sep2019, 16:45	12.66
G1033802_0000_J	0.5489000	814.08	01Sep2019, 17:10	13.17
G1033801_0000_J	0.6129000	792.27	01Sep2019, 17:10	12.72
G1033801_0000_R	0.5102000	626.30	01Sep2019, 17:15	12.72
G1033800G	0.5694000	410.77	01Sep2019, 18:35	12.69
G1033800F	0.5917000	759.08	01Sep2019, 17:05	12.65
G1033800E	0.4388000	537.43	01Sep2019, 17:15	13.01
G1033800D	0.4140000	468.95	01Sep2019, 17:20	12.99
G1033801_0001_J	0.5102000	628.10	01Sep2019, 17:10	12.72
G1033800_0001_J	3.5480000	1020.14	01Sep2019, 17:40	20.56
G1033800_0002_J	2.9563000	1557.53	01Sep2019, 17:20	22.18
G1033800_0003_J	1.9046000	1445.43	01Sep2019, 17:20	27.35
G1033800_0000_J	4.1174000	729.69	01Sep2019, 22:05	19.41
G1033600_0001_J	2.0767704	1761.46	01Sep2019, 19:15	12.78

NEEL-SCHAFFER
Solutions you can build upon

2% AEP Existing HEC-HMS Output

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
G1033600A	0.3725000	531.93	01Sep2019, 17:00	12.91
G1033600_0004_R	0.3725000	498.73	01Sep2019, 18:30	12.91
G1033600B	0.4467000	461.83	01Sep2019, 17:30	12.78
G1033600_0004_J	0.8192000	931.89	01Sep2019, 18:20	12.84
G1033602A	0.3230704	521.41	01Sep2019, 16:45	12.76
G10336021A	0.1646000	301.07	01Sep2019, 16:35	12.69
G1033602_0001_J	0.4876704	817.51	01Sep2019, 16:40	12.73
G1033602_0000_R	0.4876704	186.36	01Sep2019, 21:10	12.63
G1033602B	0.1313000	179.16	01Sep2019, 16:55	13.17
G1033602_0000_J	0.6189704	294.16	01Sep2019, 18:10	12.74
G1033603A	0.0824000	127.69	01Sep2019, 16:45	12.68
G1033600_0003_J	1.5205704	1316.71	01Sep2019, 18:15	12.79
G1033600_0003_R	1.5205704	1265.10	01Sep2019, 18:50	12.79
G1033601A	0.1218000	174.85	01Sep2019, 16:50	12.63
G1033600_0002A_J	1.6423704	1382.40	01Sep2019, 18:40	12.78
G1033600_0002_R	1.6423704	1375.74	01Sep2019, 18:55	12.78
G1033600C	0.2362000	290.59	01Sep2019, 17:05	12.57
G1033600_0002_J	1.8785704	1600.39	01Sep2019, 18:45	12.75
G1033600_0000_R	2.0767704	1755.41	01Sep2019, 19:35	12.78
G1033600_0001_R	1.8785704	1591.53	01Sep2019, 19:20	12.75
G1033600D	0.1982000	271.72	01Sep2019, 16:55	13.02
G1033600E	0.1960000	118.90	01Sep2019, 19:15	12.66
G1033600_0000_J	2.2727704	1873.76	01Sep2019, 19:35	12.77
G1038004A	0.4183000	708.18	01Sep2019, 16:40	12.93
G1038004_0000_J	0.4183000	708.18	01Sep2019, 16:40	12.93
G1034500A	0.3911000	521.38	01Sep2019, 17:00	12.75
G1033900B	0.0797000	207.12	01Sep2019, 16:20	12.58
G1033900A	0.1087000	168.11	01Sep2019, 16:45	12.72
G1033900_0001_R	0.1087000	162.81	01Sep2019, 17:10	12.72
G1033900_0001_J	0.1884000	312.53	01Sep2019, 16:45	12.66
G1033900_0000_R	0.1884000	11.75	02Sep2019, 01:40	9.54

NEEL-SCHAFFER
Solutions you can build upon

2% AEP Existing HEC-HMS Output

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
G1033900C	0.1545000	169.14	01Sep2019, 17:20	12.66
G1033900_0000_J	0.3429000	176.16	01Sep2019, 17:20	10.94
G1034601A	0.1787000	308.33	01Sep2019, 16:35	12.63
G1034600A	0.0455000	98.52	01Sep2019, 16:25	12.60
G1034600_0002_R	0.0455000	37.33	01Sep2019, 18:35	12.60
G1034600B	0.0099000	35.61	01Sep2019, 16:15	12.47
G1034600_0002_J	0.2341000	361.16	01Sep2019, 16:35	12.62
G1034600_0001_R	0.2341000	289.18	01Sep2019, 17:35	12.62
G1034600C	0.0159000	54.89	01Sep2019, 16:15	12.58
G1034600_0001_J	0.2500000	304.98	01Sep2019, 17:25	12.62
G1034600_0000_R	0.2500000	304.68	01Sep2019, 17:30	12.62
G1034600D	0.0477000	164.84	01Sep2019, 16:15	12.49
G1034600_0000_J	0.2977000	394.27	01Sep2019, 16:20	12.60

1% AEP Existing HEC-HMS Output

Project: Kingwood Simulation Run: Exist_01

Start of Run: 01Sep2019, 00:00 Basin Model: Existing
End of Run: 08Sep2019, 00:00 Meteorologic Model: 1% (100-Year)
Compute Time: DATA CHANGED, RECOMPUTE Control Specifications:Control 5

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
G1033304_0000_J	0.8551000	1184.89	01Sep2019, 17:40	15.91
G1033300_0001A_J	14.2937000	1776.07	01Sep2019, 17:35	8.05
G10333B	4.6686000	2808.55	01Sep2019, 20:35	15.79
G10333A	4.7842000	3579.24	01Sep2019, 19:30	15.54
G1033300_9902_D	4.7842000	487.24	01Sep2019, 19:30	0.39
G1033300_9902_R	4.7842000	487.24	01Sep2019, 20:10	0.39
G1033300_0009_J	9.4528000	3287.08	01Sep2019, 20:20	8.00
G1033300_9901_D	9.4528000	2260.35	01Sep2019, 20:20	4.63
G1033300_0008_R	9.4528000	965.80	02Sep2019, 04:25	4.63
G1033300A	0.4550000	642.44	01Sep2019, 17:15	15.67
G1033300_0008_J	9.9078000	1015.58	02Sep2019, 00:55	5.14
G1033303A	0.1067000	219.92	01Sep2019, 16:35	15.79
G1033300_0008A_J	10.0145000	1030.42	02Sep2019, 00:25	5.25
G1033300_0007_R	10.0145000	775.04	02Sep2019, 12:35	5.25
G1033300B	0.2619000	358.23	01Sep2019, 17:15	15.77
G1033300_0007_J	10.2764000	775.43	02Sep2019, 12:30	5.52
G1033302A	0.3788000	556.64	01Sep2019, 17:10	15.93
G1033300_0007A_J	10.6552000	1099.42	01Sep2019, 17:30	5.89
G1033300_0006_R	10.6552000	696.61	02Sep2019, 21:00	5.88
G1033300C	0.2969000	363.76	01Sep2019, 17:30	15.79
G1033300_0006_J	10.9521000	696.61	02Sep2019, 21:00	6.15
G1033300_0005_R	10.9521000	639.23	03Sep2019, 06:55	6.14
G1033300D	0.3240000	386.11	01Sep2019, 17:35	15.77
G1033300_0005_J	11.2761000	639.23	03Sep2019, 06:55	6.42
G1033300_0004_R	11.2761000	596.10	03Sep2019, 17:15	6.39
G1033300E	0.2116000	263.63	01Sep2019, 17:25	15.60
G1033300_0004_J	11.4877000	596.10	03Sep2019, 17:15	6.56

NEEL-SCHAFFER
Solutions you can build upon

1% AEP Existing HEC-HMS Output

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
G1033300_0003_R	11.4877000	561.57	04Sep2019, 04:00	6.49
G1033300F	0.2515000	398.32	01Sep2019, 16:55	15.67
G1033300_0003_J	11.7392000	561.57	04Sep2019, 04:00	6.69
G1033301A	0.2993000	552.18	01Sep2019, 16:45	15.90
G1033301_0002_R	0.2993000	545.22	01Sep2019, 17:00	15.90
G1033301B	0.2851000	424.93	01Sep2019, 17:05	15.88
G1033301_0002_J	0.5844000	969.18	01Sep2019, 17:00	15.89
G1033301_0001_R	0.5844000	959.85	01Sep2019, 17:15	15.89
G1033301C	0.4139000	572.84	01Sep2019, 17:15	15.76
G1033301_0001_J	0.9983000	1532.69	01Sep2019, 17:15	15.84
G1033301_0000_R	0.9983000	1521.71	01Sep2019, 17:30	15.84
G1033301D	0.2470000	446.62	01Sep2019, 16:45	15.82
G1033301_0000_J	1.2453000	1928.26	01Sep2019, 17:25	15.83
G1033300_0003A_J	12.9845000	2379.87	01Sep2019, 17:25	7.56
G1033300_0002_R	12.9845000	772.33	01Sep2019, 23:05	7.45
G1033300G	0.1538000	292.96	01Sep2019, 16:40	15.78
G1033300_0002_J	13.1383000	823.21	01Sep2019, 21:55	7.55
G1033300_0001_R	13.1383000	540.34	02Sep2019, 09:20	7.35
G1033300H	0.3003000	465.56	01Sep2019, 17:00	15.94
G1033300_0001_J	13.4386000	592.12	01Sep2019, 17:25	7.55
G1033304B	0.2333000	430.31	01Sep2019, 16:45	15.85
G1033304A	0.1720000	401.08	01Sep2019, 16:30	16.20
G1033304_0002_R	0.1720000	116.98	01Sep2019, 19:35	16.20
G1033304_0002_J	0.4053000	519.20	01Sep2019, 16:50	16.00
G1033304_0001_R	0.4053000	499.24	01Sep2019, 17:20	16.00
G1033304C	0.3005000	607.00	01Sep2019, 16:40	15.87
G1033304_0001_J	0.7058000	1064.60	01Sep2019, 16:55	15.94
G1033304_0000_R	0.7058000	973.65	01Sep2019, 17:40	15.94
G1033304D	0.1493000	219.07	01Sep2019, 17:05	15.72
G1033300_0000_R	14.2937000	680.45	02Sep2019, 02:05	7.78
G1033300I	0.3187000	449.10	01Sep2019, 17:10	15.66

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1% AEP Existing HEC-HMS Output

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
G1033300_0000_J	14.6124000	842.34	01Sep2019, 19:30	7.95
G1033801B	0.1027000	224.67	01Sep2019, 16:35	15.60
G1033801A	0.4291000	593.94	01Sep2019, 17:15	15.62
G1033800_0000_R	3.5480000	725.61	02Sep2019, 16:45	24.69
G1033800_0001_R	2.9563000	792.99	02Sep2019, 03:35	26.62
G1033800_0002_R	1.9046000	695.80	02Sep2019, 04:00	32.69
G1033800C	0.6407000	768.00	01Sep2019, 17:45	16.09
G1033800A	0.1532000	253.79	01Sep2019, 16:50	15.92
G1033800_0004_R	0.1532000	646.05	02Sep2019, 06:10	223.76
G1033800_0004_J	0.3010000	648.36	02Sep2019, 05:50	121.59
G1033800_0005_J	0.1532000	1144.75	01Sep2019, 20:00	223.76
G1033800B	0.1478000	231.04	01Sep2019, 16:55	15.68
G1033800_0004A_J	0.9417000	1212.68	01Sep2019, 17:55	49.81
G1033800_0003_R	0.9417000	653.16	02Sep2019, 09:10	49.80
G1033802A	0.3649000	637.52	01Sep2019, 16:55	16.05
G1033802_0000_R	0.3649000	627.91	01Sep2019, 17:15	16.05
G1033802B	0.1840000	323.83	01Sep2019, 16:50	16.09
G10338011A	0.0811000	141.27	01Sep2019, 16:45	15.55
G1033802_0000_J	0.5489000	939.23	01Sep2019, 17:10	16.07
G1033801_0000_J	0.6129000	918.89	01Sep2019, 17:10	15.61
G1033801_0000_R	0.5102000	727.49	01Sep2019, 17:15	15.61
G1033800G	0.5694000	488.48	01Sep2019, 18:45	15.58
G1033800F	0.5917000	879.71	01Sep2019, 17:05	15.54
G1033800E	0.4388000	624.11	01Sep2019, 17:15	15.90
G1033800D	0.4140000	546.34	01Sep2019, 17:25	15.88
G1033801_0001_J	0.5102000	729.39	01Sep2019, 17:10	15.61
G1033800_0001_J	3.5480000	1217.96	01Sep2019, 17:50	24.77
G1033800_0002_J	2.9563000	1832.13	01Sep2019, 17:25	26.66
G1033800_0003_J	1.9046000	1693.94	01Sep2019, 17:20	32.71
G1033800_0000_J	4.1174000	890.00	01Sep2019, 22:15	23.43
G1033600_0001_J	2.0767704	2116.38	01Sep2019, 19:10	15.66

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Solutions you can build upon

1% AEP Existing HEC-HMS Output

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
G1033600A	0.3725000	613.72	01Sep2019, 17:00	15.80
G1033600_0004_R	0.3725000	580.21	01Sep2019, 18:30	15.80
G1033600B	0.4467000	540.50	01Sep2019, 17:35	15.67
G1033600_0004_J	0.8192000	1094.23	01Sep2019, 18:20	15.73
G1033602A	0.3230704	598.44	01Sep2019, 16:45	15.65
G10336021A	0.1646000	344.02	01Sep2019, 16:35	15.58
G1033602_0001_J	0.4876704	936.98	01Sep2019, 16:40	15.62
G1033602_0000_R	0.4876704	239.83	01Sep2019, 21:05	15.51
G1033602B	0.1313000	206.83	01Sep2019, 16:55	16.06
G1033602_0000_J	0.6189704	360.96	01Sep2019, 18:35	15.63
G1033603A	0.0824000	146.78	01Sep2019, 16:45	15.57
G1033600_0003_J	1.5205704	1562.51	01Sep2019, 18:15	15.68
G1033600_0003_R	1.5205704	1513.33	01Sep2019, 18:45	15.68
G1033601A	0.1218000	201.60	01Sep2019, 16:50	15.52
G1033600_0002A_J	1.6423704	1654.59	01Sep2019, 18:40	15.67
G1033600_0002_R	1.6423704	1647.98	01Sep2019, 18:55	15.67
G1033600C	0.2362000	337.31	01Sep2019, 17:10	15.46
G1033600_0002_J	1.8785704	1918.66	01Sep2019, 18:45	15.64
G1033600_0000_R	2.0767704	2110.05	01Sep2019, 19:30	15.66
G1033600_0001_R	1.8785704	1909.38	01Sep2019, 19:20	15.64
G1033600D	0.1982000	313.83	01Sep2019, 17:00	15.91
G1033600E	0.1960000	142.28	01Sep2019, 19:20	15.55
G1033600_0000_J	2.2727704	2252.18	01Sep2019, 19:30	15.65
G1038004A	0.4183000	811.27	01Sep2019, 16:40	15.82
G1038004_0000_J	0.4183000	811.27	01Sep2019, 16:40	15.82
G1034500A	0.3911000	603.07	01Sep2019, 17:00	15.64
G1033900B	0.0797000	233.86	01Sep2019, 16:20	15.47
G1033900A	0.1087000	193.23	01Sep2019, 16:45	15.61
G1033900_0001_R	0.1087000	185.79	01Sep2019, 17:20	15.61
G1033900_0001_J	0.1884000	357.48	01Sep2019, 16:45	15.55
G1033900_0000_R	0.1884000	15.12	02Sep2019, 01:35	11.51

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1% AEP Existing HEC-HMS Output

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
G1033900C	0.1545000	197.41	01Sep2019, 17:20	15.55
G1033900_0000_J	0.3429000	205.82	01Sep2019, 17:25	13.33
G1034601A	0.1787000	353.15	01Sep2019, 16:35	15.52
G1034600A	0.0455000	111.97	01Sep2019, 16:25	15.49
G1034600_0002_R	0.0455000	40.50	01Sep2019, 18:50	15.49
G1034600B	0.0099000	39.77	01Sep2019, 16:15	15.36
G1034600_0002_J	0.2341000	412.06	01Sep2019, 16:35	15.51
G1034600_0001_R	0.2341000	323.32	01Sep2019, 17:45	15.51
G1034600C	0.0159000	61.38	01Sep2019, 16:15	15.47
G1034600_0001_J	0.2500000	340.75	01Sep2019, 17:35	15.50
G1034600_0000_R	0.2500000	340.30	01Sep2019, 17:40	15.50
G1034600D	0.0477000	184.37	01Sep2019, 16:15	15.38
G1034600_0000_J	0.2977000	442.21	01Sep2019, 16:20	15.49

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Solutions you can build upon

Watershed (G100-00-00)

Subwatershed	Drainage Area (acres)	Drainage Area (sq.mi.)	Channel Improvements Lengths or Percent (Total)			Weighted Conveyance BDF	Land Classification Areas										Composite BDF	Tc (Unadjusted)	R (Unadjusted)	Channel Slope(ft./mi)	Overland Slope(ft./mi.)	SxSo	Slope Adj	Watershed Detention Volume not Modeled Directly (ac-ft)	Detention Rate	Detention Adj	Percent Ponding	Percent Impervious 2019	TC"	R"	Ponding Adjustments for Storage Values (R")						
			Natural Channel	Improved	Concrete		Undeveloped		Open Space		Developed Roadside Ditch		Developed Storm Sewer Pre 1984		Developed Storm Sewer Post 1984		AREA CHECK						K_a		DR	C_r	DPP		(Slope and Detention Adjusted)	(Slope and Detention Adjusted)	20% (5-Yr)	10% (100-Yr)	4% (25-Yr)	2% (50-Yr)	1% (100-Yr)	0.2% (500-Yr)
							Area (ac)	BDF	Area (ac)	BDF	Area (ac)	BDF	Area (ac)	BDF	Area (ac)	BDF				S	So															
G103-41-00_1	208	0.33	0%	100%	0%	3.00	0	0.0	28	1.0	0	1.5	0	3.0	180	6.0	0.0	8.3	0.83	2.08	N/A	N/A	26	1.0	11	33	1.00	0	39%	0.83	2.08	2.08	2.08	2.08	2.08	2.08	2.08
G103-41-00_2	230	0.36	0%	100%	0%	3.00	0	0.0	24	1.0	0	1.5	0	3.0	206	6.0	0.0	8.5	0.92	2.08	N/A	N/A	26	1.0	43	119	1.31	0	35%	1.17	2.75	2.75	2.75	2.75	2.75	2.75	2.75
G103-41-00_3	37	0.06	0%	100%	0%	3.00	0	0.0	0	1.0	0	1.5	0	3.0	37	6.0	0.0	9.0	0.42	1.00	34	39	1326	0.4	0	0	1.00	0	38%	0.17	0.33	0.33	0.33	0.33	0.33	0.33	0.33
G103-41-00_4	136	0.21	0%	100%	0%	3.00	0	0.0	0	1.0	0	1.5	0	3.0	136	6.0	0.0	9.0	0.67	1.58	24	11	264	0.6	0	0	1.00	0	40%	0.42	1.00	1.00	1.00	1.00	1.00	1.00	1.00
G103-41-00_5	51	0.08	0%	100%	0%	3.00	0	0.0	0	1.0	0	1.5	0	3.0	51	6.0	0.0	9.0	0.42	1.08	N/A	N/A	N/A	1.0	0	0	1.00	0	31%	0.42	1.08	1.08	1.08	1.08	1.08	1.08	1.08
G103-41-00_6	83	0.13	0%	100%	0%	3.00	0	0.0	0	1.0	0	1.5	0	3.0	83	6.0	0.0	9.0	0.58	1.33	27	9	243	0.6	0	0	1.00	0	44%	0.33	0.83	0.83	0.83	0.83	0.83	0.83	0.83
G103-41-00_7	58	0.09	0%	100%	0%	3.00	0	0.0	0	1.0	0	1.5	0	3.0	58	6.0	0.0	9.0	0.50	1.17	N/A	N/A	N/A	1.0	0	0	1.00	0	36%	0.50	1.17	1.17	1.17	1.17	1.17	1.17	1.17
G103-41-01_1	94	0.15	0%	100%	0%	3.00	0	0.0	78	1.0	0	1.5	0	3.0	16	6.0	0.0	4.9	0.83	2.25	4	9	36	0.9	0	0	1.00	0	13%	0.75	2.08	2.08	2.08	2.08	2.08	2.08	2.08
G103-41-01_2	57	0.09	0%	100%	0%	3.00	0	0.0	0	1.0	0	1.5	0	3.0	57	6.0	0.0	9.0	0.50	1.17	N/A	N/A	26	1.0	0	0	1.00	0	27%	0.50	1.17	1.17	1.17	1.17	1.17	1.17	1.17
G103-41-01_3	44	0.07	0%	100%	0%	3.00	0	0.0	0	1.0	0	1.5	0	3.0	44	6.0	0.0	9.0	0.42	1.00	N/A	N/A	N/A	N/A	0	0	1.00	0	45%	0.42	1.00	1.00	1.00	1.00	1.00	1.00	1.00
G103-80-01_1	183	0.29	0%	0%	100%	6.00	0	0.0	0	1.0	0	1.5	0	3.0	183	6.0	0.0	12.0	0.58	1.25	31	33	1023	0.4	0	0	1.00	0	40%	0.25	0.50	0.50	0.50	0.50	0.50	0.50	0.50
G103-80-01_2	237	0.37	0%	0%	100%	6.00	0	0.0	0	1.0	0	1.5	0	3.0	237	6.0	0.0	12.0	0.67	1.42	6	9	54	0.9	0	0	1.00	0	47%	0.58	1.25	1.25	1.25	1.25	1.25	1.25	1.25
G103-80-01_3	133	0.21	0%	0%	100%	6.00	0	0.0	0	1.0	0	1.5	0	3.0	133	6.0	0.0	12.0	0.50	1.08	7	7	49	0.9	0	0	1.00	0	45%	0.42	1.00	1.00	1.00	1.00	1.00	1.00	1.00
G103-80-01_4	147	0.23	0%	0%	100%	6.00	0	0.0	0	1.0	0	1.5	0	3.0	147	6.0	0.0	12.0	0.58	1.17	7	7	49	0.9	0	0	1.00	0	36%	0.50	1.00	1.00	1.00	1.00	1.00	1.00	1.00
G103-80-03-03.1A_1	106	0.17	0%	100%	0%	3.00	0	0.0	0	1.0	0	1.5	0	3.0	106	6.0	0.0	9.0	0.58	1.50	N/A	N/A	N/A	1.0	0	0	1.00	0	23%	0.58	1.50	1.50	1.50	1.50	1.50	1.50	1.50
G103-80-03.1A_2	65	0.10	0%	100%	0%	3.00	0	0.0	0	1.0	0	1.5	0	3.0	65	6.0	0.0	9.0	0.50	1.17	12	23	276	0.6	0	0	1.00	0	50%	0.33	0.75	0.75	0.75	0.75	0.75	0.75	0.75
G103-80-03.1A_3	102	0.16	0%	100%	0%	3.00	102	0.0	0	1.0	0	1.5	0	3.0	0	6.0	0.0	3.0	1.00	2.83	16	18	288	0.6	0	0	1.00	0	10%	0.58	1.75	1.75	1.75	1.75	1.75	1.75	1.75
G103-80-03.1A_4	15	0.02	0%	100%	0%	3.00	0	0.0	0	1.0	15	1.5	0	3.0	0	6.0	0.0	4.5	0.33	1.08	N/A	N/A	N/A	1.0	0	0	1.00	0	26%	0.33	1.08	1.08	1.08	1.08	1.08	1.08	1.08
G103-80-03.1B_1	59	0.09	0%	100%	0%	3.00	0	0.0	0	1.0	0	1.5	0	3.0	59	6.0	0.0	9.0	0.50	1.17	4	36	144	0.7	0	0	1.00	0	43%	0.33	0.83	0.83	0.83	0.83	0.83	0.83	0.83
G103-80-03.1B_2	186	0.29	0%	100%	0%	3.00	0	0.0	0	1.0	0	1.5	0	3.0	186	6.0	0.0	9.0	0.75	1.83	28	19	532	0.5	0	0	1.00	0	51%	0.42	0.92	0.92	0.92	0.92	0.92	0.92	0.92
G103-80-03.1B_3	304	0.48	0%	100%	0%	3.00	0	0.0	0	1.0	0	1.5	0	3.0	304	6.0	0.0	9.0	1.00	2.17	4	13	52	0.9	0	0	1.00	0	43%	0.92	1.92	1.92	1.92	1.92	1.92	1.92	1.92
G103-80-03.1B_4	129	0.20	0%	100%	0%	3.00	0	0.0	0	1.0	0	1.5	0	3.0	129	6.0	0.0	9.0	0.67	1.58	9	4	36	0.9	0	0	1.00	0	45%	0.67	1.50	1.50	1.50	1.50	1.50	1.50	1.50
G103-80-03.1B_5	65	0.10	0%	100%	0%	3.00	0	0.0	0	1.0	0	1.5	0	3.0	65	6.0	0.0	9.0	0.50	1.17	4	6	24	1.0	0	0	1.00	0	33%	0.50	1.17	1.17	1.17	1.17	1.17	1.17	1.17
G103-80-03.1B_6	286	0.45	0%	100%	0%	3.00	0	0.0	0	1.0	0	1.5	0	3.0	286	6.0	0.0	9.0	0.92	2.17	7	9	63	0.9	0	0	1.00	0	38%	0.75	1.83	1.83	1.83	1.83	1.83	1.83	1.83
G103-80-03.1B_7	1,248	1.95	25%	75%	0%	2.25	200	0.0	158	1.0	890	1.5	0	3.0	0	6.0	0.0	3.4	2.83	7.17	5	5	25	1.0	62	32	1.00	0	15%	2.83	7.17	7.17	7.17	7.17	7.17	7.17	7.17
TOTAL	4263.0	6.7															8.63																			

Gauge ENGINEERING

50% AEP Existing HEC-HMS Output

Project:	Kingwood	Simulation Run:	EXIST_50PCT
Start of Run:	01Jan2019, 00:00	Basin Model:	Existing_Conditions
End of Run:	04Jan2019, 02:45	Meteorlogical Model	REG2_50PCT
Compute Time:		Constrol Specifications:	3_DAY_5_MIN

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
G103-80-03.1B_7	1.95	367.1	1/1/01 2:24 AM	3.96
G103-80-03.1B_6	0.45	306.6	11/1/00 2:24 PM	4.27
J_G103-80-03.1B_7	1.95	367.1	1/1/01 2:24 AM	3.96
R_G103-80-03.1B_7	1.95	362.2	12/27/00 4:48 AM	3.96
J_G103-80-03.1B_6	2.4	471	4/15/01 12:00 AM	4.02
R_G103-80-03.1B_6	2.4	470	4/14/01 12:00 AM	4.02
G103-80-03.1B_5	0.1	91.9	3/31/00 9:36 PM	4.2
J_G103-80-03.1B_5	2.5	487.8	5/1/01 7:12 PM	4.02
R_G103-80-03.1B_5	2.5	486.5	4/30/01 12:00 PM	4.02
G103-80-03.1B_4	0.2	156.2	6/4/00 4:48 AM	4.36
J_G103-80-03.1B_4	2.7	568.8	7/21/01 7:12 PM	4.05
R_G103-80-03.1B_4	2.7	564.4	7/17/01 9:36 AM	4.05
G103-80-03.1B_3	0.48	314.4	11/9/00 9:36 AM	4.34
J_G103-80-03.1B_3	3.18	831.7	4/10/02 4:48 PM	4.09
R_G103-80-03.1B_3	3.18	827.6	4/6/02 2:24 PM	4.09
G103-80-03.1B_2	0.29	312	11/7/00 12:00 AM	4.45
J_G103-80-03.1B_2	3.47	989.6	9/15/02 2:24 PM	4.12
R_G103-80-03.1B_2	3.47	986	9/12/02 12:00 AM	4.12
G103-80-03.1B_1	0.09	103.4	4/12/00 9:36 AM	4.34
G103-41-00_6	0.13	149.4	5/28/00 9:36 AM	4.35
G103-41-00_7	0.09	82.8	3/22/00 7:12 PM	4.24
G103-41-00_5	0.08	77.6	3/17/00 2:24 PM	4.17
G103-41-00_4	0.21	214.2	8/1/00 4:48 AM	4.3
G103-41-00_3	0.06	112.8	4/21/00 7:12 PM	4.27
G103-41-00_2	0.36	182.4	6/30/00 9:36 AM	4.23
G103-41-01_2	0.09	82.5	3/22/00 12:00 PM	4.12
G103-41-01_3	0.07	71.5	3/11/00 12:00 PM	4.36
G103-41-01_1	0.15	125.4	5/4/00 9:36 AM	3.93
G103-41-00_1	0.33	211.2	7/29/00 4:48 AM	4.28
G103-80-01_4	0.23	232.5	8/19/00 12:00 PM	4.24
G103-80-01_3	0.21	214.5	8/1/00 12:00 PM	4.36
G103-80-01_2	0.37	326.1	11/21/00 2:24 AM	4.39
G103-80-01_1	0.29	443.6	3/18/01 2:24 PM	4.3
G103-80-03.1A_3	0.16	111.8	4/20/00 7:12 PM	3.89
G103-80-03.1A_4	0.02	19.5	1/19/00 12:00 PM	4.11
G103-80-03.1A_2	0.1	120.7	4/29/00 4:48 PM	3.89
G103-80-03.1A_1	0.17	133.3	5/12/00 7:12 AM	4.3
J_G103-80-03.1B_1	3.56	1034.4	10/30/02 9:36 AM	4.13
J_G103-41-00_3	0.57	560.1	7/13/01 2:24 AM	4.28
J_G103-41-00_4	0.51	498.8	5/12/01 7:12 PM	4.28
J_G103-41-00_5	0.3	285.9	10/11/00 9:36 PM	4.27
J_G103-41-00_6	0.22	208.7	7/26/00 4:48 PM	4.31
J_G103-41-00_7	0.09	82.8	3/22/00 7:12 PM	4.24
J_G103-41-01_2	0.16	129.1	5/8/00 2:24 AM	4.23
J_G103-41-01_3	0.07	71.5	3/11/00 12:00 PM	4.36

50% AEP Existing HEC-HMS Output

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
J_G103-41-00_1	1.57	1041.6	11/6/02 2:24 PM	4.23
J_G103-41-00_2	1.24	859.3	5/8/02 7:12 AM	4.22
J_G103-80-01_1	1.1	963.4	8/20/02 9:36 AM	4.33
J_G103-80-01_2	0.81	721.2	12/21/01 4:48 AM	4.34
J_G103-80-01_3	0.44	426.9	3/1/01 9:36 PM	4.3
J_G103-80-01_4	0.23	232.5	8/19/00 12:00 PM	4.24
J_G103-80-03.1A_1	0.45	318.3	11/13/00 7:12 AM	4.05
J_G103-80-03.1A_2	0.28	210.1	7/28/00 2:24 AM	3.91
J_G103-80-03.1A_3	0.18	128.3	5/7/00 7:12 AM	3.91
J_G103-80-03.1A_4	0.02	19.5	1/19/00 12:00 PM	4.11
R_G103-80-03.1A_2	0.28	195.4	7/13/00 9:36 AM	3.91
R_G103-80-03.1A_3	0.18	120.7	4/29/00 4:48 PM	3.91
R_G103-80-03.1A_4	0.02	16.7	1/16/00 4:48 PM	4.11
R_G103-41-00_2	1.24	832	4/11/02 12:00 AM	4.22
R_G103-41-00_3	0.57	558.2	7/11/01 4:48 AM	4.28
R_G103-41-00_4	0.51	492.7	5/6/01 4:48 PM	4.28
R_G103-41-00_5	0.3	285.7	10/11/00 4:48 PM	4.27
R_G103-41-00_6	0.22	208.7	7/26/00 4:48 PM	4.31
R_G103-41-00_7	0.09	78.6	3/18/00 2:24 PM	4.24
R_G103-41-01_2	0.16	114.1	4/23/00 2:24 AM	4.23
R_G103-41-01_3	0.07	61.5	3/1/00 12:00 PM	4.36
R_G103-80-01_2	0.81	707.7	12/7/01 4:48 PM	4.34
R_G103-80-01_3	0.44	412.1	2/15/01 2:24 AM	4.3
R_G103-80-01_4	0.23	223.7	8/10/00 4:48 PM	4.24

Project:	Kingwood	Simulation Run:	EXIST_10PCT
Start of Run:	01Jan2019, 00:00	Basin Model:	Existing_Conditions
End of Run:	04Jan2019, 02:45	Meteorlogical Model	REG2_50PCT
Compute Time:		Constrol Specifications:	3_DAY_5_MIN

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
G103-80-03.1B_7	1.95	635.6	9/26/01 2:24 PM	7.41
G103-80-03.1B_6	0.45	475	4/19/01 12:00 AM	7.77
J_G103-80-03.1B_7	1.95	635.6	9/26/01 2:24 PM	7.41
R_G103-80-03.1B_7	1.95	630.7	9/21/01 4:48 PM	7.41
J_G103-80-03.1B_6	2.4	825.4	4/4/02 9:36 AM	7.48
R_G103-80-03.1B_6	2.4	824.4	4/3/02 9:36 AM	7.48
G103-80-03.1B_5	0.1	139.6	5/18/00 2:24 PM	7.69
J_G103-80-03.1B_5	2.5	860.7	5/9/02 4:48 PM	7.49
R_G103-80-03.1B_5	2.5	859.4	5/8/02 9:36 AM	7.49
G103-80-03.1B_4	0.2	239.4	8/26/00 9:36 AM	7.87
J_G103-80-03.1B_4	2.7	981.9	9/7/02 9:36 PM	7.52
R_G103-80-03.1B_4	2.7	977.5	9/3/02 12:00 PM	7.52
G103-80-03.1B_3	0.48	488.7	5/2/01 4:48 PM	7.84
J_G103-80-03.1B_3	3.18	1428.1	11/28/03 2:24 AM	7.57
R_G103-80-03.1B_3	3.18	1424.8	11/24/03 7:12 PM	7.57
G103-80-03.1B_2	0.29	468.3	4/12/01 7:12 AM	7.96
J_G103-80-03.1B_2	3.47	1722.6	9/17/04 2:24 PM	7.6
R_G103-80-03.1B_2	3.47	1704.6	8/30/04 2:24 PM	7.6
G103-80-03.1B_1	0.09	155	6/3/00 12:00 AM	7.84
G103-41-00_6	0.13	223.9	8/10/00 9:36 PM	7.86
G103-41-00_7	0.09	125.7	5/4/00 4:48 PM	7.73
G103-41-00_5	0.08	117.5	4/26/00 12:00 PM	7.66
G103-41-00_4	0.21	323	11/18/00 12:00 AM	7.8
G103-41-00_3	0.06	165.1	6/13/00 2:24 AM	7.77
G103-41-00_2	0.36	289.8	10/15/00 7:12 PM	7.72
G103-41-01_2	0.09	125.4	5/4/00 9:36 AM	7.6
G103-41-01_3	0.07	107.8	4/16/00 7:12 PM	7.87
G103-41-01_1	0.15	192.2	7/10/00 4:48 AM	7.38
G103-41-00_1	0.33	328.8	11/23/00 7:12 PM	7.78
G103-80-01_4	0.23	350.6	12/15/00 2:24 PM	7.73
G103-80-01_3	0.21	323.4	11/18/00 9:36 AM	7.87
G103-80-01_2	0.37	495.5	5/9/01 12:00 PM	7.9
G103-80-01_1	0.29	654.6	10/15/01 2:24 PM	7.8
G103-80-03.1A_3	0.16	173.6	6/21/00 2:24 PM	7.34
G103-80-03.1A_4	0.02	29.6	1/29/00 2:24 PM	7.58
G103-80-03.1A_2	0.1	180.8	6/28/00 7:12 PM	7.34
G103-80-03.1A_1	0.17	204.3	7/22/00 7:12 AM	7.8
J_G103-80-03.1B_1	3.56	1787.9	11/21/04 9:36 PM	7.61
J_G103-41-00_3	0.57	850.8	4/29/02 7:12 PM	7.78
J_G103-41-00_4	0.51	756.3	1/25/02 7:12 AM	7.78
J_G103-41-00_5	0.3	435.5	3/10/01 12:00 PM	7.77
J_G103-41-00_6	0.22	318.4	11/13/00 9:36 AM	7.81
J_G103-41-00_7	0.09	125.7	5/4/00 4:48 PM	7.73
J_G103-41-01_2	0.16	207	7/25/00 12:00 AM	7.72
J_G103-41-01_3	0.07	107.8	4/16/00 7:12 PM	7.87

10% AEP Existing HEC-HMS Output

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
J_G103-41-00_1	1.57	1636.1	6/23/04 2:24 AM	7.72
J_G103-41-00_2	1.24	1348.4	9/9/03 9:36 AM	7.71
J_G103-80-01_1	1.1	1455	12/25/03 12:00 AM	7.83
J_G103-80-01_2	0.81	1089.2	12/24/02 4:48 AM	7.85
J_G103-80-01_3	0.44	625	9/16/01 12:00 AM	7.8
J_G103-80-01_4	0.23	350.6	12/15/00 2:24 PM	7.73
J_G103-80-03.1A_1	0.45	481	4/25/01 12:00 AM	7.52
J_G103-80-03.1A_2	0.28	326.8	11/21/00 7:12 PM	7.36
J_G103-80-03.1A_3	0.18	198.9	7/16/00 9:36 PM	7.37
J_G103-80-03.1A_4	0.02	29.6	1/29/00 2:24 PM	7.58
R_G103-80-03.1A_2	0.28	293.1	10/19/00 2:24 AM	7.36
R_G103-80-03.1A_3	0.18	188.7	7/6/00 4:48 PM	7.37
R_G103-80-03.1A_4	0.02	25.7	1/25/00 4:48 PM	7.58
R_G103-41-00_2	1.24	1310.7	8/2/03 4:48 PM	7.71
R_G103-41-00_3	0.57	849.8	4/28/02 7:12 PM	7.78
R_G103-41-00_4	0.51	748.3	1/17/02 7:12 AM	7.78
R_G103-41-00_5	0.3	435.5	3/10/01 12:00 PM	7.77
R_G103-41-00_6	0.22	318.4	11/13/00 9:36 AM	7.81
R_G103-41-00_7	0.09	120.4	4/29/00 9:36 AM	7.73
R_G103-41-01_2	0.16	186.2	7/4/00 4:48 AM	7.72
R_G103-41-01_3	0.07	97	4/6/00 12:00 AM	7.87
R_G103-80-01_2	0.81	1067.1	12/2/02 2:24 AM	7.85
R_G103-80-01_3	0.44	614	9/5/01 12:00 AM	7.8
R_G103-80-01_4	0.23	328.6	11/23/00 2:24 PM	7.73

Project:	Kingwood	Simulation Run:	EXIST_2PCT
Start of Run:	01Jan2019, 00:00	Basin Model:	Existing_Conditions
End of Run:	04Jan2019, 02:45	Meteorlogical Model	REG2_50PCT
Compute Time:		Constrol Specifications:	3_DAY_5_MIN

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
G103-80-03.1B_7	1.95	1013.1	10/9/02 2:24 AM	12.65
G103-80-03.1B_6	0.45	680.1	11/10/01 2:24 AM	13.02
J_G103-80-03.1B_7	1.95	1013.1	10/9/02 2:24 AM	12.65
R_G103-80-03.1B_7	1.95	986.6	9/12/02 2:24 PM	12.65
J_G103-80-03.1B_6	2.4	1247.6	5/31/03 2:24 PM	12.72
R_G103-80-03.1B_6	2.4	1243.6	5/27/03 2:24 PM	12.72
G103-80-03.1B_5	0.1	195.6	7/13/00 2:24 PM	12.94
J_G103-80-03.1B_5	2.5	1295	7/18/03 12:00 AM	12.73
R_G103-80-03.1B_5	2.5	1294.4	7/17/03 9:36 AM	12.73
G103-80-03.1B_4	0.2	339.1	12/4/00 2:24 AM	13.13
J_G103-80-03.1B_4	2.7	1543.7	3/22/04 4:48 PM	12.76
R_G103-80-03.1B_4	2.7	1539.5	3/18/04 12:00 PM	12.76
G103-80-03.1B_3	0.48	702.5	12/2/01 12:00 PM	13.1
J_G103-80-03.1B_3	3.18	2199.6	1/7/06 2:24 PM	12.81
R_G103-80-03.1B_3	3.18	2197.2	1/5/06 4:48 AM	12.81
G103-80-03.1B_2	0.29	649	10/10/01 12:00 AM	13.22
J_G103-80-03.1B_2	3.47	2643.1	3/27/07 2:24 AM	12.84
R_G103-80-03.1B_2	3.47	2629.8	3/13/07 7:12 PM	12.84
G103-80-03.1B_1	0.09	214.1	8/1/00 2:24 AM	13.1
G103-41-00_6	0.13	309.4	11/4/00 9:36 AM	13.11
G103-41-00_7	0.09	176.1	6/24/00 2:24 AM	12.99
G103-41-00_5	0.08	164.2	6/12/00 4:48 AM	12.91
G103-41-00_4	0.21	449.6	3/24/01 2:24 PM	13.05
G103-41-00_3	0.06	222.1	8/9/00 2:24 AM	13.02
G103-41-00_2	0.36	426.1	3/1/01 2:24 AM	12.97
G103-41-01_2	0.09	175.8	6/23/00 7:12 PM	12.84
G103-41-01_3	0.07	150	5/29/00 12:00 AM	13.13
G103-41-01_1	0.15	271.3	9/27/00 7:12 AM	12.62
G103-41-00_1	0.33	473.1	4/17/01 2:24 AM	13.03
G103-80-01_4	0.23	487.8	5/1/01 7:12 PM	12.99
G103-80-01_3	0.21	449.9	3/24/01 9:36 PM	13.13
G103-80-01_2	0.37	695.6	11/25/01 2:24 PM	13.16
G103-80-01_1	0.29	889.1	6/7/02 2:24 AM	13.05
G103-80-03.1A_3	0.16	248.3	9/4/00 7:12 AM	12.57
G103-80-03.1A_4	0.02	41.3	2/10/00 7:12 AM	12.83
G103-80-03.1A_2	0.1	249.3	9/5/00 7:12 AM	12.57
G103-80-03.1A_1	0.17	289.4	10/15/00 9:36 AM	13.05
J_G103-80-03.1B_1	3.56	2761.7	7/23/07 4:48 PM	12.85
J_G103-41-00_3	0.57	1186.4	3/31/03 9:36 AM	13.03
J_G103-41-00_4	0.51	1054.1	11/19/02 2:24 AM	13.03
J_G103-41-00_5	0.3	608.3	8/30/01 7:12 AM	13.02
J_G103-41-00_6	0.22	445	3/20/01 12:00 AM	13.06
J_G103-41-00_7	0.09	176.1	6/24/00 2:24 AM	12.99
J_G103-41-01_2	0.16	288.8	10/14/00 7:12 PM	12.97
J_G103-41-01_3	0.07	150	5/29/00 12:00 AM	13.13

2% AEP Existing HEC-HMS Output

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
J_G103-41-00_1	1.57	2373.3	6/30/06 7:12 AM	12.97
J_G103-41-00_2	1.24	1941.2	4/24/05 4:48 AM	12.95
J_G103-80-01_1	1.1	2040.9	8/1/05 9:36 PM	13.09
J_G103-80-01_2	0.81	1504.5	2/12/04 12:00 PM	13.1
J_G103-80-01_3	0.44	860.2	5/9/02 4:48 AM	13.05
J_G103-80-01_4	0.23	487.8	5/1/01 7:12 PM	12.99
J_G103-80-03.1A_1	0.45	667.3	10/28/01 7:12 AM	12.76
J_G103-80-03.1A_2	0.28	460	4/4/01 12:00 AM	12.59
J_G103-80-03.1A_3	0.18	284.1	10/10/00 2:24 AM	12.6
J_G103-80-03.1A_4	0.02	41.3	2/10/00 7:12 AM	12.83
R_G103-80-03.1A_2	0.28	409	2/12/01 12:00 AM	12.59
R_G103-80-03.1A_3	0.18	269.5	9/25/00 12:00 PM	12.6
R_G103-80-03.1A_4	0.02	36.3	2/5/00 7:12 AM	12.83
R_G103-41-00_2	1.24	1902.3	3/16/05 7:12 AM	12.95
R_G103-41-00_3	0.57	1186.2	3/31/03 4:48 AM	13.03
R_G103-41-00_4	0.51	1044.3	11/9/02 7:12 AM	13.03
R_G103-41-00_5	0.3	608.6	8/30/01 2:24 PM	13.02
R_G103-41-00_6	0.22	445	3/20/01 12:00 AM	13.06
R_G103-41-00_7	0.09	169	6/17/00 12:00 AM	12.99
R_G103-41-01_2	0.16	263.5	9/19/00 12:00 PM	12.97
R_G103-41-01_3	0.07	134.3	5/13/00 7:12 AM	13.13
R_G103-80-01_2	0.81	1492.3	1/31/04 7:12 AM	13.1
R_G103-80-01_3	0.44	847.1	4/26/02 2:24 AM	13.05
R_G103-80-01_4	0.23	456.4	3/31/01 9:36 AM	12.99

Project:	Kingwood	Simulation Run:	EXIST_1PCT
Start of Run:	01Jan2019, 00:00	Basin Model:	Existing_Conditions
End of Run:	04Jan2019, 02:45	Meteorlogical Model	REG2_50PCT
Compute Time:		Constrol Specifications:	3_DAY_5_MIN

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
G103-80-03.1B_7	1.95	1217.7	5/1/03 4:48 PM	15.54
G103-80-03.1B_6	0.45	782.4	2/20/02 9:36 AM	15.91
J_G103-80-03.1B_7	1.95	1217.7	5/1/03 4:48 PM	15.54
R_G103-80-03.1B_7	1.95	1153.5	2/26/03 12:00 PM	15.54
J_G103-80-03.1B_6	2.4	1466.5	1/5/04 12:00 PM	15.61
R_G103-80-03.1B_6	2.4	1454.5	12/24/03 12:00 PM	15.61
G103-80-03.1B_5	0.1	222.8	8/9/00 7:12 PM	15.83
J_G103-80-03.1B_5	2.5	1533.4	3/12/04 9:36 AM	15.62
R_G103-80-03.1B_5	2.5	1531.3	3/10/04 7:12 AM	15.62
G103-80-03.1B_4	0.2	388.3	1/22/01 7:12 AM	16.02
J_G103-80-03.1B_4	2.7	1805.6	12/9/04 2:24 PM	15.65
R_G103-80-03.1B_4	2.7	1802.5	12/6/04 12:00 PM	15.65
G103-80-03.1B_3	0.48	809.6	3/19/02 2:24 PM	15.99
J_G103-80-03.1B_3	3.18	2550.8	12/24/06 7:12 PM	15.7
R_G103-80-03.1B_3	3.18	2549.5	12/23/06 12:00 PM	15.7
G103-80-03.1B_2	0.29	735.6	1/4/02 2:24 PM	16.12
J_G103-80-03.1B_2	3.47	3071.8	5/28/08 7:12 PM	15.74
R_G103-80-03.1B_2	3.47	3058	5/15/08 12:00 AM	15.74
G103-80-03.1B_1	0.09	242.3	8/29/00 7:12 AM	15.99
G103-41-00_6	0.13	350.1	12/15/00 2:24 AM	16.01
G103-41-00_7	0.09	200.6	7/18/00 2:24 PM	15.88
G103-41-00_5	0.08	186.8	7/4/00 7:12 PM	15.8
G103-41-00_4	0.21	510.6	5/24/01 2:24 PM	15.94
G103-41-00_3	0.06	247.7	9/3/00 4:48 PM	15.91
G103-41-00_2	0.36	495.6	5/9/01 2:24 PM	15.86
G103-41-01_2	0.09	200.4	7/18/00 9:36 AM	15.73
G103-41-01_3	0.07	170.3	6/18/00 7:12 AM	16.02
G103-41-01_1	0.15	310.1	11/5/00 2:24 AM	15.51
G103-41-00_1	0.33	545.4	6/28/01 9:36 AM	15.93
G103-80-01_4	0.23	553.9	7/6/01 9:36 PM	15.88
G103-80-01_3	0.21	510.9	5/24/01 9:36 PM	16.02
G103-80-01_2	0.37	793.4	3/3/02 9:36 AM	16.05
G103-80-01_1	0.29	997.1	9/23/02 2:24 AM	15.94
G103-80-03.1A_3	0.16	285.3	10/11/00 7:12 AM	15.46
G103-80-03.1A_4	0.02	46.9	2/15/00 9:36 PM	15.72
G103-80-03.1A_2	0.1	281.7	10/7/00 4:48 PM	15.46
G103-80-03.1A_1	0.17	331.4	11/26/00 9:36 AM	15.94
J_G103-80-03.1B_1	3.56	3216.2	10/20/08 4:48 AM	15.74
J_G103-41-00_3	0.57	1347.2	9/8/03 4:48 AM	15.92
J_G103-41-00_4	0.51	1198.9	4/12/03 9:36 PM	15.92
J_G103-41-00_5	0.3	690.1	11/20/01 2:24 AM	15.91
J_G103-41-00_6	0.22	504.5	5/18/01 12:00 PM	15.95
J_G103-41-00_7	0.09	200.6	7/18/00 2:24 PM	15.88
J_G103-41-01_2	0.16	325.3	11/20/00 7:12 AM	15.86
J_G103-41-01_3	0.07	170.3	6/18/00 7:12 AM	16.02

1% AEP Existing HEC-HMS Output

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
J_G103-41-00_1	1.57	2730.2	6/22/07 4:48 AM	15.86
J_G103-41-00_2	1.24	2225.3	2/2/06 7:12 AM	15.85
J_G103-80-01_1	1.1	2344	6/1/06 12:00 AM	15.98
J_G103-80-01_2	0.81	1726.9	9/21/04 9:36 PM	16
J_G103-80-01_3	0.44	990.2	9/16/02 4:48 AM	15.95
J_G103-80-01_4	0.23	553.9	7/6/01 9:36 PM	15.88
J_G103-80-03.1A_1	0.45	773.2	2/11/02 4:48 AM	15.66
J_G103-80-03.1A_2	0.28	525	6/8/01 12:00 AM	15.48
J_G103-80-03.1A_3	0.18	326.4	11/21/00 9:36 AM	15.49
J_G103-80-03.1A_4	0.02	46.9	2/15/00 9:36 PM	15.72
R_G103-80-03.1A_2	0.28	474.6	4/18/01 2:24 PM	15.48
R_G103-80-03.1A_3	0.18	310.4	11/5/00 9:36 AM	15.49
R_G103-80-03.1A_4	0.02	41.6	2/10/00 2:24 PM	15.72
R_G103-41-00_2	1.24	2187.1	12/26/05 2:24 AM	15.85
R_G103-41-00_3	0.57	1347.1	9/8/03 2:24 AM	15.92
R_G103-41-00_4	0.51	1185.8	3/30/03 7:12 PM	15.92
R_G103-41-00_5	0.3	690.8	11/20/01 7:12 PM	15.91
R_G103-41-00_6	0.22	504.5	5/18/01 12:00 PM	15.95
R_G103-41-00_7	0.09	192.5	7/10/00 12:00 PM	15.88
R_G103-41-01_2	0.16	300.3	10/26/00 7:12 AM	15.86
R_G103-41-01_3	0.07	150.2	5/29/00 4:48 AM	16.02
R_G103-80-01_2	0.81	1713.9	9/8/04 9:36 PM	16
R_G103-80-01_3	0.44	973.5	8/30/02 12:00 PM	15.95
R_G103-80-01_4	0.23	523.6	6/6/01 2:24 PM	15.88

0.2% AEP Existing HEC-HMS Output

Project:	Kingwood	Simulation Run:	EXIST_0.2PCT
Start of Run:	01Jan2019, 00:00	Basin Model:	Existing_Conditions
End of Run:	04Jan2019, 02:45	Meteorlogical Model	REG2_50PCT
Compute Time:		Constrol Specifications:	3_DAY_5_MIN

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
G103-80-03.1B_7	1.95	1816.1	12/20/04 2:24 AM	23.63
G103-80-03.1B_6	0.45	1080	12/15/02 12:00 AM	24
J_G103-80-03.1B_7	1.95	1816.1	12/20/04 2:24 AM	23.63
R_G103-80-03.1B_7	1.95	1607.9	5/25/04 9:36 PM	23.63
J_G103-80-03.1B_6	2.4	2023.6	7/15/05 2:24 PM	23.7
R_G103-80-03.1B_6	2.4	1947.2	4/30/05 4:48 AM	23.7
G103-80-03.1B_5	0.1	296.3	10/22/00 7:12 AM	23.92
J_G103-80-03.1B_5	2.5	2048.2	8/9/05 4:48 AM	23.71
R_G103-80-03.1B_5	2.5	2039.5	7/31/05 12:00 PM	23.71
G103-80-03.1B_4	0.2	528.2	6/11/01 4:48 AM	24.12
J_G103-80-03.1B_4	2.7	2424.7	8/20/06 4:48 PM	23.74
R_G103-80-03.1B_4	2.7	2415.2	8/11/06 4:48 AM	23.74
G103-80-03.1B_3	0.48	1123.6	1/27/03 2:24 PM	24.08
J_G103-80-03.1B_3	3.18	3450.5	6/11/09 12:00 PM	23.79
R_G103-80-03.1B_3	3.18	3449.7	6/10/09 4:48 PM	23.79
G103-80-03.1B_2	0.29	957.6	8/14/02 2:24 PM	24.21
J_G103-80-03.1B_2	3.47	4189.3	6/20/11 7:12 AM	23.83
R_G103-80-03.1B_2	3.47	4178	6/9/11 12:00 AM	23.83
G103-80-03.1B_1	0.09	311.3	11/6/00 7:12 AM	24.08
G103-41-00_6	0.13	449.8	3/24/01 7:12 PM	24.1
G103-41-00_7	0.09	266.8	9/22/00 7:12 PM	23.97
G103-41-00_5	0.08	246.6	9/2/00 2:24 PM	23.89
G103-41-00_4	0.21	668.8	10/29/01 7:12 PM	24.04
G103-41-00_3	0.06	288.8	10/14/00 7:12 PM	24
G103-41-00_2	0.36	704.1	12/4/01 2:24 AM	23.96
G103-41-01_2	0.09	266.5	9/22/00 12:00 PM	23.83
G103-41-01_3	0.07	223	8/10/00 12:00 AM	24.12
G103-41-01_1	0.15	417.7	2/20/01 4:48 PM	23.6
G103-41-00_1	0.33	758	1/27/02 12:00 AM	24.02
G103-80-01_4	0.23	729.4	12/29/01 9:36 AM	23.97
G103-80-01_3	0.21	669.1	10/30/01 2:24 AM	24.12
G103-80-01_2	0.37	1062.7	11/27/02 4:48 PM	24.15
G103-80-01_1	0.29	1220.6	5/4/03 2:24 PM	24.04
G103-80-03.1A_3	0.16	391.9	1/25/01 9:36 PM	23.55
G103-80-03.1A_4	0.02	62	3/2/00 12:00 AM	23.81
G103-80-03.1A_2	0.1	359.5	12/24/00 12:00 PM	23.55
G103-80-03.1A_1	0.17	450	3/25/01 12:00 AM	24.04
J_G103-80-03.1B_1	3.56	4410.5	1/27/12 12:00 PM	23.84
J_G103-41-00_3	0.57	1782.8	11/16/04 7:12 PM	24.02
J_G103-41-00_4	0.51	1585.9	5/3/04 9:36 PM	24.02
J_G103-41-00_5	0.3	917.4	7/5/02 9:36 AM	24.01
J_G103-41-00_6	0.22	671.3	11/1/01 7:12 AM	24.05
J_G103-41-00_7	0.09	266.8	9/22/00 7:12 PM	23.97
J_G103-41-01_2	0.16	425.6	2/28/01 2:24 PM	23.95
J_G103-41-01_3	0.07	223	8/10/00 12:00 AM	24.12

0.2% AEP Existing HEC-HMS Output

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
J_G103-41-00_1	1.57	3772.3	4/29/10 7:12 AM	23.96
J_G103-41-00_2	1.24	3049.6	5/6/08 2:24 PM	23.94
J_G103-80-01_1	1.1	3230.1	11/3/08 2:24 AM	24.08
J_G103-80-01_2	0.81	2366.5	6/23/06 12:00 PM	24.09
J_G103-80-01_3	0.44	1345.9	9/6/03 9:36 PM	24.04
J_G103-80-01_4	0.23	729.4	12/29/01 9:36 AM	23.97
J_G103-80-03.1A_1	0.45	1086.3	12/21/02 7:12 AM	23.75
J_G103-80-03.1A_2	0.28	726.7	12/26/01 4:48 PM	23.57
J_G103-80-03.1A_3	0.18	449.1	3/24/01 2:24 AM	23.58
J_G103-80-03.1A_4	0.02	62	3/2/00 12:00 AM	23.81
R_G103-80-03.1A_2	0.28	667.7	10/28/01 4:48 PM	23.57
R_G103-80-03.1A_3	0.18	436.1	3/11/01 2:24 AM	23.58
R_G103-80-03.1A_4	0.02	57.4	2/26/00 9:36 AM	23.81
R_G103-41-00_2	1.24	3014.3	4/1/08 7:12 AM	23.94
R_G103-41-00_3	0.57	1781.3	11/15/04 7:12 AM	24.02
R_G103-41-00_4	0.51	1575.8	4/23/04 7:12 PM	24.02
R_G103-41-00_5	0.3	917.1	7/5/02 2:24 AM	24.01
R_G103-41-00_6	0.22	671.3	11/1/01 7:12 AM	24.05
R_G103-41-00_7	0.09	259.5	9/15/00 12:00 PM	23.97
R_G103-41-01_2	0.16	393.3	1/27/01 7:12 AM	23.95
R_G103-41-01_3	0.07	196.3	7/14/00 7:12 AM	24.12
R_G103-80-01_2	0.81	2353	6/10/06 12:00 AM	24.09
R_G103-80-01_3	0.44	1328.9	8/20/03 9:36 PM	24.04
R_G103-80-01_4	0.23	707.8	12/7/01 7:12 PM	23.97

APPENDIX C

EXISTING CONDITIONS HYDRAULICS

G103-33-00 Existing HEC-RAS Output

HEC-RAS Plan: Ex_Clip Profile: Max WS

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
G103-33-00_0032	3175.311	Max WS	6418.81	36.88	45.28	42.75	45.61	0.001870	4.67	1504.50	428.50	0.37
G103-33-00_0032	4371.619	Max WS	6418.98	34.63	47.55		48.03	0.002129	5.59	1193.19	355.02	0.46
G103-33-00_0032	6455.492	Max WS	6218.69	38.52	50.18		50.29	0.000294	2.88	3741.84	964.20	0.16
G103-33-00_0032	7739.881	Max WS	5707.08	37.20	50.59		50.67	0.000311	2.38	3469.78	1075.88	0.13
G103-33-00_0032	7944.210	Max WS	5682.69	37.20	50.63		50.73	0.000237	2.51	2282.42	717.36	0.14
G103-33-00_0032	8075.989		Bridge									
G103-33-00_0032	8207.768	Max WS	5682.68	37.61	50.74	42.76	50.83	0.000228	2.50	2334.81	789.30	0.14
G103-33-00_0032	8367.096	Max WS	5663.67	37.61	50.75		50.89	0.000356	3.07	2343.87	547.44	0.17
G103-33-00_0032	9031.736	Max WS	5588.04	37.94	51.47		51.61	0.001829	3.31	2354.87	739.01	0.20
G103-33-00_0032	9501.098	Max WS	5530.50	38.66	52.02		52.14	0.000418	2.90	2737.77	848.68	0.17
G103-33-00_0032	11521.57	Max WS	5536.56	39.98	52.99		53.20	0.000598	3.86	2676.86	767.06	0.23
G103-33-00_0032	12941.61	Max WS	5484.38	41.72	53.75		53.82	0.000397	2.78	6453.77	2868.72	0.18
G103-33-00_0032	13023.86	Max WS	5486.37	41.72	53.79		53.85	0.000478	3.12	6200.25	2795.70	0.20
G103-33-00_0032	13136.92		Bridge									
G103-33-00_0032	13249.98	Max WS	5602.42	41.72	54.73	51.82	54.76	0.000303	2.41	8486.08	3484.37	0.15
G103-33-00_0032	13295.80	Max WS	5598.41	41.72	54.73		54.80	0.000433	2.98	7467.84	3503.27	0.19
G103-33-00_0032	14299.67	Max WS	4554.73	44.15	55.29		55.30	0.000739	1.64	7639.45	3513.79	0.11
G103-33-00_0032	15455.73	Max WS	4462.73	44.93	56.71		56.75	0.001763	3.31	3917.39	1659.03	0.19
G103-33-00_0032	16354.02	Max WS	4463.42	45.90	58.44		58.57	0.002375	5.01	2766.87	1006.44	0.28
G103-33-00_0032	16519.62	Max WS	4463.72	46.72	58.79		58.91	0.001815	4.59	2922.80	970.30	0.25
G103-33-00_0032	17483.99	Max WS	4380.73	46.73	59.89		59.96	0.000441	2.40	3216.93	814.47	0.13
G103-33-00_0032	18057	Max WS	4333.80	48.00	60.82		60.95	0.003035	4.61	2377.74	833.58	0.30
G103-33-00_0032	18060		Bridge									
G103-33-00_0032	18068	Max WS	4333.78	48.33	60.87	59.40	61.02	0.002974	4.70	2329.82	826.48	0.30
G103-33-00_0032	18617.86	Max WS	4293.44	48.26	61.85		62.00	0.001134	3.82	2407.57	706.48	0.21
G103-33-00_0032	19362.84	Max WS	4293.54	48.85	62.70		62.95	0.001469	4.31	1609.00	464.36	0.24
G103-33-00_0032	19400.18	Max WS	4293.56	48.80	62.55		63.10	0.002936	6.05	758.52	297.59	0.33
G103-33-00_0032	19468.8		Bridge									
G103-33-00_0032	19504.82	Max WS	4293.70	52.42	65.36	62.07	65.41	0.000799	3.13	3034.41	831.41	0.17
G103-33-00_0032	19548.24	Max WS	4284.40	53.12	65.36		65.51	0.001717	4.55	2335.30	740.71	0.25
G103-33-00_0032	20347	Max WS	4165.07	52.61	66.14		66.19	0.000737	2.89	3553.90	797.13	0.16
G103-33-00_0032	20932.01	Max WS	4083.88	54.31	66.48		66.53	0.000960	3.03	2957.69	592.16	0.18
G103-33-00_0032	21020.31	Max WS	4059.92	53.47	66.57		66.64	0.000771	3.13	2957.32	609.62	0.17
G103-33-00_0032	21058.2		Culvert									
G103-33-00_0032	21087.61	Max WS	4060.11	56.35	66.63		66.70	0.001319	3.71	2715.98	617.75	0.22
G103-33-00_0032	21221.31	Max WS	4026.22	56.66	66.84		66.89	0.001164	3.43	2904.48	660.83	0.20
G103-33-00_0032	21847.04	Max WS	4026.54	56.37	67.62		67.68	0.001212	3.47	2865.65	660.32	0.20
G103-33-00_0032	23234.05	Max WS	3784.32	58.27	69.32		69.37	0.001229	3.62	2634.25	645.51	0.21
G103-33-00_0032	24159.50	Max WS	3784.92	58.87	70.22		70.26	0.000732	2.84	3928.00	995.35	0.16
G103-33-00_0032	25279.51	Max WS	3387.62	59.58	70.82		70.95	0.000424	3.38	2682.86	902.12	0.19
G103-33-00_0032	25324.46	Max WS	3383.34	59.55	70.75		71.03	0.000677	4.21	854.01	747.07	0.24
G103-33-00_0032	25381.46		Bridge									
G103-33-00_0032	25438.45	Max WS	3383.34	59.58	71.21	64.29	71.45	0.000681	3.97	859.51	576.33	0.24
G103-33-00_0032	25496.43	Max WS	3377.80	59.57	71.32		71.47	0.000464	3.48	2167.78	580.57	0.19
G103-33-00_0032	26458.74	Max WS	3283.14	59.63	71.93		71.97	0.000662	1.97	3349.57	1159.43	0.12
G103-33-00_0032	27441.69	Max WS	3235.58	60.80	72.79		72.82	0.001061	2.04	3053.55	984.49	0.12
G103-33-00_0032	27513.68	Max WS	3235.94	60.74	72.84		72.86	0.000176	1.88	3319.64	977.97	0.10
G103-33-00_0032	27561.33		Culvert									
G103-33-00_0032	27608.98	Max WS	3237.18	62.36	72.92		72.95	0.000281	2.20	3263.51	1002.23	0.14
G103-33-00_0032	27632.55	Max WS	3228.04	61.11	72.93		72.96	0.000304	2.28	3125.81	1027.66	0.14
G103-33-00_0032	27706	Max WS	3213.47	61.89	72.94		72.97	0.000186	2.12	3580.55	1108.55	0.12
G103-33-00_0032	27730		Culvert									
G103-33-00_0032	27756	Max WS	3213.47	62.06	72.97		72.99	0.000172	1.93	3854.15	1152.05	0.12
G103-33-00_0032	27797.29	Max WS	3179.22	61.88	72.99		73.00	0.000140	1.65	5382.63	2103.22	0.10
G103-33-00_0032	27861.80	Max WS	3162.75	63.29	72.99		73.00	0.000185	1.69	4785.02	2090.58	0.12
G103-33-00_0032	27951.87		Culvert									
G103-33-00_0032	28114.66	Max WS	3162.75	61.77	72.99		73.05	0.000341	2.76	2643.50	1372.44	0.17
G103-33-00_0032	28556.21	Max WS	3024.02	63.44	73.13		73.17	0.000343	2.47	2347.16	632.20	0.16
G103-33-00_0032	29024.31	Max WS	2870.81	63.69	73.64		73.74	0.002254	4.01	1578.21	376.04	0.25
G103-33-00_0032	29200.98	Max WS	2878.94	63.92	73.99		74.10	0.002437	4.15	1644.19	478.73	0.25
G103-33-00_US	29439	Max WS	3266.50	65.17	74.87		75.09	0.005262	5.71	1322.47	384.36	0.36
G103-33-00_US	29531	Max WS	3281.39	64.97	75.24		75.60	0.005227	6.61	1273.38	426.12	0.38
G103-33-00_US	29587	Max WS	3284.39	65.62	75.54		75.76	0.003639	5.44	1479.62	443.93	0.32
G103-33-00_US	29615	Max WS	3284.47	64.96	75.67		75.81	0.002151	4.33	1771.29	477.38	0.25

G103-33-01 Existing HEC-RAS Output

HEC-RAS Plan: Existing River: G103-33-01 Reach: 1

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
1	580	2-yr	708.20	44.21	52.30	48.38	52.36	0.000590	2.27	651.91	613.83	0.20
1	580	10-yr	1137.40	44.21	53.06	49.56	53.11	0.000591	2.32	1190.06	799.31	0.20
1	580	25-yr	1425.40	44.21	53.44	50.20	53.49	0.000591	2.36	1521.98	911.74	0.20
1	580	50-yr	1662.20	44.21	53.68	50.91	53.73	0.000590	2.44	1743.90	983.70	0.20
1	580	100-yr	1928.00	44.21	53.95	51.70	54.00	0.000590	2.53	2019.22	1049.31	0.20
1	1165	2-yr	677.00	44.27	52.69		52.83	0.001039	3.01	224.65	52.63	0.26
1	1165	10-yr	1084.00	44.27	53.44		53.70	0.001731	4.06	272.41	96.71	0.34
1	1165	25-yr	1358.00	44.27	53.81		54.14	0.002194	4.65	324.56	172.43	0.38
1	1165	50-yr	1583.00	44.27	54.03		54.43	0.002637	5.12	365.81	201.75	0.42
1	1165	100-yr	1835.00	44.27	54.28		54.74	0.003007	5.51	419.24	215.04	0.45
1	1976	2-yr	637.00	44.95	53.55		53.69	0.001077	2.99	213.16	51.70	0.26
1	1976	10-yr	1014.00	44.95	54.72		54.93	0.001323	3.65	277.98	58.40	0.29
1	1976	25-yr	1270.00	44.95	55.37		55.62	0.001499	4.00	317.58	64.07	0.32
1	1976	50-yr	1479.00	44.95	55.82		56.10	0.001615	4.26	346.98	67.36	0.33
1	1976	100-yr	1713.00	44.95	56.26		56.58	0.001729	4.54	377.42	70.25	0.35
1	2284	2-yr	622.00	45.21	53.82		53.91	0.000483	2.36	263.44	49.92	0.18
1	2284	10-yr	989.00	45.21	55.08		55.22	0.000661	3.00	329.18	54.68	0.22
1	2284	25-yr	1238.00	45.21	55.77		55.95	0.000770	3.36	368.43	58.02	0.24
1	2284	50-yr	1441.00	45.21	56.26		56.46	0.000860	3.63	397.15	60.60	0.25
1	2284	100-yr	1669.00	45.21	56.74		56.98	0.000955	3.91	426.85	62.95	0.26
1	2316	2-yr	599.00	45.05	53.83		53.92	0.000494	2.38	251.75	44.84	0.18
1	2316	10-yr	949.00	45.05	55.10		55.24	0.000715	3.03	312.97	51.62	0.22
1	2316	25-yr	1187.00	45.05	55.80		55.98	0.000844	3.39	350.57	55.76	0.24
1	2316	50-yr	1381.00	45.05	56.29		56.49	0.000942	3.65	378.44	58.61	0.25
1	2316	100-yr	1599.00	45.05	56.77		57.01	0.001050	3.92	407.53	61.61	0.27
1	2350		Inl Struct									
1	2352	2-yr	599.00	50.06	54.11	53.26	54.85	0.000966	6.92	86.52	38.16	0.66
1	2352	10-yr	949.00	50.06	55.45	54.20	56.42	0.000814	7.91	120.04	47.37	0.64
1	2352	25-yr	1187.00	50.06	56.26	54.77	57.37	0.000758	8.46	140.26	52.51	0.63
1	2352	50-yr	1381.00	50.06	57.59	55.21	57.98	0.000388	5.02	275.33	64.61	0.43
1	2352	100-yr	1599.00	50.06	58.10	55.68	58.51	0.000380	5.17	308.99	68.09	0.43
1	2382	2-yr	599.00	50.52	54.21	54.21	55.37	0.019044	8.67	69.06	29.82	1.00
1	2382	10-yr	949.00	50.52	55.40	55.19	56.53	0.014616	8.54	111.12	40.55	0.91
1	2382	25-yr	1187.00	50.52	56.72		57.46	0.007395	6.90	171.96	52.00	0.67
1	2382	50-yr	1381.00	50.52	57.43		58.09	0.005842	6.55	210.76	57.81	0.61
1	2382	100-yr	1599.00	50.52	57.94		58.62	0.005421	6.62	241.65	61.78	0.59
1	2789	2-yr	599.00	50.57	56.55		56.70	0.001170	3.11	192.87	48.05	0.27
1	2789	10-yr	949.00	50.57	57.73		57.95	0.001394	3.75	253.09	54.08	0.31
1	2789	25-yr	1187.00	50.57	58.41		58.67	0.001492	4.08	291.18	57.71	0.32
1	2789	50-yr	1381.00	50.57	58.94		59.23	0.001533	4.28	322.49	60.53	0.33
1	2789	100-yr	1599.00	50.57	59.44		59.76	0.001603	4.53	353.26	63.05	0.34
1	3085	2-yr	576.60	50.26	56.90		57.04	0.001084	2.95	195.20	49.72	0.26
1	3085	10-yr	910.20	50.26	58.15		58.34	0.001218	3.48	261.69	56.84	0.29
1	3085	25-yr	1139.00	50.26	58.86		59.08	0.001280	3.75	303.90	61.21	0.30
1	3085	50-yr	1324.20	50.26	59.41		59.65	0.001305	3.91	338.37	64.82	0.30
1	3085	100-yr	1533.00	50.26	59.94		60.20	0.001344	4.11	373.16	67.91	0.31
1	3155	2-yr	576.60	50.55	57.01		57.12	0.000782	2.65	217.29	50.45	0.23
1	3155	10-yr	910.20	50.55	58.27		58.43	0.000921	3.20	284.37	56.12	0.25
1	3155	25-yr	1139.00	50.55	58.99		59.18	0.001004	3.49	326.29	60.29	0.26
1	3155	50-yr	1324.20	50.55	59.54		59.75	0.001038	3.68	360.02	62.99	0.27
1	3155	100-yr	1533.00	50.55	60.06		60.30	0.001090	3.89	393.81	65.64	0.28
1	3177		Inl Struct									
1	3195	2-yr	576.60	54.69	58.61	57.47	59.06	0.000741	5.39	107.07	37.28	0.55
1	3195	10-yr	910.20	54.69	60.08	58.34	60.57	0.000492	5.61	162.38	45.55	0.48
1	3195	25-yr	1139.00	54.69	60.93	58.80	61.46	0.000422	5.85	194.58	51.45	0.46
1	3195	50-yr	1324.20	54.69	61.52	59.15	61.99	0.000481	5.50	240.87	57.10	0.47
1	3195	100-yr	1533.00	54.69	61.96	59.51	62.48	0.000506	5.74	267.28	61.90	0.49
1	3213	2-yr	576.60	54.37	58.63	57.72	59.12	0.006600	5.58	103.31	39.67	0.61
1	3213	10-yr	910.20	54.37	60.19	58.55	60.63	0.003969	5.28	172.48	49.02	0.50
1	3213	25-yr	1139.00	54.37	61.15	59.03	61.55	0.003128	5.13	221.87	54.89	0.45
1	3213	50-yr	1324.20	54.37	61.56	59.36	62.01	0.003231	5.40	245.34	57.66	0.46
1	3213	100-yr	1533.00	54.37	62.01	59.72	62.50	0.003326	5.64	271.64	61.04	0.47
1	3247		Bridge									

G103-33-01 Existing HEC-RAS Output

HEC-RAS Plan: Existing River: G103-33-01 Reach: 1 (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
1	3268	2-yr	576.60	54.88	59.07	57.84	59.49	0.005557	5.19	111.18	41.24	0.56
1	3268	10-yr	910.20	54.88	60.45	58.79	60.87	0.004068	5.17	176.14	52.19	0.50
1	3268	25-yr	1139.00	54.88	61.34	59.28	61.74	0.003245	5.06	225.26	58.22	0.45
1	3268	50-yr	1324.20	54.88	61.77	59.64	62.20	0.003290	5.28	250.78	61.40	0.46
1	3268	100-yr	1533.00	54.88	62.22	59.99	62.69	0.003295	5.48	279.53	64.77	0.47
1	3291	2-yr	576.60	54.47	59.28		59.62	0.004071	4.68	123.13	42.25	0.48
1	3291	10-yr	910.20	54.47	60.60		60.96	0.003511	4.87	186.93	54.44	0.46
1	3291	25-yr	1139.00	54.47	61.46		61.82	0.002927	4.80	237.13	61.58	0.43
1	3291	50-yr	1324.20	54.47	61.89		62.28	0.002936	5.00	264.61	64.77	0.44
1	3291	100-yr	1533.00	54.47	62.35		62.77	0.002904	5.19	295.11	67.72	0.44
1	3449	2-yr	553.00	54.44	59.90		60.12	0.002482	3.82	144.72	46.72	0.38
1	3449	10-yr	872.00	54.44	61.15		61.42	0.002313	4.16	209.41	56.46	0.38
1	3449	25-yr	1091.00	54.44	61.94		62.22	0.002122	4.26	256.29	62.74	0.37
1	3449	50-yr	1268.00	54.44	62.38		62.69	0.002164	4.45	285.86	74.72	0.38
1	3449	100-yr	1467.00	54.44	62.85		63.18	0.002199	4.62	325.34	95.18	0.38
1	3754	2-yr	510.00	54.46	60.52		60.66	0.001258	3.03	168.23	46.04	0.28
1	3754	10-yr	803.00	54.46	61.78		61.97	0.001358	3.46	232.24	55.31	0.30
1	3754	25-yr	1004.00	54.46	62.55		62.75	0.001409	3.61	287.02	108.01	0.31
1	3754	50-yr	1166.00	54.46	63.01		63.23	0.001399	3.73	343.25	128.86	0.31
1	3754	100-yr	1348.00	54.46	63.48		63.71	0.001310	3.84	409.51	156.83	0.30
1	4020	2-yr	476.00	54.40	60.85		60.96	0.000963	2.62	181.34	50.75	0.24
1	4020	10-yr	748.00	54.40	62.14		62.28	0.000986	2.96	252.77	60.17	0.25
1	4020	25-yr	934.00	54.40	62.92		63.07	0.000960	3.10	301.80	66.41	0.25
1	4020	50-yr	1084.00	54.40	63.38		63.54	0.000977	3.25	348.15	137.28	0.26
1	4020	100-yr	1252.00	54.40	63.84		64.01	0.000981	3.38	417.94	162.27	0.26
1	4145	2-yr	460.00	54.51	60.97		61.08	0.000992	2.69	171.17	46.97	0.25
1	4145	10-yr	723.00	54.51	62.26		62.41	0.001027	3.04	237.61	55.56	0.26
1	4145	25-yr	903.00	54.51	63.03		63.19	0.001005	3.20	282.47	66.49	0.26
1	4145	50-yr	1047.00	54.51	63.50		63.67	0.001042	3.36	316.99	82.70	0.27
1	4145	100-yr	1209.00	54.51	63.96		64.15	0.001083	3.53	364.62	133.41	0.27
1	4381	2-yr	424.00	54.45	61.21		61.30	0.000767	2.36	179.59	49.57	0.22
1	4381	10-yr	664.00	54.45	62.52		62.63	0.000760	2.66	249.28	56.85	0.22
1	4381	25-yr	828.00	54.45	63.29		63.41	0.000741	2.81	294.50	60.68	0.22
1	4381	50-yr	960.00	54.45	63.76		63.90	0.000769	2.96	323.91	63.38	0.23
1	4381	100-yr	1108.00	54.45	64.23		64.38	0.000810	3.13	354.33	66.50	0.24
1	4420	2-yr	424.00	54.36	61.25	57.48	61.33	0.000563	2.16	195.89	48.56	0.19
1	4420	10-yr	664.00	54.36	62.56	58.23	62.66	0.000620	2.52	263.99	56.03	0.20
1	4420	25-yr	828.00	54.36	63.33	58.67	63.44	0.000639	2.68	309.13	61.13	0.21
1	4420	50-yr	960.00	54.36	63.80	59.01	63.93	0.000672	2.83	338.92	64.01	0.22
1	4420	100-yr	1108.00	54.36	64.27	59.36	64.41	0.000711	3.00	369.74	66.89	0.22
1	4432		Bridge									
1	4436	2-yr	424.00	54.56	61.28	57.04	61.34	0.000055	1.92	220.94	49.99	0.16
1	4436	10-yr	664.00	54.56	62.58	57.75	62.67	0.000065	2.28	291.14	57.69	0.18
1	4436	25-yr	828.00	54.56	63.35	58.16	63.45	0.000069	2.45	337.41	62.50	0.19
1	4436	50-yr	960.00	54.56	63.83	58.47	63.94	0.000074	2.61	367.95	65.35	0.19
1	4436	100-yr	1108.00	54.56	64.30	58.79	64.42	0.000079	2.77	399.50	68.15	0.20
1	4461	2-yr	424.00	54.47	61.28		61.34	0.000061	1.93	220.24	54.44	0.17
1	4461	10-yr	664.00	54.47	62.59		62.67	0.000067	2.24	296.71	61.90	0.18
1	4461	25-yr	828.00	54.47	63.36		63.45	0.000067	2.39	345.91	65.67	0.18
1	4461	50-yr	960.00	54.47	63.84		63.94	0.000071	2.54	377.94	68.02	0.19
1	4461	100-yr	1108.00	54.47	64.31		64.43	0.000075	2.70	410.71	70.27	0.20
1	4594	2-yr	409.00	54.94	61.26		61.38	0.001157	2.76	148.35	43.71	0.26
1	4594	10-yr	640.00	54.94	62.57		62.71	0.001124	3.01	212.40	53.79	0.27
1	4594	25-yr	799.00	54.94	63.34		63.49	0.001063	3.12	255.94	58.94	0.26
1	4594	50-yr	925.00	54.94	63.82		63.98	0.001069	3.25	284.95	62.18	0.27
1	4594	100-yr	1068.00	54.94	64.29		64.47	0.001084	3.39	315.15	65.14	0.27
1	4754	2-yr	392.00	56.82	61.46		61.68	0.002803	3.70	106.04	39.81	0.40
1	4754	10-yr	613.00	56.82	62.75		62.97	0.002137	3.77	162.71	48.34	0.36
1	4754	25-yr	765.00	56.82	63.51		63.73	0.001879	3.80	201.24	53.51	0.35
1	4754	50-yr	886.00	56.82	63.99		64.22	0.001831	3.89	227.81	57.42	0.34
1	4754	100-yr	1021.00	56.82	64.46		64.71	0.001778	3.99	255.82	60.67	0.34
1	4943	2-yr	373.20	57.41	61.98		62.18	0.002557	3.66	101.93	36.04	0.38
1	4943	10-yr	582.90	57.41	63.16		63.40	0.002304	3.91	148.96	44.04	0.38
1	4943	25-yr	726.30	57.41	63.87		64.12	0.002107	3.99	181.98	48.83	0.36
1	4943	50-yr	840.70	57.41	64.34		64.60	0.002038	4.09	205.43	51.76	0.36

G103-33-01 Existing HEC-RAS Output

HEC-RAS Plan: Existing River: G103-33-01 Reach: 1 (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
1	4943	100-yr	969.00	57.41	64.80		65.07	0.001991	4.21	230.03	54.49	0.36
1	5200	2-yr	346.00	57.09	62.53		62.64	0.001241	2.69	128.42	41.65	0.27
1	5200	10-yr	539.00	57.09	63.69		63.83	0.001200	2.97	181.67	49.73	0.27
1	5200	25-yr	671.00	57.09	64.37		64.52	0.001147	3.09	217.01	53.95	0.27
1	5200	50-yr	777.00	57.09	64.83		64.99	0.001134	3.20	242.47	56.62	0.27
1	5200	100-yr	895.00	57.09	65.29		65.47	0.001128	3.32	269.20	59.21	0.27
1	5507	2-yr	316.00	56.65	62.87		62.95	0.000779	2.24	141.35	42.59	0.22
1	5507	10-yr	492.00	56.65	64.03		64.13	0.000799	2.51	195.68	50.42	0.22
1	5507	25-yr	611.00	56.65	64.71		64.81	0.000777	2.65	230.63	53.64	0.23
1	5507	50-yr	707.00	56.65	65.17		65.29	0.000778	2.76	255.85	55.83	0.23
1	5507	100-yr	813.00	56.65	65.63		65.76	0.000782	2.88	282.23	58.06	0.23
1	5741	2-yr	295.00	57.41	63.05		63.12	0.000653	1.99	148.58	47.21	0.20
1	5741	10-yr	458.00	57.41	64.22		64.30	0.000619	2.20	208.06	54.33	0.20
1	5741	25-yr	569.00	57.41	64.89		64.98	0.000602	2.32	245.75	58.19	0.20
1	5741	50-yr	657.00	57.41	65.36		65.45	0.000598	2.40	273.36	60.85	0.20
1	5741	100-yr	756.00	57.41	65.83		65.92	0.000597	2.50	302.36	63.30	0.20
1	6010	2-yr	273.00	57.79	63.22		63.27	0.000520	1.84	148.41	44.83	0.18
1	6010	10-yr	423.00	57.79	64.38		64.45	0.000513	2.07	203.93	50.66	0.18
1	6010	25-yr	524.00	57.79	65.05		65.13	0.000507	2.19	238.83	53.99	0.18
1	6010	50-yr	605.00	57.79	65.52		65.60	0.000513	2.29	264.47	56.51	0.19
1	6010	100-yr	696.00	57.79	65.99		66.07	0.000524	2.39	291.62	59.41	0.19
1	6283	2-yr	252.00	58.50	63.39		63.49	0.001215	2.54	99.38	34.74	0.26
1	6283	10-yr	389.00	58.50	64.54		64.66	0.001088	2.72	143.08	41.38	0.26
1	6283	25-yr	482.00	58.50	65.21		65.33	0.001038	2.80	171.95	45.86	0.26
1	6283	50-yr	556.00	58.50	65.67		65.80	0.001012	2.87	193.98	49.11	0.25
1	6283	100-yr	639.00	58.50	66.14		66.28	0.000985	2.93	217.80	52.17	0.25
1	6539	2-yr	233.00	58.29	63.64		63.69	0.000503	1.77	131.66	40.90	0.17
1	6539	10-yr	360.00	58.29	64.79		64.85	0.000491	1.98	181.73	46.59	0.18
1	6539	25-yr	446.00	58.29	65.45		65.51	0.000485	2.09	213.54	50.04	0.18
1	6539	50-yr	514.00	58.29	65.91		65.98	0.000484	2.17	237.25	52.51	0.18
1	6539	100-yr	590.00	58.29	66.38		66.45	0.000484	2.25	262.42	54.84	0.18
1	6755	2-yr	218.90	59.39	63.75		63.79	0.000434	1.57	139.67	47.14	0.16
1	6755	10-yr	337.70	59.39	64.90		64.94	0.000391	1.71	197.03	53.52	0.16
1	6755	25-yr	417.50	59.39	65.56		65.61	0.000371	1.79	233.53	57.13	0.16
1	6755	50-yr	481.10	59.39	66.02		66.07	0.000360	1.85	260.44	59.17	0.16
1	6755	100-yr	552.00	59.39	66.49		66.55	0.000354	1.91	288.76	61.42	0.16

G103-33-02 Existing HEC-RAS Output

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

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Reach 1	61	2-yr	209.40	58.68	62.64	60.15	62.68	0.000500	1.64	127.63	45.84	0.17
Reach 1	61	10-yr	329.90	58.68	63.57	60.59	63.63	0.000500	1.93	175.96	61.45	0.18
Reach 1	61	25-yr	412.90	58.68	64.07	60.85	64.14	0.000501	2.11	211.97	89.00	0.18
Reach 1	61	50-yr	480.40	58.68	64.44	61.04	64.52	0.000500	2.23	247.36	103.44	0.19
Reach 1	61	100-yr	556.60	58.68	64.82	61.24	64.90	0.000500	2.35	287.21	108.86	0.19
Reach 1	296	2-yr	209.40	58.72	62.77		62.82	0.000652	1.78	117.53	44.58	0.19
Reach 1	296	10-yr	329.90	58.72	63.70		63.77	0.000692	2.02	163.56	53.91	0.20
Reach 1	296	25-yr	412.90	58.72	64.21		64.28	0.000708	2.15	192.18	58.55	0.21
Reach 1	296	50-yr	480.40	58.72	64.58		64.66	0.000721	2.24	214.48	62.28	0.21
Reach 1	296	100-yr	556.60	58.72	64.95		65.04	0.000705	2.34	239.99	74.03	0.21
Reach 1	517	2-yr	209.40	58.83	62.93		63.00	0.000913	2.08	100.78	38.90	0.23
Reach 1	517	10-yr	329.90	58.83	63.86		63.95	0.000916	2.37	139.41	44.23	0.23
Reach 1	517	25-yr	412.90	58.83	64.37		64.47	0.000943	2.54	162.84	47.54	0.24
Reach 1	517	50-yr	480.40	58.83	64.74		64.85	0.000961	2.66	180.88	49.93	0.25
Reach 1	517	100-yr	556.60	58.83	65.11		65.23	0.000987	2.79	199.78	52.33	0.25
Reach 1	727	2-yr	209.40	59.03	63.16		63.27	0.001746	2.67	78.57	33.81	0.31
Reach 1	727	10-yr	329.90	59.03	64.08		64.21	0.001641	2.92	112.79	40.25	0.31
Reach 1	727	25-yr	412.90	59.03	64.59		64.74	0.001612	3.07	134.32	43.86	0.31
Reach 1	727	50-yr	480.40	59.03	64.96		65.12	0.001594	3.18	151.09	46.49	0.31
Reach 1	727	100-yr	556.60	59.03	65.34		65.51	0.001585	3.30	168.89	49.04	0.31
Reach 1	1020	2-yr	209.40	60.80	63.71		63.82	0.002074	2.69	77.87	38.02	0.33
Reach 1	1020	10-yr	329.90	60.80	64.59		64.72	0.001786	2.88	114.46	44.96	0.32
Reach 1	1020	25-yr	412.90	60.80	65.08		65.22	0.001663	3.01	137.35	47.90	0.31
Reach 1	1020	50-yr	480.40	60.80	65.44		65.59	0.001600	3.10	155.07	50.18	0.31
Reach 1	1020	100-yr	556.60	60.80	65.81		65.97	0.001565	3.20	174.00	52.75	0.31

G103-33-03 Existing HEC-RAS Output

HEC-RAS Plan: Existing River: G103-33-03 Reach: 1

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
1	105	2-yr	89.10	61.92	64.10	63.50	64.25	0.005153	3.08	28.91	22.76	0.48
1	105	10-yr	136.30	61.92	64.52	63.82	64.71	0.005152	3.49	39.08	25.49	0.50
1	105	25-yr	167.70	61.92	64.76	64.00	64.97	0.005152	3.69	45.49	27.28	0.50
1	105	50-yr	192.40	61.92	64.94	64.13	65.17	0.005151	3.81	50.47	28.77	0.51
1	105	100-yr	219.90	61.92	65.12	64.26	65.36	0.005155	3.94	55.80	30.28	0.51
1	311	2-yr	89.10	63.09	65.06		65.17	0.003991	2.70	32.98	26.32	0.43
1	311	10-yr	136.30	63.09	65.49		65.63	0.003918	3.02	45.13	29.98	0.43
1	311	25-yr	167.70	63.09	65.74		65.89	0.003857	3.19	52.64	31.87	0.44
1	311	50-yr	192.40	63.09	65.91		66.08	0.003799	3.30	58.28	33.04	0.44
1	311	100-yr	219.90	63.09	66.09		66.27	0.003756	3.42	64.31	34.25	0.44
1	477	2-yr	89.10	63.55	65.69		65.82	0.003719	2.86	31.18	21.38	0.42
1	477	10-yr	136.30	63.55	66.13		66.30	0.004053	3.31	41.15	24.06	0.45
1	477	25-yr	167.70	63.55	66.37		66.57	0.004228	3.55	47.18	25.59	0.46
1	477	50-yr	192.40	63.55	66.55		66.77	0.004343	3.72	51.78	26.80	0.47
1	477	100-yr	219.90	63.55	66.73		66.96	0.004460	3.88	56.69	28.05	0.48

G103-33-04 Existing HEC-RAS Output

HEC-RAS Plan: Existing River: G103-33-04 Reach: 1

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
1	677	2-yr	444.00	42.41	46.51	44.34	46.52	0.000240	1.42	781.51	459.51	0.13
1	677	10-yr	697.50	42.41	47.25	44.80	47.26	0.000240	1.60	1156.65	579.21	0.13
1	677	25-yr	877.00	42.41	47.60	45.12	47.62	0.000240	1.68	1367.53	616.57	0.13
1	677	50-yr	1022.80	42.41	47.90	45.23	47.92	0.000240	1.74	1555.23	650.70	0.13
1	677	100-yr	1186.00	42.41	48.17	45.40	48.19	0.000240	1.80	1737.07	670.47	0.13
1	1229	2-yr	445.00	42.55	46.67		46.72	0.000573	2.07	495.06	350.16	0.19
1	1229	10-yr	692.00	42.55	47.40		47.44	0.000487	2.15	779.39	405.85	0.18
1	1229	25-yr	863.00	42.55	47.75		47.79	0.000482	2.25	923.27	412.63	0.18
1	1229	50-yr	999.00	42.55	48.05		48.09	0.000458	2.29	1045.92	417.74	0.18
1	1229	100-yr	1153.00	42.55	48.32		48.36	0.000455	2.36	1160.98	421.82	0.18
1	2091	2-yr	449.60	42.66	47.24		47.32	0.000864	2.51	306.38	249.13	0.24
1	2091	10-yr	677.30	42.66	47.89		47.98	0.000815	2.73	482.60	290.41	0.24
1	2091	25-yr	825.70	42.66	48.23		48.32	0.000787	2.83	583.08	300.87	0.23
1	2091	50-yr	935.50	42.66	48.50		48.58	0.000742	2.85	664.90	309.71	0.23
1	2091	100-yr	1066.00	42.66	48.77		48.85	0.000717	2.91	747.89	319.26	0.23
1	2584	2-yr	449.60	42.87	47.57		47.61	0.000411	1.79	464.79	313.41	0.16
1	2584	10-yr	677.30	42.87	48.21		48.24	0.000362	1.87	707.10	506.51	0.16
1	2584	25-yr	825.70	42.87	48.54		48.57	0.000343	1.91	892.65	600.25	0.15
1	2584	50-yr	935.50	42.87	48.79		48.82	0.000321	1.91	1049.85	645.92	0.15
1	2584	100-yr	1066.00	42.87	49.05		49.07	0.000311	1.94	1221.61	686.07	0.15
1	2748	2-yr	449.60	42.41	47.64		47.67	0.000317	1.71	668.96	515.96	0.14
1	2748	10-yr	677.30	42.41	48.27		48.29	0.000301	1.82	1030.64	672.54	0.14
1	2748	25-yr	825.70	42.41	48.60		48.62	0.000291	1.87	1272.76	813.12	0.14
1	2748	50-yr	935.50	42.41	48.84		48.87	0.000275	1.88	1486.63	901.32	0.14
1	2748	100-yr	1066.00	42.41	49.10		49.12	0.000256	1.87	1727.65	965.07	0.14
1	2812	2-yr	216.20	42.48	47.65	44.62	47.69	0.000318	1.49	144.94	373.45	0.14
1	2812	10-yr	325.70	42.48	48.27	45.17	48.33	0.000417	1.91	170.92	526.10	0.17
1	2812	25-yr	399.40	42.48	48.59	45.46	48.67	0.000487	2.17	184.33	735.28	0.18
1	2812	50-yr	456.10	42.48	48.87	45.63	48.88	0.000162	1.24	1001.81	893.98	0.11
1	2812	100-yr	520.00	42.48	49.13	45.82	49.14	0.000140	1.20	1241.54	970.51	0.10
1	3005		Culvert									
1	3047	2-yr	216.20	42.49	47.86	44.18	47.89	0.000204	1.36	160.12	240.01	0.11
1	3047	10-yr	325.70	42.49	48.76	44.70	48.80	0.000248	1.70	194.27	741.69	0.13
1	3047	25-yr	399.40	42.49	49.33	44.96	49.39	0.000263	1.88	216.16	955.16	0.14
1	3047	50-yr	456.10	42.49	49.85	45.12	49.91	0.000259	1.97	235.70	1072.79	0.14
1	3047	100-yr	520.00	42.49	50.47	45.28	50.48	0.000030	0.68	2388.40	1157.14	0.05
1	3086	2-yr	216.20	42.56	47.89		47.90	0.000095	0.84	633.41	572.91	0.08
1	3086	10-yr	325.70	42.56	48.82		48.82	0.000054	0.74	1361.46	948.90	0.06
1	3086	25-yr	399.40	42.56	49.40		49.41	0.000034	0.64	1973.45	1119.56	0.05
1	3086	50-yr	456.10	42.56	49.93		49.93	0.000023	0.56	2598.95	1280.99	0.04
1	3086	100-yr	520.00	42.56	50.48		50.48	0.000016	0.50	3327.19	1349.15	0.04
1	3353	2-yr	209.00	42.42	47.91		47.91	0.000031	0.48	568.61	478.66	0.04
1	3353	10-yr	315.00	42.42	48.82		48.83	0.000016	0.39	1153.37	786.69	0.03
1	3353	25-yr	386.00	42.42	49.41		49.41	0.000011	0.35	1653.19	959.11	0.03
1	3353	50-yr	441.00	42.42	49.93		49.93	0.000007	0.32	2190.18	1069.23	0.02
1	3353	100-yr	503.00	42.42	50.48		50.48	0.000005	0.28	2799.21	1160.48	0.02
1	3705	2-yr	200.00	42.58	47.92		47.92	0.000029	0.43	497.25	378.40	0.04
1	3705	10-yr	302.00	42.58	48.83		48.83	0.000016	0.37	957.82	714.92	0.03
1	3705	25-yr	370.00	42.58	49.41		49.41	0.000011	0.33	1388.06	743.66	0.03
1	3705	50-yr	423.00	42.58	49.93		49.93	0.000008	0.30	1775.33	753.07	0.02
1	3705	100-yr	481.00	42.58	50.48		50.48	0.000006	0.28	2200.77	815.23	0.02
1	3984	2-yr	188.00	42.53	47.93		47.93	0.000062	0.64	353.91	326.92	0.06
1	3984	10-yr	284.00	42.53	48.83		48.84	0.000025	0.48	770.86	599.84	0.04
1	3984	25-yr	347.00	42.53	49.42		49.42	0.000015	0.40	1148.16	678.50	0.03
1	3984	50-yr	396.00	42.53	49.93		49.94	0.000010	0.35	1512.68	723.08	0.03
1	3984	100-yr	451.00	42.53	50.48		50.48	0.000007	0.31	1930.27	802.97	0.02
1	4223	2-yr	188.00	43.30	47.94		47.98	0.000490	1.58	131.97	83.02	0.17
1	4223	10-yr	284.00	43.30	48.83		48.86	0.000318	1.52	271.90	300.33	0.14
1	4223	25-yr	347.00	43.30	49.42		49.43	0.000136	1.10	509.91	496.91	0.09
1	4223	50-yr	396.00	43.30	49.94		49.94	0.000049	0.71	793.27	613.45	0.06
1	4223	100-yr	451.00	43.30	50.48		50.49	0.000022	0.51	1162.20	754.51	0.04
1	4671	2-yr	178.00	44.13	48.22		48.28	0.000954	2.01	141.76	179.45	0.23
1	4671	10-yr	269.00	44.13	49.00		49.03	0.000460	1.68	337.16	338.51	0.17
1	4671	25-yr	328.00	44.13	49.49		49.51	0.000223	1.29	534.64	468.06	0.12
1	4671	50-yr	375.00	44.13	49.96		49.97	0.000099	0.93	788.86	600.00	0.08

G103-33-04 Existing HEC-RAS Output

HEC-RAS Plan: Existing River: G103-33-04 Reach: 1 (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
1	4671	100-yr	427.00	44.13	50.50		50.50	0.000041	0.65	1150.68	753.80	0.05
1	4874	2-yr	174.00	44.02	48.41		48.46	0.000859	2.01	167.20	206.70	0.22
1	4874	10-yr	262.00	44.02	49.10		49.13	0.000524	1.83	331.86	277.51	0.18
1	4874	25-yr	320.00	44.02	49.54		49.56	0.000332	1.58	485.02	400.37	0.14
1	4874	50-yr	366.00	44.02	49.99		50.00	0.000172	1.23	693.40	550.36	0.11
1	4874	100-yr	416.00	44.02	50.51		50.51	0.000072	0.86	1050.23	858.98	0.07
1	5059	2-yr	167.50	43.97	48.59	46.79	48.68	0.001591	2.53	95.22	96.76	0.29
1	5059	10-yr	252.60	43.97	49.20	47.35	49.28	0.001290	2.58	172.32	154.89	0.27
1	5059	25-yr	308.60	43.97	49.60	47.74	49.67	0.001006	2.49	240.67	196.95	0.24
1	5059	50-yr	352.50	43.97	50.01	48.04	50.07	0.000704	2.25	335.12	314.59	0.21
1	5059	100-yr	401.00	43.97	50.52	48.26	50.53	0.000202	1.31	670.31	897.07	0.11
1	5176	2-yr	167.50	43.99	48.75	46.30	48.82	0.000921	2.10	80.50	44.24	0.23
1	5176	10-yr	252.60	43.99	49.34	46.82	49.44	0.001224	2.49	118.63	88.95	0.26
1	5176	25-yr	308.60	43.99	49.71	47.11	49.81	0.001167	2.58	155.98	131.49	0.26
1	5176	50-yr	352.50	43.99	50.09	47.32	50.17	0.000875	2.42	221.98	212.01	0.23
1	5176	100-yr	401.00	43.99	50.54	47.53	50.58	0.000478	1.94	364.77	425.09	0.17

G103-38-00 Existing HEC-RAS Output

HEC-RAS Plan: Ex_Clip River: G103-38-00 Reach: 1 Profile: Max WS

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
1	832	Max WS	764.93	41.72	45.78	43.71	45.80	0.000340	1.65	985.80	696.35	0.15
1	1451	Max WS	959.75	41.72	46.29		46.49	0.001587	3.77	316.26	157.08	0.33
1	1613	Max WS	1335.05	41.72	46.44		46.66	0.001867	4.26	448.82	179.36	0.36
1	1685	Max WS	1525.10	41.72	46.62		46.68	0.000663	2.54	982.78	341.81	0.21
1	1732	Max WS	1746.56	41.72	46.64		46.70	0.000867	2.80	1071.19	415.01	0.24
1	1795	Max WS	1953.01	41.72	46.68		46.75	0.001053	3.04	1074.98	387.90	0.27
1	1951	Max WS	2130.20	41.72	46.83		46.94	0.001479	3.79	896.54	283.19	0.32
1	2180	Max WS	2380.03	41.72	47.15		47.34	0.002058	4.70	814.45	250.63	0.38
1	2482	Max WS	2301.15	41.72	47.79		48.09	0.002621	5.38	641.63	207.43	0.43
1	2770	Max WS	2259.21	41.72	48.46		48.73	0.001835	5.16	664.95	172.10	0.37
1	3106	Max WS	2262.74	41.72	48.99		49.06	0.000481	2.73	1245.72	259.96	0.19
1	3215	Max WS	2269.33	41.72	48.94		49.24	0.001461	4.69	678.04	239.93	0.33
1	3243		Lat Struct									
1	3245	Max WS	2267.79	41.72	48.94		49.30	0.001943	4.95	570.96	274.09	0.37
1	3302		Culvert									
1	3313	Max WS	2273.23	41.72	50.54		50.56	0.000198	1.75	2841.42	1066.98	0.12
1	3354	Max WS	2675.00	41.72	50.53		50.56	0.000257	2.20	2810.47	1019.90	0.14
1	3602	Max WS	3777.31	41.72	50.59		50.68	0.000717	3.54	2070.34	670.99	0.23
1	3771	Max WS	3789.05	41.72	50.67		51.03	0.002233	5.93	962.15	222.74	0.40
1	4018	Max WS	3759.77	41.72	51.06		51.66	0.002212	6.99	792.32	183.96	0.42
1	4374	Max WS	3719.35	41.72	51.89		52.16	0.001252	5.25	1206.10	269.11	0.31
1	4572	Max WS	3705.89	41.72	52.19		52.33	0.000916	4.08	1520.51	344.83	0.26
1	4787	Max WS	3907.00	41.72	52.30		52.56	0.001024	4.83	1240.71	250.59	0.28
1	4996	Max WS	3970.82	41.72	52.35		52.95	0.001922	6.58	772.88	158.62	0.39
1	5177	Max WS	3949.51	41.75	52.79		53.38	0.002997	6.38	705.79	176.76	0.47
1	5332	Max WS	3931.29	41.75	53.22		53.80	0.002397	6.20	707.35	181.26	0.42
1	5500	Max WS	4001.68	41.75	53.65		54.08	0.001582	5.31	780.55	158.20	0.35
1	5693	Max WS	4139.12	41.75	53.89		54.46	0.002445	6.07	687.45	136.07	0.43
1	6003		Lat Struct									
1	6004	Max WS	4102.61	41.75	54.65		55.11	0.001792	5.47	778.12	141.29	0.37
1	6407	Max WS	4055.13	41.75	55.36		55.72	0.001234	4.79	846.63	114.97	0.31
1	6451	Max WS	4050.47	42.17	55.37		55.78	0.001628	5.15	785.80	116.32	0.35
1	6492		Bridge									
1	6495	Max WS	4050.47	42.81	55.59	50.98	56.00	0.001505	5.11	792.63	114.24	0.34
1	6517	Max WS	4047.29	42.81	55.38		56.07	0.002571	6.70	604.00	84.13	0.44
1	7144	Max WS	3973.39	43.75	56.87		57.41	0.001668	5.86	678.36	80.80	0.36
1	7443	Max WS	3941.02	44.53	57.28		58.55	0.004476	9.03	436.35	55.80	0.57
1	7658	Max WS	3914.69	45.51	58.36		59.34	0.003474	7.96	491.77	65.04	0.51
1	7968	Max WS	3876.18	49.82	59.56		61.02	0.005851	9.70	399.54	58.26	0.65
1	8287	Max WS	3838.16	54.88	62.90	62.98	65.68	0.015150	13.38	286.95	53.61	1.02
1	8324	Max WS	3833.83	55.00	63.44	63.43	66.14	0.014381	13.17	291.01	53.44	1.00
1	8352		Bridge									
1	8383	Max WS	3833.83	55.85	66.04	64.41	67.28	0.006295	8.92	429.77	77.58	0.67
1	8406	Max WS	3831.13	55.69	66.28		67.29	0.004566	8.06	475.62	78.77	0.58
1	9068	Max WS	3753.07	56.28	68.73		69.20	0.001621	5.49	683.73	92.62	0.36
1	9524	Max WS	3699.25	56.38	69.47		69.88	0.001326	5.13	721.03	92.37	0.32
1	10076	Max WS	3634.04	57.00	70.23		70.64	0.001384	5.18	701.04	90.94	0.33
1	10572	Max WS	2695.21	56.94	71.09		71.26	0.000499	3.33	810.07	95.09	0.20
1	11022	Max WS	2697.18	58.98	71.32		71.55	0.000787	3.85	700.83	93.81	0.25
1	11058	Max WS	2689.38	58.54	71.38		71.58	0.000684	3.61	745.44	99.11	0.23
1	11071		Bridge									
1	11087	Max WS	2689.82	58.67	71.46	64.67	71.63	0.000525	3.32	809.04	99.52	0.21
1	11117	Max WS	2682.79	58.51	71.47		71.64	0.000493	3.32	809.04	94.68	0.20
1	11571	Max WS	2580.82	58.96	71.72		71.91	0.000600	3.51	735.08	91.60	0.22
1	12268	Max WS	2424.14	59.20	72.16		72.33	0.000553	3.37	719.33	89.86	0.21
1	13064	Max WS	2246.94	58.95	72.61		72.73	0.000391	2.82	797.24	100.16	0.18
1	13567	Max WS	2134.04	59.03	72.82		72.94	0.000382	2.71	786.16	103.68	0.17
1	13700	Max WS	2104.64	58.96	72.92		72.97	0.000167	1.85	1136.50	145.52	0.12
1	13792		Bridge									
1	13827	Max WS	2104.90	59.25	73.02	65.33	73.08	0.000178	1.97	1069.67	134.20	0.12
1	13880	Max WS	1211.46	59.23	73.11		73.14	0.000121	1.52	797.05	106.31	0.10
1	14289	Max WS	1214.40	60.82	73.15		73.20	0.000139	1.64	762.41	122.07	0.10
1	15157	Max WS	1072.42	60.80	73.29		73.32	0.000127	1.55	695.79	105.14	0.10
1	15966	Max WS	944.34	60.88	73.40		73.44	0.000121	1.47	642.08	97.09	0.10
1	16703	Max WS	830.17	62.47	73.51		73.54	0.000120	1.41	598.29	141.53	0.10
1	17382	Max WS	534.54	62.37	73.67		73.68	0.000069	1.02	534.94	121.54	0.07
1	17548	Max WS	544.10	63.26	73.68		73.70	0.000087	1.09	507.10	95.58	0.08
1	17943	Max WS	540.25	63.30	73.72		73.73	0.000053	0.93	578.66	86.51	0.06
1	18458	Max WS	525.25	63.46	73.75		73.76	0.000061	0.97	540.78	87.91	0.07
1	19060	Max WS	514.58	63.77	73.79		73.81	0.000063	0.98	526.24	84.82	0.07
1	19311	Max WS	515.36	63.84	73.81		73.83	0.000097	1.13	456.09	80.86	0.08
1	19514	Max WS	511.12	63.59	73.83		73.85	0.000062	0.97	526.64	84.29	0.07
1	19895	Max WS	505.79	63.82	73.86		73.87	0.000065	0.97	521.63	86.82	0.07
1	20195	Max WS	498.12	63.89	73.88		73.90	0.000071	1.00	496.45	83.28	0.07
1	20553	Max WS	495.58	64.23	73.91		73.93	0.000079	1.03	479.61	88.15	0.08
1	20789	Max WS	374.91	64.48	73.94		73.95	0.000049	0.81	464.56	82.02	0.06
1	20898	Max WS	380.54	64.84	73.95		73.95	0.000023	0.53	720.84	140.76	0.04
1	20972		Bridge									
1	21016	Max WS	391.43	64.64	73.98	67.34	73.98	0.000020	0.51	772.17	144.23	0.04

G103-38-00 Existing HEC-RAS Output

HEC-RAS Plan: Ex_Clip River: G103-38-00 Reach: 1 Profile: Max WS (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
1	21100	Max WS	393.17	64.97	73.97		73.98	0.000053	0.81	487.30	103.64	0.06
1	21335	Max WS	403.70	64.92	73.99		74.00	0.000049	0.79	584.77	156.49	0.06

G103-38-01 Existing
HY-8 Culvert Analysis Report

Crossing Discharge Data

Discharge Selection Method: User Defined

Table 1 - Summary of Culvert Flows at Crossing: G103-38-1

Headwater Elevation (ft)	Discharge Names	Total Discharge (cfs)	Culvert 1 Discharge (cfs)	Roadway Discharge (cfs)	Iterations
69.24	0.2	185.16	185.16	0.00	1
69.51	0.4	370.32	370.32	0.00	1
69.99	0.6	555.48	555.48	0.00	1
70.78	0.8	740.64	740.64	0.00	1
71.44	1	925.80	925.80	0.00	1
72.70	1.2	1110.96	1110.96	0.00	1
74.79	1.5	1388.70	1388.70	0.00	1
78.00	Overtopping	1743.56	1743.56	0.00	Overtopping

Rating Curve Plot for Crossing: G103-38-1

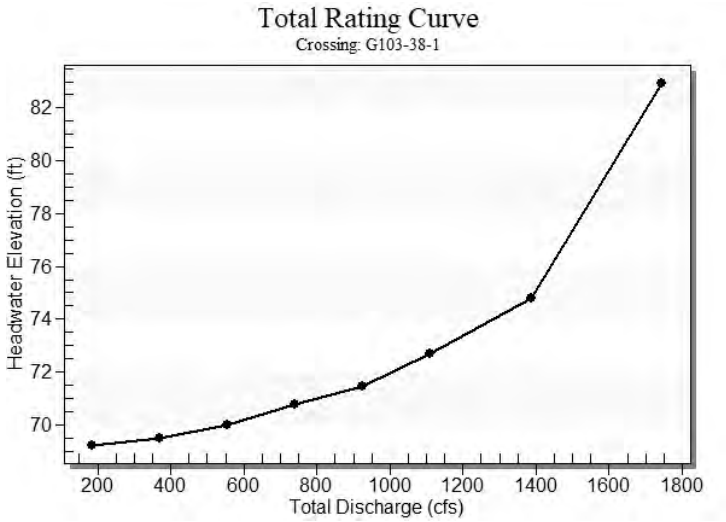

Table 2 - Culvert Summary Table: Culvert 1

Discharge Names	Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
0.2	185.16	185.16	69.24	2.666	5.718	1-S1f	0.893	1.608	8.000	8.000	1.447	0.000
0.4	370.32	370.32	69.51	4.222	5.988	1-S1f	1.414	2.553	8.000	8.000	2.893	0.000
0.6	555.48	555.48	69.99	5.506	6.465	1-S1f	1.864	3.345	8.000	8.000	4.340	0.000
0.8	740.64	740.64	70.78	6.713	7.261	1-S1f	2.277	4.052	8.000	8.000	5.786	0.000
1	925.80	925.80	71.44	7.916	7.221	1-JS1f	2.668	4.702	8.000	8.000	7.233	0.000
1.2	1110.96	1110.96	72.70	9.176	7.921	5-JS1f	3.044	5.310	8.000	8.000	8.679	0.000
1.5	1388.70	1388.70	74.79	11.275	9.210	5-S2n	3.586	6.162	4.403	8.000	19.712	0.000

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Straight Culvert

Inlet Elevation (invert): 63.52 ft, Outlet Elevation (invert): 61.15 ft

Culvert Length: 100.03 ft, Culvert Slope: 0.0237

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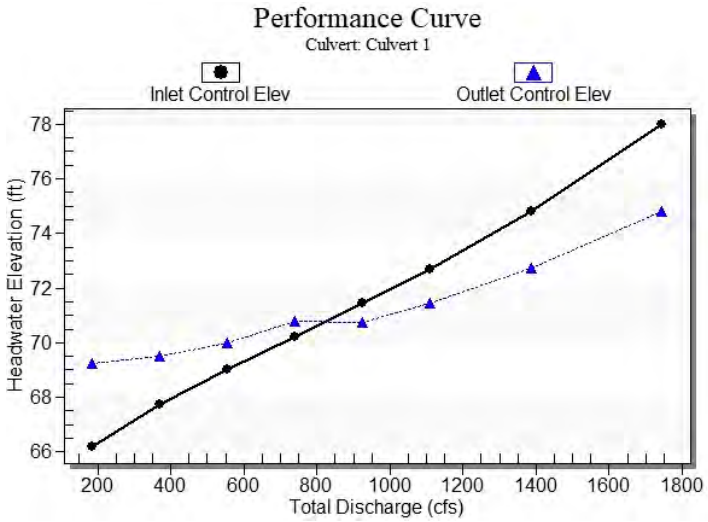
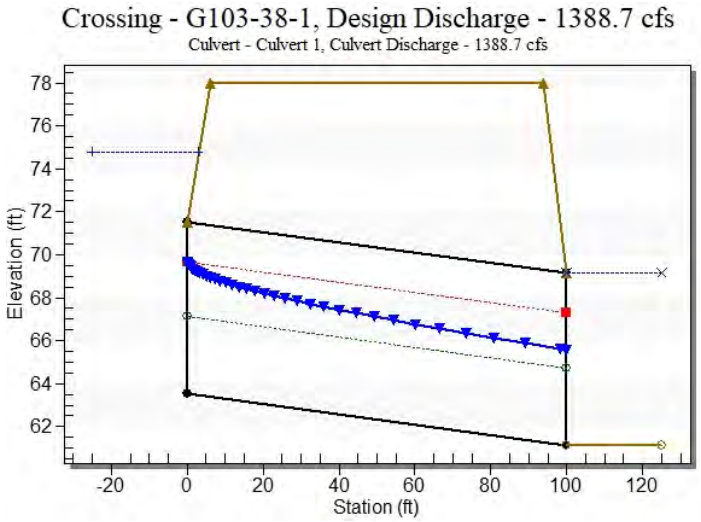
Culvert Performance Curve Plot: Culvert 1



Water Surface Profile Plot for Culvert: Culvert 1



Site Data - Culvert 1

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 63.52 ft

Outlet Station: 100.00 ft

Outlet Elevation: 61.15 ft

Number of Barrels: 2

Culvert Data Summary - Culvert 1

Barrel Shape: Concrete Box

Barrel Span: 8.00 ft

Barrel Rise: 8.00 ft

Barrel Material: Concrete

Embedment: 0.00 in

Barrel Manning's n: 0.0150

Culvert Type: Straight

Inlet Configuration: Square Edge (0º flare) Wingwall

Inlet Depression: None

Table 3 - Downstream Channel Rating Curve (Crossing: G103-38-1)

Flow (cfs)	Water Surface Elev (ft)	Depth (ft)
185.16	69.15	8.00
370.32	69.15	8.00
555.48	69.15	8.00
740.64	69.15	8.00
925.80	69.15	8.00
1110.96	69.15	8.00
1388.70	69.15	8.00

Tailwater Channel Data - G103-38-1

Tailwater Channel Option: Enter Constant Tailwater Elevation

Constant Tailwater Elevation: 69.15 ft

Roadway Data for Crossing: G103-38-1

Roadway Profile Shape: Constant Roadway Elevation

Crest Length: 100.00 ft

Crest Elevation: 78.00 ft

Roadway Surface: Gravel

Roadway Top Width: 88.00 ft

G103-38-01 Existing HEC-RAS Output

HEC-RAS Plan: Existing

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
G103-38-01	2	164	2-yr	343.20	63.59	69.47	66.66	69.67	0.000253	3.60	95.23	23.46	0.32
G103-38-01	2	164	10-yr	542.00	63.59	69.96	67.57	70.35	0.000467	5.07	106.96	24.98	0.43
G103-38-01	2	164	25-yr	680.00	63.59	70.52	68.09	71.01	0.000531	5.59	121.70	27.10	0.46
G103-38-01	2	164	50-yr	792.30	63.59	70.96	68.51	71.51	0.000564	5.91	134.07	28.79	0.48
G103-38-01	2	164	100-yr	919.00	63.59	71.42	68.93	72.02	0.000595	6.23	147.46	30.50	0.50
G103-38-01	2	512	2-yr	332.00	64.02	69.19		70.07	0.002183	7.53	44.07	12.67	0.71
G103-38-01	2	512	10-yr	525.00	64.02	69.59	69.59	71.34	0.004124	10.60	49.53	14.29	1.00
G103-38-01	2	512	25-yr	658.00	64.02	70.35	70.35	72.13	0.003776	10.69	61.54	17.33	1.00
G103-38-01	2	512	50-yr	767.00	64.02	70.84	70.84	72.68	0.003620	10.87	70.54	19.30	1.00
G103-38-01	2	512	100-yr	890.00	64.02	71.31	71.31	73.23	0.003517	11.12	80.03	21.17	1.01
G103-38-01	2	883	2-yr	308.00	64.24	70.19		70.67	0.001089	5.58	55.15	15.79	0.53
G103-38-01	2	883	10-yr	488.00	64.24	71.59		72.15	0.001019	6.01	81.16	21.39	0.54
G103-38-01	2	883	25-yr	613.00	64.24	72.29		72.91	0.001004	6.31	97.18	24.20	0.55
G103-38-01	2	883	50-yr	714.00	64.24	72.79		73.45	0.000988	6.51	109.73	26.19	0.56
G103-38-01	2	883	100-yr	829.00	64.24	73.29		73.99	0.000976	6.72	123.38	28.20	0.57
G103-38-01	2	1281	2-yr	308.00	64.41	70.66		71.07	0.000877	5.12	60.12	17.00	0.48
G103-38-01	2	1281	10-yr	488.00	64.41	72.04		72.52	0.000841	5.58	87.38	22.52	0.50
G103-38-01	2	1281	25-yr	613.00	64.41	72.74		73.28	0.000836	5.88	104.19	25.33	0.51
G103-38-01	2	1281	50-yr	714.00	64.41	73.24		73.81	0.000830	6.09	117.22	27.31	0.52
G103-38-01	2	1281	100-yr	829.00	64.41	73.74		74.36	0.000826	6.31	131.40	29.31	0.53
G103-38-01	2	1709	2-yr	283.00	64.72	71.08		71.41	0.000683	4.56	62.10	17.46	0.43
G103-38-01	2	1709	10-yr	449.00	64.72	72.47		72.85	0.000658	4.99	90.04	22.99	0.44
G103-38-01	2	1709	25-yr	564.00	64.72	73.18		73.61	0.000652	5.25	107.44	25.84	0.45
G103-38-01	2	1709	50-yr	658.00	64.72	73.68		74.14	0.000650	5.44	120.87	27.84	0.46
G103-38-01	2	1709	100-yr	763.00	64.72	74.19		74.68	0.000644	5.63	135.59	29.88	0.47
G103-38-01	2	2167	2-yr	283.00	65.05	71.40		71.72	0.000691	4.58	61.78	17.39	0.43
G103-38-01	2	2167	10-yr	449.00	65.05	72.77		73.16	0.000671	5.03	89.35	22.86	0.45
G103-38-01	2	2167	25-yr	564.00	65.05	73.48		73.91	0.000666	5.29	106.58	25.70	0.46
G103-38-01	2	2167	50-yr	658.00	65.05	73.97		74.44	0.000664	5.49	119.90	27.70	0.47
G103-38-01	2	2167	100-yr	763.00	65.05	74.48		74.98	0.000658	5.67	134.45	29.73	0.47
G103-38-01	2	2665	2-yr	269.20	65.31	71.76		72.04	0.000579	4.23	63.68	17.82	0.39
G103-38-01	2	2665	10-yr	428.40	65.31	73.13		73.47	0.000569	4.67	91.83	23.30	0.41
G103-38-01	2	2665	25-yr	538.40	65.31	73.85		74.22	0.000566	4.92	109.45	26.15	0.42
G103-38-01	2	2665	50-yr	628.10	65.31	74.35		74.75	0.000564	5.10	123.10	28.16	0.43
G103-38-01	2	2665	100-yr	729.00	65.31	74.86		75.29	0.000561	5.29	137.92	30.19	0.44
G103-38-01	1	2814	2-yr	217.90	65.19	71.94		72.12	0.000339	3.40	64.07	15.33	0.29
G103-38-01	1	2814	10-yr	347.50	65.19	73.31		73.55	0.000381	3.97	87.53	18.98	0.33
G103-38-01	1	2814	25-yr	437.20	65.19	74.02		74.30	0.000405	4.30	101.67	20.87	0.34
G103-38-01	1	2814	50-yr	510.70	65.19	74.52		74.84	0.000423	4.54	112.41	22.20	0.36
G103-38-01	1	2814	100-yr	594.00	65.19	75.02		75.37	0.000441	4.79	123.88	23.54	0.37
G103-38-01	1	3043	2-yr	192.00	65.28	72.05		72.19	0.000259	2.98	64.44	15.40	0.26
G103-38-01	1	3043	10-yr	306.00	65.28	73.45		73.63	0.000287	3.46	88.50	19.12	0.28
G103-38-01	1	3043	25-yr	385.00	65.28	74.17		74.39	0.000303	3.73	103.11	21.06	0.30
G103-38-01	1	3043	50-yr	450.00	65.28	74.69		74.93	0.000315	3.94	114.24	22.48	0.31
G103-38-01	1	3043	100-yr	524.00	65.28	75.20		75.47	0.000329	4.15	126.24	24.03	0.32
G103-38-01	1	3246	2-yr	172.00	65.47	72.12		72.24	0.000224	2.75	62.63	15.08	0.24
G103-38-01	1	3246	10-yr	274.00	65.47	73.53		73.69	0.000244	3.17	86.54	18.84	0.26
G103-38-01	1	3246	25-yr	345.00	65.47	74.27		74.45	0.000256	3.41	101.13	20.80	0.27
G103-38-01	1	3246	50-yr	403.00	65.47	74.79		74.99	0.000264	3.59	112.30	22.19	0.28
G103-38-01	1	3246	100-yr	468.00	65.47	75.32		75.54	0.000271	3.76	124.33	23.59	0.29
G103-38-01	1	3601	2-yr	141.00	65.30	72.24		72.31	0.000126	2.10	67.01	15.83	0.18
G103-38-01	1	3601	10-yr	225.00	65.30	73.67		73.76	0.000138	2.43	92.42	19.65	0.20
G103-38-01	1	3601	25-yr	283.00	65.30	74.42		74.53	0.000145	2.62	107.93	21.66	0.21
G103-38-01	1	3601	50-yr	331.00	65.30	74.95		75.07	0.000150	2.76	119.79	23.07	0.21
G103-38-01	1	3601	100-yr	385.00	65.30	75.49		75.62	0.000152	2.91	132.51	24.50	0.22
G103-38-01	1	4010	2-yr	113.00	65.53	72.31		72.35	0.000090	1.75	64.47	15.40	0.15
G103-38-01	1	4010	10-yr	180.00	65.53	73.75		73.81	0.000096	2.01	89.50	19.25	0.16
G103-38-01	1	4010	25-yr	226.00	65.53	74.51		74.58	0.000100	2.15	104.88	21.28	0.17
G103-38-01	1	4010	50-yr	264.00	65.53	75.05		75.12	0.000102	2.26	116.68	22.71	0.18
G103-38-01	1	4010	100-yr	307.00	65.53	75.59		75.67	0.000104	2.37	129.35	24.15	0.18
G103-38-01	1	4308	2-yr	91.00	66.14	72.34		72.38	0.000083	1.62	56.05	13.87	0.14
G103-38-01	1	4308	10-yr	144.00	66.14	73.79		73.84	0.000086	1.82	78.99	17.74	0.15
G103-38-01	1	4308	25-yr	182.00	66.14	74.55		74.61	0.000088	1.95	93.28	19.77	0.16
G103-38-01	1	4308	50-yr	212.00	66.14	75.09		75.16	0.000089	2.03	104.36	21.21	0.16
G103-38-01	1	4308	100-yr	247.00	66.14	75.64		75.71	0.000090	2.12	116.29	22.66	0.17
G103-38-01	1	4324	2-yr	91.00	66.48	72.34	68.08	72.39	0.000104	1.77	51.46	12.95	0.16
G103-38-01	1	4324	10-yr	144.00	66.48	73.79	68.64	73.85	0.000105	1.97	73.07	16.82	0.17
G103-38-01	1	4324	25-yr	182.00	66.48	74.55	69.00	74.62	0.000107	2.10	86.66	18.85	0.17
G103-38-01	1	4324	50-yr	212.00	66.48	75.09	69.28	75.16	0.000107	2.18	97.23	20.30	0.18
G103-38-01	1	4324	100-yr	247.00	66.48	75.63	69.58	75.71	0.000108	2.27	108.66	21.75	0.18
G103-38-01	1	4332	2-yr	91.00	67.62	72.32	69.21	72.41	0.000216	2.38	38.25	9.87	0.21
G103-38-01	1	4332	10-yr	144.00	67.62	73.77	69.78	73.87	0.000216	2.60	55.33	13.73	0.23

G103-38-01 Existing HEC-RAS Output

HEC-RAS Plan: Existing (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
G103-38-01	1	4332	25-yr	182.00	67.62	74.53	70.14	74.64	0.000214	2.74	66.54	15.76	0.23
G103-38-01	1	4332	50-yr	212.00	67.62	75.07	70.41	75.19	0.000210	2.81	75.44	17.20	0.24
G103-38-01	1	4332	100-yr	247.00	67.62	75.61	70.71	75.74	0.000200	2.91	85.02	18.65	0.24
G103-38-01	1	4370		Culvert									
G103-38-01	1	4391	2-yr	91.00	68.29	72.37	70.33	72.45	0.001329	2.32	39.21	14.56	0.25
G103-38-01	1	4391	10-yr	144.00	68.29	73.85	70.85	73.93	0.000919	2.29	62.91	17.57	0.21
G103-38-01	1	4391	25-yr	182.00	68.29	74.63	71.16	74.72	0.000847	2.35	77.32	19.33	0.21
G103-38-01	1	4391	50-yr	212.00	68.29	75.19	71.39	75.28	0.000804	2.40	88.44	20.59	0.20
G103-38-01	1	4391	100-yr	247.00	68.29	75.77	71.64	75.86	0.000776	2.45	100.69	22.02	0.20
G103-38-01	1	4409	2-yr	91.00	67.36	72.44		72.48	0.000528	1.65	55.10	16.89	0.16
G103-38-01	1	4409	10-yr	144.00	67.36	73.91		73.96	0.000452	1.75	82.28	20.23	0.15
G103-38-01	1	4409	25-yr	182.00	67.36	74.69		74.74	0.000448	1.84	98.89	22.38	0.15
G103-38-01	1	4409	50-yr	212.00	67.36	75.24		75.30	0.000441	1.90	111.77	23.87	0.15
G103-38-01	1	4409	100-yr	247.00	67.36	75.82		75.88	0.000430	1.96	126.01	25.98	0.15
G103-38-01	1	4737	2-yr	61.00	69.83	72.68		72.75	0.001918	2.22	27.46	16.05	0.30
G103-38-01	1	4737	10-yr	97.00	69.83	74.09		74.14	0.000764	1.77	54.65	22.24	0.20
G103-38-01	1	4737	25-yr	122.00	69.83	74.86		74.90	0.000548	1.68	72.64	24.78	0.17
G103-38-01	1	4737	50-yr	143.00	69.83	75.41		75.45	0.000467	1.64	86.93	27.04	0.16
G103-38-01	1	4737	100-yr	166.00	69.83	75.98		76.02	0.000399	1.61	102.98	29.22	0.15
G103-38-01	1	5125	2-yr	61.00	70.87	73.43		73.50	0.001920	2.14	28.46	17.92	0.30
G103-38-01	1	5125	10-yr	97.00	70.87	74.43		74.49	0.001102	1.98	49.08	22.88	0.24
G103-38-01	1	5125	25-yr	122.00	70.87	75.10		75.16	0.000794	1.86	65.50	25.99	0.21
G103-38-01	1	5125	50-yr	143.00	70.87	75.62		75.67	0.000660	1.80	79.58	29.05	0.19
G103-38-01	1	5125	100-yr	166.00	70.87	76.15		76.20	0.000548	1.73	96.10	32.39	0.18
G103-38-01	1	5431	2-yr	52.00	71.73	73.95		74.00	0.001362	1.75	29.77	20.02	0.25
G103-38-01	1	5431	10-yr	82.00	71.73	74.76		74.80	0.000901	1.74	47.26	23.29	0.21
G103-38-01	1	5431	25-yr	103.00	71.73	75.34		75.38	0.000673	1.67	61.50	25.48	0.19
G103-38-01	1	5431	50-yr	121.00	71.73	75.81		75.85	0.000554	1.64	73.94	27.27	0.18
G103-38-01	1	5431	100-yr	141.00	71.73	76.32		76.36	0.000469	1.60	88.33	29.78	0.16
G103-38-01	1	5655	2-yr	43.00	72.29	74.28		74.33	0.001574	1.63	26.33	22.00	0.26
G103-38-01	1	5655	10-yr	68.00	72.29	74.97		75.01	0.000968	1.59	42.69	25.53	0.22
G103-38-01	1	5655	25-yr	86.00	72.29	75.50		75.54	0.000677	1.51	56.83	27.91	0.19
G103-38-01	1	5655	50-yr	101.00	72.29	75.94		75.98	0.000518	1.45	69.54	29.59	0.17
G103-38-01	1	5655	100-yr	117.00	72.29	76.43		76.46	0.000399	1.39	84.30	31.40	0.15
G103-38-01	1	5682	2-yr	43.00	72.59	74.32	73.58	74.40	0.002771	2.20	19.51	15.62	0.35
G103-38-01	1	5682	10-yr	68.00	72.59	74.99	73.85	75.07	0.001778	2.22	30.60	18.25	0.29
G103-38-01	1	5682	25-yr	86.00	72.59	75.51	74.01	75.58	0.001214	2.18	39.51	20.39	0.25
G103-38-01	1	5682	50-yr	101.00	72.59	75.94	74.14	76.01	0.000936	2.15	47.03	22.29	0.23
G103-38-01	1	5682	100-yr	117.00	72.59	76.42	74.27	76.49	0.000732	2.12	55.30	24.44	0.21
G103-38-01	1	5700		Culvert									
G103-38-01	1	5730	2-yr	43.00	72.79	74.80	73.50	74.83	0.000557	1.31	32.82	25.55	0.17
G103-38-01	1	5730	10-yr	68.00	72.79	75.40	73.71	75.44	0.000542	1.56	43.58	27.97	0.18
G103-38-01	1	5730	25-yr	86.00	72.79	75.89	73.85	75.94	0.000473	1.65	52.26	30.01	0.17
G103-38-01	1	5730	50-yr	101.00	72.79	76.32	73.96	76.37	0.000414	1.69	59.88	32.31	0.16
G103-38-01	1	5730	100-yr	117.00	72.79	76.81	74.06	76.85	0.000355	1.71	68.51	35.07	0.15
G103-38-01	1	5765	2-yr	43.00	72.53	74.82		74.85	0.000676	1.27	33.91	21.85	0.18
G103-38-01	1	5765	10-yr	68.00	72.53	75.43		75.47	0.000621	1.41	48.10	24.53	0.18
G103-38-01	1	5765	25-yr	86.00	72.53	75.93		75.96	0.000515	1.42	60.69	26.68	0.17
G103-38-01	1	5765	50-yr	101.00	72.53	76.36		76.39	0.000432	1.39	72.59	28.64	0.15
G103-38-01	1	5765	100-yr	117.00	72.53	76.84		76.87	0.000351	1.34	87.14	30.95	0.14
G103-38-01	1	6001	2-yr	33.00	73.01	74.98		75.00	0.000641	1.19	27.85	18.89	0.17
G103-38-01	1	6001	10-yr	53.00	73.01	75.58		75.61	0.000588	1.33	39.82	21.06	0.17
G103-38-01	1	6001	25-yr	67.00	73.01	76.05		76.08	0.000490	1.34	50.05	22.75	0.16
G103-38-01	1	6001	50-yr	78.00	73.01	76.46		76.49	0.000415	1.30	59.86	25.00	0.15
G103-38-01	1	6001	100-yr	91.00	73.01	76.93		76.96	0.000348	1.26	72.28	27.85	0.14
G103-38-01	1	6220	2-yr	33.00	73.10	75.12		75.14	0.000622	1.15	28.67	20.07	0.17
G103-38-01	1	6220	10-yr	53.00	73.10	75.71		75.73	0.000567	1.29	41.23	22.62	0.17
G103-38-01	1	6220	25-yr	67.00	73.10	76.16		76.18	0.000476	1.29	51.77	24.56	0.16
G103-38-01	1	6220	50-yr	78.00	73.10	76.55		76.58	0.000395	1.26	61.81	26.40	0.15
G103-38-01	1	6220	100-yr	91.00	73.10	77.01		77.03	0.000338	1.22	74.62	29.83	0.14
G103-38-01	1	6539	2-yr	28.00	73.91	75.34		75.36	0.000772	1.10	25.43	22.63	0.18
G103-38-01	1	6539	10-yr	45.00	73.91	75.90		75.92	0.000567	1.17	38.58	24.73	0.16
G103-38-01	1	6539	25-yr	56.00	73.91	76.31		76.33	0.000430	1.14	49.07	26.26	0.15
G103-38-01	1	6539	50-yr	66.00	73.91	76.68		76.70	0.000348	1.12	59.00	27.66	0.14
G103-38-01	1	6539	100-yr	76.00	73.91	77.11		77.13	0.000267	1.06	71.36	29.33	0.12
G103-38-01	1	6767	2-yr	25.00	74.03	75.52		75.53	0.000748	1.07	23.27	20.94	0.18
G103-38-01	1	6767	10-yr	39.00	74.03	76.03		76.05	0.000568	1.13	34.59	23.38	0.16
G103-38-01	1	6767	25-yr	50.00	74.03	76.41		76.43	0.000470	1.14	43.89	25.25	0.15
G103-38-01	1	6767	50-yr	58.00	74.03	76.76		76.78	0.000369	1.09	53.00	26.95	0.14
G103-38-01	1	6767	100-yr	67.00	74.03	77.17		77.19	0.000283	1.04	64.60	29.05	0.12

G103-38-01 Existing HEC-RAS Output

HEC-RAS Plan: Existing (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
G103-38-01	1	6994	2-yr	22.00	74.38	75.74		75.77	0.001506	1.36	16.18	17.28	0.25
G103-38-01	1	6994	10-yr	35.00	74.38	76.19		76.22	0.001127	1.43	24.54	19.49	0.22
G103-38-01	1	6994	25-yr	44.00	74.38	76.54		76.57	0.000852	1.39	31.58	20.94	0.20
G103-38-01	1	6994	50-yr	51.00	74.38	76.86		76.89	0.000648	1.33	38.48	22.29	0.18
G103-38-01	1	6994	100-yr	59.00	74.38	77.25		77.27	0.000474	1.24	47.46	23.85	0.16
G103-38-01.1	1	200	2-yr	55.00	71.44	72.82	72.82	73.28	0.025808	5.44	10.10	11.13	1.01
G103-38-01.1	1	200	10-yr	85.70	71.44	73.16	73.16	73.73	0.024391	6.05	14.16	12.67	1.01
G103-38-01.1	1	200	25-yr	106.30	71.44	74.18		74.39	0.004965	3.59	29.57	17.32	0.49
G103-38-01.1	1	200	50-yr	122.80	71.44	74.77		74.92	0.002803	3.03	40.56	19.93	0.37
G103-38-01.1	1	200	100-yr	141.00	71.44	75.34		75.45	0.001828	2.68	52.62	22.45	0.31
G103-38-01.1	1	410	2-yr	50.00	71.32	73.95		73.99	0.001094	1.70	29.49	17.09	0.23
G103-38-01.1	1	410	10-yr	77.00	71.32	74.46		74.52	0.001236	1.99	38.78	19.37	0.25
G103-38-01.1	1	410	25-yr	96.00	71.32	74.81		74.88	0.001227	2.09	45.87	21.03	0.25
G103-38-01.1	1	410	50-yr	111.00	71.32	75.21		75.27	0.001037	2.03	54.64	23.07	0.23
G103-38-01.1	1	410	100-yr	127.00	71.32	75.65		75.71	0.000803	1.95	65.56	26.75	0.21
G103-38-01.1	1	592	2-yr	45.00	71.53	74.15		74.19	0.001124	1.66	27.14	16.67	0.23
G103-38-01.1	1	592	10-yr	71.00	71.53	74.69		74.74	0.001249	1.93	36.75	19.39	0.25
G103-38-01.1	1	592	25-yr	88.00	71.53	75.03		75.10	0.001210	2.01	43.87	21.37	0.25
G103-38-01.1	1	592	50-yr	101.00	71.53	75.40		75.46	0.001038	1.93	54.22	38.25	0.23
G103-38-01.1	1	592	100-yr	116.00	71.53	75.81		75.85	0.000784	1.79	76.46	78.78	0.20
G103-38-01.1	1	830	2-yr	40.00	71.63	74.37		74.40	0.000659	1.31	30.45	17.79	0.18
G103-38-01.1	1	830	10-yr	63.00	71.63	74.94		74.97	0.000727	1.53	41.31	20.71	0.19
G103-38-01.1	1	830	25-yr	78.00	71.63	75.28		75.32	0.000723	1.60	48.85	22.78	0.19
G103-38-01.1	1	830	50-yr	90.00	71.63	75.61		75.65	0.000629	1.59	57.60	34.53	0.18
G103-38-01.1	1	830	100-yr	104.00	71.63	75.97		76.01	0.000530	1.56	72.79	48.69	0.17
G103-38-01.1	1	1078	2-yr	36.00	71.88	74.53		74.55	0.000601	1.25	28.87	16.99	0.17
G103-38-01.1	1	1078	10-yr	56.00	71.88	75.11		75.14	0.000627	1.42	39.49	19.69	0.18
G103-38-01.1	1	1078	25-yr	69.00	71.88	75.45		75.49	0.000613	1.48	46.58	21.38	0.18
G103-38-01.1	1	1078	50-yr	80.00	71.88	75.77		75.81	0.000612	1.48	54.11	27.82	0.18
G103-38-01.1	1	1078	100-yr	92.00	71.88	76.11		76.14	0.000504	1.45	69.37	57.46	0.16
G103-38-01.1	1	1236	2-yr	33.00	72.04	74.63		74.65	0.000641	1.23	26.93	17.11	0.17
G103-38-01.1	1	1236	10-yr	52.00	72.04	75.21		75.24	0.000644	1.37	37.83	20.26	0.18
G103-38-01.1	1	1236	25-yr	64.00	72.04	75.55		75.59	0.000620	1.42	45.12	22.41	0.18
G103-38-01.1	1	1236	50-yr	74.00	72.04	75.87		75.90	0.000576	1.41	52.60	25.12	0.17
G103-38-01.1	1	1236	100-yr	85.00	72.04	76.19		76.22	0.000534	1.38	66.18	77.14	0.17
G103-38-01.1	1	1417	2-yr	30.00	72.46	74.76		74.79	0.000966	1.38	21.67	15.68	0.21
G103-38-01.1	1	1417	10-yr	47.00	72.46	75.34		75.38	0.000880	1.48	31.74	19.38	0.20
G103-38-01.1	1	1417	25-yr	59.00	72.46	75.68		75.71	0.000799	1.53	38.83	23.02	0.20
G103-38-01.1	1	1417	50-yr	68.00	72.46	75.98		76.01	0.000653	1.48	50.62	44.96	0.18
G103-38-01.1	1	1417	100-yr	78.00	72.46	76.29		76.32	0.000523	1.41	65.23	54.18	0.17
G103-38-01.1	1	1580	2-yr	28.00	72.63	74.90		74.92	0.000642	1.16	24.07	16.73	0.17
G103-38-01.1	1	1580	10-yr	44.00	72.63	75.47		75.50	0.000609	1.27	34.64	20.27	0.17
G103-38-01.1	1	1580	25-yr	54.00	72.63	75.80		75.82	0.000567	1.30	41.66	23.02	0.17
G103-38-01.1	1	1580	50-yr	63.00	72.63	76.08		76.11	0.000497	1.30	51.05	44.68	0.16
G103-38-01.1	1	1580	100-yr	72.00	72.63	76.37		76.39	0.000414	1.26	69.15	89.76	0.15

G103-38-02 Existing HEC-RAS Output

HEC-RAS Plan: Existing River: G103-38-02 Reach: 1

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
1	156	2-yr	359.40	62.29	66.75	65.44	67.11	0.000641	4.81	74.75	26.30	0.50
1	156	10-yr	564.20	62.29	67.80	66.25	68.25	0.000641	5.40	104.46	30.71	0.52
1	156	25-yr	702.70	62.29	68.37	66.70	68.88	0.000640	5.72	122.96	33.13	0.52
1	156	50-yr	814.70	62.29	68.79	67.05	69.34	0.000641	5.94	137.15	34.85	0.53
1	156	100-yr	940.00	62.29	69.22	67.40	69.81	0.000640	6.16	152.60	36.63	0.53
1	501	2-yr	347.00	62.26	67.01		67.32	0.000517	4.44	78.08	26.08	0.45
1	501	10-yr	545.00	62.26	68.06		68.46	0.000538	5.06	107.71	30.38	0.47
1	501	25-yr	678.00	62.26	68.64		69.09	0.000547	5.37	126.22	32.92	0.48
1	501	50-yr	786.00	62.26	69.06		69.55	0.000554	5.60	140.46	34.75	0.49
1	501	100-yr	906.00	62.26	69.50		70.03	0.000556	5.80	156.13	36.65	0.50
1	1000	2-yr	331.00	62.87	67.24		67.69	0.000906	5.41	61.13	22.97	0.59
1	1000	10-yr	518.00	62.87	68.29		68.83	0.000849	5.91	87.60	27.38	0.58
1	1000	25-yr	644.00	62.87	68.87		69.47	0.000825	6.17	104.39	29.96	0.58
1	1000	50-yr	746.00	62.87	69.30		69.92	0.000811	6.35	117.43	31.82	0.58
1	1000	100-yr	860.00	62.87	69.74		70.40	0.000796	6.52	131.84	33.88	0.58
1	1500	2-yr	315.00	63.64	68.21		68.37	0.002055	3.19	98.73	36.33	0.34
1	1500	10-yr	492.00	63.64	69.28		69.47	0.001896	3.50	140.59	42.28	0.34
1	1500	25-yr	611.00	63.64	69.88		70.09	0.001833	3.66	167.06	45.81	0.34
1	1500	50-yr	708.00	63.64	70.32		70.54	0.001797	3.77	187.59	48.32	0.34
1	1500	100-yr	816.00	63.64	70.77		71.00	0.001757	3.89	209.88	50.78	0.34
1	2000	2-yr	300.00	64.01	69.08		69.19	0.001299	2.64	113.49	39.48	0.27
1	2000	10-yr	467.00	64.01	70.11		70.25	0.001272	2.97	157.09	44.90	0.28
1	2000	25-yr	581.00	64.01	70.70		70.85	0.001265	3.15	184.35	47.99	0.28
1	2000	50-yr	672.00	64.01	71.13		71.29	0.001259	3.27	205.45	50.35	0.29
1	2000	100-yr	774.00	64.01	71.57		71.75	0.001254	3.39	228.23	52.78	0.29
1	2500	2-yr	285.00	63.87	69.60		69.68	0.000750	2.18	130.87	39.82	0.21
1	2500	10-yr	444.00	63.87	70.66		70.76	0.000819	2.52	175.93	45.76	0.23
1	2500	25-yr	551.00	63.87	71.26		71.37	0.000847	2.70	204.42	49.40	0.23
1	2500	50-yr	637.00	63.87	71.69		71.82	0.000861	2.81	226.45	51.97	0.24
1	2500	100-yr	734.00	63.87	72.14		72.27	0.000876	2.93	250.29	54.62	0.24
1	2974	2-yr	272.00	65.53	70.00		70.07	0.000937	2.17	125.37	46.50	0.23
1	2974	10-yr	423.00	65.53	71.06		71.15	0.000833	2.37	178.36	52.77	0.23
1	2974	25-yr	525.00	65.53	71.67		71.76	0.000794	2.49	211.07	55.96	0.23
1	2974	50-yr	607.00	65.53	72.10		72.21	0.000775	2.57	236.06	58.40	0.23
1	2974	100-yr	699.00	65.53	72.55		72.66	0.000760	2.66	262.94	60.94	0.23
1	3398	2-yr	261.00	66.12	70.52		70.62	0.001800	2.62	99.75	44.98	0.31
1	3398	10-yr	405.00	66.12	71.50		71.62	0.001403	2.76	146.49	50.31	0.29
1	3398	25-yr	502.00	66.12	72.07		72.20	0.001266	2.85	176.13	53.42	0.28
1	3398	50-yr	580.00	66.12	72.49		72.62	0.001190	2.91	199.10	55.75	0.27
1	3398	100-yr	668.00	66.12	72.93		73.07	0.001132	2.98	224.09	58.35	0.27
1	3500	2-yr	250.10	66.59	70.61	68.68	70.67	0.000113	1.89	132.12	53.87	0.21
1	3500	10-yr	387.20	66.59	71.59	69.08	71.66	0.000097	2.06	187.84	60.00	0.21
1	3500	25-yr	479.90	66.59	72.16	69.32	72.24	0.000091	2.15	223.19	63.65	0.20
1	3500	50-yr	554.20	66.59	72.59	69.49	72.66	0.000088	2.21	250.63	66.46	0.20
1	3500	100-yr	638.00	66.59	73.02	69.67	73.11	0.000084	2.27	280.48	69.32	0.20
1	3565		Culvert									
1	3585	2-yr	250.10	66.22	71.39	68.84	71.46	0.000076	2.01	124.26	53.71	0.19
1	3585	10-yr	387.20	66.22	72.84	69.30	72.92	0.000060	2.23	173.40	63.03	0.17
1	3585	25-yr	479.90	66.22	73.72	69.56	73.81	0.000054	2.36	203.48	68.50	0.17
1	3585	50-yr	554.20	66.22	74.40	69.76	74.49	0.000050	2.45	226.31	73.22	0.17
1	3585	100-yr	638.00	66.22	75.12	69.96	75.22	0.000047	2.54	250.90	77.99	0.17
1	3631	2-yr	250.10	66.70	71.39		71.48	0.001380	2.42	103.27	43.17	0.28
1	3631	10-yr	387.20	66.70	72.85		72.92	0.000780	2.22	174.04	53.78	0.22
1	3631	25-yr	479.90	66.70	73.75		73.82	0.000590	2.13	225.67	60.48	0.19
1	3631	50-yr	554.20	66.70	74.44		74.50	0.000492	2.06	268.96	65.96	0.18
1	3631	100-yr	638.00	66.70	75.17		75.24	0.000407	2.00	319.58	71.23	0.17
1	3838	2-yr	250.10	68.71	71.72		71.85	0.002262	2.95	84.73	38.39	0.35
1	3838	10-yr	387.20	68.71	73.02		73.14	0.001315	2.76	140.40	46.67	0.28
1	3838	25-yr	479.90	68.71	73.88		73.99	0.000971	2.63	182.54	51.81	0.25
1	3838	50-yr	554.20	68.71	74.54		74.64	0.000794	2.54	218.09	55.90	0.23
1	3838	100-yr	638.00	68.71	75.26		75.35	0.000656	2.45	259.96	60.83	0.21

G103-41-00 HEC-RAS OUTPUT (Existing Condition)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
01-1	6200	50.0	72	43	46.64		46.65	0.000075	0.63	113.66	39.39	0.07
01-1	6200	10.0	108	43	47.57		47.58	0.000073	0.71	152.09	43.56	0.07
01-1	6200	2.0	150	43	48.57		48.58	0.000067	0.76	197.75	48.05	0.07
01-1	6200	1.0	170	43	49.04		49.05	0.000063	0.77	220.9	51.92	0.06
01-1	6200	0.2	223	43	49.16		49.17	0.0001	0.98	227.56	58.14	0.08
01-1	5950	50.0	72	43	46.63		46.63	0.000074	0.61	117.3	42.71	0.07
01-1	5950	10.0	108	43	47.55		47.56	0.00007	0.68	159.36	48.01	0.07
01-1	5950	2.0	150	43	48.55		48.56	0.000063	0.71	210.16	53.72	0.06
01-1	5950	1.0	170	43	49.02		49.03	0.000058	0.72	236.15	56.42	0.06
01-1	5950	0.2	223	43	49.14		49.15	0.000093	0.92	242.53	57.06	0.08
01-1	5650	50.0	72	43	46.6	43.66	46.61	0.000071	0.6	119.13	43.12	0.06
01-1	5650	10.0	108	43	47.53	43.85	47.54	0.000068	0.67	161.56	48.3	0.06
01-1	5650	2.0	150	43	48.53	44.05	48.54	0.000061	0.71	212.69	53.89	0.06
01-1	5650	1.0	170	43	49.01	44.14	49.01	0.000056	0.71	238.82	56.53	0.06
01-1	5650	0.2	223	43	49.11	44.35	49.12	0.000091	0.91	244.62	57.1	0.08
01-1	5350	50.0	72	43	46.58	43.71	46.59	0.000086	0.65	111.35	42.22	0.07
01-1	5350	10.0	108	43	47.51	43.93	47.52	0.00008	0.7	153.29	47.99	0.07
01-1	5350	2.0	150	43	48.51	44.14	48.52	0.000069	0.73	204.58	54.22	0.07
01-1	5350	1.0	170	43	48.99	44.22	49	0.000064	0.74	231.02	57.17	0.06
01-1	5350	0.2	223	43	49.09	44.45	49.1	0.000074	0.8	360.22	220.28	0.07
01-1	5050	50.0	72	43	46.55	43.73	46.56	0.000098	0.68	105.29	40.31	0.07
01-1	5050	10.0	108	43	47.48	43.95	47.49	0.000089	0.74	145.46	45.9	0.07
01-1	5050	2.0	150	43	48.49	44.17	48.5	0.000077	0.77	194.71	51.94	0.07
01-1	5050	1.0	170	43	48.97	44.27	48.98	0.000071	0.77	220.14	54.8	0.07
01-1	5050	0.2	223	43	49.06	44.5	49.07	0.000085	0.86	326.84	185.31	0.07
01-1	4700	50.0	129	43	46.49	43.88	46.51	0.000193	0.98	132.21	49.74	0.11
01-1	4700	10.0	207	43	47.42	44.19	47.44	0.000204	1.14	181.24	56.04	0.11
01-1	4700	2.0	289	43	48.43	44.47	48.45	0.000188	1.19	242.03	66.01	0.11
01-1	4700	1.0	325	43	48.91	44.57	48.93	0.000176	1.18	275.37	72.73	0.11
01-1	4700	0.2	426	43	48.97	44.86	49.01	0.000291	1.52	279.9	73.6	0.14
01-1	4650		Culvert									
01-1	4450	50.0	129	43	46.17	44.03	46.2	0.000431	1.35	95.54	40.29	0.15
01-1	4450	10.0	207	43	46.88	44.38	46.92	0.000515	1.65	125.7	44.82	0.17
01-1	4450	2.0	289	43	47.54	44.69	47.6	0.000542	1.84	156.93	49.08	0.18
01-1	4450	1.0	325	43	47.78	44.82	47.84	0.000559	1.92	168.88	50.61	0.19
01-1	4450	0.2	426	43	48.25	45.14	48.3	0.000437	1.83	331.27	297.89	0.17
01-1	4150	50.0	129	43	46.05	43.91	46.08	0.000366	1.27	101.94	41.79	0.14
01-1	4150	10.0	207	43	46.74	44.22	46.77	0.000451	1.57	131.79	45.55	0.16
01-1	4150	2.0	289	43	47.39	44.52	47.44	0.000482	1.77	162.87	49.16	0.17
01-1	4150	1.0	325	43	47.63	44.63	47.68	0.000502	1.86	174.53	50.45	0.18
01-1	4150	0.2	426	43	48.06	44.93	48.13	0.000614	2.16	196.95	52.83	0.2
01-1	3850	50.0	129	43	45.91	43.96	45.95	0.000522	1.47	87.5	37.08	0.17
01-1	3850	10.0	207	43	46.56	44.29	46.61	0.000652	1.84	112.47	40.2	0.19
01-1	3850	2.0	289	43	47.2	44.6	47.27	0.000692	2.08	139.26	43.3	0.2
01-1	3850	1.0	325	43	47.43	44.72	47.5	0.000721	2.18	149.12	44.39	0.21
01-1	3850	0.2	426	43	47.81	45.04	47.91	0.00091	2.56	166.36	46.23	0.24
01-1	3550	50.0	129	43	45.77		45.8	0.00044	1.32	97.83	43.57	0.16
01-1	3550	10.0	207	43	46.39		46.43	0.00055	1.65	125.62	47.18	0.18
01-1	3550	2.0	289	43	47.02		47.08	0.000566	1.84	158.96	139.33	0.18
01-1	3550	1.0	325	43	47.25		47.31	0.000548	1.88	191.33	144.37	0.18
01-1	3550	0.2	426	43	47.62		47.68	0.000597	2.08	245.25	152.39	0.19
01-1	3250	50.0	129	43	45.59	43.93	45.63	0.000713	1.61	80.05	37.71	0.19

G103-41-00 HEC-RAS OUTPUT (Existing Condition)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
01-1	3250	10.0	207	43	46.16	44.26	46.22	0.000908	2.03	102.03	40.67	0.23
01-1	3250	2.0	289	43	46.78	44.55	46.86	0.000912	2.25	128.62	43.99	0.23
01-1	3250	1.0	325	43	47.01	44.68	47.09	0.000933	2.35	138.57	45.17	0.24
01-1	3250	0.2	426	43	47.49	44.98	47.52	0.000398	1.65	344.56	190.7	0.16
01-1	2950	50.0	129	43	45.41	43.82	45.44	0.000574	1.23	104.77	62.82	0.17
01-1	2950	10.0	207	43	45.94	44.09	45.97	0.000714	1.47	141.11	76.68	0.19
01-1	2950	2.0	289	43	46.54	44.33	46.57	0.000923	1.39	208.09	150.3	0.21
01-1	2950	1.0	325	43	46.78	44.43	46.81	0.000838	1.31	248.09	182.2	0.2
01-1	2950	0.2	426	43	47.37	44.67	47.39	0.000472	1.08	420.2	389.58	0.15
01-1	2650	50.0	129	43	45.3	43.63	45.31	0.000321	0.95	135.64	78.11	0.13
01-1	2650	10.0	207	43	45.78	43.85	45.8	0.00042	1.17	177.01	91.46	0.15
01-1	2650	2.0	289	43	46.38	44.05	46.4	0.000378	1.22	242.95	142.04	0.14
01-1	2650	1.0	325	43	46.63	44.13	46.66	0.000343	1.21	282.85	171.67	0.14
01-1	2650	0.2	426	43	47.27	44.34	47.29	0.00025	1.16	418.92	262.27	0.12
01-1	2525	50.0	129	43	45.24	43.69	45.26	0.000483	1.22	105.94	57.58	0.16
01-1	2525	10.0	207	43	45.7	43.94	45.74	0.000644	1.54	134.04	63.32	0.19
01-1	2525	2.0	289	43	46.3	44.16	46.34	0.000593	1.66	174.95	76.98	0.18
01-1	2525	1.0	325	43	46.56	44.25	46.6	0.000554	1.69	195.86	85.6	0.18
01-1	2525	0.2	426	43	47.22	44.49	47.25	0.000332	1.47	379.07	282.88	0.14
01-1	2475	50.0	129	43	45.23	43.6	45.24	0.000223	0.75	179.13	157.45	0.11
01-1	2475	10.0	207	43	45.7	43.8	45.71	0.000214	0.86	268.05	209.07	0.11
01-1	2475	2.0	289	43	46.31	43.98	46.32	0.000144	0.84	409.28	265.08	0.09
01-1	2475	1.0	325	43	46.57	44.05	46.58	0.000121	0.82	482	294.13	0.09
01-1	2475	0.2	426	43	47.23	44.24	47.24	0.000083	0.78	698.3	360.45	0.07
01-1	2400	50.0	129	43	45.2	43.65	45.21	0.000358	1.03	148.78	211.43	0.14
01-1	2400	10.0	207	43	45.68	43.88	45.69	0.000276	1.06	263.2	263.46	0.12
01-1	2400	2.0	289	43	46.3	44.09	46.31	0.000151	0.92	448.57	339.27	0.1
01-1	2400	1.0	325	43	46.56	44.18	46.57	0.00012	0.87	542.4	375.46	0.09
01-1	2400	0.2	426	43	47.23	44.41	47.23	0.000073	0.77	822.92	466.7	0.07
01-1	2369		Bridge									
01-1	2325	50.0	114	43	44.82		44.83	0.000327	0.86	131.88	90.13	0.13
01-1	2325	10.0	186	43	45.58		45.59	0.00018	0.82	271.02	283.6	0.1
01-1	2325	2.0	264	43	46.27		46.27	0.000087	0.69	532.43	450	0.07
01-1	2325	1.0	300	43	46.54		46.55	0.000068	0.64	659.71	486.38	0.06
01-1	2325	0.2	393	43	47.22		47.22	0.000039	0.56	1018.8	576.77	0.05
00-1	8650	50.0	83	59	61.35		61.41	0.001616	1.95	42.54	27.77	0.28
00-1	8650	10.0	126	59	61.79		61.87	0.001738	2.28	55.19	29.97	0.3
00-1	8650	2.0	176	59	62.22		62.32	0.001822	2.57	68.44	32.1	0.31
00-1	8650	1.0	201	59	62.41		62.52	0.00186	2.7	74.56	33.04	0.32
00-1	8650	0.2	267	59	62.85		62.99	0.001932	2.97	89.81	35.27	0.33
00-1	8500	50.0	83	59	61.01		61.1	0.00283	2.37	35.05	26.08	0.36
00-1	8500	10.0	126	59	61.42		61.54	0.002913	2.72	46.4	28.67	0.38
00-1	8500	2.0	176	59	61.84		61.98	0.002892	2.99	58.89	31.27	0.38
00-1	8500	1.0	201	59	62.02		62.17	0.002888	3.11	64.72	32.38	0.39
00-1	8500	0.2	267	59	62.47		62.64	0.0028	3.36	79.54	34.48	0.39
00-1	8200	50.0	83	58	59.71		59.88	0.006187	3.3	25.12	20.4	0.52
00-1	8200	10.0	126	58	60.24		60.42	0.004949	3.42	36.82	23.92	0.49
00-1	8200	2.0	176	58	60.69		60.9	0.004549	3.63	48.45	26.96	0.48
00-1	8200	1.0	201	58	60.9		61.11	0.004365	3.72	54.08	28.16	0.47
00-1	8200	0.2	267	58	61.46		61.68	0.003625	3.76	70.95	31.46	0.44
00-1	7900	50.0	83	56	59.04		59.1	0.001329	1.99	41.79	22.49	0.26
00-1	7900	10.0	126	56	59.53		59.62	0.001571	2.35	53.57	25.32	0.29

G103-41-00 HEC-RAS OUTPUT (Existing Condition)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
00-1	7900	2.0	176	56	59.89		60.01	0.001993	2.8	62.88	27.35	0.33
00-1	7900	1.0	201	56	60.08		60.21	0.002087	2.94	68.26	28.46	0.34
00-1	7900	0.2	267	56	60.79		60.93	0.001762	2.97	89.87	32.53	0.32
00-1	7625	50.0	83	56.1	57.68	57.68	58.1	0.025403	5.21	15.93	18.99	1
00-1	7625	10.0	126	56.1	57.98	57.98	58.48	0.024493	5.69	22.14	22.49	1.01
00-1	7625	2.0	176	56.1	58.67	58.25	58.97	0.009177	4.43	39.77	28.14	0.66
00-1	7625	1.0	201	56.1	59.13		59.35	0.005196	3.76	53.51	31.55	0.51
00-1	7625	0.2	267	56.1	60.31		60.43	0.001825	2.78	95.89	40.29	0.32
00-1	7610	50.0	83	56	57.14	57.14	57.71	0.003487	6.08	13.65	12	1.01
00-1	7610	10.0	126	56	57.5	57.5	58.26	0.003391	6.99	18.03	12	1
00-1	7610	2.0	176	56	58.14		58.87	0.002265	6.85	25.7	12	0.82
00-1	7610	1.0	201	56	58.64		59.27	0.001587	6.34	31.72	12	0.69
00-1	7610	0.2	267	56	59.85		60.37	0.000952	5.78	46.18	12	0.52
00-1	7575	50.0	83	53	56.41		56.48	0.000129	2.03	40.94	12	0.19
00-1	7575	10.0	126	53	57.43		57.52	0.000143	2.37	53.13	12	0.2
00-1	7575	2.0	176	53	58.44		58.55	0.00016	2.7	65.22	12	0.2
00-1	7575	1.0	201	53	58.88		59	0.000169	2.85	70.54	12	0.21
00-1	7575	0.2	267	53	60.02		60.17	0.000187	3.17	84.21	12	0.21
00-1	7550	50.0	83	53	56.44		56.46	0.000296	1.01	81.91	40.19	0.13
00-1	7550	10.0	126	53	57.47		57.49	0.000191	1	126.03	45.2	0.11
00-1	7550	2.0	176	53	58.5		58.52	0.000145	1.01	174.94	50.17	0.09
00-1	7550	1.0	201	53	58.95		58.97	0.000133	1.01	198.12	52.37	0.09
00-1	7550	0.2	267	53	60.11		60.13	0.000106	1.02	262.14	57.99	0.08
00-1	7300	50.0	83	53	56.39		56.4	0.000156	0.83	100.05	40.83	0.09
00-1	7300	10.0	126	53	57.44		57.45	0.000123	0.86	145.91	46.78	0.09
00-1	7300	2.0	176	53	58.47		58.48	0.000104	0.89	197.25	52.64	0.08
00-1	7300	1.0	201	53	58.93		58.94	0.000098	0.91	221.74	55.22	0.08
00-1	7300	0.2	267	53	60.09		60.1	0.000082	0.92	289.94	61.84	0.07
00-1	7125	50.0	209	52	56.25	54.16	56.32	0.000901	2.09	100.05	37.67	0.23
00-1	7125	10.0	318	52	57.3	54.59	57.38	0.000776	2.23	142.7	43.44	0.22
00-1	7125	2.0	445	52	58.33	55.01	58.42	0.000685	2.34	190.57	49.11	0.21
00-1	7125	1.0	505	52	58.79	55.19	58.88	0.000646	2.37	213.52	51.61	0.21
00-1	7125	0.2	671	52	59.96	55.65	60.05	0.000556	2.42	277.62	58.31	0.19
00-1	7090		Culvert									
00-1	7025	50.0	209	52	56.1		56.16	0.000789	1.99	104.93	38.51	0.21
00-1	7025	10.0	318	52	57.05		57.12	0.000762	2.21	144.05	43.99	0.22
00-1	7025	2.0	445	52	57.96		58.05	0.000735	2.39	186.47	49.24	0.22
00-1	7025	1.0	505	52	58.35		58.45	0.000717	2.45	206.51	51.54	0.22
00-1	7025	0.2	671	52	59.37		59.47	0.000716	2.54	263.9	62.18	0.22
00-1	6950	50.0	209	52	56.02	53.86	56.09	0.000897	2.11	98.82	36.43	0.23
00-1	6950	10.0	318	52	56.97	54.3	57.06	0.000873	2.34	136.16	42.26	0.23
00-1	6950	2.0	445	52	57.89	54.74	57.98	0.00084	2.51	177.25	47.86	0.23
00-1	6950	1.0	505	52	58.29	54.93	58.39	0.000816	2.57	196.86	50.32	0.23
00-1	6950	0.2	671	52	59.3	55.41	59.41	0.000751	2.67	250.92	56.53	0.22
00-1	6925		Culvert									
00-1	6875	50.0	286	51	55.92		56.02	0.000891	2.57	111.21	27.76	0.23
00-1	6875	10.0	436	51	56.77		56.93	0.00118	3.22	135.6	29.44	0.26
00-1	6875	2.0	608	51	57.55		57.78	0.001459	3.82	159.3	31.01	0.3
00-1	6875	1.0	690	51	57.89		58.15	0.001572	4.06	169.84	31.68	0.31
00-1	6875	0.2	917	51	58.72		59.06	0.001845	4.66	196.75	33.34	0.34
00-1	6700	50.0	286	51.1	55.62		55.77	0.002247	3.09	92.43	38.21	0.35

G103-41-00 HEC-RAS OUTPUT (Existing Condition)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
00-1	6700	10.0	436	51.1	56.47		56.65	0.002125	3.44	126.6	42.61	0.35
00-1	6700	2.0	608	51.1	57.26		57.48	0.00207	3.76	161.78	46.71	0.36
00-1	6700	1.0	690	51.1	57.59		57.82	0.002053	3.88	177.61	48.45	0.36
00-1	6700	0.2	917	51.1	58.41		58.69	0.002014	4.18	219.38	52.74	0.36
00-1	6400	50.0	286	51	55.04	53.22	55.17	0.001751	2.93	97.62	36.42	0.32
00-1	6400	10.0	436	51	55.89	53.77	56.06	0.001831	3.34	130.4	41.15	0.33
00-1	6400	2.0	608	51	56.67	54.28	56.88	0.001891	3.7	164.34	45.54	0.34
00-1	6400	1.0	690	51	57	54.51	57.23	0.001907	3.84	179.75	47.4	0.35
00-1	6400	0.2	917	51	57.83	55.06	58.09	0.001924	4.15	220.87	52.03	0.36
00-1	6100	50.0	286	50	54.47		54.61	0.001987	3.05	93.71	36.11	0.33
00-1	6100	10.0	436	50	55.28		55.47	0.002087	3.49	125.03	40.84	0.35
00-1	6100	2.0	608	50	56.05		56.28	0.002146	3.85	157.85	45.27	0.36
00-1	6100	1.0	690	50	56.37		56.62	0.002154	3.99	172.99	47.18	0.37
00-1	6100	0.2	917	50	57.21		57.49	0.002093	4.28	215.53	62.72	0.37
00-1	5800	50.0	286	50	53.76		53.94	0.002547	3.38	84.51	33.22	0.37
00-1	5800	10.0	436	50	54.49		54.73	0.002913	3.94	110.69	38.37	0.41
00-1	5800	2.0	608	50	55.22		55.51	0.003014	4.32	140.61	43.51	0.42
00-1	5800	1.0	690	50	55.55		55.86	0.002981	4.44	155.38	45.84	0.43
00-1	5800	0.2	917	50	56.44		56.77	0.002733	4.61	199.05	52.12	0.42
00-1	5550	50.0	286	50	52.31	51.77	52.67	0.008016	4.81	59.44	33.47	0.64
00-1	5550	10.0	436	50	53.24	52.27	53.58	0.005168	4.65	93.67	39.74	0.53
00-1	5550	2.0	608	50	54.19	52.75	54.51	0.003694	4.53	134.34	46.08	0.47
00-1	5550	1.0	690	50	54.61	52.96	54.92	0.003247	4.47	154.34	48.9	0.44
00-1	5550	0.2	917	50	55.7	53.46	55.99	0.002425	4.34	211.38	56.18	0.39
00-1	5520	50.0	286	49.7	51.55	51.55	52.48	0.002906	7.71	37.09	20	1
00-1	5520	10.0	436	49.7	52.15	52.15	53.38	0.002842	8.89	49.05	20	1
00-1	5520	2.0	608	49.7	52.76	52.76	54.29	0.002807	9.92	61.26	20	1
00-1	5520	1.0	690	49.7	53.03	53.03	54.7	0.002812	10.36	66.59	20	1
00-1	5520	0.2	917	49.7	53.73	53.73	55.74	0.002817	11.38	80.57	20	1
00-1	5480	50.0	286	44	48.46		48.62	0.000204	3.21	89.11	20	0.27
00-1	5480	10.0	436	44	49.47		49.72	0.000261	3.98	109.45	20	0.3
00-1	5480	2.0	608	44	50.33		50.69	0.000336	4.8	126.63	20	0.34
00-1	5480	1.0	690	44	50.69		51.1	0.000371	5.16	133.74	20	0.35
00-1	5480	0.2	917	44	51.56		52.13	0.000466	6.06	151.2	20	0.39
00-1	5425	50.0	499	44	48.27		48.56	0.003954	4.28	116.52	45.62	0.47
00-1	5425	10.0	756	44	49.35		49.67	0.003081	4.49	168.38	50.64	0.43
00-1	5425	2.0	1054	44	50.27		50.63	0.002897	4.87	216.61	54.91	0.43
00-1	5425	1.0	1199	44	50.64		51.04	0.00288	5.05	237.53	56.66	0.43
00-1	5425	0.2	1586	44	51.57		52.03	0.002792	5.42	292.47	61.02	0.44
00-1	5200	50	499	41	48.03		48.15	0.000876	2.79	178.97	41.28	0.24
00-1	5200	10	756	41	49.06		49.24	0.001098	3.37	224.1	45.92	0.27
00-1	5200	2	1054	41	49.92		50.17	0.001356	3.97	265.31	49.78	0.3
00-1	5200	1	1199	41	50.27		50.55	0.001476	4.24	283.02	51.35	0.32
00-1	5200	0.2	1586	41	51.16		51.52	0.001706	4.8	330.41	55.33	0.35
00-1	4950	50	560	41	47.55	44.84	47.8	0.002176	4.02	139.37	35.92	0.36
00-1	4950	10	851	41	48.4	45.81	48.78	0.002982	4.93	172.59	41.74	0.43
00-1	4950	2	1186	41	49.03	46.71	49.58	0.003994	5.92	200.35	46.05	0.5
00-1	4950	1	1347	41	49.27	47.08	49.9	0.004506	6.37	211.31	47.64	0.53
00-1	4950	0.2	1783	41	49.9	48.01	50.74	0.005539	7.34	243.02	51.98	0.6
00-1	4920		Bridge									
00-1	4875	50	560	41	47.4	44.47	47.58	0.001448	3.41	164.36	41.37	0.3
00-1	4875	10	851	41	48.18	45.31	48.47	0.002022	4.3	198.11	45.19	0.36

G103-41-00 HEC-RAS OUTPUT (Existing Condition)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
00-1	4875	2	1186	41	48.68	46.11	49.13	0.002915	5.36	221.37	47.65	0.44
00-1	4875	1	1347	41	48.82	46.46	49.37	0.003462	5.9	228.29	48.35	0.48
00-1	4875	0.2	1783	41	49.15	47.28	49.98	0.005047	7.29	244.46	49.97	0.58
00-1	4600	50	560	41	47.02		47.18	0.001423	3.35	198.21	99.17	0.3
00-1	4600	10	851	41	47.77		47.95	0.001549	3.73	314.63	212.58	0.31
00-1	4600	2	1186	41	48.35		48.51	0.001373	3.74	508.93	417.75	0.3
00-1	4600	1	1347	41	48.57		48.71	0.001256	3.69	598.68	423.59	0.29
00-1	4600	0.2	1783	41	49.08		49.2	0.001103	3.69	831.75	480.08	0.28
00-1	4300	50	560	41	46.51		46.67	0.002023	3.94	205.72	138.53	0.33
00-1	4300	10	851	41	47.31		47.46	0.00166	3.93	345.88	245.61	0.31
00-1	4300	2	1186	41	47.97		48.08	0.001378	3.88	547.09	357.31	0.29
00-1	4300	1	1347	41	48.22		48.33	0.001208	3.74	641.63	377.38	0.27
00-1	4300	0.2	1783	41	48.8		48.89	0.000926	3.48	866.99	396.25	0.24
00-1	4000	50	560	41	46.33	43.88	46.37	0.000503	1.88	386.67	214.6	0.18
00-1	4000	10	851	41	47.17	44.35	47.21	0.000397	1.93	617.29	302.28	0.16
00-1	4000	2	1186	41	47.83	44.77	47.87	0.00036	2.02	822.7	321.82	0.16
00-1	4000	1	1347	41	48.09	44.94	48.13	0.000358	2.08	905.58	329.38	0.16
00-1	4000	0.2	1783	41	48.67	45.35	48.72	0.000363	2.24	1101.97	346.62	0.16
00-1	3700	50	560	41	45.99	43.59	46.12	0.001417	2.91	192.11	62.48	0.29
00-1	3700	10	851	41	46.83	44.28	46.99	0.001477	3.3	290.54	172.7	0.31
00-1	3700	2	1186	41	47.51	44.91	47.67	0.001362	3.41	433.95	226.33	0.3
00-1	3700	1	1347	41	47.78	45.19	47.93	0.001308	3.42	494.34	230.12	0.3
00-1	3700	0.2	1783	41	48.37	45.82	48.52	0.001207	3.55	634.75	252.22	0.29
00-1	3400	50	560	41	45.47		45.62	0.00194	3.17	176.79	64.46	0.34
00-1	3400	10	851	41	46.25		46.46	0.002159	3.66	235.85	103.18	0.36
00-1	3400	2	1186	41	46.93		47.17	0.002003	4.02	333.37	182.9	0.36
00-1	3400	1	1347	41	47.21		47.45	0.001922	4.12	387.83	214.65	0.36
00-1	3400	0.2	1783	41	47.85		48.09	0.001667	4.23	539.96	254.14	0.34
00-1	3100	50	560	41	45		45.14	0.00132	3.08	201.14	80.83	0.29
00-1	3100	10	851	41	45.74		45.92	0.001453	3.66	267.04	98.67	0.31
00-1	3100	2	1186	41	46.41		46.64	0.001561	4.19	344.17	142.94	0.33
00-1	3100	1	1347	41	46.68		46.93	0.001593	4.38	385.93	167.93	0.34
00-1	3100	0.2	1783	41	47.35		47.61	0.001527	4.65	514.76	203.09	0.34
00-1	2800	50	560	41	44.89		44.92	0.000372	1.43	411.49	187.54	0.15
00-1	2800	10	851	41	45.65		45.69	0.000356	1.61	581.65	248.96	0.15
00-1	2800	2	1186	41	46.35		46.4	0.000331	1.76	782.82	318.24	0.15
00-1	2800	1	1347	41	46.64		46.68	0.000324	1.82	873.63	329.29	0.15
00-1	2800	0.2	1783	41	47.32		47.37	0.000308	1.94	1108.51	356.3	0.15
00-1	2500	50	560	41	44.7		44.77	0.000672	2.18	289.25	118.66	0.21
00-1	2500	10	851	41	45.45		45.54	0.000733	2.55	383.7	134.61	0.22
00-1	2500	2	1186	41	46.14		46.25	0.00078	2.88	481.46	149.33	0.23
00-1	2500	1	1347	41	46.41		46.53	0.00081	3.03	522.61	155.11	0.24
00-1	2500	0.2	1783	41	47.07		47.22	0.000855	3.35	630.29	165.98	0.25
00-1	2200	50	560	41	44.48		44.55	0.000769	2.11	274.73	137.66	0.22
00-1	2200	10	851	41	45.23		45.31	0.000747	2.41	405.77	214.85	0.22
00-1	2200	2	1186	41	45.92		46.02	0.000716	2.65	596.54	423.73	0.22
00-1	2200	1	1347	41	46.22		46.3	0.000629	2.59	722.74	431.49	0.21
00-1	2200	0.2	1783	41	46.94		47.01	0.000464	2.45	1042.13	450.52	0.19
00-2	2050	50	859	41	44.49		44.55	0.000741	2.25	446.53	205.27	0.22
00-2	2050	10	1348	41	45.22		45.31	0.000826	2.71	613.86	262.17	0.24
00-2	2050	2	1941	41	45.9		46.02	0.000898	3.13	821.31	349.01	0.25
00-2	2050	1	2225	41	46.17		46.3	0.00091	3.27	922.35	384.26	0.26
00-2	2050	0.2	3050	41	46.86		47	0.000914	3.57	1217.2	472.33	0.26

G103-41-00 HEC-RAS OUTPUT (Existing Condition)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
00-2	1900	50	859	41	44.31		44.41	0.00114	2.66	346.05	154.23	0.27
00-2	1900	10	1348	41	45		45.15	0.001331	3.25	463.18	184.56	0.3
00-2	1900	2	1941	41	45.64		45.84	0.001453	3.77	587.65	201.13	0.32
00-2	1900	1	2225	41	45.9		46.12	0.00151	3.99	639.97	206.88	0.33
00-2	1900	0.2	3050	41	46.53		46.81	0.001677	4.58	774.2	220.95	0.35
00-2	1600	50	859	41	43.94		44.03	0.001405	2.52	341.44	139.81	0.28
00-2	1600	10	1348	41	44.56		44.71	0.001635	3.12	440.97	181.05	0.32
00-2	1600	2	1941	41	45.15		45.35	0.001825	3.68	559.03	222.46	0.34
00-2	1600	1	2225	41	45.38		45.61	0.001908	3.91	612.63	238.9	0.36
00-2	1600	0.2	3050	41	45.95		46.24	0.002103	4.48	760.99	282.48	0.38
00-2	1300	50	859	41	43.54		43.63	0.001293	2.42	395.72	229.85	0.27
00-2	1300	10	1348	41	44.14		44.25	0.001365	2.86	545.58	270.38	0.29
00-2	1300	2	1941	41	44.71		44.85	0.001415	3.24	711.41	309.09	0.3
00-2	1300	1	2225	41	44.94		45.09	0.001446	3.41	782.74	326.58	0.31
00-2	1300	0.2	3050	41	45.49		45.68	0.001529	3.84	976.55	373.29	0.33
00-2	1000	50	1042	41	42.68	42.06	42.89	0.005006	3.61	288.72	178.95	0.5
00-2	1000	10	1636	41	43.19	42.43	43.48	0.005002	4.29	382.71	207.67	0.52
00-2	1000	2	2373	41	43.69	42.83	44.06	0.005004	4.94	512.01	318.97	0.54
00-2	1000	1	2730	41	43.88	43	44.28	0.005001	5.18	575.98	336.79	0.55
00-2	1000	0.2	3772	41	44.36	43.63	44.84	0.005006	5.77	747.43	375.53	0.56

G103-45-00 Existing HEC-RAS Output

HEC-RAS Plan: Existing River: G103-45-00 Reach: 1

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
1	55	2-yr	228.60	42.39	46.35	44.76	46.49	0.001890	2.91	78.51	31.00	0.32
1	55	10-yr	360.20	42.39	47.25	45.30	47.42	0.001891	3.35	107.66	34.19	0.33
1	55	25-yr	450.10	42.39	47.77	45.60	47.97	0.001890	3.58	125.88	36.01	0.34
1	55	50-yr	522.80	42.39	48.16	45.83	48.37	0.001890	3.73	140.13	37.51	0.34
1	55	100-yr	604.60	42.39	48.57	46.07	48.80	0.001891	3.87	156.06	39.44	0.34
1	100	2-yr	228.60	42.37	46.41	44.45	46.59	0.001747	3.34	68.48	26.66	0.32
1	100	10-yr	360.20	42.37	47.29	45.08	47.56	0.002181	4.14	86.96	29.77	0.37
1	100	25-yr	450.10	42.37	47.79	45.45	48.12	0.002303	4.59	98.02	31.56	0.38
1	100	50-yr	522.80	42.37	48.17	45.73	48.54	0.002375	4.92	106.26	33.18	0.39
1	100	100-yr	604.60	42.37	48.57	46.03	49.00	0.002441	5.26	114.99	35.31	0.41
1	152		Culvert									
1	205	2-yr	228.60	43.47	47.46	45.68	47.61	0.001866	3.06	74.71	27.56	0.32
1	205	10-yr	360.20	43.47	48.89	46.28	49.04	0.001187	3.15	114.40	33.75	0.27
1	205	25-yr	450.10	43.47	49.86	46.65	50.02	0.000909	3.18	141.68	37.51	0.25
1	205	50-yr	522.80	43.47	50.69	46.91	50.85	0.000739	3.17	164.90	40.83	0.23
1	205	100-yr	604.60	43.47	51.87	47.16	52.01	0.000539	3.06	197.80	50.11	0.20
1	241	2-yr	228.60	43.76	47.53		47.68	0.002225	3.15	72.53	28.73	0.35
1	241	10-yr	360.20	43.76	48.95		49.09	0.001446	3.06	117.76	35.00	0.29
1	241	25-yr	450.10	43.76	49.93		50.06	0.001082	2.92	154.32	39.44	0.26
1	241	50-yr	522.80	43.76	50.77		50.89	0.000851	2.76	189.27	43.79	0.23
1	241	100-yr	604.60	43.76	51.95		52.05	0.000601	2.46	245.64	52.25	0.20
1	463	2-yr	228.60	45.14	48.11		48.30	0.003433	3.49	65.46	31.32	0.43
1	463	10-yr	360.20	45.14	49.31		49.49	0.002157	3.37	106.78	37.73	0.35
1	463	25-yr	450.10	45.14	50.20		50.35	0.001537	3.16	142.43	42.93	0.31
1	463	50-yr	522.80	45.14	50.98		51.11	0.001155	2.94	177.90	48.24	0.27
1	463	100-yr	604.60	45.14	52.09		52.20	0.000724	2.56	235.72	55.14	0.22
1	725	2-yr	228.60	45.40	48.87		49.01	0.002142	2.95	77.47	33.38	0.34
1	725	10-yr	360.20	45.40	49.85		50.01	0.001845	3.20	112.53	38.15	0.33
1	725	25-yr	450.10	45.40	50.60		50.75	0.001509	3.16	142.38	42.19	0.30
1	725	50-yr	522.80	45.40	51.28		51.42	0.001218	3.03	172.73	46.47	0.28
1	725	100-yr	604.60	45.40	52.28		52.40	0.000793	2.73	223.30	55.88	0.23
1	798	2-yr	228.60	45.18	49.00	47.54	49.19	0.002145	3.51	65.13	34.21	0.36
1	798	10-yr	360.20	45.18	49.94	48.06	50.21	0.002124	4.20	85.81	128.41	0.37
1	798	25-yr	450.10	45.18	50.78	48.40	50.86	0.000914	2.48	414.46	543.69	0.24
1	798	50-yr	522.80	45.18	51.48	48.64	51.51	0.000388	1.70	879.20	842.47	0.16
1	798	100-yr	604.60	45.18	52.44	48.90	52.45	0.000094	0.97	2090.08	1511.29	0.08
1	900		Culvert									
1	929	2-yr	228.60	45.26	49.35	48.13	49.52	0.003019	3.32	69.20	60.71	0.40
1	929	10-yr	360.20	45.26	50.90	48.68	51.03	0.001118	2.90	141.62	505.50	0.27
1	929	25-yr	450.10	45.26	51.90	49.00	51.93	0.000303	1.77	679.17	885.20	0.14
1	929	50-yr	522.80	45.26	52.10	49.22	52.12	0.000150	1.28	1283.53	949.94	0.10
1	929	100-yr	604.60	45.26	52.45	49.45	52.46	0.000126	1.23	1633.73	1090.93	0.10
1	1060	2-yr	228.60	45.64	49.72		49.85	0.001952	2.90	79.53	38.34	0.33
1	1060	10-yr	360.20	45.64	51.10		51.16	0.000631	2.23	380.90	519.42	0.20
1	1060	25-yr	450.10	45.64	51.95		51.97	0.000201	1.44	949.93	722.60	0.12
1	1060	50-yr	522.80	45.64	52.13		52.14	0.000200	1.47	1077.34	726.00	0.12
1	1060	100-yr	604.60	45.64	52.47		52.48	0.000156	1.36	1325.68	732.44	0.11
1	1167	2-yr	228.60	46.36	49.95		49.98	0.000656	1.69	337.10	385.17	0.19
1	1167	10-yr	360.20	46.36	51.18		51.19	0.000127	0.98	1018.42	782.08	0.09
1	1167	25-yr	450.10	46.36	51.98		51.98	0.000061	0.77	1723.95	937.92	0.06
1	1167	50-yr	522.80	46.36	52.15		52.15	0.000063	0.80	1888.61	940.45	0.07
1	1167	100-yr	604.60	46.36	52.49		52.49	0.000053	0.78	2204.24	946.63	0.06
1	1275	2-yr	228.60	46.38	50.06		50.18	0.002062	2.82	112.54	152.08	0.33
1	1275	10-yr	360.20	46.38	51.21		51.23	0.000472	1.78	655.20	833.20	0.17
1	1275	25-yr	450.10	46.38	51.99		51.99	0.000138	1.11	1343.12	898.76	0.10
1	1275	50-yr	522.80	46.38	52.16		52.17	0.000137	1.13	1501.04	900.80	0.10
1	1275	100-yr	604.60	46.38	52.49		52.50	0.000109	1.06	1802.23	910.32	0.09
1	1367	2-yr	228.60	46.59	50.25		50.39	0.002415	3.15	102.73	128.68	0.36
1	1367	10-yr	360.20	46.59	51.24		51.31	0.000931	2.48	398.45	587.87	0.24
1	1367	25-yr	450.10	46.59	52.00		52.01	0.000302	1.62	906.54	743.26	0.14
1	1367	50-yr	522.80	46.59	52.17		52.19	0.000299	1.66	1039.59	768.91	0.14
1	1367	100-yr	604.60	46.59	52.50		52.52	0.000226	1.52	1298.74	789.66	0.12
1	1578	2-yr	228.60	46.80	50.81		50.97	0.002996	3.40	108.17	127.16	0.40
1	1578	10-yr	360.20	46.80	51.48		51.62	0.002259	3.46	223.62	276.35	0.36

G103-45-00 Existing HEC-RAS Output

HEC-RAS Plan: Existing River: G103-45-00 Reach: 1 (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
1	1578	25-yr	450.10	46.80	52.07		52.14	0.001115	2.75	457.62	482.42	0.26
1	1578	50-yr	522.80	46.80	52.24		52.31	0.001064	2.78	546.62	556.64	0.26
1	1578	100-yr	604.60	46.80	52.56		52.60	0.000782	2.52	739.96	639.41	0.22
1	1747	2-yr	228.60	46.96	51.34		51.47	0.002946	3.19	106.36	87.89	0.38
1	1747	10-yr	360.20	46.96	51.90		52.04	0.002772	3.47	209.47	297.45	0.38
1	1747	25-yr	450.10	46.96	52.29		52.39	0.002009	3.18	357.90	478.44	0.33
1	1747	50-yr	522.80	46.96	52.45		52.56	0.002023	3.31	450.96	662.42	0.34
1	1747	100-yr	604.60	46.96	52.71		52.79	0.001517	3.03	641.17	766.32	0.30

G103-80-01 HEC-RAS OUTPUT (Existing Condition)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
G130-80-01	8800	50%	233	61	63.3	63.3	64.11	0.003006	7.25	32.16	20.02	1.01
G130-80-01	8800	10%	351	61	64.1	63.86	64.87	0.002025	7.01	50.08	24.26	0.86
G130-80-01	8800	2%	488	61	65.58		66.02	0.000984	5.32	91.67	32	0.55
G130-80-01	8800	1%	554	61	66.21		66.59	0.00097	4.91	112.78	35.27	0.48
G130-80-01	8800	0.20%	729	61	67.6		67.9	0.000854	4.37	166.79	42.52	0.39
G130-80-01	8500	50%	233	60	62.85		63.19	0.000902	4.69	49.7	23.93	0.57
G130-80-01	8500	10%	351	60	64.19		64.45	0.000481	4.08	86.11	30.04	0.42
G130-80-01	8500	2%	488	60	65.53		65.75	0.000519	3.75	130.27	36.13	0.35
G130-80-01	8500	1%	554	60	66.12		66.33	0.000511	3.63	152.55	38.86	0.32
G130-80-01	8500	0.20%	729	60	67.49		67.67	0.00048	3.47	209.8	45.13	0.28
G130-80-01	8200	50%	233	59	62.73		62.95	0.000508	3.83	60.84	25.66	0.44
G130-80-01	8200	10%	351	59	64.11		64.3	0.000401	3.47	101.21	32.55	0.35
G130-80-01	8200	2%	488	59	65.42		65.59	0.000442	3.3	148.04	39.05	0.3
G130-80-01	8200	1%	554	59	66.01		66.17	0.000433	3.22	172.07	42	0.28
G130-80-01	8200	0.20%	729	59	67.38		67.53	0.000405	3.11	234.14	48.8	0.25
G130-80-01	7900	50%	233	59	62.64		62.81	0.000359	3.31	70.44	28.71	0.37
G130-80-01	7900	10%	351	59	64.02		64.17	0.000384	3.05	115.12	35.78	0.3
G130-80-01	7900	2%	488	59	65.32		65.46	0.000388	2.94	165.77	42.38	0.26
G130-80-01	7900	1%	554	59	65.92		66.04	0.000373	2.89	191.88	45.41	0.25
G130-80-01	7900	0.20%	729	59	67.29		67.41	0.000343	2.81	259.05	52.41	0.22
G130-80-01	7600	50%	233	59	62.57		62.69	0.000319	2.85	81.62	32.64	0.32
G130-80-01	7600	10%	351	59	63.94		64.05	0.000332	2.67	131.27	39.7	0.26
G130-80-01	7600	2%	488	59	65.24		65.34	0.000317	2.61	186.99	46.36	0.23
G130-80-01	7600	1%	554	59	65.83		65.94	0.000302	2.57	215.63	49.43	0.22
G130-80-01	7600	0.20%	729	59	67.21		67.31	0.000275	2.52	288.74	56.53	0.2
G130-80-01	7500	50%	233	59	62.53	60.88	62.66	0.000351	2.96	78.84	31.74	0.33
G130-80-01	7500	10%	351	59	63.9	61.38	64.02	0.00037	2.75	127.45	39.07	0.27
G130-80-01	7500	2%	488	59	65.2	61.87	65.31	0.00035	2.67	182.69	46.01	0.24
G130-80-01	7500	1%	554	59	65.8	62.07	65.9	0.000331	2.62	211.28	49.21	0.22
G130-80-01	7500	0.20%	729	59	67.18	62.58	67.28	0.000297	2.56	284.52	56.61	0.2
G130-80-01	7480		Bridge									
G130-80-01	7450	50%	233	58	62.51		62.64	0.000248	2.86	81.45	30.09	0.31
G130-80-01	7450	10%	351	58	63.88		64	0.000322	2.75	127.61	37.47	0.26
G130-80-01	7450	2%	488	58	65.18		65.29	0.000332	2.7	180.71	44.47	0.24
G130-80-01	7450	1%	554	58	65.78		65.89	0.000322	2.66	208.38	47.71	0.22
G130-80-01	7450	0.20%	729	58	67.16		67.27	0.000298	2.61	279.63	55.19	0.2
G130-80-01	7300	50%	233	58	62.49		62.59	0.000233	2.62	88.77	31.56	0.28
G130-80-01	7300	10%	351	58	63.84		63.95	0.000288	2.57	136.33	38.67	0.24
G130-80-01	7300	2%	488	58	65.14		65.24	0.000296	2.56	190.74	45.46	0.22
G130-80-01	7300	1%	554	58	65.74		65.84	0.000287	2.53	219.03	48.62	0.21
G130-80-01	7300	0.20%	729	58	67.12		67.22	0.000268	2.5	291.52	55.9	0.19
G130-80-01	7000	50%	233	58	62.44		62.52	0.000234	2.26	103.2	35.5	0.23
G130-80-01	7000	10%	351	58	63.78		63.86	0.000253	2.25	155.79	42.93	0.21
G130-80-01	7000	2%	488	58	65.07		65.15	0.000249	2.26	215.87	50.09	0.19
G130-80-01	7000	1%	554	58	65.67		65.75	0.000239	2.24	247.11	53.43	0.18
G130-80-01	7000	0.20%	729	58	67.07		67.14	0.000221	2.23	329.16	97.64	0.17
G130-80-01	6700	50%	233	57	62.39		62.45	0.000163	2.08	112.13	34.61	0.2
G130-80-01	6700	10%	351	57	63.72		63.79	0.000201	2.16	162.66	41.48	0.19
G130-80-01	6700	2%	488	57	65		65.08	0.000213	2.21	220.37	48.15	0.18
G130-80-01	6700	1%	554	57	65.61		65.68	0.00021	2.21	250.42	51.27	0.18
G130-80-01	6700	0.20%	729	57	67		67.08	0.000203	2.23	326.92	58.49	0.17

G103-80-01 HEC-RAS OUTPUT (Existing Condition)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
G130-80-01	6600	50%	427	57	62.11	60.42	62.4	0.000655	4.32	98.79	32.73	0.44
G130-80-01	6600	10%	625	57	63.44	61.13	63.72	0.000777	4.24	147.33	39.81	0.39
G130-80-01	6600	2%	860	57	64.74	61.8	65.01	0.000798	4.23	203.16	46.65	0.36
G130-80-01	6600	1%	990	57	65.34	62.13	65.62	0.000804	4.27	232.09	49.82	0.35
G130-80-01	6600	0.20%	1346	57	66.71	62.94	67.01	0.000819	4.41	305.56	57.1	0.34
G130-80-01	6585		Bridge									
G130-80-01	6525	50%	427	57	62.01		62.27	0.000689	4.11	103.83	34.48	0.42
G130-80-01	6525	10%	625	57	63.36		63.61	0.000757	4.02	155.45	41.94	0.37
G130-80-01	6525	2%	860	57	64.66		64.91	0.000753	4	214.74	49.13	0.34
G130-80-01	6525	1%	990	57	65.27		65.52	0.000752	4.03	245.36	52.46	0.33
G130-80-01	6525	0.20%	1346	57	66.65		66.92	0.000757	4.17	322.96	60.08	0.32
G130-80-01	6400	50%	427	57	61.95		62.21	0.000373	4.02	106.34	32.91	0.39
G130-80-01	6400	10%	625	57	63.31		63.56	0.000288	4.03	155.01	39.16	0.36
G130-80-01	6400	2%	860	57	64.6		64.86	0.000243	4.1	209.53	45.14	0.34
G130-80-01	6400	1%	990	57	65.2		65.47	0.00023	4.17	237.38	47.91	0.33
G130-80-01	6400	0.20%	1346	57	66.56		66.86	0.000213	4.38	307.1	54.22	0.32
G130-80-01	6100	50%	427	57	61.85		62.05	0.000575	3.59	118.8	36.95	0.35
G130-80-01	6100	10%	625	57	63.22		63.42	0.000598	3.59	174.22	43.98	0.32
G130-80-01	6100	2%	860	57	64.53		64.74	0.000598	3.64	236.12	50.69	0.3
G130-80-01	6100	1%	990	57	65.13		65.35	0.000602	3.7	267.63	53.79	0.29
G130-80-01	6100	0.20%	1346	57	66.51		66.74	0.00062	3.88	349.95	78.2	0.29
G130-80-01	5800	50%	427	57	61.61	59.86	61.86	0.000686	4.02	106.16	35.07	0.41
G130-80-01	5800	10%	625	57	62.98	60.51	63.22	0.000718	3.92	159.31	42.31	0.36
G130-80-01	5800	2%	860	57	64.3	61.16	64.54	0.000706	3.92	219.62	49.25	0.33
G130-80-01	5800	1%	990	57	64.9	61.48	65.15	0.000705	3.95	250.35	52.43	0.32
G130-80-01	5800	0.20%	1346	57	66.28	62.24	66.54	0.000718	4.11	327.16	59.65	0.31
G130-80-01	5500	50%	427	56.5	61.43	59.48	61.66	0.000588	3.87	110.31	34.79	0.38
G130-80-01	5500	10%	625	56.5	62.78	60.15	63.01	0.000653	3.86	161.95	41.66	0.35
G130-80-01	5500	2%	860	56.5	64.1	60.82	64.33	0.000663	3.89	221.09	48.34	0.32
G130-80-01	5500	1%	990	56.5	64.7	61.15	64.94	0.00067	3.94	251.13	51.4	0.31
G130-80-01	5500	0.20%	1346	56.5	66.06	61.93	66.33	0.000697	4.13	325.81	58.32	0.31
G130-80-01	5200	50%	427	56	61.28	59.14	61.48	0.00058	3.56	120.08	37.48	0.35
G130-80-01	5200	10%	625	56	62.62	59.8	62.81	0.00062	3.57	175	44.92	0.32
G130-80-01	5200	2%	860	56	63.93	60.46	64.13	0.000613	3.6	238.88	52.27	0.3
G130-80-01	5200	1%	990	56	64.53	60.78	64.74	0.000615	3.65	271.34	55.63	0.29
G130-80-01	5200	0.20%	1346	56	65.89	61.54	66.12	0.000632	3.82	351.96	63.21	0.29
G130-80-01	4900	50%	427	56	61.12	58.93	61.3	0.000562	3.47	122.97	38	0.34
G130-80-01	4900	10%	625	56	62.44	59.59	62.63	0.000597	3.51	177.86	45.18	0.31
G130-80-01	4900	2%	860	56	63.75	60.23	63.95	0.00059	3.55	242.01	52.34	0.29
G130-80-01	4900	1%	990	56	64.35	60.54	64.56	0.000593	3.61	274.43	55.6	0.29
G130-80-01	4900	0.20%	1346	56	65.7	61.3	65.93	0.000614	3.8	354.47	62.95	0.28
G130-80-01	4800	50%	427	56	61.11	58.65	61.26	0.000201	3.06	139.41	41.54	0.29
G130-80-01	4800	10%	625	56	62.44	59.28	62.59	0.000164	3.14	199.17	48.92	0.27
G130-80-01	4800	2%	860	56	63.75	59.89	63.91	0.000139	3.2	268.45	56.27	0.26
G130-80-01	4800	1%	990	56	64.35	60.2	64.52	0.000132	3.26	303.3	59.63	0.26
G130-80-01	4800	0.20%	1346	56	65.71	60.93	65.89	0.000125	3.46	389.01	67.18	0.25
G130-80-01	4775		Bridge									
G130-80-01	4750	50%	427	56	61.07	58.87	61.24	0.000596	3.32	128.67	40.67	0.33
G130-80-01	4750	10%	625	56	62.4	59.51	62.57	0.000594	3.32	188.18	48.66	0.3
G130-80-01	4750	2%	860	56	63.73	60.13	63.9	0.000565	3.33	257.97	56.61	0.28
G130-80-01	4750	1%	990	56	64.33	60.43	64.51	0.000561	3.38	293.25	60.23	0.27

G103-80-01 HEC-RAS OUTPUT (Existing Condition)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
G130-80-01	4750	0.20%	1346	56	65.69	61.16	65.88	0.000567	3.54	380.45	68.36	0.26
G130-80-01	4600	50%	427	56	60.95	58.83	61.14	0.000591	3.52	121.22	38.06	0.35
G130-80-01	4600	10%	625	56	62.28	59.49	62.47	0.000616	3.54	176.63	45.35	0.32
G130-80-01	4600	2%	860	56	63.61	60.13	63.81	0.0006	3.56	241.7	52.63	0.29
G130-80-01	4600	1%	990	56	64.21	60.43	64.41	0.0006	3.61	274.43	55.94	0.29
G130-80-01	4600	0.20%	1346	56	65.56	61.19	65.78	0.000618	3.79	354.91	63.34	0.28
G130-80-01	4300	50%	427	55	60.88	57.78	60.99	0.000335	2.7	158.33	41.95	0.24
G130-80-01	4300	10%	625	55	62.18	58.43	62.31	0.000374	2.87	217.6	48.65	0.24
G130-80-01	4300	2%	860	55	63.5	59.07	63.64	0.000389	3	286.28	55.42	0.23
G130-80-01	4300	1%	990	55	64.1	59.38	64.25	0.0004	3.09	320.38	58.48	0.23
G130-80-01	4300	0.20%	1346	55	65.44	60.15	65.61	0.000436	3.34	403.22	65.34	0.24
G130-80-01	4000	50%	427	55	60.78	57.67	60.89	0.000332	2.61	163.75	43.57	0.24
G130-80-01	4000	10%	625	55	62.08	58.3	62.2	0.000365	2.78	224.73	50.39	0.23
G130-80-01	4000	2%	860	55	63.4	58.92	63.53	0.000375	2.91	295.65	57.31	0.23
G130-80-01	4000	1%	990	55	63.99	59.23	64.13	0.000385	2.99	330.73	60.45	0.23
G130-80-01	4000	0.20%	1346	55	65.32	59.98	65.48	0.000418	3.24	415.67	67.43	0.23
G130-80-01	3850	50%	721	55	60.33	58.63	60.75	0.001177	5.26	137.17	38.45	0.49
G130-80-01	3850	10%	1089	55	61.51	59.53	62.04	0.001478	5.86	185.81	43.92	0.5
G130-80-01	3850	2%	1505	55	62.77	60.39	63.36	0.001683	6.11	246.22	51.81	0.49
G130-80-01	3850	1%	1727	55	63.35	60.77	63.95	0.001762	6.23	277.1	55.66	0.49
G130-80-01	3850	0.20%	2367	55	64.57	61.81	65.28	0.002037	6.76	350.06	63.84	0.51
G130-80-01	3800		Bridge									
G130-80-01	3750	50%	721	55	60.2		60.6	0.001327	5.07	142.1	41.69	0.48
G130-80-01	3750	10%	1089	55	61.34		61.84	0.001613	5.64	193.16	48.02	0.5
G130-80-01	3750	2%	1505	55	62.6		63.13	0.001634	5.83	258.1	55.02	0.47
G130-80-01	3750	1%	1727	55	63.17		63.72	0.00165	5.95	290.38	58.19	0.47
G130-80-01	3750	0.20%	2367	55	64.36		65.02	0.001851	6.52	363.14	64.76	0.49
G130-80-01	3700	50%	721	55	60.19		60.54	0.000471	4.75	151.65	44.39	0.45
G130-80-01	3700	10%	1089	55	61.33		61.77	0.000467	5.28	206.13	51.06	0.46
G130-80-01	3700	2%	1505	55	62.6		63.06	0.000408	5.46	275.44	58.46	0.44
G130-80-01	3700	1%	1727	55	63.17		63.65	0.000391	5.57	309.86	61.8	0.44
G130-80-01	3700	0.20%	2367	55	64.36		64.94	0.000402	6.11	387.49	68.75	0.45
G130-80-01	3400	50%	721	55	60.08	58.15	60.29	0.001151	3.67	196.47	61.81	0.36
G130-80-01	3400	10%	1089	55	61.26	58.82	61.5	0.001097	3.98	273.59	68.92	0.35
G130-80-01	3400	2%	1505	55	62.56	59.45	62.82	0.00096	4.09	368.42	76.55	0.33
G130-80-01	3400	1%	1727	55	63.15	59.75	63.42	0.000931	4.17	414.17	79.98	0.32
G130-80-01	3400	0.20%	2367	55	64.36	60.52	64.68	0.000992	4.59	515.16	87.06	0.33
G130-80-01	3100	50%	721	54	59.56	58	59.84	0.001954	4.22	170.95	55.65	0.42
G130-80-01	3100	10%	1089	54	60.78	58.66	61.09	0.001722	4.49	242.69	62.57	0.4
G130-80-01	3100	2%	1505	54	62.16	59.3	62.47	0.001393	4.5	334.41	70.42	0.36
G130-80-01	3100	1%	1727	54	62.76	59.6	63.08	0.001329	4.57	377.53	73.83	0.36
G130-80-01	3100	0.20%	2367	54	63.93	60.39	64.32	0.001413	5.06	467.95	80.5	0.37
G130-80-01	2975	50%	721	54	58.95	58.17	59.52	0.002864	6.05	119.22	47.29	0.67
G130-80-01	2975	10%	1089	54	60.32	58.98	60.83	0.002288	5.69	191.55	57.94	0.55
G130-80-01	2975	2%	1505	54	61.85	59.66	62.27	0.001675	5.21	288.88	69.6	0.45
G130-80-01	2975	1%	1727	54	62.48	59.99	62.89	0.001559	5.17	334.05	74.4	0.43
G130-80-01	2975	0.20%	2367	54	63.65	60.81	64.13	0.001624	5.55	426.54	83.36	0.43
G130-80-01	2925	50%	721	54	59.01	57.46	59.33	0.001855	4.57	157.66	55.02	0.48
G130-80-01	2925	10%	1089	54	60.35	58.28	60.68	0.001508	4.58	238.02	64.13	0.42
G130-80-01	2925	2%	1505	54	61.87	59	62.17	0.001155	4.39	342.6	74.33	0.36
G130-80-01	2925	1%	1727	54	62.49	59.3	62.79	0.001096	4.42	390.28	78.54	0.35

G103-80-01 HEC-RAS OUTPUT (Existing Condition)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
G130-80-01	2925	0.20%	2367	54	63.66	60.09	64.03	0.00118	4.86	486.68	86.43	0.36
G130-80-01	2800	50%	721	54	58.77	57.27	59.1	0.001812	4.6	156.64	53.85	0.48
G130-80-01	2800	10%	1089	54	60.17	58.05	60.5	0.001435	4.58	237.95	62.43	0.41
G130-80-01	2800	2%	1505	54	61.72	58.75	62.02	0.001094	4.4	342.36	71.96	0.36
G130-80-01	2800	1%	1727	54	62.35	59.08	62.66	0.001045	4.44	388.8	75.81	0.35
G130-80-01	2800	0.20%	2367	54	63.5	59.87	63.88	0.001153	4.93	479.82	82.85	0.36
G130-80-01	2500	50%	721	53	58.31	57.3	58.75	0.000786	5.3	136.09	49.93	0.57
G130-80-01	2500	10%	1089	53	59.9	58	60.27	0.000439	4.87	223.7	60.03	0.44
G130-80-01	2500	2%	1505	53	61.55	58.67	61.87	0.000281	4.54	331.28	70.48	0.37
G130-80-01	2500	1%	1727	53	62.19	58.98	62.52	0.000257	4.57	377.81	74.55	0.36
G130-80-01	2500	0.20%	2367	53	63.33	59.8	63.73	0.000271	5.08	466.35	81.73	0.37
G130-80-01	2150	50%	721	53	57.91	56.66	58.32	0.002014	5.18	139.14	47.79	0.54
G130-80-01	2150	10%	1089	53	59.68	57.45	60.01	0.001415	4.63	235.35	60.99	0.42
G130-80-01	2150	2%	1505	53	61.41	58.16	61.69	0.001044	4.27	352.21	73.92	0.35
G130-80-01	2150	1%	1727	53	62.06	58.51	62.35	0.000999	4.29	402.2	78.8	0.34
G130-80-01	2150	0.20%	2367	53	63.19	59.37	63.54	0.001128	4.78	495.7	87.21	0.35
G130-80-01	2130	50%	721	53	56.43	56.43	58.15	0.003219	10.5	68.64	20	1
G130-80-01	2130	10%	1089	53	57.52	57.52	59.78	0.003257	12.05	90.37	20	1
G130-80-01	2130	2%	1505	53	58.61	58.61	61.41	0.003337	13.42	112.12	20	1
G130-80-01	2130	1%	1727	53	60.05	60.05	62.13	0.008238	11.55	149.49	36.01	1
G130-80-01	2130	0.20%	2367	53	61.47	61.47	63.34	0.010928	10.98	215.58	57.49	1
G130-80-01	2060	50%	721	43	46.42	46.42	48.15	0.003256	10.54	68.38	20	1.01
G130-80-01	2060	10%	1089	43	47.5	47.5	49.78	0.003288	12.09	90.07	20	1
G130-80-01	2060	2%	1505	43	48.6	48.6	51.41	0.003344	13.43	112.04	20	1
G130-80-01	2060	1%	1727	43	49.14	49.14	52.21	0.003395	14.07	122.79	20	1
G130-80-01	2060	0.20%	2367	43	50.57	50.57	54.37	0.003553	15.63	151.4	20	1
G130-80-01	1900	50%	721	43	46.29		46.61	0.001296	4.56	158.02	55.21	0.48
G130-80-01	1900	10%	1089	43	47.03		47.49	0.0016	5.44	200.31	58.43	0.52
G130-80-01	1900	2%	1505	43	47.76		48.35	0.001842	6.16	244.14	61.59	0.55
G130-80-01	1900	1%	1727	43	48.09		48.75	0.001972	6.52	264.83	63.02	0.56
G130-80-01	1900	0.20%	2367	43	48.94		49.79	0.002296	7.4	319.86	66.69	0.6
G130-80-01	1600	50%	721	43	46.1		46.37	0.000489	4.17	173.1	64.77	0.45
G130-80-01	1600	10%	1089	43	46.83		47.21	0.000529	4.9	222.34	68.99	0.48
G130-80-01	1600	2%	1505	43	47.57		48.04	0.000541	5.47	275	73.23	0.5
G130-80-01	1600	1%	1727	43	47.91		48.43	0.000553	5.76	299.9	75.16	0.51
G130-80-01	1600	0.20%	2367	43	48.78		49.43	0.000564	6.43	376.81	106.47	0.53
G130-80-01	1300	50%	963	43	45.08	45.08	45.98	0.002771	7.58	127.02	72.01	1.01
G130-80-01	1300	10%	1455	43	45.68	45.68	46.8	0.002571	8.48	171.52	77.59	1.01
G130-80-01	1300	2%	2041	43	46.28	46.28	47.62	0.002425	9.27	220.07	83.26	1.01
G130-80-01	1300	1%	2344	43	46.57	46.57	48	0.00236	9.6	244.19	85.93	1
G130-80-01	1300	0.20%	3230	43	47.3	47.3	48.99	0.002175	10.45	311.36	105.69	0.99

G103-80-03-1B HEC-RAS OUTPUT (Existing Condition)

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)	
G10380031B_0001	13362.86	Max WS	U_100yr ExCond	1217.4	62.8	72.25		72.38	0.000627	2.96	574.48	312.73	0.2
G10380031B_0001	13362.86	Max WS	U_500yr ExCond	1792.82	62.8	73.58		73.71	0.000566	3.16	1332.66	1011.4	0.2
G10380031B_0001	13362.86	Max WS	U_050yr ExCond	1012.42	62.8	71.66		71.78	0.000628	2.81	428.3	196.5	0.2
G10380031B_0001	13362.86	Max WS	U_010yr ExCond	630.12	62.8	70.24		70.32	0.000568	2.31	274.06	62.74	0.19
G10380031B_0001	13362.86	Max WS	U_002yr ExCond	363.25	62.8	68.32		68.39	0.000843	2.16	167.81	52.5	0.21
G10380031B_0001	11888.72	Max WS	U_100yr ExCond	1216.66	59.15	71.72		71.75	0.00014	1.52	2217.01	1560.78	0.1
G10380031B_0001	11888.72	Max WS	U_500yr ExCond	1785.26	59.15	73.14		73.15	0.000083	1.29	5135.24	2447.44	0.08
G10380031B_0001	11888.72	Max WS	U_050yr ExCond	1008.77	59.15	71.12		71.16	0.000157	1.56	1392.72	1115.7	0.11
G10380031B_0001	11888.72	Max WS	U_010yr ExCond	606.24	59.15	69.76		69.79	0.000138	1.34	510.64	317.5	0.1
G10380031B_0001	11888.72	Max WS	U_002yr ExCond	331.32	59.15	67.65		67.67	0.000135	1.13	292.88	66.75	0.1
G10380031B_0001	10791.52	Max WS	U_100yr ExCond	1539.39	57.23	71.51		71.56	0.000228	2	1929.06	1523.35	0.13
G10380031B_0001	10791.52	Max WS	U_500yr ExCond	2137.62	57.23	73.03		73.05	0.000111	1.55	4919.11	2278.45	0.09
G10380031B_0001	10791.52	Max WS	U_050yr ExCond	1313.24	57.23	70.86		70.93	0.000267	2.09	1122.71	920.88	0.14
G10380031B_0001	10791.52	Max WS	U_010yr ExCond	833.1	57.23	69.53		69.57	0.000217	1.76	474.28	77.9	0.13
G10380031B_0001	10791.52	Max WS	U_002yr ExCond	476.09	57.23	67.43		67.47	0.000197	1.47	324.64	65.01	0.12
G10380031B_0001	10749.18	Max WS	U_100yr ExCond	1552.29	57.23	71.5		71.55	0.000218	1.96	2119.97	1618.79	0.13
G10380031B_0001	10749.18	Max WS	U_500yr ExCond	2151.28	57.23	73.02		73.04	0.000105	1.51	5134.02	2254.68	0.09
G10380031B_0001	10749.18	Max WS	U_050yr ExCond	1325.58	57.23	70.85		70.91	0.000268	2.1	1227.98	1174.93	0.14
G10380031B_0001	10749.18	Max WS	U_010yr ExCond	840.49	57.23	69.41		69.57	0.000365	3.16	265.71	77.2	0.17
G10380031B_0001	10749.18	Max WS	U_002yr ExCond	481.88	57.23	67.38		67.46	0.000251	2.26	212.79	64.67	0.14
G10380031B_0001	10714.8			Culvert									
G10380031B_0001	10680.41	Max WS	U_100yr ExCond	1552.16	57.23	71.49		71.54	0.000231	2.02	1751.86	1000	0.13
G10380031B_0001	10680.41	Max WS	U_500yr ExCond	2151.3	57.23	73.01		73.03	0.000125	1.64	4610.51	2424.93	0.1
G10380031B_0001	10680.41	Max WS	U_050yr ExCond	1325.58	57.23	70.84		70.9	0.00026	2.06	1189.5	767.53	0.14
G10380031B_0001	10680.41	Max WS	U_010yr ExCond	827.77	57.23	69.17		69.22	0.000252	1.85	446.73	75.7	0.13
G10380031B_0001	10680.41	Max WS	U_002yr ExCond	479.31	57.23	67.3		67.37	0.000248	2.22	216.12	64.13	0.14
G10380031B_0001	10637.79	Max WS	U_100yr ExCond	1565	57.23	71.47		71.53	0.000276	2.2	1433.78	995.56	0.15
G10380031B_0001	10637.79	Max WS	U_500yr ExCond	2165.09	57.23	73		73.03	0.000148	1.79	4151.16	2284.84	0.11
G10380031B_0001	10637.79	Max WS	U_050yr ExCond	1337.53	57.23	70.82		70.89	0.000305	2.23	874.34	732.1	0.15
G10380031B_0001	10637.79	Max WS	U_010yr ExCond	837.85	57.23	69.15		69.21	0.000259	1.88	445.67	75.61	0.14
G10380031B_0001	10637.79	Max WS	U_002yr ExCond	486.75	57.23	67.32		67.36	0.000219	1.53	317.57	64.32	0.12
G10380031B_0001	10059.36	Max WS	U_100yr ExCond	1558.37	58.19	71.27		71.36	0.000325	2.38	763.03	366.72	0.16
G10380031B_0001	10059.36	Max WS	U_500yr ExCond	2164.68	58.19	72.86		72.93	0.000263	2.31	2049.98	1274.94	0.15
G10380031B_0001	10059.36	Max WS	U_050yr ExCond	1329.42	58.19	70.63		70.71	0.000311	2.25	618.39	146.3	0.15
G10380031B_0001	10059.36	Max WS	U_010yr ExCond	826.44	58.19	69.01		69.06	0.000248	1.83	452	78.72	0.13
G10380031B_0001	10059.36	Max WS	U_002yr ExCond	483.17	58.19	67.2		67.23	0.000218	1.51	319.57	67.37	0.12
G10380031B_0001	9411.308	Max WS	U_100yr ExCond	1544.72	58.36	71.07		71.15	0.000304	2.36	655.02	90.06	0.15
G10380031B_0001	9411.308	Max WS	U_500yr ExCond	2161.96	58.36	72.64		72.75	0.000336	2.65	1587.29	1403.21	0.16
G10380031B_0001	9411.308	Max WS	U_050yr ExCond	1315.73	58.36	70.44		70.52	0.000278	2.19	600.01	86.12	0.15
G10380031B_0001	9411.308	Max WS	U_010yr ExCond	807.69	58.36	68.87		68.91	0.000199	1.71	471.88	76.37	0.12
G10380031B_0001	9411.308	Max WS	U_002yr ExCond	479.02	58.36	67.08		67.11	0.000161	1.39	345.07	65.43	0.11
G10380031B_0001	9352.978	Max WS	U_100yr ExCond	1592.21	58.36	71.04	63.59	71.13	0.000308	2.46	648.13	89.86	0.16
G10380031B_0001	9352.978	Max WS	U_500yr ExCond	2205.03	58.36	72.62	64.5	72.73	0.000352	2.71	1583.7	1404.65	0.17
G10380031B_0001	9352.978	Max WS	U_050yr ExCond	1362.93	58.36	70.42	63.22	70.5	0.000289	2.29	595.97	85.94	0.15
G10380031B_0001	9352.978	Max WS	U_010yr ExCond	856.65	58.36	68.84	62.22	68.89	0.000226	1.82	470.07	76.22	0.13
G10380031B_0001	9352.978	Max WS	U_002yr ExCond	505.51	58.36	67.06	61.36	67.09	0.000181	1.47	343.96	65.32	0.11
G10380031B_0001	9303.294			Bridge									
G10380031B_0001	9279.374	Max WS	U_100yr ExCond	1589	58.84	70.97		71.07	0.000397	2.57	618.3	147.63	0.17
G10380031B_0001	9279.374	Max WS	U_500yr ExCond	2203.24	58.84	72.5		72.6	0.000351	2.57	1867.83	1762.33	0.17
G10380031B_0001	9279.374	Max WS	U_050yr ExCond	1360.02	58.84	70.35		70.44	0.000375	2.42	562.71	88.17	0.17
G10380031B_0001	9279.374	Max WS	U_010yr ExCond	852.71	58.84	68.79		68.85	0.000299	1.97	433.12	78.02	0.15
G10380031B_0001	9279.374	Max WS	U_002yr ExCond	504.91	58.84	67.01		67.05	0.000275	1.66	304.47	66.75	0.14
G10380031B_0001	9253.604	Max WS	U_100yr ExCond	1610.19	58.84	70.95	64.57	71.05	0.00041	2.61	616.79	137.6	0.18
G10380031B_0001	9253.604	Max WS	U_500yr ExCond	2222.91	58.84	72.49	65.41	72.59	0.00036	2.6	1848.23	1750.06	0.17
G10380031B_0001	9253.604	Max WS	U_050yr ExCond	1381.29	58.84	70.33	64.22	70.43	0.000389	2.46	561.3	88.07	0.17
G10380031B_0001	9253.604	Max WS	U_010yr ExCond	874.04	58.84	68.77	63.27	68.84	0.000316	2.02	432	77.92	0.15
G10380031B_0001	9253.604	Max WS	U_002yr ExCond	516.73	58.84	67	62.32	67.04	0.00029	1.7	303.7	66.68	0.14
G10380031B_0001	9240.554			Bridge									

Reach	River Sta	Profile	Plan	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
G10380031B_0001	9227.494	Max WS	U_100yr ExCond	1609.77	58.84	70.93		71.04	0.000412	2.62	615.41	126.4	0.18
G10380031B_0001	9227.494	Max WS	U_500yr ExCond	2221.13	58.84	72.4		72.54	0.000457	2.93	757.66	1589.8	0.19
G10380031B_0001	9227.494	Max WS	U_050yr ExCond	1381.2	58.84	70.32		70.41	0.000392	2.47	560.04	87.98	0.17
G10380031B_0001	9227.494	Max WS	U_010yr ExCond	873.79	58.84	68.76		68.83	0.000318	2.03	430.94	77.83	0.15
G10380031B_0001	9227.494	Max WS	U_002yr ExCond	516.65	58.84	66.99		67.03	0.000292	1.71	302.8	66.6	0.14
G10380031B_0001	9127.317	Max WS	U_100yr ExCond	1607.2	58.84	70.89		71	0.000414	2.62	653.84	177.38	0.18
G10380031B_0001	9127.317	Max WS	U_500yr ExCond	2220.44	58.84	72.37		72.49	0.00042	2.81	1277.22	1260.94	0.18
G10380031B_0001	9127.317	Max WS	U_050yr ExCond	1378.35	58.84	70.28		70.37	0.000397	2.48	561.13	120.13	0.17
G10380031B_0001	9127.317	Max WS	U_010yr ExCond	872.02	58.84	68.73		68.79	0.000322	2.04	428.38	77.62	0.15
G10380031B_0001	9127.317	Max WS	U_002yr ExCond	516.1	58.84	66.96		67	0.000297	1.72	300.79	66.41	0.14
G10380031B_0001	8129.988	Max WS	U_100yr ExCond	1575.07	57.7	70.46		70.57	0.000437	2.65	593.64	88.12	0.18
G10380031B_0001	8129.988	Max WS	U_500yr ExCond	2188.81	57.7	71.9		72.04	0.000476	3	796	282.09	0.19
G10380031B_0001	8129.988	Max WS	U_050yr ExCond	1330.29	57.7	69.87		69.96	0.000399	2.45	542.93	84.95	0.17
G10380031B_0001	8129.988	Max WS	U_010yr ExCond	856.21	57.7	68.4		68.46	0.00033	2.02	423.92	76.72	0.15
G10380031B_0001	8129.988	Max WS	U_002yr ExCond	510.68	57.7	66.65		66.69	0.000315	1.71	298.32	66.73	0.14
G10380031B_0001	7015.351	Max WS	U_100yr ExCond	1670.88	59.31	69.59		69.78	0.000857	3.44	485.94	83.14	0.25
G10380031B_0001	7015.351	Max WS	U_500yr ExCond	2301.19	59.31	71.05		71.27	0.000838	3.76	612.07	89.59	0.25
G10380031B_0001	7015.351	Max WS	U_050yr ExCond	1483.35	59.31	69.02		69.2	0.000907	3.38	439.03	80.61	0.26
G10380031B_0001	7015.351	Max WS	U_010yr ExCond	1002.8	59.31	67.53		67.68	0.001009	3.09	324.15	74.04	0.26
G10380031B_0001	7015.351	Max WS	U_002yr ExCond	591.85	59.31	65.69		65.82	0.001197	2.95	200.85	56.13	0.27
G10380031B_0001	6967.086	Max WS	U_100yr ExCond	1680.12	59.31	69.54	64.94	69.73	0.000882	3.49	481.77	82.92	0.25
G10380031B_0001	6967.086	Max WS	U_500yr ExCond	2303.57	59.31	71	65.89	71.23	0.000788	3.83	602.23	89.37	0.25
G10380031B_0001	6967.086	Max WS	U_050yr ExCond	1489.94	59.31	68.97	64.63	69.15	0.000941	3.43	434.79	80.37	0.26
G10380031B_0001	6967.086	Max WS	U_010yr ExCond	1009.69	59.31	67.47	63.71	67.63	0.001064	3.16	319.82	73.78	0.27
G10380031B_0001	6967.086	Max WS	U_002yr ExCond	595.67	59.31	65.62	62.68	65.76	0.001267	3.02	197.01	55.26	0.28
G10380031B_0001	6937.364			Bridge									
G10380031B_0001	6907.639	Max WS	U_100yr ExCond	1659.83	59.31	69.35		69.55	0.000955	3.56	465.95	82.07	0.26
G10380031B_0001	6907.639	Max WS	U_500yr ExCond	2257.33	59.31	70.53		70.78	0.000947	4.01	563.37	87.28	0.27
G10380031B_0001	6907.639	Max WS	U_050yr ExCond	1489.59	59.31	68.84		69.03	0.001005	3.51	424.98	79.83	0.27
G10380031B_0001	6907.639	Max WS	U_010yr ExCond	1008.8	59.31	67.34		67.51	0.001162	3.25	310.31	73.21	0.28
G10380031B_0001	6907.639	Max WS	U_002yr ExCond	594.73	59.31	65.48		65.63	0.001379	3.14	189.44	53.5	0.29
G10380031B_0001	6856.784	Max WS	U_100yr ExCond	1663.29	59.31	69.29		69.49	0.000989	3.61	461.12	81.81	0.27
G10380031B_0001	6856.784	Max WS	U_500yr ExCond	2268.17	59.31	70.47		70.73	0.001045	4.04	560.82	87.03	0.28
G10380031B_0001	6856.784	Max WS	U_050yr ExCond	1498.78	59.31	68.78		68.98	0.001053	3.57	420.04	79.56	0.27
G10380031B_0001	6856.784	Max WS	U_010yr ExCond	1015.83	59.31	67.27		67.45	0.001239	3.33	305.06	72.89	0.29
G10380031B_0001	6856.784	Max WS	U_002yr ExCond	598.51	59.31	65.39		65.56	0.001478	3.24	184.94	52.55	0.3
G10380031B_0001	6101.619	Max WS	U_100yr ExCond	1621.57	55.32	68.73		68.88	0.00061	3.07	527.79	79.4	0.21
G10380031B_0001	6101.619	Max WS	U_500yr ExCond	2087.64	55.32	69.88		70.05	0.000643	3.34	690.55	256.51	0.22
G10380031B_0001	6101.619	Max WS	U_050yr ExCond	1461.99	55.32	68.2		68.34	0.000619	3.01	486.09	76.26	0.21
G10380031B_0001	6101.619	Max WS	U_010yr ExCond	1009.87	55.32	66.64		66.75	0.000599	2.7	373.99	67.09	0.2
G10380031B_0001	6101.619	Max WS	U_002yr ExCond	591.34	55.32	64.69		64.78	0.000582	2.32	254.67	55.69	0.19
G10380031B_0001	5102.891	Max WS	U_100yr ExCond	2333.23	53.81	67.19		67.58	0.001708	5.05	535.4	182.95	0.35
G10380031B_0001	5102.891	Max WS	U_500yr ExCond	3019.5	53.81	68.42		68.82	0.001645	5.2	890.07	464.54	0.34
G10380031B_0001	5102.891	Max WS	U_050yr ExCond	2071.78	53.81	66.64		67.02	0.001727	4.92	450.04	129.77	0.35
G10380031B_0001	5102.891	Max WS	U_010yr ExCond	1444.57	53.81	65.16		65.47	0.001692	4.44	325.54	59.08	0.33
G10380031B_0001	5102.891	Max WS	U_002yr ExCond	855.32	53.81	63.34		63.57	0.001633	3.79	225.91	50.45	0.32
G10380031B_0001	4379.795	Max WS	U_100yr ExCond	2326.13	54.57	65.88		66.28	0.001861	5.09	457.18	77.3	0.37
G10380031B_0001	4379.795	Max WS	U_500yr ExCond	3008.47	54.57	67.04		67.5	0.001975	5.42	602.82	343.77	0.38
G10380031B_0001	4379.795	Max WS	U_050yr ExCond	2067.7	54.57	65.34		65.72	0.001837	4.95	417.32	72.62	0.36
G10380031B_0001	4379.795	Max WS	U_010yr ExCond	1444.24	54.57	63.86		64.18	0.001866	4.56	316.53	63.07	0.36
G10380031B_0001	4379.795	Max WS	U_002yr ExCond	854.99	54.57	62.05		62.3	0.001865	4.01	213.02	51.44	0.35
G10380031B_0001	4326.764	Max WS	U_100yr ExCond	2324.82	54.57	65.76	61.84	66.18	0.001939	5.19	448.2	132.03	0.38
G10380031B_0001	4326.764	Max WS	U_500yr ExCond	3006.85	54.57	66.91	62.72	67.4	0.001929	5.58	539.12	491.91	0.38
G10380031B_0001	4326.764	Max WS	U_050yr ExCond	2066.77	54.57	65.23	61.45	65.62	0.001937	5.05	408.94	81.84	0.37
G10380031B_0001	4326.764	Max WS	U_010yr ExCond	1444.14	54.57	63.74	60.41	64.08	0.001986	4.67	309.15	62.31	0.37
G10380031B_0001	4326.764	Max WS	U_002yr ExCond	854.82	54.57	61.93	59.13	62.2	0.002011	4.13	207.02	50.69	0.36
G10380031B_0001	4297.624			Bridge									

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)	
G10380031B_0001	4268.481	Max WS	U_100yr ExCond	2318.63	54.57	65.42		65.89	0.002231	5.48	422.8	73.11	0.4
G10380031B_0001	4268.481	Max WS	U_500yr ExCond	2996.44	54.57	66.55		67.09	0.002261	5.87	510.69	314.19	0.41
G10380031B_0001	4268.481	Max WS	U_050yr ExCond	2064.21	54.57	64.89		65.33	0.00227	5.36	384.84	69.69	0.4
G10380031B_0001	4268.481	Max WS	U_010yr ExCond	1443.65	54.57	63.4		63.79	0.002385	5.01	288.41	60.13	0.4
G10380031B_0001	4268.481	Max WS	U_002yr ExCond	854.1	54.57	61.62		61.93	0.002463	4.46	191.59	48.69	0.4
G10380031B_0001	4211.277	Max WS	U_100yr ExCond	2315.57	54.57	65.26		65.75	0.002395	5.63	411.24	72.08	0.42
G10380031B_0001	4211.277	Max WS	U_500yr ExCond	2990.15	54.57	66.39		66.95	0.002519	6	498.19	82.64	0.43
G10380031B_0001	4211.277	Max WS	U_050yr ExCond	2063.17	54.57	64.72		65.2	0.002453	5.52	373.6	68.64	0.42
G10380031B_0001	4211.277	Max WS	U_010yr ExCond	1443.31	54.57	63.23		63.65	0.002625	5.19	278.12	59.02	0.42
G10380031B_0001	4211.277	Max WS	U_002yr ExCond	853.63	54.57	61.44		61.78	0.002779	4.67	182.94	47.53	0.42
G10380031B_0001	3502.953	Max WS	U_100yr ExCond	2486.59	50.51	63.76		64.18	0.00185	5.17	480.95	76.98	0.36
G10380031B_0001	3502.953	Max WS	U_500yr ExCond	3201.83	50.51	64.78		65.27	0.001988	5.65	636.03	267.44	0.38
G10380031B_0001	3502.953	Max WS	U_050yr ExCond	2204.14	50.51	63.23		63.62	0.00183	5	441.03	73.62	0.36
G10380031B_0001	3502.953	Max WS	U_010yr ExCond	1540.77	50.51	61.67		62	0.001878	4.62	333.73	63.71	0.36
G10380031B_0001	3502.953	Max WS	U_002yr ExCond	911.5	50.51	59.87		60.11	0.001816	3.99	228.7	52.86	0.34
G10380031B_0001	3454.339	Max WS	U_100yr ExCond	2498.89	50.51	63.65	59.54	64.08	0.001964	5.29	471.96	76.24	0.38
G10380031B_0001	3454.339	Max WS	U_500yr ExCond	3217.84	50.51	64.65	60.45	65.17	0.002136	5.81	591.58	207.3	0.4
G10380031B_0001	3454.339	Max WS	U_050yr ExCond	2214.12	50.51	63.12	59.11	63.53	0.001944	5.12	432.67	72.89	0.37
G10380031B_0001	3454.339	Max WS	U_010yr ExCond	1547.48	50.51	61.56	57.69	61.9	0.002009	4.74	326.41	62.97	0.37
G10380031B_0001	3454.339	Max WS	U_002yr ExCond	915.55	50.51	59.76	56.02	60.02	0.001961	4.11	222.96	52.17	0.35
G10380031B_0001	3440.99			Bridge									
G10380031B_0001	3427.639	Max WS	U_100yr ExCond	2498.71	50.51	63.58		64.02	0.002025	5.36	466.56	75.78	0.38
G10380031B_0001	3427.639	Max WS	U_500yr ExCond	3216.41	50.51	64.54		65.09	0.00224	5.92	544.17	91.8	0.41
G10380031B_0001	3427.639	Max WS	U_050yr ExCond	2214.04	50.51	63.05		63.47	0.002006	5.18	427.56	72.45	0.38
G10380031B_0001	3427.639	Max WS	U_010yr ExCond	1547.33	50.51	61.48		61.84	0.002086	4.81	321.77	62.51	0.37
G10380031B_0001	3427.639	Max WS	U_002yr ExCond	915.45	50.51	59.69		59.96	0.002038	4.17	219.41	51.56	0.36
G10380031B_0001	3385.195	Max WS	U_100yr ExCond	2509.04	50.51	63.46		63.93	0.002145	5.48	458.03	75.07	0.39
G10380031B_0001	3385.195	Max WS	U_500yr ExCond	3229.56	50.51	64.42		64.99	0.002378	6.06	540.12	149.65	0.42
G10380031B_0001	3385.195	Max WS	U_050yr ExCond	2222.2	50.51	62.94		63.37	0.002124	5.3	419.61	71.75	0.39
G10380031B_0001	3385.195	Max WS	U_010yr ExCond	1553.16	50.51	61.37		61.75	0.00223	4.94	314.71	61.79	0.39
G10380031B_0001	3385.195	Max WS	U_002yr ExCond	919.01	50.51	59.58		59.87	0.002182	4.3	213.88	50.58	0.37
G10380031B_0001	3287.034	Max WS	U_100yr ExCond	2533.1	51.17	63.14		63.68	0.00267	5.92	427.61	73.6	0.43
G10380031B_0001	3287.034	Max WS	U_500yr ExCond	3260.46	51.17	64.04		64.71	0.00297	6.56	498.91	92.27	0.46
G10380031B_0001	3287.034	Max WS	U_050yr ExCond	2242.02	51.17	62.62		63.13	0.002661	5.74	390.41	70.13	0.43
G10380031B_0001	3287.034	Max WS	U_010yr ExCond	1566.72	51.17	61.02		61.49	0.002925	5.46	287.03	59.44	0.44
G10380031B_0001	3287.034	Max WS	U_002yr ExCond	927.29	51.17	59.25		59.61	0.002913	4.83	192.15	47.3	0.42
G10380031B_0001	2911.472	Max WS	U_100yr ExCond	2630.52	53.28	62.35		62.92	0.00114	6.1	431.47	82.37	0.46
G10380031B_0001	2911.472	Max WS	U_500yr ExCond	3390.68	53.28	63.13		63.85	0.001323	6.84	509.02	136.53	0.5
G10380031B_0001	2911.472	Max WS	U_050yr ExCond	2319.16	53.28	61.84		62.38	0.001128	5.91	392.47	74.55	0.45
G10380031B_0001	2911.472	Max WS	U_010yr ExCond	1619.27	53.28	60.09		60.63	0.001432	5.92	273.56	62.03	0.5
G10380031B_0001	2911.472	Max WS	U_002yr ExCond	959.78	53.28	58.11		58.65	0.002068	5.88	163.18	49.4	0.57
G10380031B_0001	2854.677	Max WS	U_100yr ExCond	2644.98	53.28	62.27	59.4	62.87	0.00043	6.22	425.5	80.45	0.47
G10380031B_0001	2854.677	Max WS	U_500yr ExCond	3409.99	53.28	63.03	60.25	63.79	0.000502	7	501.63	152.42	0.51
G10380031B_0001	2854.677	Max WS	U_050yr ExCond	2330.73	53.28	61.77	59.01	62.33	0.000424	6.02	387.29	73.98	0.46
G10380031B_0001	2854.677	Max WS	U_010yr ExCond	1627.16	53.28	60	58.03	60.57	0.00055	6.07	268	61.45	0.51
G10380031B_0001	2854.677	Max WS	U_002yr ExCond	964.69	53.28	57.96	56.86	58.56	0.00085	6.18	156.12	48.48	0.61
G10380031B_0001	2840			Inl Struct									
G10380031B_0001	2808.66	Max WS	U_100yr ExCond	2639.27	44.51	58.36		58.51	0.000361	3.11	848.64	81.4	0.17
G10380031B_0001	2808.66	Max WS	U_500yr ExCond	3398.45	44.51	59.46		59.66	0.000448	3.62	939.17	83.85	0.19
G10380031B_0001	2808.66	Max WS	U_050yr ExCond	2320.13	44.51	57.79		57.92	0.000328	2.89	802.29	80.11	0.16
G10380031B_0001	2808.66	Max WS	U_010yr ExCond	1624.24	44.51	56.39		56.47	0.000247	2.35	692.46	76.97	0.14
G10380031B_0001	2808.66	Max WS	U_002yr ExCond	962.38	44.51	54.68		54.72	0.000158	1.71	564.08	73.13	0.11
G10380031B_0001	2724.167	Max WS	U_100yr ExCond	2661.62	44.51	58.32		58.48	0.000371	3.15	845.61	81.31	0.17
G10380031B_0001	2724.167	Max WS	U_500yr ExCond	3427.8	44.51	59.41		59.62	0.000461	3.67	935.18	83.75	0.19
G10380031B_0001	2724.167	Max WS	U_050yr ExCond	2338.74	44.51	57.75		57.89	0.000337	2.92	799.63	80.03	0.16
G10380031B_0001	2724.167	Max WS	U_010yr ExCond	1636.37	44.51	56.36		56.45	0.000252	2.37	690.6	76.92	0.14
G10380031B_0001	2724.167	Max WS	U_002yr ExCond	969.97	44.51	54.66		54.71	0.000161	1.72	562.97	73.1	0.11
G10380031B_0001	2306.809	Max WS	U_100yr ExCond	2773.68	42.32	57.69		58.07	0.00154	4.96	558.67	79.82	0.33

G103-80-03-1B HEC-RAS OUTPUT (Existing Condition)

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)	
G10380031B_0001	2306.809	Max WS	U_500yr ExCond	3580	42.32	58.64		59.14	0.00177	5.62	637.16	83.95	0.36
G10380031B_0001	2306.809	Max WS	U_050yr ExCond	2430.56	42.32	57.16		57.5	0.001472	4.7	517.21	77.54	0.32
G10380031B_0001	2306.809	Max WS	U_010yr ExCond	1696.98	42.32	55.88		56.13	0.001289	4.03	421.37	72.02	0.29
G10380031B_0001	2306.809	Max WS	U_002yr ExCond	1008.17	42.32	54.3		54.46	0.001065	3.22	312.87	64.57	0.26
G10380031B_0001	2257.737	Max WS	U_100yr ExCond	2787.29	42.32	57.59	53.03	57.99	0.001617	5.06	551.04	79.4	0.34
G10380031B_0001	2257.737	Max WS	U_500yr ExCond	3598.68	42.32	58.53	53.97	59.04	0.001867	5.73	627.54	83.45	0.37
G10380031B_0001	2257.737	Max WS	U_050yr ExCond	2442.05	42.32	57.07	52.34	57.42	0.001545	4.79	510.23	77.16	0.33
G10380031B_0001	2257.737	Max WS	U_010yr ExCond	1704.32	42.32	55.8	50.13	56.06	0.00135	4.1	415.91	71.69	0.3
G10380031B_0001	2257.737	Max WS	U_002yr ExCond	1012.8	42.32	54.23	48.37	54.4	0.001111	3.28	308.98	64.13	0.26
G10380031B_0001	2228.369			Bridge									
G10380031B_0001	2199.002	Max WS	U_100yr ExCond	2786.64	42.32	57.35		57.77	0.001788	5.24	531.83	78.35	0.35
G10380031B_0001	2199.002	Max WS	U_500yr ExCond	3596.49	42.32	58.2		58.76	0.00211	5.99	600.57	82.05	0.39
G10380031B_0001	2199.002	Max WS	U_050yr ExCond	2441.35	42.32	56.85		57.23	0.001697	4.95	493.58	76.22	0.34
G10380031B_0001	2199.002	Max WS	U_010yr ExCond	1704.08	42.32	55.64		55.91	0.001466	4.22	404.07	70.98	0.31
G10380031B_0001	2199.002	Max WS	U_002yr ExCond	1012.57	42.32	54.12		54.29	0.001186	3.36	301.42	63.27	0.27
G10380031B_0001	2155.758	Max WS	U_100yr ExCond	2798.26	42.32	57.25		57.69	0.00188	5.34	524.06	77.92	0.36
G10380031B_0001	2155.758	Max WS	U_500yr ExCond	3612.33	42.32	58.08		58.66	0.002234	6.12	590.48	81.52	0.4
G10380031B_0001	2155.758	Max WS	U_050yr ExCond	2451.16	42.32	56.76		57.15	0.001782	5.04	486.54	75.82	0.35
G10380031B_0001	2155.758	Max WS	U_010yr ExCond	1710.3	42.32	55.56		55.84	0.001536	4.29	398.63	70.65	0.32
G10380031B_0001	2155.758	Max WS	U_002yr ExCond	1016.54	42.32	54.06		54.24	0.001236	3.42	297.66	62.83	0.28
G10380031B_0001	902.652	Max WS	U_100yr ExCond	2953.89	41.37	53.36		53.93	0.004172	6.79	699.84	192.28	0.53
G10380031B_0001	902.652	Max WS	U_500yr ExCond	3831.51	41.37	54.43		55.01	0.003603	6.96	916.54	213.36	0.5
G10380031B_0001	902.652	Max WS	U_050yr ExCond	2582.86	41.37	52.82		53.38	0.004293	6.68	603.47	166.23	0.53
G10380031B_0001	902.652	Max WS	U_010yr ExCond	1792.4	41.37	51.53		52.06	0.004564	6.38	417.28	128.91	0.54
G10380031B_0001	902.652	Max WS	U_002yr ExCond	1067.31	41.37	49.97		50.48	0.004818	5.99	243.46	94.73	0.53
G10380031B_0001	83.251	Max WS	U_100yr ExCond	2953.29	38.85	51.82	46.84	52	0.000677	3.91	1393.62	247.43	0.23
G10380031B_0001	83.251	Max WS	U_500yr ExCond	3831.26	38.85	53.1	47.48	53.3	0.000677	4.29	1727.77	276.48	0.24
G10380031B_0001	83.251	Max WS	U_050yr ExCond	2582.52	38.85	51.24	46.46	51.4	0.000677	3.73	1251.58	237	0.23
G10380031B_0001	83.251	Max WS	U_010yr ExCond	1791.73	38.85	49.83	45.42	49.96	0.000677	3.28	935.3	213.62	0.22
G10380031B_0001	83.251	Max WS	U_002yr ExCond	1066.58	38.85	48.16	44	48.26	0.000677	2.8	606.36	179.04	0.22

G103-36-00 Existing HEC-RAS Output

HEC-RAS Plan: Existing

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
G103-36-00	3	113	50% (2-YR)	633.00	44.09	45.06	42.81	45.09	0.001000	2.27	710.50	763.31	0.41
G103-36-00	3	113	10% (10-YR)	1180.00	44.09	45.65	43.38	45.72	0.001002	3.10	1279.68	1139.48	0.44
G103-36-00	3	113	4% (25-YR)	1554.00	44.09	45.98	43.70	46.08	0.001000	3.53	1698.56	1327.66	0.46
G103-36-00	3	113	2% (50-YR)	1874.00	44.09	46.17	44.26	46.28	0.001002	3.77	1960.16	1384.82	0.47
G103-36-00	3	113	1% (100-YR)	2252.00	44.09	46.41	44.30	46.54	0.001001	4.06	2313.74	1580.62	0.47
G103-36-00	3	1050	50% (2-YR)	624.00	44.09	45.64		45.68	0.000429	2.01	904.63	1046.47	0.29
G103-36-00	3	1050	10% (10-YR)	1148.00	44.09	46.22		46.28	0.000403	2.43	1559.78	1206.40	0.30
G103-36-00	3	1050	4% (25-YR)	1518.00	44.09	46.56		46.62	0.000386	2.62	1970.97	1242.90	0.30
G103-36-00	3	1050	2% (50-YR)	1830.00	44.09	46.77		46.84	0.000401	2.83	2233.57	1254.53	0.31
G103-36-00	3	1050	1% (100-YR)	2198.00	44.09	47.02		47.10	0.000403	3.01	2554.55	1288.01	0.31
G103-36-00	3	1506	50% (2-YR)	608.00	44.09	45.84		46.06	0.001231	3.76	166.23	105.22	0.50
G103-36-00	3	1506	10% (10-YR)	1114.00	44.09	46.31		46.76	0.001840	5.40	221.13	129.94	0.64
G103-36-00	3	1506	4% (25-YR)	1460.00	44.09	46.54	46.08	47.16	0.002263	6.39	254.30	166.86	0.72
G103-36-00	3	1506	2% (50-YR)	1761.00	44.09	46.65	46.34	47.47	0.002802	7.33	274.29	177.89	0.81
G103-36-00	3	1506	1% (100-YR)	2116.00	44.09	46.76	46.69	47.84	0.003495	8.42	293.77	182.53	0.91
G103-36-00	3	2252	50% (2-YR)	599.00	44.09	46.14		46.15	0.000030	0.66	994.82	551.81	0.08
G103-36-00	3	2252	10% (10-YR)	1086.00	44.09	46.87		46.88	0.000035	0.86	1408.42	596.45	0.09
G103-36-00	3	2252	4% (25-YR)	1425.00	44.09	47.30		47.31	0.000037	0.98	1668.86	628.55	0.10
G103-36-00	3	2252	2% (50-YR)	1719.00	44.09	47.63		47.65	0.000038	1.06	1882.12	657.58	0.10
G103-36-00	3	2252	1% (100-YR)	2064.00	44.09	48.02		48.04	0.000038	1.14	2144.13	681.08	0.10
G103-36-00	3	2896	50% (2-YR)	589.00	44.09	46.16		46.16	0.000009	0.35	1698.99	870.34	0.04
G103-36-00	3	2896	10% (10-YR)	1055.00	44.09	46.89		46.89	0.000010	0.46	2365.80	971.82	0.05
G103-36-00	3	2896	4% (25-YR)	1387.00	44.09	47.32		47.32	0.000010	0.53	2795.05	1025.79	0.05
G103-36-00	3	2896	2% (50-YR)	1672.00	44.09	47.66		47.66	0.000011	0.57	3144.20	1058.99	0.05
G103-36-00	3	2896	1% (100-YR)	2007.00	44.09	48.05		48.05	0.000011	0.61	3571.25	1104.93	0.05
G103-36-00	3	3087	50% (2-YR)	589.00	44.09	46.99	46.99	47.96	0.004766	7.92	74.39	96.41	1.00
G103-36-00	3	3087	10% (10-YR)	1055.00	44.09	47.81	47.81	48.47	0.003179	7.16	266.75	296.12	0.84
G103-36-00	3	3087	4% (25-YR)	1387.00	44.09	48.19	48.19	48.85	0.002772	7.41	400.20	401.34	0.80
G103-36-00	3	3087	2% (50-YR)	1672.00	44.09	48.39	48.39	49.11	0.002848	7.90	490.36	486.02	0.83
G103-36-00	3	3087	1% (100-YR)	2007.00	44.09	48.64	48.64	49.38	0.002761	8.22	624.49	596.50	0.82
G103-36-00	3	3110		Bridge									
G103-36-00	3	3130	50% (2-YR)	573.00	44.09	48.25	47.39	48.32	0.000384	2.79	564.54	560.31	0.30
G103-36-00	3	3130	10% (10-YR)	1007.00	44.09	48.62	47.86	48.74	0.000609	3.82	796.67	678.25	0.39
G103-36-00	3	3130	4% (25-YR)	1327.00	44.09	48.97	48.08	49.09	0.000554	3.93	1050.71	746.44	0.38
G103-36-00	3	3130	2% (50-YR)	1600.00	44.09	49.23	48.33	49.34	0.000529	4.03	1247.33	793.64	0.37
G103-36-00	3	3130	1% (100-YR)	1919.00	44.09	49.49	48.58	49.60	0.000523	4.19	1455.89	834.55	0.37
G103-36-00	3	3224	50% (2-YR)	573.00	44.09	48.23		48.47	0.001135	3.98	147.83	90.78	0.49
G103-36-00	3	3224	10% (10-YR)	1007.00	44.09	48.50	48.05	49.08	0.002277	6.13	179.45	143.72	0.71
G103-36-00	3	3224	4% (25-YR)	1327.00	44.09	48.75	48.45	49.53	0.002728	7.19	228.37	242.59	0.79
G103-36-00	3	3224	2% (50-YR)	1600.00	44.09	48.97	48.97	49.88	0.002879	7.81	294.97	332.73	0.83
G103-36-00	3	3224	1% (100-YR)	1919.00	44.09	49.30	49.30	50.20	0.002563	7.95	417.74	412.97	0.80
G103-36-00	3	3486	50% (2-YR)	573.00	44.09	48.46	47.15	48.68	0.000592	4.19	311.21	308.34	0.39
G103-36-00	3	3486	10% (10-YR)	1007.00	44.09	49.17	48.18	49.45	0.000705	5.16	568.68	432.14	0.44
G103-36-00	3	3486	4% (25-YR)	1327.00	44.09	49.71	48.67	49.97	0.000616	5.22	834.87	532.12	0.42
G103-36-00	3	3486	2% (50-YR)	1600.00	44.09	50.10	48.99	50.34	0.000582	5.34	1057.29	643.44	0.41
G103-36-00	3	3486	1% (100-YR)	1919.00	44.09	50.37	49.39	50.66	0.000667	5.92	1241.75	719.92	0.44
G103-36-00	3	3502		Bridge									
G103-36-00	3	3529	50% (2-YR)	573.00	44.09	48.66	47.06	48.80	0.000369	3.40	416.76	418.60	0.31
G103-36-00	3	3529	10% (10-YR)	1007.00	44.09	49.48	47.85	49.62	0.000361	3.83	824.54	586.11	0.31
G103-36-00	3	3529	4% (25-YR)	1327.00	44.09	49.98	48.62	50.11	0.000337	3.97	1138.61	660.17	0.31
G103-36-00	3	3529	2% (50-YR)	1600.00	44.09	50.35	49.01	50.49	0.000341	4.18	1398.43	757.52	0.31
G103-36-00	3	3529	1% (100-YR)	1919.00	44.09	50.68	49.27	50.81	0.000338	4.33	1654.19	797.88	0.32
G103-36-00	3	3821	50% (2-YR)	573.00	44.09	48.84		48.84	0.000006	0.52	1597.18	595.17	0.04
G103-36-00	3	3821	10% (10-YR)	1007.00	44.09	49.66		49.66	0.000010	0.74	2124.96	692.90	0.06
G103-36-00	3	3821	4% (25-YR)	1327.00	44.09	50.15		50.16	0.000012	0.87	2480.68	747.85	0.06
G103-36-00	3	3821	2% (50-YR)	1600.00	44.09	50.52		50.53	0.000014	0.96	2768.27	793.65	0.07
G103-36-00	3	3821	1% (100-YR)	1919.00	44.09	50.85		50.86	0.000017	1.08	3030.32	828.21	0.07
G103-36-00	3	4420	50% (2-YR)	573.00	44.09	48.84		48.85	0.000009	0.64	1063.57	362.05	0.05
G103-36-00	3	4420	10% (10-YR)	1007.00	44.09	49.66		49.67	0.000016	0.93	1403.92	453.39	0.07
G103-36-00	3	4420	4% (25-YR)	1327.00	44.09	50.15		50.17	0.000020	1.10	1634.76	491.90	0.08
G103-36-00	3	4420	2% (50-YR)	1600.00	44.09	50.53		50.55	0.000023	1.24	1829.33	553.47	0.09
G103-36-00	3	4420	1% (100-YR)	1919.00	44.09	50.85		50.88	0.000028	1.40	2023.72	634.93	0.10
G103-36-00	3	4713	50% (2-YR)	543.00	44.09	48.84	45.07	48.85	0.000018	0.89	1462.48	745.13	0.07
G103-36-00	3	4713	10% (10-YR)	924.00	44.09	49.66	45.47	49.68	0.000025	1.17	2148.47	927.24	0.09
G103-36-00	3	4713	4% (25-YR)	1224.00	44.09	50.16	45.76	50.18	0.000028	1.31	2660.80	984.87	0.09
G103-36-00	3	4713	2% (50-YR)	1474.00	44.09	50.54	45.99	50.56	0.000031	1.42	3043.46	1034.49	0.10
G103-36-00	3	4713	1% (100-YR)	1766.00	44.09	50.86	46.24	50.89	0.000035	1.57	3388.18	1060.76	0.11
G103-36-00	3	4807		Bridge									
G103-36-00	3	4832	50% (2-YR)	531.00	47.27	48.86	46.51	48.86	0.000083	0.87	1774.75	921.41	0.13
G103-36-00	3	4832	10% (10-YR)	892.00	47.27	49.69	46.69	49.69	0.000073	1.10	2576.60	1036.01	0.13
G103-36-00	3	4832	4% (25-YR)	1184.00	47.27	50.18	46.79	50.19	0.000071	1.24	3112.33	1112.15	0.13
G103-36-00	3	4832	2% (50-YR)	1426.00	47.27	50.56	46.87	50.57	0.000070	1.33	3549.62	1176.94	0.13
G103-36-00	3	4832	1% (100-YR)	1707.00	47.27	50.89	46.96	50.91	0.000072	1.45	3943.43	1192.68	0.14

G103-36-00 Existing HEC-RAS Output

HEC-RAS Plan: Existing (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
G103-36-00	3	4942	50% (2-YR)	520.00	47.20	48.87		48.87	0.000102	0.87	1609.57	925.42	0.14
G103-36-00	3	4942	10% (10-YR)	864.00	47.20	49.69		49.70	0.000071	1.02	2411.58	1039.02	0.12
G103-36-00	3	4942	4% (25-YR)	1149.00	47.20	50.19		50.20	0.000064	1.12	2960.51	1159.35	0.12
G103-36-00	3	4942	2% (50-YR)	1382.00	47.20	50.57		50.58	0.000059	1.18	3410.07	1223.65	0.12
G103-36-00	3	4942	1% (100-YR)	1655.00	47.20	50.90		50.91	0.000059	1.26	3824.78	1297.83	0.12
G103-36-00	2	5123	50% (2-YR)	516.00	47.27	48.89	48.00	48.89	0.000079	0.68	1678.60	1000.22	0.12
G103-36-00	2	5123	10% (10-YR)	852.00	47.27	49.71	48.00	49.71	0.000052	0.81	2610.61	1256.29	0.10
G103-36-00	2	5123	4% (25-YR)	1136.00	47.27	50.20	48.00	50.21	0.000049	0.92	3263.39	1370.54	0.11
G103-36-00	2	5123	2% (50-YR)	1365.00	47.27	50.58	48.00	50.59	0.000043	0.96	3798.58	1449.06	0.10
G103-36-00	2	5123	1% (100-YR)	1630.00	47.27	50.92	48.01	50.92	0.000042	1.03	4291.48	1504.17	0.10
G103-36-00	2	5156		Bridge									
G103-36-00	2	5237	50% (2-YR)	506.00	46.88	49.35	47.80	49.35	0.000014	0.51	2609.21	1647.33	0.06
G103-36-00	2	5237	10% (10-YR)	821.00	46.88	49.72	48.15	49.72	0.000021	0.69	3223.04	1708.89	0.07
G103-36-00	2	5237	4% (25-YR)	1102.00	46.88	50.21	48.42	50.22	0.000020	0.74	4113.85	1845.33	0.07
G103-36-00	2	5237	2% (50-YR)	1317.00	46.88	50.59	48.61	50.60	0.000019	0.77	4822.38	1920.06	0.07
G103-36-00	2	5237	1% (100-YR)	1563.00	46.88	50.92	48.82	50.93	0.000018	0.80	5464.11	1928.48	0.07
G103-36-00	2	5419	50% (2-YR)	506.00	46.88	49.35		49.36	0.000014	0.51	2440.37	1411.31	0.06
G103-36-00	2	5419	10% (10-YR)	821.00	46.88	49.72		49.73	0.000022	0.70	2983.49	1547.86	0.07
G103-36-00	2	5419	4% (25-YR)	1102.00	46.88	50.22		50.22	0.000022	0.77	3816.30	1783.52	0.07
G103-36-00	2	5419	2% (50-YR)	1317.00	46.88	50.59		50.60	0.000021	0.81	4501.23	1839.52	0.07
G103-36-00	2	5419	1% (100-YR)	1563.00	46.88	50.93		50.93	0.000021	0.85	5119.59	1871.94	0.07
G103-36-00	2	5640	50% (2-YR)	506.00	46.88	49.36		49.36	0.000023	0.65	2141.02	1276.30	0.07
G103-36-00	2	5640	10% (10-YR)	821.00	46.88	49.73		49.73	0.000036	0.88	2634.64	1418.82	0.09
G103-36-00	2	5640	4% (25-YR)	1102.00	46.88	50.22		50.23	0.000034	0.96	3374.58	1550.99	0.09
G103-36-00	2	5640	2% (50-YR)	1317.00	46.88	50.60		50.61	0.000033	1.02	3978.44	1652.32	0.09
G103-36-00	2	5640	1% (100-YR)	1563.00	46.88	50.93		50.94	0.000032	1.07	4536.39	1693.50	0.09
G103-36-00	1	6054	50% (2-YR)	388.00	46.88	49.35	47.78	49.40	0.000671	1.70	280.85	187.72	0.20
G103-36-00	1	6054	10% (10-YR)	624.00	46.88	49.71	48.11	49.79	0.001032	2.32	351.02	205.29	0.25
G103-36-00	1	6054	4% (25-YR)	790.00	46.88	50.21	48.32	50.29	0.000893	2.41	460.23	234.82	0.24
G103-36-00	1	6054	2% (50-YR)	932.00	46.88	50.58	48.48	50.67	0.000830	2.50	555.61	272.97	0.23
G103-36-00	1	6054	1% (100-YR)	1094.00	46.88	50.91	48.66	51.00	0.000809	2.62	648.35	285.88	0.23
G103-36-00	1	6077		Bridge									
G103-36-00	1	6094	50% (2-YR)	377.00	46.88	49.62	47.79	49.66	0.000524	1.63	269.37	148.12	0.18
G103-36-00	1	6094	10% (10-YR)	605.00	46.88	50.01	48.12	50.09	0.000827	2.25	331.85	176.19	0.23
G103-36-00	1	6094	4% (25-YR)	766.00	46.88	50.41	48.33	50.50	0.000855	2.48	406.08	202.95	0.23
G103-36-00	1	6094	2% (50-YR)	903.00	46.88	50.73	48.49	50.83	0.000851	2.62	474.21	220.47	0.24
G103-36-00	1	6094	1% (100-YR)	1059.00	46.88	51.03	48.67	51.14	0.000880	2.81	542.62	234.01	0.24
G103-36-00	1	6495	50% (2-YR)	377.00	46.88	49.87		49.95	0.000901	2.22	191.90	96.93	0.23
G103-36-00	1	6495	10% (10-YR)	605.00	46.88	50.39		50.52	0.001282	2.96	246.68	114.24	0.29
G103-36-00	1	6495	4% (25-YR)	766.00	46.88	50.80		50.96	0.001360	3.29	294.39	122.98	0.30
G103-36-00	1	6495	2% (50-YR)	903.00	46.88	51.12		51.30	0.001408	3.53	336.28	136.90	0.31
G103-36-00	1	6495	1% (100-YR)	1059.00	46.88	51.43		51.64	0.001477	3.80	380.65	149.16	0.32
G103-36-00	1	6618	50% (2-YR)	365.00	46.88	49.99		50.02	0.000306	1.35	290.32	122.46	0.14
G103-36-00	1	6618	10% (10-YR)	584.00	46.88	50.57		50.62	0.000426	1.79	365.73	135.54	0.17
G103-36-00	1	6618	4% (25-YR)	738.00	46.88	51.00		51.06	0.000459	2.01	425.36	143.06	0.18
G103-36-00	1	6618	2% (50-YR)	869.00	46.88	51.34		51.41	0.000482	2.17	475.69	160.71	0.18
G103-36-00	1	6618	1% (100-YR)	1018.00	46.88	51.67		51.75	0.000511	2.35	533.18	179.34	0.19
G103-36-00	1	6713	50% (2-YR)	365.00	46.88	49.94	48.55	50.19	0.002570	3.97	91.89	61.29	0.40
G103-36-00	1	6713	10% (10-YR)	584.00	46.88	50.45	49.16	50.92	0.003932	5.45	107.24	71.05	0.51
G103-36-00	1	6713	4% (25-YR)	738.00	46.88	50.83	49.54	51.43	0.004515	6.23	118.39	87.03	0.55
G103-36-00	1	6713	2% (50-YR)	869.00	46.88	51.11	49.84	51.84	0.004949	6.84	127.04	111.02	0.59
G103-36-00	1	6713	1% (100-YR)	1018.00	46.88	51.39	50.17	52.27	0.005524	7.53	135.16	126.94	0.63
G103-36-00	1	6790		Culvert									
G103-36-00	1	6905	50% (2-YR)	365.00	47.27	49.56	49.36	50.23	0.042158	6.54	55.78	67.73	0.85
G103-36-00	1	6905	10% (10-YR)	584.00	47.27	49.98	49.98	51.11	0.055209	8.56	68.20	73.99	1.00
G103-36-00	1	6905	4% (25-YR)	738.00	47.27	50.36	50.36	51.69	0.052371	9.26	79.74	80.22	1.00
G103-36-00	1	6905	2% (50-YR)	869.00	47.27	50.67	50.67	52.15	0.050235	9.76	89.05	106.18	1.00
G103-36-00	1	6905	1% (100-YR)	1018.00	47.27	51.00	51.00	52.64	0.048614	10.29	98.89	131.17	1.00
G103-36-00	1	7020	50% (2-YR)	365.00	47.25	50.97	49.66	51.02	0.002695	2.27	276.35	166.34	0.23
G103-36-00	1	7020	10% (10-YR)	584.00	47.25	51.82	50.08	51.87	0.002171	2.40	422.71	182.53	0.22
G103-36-00	1	7020	4% (25-YR)	738.00	47.25	52.36		52.41	0.001986	2.51	525.97	203.04	0.21
G103-36-00	1	7020	2% (50-YR)	869.00	47.25	52.78		52.83	0.001806	2.54	614.30	213.40	0.20
G103-36-00	1	7020	1% (100-YR)	1018.00	47.25	53.25		53.31	0.001666	2.60	719.52	233.31	0.20
G103-36-00	1	7370	50% (2-YR)	351.00	47.30	51.70		51.75	0.001740	2.01	278.75	178.11	0.19
G103-36-00	1	7370	10% (10-YR)	562.00	47.30	52.46		52.52	0.001710	2.27	424.41	212.65	0.19
G103-36-00	1	7370	4% (25-YR)	709.00	47.30	52.95		53.00	0.001569	2.34	530.59	224.04	0.19
G103-36-00	1	7370	2% (50-YR)	833.00	47.30	53.33		53.38	0.001471	2.38	616.94	232.59	0.19
G103-36-00	1	7370	1% (100-YR)	975.00	47.30	53.76		53.82	0.001382	2.44	724.30	255.17	0.18
G103-36-00	1	7595	50% (2-YR)	351.00	47.31	52.04		52.07	0.001257	1.83	299.11	184.24	0.16
G103-36-00	1	7595	10% (10-YR)	562.00	47.31	52.80		52.85	0.001384	2.16	461.40	227.24	0.18
G103-36-00	1	7595	4% (25-YR)	709.00	47.31	53.27		53.32	0.001342	2.27	570.01	240.73	0.18
G103-36-00	1	7595	2% (50-YR)	833.00	47.31	53.63		53.68	0.001301	2.33	659.64	252.16	0.17

G103-36-00 Existing HEC-RAS Output

HEC-RAS Plan: Existing (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
G103-36-00	1	7595	1% (100-YR)	975.00	47.31	54.04		54.09	0.001217	2.37	766.24	261.56	0.17
G103-36-00	1	7901	50% (2-YR)	338.00	47.21	52.42		52.47	0.001370	2.00	308.83	210.40	0.17
G103-36-00	1	7901	10% (10-YR)	538.00	47.21	53.20		53.25	0.001284	2.16	481.22	231.04	0.17
G103-36-00	1	7901	4% (25-YR)	679.00	47.21	53.66		53.70	0.001250	2.26	588.31	243.30	0.17
G103-36-00	1	7901	2% (50-YR)	797.00	47.21	54.01		54.05	0.001223	2.32	675.47	254.82	0.17
G103-36-00	1	7901	1% (100-YR)	931.00	47.21	54.40		54.45	0.001170	2.37	778.32	267.94	0.17
G103-36-00	1	8217	50% (2-YR)	338.00	47.12	52.96		53.02	0.002297	2.40	245.44	194.53	0.21
G103-36-00	1	8217	10% (10-YR)	538.00	47.12	53.70		53.76	0.002122	2.59	417.26	253.95	0.21
G103-36-00	1	8217	4% (25-YR)	679.00	47.12	54.13		54.19	0.001945	2.62	531.77	271.27	0.20
G103-36-00	1	8217	2% (50-YR)	797.00	47.12	54.46		54.51	0.001785	2.62	622.45	275.36	0.20
G103-36-00	1	8217	1% (100-YR)	931.00	47.12	54.82		54.88	0.001628	2.61	723.75	280.11	0.19
G103-36-00	1	8422	50% (2-YR)	324.00	48.03	53.39		53.46	0.002120	2.34	224.19	185.47	0.21
G103-36-00	1	8422	10% (10-YR)	515.00	48.03	54.09		54.16	0.002017	2.54	395.11	312.01	0.21
G103-36-00	1	8422	4% (25-YR)	649.00	48.03	54.49		54.55	0.001880	2.59	540.29	449.76	0.20
G103-36-00	1	8422	2% (50-YR)	760.00	48.03	54.79		54.84	0.001686	2.55	684.03	497.14	0.20
G103-36-00	1	8422	1% (100-YR)	887.00	48.03	55.12		55.17	0.001447	2.46	855.97	530.95	0.18
G103-36-00	1	8556	50% (2-YR)	324.00	47.29	53.68		53.75	0.002121	2.39	192.30	168.52	0.20
G103-36-00	1	8556	10% (10-YR)	515.00	47.29	54.39		54.47	0.002345	2.78	379.74	389.41	0.22
G103-36-00	1	8556	4% (25-YR)	649.00	47.29	54.76		54.83	0.002044	2.73	561.13	584.55	0.21
G103-36-00	1	8556	2% (50-YR)	760.00	47.29	55.04		55.10	0.001810	2.65	738.85	694.66	0.20
G103-36-00	1	8556	1% (100-YR)	887.00	47.29	55.34		55.38	0.001551	2.54	958.97	760.06	0.18
G103-36-00	1	8647	50% (2-YR)	324.00	47.28	53.89		54.00	0.002682	2.73	129.91	87.26	0.23
G103-36-00	1	8647	10% (10-YR)	515.00	47.28	54.63		54.78	0.003224	3.31	253.22	233.39	0.26
G103-36-00	1	8647	4% (25-YR)	649.00	47.28	54.99		55.14	0.003298	3.50	344.81	265.91	0.26
G103-36-00	1	8647	2% (50-YR)	760.00	47.28	55.25		55.40	0.003293	3.60	416.04	287.85	0.26
G103-36-00	1	8647	1% (100-YR)	887.00	47.28	55.53		55.67	0.003198	3.67	498.56	298.89	0.26
G103-36-00	1	8868	50% (2-YR)	324.00	46.82	54.42		54.49	0.001802	2.11	160.74	57.91	0.19
G103-36-00	1	8868	10% (10-YR)	515.00	46.82	55.29		55.39	0.002268	2.59	249.96	156.70	0.22
G103-36-00	1	8868	4% (25-YR)	649.00	46.82	55.67		55.79	0.002485	2.86	316.86	197.14	0.23
G103-36-00	1	8868	2% (50-YR)	760.00	46.82	55.94		56.07	0.002643	3.06	372.83	220.41	0.24
G103-36-00	1	8868	1% (100-YR)	887.00	46.82	56.21		56.34	0.002721	3.21	433.84	235.44	0.24
G103-36-00	1	9271	50% (2-YR)	311.00	47.65	54.97		55.01	0.000954	1.62	193.60	51.86	0.14
G103-36-00	1	9271	10% (10-YR)	493.00	47.65	55.99		56.05	0.001252	2.03	253.30	66.61	0.16
G103-36-00	1	9271	4% (25-YR)	620.00	47.65	56.45		56.53	0.001418	2.29	311.00	170.27	0.18
G103-36-00	1	9271	2% (50-YR)	725.00	47.65	56.76		56.86	0.001522	2.47	370.19	199.37	0.18
G103-36-00	1	9271	1% (100-YR)	845.00	47.65	57.07		57.17	0.001623	2.64	435.11	224.34	0.19
G103-36-00	1	9511	50% (2-YR)	311.00	48.75	55.30		55.39	0.002772	2.39	130.39	38.53	0.23
G103-36-00	1	9511	10% (10-YR)	493.00	48.75	56.41		56.53	0.003317	2.75	179.45	49.53	0.25
G103-36-00	1	9511	4% (25-YR)	620.00	48.75	56.92		57.06	0.003613	3.02	205.57	56.55	0.27
G103-36-00	1	9511	2% (50-YR)	725.00	48.75	57.26		57.43	0.003727	3.24	230.28	110.78	0.28
G103-36-00	1	9511	1% (100-YR)	845.00	48.75	57.59		57.77	0.003837	3.45	274.87	160.11	0.28
G103-36-00	1	9802	50% (2-YR)	299.00	49.22	55.84		55.88	0.001108	1.73	190.43	60.01	0.15
G103-36-00	1	9802	10% (10-YR)	473.00	49.22	57.04		57.10	0.001251	2.02	274.60	86.32	0.16
G103-36-00	1	9802	4% (25-YR)	594.00	49.22	57.62		57.69	0.001368	2.18	326.84	95.48	0.17
G103-36-00	1	9802	2% (50-YR)	694.00	49.22	58.01		58.08	0.001460	2.31	364.91	100.34	0.18
G103-36-00	1	9802	1% (100-YR)	807.00	49.22	58.38		58.46	0.001535	2.47	403.05	107.74	0.18
G103-36-00	1	10133	50% (2-YR)	299.00	49.62	56.34		56.45	0.002878	2.69	116.53	36.78	0.23
G103-36-00	1	10133	10% (10-YR)	473.00	49.62	57.60		57.74	0.003348	3.06	170.15	48.31	0.25
G103-36-00	1	10133	4% (25-YR)	594.00	49.62	58.22		58.38	0.003634	3.30	201.66	53.95	0.27
G103-36-00	1	10133	2% (50-YR)	694.00	49.62	58.64		58.82	0.003852	3.49	225.25	58.71	0.28
G103-36-00	1	10133	1% (100-YR)	807.00	49.62	59.03		59.22	0.004018	3.72	248.81	63.00	0.29
G103-36-00	1	10713	50% (2-YR)	288.00	50.71	57.81		57.87	0.002089	2.09	137.56	38.95	0.20
G103-36-00	1	10713	10% (10-YR)	455.00	50.71	59.15		59.24	0.001996	2.35	193.77	44.55	0.20
G103-36-00	1	10713	4% (25-YR)	570.00	50.71	59.87		59.97	0.002069	2.51	227.23	48.77	0.20
G103-36-00	1	10713	2% (50-YR)	665.00	50.71	60.37		60.48	0.002138	2.63	252.40	51.68	0.21
G103-36-00	1	10713	1% (100-YR)	773.00	50.71	60.85		60.97	0.002241	2.78	277.78	57.71	0.22
G103-36-00	1	11215	50% (2-YR)	279.00	51.60	58.96		59.04	0.002623	2.36	125.24	43.43	0.22
G103-36-00	1	11215	10% (10-YR)	439.00	51.60	60.26		60.35	0.002504	2.54	189.58	54.92	0.22
G103-36-00	1	11215	4% (25-YR)	550.00	51.60	60.98		61.08	0.002408	2.64	231.16	60.24	0.22
G103-36-00	1	11215	2% (50-YR)	641.00	51.60	61.50		61.61	0.002382	2.71	263.45	64.56	0.22
G103-36-00	1	11215	1% (100-YR)	744.00	51.60	62.02		62.13	0.002431	2.79	298.58	70.65	0.22
G103-36-00	1	11848	50% (2-YR)	267.00	52.60	60.18		60.24	0.001415	2.01	135.09	33.84	0.16
G103-36-00	1	11848	10% (10-YR)	421.00	52.60	61.56		61.64	0.001688	2.36	188.77	44.54	0.18
G103-36-00	1	11848	4% (25-YR)	526.00	52.60	62.29		62.39	0.001807	2.54	223.91	50.98	0.19
G103-36-00	1	11848	2% (50-YR)	612.00	52.60	62.83		62.93	0.001890	2.65	252.65	56.33	0.20
G103-36-00	1	11848	1% (100-YR)	710.00	52.60	63.39		63.50	0.001964	2.76	285.69	62.33	0.20
G103-36-00	1	12373	50% (2-YR)	259.00	53.99	60.97		61.04	0.001638	2.11	122.87	28.06	0.18
G103-36-00	1	12373	10% (10-YR)	406.00	53.99	62.46		62.55	0.001758	2.42	167.72	32.57	0.19
G103-36-00	1	12373	4% (25-YR)	507.00	53.99	63.25		63.36	0.001866	2.60	194.67	35.42	0.20
G103-36-00	1	12373	2% (50-YR)	590.00	53.99	63.83		63.95	0.001949	2.73	215.83	37.80	0.20
G103-36-00	1	12373	1% (100-YR)	683.00	53.99	64.42		64.55	0.002025	2.86	239.00	40.37	0.21
G103-36-00	1	12902	50% (2-YR)	250.00	57.52	62.42		62.62	0.006751	3.54	70.62	21.50	0.34
G103-36-00	1	12902	10% (10-YR)	392.00	57.52	63.91		64.12	0.005800	3.69	106.24	27.11	0.33
G103-36-00	1	12902	4% (25-YR)	489.00	57.52	64.73		64.95	0.005439	3.76	130.12	30.94	0.32

G103-36-00 Existing HEC-RAS Output

HEC-RAS Plan: Existing (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
G103-36-00	1	12902	2% (50-YR)	567.00	57.52	65.32		65.55	0.005154	3.80	149.28	33.65	0.32
G103-36-00	1	12902	1% (100-YR)	656.00	57.52	65.93		66.16	0.004900	3.85	170.41	36.31	0.31
G103-36-00	1	13266	50% (2-YR)	244.00	57.45	63.76		63.82	0.001908	2.04	119.61	33.53	0.19
G103-36-00	1	13266	10% (10-YR)	382.00	57.45	65.14		65.22	0.001788	2.25	169.50	38.80	0.19
G103-36-00	1	13266	4% (25-YR)	477.00	57.45	65.92		66.01	0.001740	2.38	200.83	41.48	0.19
G103-36-00	1	13266	2% (50-YR)	553.00	57.45	66.48		66.58	0.001722	2.46	224.83	43.68	0.19
G103-36-00	1	13266	1% (100-YR)	638.00	57.45	67.07		67.17	0.001736	2.54	251.41	47.01	0.19
G103-36-00	1	13795	50% (2-YR)	236.00	58.57	64.45		64.48	0.000858	1.55	152.11	34.75	0.13
G103-36-00	1	13795	10% (10-YR)	369.00	58.57	65.84		65.89	0.000931	1.82	202.88	38.29	0.14
G103-36-00	1	13795	4% (25-YR)	459.00	58.57	66.63		66.68	0.000969	1.96	233.85	40.34	0.14
G103-36-00	1	13795	2% (50-YR)	532.00	58.57	67.20		67.26	0.001000	2.07	257.39	41.87	0.15
G103-36-00	1	13795	1% (100-YR)	614.00	58.57	67.80		67.87	0.001026	2.17	282.94	43.46	0.15
G103-36-01	1	249	50% (2-YR)	78.00	47.12	48.90		48.90	0.000185	0.61	130.26	105.41	0.09
G103-36-01	1	249	10% (10-YR)	121.00	47.12	49.71		49.72	0.000086	0.58	223.88	142.15	0.07
G103-36-01	1	249	4% (25-YR)	151.00	47.12	50.21		50.22	0.000062	0.56	309.42	203.38	0.06
G103-36-01	1	249	2% (50-YR)	175.00	47.12	50.59		50.59	0.000049	0.54	392.98	232.12	0.06
G103-36-01	1	249	1% (100-YR)	202.00	47.12	50.92		50.93	0.000042	0.54	472.47	243.75	0.05
G103-36-01	1	620	50% (2-YR)	70.00	47.20	48.99		49.01	0.000497	1.12	77.63	87.61	0.16
G103-36-01	1	620	10% (10-YR)	108.00	47.20	49.76		49.77	0.000209	0.94	161.55	139.91	0.11
G103-36-01	1	620	4% (25-YR)	135.00	47.20	50.24		50.25	0.000136	0.86	241.60	185.32	0.09
G103-36-01	1	620	2% (50-YR)	156.00	47.20	50.61		50.62	0.000096	0.79	314.26	214.82	0.08
G103-36-01	1	620	1% (100-YR)	180.00	47.20	50.94		50.95	0.000080	0.77	389.83	235.26	0.07
G103-36-01	1	972	50% (2-YR)	63.00	47.27	49.14		49.15	0.000318	0.90	99.95	112.16	0.13
G103-36-01	1	972	10% (10-YR)	97.00	47.27	49.82		49.83	0.000150	0.79	185.60	139.61	0.09
G103-36-01	1	972	4% (25-YR)	121.00	47.27	50.29		50.29	0.000100	0.73	253.97	156.04	0.08
G103-36-01	1	972	2% (50-YR)	140.00	47.27	50.64		50.65	0.000077	0.69	312.65	169.48	0.07
G103-36-01	1	972	1% (100-YR)	162.00	47.27	50.97		50.97	0.000066	0.69	370.03	183.89	0.07
G103-36-01	1	1195	50% (2-YR)	58.00	47.22	49.22		49.23	0.000441	1.08	98.98	150.85	0.15
G103-36-01	1	1195	10% (10-YR)	91.00	47.22	49.86		49.86	0.000158	0.80	204.46	187.53	0.09
G103-36-01	1	1195	4% (25-YR)	113.00	47.22	50.31		50.31	0.000088	0.68	293.77	207.52	0.07
G103-36-01	1	1195	2% (50-YR)	131.00	47.22	50.66		50.66	0.000062	0.62	369.92	224.18	0.06
G103-36-01	1	1195	1% (100-YR)	151.00	47.22	50.98		50.99	0.000050	0.59	444.55	239.74	0.06
G103-36-01	1	1495	50% (2-YR)	51.00	47.42	49.36		49.37	0.000536	1.11	76.35	125.63	0.16
G103-36-01	1	1495	10% (10-YR)	80.00	47.42	49.91		49.92	0.000218	0.87	148.50	136.92	0.11
G103-36-01	1	1495	4% (25-YR)	99.00	47.42	50.34		50.34	0.000127	0.76	209.00	147.22	0.09
G103-36-01	1	1495	2% (50-YR)	115.00	47.42	50.68		50.69	0.000091	0.70	261.40	156.51	0.07
G103-36-01	1	1495	1% (100-YR)	133.00	47.42	51.00		51.00	0.000073	0.67	312.46	163.92	0.07
G103-36-01	1	1518	50% (2-YR)	51.00	47.34	49.61	48.36	49.62	0.000407	1.11	96.79	120.39	0.14
G103-36-01	1	1518	10% (10-YR)	80.00	47.34	50.05	48.65	50.07	0.000358	1.21	152.06	128.39	0.14
G103-36-01	1	1518	4% (25-YR)	99.00	47.34	50.43	48.82	50.44	0.000274	1.17	201.79	136.46	0.13
G103-36-01	1	1518	2% (50-YR)	115.00	47.34	50.75	48.96	50.76	0.000223	1.14	246.83	143.97	0.12
G103-36-01	1	1518	1% (100-YR)	133.00	47.34	51.06	49.11	51.07	0.000192	1.13	291.67	148.92	0.11
G103-36-01	1	1519	50% (2-YR)	51.00	47.34	49.63	48.36	49.63	0.000233	0.85	98.82	120.63	0.11
G103-36-01	1	1519	10% (10-YR)	80.00	47.34	50.07	48.65	50.08	0.000172	0.84	154.26	128.78	0.10
G103-36-01	1	1519	4% (25-YR)	99.00	47.34	50.44	48.85	50.45	0.000121	0.78	203.75	136.74	0.08
G103-36-01	1	1519	2% (50-YR)	115.00	47.34	50.76	48.99	50.77	0.000093	0.74	248.64	144.24	0.08
G103-36-01	1	1519	1% (100-YR)	133.00	47.34	51.07	49.11	51.07	0.000077	0.72	293.39	149.09	0.07
G103-36-01	1	1527		Bridge									
G103-36-01	1	1536	50% (2-YR)	51.00	47.32	49.67	48.28	49.68	0.000342	1.09	100.31	104.44	0.14
G103-36-01	1	1536	10% (10-YR)	80.00	47.32	50.08	48.53	50.10	0.000360	1.27	146.40	117.04	0.14
G103-36-01	1	1536	4% (25-YR)	99.00	47.32	50.45	48.67	50.46	0.000294	1.26	190.88	127.22	0.13
G103-36-01	1	1536	2% (50-YR)	115.00	47.32	50.77	48.78	50.78	0.000244	1.23	232.70	135.31	0.12
G103-36-01	1	1536	1% (100-YR)	133.00	47.32	51.07	48.90	51.08	0.000214	1.23	274.65	140.92	0.12
G103-36-01	1	1537	50% (2-YR)	51.00	47.32	49.68	48.28	49.69	0.000188	0.81	101.83	104.82	0.10
G103-36-01	1	1537	10% (10-YR)	80.00	47.32	50.10	48.52	50.11	0.000172	0.88	148.46	117.44	0.10
G103-36-01	1	1537	4% (25-YR)	99.00	47.32	50.46	48.66	50.47	0.000130	0.84	192.91	127.79	0.09
G103-36-01	1	1537	2% (50-YR)	115.00	47.32	50.78	48.78	50.79	0.000103	0.80	234.63	135.61	0.08
G103-36-01	1	1537	1% (100-YR)	133.00	47.32	51.08	49.03	51.09	0.000086	0.78	276.54	141.16	0.07
G103-36-01	1	1627	50% (2-YR)	51.00	47.21	49.69		49.70	0.000044	0.40	137.03	84.37	0.05
G103-36-01	1	1627	10% (10-YR)	80.00	47.21	50.11		50.12	0.000055	0.51	174.06	91.75	0.06
G103-36-01	1	1627	4% (25-YR)	99.00	47.21	50.47		50.48	0.000052	0.54	208.88	100.10	0.06
G103-36-01	1	1627	2% (50-YR)	115.00	47.21	50.79		50.79	0.000047	0.55	241.28	106.06	0.05
G103-36-01	1	1627	1% (100-YR)	133.00	47.21	51.09		51.09	0.000045	0.57	273.78	109.62	0.05
G103-36-01	1	1680	50% (2-YR)	46.00	47.28	49.70	47.98	49.72	0.000349	1.23	37.53	102.13	0.14
G103-36-01	1	1680	10% (10-YR)	71.00	47.28	50.11	48.20	50.15	0.000483	1.61	44.17	116.60	0.17
G103-36-01	1	1680	4% (25-YR)	88.00	47.28	50.47	48.33	50.52	0.000496	1.76	49.88	127.75	0.18
G103-36-01	1	1680	2% (50-YR)	102.00	47.28	50.78	48.43	50.83	0.000485	1.86	54.84	138.77	0.18
G103-36-01	1	1680	1% (100-YR)	118.00	47.28	51.07	48.54	51.14	0.000492	1.98	59.59	170.95	0.18
G103-36-01	1	1681	50% (2-YR)	46.00	47.28	49.73	47.64	49.73	0.000030	0.36	130.19	103.42	0.04
G103-36-01	1	1681	10% (10-YR)	71.00	47.28	50.16	47.74	50.17	0.000040	0.46	156.40	118.99	0.05
G103-36-01	1	1681	4% (25-YR)	88.00	47.28	50.53	47.80	50.53	0.000041	0.50	178.38	129.18	0.05
G103-36-01	1	1681	2% (50-YR)	102.00	47.28	50.85	47.85	50.85	0.000039	0.53	197.36	141.66	0.05
G103-36-01	1	1681	1% (100-YR)	118.00	47.28	51.15	47.90	51.16	0.000039	0.56	215.72	178.59	0.05

G103-36-00 Existing HEC-RAS Output

HEC-RAS Plan: Existing (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
G103-36-01	1	1805		Culvert									
G103-36-01	1	1940	50% (2-YR)	46.00	48.40	49.47	49.47	49.81	0.082782	4.69	9.82	27.12	1.00
G103-36-01	1	1940	10% (10-YR)	71.00	48.40	50.03	49.75	50.21	0.025830	3.49	24.06	132.24	0.60
G103-36-01	1	1940	4% (25-YR)	88.00	48.40	50.52	49.90	50.59	0.007417	2.41	55.36	172.95	0.34
G103-36-01	1	1940	2% (50-YR)	102.00	48.40	50.89	49.96	50.93	0.003501	1.91	84.75	195.37	0.24
G103-36-01	1	1940	1% (100-YR)	118.00	48.40	51.24	50.14	51.27	0.002120	1.66	112.59	205.00	0.19
G103-36-01	1	2014	50% (2-YR)	46.00	48.49	50.20	49.70	50.21	0.001648	0.93	92.74	145.81	0.15
G103-36-01	1	2014	10% (10-YR)	71.00	48.49	50.48		50.49	0.001356	0.98	136.93	172.83	0.14
G103-36-01	1	2014	4% (25-YR)	88.00	48.49	50.73		50.74	0.000944	0.91	182.00	182.27	0.12
G103-36-01	1	2014	2% (50-YR)	102.00	48.49	51.02		51.02	0.000618	0.82	234.78	194.27	0.10
G103-36-01	1	2014	1% (100-YR)	118.00	48.49	51.32		51.32	0.000422	0.74	295.30	202.58	0.09
G103-36-01	1	2291	50% (2-YR)	42.00	49.28	50.72		50.73	0.002220	0.89	78.46	140.63	0.17
G103-36-01	1	2291	10% (10-YR)	65.00	49.28	50.93		50.94	0.002082	0.99	108.40	149.27	0.17
G103-36-01	1	2291	4% (25-YR)	81.00	49.28	51.08		51.09	0.001849	1.02	131.39	154.90	0.17
G103-36-01	1	2291	2% (50-YR)	94.00	49.28	51.26		51.26	0.001406	0.98	158.75	158.68	0.15
G103-36-01	1	2291	1% (100-YR)	109.00	49.28	51.49		51.49	0.000999	0.92	196.19	163.79	0.13
G103-36-01	1	2662	50% (2-YR)	37.00	49.54	51.52		51.53	0.002147	1.05	57.54	109.52	0.17
G103-36-01	1	2662	10% (10-YR)	58.00	49.54	51.73		51.74	0.002355	1.23	83.39	135.31	0.19
G103-36-01	1	2662	4% (25-YR)	72.00	49.54	51.84		51.85	0.002387	1.30	98.40	140.25	0.19
G103-36-01	1	2662	2% (50-YR)	84.00	49.54	51.91		51.93	0.002503	1.38	108.85	143.76	0.20
G103-36-01	1	2662	1% (100-YR)	97.00	49.54	52.01		52.03	0.002424	1.41	122.74	146.50	0.20
G103-36-01	1	3089	50% (2-YR)	16.00	50.94	52.48		52.49	0.002772	1.04	26.15	62.99	0.19
G103-36-01	1	3089	10% (10-YR)	25.00	50.94	52.70		52.71	0.002318	1.05	43.65	94.90	0.18
G103-36-01	1	3089	4% (25-YR)	31.00	50.94	52.81		52.82	0.002217	1.07	54.12	104.98	0.18
G103-36-01	1	3089	2% (50-YR)	36.00	50.94	52.89		52.90	0.002069	1.07	63.31	109.53	0.17
G103-36-01	1	3089	1% (100-YR)	42.00	50.94	52.97		52.98	0.002069	1.10	72.12	113.28	0.17
G103-36-01	1	3591	50% (2-YR)	6.00	51.86	53.25		53.25	0.000556	0.43	14.05	17.54	0.08
G103-36-01	1	3591	10% (10-YR)	9.00	51.86	53.45		53.46	0.000652	0.50	18.29	26.45	0.09
G103-36-01	1	3591	4% (25-YR)	12.00	51.86	53.57		53.58	0.000774	0.58	22.27	42.45	0.10
G103-36-01	1	3591	2% (50-YR)	14.00	51.86	53.64		53.65	0.000820	0.63	25.51	50.02	0.11
G103-36-01	1	3591	1% (100-YR)	16.00	51.86	53.72		53.73	0.000806	0.65	29.96	65.20	0.11
G103-36-01	1	4075	50% (2-YR)	2.00	53.60	53.95	53.95	54.05	0.126525	2.53	0.79	4.01	1.00
G103-36-01	1	4075	10% (10-YR)	4.00	53.60	54.08	54.08	54.21	0.112498	2.94	1.36	5.03	1.00
G103-36-01	1	4075	4% (25-YR)	5.00	53.60	54.20		54.29	0.058393	2.46	2.04	6.02	0.74
G103-36-01	1	4075	2% (50-YR)	5.00	53.60	54.26		54.33	0.036399	2.06	2.43	6.58	0.60
G103-36-01	1	4075	1% (100-YR)	6.00	53.60	54.34		54.40	0.030913	2.02	2.97	7.31	0.56
G103-36-02	2	756	50% (2-YR)	92.00	46.88	49.36		49.36	0.000000	0.06	2415.14	1319.91	0.01
G103-36-02	2	756	10% (10-YR)	163.00	46.88	49.74		49.74	0.000000	0.10	2922.87	1392.33	0.01
G103-36-02	2	756	4% (25-YR)	236.00	46.88	50.24		50.24	0.000000	0.12	3633.93	1476.42	0.01
G103-36-02	2	756	2% (50-YR)	294.00	46.88	50.61		50.61	0.000001	0.13	4222.23	1633.41	0.01
G103-36-02	2	756	1% (100-YR)	361.00	46.88	50.95		50.95	0.000001	0.14	4775.81	1686.70	0.01
G103-36-02	2	1560	50% (2-YR)	183.00	46.88	49.36		49.37	0.000000	0.09	2784.95	1392.82	0.01
G103-36-02	2	1560	10% (10-YR)	302.00	46.88	49.74		49.74	0.000001	0.13	3324.16	1480.05	0.01
G103-36-02	2	1560	4% (25-YR)	405.00	46.88	50.24		50.24	0.000001	0.15	4086.94	1589.76	0.01
G103-36-02	2	1560	2% (50-YR)	485.00	46.88	50.61		50.61	0.000001	0.16	4703.70	1672.32	0.01
G103-36-02	2	1560	1% (100-YR)	576.00	46.88	50.95		50.95	0.000001	0.17	5275.60	1767.42	0.01
G103-36-02	2	2400	50% (2-YR)	373.00	46.88	49.37		49.37	0.000003	0.25	1972.68	940.82	0.03
G103-36-02	2	2400	10% (10-YR)	576.00	46.88	49.74		49.74	0.000005	0.34	2337.46	1019.56	0.04
G103-36-02	2	2400	4% (25-YR)	711.00	46.88	50.24		50.24	0.000004	0.35	2873.87	1122.52	0.03
G103-36-02	2	2400	2% (50-YR)	818.00	46.88	50.61		50.62	0.000004	0.36	3307.15	1172.40	0.03
G103-36-02	2	2400	1% (100-YR)	937.00	46.88	50.95		50.95	0.000004	0.38	3712.32	1252.27	0.03
G103-36-02	1	3169	50% (2-YR)	237.00	47.17	49.36		49.38	0.002559	1.69	316.33	378.09	0.24
G103-36-02	1	3169	10% (10-YR)	366.00	47.17	49.74		49.75	0.002094	1.76	472.90	441.87	0.22
G103-36-02	1	3169	4% (25-YR)	453.00	47.17	50.24		50.25	0.001062	1.45	734.05	649.72	0.16
G103-36-02	1	3169	2% (50-YR)	521.00	47.17	50.62		50.62	0.000712	1.31	1013.19	805.14	0.14
G103-36-02	1	3169	1% (100-YR)	598.00	47.17	50.95		50.96	0.000504	1.19	1298.15	906.88	0.12
G103-36-02	1	4049	50% (2-YR)	105.00	48.72	50.14		50.15	0.000257	0.40	471.07	558.48	0.07
G103-36-02	1	4049	10% (10-YR)	162.00	48.72	50.44		50.44	0.000245	0.43	650.70	672.61	0.07
G103-36-02	1	4049	4% (25-YR)	200.00	48.72	50.69		50.69	0.000192	0.43	823.22	722.82	0.06
G103-36-02	1	4049	2% (50-YR)	231.00	48.72	50.94		50.94	0.000145	0.42	1010.49	775.09	0.06
G103-36-02	1	4049	1% (100-YR)	265.00	48.72	51.19		51.19	0.000117	0.41	1213.04	808.83	0.05
G103-36-02	1	4600	50% (2-YR)	63.00	54.00	55.66	55.66	56.16	0.057424	5.67	11.11	11.36	1.01
G103-36-02	1	4600	10% (10-YR)	97.00	54.00	56.02	56.02	56.62	0.054303	6.23	15.58	13.21	1.01
G103-36-02	1	4600	4% (25-YR)	120.00	54.00	56.23	56.23	56.89	0.052748	6.50	18.46	14.33	1.01
G103-36-02	1	4600	2% (50-YR)	138.00	54.00	56.38	56.38	57.07	0.051858	6.67	20.68	15.22	1.01
G103-36-02	1	4600	1% (100-YR)	159.00	54.00	56.54	56.54	57.27	0.050988	6.88	23.11	16.02	1.01
G103-36-02	1	4656	50% (2-YR)	60.00	58.02	59.29	59.29	59.68	0.059480	5.03	11.94	15.44	1.01
G103-36-02	1	4656	10% (10-YR)	92.00	58.02	59.60	59.60	60.04	0.056905	5.33	17.25	19.76	1.01
G103-36-02	1	4656	4% (25-YR)	114.00	58.02	59.76	59.76	60.23	0.056557	5.50	20.72	22.53	1.01
G103-36-02	1	4656	2% (50-YR)	131.00	58.02	59.87	59.87	60.36	0.055145	5.62	23.30	24.09	1.01
G103-36-02	1	4656	1% (100-YR)	151.00	58.02	59.98	59.98	60.51	0.054994	5.83	25.91	25.31	1.02
G103-36-02.1	1	515	50% (2-YR)	139.00	47.31	49.24		49.43	0.009133	3.48	39.99	29.04	0.52
G103-36-02.1	1	515	10% (10-YR)	213.00	47.31	49.55	49.01	49.83	0.011622	4.24	56.10	79.43	0.60
G103-36-02.1	1	515	4% (25-YR)	262.00	47.31	50.14		50.29	0.005894	3.25	122.46	155.71	0.44

G103-36-00 Existing HEC-RAS Output

HEC-RAS Plan: Existing (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
G103-36-02.1	1	515	2% (50-YR)	301.00	47.31	50.56		50.65	0.003078	2.69	196.48	193.69	0.33
G103-36-02.1	1	515	1% (100-YR)	344.00	47.31	50.91		50.97	0.001982	2.39	265.48	201.13	0.27
G103-36-02.1	1	831	50% (2-YR)	139.00	47.23	50.48		50.56	0.001859	2.25	61.64	24.54	0.25
G103-36-02.1	1	831	10% (10-YR)	213.00	47.23	51.13		51.25	0.002313	2.71	78.74	28.13	0.29
G103-36-02.1	1	831	4% (25-YR)	262.00	47.23	51.38		51.53	0.002748	3.05	86.00	30.00	0.31
G103-36-02.1	1	831	2% (50-YR)	301.00	47.23	51.50		51.68	0.003207	3.36	89.72	31.28	0.34
G103-36-02.1	1	831	1% (100-YR)	344.00	47.23	51.65		51.86	0.003578	3.66	94.42	32.95	0.36
G103-36-02.1	1	1009	50% (2-YR)	139.00	47.27	50.83		50.94	0.002374	2.58	53.88	20.48	0.28
G103-36-02.1	1	1009	10% (10-YR)	213.00	47.27	51.57		51.71	0.002906	3.03	70.41	24.60	0.32
G103-36-02.1	1	1009	4% (25-YR)	262.00	47.27	51.88		52.06	0.003130	3.35	78.55	27.89	0.33
G103-36-02.1	1	1009	2% (50-YR)	301.00	47.27	52.07		52.28	0.003394	3.63	84.05	30.05	0.35
G103-36-02.1	1	1009	1% (100-YR)	344.00	47.27	52.27		52.51	0.003641	3.91	90.32	32.58	0.37
G103-36-02.1	1	1225	50% (2-YR)	139.00	47.27	51.28		51.34	0.001501	2.08	66.69	25.73	0.23
G103-36-02.1	1	1225	10% (10-YR)	213.00	47.27	52.09		52.17	0.001606	2.37	90.02	33.53	0.24
G103-36-02.1	1	1225	4% (25-YR)	262.00	47.27	52.44		52.54	0.001663	2.60	104.39	43.14	0.25
G103-36-02.1	1	1225	2% (50-YR)	301.00	47.27	52.68		52.79	0.001732	2.78	114.78	44.91	0.26
G103-36-02.1	1	1225	1% (100-YR)	344.00	47.27	52.92		53.05	0.001794	2.96	126.25	54.00	0.27
G103-36-02.1	1	1493	50% (2-YR)	139.00	48.09	51.73		51.80	0.001952	2.15	64.61	29.57	0.26
G103-36-02.1	1	1493	10% (10-YR)	213.00	48.09	52.55		52.63	0.001833	2.35	90.58	34.51	0.26
G103-36-02.1	1	1493	4% (25-YR)	262.00	48.09	52.92		53.02	0.001869	2.52	104.06	38.43	0.26
G103-36-02.1	1	1493	2% (50-YR)	301.00	48.09	53.17		53.28	0.001868	2.67	113.98	41.39	0.27
G103-36-02.1	1	1493	1% (100-YR)	344.00	48.09	53.42		53.55	0.001867	2.81	126.83	61.87	0.27
G103-36-02.1	1	1687	50% (2-YR)	139.00	48.31	52.08		52.15	0.001658	2.08	66.77	28.33	0.24
G103-36-02.1	1	1687	10% (10-YR)	213.00	48.31	52.89		52.97	0.001648	2.34	90.89	31.95	0.24
G103-36-02.1	1	1687	4% (25-YR)	262.00	48.31	53.27		53.37	0.001733	2.53	103.49	33.99	0.25
G103-36-02.1	1	1687	2% (50-YR)	301.00	48.31	53.52		53.63	0.001773	2.69	112.25	35.96	0.26
G103-36-02.1	1	1687	1% (100-YR)	344.00	48.31	53.78		53.90	0.001802	2.85	121.81	38.29	0.27
G103-36-02.1	1	1927	50% (2-YR)	139.00	49.16	52.56		52.64	0.002518	2.32	59.88	29.55	0.29
G103-36-02.1	1	1927	10% (10-YR)	213.00	49.16	53.34		53.44	0.002279	2.50	85.13	35.31	0.28
G103-36-02.1	1	1927	4% (25-YR)	262.00	49.16	53.72		53.83	0.002139	2.66	99.73	41.73	0.28
G103-36-02.1	1	1927	2% (50-YR)	301.00	49.16	53.98		54.10	0.002105	2.79	111.19	50.21	0.28
G103-36-02.1	1	1927	1% (100-YR)	344.00	49.16	54.24		54.37	0.002074	2.93	126.26	68.66	0.28
G103-36-02.1	1	2045	50% (2-YR)	139.00	49.15	52.80	51.07	52.85	0.001195	1.82	76.22	40.93	0.21
G103-36-02.1	1	2045	10% (10-YR)	213.00	49.15	53.57	51.40	53.63	0.001196	2.10	101.61	44.77	0.21
G103-36-02.1	1	2045	4% (25-YR)	262.00	49.15	53.94	51.58	54.03	0.001214	2.29	114.56	50.43	0.22
G103-36-02.1	1	2045	2% (50-YR)	301.00	49.15	54.20	51.73	54.29	0.001253	2.44	123.33	58.43	0.23
G103-36-02.1	1	2045	1% (100-YR)	344.00	49.15	54.46	51.87	54.57	0.001296	2.60	132.27	73.47	0.23
G103-36-02.1	1	2088		Culvert									
G103-36-02.1	1	2159	50% (2-YR)	23.00	49.94	52.86	50.37	52.86	0.000032	0.30	76.92	38.20	0.03
G103-36-02.1	1	2159	10% (10-YR)	35.00	49.94	53.65	50.48	53.65	0.000031	0.34	103.04	42.76	0.03
G103-36-02.1	1	2159	4% (25-YR)	43.00	49.94	54.01	50.54	54.02	0.000032	0.37	116.09	50.33	0.04
G103-36-02.1	1	2159	2% (50-YR)	50.00	49.94	54.30	50.60	54.31	0.000033	0.40	129.43	74.74	0.04
G103-36-02.1	1	2159	1% (100-YR)	57.00	49.94	54.60	50.65	54.60	0.000032	0.42	148.04	103.75	0.04
G103-36-02.1	1	2224	50% (2-YR)	21.00	50.23	52.86	51.15	52.87	0.000383	0.99	21.24	28.07	0.12
G103-36-02.1	1	2224	10% (10-YR)	33.00	50.23	53.64	51.34	53.66	0.000347	1.15	28.72	31.35	0.12
G103-36-02.1	1	2224	4% (25-YR)	40.00	50.23	54.01	51.44	54.03	0.000348	1.24	32.19	32.94	0.12
G103-36-02.1	1	2224	2% (50-YR)	46.00	50.23	54.30	51.52	54.32	0.000351	1.32	34.93	34.46	0.12
G103-36-02.1	1	2224	1% (100-YR)	53.00	50.23	54.59	51.61	54.62	0.000360	1.41	37.72	43.37	0.12
G103-36-02.1	1	2271		Culvert									
G103-36-02.1	1	2314	50% (2-YR)	19.00	50.23	52.94	50.75	52.95	0.000050	0.33	56.72	33.97	0.04
G103-36-02.1	1	2314	10% (10-YR)	30.00	50.23	53.76	50.88	53.76	0.000044	0.37	80.49	39.34	0.04
G103-36-02.1	1	2314	4% (25-YR)	36.00	50.23	54.15	50.94	54.15	0.000043	0.39	92.64	50.90	0.04
G103-36-02.1	1	2314	2% (50-YR)	42.00	50.23	54.47	51.00	54.47	0.000041	0.41	103.23	68.77	0.04
G103-36-02.1	1	2314	1% (100-YR)	48.00	50.23	54.80	51.06	54.80	0.000039	0.42	114.63	101.12	0.04
G103-36-02.1	1	2446	50% (2-YR)	17.00	50.37	52.95		52.96	0.000144	0.45	37.76	26.01	0.07
G103-36-02.1	1	2446	10% (10-YR)	26.00	50.37	53.77		53.77	0.000077	0.42	65.99	48.36	0.05
G103-36-02.1	1	2446	4% (25-YR)	31.00	50.37	54.16		54.16	0.000060	0.42	87.31	60.46	0.05
G103-36-02.1	1	2446	2% (50-YR)	36.00	50.37	54.47		54.48	0.000052	0.42	107.81	71.67	0.04
G103-36-02.1	1	2446	1% (100-YR)	41.00	50.37	54.80		54.81	0.000044	0.42	133.59	85.47	0.04
G103-36-03	1	760	50% (2-YR)	58.00	46.88	49.38	47.14	49.38	0.000016	0.28	254.41	147.33	0.03
G103-36-03	1	760	10% (10-YR)	89.00	46.88	49.76	47.22	49.76	0.000023	0.36	312.85	161.53	0.04
G103-36-03	1	760	4% (25-YR)	111.00	46.88	50.25	47.27	50.26	0.000020	0.37	403.21	196.39	0.04
G103-36-03	1	760	2% (50-YR)	128.00	46.88	50.63	47.31	50.63	0.000018	0.38	480.99	214.23	0.03
G103-36-03	1	760	1% (100-YR)	147.00	46.88	50.96	47.35	50.97	0.000017	0.39	556.06	239.30	0.03
G103-36-03	1	775		Bridge									
G103-36-03	1	790	50% (2-YR)	58.00	46.88	49.38	47.15	49.39	0.000018	0.29	237.48	135.23	0.03
G103-36-03	1	790	10% (10-YR)	89.00	46.88	49.77	47.24	49.77	0.000026	0.38	291.12	147.65	0.04
G103-36-03	1	790	4% (25-YR)	111.00	46.88	50.26	47.29	50.26	0.000023	0.40	366.51	161.07	0.04
G103-36-03	1	790	2% (50-YR)	128.00	46.88	50.63	47.33	50.64	0.000020	0.40	430.91	177.50	0.04
G103-36-03	1	790	1% (100-YR)	147.00	46.88	50.97	47.38	50.97	0.000020	0.42	491.33	186.32	0.04
G103-36-03	1	986	50% (2-YR)	50.00	46.88	49.39		49.39	0.000029	0.37	174.07	100.58	0.04
G103-36-03	1	986	10% (10-YR)	77.00	46.88	49.77		49.77	0.000041	0.48	213.86	108.41	0.05

G103-36-00 Existing HEC-RAS Output

HEC-RAS Plan: Existing (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
G103-36-03	1	986	4% (25-YR)	96.00	46.88	50.26		50.27	0.000036	0.50	270.53	120.81	0.05
G103-36-03	1	986	2% (50-YR)	111.00	46.88	50.64		50.64	0.000033	0.51	318.15	133.57	0.05
G103-36-03	1	986	1% (100-YR)	128.00	46.88	50.97		50.97	0.000031	0.53	363.93	141.74	0.05
G103-36-03	1	1219	50% (2-YR)	38.00	46.88	49.40		49.40	0.000025	0.34	156.12	97.53	0.04
G103-36-03	1	1219	10% (10-YR)	59.00	46.88	49.78		49.78	0.000035	0.44	195.94	108.97	0.05
G103-36-03	1	1219	4% (25-YR)	73.00	46.88	50.27		50.27	0.000029	0.45	252.24	124.56	0.04
G103-36-03	1	1219	2% (50-YR)	85.00	46.88	50.65		50.65	0.000027	0.46	303.60	145.46	0.04
G103-36-03	1	1219	1% (100-YR)	97.00	46.88	50.98		50.98	0.000025	0.47	353.58	153.90	0.04
G103-36-03	1	1362	50% (2-YR)	38.00	46.88	49.40		49.40	0.000007	0.18	230.89	116.67	0.02
G103-36-03	1	1362	10% (10-YR)	59.00	46.88	49.78		49.79	0.000010	0.23	277.37	123.95	0.02
G103-36-03	1	1362	4% (25-YR)	73.00	46.88	50.28		50.28	0.000009	0.24	343.47	142.28	0.02
G103-36-03	1	1362	2% (50-YR)	85.00	46.88	50.65		50.65	0.000008	0.25	398.31	151.55	0.02
G103-36-03	1	1362	1% (100-YR)	97.00	46.88	50.98		50.98	0.000008	0.26	450.50	161.63	0.02
G103-36-03	1	1514	50% (2-YR)	31.00	46.88	49.40	47.16	49.40	0.000021	0.31	110.48	137.09	0.03
G103-36-03	1	1514	10% (10-YR)	47.00	46.88	49.79	47.25	49.79	0.000029	0.41	131.37	146.08	0.04
G103-36-03	1	1514	4% (25-YR)	59.00	46.88	50.28	47.31	50.28	0.000026	0.43	157.88	156.78	0.04
G103-36-03	1	1514	2% (50-YR)	67.00	46.88	50.65	47.35	50.65	0.000024	0.44	178.07	167.48	0.04
G103-36-03	1	1514	1% (100-YR)	77.00	46.88	50.98	47.39	50.99	0.000023	0.46	196.00	174.28	0.04
G103-36-03	1	1654		Culvert									
G103-36-03	1	1676	50% (2-YR)	31.00	47.91	49.71	48.65	49.73	0.002037	1.05	29.57	51.24	0.17
G103-36-03	1	1676	10% (10-YR)	47.00	47.91	50.33	48.82	50.34	0.001209	0.99	48.91	151.49	0.14
G103-36-03	1	1676	4% (25-YR)	59.00	47.91	50.95	48.94	50.97	0.000590	0.86	72.68	201.18	0.10
G103-36-03	1	1676	2% (50-YR)	67.00	47.91	51.53	49.01	51.54	0.000335	0.76	94.63	227.67	0.08
G103-36-03	1	1676	1% (100-YR)	77.00	47.91	52.15	49.08	52.16	0.000219	0.70	118.14	255.24	0.07
G103-36-03	1	1769	50% (2-YR)	22.00	47.25	49.79	48.11	49.79	0.000331	0.56	40.04	107.06	0.07
G103-36-03	1	1769	10% (10-YR)	34.00	47.25	50.38	48.31	50.39	0.000295	0.64	54.04	135.51	0.07
G103-36-03	1	1769	4% (25-YR)	42.00	47.25	50.99	48.40	50.99	0.000209	0.63	68.22	150.67	0.06
G103-36-03	1	1769	2% (50-YR)	49.00	47.25	51.55	48.47	51.56	0.000158	0.61	81.51	156.93	0.06
G103-36-03	1	1769	1% (100-YR)	56.00	47.25	52.17	48.53	52.17	0.000120	0.59	95.90	175.74	0.05
G103-36-03	1	1849		Culvert									
G103-36-03	1	1953	50% (2-YR)	22.00	47.56	50.01	48.77	50.04	0.002862	1.32	16.71	69.23	0.20
G103-36-03	1	1953	10% (10-YR)	34.00	47.56	50.75	49.01	50.77	0.001960	1.23	28.30	94.09	0.17
G103-36-03	1	1953	4% (25-YR)	42.00	47.56	51.53	49.16	51.54	0.000736	0.97	48.09	136.00	0.11
G103-36-03	1	1953	2% (50-YR)	49.00	47.56	52.30	49.27	52.31	0.000348	0.80	70.38	179.05	0.08
G103-36-03	1	1953	1% (100-YR)	56.00	47.56	53.14	49.38	53.15	0.000185	0.69	95.33	240.61	0.06
G103-36-03	1	2129	50% (2-YR)	22.00	48.25	50.16		50.17	0.000411	0.37	60.91	91.72	0.07
G103-36-03	1	2129	10% (10-YR)	34.00	48.25	50.82		50.82	0.000116	0.29	139.23	144.12	0.04
G103-36-03	1	2129	4% (25-YR)	42.00	48.25	51.56		51.56	0.000037	0.22	263.34	197.74	0.03
G103-36-03	1	2129	2% (50-YR)	49.00	48.25	52.32		52.32	0.000015	0.17	428.14	230.65	0.02
G103-36-03	1	2129	1% (100-YR)	56.00	48.25	53.16		53.16	0.000007	0.13	627.00	244.93	0.01
G103-36-03	1	2228	50% (2-YR)	8.00	48.77	50.21	49.31	50.22	0.001555	0.74	10.74	15.17	0.14
G103-36-03	1	2228	10% (10-YR)	12.00	48.77	50.83	49.43	50.84	0.000758	0.57	21.17	64.87	0.10
G103-36-03	1	2228	4% (25-YR)	14.00	48.77	51.56	49.49	51.57	0.000159	0.37	38.39	144.29	0.05
G103-36-03	1	2228	2% (50-YR)	17.00	48.77	52.32	49.57	52.32	0.000065	0.30	59.47	165.56	0.03
G103-36-03	1	2228	1% (100-YR)	19.00	48.77	53.16	49.61	53.16	0.000029	0.25	82.95	189.53	0.02
G103-36-03	1	2281		Culvert									
G103-36-03	1	2341	50% (2-YR)	8.00	49.62	50.50	50.09	50.51	0.001875	0.59	13.58	80.31	0.14
G103-36-03	1	2341	10% (10-YR)	12.00	49.62	51.28	50.14	51.28	0.000168	0.33	42.12	116.59	0.05
G103-36-03	1	2341	4% (25-YR)	14.00	49.62	52.17	50.17	52.18	0.000034	0.21	81.67	146.18	0.02
G103-36-03	1	2341	2% (50-YR)	17.00	49.62	53.22	50.20	53.22	0.000012	0.16	131.72	192.29	0.02
G103-36-03	1	2341	1% (100-YR)	19.00	49.62	53.92	50.22	53.92	0.000001	0.05	539.72	204.87	0.00
G103-36-03	1	2417	50% (2-YR)	8.00	49.69	50.53		50.53	0.000145	0.14	55.44	130.89	0.04
G103-36-03	1	2417	10% (10-YR)	12.00	49.69	51.28		51.28	0.000011	0.07	164.65	165.51	0.01
G103-36-03	1	2417	4% (25-YR)	14.00	49.69	52.18		52.18	0.000002	0.05	328.40	210.19	0.01
G103-36-03	1	2417	2% (50-YR)	17.00	49.69	53.22		53.22	0.000001	0.03	563.19	234.04	0.00
G103-36-03	1	2417	1% (100-YR)	19.00	49.69	53.92		53.92	0.000000	0.03	731.46	249.73	0.00
G103-36-03	1	2695	50% (2-YR)	8.00	51.20	51.56	51.56	51.63	0.134204	2.13	3.76	26.22	0.99
G103-36-03	1	2695	10% (10-YR)	12.00	51.20	51.61	51.61	51.69	0.143032	2.19	5.48	38.41	1.02
G103-36-03	1	2695	4% (25-YR)	14.00	51.20	52.18		52.18	0.000880	0.44	32.04	55.31	0.10
G103-36-03	1	2695	2% (50-YR)	17.00	51.20	53.22		53.22	0.000034	0.15	114.38	90.22	0.02
G103-36-03	1	2695	1% (100-YR)	19.00	51.20	53.92		53.92	0.000010	0.11	195.07	144.92	0.01

G103-39-00 Existing HEC-RAS Output

HEC-RAS Plan: Existing River: G103-39-00 Reach: 1

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
1	14	2-yr	73.80	41.99	46.44	43.29	46.46	0.000501	1.09	67.61	21.65	0.11
1	14	10-yr	118.80	41.99	47.58	43.68	47.61	0.000501	1.26	97.41	44.81	0.11
1	14	25-yr	150.10	41.99	48.07	43.92	48.10	0.000501	1.37	142.21	155.94	0.11
1	14	50-yr	176.10	41.99	48.35	44.10	48.38	0.000500	1.42	194.43	210.30	0.12
1	14	100-yr	206.00	41.99	48.60	44.29	48.63	0.000500	1.47	252.98	266.96	0.12
1	711	2-yr	85.00	42.49	46.48		46.48	0.000008	0.13	1245.70	818.79	0.01
1	711	10-yr	136.00	42.49	47.62		47.62	0.000004	0.12	2316.22	1078.19	0.01
1	711	25-yr	171.00	42.49	48.11		48.11	0.000003	0.12	2864.48	1143.84	0.01
1	711	50-yr	199.00	42.49	48.39		48.39	0.000003	0.13	3182.85	1162.60	0.01
1	711	100-yr	232.00	42.49	48.64		48.64	0.000004	0.13	3474.64	1190.71	0.01
1	1336	2-yr	97.00	41.72	46.48		46.48	0.000002	0.11	2272.77	1280.37	0.01
1	1336	10-yr	154.00	41.72	47.62		47.62	0.000001	0.10	4063.33	1703.50	0.01
1	1336	25-yr	192.00	41.72	48.11		48.11	0.000001	0.10	4910.66	1715.40	0.01
1	1336	50-yr	222.00	41.72	48.39		48.39	0.000001	0.10	5385.73	1723.35	0.01
1	1336	100-yr	258.00	41.72	48.64		48.64	0.000001	0.11	5814.36	1731.84	0.01
1	1575	2-yr	101.00	41.72	46.48		46.48	0.000005	0.15	1834.66	1446.11	0.01
1	1575	10-yr	161.00	41.72	47.62		47.62	0.000002	0.12	3531.40	1533.84	0.01
1	1575	25-yr	200.00	41.72	48.11		48.11	0.000002	0.12	4298.04	1556.10	0.01
1	1575	50-yr	232.00	41.72	48.39		48.39	0.000002	0.12	4730.99	1574.81	0.01
1	1575	100-yr	268.00	41.72	48.64		48.64	0.000002	0.13	5123.21	1587.42	0.01
1	1864	2-yr	108.00	41.72	46.48		46.49	0.000017	0.28	640.19	515.83	0.02
1	1864	10-yr	170.00	41.72	47.62		47.62	0.000011	0.26	1401.86	917.51	0.02
1	1864	25-yr	211.00	41.72	48.11		48.11	0.000010	0.27	1877.72	1005.64	0.02
1	1864	50-yr	244.00	41.72	48.39		48.39	0.000010	0.27	2161.08	1035.55	0.02
1	1864	100-yr	282.00	41.72	48.64		48.64	0.000010	0.28	2427.85	1123.79	0.02
1	2252	2-yr	121.00	41.72	46.49		46.49	0.000033	0.37	340.23	100.43	0.03
1	2252	10-yr	190.00	41.72	47.62		47.63	0.000035	0.44	478.85	160.16	0.03
1	2252	25-yr	234.00	41.72	48.12		48.12	0.000038	0.49	589.22	342.78	0.04
1	2252	50-yr	269.00	41.72	48.39		48.40	0.000041	0.52	711.46	533.91	0.04
1	2252	100-yr	310.00	41.72	48.64		48.65	0.000046	0.57	860.11	627.32	0.04
1	2426	2-yr	121.00	41.72	46.50		46.50	0.000031	0.35	362.75	141.00	0.03
1	2426	10-yr	190.00	41.72	47.63		47.63	0.000029	0.40	672.79	434.43	0.03
1	2426	25-yr	234.00	41.72	48.13		48.13	0.000028	0.42	936.60	621.10	0.03
1	2426	50-yr	269.00	41.72	48.40		48.40	0.000030	0.44	1131.37	757.96	0.03
1	2426	100-yr	310.00	41.72	48.65		48.65	0.000030	0.46	1325.47	793.43	0.03
1	2645	2-yr	131.00	41.72	46.51		46.51	0.000033	0.36	379.78	138.52	0.03
1	2645	10-yr	206.00	41.72	47.64		47.64	0.000033	0.42	642.34	337.59	0.03
1	2645	25-yr	252.00	41.72	48.13		48.13	0.000033	0.45	836.19	489.27	0.03
1	2645	50-yr	289.00	41.72	48.41		48.41	0.000034	0.47	992.84	621.77	0.03
1	2645	100-yr	332.00	41.72	48.66		48.66	0.000037	0.50	1155.73	682.11	0.04
1	2825	2-yr	131.00	41.72	46.51		46.51	0.000033	0.34	395.94	168.17	0.03
1	2825	10-yr	206.00	41.72	47.64		47.65	0.000030	0.39	712.48	404.45	0.03
1	2825	25-yr	252.00	41.72	48.14		48.14	0.000029	0.41	950.74	544.94	0.03
1	2825	50-yr	289.00	41.72	48.41		48.42	0.000030	0.42	1105.52	578.20	0.03
1	2825	100-yr	332.00	41.72	48.66		48.67	0.000031	0.44	1251.56	594.28	0.03
1	3049	2-yr	142.50	43.33	46.53		46.54	0.000546	0.86	166.12	90.78	0.11
1	3049	10-yr	223.20	43.33	47.65		47.66	0.000291	0.81	275.27	110.15	0.09
1	3049	25-yr	272.80	43.33	48.15		48.16	0.000246	0.84	340.16	164.43	0.08
1	3049	50-yr	311.00	43.33	48.42		48.43	0.000237	0.87	397.71	260.77	0.08
1	3049	100-yr	356.00	43.33	48.67		48.69	0.000238	0.91	473.47	349.32	0.08
1	3244	2-yr	142.50	45.84	47.70	47.70	48.09	0.058377	5.00	28.48	36.77	1.00
1	3244	10-yr	223.20	45.84	47.97	47.97	48.48	0.055539	5.72	39.00	39.63	1.02
1	3244	25-yr	272.80	45.84	48.14	48.14	48.69	0.051779	5.95	45.83	41.68	1.00
1	3244	50-yr	311.00	45.84	48.24	48.24	48.84	0.052494	6.22	50.01	43.01	1.02
1	3244	100-yr	356.00	45.84	48.45	48.37	49.01	0.042144	6.00	59.33	45.68	0.93
1	3333	2-yr	135.00	46.04	48.90	47.66	49.00	0.003798	2.56	52.75	39.68	0.30
1	3333	10-yr	212.00	46.04	49.39	48.04	49.56	0.004771	3.28	64.58	59.21	0.35
1	3333	25-yr	259.00	46.04	49.63	48.24	49.84	0.005349	3.68	70.37	69.85	0.38
1	3333	50-yr	295.00	46.04	49.81	48.38	50.05	0.005703	3.95	74.64	93.87	0.40
1	3333	100-yr	338.00	46.04	49.96	48.53	50.25	0.006425	4.33	78.14	110.53	0.42
1	3403		Culvert									
1	3423	2-yr	135.00	47.87	51.50	49.88	51.57	0.003067	2.24	99.08	138.65	0.27
1	3423	10-yr	212.00	47.87	51.70	50.44	51.81	0.004948	3.01	128.95	174.97	0.34
1	3423	25-yr	259.00	47.87	51.75	50.72	51.91	0.007126	3.66	137.98	183.16	0.41
1	3423	50-yr	295.00	47.87	51.70	51.23	51.91	0.009486	4.17	129.75	175.74	0.47

G103-39-00 Existing HEC-RAS Output

HEC-RAS Plan: Existing River: G103-39-00 Reach: 1 (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
1	3423	100-yr	338.00	47.87	51.95	51.35	52.14	0.007630	3.99	177.45	195.94	0.43
1	3454	2-yr	135.00	47.88	51.58		51.76	0.009127	3.43	40.01	34.21	0.44
1	3454	10-yr	212.00	47.88	51.78	50.96	52.14	0.015638	4.80	48.88	52.00	0.59
1	3454	25-yr	259.00	47.88	51.89	51.29	52.35	0.019302	5.51	54.57	54.42	0.66
1	3454	50-yr	295.00	47.88	51.89	51.56	52.49	0.025034	6.28	54.57	54.42	0.75
1	3454	100-yr	338.00	47.88	52.02	51.89	52.69	0.025924	6.65	62.13	57.01	0.77
1	3633	2-yr	122.00	50.83	53.50		53.72	0.013518	3.76	32.48	20.99	0.53
1	3633	10-yr	191.00	50.83	54.20		54.44	0.010620	3.96	48.24	23.81	0.49
1	3633	25-yr	234.00	50.83	54.56		54.82	0.009983	4.09	57.18	26.81	0.48
1	3633	50-yr	267.00	50.83	54.87		55.13	0.009180	4.08	67.28	40.89	0.47
1	3633	100-yr	306.00	50.83	55.09		55.36	0.009166	4.24	77.88	52.68	0.47
1	3862	2-yr	122.00	51.68	55.90		56.09	0.008215	3.50	34.83	15.43	0.41
1	3862	10-yr	191.00	51.68	56.55		56.82	0.010052	4.19	45.55	17.97	0.46
1	3862	25-yr	234.00	51.68	56.90		57.21	0.010773	4.48	52.20	19.71	0.49
1	3862	50-yr	267.00	51.68	57.13		57.47	0.011293	4.69	56.93	20.86	0.50
1	3862	100-yr	306.00	51.68	57.39		57.76	0.011781	4.90	62.50	22.23	0.51
1	4002	2-yr	112.00	51.99	56.57		56.63	0.002045	2.01	55.74	21.00	0.22
1	4002	10-yr	175.00	51.99	57.37		57.46	0.002367	2.37	73.90	24.25	0.24
1	4002	25-yr	215.00	51.99	57.79		57.89	0.002517	2.54	84.48	26.04	0.25
1	4002	50-yr	246.00	51.99	58.08		58.19	0.002637	2.67	92.08	27.35	0.26
1	4002	100-yr	282.00	51.99	58.39		58.51	0.002752	2.80	100.83	28.90	0.26
1	4201	2-yr	112.00	52.64	57.12		57.24	0.004716	2.85	39.33	15.02	0.31
1	4201	10-yr	175.00	52.64	57.98		58.15	0.005140	3.27	53.45	17.69	0.33
1	4201	25-yr	215.00	52.64	58.43		58.62	0.005333	3.48	61.75	19.20	0.34
1	4201	50-yr	246.00	52.64	58.74		58.95	0.005501	3.62	67.89	20.41	0.35
1	4201	100-yr	282.00	52.64	59.08		59.30	0.005644	3.76	74.92	21.77	0.36
1	4287	2-yr	100.00	53.57	57.35	54.80	57.38	0.000624	1.23	81.36	28.02	0.13
1	4287	10-yr	155.00	53.57	58.26	55.12	58.29	0.000639	1.46	106.48	29.84	0.13
1	4287	25-yr	191.00	53.57	58.73	55.31	58.77	0.000658	1.60	119.67	30.76	0.14
1	4287	50-yr	219.00	53.57	59.05	55.44	59.10	0.000677	1.70	128.77	31.39	0.14
1	4287	100-yr	252.00	53.57	59.40	55.59	59.45	0.000703	1.82	138.53	32.11	0.14
1	4380		Culvert									
1	4408	2-yr	100.00	56.52	62.08	58.47	62.09	0.000376	1.11	90.10	39.81	0.10
1	4408	10-yr	155.00	56.52	62.94	58.92	62.97	0.000453	1.40	110.84	51.15	0.11
1	4408	25-yr	191.00	56.52	65.87	59.16	65.88	0.000134	1.05	181.09	66.68	0.07
1	4408	50-yr	219.00	56.52	68.45	59.34	68.46	0.000066	0.90	243.02	150.77	0.05
1	4408	100-yr	252.00	56.52	68.73	59.53	68.73	0.000034	0.57	487.72	162.29	0.03
1	4458	2-yr	100.00	57.33	62.09		62.14	0.001981	1.85	53.92	22.13	0.21
1	4458	10-yr	155.00	57.33	62.96		63.02	0.002015	2.06	75.14	26.79	0.22
1	4458	25-yr	191.00	57.33	65.88		65.89	0.000328	1.08	176.54	43.15	0.09
1	4458	50-yr	219.00	57.33	68.46		68.46	0.000080	0.72	337.26	102.74	0.05
1	4458	100-yr	252.00	57.33	68.73		68.74	0.000090	0.79	368.39	123.93	0.05
1	4667	2-yr	100.00	57.67	62.52		62.58	0.002231	2.07	48.40	17.86	0.22
1	4667	10-yr	155.00	57.67	63.40		63.49	0.002381	2.38	65.10	20.18	0.23
1	4667	25-yr	191.00	57.67	65.96		65.99	0.000642	1.49	127.87	30.15	0.13
1	4667	50-yr	219.00	57.67	68.47		68.49	0.000176	1.00	231.24	54.73	0.07
1	4667	100-yr	252.00	57.67	68.75		68.77	0.000199	1.09	246.79	58.96	0.08
1	4869	2-yr	91.00	58.83	63.05		63.10	0.003031	1.95	46.73	25.40	0.25
1	4869	10-yr	141.00	58.83	63.90		63.96	0.002271	2.01	70.14	29.17	0.23
1	4869	25-yr	174.00	58.83	66.08		66.10	0.000460	1.23	141.52	36.57	0.11
1	4869	50-yr	201.00	58.83	68.51		68.52	0.000138	0.83	242.07	48.02	0.06
1	4869	100-yr	230.00	58.83	68.79		68.80	0.000155	0.90	255.71	49.87	0.07
1	5031	2-yr	91.00	60.14	63.79		64.00	0.011272	3.70	24.60	12.70	0.47
1	5031	10-yr	141.00	60.14	64.46		64.73	0.011680	4.15	33.94	15.16	0.49
1	5031	25-yr	174.00	60.14	66.18		66.28	0.003147	2.65	65.77	21.79	0.27
1	5031	50-yr	201.00	60.14	68.54		68.57	0.000741	1.54	130.61	33.64	0.14
1	5031	100-yr	230.00	60.14	68.82		68.86	0.000804	1.64	140.26	35.00	0.14
1	5204	2-yr	84.00	61.21	64.97		65.05	0.003581	2.27	36.98	17.74	0.28
1	5204	10-yr	130.00	61.21	65.71		65.81	0.003680	2.52	51.66	21.81	0.29
1	5204	25-yr	161.00	61.21	66.71		66.77	0.002439	2.00	80.60	36.20	0.24
1	5204	50-yr	185.00	61.21	68.65		68.67	0.000447	1.11	167.22	52.16	0.11
1	5204	100-yr	212.00	61.21	68.94		68.97	0.000454	1.16	182.61	54.28	0.11
1	5362	2-yr	84.00	62.01	65.68		65.83	0.006701	3.04	27.62	12.49	0.36
1	5362	10-yr	130.00	62.01	66.43		66.62	0.006914	3.45	37.65	14.20	0.37

G103-39-00 Existing HEC-RAS Output

HEC-RAS Plan: Existing River: G103-39-00 Reach: 1 (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
1	5362	25-yr	161.00	62.01	67.18		67.35	0.005273	3.29	49.00	16.18	0.33
1	5362	50-yr	185.00	62.01	68.74		68.82	0.001914	2.39	82.83	51.90	0.21
1	5362	100-yr	212.00	62.01	69.02		69.12	0.001929	2.50	98.50	55.85	0.21
1	5535	2-yr	75.20	63.06	66.85		66.95	0.006288	2.50	30.14	19.02	0.35
1	5535	10-yr	116.70	63.06	67.59		67.68	0.005402	2.45	47.57	28.19	0.33
1	5535	25-yr	144.70	63.06	68.07		68.16	0.004019	2.32	62.31	32.27	0.29
1	5535	50-yr	167.00	63.06	69.07		69.11	0.001431	1.72	97.86	39.44	0.19
1	5535	100-yr	192.00	63.06	69.35		69.40	0.001347	1.78	109.30	41.81	0.18
1	5637	2-yr	75.20	64.83	67.60		67.80	0.010686	3.55	21.17	10.79	0.45
1	5637	10-yr	116.70	64.83	68.32		68.56	0.013701	3.90	29.91	16.50	0.51
1	5637	25-yr	144.70	64.83	68.67		68.91	0.014621	3.90	37.12	22.17	0.53
1	5637	50-yr	167.00	64.83	69.27		69.44	0.007831	3.25	51.38	25.31	0.40
1	5637	100-yr	192.00	64.83	69.54		69.70	0.007337	3.30	58.24	26.81	0.39
1	5778	2-yr	75.20	65.77	68.88		69.02	0.007062	2.96	25.38	13.06	0.37
1	5778	10-yr	116.70	65.77	69.70		69.85	0.006463	3.10	37.68	17.08	0.37
1	5778	25-yr	144.70	65.77	70.06		70.23	0.006526	3.27	44.22	18.57	0.37
1	5778	50-yr	167.00	65.77	70.29		70.47	0.006829	3.45	48.43	19.45	0.39
1	5778	100-yr	192.00	65.77	70.53		70.73	0.007041	3.61	53.22	20.42	0.39

G103-46-00 Existing HEC-RAS Output

HEC-RAS Plan: Existing River: G103-46-00 Reach: 1

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
1	1253	2-yr	212.00	41.89	44.24	44.00	44.85	0.002001	6.25	33.90	19.11	0.83
1	1253	10-yr	296.00	41.89	44.69	44.43	45.43	0.002000	6.92	42.76	20.53	0.85
1	1253	25-yr	350.00	41.89	44.94	44.68	45.76	0.002004	7.28	48.07	21.34	0.86
1	1253	50-yr	394.00	41.89	45.13	44.86	46.02	0.002003	7.54	52.27	21.96	0.86
1	1253	100-yr	442.00	41.89	45.33	45.06	46.28	0.002003	7.79	56.71	22.59	0.87
1	1312	2-yr	210.00	41.65	44.71	43.71	44.94	0.000629	3.85	54.49	27.13	0.48
1	1312	10-yr	285.00	41.65	45.28	44.07	45.53	0.000545	4.05	70.38	28.99	0.46
1	1312	25-yr	338.00	41.65	45.59	44.31	45.87	0.000536	4.25	79.58	30.02	0.46
1	1312	50-yr	379.00	41.65	45.83	44.50	46.13	0.000522	4.36	86.93	30.80	0.46
1	1312	100-yr	424.00	41.65	46.08	44.66	46.39	0.000510	4.48	94.65	31.55	0.46
1	1360		Culvert									
1	1391	2-yr	210.00	42.17	45.19	44.36	45.47	0.005551	4.27	49.20	24.63	0.53
1	1391	10-yr	285.00	42.17	45.97	44.73	46.23	0.003755	4.11	69.40	27.13	0.45
1	1391	25-yr	338.00	42.17	46.45	44.97	46.71	0.003171	4.09	82.73	28.49	0.42
1	1391	50-yr	379.00	42.17	46.81	45.14	47.07	0.002825	4.06	93.24	29.51	0.40
1	1391	100-yr	424.00	42.17	47.20	45.31	47.45	0.002530	4.05	104.81	30.61	0.39
1	1427	2-yr	210.00	42.07	45.37		45.70	0.005993	4.57	45.94	21.62	0.55
1	1427	10-yr	285.00	42.07	46.08		46.40	0.004791	4.57	62.31	24.62	0.51
1	1427	25-yr	338.00	42.07	46.53		46.86	0.004182	4.57	73.91	26.26	0.48
1	1427	50-yr	379.00	42.07	46.88		47.21	0.003780	4.55	83.32	27.59	0.46
1	1427	100-yr	424.00	42.07	47.26		47.57	0.003413	4.52	93.90	29.06	0.44
1	1699	2-yr	206.00	42.54	46.66		46.83	0.002961	3.29	62.65	28.86	0.39
1	1699	10-yr	269.00	42.54	47.20		47.38	0.002684	3.39	79.36	32.45	0.38
1	1699	25-yr	319.00	42.54	47.57		47.76	0.002564	3.48	91.70	34.84	0.38
1	1699	50-yr	356.00	42.54	47.85		48.04	0.002450	3.50	101.84	37.14	0.37
1	1699	100-yr	398.00	42.54	48.17		48.36	0.002381	3.48	114.41	41.28	0.37
1	1962	2-yr	203.00	43.04	47.38		47.57	0.002656	3.48	58.26	21.75	0.38
1	1962	10-yr	255.00	43.04	47.89		48.10	0.002694	3.64	69.98	24.76	0.38
1	1962	25-yr	302.00	43.04	48.27		48.49	0.002951	3.77	80.65	33.72	0.40
1	1962	50-yr	334.00	43.04	48.54		48.76	0.003026	3.76	91.44	46.97	0.41
1	1962	100-yr	374.00	43.04	48.85		49.07	0.003012	3.71	110.94	79.50	0.41
1	2102	2-yr	201.00	42.90	47.75		47.91	0.002219	3.27	61.42	21.26	0.34
1	2102	10-yr	247.00	42.90	48.26		48.44	0.002171	3.38	73.02	23.76	0.34
1	2102	25-yr	293.00	42.90	48.66		48.85	0.002255	3.53	82.91	26.14	0.35
1	2102	50-yr	324.00	42.90	48.94		49.14	0.002327	3.58	90.43	28.80	0.36
1	2102	100-yr	362.00	42.90	49.25		49.45	0.002438	3.60	106.49	97.34	0.37
1	2216	2-yr	198.00	43.94	48.00	46.41	48.18	0.002454	3.37	58.80	23.64	0.37
1	2216	10-yr	234.00	43.94	48.51	46.64	48.68	0.002056	3.32	70.47	26.55	0.34
1	2216	25-yr	278.00	43.94	48.91	46.87	49.10	0.002098	3.45	80.58	30.18	0.35
1	2216	50-yr	305.00	43.94	49.20	47.02	49.38	0.002003	3.45	88.63	37.20	0.34
1	2216	100-yr	341.00	43.94	49.50	47.19	49.69	0.001846	3.52	98.53	46.76	0.33
1	2285		Culvert									
1	2308	2-yr	198.00	44.49	52.00	47.48	52.02	0.000174	1.25	163.92	105.26	0.11
1	2308	10-yr	234.00	44.49	52.51	47.70	52.54	0.000166	1.32	184.85	127.53	0.11
1	2308	25-yr	278.00	44.49	53.36	47.96	53.39	0.000135	1.32	219.85	149.47	0.10
1	2308	50-yr	305.00	44.49	53.88	48.10	53.90	0.000121	1.33	240.87	160.80	0.09
1	2308	100-yr	341.00	44.49	54.51	48.29	54.53	0.000109	1.34	266.65	183.10	0.09
1	2359	2-yr	198.00	44.76	52.01		52.04	0.000192	1.42	206.44	109.41	0.11
1	2359	10-yr	234.00	44.76	52.52		52.55	0.000180	1.47	264.60	124.79	0.11
1	2359	25-yr	278.00	44.76	53.37		53.40	0.000136	1.40	378.83	143.08	0.10
1	2359	50-yr	305.00	44.76	53.89		53.91	0.000116	1.36	455.64	154.83	0.09
1	2359	100-yr	341.00	44.76	54.52		54.54	0.000099	1.33	557.74	170.97	0.09
1	2485	2-yr	194.00	45.15	52.04		52.06	0.000186	1.25	195.62	130.07	0.11
1	2485	10-yr	238.00	45.15	52.55		52.57	0.000176	1.31	267.47	151.22	0.11
1	2485	25-yr	283.00	45.15	53.39		53.42	0.000122	1.22	410.00	180.81	0.09
1	2485	50-yr	313.00	45.15	53.91		53.92	0.000102	1.19	508.64	205.98	0.09
1	2485	100-yr	350.00	45.15	54.54		54.55	0.000082	1.14	647.36	228.10	0.08
1	2710	2-yr	187.00	46.05	52.08		52.13	0.000460	1.71	165.74	175.43	0.16
1	2710	10-yr	244.00	46.05	52.59		52.63	0.000406	1.76	269.39	224.14	0.16
1	2710	25-yr	293.00	46.05	53.43		53.45	0.000216	1.47	492.25	300.45	0.12
1	2710	50-yr	327.00	46.05	53.93		53.95	0.000155	1.33	649.57	329.68	0.10
1	2710	100-yr	368.00	46.05	54.56		54.57	0.000104	1.17	859.25	340.12	0.09
1	2988	2-yr	179.00	46.88	52.22		52.26	0.000500	1.61	132.40	128.77	0.17
1	2988	10-yr	252.00	46.88	52.71		52.76	0.000525	1.84	205.88	189.65	0.18

G103-46-00 Existing HEC-RAS Output

HEC-RAS Plan: Existing River: G103-46-00 Reach: 1 (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
1	2988	25-yr	305.00	46.88	53.49		53.52	0.000289	1.57	422.81	375.11	0.14
1	2988	50-yr	345.00	46.88	53.98		54.00	0.000199	1.41	619.83	420.84	0.12
1	2988	100-yr	391.00	46.88	54.59		54.61	0.000129	1.23	893.32	472.28	0.10
1	3229	2-yr	172.00	47.95	52.39		52.45	0.001349	2.19	161.19	235.64	0.26
1	3229	10-yr	259.00	47.95	52.89		52.95	0.001197	2.16	294.17	294.38	0.25
1	3229	25-yr	316.00	47.95	53.59		53.61	0.000497	1.66	513.78	333.91	0.17
1	3229	50-yr	361.00	47.95	54.04		54.06	0.000330	1.49	674.05	365.50	0.14
1	3229	100-yr	412.00	47.95	54.63		54.64	0.000211	1.32	913.17	428.05	0.12
1	3521	2-yr	95.00	48.05	52.57		52.58	0.000141	0.89	215.94	223.66	0.09
1	3521	10-yr	143.00	48.05	53.06		53.08	0.000152	1.03	336.22	278.14	0.10
1	3521	25-yr	174.00	48.05	53.67		53.68	0.000097	0.91	549.53	400.11	0.08
1	3521	50-yr	199.00	48.05	54.10		54.11	0.000072	0.84	730.13	440.75	0.07
1	3521	100-yr	227.00	48.05	54.67		54.68	0.000047	0.74	987.41	469.63	0.06
1	3867	2-yr	47.00	48.82	52.62		52.63	0.000091	0.60	159.44	276.15	0.07
1	3867	10-yr	71.00	48.82	53.11		53.12	0.000071	0.61	326.19	388.16	0.06
1	3867	25-yr	86.00	48.82	53.70		53.70	0.000034	0.48	585.49	493.46	0.05
1	3867	50-yr	99.00	48.82	54.13		54.13	0.000021	0.41	800.28	525.28	0.04
1	3867	100-yr	112.00	48.82	54.68		54.68	0.000012	0.34	1105.14	565.31	0.03

G103-46-01 Existing
HY-8 Culvert Analysis Report

Crossing Discharge Data

Discharge Selection Method: User Defined

Table 1 - Summary of Culvert Flows at Crossing: G103-46-01 Outlet Existing

Headwater Elevation (ft)	Discharge Names	Total Discharge (cfs)	Existing Discharge (cfs)	Roadway Discharge (cfs)	Iterations
67.06	0.2	70.60	70.60	0.00	1
68.92	0.4	141.20	102.32	38.81	6
69.19	0.6	211.80	106.17	105.48	5
69.42	0.8	282.40	109.17	173.09	4
69.62	1	353.00	111.73	240.95	3
68.62	Overtopping	97.99	97.99	0.00	Overtopping

Rating Curve Plot for Crossing: G103-46-01 Outlet Existing

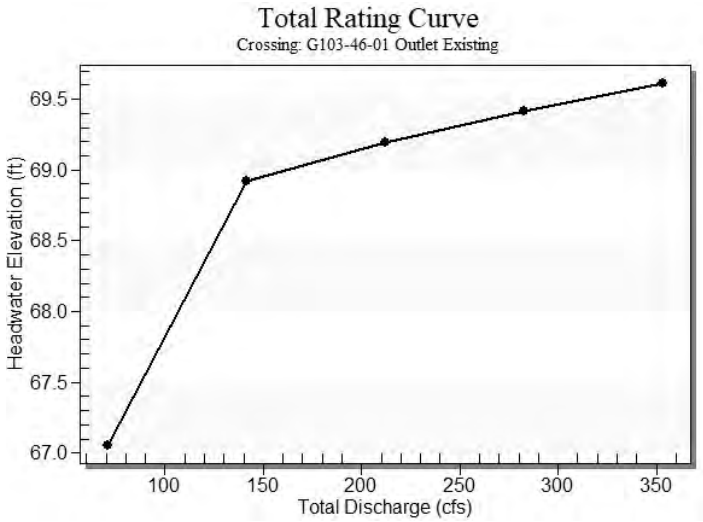


Table 2 - Culvert Summary Table: Existing

Discharge Names	Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
0.2	70.60	70.60	67.06	4.078	0.0*	5-S2n	1.527	2.629	1.527	2.578	16.918	2.404
0.4	141.20	102.32	68.92	5.937	0.0*	5-S2n	1.901	3.094	1.962	3.577	17.855	2.848
0.6	211.80	106.17	69.19	6.215	0.0*	5-S2n	1.946	3.134	2.017	4.336	17.915	3.046
0.8	282.40	109.17	69.42	6.439	0.0*	5-JS1f	1.980	3.162	3.500	5.001	11.347	3.073
1	353.00	111.73	69.62	6.635	0.0*	5-JS1f	2.010	3.186	3.500	5.502	11.613	3.110

* Full Flow Headwater elevation is below inlet invert.

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Straight Culvert

Inlet Elevation (invert): 62.98 ft, Outlet Elevation (invert): 47.63 ft

Culvert Length: 534.22 ft, Culvert Slope: 0.0287

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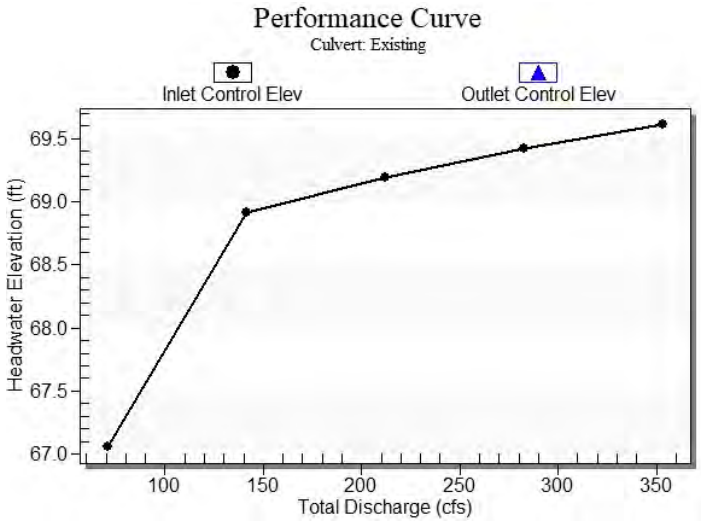
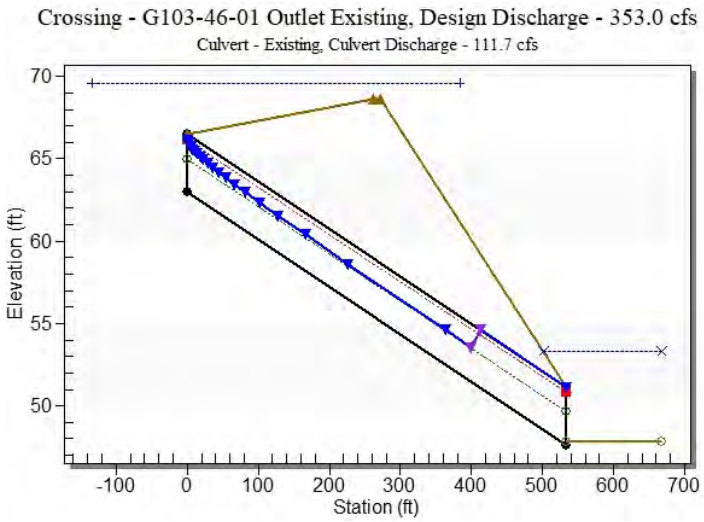
Culvert Performance Curve Plot: Existing



Water Surface Profile Plot for Culvert: Existing



Site Data - Existing

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 62.98 ft

Outlet Station: 534.00 ft

Outlet Elevation: 47.63 ft

Number of Barrels: 1

Culvert Data Summary - Existing

Barrel Shape: Circular

Barrel Diameter: 3.50 ft

Barrel Material: Concrete

Embedment: 0.00 in

Barrel Manning's n: 0.0130

Culvert Type: Straight

Inlet Configuration: Grooved End Projecting

Inlet Depression: None

Table 3 - Downstream Channel Rating Curve (Crossing: G103-46-01 Outlet Existing)

Flow (cfs)	Water Surface Elev (ft)	Depth (ft)	Velocity (ft/s)	Shear (psf)	Froude Number
70.60	50.41	2.58	2.40	0.37	0.33
141.20	51.41	3.58	2.85	0.51	0.34
211.80	52.17	4.34	3.05	0.62	0.35
282.40	52.83	5.00	3.07	0.72	0.35
353.00	53.33	5.50	3.11	0.79	0.35

Tailwater Channel Data - G103-46-01 Outlet Existing

Tailwater Channel Option: Irregular Channel

Channel Slope: 0.0023

User Defined Channel Cross-Section:

Coord No.	Station (ft)	Elevation (ft)	Manning's n
1	0.00	56.00	0.0400
2	0.10	53.58	0.0400
3	0.73	53.63	0.0400
4	4.66	53.50	0.0400
5	6.41	53.30	0.0400
6	9.07	52.91	0.0400
7	11.15	52.47	0.0400
8	12.52	52.14	0.0400
9	13.52	51.65	0.0400
10	15.03	50.79	0.0400
11	16.45	49.90	0.0400
12	18.25	48.98	0.0400
13	19.21	48.67	0.0400
14	20.38	48.24	0.0400
15	22.99	47.83	0.0400
16	24.31	47.84	0.0400
17	25.36	48.03	0.0400
18	26.95	48.38	0.0400
19	27.73	48.50	0.0400
20	28.24	48.56	0.0400
21	30.10	48.94	0.0400
22	30.76	49.26	0.0400
23	32.17	49.88	0.0400
24	32.46	50.03	0.0400
25	32.90	50.23	0.0400
26	34.83	50.87	0.0400
27	36.10	51.23	0.0400
28	37.20	51.42	0.0400
29	41.94	52.17	0.0400
30	43.96	52.47	0.0400
31	46.67	52.73	0.0400
32	47.89	52.80	0.0400
33	49.04	52.89	0.0400
34	51.82	53.14	0.0400
35	55.76	53.57	0.0400
36	56.00	53.56	0.0400
37	56.09	56.00	0.0000

Roadway Data for Crossing: G103-46-01 Outlet Existing

Roadway Profile Shape: Constant Roadway Elevation

Crest Length: 80.00 ft

Crest Elevation: 68.62 ft

Roadway Surface: Paved

Roadway Top Width: 10.00 ft

G103-46-01 Existing HEC-RAS Output

HEC-RAS Plan: Existing River: G103-46-01 Reach: 1

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
1	5	2-yr	141.10	62.77	68.92	65.94	68.99	0.002412	2.11	66.78	25.87	0.23
1	5	10-yr	217.30	62.77	69.21	66.62	69.34	0.004342	2.91	74.93	30.39	0.31
1	5	25-yr	268.10	62.77	69.37	66.98	69.55	0.005572	3.37	80.27	34.40	0.36
1	5	50-yr	308.30	62.77	69.49	67.24	69.71	0.006526	3.71	84.68	38.95	0.39
1	5	100-yr	353.00	62.77	69.62	67.52	69.87	0.007536	4.06	89.76	41.25	0.42
1	173	2-yr	124.00	65.06	69.40		69.53	0.004392	2.79	44.49	17.68	0.31
1	173	10-yr	192.00	65.06	70.00		70.19	0.005857	3.44	55.80	20.09	0.36
1	173	25-yr	236.00	65.06	70.35		70.56	0.006491	3.75	62.91	21.51	0.39
1	173	50-yr	272.00	65.06	70.60		70.84	0.006933	3.98	68.43	22.56	0.40
1	173	100-yr	311.00	65.06	70.85		71.12	0.007303	4.18	74.35	23.64	0.42
1	212	2-yr	95.00	65.33	69.54	67.55	69.67	0.002810	2.80	33.91	18.82	0.27
1	212	10-yr	147.00	65.33	70.17	68.04	70.38	0.003807	3.65	40.22	21.30	0.32
1	212	25-yr	181.00	65.33	70.52	68.32	70.79	0.004375	4.14	43.71	22.62	0.35
1	212	50-yr	209.00	65.33	70.78	68.54	71.09	0.004840	4.52	46.22	23.58	0.37
1	212	100-yr	239.00	65.33	71.03	68.76	71.40	0.005300	4.90	48.75	24.54	0.39
1	512		Culvert									
1	525	2-yr	95.00	71.56	77.73	74.03	77.74	0.000257	0.80	141.09	139.45	0.08
1	525	10-yr	147.00	71.56	77.95	74.62	77.97	0.000456	1.12	176.25	167.34	0.11
1	525	25-yr	181.00	71.56	78.04	74.86	78.06	0.000617	1.33	191.56	191.94	0.13
1	525	50-yr	209.00	71.56	78.10	75.01	78.13	0.000758	1.49	204.25	200.72	0.14
1	525	100-yr	239.00	71.56	78.16	75.16	78.20	0.000910	1.66	217.06	206.33	0.16
1	548	2-yr	77.00	72.00	77.74		77.74	0.000156	0.64	122.10	50.85	0.06
1	548	10-yr	119.00	72.00	77.97		77.98	0.000291	0.92	138.64	104.74	0.09
1	548	25-yr	147.00	72.00	78.06		78.08	0.000404	1.10	149.04	122.50	0.10
1	548	50-yr	169.00	72.00	78.13		78.15	0.000495	1.24	157.98	134.86	0.12
1	548	100-yr	194.00	72.00	78.19		78.22	0.000606	1.39	167.25	139.52	0.13
1	651	2-yr	77.00	71.95	77.75		77.76	0.000221	0.74	104.21	34.48	0.07
1	651	10-yr	119.00	71.95	78.00		78.02	0.000437	1.05	113.01	36.76	0.11
1	651	25-yr	147.00	71.95	78.10		78.13	0.000624	1.26	116.89	38.06	0.13
1	651	50-yr	169.00	71.95	78.18		78.21	0.000792	1.41	120.11	42.51	0.14
1	651	100-yr	194.00	71.95	78.26		78.30	0.000995	1.57	123.78	47.60	0.16
1	804	2-yr	77.00	72.54	77.79		77.81	0.000382	0.93	82.65	28.95	0.10
1	804	10-yr	119.00	72.54	78.08		78.10	0.000700	1.31	91.04	30.17	0.13
1	804	25-yr	147.00	72.54	78.21		78.25	0.000946	1.54	95.15	30.75	0.15
1	804	50-yr	169.00	72.54	78.32		78.36	0.001139	1.72	98.45	31.20	0.17
1	804	100-yr	194.00	72.54	78.43		78.49	0.001363	1.90	101.97	31.68	0.19
1	927	2-yr	63.00	73.88	77.85		77.86	0.000570	1.02	61.89	25.98	0.12
1	927	10-yr	97.00	73.88	78.17		78.20	0.000941	1.37	70.59	27.44	0.15
1	927	25-yr	119.00	73.88	78.34		78.38	0.001190	1.58	75.22	28.22	0.17
1	927	50-yr	137.00	73.88	78.47		78.52	0.001383	1.74	78.96	28.83	0.18
1	927	100-yr	157.00	73.88	78.61		78.67	0.001584	1.89	83.04	29.50	0.20
1	960	2-yr	63.00	74.43	77.87		77.89	0.000991	1.24	50.83	24.17	0.15
1	960	10-yr	97.00	74.43	78.20		78.24	0.001542	1.64	59.26	25.82	0.19
1	960	25-yr	119.00	74.43	78.38		78.43	0.001896	1.86	63.83	26.69	0.21
1	960	50-yr	137.00	74.43	78.51		78.58	0.002155	2.03	67.53	27.36	0.23
1	960	100-yr	157.00	74.43	78.66		78.73	0.002412	2.19	71.58	28.05	0.24
1	1022		Culvert									
1	1061	2-yr	63.00	74.87	79.63	76.33	79.64	0.000176	0.62	101.84	38.33	0.07
1	1061	10-yr	97.00	74.87	79.91	76.62	79.93	0.000305	0.86	123.56	151.51	0.09
1	1061	25-yr	119.00	74.87	79.96	76.78	79.98	0.000435	1.03	130.59	167.45	0.11
1	1061	50-yr	137.00	74.87	80.00	76.90	80.02	0.000551	1.17	137.09	182.19	0.12
1	1061	100-yr	157.00	74.87	80.13	77.02	80.16	0.000607	1.25	165.72	235.43	0.13
1	1083	2-yr	63.00	75.03	79.64		79.64	0.000129	0.56	113.46	41.16	0.06
1	1083	10-yr	97.00	75.03	79.92		79.93	0.000228	0.78	125.59	43.86	0.08
1	1083	25-yr	119.00	75.03	79.97		79.98	0.000329	0.94	127.69	44.41	0.09
1	1083	50-yr	137.00	75.03	80.01		80.03	0.000420	1.07	129.48	44.86	0.11
1	1083	100-yr	157.00	75.03	80.15		80.17	0.000492	1.17	135.69	46.74	0.12
1	1200	2-yr	51.00	75.29	79.65		79.66	0.000158	0.55	92.26	37.78	0.06
1	1200	10-yr	79.00	75.29	79.95		79.96	0.000277	0.76	103.89	40.08	0.08
1	1200	25-yr	98.00	75.29	80.01		80.03	0.000400	0.92	106.34	40.54	0.10
1	1200	50-yr	112.00	75.29	80.06		80.08	0.000496	1.03	108.44	40.94	0.11
1	1200	100-yr	129.00	75.29	80.21		80.23	0.000571	1.13	114.45	42.08	0.12
1	1350	2-yr	51.00	77.26	79.68		79.70	0.000392	1.07	47.77	26.55	0.14
1	1350	10-yr	79.00	77.26	80.00		80.03	0.000586	1.40	56.39	28.10	0.17

G103-46-01 Existing HEC-RAS Output

HEC-RAS Plan: Existing River: G103-46-01 Reach: 1 (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
1	1350	25-yr	98.00	77.26	80.07		80.12	0.000809	1.67	58.63	28.52	0.21
1	1350	50-yr	112.00	77.26	80.14		80.19	0.000967	1.85	60.50	28.86	0.23
1	1350	100-yr	129.00	77.26	80.29		80.36	0.001049	1.98	65.01	29.68	0.24
1	1463	2-yr	44.00	77.35	79.73		79.76	0.000821	1.36	32.26	21.61	0.20
1	1463	10-yr	68.00	77.35	80.07		80.12	0.001093	1.70	39.92	23.68	0.23
1	1463	25-yr	83.00	77.35	80.18		80.24	0.001379	1.95	42.48	24.43	0.26
1	1463	50-yr	96.00	77.35	80.26		80.34	0.001622	2.15	44.59	25.02	0.28
1	1463	100-yr	110.00	77.35	80.43		80.51	0.001678	2.26	48.76	26.16	0.29
1	1481	2-yr	44.00	77.58	79.73		79.80	0.002509	2.12	20.78	16.43	0.33
1	1481	10-yr	68.00	77.58	80.06		80.16	0.003097	2.55	26.67	18.67	0.38
1	1481	25-yr	83.00	77.58	80.17		80.30	0.003825	2.90	28.65	19.40	0.42
1	1481	50-yr	96.00	77.58	80.25		80.41	0.004426	3.17	30.27	19.98	0.45
1	1481	100-yr	110.00	77.58	80.41		80.58	0.004419	3.27	33.60	21.12	0.46
1	1547		Culvert									
1	1561	2-yr	44.00	78.92	82.77	80.30	82.78	0.000298	0.65	69.60	68.41	0.08
1	1561	10-yr	68.00	78.92	83.16	80.55	83.17	0.000374	0.78	109.77	128.84	0.09
1	1561	25-yr	83.00	78.92	83.23	80.67	83.24	0.000496	0.91	118.74	139.24	0.11
1	1561	50-yr	96.00	78.92	83.25	80.78	83.27	0.000639	1.04	121.86	144.73	0.12
1	1561	100-yr	110.00	78.92	83.28	80.89	83.30	0.000783	1.16	127.03	150.51	0.14
1	1605	2-yr	44.00	79.38	82.79		82.79	0.000319	0.69	64.19	32.49	0.09
1	1605	10-yr	68.00	79.38	83.18		83.19	0.000462	0.88	78.93	48.48	0.10
1	1605	25-yr	83.00	79.38	83.25		83.27	0.000621	1.03	82.58	52.31	0.12
1	1605	50-yr	96.00	79.38	83.28		83.30	0.000799	1.18	84.05	53.19	0.14
1	1605	100-yr	110.00	79.38	83.32		83.35	0.000990	1.32	86.25	54.48	0.15
1	1728	2-yr	34.00	79.38	82.82		82.82	0.000142	0.48	70.54	34.25	0.06
1	1728	10-yr	53.00	79.38	83.22		83.23	0.000205	0.63	85.08	37.99	0.07
1	1728	25-yr	65.00	79.38	83.31		83.32	0.000278	0.75	88.47	39.04	0.08
1	1728	50-yr	75.00	79.38	83.35		83.37	0.000351	0.84	90.24	39.57	0.09
1	1728	100-yr	86.00	79.38	83.41		83.43	0.000428	0.95	92.59	40.27	0.10
1	1881	2-yr	34.00	79.65	82.84		82.85	0.000315	0.76	44.73	24.79	0.10
1	1881	10-yr	53.00	79.65	83.26		83.27	0.000421	0.95	55.50	27.14	0.12
1	1881	25-yr	65.00	79.65	83.36		83.38	0.000555	1.12	58.27	27.73	0.14
1	1881	50-yr	75.00	79.65	83.42		83.44	0.000685	1.25	59.88	28.07	0.15
1	1881	100-yr	86.00	79.65	83.49		83.52	0.000838	1.39	61.96	28.98	0.17
1	1968	2-yr	30.00	79.97	82.87		82.88	0.000398	0.75	40.01	27.38	0.11
1	1968	10-yr	46.00	79.97	83.30		83.31	0.000457	0.88	52.58	32.40	0.12
1	1968	25-yr	56.00	79.97	83.41		83.43	0.000564	1.00	56.34	34.12	0.13
1	1968	50-yr	65.00	79.97	83.48		83.50	0.000679	1.11	58.76	35.18	0.15
1	1968	100-yr	74.00	79.97	83.57		83.59	0.000769	1.21	61.84	36.32	0.16
1	1990	2-yr	30.00	80.02	82.88		82.89	0.000356	0.74	40.69	26.28	0.10
1	1990	10-yr	46.00	80.02	83.31		83.32	0.000426	0.87	52.64	30.14	0.12
1	1990	25-yr	56.00	80.02	83.42		83.44	0.000520	1.00	56.19	31.46	0.13
1	1990	50-yr	65.00	80.02	83.50		83.52	0.000625	1.11	58.50	32.40	0.14
1	1990	100-yr	74.00	80.02	83.59		83.61	0.000720	1.21	61.42	34.01	0.15
1	2062		Culvert									
1	2106	2-yr	30.00	81.22	83.60	82.03	83.60	0.000293	0.62	48.48	35.66	0.09
1	2106	10-yr	46.00	81.22	84.17	82.19	84.18	0.000215	0.65	75.60	71.65	0.08
1	2106	25-yr	56.00	81.22	84.27	82.27	84.28	0.000265	0.74	82.51	77.86	0.09
1	2106	50-yr	65.00	81.22	84.31	82.35	84.32	0.000330	0.84	85.70	85.30	0.11
1	2106	100-yr	74.00	81.22	84.37	82.41	84.38	0.000381	0.92	92.13	114.04	0.11
1	2143	2-yr	26.00	81.41	83.61		83.62	0.000322	0.61	42.42	35.21	0.10
1	2143	10-yr	39.00	81.41	84.18		84.19	0.000204	0.61	67.75	53.96	0.08
1	2143	25-yr	49.00	81.41	84.28		84.28	0.000265	0.72	73.00	56.58	0.09
1	2143	50-yr	56.00	81.41	84.32		84.33	0.000319	0.80	75.41	57.64	0.10
1	2143	100-yr	64.00	81.41	84.38		84.39	0.000368	0.88	79.12	59.04	0.11
1	2278	2-yr	26.00	81.81	83.66		83.67	0.000478	0.75	34.88	28.03	0.12
1	2278	10-yr	39.00	81.81	84.22		84.22	0.000359	0.75	51.76	32.93	0.11
1	2278	25-yr	49.00	81.81	84.32		84.33	0.000474	0.89	55.28	33.94	0.12
1	2278	50-yr	56.00	81.81	84.37		84.39	0.000567	0.98	57.03	34.43	0.13
1	2278	100-yr	64.00	81.81	84.44		84.46	0.000654	1.08	59.51	35.12	0.15
1	2408	2-yr	21.00	82.23	83.74		83.75	0.001011	0.98	21.38	19.78	0.17
1	2408	10-yr	33.00	82.23	84.27		84.29	0.000732	1.01	32.68	22.63	0.15
1	2408	25-yr	40.00	82.23	84.39		84.41	0.000859	1.13	35.46	23.43	0.16
1	2408	50-yr	46.00	82.23	84.46		84.48	0.001011	1.24	37.00	23.86	0.18

G103-46-01 Existing HEC-RAS Output

HEC-RAS Plan: Existing River: G103-46-01 Reach: 1 (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
1	2408	100-yr	53.00	82.23	84.54		84.57	0.001165	1.36	39.04	24.53	0.19
1	2530	2-yr	21.00	82.74	83.97		84.02	0.006471	1.86	11.30	16.28	0.39
1	2530	10-yr	33.00	82.74	84.42		84.46	0.003430	1.68	19.61	20.29	0.30
1	2530	25-yr	40.00	82.74	84.56		84.61	0.003435	1.78	22.52	21.51	0.31
1	2530	50-yr	46.00	82.74	84.65		84.70	0.003612	1.88	24.46	22.25	0.32
1	2530	100-yr	53.00	82.74	84.75		84.82	0.003696	1.97	26.87	23.15	0.32

G103-80-03-1A HEC-RAS OUTPUT (Existing Condition)

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)	
G10380031A_0001	7664.522	Max WS	U_100 RevEx	4.31	67.09	69.58		69.58	0.000017	0.11	40.16	35.91	0.02
G10380031A_0001	7664.522	Max WS	U_500 RevEx	5.58	67.09	70.01		70.01	0.000011	0.1	58.11	46.05	0.01
G10380031A_0001	7664.522	Max WS	U_050 RevEx	3.9	67.09	69.41		69.41	0.000019	0.11	34.47	31.98	0.02
G10380031A_0001	7664.522	Max WS	U_010 RevEx	2.81	67.09	69.02		69.02	0.000022	0.12	23.74	22.81	0.02
G10380031A_0001	7664.522	Max WS	U_002 RevEx	1.92	67.09	68.65		68.65	0.000026	0.12	16.46	18.12	0.02
G10380031A_0001	7608.932	Max WS	U_100 RevEx	4.22	67.61	69.57		69.57	0.000041	0.17	24.46	26.6	0.03
G10380031A_0001	7608.932	Max WS	U_500 RevEx	5.58	67.61	70.01		70.01	0.000026	0.16	33.92	45.05	0.02
G10380031A_0001	7608.932	Max WS	U_050 RevEx	3.88	67.61	69.41		69.41	0.000055	0.19	20.95	20.11	0.03
G10380031A_0001	7608.932	Max WS	U_010 RevEx	2.81	67.61	69.01		69.01	0.000092	0.21	13.71	16.78	0.04
G10380031A_0001	7608.932	Max WS	U_002 RevEx	1.91	67.61	68.64		68.65	0.000187	0.24	8.1	13.65	0.05
G10380031A_0001	7572.872			Culvert									
G10380031A_0001	7536.812	Max WS	U_100 RevEx	4.22	67.17	69.57		69.57	0.000015	0.13	31.73	34.87	0.02
G10380031A_0001	7536.812	Max WS	U_500 RevEx	5.57	67.17	70.01		70.01	0.000013	0.14	40.32	45.75	0.02
G10380031A_0001	7536.812	Max WS	U_050 RevEx	3.75	67.17	69.4		69.4	0.000017	0.13	28.54	30.67	0.02
G10380031A_0001	7536.812	Max WS	U_010 RevEx	2.81	67.17	69.01		69.01	0.000024	0.13	21.25	20.78	0.02
G10380031A_0001	7536.812	Max WS	U_002 RevEx	1.91	67.17	68.64		68.64	0.000036	0.13	14.63	17.25	0.03
G10380031A_0001	7480.201	Max WS	U_100 RevEx	41.53	66.97	69.49		69.5	0.001419	1.02	40.82	35.16	0.17
G10380031A_0001	7480.201	Max WS	U_500 RevEx	54.44	66.97	69.95		69.96	0.00098	0.92	59.1	44.87	0.14
G10380031A_0001	7480.201	Max WS	U_050 RevEx	37.49	66.97	69.32		69.33	0.00166	1.07	35.04	31.47	0.18
G10380031A_0001	7480.201	Max WS	U_010 RevEx	27.38	66.97	68.9		68.92	0.002066	1.15	23.88	22.72	0.2
G10380031A_0001	7480.201	Max WS	U_002 RevEx	18.85	66.97	68.52		68.54	0.002608	1.16	16.21	18	0.22
G10380031A_0001	7018.827	Max WS	U_100 RevEx	113.7	65.34	69.05		69.06	0.000494	0.88	128.59	65.32	0.11
G10380031A_0001	7018.827	Max WS	U_500 RevEx	157.45	65.34	69.6		69.61	0.000456	0.93	184.9	184.77	0.11
G10380031A_0001	7018.827	Max WS	U_050 RevEx	98.07	65.34	68.84		68.85	0.000492	0.85	115.15	62.19	0.11
G10380031A_0001	7018.827	Max WS	U_010 RevEx	68.98	65.34	68.32		68.33	0.000554	0.81	84.97	54.48	0.11
G10380031A_0001	7018.827	Max WS	U_002 RevEx	44.92	65.34	67.78		67.79	0.000684	0.78	57.91	46.26	0.12
G10380031A_0001	6012.92	Max WS	U_100 RevEx	273.56	62.6	68.64		68.65	0.000322	1.25	611.12	415.71	0.1
G10380031A_0001	6012.92	Max WS	U_500 RevEx	386.14	62.6	69.23		69.24	0.000275	1.25	870.83	458.05	0.09
G10380031A_0001	6012.92	Max WS	U_050 RevEx	233.88	62.6	68.42		68.44	0.00033	1.23	524.47	396.76	0.1
G10380031A_0001	6012.92	Max WS	U_010 RevEx	162.2	62.6	67.88		67.89	0.000333	1.14	339.93	272.13	0.1
G10380031A_0001	6012.92	Max WS	U_002 RevEx	103.98	62.6	67.29		67.3	0.000313	1	214.3	189.26	0.09
G10380031A_0001	5992.49	Max WS	U_100 RevEx	276.87	62.6	68.63		68.64	0.000284	1.21	598.22	417.95	0.09
G10380031A_0001	5992.49	Max WS	U_500 RevEx	390.84	62.6	69.23		69.24	0.000273	1.28	868.78	540.52	0.09
G10380031A_0001	5992.49	Max WS	U_050 RevEx	236.71	62.6	68.42		68.43	0.000285	1.18	510.98	399.91	0.09
G10380031A_0001	5992.49	Max WS	U_010 RevEx	164.16	62.6	67.87		67.88	0.000262	1.05	326.24	244.15	0.09
G10380031A_0001	5992.49	Max WS	U_002 RevEx	105.2	62.6	67.28		67.29	0.000233	0.9	209.49	170.93	0.08
G10380031A_0001	5914.3	Max WS	U_100 RevEx	289.57	62.5	68.62		68.63	0.000042	0.64	454.04	535.97	0.05
G10380031A_0001	5914.3	Max WS	U_500 RevEx	408.79	62.5	69.22		69.22	0.00004	0.52	1209.47	680.68	0.05
G10380031A_0001	5914.3	Max WS	U_050 RevEx	247.54	62.5	68.41		68.41	0.000036	0.57	431.9	495.53	0.05
G10380031A_0001	5914.3	Max WS	U_010 RevEx	171.61	62.5	67.86		67.87	0.000027	0.46	375.16	371.57	0.04
G10380031A_0001	5914.3	Max WS	U_002 RevEx	109.95	62.5	67.28		67.28	0.000019	0.35	313.93	209.57	0.04
G10380031A_0001	5900			Culvert									
G10380031A_0001	5823.28	Max WS	U_100 RevEx	289.56	62.52	68.51		68.51	0.000034	0.64	818.88	474.06	0.05
G10380031A_0001	5823.28	Max WS	U_500 RevEx	408.79	62.52	69.04		69.05	0.000043	0.76	1089.32	556.22	0.06
G10380031A_0001	5823.28	Max WS	U_050 RevEx	247.51	62.52	68.32		68.32	0.00003	0.58	729.83	462.14	0.05
G10380031A_0001	5823.28	Max WS	U_010 RevEx	171.58	62.52	67.81		67.81	0.000026	0.5	350.9	392.44	0.04
G10380031A_0001	5823.28	Max WS	U_002 RevEx	109.96	62.52	67.25		67.25	0.000017	0.37	302.82	178.16	0.03
G10380031A_0001	5776.91	Max WS	U_100 RevEx	297.08	62.7	68.5		68.51	0.000417	1.28	614.38	458.9	0.11
G10380031A_0001	5776.91	Max WS	U_500 RevEx	419.44	62.7	69.03		69.04	0.000365	1.29	882.94	530.56	0.1
G10380031A_0001	5776.91	Max WS	U_050 RevEx	253.93	62.7	68.31		68.32	0.000408	1.23	530.63	423.39	0.11
G10380031A_0001	5776.91	Max WS	U_010 RevEx	175.99	62.7	67.79		67.8	0.000517	1.26	325.32	369.44	0.12
G10380031A_0001	5776.91	Max WS	U_002 RevEx	112.77	62.7	67.22		67.24	0.000575	1.2	157.53	205.12	0.12
G10380031A_0001	5042.04	Max WS	U_100 RevEx	372.64	61.45	67.03		67.18	0.003563	3.94	214.04	133.9	0.32
G10380031A_0001	5042.04	Max WS	U_500 RevEx	525.37	61.45	67.77		67.91	0.003051	4.02	321.33	162.06	0.3
G10380031A_0001	5042.04	Max WS	U_050 RevEx	317.54	61.45	66.72		66.89	0.003882	3.94	174.15	126.22	0.33
G10380031A_0001	5042.04	Max WS	U_010 RevEx	220.31	61.45	66		66.17	0.004298	3.68	99.22	71.63	0.34
G10380031A_0001	5042.04	Max WS	U_002 RevEx	141.53	61.45	65.25		65.4	0.004677	3.3	61.53	42.39	0.34
G10380031A_0001	4371.411	Max WS	U_100 RevEx	446.07	59.03	65.65		65.69	0.00068	1.72	327.99	117.25	0.14
G10380031A_0001	4371.411	Max WS	U_500 RevEx	630.56	59.03	66.55		66.6	0.000671	1.93	439.93	131.9	0.15
G10380031A_0001	4371.411	Max WS	U_050 RevEx	379.83	59.03	65.23		65.27	0.000714	1.65	280.89	109.69	0.15
G10380031A_0001	4371.411	Max WS	U_010 RevEx	264.37	59.03	64.33		64.36	0.000884	1.54	190.19	89.95	0.15
G10380031A_0001	4371.411	Max WS	U_002 RevEx	171.05	59.03	63.27		63.31	0.001396	1.54	110.98	53.92	0.18
G10380031A_0001	4177.46	Max WS	U_100 RevEx	467.83	57.9	65.49		65.55	0.000798	2.18	344.23	120.36	0.16

G103-80-03-1A HEC-RAS OUTPUT (Existing Condition)

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)	
G10380031A_0001	4177.46	Max WS	U_500 RevEx	662.31	57.9	66.38		66.45	0.000871	2.5	462.7	149.28	0.17
G10380031A_0001	4177.46	Max WS	U_050 RevEx	398.38	57.9	65.08		65.13	0.000782	2.06	296.78	107.55	0.15
G10380031A_0001	4177.46	Max WS	U_010 RevEx	277.51	57.9	64.16		64.2	0.000781	1.82	211.25	81.48	0.15
G10380031A_0001	4177.46	Max WS	U_002 RevEx	179.88	57.9	63.04		63.08	0.000932	1.71	129.96	67.16	0.16
G10380031A_0001	4161.04	Max WS	U_100 RevEx	469.66	57.5	65.51		65.53	0.000033	1.16	407.19	129.96	0.08
G10380031A_0001	4161.04	Max WS	U_500 RevEx	664.94	57.5	66.4		66.43	0.000038	1.36	594.08	158.65	0.09
G10380031A_0001	4161.04	Max WS	U_050 RevEx	399.93	57.5	65.1		65.11	0.000029	1.05	381.72	114.9	0.07
G10380031A_0001	4161.04	Max WS	U_010 RevEx	278.6	57.5	64.18		64.19	0.00002	0.85	326.25	65.7	0.06
G10380031A_0001	4161.04	Max WS	U_002 RevEx	180.62	57.5	63.06		63.07	0.00001	0.69	261.59	60.83	0.06
G10380031A_0001	4100			Culvert									
G10380031A_0001	4086.73	Max WS	U_100 RevEx	469.63	57.3	65.2		65.22	0.000008	1.03	502.69	109.27	0.07
G10380031A_0001	4086.73	Max WS	U_500 RevEx	664.9	57.3	66.01		66.04	0.000012	1.3	600.5	130.98	0.08
G10380031A_0001	4086.73	Max WS	U_050 RevEx	399.87	57.3	64.85		64.87	0.000007	0.95	419.83	99.78	0.06
G10380031A_0001	4086.73	Max WS	U_010 RevEx	278.6	57.3	64.04		64.05	0.000005	0.75	370.04	80.95	0.05
G10380031A_0001	4086.73	Max WS	U_002 RevEx	180.62	57.3	63		63	0.000004	0.59	306.05	72.12	0.05
G10380031A_0001	4055.94	Max WS	U_100 RevEx	472.75	57	65.13		65.23	0.001253	2.81	295.07	111.15	0.2
G10380031A_0001	4055.94	Max WS	U_500 RevEx	669.33	57	65.94		66.06	0.001434	3.25	391.87	132.61	0.21
G10380031A_0001	4055.94	Max WS	U_050 RevEx	402.58	57	64.79		64.87	0.001185	2.63	257.74	104.19	0.19
G10380031A_0001	4055.94	Max WS	U_010 RevEx	280.47	57	63.98		64.05	0.001112	2.32	180.72	86.48	0.18
G10380031A_0001	4055.94	Max WS	U_002 RevEx	181.85	57	62.94		63	0.001148	2.03	109.32	53.74	0.17
G10380031A_0001	3784.971	Max WS	U_100 RevEx	500.71	56.55	64.54		64.72	0.002624	3.76	225.34	101.17	0.27
G10380031A_0001	3784.971	Max WS	U_500 RevEx	709.32	56.55	65.27		65.48	0.002959	4.31	305.94	128.86	0.29
G10380031A_0001	3784.971	Max WS	U_050 RevEx	426.78	56.55	64.23		64.39	0.002478	3.53	194.73	93.79	0.26
G10380031A_0001	3784.971	Max WS	U_010 RevEx	297.44	56.55	63.46		63.59	0.002323	3.11	131.8	66.13	0.24
G10380031A_0001	3784.971	Max WS	U_002 RevEx	193.01	56.55	62.4		62.51	0.002468	2.74	78.26	36.28	0.24
G10380031A_0001	3125.414	Max WS	U_100 RevEx	559.92	54.29	63.31		63.34	0.00147	1.68	485.76	323.72	0.14
G10380031A_0001	3125.414	Max WS	U_500 RevEx	795.51	54.29	63.99		64.02	0.001364	1.77	722.58	371.85	0.13
G10380031A_0001	3125.414	Max WS	U_050 RevEx	477.69	54.29	63.01		63.05	0.001517	1.64	395.78	282.06	0.14
G10380031A_0001	3125.414	Max WS	U_010 RevEx	334.32	54.29	62.29		62.32	0.001466	1.49	248.42	119.22	0.13
G10380031A_0001	3125.414	Max WS	U_002 RevEx	217.24	54.29	61.22		61.25	0.001277	1.34	162.31	48.41	0.13
G10380031A_0001	2615.371	Max WS	U_100 RevEx	607.75	52.72	61.89		62.11	0.00379	4.22	299.63	197.6	0.3
G10380031A_0001	2615.371	Max WS	U_500 RevEx	865.01	52.72	62.52		62.75	0.004157	4.71	442.69	262.84	0.32
G10380031A_0001	2615.371	Max WS	U_050 RevEx	517.87	52.72	61.62		61.83	0.003622	4	248.78	181.9	0.29
G10380031A_0001	2615.371	Max WS	U_010 RevEx	304.98	52.72	60.89		61.02	0.002543	3.06	138.19	102.9	0.24
G10380031A_0001	2615.371	Max WS	U_002 RevEx	234.31	52.72	59.78		59.94	0.003855	3.21	73.82	22.17	0.28
G10380031A_0001	1610.862	Max WS	U_100 RevEx	699.65	50.63	59.87		59.89	0.000509	1.41	1039.06	396.96	0.12
G10380031A_0001	1610.862	Max WS	U_500 RevEx	1000.83	50.63	60.21		60.23	0.000749	1.8	1172.96	410.64	0.15
G10380031A_0001	1610.862	Max WS	U_050 RevEx	593.45	50.63	59.72		59.73	0.000431	1.27	978.83	390.65	0.11
G10380031A_0001	1610.862	Max WS	U_010 RevEx	356.42	50.63	59.29		59.29	0.000257	0.91	812.49	372.66	0.08
G10380031A_0001	1610.862	Max WS	U_002 RevEx	246.76	50.63	57.71		57.72	0.000619	1.08	381.56	177.89	0.12
G10380031A_0001	1074.149	Max WS	U_100 RevEx	739.74	49	59.72		59.73	0.000198	0.99	1615.37	768.46	0.08
G10380031A_0001	1074.149	Max WS	U_500 RevEx	1059.89	49	59.98		59.99	0.000314	1.28	1830.11	931.45	0.1
G10380031A_0001	1074.149	Max WS	U_050 RevEx	626.88	49	59.59		59.6	0.000161	1.01	1467.68	666.74	0.07
G10380031A_0001	1074.149	Max WS	U_010 RevEx	392.11	49	59.16		59.16	0.000082	0.68	1264.02	462.44	0.05
G10380031A_0001	1074.149	Max WS	U_002 RevEx	258.79	49	57.17		57.25	0.001455	2.21	116.88	385.25	0.19
G10380031A_0001	1029			Culvert									
G10380031A_0001	966.0479	Max WS	U_100 RevEx	739.75	49	58.01		58.08	0.00203	2.75	542.31	371.89	0.23
G10380031A_0001	966.0479	Max WS	U_500 RevEx	1058.66	49	58.83		58.87	0.001425	2.44	994.64	552.68	0.2
G10380031A_0001	966.0479	Max WS	U_050 RevEx	626.39	49	57.7		57.78	0.002168	2.76	454.99	331.87	0.24
G10380031A_0001	966.0479	Max WS	U_010 RevEx	387.16	49	56.82		57.06	0.003823	3.94	110.01	234.93	0.32
G10380031A_0001	966.0479	Max WS	U_002 RevEx	258.77	49	56.06		56.22	0.003201	3.21	82.21	98.65	0.28
G10380031A_0001	889.666	Max WS	U_100 RevEx	748.3	48.35	57.79		57.88	0.002758	2.96	424.14	410.61	0.27
G10380031A_0001	889.666	Max WS	U_500 RevEx	1070.94	48.35	58.62		58.72	0.002484	3.2	562	564.34	0.26
G10380031A_0001	889.666	Max WS	U_050 RevEx	633.34	48.35	57.48		57.56	0.002863	2.85	371.85	388.09	0.27
G10380031A_0001	889.666	Max WS	U_010 RevEx	390.89	48.35	56.67		56.74	0.002812	2.61	244.73	314.72	0.26
G10380031A_0001	889.666	Max WS	U_002 RevEx	261.52	48.35	55.89		55.96	0.002842	2.44	146.53	135.44	0.25
G10380031A_0001	809.963	Max WS	U_100 RevEx	745.52	48.11	57.22	55.39	57.65	0.005536	5.28	151.6	216.68	0.49
G10380031A_0001	809.963	Max WS	U_500 RevEx	1070.92	48.11	58.01	56.34	58.54	0.005389	5.95	200.66	256.06	0.5
G10380031A_0001	809.963	Max WS	U_050 RevEx	633.3	48.11	56.95	54.99	57.32	0.005084	4.9	135.49	165.55	0.47
G10380031A_0001	809.963	Max WS	U_010 RevEx	390.77	48.11	56.31	53.97	56.53	0.003261	3.71	105.66	120.2	0.37
G10380031A_0001	809.963	Max WS	U_002 RevEx	261.52	48.11	55.59	53.14	55.75	0.002676	3.15	83.08	28.62	0.33
G10380031A_0001	764.02			Bridge									

G103-80-03-1A HEC-RAS OUTPUT (Existing Condition)

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)	
G10380031A_0001	718.083	Max WS	U_100 RevEx	748.3	47.82	57.17		57.56	0.004532	4.99	163.29	271.58	0.45
G10380031A_0001	718.083	Max WS	U_500 RevEx	1070.89	47.82	57.63		58.23	0.006216	6.3	191.42	339	0.54
G10380031A_0001	718.083	Max WS	U_050 RevEx	633.26	47.82	56.94		57.26	0.004068	4.53	148.67	237.09	0.42
G10380031A_0001	718.083	Max WS	U_010 RevEx	390.71	47.82	56.13		56.33	0.003004	3.59	108.86	168.28	0.35
G10380031A_0001	718.083	Max WS	U_002 RevEx	261.52	47.82	55.47		55.61	0.002319	2.97	87.93	93.09	0.3
G10380031A_0001	629.772	Max WS	U_100 RevEx	748.29	47.69	56.71		57	0.008077	4.7	251.88	196.68	0.45
G10380031A_0001	629.772	Max WS	U_500 RevEx	1070.88	47.69	57.19		57.53	0.008746	5.33	351.61	219.78	0.47
G10380031A_0001	629.772	Max WS	U_050 RevEx	633.24	47.69	56.47		56.75	0.007627	4.47	207.74	173.53	0.43
G10380031A_0001	629.772	Max WS	U_010 RevEx	390.69	47.69	55.74		55.94	0.005886	3.68	122.89	54.47	0.37
G10380031A_0001	629.772	Max WS	U_002 RevEx	261.51	47.69	55.17		55.31	0.004465	3.05	95.18	43.92	0.32
G10380031A_0001	57.843	Max WS	U_100 RevEx	748.28	46.93	54.3	52.94	54.64	0.001422	2.18	247.9	171.12	0.19
G10380031A_0001	57.843	Max WS	U_500 RevEx	1070.87	46.93	54.62	53.65	55.1	0.001421	2.29	308.13	219.43	0.19
G10380031A_0001	57.843	Max WS	U_050 RevEx	633.27	46.93	54.18	52.44	54.45	0.001423	2.14	226.62	165.21	0.19
G10380031A_0001	57.843	Max WS	U_010 RevEx	390.59	46.93	53.86	51.16	54	0.001425	2.03	176.43	153.09	0.19
G10380031A_0001	57.843	Max WS	U_002 RevEx	261.49	46.93	53.63	50.4	53.71	0.001421	1.97	142.53	147.34	0.19

G103-80-04 Existing HEC-RAS Output

HEC-RAS Plan: Existing River: G103-80-04 Reach: 1

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
1	1022	2-yr	324.80	41.67	46.26	44.48	46.31	0.001001	1.68	193.38	112.36	0.23
1	1022	10-yr	499.40	41.67	46.85	44.95	46.91	0.001001	1.88	265.89	130.75	0.23
1	1022	25-yr	615.90	41.67	47.18	45.18	47.24	0.001001	1.99	310.22	140.35	0.24
1	1022	50-yr	708.20	41.67	47.42	45.35	47.49	0.001001	2.05	344.92	148.42	0.24
1	1022	100-yr	811.00	41.67	47.66	45.51	47.73	0.001000	2.13	380.73	155.03	0.24
1	1220	2-yr	291.00	41.58	46.43		46.47	0.000659	1.58	184.50	85.54	0.19
1	1220	10-yr	447.00	41.58	47.02		47.08	0.000731	1.89	236.87	90.62	0.21
1	1220	25-yr	551.00	41.58	47.35		47.42	0.000769	2.06	267.01	92.70	0.21
1	1220	50-yr	634.00	41.58	47.59		47.67	0.000793	2.19	289.55	94.12	0.22
1	1220	100-yr	726.00	41.58	47.83		47.91	0.000828	2.33	311.94	95.54	0.23
1	1474	2-yr	252.00	43.93	47.02	47.02	47.40	0.030240	4.98	50.56	71.83	1.05
1	1474	10-yr	387.00	43.93	47.31	47.27	47.76	0.022579	5.38	71.96	73.04	0.96
1	1474	25-yr	478.00	43.93	47.66		48.03	0.012763	4.89	97.81	74.47	0.75
1	1474	50-yr	549.00	43.93	47.91		48.25	0.009677	4.72	116.20	75.46	0.67
1	1474	100-yr	629.00	43.93	48.15		48.49	0.007932	4.68	134.50	76.22	0.62
1	1523	2-yr	234.00	44.18	47.72	46.83	47.79	0.002279	2.03	115.44	91.98	0.32
1	1523	10-yr	359.00	44.18	48.06	47.17	48.16	0.002492	2.44	147.15	94.79	0.35
1	1523	25-yr	443.00	44.18	48.25	47.33	48.36	0.002623	2.69	164.95	95.52	0.36
1	1523	50-yr	510.00	44.18	48.42	47.43	48.55	0.002562	2.81	181.61	96.57	0.36
1	1523	100-yr	584.00	44.18	48.62	47.53	48.75	0.002431	2.91	200.83	97.31	0.36
1	1540		Bridge									
1	1563	2-yr	234.00	45.41	47.82	47.22	47.90	0.002871	2.23	105.15	88.20	0.36
1	1563	10-yr	359.00	45.41	48.17	47.43	48.28	0.002955	2.65	135.64	89.44	0.38
1	1563	25-yr	443.00	45.41	48.36	47.55	48.49	0.003062	2.90	152.77	90.12	0.39
1	1563	50-yr	510.00	45.41	48.53	47.64	48.67	0.003035	3.03	168.38	92.35	0.40
1	1563	100-yr	584.00	45.41	48.72	47.74	48.87	0.002904	3.14	186.24	93.75	0.39
1	1607	2-yr	234.00	45.70	47.96		48.13	0.006783	3.30	70.80	62.84	0.55
1	1607	10-yr	359.00	45.70	48.30		48.53	0.007329	3.85	93.32	69.88	0.59
1	1607	25-yr	443.00	45.70	48.49		48.76	0.007529	4.15	106.87	72.99	0.60
1	1607	50-yr	510.00	45.70	48.66		48.94	0.007341	4.28	119.14	76.07	0.60
1	1607	100-yr	584.00	45.70	48.84		49.14	0.006956	4.39	133.12	78.66	0.59
1	1816	2-yr	208.00	47.09	49.37		49.55	0.006784	3.40	61.19	51.98	0.55
1	1816	10-yr	320.00	47.09	49.76		50.00	0.006711	3.89	82.26	56.58	0.57
1	1816	25-yr	394.00	47.09	49.98		50.25	0.006757	4.15	94.88	59.46	0.58
1	1816	50-yr	453.00	47.09	50.13		50.42	0.006835	4.36	103.98	61.15	0.59
1	1816	100-yr	519.00	47.09	50.28		50.60	0.007029	4.59	113.08	62.78	0.60
1	1990	2-yr	188.00	47.87	50.19		50.27	0.002601	2.37	79.21	56.24	0.35
1	1990	10-yr	290.00	47.87	50.62		50.74	0.002766	2.77	104.86	61.94	0.37
1	1990	25-yr	357.00	47.87	50.86		51.00	0.002812	2.97	120.38	64.82	0.38
1	1990	50-yr	411.00	47.87	51.04		51.19	0.002875	3.12	131.84	66.95	0.39
1	1990	100-yr	471.00	47.87	51.22		51.39	0.002928	3.27	144.18	69.17	0.40
1	2218	2-yr	166.00	48.76	50.96		51.14	0.005867	3.36	49.45	38.27	0.52
1	2218	10-yr	255.00	48.76	51.40		51.63	0.005774	3.78	67.47	43.14	0.53
1	2218	25-yr	314.00	48.76	51.66		51.90	0.005778	3.99	78.73	46.45	0.54
1	2218	50-yr	362.00	48.76	51.84		52.11	0.005811	4.13	87.60	49.22	0.55
1	2218	100-yr	414.00	48.76	52.03		52.31	0.005756	4.27	96.96	51.48	0.55
1	2407	2-yr	149.00	49.95	51.94		52.00	0.003339	2.05	72.81	77.84	0.37
1	2407	10-yr	229.00	49.95	52.31		52.39	0.002608	2.24	102.14	78.80	0.35
1	2407	25-yr	283.00	49.95	52.54		52.63	0.002343	2.36	120.15	79.25	0.34
1	2407	50-yr	325.00	49.95	52.72		52.81	0.002163	2.42	134.06	79.59	0.33
1	2407	100-yr	372.00	49.95	52.89		52.99	0.002042	2.51	148.30	79.93	0.32
1	2438	2-yr	140.00	50.24	52.03	51.10	52.07	0.001191	1.65	85.07	57.26	0.24
1	2438	10-yr	215.00	50.24	52.39	51.29	52.45	0.001382	2.03	105.86	57.74	0.26
1	2438	25-yr	265.00	50.24	52.61	51.41	52.69	0.001456	2.23	118.59	58.03	0.28
1	2438	50-yr	305.00	50.24	52.78	51.49	52.86	0.001496	2.38	128.31	58.26	0.28
1	2438	100-yr	349.00	50.24	52.95	51.58	53.05	0.001537	2.52	138.39	58.49	0.29
1	2482		Bridge									
1	2489	2-yr	140.00	50.45	52.09	51.20	52.13	0.001224	1.60	87.65	63.71	0.24
1	2489	10-yr	215.00	50.45	52.47	51.40	52.52	0.001318	1.93	111.69	64.54	0.26
1	2489	25-yr	265.00	50.45	52.69	51.51	52.76	0.001344	2.10	126.33	64.93	0.27
1	2489	50-yr	305.00	50.45	52.86	51.59	52.94	0.001355	2.22	137.49	65.22	0.27
1	2489	100-yr	349.00	50.45	53.04	51.69	53.13	0.001367	2.34	149.11	65.52	0.27
1	2522	2-yr	140.00	50.75	52.11		52.29	0.009339	3.42	40.91	43.82	0.62
1	2522	10-yr	215.00	50.75	52.48		52.69	0.007854	3.72	57.73	47.76	0.60

G103-80-04 Existing HEC-RAS Output

HEC-RAS Plan: Existing River: G103-80-04 Reach: 1 (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
1	2522	25-yr	265.00	50.75	52.70		52.93	0.007112	3.87	68.54	49.72	0.58
1	2522	50-yr	305.00	50.75	52.87		53.11	0.006644	3.96	77.05	51.24	0.57
1	2522	100-yr	349.00	50.75	53.04		53.30	0.006299	4.05	86.24	53.28	0.56
1	2828	2-yr	118.00	53.23	54.82		54.99	0.008233	3.32	35.57	36.25	0.59
1	2828	10-yr	181.00	53.23	55.08		55.33	0.009525	4.01	45.18	38.67	0.65
1	2828	25-yr	223.00	53.23	55.21		55.52	0.010378	4.41	50.54	39.89	0.69
1	2828	50-yr	257.00	53.23	55.31		55.66	0.010957	4.70	54.64	40.78	0.72
1	2828	100-yr	294.00	53.23	55.42		55.81	0.011387	4.98	59.07	41.68	0.74
1	3049	2-yr	104.00	53.47	55.71		55.77	0.001787	1.93	53.81	39.09	0.29
1	3049	10-yr	160.00	53.47	56.12		56.20	0.001947	2.26	70.70	43.17	0.31
1	3049	25-yr	197.00	53.47	56.34		56.43	0.002012	2.44	80.66	44.98	0.32
1	3049	50-yr	227.00	53.47	56.51		56.61	0.002068	2.58	88.12	46.29	0.33
1	3049	100-yr	260.00	53.47	56.68		56.79	0.002113	2.71	96.10	47.63	0.34

APPENDIX D

PROPOSED CONDITION HYDROLOGY

NEEL-SCHAFFER
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DATA ENTRY TO BE ENTERED IN **UNSHADED CELLS ONLY**

Watershed (G100-00-00) Option 1

Subwatershed	Drainage Area (acres)	Drainage Area (sq.mi.)	Channel Improvements (Total Lengths or Percent)			Weighted Conveyance BDF	Land Classification Areas												Composite BDF	Tc (Unadjusted)	R (Unadjusted)	Channel Slope(ft./mi)	Overland Slope(ft./mi.)	Slope Adj	Watershed Detention Volume not Modeled Directly (ac-ft)	Detention Rate	Detention Adj	Percent Ponding	Percent Impervious 2018	TC''	R''	Ponding Adjustments for Storage Values (R'')						
							Undeveloped		Open Space		Developed Roadside Ditch		Developed Storm Sewer Pre 1984		Developed Storm Sewer Post 1984																							
			Natural Channel	Improved	Concrete		Area (ac)	BDF	Area (ac)	BDF	Area (ac)	BDF	Area (ac)	BDF	Area (ac)	BDF	AREA CHECK					S	So	K_a		DR	C_f	DPP		(Slope and Detention Adjusted)	(Slope and Detention Adjusted)	20% (5-Yr)	10% (100-Yr)	4% (25-Yr)	2% (50-Yr)	1% (100-Yr)	0.2% (500-Yr)
G1033300A	291.2	0.4550363	0	4336	0	3.00	84.52	0.0	14.61	1.0	10.84	1.5	0.00	3.0	181.25	6.0	0.0		6.8	1.12	2.75	12.00	8.94	107.33	0.77	38.60	84.83	1.14	0	28.28	0.97	2.39	2.39	2.39	2.39	2.39	2.39	2.39
G1033300B	167.6	0.2619095	1188	2191	0	1.95	39.13	0.0	5.10	1.0	0.21	1.5	0.00	3.0	123.19	6.0	0.0		6.4	0.92	2.34	2.46	15.36	37.71	0.94	0.00	0.00	1.00	0	34.09	0.86	2.19	2.19	2.19	2.19	2.19	2.19	2.19
G1033300C	190.0	0.2969142	2490	42	0	0.05	33.75	0.0	0.05	1.0	0.00	1.5	0.00	3.0	156.22	6.0	0.0		5.0	1.10	2.90	3.62	15.59	56.49	0.87	0.00	0.00	1.00	0	34.91	0.95	2.52	2.52	2.52	2.52	2.52	2.52	2.52
G1033300D	207.4	0.3240076	2282	0	0	0.00	29.38	0.0	0.00	1.0	0.00	1.5	0.00	3.0	177.98	6.0	0.0		5.1	1.12	2.94	4.63	10.89	50.40	0.89	0.00	0.00	1.00	0	33.72	1.00	2.61	2.61	2.61	2.61	2.61	2.61	2.61
G1033300E	135.4	0.2115922	3047	30	0	0.03	38.88	0.0	0.00	1.0	0.00	1.5	0.00	3.0	96.54	6.0	0.0		4.3	1.01	2.75	2.23	24.43	54.48	0.88	0.00	0.00	1.00	0	24.07	0.89	2.41	2.41	2.41	2.41	2.41	2.41	2.41
G1033300F	161.0	0.2514920	0	3745	0	3.00	49.63	0.0	14.57	1.0	0.00	1.5	0.00	3.0	96.75	6.0	0.0		6.7	0.88	2.22	4.84	22.38	108.37	0.76	0.00	0.00	1.00	0	27.91	0.67	1.70	1.70	1.70	1.70	1.70	1.70	1.70
G1033300G	98.4	0.1537563	0	3629	0	3.00	1.63	0.0	61.85	1.0	0.00	1.5	0.00	3.0	34.92	6.0	0.0		5.8	0.77	2.05	15.46	7.12	110.13	0.76	0.00	0.00	1.00	0	34.64	0.59	1.56	1.56	1.56	1.56	1.56	1.56	1.56
G1033300H	192.2	0.3003042	0	4603	0	3.00	8.76	0.0	57.50	1.0	0.00	1.5	0.00	3.0	125.93	6.0	0.0		7.2	0.90	2.24	0.24	11.97	2.91	1.00	0.00	0.00	1.00	0	44.05	0.90	2.24	2.24	2.24	2.24	2.24	2.24	2.24
G1033300I	204.0	0.3186844	11	4375	0	2.99	0.59	0.0	112.92	1.0	0.00	1.5	0.00	3.0	90.45	6.0	0.0		6.2	1.01	2.58	2.64	11.65	30.75	0.97	0.00	0.00	1.00	0	27.78	0.98	2.50	2.50	2.50	2.50	2.50	2.50	2.50
G1033301A	191.6	0.2993163	0	0	4460	6.00	8.82	0.0	0.13	1.0	0.00	1.5	0.00	3.0	182.61	6.0	0.0		11.7	0.64	1.32	5.39	9.25	49.88	0.89	0.00	0.00	1.00	0	41.47	0.57	1.18	1.18	1.18	1.18	1.18	1.18	1.18
G1033301B	182.5	0.2851485	0	1705	35	3.06	13.19	0.0	6.76	1.0	0.00	1.5	0.00	3.0	162.54	6.0	0.0		8.4	0.80	1.90	5.36	6.50	34.88	0.95	0.00	0.00	1.00	0	40.59	0.76	1.80	1.80	1.80	1.80	1.80	1.80	1.80
G1033301C	264.9	0.4139232	0	1913	0	3.00	29.22	0.0	12.01	1.0	0.00	1.5	0.00	3.0	223.68	6.0	0.0		8.1	0.97	2.28	5.64	8.61	48.53	0.89	0.00	0.00	1.00	0	33.20	0.86	2.04	2.04	2.04	2.04	2.04	2.04	2.04
G1033301D	158.1	0.2470307	0	3142	0	3.00	33.46	0.0	13.75	1.0	0.00	1.5	0.00	3.0	110.89	6.0	0.0		7.3	0.83	2.06	6.89	28.73	197.78	0.67	0.00	0.00	1.00	0	36.65	0.55	1.37	1.37	1.37	1.37	1.37	1.37	1.37
G1033302A	242.4	0.3788040	0	1042	0	3.00	3.99	0.0	3.46	1.0	0.00	1.5	0.00	3.0	234.99	6.0	0.0		8.8	0.88	2.03	5.98	9.83	58.77	0.86	0.00	0.00	1.00	0	43.43	0.76	1.75	1.75	1.75	1.75	1.75	1.75	1.75
G1033302B	68.3	0.1066992	0	410	0	3.00	4.39	0.0	0.78	1.0	0.00	1.5	0.00	3.0	63.12	6.0	0.0		8.6	0.52	1.29	10.18	10.63	108.25	0.76	0.00	0.00	1.00	0	35.29	0.40	0.98	0.98	0.98	0.98	0.98	0.98	0.98
G1033304A	110.1	0.1719938	0	213	2756	5.78	4.85	0.0	0.78	1.0	0.00	1.5	0.00	3.0	104.45	6.0	0.0		11.5	0.51	1.10	4.17	20.30	84.59	0.80	0.00	0.00	1.00	0	59.23	0.41	0.88	0.88	0.88	0.88	0.88	0.88	0.88
G1033304B	149.3	0.2333139	0	1935	0	3.00	26.12	0.0	5.77	1.0	0.00	1.5	0.00	3.0	117.43	6.0	0.0		7.8	0.78	1.91	5.06	31.13	157.45	0.70	8.90	38.15	1.01	0	38.49	0.55	1.35	1.35	1.35	1.35	1.35	1.35	1.35
G1033304C	192.3	0.3004744	0	361	1141	5.28	19.64	0.0	1.17	1.0	0.00	1.5	0.00	3.0	171.49	6.0	0.0		10.6	0.69	1.50	7.39	19.44	143.66	0.72	12.30	40.94	1.01	0	39.91	0.50	1.09	1.09	1.09	1.09	1.09	1.09	1.09
G1033304D	95.6	0.1493227	0	2569	0	3.00	47.05	0.0	8.32	1.0	0.00	1.5	0.00	3.0	40.19	6.0	0.0		5.6	0.77	2.06	0.72	22.35	16.07	1.00	12.60	84.38	1.13	0	31.33	0.88	2.34	2.34	2.34	2.34	2.34	2.34	2.34
G1033304E	3061.9	4.7841636	0	24314	998	3.12	327.99	0.0	348.83	1.0	1963.39	1.5	0.00	3.0	421.65	6.0	0.0		5.0	3.61	8.42	6.15	9.85	60.54	0.86	141.80	29.64	1.00	0	20.44	3.09	7.21	7.21	7.21	7.21	7.21	7.21	7.21
G1033304F	2987.9	4.6686162	3811	20424	0	2.53	652.55	0.0	249.63	1.0	1325.99	1.5	0.00	3.0	759.75	6.0	0.0		4.8	3.64	8.55	5.10	11.66	59.41	0.86	576.20	123.42	1.34	0	35.08	4.20	9.87	9.87	9.87	9.87	9.87	9.87	9.87
G1033600A	238.4	0.3725292	0	0	1948	6.00	5.18	0.0	0.00	1.0	0.00	1.5	0.00	3.0	233.24	6.0	0.0		11.9	0.70	1.41	4.37	5.55	24.23	1.00	0.00	0.00	1.00	0	35.62	0.70	1.41	1.41	1.41	1.41	1.41	1.41	1.41
G1033600B	285.9	0.4466661	4942	2758	26	1.09	42.30	0.0	2.59	1.0	0.00	1.5	0.00	3.0	240.98	6.0	0.0		6.2	1.18	2.95	6.57	19.21	126.24	0.74	0.00	0.00	1.00	0	28.23	0.87	2.18	2.18	2.18	2.18	2.18	2.18	2.18
G1033600C	151.2	0.2362303	0	1306	0	3.00	69.65	0.0	53.03	1.0	0.00	1.5	0.00	3.0	28.51	6.0	0.0		4.5	1.04	2.81	3.65	16.27	59.37	0.86	0.00	0.00	1.00	0	15.60	0.90	2.42	2.42	2.42	2.42	2.42	2.42	2.42
G1033600D	126.8	0.1981772	0	2816	0	3.00	6.03	0.0	56.27	1.0	0.00	1.5	0.00	3.0	64.53	6.0	0.0		6.5	0.81	2.08	N/A	16.64	16.64	1.00	0.00	0.00	1.00	0	42.32	0.81	2.08	2.08	2.08	2.08	2.08	2.08	2.08
G1033600E	125.4	0.1959770	0	1856	0	3.00	8.79	0.0	116.64	1.0	0.00	1.5	0.00	3.0	0.00	6.0	0.0		3.9	1.02	2.79	N/A	19.41	19.41	1.00	50.20	256.15	2.73	0	20.98	2.77	7.60	7.60	7.60	7.60	7.60	7.60	7.60
G1033601A	77.9	0.1217956	2378	1652	0	1.23	12.83	0.0	15.64	1.0	0.00	1.5	0.00	3.0	49.48	6.0	0.0		5.2	0.73	1.99	6.29	19.96	125.59	0.74	0.00	0.00	1.00	0	19.41	0.54	1.48	1.48	1.48	1.48	1.48	1.48	1.48
G1033601A	105.4	0.1646499	0	2011	0	3.00	0.00	0.0	0.80	1.0	0.00	1.5	0.00	3.0	104.57	6.0	0.0		9.0	0.60	1.45	9.91	25.26	250.30	0.63	0.00	0.00	1.00	0	22.65	0.38	0.91	0.91	0.91	0.91	0.91	0.91	0.91
G1033602A	206.8	0.3230704	0	2190	1345	4.14	53.10	0.0	5.70	1.0	0.00	1.5	0.00	3.0	147.96	6.0	0.0		8.5	0.84	1.99	8.88	26.69	237.07	0.64	0.00	0.00	1.00	0	26.77	0.54	1.27	1.27	1.27	1.27	1.27	1.27	1.27
G1033602B	84.0	0.1312987	0	3895	0	3.00	4.76	0.0	51.03	1.0	0.00	1.5	0.00	3.0	28.24	6.0	0.0		5.6	0.73	1.96	N/A	26.44	26.44	0.99	0.00	0.00	1.00	0	50.99	0.73	1.95	1.95	1.95	1.95	1.95	1.95	1.95
G1033603A	52.8	0.0824403	0	1438	0	3.00	0.00	0.0	2.88	1.0	0.00	1.5	0.00	3.0	49.88	6.0	0.0		8.7	0.46	1.14	N/A	21.84	21.84	1.00	0.00	0.00	1.00	0	22.35	0.46	1.14	1.14	1.14	1.14	1.14	1.14	1.14
G1033800A	98.0	0.1531545	0	5743	0	3.00	0.21	0.0	1.46	1.0	0.67	1.5	0.00	3.0	95.68	6.0	0.0		8.9	0.59	1.42	4.41	14.78	65.13	0.85	0.90	5.88	1.00	0	42.97	0.50	1.20	1.20	1.20	1.20	1.20	1.20	1.20
G1033800B	94.6	0.1478170	0	3376	0	3.00	3.85	0.0	31.04	1.0	0.00	1.5	0.00	3.0	59.72	6.0	0.0		7.1	0.67	1.72	1.83	10.96	20.03	1.00	0.00	0.00	1.00	0	28.97	0.67	1.72	1.72	1.72	1.72	1.72	1.72	1.72
G1033800C	410.1	0.6407304	0	7049	0	3.00	3.47	0.0	23.25	1.0	1.04	1.5	0.00	3.0	382.31	6.0	0.0		8.7	1.12	2.54	4.92	9.08	44.53	0.91	90.40	141.09	1.46	0	52.46	1.49	3.37	3.37	3.37	3.37	3.37	3.37	3.37
G1033800D	265.0	0.4140261	0	3319	0	3.00	1.13	0.0	17.19	1.0	0.00	1.5	0.00	3.0	246.66	6.0	0.0		8.7	0.93	2.15	0.31	4.40	1.35	1.00	25.60	61.83	1.06	0	40.29	0.98	2.27	2.27	2.27	2.27	2.27	2.27	2.27
G1033800E	280.8	0.4387684	0	3417	104	3.09	1.84	0.0	17.03	1.0	0.00	1.5	0.00	3.0	261.94	6.0	0.0		8.7	0.94	2.17	1.22	4.08	4.99	1.00	2.40	5.47	1.00	0	41.65	0.94	2.17	2.17	2.17	2.17	2.17	2.17	2.17
G1033800F	398.0	0.6218118	0	6595	1966	3.69	52.18	0.0	74.68	1.0	0.41	1.5	0.00	3.0	270.69	6.0	0.0		8.0	1.17	2.72	6.86	30.49	209.28	0.66	0.00	0.00	1.00	0	20.68	0.77	1.79	1.79	1.79	1.79	1.79	1.79	1.79
G1033800G	345.1	0.5392756	0	3271	0	3.00	102.63	0.0	123.76	1.0	0.00	1.5	0.00	3.0	118.75	6.0	0.0		5.4	1.36	3.46	N/A	21.48	21.48	1.00	88.40	163.92	1.65	0	22.77	2.25	5.71	5.71	5.71	5.71	5.71	5.71	5.71
G1033801A	51.9	0.0811129	0	1569	0	3.00	0.00	0.0	1.41	1.0	0.00	1.5	0.00	3.0	50.50	6.0	0.0		8.9	0.45	1.12	3.28	5.33	17.49	1.00	0.00	0.00	1.00	0	21.24	0.45	1.12	1.12	1.12	1.12	1.12	1.12	1.12
G1033801A	274.6	0.4290893	0	2692	1746	4.18	3.33	0.0	49.54	1.0	0.00	1.5	0.00	3.0	221.75	6.0	0.0		9.2	0.90	2.04	7.07	7.93	56.11	0.87	0.00	0.00	1.00	0	25.28	0.78	1.78	1.78	1.78	1.78	1.78	1.78	1.78
G1033801B	65.7	0.1026927	0	0	2520	6.00	0.00	0.0	2.33	1.0	0.00	1.5	0.00	3.0	63.40	6.0	0.0		11.8	0.39	0.87	3.47	19.26	66.82	0.84	0.00	0.00	1.00	0	23.87	0.33	0.73	0.73	0.73	0.73	0.73	0.73	0.73
G1033802A	233.6	0.3649300	0	345	3559	5.74	10.44	0.0	4.44	1.0	0.00	1.5	0.00	3.0	218.67	6.0	0.0		11.4	0.71	1.49	4.35	4.50	19.56	1.00	3.50	9.59	1.00	0	50.56	0.71	1.49	1.49	1.49	1.49	1.49	1.49	1.49
G1033802B	117.7	0.1839737	0	2437	965	3.85	0.00	0.0	10.10	1.0	0.00	1.5	0.00	3.0	107.65	6.0	0.0		9.4	0.61	1.43	9.53	5.52	52.56	0.88	0.00	0.00	1.00	0	52.85	0.54	1.26	1.26	1.26	1.26	1.26	1.26	1.26
G1033900A	69.6	0.1086969	409	0	0	0.00	0.00	0.0	0.00	1.0	1.06	1.5	0.00	3.0	68.51	6.0	0.0		5.9	0.66	1.76	17.36	17.38	301.73	0.60	0.00	0.00	1.00	0	24.36	0.39	1.05	1.05	1.05	1.05	1.05	1.05	1.05
G1033900B	511.0	0.7979792	2203	0	0	0.00	0.00	0.0	4.02	1.0	29.12	1.5	0.00	3.0	17.87	6.0	0.0		3.0	0.76	2.19	48.51	46.76	258.39	0.27	0.00	0.00	1.00	0	16.59	0.21	0.59	0.59	0.59	0.59	0.59	0.59	0.59
G1033900C	98.9	0.1544588	3135	0	0	0.00	42.71	0.0	23.16	1.0	32.96	1.5	0.00	3.0	0.00	6.0	0.0		0.7	1.26	3.69	N/A	66.80	66.80	0.84	0.00	0.00	1.00	0	20.89	1.06	3.11	3.11	3.11	3.11	3.11	3.11	3.11
G1034500A	250.3	0.3911306	0	1793	0	3.00	98.65	0.0	24.47	1.0	1.38	1.5	0.00	3.0	125.82	6.0	0.0		6.1	1.12	2.82	13.31	43.36	577.29	0.49	51.80	132.44	1.40	0	26.33	0.77	1.95	1.95	1.95	1.95	1.95	1.95	1.95
G1034600A	29.1	0.0454531	1	0	0	0.00	0.00	0.0	2.48	1.0	0.00	1.5	0.00	3.0	26.61	6.0	0.0		5.6	0.47	1.31	10.04	66.91	672.06	0.47	0.00	0.00	1.00	0	17.50	0.22	0.61	0.61	0.61	0.61	0.61	0.61	0.61
G1034600B	6.4	0.0099375	0	1011	0	0.00	0.00	0.0	0.00	1.0	0.00	1.5	0.00	3.0	6.36	6.0	0.0		9.0	0.18	0.49	10.88	77.40	841.75	0.43	0.00	0.00	1.00	0	9.75	0.08	0.21	0.21	0.21	0.21	0.21	0.21	0.21
G1034600C	10.2	0.0159063	0	618	0	3.00	0.00	0.0	0.00	1.0	0.00	1.5	0.00	3.0	10.18	6.0	0.0		9.0	0.22	0.59	16.88	59.12	998.05	0.40	0.00	0.00	1.00	0	16.42	0.09	0.24	0.24	0.24	0.24	0.24	0.24	0.24
G1034600D	30.5	0.0476563	0	891	178	3.50	0.00	0.0	4.77	1.0	23.96	1.5	0.00	3.0	1.77	6.0	0.0		5.2	0.49	1.40	36.87	59.12	2180.09	0.28	0.00	0.00	1.00	0	11.25	0.14	0.39	0.39	0.39	0.39	0.39	0.39	0.39
G1034601A	114.4	0.1786981	2558	0	431	0.87	0.00	0.0	0.03	1.0	0.00	1.5	0.00	3.0	114.34	6.0	0.0		6.9	0.75	1.91	32.98	22.55	743.72	0.45	0.00	0.00	1.00	0	19.37	0.34	0.86	0.86	0.86	0.86	0.86	0.86	0.86
G1038004A	267.7	0.4183441	2117	1526	0	1.26	57.43	0.0	9.20	1.0	0.00	1.5	0.00	3.0	201.10	6.0	0.0		5.8	1.18	3.00	13.90	39.44	548.04	0.50	0.00	0.00	1.00	0	36.94	0.59	1.51	1.51	1.51	1.51	1.51	1.51	1.51
TOTAL	14369.7	22.4527111																		7.27																	

1% AEP Proposed Option 1 HEC-HMS Output

Project: Kingwood Simulation Run: Prop 01 - Option 1

Start of Run: 01Sep2019, 00:00
End of Run: 08Sep2019, 00:00
Compute Time: 08May2020, 12:13:02

Basin Model: Proposed - Option 1
Meteorologic Model: 1% (100-Year)
Control Specifications: Control 5

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
G1033304_0000_J	0.8551000	1449.84	01Sep2019, 17:20	15.91
G1033300_0001A_J	14.2937000	2051.35	01Sep2019, 17:20	8.05
G10333B	4.6686000	2826.79	01Sep2019, 20:35	15.79
G10333A	4.7842000	3579.24	01Sep2019, 19:30	15.54
G1033300_9902_D	4.7842000	487.24	01Sep2019, 19:30	0.39
G1033300_9902_R	4.7842000	487.24	01Sep2019, 20:10	0.39
G1033300_0009_J	9.4528000	3306.64	01Sep2019, 20:20	8.00
G1033300_9901_D	9.4528000	2276.40	01Sep2019, 20:20	4.64
G1033300_0008_R	9.4528000	970.94	02Sep2019, 04:20	4.64
G1033300A	0.4550000	677.12	01Sep2019, 17:05	15.67
G1033300_0008_J	9.9078000	1010.12	02Sep2019, 00:50	5.14
G1033303A	0.1067000	262.25	01Sep2019, 16:30	15.79
G1033300_0008A_J	10.0145000	1036.99	01Sep2019, 17:05	5.26
G1033300_0007_R	10.0145000	775.24	02Sep2019, 12:35	5.25
G1033300B	0.2619000	410.68	01Sep2019, 17:00	15.77
G1033300_0007_J	10.2764000	775.24	02Sep2019, 12:35	5.52
G1033302A	0.3788000	674.58	01Sep2019, 16:50	15.93
G1033300_0007A_J	10.6552000	1252.22	01Sep2019, 17:00	5.89
G1033300_0006_R	10.6552000	693.17	02Sep2019, 21:10	5.89
G1033300C	0.2969000	429.68	01Sep2019, 17:10	15.79
G1033300_0006_J	10.9521000	693.17	02Sep2019, 21:10	6.16
G1033300_0005_R	10.9521000	635.58	03Sep2019, 07:05	6.15
G1033300D	0.3240000	459.42	01Sep2019, 17:10	15.77
G1033300_0005_J	11.2761000	635.58	03Sep2019, 07:05	6.42
G1033300_0004_R	11.2761000	592.65	03Sep2019, 17:25	6.39
G1033300E	0.2116000	313.58	01Sep2019, 17:05	15.60
G1033300_0004_J	11.4877000	592.65	03Sep2019, 17:25	6.56

1% AEP Proposed Option 1 HEC-HMS Output

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
G1033300_0003_R	11.4877000	558.47	04Sep2019, 04:05	6.50
G1033300F	0.2515000	455.12	01Sep2019, 16:45	15.67
G1033300_0003_J	11.7392000	558.47	04Sep2019, 04:05	6.69
G1033301A	0.2993000	659.23	01Sep2019, 16:40	15.90
G1033301_0002_R	0.2993000	647.59	01Sep2019, 16:50	15.90
G1033301B	0.2851000	499.67	01Sep2019, 16:50	15.88
G1033301_0002_J	0.5844000	1147.27	01Sep2019, 16:50	15.89
G1033301_0001_R	0.5844000	1120.76	01Sep2019, 17:00	15.89
G1033301C	0.4139000	674.54	01Sep2019, 17:00	15.76
G1033301_0001_J	0.9983000	1795.30	01Sep2019, 17:00	15.84
G1033301_0000_R	0.9983000	1779.86	01Sep2019, 17:15	15.84
G1033301D	0.2470000	504.53	01Sep2019, 16:40	15.82
G1033301_0000_J	1.2453000	2235.05	01Sep2019, 17:10	15.83
G1033300_0003A_J	12.9845000	2743.70	01Sep2019, 17:10	7.57
G1033300_0002_R	12.9845000	795.46	01Sep2019, 22:10	7.45
G1033300G	0.1538000	292.96	01Sep2019, 16:40	15.78
G1033300_0002_J	13.1383000	864.20	01Sep2019, 20:35	7.55
G1033300_0001_R	13.1383000	546.91	02Sep2019, 08:30	7.36
G1033300H	0.3003000	465.56	01Sep2019, 17:00	15.94
G1033300_0001_J	13.4386000	602.33	01Sep2019, 17:30	7.55
G1033304B	0.2333000	480.25	01Sep2019, 16:40	15.85
G1033304A	0.1720000	446.63	01Sep2019, 16:30	16.20
G1033304_0002_R	0.1720000	256.60	01Sep2019, 17:45	16.20
G1033304_0002_J	0.4053000	698.59	01Sep2019, 16:45	16.00
G1033304_0001_R	0.4053000	695.52	01Sep2019, 16:55	16.00
G1033304C	0.3005000	694.34	01Sep2019, 16:35	15.87
G1033304_0001_J	0.7058000	1364.67	01Sep2019, 16:40	15.94
G1033304_0000_R	0.7058000	1227.35	01Sep2019, 17:20	15.94
G1033304D	0.1493000	225.30	01Sep2019, 17:00	15.72
G1033300_0000_R	14.2937000	700.61	02Sep2019, 00:35	7.79
G1033300I	0.3187000	462.45	01Sep2019, 17:10	15.66

1% AEP Proposed Option 1 HEC-HMS Output

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
G1033300_0000_J	14.6124000	909.80	01Sep2019, 19:25	7.96
G1033801B	0.1027000	293.95	01Sep2019, 16:25	15.60
G1033801A	0.4291000	753.20	01Sep2019, 16:50	15.62
G1033800_0000_R	3.5781000	723.39	02Sep2019, 14:40	24.60
G1033800_0001_R	2.9563000	792.89	02Sep2019, 02:05	26.60
G1033800_0002_R	1.9046000	690.53	02Sep2019, 02:35	32.66
G1033800C	0.6407000	784.98	01Sep2019, 17:40	16.09
G1033800A	0.1532000	337.50	01Sep2019, 16:35	15.92
G1033800_0004_R	0.1532000	643.60	02Sep2019, 06:05	223.37
G1033800_0004_J	0.3010000	644.41	02Sep2019, 06:00	121.39
G1033800_0005_J	0.1532000	1117.22	01Sep2019, 20:00	223.37
G1033800B	0.1478000	265.82	01Sep2019, 16:45	15.68
G1033800_0004A_J	0.9417000	1254.22	01Sep2019, 17:45	49.74
G1033800_0003_R	0.9417000	650.57	02Sep2019, 09:00	49.74
G1033802A	0.3649000	708.77	01Sep2019, 16:45	16.05
G1033802_0000_R	0.3649000	692.88	01Sep2019, 17:05	16.05
G1033802B	0.1840000	393.92	01Sep2019, 16:35	16.09
G10338011A	0.0811000	184.96	01Sep2019, 16:30	15.55
G1033802_0000_J	0.5489000	1051.88	01Sep2019, 17:00	16.07
G1033801_0000_J	0.6129000	1156.08	01Sep2019, 16:50	15.61
G1033801_0000_R	0.5102000	922.33	01Sep2019, 16:55	15.61
G1033800G	0.5393000	473.02	01Sep2019, 18:40	15.58
G1033800F	0.6218000	1088.05	01Sep2019, 16:50	15.54
G1033800E	0.4388000	691.28	01Sep2019, 17:05	15.90
G1033800D	0.4140000	635.60	01Sep2019, 17:05	15.88
G1033801_0001_J	0.5102000	925.64	01Sep2019, 16:50	15.61
G1033800_0001_J	3.5781000	1423.48	01Sep2019, 17:15	24.68
G1033800_0002_J	2.9563000	2117.75	01Sep2019, 17:00	26.64
G1033800_0003_J	1.9046000	1893.13	01Sep2019, 17:05	32.67
G1033800_0000_J	4.1174000	922.13	01Sep2019, 21:15	23.42
G1033600_0001_J	2.0767704	2432.04	01Sep2019, 18:40	15.66

1% AEP Proposed Option 1 HEC-HMS Output

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
G1033600A	0.3725000	743.56	01Sep2019, 16:45	15.80
G1033600_0004_R	0.3725000	691.07	01Sep2019, 17:55	15.80
G1033600B	0.4467000	701.22	01Sep2019, 17:00	15.67
G1033600_0004_J	0.8192000	1335.17	01Sep2019, 17:45	15.73
G1033602A	0.3230704	685.85	01Sep2019, 16:35	15.65
G10336021A	0.1646000	418.52	01Sep2019, 16:25	15.58
G1033602_0001_J	0.4876704	1093.50	01Sep2019, 16:35	15.62
G1033602_0000_R	0.4876704	222.21	01Sep2019, 20:40	15.48
G1033602B	0.1313000	220.96	01Sep2019, 16:50	16.06
G1033602_0000_J	0.6189704	360.31	01Sep2019, 17:55	15.60
G1033603A	0.0824000	185.75	01Sep2019, 16:30	15.57
G1033600_0003_J	1.5205704	1822.71	01Sep2019, 17:45	15.67
G1033600_0003_R	1.5205704	1748.49	01Sep2019, 18:10	15.67
G1033601A	0.1218000	238.31	01Sep2019, 16:40	15.52
G1033600_0002A_J	1.6423704	1915.42	01Sep2019, 18:05	15.66
G1033600_0002_R	1.6423704	1904.83	01Sep2019, 18:15	15.66
G1033600C	0.2362000	348.49	01Sep2019, 17:05	15.46
G1033600_0002_J	1.8785704	2212.55	01Sep2019, 18:10	15.63
G1033600_0000_R	2.0767704	2419.25	01Sep2019, 18:55	15.66
G1033600_0001_R	1.8785704	2194.47	01Sep2019, 18:45	15.63
G1033600D	0.1982000	320.65	01Sep2019, 16:55	15.91
G1033600E	0.1960000	142.28	01Sep2019, 19:20	15.55
G1033600_0000_J	2.2727704	2560.70	01Sep2019, 19:00	15.65
G1038004A	0.4183000	811.27	01Sep2019, 16:40	15.82
G1038004_0000_J	0.4183000	811.27	01Sep2019, 16:40	15.82
G1034500A	0.3911000	653.91	01Sep2019, 16:55	15.64
G1033900B	0.0797000	254.94	01Sep2019, 16:20	15.47
G1033900A	0.1087000	257.71	01Sep2019, 16:30	15.61
G1033900_0001_R	0.1087000	215.59	01Sep2019, 17:20	15.61
G1033900_0001_J	0.1884000	415.60	01Sep2019, 16:25	15.55
G1033900_0000_R	0.1884000	15.27	02Sep2019, 00:55	11.54

1% AEP Proposed Option 1 HEC-HMS Output

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
G1033900C	0.1545000	197.41	01Sep2019, 17:20	15.55
G1033900_0000_J	0.3429000	206.60	01Sep2019, 17:25	13.34
G1034601A	0.1787000	472.18	01Sep2019, 16:25	15.52
G1034600A	0.0455000	143.42	01Sep2019, 16:20	15.49
G1034600_0002_R	0.0455000	41.52	01Sep2019, 18:15	15.49
G1034600B	0.0099000	51.76	01Sep2019, 16:10	15.36
G1034600_0002_J	0.2341000	537.41	01Sep2019, 16:25	15.51
G1034600_0001_R	0.2341000	360.57	01Sep2019, 17:25	15.51
G1034600C	0.0159000	78.52	01Sep2019, 16:10	15.47
G1034600_0001_J	0.2500000	378.68	01Sep2019, 17:15	15.50
G1034600_0000_R	0.2500000	377.68	01Sep2019, 17:25	15.50
G1034600D	0.0477000	186.40	01Sep2019, 16:15	15.38
G1034600_0000_J	0.2977000	494.44	01Sep2019, 16:20	15.49

2% AEP Proposed Option 1 HEC-HMS Output

Project: Kingwood Simulation Run: Prop 02 - Option 1

Start of Run: 01Sep2019, 00:00
End of Run: 08Sep2019, 00:00
Compute Time: 08May2020, 12:13:11

Basin Model: Proposed - Option 1
Meteorologic Model: 2% (50-Year)
Control Specifications: Control 5

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
G1033304_0000_J	0.8551000	1269.46	01Sep2019, 17:15	13.01
G1033300_0001A_J	14.2937000	1775.60	01Sep2019, 17:15	6.41
G10333B	4.6686000	2353.35	01Sep2019, 20:30	12.90
G10333A	4.7842000	2993.76	01Sep2019, 19:20	12.65
G1033300_9902_D	4.7842000	0.00	01Sep2019, 00:00	0.00
G1033300_9902_R	4.7842000	0.00	01Sep2019, 00:00	0.00
G1033300_0009_J	9.4528000	2353.35	01Sep2019, 20:30	6.37
G1033300_9901_D	9.4528000	1486.62	01Sep2019, 20:30	3.50
G1033300_0008_R	9.4528000	721.49	02Sep2019, 04:50	3.50
G1033300A	0.4550000	584.44	01Sep2019, 17:05	12.78
G1033300_0008_J	9.9078000	744.70	02Sep2019, 02:55	3.93
G1033303A	0.1067000	231.00	01Sep2019, 16:30	12.90
G1033300_0008A_J	10.0145000	880.48	01Sep2019, 17:00	4.03
G1033300_0007_R	10.0145000	584.86	02Sep2019, 12:45	4.03
G1033300B	0.2619000	355.33	01Sep2019, 17:00	12.88
G1033300_0007_J	10.2764000	584.86	02Sep2019, 12:45	4.25
G1033302A	0.3788000	586.87	01Sep2019, 16:50	13.04
G1033300_0007A_J	10.6552000	1072.52	01Sep2019, 17:00	4.56
G1033300_0006_R	10.6552000	529.47	02Sep2019, 21:05	4.56
G1033300C	0.2969000	370.58	01Sep2019, 17:05	12.90
G1033300_0006_J	10.9521000	567.45	01Sep2019, 18:05	4.79
G1033300_0005_R	10.9521000	488.87	03Sep2019, 06:40	4.78
G1033300D	0.3240000	395.74	01Sep2019, 17:10	12.88
G1033300_0005_J	11.2761000	492.82	01Sep2019, 17:35	5.01
G1033300_0004_R	11.2761000	457.83	03Sep2019, 16:55	4.99
G1033300E	0.2116000	270.55	01Sep2019, 17:05	12.71
G1033300_0004_J	11.4877000	457.83	03Sep2019, 16:55	5.13

2% AEP Proposed Option 1 HEC-HMS Output

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
G1033300_0003_R	11.4877000	432.68	04Sep2019, 03:30	5.08
G1033300F	0.2515000	396.14	01Sep2019, 16:45	12.78
G1033300_0003_J	11.7392000	444.23	01Sep2019, 16:50	5.24
G1033301A	0.2993000	578.53	01Sep2019, 16:40	13.01
G1033301_0002_R	0.2993000	566.49	01Sep2019, 16:50	13.01
G1033301B	0.2851000	434.43	01Sep2019, 16:50	12.99
G1033301_0002_J	0.5844000	1000.92	01Sep2019, 16:50	13.00
G1033301_0001_R	0.5844000	979.13	01Sep2019, 17:00	13.00
G1033301C	0.4139000	584.38	01Sep2019, 17:00	12.87
G1033301_0001_J	0.9983000	1563.51	01Sep2019, 17:00	12.94
G1033301_0000_R	0.9983000	1544.71	01Sep2019, 17:15	12.94
G1033301D	0.2470000	441.42	01Sep2019, 16:40	12.93
G1033301_0000_J	1.2453000	1933.99	01Sep2019, 17:10	12.94
G1033300_0003A_J	12.9845000	2368.11	01Sep2019, 17:10	5.98
G1033300_0002_R	12.9845000	655.72	01Sep2019, 22:10	5.89
G1033300G	0.1538000	255.55	01Sep2019, 16:40	12.89
G1033300_0002_J	13.1383000	712.15	01Sep2019, 20:35	5.97
G1033300_0001_R	13.1383000	447.60	02Sep2019, 08:30	5.83
G1033300H	0.3003000	402.79	01Sep2019, 17:00	13.05
G1033300_0001_J	13.4386000	506.30	01Sep2019, 17:20	5.99
G1033304B	0.2333000	420.32	01Sep2019, 16:40	12.96
G1033304A	0.1720000	394.43	01Sep2019, 16:30	13.31
G1033304_0002_R	0.1720000	230.90	01Sep2019, 17:40	13.31
G1033304_0002_J	0.4053000	621.49	01Sep2019, 16:45	13.11
G1033304_0001_R	0.4053000	618.22	01Sep2019, 16:50	13.11
G1033304C	0.3005000	610.34	01Sep2019, 16:35	12.98
G1033304_0001_J	0.7058000	1203.80	01Sep2019, 16:40	13.05
G1033304_0000_R	0.7058000	1077.50	01Sep2019, 17:20	13.05
G1033304D	0.1493000	194.67	01Sep2019, 17:00	12.84
G1033300_0000_R	14.2937000	573.82	02Sep2019, 00:30	6.20
G1033300I	0.3187000	398.53	01Sep2019, 17:10	12.77

2% AEP Proposed Option 1 HEC-HMS Output

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
G1033300_0000_J	14.6124000	754.43	01Sep2019, 19:15	6.35
G1033801B	0.1027000	260.31	01Sep2019, 16:25	12.71
G1033801A	0.4291000	654.59	01Sep2019, 16:50	12.73
G1033800_0000_R	3.5781000	593.20	02Sep2019, 15:50	20.42
G1033800_0001_R	2.9563000	649.57	02Sep2019, 02:05	22.13
G1033800_0002_R	1.9046000	567.14	02Sep2019, 02:55	27.31
G1033800C	0.6407000	671.25	01Sep2019, 17:40	13.19
G1033800A	0.1532000	296.10	01Sep2019, 16:35	13.03
G1033800_0004_R	0.1532000	560.42	02Sep2019, 06:05	189.88
G1033800_0004_J	0.3010000	561.08	02Sep2019, 05:55	102.93
G1033800_0005_J	0.1532000	940.30	01Sep2019, 19:40	189.88
G1033800B	0.1478000	231.33	01Sep2019, 16:45	12.79
G1033800_0004A_J	0.9417000	1057.31	01Sep2019, 17:40	41.87
G1033800_0003_R	0.9417000	551.70	02Sep2019, 09:55	41.87
G1033802A	0.3649000	618.77	01Sep2019, 16:45	13.16
G1033802_0000_R	0.3649000	604.02	01Sep2019, 17:05	13.16
G1033802B	0.1840000	345.16	01Sep2019, 16:35	13.20
G10338011A	0.0811000	162.32	01Sep2019, 16:30	12.66
G1033802_0000_J	0.5489000	916.59	01Sep2019, 17:00	13.17
G1033801_0000_J	0.6129000	1007.67	01Sep2019, 16:50	12.72
G1033801_0000_R	0.5102000	802.41	01Sep2019, 16:55	12.72
G1033800G	0.5393000	398.12	01Sep2019, 18:35	12.69
G1033800F	0.6218000	945.43	01Sep2019, 16:50	12.65
G1033800E	0.4388000	597.99	01Sep2019, 17:05	13.01
G1033800D	0.4140000	549.37	01Sep2019, 17:05	12.99
G1033801_0001_J	0.5102000	805.61	01Sep2019, 16:50	12.72
G1033800_0001_J	3.5781000	1209.12	01Sep2019, 17:05	20.49
G1033800_0002_J	2.9563000	1817.67	01Sep2019, 17:00	22.16
G1033800_0003_J	1.9046000	1626.74	01Sep2019, 17:05	27.32
G1033800_0000_J	4.1174000	757.08	01Sep2019, 21:05	19.40
G1033600_0001_J	2.0767704	2027.79	01Sep2019, 18:45	12.77

2% AEP Proposed Option 1 HEC-HMS Output

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
G1033600A	0.3725000	649.67	01Sep2019, 16:45	12.91
G1033600_0004_R	0.3725000	597.26	01Sep2019, 17:55	12.91
G1033600B	0.4467000	606.64	01Sep2019, 17:00	12.78
G1033600_0004_J	0.8192000	1141.89	01Sep2019, 17:50	12.84
G1033602A	0.3230704	600.47	01Sep2019, 16:35	12.76
G10336021A	0.1646000	368.86	01Sep2019, 16:30	12.69
G1033602_0001_J	0.4876704	960.19	01Sep2019, 16:35	12.73
G1033602_0000_R	0.4876704	170.09	01Sep2019, 20:50	12.60
G1033602B	0.1313000	191.90	01Sep2019, 16:50	13.17
G1033602_0000_J	0.6189704	295.09	01Sep2019, 17:40	12.72
G1033603A	0.0824000	162.99	01Sep2019, 16:35	12.68
G1033600_0003_J	1.5205704	1544.30	01Sep2019, 17:45	12.78
G1033600_0003_R	1.5205704	1465.82	01Sep2019, 18:10	12.78
G1033601A	0.1218000	208.08	01Sep2019, 16:40	12.63
G1033600_0002A_J	1.6423704	1603.35	01Sep2019, 18:05	12.77
G1033600_0002_R	1.6423704	1592.92	01Sep2019, 18:20	12.77
G1033600C	0.2362000	300.55	01Sep2019, 17:05	12.57
G1033600_0002_J	1.8785704	1849.60	01Sep2019, 18:15	12.74
G1033600_0000_R	2.0767704	2015.73	01Sep2019, 19:05	12.77
G1033600_0001_R	1.8785704	1832.68	01Sep2019, 18:50	12.74
G1033600D	0.1982000	277.93	01Sep2019, 16:55	13.02
G1033600E	0.1960000	118.90	01Sep2019, 19:15	12.66
G1033600_0000_J	2.2727704	2134.56	01Sep2019, 19:05	12.76
G1038004A	0.4183000	708.18	01Sep2019, 16:40	12.93
G1038004_0000_J	0.4183000	708.18	01Sep2019, 16:40	12.93
G1034500A	0.3911000	567.21	01Sep2019, 16:55	12.75
G1033900B	0.0797000	226.64	01Sep2019, 16:20	12.58
G1033900A	0.1087000	226.64	01Sep2019, 16:30	12.72
G1033900_0001_R	0.1087000	196.31	01Sep2019, 17:10	12.72
G1033900_0001_J	0.1884000	373.47	01Sep2019, 16:30	12.66
G1033900_0000_R	0.1884000	11.84	02Sep2019, 00:55	9.56

2% AEP Proposed Option 1 HEC-HMS Output

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
G1033900C	0.1545000	169.14	01Sep2019, 17:20	12.66
G1033900_0000_J	0.3429000	176.89	01Sep2019, 17:20	10.95
G1034601A	0.1787000	416.68	01Sep2019, 16:25	12.63
G1034600A	0.0455000	127.41	01Sep2019, 16:20	12.60
G1034600_0002_R	0.0455000	38.34	01Sep2019, 18:00	12.60
G1034600B	0.0099000	46.53	01Sep2019, 16:10	12.47
G1034600_0002_J	0.2341000	475.59	01Sep2019, 16:25	12.62
G1034600_0001_R	0.2341000	325.82	01Sep2019, 17:15	12.62
G1034600C	0.0159000	70.52	01Sep2019, 16:10	12.58
G1034600_0001_J	0.2500000	341.77	01Sep2019, 17:10	12.62
G1034600_0000_R	0.2500000	341.11	01Sep2019, 17:15	12.62
G1034600D	0.0477000	166.71	01Sep2019, 16:15	12.49
G1034600_0000_J	0.2977000	445.21	01Sep2019, 16:20	12.60

4% AEP Proposed Option 1 HEC-HMS Output

Project: Kingwood Simulation Run: Prop 04 - Option 1

Start of Run: 01Sep2019, 00:00
End of Run: 08Sep2019, 00:00
Compute Time: 08May2020, 12:13:22

Basin Model: Proposed - Option 1
Meteorologic Model: 4% (25-Year)
Control Specifications: Control 5

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
G1033304_0000_J	0.8551000	1110.92	01Sep2019, 17:15	10.53
G1033300_0001A_J	14.2937000	1535.49	01Sep2019, 17:15	5.11
G10333B	4.6686000	1946.17	01Sep2019, 20:25	10.41
G10333A	4.7842000	2488.42	01Sep2019, 19:15	10.17
G1033300_9902_D	4.7842000	0.00	01Sep2019, 00:00	0.00
G1033300_9902_R	4.7842000	0.00	01Sep2019, 00:00	0.00
G1033300_0009_J	9.4528000	1946.17	01Sep2019, 20:25	5.14
G1033300_9901_D	9.4528000	1148.88	01Sep2019, 20:25	2.72
G1033300_0008_R	9.4528000	555.10	02Sep2019, 04:50	2.72
G1033300A	0.4550000	502.24	01Sep2019, 17:05	10.30
G1033300_0008_J	9.9078000	583.31	01Sep2019, 17:10	3.07
G1033303A	0.1067000	202.66	01Sep2019, 16:30	10.42
G1033300_0008A_J	10.0145000	745.26	01Sep2019, 17:00	3.14
G1033300_0007_R	10.0145000	453.43	02Sep2019, 12:50	3.14
G1033300B	0.2619000	306.18	01Sep2019, 17:00	10.40
G1033300_0007_J	10.2764000	453.43	02Sep2019, 12:50	3.33
G1033302A	0.3788000	508.65	01Sep2019, 16:50	10.55
G1033300_0007A_J	10.6552000	914.96	01Sep2019, 17:00	3.59
G1033300_0006_R	10.6552000	413.40	02Sep2019, 20:55	3.58
G1033300C	0.2969000	318.23	01Sep2019, 17:05	10.41
G1033300_0006_J	10.9521000	470.01	01Sep2019, 17:55	3.77
G1033300_0005_R	10.9521000	383.13	03Sep2019, 06:25	3.76
G1033300D	0.3240000	339.34	01Sep2019, 17:10	10.39
G1033300_0005_J	11.2761000	412.59	01Sep2019, 17:25	3.95
G1033300_0004_R	11.2761000	359.60	03Sep2019, 16:35	3.93
G1033300E	0.2116000	232.51	01Sep2019, 17:00	10.23
G1033300_0004_J	11.4877000	359.60	03Sep2019, 16:35	4.05

4% AEP Proposed Option 1 HEC-HMS Output

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
G1033300_0003_R	11.4877000	340.33	04Sep2019, 03:10	4.01
G1033300F	0.2515000	343.49	01Sep2019, 16:45	10.29
G1033300_0003_J	11.7392000	379.89	01Sep2019, 16:50	4.14
G1033301A	0.2993000	505.88	01Sep2019, 16:40	10.52
G1033301_0002_R	0.2993000	493.08	01Sep2019, 16:50	10.52
G1033301B	0.2851000	376.26	01Sep2019, 16:50	10.51
G1033301_0002_J	0.5844000	869.34	01Sep2019, 16:50	10.51
G1033301_0001_R	0.5844000	852.04	01Sep2019, 17:00	10.51
G1033301C	0.4139000	504.24	01Sep2019, 17:00	10.38
G1033301_0001_J	0.9983000	1356.27	01Sep2019, 17:00	10.46
G1033301_0000_R	0.9983000	1334.61	01Sep2019, 17:15	10.46
G1033301D	0.2470000	384.80	01Sep2019, 16:40	10.44
G1033301_0000_J	1.2453000	1668.59	01Sep2019, 17:10	10.45
G1033300_0003A_J	12.9845000	2037.48	01Sep2019, 17:10	4.75
G1033300_0002_R	12.9845000	535.29	01Sep2019, 22:05	4.68
G1033300G	0.1538000	222.06	01Sep2019, 16:40	10.41
G1033300_0002_J	13.1383000	581.65	01Sep2019, 20:25	4.75
G1033300_0001_R	13.1383000	362.02	02Sep2019, 08:30	4.63
G1033300H	0.3003000	347.04	01Sep2019, 17:00	10.56
G1033300_0001_J	13.4386000	424.62	01Sep2019, 17:10	4.76
G1033304B	0.2333000	366.54	01Sep2019, 16:40	10.47
G1033304A	0.1720000	346.92	01Sep2019, 16:30	10.82
G1033304_0002_R	0.1720000	209.48	01Sep2019, 17:30	10.82
G1033304_0002_J	0.4053000	547.63	01Sep2019, 16:50	10.62
G1033304_0001_R	0.4053000	547.19	01Sep2019, 16:50	10.62
G1033304C	0.3005000	534.48	01Sep2019, 16:35	10.49
G1033304_0001_J	0.7058000	1063.47	01Sep2019, 16:40	10.56
G1033304_0000_R	0.7058000	945.71	01Sep2019, 17:15	10.56
G1033304D	0.1493000	167.49	01Sep2019, 17:00	10.35
G1033300_0000_R	14.2937000	464.67	02Sep2019, 00:15	4.95
G1033300I	0.3187000	342.11	01Sep2019, 17:05	10.29

4% AEP Proposed Option 1 HEC-HMS Output

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
G1033300_0000_J	14.6124000	621.93	01Sep2019, 19:05	5.06
G1033801B	0.1027000	229.45	01Sep2019, 16:25	10.23
G1033801A	0.4291000	566.66	01Sep2019, 16:50	10.25
G1033800_0000_R	3.5781000	481.85	02Sep2019, 17:50	16.78
G1033800_0001_R	2.9563000	526.11	02Sep2019, 02:00	18.24
G1033800_0002_R	1.9046000	462.62	02Sep2019, 12:40	22.63
G1033800C	0.6407000	571.27	01Sep2019, 17:35	10.70
G1033800A	0.1532000	258.80	01Sep2019, 16:35	10.54
G1033800_0004_R	0.1532000	484.79	02Sep2019, 06:05	160.14
G1033800_0004_J	0.3010000	485.28	02Sep2019, 05:55	86.57
G1033800_0005_J	0.1532000	855.14	01Sep2019, 19:50	160.14
G1033800B	0.1478000	200.54	01Sep2019, 16:45	10.31
G1033800_0004A_J	0.9417000	885.75	01Sep2019, 17:35	34.95
G1033800_0003_R	0.9417000	465.81	02Sep2019, 10:25	34.95
G1033802A	0.3649000	538.23	01Sep2019, 16:45	10.67
G1033802_0000_R	0.3649000	524.04	01Sep2019, 17:05	10.67
G1033802B	0.1840000	301.30	01Sep2019, 16:35	10.71
G10338011A	0.0811000	141.86	01Sep2019, 16:30	10.18
G1033802_0000_J	0.5489000	794.58	01Sep2019, 17:00	10.68
G1033801_0000_J	0.6129000	873.89	01Sep2019, 16:50	10.24
G1033801_0000_R	0.5102000	694.96	01Sep2019, 16:55	10.24
G1033800G	0.5393000	333.22	01Sep2019, 18:30	10.21
G1033800F	0.6218000	818.26	01Sep2019, 16:50	10.17
G1033800E	0.4388000	515.22	01Sep2019, 17:00	10.52
G1033800D	0.4140000	472.85	01Sep2019, 17:05	10.50
G1033801_0001_J	0.5102000	698.49	01Sep2019, 16:50	10.24
G1033800_0001_J	3.5781000	1023.21	01Sep2019, 17:00	16.84
G1033800_0002_J	2.9563000	1553.49	01Sep2019, 17:00	18.26
G1033800_0003_J	1.9046000	1391.72	01Sep2019, 17:05	22.64
G1033800_0000_J	4.1174000	616.06	01Sep2019, 20:50	15.92
G1033600_0001_J	2.0767704	1681.17	01Sep2019, 18:50	10.29

4% AEP Proposed Option 1 HEC-HMS Output

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
G1033600A	0.3725000	565.54	01Sep2019, 16:45	10.42
G1033600_0004_R	0.3725000	514.65	01Sep2019, 18:00	10.42
G1033600B	0.4467000	522.62	01Sep2019, 17:00	10.30
G1033600_0004_J	0.8192000	971.50	01Sep2019, 17:50	10.35
G1033602A	0.3230704	523.68	01Sep2019, 16:35	10.27
G10336021A	0.1646000	324.05	01Sep2019, 16:30	10.20
G1033602_0001_J	0.4876704	839.97	01Sep2019, 16:35	10.25
G1033602_0000_R	0.4876704	132.19	01Sep2019, 20:50	10.13
G1033602B	0.1313000	166.03	01Sep2019, 16:50	10.68
G1033602_0000_J	0.6189704	241.84	01Sep2019, 17:35	10.25
G1033603A	0.0824000	142.58	01Sep2019, 16:35	10.20
G1033600_0003_J	1.5205704	1302.13	01Sep2019, 17:45	10.30
G1033600_0003_R	1.5205704	1222.34	01Sep2019, 18:15	10.30
G1033601A	0.1218000	181.01	01Sep2019, 16:40	10.15
G1033600_0002A_J	1.6423704	1334.71	01Sep2019, 18:10	10.29
G1033600_0002_R	1.6423704	1323.41	01Sep2019, 18:25	10.29
G1033600C	0.2362000	258.05	01Sep2019, 17:05	10.09
G1033600_0002_J	1.8785704	1534.27	01Sep2019, 18:20	10.26
G1033600_0000_R	2.0767704	1674.60	01Sep2019, 19:05	10.29
G1033600_0001_R	1.8785704	1522.53	01Sep2019, 18:55	10.26
G1033600D	0.1982000	239.94	01Sep2019, 16:55	10.53
G1033600E	0.1960000	98.77	01Sep2019, 19:05	10.18
G1033600_0000_J	2.2727704	1773.37	01Sep2019, 19:05	10.28
G1038004A	0.4183000	615.87	01Sep2019, 16:40	10.44
G1038004_0000_J	0.4183000	615.87	01Sep2019, 16:40	10.44
G1034500A	0.3911000	490.06	01Sep2019, 16:55	10.27
G1033900B	0.0797000	200.42	01Sep2019, 16:20	10.10
G1033900A	0.1087000	198.52	01Sep2019, 16:30	10.23
G1033900_0001_R	0.1087000	183.82	01Sep2019, 16:55	10.23
G1033900_0001_J	0.1884000	333.79	01Sep2019, 16:35	10.18
G1033900_0000_R	0.1884000	9.60	02Sep2019, 00:50	7.92

4% AEP Proposed Option 1 HEC-HMS Output

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
G1033900C	0.1545000	144.29	01Sep2019, 17:15	10.18
G1033900_0000_J	0.3429000	150.80	01Sep2019, 17:20	8.93
G1034601A	0.1787000	366.06	01Sep2019, 16:25	10.15
G1034600A	0.0455000	112.60	01Sep2019, 16:20	10.12
G1034600_0002_R	0.0455000	35.82	01Sep2019, 17:50	10.12
G1034600B	0.0099000	41.51	01Sep2019, 16:10	9.99
G1034600_0002_J	0.2341000	419.25	01Sep2019, 16:25	10.14
G1034600_0001_R	0.2341000	295.24	01Sep2019, 17:10	10.14
G1034600C	0.0159000	62.89	01Sep2019, 16:10	10.10
G1034600_0001_J	0.2500000	309.32	01Sep2019, 17:05	10.13
G1034600_0000_R	0.2500000	308.76	01Sep2019, 17:10	10.13
G1034600D	0.0477000	148.15	01Sep2019, 16:15	10.01
G1034600_0000_J	0.2977000	401.27	01Sep2019, 16:20	10.12

10% AEP Proposed Option 1 HEC-HMS Output

Project: Kingwood Simulation Run: Prop 10 - Option 1

Start of Run: 01Sep2019, 00:00
End of Run: 08Sep2019, 00:00
Compute Time: 08May2020, 12:13:31

Basin Model: Proposed - Option 1
Meteorologic Model: 10% (10-Year)
Control Specifications: Control 5

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
G1033304_0000_J	0.8551000	910.69	01Sep2019, 17:10	7.77
G1033300_0001A_J	14.2937000	1240.01	01Sep2019, 17:10	3.71
G10333B	4.6686000	1479.62	01Sep2019, 20:20	7.66
G10333A	4.7842000	1903.42	01Sep2019, 19:15	7.42
G1033300_9902_D	4.7842000	0.00	01Sep2019, 00:00	0.00
G1033300_9902_R	4.7842000	0.00	01Sep2019, 00:00	0.00
G1033300_0009_J	9.4528000	1479.62	01Sep2019, 20:20	3.78
G1033300_9901_D	9.4528000	818.06	01Sep2019, 20:20	1.92
G1033300_0008_R	9.4528000	386.22	02Sep2019, 04:50	1.92
G1033300A	0.4550000	400.99	01Sep2019, 17:05	7.55
G1033300_0008_J	9.9078000	451.78	01Sep2019, 17:10	2.18
G1033303A	0.1067000	166.08	01Sep2019, 16:30	7.66
G1033300_0008A_J	10.0145000	583.55	01Sep2019, 17:00	2.24
G1033300_0007_R	10.0145000	320.23	02Sep2019, 13:00	2.24
G1033300B	0.2619000	245.34	01Sep2019, 17:00	7.64
G1033300_0007_J	10.2764000	323.76	01Sep2019, 17:20	2.37
G1033302A	0.3788000	410.71	01Sep2019, 16:50	7.79
G1033300_0007A_J	10.6552000	724.45	01Sep2019, 16:55	2.57
G1033300_0006_R	10.6552000	294.12	02Sep2019, 20:45	2.57
G1033300C	0.2969000	253.91	01Sep2019, 17:05	7.66
G1033300_0006_J	10.9521000	358.91	01Sep2019, 17:45	2.70
G1033300_0005_R	10.9521000	273.64	03Sep2019, 06:10	2.70
G1033300D	0.3240000	270.23	01Sep2019, 17:10	7.64
G1033300_0005_J	11.2761000	319.58	01Sep2019, 17:20	2.84
G1033300_0004_R	11.2761000	257.43	03Sep2019, 16:20	2.83
G1033300E	0.2116000	185.68	01Sep2019, 17:00	7.48
G1033300_0004_J	11.4877000	257.43	03Sep2019, 16:20	2.91

10% AEP Proposed Option 1 HEC-HMS Output

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
G1033300_0003_R	11.4877000	243.99	04Sep2019, 02:50	2.88
G1033300F	0.2515000	277.41	01Sep2019, 16:45	7.54
G1033300_0003_J	11.7392000	301.46	01Sep2019, 16:50	2.98
G1033301A	0.2993000	412.88	01Sep2019, 16:40	7.76
G1033301_0002_R	0.2993000	401.29	01Sep2019, 16:50	7.76
G1033301B	0.2851000	303.54	01Sep2019, 16:50	7.75
G1033301_0002_J	0.5844000	704.83	01Sep2019, 16:50	7.75
G1033301_0001_R	0.5844000	689.43	01Sep2019, 17:00	7.75
G1033301C	0.4139000	404.80	01Sep2019, 16:55	7.63
G1033301_0001_J	0.9983000	1094.15	01Sep2019, 17:00	7.70
G1033301_0000_R	0.9983000	1072.82	01Sep2019, 17:15	7.70
G1033301D	0.2470000	312.88	01Sep2019, 16:40	7.68
G1033301_0000_J	1.2453000	1338.91	01Sep2019, 17:10	7.70
G1033300_0003A_J	12.9845000	1629.11	01Sep2019, 17:10	3.44
G1033300_0002_R	12.9845000	400.52	01Sep2019, 22:00	3.39
G1033300G	0.1538000	179.87	01Sep2019, 16:40	7.65
G1033300_0002_J	13.1383000	434.78	01Sep2019, 20:20	3.44
G1033300_0001_R	13.1383000	266.96	02Sep2019, 08:30	3.35
G1033300H	0.3003000	278.17	01Sep2019, 17:00	7.80
G1033300_0001_J	13.4386000	329.32	01Sep2019, 17:10	3.45
G1033304B	0.2333000	298.17	01Sep2019, 16:40	7.71
G1033304A	0.1720000	285.30	01Sep2019, 16:30	8.05
G1033304_0002_R	0.1720000	177.55	01Sep2019, 17:25	8.05
G1033304_0002_J	0.4053000	453.69	01Sep2019, 16:45	7.86
G1033304_0001_R	0.4053000	453.17	01Sep2019, 16:50	7.86
G1033304C	0.3005000	437.05	01Sep2019, 16:35	7.74
G1033304_0001_J	0.7058000	875.06	01Sep2019, 16:40	7.80
G1033304_0000_R	0.7058000	778.54	01Sep2019, 17:15	7.80
G1033304D	0.1493000	133.95	01Sep2019, 17:00	7.60
G1033300_0000_R	14.2937000	344.03	01Sep2019, 23:45	3.60
G1033300I	0.3187000	272.82	01Sep2019, 17:05	7.54

10% AEP Proposed Option 1 HEC-HMS Output

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
G1033300_0000_J	14.6124000	471.08	01Sep2019, 18:45	3.68
G1033801B	0.1027000	189.10	01Sep2019, 16:25	7.48
G1033801A	0.4291000	456.67	01Sep2019, 16:50	7.50
G1033800_0000_R	3.5781000	357.45	02Sep2019, 20:50	12.56
G1033800_0001_R	2.9563000	388.78	02Sep2019, 02:00	13.69
G1033800_0002_R	1.9046000	349.85	02Sep2019, 14:50	17.08
G1033800C	0.6407000	451.48	01Sep2019, 17:35	7.94
G1033800A	0.1532000	211.16	01Sep2019, 16:35	7.79
G1033800_0004_R	0.1532000	383.09	02Sep2019, 05:40	122.65
G1033800_0004_J	0.3010000	383.53	02Sep2019, 05:30	66.14
G1033800_0005_J	0.1532000	701.92	01Sep2019, 20:05	122.65
G1033800B	0.1478000	161.92	01Sep2019, 16:45	7.56
G1033800_0004A_J	0.9417000	684.10	01Sep2019, 17:35	26.54
G1033800_0003_R	0.9417000	358.08	02Sep2019, 10:40	26.54
G1033802A	0.3649000	436.62	01Sep2019, 16:45	7.91
G1033802_0000_R	0.3649000	423.52	01Sep2019, 17:10	7.91
G1033802B	0.1840000	245.53	01Sep2019, 16:35	7.95
G10338011A	0.0811000	115.71	01Sep2019, 16:30	7.43
G1033802_0000_J	0.5489000	641.32	01Sep2019, 17:00	7.92
G1033801_0000_J	0.6129000	706.78	01Sep2019, 16:50	7.49
G1033801_0000_R	0.5102000	560.76	01Sep2019, 16:55	7.49
G1033800G	0.5393000	257.37	01Sep2019, 18:25	7.46
G1033800F	0.6218000	659.17	01Sep2019, 16:50	7.42
G1033800E	0.4388000	413.15	01Sep2019, 17:00	7.76
G1033800D	0.4140000	378.44	01Sep2019, 17:05	7.74
G1033801_0001_J	0.5102000	563.90	01Sep2019, 16:50	7.49
G1033800_0001_J	3.5781000	801.55	01Sep2019, 17:00	12.60
G1033800_0002_J	2.9563000	1232.62	01Sep2019, 16:55	13.71
G1033800_0003_J	1.9046000	1105.11	01Sep2019, 17:05	17.09
G1033800_0000_J	4.1174000	458.06	01Sep2019, 20:35	11.89
G1033600_0001_J	2.0767704	1278.41	01Sep2019, 18:50	7.54

10% AEP Proposed Option 1 HEC-HMS Output

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
G1033600A	0.3725000	459.03	01Sep2019, 16:45	7.67
G1033600_0004_R	0.3725000	413.82	01Sep2019, 18:00	7.67
G1033600B	0.4467000	418.61	01Sep2019, 17:00	7.55
G1033600_0004_J	0.8192000	771.19	01Sep2019, 17:50	7.60
G1033602A	0.3230704	426.10	01Sep2019, 16:40	7.52
G10336021A	0.1646000	265.93	01Sep2019, 16:30	7.46
G1033602_0001_J	0.4876704	685.74	01Sep2019, 16:35	7.50
G1033602_0000_R	0.4876704	94.53	01Sep2019, 20:50	7.40
G1033602B	0.1313000	133.80	01Sep2019, 16:50	7.92
G1033602_0000_J	0.6189704	161.11	01Sep2019, 17:00	7.51
G1033603A	0.0824000	116.40	01Sep2019, 16:35	7.45
G1033600_0003_J	1.5205704	992.03	01Sep2019, 17:40	7.55
G1033600_0003_R	1.5205704	925.39	01Sep2019, 18:15	7.55
G1033601A	0.1218000	146.74	01Sep2019, 16:40	7.40
G1033600_0002A_J	1.6423704	1013.14	01Sep2019, 18:10	7.54
G1033600_0002_R	1.6423704	1002.92	01Sep2019, 18:20	7.54
G1033600C	0.2362000	205.86	01Sep2019, 17:00	7.34
G1033600_0002_J	1.8785704	1167.67	01Sep2019, 18:15	7.52
G1033600_0000_R	2.0767704	1267.13	01Sep2019, 19:15	7.54
G1033600_0001_R	1.8785704	1157.17	01Sep2019, 18:55	7.52
G1033600D	0.1982000	192.79	01Sep2019, 16:55	7.78
G1033600E	0.1960000	75.52	01Sep2019, 19:00	7.43
G1033600_0000_J	2.2727704	1342.43	01Sep2019, 19:15	7.53
G1038004A	0.4183000	499.36	01Sep2019, 16:40	7.69
G1038004_0000_J	0.4183000	499.36	01Sep2019, 16:40	7.69
G1034500A	0.3911000	393.92	01Sep2019, 16:55	7.52
G1033900B	0.0797000	165.85	01Sep2019, 16:20	7.36
G1033900A	0.1087000	162.35	01Sep2019, 16:30	7.48
G1033900_0001_R	0.1087000	150.54	01Sep2019, 16:50	7.48
G1033900_0001_J	0.1884000	275.41	01Sep2019, 16:35	7.43
G1033900_0000_R	0.1884000	7.46	02Sep2019, 00:40	6.01

10% AEP Proposed Option 1 HEC-HMS Output

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
G1033900C	0.1545000	114.14	01Sep2019, 17:15	7.43
G1033900_0000_J	0.3429000	119.30	01Sep2019, 17:15	6.65
G1034601A	0.1787000	300.48	01Sep2019, 16:25	7.40
G1034600A	0.0455000	93.11	01Sep2019, 16:20	7.37
G1034600_0002_R	0.0455000	32.26	01Sep2019, 17:40	7.37
G1034600B	0.0099000	34.78	01Sep2019, 16:10	7.25
G1034600_0002_J	0.2341000	346.75	01Sep2019, 16:25	7.39
G1034600_0001_R	0.2341000	260.83	01Sep2019, 17:00	7.39
G1034600C	0.0159000	52.64	01Sep2019, 16:10	7.36
G1034600_0001_J	0.2500000	273.82	01Sep2019, 16:55	7.39
G1034600_0000_R	0.2500000	273.05	01Sep2019, 17:00	7.39
G1034600D	0.0477000	123.38	01Sep2019, 16:15	7.27
G1034600_0000_J	0.2977000	344.87	01Sep2019, 16:25	7.37

50% AEP Proposed Option 1 HEC-HMS Output

Project: Kingwood Simulation Run: Prop 50 - Option 1

Start of Run: 01Sep2019, 00:00
End of Run: 08Sep2019, 00:00
Compute Time: 08May2020, 12:13:40

Basin Model: Proposed - Option 1
Meteorologic Model: 50% (2-Year)
Control Specifications: Control 5

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
G1033304_0000_J	0.8551000	605.71	01Sep2019, 17:10	4.28
G1033300_0001A_J	14.2937000	806.67	01Sep2019, 17:05	2.00
G10333B	4.6686000	859.97	01Sep2019, 20:15	4.18
G10333A	4.7842000	1113.69	01Sep2019, 19:10	3.97
G1033300_9902_D	4.7842000	0.00	01Sep2019, 00:00	0.00
G1033300_9902_R	4.7842000	0.00	01Sep2019, 00:00	0.00
G1033300_0009_J	9.4528000	859.97	01Sep2019, 20:15	2.07
G1033300_9901_D	9.4528000	415.29	01Sep2019, 20:15	1.00
G1033300_0008_R	9.4528000	198.37	02Sep2019, 05:30	1.00
G1033300A	0.4550000	253.56	01Sep2019, 17:05	4.08
G1033300_0008_J	9.9078000	274.48	01Sep2019, 17:05	1.14
G1033303A	0.1067000	110.02	01Sep2019, 16:30	4.18
G1033300_0008A_J	10.0145000	360.38	01Sep2019, 17:00	1.17
G1033300_0007_R	10.0145000	166.10	02Sep2019, 13:20	1.17
G1033300B	0.2619000	156.27	01Sep2019, 17:00	4.17
G1033300_0007_J	10.2764000	194.78	01Sep2019, 17:10	1.25
G1033302A	0.3788000	265.47	01Sep2019, 16:50	4.30
G1033300_0007A_J	10.6552000	455.10	01Sep2019, 16:55	1.36
G1033300_0006_R	10.6552000	153.84	02Sep2019, 20:45	1.36
G1033300C	0.2969000	160.53	01Sep2019, 17:05	4.18
G1033300_0006_J	10.9521000	212.86	01Sep2019, 17:30	1.43
G1033300_0005_R	10.9521000	143.90	03Sep2019, 06:00	1.43
G1033300D	0.3240000	170.47	01Sep2019, 17:05	4.16
G1033300_0005_J	11.2761000	194.01	01Sep2019, 17:15	1.51
G1033300_0004_R	11.2761000	135.80	03Sep2019, 15:55	1.50
G1033300E	0.2116000	117.35	01Sep2019, 17:00	4.02
G1033300_0004_J	11.4877000	136.91	01Sep2019, 17:10	1.55

50% AEP Proposed Option 1 HEC-HMS Output

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
G1033300_0003_R	11.4877000	128.97	04Sep2019, 02:30	1.53
G1033300F	0.2515000	178.99	01Sep2019, 16:45	4.08
G1033300_0003_J	11.7392000	189.79	01Sep2019, 16:50	1.59
G1033301A	0.2993000	271.76	01Sep2019, 16:40	4.27
G1033301_0002_R	0.2993000	261.60	01Sep2019, 16:55	4.27
G1033301B	0.2851000	195.81	01Sep2019, 16:50	4.26
G1033301_0002_J	0.5844000	456.62	01Sep2019, 16:55	4.27
G1033301_0001_R	0.5844000	445.60	01Sep2019, 17:05	4.27
G1033301C	0.4139000	258.79	01Sep2019, 16:55	4.15
G1033301_0001_J	0.9983000	703.25	01Sep2019, 17:00	4.22
G1033301_0000_R	0.9983000	685.67	01Sep2019, 17:20	4.22
G1033301D	0.2470000	204.51	01Sep2019, 16:40	4.20
G1033301_0000_J	1.2453000	854.07	01Sep2019, 17:15	4.22
G1033300_0003A_J	12.9845000	1030.67	01Sep2019, 17:15	1.84
G1033300_0002_R	12.9845000	226.41	01Sep2019, 21:40	1.81
G1033300G	0.1538000	116.77	01Sep2019, 16:40	4.18
G1033300_0002_J	13.1383000	245.54	01Sep2019, 20:15	1.84
G1033300_0001_R	13.1383000	146.34	02Sep2019, 08:25	1.80
G1033300H	0.3003000	177.53	01Sep2019, 17:00	4.31
G1033300_0001_J	13.4386000	201.22	01Sep2019, 17:05	1.85
G1033304B	0.2333000	195.09	01Sep2019, 16:40	4.23
G1033304A	0.1720000	190.45	01Sep2019, 16:30	4.53
G1033304_0002_R	0.1720000	124.97	01Sep2019, 17:15	4.53
G1033304_0002_J	0.4053000	306.29	01Sep2019, 16:45	4.36
G1033304_0001_R	0.4053000	306.28	01Sep2019, 16:50	4.36
G1033304C	0.3005000	288.55	01Sep2019, 16:35	4.25
G1033304_0001_J	0.7058000	585.84	01Sep2019, 16:40	4.31
G1033304_0000_R	0.7058000	521.86	01Sep2019, 17:10	4.31
G1033304D	0.1493000	84.98	01Sep2019, 17:00	4.13
G1033300_0000_R	14.2937000	191.74	01Sep2019, 22:45	1.94
G1033300I	0.3187000	172.12	01Sep2019, 17:05	4.08

50% AEP Proposed Option 1 HEC-HMS Output

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
G1033300_0000_J	14.6124000	273.57	01Sep2019, 18:20	1.98
G1033801B	0.1027000	126.35	01Sep2019, 16:25	4.02
G1033801A	0.4291000	293.46	01Sep2019, 16:50	4.04
G1033800_0000_R	3.5781000	198.74	03Sep2019, 00:55	7.01
G1033800_0001_R	2.9563000	214.21	02Sep2019, 01:45	7.67
G1033800_0002_R	1.9046000	199.11	02Sep2019, 15:45	9.64
G1033800C	0.6407000	281.54	01Sep2019, 17:35	4.43
G1033800A	0.1532000	138.94	01Sep2019, 16:35	4.29
G1033800_0004_R	0.1532000	225.71	02Sep2019, 04:55	70.18
G1033800_0004_J	0.3010000	225.98	02Sep2019, 04:45	37.73
G1033800_0005_J	0.1532000	465.93	01Sep2019, 20:10	70.18
G1033800B	0.1478000	104.45	01Sep2019, 16:45	4.09
G1033800_0004A_J	0.9417000	412.61	01Sep2019, 17:30	15.07
G1033800_0003_R	0.9417000	206.64	02Sep2019, 10:35	15.07
G1033802A	0.3649000	284.73	01Sep2019, 16:45	4.40
G1033802_0000_R	0.3649000	274.18	01Sep2019, 17:10	4.40
G1033802B	0.1840000	161.58	01Sep2019, 16:40	4.44
G10338011A	0.0811000	76.09	01Sep2019, 16:35	3.98
G1033802_0000_J	0.5489000	413.40	01Sep2019, 17:05	4.41
G1033801_0000_J	0.6129000	457.06	01Sep2019, 16:50	4.03
G1033801_0000_R	0.5102000	361.15	01Sep2019, 16:55	4.03
G1033800G	0.5393000	153.30	01Sep2019, 18:20	4.01
G1033800F	0.6218000	423.01	01Sep2019, 16:50	3.98
G1033800E	0.4388000	263.79	01Sep2019, 17:00	4.28
G1033800D	0.4140000	240.78	01Sep2019, 17:05	4.26
G1033801_0001_J	0.5102000	363.50	01Sep2019, 16:50	4.03
G1033800_0001_J	3.5781000	492.67	01Sep2019, 16:55	7.03
G1033800_0002_J	2.9563000	775.23	01Sep2019, 16:55	7.68
G1033800_0003_J	1.9046000	696.84	01Sep2019, 17:05	9.65
G1033800_0000_J	4.1174000	256.46	01Sep2019, 20:00	6.61
G1033600_0001_J	2.0767704	725.09	01Sep2019, 19:05	4.08

50% AEP Proposed Option 1 HEC-HMS Output

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
G1033600A	0.3725000	299.11	01Sep2019, 16:45	4.19
G1033600_0004_R	0.3725000	262.84	01Sep2019, 17:55	4.19
G1033600B	0.4467000	266.19	01Sep2019, 17:00	4.08
G1033600_0004_J	0.8192000	484.67	01Sep2019, 17:50	4.13
G1033602A	0.3230704	278.90	01Sep2019, 16:40	4.06
G10336021A	0.1646000	176.39	01Sep2019, 16:30	4.00
G1033602_0001_J	0.4876704	450.86	01Sep2019, 16:35	4.04
G1033602_0000_R	0.4876704	29.24	01Sep2019, 21:45	3.98
G1033602B	0.1313000	86.28	01Sep2019, 16:50	4.41
G1033602_0000_J	0.6189704	100.45	01Sep2019, 16:55	4.07
G1033603A	0.0824000	76.51	01Sep2019, 16:35	4.00
G1033600_0003_J	1.5205704	614.47	01Sep2019, 17:50	4.10
G1033600_0003_R	1.5205704	565.94	01Sep2019, 18:10	4.10
G1033601A	0.1218000	95.23	01Sep2019, 16:40	3.96
G1033600_0002A_J	1.6423704	619.21	01Sep2019, 18:05	4.09
G1033600_0002_R	1.6423704	588.48	01Sep2019, 18:25	4.09
G1033600C	0.2362000	129.70	01Sep2019, 17:00	3.90
G1033600_0002_J	1.8785704	683.42	01Sep2019, 18:25	4.06
G1033600_0000_R	2.0767704	700.57	01Sep2019, 19:35	4.08
G1033600_0001_R	1.8785704	659.31	01Sep2019, 19:10	4.06
G1033600D	0.1982000	123.53	01Sep2019, 16:55	4.28
G1033600E	0.1960000	44.21	01Sep2019, 18:55	3.98
G1033600_0000_J	2.2727704	743.61	01Sep2019, 19:35	4.08
G1038004A	0.4183000	324.83	01Sep2019, 16:40	4.21
G1038004_0000_J	0.4183000	324.83	01Sep2019, 16:40	4.21
G1034500A	0.3911000	252.11	01Sep2019, 16:50	4.06
G1033900B	0.0797000	111.51	01Sep2019, 16:20	3.92
G1033900A	0.1087000	107.07	01Sep2019, 16:30	4.03
G1033900_0001_R	0.1087000	100.60	01Sep2019, 16:50	4.03
G1033900_0001_J	0.1884000	185.36	01Sep2019, 16:35	3.98
G1033900_0000_R	0.1884000	4.73	01Sep2019, 23:30	3.36

50% AEP Proposed Option 1 HEC-HMS Output

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
G1033900C	0.1545000	70.90	01Sep2019, 17:10	3.98
G1033900_0000_J	0.3429000	74.37	01Sep2019, 17:15	3.64
G1034601A	0.1787000	199.34	01Sep2019, 16:25	3.96
G1034600A	0.0455000	62.53	01Sep2019, 16:20	3.93
G1034600_0002_R	0.0455000	25.49	01Sep2019, 17:20	3.93
G1034600B	0.0099000	23.81	01Sep2019, 16:10	3.82
G1034600_0002_J	0.2341000	234.04	01Sep2019, 16:25	3.95
G1034600_0001_R	0.2341000	196.21	01Sep2019, 16:50	3.95
G1034600C	0.0159000	36.00	01Sep2019, 16:10	3.91
G1034600_0001_J	0.2500000	207.11	01Sep2019, 16:40	3.94
G1034600_0000_R	0.2500000	205.97	01Sep2019, 16:50	3.94
G1034600D	0.0477000	83.78	01Sep2019, 16:15	3.84
G1034600_0000_J	0.2977000	253.86	01Sep2019, 16:35	3.93

DATA ENTRY TO BE ENTERED IN **UNSHADED CELLS ONLY**

Watershed (G100-00-00) Option 2

Subwatershed	Drainage Area (acres)	Drainage Area (sq.mi.)	Channel Improvements (Total Lengths or Percent)			Weighted Conveyance BDF	Land Classification Areas												Composite BDF	Tc (Unadjusted)	R (Unadjusted)	Channel Slope(ft./mi)	Overland Slope(ft./mi.)	Slope Adj	Watershed Detention Volume not Modeled Directly (ac-ft)	Detention Rate	Detention Adj	Percent Ponding	Percent Impervious 2018	TC"	R"	Ponding Adjustments for Storage Values (R")						
							Undeveloped		Open Space		Developed Roadside Ditch		Developed Storm Sewer Pre 1984		Developed Storm Sewer Post 1984																							
			Natural Channel	Improved	Concrete		Area (ac)	BDF	Area (ac)	BDF	Area (ac)	BDF	Area (ac)	BDF	Area (ac)	BDF	AREA CHECK				S	So	K_a		DR	C_f	DPP		(Slope and Detention Adjusted)	(Slope and Detention Adjusted)	20% (5-Yr)	10% (100-Yr)	4% (25-Yr)	2% (50-Yr)	1% (100-Yr)	0.2% (500-Yr)
G1033300A	291.2	0.4550363	0	4336	0	3.00	84.52	0.0	14.61	1.0	10.84	1.5	0.00	3.0	181.25	6.0	0.0	6.8	1.12	2.75	12.00	8.94	107.33	0.77	38.60	84.83	1.14	0	28.28	0.97	2.39	2.39	2.39	2.39	2.39	2.39
G1033300B	167.6	0.2619095	1188	2191	0	1.95	39.13	0.0	5.10	1.0	0.21	1.5	0.00	3.0	123.19	6.0	0.0	6.4	0.92	2.34	2.46	15.36	37.71	0.94	0.00	0.00	1.00	0	34.09	0.86	2.19	2.19	2.19	2.19	2.19	2.19
G1033300C	190.0	0.2969142	26	2506	0	2.97	33.75	0.0	0.05	1.0	0.00	1.5	0.00	3.0	156.22	6.0	0.0	7.9	0.85	2.06	8.98	15.59	140.03	0.72	0.00	0.00	1.00	0	34.91	0.61	1.49	1.49	1.49	1.49	1.49	1.49
G1033300D	207.4	0.3240076	0	2282	0	3.00	29.38	0.0	0.00	1.0	0.00	1.5	0.00	3.0	177.98	6.0	0.0	8.1	0.87	2.07	8.98	10.89	97.77	0.78	0.00	0.00	1.00	0	33.72	0.68	1.62	1.62	1.62	1.62	1.62	1.62
G1033300E	135.4	0.2115922	2988	89	0	0.09	38.88	0.0	0.00	1.0	0.00	1.5	0.00	3.0	96.54	6.0	0.0	4.4	1.01	2.73	2.23	24.43	54.48	0.88	0.00	0.00	1.00	0	24.07	0.88	2.39	2.39	2.39	2.39	2.39	2.39
G1033300F	161.0	0.2514920	0	3745	0	3.00	49.63	0.0	14.57	1.0	0.00	1.5	0.00	3.0	96.75	6.0	0.0	6.7	0.88	2.22	4.84	22.38	108.37	0.76	0.00	0.00	1.00	0	27.91	0.67	1.70	1.70	1.70	1.70	1.70	1.70
G1033300G	98.4	0.1537563	0	3629	0	3.00	1.63	0.0	61.85	1.0	0.00	1.5	0.00	3.0	34.92	6.0	0.0	5.8	0.77	2.05	15.46	7.12	110.13	0.76	0.00	0.00	1.00	0	34.64	0.59	1.56	1.56	1.56	1.56	1.56	1.56
G1033300H	192.2	0.3003042	0	4603	0	3.00	8.76	0.0	57.50	1.0	0.00	1.5	0.00	3.0	125.93	6.0	0.0	7.2	0.90	2.24	0.24	11.97	2.91	1.00	0.00	0.00	1.00	0	44.05	0.90	2.24	2.24	2.24	2.24	2.24	2.24
G1033300I	204.0	0.3186844	11	4375	0	2.99	0.59	0.0	112.92	1.0	0.00	1.5	0.00	3.0	90.45	6.0	0.0	6.2	1.01	2.58	2.64	11.65	30.75	0.97	0.00	0.00	1.00	0	27.78	0.98	2.50	2.50	2.50	2.50	2.50	2.50
G1033301A	191.6	0.2993163	0	0	4460	6.00	8.82	0.0	0.13	1.0	0.00	1.5	0.00	3.0	182.61	6.0	0.0	11.7	0.64	1.32	5.39	9.25	49.88	0.89	0.00	0.00	1.00	0	41.47	0.57	1.18	1.18	1.18	1.18	1.18	1.18
G1033301B	182.5	0.2851485	0	1705	35	3.06	13.19	0.0	6.76	1.0	0.00	1.5	0.00	3.0	162.54	6.0	0.0	8.4	0.80	1.90	5.36	6.50	34.88	0.95	0.00	0.00	1.00	0	40.59	0.76	1.80	1.80	1.80	1.80	1.80	1.80
G1033301C	264.9	0.4139232	0	1913	0	3.00	29.22	0.0	12.01	1.0	0.00	1.5	0.00	3.0	223.68	6.0	0.0	8.1	0.97	2.28	5.64	8.61	48.53	0.89	0.00	0.00	1.00	0	33.20	0.86	2.04	2.04	2.04	2.04	2.04	2.04
G1033301D	158.1	0.2470307	0	3142	0	3.00	33.46	0.0	13.75	1.0	0.00	1.5	0.00	3.0	110.89	6.0	0.0	7.3	0.83	2.06	6.89	28.73	197.78	0.67	0.00	0.00	1.00	0	36.65	0.55	1.37	1.37	1.37	1.37	1.37	1.37
G1033302A	242.4	0.3788040	0	1042	0	3.00	3.99	0.0	3.46	1.0	0.00	1.5	0.00	3.0	234.99	6.0	0.0	8.8	0.88	2.03	5.98	9.83	58.77	0.86	0.00	0.00	1.00	0	43.43	0.76	1.75	1.75	1.75	1.75	1.75	1.75
G1033302B	68.3	0.1066992	0	410	0	3.00	4.39	0.0	0.78	1.0	0.00	1.5	0.00	3.0	63.12	6.0	0.0	8.6	0.52	1.29	10.18	10.63	108.25	0.76	0.00	0.00	1.00	0	35.29	0.40	0.98	0.98	0.98	0.98	0.98	0.98
G1033304A	110.1	0.1719938	0	213	2756	5.78	4.85	0.0	0.78	1.0	0.00	1.5	0.00	3.0	104.45	6.0	0.0	11.5	0.51	1.10	4.17	20.30	84.59	0.80	0.00	0.00	1.00	0	59.23	0.41	0.88	0.88	0.88	0.88	0.88	0.88
G1033304B	149.3	0.2333139	0	1935	0	3.00	26.12	0.0	5.77	1.0	0.00	1.5	0.00	3.0	117.43	6.0	0.0	7.8	0.78	1.91	5.06	31.13	157.45	0.70	8.90	38.15	1.01	0	38.49	0.55	1.35	1.35	1.35	1.35	1.35	1.35
G1033304C	192.3	0.3004744	0	361	1141	5.28	19.64	0.0	1.17	1.0	0.00	1.5	0.00	3.0	171.49	6.0	0.0	10.6	0.69	1.50	7.39	19.44	143.66	0.72	12.30	40.94	1.01	0	39.91	0.50	1.09	1.09	1.09	1.09	1.09	1.09
G1033304D	95.6	0.1493227	0	2569	0	3.00	47.05	0.0	8.32	1.0	0.00	1.5	0.00	3.0	40.19	6.0	0.0	5.6	0.77	2.06	0.72	22.35	16.07	1.00	12.60	84.38	1.13	0	31.33	0.88	2.34	2.34	2.34	2.34	2.34	2.34
G1033304E	3061.9	4.7841636	0	24314	998	3.12	327.99	0.0	348.83	1.0	1963.39	1.5	0.00	3.0	421.65	6.0	0.0	5.0	3.61	8.42	6.15	9.85	60.54	0.86	141.80	29.64	1.00	0	20.44	3.09	7.21	7.21	7.21	7.21	7.21	7.21
G1033304F	2987.9	4.6686162	3811	20424	0	2.53	652.55	0.0	249.63	1.0	1325.99	1.5	0.00	3.0	759.75	6.0	0.0	4.8	3.64	8.55	5.10	11.66	59.41	0.86	576.20	123.42	1.34	0	35.08	4.20	9.87	9.87	9.87	9.87	9.87	9.87
G1033600A	238.4	0.3725292	0	0	1948	6.00	5.18	0.0	0.00	1.0	0.00	1.5	0.00	3.0	233.24	6.0	0.0	11.9	0.70	1.41	4.37	5.55	24.23	1.00	0.00	0.00	1.00	0	35.62	0.70	1.41	1.41	1.41	1.41	1.41	1.41
G1033600B	285.9	0.4466661	4942	2758	26	1.09	42.30	0.0	2.59	1.0	0.00	1.5	0.00	3.0	240.98	6.0	0.0	6.2	1.18	2.95	6.57	19.21	126.24	0.74	0.00	0.00	1.00	0	28.23	0.87	2.18	2.18	2.18	2.18	2.18	2.18
G1033600C	151.2	0.2362303	0	1306	0	3.00	69.65	0.0	53.03	1.0	0.00	1.5	0.00	3.0	28.51	6.0	0.0	4.5	1.04	2.81	3.65	16.27	59.37	0.86	0.00	0.00	1.00	0	15.60	0.90	2.42	2.42	2.42	2.42	2.42	2.42
G1033600D	126.8	0.1981772	0	2816	0	3.00	6.03	0.0	56.27	1.0	0.00	1.5	0.00	3.0	64.53	6.0	0.0	6.5	0.81	2.08	N/A	16.64	16.64	1.00	0.00	0.00	1.00	0	42.32	0.81	2.08	2.08	2.08	2.08	2.08	2.08
G1033600E	125.4	0.1959770	7.60	1856	0	3.00	8.79	0.0	116.64	1.0	0.00	1.5	0.00	3.0	0.00	6.0	0.0	3.9	1.02	2.79	N/A	19.41	19.41	1.00	50.20	256.15	2.73	0	20.98	2.77	7.60	7.60	7.60	7.60	7.60	7.60
G1033601A	77.9	0.1217956	2378	1652	0	1.23	12.83	0.0	15.64	1.0	0.00	1.5	0.00	3.0	49.48	6.0	0.0	5.2	0.73	1.99	6.29	19.96	125.59	0.74	0.00	0.00	1.00	0	19.41	0.54	1.48	1.48	1.48	1.48	1.48	1.48
G10336021A	105.4	0.1646499	0	2011	0	3.00	0.00	0.0	0.80	1.0	0.00	1.5	0.00	3.0	104.57	6.0	0.0	9.0	0.60	1.45	9.91	25.26	250.30	0.63	0.00	0.00	1.00	0	22.65	0.38	0.91	0.91	0.91	0.91	0.91	0.91
G1033602A	206.8	0.3230704	0	2190	1345	4.14	53.10	0.0	5.70	1.0	0.00	1.5	0.00	3.0	147.96	6.0	0.0	8.5	0.84	1.99	8.88	26.69	237.07	0.64	0.00	0.00	1.00	0	26.77	0.54	1.27	1.27	1.27	1.27	1.27	1.27
G1033602B	84.0	0.1312987	0	3895	0	3.00	4.76	0.0	51.03	1.0	0.00	1.5	0.00	3.0	28.24	6.0	0.0	5.6	0.73	1.96	N/A	26.44	26.44	0.99	0.00	0.00	1.00	0	50.99	0.73	1.95	1.95	1.95	1.95	1.95	1.95
G1033603A	52.8	0.0824403	0	1438	0	3.00	0.00	0.0	2.88	1.0	0.00	1.5	0.00	3.0	49.88	6.0	0.0	8.7	0.46	1.14	N/A	21.84	21.84	1.00	0.00	0.00	1.00	0	22.35	0.46	1.14	1.14	1.14	1.14	1.14	1.14
G1033800A	98.0	0.1531545	0	5743	0	3.00	0.21	0.0	1.46	1.0	0.67	1.5	0.00	3.0	95.68	6.0	0.0	8.9	0.59	1.42	4.41	14.78	65.13	0.85	0.90	5.88	1.00	0	42.97	0.50	1.20	1.20	1.20	1.20	1.20	1.20
G1033800B	94.6	0.1478170	0	3376	0	3.00	3.85	0.0	31.04	1.0	0.00	1.5	0.00	3.0	59.72	6.0	0.0	7.1	0.67	1.72	1.83	10.96	20.03	1.00	0.00	0.00	1.00	0	28.97	0.67	1.72	1.72	1.72	1.72	1.72	1.72
G1033800C	410.1	0.6407304	0	7049	0	3.00	3.47	0.0	23.25	1.0	1.04	1.5	0.00	3.0	382.31	6.0	0.0	8.7	1.12	2.54	4.92	9.08	44.53	0.91	90.40	141.09	1.46	0	52.46	1.49	3.37	3.37	3.37	3.37	3.37	3.37
G1033800D	265.0	0.4140261	0	3319	0	3.00	1.13	0.0	17.19	1.0	0.00	1.5	0.00	3.0	246.66	6.0	0.0	8.7	0.93	2.15	0.31	4.40	1.35	1.00	25.60	61.83	1.06	0	40.29	0.98	2.27	2.27	2.27	2.27	2.27	2.27
G1033800E	280.8	0.4387684	0	3417	104	3.09	1.84	0.0	17.03	1.0	0.00	1.5	0.00	3.0	261.94	6.0	0.0	8.7	0.94	2.17	1.22	4.08	4.99	1.00	2.40	5.47	1.00	0	41.65	0.94	2.17	2.17	2.17	2.17	2.17	2.17
G1033800F	398.0	0.6218118	0	6595	1966	3.69	52.18	0.0	74.68	1.0	0.41	1.5	0.00	3.0	270.69	6.0	0.0	8.0	1.17	2.72	6.86	30.49	209.28	0.66	0.00	0.00	1.00	0	20.68	0.77	1.79	1.79	1.79	1.79	1.79	1.79
G1033800G	345.1	0.5392756	0	3271	0	3.00	102.63	0.0	123.76	1.0	0.00	1.5	0.00	3.0	118.75	6.0	0.0	5.4	1.36	3.46	N/A	21.48	21.48	1.00	88.40	163.92	1.65	0	22.77	2.25	5.71	5.71	5.71	5.71	5.71	5.71
G10338011A	51.9	0.0811129	0	1569	0	3.00	0.00	0.0	1.41	1.0	0.00	1.5	0.00	3.0	50.50	6.0	0.0	8.9	0.45	1.12	3.28	5.33	17.49	1.00	0.00	0.00	1.00	0	21.24	0.45	1.12	1.12	1.12	1.12	1.12	1.12
G1033801A	274.6	0.4290893	0	2692	1746	4.18	3.33	0.0	49.54	1.0	0.00	1.5	0.00	3.0	221.75	6.0	0.0	9.2	0.90	2.04	7.07	7.93	56.11	0.87	0.00	0.00	1.00	0	25.28	0.78	1.78	1.78	1.78	1.78	1.78	1.78
G1033801B	65.7	0.1026927	0	0	2520	6.00	0.00	0.0	2.33	1.0	0.00	1.5	0.00	3.0	63.40	6.0	0.0	11.8	0.39	0.87	3.47	19.26	66.82	0.84	0.00	0.00	1.00	0	23.87	0.33	0.73	0.73	0.73	0.73	0.73	0.73
G1033802A	233.6	0.3649300	0	345	3559	5.74	10.44	0.0	4.44	1.0	0.00	1.5	0.00	3.0	218.67	6.0	0.0	11.4	0.71	1.49	4.35	4.50	19.56	1.00	3.50	9.59	1.00	0	50.56	0.71	1.49	1.49	1.49	1.49	1.49	1.49
G1033802B	117.7	0.1839737	0	2437	965	3.85	0.00	0.0	10.10	1.0	0.00	1.5	0.00	3.0	107.65	6.0	0.0	9.4	0.61	1.43	9.53	5.52	52.56	0.88	0.00	0.00	1.00	0	52.85	0.54	1.26	1.26	1.26	1.26	1.26	1.26
G1033900A	69.6	0.1086969	409	0	0	0.00	0.00	0.0	0.00	1.0	1.06	1.5	0.00	3.0	68.51	6.0	0.0	5.9	0.66	1.76	17.36	17.38	301.73	0.60	0.00	0.00	1.00	0	24.36	0.39	1.05	1.05	1.05	1.05	1.05	1.05
G1033900B	511.0	0.7979792	2203	0	0	0.00	0.00	0.0	4.02	1.0	29.12	1.5	0.00	3.0	17.87	6.0	0.0	3.0	0.76	2.19	48.51	46.76	4258.39	0.27	0.00	0.00	1.00	0	16.59	0.21	0.59	0.59	0.59	0.59	0.59	0.59
G1033900C	98.9	0.1544588	3135	0	0	0.00	42.71	0.0	23.16	1.0	32.96	1.5	0.00	3.0	0.02	6.0	0.0	0.7	1.26	3.69	N/A	66.80	66.80	0.84	0.00	0.00	1.00	0	20.89	1.06	3.11	3.11	3.11	3.11	3.11	3.11
G1034500A	250.3	0.3911306	0	1793	0	3.00	98.65	0.0	24.47	1.0	1.38	1.5	0.00	3.0	125.82	6.0	0.0	6.1	1.12	2.82	13.31	43.36	577.29	0.49	51.80	132.44	1.40	0	26.33	0.77	1.95	1.95	1.95	1.95	1.95	1.95
G1034600A	29.1	0.0454531	1	0	0	0.00	0.00	0.0	2.48	1.0	0.00	1.5	0.00	3.0	26.61	6.0	0.0	5.6	0.47	1.31	10.04	66.91	672.06	0.47	0.00	0.00	1.00	0	17.50	0.22	0.61	0.61	0.61	0.61	0.61	0.61
G1034600B	6.4	0.0099375	0	1011	0	0.00	0.00	0.0	0.00	1.0	0.00	1.5	0.00	3.0	6.36	6.0	0.0	9.0	0.18	0.49	10.88	77.40	841.75	0.43	0.00	0.00	1.00	0	9.75	0.08	0.21	0.21	0.21	0.21	0.21	0.21
G1034600C	10.2	0.0159063	0	618	0	3.00	0.00	0.0	0.00	1.0	0.00	1.5	0.00	3.0	10.18	6.0	0.0	9.0	0.22	0.59	16.88	59.12	998.05	0.40	0.00	0.00	1.00	0	16.42	0.09	0.24	0.24	0.24	0.24	0.24	0.24
G1034600D	30.5	0.0476563	0	891	178	3.50	0.00	0.0	4.77	1.0	23.96	1.5	0.00	3.0	1.77	6.0	0.0	5.2	0.49	1.40	36.87	59.12	2180.09	0.28	0.00	0.00	1.00	0	11.25	0.14	0.39	0.39	0.39	0.39	0.39	0.39
G1034601A	114.4	0.1786981	2558	0	431	0.87	0.00	0.0	0.03	1.0	0.00	1.5	0.00	3.0	114.34	6.0	0.0	6.9	0.75	1.91	32.98	22.55	743.72	0.45	0.00	0.00	1.00	0	19.37	0.34	0.86	0.86	0.86	0.86	0.86	0.86
G1038004A	267.7	0.4183441	2117	1526	0	1.26	57.43	0.0	9.20	1.0	0.00	1.5	0.00	3.0	201.10	6.0	0.0	5.8	1.18	3.00	13.90	39.44	548.04	0.50	0.00	0.00	1.00	0	36.94	0.59	1.51	1.51	1.51	1.51	1.51	1.51
TOTAL	14369.7	22.4527111																7.38																		

1% AEP Proposed Option 2 HEC-HMS Output

Project: Kingwood Simulation Run: Prop_01 - Option 2

Start of Run: 01Sep2019, 00:00
End of Run: 08Sep2019, 00:00
Compute Time: 08May2020, 12:13:50

Basin Model: Proposed - Option 2
Meteorologic Model: 1% (100-Year)
Control Specifications: Control 5

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
G1033304_0000_J	0.8551000	1449.84	01Sep2019, 17:20	15.91
G1033300_0001A_J	14.2937000	2051.67	01Sep2019, 17:20	8.05
G10333B	4.6686000	2826.79	01Sep2019, 20:35	15.79
G10333A	4.7842000	3579.24	01Sep2019, 19:30	15.54
G1033300_9902_D	4.7842000	487.24	01Sep2019, 19:30	0.39
G1033300_9902_R	4.7842000	487.24	01Sep2019, 20:10	0.39
G1033300_0009_J	9.4528000	3306.64	01Sep2019, 20:20	8.00
G1033300_9901_D	9.4528000	2276.40	01Sep2019, 20:20	4.64
G1033300_0008_R	9.4528000	970.94	02Sep2019, 04:20	4.64
G1033300A	0.4550000	677.12	01Sep2019, 17:05	15.67
G1033300_0008_J	9.9078000	1010.12	02Sep2019, 00:50	5.14
G1033303A	0.1067000	262.25	01Sep2019, 16:30	15.79
G1033300_0008A_J	10.0145000	1036.99	01Sep2019, 17:05	5.26
G1033300_0007_R	10.0145000	775.24	02Sep2019, 12:35	5.25
G1033300B	0.2619000	410.68	01Sep2019, 17:00	15.77
G1033300_0007_J	10.2764000	775.24	02Sep2019, 12:35	5.52
G1033302A	0.3788000	674.58	01Sep2019, 16:50	15.93
G1033300_0007A_J	10.6552000	1252.22	01Sep2019, 17:00	5.89
G1033300_0006_R	10.6552000	693.17	02Sep2019, 21:10	5.89
G1033300C	0.2969000	578.48	01Sep2019, 16:40	15.79
G1033300_0006_J	10.9521000	757.43	01Sep2019, 16:50	6.16
G1033300_0005_R	10.9521000	634.26	03Sep2019, 07:10	6.15
G1033300D	0.3240000	602.05	01Sep2019, 16:45	15.77
G1033300_0005_J	11.2761000	722.80	01Sep2019, 16:50	6.42
G1033300_0004_R	11.2761000	590.54	03Sep2019, 17:35	6.39
G1033300E	0.2116000	315.04	01Sep2019, 17:05	15.60
G1033300_0004_J	11.4877000	590.54	03Sep2019, 17:35	6.56

1% AEP Proposed Option 2 HEC-HMS Output

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
G1033300_0003_R	11.4877000	556.21	04Sep2019, 04:15	6.50
G1033300F	0.2515000	455.12	01Sep2019, 16:45	15.67
G1033300_0003_J	11.7392000	556.21	04Sep2019, 04:15	6.69
G1033301A	0.2993000	659.23	01Sep2019, 16:40	15.90
G1033301_0002_R	0.2993000	647.59	01Sep2019, 16:50	15.90
G1033301B	0.2851000	499.67	01Sep2019, 16:50	15.88
G1033301_0002_J	0.5844000	1147.27	01Sep2019, 16:50	15.89
G1033301_0001_R	0.5844000	1120.76	01Sep2019, 17:00	15.89
G1033301C	0.4139000	674.54	01Sep2019, 17:00	15.76
G1033301_0001_J	0.9983000	1795.30	01Sep2019, 17:00	15.84
G1033301_0000_R	0.9983000	1779.86	01Sep2019, 17:15	15.84
G1033301D	0.2470000	504.53	01Sep2019, 16:40	15.82
G1033301_0000_J	1.2453000	2235.05	01Sep2019, 17:10	15.83
G1033300_0003A_J	12.9845000	2748.56	01Sep2019, 17:10	7.57
G1033300_0002_R	12.9845000	799.55	01Sep2019, 22:15	7.45
G1033300G	0.1538000	292.96	01Sep2019, 16:40	15.78
G1033300_0002_J	13.1383000	867.15	01Sep2019, 20:35	7.55
G1033300_0001_R	13.1383000	551.04	02Sep2019, 08:35	7.36
G1033300H	0.3003000	465.56	01Sep2019, 17:00	15.94
G1033300_0001_J	13.4386000	602.66	01Sep2019, 17:30	7.55
G1033304B	0.2333000	480.25	01Sep2019, 16:40	15.85
G1033304A	0.1720000	446.63	01Sep2019, 16:30	16.20
G1033304_0002_R	0.1720000	256.60	01Sep2019, 17:45	16.20
G1033304_0002_J	0.4053000	698.59	01Sep2019, 16:45	16.00
G1033304_0001_R	0.4053000	695.52	01Sep2019, 16:55	16.00
G1033304C	0.3005000	694.34	01Sep2019, 16:35	15.87
G1033304_0001_J	0.7058000	1364.67	01Sep2019, 16:40	15.94
G1033304_0000_R	0.7058000	1227.35	01Sep2019, 17:20	15.94
G1033304D	0.1493000	225.30	01Sep2019, 17:00	15.72
G1033300_0000_R	14.2937000	701.08	02Sep2019, 00:40	7.79
G1033300I	0.3187000	462.45	01Sep2019, 17:10	15.66

1% AEP Proposed Option 2 HEC-HMS Output

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
G1033300_0000_J	14.6124000	909.93	01Sep2019, 19:25	7.96
G1033801B	0.1027000	293.95	01Sep2019, 16:25	15.60
G1033801A	0.4291000	753.20	01Sep2019, 16:50	15.62
G1033800_0000_R	3.5781000	723.39	02Sep2019, 14:40	24.60
G1033800_0001_R	2.9563000	792.89	02Sep2019, 02:05	26.60
G1033800_0002_R	1.9046000	690.53	02Sep2019, 02:35	32.66
G1033800C	0.6407000	784.98	01Sep2019, 17:40	16.09
G1033800A	0.1532000	337.50	01Sep2019, 16:35	15.92
G1033800_0004_R	0.1532000	643.60	02Sep2019, 06:05	223.37
G1033800_0004_J	0.3010000	644.41	02Sep2019, 06:00	121.39
G1033800_0005_J	0.1532000	1117.22	01Sep2019, 20:00	223.37
G1033800B	0.1478000	265.82	01Sep2019, 16:45	15.68
G1033800_0004A_J	0.9417000	1254.22	01Sep2019, 17:45	49.74
G1033800_0003_R	0.9417000	650.57	02Sep2019, 09:00	49.74
G1033802A	0.3649000	708.77	01Sep2019, 16:45	16.05
G1033802_0000_R	0.3649000	692.88	01Sep2019, 17:05	16.05
G1033802B	0.1840000	393.92	01Sep2019, 16:35	16.09
G10338011A	0.0811000	184.96	01Sep2019, 16:30	15.55
G1033802_0000_J	0.5489000	1051.88	01Sep2019, 17:00	16.07
G1033801_0000_J	0.6129000	1156.08	01Sep2019, 16:50	15.61
G1033801_0000_R	0.5102000	922.33	01Sep2019, 16:55	15.61
G1033800G	0.5393000	473.02	01Sep2019, 18:40	15.58
G1033800F	0.6218000	1088.05	01Sep2019, 16:50	15.54
G1033800E	0.4388000	691.28	01Sep2019, 17:05	15.90
G1033800D	0.4140000	635.60	01Sep2019, 17:05	15.88
G1033801_0001_J	0.5102000	925.64	01Sep2019, 16:50	15.61
G1033800_0001_J	3.5781000	1423.48	01Sep2019, 17:15	24.68
G1033800_0002_J	2.9563000	2117.75	01Sep2019, 17:00	26.64
G1033800_0003_J	1.9046000	1893.13	01Sep2019, 17:05	32.67
G1033800_0000_J	4.1174000	922.13	01Sep2019, 21:15	23.42
G1033600_0001_J	2.0767704	2432.04	01Sep2019, 18:40	15.66

1% AEP Proposed Option 2 HEC-HMS Output

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
G1033600A	0.3725000	743.56	01Sep2019, 16:45	15.80
G1033600_0004_R	0.3725000	691.07	01Sep2019, 17:55	15.80
G1033600B	0.4467000	701.22	01Sep2019, 17:00	15.67
G1033600_0004_J	0.8192000	1335.17	01Sep2019, 17:45	15.73
G1033602A	0.3230704	685.85	01Sep2019, 16:35	15.65
G10336021A	0.1646000	418.52	01Sep2019, 16:25	15.58
G1033602_0001_J	0.4876704	1093.50	01Sep2019, 16:35	15.62
G1033602_0000_R	0.4876704	222.21	01Sep2019, 20:40	15.48
G1033602B	0.1313000	220.96	01Sep2019, 16:50	16.06
G1033602_0000_J	0.6189704	360.31	01Sep2019, 17:55	15.60
G1033603A	0.0824000	185.75	01Sep2019, 16:30	15.57
G1033600_0003_J	1.5205704	1822.71	01Sep2019, 17:45	15.67
G1033600_0003_R	1.5205704	1748.49	01Sep2019, 18:10	15.67
G1033601A	0.1218000	238.31	01Sep2019, 16:40	15.52
G1033600_0002A_J	1.6423704	1915.42	01Sep2019, 18:05	15.66
G1033600_0002_R	1.6423704	1904.83	01Sep2019, 18:15	15.66
G1033600C	0.2362000	348.49	01Sep2019, 17:05	15.46
G1033600_0002_J	1.8785704	2212.55	01Sep2019, 18:10	15.63
G1033600_0000_R	2.0767704	2419.25	01Sep2019, 18:55	15.66
G1033600_0001_R	1.8785704	2194.47	01Sep2019, 18:45	15.63
G1033600D	0.1982000	320.65	01Sep2019, 16:55	15.91
G1033600E	0.1960000	142.28	01Sep2019, 19:20	15.55
G1033600_0000_J	2.2727704	2560.70	01Sep2019, 19:00	15.65
G1038004A	0.4183000	811.27	01Sep2019, 16:40	15.82
G1038004_0000_J	0.4183000	811.27	01Sep2019, 16:40	15.82
G1034500A	0.3911000	653.91	01Sep2019, 16:55	15.64
G1033900B	0.0797000	254.94	01Sep2019, 16:20	15.47
G1033900A	0.1087000	257.71	01Sep2019, 16:30	15.61
G1033900_0001_R	0.1087000	215.59	01Sep2019, 17:20	15.61
G1033900_0001_J	0.1884000	415.60	01Sep2019, 16:25	15.55
G1033900_0000_R	0.1884000	15.27	02Sep2019, 00:55	11.54

1% AEP Proposed Option 2 HEC-HMS Output

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
G1033900C	0.1545000	197.41	01Sep2019, 17:20	15.55
G1033900_0000_J	0.3429000	206.60	01Sep2019, 17:25	13.34
G1034601A	0.1787000	472.18	01Sep2019, 16:25	15.52
G1034600A	0.0455000	143.42	01Sep2019, 16:20	15.49
G1034600_0002_R	0.0455000	41.52	01Sep2019, 18:15	15.49
G1034600B	0.0099000	51.76	01Sep2019, 16:10	15.36
G1034600_0002_J	0.2341000	537.41	01Sep2019, 16:25	15.51
G1034600_0001_R	0.2341000	360.57	01Sep2019, 17:25	15.51
G1034600C	0.0159000	78.52	01Sep2019, 16:10	15.47
G1034600_0001_J	0.2500000	378.68	01Sep2019, 17:15	15.50
G1034600_0000_R	0.2500000	377.68	01Sep2019, 17:25	15.50
G1034600D	0.0477000	186.40	01Sep2019, 16:15	15.38
G1034600_0000_J	0.2977000	494.44	01Sep2019, 16:20	15.49

2% AEP Proposed Option 2 HEC-HMS Output

Project: Kingwood Simulation Run: Prop_02 - Option 2

Start of Run: 01Sep2019, 00:00
End of Run: 08Sep2019, 00:00
Compute Time: 08May2020, 12:14:01

Basin Model: Proposed - Option 2
Meteorologic Model: 2% (50-Year)
Control Specifications: Control 5

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
G1033304_0000_J	0.8551000	1269.46	01Sep2019, 17:15	13.01
G1033300_0001A_J	14.2937000	1775.82	01Sep2019, 17:15	6.41
G10333B	4.6686000	2353.35	01Sep2019, 20:30	12.90
G10333A	4.7842000	2993.76	01Sep2019, 19:20	12.65
G1033300_9902_D	4.7842000	0.00	01Sep2019, 00:00	0.00
G1033300_9902_R	4.7842000	0.00	01Sep2019, 00:00	0.00
G1033300_0009_J	9.4528000	2353.35	01Sep2019, 20:30	6.37
G1033300_9901_D	9.4528000	1486.62	01Sep2019, 20:30	3.50
G1033300_0008_R	9.4528000	721.49	02Sep2019, 04:50	3.50
G1033300A	0.4550000	584.44	01Sep2019, 17:05	12.78
G1033300_0008_J	9.9078000	744.70	02Sep2019, 02:55	3.93
G1033303A	0.1067000	231.00	01Sep2019, 16:30	12.90
G1033300_0008A_J	10.0145000	880.48	01Sep2019, 17:00	4.03
G1033300_0007_R	10.0145000	584.86	02Sep2019, 12:45	4.03
G1033300B	0.2619000	355.33	01Sep2019, 17:00	12.88
G1033300_0007_J	10.2764000	584.86	02Sep2019, 12:45	4.25
G1033302A	0.3788000	586.87	01Sep2019, 16:50	13.04
G1033300_0007A_J	10.6552000	1072.52	01Sep2019, 17:00	4.56
G1033300_0006_R	10.6552000	529.47	02Sep2019, 21:05	4.56
G1033300C	0.2969000	504.98	01Sep2019, 16:40	12.90
G1033300_0006_J	10.9521000	645.59	01Sep2019, 16:50	4.79
G1033300_0005_R	10.9521000	487.75	03Sep2019, 06:50	4.78
G1033300D	0.3240000	524.60	01Sep2019, 16:45	12.88
G1033300_0005_J	11.2761000	619.50	01Sep2019, 16:50	5.01
G1033300_0004_R	11.2761000	456.05	03Sep2019, 17:05	4.99
G1033300E	0.2116000	271.95	01Sep2019, 17:00	12.71
G1033300_0004_J	11.4877000	456.05	03Sep2019, 17:05	5.13

2% AEP Proposed Option 2 HEC-HMS Output

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
G1033300_0003_R	11.4877000	430.78	04Sep2019, 03:45	5.08
G1033300F	0.2515000	396.14	01Sep2019, 16:45	12.78
G1033300_0003_J	11.7392000	447.56	01Sep2019, 16:50	5.24
G1033301A	0.2993000	578.53	01Sep2019, 16:40	13.01
G1033301_0002_R	0.2993000	566.49	01Sep2019, 16:50	13.01
G1033301B	0.2851000	434.43	01Sep2019, 16:50	12.99
G1033301_0002_J	0.5844000	1000.92	01Sep2019, 16:50	13.00
G1033301_0001_R	0.5844000	979.13	01Sep2019, 17:00	13.00
G1033301C	0.4139000	584.38	01Sep2019, 17:00	12.87
G1033301_0001_J	0.9983000	1563.51	01Sep2019, 17:00	12.94
G1033301_0000_R	0.9983000	1544.71	01Sep2019, 17:15	12.94
G1033301D	0.2470000	441.42	01Sep2019, 16:40	12.93
G1033301_0000_J	1.2453000	1933.99	01Sep2019, 17:10	12.94
G1033300_0003A_J	12.9845000	2371.97	01Sep2019, 17:10	5.98
G1033300_0002_R	12.9845000	659.00	01Sep2019, 22:15	5.89
G1033300G	0.1538000	255.55	01Sep2019, 16:40	12.89
G1033300_0002_J	13.1383000	714.53	01Sep2019, 20:40	5.97
G1033300_0001_R	13.1383000	450.98	02Sep2019, 08:35	5.83
G1033300H	0.3003000	402.79	01Sep2019, 17:00	13.05
G1033300_0001_J	13.4386000	506.53	01Sep2019, 17:20	5.99
G1033304B	0.2333000	420.32	01Sep2019, 16:40	12.96
G1033304A	0.1720000	394.43	01Sep2019, 16:30	13.31
G1033304_0002_R	0.1720000	230.90	01Sep2019, 17:40	13.31
G1033304_0002_J	0.4053000	621.49	01Sep2019, 16:45	13.11
G1033304_0001_R	0.4053000	618.22	01Sep2019, 16:50	13.11
G1033304C	0.3005000	610.34	01Sep2019, 16:35	12.98
G1033304_0001_J	0.7058000	1203.80	01Sep2019, 16:40	13.05
G1033304_0000_R	0.7058000	1077.50	01Sep2019, 17:20	13.05
G1033304D	0.1493000	194.67	01Sep2019, 17:00	12.84
G1033300_0000_R	14.2937000	574.18	02Sep2019, 00:30	6.20
G1033300I	0.3187000	398.53	01Sep2019, 17:10	12.77

2% AEP Proposed Option 2 HEC-HMS Output

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
G1033300_0000_J	14.6124000	754.52	01Sep2019, 19:15	6.35
G1033801B	0.1027000	260.31	01Sep2019, 16:25	12.71
G1033801A	0.4291000	654.59	01Sep2019, 16:50	12.73
G1033800_0000_R	3.5781000	593.20	02Sep2019, 15:50	20.42
G1033800_0001_R	2.9563000	649.57	02Sep2019, 02:05	22.13
G1033800_0002_R	1.9046000	567.14	02Sep2019, 02:55	27.31
G1033800C	0.6407000	671.25	01Sep2019, 17:40	13.19
G1033800A	0.1532000	296.10	01Sep2019, 16:35	13.03
G1033800_0004_R	0.1532000	560.42	02Sep2019, 06:05	189.88
G1033800_0004_J	0.3010000	561.08	02Sep2019, 05:55	102.93
G1033800_0005_J	0.1532000	940.30	01Sep2019, 19:40	189.88
G1033800B	0.1478000	231.33	01Sep2019, 16:45	12.79
G1033800_0004A_J	0.9417000	1057.31	01Sep2019, 17:40	41.87
G1033800_0003_R	0.9417000	551.70	02Sep2019, 09:55	41.87
G1033802A	0.3649000	618.77	01Sep2019, 16:45	13.16
G1033802_0000_R	0.3649000	604.02	01Sep2019, 17:05	13.16
G1033802B	0.1840000	345.16	01Sep2019, 16:35	13.20
G10338011A	0.0811000	162.32	01Sep2019, 16:30	12.66
G1033802_0000_J	0.5489000	916.59	01Sep2019, 17:00	13.17
G1033801_0000_J	0.6129000	1007.67	01Sep2019, 16:50	12.72
G1033801_0000_R	0.5102000	802.41	01Sep2019, 16:55	12.72
G1033800G	0.5393000	398.12	01Sep2019, 18:35	12.69
G1033800F	0.6218000	945.43	01Sep2019, 16:50	12.65
G1033800E	0.4388000	597.99	01Sep2019, 17:05	13.01
G1033800D	0.4140000	549.37	01Sep2019, 17:05	12.99
G1033801_0001_J	0.5102000	805.61	01Sep2019, 16:50	12.72
G1033800_0001_J	3.5781000	1209.12	01Sep2019, 17:05	20.49
G1033800_0002_J	2.9563000	1817.67	01Sep2019, 17:00	22.16
G1033800_0003_J	1.9046000	1626.74	01Sep2019, 17:05	27.32
G1033800_0000_J	4.1174000	757.08	01Sep2019, 21:05	19.40
G1033600_0001_J	2.0767704	2027.79	01Sep2019, 18:45	12.77

2% AEP Proposed Option 2 HEC-HMS Output

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
G1033600A	0.3725000	649.67	01Sep2019, 16:45	12.91
G1033600_0004_R	0.3725000	597.26	01Sep2019, 17:55	12.91
G1033600B	0.4467000	606.64	01Sep2019, 17:00	12.78
G1033600_0004_J	0.8192000	1141.89	01Sep2019, 17:50	12.84
G1033602A	0.3230704	600.47	01Sep2019, 16:35	12.76
G10336021A	0.1646000	368.86	01Sep2019, 16:30	12.69
G1033602_0001_J	0.4876704	960.19	01Sep2019, 16:35	12.73
G1033602_0000_R	0.4876704	170.09	01Sep2019, 20:50	12.60
G1033602B	0.1313000	191.90	01Sep2019, 16:50	13.17
G1033602_0000_J	0.6189704	295.09	01Sep2019, 17:40	12.72
G1033603A	0.0824000	162.99	01Sep2019, 16:35	12.68
G1033600_0003_J	1.5205704	1544.30	01Sep2019, 17:45	12.78
G1033600_0003_R	1.5205704	1465.82	01Sep2019, 18:10	12.78
G1033601A	0.1218000	208.08	01Sep2019, 16:40	12.63
G1033600_0002A_J	1.6423704	1603.35	01Sep2019, 18:05	12.77
G1033600_0002_R	1.6423704	1592.92	01Sep2019, 18:20	12.77
G1033600C	0.2362000	300.55	01Sep2019, 17:05	12.57
G1033600_0002_J	1.8785704	1849.60	01Sep2019, 18:15	12.74
G1033600_0000_R	2.0767704	2015.73	01Sep2019, 19:05	12.77
G1033600_0001_R	1.8785704	1832.68	01Sep2019, 18:50	12.74
G1033600D	0.1982000	277.93	01Sep2019, 16:55	13.02
G1033600E	0.1960000	118.90	01Sep2019, 19:15	12.66
G1033600_0000_J	2.2727704	2134.56	01Sep2019, 19:05	12.76
G1038004A	0.4183000	708.18	01Sep2019, 16:40	12.93
G1038004_0000_J	0.4183000	708.18	01Sep2019, 16:40	12.93
G1034500A	0.3911000	567.21	01Sep2019, 16:55	12.75
G1033900B	0.0797000	226.64	01Sep2019, 16:20	12.58
G1033900A	0.1087000	226.64	01Sep2019, 16:30	12.72
G1033900_0001_R	0.1087000	196.31	01Sep2019, 17:10	12.72
G1033900_0001_J	0.1884000	373.47	01Sep2019, 16:30	12.66
G1033900_0000_R	0.1884000	11.84	02Sep2019, 00:55	9.56

2% AEP Proposed Option 2 HEC-HMS Output

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
G1033900C	0.1545000	169.14	01Sep2019, 17:20	12.66
G1033900_0000_J	0.3429000	176.89	01Sep2019, 17:20	10.95
G1034601A	0.1787000	416.68	01Sep2019, 16:25	12.63
G1034600A	0.0455000	127.41	01Sep2019, 16:20	12.60
G1034600_0002_R	0.0455000	38.34	01Sep2019, 18:00	12.60
G1034600B	0.0099000	46.53	01Sep2019, 16:10	12.47
G1034600_0002_J	0.2341000	475.59	01Sep2019, 16:25	12.62
G1034600_0001_R	0.2341000	325.82	01Sep2019, 17:15	12.62
G1034600C	0.0159000	70.52	01Sep2019, 16:10	12.58
G1034600_0001_J	0.2500000	341.77	01Sep2019, 17:10	12.62
G1034600_0000_R	0.2500000	341.11	01Sep2019, 17:15	12.62
G1034600D	0.0477000	166.71	01Sep2019, 16:15	12.49
G1034600_0000_J	0.2977000	445.21	01Sep2019, 16:20	12.60

4% AEP Proposed Option 2 HEC-HMS Output

Project: Kingwood Simulation Run: Prop_04 - Option 2

Start of Run: 01Sep2019, 00:00
End of Run: 08Sep2019, 00:00
Compute Time: 08May2020, 12:14:12

Basin Model: Proposed - Option 2
Meteorologic Model: 4% (25-Year)
Control Specifications: Control 5

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
G1033304_0000_J	0.8551000	1110.92	01Sep2019, 17:15	10.53
G1033300_0001A_J	14.2937000	1535.65	01Sep2019, 17:15	5.11
G10333B	4.6686000	1946.17	01Sep2019, 20:25	10.41
G10333A	4.7842000	2488.42	01Sep2019, 19:15	10.17
G1033300_9902_D	4.7842000	0.00	01Sep2019, 00:00	0.00
G1033300_9902_R	4.7842000	0.00	01Sep2019, 00:00	0.00
G1033300_0009_J	9.4528000	1946.17	01Sep2019, 20:25	5.14
G1033300_9901_D	9.4528000	1148.88	01Sep2019, 20:25	2.72
G1033300_0008_R	9.4528000	555.10	02Sep2019, 04:50	2.72
G1033300A	0.4550000	502.24	01Sep2019, 17:05	10.30
G1033300_0008_J	9.9078000	583.31	01Sep2019, 17:10	3.07
G1033303A	0.1067000	202.66	01Sep2019, 16:30	10.42
G1033300_0008A_J	10.0145000	745.26	01Sep2019, 17:00	3.14
G1033300_0007_R	10.0145000	453.43	02Sep2019, 12:50	3.14
G1033300B	0.2619000	306.18	01Sep2019, 17:00	10.40
G1033300_0007_J	10.2764000	453.43	02Sep2019, 12:50	3.33
G1033302A	0.3788000	508.65	01Sep2019, 16:50	10.55
G1033300_0007A_J	10.6552000	914.96	01Sep2019, 17:00	3.59
G1033300_0006_R	10.6552000	413.40	02Sep2019, 20:55	3.58
G1033300C	0.2969000	439.15	01Sep2019, 16:40	10.41
G1033300_0006_J	10.9521000	547.90	01Sep2019, 16:50	3.77
G1033300_0005_R	10.9521000	382.20	03Sep2019, 06:35	3.76
G1033300D	0.3240000	455.39	01Sep2019, 16:45	10.39
G1033300_0005_J	11.2761000	528.89	01Sep2019, 16:50	3.95
G1033300_0004_R	11.2761000	358.13	03Sep2019, 16:50	3.93
G1033300E	0.2116000	233.79	01Sep2019, 17:00	10.23
G1033300_0004_J	11.4877000	358.13	03Sep2019, 16:50	4.05

4% AEP Proposed Option 2 HEC-HMS Output

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
G1033300_0003_R	11.4877000	338.77	04Sep2019, 03:25	4.01
G1033300F	0.2515000	343.49	01Sep2019, 16:45	10.29
G1033300_0003_J	11.7392000	382.44	01Sep2019, 16:50	4.14
G1033301A	0.2993000	505.88	01Sep2019, 16:40	10.52
G1033301_0002_R	0.2993000	493.08	01Sep2019, 16:50	10.52
G1033301B	0.2851000	376.26	01Sep2019, 16:50	10.51
G1033301_0002_J	0.5844000	869.34	01Sep2019, 16:50	10.51
G1033301_0001_R	0.5844000	852.04	01Sep2019, 17:00	10.51
G1033301C	0.4139000	504.24	01Sep2019, 17:00	10.38
G1033301_0001_J	0.9983000	1356.27	01Sep2019, 17:00	10.46
G1033301_0000_R	0.9983000	1334.61	01Sep2019, 17:15	10.46
G1033301D	0.2470000	384.80	01Sep2019, 16:40	10.44
G1033301_0000_J	1.2453000	1668.59	01Sep2019, 17:10	10.45
G1033300_0003A_J	12.9845000	2040.49	01Sep2019, 17:10	4.75
G1033300_0002_R	12.9845000	537.88	01Sep2019, 22:05	4.68
G1033300G	0.1538000	222.06	01Sep2019, 16:40	10.41
G1033300_0002_J	13.1383000	583.48	01Sep2019, 20:30	4.75
G1033300_0001_R	13.1383000	364.75	02Sep2019, 08:35	4.63
G1033300H	0.3003000	347.04	01Sep2019, 17:00	10.56
G1033300_0001_J	13.4386000	424.78	01Sep2019, 17:10	4.76
G1033304B	0.2333000	366.54	01Sep2019, 16:40	10.47
G1033304A	0.1720000	346.92	01Sep2019, 16:30	10.82
G1033304_0002_R	0.1720000	209.48	01Sep2019, 17:30	10.82
G1033304_0002_J	0.4053000	547.63	01Sep2019, 16:50	10.62
G1033304_0001_R	0.4053000	547.19	01Sep2019, 16:50	10.62
G1033304C	0.3005000	534.48	01Sep2019, 16:35	10.49
G1033304_0001_J	0.7058000	1063.47	01Sep2019, 16:40	10.56
G1033304_0000_R	0.7058000	945.71	01Sep2019, 17:15	10.56
G1033304D	0.1493000	167.49	01Sep2019, 17:00	10.35
G1033300_0000_R	14.2937000	464.92	02Sep2019, 00:15	4.95
G1033300I	0.3187000	342.11	01Sep2019, 17:05	10.29

4% AEP Proposed Option 2 HEC-HMS Output

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
G1033300_0000_J	14.6124000	621.99	01Sep2019, 19:05	5.06
G1033801B	0.1027000	229.45	01Sep2019, 16:25	10.23
G1033801A	0.4291000	566.66	01Sep2019, 16:50	10.25
G1033800_0000_R	3.5781000	481.85	02Sep2019, 17:50	16.78
G1033800_0001_R	2.9563000	526.11	02Sep2019, 02:00	18.24
G1033800_0002_R	1.9046000	462.62	02Sep2019, 12:40	22.63
G1033800C	0.6407000	571.27	01Sep2019, 17:35	10.70
G1033800A	0.1532000	258.80	01Sep2019, 16:35	10.54
G1033800_0004_R	0.1532000	484.79	02Sep2019, 06:05	160.14
G1033800_0004_J	0.3010000	485.28	02Sep2019, 05:55	86.57
G1033800_0005_J	0.1532000	855.14	01Sep2019, 19:50	160.14
G1033800B	0.1478000	200.54	01Sep2019, 16:45	10.31
G1033800_0004A_J	0.9417000	885.75	01Sep2019, 17:35	34.95
G1033800_0003_R	0.9417000	465.81	02Sep2019, 10:25	34.95
G1033802A	0.3649000	538.23	01Sep2019, 16:45	10.67
G1033802_0000_R	0.3649000	524.04	01Sep2019, 17:05	10.67
G1033802B	0.1840000	301.30	01Sep2019, 16:35	10.71
G10338011A	0.0811000	141.86	01Sep2019, 16:30	10.18
G1033802_0000_J	0.5489000	794.58	01Sep2019, 17:00	10.68
G1033801_0000_J	0.6129000	873.89	01Sep2019, 16:50	10.24
G1033801_0000_R	0.5102000	694.96	01Sep2019, 16:55	10.24
G1033800G	0.5393000	333.22	01Sep2019, 18:30	10.21
G1033800F	0.6218000	818.26	01Sep2019, 16:50	10.17
G1033800E	0.4388000	515.22	01Sep2019, 17:00	10.52
G1033800D	0.4140000	472.85	01Sep2019, 17:05	10.50
G1033801_0001_J	0.5102000	698.49	01Sep2019, 16:50	10.24
G1033800_0001_J	3.5781000	1023.21	01Sep2019, 17:00	16.84
G1033800_0002_J	2.9563000	1553.49	01Sep2019, 17:00	18.26
G1033800_0003_J	1.9046000	1391.72	01Sep2019, 17:05	22.64
G1033800_0000_J	4.1174000	616.06	01Sep2019, 20:50	15.92
G1033600_0001_J	2.0767704	1681.17	01Sep2019, 18:50	10.29

4% AEP Proposed Option 2 HEC-HMS Output

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
G1033600A	0.3725000	565.54	01Sep2019, 16:45	10.42
G1033600_0004_R	0.3725000	514.65	01Sep2019, 18:00	10.42
G1033600B	0.4467000	522.62	01Sep2019, 17:00	10.30
G1033600_0004_J	0.8192000	971.50	01Sep2019, 17:50	10.35
G1033602A	0.3230704	523.68	01Sep2019, 16:35	10.27
G10336021A	0.1646000	324.05	01Sep2019, 16:30	10.20
G1033602_0001_J	0.4876704	839.97	01Sep2019, 16:35	10.25
G1033602_0000_R	0.4876704	132.19	01Sep2019, 20:50	10.13
G1033602B	0.1313000	166.03	01Sep2019, 16:50	10.68
G1033602_0000_J	0.6189704	241.84	01Sep2019, 17:35	10.25
G1033603A	0.0824000	142.58	01Sep2019, 16:35	10.20
G1033600_0003_J	1.5205704	1302.13	01Sep2019, 17:45	10.30
G1033600_0003_R	1.5205704	1222.34	01Sep2019, 18:15	10.30
G1033601A	0.1218000	181.01	01Sep2019, 16:40	10.15
G1033600_0002A_J	1.6423704	1334.71	01Sep2019, 18:10	10.29
G1033600_0002_R	1.6423704	1323.41	01Sep2019, 18:25	10.29
G1033600C	0.2362000	258.05	01Sep2019, 17:05	10.09
G1033600_0002_J	1.8785704	1534.27	01Sep2019, 18:20	10.26
G1033600_0000_R	2.0767704	1674.60	01Sep2019, 19:05	10.29
G1033600_0001_R	1.8785704	1522.53	01Sep2019, 18:55	10.26
G1033600D	0.1982000	239.94	01Sep2019, 16:55	10.53
G1033600E	0.1960000	98.77	01Sep2019, 19:05	10.18
G1033600_0000_J	2.2727704	1773.37	01Sep2019, 19:05	10.28
G1038004A	0.4183000	615.87	01Sep2019, 16:40	10.44
G1038004_0000_J	0.4183000	615.87	01Sep2019, 16:40	10.44
G1034500A	0.3911000	490.06	01Sep2019, 16:55	10.27
G1033900B	0.0797000	200.42	01Sep2019, 16:20	10.10
G1033900A	0.1087000	198.52	01Sep2019, 16:30	10.23
G1033900_0001_R	0.1087000	183.82	01Sep2019, 16:55	10.23
G1033900_0001_J	0.1884000	333.79	01Sep2019, 16:35	10.18
G1033900_0000_R	0.1884000	9.60	02Sep2019, 00:50	7.92

4% AEP Proposed Option 2 HEC-HMS Output

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
G1033900C	0.1545000	144.29	01Sep2019, 17:15	10.18
G1033900_0000_J	0.3429000	150.80	01Sep2019, 17:20	8.93
G1034601A	0.1787000	366.06	01Sep2019, 16:25	10.15
G1034600A	0.0455000	112.60	01Sep2019, 16:20	10.12
G1034600_0002_R	0.0455000	35.82	01Sep2019, 17:50	10.12
G1034600B	0.0099000	41.51	01Sep2019, 16:10	9.99
G1034600_0002_J	0.2341000	419.25	01Sep2019, 16:25	10.14
G1034600_0001_R	0.2341000	295.24	01Sep2019, 17:10	10.14
G1034600C	0.0159000	62.89	01Sep2019, 16:10	10.10
G1034600_0001_J	0.2500000	309.32	01Sep2019, 17:05	10.13
G1034600_0000_R	0.2500000	308.76	01Sep2019, 17:10	10.13
G1034600D	0.0477000	148.15	01Sep2019, 16:15	10.01
G1034600_0000_J	0.2977000	401.27	01Sep2019, 16:20	10.12

10% AEP Proposed Option 2 HEC-HMS Output

Project: Kingwood Simulation Run: Prop_10 - Option 2

Start of Run: 01Sep2019, 00:00
End of Run: 08Sep2019, 00:00
Compute Time: 08May2020, 12:14:22

Basin Model: Proposed - Option 2
Meteorologic Model: 10% (10-Year)
Control Specifications: Control 5

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
G1033304_0000_J	0.8551000	910.69	01Sep2019, 17:10	7.77
G1033300_0001A_J	14.2937000	1240.10	01Sep2019, 17:10	3.71
G10333B	4.6686000	1479.62	01Sep2019, 20:20	7.66
G10333A	4.7842000	1903.42	01Sep2019, 19:15	7.42
G1033300_9902_D	4.7842000	0.00	01Sep2019, 00:00	0.00
G1033300_9902_R	4.7842000	0.00	01Sep2019, 00:00	0.00
G1033300_0009_J	9.4528000	1479.62	01Sep2019, 20:20	3.78
G1033300_9901_D	9.4528000	818.06	01Sep2019, 20:20	1.92
G1033300_0008_R	9.4528000	386.22	02Sep2019, 04:50	1.92
G1033300A	0.4550000	400.99	01Sep2019, 17:05	7.55
G1033300_0008_J	9.9078000	451.78	01Sep2019, 17:10	2.18
G1033303A	0.1067000	166.08	01Sep2019, 16:30	7.66
G1033300_0008A_J	10.0145000	583.55	01Sep2019, 17:00	2.24
G1033300_0007_R	10.0145000	320.23	02Sep2019, 13:00	2.24
G1033300B	0.2619000	245.34	01Sep2019, 17:00	7.64
G1033300_0007_J	10.2764000	323.76	01Sep2019, 17:20	2.37
G1033302A	0.3788000	410.71	01Sep2019, 16:50	7.79
G1033300_0007A_J	10.6552000	724.45	01Sep2019, 16:55	2.57
G1033300_0006_R	10.6552000	294.12	02Sep2019, 20:45	2.57
G1033300C	0.2969000	356.05	01Sep2019, 16:40	7.66
G1033300_0006_J	10.9521000	430.66	01Sep2019, 16:50	2.70
G1033300_0005_R	10.9521000	272.95	03Sep2019, 06:20	2.70
G1033300D	0.3240000	368.36	01Sep2019, 16:45	7.64
G1033300_0005_J	11.2761000	418.92	01Sep2019, 16:50	2.84
G1033300_0004_R	11.2761000	256.32	03Sep2019, 16:35	2.83
G1033300E	0.2116000	186.74	01Sep2019, 17:00	7.48
G1033300_0004_J	11.4877000	256.32	03Sep2019, 16:35	2.91

10% AEP Proposed Option 2 HEC-HMS Output

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
G1033300_0003_R	11.4877000	242.82	04Sep2019, 03:05	2.88
G1033300F	0.2515000	277.41	01Sep2019, 16:45	7.54
G1033300_0003_J	11.7392000	303.18	01Sep2019, 16:50	2.98
G1033301A	0.2993000	412.88	01Sep2019, 16:40	7.76
G1033301_0002_R	0.2993000	401.29	01Sep2019, 16:50	7.76
G1033301B	0.2851000	303.54	01Sep2019, 16:50	7.75
G1033301_0002_J	0.5844000	704.83	01Sep2019, 16:50	7.75
G1033301_0001_R	0.5844000	689.43	01Sep2019, 17:00	7.75
G1033301C	0.4139000	404.80	01Sep2019, 16:55	7.63
G1033301_0001_J	0.9983000	1094.15	01Sep2019, 17:00	7.70
G1033301_0000_R	0.9983000	1072.82	01Sep2019, 17:15	7.70
G1033301D	0.2470000	312.88	01Sep2019, 16:40	7.68
G1033301_0000_J	1.2453000	1338.91	01Sep2019, 17:10	7.70
G1033300_0003A_J	12.9845000	1631.20	01Sep2019, 17:10	3.44
G1033300_0002_R	12.9845000	402.37	01Sep2019, 22:00	3.39
G1033300G	0.1538000	179.87	01Sep2019, 16:40	7.65
G1033300_0002_J	13.1383000	436.03	01Sep2019, 20:25	3.44
G1033300_0001_R	13.1383000	268.97	02Sep2019, 08:40	3.35
G1033300H	0.3003000	278.17	01Sep2019, 17:00	7.80
G1033300_0001_J	13.4386000	329.41	01Sep2019, 17:10	3.45
G1033304B	0.2333000	298.17	01Sep2019, 16:40	7.71
G1033304A	0.1720000	285.30	01Sep2019, 16:30	8.05
G1033304_0002_R	0.1720000	177.55	01Sep2019, 17:25	8.05
G1033304_0002_J	0.4053000	453.69	01Sep2019, 16:45	7.86
G1033304_0001_R	0.4053000	453.17	01Sep2019, 16:50	7.86
G1033304C	0.3005000	437.05	01Sep2019, 16:35	7.74
G1033304_0001_J	0.7058000	875.06	01Sep2019, 16:40	7.80
G1033304_0000_R	0.7058000	778.54	01Sep2019, 17:15	7.80
G1033304D	0.1493000	133.95	01Sep2019, 17:00	7.60
G1033300_0000_R	14.2937000	344.18	01Sep2019, 23:45	3.60
G1033300I	0.3187000	272.82	01Sep2019, 17:05	7.54

10% AEP Proposed Option 2 HEC-HMS Output

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
G1033300_0000_J	14.6124000	471.12	01Sep2019, 18:45	3.68
G1033801B	0.1027000	189.10	01Sep2019, 16:25	7.48
G1033801A	0.4291000	456.67	01Sep2019, 16:50	7.50
G1033800_0000_R	3.5781000	357.45	02Sep2019, 20:50	12.56
G1033800_0001_R	2.9563000	388.78	02Sep2019, 02:00	13.69
G1033800_0002_R	1.9046000	349.85	02Sep2019, 14:50	17.08
G1033800C	0.6407000	451.48	01Sep2019, 17:35	7.94
G1033800A	0.1532000	211.16	01Sep2019, 16:35	7.79
G1033800_0004_R	0.1532000	383.09	02Sep2019, 05:40	122.65
G1033800_0004_J	0.3010000	383.53	02Sep2019, 05:30	66.14
G1033800_0005_J	0.1532000	701.92	01Sep2019, 20:05	122.65
G1033800B	0.1478000	161.92	01Sep2019, 16:45	7.56
G1033800_0004A_J	0.9417000	684.10	01Sep2019, 17:35	26.54
G1033800_0003_R	0.9417000	358.08	02Sep2019, 10:40	26.54
G1033802A	0.3649000	436.62	01Sep2019, 16:45	7.91
G1033802_0000_R	0.3649000	423.52	01Sep2019, 17:10	7.91
G1033802B	0.1840000	245.53	01Sep2019, 16:35	7.95
G10338011A	0.0811000	115.71	01Sep2019, 16:30	7.43
G1033802_0000_J	0.5489000	641.32	01Sep2019, 17:00	7.92
G1033801_0000_J	0.6129000	706.78	01Sep2019, 16:50	7.49
G1033801_0000_R	0.5102000	560.76	01Sep2019, 16:55	7.49
G1033800G	0.5393000	257.37	01Sep2019, 18:25	7.46
G1033800F	0.6218000	659.17	01Sep2019, 16:50	7.42
G1033800E	0.4388000	413.15	01Sep2019, 17:00	7.76
G1033800D	0.4140000	378.44	01Sep2019, 17:05	7.74
G1033801_0001_J	0.5102000	563.90	01Sep2019, 16:50	7.49
G1033800_0001_J	3.5781000	801.55	01Sep2019, 17:00	12.60
G1033800_0002_J	2.9563000	1232.62	01Sep2019, 16:55	13.71
G1033800_0003_J	1.9046000	1105.11	01Sep2019, 17:05	17.09
G1033800_0000_J	4.1174000	458.06	01Sep2019, 20:35	11.89
G1033600_0001_J	2.0767704	1278.41	01Sep2019, 18:50	7.54

10% AEP Proposed Option 2 HEC-HMS Output

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
G1033600A	0.3725000	459.03	01Sep2019, 16:45	7.67
G1033600_0004_R	0.3725000	413.82	01Sep2019, 18:00	7.67
G1033600B	0.4467000	418.61	01Sep2019, 17:00	7.55
G1033600_0004_J	0.8192000	771.19	01Sep2019, 17:50	7.60
G1033602A	0.3230704	426.10	01Sep2019, 16:40	7.52
G10336021A	0.1646000	265.93	01Sep2019, 16:30	7.46
G1033602_0001_J	0.4876704	685.74	01Sep2019, 16:35	7.50
G1033602_0000_R	0.4876704	94.53	01Sep2019, 20:50	7.40
G1033602B	0.1313000	133.80	01Sep2019, 16:50	7.92
G1033602_0000_J	0.6189704	161.11	01Sep2019, 17:00	7.51
G1033603A	0.0824000	116.40	01Sep2019, 16:35	7.45
G1033600_0003_J	1.5205704	992.03	01Sep2019, 17:40	7.55
G1033600_0003_R	1.5205704	925.39	01Sep2019, 18:15	7.55
G1033601A	0.1218000	146.74	01Sep2019, 16:40	7.40
G1033600_0002A_J	1.6423704	1013.14	01Sep2019, 18:10	7.54
G1033600_0002_R	1.6423704	1002.92	01Sep2019, 18:20	7.54
G1033600C	0.2362000	205.86	01Sep2019, 17:00	7.34
G1033600_0002_J	1.8785704	1167.67	01Sep2019, 18:15	7.52
G1033600_0000_R	2.0767704	1267.13	01Sep2019, 19:15	7.54
G1033600_0001_R	1.8785704	1157.17	01Sep2019, 18:55	7.52
G1033600D	0.1982000	192.79	01Sep2019, 16:55	7.78
G1033600E	0.1960000	75.52	01Sep2019, 19:00	7.43
G1033600_0000_J	2.2727704	1342.43	01Sep2019, 19:15	7.53
G1038004A	0.4183000	499.36	01Sep2019, 16:40	7.69
G1038004_0000_J	0.4183000	499.36	01Sep2019, 16:40	7.69
G1034500A	0.3911000	393.92	01Sep2019, 16:55	7.52
G1033900B	0.0797000	165.85	01Sep2019, 16:20	7.36
G1033900A	0.1087000	162.35	01Sep2019, 16:30	7.48
G1033900_0001_R	0.1087000	150.54	01Sep2019, 16:50	7.48
G1033900_0001_J	0.1884000	275.41	01Sep2019, 16:35	7.43
G1033900_0000_R	0.1884000	7.46	02Sep2019, 00:40	6.01

10% AEP Proposed Option 2 HEC-HMS Output

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
G1033900C	0.1545000	114.14	01Sep2019, 17:15	7.43
G1033900_0000_J	0.3429000	119.30	01Sep2019, 17:15	6.65
G1034601A	0.1787000	300.48	01Sep2019, 16:25	7.40
G1034600A	0.0455000	93.11	01Sep2019, 16:20	7.37
G1034600_0002_R	0.0455000	32.26	01Sep2019, 17:40	7.37
G1034600B	0.0099000	34.78	01Sep2019, 16:10	7.25
G1034600_0002_J	0.2341000	346.75	01Sep2019, 16:25	7.39
G1034600_0001_R	0.2341000	260.83	01Sep2019, 17:00	7.39
G1034600C	0.0159000	52.64	01Sep2019, 16:10	7.36
G1034600_0001_J	0.2500000	273.82	01Sep2019, 16:55	7.39
G1034600_0000_R	0.2500000	273.05	01Sep2019, 17:00	7.39
G1034600D	0.0477000	123.38	01Sep2019, 16:15	7.27
G1034600_0000_J	0.2977000	344.87	01Sep2019, 16:25	7.37

50% AEP Proposed Option 2 HEC-HMS Output

Project: Kingwood Simulation Run: Prop_50 - Option 2

Start of Run: 01Sep2019, 00:00
End of Run: 08Sep2019, 00:00
Compute Time: 08May2020, 12:14:32

Basin Model: Proposed - Option 2
Meteorologic Model: 50% (2-Year)
Control Specifications: Control 5

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
G1033304_0000_J	0.8551000	605.71	01Sep2019, 17:10	4.28
G1033300_0001A_J	14.2937000	806.70	01Sep2019, 17:05	2.00
G10333B	4.6686000	859.97	01Sep2019, 20:15	4.18
G10333A	4.7842000	1113.69	01Sep2019, 19:10	3.97
G1033300_9902_D	4.7842000	0.00	01Sep2019, 00:00	0.00
G1033300_9902_R	4.7842000	0.00	01Sep2019, 00:00	0.00
G1033300_0009_J	9.4528000	859.97	01Sep2019, 20:15	2.07
G1033300_9901_D	9.4528000	415.29	01Sep2019, 20:15	1.00
G1033300_0008_R	9.4528000	198.37	02Sep2019, 05:30	1.00
G1033300A	0.4550000	253.56	01Sep2019, 17:05	4.08
G1033300_0008_J	9.9078000	274.48	01Sep2019, 17:05	1.14
G1033303A	0.1067000	110.02	01Sep2019, 16:30	4.18
G1033300_0008A_J	10.0145000	360.38	01Sep2019, 17:00	1.17
G1033300_0007_R	10.0145000	166.10	02Sep2019, 13:20	1.17
G1033300B	0.2619000	156.27	01Sep2019, 17:00	4.17
G1033300_0007_J	10.2764000	194.78	01Sep2019, 17:10	1.25
G1033302A	0.3788000	265.47	01Sep2019, 16:50	4.30
G1033300_0007A_J	10.6552000	455.10	01Sep2019, 16:55	1.36
G1033300_0006_R	10.6552000	153.84	02Sep2019, 20:45	1.36
G1033300C	0.2969000	231.54	01Sep2019, 16:40	4.18
G1033300_0006_J	10.9521000	267.81	01Sep2019, 16:45	1.43
G1033300_0005_R	10.9521000	143.51	03Sep2019, 06:10	1.43
G1033300D	0.3240000	238.52	01Sep2019, 16:45	4.16
G1033300_0005_J	11.2761000	263.35	01Sep2019, 16:50	1.51
G1033300_0004_R	11.2761000	135.18	03Sep2019, 16:15	1.50
G1033300E	0.2116000	118.08	01Sep2019, 17:00	4.02
G1033300_0004_J	11.4877000	146.72	01Sep2019, 17:15	1.55

50% AEP Proposed Option 2 HEC-HMS Output

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
G1033300_0003_R	11.4877000	128.32	04Sep2019, 02:45	1.53
G1033300F	0.2515000	178.99	01Sep2019, 16:45	4.08
G1033300_0003_J	11.7392000	190.56	01Sep2019, 16:50	1.59
G1033301A	0.2993000	271.76	01Sep2019, 16:40	4.27
G1033301_0002_R	0.2993000	261.60	01Sep2019, 16:55	4.27
G1033301B	0.2851000	195.81	01Sep2019, 16:50	4.26
G1033301_0002_J	0.5844000	456.62	01Sep2019, 16:55	4.27
G1033301_0001_R	0.5844000	445.60	01Sep2019, 17:05	4.27
G1033301C	0.4139000	258.79	01Sep2019, 16:55	4.15
G1033301_0001_J	0.9983000	703.25	01Sep2019, 17:00	4.22
G1033301_0000_R	0.9983000	685.67	01Sep2019, 17:20	4.22
G1033301D	0.2470000	204.51	01Sep2019, 16:40	4.20
G1033301_0000_J	1.2453000	854.07	01Sep2019, 17:15	4.22
G1033300_0003A_J	12.9845000	1031.73	01Sep2019, 17:15	1.84
G1033300_0002_R	12.9845000	227.32	01Sep2019, 21:40	1.81
G1033300G	0.1538000	116.77	01Sep2019, 16:40	4.18
G1033300_0002_J	13.1383000	246.16	01Sep2019, 20:20	1.84
G1033300_0001_R	13.1383000	147.44	02Sep2019, 08:35	1.80
G1033300H	0.3003000	177.53	01Sep2019, 17:00	4.31
G1033300_0001_J	13.4386000	201.26	01Sep2019, 17:05	1.85
G1033304B	0.2333000	195.09	01Sep2019, 16:40	4.23
G1033304A	0.1720000	190.45	01Sep2019, 16:30	4.53
G1033304_0002_R	0.1720000	124.97	01Sep2019, 17:15	4.53
G1033304_0002_J	0.4053000	306.29	01Sep2019, 16:45	4.36
G1033304_0001_R	0.4053000	306.28	01Sep2019, 16:50	4.36
G1033304C	0.3005000	288.55	01Sep2019, 16:35	4.25
G1033304_0001_J	0.7058000	585.84	01Sep2019, 16:40	4.31
G1033304_0000_R	0.7058000	521.86	01Sep2019, 17:10	4.31
G1033304D	0.1493000	84.98	01Sep2019, 17:00	4.13
G1033300_0000_R	14.2937000	191.80	01Sep2019, 22:45	1.94
G1033300I	0.3187000	172.12	01Sep2019, 17:05	4.08

50% AEP Proposed Option 2 HEC-HMS Output

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
G1033300_0000_J	14.6124000	273.58	01Sep2019, 18:20	1.98
G1033801B	0.1027000	126.35	01Sep2019, 16:25	4.02
G1033801A	0.4291000	293.46	01Sep2019, 16:50	4.04
G1033800_0000_R	3.5781000	198.74	03Sep2019, 00:55	7.01
G1033800_0001_R	2.9563000	214.21	02Sep2019, 01:45	7.67
G1033800_0002_R	1.9046000	199.11	02Sep2019, 15:45	9.64
G1033800C	0.6407000	281.54	01Sep2019, 17:35	4.43
G1033800A	0.1532000	138.94	01Sep2019, 16:35	4.29
G1033800_0004_R	0.1532000	225.71	02Sep2019, 04:55	70.18
G1033800_0004_J	0.3010000	225.98	02Sep2019, 04:45	37.73
G1033800_0005_J	0.1532000	465.93	01Sep2019, 20:10	70.18
G1033800B	0.1478000	104.45	01Sep2019, 16:45	4.09
G1033800_0004A_J	0.9417000	412.61	01Sep2019, 17:30	15.07
G1033800_0003_R	0.9417000	206.64	02Sep2019, 10:35	15.07
G1033802A	0.3649000	284.73	01Sep2019, 16:45	4.40
G1033802_0000_R	0.3649000	274.18	01Sep2019, 17:10	4.40
G1033802B	0.1840000	161.58	01Sep2019, 16:40	4.44
G10338011A	0.0811000	76.09	01Sep2019, 16:35	3.98
G1033802_0000_J	0.5489000	413.40	01Sep2019, 17:05	4.41
G1033801_0000_J	0.6129000	457.06	01Sep2019, 16:50	4.03
G1033801_0000_R	0.5102000	361.15	01Sep2019, 16:55	4.03
G1033800G	0.5393000	153.30	01Sep2019, 18:20	4.01
G1033800F	0.6218000	423.01	01Sep2019, 16:50	3.98
G1033800E	0.4388000	263.79	01Sep2019, 17:00	4.28
G1033800D	0.4140000	240.78	01Sep2019, 17:05	4.26
G1033801_0001_J	0.5102000	363.50	01Sep2019, 16:50	4.03
G1033800_0001_J	3.5781000	492.67	01Sep2019, 16:55	7.03
G1033800_0002_J	2.9563000	775.23	01Sep2019, 16:55	7.68
G1033800_0003_J	1.9046000	696.84	01Sep2019, 17:05	9.65
G1033800_0000_J	4.1174000	256.46	01Sep2019, 20:00	6.61
G1033600_0001_J	2.0767704	725.09	01Sep2019, 19:05	4.08

50% AEP Proposed Option 2 HEC-HMS Output

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
G1033600A	0.3725000	299.11	01Sep2019, 16:45	4.19
G1033600_0004_R	0.3725000	262.84	01Sep2019, 17:55	4.19
G1033600B	0.4467000	266.19	01Sep2019, 17:00	4.08
G1033600_0004_J	0.8192000	484.67	01Sep2019, 17:50	4.13
G1033602A	0.3230704	278.90	01Sep2019, 16:40	4.06
G10336021A	0.1646000	176.39	01Sep2019, 16:30	4.00
G1033602_0001_J	0.4876704	450.86	01Sep2019, 16:35	4.04
G1033602_0000_R	0.4876704	29.24	01Sep2019, 21:45	3.98
G1033602B	0.1313000	86.28	01Sep2019, 16:50	4.41
G1033602_0000_J	0.6189704	100.45	01Sep2019, 16:55	4.07
G1033603A	0.0824000	76.51	01Sep2019, 16:35	4.00
G1033600_0003_J	1.5205704	614.47	01Sep2019, 17:50	4.10
G1033600_0003_R	1.5205704	565.94	01Sep2019, 18:10	4.10
G1033601A	0.1218000	95.23	01Sep2019, 16:40	3.96
G1033600_0002A_J	1.6423704	619.21	01Sep2019, 18:05	4.09
G1033600_0002_R	1.6423704	588.48	01Sep2019, 18:25	4.09
G1033600C	0.2362000	129.70	01Sep2019, 17:00	3.90
G1033600_0002_J	1.8785704	683.42	01Sep2019, 18:25	4.06
G1033600_0000_R	2.0767704	700.57	01Sep2019, 19:35	4.08
G1033600_0001_R	1.8785704	659.31	01Sep2019, 19:10	4.06
G1033600D	0.1982000	123.53	01Sep2019, 16:55	4.28
G1033600E	0.1960000	44.21	01Sep2019, 18:55	3.98
G1033600_0000_J	2.2727704	743.61	01Sep2019, 19:35	4.08
G1038004A	0.4183000	324.83	01Sep2019, 16:40	4.21
G1038004_0000_J	0.4183000	324.83	01Sep2019, 16:40	4.21
G1034500A	0.3911000	252.11	01Sep2019, 16:50	4.06
G1033900B	0.0797000	111.51	01Sep2019, 16:20	3.92
G1033900A	0.1087000	107.07	01Sep2019, 16:30	4.03
G1033900_0001_R	0.1087000	100.60	01Sep2019, 16:50	4.03
G1033900_0001_J	0.1884000	185.36	01Sep2019, 16:35	3.98
G1033900_0000_R	0.1884000	4.73	01Sep2019, 23:30	3.36

50% AEP Proposed Option 2 HEC-HMS Output

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
G1033900C	0.1545000	70.90	01Sep2019, 17:10	3.98
G1033900_0000_J	0.3429000	74.37	01Sep2019, 17:15	3.64
G1034601A	0.1787000	199.34	01Sep2019, 16:25	3.96
G1034600A	0.0455000	62.53	01Sep2019, 16:20	3.93
G1034600_0002_R	0.0455000	25.49	01Sep2019, 17:20	3.93
G1034600B	0.0099000	23.81	01Sep2019, 16:10	3.82
G1034600_0002_J	0.2341000	234.04	01Sep2019, 16:25	3.95
G1034600_0001_R	0.2341000	196.21	01Sep2019, 16:50	3.95
G1034600C	0.0159000	36.00	01Sep2019, 16:10	3.91
G1034600_0001_J	0.2500000	207.11	01Sep2019, 16:40	3.94
G1034600_0000_R	0.2500000	205.97	01Sep2019, 16:50	3.94
G1034600D	0.0477000	83.78	01Sep2019, 16:15	3.84
G1034600_0000_J	0.2977000	253.86	01Sep2019, 16:35	3.93

APPENDIX E

PROPOSED CONDITION HYDRAULICS

G103-33-01 Proposed Peak Flow Distribution

Project Name: Kingwood Drainage Study
Date: 5/7/2020

HEC-HMS Node	Location	HEC-RAS Station	50% (2-yr)	10% (10-yr)	4% (25-yr)	2% (50-yr)	1% (100-yr)
G1033301A	Head water of G103-33-01	**6755.0**	**271.8**	**412.9**	**505.9**	**578.5**	**659**
	Interpolated Flow	**6539.0**	**289**	**440**	**540**	**618**	**704**
	Interpolated Flow	**6283.0**	**311**	**475**	**583**	**667**	**761**
	Interpolated Flow	**6010.0**	**336**	**514**	**632**	**725**	**828**
	Interpolated Flow	**5741.0**	**363**	**557**	**685**	**786**	**899**
	Interpolated Flow	**5507.0**	**389**	**597**	**734**	**844**	**965**
	Interpolated Flow	**5200.0**	**424**	**653**	**805**	**926**	**1060**
G1033301_0002_J	Brook Shadow Drive	**4943.0**	**456.6**	**704.8**	**869.3**	**1000.9**	**1147**
	Interpolated Flow	**4754.0**	**480**	**741**	**915**	**1079**	**1207**
	Interpolated Flow	**4594.0**	**500**	**773**	**955**	**1150**	**1261**
	Interpolated Flow	**4461.0**	**518**	**801**	**990**	**1213**	**1307**
	Interpolated Flow	**4145.0**	**563**	**872**	**1078**	**1376**	**1424**
	Interpolated Flow	**4020.0**	**581**	**901**	**1115**	**1446**	**1473**
	Interpolated Flow	**3754.0**	**623**	**967**	**1197**	**1608**	**1583**
	Interpolated Flow	**3449.0**	**675**	**1049**	**1300**	**1816**	**1720**
G1033301_0001_J	Sandy Forks Drive	**3291.0**	**703.3**	**1094.1**	**1356.3**	**1934.0**	**1795**
	Interpolated Flow	**2789.0**	**729**	**1136**	**1268**	**1934**	**1870**
	Interpolated Flow	**2284.0**	**756**	**1179**	**1185**	**1934**	**1947**
	Interpolated Flow	**1976.0**	**773**	**1207**	**1138**	**1934**	**1997**
	Interpolated Flow	**1165.0**	**819**	**1282**	**1021**	**1934**	**2132**
G1033301_0000_J	U/S of confluence with G103-33-00	**580.0**	**854.1**	**1338.9**	**944.0**	**1934.0**	**2235**

G103-38-02 Proposed Peak Flow Distribution

Project Name: Kingwood Drainage Study
Date: 5/7/2020

HEC-HMS Node	Location	HEC-RAS Station	50% (2-yr)	10% (10-yr)	4% (25-yr)	2% (50-yr)	1% (100-yr)
G1033802A	Head water of G103-38-02	**3838.0**	**284.7**	**436.6**	**538.2**	**618.8**	**709**
	Interpolated Flow	**3398.0**	**317**	**488**	**603**	**695**	**797**
	Interpolated Flow	**2974.0**	**351**	**543**	**673**	**776**	**893**
	Interpolated Flow	**2500.0**	**394**	**612**	**760**	**879**	**1013**
	Interpolated Flow	**2000.0**	**445**	**694**	**865**	**1002**	**1157**
	Interpolated Flow	**1500.0**	**503**	**787**	**984**	**1143**	**1323**
	Interpolated Flow	**1000.0**	**568**	**893**	**1119**	**1303**	**1511**
	Interpolated Flow	**501.0**	**641**	**1013**	**1273**	**1486**	**1727**
G1033800_0003_J	D/S of G1033802B U/S of confluence with G103-38-00	**156.0**	**696.8**	**1105.1**	**1391.7**	**1626.7**	**1893**

G103-36-01 Proposed Peak Flow Distribution

Project Name: Kingwood Drainage Study
Date: 5/7/2020

HEC-HMS Node	Location	HEC-RAS Station	50% (2-yr)	10% (10-yr)	4% (25-yr)	2% (50-yr)	1% (100-yr)
G1033601A (3%)	Head water of G103-36-01	**4075.0**	**3**	**4**	**5**	**6**	**7**
	Interpolated Flow	**3591.0**	**7**	**11**	**14**	**16**	**18**
	Interpolated Flow	**3089.0**	**20**	**30**	**38**	**43**	**49**
G1033601A (48%)	Interpolated Flow	**2662.0**	**46**	**70**	**87**	**100**	**114**
	Interpolated Flow	**2291.0**	**51**	**79**	**97**	**112**	**128**
	Interpolated Flow	**2014.0**	**56**	**86**	**106**	**122**	**139**
	Interpolated Flow	**1627.0**	**63**	**96**	**119**	**137**	**157**
	Interpolated Flow	**1195.0**	**71**	**110**	**136**	**156**	**179**
	Interpolated Flow	**972.0**	**76**	**118**	**145**	**167**	**191**
	Interpolated Flow	**620.0**	**85**	**131**	**162**	**186**	**213**
G1033601A	US of confluence with G103-36-00	**249.0**	**95**	**147**	**181**	**208**	**238**

G103-36-02 Proposed Peak Flow Distribution

Project Name: Kingwood Drainage Study
Date: 5/7/2020

HEC-HMS Node	Location	HEC-RAS Station	50% (2-yr)	10% (10-yr)	4% (25-yr)	2% (50-yr)	1% (100-yr)
G1033602A (25%)	Head water of G103-36-02	**4656.0**	**70**	**107**	**132**	**151**	**173**
	Interpolated Flow	**4600.0**	**74**	**113**	**139**	**159**	**182**
	Interpolated Flow	**4049.0**	**123**	**188**	**232**	**266**	**303**
G1033602A	Upstream of the pond	**3169.0**	**279**	**426**	**524**	**600**	**686**
G1033602_0001_J	After the confluence with G103-36-02.1	**2400.0**	**451**	**686**	**840**	**960**	**1094**
	Interpolated Flow	**1560.0**	**209**	**327**	**445**	**525**	**620**
G1033602_0000_J	US of confluence with G103-36-00	**756.0**	**100**	**161**	**242**	**295**	**360**

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G103-36-02.1 Proposed Peak Flow Distribution

Project Name: Kingwood Drainage Study
Date: 5/7/2020

HEC-HMS Node	Location	HEC-RAS Station	50% (2-yr)	10% (10-yr)	4% (25-yr)	2% (50-yr)	1% (100-yr)
G10336021A (12%)	Head water of G103-36-02.1	**2446.0**	**21**	**32**	**39**	**44**	**50**
	Interpolated Flow	**2314.0**	**24**	**37**	**45**	**51**	**58**
	Interpolated Flow	**2224.0**	**27**	**41**	**50**	**56**	**64**
	Interpolated Flow	**2159.0**	**29**	**44**	**53**	**61**	**69**
	Interpolated Flow	**2045.0**	**33**	**50**	**60**	**69**	**78**
	Interpolated Flow	**1927.0**	**37**	**56**	**69**	**78**	**89**
	Interpolated Flow	**1687.0**	**49**	**73**	**89**	**102**	**116**
	Interpolated Flow	**1493.0**	**60**	**91**	**111**	**126**	**143**
	Interpolated Flow	**1225.0**	**81**	**122**	**149**	**169**	**192**
	Interpolated Flow	**1009.0**	**103**	**155**	**188**	**214**	**243**
	Interpolated Flow	**831.0**	**125**	**188**	**229**	**261**	**296**
G10336021A	US of confluence with G103-36-00	**515.0**	**176**	**266**	**324**	**369**	**419**

HCFCD UNIT G103-33-00 (BENS BRANCH) HEC-RAS RESULTS

Project Name: Kingwood Drainage Study
Location: Kingwood, Texas
Date: 5/3/2020

HEC-RAS Station	Option 1						Option 2					
	100-Year Peak Flows			100-Year WSEL			100-Year Peak Flows			100-Year WSEL		
	Ex	Prop	Diff	Ex	Prop	Diff	Ex	Prop	Diff	Ex	Prop	Diff
29615	3287	3307	20	75.67	75.61	-0.06	3287	3307	20	75.67	75.61	-0.06
29587	3287	3307	19	75.54	75.49	-0.05	3287	3307	19	75.54	75.49	-0.05
29531	3290	3307	17	75.24	75.19	-0.05	3290	3307	17	75.24	75.19	-0.05
29439	3300	3308	8	74.87	74.77	-0.10	3300	3308	8	74.87	74.77	-0.10
29200.98	2883	10	-2873	73.99	70.91	-3.08	2883	10	-2873	73.99	69.83	-4.16
29024.31	2877	19	-2858	73.64	70.91	-2.73	2877	153	-2723	73.64	69.76	-3.88
28556.21	3040	256	-2784	73.13	70.91	-2.22	3040	478	-2562	73.13	69.68	-3.45
28114.66	3182	479	-2703	72.99	70.87	-2.12	3182	579	-2604	72.99	69.57	-3.42
27951.87	Westbound Northpark Drive											
27861.8	3182	479	-2703	72.99	70.60	-2.39	3182	579	-2604	72.99	69.58	-3.41
27797.29	3197	507	-2690	72.99	70.60	-2.39	3197	1440	-1757	72.99	69.59	-3.40
27756	3230	561	-2669	72.97	70.59	-2.38	3230	1341	-1889	72.97	68.92	-4.05
27730	Low Water Crossing											
27706	3230	561	-2669	72.94	70.56	-2.38	3230	780	-2450	72.94	68.88	-4.06
27632.55	3245	586	-2660	72.93	70.56	-2.37	3245	862	-2383	72.93	68.80	-4.13
27608.98	3254	600	-2654	72.92	70.50	-2.42	3254	902	-2352	72.92	68.76	-4.16
27561.33	Eastbound Northpark Drive											
27513.68	3254	600	-2654	72.84	69.23	-3.61	3254	902	-2352	72.84	68.98	-3.86
27441.69	3252	601	-2651	72.79	69.23	-3.56	3252	839	-2413	72.79	68.95	-3.84
26458.74	3289	730	-2559	71.93	68.72	-3.21	3289	1199	-2090	71.93	67.27	-4.66
25496.43	3378	895	-2483	71.32	68.43	-2.89	3378	1171	-2207	71.32	65.66	-5.66
25438.45	3383	904	-2479	71.21	68.42	-2.79	3383	1150	-2234	71.21	65.62	-5.59
25381.46	Woodland Hills Drive											
25324.46	3383	904	-2479	70.75	68.39	-2.36	3383	1150	-2234	70.75	65.47	-5.28
25279.51	3388	912	-2476	70.82	68.40	-2.42	3388	1148	-2239	70.82	65.40	-5.42
24159.5	3788	1630	-2158	70.22	67.98	-2.24	3788	1973	-1815	70.22	64.10	-6.12
23234.05	3784	1615	-2169	69.32	67.24	-2.08	3784	1936	-1849	69.32	63.26	-6.06
21847.04	4027	1991	-2036	67.62	65.69	-1.93	4027	2391	-1636	67.62	62.29	-5.33
21221.31	4027	1982	-2045	66.84	64.76	-2.08	4027	2356	-1671	66.84	61.97	-4.87
21087.61	4061	2031	-2030	66.63	64.48	-2.15	4061	2413	-1648	66.63	61.91	-4.72
21058.2	Pedestrian Low Water Crossing											
21020.31	4061	2031	-2030	66.57	64.46	-2.11	4061	2437	-1624	66.57	61.88	-4.69
20932.01	4085	2065	-2020	66.48	64.37	-2.11	4085	2474	-1610	66.48	61.85	-4.63
20347	4166	2175	-1990	66.14	63.95	-2.19	4166	2613	-1553	66.14	61.66	-4.48
19548.24	4284	2334	-1950	65.36	63.07	-2.29	4284	2821	-1464	65.36	61.45	-3.91
19504.82	4294	2347	-1947	65.36	62.85	-2.51	4294	2836	-1458	65.36	61.44	-3.92
19468.8	Tree Lane											

HEC-RAS Station	Option 1						Option 2					
	100-Year Peak Flows			100-Year WSEL			100-Year Peak Flows			100-Year WSEL		
	Ex	Prop	Diff	Ex	Prop	Diff	Ex	Prop	Diff	Ex	Prop	Diff
19400.18	4294	2347	-1947	62.55	61.19	-1.36	4294	2836	-1458	62.55	61.37	-1.18
19362.84	4294	2347	-1947	62.70	61.21	-1.49	4294	2835	-1458	62.70	61.37	-1.33
18617.86	4293	2347	-1947	61.85	60.65	-1.20	4293	2826	-1468	61.85	60.99	-0.86
18068	4334	2404	-1930	60.87	59.70	-1.17	4334	2881	-1453	60.87	60.04	-0.83
18060	Pedestrian Low Water Crossing											
18057	4334	2404	-1930	60.82	59.63	-1.19	4334	2881	-1453	60.82	59.98	-0.84
17483.99	4381	2468	-1913	59.89	58.66	-1.23	4381	2956	-1425	59.89	59.05	-0.84
16519.62	4464	2580	-1884	58.79	57.76	-1.03	4464	3084	-1380	58.79	57.54	-1.25
16354.02	4464	2579	-1885	58.44	57.46	-0.98	4464	3082	-1382	58.44	56.67	-1.77
15455.73	4463	2569	-1893	56.71	55.89	-0.82	4463	3080	-1383	56.71	53.37	-3.34
14299.67	4568	2711	-1858	55.29	54.60	-0.69	4568	3279	-1289	55.29	52.70	-2.59
13295.8	5600	4107	-1494	54.73	54.04	-0.69	5600	5331	-269	54.73	51.81	-2.92
13249.98	5602	4112	-1491	54.73	54.03	-0.70	5602	5336	-266	54.73	51.75	-2.98
13136.92	Kingwood Drive											
13023.86	5602	4112	-1491	53.79	52.80	-0.99	5602	5336	-266	53.79	51.25	-2.54
12941.61	5588	4103	-1485	53.75	52.75	-1.00	5588	5329	-258	53.75	51.25	-2.50
11521.57	5560	4162	-1398	52.99	51.98	-1.01	5560	5501	-58	52.99	49.99	-3.00
9501.098	5531	4172	-1360	52.02	51.13	-0.89	5531	5488	-43	52.02	48.62	-3.40
9031.736	5588	4258	-1330	51.47	50.63	-0.84	5588	5617	29	51.47	48.40	-3.07
8367.096	5664	4377	-1286	50.75	49.99	-0.76	5664	5787	124	50.75	48.08	-2.67
8207.768	5683	4407	-1275	50.74	49.97	-0.77	5683	5830	148	50.74	48.03	-2.71
8075.989	West Lake Houston Parkway											
7944.21	5683	4407	-1275	50.63	49.91	-0.72	5683	5830	148	50.63	47.92	-2.71
7739.881	5707	4448	-1259	50.59	49.87	-0.72	5707	5885	178	50.59	47.85	-2.74
6455.492	6220	5270	-950	50.18	49.49	-0.69	6220	7143	923	50.18	47.25	-2.93
4371.619	6419	5576	-843	47.55	47.13	-0.42	6419	7546	1127	47.55	46.32	-1.23
3175.311	6419	5575	-843	45.28	44.89	-0.39	6419	7544	1126	45.28	44.84	-0.44

HCFCD UNIT G103-33-01 HEC-RAS RESULTS

Project Name: Kingwood Drainage Study
Location: Kingwood, Texas
Date: 5/3/2020

HEC-RAS Station	Peak Flows						Water Surface Elevation					
	10-Year			100-Year			10-Year			100-Year		
	Ex	Prop	Diff	Ex	Prop	Diff	Ex	Prop	Diff	Ex	Prop	Diff
6755	338	413	75	552	659	107	64.90	65.47	0.57	66.49	67.08	0.59
6539	360	440	80	590	704	114	64.79	65.36	0.57	66.38	66.96	0.58
6283	389	475	86	639	761	122	64.54	65.11	0.57	66.14	66.72	0.58
6010	423	514	91	696	828	132	64.38	64.95	0.57	65.99	66.56	0.57
5741	458	557	99	756	899	143	64.22	64.79	0.57	65.83	66.40	0.57
5507	492	597	105	813	965	152	64.03	64.60	0.57	65.63	66.19	0.56
5200	539	653	114	895	1060	165	63.69	64.26	0.57	65.29	65.85	0.56
4943	583	705	122	969	1147	178	63.16	63.75	0.59	64.80	65.34	0.54
4754	613	741	128	1021	1207	186	62.75	63.37	0.62	64.46	65.01	0.55
4594	640	773	133	1068	1261	193	62.57	63.20	0.63	64.29	64.83	0.54
4461	664	801	137	1108	1307	199	62.59	63.22	0.63	64.31	64.85	0.54
4436	664	801	137	1108	1307	199	62.58	63.22	0.64	64.30	64.84	0.54
4432	Pedestrian Bridge											
4420	664	801	137	1108	1307	199	62.56	63.19	0.63	64.27	64.79	0.52
4381	664	801	137	1108	1307	199	62.52	63.15	0.63	64.23	64.74	0.51
4145	723	872	149	1209	1424	215	62.26	62.89	0.63	63.96	64.46	0.50
4020	748	901	153	1252	1473	221	62.14	62.78	0.64	63.84	64.35	0.51
3754	803	967	164	1348	1583	235	61.78	62.41	0.63	63.48	64.00	0.52
3449	872	1049	177	1467	1720	253	61.15	61.79	0.64	62.85	63.36	0.51
3291	910	1094	184	1533	1795	262	60.60	61.31	0.71	62.35	62.85	0.50
3268	910	1094	184	1533	1795	262	60.45	61.18	0.73	62.22	62.71	0.49
3247	Sandy Forks Drive											
3213	910	1094	184	1533	1795	262	60.19	60.98	0.79	62.01	62.47	0.46
3195	910	1094	184	1533	1795	262	60.08	60.79	0.71	61.96	62.44	0.48
3177	Drop Structure											
3155	910	1094	184	1533	1795	262	58.27	58.83	0.56	60.06	60.64	0.58
3085	910	1094	184	1533	1795	262	58.15	58.70	0.55	59.94	60.51	0.57
2789	949	1136	187	1599	1870	271	57.73	58.25	0.52	59.44	59.98	0.54
2382	949	1136	187	1599	1870	271	55.40	56.46	1.06	57.94	58.45	0.51
2352	949	1136	187	1599	1870	271	55.45	56.09	0.64	58.10	58.61	0.51
2350	Drop Structure											
2316	949	1136	187	1599	1870	271	55.10	55.62	0.52	56.77	57.27	0.50
2284	989	1179	190	1669	1947	278	55.08	55.60	0.52	56.74	57.24	0.50
1976	1014	1207	193	1713	1997	284	54.72	55.21	0.49	56.26	56.71	0.45
1165	1084	1282	198	1835	2132	297	53.44	53.71	0.27	54.28	54.48	0.20
580	1137	1339	202	1928	2235	307	53.06	53.34	0.28	53.95	54.18	0.23

HCFCD UNIT G103-33-02 HEC-RAS RESULTS

Project Name: Kingwood Drainage Study
Location: Kingwood, Texas
Date: 5/3/2020

HEC-RAS Station	Peak Flows						Water Surface Elevation					
	10-Year			100-Year			10-Year			100-Year		
	Ex	Prop	Diff	Ex	Prop	Diff	Ex	Prop	Diff	Ex	Prop	Diff
1020	330	411	81	557	675	118	64.59	65.07	0.48	65.81	66.32	0.51
727	330	411	81	557	675	118	64.08	64.58	0.50	65.34	65.85	0.51
517	330	411	81	557	675	118	63.86	64.36	0.50	65.11	65.63	0.52
296	330	411	81	557	675	118	63.70	64.20	0.50	64.95	65.47	0.52
61	330	411	81	557	675	118	63.57	64.06	0.49	64.82	65.34	0.52

HCFCD UNIT G103-33-03 HEC-RAS RESULTS

Project Name: Kingwood Drainage Study
Location: Kingwood, Texas
Date: 5/3/2020

HEC-RAS Station	Peak Flows						Water Surface Elevation					
	10-Year			100-Year			10-Year			100-Year		
	Ex	Prop	Diff	Ex	Prop	Diff	Ex	Prop	Diff	Ex	Prop	Diff
477	136	166	30	220	262	42	66.13	66.36	0.23	66.73	66.98	0.25
311	136	166	30	220	262	42	65.49	65.72	0.23	66.09	66.34	0.25
105	136	166	30	220	262	42	64.52	64.75	0.23	65.12	65.37	0.25

HCFCD UNIT G103-33-04 HEC-RAS RESULTS

Project Name: Kingwood Drainage Study
Location: Kingwood, Texas
Date: 5/3/2020

HEC-RAS Station	Peak Flows						Water Surface Elevation					
	10-Year			100-Year			10-Year			100-Year		
	Ex	Prop	Diff	Ex	Prop	Diff	Ex	Prop	Diff	Ex	Prop	Diff
5176	253	285	32	401	447	46	49.34	48.05	-1.29	50.54	49.10	-1.44
5059	253	285	32	401	447	46	49.20	47.99	-1.21	50.52	49.05	-1.47
4874	262	305	43	416	476	60	49.10	47.90	-1.20	50.51	48.99	-1.52
4671	269	319	50	427	498	71	49.00	47.80	-1.20	50.50	48.91	-1.59
4223	284	353	69	451	548	97	48.83	47.56	-1.27	50.48	48.71	-1.77
3984	284	353	69	451	548	97	48.83	47.51	-1.32	50.48	48.71	-1.77
3705	302	395	93	481	612	131	48.83	47.46	-1.37	50.48	48.70	-1.78
3353	315	428	113	503	660	157	48.82	47.41	-1.41	50.48	48.68	-1.80
3086	326	454	128	520	699	179	48.82	47.32	-1.50	50.48	48.65	-1.83
3047	326	454	128	520	699	179	48.76	47.28	-1.48	50.47	48.55	-1.92
3005	Kingwood Drive											
2812	326	454	128	520	699	179	48.27	47.14	-1.13	49.13	48.18	-0.95
2748	677	875	198	1066	1365	299	48.27	47.08	-1.19	49.10	48.16	-0.94
2584	677	875	198	1066	1365	299	48.21	46.97	-1.24	49.05	48.07	-0.98
2091	677	875	198	1066	1365	299	47.89	46.67	-1.22	48.77	47.77	-1.00
1229	692	901	209	1153	1427	274	47.40	46.28	-1.12	48.32	47.41	-0.91
677	698	911	214	1186	1450	264	47.25	46.13	-1.12	48.17	47.27	-0.90

HCFCD UNIT G103-38-00 (KINGWOOD DIVERSION DITCH) HEC-RAS RESULTS

Project Name: Kingwood Drainage Study
Location: Kingwood, Texas
Date: 5/3/2020

HEC-RAS Station	Alternative 1					
	100-Year Peak Flows			100-Year WSEL		
	Ex	Prop	Diff	Ex	Prop	Diff
21335	720	3311	2592	73.99	73.91	-0.08
21100	719	3314	2595	73.97	73.87	-0.10
21016	716	3315	2599	73.98	73.85	-0.13
20972	Northpark Drive					
20898	716	3315	2599	73.95	73.80	-0.15
20789	716	3316	2600	73.94	73.77	-0.17
20553	729	3397	2668	73.91	73.71	-0.20
20195	732	3412	2680	73.88	73.60	-0.28
19895	736	3424	2689	73.86	73.52	-0.34
19514	741	3440	2699	73.83	73.42	-0.41
19311	744	3448	2704	73.81	73.34	-0.47
19060	748	3458	2710	73.79	73.26	-0.53
18458	758	3484	2726	73.75	73.09	-0.66
17943	768	3507	2738	73.72	72.95	-0.77
17548	776	3525	2748	73.68	72.85	-0.83
17382	778	3527	2750	73.67	72.80	-0.87
16703	1340	4162	2822	73.51	72.54	-0.97
15966	1430	4248	2818	73.40	72.31	-1.09
15157	1530	4342	2813	73.29	72.06	-1.23
14289	1641	4445	2804	73.15	71.76	-1.39
13880	1647	4449	2802	73.11	71.63	-1.48
13827	2132	4833	2700	73.02	71.55	-1.47
13792	Kingwood Drive					
13700	2132	4833	2700	72.92	71.46	-1.46
13567	2155	4851	2697	72.82	71.37	-1.45
13064	2254	4922	2668	72.61	71.12	-1.49
12268	2431	5033	2602	72.16	70.74	-1.42
11571	2588	5132	2543	71.72	70.40	-1.32
11117	2691	5196	2505	71.47	70.18	-1.29
11087	2698	5201	2503	71.46	70.12	-1.34
11071	Pedestrian Crossing					
11058	2698	5201	2503	71.38	70.10	-1.28
11022	2706	5206	2500	71.32	70.07	-1.25
10572	2709	5208	2499	71.09	69.65	-1.44
10076	3634	5843	2208	70.23	68.85	-1.38
9524	3699	5904	2205	69.47	67.90	-1.57
9068	3753	5955	2202	68.73	66.93	-1.80

HEC-RAS Station	Alternative 1					
	100-Year Peak Flows			100-Year WSEL		
	Ex	Prop	Diff	Ex	Prop	Diff
8406	3831	6029	2198	66.28	64.71	-1.57
8383	3834	6032	2198	66.04	64.60	-1.44
8352	Walnut Lane					
8324	3834	6032	2198	63.44	58.38	-5.06
8287	3838	6036	2198	62.90	56.70	-6.20
7968	3876	6072	2196	59.56	54.79	-4.77
7658	3915	6108	2194	58.36	53.98	-4.38
7443	3941	6133	2192	57.28	53.94	-3.34
7144	3973	6164	2190	56.87	53.87	-3.00
6517	4047	6233	2185	55.38	53.82	-1.56
6495	4050	6236	2185	55.59	53.81	-1.78
6492	Deer Ridge Estates Boulevard					
6451	4050	6236	2185	55.37	53.89	-1.48
6407	4055	6240	2185	55.36	53.91	-1.45
6004	4103	6283	2180	54.65	54.01	-0.64
5693	4139	6316	2176	53.89	53.92	0.03
5500	4002	6336	2334	53.65	53.86	0.21
5332	3931	6353	2422	53.22	53.81	0.59
5177	3950	6368	2418	52.79	53.76	0.97
4996	3971	6380	2409	52.35	53.70	1.35
4787	3907	6399	2492	52.30	53.63	1.33
4572	3706	6422	2716	52.19	53.55	1.36
4374	3719	6443	2723	51.89	53.48	1.59
4018	3760	6479	2719	51.06	53.35	2.29
3771	3789	6506	2717	50.67	53.26	2.59
3602	3778	6524	2746	50.59	53.19	2.60
3354	2675	--	--	50.53	--	--
3313	2273	--	--	50.54	--	--
3302	Woodland Hills Drive					
3245	2273	10	-2263	48.94	45.60	-3.34
3215	2275	10	-2265	48.94	45.60	-3.34
3106	2266	41	-2225	48.99	45.60	-3.39
2770	2262	132	-2130	48.46	45.57	-2.89
2482	2303	209	-2094	47.79	45.50	-2.29
2180	2381	290	-2091	47.15	45.41	-1.74
1951	2131	349	-1782	46.83	45.35	-1.48
1795	1954	391	-1562	46.68	45.31	-1.37
1732	1747	396	-1351	46.64	45.29	-1.35
1685	1525	400	-1125	46.62	45.27	-1.35
1613	1335	411	-924	46.44	45.21	-1.23
1451	960	314	-645	46.29	45.14	-1.15
832	765	314	-451	45.78	44.86	-0.92

HCFCD UNIT G103-38-01 HEC-RAS RESULTS

Project Name: Kingwood Drainage Study
Location: Kingwood, Texas
Date: 5/3/2020

HEC-RAS Station	Peak Flows						Water Surface Elevation					
	10-Year			100-Year			10-Year			100-Year		
	Ex	Prop	Diff	Ex	Prop	Diff	Ex	Prop	Diff	Ex	Prop	Diff
6994	35	46	11	59	75	16	76.19	76.56	0.37	77.25	77.81	0.56
6767	39	52	13	67	85	18	76.03	76.42	0.39	77.17	77.74	0.57
6539	45	59	14	76	97	21	75.90	76.31	0.41	77.11	77.69	0.58
6220	53	70	17	91	115	24	75.71	76.15	0.44	77.01	77.60	0.59
6001	53	70	17	91	115	24	75.58	76.03	0.45	76.93	77.53	0.60
5765	68	90	22	117	148	31	75.43	75.89	0.46	76.84	77.46	0.62
5730	68	90	22	117	148	31	75.40	75.85	0.45	76.81	77.41	0.60
5700	Players Path											
5682	68	90	22	117	148	31	74.99	75.36	0.37	76.42	76.89	0.47
5655	68	90	22	117	148	31	74.97	75.35	0.38	76.43	76.90	0.47
5431	82	108	26	141	178	37	74.76	75.12	0.36	76.32	76.78	0.46
5125	97	128	31	166	211	45	74.43	74.75	0.32	76.15	76.61	0.46
4737	97	128	31	166	211	45	74.09	74.31	0.22	75.98	76.41	0.43
4409	144	190	46	247	313	66	73.91	74.03	0.12	75.82	76.21	0.39
4391	144	190	46	247	313	66	73.85	73.93	0.08	75.77	76.14	0.37
4370	Chestnut Ridge Road											
4332	144	190	46	247	313	66	73.77	73.78	0.01	75.61	75.87	0.26
4324	144	190	46	247	313	66	73.79	73.82	0.03	75.63	75.91	0.28
4308	144	190	46	247	313	66	73.79	73.82	0.03	75.64	75.91	0.27
4010	180	236	56	307	390	83	73.75	73.75	0.00	75.59	75.84	0.25
3601	225	296	71	385	488	103	73.67	73.61	-0.06	75.49	75.69	0.20
3246	274	360	86	468	594	126	73.53	73.34	-0.19	75.32	75.42	0.10
3043	306	403	97	524	664	140	73.45	73.16	-0.29	75.20	75.23	0.03
2814	348	457	109	594	753	159	73.31	72.81	-0.50	75.02	74.89	-0.13
2665	428	564	136	729	926	197	73.13	72.83	-0.30	74.86	74.90	0.04
2167	449	590	141	763	968	205	72.77	72.47	-0.30	74.48	74.56	0.08
1709	449	590	141	763	968	205	72.47	72.19	-0.28	74.19	74.29	0.10
1281	488	639	151	829	1047	218	72.04	71.79	-0.25	73.74	73.90	0.16
883	488	639	151	829	1047	218	71.59	71.40	-0.19	73.29	73.56	0.27
512	525	685	160	890	1121	231	69.59	70.73	1.14	71.31	73.04	1.73
164	542	707	165	919	1156	237	69.96	70.64	0.68	71.42	73.04	1.62

HCFCD UNIT G103-38-01.1 HEC-RAS RESULTS

Project Name: Kingwood Drainage Study
Location: Kingwood, Texas
Date: 5/3/2020

HEC-RAS Station	Peak Flows						Water Surface Elevation					
	10-Year			100-Year			10-Year			100-Year		
	Ex	Prop	Diff	Ex	Prop	Diff	Ex	Prop	Diff	Ex	Prop	Diff
1580	44	59	15	72	94	22	75.47	74.26	-1.21	76.37	75.75	-0.62
1417	47	64	17	78	102	24	75.34	74.13	-1.21	76.29	75.71	-0.58
1236	52	70	18	85	112	27	75.21	73.99	-1.22	76.19	75.67	-0.52
1078	56	75	19	92	121	29	75.11	73.88	-1.23	76.11	75.64	-0.47
830	63	85	22	104	136	32	74.94	73.70	-1.24	75.97	75.59	-0.38
592	71	96	25	116	153	37	74.69	73.55	-1.14	75.81	75.54	-0.27
410	77	104	27	127	167	40	74.46	73.43	-1.03	75.65	75.51	-0.14
200	86	116	30	141	185	44	73.16	73.30	0.14	75.34	75.47	0.13

HCFCD UNIT G103-38-02 HEC-RAS RESULTS

Project Name: Kingwood Drainage Study
Location: Kingwood, Texas
Date: 5/3/2020

HEC-RAS Station	Peak Flows						Water Surface Elevation					
	10-Year			100-Year			10-Year			100-Year		
	Ex	Prop	Diff	Ex	Prop	Diff	Ex	Prop	Diff	Ex	Prop	Diff
3838	387	437	49	638	709	71	73.02	73.93	0.91	75.26	77.81	2.55
3631	387	437	49	638	709	71	72.85	73.83	0.98	75.17	77.79	2.62
3585	387	437	49	638	709	71	72.84	73.81	0.97	75.12	77.77	2.65
3565	Greenberry Drive											
3500	387	437	49	638	709	71	71.59	72.75	1.16	73.02	75.98	2.96
3398	405	488	83	668	797	129	71.50	72.68	1.18	72.93	75.94	3.01
2974	423	543	120	699	893	194	71.06	72.44	1.38	72.55	75.84	3.29
2500	444	612	168	734	1013	279	70.66	72.16	1.50	72.14	75.70	3.56
2000	467	694	227	774	1157	383	70.11	71.74	1.63	71.57	75.51	3.94
1500	492	787	295	816	1323	507	69.28	71.15	1.87	70.77	75.27	4.50
1000	518	893	375	860	1511	651	68.29	70.39	2.10	69.74	74.89	5.15
501	545	1013	468	906	1727	821	68.06	70.12	2.06	69.50	74.57	5.07
156	564	1105	541	940	1893	953	67.80	69.76	1.96	69.22	74.35	5.13

Proposed HEC-RAS 1% AEP Water Surface Profile Comparison - Taylor Gully Improvement Options

		Existing (Unsteady)			Option 1.a - 3:1 (steady)					Option 1.b - 4:1 (steady)					LowFlow 20'x4' (unsteady)				
River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Q Total	Min Ch El	Diff	W.S. Elev	Diff	Q Total	Min Ch El	Diff	W.S. Elev	Diff	Q Total	Min Ch El	Diff	W.S. Elev	Diff
		(cfs)	(ft)	(ft)	(cfs)	(ft)	(ft)	(ft)	(ft)	(cfs)	(ft)	(ft)	(ft)	(ft)	(cfs)	(ft)	(ft)	(ft)	(ft)
13362.86	1PCT_100yr	1217.4	62.80	72.25	1497	58.51	(4.29)	70.04	(2.21)	1497	60.51	(2.29)	70.80	(1.45)	1191.7	62.80	-	70.67	(1.58)
11888.72	1PCT_100yr	1216.7	59.15	71.72	1622	57.04	(2.11)	69.04	(2.68)	1622	59.04	(0.11)	69.73	(1.99)	1065.2	56.00	(3.15)	69.57	(2.15)
10791.52	1PCT_100yr	1539.4	57.23	71.51	1791	55.94	(1.29)	68.27	(3.24)	1791	57.94	0.71	68.90	(2.61)	1545.3	55.45	(1.78)	69.14	(2.37)
10749.18	1PCT_100yr	1552.3	57.23	71.50	1791	55.90	(1.33)	68.24	(3.26)	1791	57.90	0.67	68.87	(2.63)	1566.3	55.43	(1.80)	69.11	(2.39)
10714.8	Rustling Elms	Culvert			Bridge		-		-			-		-	Bridge		-		-
10680.41	1PCT_100yr	1552.2	57.23	71.49	1791	55.83	(1.40)	68.03	(3.46)	1791	57.83	0.60	68.82	(2.67)	1540.0	55.40	(1.83)	68.82	(2.67)
10637.79	1PCT_100yr	1565.0	57.23	71.47	1791	55.78	(1.45)	68.00	(3.47)	1791	57.78	0.55	68.78	(2.69)	1561.7	55.38	(1.85)	68.79	(2.68)
10059.36	1PCT_100yr	1558.4	58.19	71.27	1855	55.21	(2.98)	67.56	(3.71)	1855	57.21	(0.98)	68.34	(2.93)	1539.2	55.09	(3.10)	68.57	(2.70)
9411.308	1PCT_100yr	1544.7	58.36	71.07	1884	54.56	(3.80)	67.08	(3.99)	1884	56.56	(1.80)	67.86	(3.21)	1525.1	54.77	(3.59)	68.33	(2.74)
9352.978	1PCT_100yr	1592.2	58.36	71.04	1884	54.50	(3.86)	67.04	(4.00)	1884	56.50	(1.86)	67.81	(3.23)	1625.4	54.74	(3.62)	68.27	(2.77)
9303.294	W. Lake Houston	Bridge			Bridge		-		-	Bridge		-		-	Bridge		-		-
9279.374	1PCT_100yr	1589.0	58.84	70.97	1884	54.43	(4.41)	66.95	(4.02)	1884	56.43	(2.41)	67.72	(3.25)	1625.0	54.70	(4.14)	68.22	(2.75)
9253.604	1PCT_100yr	1610.2	58.84	70.95	1884	54.40	(4.44)	66.93	(4.02)	1884	56.40	(2.44)	67.70	(3.25)	1669.0	54.69	(4.15)	68.20	(2.75)
9240.554	Pedestrian	Bridge			Bridge		-		-	Bridge		-		-	Bridge		-		-
9227.494	1PCT_100yr	1609.8	58.84	70.93	1884	54.37	(4.47)	66.91	(4.02)	1884	56.37	(2.47)	67.68	(3.25)	1669.0	54.68	(4.16)	68.17	(2.76)
9127.317	1PCT_100yr	1607.2	58.84	70.89	1989	54.27	(4.57)	66.80	(4.09)	1989	56.27	(2.57)	67.58	(3.31)	1668.3	54.63	(4.21)	68.13	(2.76)
8129.988	1PCT_100yr	1575.1	57.70	70.46	2113	53.28	(4.42)	65.95	(4.51)	2113	55.28	(2.42)	66.73	(3.73)	1648.9	54.13	(3.57)	67.68	(2.78)
7015.351	1PCT_100yr	1670.9	59.31	69.59	2131	52.16	(7.15)	65.03	(4.56)	2131	54.16	(5.15)	65.82	(3.77)	1924.8	53.57	(5.74)	66.97	(2.62)
6967.086	1PCT_100yr	1680.1	59.31	69.54	2131	52.11	(7.20)	64.99	(4.55)	2131	54.11	(5.20)	65.76	(3.78)	1937.6	53.55	(5.76)	66.93	(2.61)
6937.364	Mill Bridge	Bridge			Bridge		-		-	Bridge		-		-	Bridge		-		-
6907.639	1PCT_100yr	1659.8	59.31	69.35	2131	52.05	(7.26)	64.90	(4.45)	2131	54.05	(5.26)	65.68	(3.67)	1937.1	53.52	(5.79)	66.87	(2.48)
6856.784	1PCT_100yr	1663.3	59.31	69.29	2220	52.00	(7.31)	64.83	(4.46)	2220	54.00	(5.31)	65.64	(3.65)	1950.1	53.49	(5.82)	66.84	(2.45)
6101.619	1PCT_100yr	1621.6	55.32	68.73	2344	51.25	(4.07)	64.09	(4.64)	2344	53.25	(2.07)	64.92	(3.81)	1946.3	52.50	(2.82)	66.38	(2.35)
5102.891	1PCT_100yr	2333.2	53.81	67.19	2460	50.25	(3.56)	62.99	(4.20)	2460	52.25	(1.56)	63.87	(3.32)	2688.3	51.50	(2.31)	64.91	(2.28)
4379.795	1PCT_100yr	2326.1	54.57	65.88	2460	49.53	(5.04)	62.13	(3.75)	2460	51.53	(3.04)	63.06	(2.82)	2684.8	50.80	(3.77)	64.09	(1.79)
4326.764	1PCT_100yr	2324.8	54.57	65.76	2460	49.47	(5.10)	62.05	(3.71)	2460	51.47	(3.10)	62.98	(2.78)	2684.4	50.75	(3.82)	64.03	(1.73)
4297.624	Mills Branch	Bridge			Bridge		-		-	Bridge		-		-	Bridge		-		-
4268.481	1PCT_100yr	2318.6	54.57	65.42	2460	49.41	(5.16)	61.91	(3.51)	2460	51.41	(3.16)	62.85	(2.57)	2683.1	50.69	(3.88)	63.85	(1.57)
4211.277	1PCT_100yr	2315.6	54.57	65.26	2556	49.36	(5.21)	61.80	(3.46)	2556	51.36	(3.21)	62.78	(2.48)	2682.5	50.63	(3.94)	63.78	(1.48)
3502.953	1PCT_100yr	2486.6	50.51	63.76	2667	48.65	(1.86)	60.56	(3.20)	2667	50.65	0.14	61.66	(2.10)	2850.6	49.93	(0.58)	62.44	(1.32)
3454.339	1PCT_100yr	2498.9	50.51	63.65	2667	48.60	(1.91)	60.46	(3.19)	2667	50.60	0.09	61.58	(2.07)	2862.2	49.88	(0.63)	62.32	(1.33)
3440.99	Pedestrian	Bridge			Bridge		-		-	Bridge		-		-	Bridge		-		-
3427.639	1PCT_100yr	2498.7	50.51	63.58	2667	48.57	(1.94)	60.40	(3.18)	2667	50.57	0.06	61.52	(2.06)	2862.1	49.86	(0.65)	62.25	(1.33)
3385.195	1PCT_100yr	2509.0	50.51	63.46	2667	48.53	(1.98)	60.31	(3.15)	2667	50.53	0.02	61.45	(2.01)	2872.1	49.81	(0.70)	62.15	(1.31)
3287.034	1PCT_100yr	2533.1	51.17	63.14	2667	48.43	(2.74)	60.09	(3.05)	2667	50.43	(0.74)	61.26	(1.88)	2895.5	49.72	(1.45)	61.90	(1.24)
2911.472	1PCT_100yr	2630.5	53.28	62.35	2667	48.06	(5.22)	59.07	(3.28)	2667	50.06	(3.22)	60.42	(1.93)	2985.5	49.35	(3.93)	60.75	(1.60)
2854.677	1PCT_100yr	2645.0	53.28	62.27	2667	48.00	(5.28)	58.87	(3.40)	2667	50.00	(3.28)	60.26	(2.01)	2999.0	49.49	(3.79)	60.40	(1.87)
2840	Drop Structure	Inl Struct			Inl Struct		-		-	Inl Struct		-		-	Inl Struct		-		-
2808.66	1PCT_100yr	2639.3	44.51	58.36	2667	44.51	-	58.34	(0.02)	2667	44.51	-	58.34	(0.02)	2993.9	44.51	-	58.81	0.45
2724.167	1PCT_100yr	2661.6	44.51	58.32	2750	44.51	-	58.29	(0.03)	2750	44.51	-	58.29	(0.03)	3014.5	44.51	-	58.77	0.45
2306.809	1PCT_100yr	2773.7	42.32	57.69	2750	42.32	-	57.78	0.09	2750	42.32	-	57.78	0.09	3117.2	42.32	-	58.07	0.38
2257.737	1PCT_100yr	2787.3	42.32	57.59	2750	42.32	-	57.69	0.10	2750	42.32	-	57.69	0.10	3129.8	42.32	-	57.96	0.37
2228.369	Maple Bend	Bridge			Bridge		-		-	Bridge		-		-	Bridge		-		-
2199.002	1PCT_100yr	2786.6	42.32	57.35	2750	42.32	-	57.50	0.15	2750	42.32	-	57.50	0.15	3129.0	42.32	-	57.68	0.33
2155.758	1PCT_100yr	2798.3	42.32	57.25	2944	42.32	-	57.31	0.06	2944	42.32	-	57.31	0.06	3139.6	42.32	-	57.57	0.32
902.652	1PCT_100yr	2953.9	41.37	53.36	3078	41.37	-	52.76	(0.60)	3078	41.37	-	52.76	(0.60)	3285.7	41.37	-	53.77	0.41
83.251	1PCT_100yr	2953.3	38.85	51.82	3078	38.85	-	52.01	0.19	3078	38.85	-	52.01	0.19	3285.1	38.85	-	52.33	0.51

HCFCD UNIT G103-36-00 HEC-RAS RESULTS

Project Name: Kingwood Drainage Study
Location: Kingwood, Texas
Date: 5/3/2020

HEC-RAS Station	Peak Flows						Water Surface Elevation					
	10-Year			100-Year			10-Year			100-Year		
	Ex	Prop	Diff	Ex	Prop	Diff	Ex	Prop	Diff	Ex	Prop	Diff
13795	369	459	90	614	744	130	65.84	66.61	0.77	67.80	68.60	0.80
13266	382	476	94	638	774	136	65.14	65.90	0.76	67.07	67.86	0.79
12902	392	487	95	656	796	140	63.91	64.70	0.79	65.93	66.75	0.82
12373	406	505	99	683	828	145	62.46	63.21	0.75	64.42	65.17	0.75
11848	421	523	102	710	862	152	61.56	62.25	0.69	63.39	64.05	0.66
11215	439	546	107	744	904	160	60.26	60.90	0.64	62.02	62.63	0.61
10713	455	564	109	773	939	166	59.15	59.73	0.58	60.85	61.44	0.59
10133	473	587	114	807	981	174	57.60	57.84	0.24	59.03	59.38	0.35
9802	473	587	114	807	981	174	57.04	56.99	-0.05	58.38	58.55	0.17
9511	493	612	119	845	1028	183	56.41	55.78	-0.63	57.59	57.32	-0.27
9271	493	612	119	845	1028	183	55.99	54.07	-1.92	57.07	55.59	-1.48
8868	515	639	124	887	1079	192	55.29	52.64	-2.65	56.21	53.99	-2.22
8647	515	639	124	887	1079	192	54.63	52.20	-2.43	55.53	53.51	-2.02
8556	515	639	124	887	1079	192	54.39	52.12	-2.27	55.34	53.42	-1.92
8422	515	639	124	887	1079	192	54.09	52.02	-2.07	55.12	53.32	-1.80
8217	538	667	129	931	1134	203	53.70	51.94	-1.76	54.82	53.24	-1.58
7901	538	667	129	931	1134	203	53.20	51.80	-1.40	54.40	53.10	-1.30
7595	562	696	134	975	1188	213	52.80	51.62	-1.18	54.04	52.91	-1.13
7370	562	696	134	975	1188	213	52.46	51.48	-0.98	53.76	52.78	-0.98
7020	584	723	139	1018	1241	223	51.82	51.20	-0.62	53.25	52.52	-0.73
6905	584	723	139	1018	1241	223	49.98	51.07	1.09	51.00	52.38	1.38
6790	Kingwood Drive											
6713	584	723	139	1018	1241	223	50.45	50.87	0.42	51.39	51.95	0.56
6618	584	723	139	1018	1241	223	50.57	50.89	0.32	51.67	52.03	0.36
6495	605	749	144	1059	1291	232	50.39	50.69	0.30	51.43	51.75	0.32
6094	605	749	144	1059	1291	232	50.01	50.25	0.24	51.03	51.29	0.26
6077	Golf Pedestrian Crossing											
6054	624	771	147	1094	1335	241	49.71	49.96	0.25	50.91	51.16	0.25
5640	821	992	171	1563	1823	260	49.73	49.98	0.25	50.93	51.19	0.26
5419	821	992	171	1563	1823	260	49.72	49.98	0.26	50.93	51.19	0.26
5237	821	992	171	1563	1823	260	49.72	49.97	0.25	50.92	51.18	0.26
5156	Golf Pedestrian Crossing											
5123	852	1008	156	1630	1891	261	49.71	49.96	0.25	50.92	51.17	0.25
4942	864	1013	149	1655	1915	260	49.69	49.95	0.26	50.90	51.16	0.26
4832	892	1044	152	1707	1975	268	49.69	49.94	0.25	50.89	51.15	0.26
4807	Golf Pedestrian Crossing											
4713	924	1078	154	1766	2041	275	49.66	49.92	0.26	50.86	51.12	0.26

HEC-RAS Station	Peak Flows						Water Surface Elevation					
	10-Year			100-Year			10-Year			100-Year		
	Ex	Prop	Diff	Ex	Prop	Diff	Ex	Prop	Diff	Ex	Prop	Diff
4420	1007	1168	161	1919	2213	294	49.66	49.91	0.25	50.85	51.10	0.25
3821	1007	1168	161	1919	2213	294	49.66	49.91	0.25	50.85	51.09	0.24
3529	1007	1168	161	1919	2213	294	49.48	49.74	0.26	50.68	50.92	0.24
3502	Golf Pedestrian Crossing											
3486	1007	1168	161	1919	2213	294	49.17	49.45	0.28	50.37	50.61	0.24
3224	1007	1168	161	1919	2213	294	48.50	48.63	0.13	49.30	49.54	0.24
3130	1007	1168	161	1919	2213	294	48.62	48.81	0.19	49.49	49.68	0.19
3110	Golf Pedestrian Crossing											
3087	1055	1217	162	2007	2310	303	47.81	47.99	0.18	48.64	49.00	0.36
2896	1055	1217	162	2007	2310	303	46.89	47.10	0.21	48.05	48.39	0.34
2252	1086	1249	163	2064	2374	310	46.87	47.07	0.20	48.02	48.36	0.34
1506	1114	1278	164	2116	2432	316	46.31	46.41	0.10	46.76	46.94	0.18
1050	1148	1307	159	2198	2491	293	46.22	46.38	0.16	47.02	47.19	0.17
113	1180	1342	162	2252	2561	309	45.65	45.81	0.16	46.41	46.58	0.17

HCFCD UNIT G103-36-01 HEC-RAS RESULTS

Project Name: Kingwood Drainage Study
Location: Kingwood, Texas
Date: 5/3/2020

HEC-RAS Station	Peak Flows						Water Surface Elevation					
	10-Year			100-Year			10-Year			100-Year		
	Ex	Prop	Diff	Ex	Prop	Diff	Ex	Prop	Diff	Ex	Prop	Diff
4075	4	4	0	6	7	1	54.08	54.08	0.00	54.34	54.40	0.06
3591	9	11	2	16	18	2	53.45	53.55	0.10	53.72	53.80	0.08
3089	25	30	5	42	49	7	52.70	52.79	0.09	52.97	53.04	0.07
2662	58	70	12	97	114	17	51.73	51.82	0.09	52.01	52.17	0.16
2291	65	79	14	109	128	19	50.93	51.05	0.12	51.49	51.75	0.26
2014	71	86	15	118	139	21	50.48	50.65	0.17	51.32	51.62	0.30
1940	71	86	15	118	139	21	50.03	50.34	0.31	51.24	51.56	0.32
1805	Kingwood Drive											
1681	71	86	15	118	139	21	50.16	50.39	0.23	51.15	51.42	0.27
1680	71	86	15	118	139	21	50.11	50.32	0.21	51.07	51.32	0.25
1627	80	96	16	133	157	24	50.11	50.33	0.22	51.09	51.34	0.25
1537	80	96	16	133	157	24	50.10	50.31	0.21	51.08	51.34	0.26
1536	80	96	16	133	157	24	50.08	50.30	0.22	51.07	51.32	0.25
1527	Golf Pedestrian Crossing											
1519	80	96	16	133	157	24	50.07	50.29	0.22	51.07	51.32	0.25
1518	80	96	16	133	157	24	50.05	50.27	0.22	51.06	51.31	0.25
1495	80	96	16	133	157	24	49.91	50.15	0.24	51.00	51.26	0.26
1195	91	110	19	151	179	28	49.86	50.10	0.24	50.98	51.24	0.26
972	97	118	21	162	191	29	49.82	50.07	0.25	50.97	51.23	0.26
620	108	131	23	180	213	33	49.76	50.01	0.25	50.94	51.20	0.26
249	121	147	26	202	238	36	49.71	49.97	0.26	50.92	51.18	0.26

HCFCD UNIT G103-36-02 HEC-RAS RESULTS

Project Name: Kingwood Drainage Study
Location: Kingwood, Texas
Date: 5/3/2020

HEC-RAS Station	Peak Flows						Water Surface Elevation					
	10-Year			100-Year			10-Year			100-Year		
	Ex	Prop	Diff	Ex	Prop	Diff	Ex	Prop	Diff	Ex	Prop	Diff
4656	92	107	15	151	173	22	59.60	59.71	0.11	59.98	60.09	0.11
4600	97	113	16	159	182	23	56.02	56.17	0.15	56.54	56.70	0.16
4049	162	188	26	265	303	38	50.44	50.58	0.14	51.19	51.42	0.23
3169	366	426	60	598	686	88	49.74	50.00	0.26	50.95	51.21	0.26
2400	576	686	110	937	1094	157	49.74	50.00	0.26	50.95	51.21	0.26
1560	302	327	25	576	620	44	49.74	50.00	0.26	50.95	51.21	0.26
756	163	161	-2	361	360	-1	49.74	50.00	0.26	50.95	51.21	0.26

HCFCD UNIT G103-36-02.1 HEC-RAS RESULTS

Project Name: Kingwood Drainage Study
Location: Kingwood, Texas
Date: 5/3/2020

HEC-RAS Station	Peak Flows						Water Surface Elevation					
	10-Year			100-Year			10-Year			100-Year		
	Ex	Prop	Diff	Ex	Prop	Diff	Ex	Prop	Diff	Ex	Prop	Diff
2446	26	32	6	41	50	9	53.77	54.20	0.43	54.80	55.35	0.55
2314	30	37	7	48	58	10	53.76	54.19	0.43	54.80	55.34	0.54
2271	Kingwood Drive Westbound											
2224	33	41	8	53	64	11	53.64	54.04	0.40	54.59	55.03	0.44
2159	35	44	9	57	69	12	53.65	54.05	0.40	54.60	55.05	0.45
2088	Kingwood Drive Eastbound											
2045	213	266	53	344	419	75	53.57	53.98	0.41	54.46	54.87	0.41
1927	213	266	53	344	419	75	53.34	53.75	0.41	54.24	54.65	0.41
1687	213	266	53	344	419	75	52.89	53.30	0.41	53.78	54.19	0.41
1493	213	266	53	344	419	75	52.55	52.96	0.41	53.42	53.84	0.42
1225	213	266	53	344	419	75	52.09	52.48	0.39	52.92	53.32	0.40
1009	213	266	53	344	419	75	51.57	51.94	0.37	52.27	52.60	0.33
831	213	266	53	344	419	75	51.13	51.46	0.33	51.65	51.90	0.25
515	213	266	53	344	419	75	49.55	49.81	0.26	50.91	51.17	0.26

HCFCD UNIT G103-36-03 HEC-RAS RESULTS

Project Name: Kingwood Drainage Study
Location: Kingwood, Texas
Date: 5/3/2020

HEC-RAS Station	Peak Flows						Water Surface Elevation					
	10-Year			100-Year			10-Year			100-Year		
	Ex	Prop	Diff	Ex	Prop	Diff	Ex	Prop	Diff	Ex	Prop	Diff
2695	12	15	3	19	24	5	51.61	51.64	0.03	53.92	53.51	-0.41
2417	12	15	3	19	24	5	51.28	51.32	0.04	53.92	53.51	-0.41
2341	12	15	3	19	24	5	51.28	51.32	0.04	53.92	53.51	-0.41
2281	Royal Circle Drive											
2228	12	15	3	19	24	5	50.83	51.05	0.22	53.16	52.84	-0.32
2129	34	44	10	56	71	15	50.82	51.04	0.22	53.16	52.84	-0.32
1953	34	44	10	56	71	15	50.75	50.96	0.21	53.14	52.82	-0.32
1849	Westbound Kingwood Drive											
1769	34	44	10	56	71	15	50.38	50.58	0.20	52.17	51.96	-0.21
1676	47	61	14	77	98	21	50.33	50.52	0.19	52.15	51.93	-0.22
1654	Eastbound Kingwood Drive											
1514	47	61	14	77	98	21	49.79	50.05	0.26	50.98	51.25	0.27
1362	59	77	18	97	123	26	49.78	50.05	0.27	50.98	51.25	0.27
1219	59	77	18	97	123	26	49.78	50.04	0.26	50.98	51.24	0.26
986	77	101	24	128	161	33	49.77	50.03	0.26	50.97	51.23	0.26
790	89	116	27	147	186	39	49.77	50.03	0.26	50.97	51.23	0.26
775	Golf Pedestrian Crossing											
760	89	116	27	147	186	39	49.76	50.02	0.26	50.96	51.22	0.26

HCFCD UNIT G103-46-01 HEC-RAS RESULTS

Project Name: Kingwood Drainage Study
Location: Kingwood, Texas
Date: 5/3/2020

HEC-RAS Station	Peak Flows						Water Surface Elevation					
	10-Year			100-Year			10-Year			100-Year		
	Ex	Prop	Diff	Ex	Prop	Diff	Ex	Prop	Diff	Ex	Prop	Diff
2530	33	45	12	53	71	18	84.42	84.41	-0.01	84.75	84.84	0.09
2408	33	45	12	53	71	18	84.27	83.91	-0.36	84.54	84.42	-0.12
2278	39	54	15	64	86	22	84.22	83.57	-0.65	84.44	84.14	-0.30
2143	39	54	15	64	86	22	84.18	83.10	-1.08	84.38	83.88	-0.50
2106	46	63	17	74	99	25	84.17	82.88	-1.29	84.37	83.80	-0.57
2062	Mistletoe Lane											
1990	46	63	17	74	99	25	83.31	82.85	-0.46	83.59	83.58	-0.01
1968	46	63	17	74	99	25	83.30	82.80	-0.50	83.57	83.55	-0.02
1881	53	73	20	86	115	29	83.26	82.61	-0.65	83.49	83.40	-0.09
1728	53	73	20	86	115	29	83.22	82.39	-0.83	83.41	83.23	-0.18
1605	68	93	25	110	147	37	83.18	82.05	-1.13	83.32	82.99	-0.33
1561	68	93	25	110	147	37	83.16	81.84	-1.32	83.28	82.87	-0.41
1547	Walnut Lane											
1481	68	93	25	110	147	37	80.06	79.63	-0.43	80.41	80.16	-0.25
1463	68	93	25	110	147	37	80.07	79.65	-0.42	80.43	80.20	-0.23
1350	79	109	30	129	172	43	80.00	79.03	-0.97	80.29	79.69	-0.60
1200	79	109	30	129	172	43	79.95	78.42	-1.53	80.21	79.26	-0.95
1083	97	134	37	157	210	53	79.92	77.87	-2.05	80.15	78.87	-1.28
1061	97	134	37	157	210	53	79.91	77.63	-2.28	80.13	78.74	-1.39
1022	Magnolia Lane											
960	97	134	37	157	210	53	78.20	77.63	-0.57	78.66	78.48	-0.18
927	97	134	37	157	210	53	78.17	77.49	-0.68	78.61	78.37	-0.24
804	119	165	46	194	259	65	78.08	76.96	-1.12	78.43	77.87	-0.56
651	119	165	46	194	259	65	78.00	76.38	-1.62	78.26	77.30	-0.96
548	119	165	46	194	259	65	77.97	75.93	-2.04	78.19	76.91	-1.28
525	147	203	56	239	319	80	77.95	74.97	-2.98	78.16	76.54	-1.62
512	Sycamore Lane											
212	147	203	56	239	319	80	70.17	70.86	0.69	71.03	72.07	1.04
173	192	265	73	311	416	105	70.00	70.68	0.68	70.85	71.74	0.89
5	217	301	83	353	472	119	69.21	67.19	-2.02	69.62	68.35	-1.27

G103-33-00 Option 1 HEC-RAS Output

HEC-RAS Plan: PropAlt1 River: G103-33-00 Reach: G103-33-00_0032 Profile: Max WS

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
G103-33-00_0032	3175.311	Max WS	5575.33	36.88	44.89	42.48	45.19	0.001870	4.43	1346.61	393.58	0.36
G103-33-00_0032	4371.619	Max WS	5575.70	34.63	47.13		47.57	0.001964	5.32	1055.42	294.23	0.44
G103-33-00_0032	6455.492	Max WS	5268.38	38.52	49.49		49.59	0.000286	2.72	3158.96	801.80	0.16
G103-33-00_0032	7739.881	Max WS	4425.31	37.20	49.87		49.93	0.000246	2.02	2842.30	739.84	0.12
G103-33-00_0032	7944.210	Max WS	4386.26	37.20	49.91		49.98	0.000184	2.10	2101.62	434.48	0.13
G103-33-00_0032	8075.989		Bridge									
G103-33-00_0032	8207.768	Max WS	4387.12	37.61	49.97	42.16	50.04	0.000178	2.09	2142.73	589.95	0.12
G103-33-00_0032	8367.096	Max WS	4356.21	37.61	49.99		50.09	0.000288	2.62	1962.05	455.92	0.15
G103-33-00_0032	9031.736	Max WS	4242.51	37.94	50.63		50.75	0.001681	2.96	1879.43	506.49	0.19
G103-33-00_0032	9501.098	Max WS	4156.52	38.66	51.13		51.22	0.000339	2.49	2156.27	550.98	0.15
G103-33-00_0032	11521.57	Max WS	4157.05	39.98	51.98		52.15	0.000546	3.40	1940.11	656.29	0.21
G103-33-00_0032	12941.61	Max WS	4041.28	41.72	52.75		52.83	0.000490	2.80	3816.35	2166.38	0.20
G103-33-00_0032	13023.86	Max WS	4042.68	41.72	52.80		52.88	0.000625	3.26	3492.45	2148.37	0.22
G103-33-00_0032	13136.92		Bridge									
G103-33-00_0032	13249.98	Max WS	4111.91	41.72	54.03	50.76	54.08	0.000363	2.48	6209.00	3232.17	0.17
G103-33-00_0032	13295.80	Max WS	4106.63	41.72	54.04		54.12	0.000488	2.98	5272.22	3268.26	0.19
G103-33-00_0032	14299.67	Max WS	2697.00	44.15	54.60		54.61	0.000673	1.50	5303.84	3249.03	0.11
G103-33-00_0032	15455.73	Max WS	2563.76	44.93	55.89		55.94	0.001597	2.97	2617.11	1513.39	0.18
G103-33-00_0032	16354.02	Max WS	2576.97	45.90	57.46		57.59	0.002109	4.40	1822.18	911.93	0.26
G103-33-00_0032	16519.62	Max WS	2577.88	46.72	57.76		57.88	0.001554	3.96	1975.47	884.10	0.23
G103-33-00_0032	17483.99	Max WS	2466.01	46.73	58.66		58.70	0.000269	1.72	2255.63	748.25	0.10
G103-33-00_0032	18057	Max WS	2402.64	48.00	59.63		59.77	0.003349	4.29	1431.72	737.41	0.31
G103-33-00_0032	18060		Bridge									
G103-33-00_0032	18068	Max WS	2402.90	48.33	59.70	58.61	59.85	0.003124	4.29	1411.99	728.03	0.30
G103-33-00_0032	18617.86	Max WS	2346.76	48.26	60.65		60.74	0.000703	2.77	1612.62	582.97	0.16
G103-33-00_0032	19362.84	Max WS	2346.87	48.85	61.21		61.34	0.000932	3.09	1001.04	343.64	0.18
G103-33-00_0032	19400.18	Max WS	2346.92	48.80	61.19		61.43	0.001489	3.92	620.79	165.57	0.23
G103-33-00_0032	19468.8		Bridge									
G103-33-00_0032	19504.82	Max WS	2347.19	52.42	62.85	60.32	63.22	0.003722	5.68	516.55	562.50	0.35
G103-33-00_0032	19548.24	Max WS	2334.04	53.12	63.07		63.21	0.001891	4.03	1240.49	373.95	0.25
G103-33-00_0032	20347	Max WS	2164.79	52.61	63.95		64.00	0.000884	2.70	1990.53	634.98	0.17
G103-33-00_0032	20932.01	Max WS	2051.26	54.31	64.37		64.42	0.001138	2.75	1746.84	553.61	0.19
G103-33-00_0032	21020.31	Max WS	2017.74	53.47	64.46		64.52	0.000709	2.59	1738.52	520.32	0.16
G103-33-00_0032	21058.2		Culvert									
G103-33-00_0032	21087.61	Max WS	2017.89	56.35	64.48		64.56	0.001900	3.70	1452.22	545.75	0.25
G103-33-00_0032	21221.31	Max WS	1972.34	56.66	64.76		64.83	0.001579	3.34	1588.05	605.79	0.23
G103-33-00_0032	21847.04	Max WS	1985.58	56.37	65.69		65.74	0.001226	2.98	1690.06	558.53	0.20
G103-33-00_0032	23234.05	Max WS	1614.48	58.27	67.24		67.28	0.000991	2.75	1527.20	489.27	0.18
G103-33-00_0032	24159.50	Max WS	1618.49	58.87	67.98		68.01	0.000621	2.20	2103.17	692.95	0.14
G103-33-00_0032	25279.51	Max WS	906.56	59.58	68.40		68.42	0.000103	1.39	1213.05	385.28	0.09
G103-33-00_0032	25324.46	Max WS	899.12	59.55	68.39		68.43	0.000123	1.49	605.94	114.36	0.10
G103-33-00_0032	25381.46		Bridge									
G103-33-00_0032	25438.45	Max WS	899.37	59.58	68.42	61.66	68.45	0.000124	1.50	599.38	190.45	0.10
G103-33-00_0032	25496.43	Max WS	889.86	59.57	68.43		68.46	0.000131	1.49	980.63	308.67	0.10
G103-33-00_0032	26458.74	Max WS	728.68	59.63	68.72		68.74	0.000424	1.19	936.22	494.33	0.10
G103-33-00_0032	27441.69	Max WS	597.63	60.80	69.23		69.24	0.000594	1.08	893.75	357.68	0.08
G103-33-00_0032	27513.68	Max WS	597.67	60.74	69.23		69.28	0.000231	1.66	367.08	448.22	0.11
G103-33-00_0032	27561.33		Culvert									
G103-33-00_0032	27608.98	Max WS	599.49	62.36	70.50		70.62	0.000948	3.12	250.24	706.92	0.24
G103-33-00_0032	27632.55	Max WS	585.24	61.11	70.56		70.57	0.000156	1.29	1010.35	682.56	0.10
G103-33-00_0032	27706	Max WS	561.04	61.89	70.56		70.57	0.000060	0.99	1270.68	772.06	0.07
G103-33-00_0032	27730		Culvert									
G103-33-00_0032	27756	Max WS	561.04	62.06	70.59		70.60	0.000059	0.89	1418.52	840.98	0.07
G103-33-00_0032	27797.29	Max WS	506.93	61.88	70.60		70.60	0.000084	1.02	1431.63	1139.82	0.07
G103-33-00_0032	27861.80	Max WS	478.93	63.29	70.60		70.62	0.000193	1.27	845.32	924.01	0.11
G103-33-00_0032	27951.87		Culvert									
G103-33-00_0032	28114.66	Max WS	478.96	61.77	70.87		70.89	0.000093	1.23	390.04	551.51	0.08
G103-33-00_0032	28556.21	Max WS	255.27	63.44	70.91		70.91	0.000013	0.38	1174.95	455.98	0.03
G103-33-00_0032	29024.31	Max WS	9.97	63.69	70.91		70.91	0.000000	0.03	727.70	247.19	0.00
G103-33-00_0032	29200.98	Max WS	10.00	63.92	70.91		70.91	0.000000	0.03	578.81	214.11	0.00

G103-33-00 Option 2 HEC-RAS Output

HEC-RAS Plan: PropAlt2 River: G103-33-00 Reach: G103-33-00_0032 Profile: Max WS

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
G103-33-00_0032	3175.311	Max WS	7544.32	36.88	44.84	41.04	45.23	0.001870	5.00	1593.54	389.73	0.37
G103-33-00_0032	4371.619	Max WS	7544.69	34.63	46.32		46.51	0.000429	3.49	2162.90	220.14	0.20
G103-33-00_0032	6455.492	Max WS	7139.25	36.42	47.25		47.44	0.000459	3.57	2279.33	467.05	0.20
G103-33-00_0032	7739.881	Max WS	5882.93	37.20	47.85		47.99	0.000356	3.04	1971.45	323.65	0.18
G103-33-00_0032	7944.210	Max WS	5828.73	37.20	47.92		48.06	0.000346	2.98	1953.69	214.35	0.17
G103-33-00_0032	8075.989		Bridge									
G103-33-00_0032	8207.768	Max WS	5828.89	37.61	48.03	41.13	48.18	0.000364	3.08	1929.56	307.71	0.18
G103-33-00_0032	8367.096	Max WS	5786.21	37.61	48.08		48.26	0.000478	3.42	1745.83	284.21	0.20
G103-33-00_0032	9031.736	Max WS	5616.61	37.94	48.40		48.57	0.000452	3.32	1770.40	326.52	0.20
G103-33-00_0032	9501.098	Max WS	5487.70	38.66	48.62		48.80	0.000493	3.44	1673.08	304.78	0.21
G103-33-00_0032	11521.57	Max WS	5489.85	39.98	49.99		50.31	0.000939	4.57	1361.09	312.82	0.28
G103-33-00_0032	12941.61	Max WS	5296.92	41.72	51.25		51.49	0.000773	4.15	1912.99	880.34	0.26
G103-33-00_0032	13023.86	Max WS	5297.53	41.72	51.25		51.65	0.001215	5.11	1110.65	904.50	0.32
G103-33-00_0032	13136.92		Bridge									
G103-33-00_0032	13249.98	Max WS	5310.66	41.72	51.75	46.56	52.10	0.001077	4.80	1146.83	1022.77	0.30
G103-33-00_0032	13295.80	Max WS	5303.48	41.72	51.81		52.14	0.001005	4.66	1468.52	630.81	0.29
G103-33-00_0032	14299.67	Max WS	3273.47	43.19	52.70		52.85	0.000487	3.10	1429.77	1042.06	0.20
G103-33-00_0032	15455.73	Max WS	3077.94	44.93	53.37		53.56	0.000693	3.46	892.93	164.39	0.23
G103-33-00_0032	16354.02	Max WS	3081.84	45.90	56.67		57.16	0.006994	7.54	1174.63	686.21	0.46
G103-33-00_0032	16519.62	Max WS	3082.93	46.72	57.54		57.75	0.002741	5.17	1778.19	865.95	0.31
G103-33-00_0032	17483.99	Max WS	2948.70	46.73	59.05		59.10	0.000310	1.90	2552.77	767.64	0.11
G103-33-00_0032	18057	Max WS	2872.44	48.00	59.98		60.11	0.003156	4.33	1696.50	770.03	0.30
G103-33-00_0032	18060		Bridge									
G103-33-00_0032	18068	Max WS	2875.26	48.33	60.04	58.90	60.19	0.003007	4.36	1666.92	758.46	0.30
G103-33-00_0032	18617.86	Max WS	2824.88	48.26	60.99		61.10	0.000847	3.12	1818.18	641.50	0.18
G103-33-00_0032	19362.84	Max WS	2826.99	49.52	61.37		61.47	0.000232	2.49	1392.43	358.96	0.14
G103-33-00_0032	19400.18	Max WS	2827.91	49.58	61.37		61.48	0.000255	2.55	1109.67	196.80	0.15
G103-33-00_0032	19468.8		Bridge									
G103-33-00_0032	19504.82	Max WS	2827.91	49.76	61.44	53.59	61.54	0.000250	2.51	1197.49	356.72	0.15
G103-33-00_0032	19548.24	Max WS	2812.30	49.83	61.45		61.55	0.000243	2.49	1398.72	316.69	0.15
G103-33-00_0032	20347	Max WS	2605.36	51.19	61.66		61.76	0.000310	2.60	1379.30	465.56	0.16
G103-33-00_0032	20932.01	Max WS	2469.80	52.19	61.85		61.96	0.000396	2.77	1191.91	443.64	0.18
G103-33-00_0032	21020.31	Max WS	2431.26	52.34	61.88		62.00	0.000434	2.84	1000.36	377.77	0.19
G103-33-00_0032	21087.61	Max WS	2408.22	52.45	61.91		62.03	0.000426	2.85	977.99	351.74	0.19
G103-33-00_0032	21221.31	Max WS	2352.90	52.68	61.97		62.10	0.000458	2.87	867.12	321.92	0.19
G103-33-00_0032	21847.04	Max WS	2381.09	53.74	62.29		62.45	0.000629	3.22	845.97	341.42	0.22
G103-33-00_0032	23234.05	Max WS	1933.93	56.10	63.26		63.43	0.000792	3.31	610.09	211.19	0.24
G103-33-00_0032	24159.50	Max WS	1970.07	57.67	64.10		64.33	0.001237	3.85	531.11	170.40	0.30
G103-33-00_0032	25279.51	Max WS	1138.63	59.58	65.40		65.57	0.001110	3.30	353.34	103.02	0.27
G103-33-00_0032	25324.46	Max WS	1139.49	59.55	65.47		65.61	0.000787	3.02	377.07	72.54	0.23
G103-33-00_0032	25381.46		Bridge									
G103-33-00_0032	25438.45	Max WS	1139.49	59.58	65.62	61.99	65.76	0.000729	2.95	386.61	72.56	0.23
G103-33-00_0032	25496.43	Max WS	1161.73	59.57	65.66		65.84	0.001276	3.44	344.86	98.71	0.28
G103-33-00_0032	26458.74	Max WS	1197.00	59.62	67.27		67.41	0.004133	3.14	462.62	236.64	0.30
G103-33-00_0032	27441.69	Max WS	838.91	60.80	68.95		68.98	0.001590	1.70	794.98	352.69	0.13
G103-33-00_0032	27513.68	Max WS	881.60	60.74	68.98		69.07	0.000510	2.43	370.51	435.40	0.16
G103-33-00_0032	27561.33		Culvert									
G103-33-00_0032	27608.98	Max WS	223.16	62.36	68.76		68.82	0.000736	2.09	136.60	239.31	0.20
G103-33-00_0032	27632.55	Max WS	242.51	61.11	68.80		68.82	0.000290	1.37	270.33	231.46	0.12
G103-33-00_0032	27706	Max WS	473.06	61.89	68.88		68.93	0.000250	1.73	391.30	303.25	0.13
G103-33-00_0032	27756	Max WS	472.26	62.06	68.92		68.96	0.000369	1.79	440.09	337.60	0.16
G103-33-00_0032	27797.29	Max WS	-106.20	61.88	69.59		69.59	0.000024	-0.49	474.87	606.04	0.04
G103-33-00_0032	27861.80	Max WS	-75.74	63.29	69.58		69.58	0.000025	-0.38	313.19	294.44	0.04
G103-33-00_0032	27951.87		Culvert									
G103-33-00_0032	28114.66	Max WS	-75.74	61.77	69.57		69.57	0.000005	-0.24	313.92	313.46	0.02
G103-33-00_0032	28556.21	Max WS	-163.18	63.44	69.68		69.69	0.000019	-0.37	657.87	352.41	0.03
G103-33-00_0032	29024.31	Max WS	-96.83	63.69	69.76		69.76	0.000053	-0.40	470.29	204.72	0.03
G103-33-00_0032	29200.98	Max WS	10.00	63.92	69.83		69.83	0.000001	0.05	384.46	163.58	0.00

G103-33-01 Proposed HEC-RAS Output

HEC-RAS Plan: Proposed River: G103-33-01 Reach: 1

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
1	580	2-yr	854.10	44.21	52.60	48.85	52.66	0.000590	2.29	847.17	676.59	0.20
1	580	10-yr	1338.90	44.21	53.34	49.98	53.39	0.000591	2.32	1429.89	889.17	0.20
1	580	25-yr	944.00	44.21	52.79	49.11	52.85	0.000590	2.24	985.08	747.32	0.20
1	580	50-yr	1934.00	44.21	53.95	51.71	54.00	0.000590	2.54	2024.17	1049.76	0.20
1	580	100-yr	2235.00	44.21	54.18	52.07	54.23	0.000591	2.61	2269.87	1104.07	0.20
1	1165	2-yr	819.00	44.27	52.99		53.17	0.001262	3.40	241.41	59.13	0.29
1	1165	10-yr	1282.00	44.27	53.71		54.03	0.002069	4.50	308.39	160.88	0.37
1	1165	25-yr	1021.00	44.27	53.21		53.46	0.001747	4.04	254.56	64.01	0.34
1	1165	50-yr	1934.00	44.27	54.29		54.79	0.003332	5.80	419.85	215.19	0.47
1	1165	100-yr	2132.00	44.27	54.48		55.02	0.003455	6.04	466.09	256.87	0.48
1	1976	2-yr	773.00	44.95	54.00		54.17	0.001186	3.26	237.26	54.37	0.27
1	1976	10-yr	1207.00	44.95	55.21		55.45	0.001468	3.93	307.04	62.53	0.31
1	1976	25-yr	1138.00	44.95	54.62		54.89	0.001769	4.19	271.91	57.81	0.34
1	1976	50-yr	1934.00	44.95	56.47		56.85	0.001983	4.93	392.43	71.58	0.37
1	1976	100-yr	1997.00	44.95	56.71		57.08	0.001886	4.88	409.38	73.06	0.36
1	2284	2-yr	756.00	45.21	54.31		54.41	0.000556	2.62	288.25	51.71	0.20
1	2284	10-yr	1179.00	45.21	55.60		55.77	0.000750	3.29	358.34	57.12	0.23
1	2284	25-yr	1185.00	45.21	55.08		55.28	0.000946	3.60	329.53	54.70	0.26
1	2284	50-yr	1934.00	45.21	57.02		57.31	0.001150	4.35	444.70	64.27	0.29
1	2284	100-yr	1947.00	45.21	57.24		57.52	0.001074	4.24	458.69	65.28	0.28
1	2316	2-yr	729.00	45.05	54.33		54.43	0.000592	2.66	274.53	47.74	0.20
1	2316	10-yr	1136.00	45.05	55.62		55.80	0.000829	3.33	340.83	54.69	0.24
1	2316	25-yr	1268.00	45.05	55.11		55.36	0.001272	4.05	313.46	51.67	0.29
1	2316	50-yr	1934.00	45.05	57.06		57.38	0.001380	4.55	425.26	63.36	0.31
1	2316	100-yr	1870.00	45.05	57.27		57.55	0.001190	4.26	439.16	64.71	0.29
1	2350		Inl Struct									
1	2352	2-yr	729.00	50.06	54.63	53.62	55.47	0.000893	7.32	99.64	41.78	0.65
1	2352	10-yr	1136.00	50.06	56.09	54.65	57.17	0.000770	8.36	135.93	51.29	0.63
1	2352	25-yr	1268.00	50.06	57.25	54.96	57.64	0.000397	4.99	254.16	61.08	0.43
1	2352	50-yr	1934.00	50.06	56.36	56.36	59.21	0.001899	13.55	142.70	53.37	1.00
1	2352	100-yr	1870.00	50.06	58.61	56.23	59.06	0.000389	5.43	344.53	71.86	0.44
1	2382	2-yr	729.00	50.52	54.61	54.61	55.84	0.018688	8.91	81.82	33.56	1.01
1	2382	10-yr	1136.00	50.52	56.46		57.26	0.008280	7.16	158.70	49.41	0.70
1	2382	25-yr	1268.00	50.52	57.08		57.76	0.006400	6.64	191.02	55.00	0.63
1	2382	50-yr	1934.00	50.52	58.88	56.96	59.51	0.004335	6.38	303.19	69.32	0.54
1	2382	100-yr	1870.00	50.52	58.45		59.17	0.005307	6.82	274.05	65.88	0.59
1	2789	2-yr	729.00	50.57	57.05		57.23	0.001244	3.35	217.71	50.69	0.28
1	2789	10-yr	1136.00	50.57	58.25		58.51	0.001488	4.03	282.16	56.86	0.32
1	2789	25-yr	1268.00	50.57	58.65		58.92	0.001504	4.16	304.89	58.97	0.32
1	2789	50-yr	1934.00	50.57	60.21		60.57	0.001639	4.79	403.35	67.08	0.34
1	2789	100-yr	1870.00	50.57	59.98		60.34	0.001699	4.82	388.16	65.85	0.35
1	3085	2-yr	703.30	50.26	57.43		57.58	0.001133	3.17	222.13	52.68	0.27
1	3085	10-yr	1094.10	50.26	58.70		58.92	0.001286	3.72	294.18	60.15	0.30
1	3085	25-yr	1356.30	50.26	59.10		59.38	0.001606	4.26	318.37	62.75	0.33
1	3085	50-yr	1934.00	50.26	60.71		61.03	0.001477	4.52	427.67	72.31	0.33
1	3085	100-yr	1795.00	50.26	60.51		60.80	0.001397	4.34	413.15	71.13	0.32
1	3155	2-yr	703.30	50.55	57.54		57.67	0.000832	2.87	244.68	52.65	0.24
1	3155	10-yr	1094.10	50.55	58.83		59.02	0.001002	3.45	316.76	59.37	0.26
1	3155	25-yr	1356.30	50.55	59.26		59.50	0.001246	3.96	342.64	61.62	0.30
1	3155	50-yr	1934.00	50.55	60.85		61.14	0.001234	4.32	447.18	69.83	0.30
1	3155	100-yr	1795.00	50.55	60.64		60.91	0.001162	4.15	432.64	68.72	0.29
1	3177		Inl Struct									
1	3195	2-yr	703.30	54.69	59.20	57.86	59.67	0.000627	5.45	128.96	40.27	0.52
1	3195	10-yr	1094.10	54.69	60.79	58.71	61.31	0.000427	5.78	189.23	50.42	0.46
1	3195	25-yr	1356.30	54.69	61.60	59.21	62.07	0.000483	5.53	245.40	57.91	0.47
1	3195	50-yr	1934.00	54.69	62.66	60.13	63.25	0.000549	6.19	312.64	68.89	0.51
1	3195	100-yr	1795.00	54.69	62.44	59.92	63.00	0.000529	6.03	297.66	66.25	0.50
1	3213	2-yr	703.30	54.37	59.23	58.07	59.70	0.005424	5.50	127.92	43.30	0.56
1	3213	10-yr	1094.10	54.37	60.98	58.94	61.39	0.003216	5.13	213.08	53.81	0.45
1	3213	25-yr	1356.30	54.37	61.64	59.42	62.10	0.003230	5.43	249.96	58.26	0.46
1	3213	50-yr	1934.00	54.37	62.69	60.33	63.28	0.003532	6.14	314.93	65.16	0.49
1	3213	100-yr	1795.00	54.37	62.47	60.13	63.03	0.003451	5.96	300.97	63.97	0.48
1	3247		Bridge									

G103-33-01 Proposed HEC-RAS Output

HEC-RAS Plan: Proposed River: G103-33-01 Reach: 1 (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
1	3268	2-yr	703.30	54.88	59.59	58.25	60.02	0.005112	5.25	133.89	45.88	0.54
1	3268	10-yr	1094.10	54.88	61.18	59.19	61.58	0.003343	5.06	216.26	57.11	0.46
1	3268	25-yr	1356.30	54.88	61.85	59.69	62.28	0.003275	5.30	255.75	62.01	0.46
1	3268	50-yr	1934.00	54.88	62.94	60.59	63.48	0.003411	5.90	327.57	69.76	0.48
1	3268	100-yr	1795.00	54.88	62.71	60.39	63.22	0.003358	5.76	311.90	68.22	0.47
1	3291	2-yr	703.30	54.47	59.78		60.14	0.003973	4.84	145.32	46.70	0.48
1	3291	10-yr	1094.10	54.47	61.31		61.67	0.003007	4.80	227.78	60.34	0.44
1	3291	25-yr	1356.30	54.47	61.98		62.37	0.002916	5.03	269.85	65.29	0.44
1	3291	50-yr	1934.00	54.47	63.08		63.57	0.003004	5.58	346.31	73.16	0.45
1	3291	100-yr	1795.00	54.47	62.85		63.31	0.002954	5.45	329.48	71.33	0.45
1	3449	2-yr	675.00	54.44	60.39		60.64	0.002461	4.00	168.77	50.61	0.39
1	3449	10-yr	1049.00	54.44	61.79		62.07	0.002155	4.24	247.40	61.61	0.37
1	3449	25-yr	1300.00	54.44	62.46		62.77	0.002168	4.48	291.88	77.38	0.38
1	3449	50-yr	1816.00	54.44	63.62		63.97	0.002015	4.79	420.95	156.09	0.38
1	3449	100-yr	1720.00	54.44	63.36		63.72	0.002175	4.81	383.00	139.42	0.39
1	3754	2-yr	623.00	54.46	61.03		61.20	0.001333	3.23	192.81	50.12	0.29
1	3754	10-yr	967.00	54.46	62.41		62.61	0.001393	3.60	272.61	89.76	0.30
1	3754	25-yr	1197.00	54.46	63.09		63.31	0.001391	3.75	353.67	132.27	0.31
1	3754	50-yr	1608.00	54.46	64.22		64.43	0.001096	3.85	536.81	178.12	0.28
1	3754	100-yr	1583.00	54.46	64.00		64.23	0.001241	3.99	497.68	176.07	0.30
1	4020	2-yr	581.00	54.40	61.38		61.50	0.000980	2.78	209.23	54.52	0.25
1	4020	10-yr	901.00	54.40	62.78		62.92	0.000977	3.08	292.42	65.17	0.26
1	4020	25-yr	1115.00	54.40	63.46		63.63	0.000985	3.28	359.30	144.87	0.26
1	4020	50-yr	1446.00	54.40	64.53		64.69	0.000838	3.31	550.48	207.28	0.25
1	4020	100-yr	1473.00	54.40	64.35		64.53	0.000992	3.52	512.65	198.64	0.27
1	4145	2-yr	563.00	54.51	61.50		61.63	0.001028	2.86	197.15	50.76	0.26
1	4145	10-yr	872.00	54.51	62.89		63.05	0.001016	3.18	273.79	59.28	0.26
1	4145	25-yr	1078.00	54.51	63.58		63.76	0.001057	3.41	323.72	87.09	0.27
1	4145	50-yr	1376.00	54.51	64.63		64.81	0.000942	3.46	470.43	180.56	0.26
1	4145	100-yr	1424.00	54.51	64.46		64.67	0.001114	3.72	440.56	169.91	0.28
1	4381	2-yr	518.00	54.45	61.75		61.85	0.000775	2.50	207.39	52.96	0.22
1	4381	10-yr	801.00	54.45	63.15		63.27	0.000751	2.80	286.12	59.95	0.23
1	4381	25-yr	990.00	54.45	63.84		63.98	0.000784	3.01	329.22	63.90	0.23
1	4381	50-yr	1213.00	54.45	64.87		65.01	0.000716	3.04	398.58	74.71	0.23
1	4381	100-yr	1307.00	54.45	64.74		64.91	0.000884	3.36	389.16	70.10	0.25
1	4420	2-yr	518.00	54.36	61.80	57.80	61.88	0.000593	2.32	223.05	51.66	0.20
1	4420	10-yr	801.00	54.36	63.19	58.60	63.30	0.000644	2.66	300.72	60.30	0.21
1	4420	25-yr	990.00	54.36	63.89	59.09	64.02	0.000685	2.88	344.34	64.52	0.22
1	4420	50-yr	1213.00	54.36	64.91	59.59	65.04	0.000637	2.93	413.70	71.28	0.21
1	4420	100-yr	1307.00	54.36	64.79	59.77	64.95	0.000780	3.23	405.05	70.37	0.24
1	4432		Bridge									
1	4436	2-yr	518.00	54.56	61.82	57.33	61.89	0.000060	2.08	248.95	53.05	0.17
1	4436	10-yr	801.00	54.56	63.22	58.10	63.31	0.000069	2.44	328.83	61.66	0.19
1	4436	25-yr	990.00	54.56	63.92	58.53	64.03	0.000076	2.65	373.52	65.86	0.20
1	4436	50-yr	1213.00	54.56	64.96	59.00	65.08	0.000070	2.72	445.45	72.78	0.19
1	4436	100-yr	1307.00	54.56	64.84	59.18	64.98	0.000087	2.99	437.05	71.71	0.21
1	4461	2-yr	518.00	54.47	61.83		61.89	0.000064	2.06	250.85	57.77	0.17
1	4461	10-yr	801.00	54.47	63.22		63.31	0.000068	2.38	336.86	64.97	0.18
1	4461	25-yr	990.00	54.47	63.93		64.03	0.000072	2.58	383.76	68.43	0.19
1	4461	50-yr	1213.00	54.47	64.97		65.08	0.000067	2.65	457.96	74.19	0.19
1	4461	100-yr	1307.00	54.47	64.85		64.99	0.000082	2.91	449.44	73.47	0.21
1	4594	2-yr	500.00	54.94	61.80		61.93	0.001166	2.88	173.32	48.10	0.27
1	4594	10-yr	773.00	54.94	63.20		63.35	0.001084	3.12	247.82	58.01	0.27
1	4594	25-yr	955.00	54.94	63.90		64.07	0.001085	3.29	290.25	62.77	0.27
1	4594	50-yr	1150.00	54.94	64.96		65.11	0.000874	3.20	359.55	68.94	0.25
1	4594	100-yr	1261.00	54.94	64.83		65.03	0.001123	3.59	351.07	68.23	0.28
1	4754	2-yr	480.00	56.82	62.00		62.22	0.002488	3.74	128.40	43.31	0.38
1	4754	10-yr	741.00	56.82	63.37		63.60	0.001942	3.82	194.10	52.57	0.35
1	4754	25-yr	915.00	56.82	64.08		64.32	0.001841	3.93	232.83	58.01	0.35
1	4754	50-yr	1079.00	56.82	65.09		65.30	0.001341	3.65	295.29	64.64	0.30
1	4754	100-yr	1207.00	56.82	65.01		65.28	0.001771	4.17	289.70	64.18	0.35
1	4943	2-yr	456.60	57.41	62.46		62.69	0.002446	3.80	120.22	38.86	0.38
1	4943	10-yr	704.80	57.41	63.75		64.00	0.002169	4.00	176.04	48.06	0.37
1	4943	25-yr	869.30	57.41	64.42		64.69	0.002052	4.14	210.04	52.30	0.36
1	4943	50-yr	1000.90	57.41	65.35		65.57	0.001511	3.84	260.69	57.67	0.32

G103-33-01 Proposed HEC-RAS Output

HEC-RAS Plan: Proposed River: G103-33-01 Reach: 1 (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
1	4943	100-yr	1147.00	57.41	65.34		65.64	0.001994	4.41	260.23	57.62	0.37
1	5200	2-yr	424.00	57.09	63.02		63.14	0.001252	2.83	149.56	45.29	0.28
1	5200	10-yr	653.00	57.09	64.26		64.41	0.001172	3.09	211.06	53.31	0.27
1	5200	25-yr	805.00	57.09	64.93		65.09	0.001147	3.25	247.81	57.17	0.28
1	5200	50-yr	926.00	57.09	65.73		65.89	0.000935	3.13	295.77	61.79	0.25
1	5200	100-yr	1060.00	57.09	65.85		66.04	0.001150	3.50	302.75	62.49	0.28
1	5507	2-yr	389.00	56.65	63.37		63.45	0.000810	2.38	163.25	46.06	0.22
1	5507	10-yr	597.00	56.65	64.60		64.71	0.000794	2.65	225.04	53.14	0.23
1	5507	25-yr	734.00	56.65	65.26		65.39	0.000789	2.81	261.35	56.28	0.23
1	5507	50-yr	844.00	56.65	66.02		66.14	0.000683	2.77	305.07	60.24	0.22
1	5507	100-yr	965.00	56.65	66.19		66.34	0.000814	3.06	315.84	61.24	0.24
1	5741	2-yr	363.00	57.41	63.56		63.63	0.000648	2.10	173.12	50.41	0.20
1	5741	10-yr	557.00	57.41	64.79		64.88	0.000617	2.32	239.90	57.61	0.20
1	5741	25-yr	685.00	57.41	65.46		65.55	0.000610	2.45	279.55	61.39	0.20
1	5741	50-yr	786.00	57.41	66.19		66.28	0.000525	2.41	325.66	65.21	0.19
1	5741	100-yr	899.00	57.41	66.40		66.51	0.000611	2.65	339.51	66.31	0.21
1	6010	2-yr	336.00	57.79	63.72		63.78	0.000524	1.96	171.53	47.28	0.18
1	6010	10-yr	514.00	57.79	64.95		65.03	0.000519	2.20	233.59	53.45	0.19
1	6010	25-yr	632.00	57.79	65.62		65.71	0.000526	2.34	270.43	57.08	0.19
1	6010	50-yr	725.00	57.79	66.33		66.41	0.000473	2.32	312.41	61.43	0.18
1	6010	100-yr	828.00	57.79	66.56		66.66	0.000546	2.53	327.00	62.85	0.20
1	6283	2-yr	311.00	58.50	63.89		64.00	0.001171	2.65	117.33	37.27	0.26
1	6283	10-yr	475.00	58.50	65.11		65.24	0.001075	2.83	167.68	45.20	0.26
1	6283	25-yr	583.00	58.50	65.78		65.91	0.001036	2.92	199.36	49.86	0.26
1	6283	50-yr	667.00	58.50	66.47		66.59	0.000872	2.84	235.20	54.07	0.24
1	6283	100-yr	761.00	58.50	66.72		66.87	0.000967	3.05	249.15	55.35	0.25
1	6539	2-yr	289.00	58.29	64.14		64.20	0.000511	1.89	152.74	43.38	0.18
1	6539	10-yr	440.00	58.29	65.36		65.43	0.000499	2.10	209.24	49.58	0.18
1	6539	25-yr	540.00	58.29	66.02		66.10	0.000499	2.22	243.35	53.13	0.18
1	6539	50-yr	618.00	58.29	66.68		66.76	0.000446	2.21	279.28	56.17	0.17
1	6539	100-yr	704.00	58.29	66.96		67.05	0.000495	2.38	295.21	57.31	0.19
1	6755	2-yr	271.80	59.39	64.26		64.30	0.000421	1.66	163.96	49.58	0.16
1	6755	10-yr	412.90	59.39	65.47		65.52	0.000385	1.80	228.78	56.71	0.16
1	6755	25-yr	505.90	59.39	66.14		66.19	0.000369	1.89	267.51	59.74	0.16
1	6755	50-yr	578.50	59.39	66.79		66.84	0.000327	1.88	307.17	62.93	0.15
1	6755	100-yr	659.00	59.39	67.08		67.14	0.000360	2.02	325.87	64.43	0.16

G103-33-02 Proposed HEC-RAS Output

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

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Reach 1	61	2-yr	265.47	58.68	63.11	60.37	63.16	0.000500	1.78	150.33	51.43	0.18
Reach 1	61	10-yr	410.71	58.68	64.06	60.84	64.13	0.000501	2.10	210.85	88.57	0.18
Reach 1	61	25-yr	508.65	58.68	64.58	61.12	64.66	0.000500	2.28	262.35	106.25	0.19
Reach 1	61	50-yr	586.87	58.68	64.96	61.32	65.04	0.000500	2.40	302.58	110.34	0.19
Reach 1	61	100-yr	674.58	58.68	65.34	61.53	65.43	0.000500	2.52	344.84	111.40	0.19
Reach 1	296	2-yr	265.47	58.72	63.24		63.30	0.000680	1.90	139.86	49.84	0.20
Reach 1	296	10-yr	410.71	58.72	64.20		64.27	0.000707	2.15	191.44	58.43	0.21
Reach 1	296	25-yr	508.65	58.72	64.72		64.80	0.000714	2.28	223.56	68.57	0.21
Reach 1	296	50-yr	586.87	58.72	65.09		65.18	0.000700	2.37	250.61	78.98	0.21
Reach 1	296	100-yr	674.58	58.72	65.47		65.57	0.000690	2.47	281.93	83.89	0.21
Reach 1	517	2-yr	265.47	58.83	63.40		63.48	0.000900	2.22	119.84	41.48	0.23
Reach 1	517	10-yr	410.71	58.83	64.36		64.46	0.000942	2.53	162.24	47.45	0.24
Reach 1	517	25-yr	508.65	58.83	64.88		65.00	0.000971	2.71	188.00	50.84	0.25
Reach 1	517	50-yr	586.87	58.83	65.25		65.37	0.000995	2.83	207.11	53.22	0.25
Reach 1	517	100-yr	674.58	58.83	65.63		65.76	0.001021	2.96	227.59	55.71	0.26
Reach 1	727	2-yr	265.47	59.03	63.62		63.75	0.001681	2.79	95.14	37.11	0.31
Reach 1	727	10-yr	410.71	59.03	64.58		64.73	0.001612	3.07	133.77	43.77	0.31
Reach 1	727	25-yr	508.65	59.03	65.11		65.27	0.001591	3.22	157.78	47.50	0.31
Reach 1	727	50-yr	586.87	59.03	65.48		65.65	0.001580	3.34	175.79	49.93	0.31
Reach 1	727	100-yr	674.58	59.03	65.85		66.04	0.001573	3.46	195.17	52.43	0.32
Reach 1	1020	2-yr	265.47	60.80	64.15		64.27	0.001939	2.78	95.57	42.26	0.33
Reach 1	1020	10-yr	410.71	60.80	65.07		65.21	0.001665	3.00	136.76	47.83	0.31
Reach 1	1020	25-yr	508.65	60.80	65.58		65.73	0.001585	3.14	162.19	51.17	0.31
Reach 1	1020	50-yr	586.87	60.80	65.95		66.11	0.001554	3.24	181.33	53.72	0.31
Reach 1	1020	100-yr	674.58	60.80	66.32		66.50	0.001526	3.34	202.02	56.30	0.31

G103-33-03 Proposed HEC-RAS Output

HEC-RAS Plan: Proposed River: G103-33-03 Reach: 1

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
1	105	2-yr	110.02	61.92	64.30	63.65	64.46	0.005159	3.28	33.54	24.04	0.49
1	105	10-yr	166.08	61.92	64.75	63.99	64.96	0.005152	3.68	45.16	27.17	0.50
1	105	25-yr	202.66	61.92	65.01	64.18	65.24	0.005159	3.86	52.45	29.34	0.51
1	105	50-yr	231.00	61.92	65.19	64.31	65.44	0.005153	3.99	57.92	30.86	0.51
1	105	100-yr	262.25	61.92	65.37	64.45	65.64	0.005150	4.12	63.67	32.30	0.52
1	311	2-yr	110.02	63.09	65.27		65.39	0.003954	2.86	38.53	28.07	0.43
1	311	10-yr	166.08	63.09	65.72		65.88	0.003862	3.18	52.26	31.79	0.44
1	311	25-yr	202.66	63.09	65.98		66.15	0.003780	3.35	60.55	33.49	0.44
1	311	50-yr	231.00	63.09	66.16		66.35	0.003728	3.46	66.78	34.76	0.44
1	311	100-yr	262.25	63.09	66.34		66.54	0.003725	3.59	73.13	36.02	0.44
1	477	2-yr	110.02	63.55	65.90		66.05	0.003883	3.08	35.76	22.65	0.43
1	477	10-yr	166.08	63.55	66.36		66.56	0.004219	3.54	46.88	25.52	0.46
1	477	25-yr	202.66	63.55	66.62		66.84	0.004390	3.78	53.63	27.28	0.48
1	477	50-yr	231.00	63.55	66.80		67.04	0.004495	3.94	58.66	28.54	0.48
1	477	100-yr	262.25	63.55	66.98		67.24	0.004599	4.10	63.98	29.81	0.49

G103-33-04 Proposed HEC-RAS Output

HEC-RAS Plan: Proposed River: G103-33-04 Reach: 1

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
1	677	2-yr	606.00	39.30	45.24	41.13	45.27	0.000240	1.60	519.66	311.98	0.13
1	677	10-yr	911.00	39.30	46.13	41.66	46.17	0.000240	1.78	841.27	423.26	0.13
1	677	25-yr	1111.00	39.30	46.59	41.98	46.64	0.000240	1.88	1048.19	461.88	0.13
1	677	50-yr	1269.00	39.30	46.90	42.21	46.94	0.000240	1.94	1192.39	501.84	0.14
1	677	100-yr	1450.00	39.30	47.27	42.46	47.31	0.000240	2.01	1394.17	580.10	0.14
1	1229	2-yr	600.00	39.85	45.39		45.44	0.000375	1.87	370.83	202.17	0.16
1	1229	10-yr	901.00	39.85	46.28		46.34	0.000397	2.14	611.99	334.04	0.17
1	1229	25-yr	1098.00	39.85	46.74		46.81	0.000400	2.25	773.63	367.24	0.17
1	1229	50-yr	1252.00	39.85	47.04		47.11	0.000403	2.34	888.90	398.92	0.17
1	1229	100-yr	1427.00	39.85	47.41		47.48	0.000383	2.38	1036.06	405.92	0.17
1	2091	2-yr	586.00	40.71	45.76		45.82	0.000527	2.10	282.33	87.62	0.19
1	2091	10-yr	875.00	40.71	46.67		46.76	0.000580	2.48	393.32	199.33	0.20
1	2091	25-yr	1063.00	40.71	47.13		47.23	0.000590	2.67	500.52	259.50	0.21
1	2091	50-yr	1204.00	40.71	47.43		47.54	0.000593	2.78	580.19	269.11	0.21
1	2091	100-yr	1365.00	40.71	47.77		47.89	0.000583	2.87	675.87	286.77	0.21
1	2584	2-yr	586.00	41.20	46.03		46.11	0.000613	2.21	273.09	110.14	0.20
1	2584	10-yr	875.00	41.20	46.97		47.05	0.000597	2.44	473.06	308.12	0.20
1	2584	25-yr	1063.00	41.20	47.43		47.51	0.000535	2.47	632.36	347.94	0.19
1	2584	50-yr	1204.00	41.20	47.73		47.81	0.000499	2.48	738.21	358.51	0.19
1	2584	100-yr	1365.00	41.20	48.07		48.14	0.000456	2.47	877.35	467.45	0.18
1	2748	2-yr	586.00	41.36	46.14		46.21	0.000605	2.18	326.98	195.99	0.20
1	2748	10-yr	875.00	41.36	47.08		47.15	0.000513	2.30	610.85	427.66	0.19
1	2748	25-yr	1063.00	41.36	47.53		47.59	0.000458	2.31	833.11	531.87	0.18
1	2748	50-yr	1204.00	41.36	47.83		47.89	0.000425	2.31	998.81	582.19	0.18
1	2748	100-yr	1365.00	41.36	48.16		48.22	0.000384	2.29	1199.80	621.60	0.17
1	2812	2-yr	306.00	41.42	46.22	42.60	46.24	0.000155	1.22	251.48	68.82	0.10
1	2812	10-yr	454.00	41.42	47.14	42.95	47.18	0.000180	1.49	304.97	183.68	0.11
1	2812	25-yr	548.00	41.42	47.58	43.14	47.62	0.000201	1.66	330.27	368.98	0.12
1	2812	50-yr	621.00	41.42	47.86	43.28	47.91	0.000219	1.79	346.68	530.28	0.13
1	2812	100-yr	699.00	41.42	48.18	43.43	48.24	0.000234	1.91	365.14	604.20	0.13
1	3005		Culvert									
1	3047	2-yr	306.00	41.65	46.31	43.21	46.35	0.000402	1.69	181.81	54.49	0.16
1	3047	10-yr	454.00	41.65	47.28	43.65	47.34	0.000388	1.95	234.41	70.03	0.16
1	3047	25-yr	548.00	41.65	47.79	43.89	47.86	0.000394	2.11	261.72	230.89	0.17
1	3047	50-yr	621.00	41.65	48.14	44.07	48.22	0.000401	2.23	280.85	379.53	0.17
1	3047	100-yr	699.00	41.65	48.55	44.24	48.63	0.000396	2.33	302.80	690.64	0.17
1	3086	2-yr	306.00	41.69	46.32		46.37	0.000419	1.69	187.69	101.47	0.16
1	3086	10-yr	454.00	41.69	47.32		47.36	0.000326	1.69	456.52	442.25	0.15
1	3086	25-yr	548.00	41.69	47.85		47.88	0.000235	1.56	732.75	584.95	0.13
1	3086	50-yr	621.00	41.69	48.22		48.25	0.000188	1.47	981.48	767.78	0.12
1	3086	100-yr	699.00	41.69	48.65		48.66	0.000138	1.33	1351.83	928.04	0.10
1	3353	2-yr	288.00	41.96	46.44		46.48	0.000426	1.67	172.07	51.86	0.16
1	3353	10-yr	428.00	41.96	47.41		47.42	0.000182	1.24	446.52	394.10	0.11
1	3353	25-yr	517.00	41.96	47.91		47.92	0.000111	1.03	673.65	500.65	0.09
1	3353	50-yr	586.00	41.96	48.27		48.28	0.000082	0.92	870.48	615.45	0.08
1	3353	100-yr	660.00	41.96	48.68		48.68	0.000058	0.82	1165.87	802.61	0.06
1	3705	2-yr	266.00	42.31	46.58		46.61	0.000335	1.45	213.09	213.74	0.14
1	3705	10-yr	395.00	42.31	47.46		47.48	0.000142	1.04	430.52	311.57	0.10
1	3705	25-yr	478.00	42.31	47.94		47.95	0.000097	0.91	604.09	402.36	0.08
1	3705	50-yr	543.00	42.31	48.29		48.30	0.000075	0.84	751.23	465.69	0.07
1	3705	100-yr	612.00	42.31	48.70		48.70	0.000056	0.76	975.18	670.96	0.06
1	3984	2-yr	237.00	42.59	46.68		46.72	0.000405	1.55	152.45	49.54	0.16
1	3984	10-yr	353.00	42.59	47.51		47.53	0.000247	1.34	313.22	261.43	0.12
1	3984	25-yr	427.00	42.59	47.97		47.99	0.000150	1.12	466.87	377.42	0.10
1	3984	50-yr	485.00	42.59	48.31		48.33	0.000108	1.00	611.32	466.53	0.09
1	3984	100-yr	548.00	42.59	48.71		48.72	0.000075	0.89	822.66	608.53	0.07
1	4223	2-yr	237.00	42.83	46.78		46.82	0.000462	1.63	145.59	48.70	0.17
1	4223	10-yr	353.00	42.83	47.56		47.62	0.000517	1.90	185.61	53.40	0.18
1	4223	25-yr	427.00	42.83	48.00		48.06	0.000533	2.04	214.37	90.46	0.19
1	4223	50-yr	485.00	42.83	48.32		48.39	0.000525	2.11	249.41	140.12	0.19
1	4223	100-yr	548.00	42.83	48.71		48.77	0.000459	2.07	322.16	242.28	0.18
1	4671	2-yr	214.00	43.28	46.99		47.03	0.000475	1.60	134.15	47.27	0.17
1	4671	10-yr	319.00	43.28	47.80		47.85	0.000499	1.82	188.29	131.79	0.18
1	4671	25-yr	387.00	43.28	48.24		48.29	0.000482	1.88	262.80	200.17	0.17
1	4671	50-yr	440.00	43.28	48.56		48.61	0.000438	1.89	337.97	257.96	0.17

G103-33-04 Proposed HEC-RAS Output

HEC-RAS Plan: Proposed River: G103-33-04 Reach: 1 (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
1	4671	100-yr	498.00	43.28	48.91		48.96	0.000366	1.83	445.48	344.15	0.16
1	4874	2-yr	204.00	43.48	47.09		47.13	0.000479	1.58	129.33	46.65	0.17
1	4874	10-yr	305.00	43.48	47.90		47.95	0.000491	1.78	190.83	152.31	0.17
1	4874	25-yr	371.00	43.48	48.34		48.39	0.000462	1.82	274.69	218.21	0.17
1	4874	50-yr	421.00	43.48	48.65		48.70	0.000421	1.82	351.93	270.65	0.16
1	4874	100-yr	476.00	43.48	48.99		49.03	0.000358	1.78	446.31	298.15	0.15
1	5059	2-yr	190.00	43.67	47.18	44.83	47.22	0.000461	1.52	124.70	46.06	0.16
1	5059	10-yr	285.00	43.67	47.99	45.17	48.04	0.000471	1.73	172.66	77.99	0.17
1	5059	25-yr	347.00	43.67	48.42	45.36	48.48	0.000474	1.82	210.73	111.70	0.17
1	5059	50-yr	394.00	43.67	48.73	45.50	48.78	0.000470	1.88	247.86	130.87	0.17
1	5059	100-yr	447.00	43.67	49.05	45.65	49.11	0.000452	1.92	298.99	186.13	0.17
1	5176	2-yr	190.00	43.79	47.23	44.95	47.27	0.000494	1.56	121.69	45.66	0.17
1	5176	10-yr	285.00	43.79	48.05	45.28	48.10	0.000504	1.77	160.84	50.54	0.18
1	5176	25-yr	347.00	43.79	48.48	45.48	48.53	0.000518	1.89	183.16	53.12	0.18
1	5176	50-yr	394.00	43.79	48.78	45.62	48.84	0.000527	1.98	199.44	54.93	0.18
1	5176	100-yr	447.00	43.79	49.10	45.77	49.17	0.000532	2.05	218.19	64.07	0.19

G103-38-00 Proposed HEC-RAS Output

HEC-RAS Plan: PropAlt1 Profile: Max WS

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
G103-33-00	G103-33-00_US	2030	Max WS	6600.09	41.72	52.46	45.70	52.66	0.000500	3.57	1850.40	204.46	0.21
G103-33-00	G103-33-00_US	2179	Max WS	6600.10	41.72	52.54		52.73	0.000488	3.54	1865.95	204.92	0.21
G103-33-00	G103-33-00_US	2375	Max WS	6600.09	41.72	52.64		52.83	0.000473	3.50	1885.87	205.50	0.20
G103-33-00	G103-33-00_US	2570	Max WS	6600.19	41.72	52.73		52.91	0.000459	3.47	1904.63	206.05	0.20
G103-33-00	G103-33-00_US	2722	Max WS	6600.17	41.72	52.80		52.98	0.000449	3.44	1918.88	206.46	0.20
G103-33-00	G103-33-00_US	2891	Max WS	6600.25	41.72	52.87		53.05	0.000439	3.41	1934.06	206.90	0.20
G103-33-00	G103-33-00_US	3101	Max WS	6578.97	41.72	52.96		53.14	0.000423	3.37	1952.86	207.45	0.19
G103-33-00	G103-33-00_US	3262	Max WS	6562.84	41.72	53.03		53.20	0.000413	3.34	1966.81	207.85	0.19
G103-33-00	G103-33-00_US	3602	Max WS	6522.79	41.72	53.19		53.35	0.000388	3.26	1999.84	208.80	0.19
G103-33-00	G103-33-00_US	3771	Max WS	6504.54	41.72	53.26		53.42	0.000378	3.23	2014.28	209.22	0.18
G103-33-00	G103-33-00_US	4018	Max WS	6477.90	41.72	53.35		53.51	0.000364	3.18	2034.73	209.80	0.18
G103-33-00	G103-33-00_US	4374	Max WS	6441.27	41.72	53.48		53.63	0.000346	3.12	2061.81	210.57	0.18
G103-33-00	G103-33-00_US	4572	Max WS	6420.09	41.72	53.55		53.70	0.000336	3.09	2076.82	211.00	0.17
G103-33-00	G103-33-00_US	4787	Max WS	6397.25	41.72	53.63		53.77	0.000327	3.06	2092.54	211.45	0.17
G103-33-00	G103-33-00_US	4996	Max WS	6375.11	41.72	53.70		53.84	0.000317	3.02	2107.68	211.88	0.17
G103-33-00	G103-33-00_US	5177	Max WS	6355.84	41.75	53.76		53.90	0.000313	3.01	2113.69	212.05	0.17
G103-33-00	G103-33-00_US	5332	Max WS	6339.31	41.75	53.81		53.95	0.000307	2.98	2124.07	212.34	0.17
G103-33-00	G103-33-00_US	5500	Max WS	6321.80	41.75	53.86		54.00	0.000300	2.96	2135.44	212.66	0.16
G103-33-00	G103-33-00_US	5693	Max WS	6301.78	41.75	53.92		54.05	0.000293	2.93	2148.17	213.04	0.16
G103-33-00	G103-33-00_US	6004	Max WS	6268.95	41.75	54.01		54.14	0.000283	2.89	2168.04	213.60	0.16
G103-33-00	G103-33-00_US	6407	Max WS	6225.51	41.75	53.91		54.37	0.000155	5.43	1146.74	118.63	0.31
G103-33-00	G103-33-00_US	6451	Max WS	6221.27	42.17	53.89		54.39	0.000177	5.68	1094.97	116.88	0.33
G103-33-00	G103-33-00_US	6492		Bridge									
G103-33-00	G103-33-00_US	6495	Max WS	6220.41	42.81	53.81	48.71	54.40	0.000220	6.15	1012.16	114.00	0.36
G103-33-00	G103-33-00_US	6517	Max WS	6217.74	42.81	53.82		54.40	0.000221	6.14	1013.01	114.04	0.36
G103-33-00	G103-33-00_US	7144	Max WS	6151.53	43.75	53.87		54.76	0.000383	7.57	812.14	100.48	0.47
G103-33-00	G103-33-00_US	7443	Max WS	6123.17	44.53	53.94		55.00	0.000494	8.26	741.39	97.63	0.53
G103-33-00	G103-33-00_US	7658	Max WS	6100.55	45.51	53.98		55.34	0.000714	9.36	651.49	93.87	0.63
G103-33-00	G103-33-00_US	7968	Max WS	6068.27	49.82	54.79	56.15	59.52	0.004535	17.45	347.81	79.89	1.47
G103-33-00	G103-33-00_US	8287	Max WS	6035.23	52.40	56.70	58.73	63.21	0.007411	20.48	294.73	77.19	1.85
G103-33-00	G103-33-00_US	8324	Max WS	6031.76	52.43	58.38	61.66	69.52	0.084385	26.78	225.27	55.71	2.35
G103-33-00	G103-33-00_US	8352		Bridge									
G103-33-00	G103-33-00_US	8383	Max WS	6031.76	52.48	64.60	61.71	65.81	0.004163	8.83	683.25	92.73	0.57
G103-33-00	G103-33-00_US	8406	Max WS	6029.20	52.50	64.71		65.89	0.004035	8.73	691.02	93.23	0.56
G103-33-00	G103-33-00_US	9068	Max WS	5955.10	53.01	66.93		67.68	0.002186	6.92	860.17	103.55	0.42
G103-33-00	G103-33-00_US	9524	Max WS	5904.05	53.36	67.90		68.53	0.001766	6.38	925.24	107.25	0.38
G103-33-00	G103-33-00_US	10076	Max WS	5842.32	53.78	68.85		69.40	0.001471	5.95	982.71	110.42	0.35
G103-33-00	G103-33-00_US	10572	Max WS	4963.98	54.16	69.65		70.01	0.000937	4.82	1029.78	112.95	0.28
G103-33-00	G103-33-00_US	11022	Max WS	4981.49	54.51	70.07		70.34	0.000646	4.17	1193.41	123.37	0.24
G103-33-00	G103-33-00_US	11058	Max WS	4974.52	54.54	70.10		70.37	0.000645	4.17	1192.71	123.34	0.24
G103-33-00	G103-33-00_US	11071		Bridge									
G103-33-00	G103-33-00_US	11087	Max WS	4975.81	54.56	70.12	61.95	70.39	0.000646	4.17	1192.67	123.34	0.24
G103-33-00	G103-33-00_US	11117	Max WS	4970.43	54.58	70.18		70.39	0.000468	3.67	1353.89	133.59	0.20
G103-33-00	G103-33-00_US	11571	Max WS	4877.67	54.93	70.40		70.61	0.000467	3.65	1336.79	132.82	0.20
G103-33-00	G103-33-00_US	12268	Max WS	4735.98	55.47	70.74		70.94	0.000464	3.61	1310.20	131.61	0.20
G103-33-00	G103-33-00_US	13064	Max WS	4578.49	56.08	71.12		71.32	0.000462	3.57	1280.75	130.27	0.20
G103-33-00	G103-33-00_US	13567	Max WS	4478.29	56.47	71.37		71.56	0.000460	3.55	1261.59	129.38	0.20
G103-33-00	G103-33-00_US	13700	Max WS	4819.89	56.57	71.46		71.64	0.000406	3.42	1409.16	139.32	0.19
G103-33-00	G103-33-00_US	13792		Bridge									
G103-33-00	G103-33-00_US	13827	Max WS	4821.01	56.67	71.55	62.51	71.74	0.000387	3.43	1406.12	139.29	0.19
G103-33-00	G103-33-00_US	13880	Max WS	3694.21	56.71	71.63		71.74	0.000236	2.61	1413.79	139.52	0.14
G103-33-00	G103-33-00_US	14289	Max WS	4392.25	57.02	71.76		71.91	0.000351	3.16	1391.09	147.44	0.18
G103-33-00	G103-33-00_US	15157	Max WS	4302.53	57.69	72.06		72.19	0.000290	2.90	1482.20	146.24	0.16
G103-33-00	G103-33-00_US	15966	Max WS	4214.67	58.31	72.31		72.44	0.000309	2.95	1427.72	143.99	0.17
G103-33-00	G103-33-00_US	16703	Max WS	4135.36	58.88	72.54		72.68	0.000327	3.00	1380.07	141.99	0.17
G103-33-00	G103-33-00_US	17382	Max WS	3466.15	59.40	72.80		72.91	0.000247	2.58	1343.30	140.42	0.15
G103-33-00	G103-33-00_US	17548	Max WS	3467.60	59.53	72.85		72.95	0.000254	2.60	1336.33	147.13	0.15
G103-33-00	G103-33-00_US	17943	Max WS	3457.75	59.83	72.95		73.06	0.000268	2.65	1303.13	138.70	0.15
G103-33-00	G103-33-00_US	18458	Max WS	3445.46	60.23	73.09		73.20	0.000287	2.72	1267.29	137.13	0.16
G103-33-00	G103-33-00_US	19060	Max WS	3427.87	60.69	73.26		73.39	0.000310	2.79	1228.78	135.44	0.16
G103-33-00	G103-33-00_US	19311	Max WS	3421.46	60.88	73.34		73.47	0.000320	2.82	1213.63	134.77	0.17
G103-33-00	G103-33-00_US	19514	Max WS	3415.92	61.04	73.42		73.52	0.000259	2.58	1326.10	144.27	0.15
G103-33-00	G103-33-00_US	19895	Max WS	3404.25	61.33	73.52		73.62	0.000273	2.62	1298.73	143.13	0.15
G103-33-00	G103-33-00_US	20195	Max WS	3395.33	61.56	73.60		73.71	0.000284	2.66	1277.63	142.24	0.16
G103-33-00	G103-33-00_US	20553	Max WS	3383.33	61.83	73.71		73.80	0.000240	2.46	1373.35	151.27	0.14
G103-33-00	G103-33-00_US	20789	Max WS	3296.77	62.01	73.77		73.86	0.000237	2.43	1355.62	150.56	0.14
G103-33-00	G103-33-00_US	20898	Max WS	3297.52	62.09	73.80		73.88	0.000198	2.25	1465.99	160.29	0.13
G103-33-00	G103-33-00_US	20972		Bridge									
G103-33-00	G103-33-00_US	21016	Max WS	3297.99	62.18	73.85	65.52	73.93	0.000184	2.31	1429.11	159.99	0.13
G103-33-00	G103-33-00_US	21100	Max WS	3298.00	62.24	73.87		73.95	0.000203	2.27	1452.95	169.15	0.13
G103-33-00	G103-33-00_US	21335	Max WS	3298.69	62.42	73.91		73.99	0.000191	2.27	1553.74	225.98	0.13
G103-33-00	G103-33-00_US	29439	Max WS	3303.79	65.17	74.77		75.01	0.005795	5.94	1283.64	378.92	0.38
G103-33-00	G103-33-00_US	29531	Max WS	3304.47	64.97	75.19		75.57	0.005517	6.77	1251.27	424.49	0.39
G103-33-00	G103-33-00_US	29587	Max WS	3304.79	65.62	75.49		75.71	0.003649	5.43	1454.56	440.42	0.32
G103-33-00	G103-33-00_US	29615	Max WS	3304.84	64.96	75.61		75.75	0.002256	4.41	1740.92	474.25	0.25
G103-38-00	1	832	Max WS	313.95	41.72	44.86	42.87	44.88	0.000339	1.36	417.91	533.68	0.14
G103-38-00	1	1451	Max WS	314.10	41.72	45.14		45.18	0.000575	1.82	190.80	82.56	0.19
G103-38-00	1	1613	Max WS	411.03	41.72	45.21		45.28	0.000741	2.16	235.93	150.06	0.21
G103-38-00	1	1685	Max WS	400.42	41.72	45.27		45.29	0.000274	1.28	527.50	334.25	0.13
G103-38-00	1	1732	Max WS	396.07	41.72	45.29		45.30	0.000279	1.22	534.30	334.49	0.13
G103-38-00	1	1795	Max WS	391.00	41.72	45.31		45.32	0.000312	1.26	549.15	372.89	0.13
G103-38-00	1	1951	Max WS	349.19	41.72	45.35		45.37	0.000248	1.19	489.03	264.18	0.12
G103-38-00	1	2180	Max WS	290.32	41.72	45.41		45.43	0.000240	1.21	392.82	223.92	0.12
G103-38-00	1	2482	Max WS	209.22	41.72	45.50		45.52	0.000312	1.26	229.87	140.24	0.13
G103-38-00	1	2770	Max WS	131.82	41.72	45.57		45.58	0.000121	0.86	207.77	138.68	0.09
G103-38-00	1	3106	Max WS	41.39	41.72	45.60		45.60	0.000004	0.16	405.33	224.75	0.02
G103-38-00	1	3215	Max WS	10.00	41.72	45.60		45.60	0.000000	0.05	197.57	58.64	0.00
G103-38-00	1	3243		Lat Struct									
G103-38-00	1	3245	Max WS	10.00	41.72	45.60		45.60	0.000000	0.05	197.99	57.58	0.00

G103-38-01 Proposed HEC-RAS Output

HEC-RAS Plan: Proposed_Design

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
G103-38-01	2	164	2-yr	457.10	63.59	69.73	67.20	70.05	0.000380	4.50	101.54	24.28	0.39
G103-38-01	2	164	10-yr	706.80	63.59	70.64	68.21	71.13	0.000538	5.66	124.82	27.54	0.47
G103-38-01	2	164	25-yr	873.90	63.59	71.26	68.76	71.84	0.000586	6.13	142.61	29.89	0.49
G103-38-01	2	164	50-yr	1007.70	63.59	72.00	69.20	72.57	0.000529	6.08	165.84	32.67	0.48
G103-38-01	2	164	100-yr	1156.00	63.59	73.04	69.66	73.55	0.000415	5.73	201.75	36.23	0.43
G103-38-01	2	512	2-yr	443.00	64.02	69.80		70.34	0.001337	5.94	74.62	24.00	0.59
G103-38-01	2	512	10-yr	685.00	64.02	70.73		71.50	0.001428	7.06	96.99	24.00	0.62
G103-38-01	2	512	25-yr	847.00	64.02	71.34		72.23	0.001425	7.59	111.66	24.00	0.62
G103-38-01	2	512	50-yr	977.00	64.02	72.04		72.94	0.001248	7.61	128.44	24.07	0.58
G103-38-01	2	512	100-yr	1121.00	64.02	73.04		73.86	0.001022	7.26	154.51	28.07	0.55
G103-38-01	2	883	2-yr	413.00	64.24	70.36		70.75	0.000836	4.98	82.99	24.00	0.47
G103-38-01	2	883	10-yr	639.00	64.24	71.40		71.94	0.000901	5.93	107.81	24.00	0.49
G103-38-01	2	883	25-yr	791.00	64.24	72.04		72.68	0.000924	6.42	123.26	24.00	0.50
G103-38-01	2	883	50-yr	912.00	64.24	72.68		73.35	0.000889	6.56	139.00	25.77	0.50
G103-38-01	2	883	100-yr	1047.00	64.24	73.56		74.20	0.000772	6.41	163.30	29.30	0.48
G103-38-01	2	1281	2-yr	413.00	64.41	70.71		71.06	0.000716	4.73	87.28	24.00	0.44
G103-38-01	2	1281	10-yr	639.00	64.41	71.79		72.28	0.000781	5.65	113.05	24.00	0.46
G103-38-01	2	1281	25-yr	791.00	64.41	72.45		73.03	0.000811	6.14	128.90	24.15	0.47
G103-38-01	2	1281	50-yr	912.00	64.41	73.08		73.69	0.000798	6.29	144.92	26.67	0.48
G103-38-01	2	1281	100-yr	1047.00	64.41	73.90		74.50	0.000714	6.22	168.27	29.97	0.46
G103-38-01	2	1709	2-yr	380.00	64.72	71.06		71.35	0.000590	4.31	88.07	24.00	0.40
G103-38-01	2	1709	10-yr	590.00	64.72	72.19		72.59	0.000630	5.12	115.16	24.00	0.41
G103-38-01	2	1709	25-yr	730.00	64.72	72.88		73.36	0.000652	5.54	131.86	24.64	0.42
G103-38-01	2	1709	50-yr	842.00	64.72	73.51		74.01	0.000642	5.68	148.21	27.16	0.43
G103-38-01	2	1709	100-yr	968.00	64.72	74.29		74.79	0.000588	5.67	170.67	30.29	0.42
G103-38-01	2	2167	2-yr	380.00	65.05	71.33		71.63	0.000621	4.39	86.63	24.00	0.41
G103-38-01	2	2167	10-yr	590.00	65.05	72.47		72.89	0.000647	5.17	114.13	24.00	0.42
G103-38-01	2	2167	25-yr	730.00	65.05	73.18		73.66	0.000662	5.57	131.03	24.50	0.42
G103-38-01	2	2167	50-yr	842.00	65.05	73.80		74.31	0.000654	5.72	147.17	27.01	0.43
G103-38-01	2	2167	100-yr	968.00	65.05	74.56		75.07	0.000606	5.74	168.70	30.03	0.43
G103-38-01	2	2665	2-yr	363.50	65.31	71.65		71.92	0.000537	4.12	88.21	24.00	0.38
G103-38-01	2	2665	10-yr	563.90	65.31	72.83		73.19	0.000557	4.84	116.41	24.00	0.39
G103-38-01	2	2665	25-yr	698.50	65.31	73.55		73.97	0.000575	5.22	133.80	24.95	0.40
G103-38-01	2	2665	50-yr	805.60	65.31	74.17		74.62	0.000568	5.36	150.20	27.45	0.40
G103-38-01	2	2665	100-yr	926.00	65.31	74.90		75.36	0.000533	5.41	171.31	30.37	0.40
G103-38-01	1	2814	2-yr	293.50	65.19	71.67		72.04	0.000728	4.89	60.02	14.61	0.43
G103-38-01	1	2814	10-yr	456.70	65.19	72.81		73.34	0.000875	5.82	78.52	17.67	0.49
G103-38-01	1	2814	25-yr	566.70	65.19	73.53		74.12	0.000890	6.17	91.90	19.58	0.50
G103-38-01	1	2814	50-yr	654.60	65.19	74.16		74.77	0.000839	6.25	104.72	21.26	0.50
G103-38-01	1	2814	100-yr	753.00	65.19	74.89		75.49	0.000756	6.23	120.96	23.20	0.48
G103-38-01	1	3043	2-yr	259.00	65.28	71.92		72.19	0.000512	4.15	62.46	15.05	0.36
G103-38-01	1	3043	10-yr	403.00	65.28	73.16		73.52	0.000588	4.85	83.03	18.34	0.40
G103-38-01	1	3043	25-yr	500.00	65.28	73.90		74.31	0.000593	5.13	97.42	20.32	0.41
G103-38-01	1	3043	50-yr	577.00	65.28	74.52		74.94	0.000564	5.22	110.57	21.98	0.41
G103-38-01	1	3043	100-yr	664.00	65.28	75.23		75.66	0.000521	5.23	126.91	24.12	0.40
G103-38-01	1	3246	2-yr	231.00	65.47	72.07		72.29	0.000417	3.73	61.85	14.94	0.32
G103-38-01	1	3246	10-yr	360.00	65.47	73.34		73.64	0.000470	4.34	82.99	18.33	0.36
G103-38-01	1	3246	25-yr	447.00	65.47	74.10		74.42	0.000472	4.58	97.58	20.34	0.37
G103-38-01	1	3246	50-yr	516.00	65.47	74.72		75.05	0.000450	4.66	110.69	21.99	0.37
G103-38-01	1	3246	100-yr	594.00	65.47	75.42		75.76	0.000412	4.69	126.74	24.11	0.36
G103-38-01	1	3601	2-yr	190.00	65.30	72.29		72.41	0.000223	2.80	67.77	15.96	0.24
G103-38-01	1	3601	10-yr	296.00	65.30	73.61		73.77	0.000248	3.25	91.18	19.48	0.26
G103-38-01	1	3601	25-yr	367.00	65.30	74.38		74.56	0.000249	3.43	107.00	21.54	0.27
G103-38-01	1	3601	50-yr	424.00	65.30	75.00		75.19	0.000240	3.51	120.82	23.19	0.27
G103-38-01	1	3601	100-yr	488.00	65.30	75.69		75.88	0.000225	3.55	137.47	25.03	0.27
G103-38-01	1	4010	2-yr	152.00	65.53	72.41		72.49	0.000153	2.30	66.03	15.67	0.20
G103-38-01	1	4010	10-yr	236.00	65.53	73.75		73.86	0.000165	2.64	89.54	19.26	0.22
G103-38-01	1	4010	25-yr	293.00	65.53	74.53		74.65	0.000165	2.78	105.35	21.34	0.22
G103-38-01	1	4010	50-yr	339.00	65.53	75.15		75.27	0.000160	2.85	119.04	22.98	0.22
G103-38-01	1	4010	100-yr	390.00	65.53	75.84		75.96	0.000150	2.88	135.47	24.82	0.22
G103-38-01	1	4308	2-yr	122.00	66.14	72.47		72.54	0.000138	2.11	57.83	14.20	0.18
G103-38-01	1	4308	10-yr	190.00	66.14	73.82		73.91	0.000146	2.39	79.56	17.82	0.20
G103-38-01	1	4308	25-yr	235.00	66.14	74.61		74.70	0.000143	2.49	94.36	19.91	0.20
G103-38-01	1	4308	50-yr	272.00	66.14	75.23		75.33	0.000136	2.54	107.20	21.56	0.20
G103-38-01	1	4308	100-yr	313.00	66.14	75.91		76.01	0.000126	2.55	122.63	23.40	0.20
G103-38-01	1	4324	2-yr	122.00	66.48	72.46	68.41	72.54	0.000172	2.30	53.10	13.29	0.20
G103-38-01	1	4324	10-yr	190.00	66.48	73.82	69.08	73.92	0.000180	2.58	73.57	16.90	0.22
G103-38-01	1	4324	25-yr	235.00	66.48	74.60	69.47	74.71	0.000173	2.68	87.65	18.99	0.22
G103-38-01	1	4324	50-yr	272.00	66.48	75.22	69.78	75.34	0.000164	2.72	99.91	20.64	0.22
G103-38-01	1	4324	100-yr	313.00	66.48	75.91	70.11	76.02	0.000150	2.73	114.71	22.48	0.21
G103-38-01	1	4332	2-yr	122.00	67.62	72.43	69.55	72.58	0.000363	3.10	39.37	10.16	0.28
G103-38-01	1	4332	10-yr	190.00	67.62	73.78	70.23	73.96	0.000373	3.42	55.53	13.77	0.30

G103-38-01 Proposed HEC-RAS Output

HEC-RAS Plan: Proposed_Design (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
G103-38-01	1	4332	25-yr	235.00	67.62	74.57	70.61	74.76	0.000349	3.50	67.14	15.86	0.30
G103-38-01	1	4332	50-yr	272.00	67.62	75.19	70.92	75.38	0.000320	3.51	77.48	17.51	0.29
G103-38-01	1	4332	100-yr	313.00	67.62	75.87	71.25	76.06	0.000268	3.49	89.75	19.44	0.28
G103-38-01	1	4370		Culvert									
G103-38-01	1	4391	2-yr	122.00	68.29	72.52	70.65	72.66	0.002049	2.94	41.44	14.84	0.31
G103-38-01	1	4391	10-yr	190.00	68.29	73.93	71.23	74.07	0.001509	2.95	64.33	17.76	0.27
G103-38-01	1	4391	25-yr	235.00	68.29	74.74	71.55	74.88	0.001313	2.96	79.46	19.58	0.26
G103-38-01	1	4391	50-yr	272.00	68.29	75.39	71.81	75.52	0.001173	2.94	92.58	21.07	0.25
G103-38-01	1	4391	100-yr	313.00	68.29	76.14	72.06	76.26	0.000993	2.87	109.07	26.41	0.23
G103-38-01	1	4409	2-yr	122.00	67.36	72.63		72.70	0.000810	2.09	58.39	17.29	0.20
G103-38-01	1	4409	10-yr	190.00	67.36	74.03		74.10	0.000730	2.24	84.68	20.55	0.19
G103-38-01	1	4409	25-yr	235.00	67.36	74.83		74.91	0.000687	2.30	102.10	22.78	0.19
G103-38-01	1	4409	50-yr	272.00	67.36	75.47		75.55	0.000640	2.32	117.22	24.46	0.19
G103-38-01	1	4409	100-yr	313.00	67.36	76.21		76.29	0.000551	2.30	136.47	27.87	0.18
G103-38-01	1	4737	2-yr	82.00	69.83	72.98		73.08	0.002206	2.52	32.59	17.53	0.33
G103-38-01	1	4737	10-yr	128.00	69.83	74.31		74.38	0.001039	2.15	59.61	22.88	0.23
G103-38-01	1	4737	25-yr	159.00	69.83	75.08		75.15	0.000760	2.03	78.41	25.72	0.20
G103-38-01	1	4737	50-yr	183.00	69.83	75.70		75.76	0.000602	1.92	95.10	28.23	0.18
G103-38-01	1	4737	100-yr	211.00	69.83	76.41		76.46	0.000467	1.82	115.99	30.81	0.17
G103-38-01	1	5125	2-yr	82.00	70.87	73.80		73.88	0.001920	2.31	35.46	19.89	0.31
G103-38-01	1	5125	10-yr	128.00	70.87	74.75		74.83	0.001302	2.26	56.65	24.45	0.26
G103-38-01	1	5125	25-yr	159.00	70.87	75.41		75.49	0.000988	2.15	73.84	27.79	0.23
G103-38-01	1	5125	50-yr	183.00	70.87	75.96		76.03	0.000787	2.03	90.08	31.21	0.21
G103-38-01	1	5125	100-yr	211.00	70.87	76.61		76.66	0.000559	1.90	111.57	36.34	0.18
G103-38-01	1	5431	2-yr	69.00	71.73	74.31		74.36	0.001264	1.85	37.27	21.62	0.25
G103-38-01	1	5431	10-yr	108.00	71.73	75.12		75.18	0.000962	1.93	56.04	24.66	0.23
G103-38-01	1	5431	25-yr	134.00	71.73	75.70		75.76	0.000763	1.89	70.93	26.84	0.20
G103-38-01	1	5431	50-yr	155.00	71.73	76.19		76.25	0.000631	1.83	84.72	29.11	0.19
G103-38-01	1	5431	100-yr	178.00	71.73	76.78		76.83	0.000503	1.73	102.66	32.22	0.17
G103-38-01	1	5655	2-yr	58.00	72.29	74.61		74.66	0.001369	1.71	33.86	23.63	0.25
G103-38-01	1	5655	10-yr	90.00	72.29	75.35		75.39	0.000928	1.71	52.65	27.33	0.22
G103-38-01	1	5655	25-yr	112.00	72.29	75.88		75.92	0.000690	1.66	67.67	29.35	0.19
G103-38-01	1	5655	50-yr	129.00	72.29	76.34		76.38	0.000532	1.58	81.65	31.09	0.17
G103-38-01	1	5655	100-yr	148.00	72.29	76.90		76.93	0.000400	1.49	99.48	33.36	0.15
G103-38-01	1	5682	2-yr	58.00	72.59	74.64	73.75	74.73	0.002525	2.35	24.70	16.83	0.34
G103-38-01	1	5682	10-yr	90.00	72.59	75.36	74.05	75.45	0.001658	2.43	36.98	19.83	0.29
G103-38-01	1	5682	25-yr	112.00	72.59	75.88	74.23	75.97	0.001244	2.44	45.95	22.01	0.26
G103-38-01	1	5682	50-yr	129.00	72.59	76.34	74.36	76.43	0.000974	2.40	53.83	24.03	0.24
G103-38-01	1	5682	100-yr	148.00	72.59	76.89	74.50	76.97	0.000747	2.34	63.30	26.65	0.22
G103-38-01	1	5700		Culvert									
G103-38-01	1	5730	2-yr	58.00	72.79	75.13	73.63	75.17	0.000581	1.50	38.78	26.89	0.18
G103-38-01	1	5730	10-yr	90.00	72.79	75.85	73.87	75.90	0.000544	1.75	51.50	29.78	0.18
G103-38-01	1	5730	25-yr	112.00	72.79	76.37	74.02	76.43	0.000485	1.84	60.76	32.57	0.18
G103-38-01	1	5730	50-yr	129.00	72.79	76.83	74.13	76.89	0.000424	1.87	68.90	35.22	0.17
G103-38-01	1	5730	100-yr	148.00	72.79	77.41	74.24	77.47	0.000350	1.87	79.21	39.94	0.16
G103-38-01	1	5765	2-yr	58.00	72.53	75.16		75.19	0.000683	1.39	41.60	23.34	0.18
G103-38-01	1	5765	10-yr	90.00	72.53	75.89		75.92	0.000592	1.51	59.66	26.51	0.18
G103-38-01	1	5765	25-yr	112.00	72.53	76.41		76.45	0.000500	1.51	74.21	28.91	0.17
G103-38-01	1	5765	50-yr	129.00	72.53	76.87		76.91	0.000415	1.47	88.03	31.09	0.15
G103-38-01	1	5765	100-yr	148.00	72.53	77.46		77.49	0.000323	1.38	107.09	34.92	0.14
G103-38-01	1	6001	2-yr	45.00	73.01	75.32		75.35	0.000639	1.30	34.51	20.13	0.18
G103-38-01	1	6001	10-yr	70.00	73.01	76.03		76.06	0.000550	1.41	49.57	22.67	0.17
G103-38-01	1	6001	25-yr	87.00	73.01	76.53		76.56	0.000478	1.41	61.69	25.44	0.16
G103-38-01	1	6001	50-yr	100.00	73.01	76.97		77.00	0.000402	1.36	73.52	28.12	0.15
G103-38-01	1	6001	100-yr	115.00	73.01	77.53		77.56	0.000291	1.28	90.90	35.54	0.13
G103-38-01	1	6220	2-yr	45.00	73.10	75.46		75.49	0.000613	1.26	35.76	21.55	0.17
G103-38-01	1	6220	10-yr	70.00	73.10	76.15		76.18	0.000526	1.36	51.55	24.52	0.17
G103-38-01	1	6220	25-yr	87.00	73.10	76.64		76.67	0.000448	1.36	64.10	26.98	0.16
G103-38-01	1	6220	50-yr	100.00	73.10	77.06		77.09	0.000385	1.31	76.30	30.24	0.15
G103-38-01	1	6220	100-yr	115.00	73.10	77.60		77.62	0.000283	1.23	94.12	37.76	0.13
G103-38-01	1	6539	2-yr	38.00	73.91	75.67		75.69	0.000646	1.15	33.00	23.89	0.17
G103-38-01	1	6539	10-yr	59.00	73.91	76.31		76.34	0.000472	1.20	49.24	26.29	0.15
G103-38-01	1	6539	25-yr	73.00	73.91	76.78		76.80	0.000373	1.18	61.79	28.04	0.14
G103-38-01	1	6539	50-yr	84.00	73.91	77.18		77.20	0.000301	1.14	73.43	29.70	0.13
G103-38-01	1	6539	100-yr	97.00	73.91	77.69		77.71	0.000236	1.09	89.17	32.35	0.12
G103-38-01	1	6767	2-yr	33.00	74.03	75.81		75.83	0.000633	1.11	29.73	22.37	0.17
G103-38-01	1	6767	10-yr	52.00	74.03	76.42		76.45	0.000496	1.17	44.27	25.32	0.16
G103-38-01	1	6767	25-yr	64.00	74.03	76.86		76.88	0.000387	1.15	55.86	27.46	0.14
G103-38-01	1	6767	50-yr	74.00	74.03	77.25		77.27	0.000315	1.11	66.89	29.63	0.13
G103-38-01	1	6767	100-yr	85.00	74.03	77.74		77.76	0.000241	1.03	82.24	32.90	0.12

G103-38-01 Proposed HEC-RAS Output

HEC-RAS Plan: Proposed_Design (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
G103-38-01	1	6994	2-yr	29.00	74.38	76.00		76.03	0.001239	1.39	20.86	18.52	0.23
G103-38-01	1	6994	10-yr	46.00	74.38	76.56		76.59	0.000893	1.44	32.05	21.04	0.21
G103-38-01	1	6994	25-yr	57.00	74.38	76.97		77.00	0.000677	1.39	40.95	22.76	0.18
G103-38-01	1	6994	50-yr	65.00	74.38	77.33		77.36	0.000509	1.31	49.52	24.18	0.16
G103-38-01	1	6994	100-yr	75.00	74.38	77.81		77.83	0.000374	1.22	61.37	26.35	0.14
G103-38-01.1	1	200	2-yr	76.10	70.20	72.00		72.06	0.002014	2.08	36.65	25.78	0.31
G103-38-01.1	1	200	10-yr	115.70	70.20	73.30		73.34	0.000605	1.54	75.36	33.61	0.18
G103-38-01.1	1	200	25-yr	141.90	70.20	74.09		74.12	0.000376	1.37	103.65	38.33	0.15
G103-38-01.1	1	200	50-yr	162.30	70.20	74.74		74.76	0.000265	1.25	129.77	42.22	0.13
G103-38-01.1	1	200	100-yr	185.00	70.20	75.47		75.49	0.000187	1.14	162.20	46.60	0.11
G103-38-01.1	1	410	2-yr	69.00	70.51	72.38		72.43	0.001443	1.80	38.43	26.18	0.26
G103-38-01.1	1	410	10-yr	104.00	70.51	73.43		73.47	0.000616	1.50	69.36	32.49	0.18
G103-38-01.1	1	410	25-yr	128.00	70.51	74.17		74.20	0.000390	1.35	94.96	36.91	0.15
G103-38-01.1	1	410	50-yr	147.00	70.51	74.79		74.82	0.000275	1.23	119.18	40.65	0.13
G103-38-01.1	1	410	100-yr	167.00	70.51	75.51		75.53	0.000187	1.12	150.12	50.66	0.11
G103-38-01.1	1	592	2-yr	63.00	70.78	72.63		72.67	0.001247	1.66	37.96	26.08	0.24
G103-38-01.1	1	592	10-yr	96.00	70.78	73.55		73.58	0.000646	1.49	64.40	31.57	0.18
G103-38-01.1	1	592	25-yr	117.00	70.78	74.24		74.27	0.000404	1.33	87.82	35.74	0.15
G103-38-01.1	1	592	50-yr	134.00	70.78	74.84		74.87	0.000281	1.21	110.48	39.36	0.13
G103-38-01.1	1	592	100-yr	153.00	70.78	75.54		75.56	0.000183	1.09	146.90	68.81	0.11
G103-38-01.1	1	830	2-yr	56.00	71.14	72.92		72.96	0.001135	1.55	36.13	25.64	0.23
G103-38-01.1	1	830	10-yr	85.00	71.14	73.70		73.74	0.000675	1.46	58.12	30.33	0.19
G103-38-01.1	1	830	25-yr	104.00	71.14	74.34		74.37	0.000433	1.32	78.67	34.15	0.15
G103-38-01.1	1	830	50-yr	119.00	71.14	74.91		74.94	0.000298	1.20	99.20	37.57	0.13
G103-38-01.1	1	830	100-yr	136.00	71.14	75.59		75.60	0.000194	1.08	130.49	60.19	0.11
G103-38-01.1	1	1078	2-yr	50.00	71.51	73.20		73.23	0.001090	1.48	33.90	25.14	0.22
G103-38-01.1	1	1078	10-yr	75.00	71.51	73.88		73.91	0.000708	1.43	52.34	29.22	0.19
G103-38-01.1	1	1078	25-yr	92.00	71.51	74.45		74.48	0.000467	1.31	70.17	32.68	0.16
G103-38-01.1	1	1078	50-yr	106.00	71.51	74.99		75.01	0.000324	1.20	88.62	35.91	0.13
G103-38-01.1	1	1078	100-yr	121.00	71.51	75.64		75.66	0.000215	1.07	113.08	39.79	0.11
G103-38-01.1	1	1236	2-yr	46.00	71.75	73.37		73.40	0.001067	1.43	32.26	24.80	0.22
G103-38-01.1	1	1236	10-yr	70.00	71.75	73.99		74.02	0.000753	1.43	48.82	28.55	0.19
G103-38-01.1	1	1236	25-yr	86.00	71.75	74.53		74.56	0.000506	1.32	65.04	31.80	0.16
G103-38-01.1	1	1236	50-yr	98.00	71.75	75.04		75.07	0.000342	1.19	82.20	34.91	0.14
G103-38-01.1	1	1236	100-yr	112.00	71.75	75.67		75.69	0.000225	1.06	105.34	38.71	0.11
G103-38-01.1	1	1417	2-yr	42.00	72.02	73.57		73.60	0.001058	1.38	30.35	24.26	0.22
G103-38-01.1	1	1417	10-yr	64.00	72.02	74.13		74.16	0.000788	1.42	45.05	27.65	0.20
G103-38-01.1	1	1417	25-yr	78.00	72.02	74.62		74.65	0.000536	1.31	59.38	30.60	0.17
G103-38-01.1	1	1417	50-yr	90.00	72.02	75.11		75.13	0.000372	1.20	74.88	33.49	0.14
G103-38-01.1	1	1417	100-yr	102.00	72.02	75.71		75.73	0.000238	1.06	96.31	40.27	0.12
G103-38-01.1	1	1580	2-yr	39.00	72.26	73.74		73.77	0.001067	1.36	28.76	23.87	0.22
G103-38-01.1	1	1580	10-yr	59.00	72.26	74.26		74.29	0.000814	1.40	42.08	27.00	0.20
G103-38-01.1	1	1580	25-yr	72.00	72.26	74.71		74.74	0.000571	1.31	54.86	29.70	0.17
G103-38-01.1	1	1580	50-yr	83.00	72.26	75.17		75.19	0.000398	1.20	69.04	32.44	0.15
G103-38-01.1	1	1580	100-yr	94.00	72.26	75.75		75.77	0.000251	1.06	89.00	35.94	0.12

G103-08-02 Proposed HEC-RAS Output

HEC-RAS Plan: Proposed River: G103-38-02 Reach: 1

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
1	156	2-yr	696.80	62.29	68.35	66.68	68.86	0.000640	5.70	122.19	33.03	0.52
1	156	10-yr	1105.10	62.29	69.76	67.82	70.39	0.000640	6.40	172.72	39.16	0.54
1	156	25-yr	1391.70	62.29	71.70	68.46	72.14	0.000639	5.37	259.12	50.94	0.42
1	156	50-yr	1626.70	62.29	73.30	68.95	73.64	0.000641	4.62	351.91	63.87	0.35
1	156	100-yr	1893.00	62.29	74.35	69.45	74.66	0.000641	4.48	422.90	72.06	0.33
1	501	2-yr	641.00	62.26	68.66		69.06	0.000483	5.05	126.86	33.01	0.45
1	501	10-yr	1013.00	62.26	70.12		70.61	0.000571	5.64	179.66	39.60	0.47
1	501	25-yr	1273.00	62.26	71.99		72.36	0.000540	4.84	263.04	49.73	0.37
1	501	50-yr	1486.00	62.26	73.54		73.83	0.000458	4.30	345.58	56.72	0.31
1	501	100-yr	1727.00	62.26	74.57		74.85	0.000456	4.25	406.39	61.58	0.29
1	1000	2-yr	568.00	62.87	68.89		69.35	0.000632	5.41	105.00	30.05	0.51
1	1000	10-yr	893.00	62.87	70.39		70.90	0.000563	5.76	154.98	37.02	0.50
1	1000	25-yr	1119.00	62.87	72.33		72.66	0.000701	4.64	240.97	52.69	0.38
1	1000	50-yr	1303.00	62.87	73.85		74.09	0.000589	3.95	329.74	64.74	0.31
1	1000	100-yr	1511.00	62.87	74.89		75.11	0.000575	3.75	403.76	80.60	0.29
1	1500	2-yr	503.00	63.64	69.67		69.83	0.001458	3.19	157.46	44.56	0.30
1	1500	10-yr	787.00	63.64	71.15		71.33	0.001273	3.43	229.75	52.74	0.29
1	1500	25-yr	984.00	63.64	72.91		73.04	0.000747	2.98	330.71	62.80	0.23
1	1500	50-yr	1143.00	63.64	74.27		74.38	0.000537	2.70	422.77	72.39	0.20
1	1500	100-yr	1323.00	63.64	75.27		75.38	0.000473	2.65	499.12	80.13	0.19
1	2000	2-yr	445.00	64.01	70.32		70.43	0.000981	2.67	166.61	45.99	0.25
1	2000	10-yr	694.00	64.01	71.74		71.88	0.000904	2.92	237.54	53.75	0.25
1	2000	25-yr	865.00	64.01	73.27		73.38	0.000593	2.66	325.79	61.84	0.20
1	2000	50-yr	1002.00	64.01	74.53		74.63	0.000438	2.45	409.19	69.84	0.18
1	2000	100-yr	1157.00	64.01	75.51		75.60	0.000385	2.41	479.99	76.16	0.17
1	2500	2-yr	394.00	63.87	70.75		70.82	0.000608	2.19	179.90	46.29	0.20
1	2500	10-yr	612.00	63.87	72.16		72.25	0.000603	2.44	251.24	54.72	0.20
1	2500	25-yr	760.00	63.87	73.56		73.64	0.000438	2.28	333.76	63.34	0.17
1	2500	50-yr	879.00	63.87	74.75		74.82	0.000335	2.12	414.35	71.50	0.16
1	2500	100-yr	1013.00	63.87	75.70		75.77	0.000293	2.09	487.27	82.95	0.15
1	2974	2-yr	351.00	65.53	71.04		71.11	0.000583	1.98	177.29	52.66	0.19
1	2974	10-yr	543.00	65.53	72.44		72.51	0.000494	2.12	256.16	60.31	0.18
1	2974	25-yr	673.00	65.53	73.76		73.82	0.000341	1.98	340.56	67.29	0.15
1	2974	50-yr	776.00	65.53	74.91		74.96	0.000253	1.84	421.31	73.82	0.14
1	2974	100-yr	893.00	65.53	75.84		75.89	0.000220	1.81	492.62	79.47	0.13
1	3398	2-yr	317.00	66.12	71.35		71.43	0.001000	2.28	139.05	49.50	0.24
1	3398	10-yr	488.00	66.12	72.68		72.77	0.000724	2.32	210.04	56.86	0.21
1	3398	25-yr	603.00	66.12	73.93		74.00	0.000470	2.11	285.39	64.33	0.18
1	3398	50-yr	695.00	66.12	75.03		75.09	0.000327	1.93	359.62	70.51	0.15
1	3398	100-yr	797.00	66.12	75.94		76.00	0.000271	1.87	426.66	76.36	0.14
1	3500	2-yr	284.70	66.59	71.42	68.80	71.46	0.000062	1.60	177.57	58.91	0.16
1	3500	10-yr	436.60	66.59	72.75	69.21	72.79	0.000048	1.67	261.68	67.55	0.15
1	3500	25-yr	538.20	66.59	73.98	69.46	74.01	0.000032	1.54	349.21	75.41	0.13
1	3500	50-yr	618.80	66.59	75.07	69.63	75.10	0.000022	1.43	432.02	82.60	0.11
1	3500	100-yr	709.00	66.59	75.98	69.82	76.01	0.000017	1.41	502.86	88.73	0.10
1	3565		Culvert									
1	3585	2-yr	284.70	66.22	72.13	68.97	72.19	0.000053	1.91	149.42	58.43	0.16
1	3585	10-yr	436.60	66.22	73.81	69.44	73.88	0.000043	2.12	206.42	69.09	0.15
1	3585	25-yr	538.20	66.22	75.11	69.73	75.18	0.000034	2.15	250.65	77.95	0.14
1	3585	50-yr	618.80	66.22	76.49	69.91	76.56	0.000025	2.08	297.54	87.70	0.12
1	3585	100-yr	709.00	66.22	77.77	70.12	77.81	0.000019	1.58	462.96	132.34	0.10
1	3631	2-yr	284.70	66.70	72.14		72.20	0.000809	2.07	137.55	48.75	0.22
1	3631	10-yr	436.60	66.70	73.83		73.89	0.000460	1.89	230.67	61.09	0.17
1	3631	25-yr	538.20	66.70	75.15		75.19	0.000294	1.69	317.91	71.07	0.14
1	3631	50-yr	618.80	66.70	76.54		76.57	0.000179	1.46	423.37	81.24	0.11
1	3631	100-yr	709.00	66.70	77.79		77.82	0.000123	1.33	535.22	95.58	0.10
1	3838	2-yr	284.70	68.71	72.33		72.43	0.001435	2.60	109.31	42.39	0.29
1	3838	10-yr	436.60	68.71	73.93		74.02	0.000770	2.36	185.33	52.10	0.22
1	3838	25-yr	538.20	68.71	75.21		75.28	0.000481	2.09	257.13	60.52	0.18
1	3838	50-yr	618.80	68.71	76.57		76.62	0.000287	1.79	345.78	69.78	0.14
1	3838	100-yr	709.00	68.71	77.81		77.85	0.000206	1.62	438.69	80.44	0.12

G103-45-00 Proposed HEC-RAS Output

HEC-RAS Plan: Proposed River: G103-45-00 Reach: 1

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
1	55	2-yr	252.11	42.39	46.53	44.86	46.67	0.001892	3.00	83.98	31.62	0.32
1	55	10-yr	393.92	42.39	47.45	45.42	47.63	0.001893	3.44	114.60	34.91	0.33
1	55	25-yr	490.06	42.39	47.98	45.72	48.19	0.001893	3.67	133.53	36.70	0.34
1	55	50-yr	567.21	42.39	48.38	45.96	48.61	0.001893	3.81	148.79	38.57	0.34
1	55	100-yr	653.91	42.39	48.80	46.20	49.05	0.001893	3.95	165.36	40.52	0.35
1	100	2-yr	252.11	42.37	46.59	44.58	46.78	0.001836	3.50	71.99	27.26	0.33
1	100	10-yr	393.92	42.37	47.49	45.22	47.78	0.002239	4.32	91.25	30.46	0.37
1	100	25-yr	490.06	42.37	48.00	45.60	48.35	0.002354	4.78	102.48	32.36	0.39
1	100	50-yr	567.21	42.37	48.39	45.90	48.79	0.002412	5.11	111.06	34.35	0.40
1	100	100-yr	653.91	42.37	48.79	46.21	49.25	0.002485	5.46	119.87	36.50	0.41
1	152		Culvert									
1	205	2-yr	252.11	43.47	47.72	45.80	47.87	0.001739	3.08	81.76	28.70	0.32
1	205	10-yr	393.92	43.47	49.25	46.43	49.41	0.001069	3.16	124.57	35.16	0.26
1	205	25-yr	490.06	43.47	50.30	46.79	50.46	0.000815	3.18	154.02	39.28	0.24
1	205	50-yr	567.21	43.47	51.32	47.05	51.47	0.000622	3.11	182.38	44.12	0.21
1	205	100-yr	653.91	43.47	52.29	47.30	52.44	0.000519	3.12	209.65	61.23	0.20
1	241	2-yr	252.11	43.76	47.78		47.94	0.002064	3.15	80.03	29.93	0.34
1	241	10-yr	393.92	43.76	49.31		49.45	0.001295	3.01	130.87	36.61	0.28
1	241	25-yr	490.06	43.76	50.38		50.50	0.000957	2.84	172.46	41.81	0.25
1	241	50-yr	567.21	43.76	51.40		51.50	0.000699	2.60	217.96	47.60	0.21
1	241	100-yr	653.91	43.76	52.38		52.48	0.000550	2.43	269.07	56.32	0.19
1	463	2-yr	252.11	45.14	48.32		48.51	0.003156	3.50	72.11	32.28	0.41
1	463	10-yr	393.92	45.14	49.64		49.81	0.001900	3.30	119.36	39.57	0.34
1	463	25-yr	490.06	45.14	50.61		50.75	0.001324	3.05	160.72	45.68	0.29
1	463	50-yr	567.21	45.14	51.57		51.68	0.000900	2.73	207.44	51.96	0.24
1	463	100-yr	653.91	45.14	52.51		52.61	0.000660	2.52	259.53	58.16	0.21
1	725	2-yr	252.11	45.40	49.04		49.19	0.002116	3.03	83.30	34.19	0.34
1	725	10-yr	393.92	45.40	50.12		50.28	0.001727	3.20	123.01	39.61	0.32
1	725	25-yr	490.06	45.40	50.96		51.11	0.001354	3.10	158.03	44.40	0.29
1	725	50-yr	567.21	45.40	51.80		51.93	0.000973	2.87	197.85	50.38	0.25
1	725	100-yr	653.91	45.40	52.68		52.80	0.000716	2.70	247.06	61.22	0.22
1	798	2-yr	252.11	45.18	49.17	47.63	49.38	0.002172	3.66	68.81	34.96	0.37
1	798	10-yr	393.92	45.18	50.19	48.19	50.48	0.002056	4.31	91.43	274.94	0.37
1	798	25-yr	490.06	45.18	51.16	48.53	51.20	0.000577	2.03	638.64	672.45	0.19
1	798	50-yr	567.21	45.18	51.98	48.78	51.99	0.000187	1.29	1433.39	1352.87	0.11
1	798	100-yr	653.91	45.18	52.84	49.06	52.84	0.000059	0.82	2719.37	1624.72	0.06
1	900		Culvert									
1	929	2-yr	252.11	45.26	49.59	48.23	49.76	0.002585	3.28	77.80	88.65	0.38
1	929	10-yr	393.92	45.26	51.39	48.81	51.50	0.000847	2.74	167.83	638.45	0.24
1	929	25-yr	490.06	45.26	52.02	49.13	52.03	0.000150	1.27	1206.80	911.07	0.10
1	929	50-yr	567.21	45.26	52.22	49.34	52.23	0.000148	1.29	1392.46	1002.86	0.10
1	929	100-yr	653.91	45.26	52.84	49.57	52.84	0.000083	1.05	2077.83	1155.30	0.08
1	1060	2-yr	252.11	45.64	49.91		50.05	0.001816	2.95	87.91	47.94	0.32
1	1060	10-yr	393.92	45.64	51.56		51.59	0.000322	1.72	672.55	689.89	0.15
1	1060	25-yr	490.06	45.64	52.04		52.06	0.000202	1.46	1017.35	724.59	0.12
1	1060	50-yr	567.21	45.64	52.24		52.25	0.000196	1.48	1158.16	727.87	0.12
1	1060	100-yr	653.91	45.64	52.85		52.86	0.000109	1.19	1609.30	748.17	0.09
1	1167	2-yr	252.11	46.36	50.14		50.16	0.000503	1.56	418.44	473.43	0.17
1	1167	10-yr	393.92	46.36	51.60		51.61	0.000085	0.86	1378.39	910.93	0.07
1	1167	25-yr	490.06	46.36	52.07		52.07	0.000062	0.79	1811.32	939.30	0.07
1	1167	50-yr	567.21	46.36	52.26		52.26	0.000063	0.82	1992.61	942.00	0.07
1	1167	100-yr	653.91	46.36	52.86		52.86	0.000040	0.71	2563.77	968.58	0.05
1	1275	2-yr	252.11	46.38	50.22		50.34	0.001846	2.80	139.44	200.92	0.32
1	1275	10-yr	393.92	46.38	51.62		51.63	0.000222	1.32	1012.48	893.43	0.12
1	1275	25-yr	490.06	46.38	52.08		52.09	0.000138	1.12	1427.00	899.80	0.10
1	1275	50-yr	567.21	46.38	52.27		52.28	0.000134	1.14	1600.63	902.32	0.10
1	1275	100-yr	653.91	46.38	52.87		52.87	0.000077	0.94	2145.06	929.51	0.07
1	1367	2-yr	252.11	46.59	50.40		50.54	0.002239	3.16	122.11	133.91	0.35
1	1367	10-yr	393.92	46.59	51.63		51.66	0.000476	1.91	650.52	675.77	0.17
1	1367	25-yr	490.06	46.59	52.09		52.11	0.000303	1.65	976.71	761.10	0.14
1	1367	50-yr	567.21	46.59	52.28		52.30	0.000291	1.66	1125.28	780.59	0.14
1	1367	100-yr	653.91	46.59	52.87		52.88	0.000152	1.31	1596.03	811.79	0.10
1	1578	2-yr	252.11	46.80	50.92		51.08	0.002949	3.46	123.18	133.99	0.40
1	1578	10-yr	393.92	46.80	51.75		51.85	0.001652	3.14	316.27	401.58	0.31

G103-45-00 Proposed HEC-RAS Output

HEC-RAS Plan: Proposed River: G103-45-00 Reach: 1 (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
1	1578	25-yr	490.06	46.80	52.16		52.23	0.001096	2.78	503.75	502.45	0.26
1	1578	50-yr	567.21	46.80	52.35		52.41	0.001017	2.77	610.55	616.15	0.25
1	1578	100-yr	653.91	46.80	52.91		52.94	0.000502	2.14	974.71	685.05	0.18
1	1747	2-yr	252.11	46.96	51.45		51.59	0.003020	3.29	116.64	96.80	0.39
1	1747	10-yr	393.92	46.96	52.07		52.20	0.002450	3.38	264.18	357.48	0.36
1	1747	25-yr	490.06	46.96	52.38		52.48	0.002020	3.25	404.80	585.18	0.34
1	1747	50-yr	567.21	46.96	52.55		52.65	0.001954	3.32	520.77	735.95	0.33
1	1747	100-yr	653.91	46.96	53.01		53.05	0.000860	2.42	873.79	795.46	0.23

G103-36-00 Proposed HEC-RAS Output

HEC-RAS Plan: Proposed River: G103-36-03 Reach: 1

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
1	760	50% (2-YR)	77.00	46.88	49.39	47.19	49.39	0.000028	0.36	256.30	147.64	0.04
1	760	10% (10-YR)	116.00	46.88	50.02	47.29	50.02	0.000029	0.43	357.68	184.40	0.04
1	760	4% (25-YR)	143.00	46.88	50.56	47.35	50.56	0.000024	0.43	464.95	211.21	0.04
1	760	2% (50-YR)	163.00	46.88	50.90	47.38	50.90	0.000022	0.44	540.73	232.39	0.04
1	760	1% (100-YR)	186.00	46.88	51.22	47.43	51.23	0.000022	0.46	621.12	256.59	0.04
1	775		Bridge									
1	790	50% (2-YR)	77.00	46.88	49.40	47.20	49.41	0.000031	0.38	239.92	135.69	0.04
1	790	10% (10-YR)	116.00	46.88	50.03	47.30	50.03	0.000032	0.45	330.10	152.43	0.04
1	790	4% (25-YR)	143.00	46.88	50.56	47.37	50.56	0.000027	0.46	417.80	175.96	0.04
1	790	2% (50-YR)	163.00	46.88	50.90	47.41	50.91	0.000026	0.47	479.42	184.24	0.04
1	790	1% (100-YR)	186.00	46.88	51.23	47.46	51.23	0.000025	0.49	540.88	193.73	0.04
1	986	50% (2-YR)	67.00	46.88	49.41		49.41	0.000051	0.49	176.18	100.95	0.05
1	986	10% (10-YR)	101.00	46.88	50.03		50.04	0.000052	0.57	243.10	115.86	0.06
1	986	4% (25-YR)	124.00	46.88	50.57		50.57	0.000044	0.59	308.50	132.10	0.05
1	986	2% (50-YR)	141.00	46.88	50.91		50.91	0.000040	0.60	355.05	140.08	0.05
1	986	1% (100-YR)	161.00	46.88	51.23		51.24	0.000040	0.62	402.34	151.61	0.05
1	1219	50% (2-YR)	51.00	46.88	49.42		49.42	0.000043	0.45	158.66	98.61	0.05
1	1219	10% (10-YR)	77.00	46.88	50.04		50.05	0.000042	0.52	225.52	114.68	0.05
1	1219	4% (25-YR)	95.00	46.88	50.58		50.58	0.000036	0.53	293.51	142.41	0.05
1	1219	2% (50-YR)	108.00	46.88	50.92		50.92	0.000033	0.53	344.25	152.75	0.05
1	1219	1% (100-YR)	123.00	46.88	51.24		51.25	0.000031	0.55	394.96	160.45	0.05
1	1362	50% (2-YR)	51.00	46.88	49.43		49.43	0.000013	0.23	234.17	117.24	0.03
1	1362	10% (10-YR)	77.00	46.88	50.05		50.05	0.000013	0.28	311.70	136.37	0.03
1	1362	4% (25-YR)	95.00	46.88	50.58		50.58	0.000011	0.29	387.96	149.64	0.03
1	1362	2% (50-YR)	108.00	46.88	50.92		50.92	0.000010	0.29	440.90	160.31	0.03
1	1362	1% (100-YR)	123.00	46.88	51.25		51.25	0.000010	0.31	494.10	168.24	0.03
1	1514	50% (2-YR)	41.00	46.88	49.43	47.21	49.43	0.000035	0.41	112.04	137.71	0.05
1	1514	10% (10-YR)	61.00	46.88	50.05	47.32	50.06	0.000036	0.48	145.69	151.22	0.05
1	1514	4% (25-YR)	75.00	46.88	50.58	47.38	50.59	0.000032	0.50	174.38	165.26	0.05
1	1514	2% (50-YR)	86.00	46.88	50.92	47.43	50.93	0.000030	0.52	192.79	173.08	0.05
1	1514	1% (100-YR)	98.00	46.88	51.25	47.48	51.25	0.000030	0.54	210.29	183.87	0.05
1	1654		Culvert									
1	1676	50% (2-YR)	41.00	47.91	49.77	48.76	49.80	0.003117	1.32	31.11	64.60	0.21
1	1676	10% (10-YR)	61.00	47.91	50.52	48.95	50.54	0.001375	1.13	56.04	172.94	0.15
1	1676	4% (25-YR)	75.00	47.91	51.10	49.07	51.11	0.000764	1.02	78.10	205.94	0.12
1	1676	2% (50-YR)	86.00	47.91	51.51	49.15	51.52	0.000570	0.98	93.66	226.39	0.10
1	1676	1% (100-YR)	98.00	47.91	51.93	49.24	51.95	0.000447	0.96	109.91	243.32	0.10
1	1769	50% (2-YR)	29.26	47.25	49.89	48.25	49.89	0.000488	0.70	42.33	109.55	0.09
1	1769	10% (10-YR)	44.08	47.25	50.58	48.43	50.59	0.000377	0.76	58.73	144.53	0.08
1	1769	4% (25-YR)	54.34	47.25	51.14	48.53	51.15	0.000295	0.77	71.83	152.33	0.08
1	1769	2% (50-YR)	61.94	47.25	51.54	48.59	51.55	0.000255	0.78	81.25	156.80	0.07
1	1769	1% (100-YR)	70.68	47.25	51.96	48.66	51.97	0.000227	0.79	91.15	166.54	0.07
1	1849		Culvert									
1	1953	50% (2-YR)	29.26	47.56	50.16	48.92	50.20	0.003898	1.58	18.55	73.20	0.23
1	1953	10% (10-YR)	44.08	47.56	50.96	49.19	50.99	0.002220	1.39	33.32	109.73	0.18
1	1953	4% (25-YR)	54.34	47.56	51.62	49.35	51.64	0.001071	1.19	50.59	143.48	0.14
1	1953	2% (50-YR)	61.94	47.56	52.19	49.47	52.21	0.000634	1.06	67.21	175.56	0.11
1	1953	1% (100-YR)	70.68	47.56	52.82	49.58	52.83	0.000406	0.96	85.67	220.57	0.09
1	2129	50% (2-YR)	29.26	48.25	50.33		50.33	0.000387	0.41	77.44	110.02	0.07
1	2129	10% (10-YR)	44.08	48.25	51.04		51.04	0.000113	0.32	172.72	155.17	0.04
1	2129	4% (25-YR)	54.34	48.25	51.66		51.67	0.000051	0.26	284.58	204.29	0.03
1	2129	2% (50-YR)	61.94	48.25	52.22		52.22	0.000027	0.22	406.58	228.83	0.02
1	2129	1% (100-YR)	70.68	48.25	52.84		52.84	0.000015	0.19	550.77	238.06	0.02
1	2228	50% (2-YR)	10.01	48.77	50.37	49.37	50.38	0.001615	0.78	12.87	20.67	0.14
1	2228	10% (10-YR)	15.08	48.77	51.05	49.51	51.06	0.000617	0.58	26.09	99.11	0.09
1	2228	4% (25-YR)	18.59	48.77	51.67	49.60	51.67	0.000227	0.46	41.37	150.18	0.06
1	2228	2% (50-YR)	21.19	48.77	52.22	49.66	52.23	0.000115	0.40	56.88	164.62	0.05
1	2228	1% (100-YR)	24.18	48.77	52.84	49.72	52.84	0.000066	0.35	74.12	173.20	0.04
1	2281		Culvert									
1	2341	50% (2-YR)	10.01	49.62	50.60	50.11	50.60	0.001643	0.62	16.47	82.86	0.14
1	2341	10% (10-YR)	15.08	49.62	51.32	50.18	51.32	0.000239	0.40	43.64	117.10	0.06

G103-36-00 Proposed HEC-RAS Output

HEC-RAS Plan: Proposed River: G103-36-03 Reach: 1 (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
1	2341	4% (25-YR)	18.59	49.62	52.07	50.22	52.07	0.000072	0.29	76.62	143.48	0.04
1	2341	2% (50-YR)	21.19	49.62	52.74	50.24	52.74	0.000033	0.24	108.71	161.66	0.03
1	2341	1% (100-YR)	24.18	49.62	53.51	50.27	53.51	0.000017	0.20	145.76	199.41	0.02
1	2417	50% (2-YR)	10.01	49.69	50.63		50.63	0.000119	0.15	67.88	133.29	0.04
1	2417	10% (10-YR)	15.08	49.69	51.32		51.32	0.000015	0.09	171.00	167.15	0.01
1	2417	4% (25-YR)	18.59	49.69	52.07		52.07	0.000004	0.06	306.09	205.98	0.01
1	2417	2% (50-YR)	21.19	49.69	52.74		52.74	0.000002	0.05	453.31	226.60	0.01
1	2417	1% (100-YR)	24.18	49.69	53.51		53.51	0.000001	0.04	632.49	238.63	0.00
1	2695	50% (2-YR)	10.01	51.20	51.59	51.59	51.66	0.132437	2.18	4.60	30.72	0.99
1	2695	10% (10-YR)	15.08	51.20	51.64	51.64	51.72	0.121650	2.24	6.72	40.29	0.97
1	2695	4% (25-YR)	18.59	51.20	52.07		52.08	0.002725	0.71	26.27	51.41	0.17
1	2695	2% (50-YR)	21.19	51.20	52.74		52.74	0.000221	0.29	73.01	83.23	0.05
1	2695	1% (100-YR)	24.18	51.20	53.51		53.51	0.000035	0.18	141.89	98.86	0.02

G103-39-00 Proposed HEC-RAS Output

HEC-RAS Plan: Porposed River: G103-39-00 Reach: 1

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
1	14	2-yr	74.40	41.99	46.46	43.30	46.48	0.000501	1.09	68.01	21.71	0.11
1	14	10-yr	119.30	41.99	47.59	43.68	47.62	0.000501	1.26	97.89	46.06	0.11
1	14	25-yr	150.80	41.99	48.08	43.92	48.11	0.000500	1.37	143.56	157.75	0.11
1	14	50-yr	176.90	41.99	48.36	44.10	48.39	0.000500	1.42	195.96	211.03	0.12
1	14	100-yr	207.00	41.99	48.60	44.30	48.63	0.000500	1.47	254.93	268.78	0.12
1	711	2-yr	91.00	42.49	46.50		46.50	0.000009	0.14	1261.73	823.94	0.02
1	711	10-yr	143.00	42.49	47.63		47.63	0.000004	0.12	2327.93	1080.05	0.01
1	711	25-yr	179.00	42.49	48.12		48.12	0.000004	0.13	2874.73	1144.01	0.01
1	711	50-yr	208.00	42.49	48.40		48.40	0.000004	0.13	3191.70	1162.90	0.01
1	711	100-yr	240.00	42.49	48.64		48.64	0.000004	0.14	3483.61	1191.16	0.01
1	1336	2-yr	108.00	41.72	46.50		46.50	0.000003	0.12	2298.24	1292.13	0.01
1	1336	10-yr	168.00	41.72	47.63		47.63	0.000002	0.10	4082.06	1703.79	0.01
1	1336	25-yr	209.00	41.72	48.12		48.12	0.000002	0.10	4926.26	1715.59	0.01
1	1336	50-yr	240.00	41.72	48.40		48.40	0.000002	0.11	5399.06	1723.62	0.01
1	1336	100-yr	275.00	41.72	48.65		48.65	0.000002	0.11	5827.60	1732.02	0.01
1	1575	2-yr	116.00	41.72	46.50		46.50	0.000007	0.17	1863.55	1448.11	0.01
1	1575	10-yr	179.00	41.72	47.63		47.63	0.000003	0.13	3548.38	1534.06	0.01
1	1575	25-yr	221.00	41.72	48.12		48.12	0.000002	0.13	4312.27	1557.27	0.01
1	1575	50-yr	254.00	41.72	48.40		48.40	0.000002	0.13	4743.26	1575.14	0.01
1	1575	100-yr	290.00	41.72	48.65		48.65	0.000002	0.14	5135.41	1587.71	0.01
1	1864	2-yr	125.00	41.72	46.51		46.51	0.000022	0.32	650.80	523.00	0.03
1	1864	10-yr	193.00	41.72	47.63		47.63	0.000014	0.29	1412.16	919.84	0.02
1	1864	25-yr	238.00	41.72	48.12		48.12	0.000013	0.30	1887.03	1006.68	0.02
1	1864	50-yr	271.00	41.72	48.40		48.40	0.000012	0.30	2169.25	1036.13	0.02
1	1864	100-yr	308.00	41.72	48.65		48.65	0.000012	0.30	2436.62	1129.69	0.02
1	2252	2-yr	147.00	41.72	46.52		46.52	0.000048	0.44	342.58	100.82	0.04
1	2252	10-yr	223.00	41.72	47.64		47.64	0.000048	0.52	480.90	162.22	0.04
1	2252	25-yr	273.00	41.72	48.13		48.13	0.000052	0.57	592.85	350.19	0.04
1	2252	50-yr	309.00	41.72	48.40		48.41	0.000054	0.60	716.21	539.82	0.04
1	2252	100-yr	348.00	41.72	48.65		48.66	0.000057	0.63	865.44	628.20	0.04
1	2426	2-yr	147.00	41.72	46.52		46.53	0.000045	0.42	366.44	143.61	0.04
1	2426	10-yr	223.00	41.72	47.65		47.65	0.000040	0.47	679.34	437.53	0.04
1	2426	25-yr	273.00	41.72	48.14		48.14	0.000038	0.49	944.64	627.71	0.04
1	2426	50-yr	309.00	41.72	48.41		48.42	0.000038	0.50	1139.82	760.32	0.04
1	2426	100-yr	348.00	41.72	48.66		48.66	0.000038	0.51	1333.87	794.57	0.04
1	2645	2-yr	165.00	41.72	46.53		46.54	0.000052	0.45	383.87	141.51	0.04
1	2645	10-yr	247.00	41.72	47.65		47.66	0.000046	0.50	648.25	340.90	0.04
1	2645	25-yr	301.00	41.72	48.15		48.15	0.000046	0.53	843.68	502.87	0.04
1	2645	50-yr	339.00	41.72	48.42		48.43	0.000046	0.55	1001.04	625.69	0.04
1	2645	100-yr	380.00	41.72	48.67		48.67	0.000047	0.57	1164.09	683.96	0.04
1	2825	2-yr	165.00	41.72	46.54		46.55	0.000051	0.43	401.50	173.42	0.04
1	2825	10-yr	247.00	41.72	47.66		47.67	0.000042	0.46	720.61	410.90	0.04
1	2825	25-yr	301.00	41.72	48.16		48.16	0.000041	0.48	960.32	546.50	0.04
1	2825	50-yr	339.00	41.72	48.43		48.43	0.000040	0.49	1114.44	579.70	0.04
1	2825	100-yr	380.00	41.72	48.68		48.68	0.000040	0.51	1260.01	595.24	0.04
1	3049	2-yr	185.40	43.33	46.57		46.58	0.000863	1.09	169.78	91.04	0.14
1	3049	10-yr	275.40	43.33	47.68		47.69	0.000429	1.00	277.95	110.83	0.11
1	3049	25-yr	333.80	43.33	48.17		48.18	0.000360	1.02	343.68	167.17	0.10
1	3049	50-yr	373.50	43.33	48.44		48.46	0.000335	1.04	402.59	268.27	0.10
1	3049	100-yr	416.00	43.33	48.69		48.71	0.000319	1.06	479.30	350.90	0.10
1	3244	2-yr	185.40	45.84	47.85	47.85	48.31	0.057737	5.46	33.98	38.20	1.02
1	3244	10-yr	275.40	45.84	48.14	48.14	48.70	0.053535	6.04	45.60	41.60	1.02
1	3244	25-yr	333.80	45.84	48.31	48.31	48.93	0.051469	6.31	52.87	43.80	1.01
1	3244	50-yr	373.50	45.84	48.43	48.43	49.07	0.049227	6.43	58.10	45.32	1.00
1	3244	100-yr	416.00	45.84	48.52	48.52	49.21	0.050056	6.67	62.33	46.55	1.02
1	3333	2-yr	177.00	46.04	49.18	47.88	49.32	0.004363	2.97	59.53	53.42	0.33
1	3333	10-yr	264.00	46.04	49.65	48.26	49.87	0.005421	3.72	70.90	74.68	0.38
1	3333	25-yr	320.00	46.04	49.91	48.47	50.18	0.006052	4.16	76.99	101.94	0.41
1	3333	50-yr	358.00	46.04	50.06	48.61	50.37	0.006502	4.44	80.60	127.06	0.43
1	3333	100-yr	399.00	46.04	50.09	48.75	50.47	0.007797	4.90	81.45	129.13	0.47
1	3403		Culvert									
1	3423	2-yr	177.00	47.87	51.58	50.20	51.68	0.004451	2.76	110.11	146.66	0.32
1	3423	10-yr	264.00	47.87	51.71	50.76	51.88	0.007441	3.70	131.68	176.99	0.42
1	3423	25-yr	320.00	47.87	51.29	51.29	51.84	0.027761	6.28	74.42	87.57	0.79
1	3423	50-yr	358.00	47.87	51.75	51.42	52.04	0.012877	4.91	137.59	182.99	0.55

G103-39-00 Proposed HEC-RAS Output

HEC-RAS Plan: Porposed River: G103-39-00 Reach: 1 (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
1	3423	100-yr	399.00	47.87	51.69	51.55	52.09	0.017991	5.71	126.85	172.94	0.65
1	3454	2-yr	177.00	47.88	51.68		51.96	0.013173	4.25	43.84	42.03	0.54
1	3454	10-yr	264.00	47.88	51.85	51.32	52.35	0.021557	5.76	52.38	53.70	0.69
1	3454	25-yr	320.00	47.88	52.05	51.77	52.62	0.022312	6.22	63.49	57.47	0.72
1	3454	50-yr	358.00	47.88	52.01	51.97	52.77	0.029728	7.10	61.40	56.73	0.83
1	3454	100-yr	399.00	47.88	52.12	52.12	52.94	0.030684	7.44	67.72	58.86	0.85
1	3633	2-yr	162.00	50.83	53.93		54.16	0.011465	3.87	41.85	22.71	0.50
1	3633	10-yr	242.00	50.83	54.65		54.90	0.009690	4.08	59.57	30.48	0.48
1	3633	25-yr	294.00	50.83	54.96		55.25	0.009941	4.30	71.67	48.25	0.49
1	3633	50-yr	331.00	50.83	55.23		55.51	0.008869	4.30	86.06	60.38	0.47
1	3633	100-yr	370.00	50.83	55.40		55.70	0.008800	4.47	98.14	77.62	0.47
1	3862	2-yr	162.00	51.68	56.29		56.54	0.009365	3.93	41.18	16.93	0.44
1	3862	10-yr	242.00	51.68	56.96		57.28	0.010931	4.54	53.32	19.99	0.49
1	3862	25-yr	294.00	51.68	57.34		57.70	0.011326	4.79	61.41	21.92	0.50
1	3862	50-yr	331.00	51.68	57.53		57.92	0.012297	5.04	65.63	23.11	0.53
1	3862	100-yr	370.00	51.68	57.74		58.16	0.012935	5.24	70.58	24.44	0.54
1	4002	2-yr	151.00	51.99	57.07		57.15	0.002323	2.26	66.69	23.10	0.23
1	4002	10-yr	226.00	51.99	57.87		57.98	0.002618	2.61	86.46	26.38	0.25
1	4002	25-yr	274.00	51.99	58.31		58.43	0.002753	2.78	98.60	28.54	0.26
1	4002	50-yr	309.00	51.99	58.57		58.70	0.002890	2.91	106.21	29.77	0.27
1	4002	100-yr	347.00	51.99	58.84		58.98	0.003029	3.04	114.31	31.19	0.28
1	4201	2-yr	151.00	52.64	57.67		57.82	0.005045	3.14	48.08	16.67	0.33
1	4201	10-yr	226.00	52.64	58.53		58.73	0.005456	3.55	63.64	19.55	0.35
1	4201	25-yr	274.00	52.64	59.00		59.22	0.005638	3.74	73.26	21.46	0.36
1	4201	50-yr	309.00	52.64	59.29		59.52	0.005790	3.88	79.59	22.53	0.36
1	4201	100-yr	347.00	52.64	59.58		59.83	0.005884	4.02	86.25	23.42	0.37
1	4287	2-yr	136.00	53.57	57.93	55.02	57.96	0.000658	1.40	97.42	29.21	0.13
1	4287	10-yr	205.00	53.57	58.84	55.37	58.88	0.000698	1.67	122.66	30.96	0.14
1	4287	25-yr	249.00	53.57	59.32	55.57	59.38	0.000724	1.83	136.33	31.94	0.15
1	4287	50-yr	282.00	53.57	59.63	55.72	59.69	0.000759	1.95	144.84	32.58	0.15
1	4287	100-yr	318.00	53.57	59.93	55.86	60.00	0.000797	2.07	153.40	33.22	0.16
1	4380		Culvert									
1	4408	2-yr	136.00	56.52	63.50	58.77	63.51	0.000239	1.10	124.18	53.49	0.08
1	4408	10-yr	205.00	56.52	67.06	59.26	67.08	0.000094	0.98	209.81	87.21	0.06
1	4408	25-yr	249.00	56.52	68.69	59.52	68.69	0.000034	0.56	483.66	161.20	0.03
1	4408	50-yr	282.00	56.52	68.89	59.69	68.89	0.000031	0.50	643.56	166.59	0.03
1	4408	100-yr	318.00	56.52	69.05	59.89	69.05	0.000036	0.55	671.10	170.82	0.04
1	4458	2-yr	136.00	57.33	63.51		63.54	0.000942	1.50	90.58	29.47	0.15
1	4458	10-yr	205.00	57.33	67.07		67.08	0.000165	0.89	235.45	56.00	0.07
1	4458	25-yr	249.00	57.33	68.69		68.70	0.000090	0.79	363.45	122.53	0.05
1	4458	50-yr	282.00	57.33	68.88		68.89	0.000102	0.86	388.15	129.96	0.06
1	4458	100-yr	318.00	57.33	69.05		69.06	0.000118	0.93	409.70	134.69	0.06
1	4667	2-yr	136.00	57.67	63.73		63.78	0.001402	1.89	71.93	21.14	0.18
1	4667	10-yr	205.00	57.67	67.11		67.14	0.000374	1.23	167.79	40.01	0.10
1	4667	25-yr	249.00	57.67	68.71		68.73	0.000198	1.09	244.44	58.33	0.08
1	4667	50-yr	282.00	57.67	68.91		68.93	0.000227	1.19	256.28	61.70	0.08
1	4667	100-yr	318.00	57.67	69.07		69.10	0.000263	1.30	266.86	65.56	0.09
1	4869	2-yr	126.00	58.83	64.04		64.08	0.001532	1.70	74.25	29.58	0.19
1	4869	10-yr	190.00	58.83	67.19		67.20	0.000264	1.03	184.10	40.66	0.09
1	4869	25-yr	231.00	58.83	68.75		68.76	0.000160	0.91	253.72	49.62	0.07
1	4869	50-yr	263.00	58.83	68.95		68.97	0.000185	1.00	263.98	50.93	0.07
1	4869	100-yr	297.00	58.83	69.13		69.15	0.000215	1.10	272.91	52.00	0.08
1	5031	2-yr	126.00	60.14	64.42		64.64	0.009760	3.78	33.35	15.00	0.45
1	5031	10-yr	190.00	60.14	67.24		67.30	0.001613	2.08	91.37	26.53	0.20
1	5031	25-yr	231.00	60.14	68.78		68.82	0.000832	1.66	138.90	34.81	0.15
1	5031	50-yr	263.00	60.14	68.99		69.04	0.000942	1.80	146.25	35.81	0.16
1	5031	100-yr	297.00	60.14	69.17		69.22	0.001073	1.94	152.72	36.67	0.17
1	5204	2-yr	117.00	61.21	65.54		65.63	0.003584	2.44	47.91	20.70	0.28
1	5204	10-yr	177.00	61.21	67.51		67.55	0.001229	1.58	112.28	43.22	0.17
1	5204	25-yr	216.00	61.21	68.91		68.93	0.000485	1.20	180.78	54.03	0.11
1	5204	50-yr	246.00	61.21	69.13		69.16	0.000514	1.28	193.06	56.75	0.12
1	5204	100-yr	279.00	61.21	69.33		69.36	0.000555	1.38	204.46	59.22	0.12
1	5362	2-yr	117.00	62.01	66.25		66.42	0.006816	3.34	35.02	13.76	0.37
1	5362	10-yr	177.00	62.01	67.76		67.90	0.003942	3.01	58.85	17.85	0.29

G103-39-00 Proposed HEC-RAS Output

HEC-RAS Plan: Porposed River: G103-39-00 Reach: 1 (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
1	5362	25-yr	216.00	62.01	69.00		69.10	0.002057	2.57	96.94	55.67	0.22
1	5362	50-yr	246.00	62.01	69.22		69.33	0.002148	2.72	109.65	57.17	0.23
1	5362	100-yr	279.00	62.01	69.42		69.54	0.002286	2.89	121.31	58.96	0.24
1	5535	2-yr	107.10	63.06	67.42		67.52	0.005871	2.49	42.99	26.41	0.34
1	5535	10-yr	162.40	63.06	68.44		68.51	0.003074	2.18	74.44	34.68	0.26
1	5535	25-yr	198.50	63.06	69.34		69.40	0.001450	1.85	109.05	41.75	0.19
1	5535	50-yr	226.60	63.06	69.58		69.64	0.001455	1.95	119.10	43.75	0.19
1	5535	100-yr	258.00	63.06	69.80		69.86	0.001502	2.07	128.90	46.14	0.20
1	5637	2-yr	107.10	64.83	68.14		68.38	0.011566	3.91	27.41	12.88	0.47
1	5637	10-yr	162.40	64.83	68.89		69.12	0.012905	3.86	42.12	23.32	0.51
1	5637	25-yr	198.50	64.83	69.54		69.72	0.007762	3.40	58.47	26.86	0.41
1	5637	50-yr	226.60	64.83	69.77		69.96	0.007632	3.50	64.81	28.17	0.41
1	5637	100-yr	258.00	64.83	69.99		70.20	0.007663	3.63	71.16	29.41	0.41
1	5778	2-yr	107.10	65.77	69.48		69.64	0.007018	3.14	34.11	16.09	0.38
1	5778	10-yr	162.40	65.77	70.23		70.41	0.006839	3.43	47.40	19.24	0.38
1	5778	25-yr	198.50	65.77	70.57		70.78	0.007168	3.66	54.22	20.63	0.40
1	5778	50-yr	226.60	65.77	70.81		71.04	0.007424	3.83	59.20	21.63	0.41
1	5778	100-yr	258.00	65.77	71.05		71.30	0.007693	4.00	64.46	22.62	0.42

G103-46-00 Proposed HEC-RAS Output

HEC-RAS Plan: Proposed River: G103-46-00 Reach: 1

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
1	1253	2-yr	253.90	41.89	44.47	44.22	45.15	0.002001	6.61	38.42	19.85	0.84
1	1253	10-yr	344.90	41.89	44.92	44.65	45.73	0.002000	7.24	47.61	21.27	0.85
1	1253	25-yr	401.30	41.89	45.16	44.90	46.06	0.002003	7.58	52.96	22.06	0.86
1	1253	50-yr	445.20	41.89	45.35	45.07	46.29	0.002003	7.81	57.01	22.64	0.87
1	1253	100-yr	494.00	41.89	45.54	45.26	46.54	0.002002	8.05	61.39	23.24	0.87
1	1312	2-yr	253.90	41.65	44.99	43.92	45.25	0.000623	4.08	62.16	28.04	0.48
1	1312	10-yr	344.90	41.65	45.54	44.35	45.84	0.000592	4.42	77.97	29.84	0.48
1	1312	25-yr	401.30	41.65	45.84	44.58	46.17	0.000581	4.60	87.14	30.82	0.48
1	1312	50-yr	445.20	41.65	46.06	44.74	46.41	0.000573	4.73	94.03	31.49	0.48
1	1312	100-yr	494.00	41.65	46.29	44.90	46.66	0.000566	4.87	101.44	32.21	0.48
1	1360		Culvert									
1	1391	2-yr	253.90	42.17	45.63	44.59	45.90	0.004489	4.21	60.35	26.16	0.49
1	1391	10-yr	344.90	42.17	46.47	44.99	46.74	0.003221	4.13	83.43	28.56	0.43
1	1391	25-yr	401.30	42.17	46.96	45.22	47.22	0.002771	4.11	97.70	29.94	0.40
1	1391	50-yr	445.20	42.17	47.33	45.38	47.59	0.002507	4.09	108.91	31.05	0.38
1	1391	100-yr	494.00	42.17	47.73	45.55	47.99	0.002282	4.06	121.69	32.58	0.37
1	1427	2-yr	249.00	42.07	45.77		46.09	0.005160	4.53	54.97	23.37	0.52
1	1427	10-yr	345.00	42.07	46.56		46.89	0.004247	4.62	74.59	26.36	0.48
1	1427	25-yr	405.00	42.07	47.03		47.36	0.003793	4.64	87.33	28.14	0.46
1	1427	50-yr	452.00	42.07	47.38		47.72	0.003494	4.63	97.61	29.58	0.45
1	1427	100-yr	504.00	42.07	47.78		48.11	0.003177	4.60	109.55	31.44	0.43
1	1699	2-yr	249.00	42.54	46.97		47.16	0.002981	3.46	71.98	30.88	0.40
1	1699	10-yr	345.00	42.54	47.63		47.84	0.002826	3.68	93.76	35.22	0.40
1	1699	25-yr	405.00	42.54	48.03		48.25	0.002764	3.72	108.78	39.60	0.40
1	1699	50-yr	452.00	42.54	48.34		48.56	0.002672	3.72	121.56	45.49	0.39
1	1699	100-yr	504.00	42.54	48.67		48.88	0.002480	3.70	139.48	63.35	0.38
1	1962	2-yr	247.00	43.04	47.72		47.94	0.002880	3.75	65.81	23.34	0.39
1	1962	10-yr	346.00	43.04	48.42		48.68	0.003485	4.09	86.07	39.72	0.44
1	1962	25-yr	408.00	43.04	48.83		49.09	0.003665	4.08	109.43	77.75	0.45
1	1962	50-yr	456.00	43.04	49.13		49.37	0.003579	4.02	135.13	97.83	0.44
1	1962	100-yr	509.00	43.04	49.41		49.64	0.003422	3.95	175.52	237.68	0.43
1	2102	2-yr	243.00	42.90	48.12		48.30	0.002369	3.49	69.63	23.05	0.35
1	2102	10-yr	346.00	42.90	48.87		49.11	0.002695	3.91	88.57	27.54	0.38
1	2102	25-yr	411.00	42.90	49.31		49.55	0.002959	4.00	112.58	107.17	0.40
1	2102	50-yr	461.00	42.90	49.58		49.82	0.002899	4.03	147.54	143.09	0.40
1	2102	100-yr	517.00	42.90	49.84		50.08	0.002771	4.05	188.42	189.66	0.40
1	2216	2-yr	243.00	43.94	48.38	46.69	48.58	0.002500	3.60	67.52	25.78	0.37
1	2216	10-yr	346.00	43.94	49.17	47.22	49.41	0.002654	3.95	87.74	36.57	0.39
1	2216	25-yr	411.00	43.94	49.60	47.49	49.86	0.002431	4.12	101.91	49.18	0.38
1	2216	50-yr	461.00	43.94	49.85	47.69	50.14	0.002430	4.31	110.18	54.45	0.39
1	2216	100-yr	517.00	43.94	50.08	47.91	50.40	0.002506	4.55	117.79	61.51	0.40
1	2285		Culvert									
1	2308	2-yr	243.00	44.49	52.61	47.76	52.64	0.000167	1.34	189.09	128.69	0.11
1	2308	10-yr	346.00	44.49	54.50	48.32	54.53	0.000113	1.37	266.25	182.85	0.09
1	2308	25-yr	411.00	44.49	55.55	48.63	55.58	0.000099	1.40	309.25	225.52	0.09
1	2308	50-yr	461.00	44.49	56.15	48.86	56.16	0.000061	1.15	794.87	289.10	0.07
1	2308	100-yr	517.00	44.49	56.31	49.11	56.33	0.000065	1.20	985.45	300.31	0.07
1	2359	2-yr	239.00	44.76	52.62		52.65	0.000173	1.46	277.71	126.44	0.11
1	2359	10-yr	346.00	44.76	54.51		54.53	0.000102	1.36	556.14	170.77	0.09
1	2359	25-yr	414.00	44.76	55.56		55.58	0.000085	1.35	755.08	235.75	0.08
1	2359	50-yr	467.00	44.76	56.15		56.17	0.000084	1.41	911.61	320.22	0.08
1	2359	100-yr	526.00	44.76	56.31		56.33	0.000097	1.52	963.77	327.75	0.09
1	2485	2-yr	239.00	45.15	52.65		52.67	0.000162	1.28	283.44	156.37	0.10
1	2485	10-yr	346.00	45.15	54.53		54.54	0.000080	1.13	645.50	227.92	0.08
1	2485	25-yr	414.00	45.15	55.58		55.59	0.000059	1.07	901.33	259.64	0.07
1	2485	50-yr	467.00	45.15	56.17		56.18	0.000053	1.07	1057.87	273.46	0.07
1	2485	100-yr	526.00	45.15	56.33		56.34	0.000062	1.16	1103.49	285.34	0.07
1	2710	2-yr	239.00	46.05	52.69		52.73	0.000342	1.65	292.11	228.54	0.15
1	2710	10-yr	346.00	46.05	54.55		54.56	0.000093	1.11	856.44	339.97	0.08
1	2710	25-yr	414.00	46.05	55.60		55.60	0.000054	0.95	1219.53	354.56	0.06
1	2710	50-yr	467.00	46.05	56.18		56.19	0.000046	0.92	1431.39	370.23	0.06
1	2710	100-yr	526.00	46.05	56.35		56.36	0.000052	1.00	1493.40	373.02	0.06
1	2988	2-yr	236.00	46.88	52.79		52.83	0.000416	1.67	222.45	223.47	0.16
1	2988	10-yr	347.00	46.88	54.58		54.59	0.000103	1.10	887.61	470.79	0.09

G103-46-00 Proposed HEC-RAS Output

HEC-RAS Plan: Proposed River: G103-46-00 Reach: 1 (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
1	2988	25-yr	417.00	46.88	55.61		55.62	0.000053	0.89	1413.32	538.36	0.06
1	2988	50-yr	472.00	46.88	56.20		56.20	0.000041	0.83	1731.97	552.61	0.06
1	2988	100-yr	532.00	46.88	56.36		56.37	0.000045	0.89	1825.84	561.91	0.06
1	3229	2-yr	234.00	47.95	52.93		52.97	0.000915	1.91	306.05	296.93	0.22
1	3229	10-yr	346.80	47.95	54.61		54.62	0.000153	1.12	904.28	426.45	0.10
1	3229	25-yr	419.30	47.95	55.63		55.63	0.000075	0.91	1387.87	501.10	0.07
1	3229	50-yr	475.60	47.95	56.21		56.21	0.000057	0.86	1684.61	524.11	0.06
1	3229	100-yr	537.00	47.95	56.38		56.38	0.000064	0.92	1775.63	540.58	0.07
1	3521	2-yr	128.00	48.05	53.07		53.08	0.000121	0.92	337.18	278.48	0.09
1	3521	10-yr	190.00	48.05	54.64		54.64	0.000034	0.62	972.58	466.89	0.05
1	3521	25-yr	230.00	48.05	55.64		55.65	0.000018	0.52	1483.18	528.52	0.04
1	3521	50-yr	260.00	48.05	56.22		56.22	0.000014	0.48	1795.17	553.26	0.03
1	3521	100-yr	294.00	48.05	56.39		56.39	0.000016	0.52	1890.73	561.21	0.04
1	3867	2-yr	62.50	48.82	53.10		53.11	0.000056	0.54	323.72	387.60	0.06
1	3867	10-yr	93.10	48.82	54.65		54.65	0.000009	0.29	1085.22	563.37	0.02
1	3867	25-yr	112.60	48.82	55.65		55.65	0.000004	0.22	1674.91	607.22	0.02
1	3867	50-yr	127.40	48.82	56.22		56.22	0.000003	0.21	2031.44	632.07	0.02
1	3867	100-yr	143.00	48.82	56.40		56.40	0.000003	0.22	2141.26	645.33	0.02

G103-46-01 Proposed
HY-8 Culvert Analysis Report

Crossing Discharge Data

Discharge Selection Method: User Defined

Table 1 - Summary of Culvert Flows at Crossing: G103-46-01 Outlet Proposed

Headwater Elevation (ft)	Discharge Names	Total Discharge (cfs)	Proposed Discharge (cfs)	Roadway Discharge (cfs)	Iterations
64.56	0.2	94.40	94.40	0.00	1
65.49	0.4	188.80	188.80	0.00	1
66.32	0.6	283.20	283.20	0.00	1
67.24	0.8	377.60	377.60	0.00	1
68.35	1	472.00	472.00	0.00	1
68.62	Overtopping	492.11	492.11	0.00	Overtopping

Rating Curve Plot for Crossing: G103-46-01 Outlet Proposed

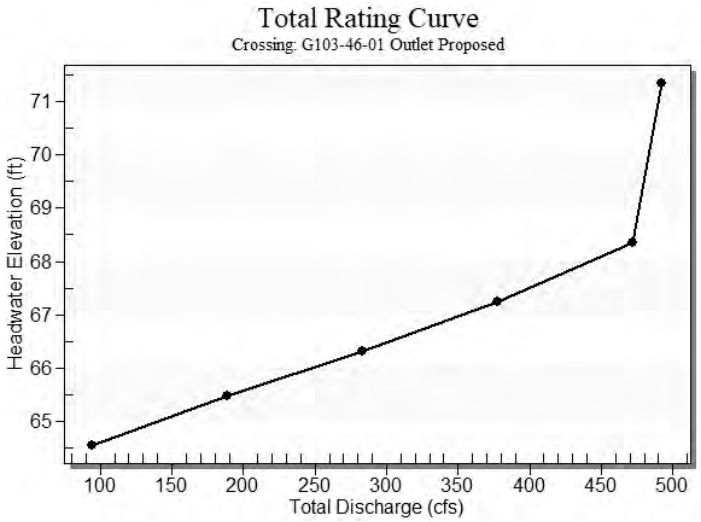

Table 2 - Culvert Summary Table: Proposed

Discharge Names	Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
0.2	94.40	94.40	64.56	1.582	0.0*	1-JS1f	0.448	0.949	3.000	2.951	1.748	2.598
0.4	188.80	188.80	65.49	2.505	0.0*	1-JS1f	0.699	1.506	3.000	4.114	3.496	2.987
0.6	283.20	283.20	66.32	3.341	0.0*	5-JS1f	0.912	1.974	3.000	5.008	5.244	3.073
0.8	377.60	377.60	67.24	4.260	0.0*	5-JS1f	1.106	2.391	3.000	5.649	6.993	3.128
1	472.00	472.00	68.35	5.372	0.0*	5-JS1f	1.287	2.774	3.000	6.087	8.741	3.262

* Full Flow Headwater elevation is below inlet invert.

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Straight Culvert

Inlet Elevation (invert): 62.98 ft, Outlet Elevation (invert): 47.63 ft

Culvert Length: 534.22 ft, Culvert Slope: 0.0287

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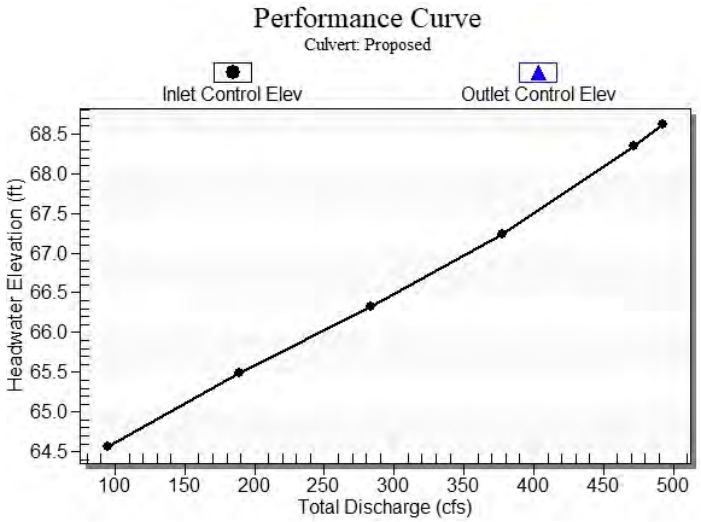
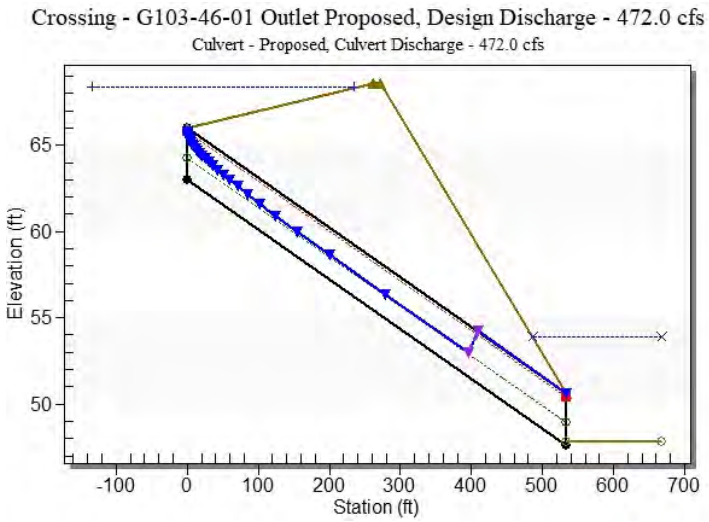
Culvert Performance Curve Plot: Proposed



Water Surface Profile Plot for Culvert: Proposed



Site Data - Proposed

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 62.98 ft

Outlet Station: 534.00 ft

Outlet Elevation: 47.63 ft

Number of Barrels: 3

Culvert Data Summary - Proposed

Barrel Shape: Concrete Box

Barrel Span: 6.00 ft

Barrel Rise: 3.00 ft

Barrel Material: Concrete

Embedment: 0.00 in

Barrel Manning's n: 0.0120

Culvert Type: Straight

Inlet Configuration: Square Edge (90º) Headwall

Inlet Depression: None

Table 3 - Downstream Channel Rating Curve (Crossing: G103-46-01 Outlet Proposed)

Flow (cfs)	Water Surface Elev (ft)	Depth (ft)	Velocity (ft/s)	Shear (psf)	Froude Number
94.40	50.78	2.95	2.60	0.42	0.34
188.80	51.94	4.11	2.99	0.59	0.35
283.20	52.84	5.01	3.07	0.72	0.35
377.60	53.48	5.65	3.13	0.81	0.36
472.00	53.92	6.09	3.26	0.87	0.36

Tailwater Channel Data - G103-46-01 Outlet Proposed

Tailwater Channel Option: Irregular Channel

Channel Slope: 0.0023

User Defined Channel Cross-Section:

Coord No.	Station (ft)	Elevation (ft)	Manning's n
1	0.00	56.00	0.0400
2	0.10	53.58	0.0400
3	0.73	53.63	0.0400
4	4.66	53.50	0.0400
5	6.41	53.30	0.0400
6	9.07	52.91	0.0400
7	11.15	52.47	0.0400
8	12.52	52.14	0.0400
9	13.52	51.65	0.0400
10	15.03	50.79	0.0400
11	16.45	49.90	0.0400
12	18.25	48.98	0.0400
13	19.21	48.67	0.0400
14	20.38	48.24	0.0400
15	22.99	47.83	0.0400
16	24.31	47.84	0.0400
17	25.36	48.03	0.0400
18	26.95	48.38	0.0400
19	27.73	48.50	0.0400
20	28.24	48.56	0.0400
21	30.10	48.94	0.0400
22	30.76	49.26	0.0400
23	32.17	49.88	0.0400
24	32.46	50.03	0.0400
25	32.90	50.23	0.0400
26	34.83	50.87	0.0400
27	36.10	51.23	0.0400
28	37.20	51.42	0.0400
29	41.94	52.17	0.0400
30	43.96	52.47	0.0400
31	46.67	52.73	0.0400
32	47.89	52.80	0.0400
33	49.04	52.89	0.0400
34	51.82	53.14	0.0400
35	55.76	53.57	0.0400
36	56.00	53.56	0.0400
37	56.09	56.00	0.0000

Roadway Data for Crossing: G103-46-01 Outlet Proposed

Roadway Profile Shape: Constant Roadway Elevation

Crest Length: 80.00 ft

Crest Elevation: 68.62 ft

Roadway Surface: Paved

Roadway Top Width: 10.00 ft

G103-46-01 Proposed HEC-RAS Output

HEC-RAS Plan: Proposed River: G103-46-01 Reach: 1

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
1	5	2-yr	199.30	62.77	66.48	66.48	67.49	0.051945	8.07	24.69	12.22	1.00
1	5	10-yr	300.50	62.77	67.19	67.19	68.39	0.050248	8.79	34.19	14.52	1.01
1	5	25-yr	366.10	62.77	67.60	67.60	68.88	0.048134	9.07	40.39	15.87	1.00
1	5	50-yr	416.70	62.77	67.90	67.90	69.21	0.047027	9.20	45.30	17.19	1.00
1	5	100-yr	472.00	62.77	68.35	68.21	69.55	0.041881	8.77	53.80	20.48	0.95
1	173	2-yr	176.00	65.06	69.79		69.97	0.006028	3.41	51.58	19.20	0.37
1	173	10-yr	265.00	65.06	70.68		70.90	0.006148	3.77	70.24	22.90	0.38
1	173	25-yr	323.00	65.06	71.14		71.38	0.006247	3.97	81.27	24.83	0.39
1	173	50-yr	367.00	65.06	71.46		71.72	0.006296	4.10	89.47	26.26	0.39
1	173	100-yr	416.00	65.06	71.74		72.03	0.006564	4.29	97.08	27.57	0.40
1	212	2-yr	135.00	65.33	70.00	67.95	70.15	0.003171	3.11	43.47	20.61	0.29
1	212	10-yr	203.00	65.33	70.86	68.45	71.08	0.003515	3.77	53.84	23.91	0.31
1	212	25-yr	248.00	65.33	71.31	68.74	71.59	0.003809	4.18	59.27	25.56	0.33
1	212	50-yr	282.00	65.33	71.62	68.95	71.94	0.004018	4.48	63.00	26.41	0.34
1	212	100-yr	319.00	65.33	72.07	69.17	72.22	0.003133	3.08	103.54	27.65	0.28
1	512		Culvert									
1	525	2-yr	135.00	71.56	74.52	74.52	75.15	0.053803	6.37	21.20	16.93	1.00
1	525	10-yr	203.00	71.56	74.97	74.97	75.68	0.051185	6.75	30.06	21.36	1.00
1	525	25-yr	248.00	71.56	75.21	75.21	75.98	0.049239	7.05	35.17	22.78	1.00
1	525	50-yr	282.00	71.56	75.37	75.37	76.18	0.048259	7.24	38.94	23.88	1.00
1	525	100-yr	319.00	71.56	76.54	75.53	76.86	0.011087	4.54	70.29	32.49	0.51
1	548	2-yr	109.00	72.00	75.41		75.50	0.004777	2.43	44.91	25.37	0.32
1	548	10-yr	165.00	72.00	75.93		76.05	0.005124	2.80	58.86	28.19	0.34
1	548	25-yr	201.00	72.00	76.22		76.36	0.005270	2.99	67.15	29.75	0.35
1	548	50-yr	229.00	72.00	76.41		76.57	0.005404	3.13	73.12	30.82	0.36
1	548	100-yr	259.00	72.00	76.91		77.04	0.004101	2.91	89.12	34.19	0.32
1	651	2-yr	109.00	71.95	75.81		75.88	0.002977	2.18	50.07	23.07	0.26
1	651	10-yr	165.00	71.95	76.38		76.48	0.003475	2.58	63.88	25.47	0.29
1	651	25-yr	201.00	71.95	76.69		76.81	0.003744	2.79	72.00	26.99	0.30
1	651	50-yr	229.00	71.95	76.90		77.04	0.003957	2.94	77.98	28.25	0.31
1	651	100-yr	259.00	71.95	77.30		77.43	0.003536	2.89	89.59	30.56	0.30
1	804	2-yr	109.00	72.54	76.33		76.42	0.004194	2.43	44.89	22.74	0.30
1	804	10-yr	165.00	72.54	76.96		77.07	0.004283	2.75	59.90	25.40	0.32
1	804	25-yr	201.00	72.54	77.30		77.43	0.004321	2.92	68.80	26.83	0.32
1	804	50-yr	229.00	72.54	77.53		77.68	0.004365	3.04	75.33	27.85	0.33
1	804	100-yr	259.00	72.54	77.87		78.01	0.004030	3.05	84.79	29.27	0.32
1	927	2-yr	89.00	73.88	76.87		76.95	0.004364	2.31	38.46	21.88	0.31
1	927	10-yr	134.00	73.88	77.49		77.59	0.004012	2.53	52.86	24.47	0.30
1	927	25-yr	163.00	73.88	77.83		77.94	0.003892	2.65	61.46	25.91	0.30
1	927	50-yr	185.00	73.88	78.07		78.19	0.003814	2.73	67.85	26.98	0.30
1	927	100-yr	210.00	73.88	78.37		78.49	0.003600	2.76	76.02	28.35	0.30
1	960	2-yr	89.00	74.43	77.02		77.14	0.007285	2.78	32.03	20.43	0.39
1	960	10-yr	134.00	74.43	77.63		77.76	0.006247	2.97	45.16	23.10	0.37
1	960	25-yr	163.00	74.43	77.96		78.11	0.005869	3.07	53.12	24.60	0.37
1	960	50-yr	185.00	74.43	78.20		78.35	0.005648	3.13	59.11	25.79	0.36
1	960	100-yr	210.00	74.43	78.48		78.64	0.005236	3.15	66.71	27.22	0.35
1	1022		Culvert									
1	1061	2-yr	89.00	74.87	76.98	76.56	77.19	0.018226	3.66	24.34	20.77	0.60
1	1061	10-yr	134.00	74.87	77.63	76.88	77.81	0.011080	3.43	39.12	25.28	0.49
1	1061	25-yr	163.00	74.87	78.04	77.05	78.20	0.008156	3.25	50.13	27.77	0.43
1	1061	50-yr	185.00	74.87	78.34	77.18	78.50	0.006672	3.14	58.83	29.42	0.39
1	1061	100-yr	210.00	74.87	78.74	77.31	78.88	0.005095	2.96	70.91	31.62	0.35
1	1083	2-yr	89.00	75.03	77.33		77.41	0.006065	2.40	37.04	26.13	0.36
1	1083	10-yr	134.00	75.03	77.87		77.97	0.005127	2.57	52.20	29.28	0.34
1	1083	25-yr	163.00	75.03	78.23		78.34	0.004398	2.58	63.17	31.25	0.32
1	1083	50-yr	185.00	75.03	78.51		78.61	0.003945	2.57	72.03	33.03	0.31
1	1083	100-yr	210.00	75.03	78.87		78.97	0.003278	2.49	84.42	35.29	0.28
1	1200	2-yr	73.00	75.29	77.93		77.99	0.003804	1.94	37.66	25.57	0.28
1	1200	10-yr	109.00	75.29	78.42		78.49	0.003653	2.14	50.98	28.94	0.28
1	1200	25-yr	133.00	75.29	78.73		78.80	0.003468	2.21	60.24	31.33	0.28
1	1200	50-yr	152.00	75.29	78.96		79.04	0.003272	2.24	67.80	32.97	0.28
1	1200	100-yr	172.00	75.29	79.26		79.33	0.002864	2.21	77.82	34.96	0.26
1	1350	2-yr	73.00	77.26	78.63		78.79	0.007322	3.25	22.45	21.34	0.56
1	1350	10-yr	109.00	77.26	79.03		79.22	0.006007	3.46	31.51	23.40	0.53

G103-46-01 Proposed HEC-RAS Output

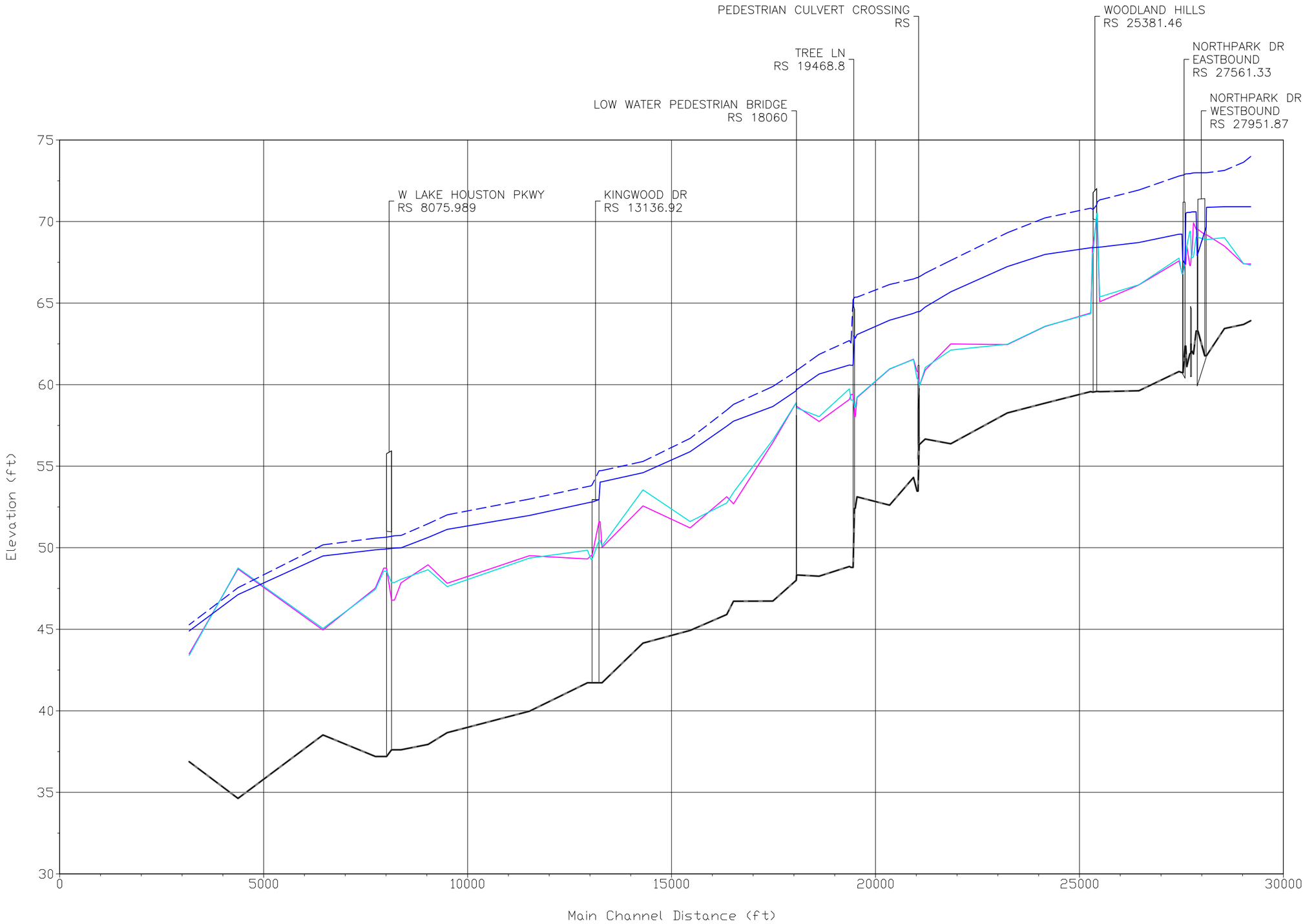
HEC-RAS Plan: Proposed River: G103-46-01 Reach: 1 (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
1	1350	25-yr	133.00	77.26	79.28		79.48	0.005393	3.55	37.52	24.71	0.51
1	1350	50-yr	152.00	77.26	79.47		79.67	0.004956	3.59	42.33	25.62	0.49
1	1350	100-yr	172.00	77.26	79.69		79.89	0.004360	3.57	48.16	26.61	0.47
1	1463	2-yr	62.00	77.35	79.30		79.41	0.004017	2.65	23.43	19.16	0.42
1	1463	10-yr	93.00	77.35	79.65		79.80	0.004262	3.04	30.58	21.16	0.45
1	1463	25-yr	114.00	77.35	79.86		80.03	0.004341	3.24	35.15	22.35	0.46
1	1463	50-yr	129.00	77.35	80.02		80.19	0.004246	3.33	38.77	23.32	0.45
1	1463	100-yr	147.00	77.35	80.20		80.38	0.004211	3.43	42.92	24.55	0.46
1	1481	2-yr	62.00	77.58	79.29		79.59	0.013558	4.35	14.27	13.60	0.75
1	1481	10-yr	93.00	77.58	79.63		79.99	0.013830	4.84	19.20	15.79	0.77
1	1481	25-yr	114.00	77.58	79.83		80.23	0.013629	5.07	22.50	17.10	0.78
1	1481	50-yr	129.00	77.58	79.99		80.39	0.012876	5.11	25.24	18.13	0.76
1	1481	100-yr	147.00	77.58	80.16		80.57	0.012231	5.17	28.44	19.33	0.75
1	1547		Culvert									
1	1561	2-yr	62.00	78.92	81.15	80.48	81.25	0.009059	2.58	24.07	20.49	0.42
1	1561	10-yr	93.00	78.92	81.84	80.76	81.92	0.005063	2.33	39.96	25.57	0.33
1	1561	25-yr	114.00	78.92	82.26	80.91	82.33	0.003874	2.22	51.37	28.86	0.29
1	1561	50-yr	129.00	78.92	82.54	81.01	82.61	0.003439	2.15	59.99	32.38	0.28
1	1561	100-yr	147.00	78.92	82.87	81.13	82.93	0.002918	2.05	77.06	93.27	0.26
1	1605	2-yr	62.00	79.38	81.50		81.57	0.005932	2.17	28.60	23.16	0.34
1	1605	10-yr	93.00	79.38	82.05		82.13	0.004362	2.19	42.54	26.93	0.31
1	1605	25-yr	114.00	79.38	82.42		82.50	0.003561	2.15	52.97	29.44	0.28
1	1605	50-yr	129.00	79.38	82.69		82.75	0.003148	2.12	60.95	31.65	0.27
1	1605	100-yr	147.00	79.38	82.99		83.05	0.002733	2.07	70.90	34.14	0.25
1	1728	2-yr	49.00	79.38	81.88		81.90	0.001299	1.17	41.72	27.08	0.17
1	1728	10-yr	73.00	79.38	82.39		82.41	0.001253	1.29	56.57	30.99	0.17
1	1728	25-yr	89.00	79.38	82.72		82.74	0.001128	1.33	67.15	33.49	0.16
1	1728	50-yr	102.00	79.38	82.95		82.98	0.001061	1.36	75.28	35.29	0.16
1	1728	100-yr	115.00	79.38	83.23		83.26	0.000957	1.36	85.32	38.06	0.15
1	1881	2-yr	49.00	79.65	82.12		82.17	0.002388	1.73	28.26	20.88	0.26
1	1881	10-yr	73.00	79.65	82.61		82.67	0.002106	1.87	39.13	23.51	0.25
1	1881	25-yr	89.00	79.65	82.92		82.97	0.001929	1.91	46.55	25.20	0.25
1	1881	50-yr	102.00	79.65	83.14		83.20	0.001833	1.95	52.33	26.44	0.24
1	1881	100-yr	115.00	79.65	83.40		83.45	0.001658	1.94	59.26	27.94	0.23
1	1968	2-yr	42.00	79.97	82.34		82.38	0.002534	1.59	26.46	23.62	0.26
1	1968	10-yr	63.00	79.97	82.80		82.85	0.002010	1.65	38.10	26.84	0.24
1	1968	25-yr	77.00	79.97	83.09		83.14	0.001776	1.67	46.19	29.47	0.23
1	1968	50-yr	87.00	79.97	83.31		83.35	0.001610	1.65	52.88	32.53	0.23
1	1968	100-yr	99.00	79.97	83.55		83.59	0.001422	1.63	61.10	36.05	0.21
1	1990	2-yr	42.00	80.02	82.40		82.43	0.001797	1.46	28.82	22.56	0.23
1	1990	10-yr	63.00	80.02	82.85		82.89	0.001671	1.58	39.79	26.01	0.23
1	1990	25-yr	77.00	80.02	83.13		83.17	0.001542	1.62	47.48	28.18	0.22
1	1990	50-yr	87.00	80.02	83.34		83.38	0.001439	1.62	53.69	30.54	0.21
1	1990	100-yr	99.00	80.02	83.58		83.62	0.001300	1.62	61.21	33.88	0.21
1	2062		Culvert									
1	2106	2-yr	42.00	81.22	82.34	82.15	82.48	0.018606	3.03	13.86	21.26	0.66
1	2106	10-yr	63.00	81.22	82.88	82.33	82.97	0.006153	2.35	26.84	26.27	0.41
1	2106	25-yr	77.00	81.22	83.23	82.43	83.30	0.003872	2.11	36.46	29.50	0.33
1	2106	50-yr	87.00	81.22	83.50	82.49	83.55	0.002962	1.94	44.89	33.82	0.30
1	2106	100-yr	99.00	81.22	83.80	82.57	83.85	0.002057	1.77	56.13	39.42	0.25
1	2143	2-yr	36.00	81.41	82.78		82.84	0.005472	1.88	19.10	23.83	0.37
1	2143	10-yr	54.00	81.41	83.10		83.16	0.004470	1.99	27.15	26.79	0.35
1	2143	25-yr	66.00	81.41	83.37		83.43	0.003372	1.89	34.84	29.91	0.31
1	2143	50-yr	75.00	81.41	83.61		83.66	0.002688	1.77	42.38	35.18	0.28
1	2143	100-yr	86.00	81.41	83.88		83.92	0.001918	1.65	53.22	43.57	0.24
1	2278	2-yr	36.00	81.81	83.28		83.31	0.002424	1.45	24.82	24.86	0.26
1	2278	10-yr	54.00	81.81	83.57		83.61	0.002545	1.67	32.37	27.22	0.27
1	2278	25-yr	66.00	81.81	83.77		83.81	0.002439	1.74	37.92	28.97	0.27
1	2278	50-yr	75.00	81.81	83.94		83.99	0.002201	1.74	43.03	30.34	0.26
1	2278	100-yr	86.00	81.81	84.14		84.19	0.001981	1.74	49.40	32.23	0.25
1	2408	2-yr	30.00	82.23	83.61		83.65	0.002950	1.58	18.94	19.12	0.28
1	2408	10-yr	45.00	82.23	83.91		83.96	0.002971	1.81	24.91	20.69	0.29
1	2408	25-yr	55.00	82.23	84.10		84.16	0.002895	1.91	28.87	21.67	0.29
1	2408	50-yr	63.00	82.23	84.25		84.31	0.002805	1.96	32.09	22.45	0.29

G103-46-01 Proposed HEC-RAS Output

HEC-RAS Plan: Proposed River: G103-46-01 Reach: 1 (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
1	2408	100-yr	71.00	82.23	84.42		84.48	0.002576	1.97	36.10	23.61	0.28
1	2530	2-yr	30.00	82.74	84.13		84.20	0.007134	2.13	14.07	17.70	0.42
1	2530	10-yr	45.00	82.74	84.41		84.49	0.006569	2.32	19.40	20.20	0.42
1	2530	25-yr	55.00	82.74	84.58		84.67	0.006209	2.40	22.89	21.65	0.41
1	2530	50-yr	63.00	82.74	84.70		84.80	0.005915	2.45	25.69	22.71	0.41
1	2530	100-yr	71.00	82.74	84.84		84.93	0.005444	2.46	28.86	23.86	0.39



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713.783.7117
TX FIRM NO. 2697

KINGWOOD DRAINAGE STUDY

G103-33-00

1% AEP WSEL PROFILE
IMPROVEMENT OPTION 1

DRAWN BY	CK'D BY
RM	DJ
DRAWING SCALE	
VERT N.T.S. HORIZ N.T.S.	
DATE	
05/1/2020	
SHEET NO. 1 OF 9	

INTERIM REVIEW ONLY

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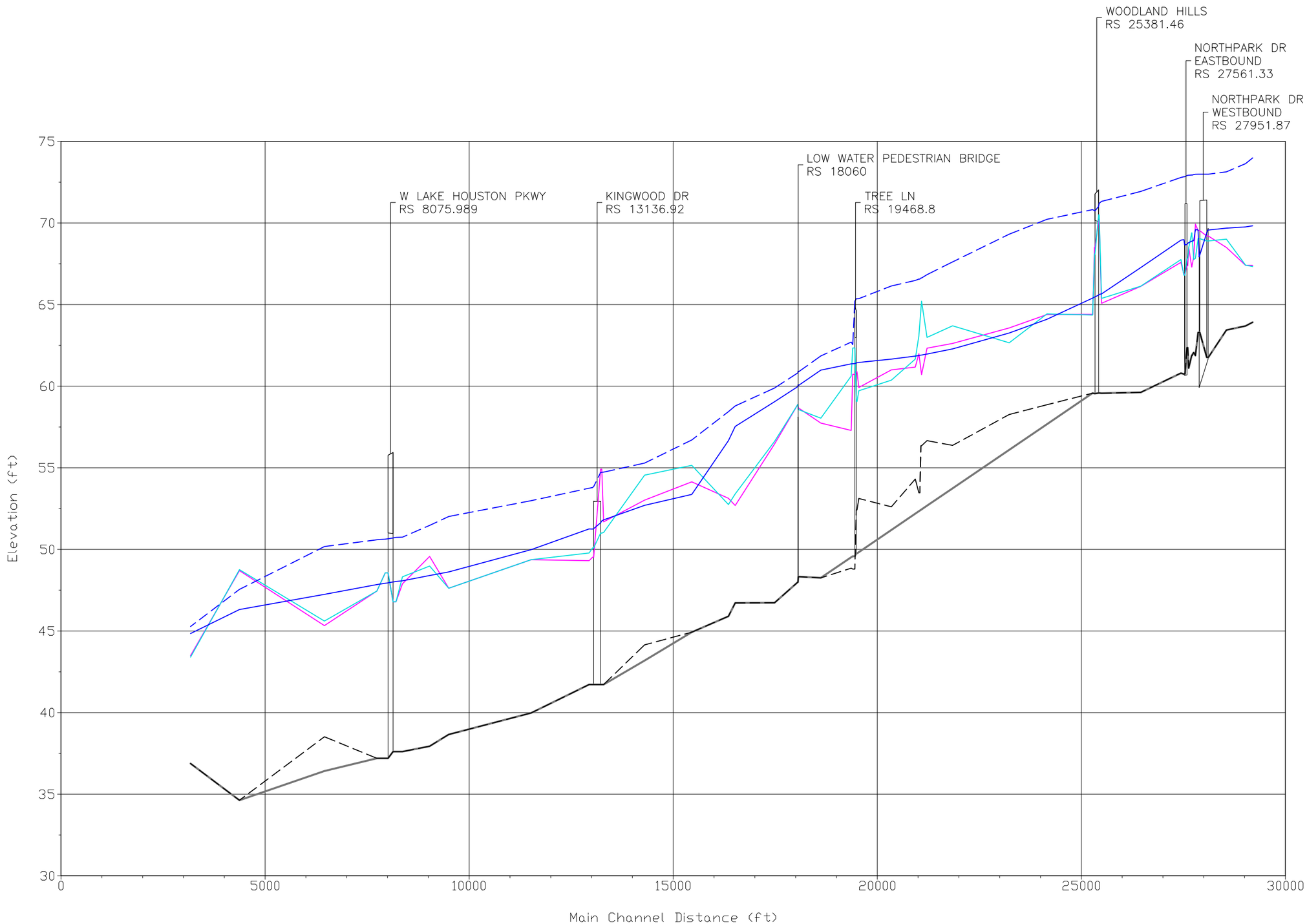
DATE: MAY 2020
CONNOR MCCOLLOCH, P.E.
TX P.E. NO. 120523

DRAFT REVIEW



NEEL-SCHAFFER
Solutions you can build upon
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HOUSTON, TX 77040
713.783.7117
TX FIRM NO. 2697

KINGWOOD DRAINAGE STUDY

G103-33-00

1% AEP WSEL PROFILE
IMPROVEMENT OPTION 2

DRAWN BY	CK'D BY
RM	DJ
DRAWING SCALE	
VERT N.T.S. HORIZ N.T.S.	
DATE	
05/1/2020	
SHEET NO. 2 OF 9	

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DATE: MAY 2020
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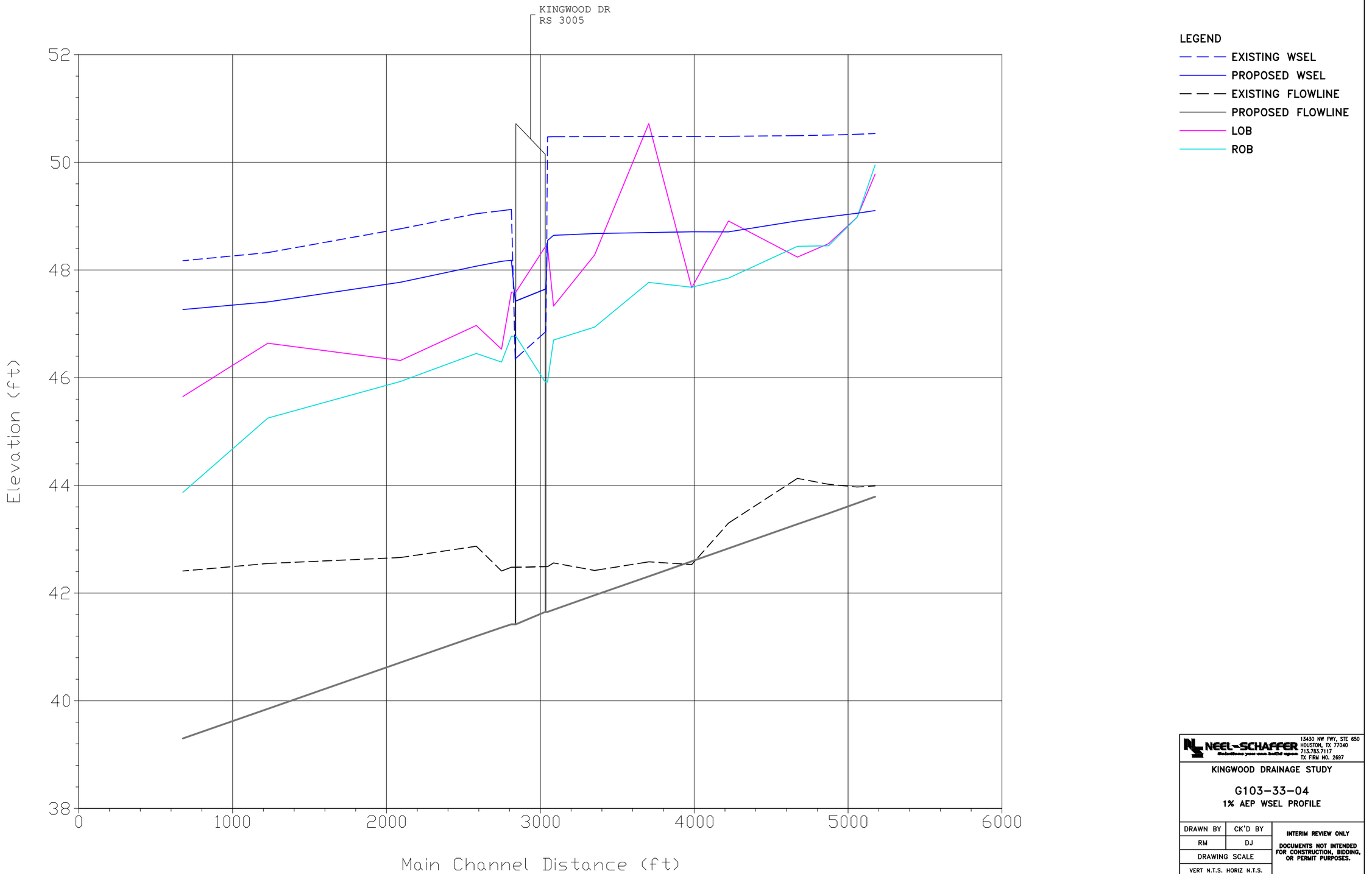
TX P.E. NO. 120523

DRAFT REVIEW



NEEL-SCHAFFER
Solutions you can build upon
13430 NW FWY, STE 650
HOUSTON, TX 77040
713.783.7117
TX FIRM NO. 2697

KINGWOOD DRAINAGE STUDY

G103-33-04

1% AEP WSEL PROFILE

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RM	DJ
DRAWING SCALE	
VERT N.T.S. HORIZ N.T.S.	
DATE	
05/1/2020	
SHEET NO. 3 OF 9	

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DATE: MAY 2020
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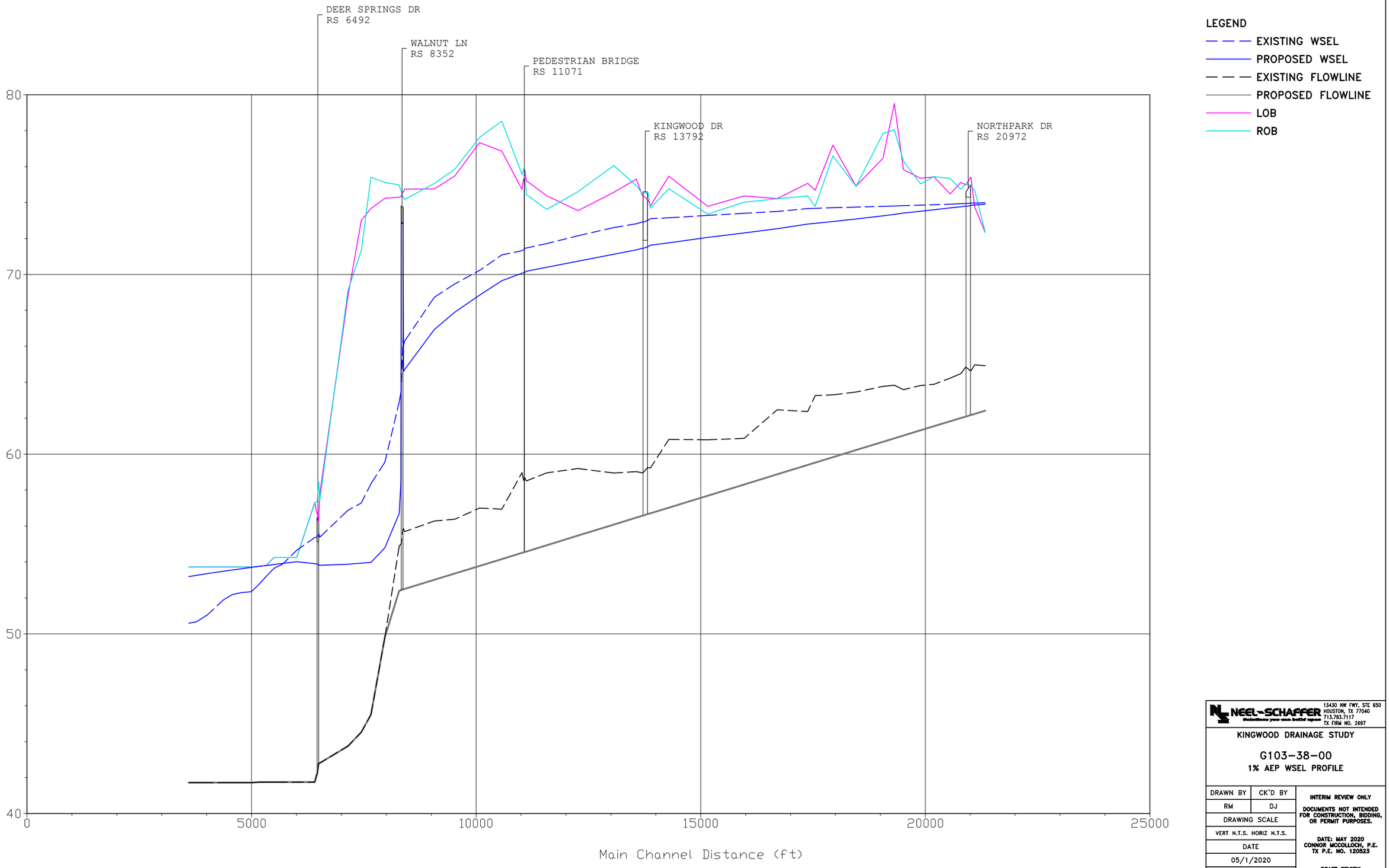
TX P.E. NO. 120523

DRAFT REVIEW



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TX FIRM NO. 2697

KINGWOOD DRAINAGE STUDY

G103-38-00
1% AEP WSEL PROFILE

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RM	DJ
DRAWING SCALE	
VERT N.T.S. HORIZ N.T.S.	
DATE	
05/1/2020	
SHEET NO. 4 OF 9	

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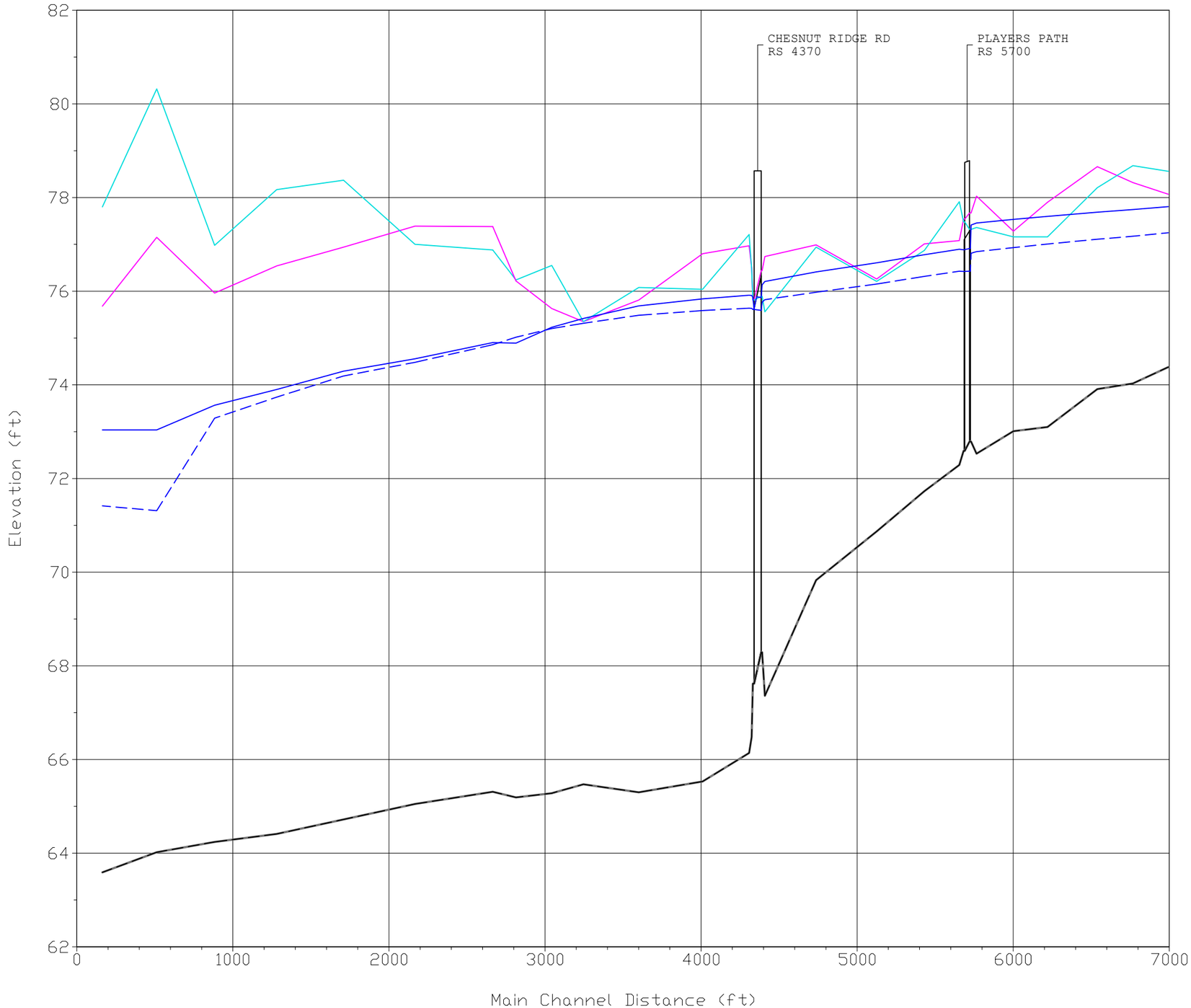
DATE: MAY 2020
CONNOR MCCOLLOCH, P.E.
TX P.E. NO. 120523

DRAFT REVIEW



LEGEND

- EXISTING WSEL
- PROPOSED WSEL
- EXISTING FLOWLINE
- PROPOSED FLOWLINE
- LOB
- ROB

NEEL-SCHAFFER
Maximize your own battle space
13430 NW FWY, STE 650
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KINGWOOD DRAINAGE STUDY

G103-38-01

1% AEP WSEL PROFILE

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RM	DJ
DRAWING SCALE	
VERT N.T.S. HORIZ N.T.S.	
DATE	
05/1/2020	
SHEET NO. 5 OF 9	

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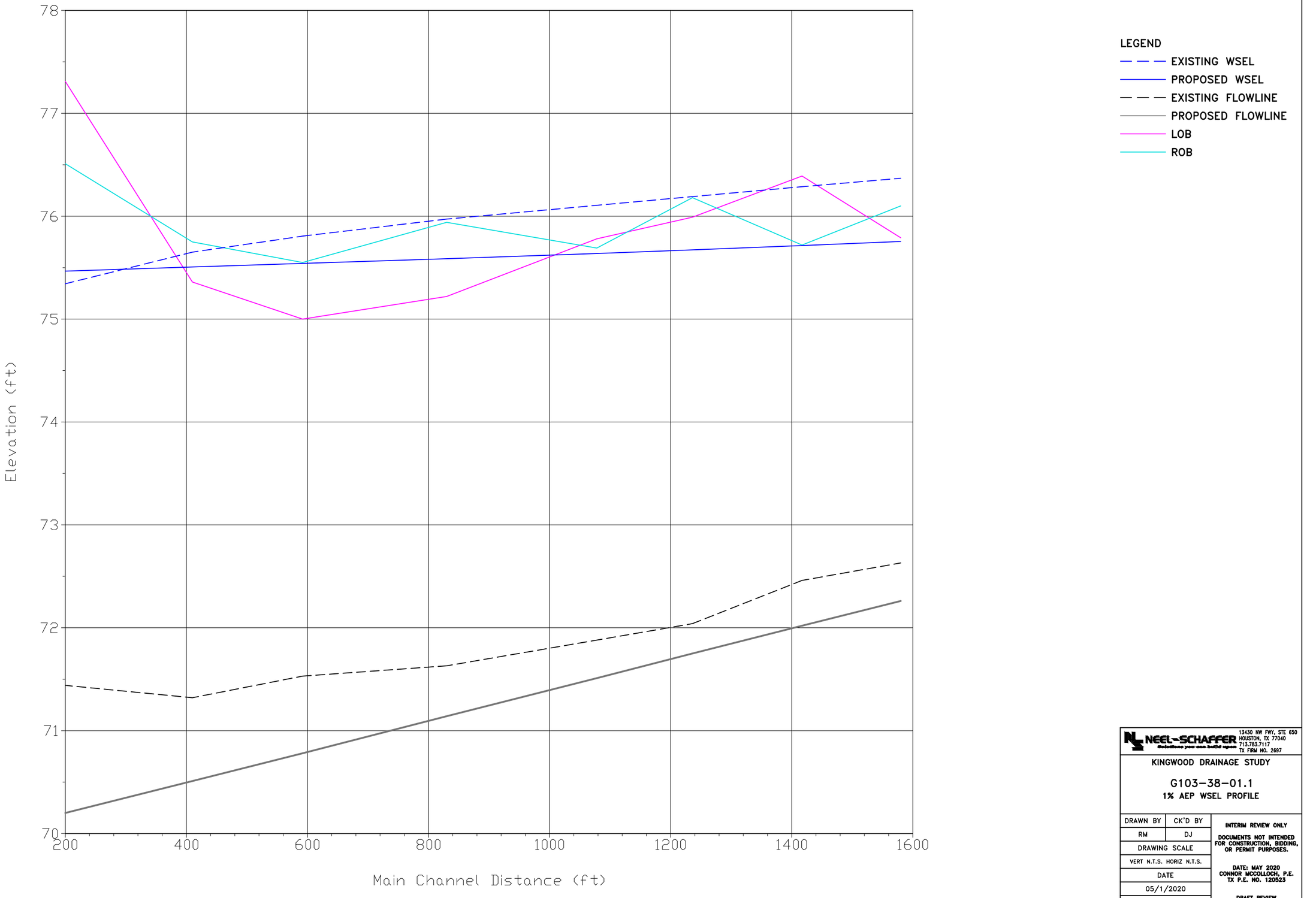
DATE: MAY 2020
CONNOR MCCOLLOCH, P.E.
TX P.E. NO. 120523

DRAFT REVIEW



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13430 NW FWY, STE 650
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TX FIRM NO. 2697

KINGWOOD DRAINAGE STUDY

G103-38-01.1

1% AEP WSEL PROFILE

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RM	DJ
DRAWING SCALE	
VERT N.T.S. HORIZ N.T.S.	
DATE	
05/1/2020	
SHEET NO. 6 OF 9	

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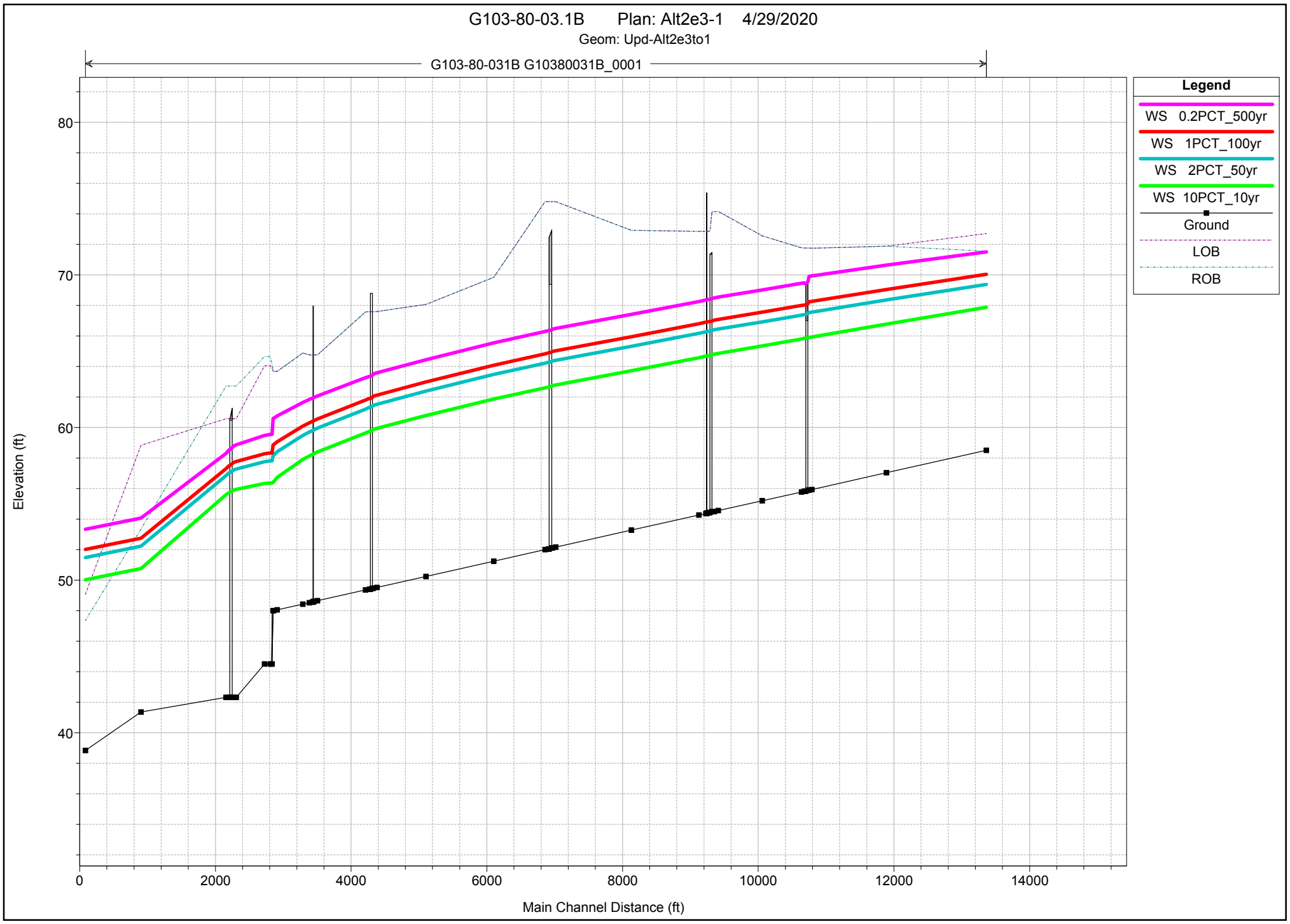
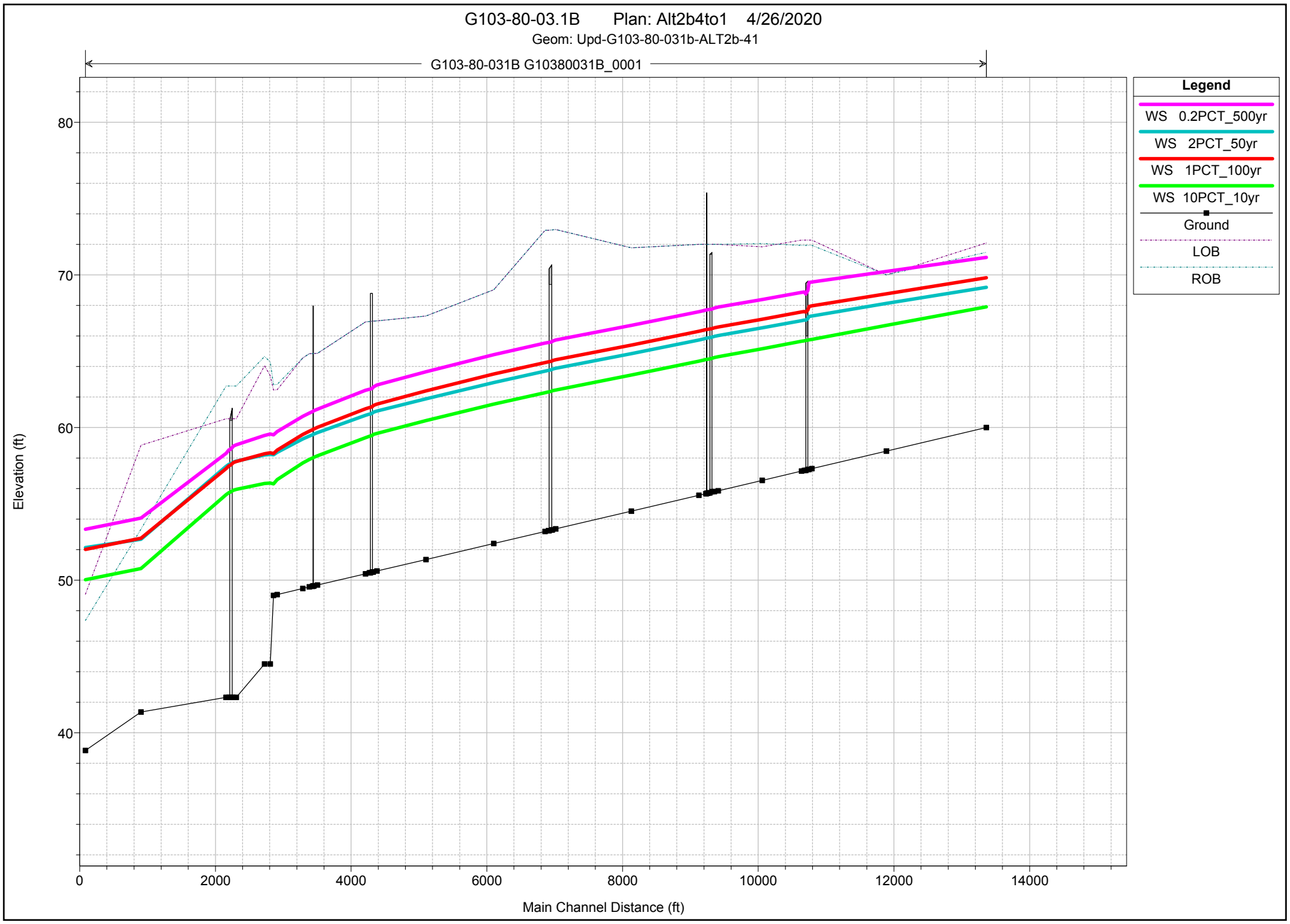
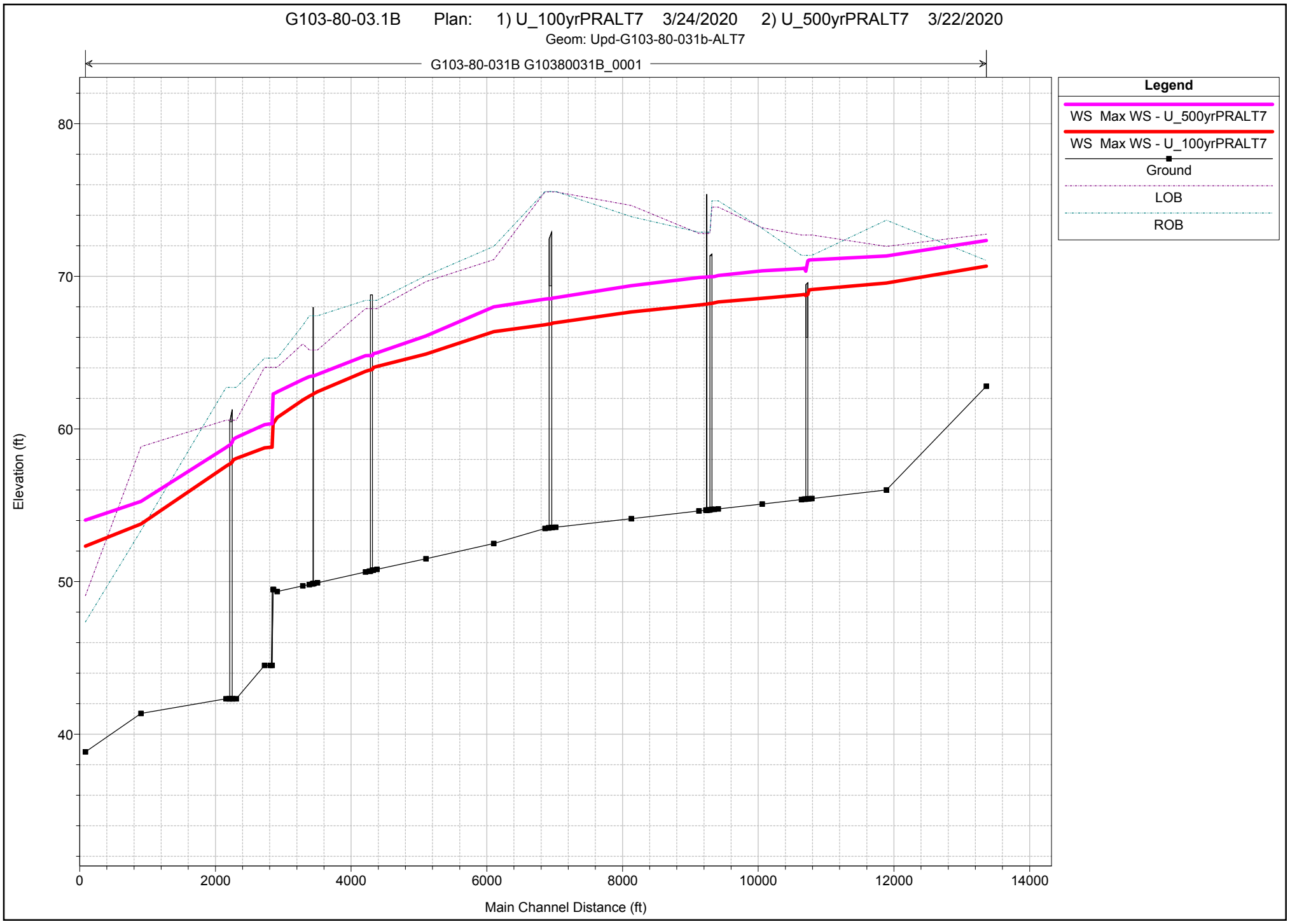
DATE: MAY 2020
CONNOR MCCOLLOCH, P.E.
TX P.E. NO. 120523

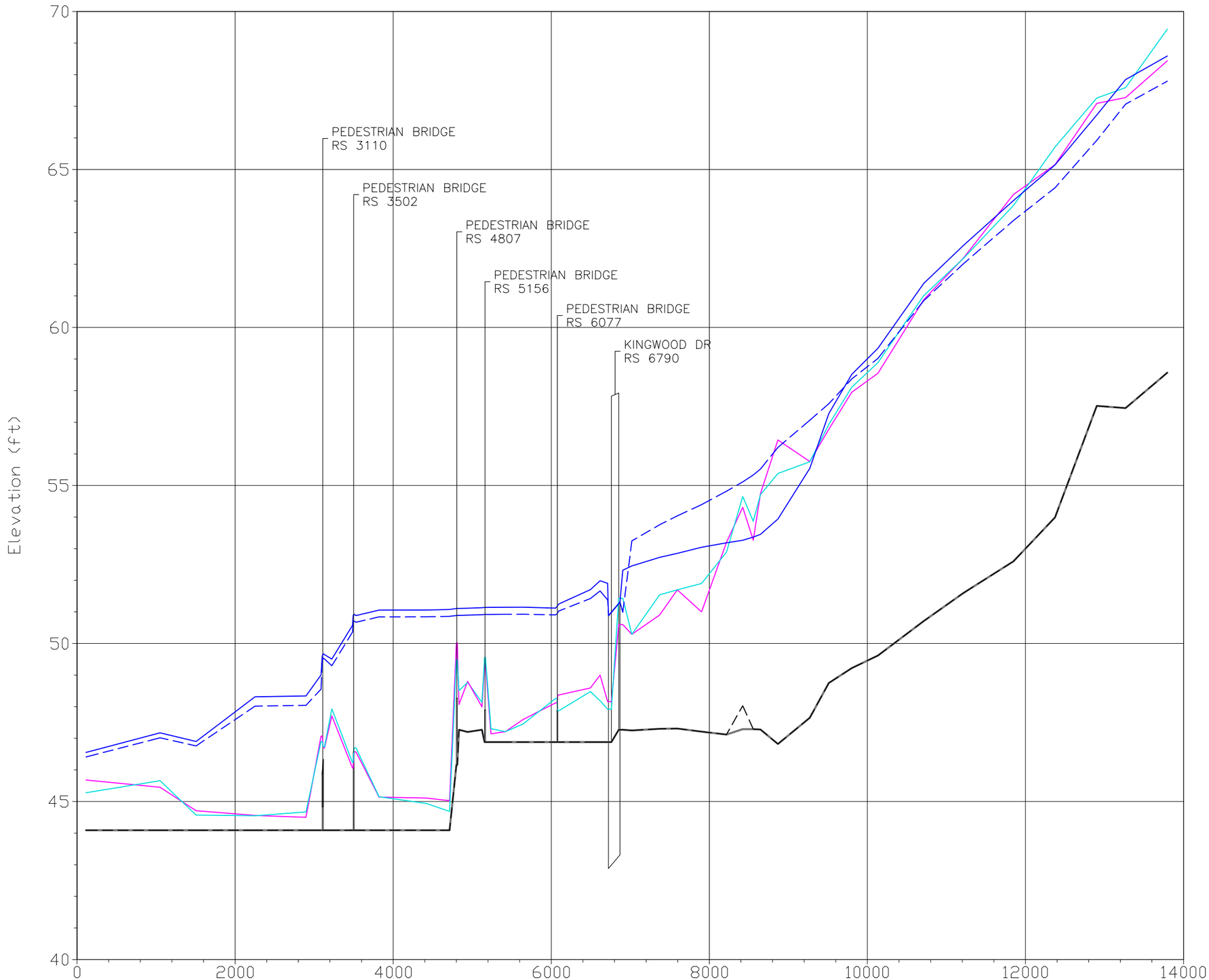
DRAFT REVIEW


G103-80-03.1B Plan: Alt2e3-1 4/29/2020
Geom: Upd-Alt2e3to1
G103-80-031B G10380031B_0001
Legend
WS 0.2PCT_500yr
WS 1PCT_100yr
WS 2PCT_50yr
WS 10PCT_10yr
Ground
LOB
ROB
Elevation (ft)
80
70
60
50
40
0
2000
4000
6000
8000
10000
12000
14000
Main Channel Distance (ft)
1 in Horiz. = 1800 ft 1 in Vert. = 8 ft



1 in Horiz. = 1800 ft 1 in Vert. = 8 ft


G103-80-03.1B Plan: 1) U_100yrPRALT7 3/24/2020 2) U_500yrPRALT7 3/22/2020
Geom: Upd-G103-80-031b-ALT7
G103-80-031B G10380031B_0001
Legend
WS Max WS - U_500yrPRALT7
WS Max WS - U_100yrPRALT7
Ground
LOB
ROB
Elevation (ft)
80
70
60
50
40
0
2000
4000
6000
8000
10000
12000
14000
Main Channel Distance (ft)
1 in Horiz. = 1800 ft 1 in Vert. = 8 ft



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KINGWOOD DRAINAGE STUDY

G103-36-00

1% AEP WSEL PROFILE

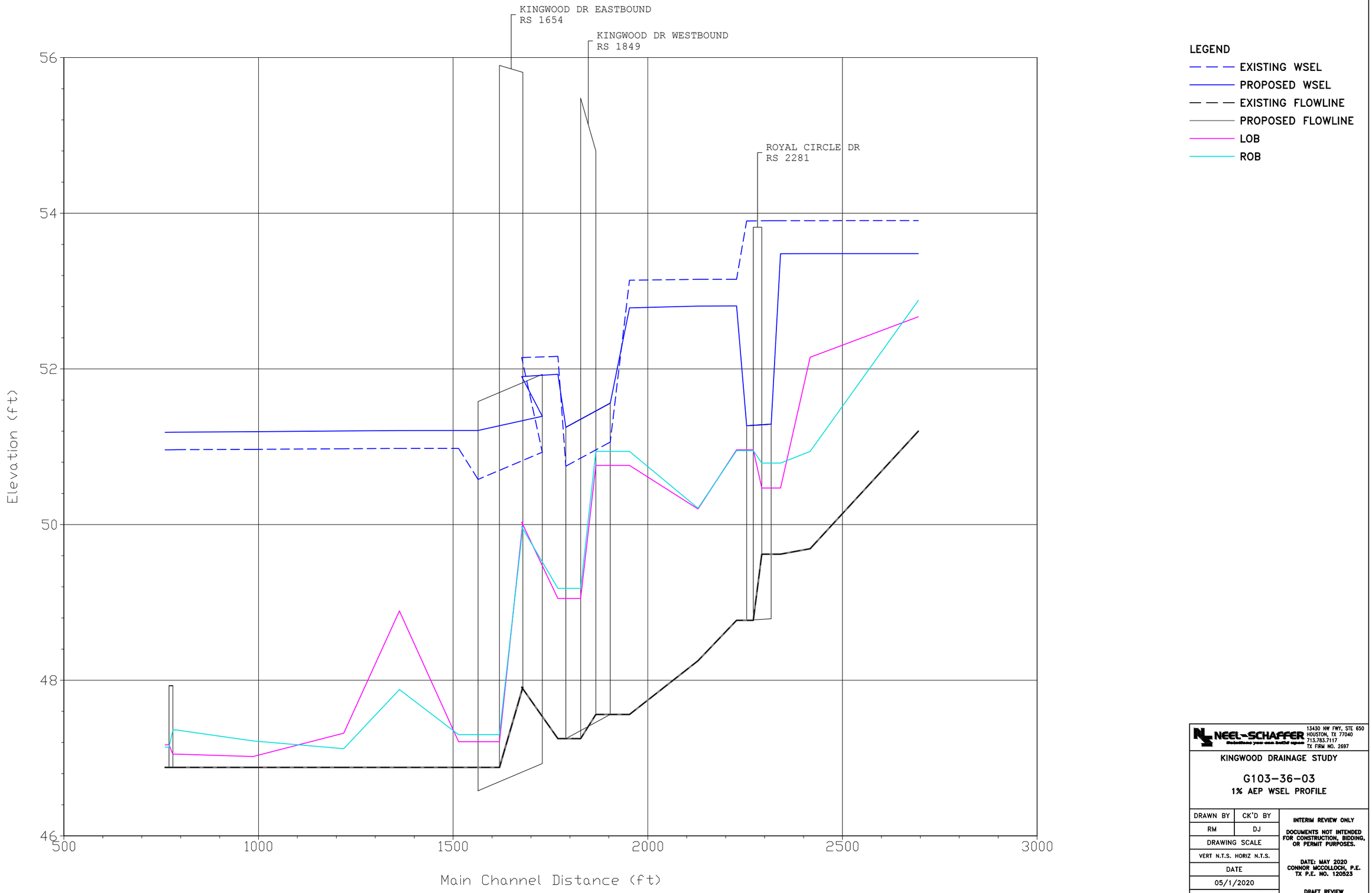
DRAWN BY	CK'D BY
RM	DJ
DRAWING SCALE	
VERT N.T.S. HORIZ N.T.S.	
DATE	
05/1/2020	
SHEET NO. 7 OF 9	

INTERIM REVIEW ONLY

DOCUMENTS NOT INTENDED FOR CONSTRUCTION, BIDDING, OR PERMIT PURPOSES.

DATE: MAY 2020
CONNOR MCCOLLOCH, P.E.
TX P.E. NO. 120523

DRAFT REVIEW



NEEL-SCHAFFER
Solutions you can build upon
13430 NW FWY, STE 650
HOUSTON, TX 77040
713.783.7117
TX FIRM NO. 2697

KINGWOOD DRAINAGE STUDY

G103-36-03

1% AEP WSEL PROFILE

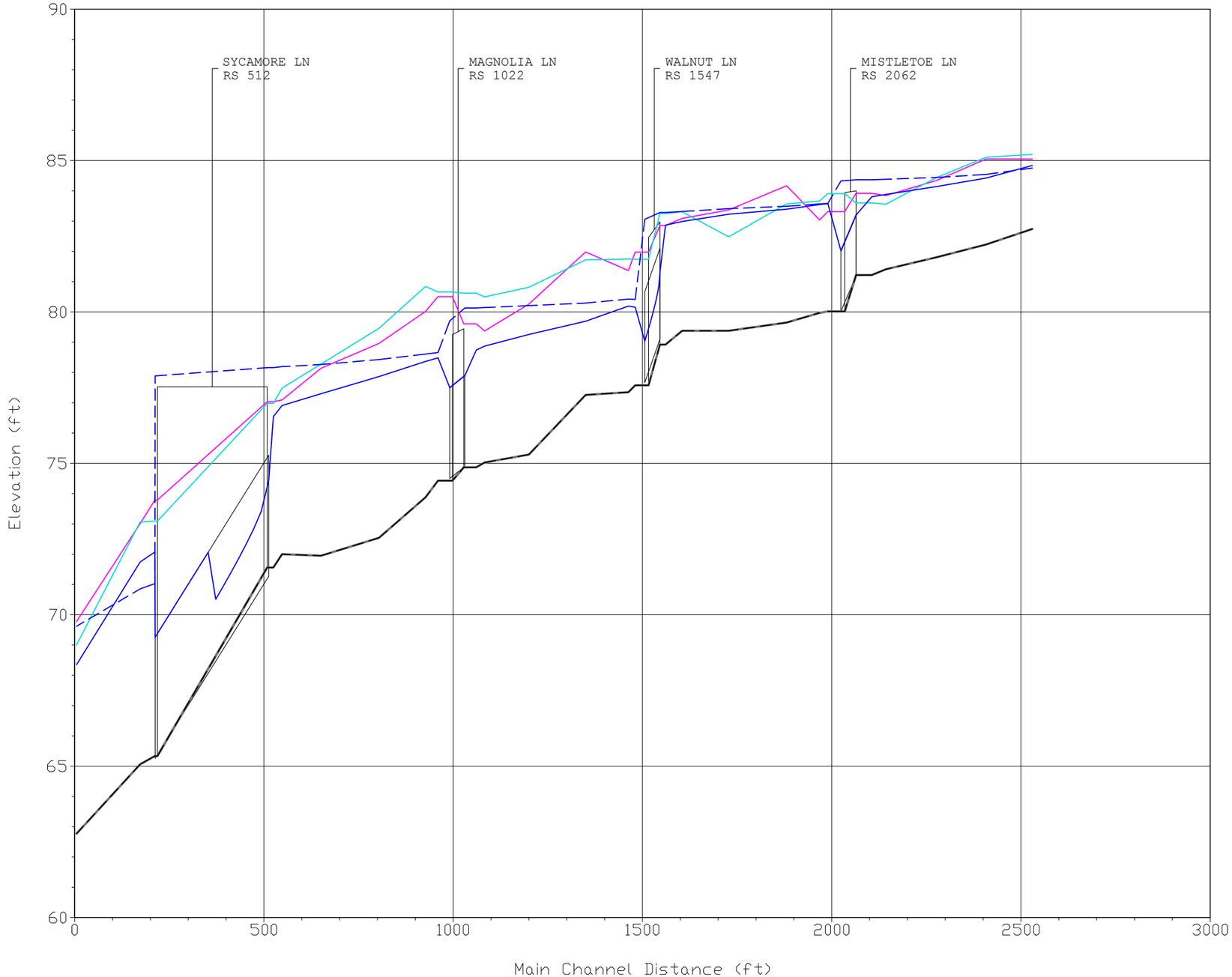
DRAWN BY	CK'D BY
RM	DJ
DRAWING SCALE	
VERT N.T.S. HORIZ N.T.S.	
DATE	
05/1/2020	
SHEET NO. 8 OF 9	

INTERIM REVIEW ONLY

DOCUMENTS NOT INTENDED FOR CONSTRUCTION, BIDDING, OR PERMIT PURPOSES.

DATE: MAY 2020
CONNOR MCCOLLOCH, P.E.
TX P.E. NO. 120523

DRAFT REVIEW



LEGEND

- EXISTING WSEL
- PROPOSED WSEL
- EXISTING FLOWLINE
- PROPOSED FLOWLINE
- LOB
- ROB

NEEL-SCHAFFER
Maximize your one build space
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KINGWOOD DRAINAGE STUDY

G103-46-01

1% AEP WSEL PROFILE

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RM	DJ
DRAWING SCALE	
VERT N.T.S. HORIZ N.T.S.	
DATE	
05/1/2020	
SHEET NO. 9 OF 9	

INTERIM REVIEW ONLY

DOCUMENTS NOT INTENDED FOR CONSTRUCTION, BIDDING, OR PERMIT PURPOSES.

DATE: MAY 2020
CONNOR MCCOLLOCH, P.E.
TX P.E. NO. 120523

DRAFT REVIEW

APPENDIX F

PEAK FLOW IMPACT AND MITIGATION

DATA ENTRY TO BE ENTERED IN **UNSHADED CELLS ONLY**

Watershed (G100-00-00) Proposed Channel Option 1

Subwatershed	Drainage Area (acres)	Drainage Area (sq.mi.)	Channel Improvements (Total Lengths or Percent)			Weighted Conveyance BDF	Land Classification Areas												Composite BDF	Tc (Unadjusted)	R (Unadjusted)	Channel Slope(ft./mi)	Overland Slope(ft./mi.)	Slope Adj	Watershed Detention Volume not Modeled Directly (ac-ft)	Detention Rate	Detention Adj	Percent Ponding	Percent Impervious 2018	TC"	R"	Ponding Adjustments for Storage Values (R")						
							Undeveloped		Open Space		Developed Roadside Ditch		Developed Storm Sewer Pre 1984		Developed Storm Sewer Post 1984																							
			Natural Channel	Improved	Concrete		Area (ac)	BDF	Area (ac)	BDF	Area (ac)	BDF	Area (ac)	BDF	Area (ac)	BDF	AREA CHECK				S	So	K_a		DR	C_f	DPP		(Slope and Detention Adjusted)	(Slope and Detention Adjusted)	20% (5-Yr)	10% (100-Yr)	4% (25-Yr)	2% (50-Yr)	1% (100-Yr)	0.2% (500-Yr)
G1033300A	291.2	0.4550363	0	4336	0	3.00	84.52	0.0	14.61	1.0	10.84	1.5	75.36	3.0	105.90	6.0	0.0		6.1	1.20	3.01	12.00	8.94	107.33	0.77	38.60	84.83	1.14	0	28.28	1.04	2.62	2.62	2.62	2.62	2.62	2.62	2.62
G1033300B	167.6	0.2619095	1188	2191	0	1.95	39.13	0.0	5.10	1.0	0.21	1.5	114.91	3.0	8.28	6.0	0.0		4.3	1.11	2.98	2.46	15.36	37.71	0.94	0.00	0.00	1.00	0	34.09	1.03	2.78	2.78	2.78	2.78	2.78	2.78	2.78
G1033300C	190.0	0.2969142	2490	42	0	0.05	33.75	0.0	0.05	1.0	0.00	1.5	156.22	3.0	0.00	6.0	0.0		2.5	1.39	3.86	3.62	15.59	56.49	0.87	0.00	0.00	1.00	0	34.91	1.21	3.36	3.36	3.36	3.36	3.36	3.36	3.36
G1033300D	207.4	0.3240076	2282	0	0	0.00	29.38	0.0	0.00	1.0	0.00	1.5	177.98	3.0	0.00	6.0	0.0		2.6	1.43	3.97	4.63	10.89	50.40	0.89	0.00	0.00	1.00	0	33.72	1.27	3.52	3.52	3.52	3.52	3.52	3.52	3.52
G1033300E	135.4	0.2115922	3047	30	0	0.03	38.88	0.0	0.00	1.0	40.05	1.5	56.49	3.0	0.00	6.0	0.0		1.7	1.30	3.72	2.23	24.43	54.48	0.88	0.00	0.00	1.00	0	24.07	1.14	3.25	3.25	3.25	3.25	3.25	3.25	3.25
G1033300F	161.0	0.2514920	0	3745	0	3.00	49.63	0.0	14.57	1.0	24.04	1.5	72.71	3.0	0.00	6.0	0.0		4.7	1.05	2.82	4.84	22.38	108.37	0.76	0.00	0.00	1.00	0	27.91	0.80	2.15	2.15	2.15	2.15	2.15	2.15	2.15
G1033300G	98.4	0.1537563	0	3629	0	3.00	1.63	0.0	61.85	1.0	0.00	1.5	0.02	3.0	34.91	6.0	0.0		5.8	0.77	2.05	15.46	7.12	110.13	0.76	0.00	0.00	1.00	0	34.64	0.59	1.56	1.56	1.56	1.56	1.56	1.56	1.56
G1033300H	192.2	0.3003042	0	4603	0	3.00	8.76	0.0	57.50	1.0	0.00	1.5	0.02	3.0	125.91	6.0	0.0		7.2	0.90	2.24	0.24	11.97	2.91	1.00	0.00	0.00	1.00	0	44.05	0.90	2.24	2.24	2.24	2.24	2.24	2.24	2.24
G1033300I	204.0	0.3186844	11	4375	0	2.99	0.59	0.0	112.92	1.0	0.00	1.5	29.87	3.0	60.58	6.0	0.0		5.8	1.05	2.71	2.64	11.65	30.75	0.97	0.00	0.00	1.00	0	27.78	1.02	2.63	2.63	2.63	2.63	2.63	2.63	2.63
G1033301A	191.6	0.2993163	0	0	4460	6.00	8.82	0.0	0.13	1.0	0.00	1.5	182.61	3.0	0.00	6.0	0.0		8.9	0.79	1.85	5.39	9.25	49.88	0.89	0.00	0.00	1.00	0	41.47	0.70	1.64	1.64	1.64	1.64	1.64	1.64	1.64
G1033301B	182.5	0.2851485	2.49	1705	35	3.06	13.19	0.0	6.76	1.0	0.00	1.5	147.95	3.0	14.59	6.0	0.0		6.0	0.98	2.53	5.36	6.50	34.88	0.95	0.00	0.00	1.00	0	40.59	0.93	2.40	2.40	2.40	2.40	2.40	2.40	2.40
G1033301C	264.9	0.4139232	0	1913	0	3.00	29.22	0.0	12.01	1.0	0.00	1.5	216.11	3.0	7.57	6.0	0.0		5.7	1.19	3.04	5.64	8.61	48.53	0.89	0.00	0.00	1.00	0	33.20	1.06	2.72	2.72	2.72	2.72	2.72	2.72	2.72
G1033301D	158.1	0.2470307	0	3142	0	3.00	33.46	0.0	13.75	1.0	0.00	1.5	100.16	3.0	10.73	6.0	0.0		5.4	0.98	2.57	6.89	28.73	197.78	0.67	0.00	0.00	1.00	0	36.65	0.65	1.71	1.71	1.71	1.71	1.71	1.71	1.71
G1033302A	242.4	0.3788040	0	1042	0	3.00	3.99	0.0	3.46	1.0	0.00	1.5	234.99	3.0	0.00	6.0	0.0		5.9	1.12	2.85	5.98	9.83	58.77	0.86	0.00	0.00	1.00	0	43.43	0.97	2.46	2.46	2.46	2.46	2.46	2.46	2.46
G1033302B	68.3	0.1066992	0	410	0	3.00	4.39	0.0	0.78	1.0	0.00	1.5	63.12	3.0	0.00	6.0	0.0		5.8	0.66	1.78	10.18	10.63	108.25	0.76	0.00	0.00	1.00	0	35.29	0.50	1.36	1.36	1.36	1.36	1.36	1.36	1.36
G1033304A	110.1	0.1719938	0	213	2756	5.78	4.85	0.0	0.78	1.0	0.00	1.5	62.85	3.0	41.60	6.0	0.0		9.8	0.58	1.34	4.17	20.30	84.59	0.80	0.00	0.00	1.00	0	59.23	0.46	1.08	1.08	1.08	1.08	1.08	1.08	1.08
G1033304B	149.3	0.2333139	0	1935	0	3.00	26.12	0.0	5.77	1.0	0.00	1.5	85.18	3.0	32.25	6.0	0.0		6.0	0.90	2.33	5.06	31.13	157.45	0.70	8.90	38.15	1.01	0	38.49	0.64	1.65	1.65	1.65	1.65	1.65	1.65	1.65
G1033304C	192.3	0.3004744	0	361	1141	5.28	19.64	0.0	1.17	1.0	0.00	1.5	136.67	3.0	34.82	6.0	0.0		8.5	0.81	1.93	7.39	19.44	143.66	0.72	12.30	40.94	1.01	0	39.91	0.59	1.40	1.40	1.40	1.40	1.40	1.40	1.40
G1033304D	95.6	0.1493227	0	2569	0	3.00	47.05	0.0	8.32	1.0	0.00	1.5	14.02	3.0	26.17	6.0	0.0		5.2	0.80	2.17	0.72	22.35	16.07	1.00	12.60	84.38	1.13	0	31.33	0.91	2.46	2.46	2.46	2.46	2.46	2.46	2.46
G1033304E	3061.9	4.7841636	0	24314	998	3.12	327.99	0.0	348.83	1.0	1963.39	1.5	0.00	3.0	421.65	6.0	0.0		5.0	3.61	8.42	6.15	9.85	60.54	0.86	141.80	29.64	1.00	0	20.44	3.09	7.21	7.21	7.21	7.21	7.21	7.21	7.21
G1033304F	2987.9	4.6686162	3811	20424	0	2.53	652.55	0.0	249.63	1.0	1376.83	1.5	0.00	3.0	708.91	6.0	0.0		4.7	3.66	8.63	5.10	11.66	59.41	0.86	576.20	123.42	1.34	0	35.08	4.23	9.96	9.96	9.96	9.96	9.96	9.96	9.96
G1033600A	238.4	0.3725292	0	0	1948	6.00	5.18	0.0	0.00	1.0	6.40	1.5	226.84	3.0	0.00	6.0	0.0		8.9	0.87	2.00	4.37	5.55	24.23	1.00	0.00	0.00	1.00	0	35.62	0.87	2.00	2.00	2.00	2.00	2.00	2.00	2.00
G1033600B	285.9	0.4466661	4942	2758	26	1.09	42.30	0.0	2.59	1.0	94.82	1.5	146.16	3.0	0.00	6.0	0.0		3.1	1.55	4.21	6.57	19.21	126.24	0.74	0.00	0.00	1.00	0	28.23	1.15	3.11	3.11	3.11	3.11	3.11	3.11	3.11
G1033600C	151.2	0.2362303	0	1306	0	3.00	69.65	0.0	53.03	1.0	0.00	1.5	24.41	3.0	4.10	6.0	0.0		4.0	1.09	2.97	3.65	16.27	59.37	0.86	0.00	0.00	1.00	0	15.60	0.94	2.56	2.56	2.56	2.56	2.56	2.56	2.56
G1033600D	126.8	0.1981772	0	2816	0	3.00	6.03	0.0	56.27	1.0	0.00	1.5	14.43	3.0	50.10	6.0	0.0		6.2	0.83	2.16	N/A	16.64	16.64	1.00	0.00	0.00	1.00	0	42.32	0.83	2.16	2.16	2.16	2.16	2.16	2.16	2.16
G1033600E	125.4	0.1959770	0	1856	0	3.00	8.79	0.0	116.64	1.0	0.00	1.5	0.00	3.0	0.00	6.0	0.0		3.9	1.02	2.79	N/A	19.41	19.41	1.00	50.20	256.15	2.73	0	20.98	2.77	7.60	7.60	7.60	7.60	7.60	7.60	7.60
G1033601A	77.9	0.1217956	2378	1652	0	1.23	12.83	0.0	15.64	1.0	38.54	1.5	8.84	3.0	2.11	6.0	0.0		2.7	0.94	2.69	6.29	19.96	125.59	0.74	0.00	0.00	1.00	0	19.41	0.69	1.99	1.99	1.99	1.99	1.99	1.99	1.99
G10336021A	105.4	0.1646499	0	2011	0	3.00	0.00	0.0	0.80	1.0	13.45	1.5	91.12	3.0	0.00	6.0	0.0		5.8	0.79	2.10	9.91	25.26	250.30	0.63	0.00	0.00	1.00	0	22.65	0.50	1.32	1.32	1.32	1.32	1.32	1.32	1.32
G1033602A	206.8	0.3230704	0	2190	1345	4.14	53.10	0.0	5.70	1.0	0.00	1.5	147.96	3.0	0.00	6.0	0.0		6.3	1.01	2.56	8.88	26.69	237.07	0.64	0.00	0.00	1.00	0	26.77	0.64	1.63	1.63	1.63	1.63	1.63	1.63	1.63
G1033602B	84.0	0.1312987	0	3805	0	3.00	4.76	0.0	51.03	1.0	0.00	1.5	28.24	3.0	0.00	6.0	0.0		4.6	0.80	2.21	N/A	26.44	26.44	0.99	0.00	0.00	1.00	0	50.99	0.80	2.19	2.19	2.19	2.19	2.19	2.19	2.19
G1033603A	52.8	0.0824403	0	1438	0	3.00	0.00	0.0	2.88	1.0	28.89	1.5	21.00	3.0	0.00	6.0	0.0		5.1	0.63	1.75	N/A	21.84	21.84	1.00	0.00	0.00	1.00	0	22.35	0.63	1.75	1.75	1.75	1.75	1.75	1.75	1.75
G1033800A	98.0	0.1531545	0	5743	0	3.00	0.21	0.0	1.46	1.0	94.47	1.5	0.78	3.0	1.10	6.0	0.0		4.6	0.86	2.36	4.41	14.78	65.13	0.85	0.90	5.88	1.00	0	42.97	0.73	2.00	2.00	2.00	2.00	2.00	2.00	2.00
G1033800B	94.6	0.1478170	0	3376	0	3.00	3.85	0.0	31.04	1.0	10.81	1.5	48.91	3.0	0.00	6.0	0.0		5.1	0.81	2.20	1.83	10.96	20.03	1.00	0.00	0.00	1.00	0	28.97	0.81	2.20	2.20	2.20	2.20	2.20	2.20	2.20
G1033800C	110.1	0.1607304	0	7046	0	3.00	3.47	0.0	23.25	1.0	29.70	1.5	0.00	3.0	353.64	6.0	0.0		8.3	1.15	2.63	4.92	9.08	44.53	0.91	90.40	141.09	1.46	0	52.46	1.52	3.50	3.50	3.50	3.50	3.50	3.50	3.50
G1033800D	265.0	0.4140261	0	3319	0	3.00	1.13	0.0	17.19	1.0	33.77	1.5	152.54	3.0	60.34	6.0	0.0		6.3	1.12	2.81	0.31	4.40	1.35	1.00	25.60	61.83	1.06	0	40.29	1.18	2.96	2.96	2.96	2.96	2.96	2.96	2.96
G1033800E	280.8	0.4387684	0	3417	104	3.09	1.84	0.0	17.03	1.0	0.00	1.5	146.30	3.0	115.64	6.0	0.0		7.2	1.07	2.60	1.22	4.08	4.99	1.00	2.40	5.47	1.00	0	41.65	1.07	2.60	2.60	2.60	2.60	2.60	2.60	2.60
G1033800F	398.0	0.6218118	0	6595	1966	3.69	52.18	0.0	74.68	1.0	136.04	1.5	75.13	3.0	59.92	6.0	0.0		5.9	1.39	3.48	6.86	30.49	209.28	0.66	0.00	0.00	1.00	0	20.68	0.92	2.29	2.29	2.29	2.29	2.29	2.29	2.29
G1033800G	349.1	0.5392756	0	3271	0	3.00	102.63	0.0	123.76	1.0	6.88	1.5	36.20	3.0	75.68	6.0	0.0		5.0	1.41	3.63	N/A	21.48	21.48	1.00	88.40	163.92	1.65	0	22.77	2.33	5.99	5.99	5.99	5.99	5.99	5.99	5.99
G10338011A	51.9	0.0811129	0	1569	0	3.00	0.00	0.0	1.41	1.0	48.16	1.5	0.00	3.0	2.34	6.0	0.0		4.7	0.65	1.82	3.28	5.33	17.49	1.00	0.00	0.00	1.00	0	21.24	0.65	1.82	1.82	1.82	1.82	1.82	1.82	1.82
G1033801A	274.6	0.4290893	0	2692	1746	4.18	3.33	0.0	49.54	1.0	221.55	1.5	0.20	3.0	0.00	6.0	0.0		5.6	1.22	3.11	7.07	7.93	56.11	0.87	0.00	0.00	1.00	0	25.28	1.06	2.71	2.71	2.71	2.71	2.71	2.71	2.71
G1033801B	65.7	0.1026927	0	0	2520	6.00	0.00	0.0	2.33	1.0	63.29	1.5	0.00	3.0	0.10	6.0	0.0		7.5	0.56	1.43	3.47	19.26	66.82	0.84	0.00	0.00	1.00	0	23.87	0.47	1.21	1.21	1.21	1.21	1.21	1.21	1.21
G1033802A	233.6	0.3649300	0	345	3559	5.74	10.44	0.0	4.44	1.0	8.58	1.5	118.20	3.0	91.90	6.0	0.0		9.7	0.81	1.81	4.35	4.50	19.56	1.00	3.50	9.59	1.00	0	50.56	0.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81
G1033802B	117.7	0.1839737	0	2437	965	3.85	0.00	0.0	10.10	1.0	21.32	1.5	86.31	3.0	0.01	6.0	0.0		6.4	0.79	2.04	9.53	5.52	52.56	0.88	0.00	0.00	1.00	0	52.85	0.69	1.80	1.80	1.80	1.80	1.80	1.80	1.80
G1033900A	69.6	0.1086969	409	0	0	0.00	0.00	0.0	0.00	1.0	69.53	1.5	0.00	3.0	0.04	6.0	0.0		1.5	1.01	2.95	17.36	17.38	301.73	0.60	0.00	0.00	1.00	0	24.36	0.60	1.76	1.76	1.76	1.76	1.76	1.76	1.76
G1033900B	51.0	0.0797092	2203	0	0	0.00	0.00	0.0	4.02	1.0	46.99	1.5	0.00	3.0	0.00	6.0	0.0		1.5	0.89	2.63	48.51	46.76	2258.39	0.27	0.00	0.00	1.00	0	16.59	0.24	0.71	0.71	0.71	0.71	0.71	0.71	0.71
G1033900C	98.9	0.1544588	3135	0	0	0.00	42.71	0.0	23.16	1.0	32.99	1.5	0.00	3.0	0.00	6.0	0.0		0.7	1.26	3.69	N/A	66.80	66.80	0.84	0.00	0.00	1.00	0	20.89	1.06	3.11	3.11	3.11	3.11	3.11	3.11	3.11
G1034500A	250.3	0.3911306	0	1793	0	3.00	98.65	0.0	24.47	1.0	69.92	1.5	0.00	3.0	57.28	6.0	0.0		4.9	1.25	3.25	13.31	43.36	577.29	0.49	51.80	132.44	1.40	0	26.33	0.86	2.25	2.25	2.25	2.25	2.25	2.25	2.25
G1034600A	29.1	0.0454531	1	0	0	0.00	0.00	0.0	2.48	1.0	26.61	1.5	0.00	3.0	0.00	6.0	0.0		1.5	0.70	2.12	10.04	66.91	672.06	0.47	0.00	0.00	1.00	0	17.50	0.33	0.99	0.99	0.99	0.99	0.99	0.99	0.99
G1034600B	6.4	0.0099375	0	1011	0	3.00	0.00	0.0	6.36	1.0	0.00	1.5	0.00	3.0	0.00	6.0	0.0		4.5	0.27	0.83	10.88	77.40	841.75	0.43	0.00	0.00	1.00	0	9.75	0.12	0.36	0.36	0.36	0.36	0.36	0.36	0.36
G1034600C	10.2	0.0159063	0	618	0	3.00	0.00	0.0	0.00	1.0	10.18	1.5	0.00	3.0	0.00	6.0	0.0		4.5	0.33	0.99	16.88	59.12	998.05	0.40	0.00	0.00	1.00	0	16.42	0.13	0.40	0.40	0.40	0.40	0.40	0.40	0.40
G1034600D	30.5	0.0476563	0	891	178	3.50	0.00	0.0	4.77	1.0	25.73	1.5	0.00	3.0	0.00	6.0	0.0		4.9	0.51	1.44	36.87	59.12	2180.09	0.28	0.00	0.00	1.00	0	11.25	0.14	0.40	0.40	0.40	0.40	0.40	0.40	0.40
G1034601A	114.4	0.1786981	2558	0	431	0.87	0.00	0.0	0.03	1.0	114.34	1.5	0.00	3.0	0.00	6.0	0.0		2.4	1.14	3.23	32.98	22.55	743.72	0.45	0.00	0.00	1.00	0	19.37	0.51	1.46	1.46	1.46	1.46	1.46	1.46	1.46
G1038004A	267.7	0.4183441	2117	1526	0	1.26	57.43	0.0	9.20	1.0	0.00	1.5	0.00	3.0	201.10	6.0	0.0		5.8	1.18	3.00	13.90	39.44	548.04	0.50	0.00	0.00	1.00	0	36.94	0.59	1.51	1.51	1.51	1.51	1.51	1.51	1.51
TOTAL	14369.7	22.4527111																	5.22																		

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1% AEP Proposed Channel Option 1 HEC-HMS Output

Project: Kingwood Simulation Run: Proposed Channel - Option 1

Start of Run: 01Sep2019, 00:00
End of Run: 08Sep2019, 00:00
Compute Time: 08May2020, 12:12:40

Basin Model: Proposed Channel - Option 1
Meteorologic Model: 1% (100-Year)
Control Specifications: Control 5

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
G1033304_0000_J	0.8551000	1184.89	01Sep2019, 17:40	15.91
G1033300_0001A_J	14.2937000	1776.07	01Sep2019, 17:35	8.05
G10333B	4.6686000	2808.55	01Sep2019, 20:35	15.79
G10333A	4.7842000	3579.24	01Sep2019, 19:30	15.54
G1033300_9902_D	4.7842000	487.24	01Sep2019, 19:30	0.39
G1033300_9902_R	4.7842000	487.24	01Sep2019, 20:10	0.39
G1033300_0009_J	9.4528000	3287.08	01Sep2019, 20:20	8.00
G1033300_9901_D	9.4528000	2260.35	01Sep2019, 20:20	4.63
G1033300_0008_R	9.4528000	965.80	02Sep2019, 04:25	4.63
G1033300A	0.4550000	642.44	01Sep2019, 17:15	15.67
G1033300_0008_J	9.9078000	1015.58	02Sep2019, 00:55	5.14
G1033303A	0.1067000	219.92	01Sep2019, 16:35	15.79
G1033300_0008A_J	10.0145000	1030.42	02Sep2019, 00:25	5.25
G1033300_0007_R	10.0145000	775.04	02Sep2019, 12:35	5.25
G1033300B	0.2619000	358.23	01Sep2019, 17:15	15.77
G1033300_0007_J	10.2764000	775.43	02Sep2019, 12:30	5.52
G1033302A	0.3788000	556.64	01Sep2019, 17:10	15.93
G1033300_0007A_J	10.6552000	1099.42	01Sep2019, 17:30	5.89
G1033300_0006_R	10.6552000	696.61	02Sep2019, 21:00	5.88
G1033300C	0.2969000	363.76	01Sep2019, 17:30	15.79
G1033300_0006_J	10.9521000	696.61	02Sep2019, 21:00	6.15
G1033300_0005_R	10.9521000	639.23	03Sep2019, 06:55	6.14
G1033300D	0.3240000	386.11	01Sep2019, 17:35	15.77
G1033300_0005_J	11.2761000	639.23	03Sep2019, 06:55	6.42
G1033300_0004_R	11.2761000	596.10	03Sep2019, 17:15	6.39
G1033300E	0.2116000	263.63	01Sep2019, 17:25	15.60
G1033300_0004_J	11.4877000	596.10	03Sep2019, 17:15	6.56

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1% AEP Proposed Channel Option 1 HEC-HMS Output

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
G1033300_0003_R	11.4877000	561.57	04Sep2019, 04:00	6.49
G1033300F	0.2515000	398.32	01Sep2019, 16:55	15.67
G1033300_0003_J	11.7392000	561.57	04Sep2019, 04:00	6.69
G1033301A	0.2993000	552.18	01Sep2019, 16:45	15.90
G1033301_0002_R	0.2993000	545.22	01Sep2019, 17:00	15.90
G1033301B	0.2851000	424.93	01Sep2019, 17:05	15.88
G1033301_0002_J	0.5844000	969.18	01Sep2019, 17:00	15.89
G1033301_0001_R	0.5844000	959.85	01Sep2019, 17:15	15.89
G1033301C	0.4139000	572.84	01Sep2019, 17:15	15.76
G1033301_0001_J	0.9983000	1532.69	01Sep2019, 17:15	15.84
G1033301_0000_R	0.9983000	1521.71	01Sep2019, 17:30	15.84
G1033301D	0.2470000	446.62	01Sep2019, 16:45	15.82
G1033301_0000_J	1.2453000	1928.26	01Sep2019, 17:25	15.83
G1033300_0003A_J	12.9845000	2379.87	01Sep2019, 17:25	7.56
G1033300_0002_R	12.9845000	772.33	01Sep2019, 23:05	7.45
G1033300G	0.1538000	292.96	01Sep2019, 16:40	15.78
G1033300_0002_J	13.1383000	823.21	01Sep2019, 21:55	7.55
G1033300_0001_R	13.1383000	540.34	02Sep2019, 09:20	7.35
G1033300H	0.3003000	465.56	01Sep2019, 17:00	15.94
G1033300_0001_J	13.4386000	592.12	01Sep2019, 17:25	7.55
G1033304B	0.2333000	430.31	01Sep2019, 16:45	15.85
G1033304A	0.1720000	401.08	01Sep2019, 16:30	16.20
G1033304_0002_R	0.1720000	116.98	01Sep2019, 19:35	16.20
G1033304_0002_J	0.4053000	519.20	01Sep2019, 16:50	16.00
G1033304_0001_R	0.4053000	499.24	01Sep2019, 17:20	16.00
G1033304C	0.3005000	607.00	01Sep2019, 16:40	15.87
G1033304_0001_J	0.7058000	1064.60	01Sep2019, 16:55	15.94
G1033304_0000_R	0.7058000	973.65	01Sep2019, 17:40	15.94
G1033304D	0.1493000	219.07	01Sep2019, 17:05	15.72
G1033300_0000_R	14.2937000	680.45	02Sep2019, 02:05	7.78
G1033300I	0.3187000	449.10	01Sep2019, 17:10	15.66

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1% AEP Proposed Channel Option 1 HEC-HMS Output

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
G1033300_0000_J	14.6124000	842.34	01Sep2019, 19:30	7.95
G1033801B	0.1027000	224.67	01Sep2019, 16:35	15.60
G1033801A	0.4291000	593.94	01Sep2019, 17:15	15.62
G1033800_0000_R	3.5781000	728.91	02Sep2019, 16:10	24.61
G1033800_0001_R	2.9563000	792.99	02Sep2019, 03:35	26.62
G1033800_0002_R	1.9046000	695.80	02Sep2019, 04:00	32.69
G1033800C	0.6407000	768.00	01Sep2019, 17:45	16.09
G1033800A	0.1532000	253.79	01Sep2019, 16:50	15.92
G1033800_0004_R	0.1532000	646.05	02Sep2019, 06:10	223.76
G1033800_0004_J	0.3010000	648.36	02Sep2019, 05:50	121.59
G1033800_0005_J	0.1532000	1144.75	01Sep2019, 20:00	223.76
G1033800B	0.1478000	231.04	01Sep2019, 16:55	15.68
G1033800_0004A_J	0.9417000	1212.68	01Sep2019, 17:55	49.81
G1033800_0003_R	0.9417000	653.16	02Sep2019, 09:10	49.80
G1033802A	0.3649000	637.52	01Sep2019, 16:55	16.05
G1033802_0000_R	0.3649000	627.91	01Sep2019, 17:15	16.05
G1033802B	0.1840000	323.83	01Sep2019, 16:50	16.09
G10338011A	0.0811000	141.27	01Sep2019, 16:45	15.55
G1033802_0000_J	0.5489000	939.23	01Sep2019, 17:10	16.07
G1033801_0000_J	0.6129000	918.89	01Sep2019, 17:10	15.61
G1033801_0000_R	0.5102000	727.49	01Sep2019, 17:15	15.61
G1033800G	0.5393000	458.60	01Sep2019, 18:45	15.58
G1033800F	0.6218000	946.97	01Sep2019, 17:05	15.54
G1033800E	0.4388000	624.11	01Sep2019, 17:15	15.90
G1033800D	0.4140000	546.34	01Sep2019, 17:25	15.88
G1033801_0001_J	0.5102000	729.39	01Sep2019, 17:10	15.61
G1033800_0001_J	3.5781000	1274.05	01Sep2019, 17:40	24.70
G1033800_0002_J	2.9563000	1832.13	01Sep2019, 17:25	26.66
G1033800_0003_J	1.9046000	1693.94	01Sep2019, 17:20	32.71
G1033800_0000_J	4.1174000	886.52	01Sep2019, 22:45	23.43
G1033600_0001_J	2.0767704	2168.62	01Sep2019, 19:00	15.66

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1% AEP Proposed Channel Option 1 HEC-HMS Output

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
G1033600A	0.3725000	613.72	01Sep2019, 17:00	15.80
G1033600_0004_R	0.3725000	587.53	01Sep2019, 18:10	15.80
G1033600B	0.4467000	571.49	01Sep2019, 17:25	15.67
G1033600_0004_J	0.8192000	1137.03	01Sep2019, 18:05	15.73
G1033602A	0.3230704	598.44	01Sep2019, 16:45	15.65
G10336021A	0.1646000	344.02	01Sep2019, 16:35	15.58
G1033602_0001_J	0.4876704	936.98	01Sep2019, 16:40	15.62
G1033602_0000_R	0.4876704	216.79	01Sep2019, 21:20	15.48
G1033602B	0.1313000	206.83	01Sep2019, 16:55	16.06
G1033602_0000_J	0.6189704	336.61	01Sep2019, 18:10	15.60
G1033603A	0.0824000	146.78	01Sep2019, 16:45	15.57
G1033600_0003_J	1.5205704	1589.83	01Sep2019, 18:00	15.67
G1033600_0003_R	1.5205704	1533.24	01Sep2019, 18:30	15.67
G1033601A	0.1218000	201.60	01Sep2019, 16:50	15.52
G1033600_0002A_J	1.6423704	1684.76	01Sep2019, 18:25	15.66
G1033600_0002_R	1.6423704	1677.31	01Sep2019, 18:35	15.66
G1033600C	0.2362000	337.31	01Sep2019, 17:10	15.46
G1033600_0002_J	1.8785704	1962.09	01Sep2019, 18:30	15.63
G1033600_0000_R	2.0767704	2158.93	01Sep2019, 19:20	15.66
G1033600_0001_R	1.8785704	1949.91	01Sep2019, 19:05	15.63
G1033600D	0.1982000	313.83	01Sep2019, 17:00	15.91
G1033600E	0.1960000	142.28	01Sep2019, 19:20	15.55
G1033600_0000_J	2.2727704	2301.21	01Sep2019, 19:20	15.65
G1038004A	0.4183000	811.27	01Sep2019, 16:40	15.82
G1038004_0000_J	0.4183000	811.27	01Sep2019, 16:40	15.82
G1034500A	0.3911000	603.07	01Sep2019, 17:00	15.64
G1033900B	0.0797000	233.86	01Sep2019, 16:20	15.47
G1033900A	0.1087000	193.23	01Sep2019, 16:45	15.61
G1033900_0001_R	0.1087000	185.79	01Sep2019, 17:20	15.61
G1033900_0001_J	0.1884000	357.48	01Sep2019, 16:45	15.55
G1033900_0000_R	0.1884000	15.12	02Sep2019, 01:35	11.51

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1% AEP Proposed Channel Option 1 HEC-HMS Output

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
G1033900C	0.1545000	197.41	01Sep2019, 17:20	15.55
G1033900_0000_J	0.3429000	205.82	01Sep2019, 17:25	13.33
G1034601A	0.1787000	353.15	01Sep2019, 16:35	15.52
G1034600A	0.0455000	111.97	01Sep2019, 16:25	15.49
G1034600_0002_R	0.0455000	40.50	01Sep2019, 18:50	15.49
G1034600B	0.0099000	39.77	01Sep2019, 16:15	15.36
G1034600_0002_J	0.2341000	412.06	01Sep2019, 16:35	15.51
G1034600_0001_R	0.2341000	323.32	01Sep2019, 17:45	15.51
G1034600C	0.0159000	61.38	01Sep2019, 16:15	15.47
G1034600_0001_J	0.2500000	340.75	01Sep2019, 17:35	15.50
G1034600_0000_R	0.2500000	340.30	01Sep2019, 17:40	15.50
G1034600D	0.0477000	184.37	01Sep2019, 16:15	15.38
G1034600_0000_J	0.2977000	442.21	01Sep2019, 16:20	15.49

DATA ENTRY TO BE ENTERED IN **UNSHADED CELLS ONLY**

Watershed (G100-00-00) Proposed Channel Option 2

Subwatershed	Drainage Area (acres)	Drainage Area (sq.mi.)	Channel Improvements (Total Lengths or Percent)			Weighted Conveyance BDF	Land Classification Areas												Composite BDF	Tc (Unadjusted)	R (Unadjusted)	Channel Slope(ft./mi)	Overland Slope(ft./mi.)	Slope Adj	Watershed Detention Volume not Modeled Directly (ac-ft)	Detention Rate	Detention Adj	Percent Ponding	Percent Impervious 2018	TC"	R"	Ponding Adjustments for Storage Values (R")						
							Undeveloped		Open Space		Developed Roadside Ditch		Developed Storm Sewer Pre 1984		Developed Storm Sewer Post 1984																							
			Natural Channel	Improved	Concrete		Area (ac)	BDF	Area (ac)	BDF	Area (ac)	BDF	Area (ac)	BDF	Area (ac)	BDF	AREA CHECK				S	So	K_a		DR	C_f	DPP		(Slope and Detention Adjusted)	(Slope and Detention Adjusted)	20% (5-Yr)	10% (100-Yr)	4% (25-Yr)	2% (50-Yr)	1% (100-Yr)	0.2% (500-Yr)
G1033300A	291.2	0.4550363	0	4336	0	3.00	84.52	0.0	14.61	1.0	10.84	1.5	75.36	3.0	105.90	6.0	0.0	6.1	1.20	3.01	12.00	8.94	107.33	0.77	38.60	84.83	1.14	0	28.28	1.04	2.62	2.62	2.62	2.62	2.62	2.62	2.62
G1033300B	167.6	0.2619095	1188	2191	0	1.95	39.13	0.0	5.10	1.0	0.21	1.5	114.91	3.0	8.28	6.0	0.0	4.3	1.11	2.98	2.46	15.36	37.71	0.94	0.00	0.00	1.00	0	34.09	1.03	2.78	2.78	2.78	2.78	2.78	2.78	2.78
G1033300C	190.0	0.2969142	26	2508	0	2.97	33.75	0.0	0.05	1.0	0.00	1.5	156.22	3.0	0.00	6.0	0.0	5.4	1.05	2.75	8.98	15.59	140.03	0.72	0.00	0.00	1.00	0	34.91	0.76	1.98	1.98	1.98	1.98	1.98	1.98	1.98
G1033300D	207.4	0.3240076	0	2282	0	3.00	29.38	0.0	0.00	1.0	0.00	1.5	177.98	3.0	0.00	6.0	0.0	5.6	1.08	2.79	8.98	10.89	97.77	0.78	0.00	0.00	1.00	0	33.72	0.84	2.18	2.18	2.18	2.18	2.18	2.18	2.18
G1033300E	135.4	0.2115922	2988	89	0	0.09	38.88	0.0	0.00	1.0	40.05	1.5	56.49	3.0	0.00	6.0	0.0	1.8	1.29	3.69	2.23	24.43	54.48	0.88	0.00	0.00	1.00	0	24.07	1.13	3.23	3.23	3.23	3.23	3.23	3.23	3.23
G1033300F	161.0	0.2514920	0	3745	0	3.00	49.63	0.0	14.57	1.0	24.04	1.5	72.71	3.0	0.00	6.0	0.0	4.7	1.05	2.82	4.84	22.38	108.37	0.76	0.00	0.00	1.00	0	27.91	0.80	2.15	2.15	2.15	2.15	2.15	2.15	2.15
G1033300G	98.4	0.1537563	0	3629	0	3.00	1.63	0.0	61.85	1.0	0.00	1.5	0.02	3.0	34.91	6.0	0.0	5.8	0.77	2.05	15.46	7.12	110.13	0.76	0.00	0.00	1.00	0	34.64	0.59	1.56	1.56	1.56	1.56	1.56	1.56	1.56
G1033300H	192.2	0.3003042	0	4603	0	3.00	8.76	0.0	57.50	1.0	0.00	1.5	0.02	3.0	125.91	6.0	0.0	7.2	0.90	2.24	0.24	11.97	2.91	1.00	0.00	0.00	1.00	0	44.05	0.90	2.24	2.24	2.24	2.24	2.24	2.24	2.24
G1033300I	204.0	0.3186844	11	4375	0	2.99	0.59	0.0	112.92	1.0	0.00	1.5	29.87	3.0	60.58	6.0	0.0	5.8	1.05	2.71	2.64	11.65	30.75	0.97	0.00	0.00	1.00	0	27.78	1.02	2.63	2.63	2.63	2.63	2.63	2.63	2.63
G1033301A	191.6	0.2993163	0	0	4460	6.00	8.82	0.0	0.13	1.0	0.00	1.5	182.61	3.0	0.00	6.0	0.0	8.9	0.79	1.85	5.39	9.25	49.88	0.89	0.00	0.00	1.00	0	41.47	0.70	1.64	1.64	1.64	1.64	1.64	1.64	1.64
G1033301B	182.5	0.2851485	0	1705	35	3.06	13.19	0.0	6.76	1.0	0.00	1.5	147.95	3.0	14.59	6.0	0.0	6.0	0.98	2.53	5.36	6.50	34.88	0.95	0.00	0.00	1.00	0	40.59	0.93	2.40	2.40	2.40	2.40	2.40	2.40	2.40
G1033301C	264.9	0.4139232	0	1913	0	3.00	29.22	0.0	12.01	1.0	0.00	1.5	216.11	3.0	7.57	6.0	0.0	5.7	1.19	3.04	5.64	8.61	48.53	0.89	0.00	0.00	1.00	0	33.20	1.06	2.72	2.72	2.72	2.72	2.72	2.72	2.72
G1033301D	158.1	0.2470307	0	3142	0	3.00	33.46	0.0	13.75	1.0	0.00	1.5	100.16	3.0	10.73	6.0	0.0	5.4	0.98	2.57	6.89	28.73	197.78	0.67	0.00	0.00	1.00	0	36.65	0.65	1.71	1.71	1.71	1.71	1.71	1.71	1.71
G1033302A	242.4	0.3788040	0	1042	0	3.00	3.99	0.0	3.46	1.0	0.00	1.5	234.99	3.0	0.00	6.0	0.0	5.9	1.12	2.85	5.98	9.83	58.77	0.86	0.00	0.00	1.00	0	43.43	0.97	2.46	2.46	2.46	2.46	2.46	2.46	2.46
G1033302B	68.3	0.1066992	0	410	0	3.00	4.39	0.0	0.78	1.0	0.00	1.5	63.12	3.0	0.00	6.0	0.0	5.8	0.66	1.78	10.18	10.63	108.25	0.76	0.00	0.00	1.00	0	35.29	0.50	1.36	1.36	1.36	1.36	1.36	1.36	1.36
G1033304A	110.1	0.1719938	0	213	2756	5.78	4.85	0.0	0.78	1.0	0.00	1.5	62.85	3.0	41.60	6.0	0.0	9.8	0.58	1.34	4.17	20.30	84.59	0.80	0.00	0.00	1.00	0	59.23	0.46	1.08	1.08	1.08	1.08	1.08	1.08	1.08
G1033304B	149.3	0.2333139	0	1935	0	3.00	26.12	0.0	5.77	1.0	0.00	1.5	85.18	3.0	32.25	6.0	0.0	6.0	0.90	2.33	5.06	31.13	157.45	0.70	8.90	38.15	1.01	0	38.49	0.64	1.65	1.65	1.65	1.65	1.65	1.65	1.65
G1033304C	192.3	0.3004744	0	361	1141	5.28	19.64	0.0	1.17	1.0	0.00	1.5	136.67	3.0	34.82	6.0	0.0	8.5	0.81	1.93	7.39	19.44	143.66	0.72	12.30	40.94	1.01	0	39.91	0.59	1.40	1.40	1.40	1.40	1.40	1.40	1.40
G1033304D	95.6	0.1493227	0	2569	0	3.00	47.05	0.0	8.32	1.0	0.00	1.5	14.02	3.0	26.17	6.0	0.0	5.2	0.80	2.17	0.72	22.35	16.07	1.00	12.60	84.38	1.13	0	31.33	0.91	2.46	2.46	2.46	2.46	2.46	2.46	2.46
G1033304E	3061.9	4.7841636	0	24314	998	3.12	327.99	0.0	348.83	1.0	1963.39	1.5	0.00	3.0	421.65	6.0	0.0	5.0	3.61	8.42	6.15	9.85	60.54	0.86	141.80	29.64	1.00	0	20.44	3.09	7.21	7.21	7.21	7.21	7.21	7.21	7.21
G1033304F	2987.9	4.6686162	3811	20424	0	2.53	652.55	0.0	249.63	1.0	1376.83	1.5	0.00	3.0	708.91	6.0	0.0	4.7	3.66	8.63	5.10	11.66	59.41	0.86	576.20	123.42	1.34	0	35.08	4.23	9.96	9.96	9.96	9.96	9.96	9.96	9.96
G1033600A	238.4	0.3725292	0	0	1948	6.00	5.18	0.0	0.00	1.0	6.40	1.5	226.84	3.0	0.00	6.0	0.0	8.9	0.87	2.00	4.37	5.55	24.23	1.00	0.00	0.00	1.00	0	35.62	0.87	2.00	2.00	2.00	2.00	2.00	2.00	2.00
G1033600B	285.9	0.4466661	4942	2758	26	1.09	42.30	0.0	2.59	1.0	94.82	1.5	146.16	3.0	0.00	6.0	0.0	3.1	1.55	4.21	6.57	19.21	126.24	0.74	0.00	0.00	1.00	0	28.23	1.15	3.11	3.11	3.11	3.11	3.11	3.11	3.11
G1033600C	151.2	0.2362303	0	1306	0	3.00	69.65	0.0	53.03	1.0	0.00	1.5	24.41	3.0	4.10	6.0	0.0	4.0	1.09	2.97	3.65	16.27	59.37	0.86	0.00	0.00	1.00	0	15.60	0.94	2.56	2.56	2.56	2.56	2.56	2.56	2.56
G1033600D	126.8	0.1981772	0	2816	0	3.00	6.03	0.0	56.27	1.0	0.00	1.5	14.43	3.0	50.10	6.0	0.0	6.2	0.83	2.16	N/A	16.64	16.64	1.00	0.00	0.00	1.00	0	42.32	0.83	2.16	2.16	2.16	2.16	2.16	2.16	2.16
G1033600E	125.4	0.1959770	0	1856	0	3.00	8.79	0.0	116.64	1.0	0.00	1.5	0.00	3.0	0.00	6.0	0.0	3.9	1.02	2.79	N/A	19.41	19.41	1.00	50.20	256.15	2.73	0	20.98	2.77	7.60	7.60	7.60	7.60	7.60	7.60	7.60
G1033601A	77.9	0.1217956	2378	1652	0	1.23	12.83	0.0	15.64	1.0	38.54	1.5	8.84	3.0	2.11	6.0	0.0	2.7	0.94	2.69	6.29	19.96	125.59	0.74	0.00	0.00	1.00	0	19.41	0.69	1.99	1.99	1.99	1.99	1.99	1.99	1.99
G1033601A	105.4	0.1646499	0	2011	0	3.00	0.00	0.0	0.80	1.0	13.45	1.5	91.12	3.0	0.00	6.0	0.0	5.8	0.79	2.10	9.91	25.26	250.30	0.63	0.00	0.00	1.00	0	22.65	0.50	1.32	1.32	1.32	1.32	1.32	1.32	1.32
G1033602A	206.8	0.3230704	0	2190	1345	4.14	53.10	0.0	5.70	1.0	0.00	1.5	147.96	3.0	0.00	6.0	0.0	6.3	1.01	2.56	8.88	26.69	237.07	0.64	0.00	0.00	1.00	0	26.77	0.64	1.63	1.63	1.63	1.63	1.63	1.63	1.63
G1033602B	84.0	0.1312987	0	3805	0	3.00	4.76	0.0	51.03	1.0	0.00	1.5	28.24	3.0	0.00	6.0	0.0	4.6	0.80	2.21	N/A	26.44	26.44	0.99	0.00	0.00	1.00	0	50.99	0.80	2.19	2.19	2.19	2.19	2.19	2.19	2.19
G1033603A	52.8	0.0824403	0	1438	0	3.00	0.00	0.0	2.88	1.0	28.89	1.5	21.00	3.0	0.00	6.0	0.0	5.1	0.63	1.75	N/A	21.84	21.84	1.00	0.00	0.00	1.00	0	22.35	0.63	1.75	1.75	1.75	1.75	1.75	1.75	1.75
G1033800A	98.0	0.1531545	0	5743	0	3.00	0.21	0.0	1.46	1.0	94.47	1.5	0.78	3.0	1.10	6.0	0.0	4.6	0.86	2.36	4.41	14.78	65.13	0.85	0.90	5.88	1.00	0	42.97	0.73	2.00	2.00	2.00	2.00	2.00	2.00	2.00
G1033800B	94.6	0.1478170	0	3376	0	3.00	3.85	0.0	31.04	1.0	10.81	1.5	48.91	3.0	0.00	6.0	0.0	5.1	0.81	2.20	1.83	10.96	20.03	1.00	0.00	0.00	1.00	0	28.97	0.81	2.20	2.20	2.20	2.20	2.20	2.20	2.20
G1033800C	110.1	0.1607304	0	7046	0	3.00	3.47	0.0	23.25	1.0	29.70	1.5	0.00	3.0	353.64	6.0	0.0	8.3	1.15	2.63	4.92	9.08	44.53	0.91	90.40	141.09	1.46	0	52.46	1.52	3.50	3.50	3.50	3.50	3.50	3.50	3.50
G1033800D	265.0	0.4140261	0	3319	0	3.00	1.13	0.0	17.19	1.0	33.77	1.5	152.54	3.0	60.34	6.0	0.0	6.3	1.12	2.81	0.31	4.40	1.35	1.00	25.60	61.83	1.06	0	40.29	1.18	2.96	2.96	2.96	2.96	2.96	2.96	2.96
G1033800E	280.8	0.4387684	0	3417	104	3.09	1.84	0.0	17.03	1.0	0.00	1.5	146.30	3.0	115.64	6.0	0.0	7.2	1.07	2.60	1.22	4.08	4.99	1.00	2.40	5.47	1.00	0	41.65	1.07	2.60	2.60	2.60	2.60	2.60	2.60	2.60
G1033800F	398.0	0.6218118	0	6595	1966	3.69	52.18	0.0	74.68	1.0	136.04	1.5	75.13	3.0	59.92	6.0	0.0	5.9	1.39	3.48	6.86	30.49	209.28	0.66	0.00	0.00	1.00	0	20.68	0.92	2.29	2.29	2.29	2.29	2.29	2.29	2.29
G1033800G	345.1	0.5392754	0	3271	0	3.00	102.63	0.0	123.76	1.0	6.88	1.5	36.20	3.0	75.68	6.0	0.0	5.0	1.41	3.63	N/A	21.48	21.48	1.00	88.40	163.92	1.65	0	22.77	2.33	5.99	5.99	5.99	5.99	5.99	5.99	5.99
G1033801A	51.9	0.0811129	0	1569	0	3.00	0.00	0.0	1.41	1.0	48.16	1.5	0.00	3.0	2.34	6.0	0.0	4.7	0.65	1.82	3.28	5.33	17.49	1.00	0.00	0.00	1.00	0	21.24	0.65	1.82	1.82	1.82	1.82	1.82	1.82	1.82
G1033801A	274.6	0.4290893	0	2692	1746	4.18	3.33	0.0	49.54	1.0	221.55	1.5	0.00	3.0	0.20	6.0	0.0	5.6	1.22	3.11	7.07	7.93	56.11	0.87	0.00	0.00	1.00	0	25.28	1.06	2.71	2.71	2.71	2.71	2.71	2.71	2.71
G1033801B	65.7	0.1026927	0	0	2520	6.00	0.00	0.0	2.33	1.0	63.29	1.5	0.00	3.0	0.10	6.0	0.0	7.5	0.56	1.43	3.47	19.26	66.82	0.84	0.00	0.00	1.00	0	23.87	0.47	1.21	1.21	1.21	1.21	1.21	1.21	1.21
G1033802A	233.6	0.3649300	0	345	3559	5.74	10.44	0.0	4.44	1.0	8.58	1.5	118.20	3.0	91.90	6.0	0.0	9.7	0.81	1.81	4.35	4.50	19.56	1.00	3.50	9.59	1.00	0	50.56	0.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81
G1033802B	117.7	0.1839737	0	2437	965	3.85	0.00	0.0	10.10	1.0	21.32	1.5	86.31	3.0	0.01	6.0	0.0	6.4	0.79	2.04	9.53	5.52	52.56	0.88	0.00	0.00	1.00	0	52.85	0.69	1.80	1.80	1.80	1.80	1.80	1.80	1.80
G1033900A	69.6	0.1086969	409	0	0	0.00	0.00	0.0	0.00	1.0	69.53	1.5	0.00	3.0	0.04	6.0	0.0	1.5	1.01	2.95	17.36	17.38	301.73	0.60	0.00	0.00	1.00	0	24.36	0.60	1.76	1.76	1.76	1.76	1.76	1.76	1.76
G1033900B	51.0	0.0797092	2203	0	0	0.00	0.00	0.0	4.02	1.0	46.99	1.5	0.00	3.0	0.00	6.0	0.0	1.5	0.89	2.63	48.51	46.76	1258.39	0.27	0.00	0.00	1.00	0	16.59	0.24	0.71	0.71	0.71	0.71	0.71	0.71	0.71
G1033900C	98.9	0.1544588	3135	0	0	0.00	42.71	0.0	23.16	1.0	32.99	1.5	0.00	3.0	0.00	6.0	0.0	0.7	1.26	3.69	N/A	66.80	66.80	0.84	0.00	0.00	1.00	0	20.89	1.06	3.11	3.11	3.11	3.11	3.11	3.11	3.11
G1034500A	250.3	0.3911306	0	1793	0	3.00	98.65	0.0	24.47	1.0	69.92	1.5	0.00	3.0	57.28	6.0	0.0	4.9	1.25	3.25	13.31	43.36	577.29	0.49	51.80	132.44	1.40	0	26.33	0.86	2.25	2.25	2.25	2.25	2.25	2.25	2.25
G1034600A	29.1	0.0454531	1	0	0	0.00	0.00	0.0	2.48	1.0	26.61	1.5	0.00	3.0	0.00	6.0	0.0	1.5	0.70	2.12	10.04	66.91	672.06	0.47	0.00	0.00	1.00	0	17.50	0.33	0.99	0.99	0.99	0.99	0.99	0.99	0.99
G1034600B	6.4	0.0099375	0	1011	0	3.00	0.00	0.0	0.00	1.0	6.36	1.5	0.00	3.0	0.00	6.0	0.0	4.5	0.27	0.83	10.88	77.40	847.75	0.43	0.00	0.00	1.00	0	9.75	0.12	0.36	0.36	0.36	0.36	0.36	0.36	0.36
G1034600C	10.2	0.0159063	0	618	0	3.00	0.00	0.0	0.00	1.0	10.18	1.5	0.00	3.0	0.00	6.0	0.0	4.5	0.33	0.99	16.88	59.12	998.05	0.40	0.00	0.00	1.00	0	16.42	0.13	0.40	0.40	0.40	0.40	0.40	0.40	0.40
G1034600D	30.5	0.0476563	0	891	178	3.50	0.00	0.0	4.77	1.0	25.73	1.5	0.00	3.0	0.00	6.0	0.0	4.9	0.51	1.44	36.87	59.12	2180.09	0.28	0.00	0.00	1.00	0	11.25	0.14	0.40	0.40	0.40	0.40	0.40	0.40	0.40
G1034601A	114.4	0.1786981	2558	0	431	0.87	0.00	0.0	0.03	1.0	114.34	1.5	0.00	3.0	0.00	6.0	0.0	2.4	1.14	3.23	32.98	22.55	743.72	0.45	0.00	0.00	1.00	0	19.37	0.51	1.46	1.46	1.46	1.46	1.46	1.46	1.46
G1038004A	267.7	0.4183441	2117	1526	0	1.26	57.43	0.0	9.20	1.0	0.00	1.5	0.00	3.0	201.10	6.0	0.0	5.8	1.18	3.00	13.90	39.44	548.04	0.50	0.00	0.00	1.00	0	36.94	0.59	1.51	1.51	1.51	1.51	1.51	1.51	1.51
TOTAL	14369.7	22.4527111																			5.33																

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Project: Kingwood Simulation Run: Proposed Channel - Option 2

Start of Run: 01Sep2019, 00:00
End of Run: 08Sep2019, 00:00
Compute Time: 08May2020, 12:12:51

Basin Model: Proposed Channel - Option 2
Meteorologic Model: 1% (100-Year)
Control Specifications: Control 5

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
G1033304_0000_J	0.8551000	1184.89	01Sep2019, 17:40	15.91
G1033300_0001A_J	14.2937000	1776.44	01Sep2019, 17:35	8.05
G10333B	4.6686000	2808.55	01Sep2019, 20:35	15.79
G10333A	4.7842000	3579.24	01Sep2019, 19:30	15.54
G1033300_9902_D	4.7842000	487.24	01Sep2019, 19:30	0.39
G1033300_9902_R	4.7842000	487.24	01Sep2019, 20:10	0.39
G1033300_0009_J	9.4528000	3287.08	01Sep2019, 20:20	8.00
G1033300_9901_D	9.4528000	2260.35	01Sep2019, 20:20	4.63
G1033300_0008_R	9.4528000	965.80	02Sep2019, 04:25	4.63
G1033300A	0.4550000	642.44	01Sep2019, 17:15	15.67
G1033300_0008_J	9.9078000	1015.58	02Sep2019, 00:55	5.14
G1033303A	0.1067000	219.92	01Sep2019, 16:35	15.79
G1033300_0008A_J	10.0145000	1030.42	02Sep2019, 00:25	5.25
G1033300_0007_R	10.0145000	775.04	02Sep2019, 12:35	5.25
G1033300B	0.2619000	358.23	01Sep2019, 17:15	15.77
G1033300_0007_J	10.2764000	775.43	02Sep2019, 12:30	5.52
G1033302A	0.3788000	556.64	01Sep2019, 17:10	15.93
G1033300_0007A_J	10.6552000	1099.42	01Sep2019, 17:30	5.89
G1033300_0006_R	10.6552000	696.61	02Sep2019, 21:00	5.88
G1033300C	0.2969000	493.24	01Sep2019, 16:55	15.79
G1033300_0006_J	10.9521000	696.61	02Sep2019, 21:00	6.15
G1033300_0005_R	10.9521000	637.21	03Sep2019, 07:05	6.14
G1033300D	0.3240000	509.49	01Sep2019, 17:00	15.77
G1033300_0005_J	11.2761000	637.21	03Sep2019, 07:05	6.42
G1033300_0004_R	11.2761000	592.99	03Sep2019, 17:30	6.39
G1033300E	0.2116000	264.60	01Sep2019, 17:25	15.60
G1033300_0004_J	11.4877000	592.99	03Sep2019, 17:30	6.56

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Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
G1033300_0003_R	11.4877000	558.33	04Sep2019, 04:15	6.49
G1033300F	0.2515000	398.32	01Sep2019, 16:55	15.67
G1033300_0003_J	11.7392000	558.33	04Sep2019, 04:15	6.69
G1033301A	0.2993000	552.18	01Sep2019, 16:45	15.90
G1033301_0002_R	0.2993000	545.22	01Sep2019, 17:00	15.90
G1033301B	0.2851000	424.93	01Sep2019, 17:05	15.88
G1033301_0002_J	0.5844000	969.18	01Sep2019, 17:00	15.89
G1033301_0001_R	0.5844000	959.85	01Sep2019, 17:15	15.89
G1033301C	0.4139000	572.84	01Sep2019, 17:15	15.76
G1033301_0001_J	0.9983000	1532.69	01Sep2019, 17:15	15.84
G1033301_0000_R	0.9983000	1521.71	01Sep2019, 17:30	15.84
G1033301D	0.2470000	446.62	01Sep2019, 16:45	15.82
G1033301_0000_J	1.2453000	1928.26	01Sep2019, 17:25	15.83
G1033300_0003A_J	12.9845000	2385.40	01Sep2019, 17:25	7.56
G1033300_0002_R	12.9845000	777.56	01Sep2019, 23:10	7.45
G1033300G	0.1538000	292.96	01Sep2019, 16:40	15.78
G1033300_0002_J	13.1383000	827.44	01Sep2019, 22:00	7.55
G1033300_0001_R	13.1383000	545.66	02Sep2019, 09:30	7.35
G1033300H	0.3003000	465.56	01Sep2019, 17:00	15.94
G1033300_0001_J	13.4386000	592.47	01Sep2019, 17:25	7.55
G1033304B	0.2333000	430.31	01Sep2019, 16:45	15.85
G1033304A	0.1720000	401.08	01Sep2019, 16:30	16.20
G1033304_0002_R	0.1720000	116.98	01Sep2019, 19:35	16.20
G1033304_0002_J	0.4053000	519.20	01Sep2019, 16:50	16.00
G1033304_0001_R	0.4053000	499.24	01Sep2019, 17:20	16.00
G1033304C	0.3005000	607.00	01Sep2019, 16:40	15.87
G1033304_0001_J	0.7058000	1064.60	01Sep2019, 16:55	15.94
G1033304_0000_R	0.7058000	973.65	01Sep2019, 17:40	15.94
G1033304D	0.1493000	219.07	01Sep2019, 17:05	15.72
G1033300_0000_R	14.2937000	681.16	02Sep2019, 02:05	7.78
G1033300I	0.3187000	449.10	01Sep2019, 17:10	15.66

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Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
G1033300_0000_J	14.6124000	842.48	01Sep2019, 19:30	7.95
G1033801B	0.1027000	224.67	01Sep2019, 16:35	15.60
G1033801A	0.4291000	593.94	01Sep2019, 17:15	15.62
G1033800_0000_R	3.5781000	728.91	02Sep2019, 16:10	24.61
G1033800_0001_R	2.9563000	792.99	02Sep2019, 03:35	26.62
G1033800_0002_R	1.9046000	695.80	02Sep2019, 04:00	32.69
G1033800C	0.6407000	768.00	01Sep2019, 17:45	16.09
G1033800A	0.1532000	253.79	01Sep2019, 16:50	15.92
G1033800_0004_R	0.1532000	646.05	02Sep2019, 06:10	223.76
G1033800_0004_J	0.3010000	648.36	02Sep2019, 05:50	121.59
G1033800_0005_J	0.1532000	1144.75	01Sep2019, 20:00	223.76
G1033800B	0.1478000	231.04	01Sep2019, 16:55	15.68
G1033800_0004A_J	0.9417000	1212.68	01Sep2019, 17:55	49.81
G1033800_0003_R	0.9417000	653.16	02Sep2019, 09:10	49.80
G1033802A	0.3649000	637.52	01Sep2019, 16:55	16.05
G1033802_0000_R	0.3649000	627.91	01Sep2019, 17:15	16.05
G1033802B	0.1840000	323.83	01Sep2019, 16:50	16.09
G10338011A	0.0811000	141.27	01Sep2019, 16:45	15.55
G1033802_0000_J	0.5489000	939.23	01Sep2019, 17:10	16.07
G1033801_0000_J	0.6129000	918.89	01Sep2019, 17:10	15.61
G1033801_0000_R	0.5102000	727.49	01Sep2019, 17:15	15.61
G1033800G	0.5393000	458.60	01Sep2019, 18:45	15.58
G1033800F	0.6218000	946.97	01Sep2019, 17:05	15.54
G1033800E	0.4388000	624.11	01Sep2019, 17:15	15.90
G1033800D	0.4140000	546.34	01Sep2019, 17:25	15.88
G1033801_0001_J	0.5102000	729.39	01Sep2019, 17:10	15.61
G1033800_0001_J	3.5781000	1274.05	01Sep2019, 17:40	24.70
G1033800_0002_J	2.9563000	1832.13	01Sep2019, 17:25	26.66
G1033800_0003_J	1.9046000	1693.94	01Sep2019, 17:20	32.71
G1033800_0000_J	4.1174000	886.52	01Sep2019, 22:45	23.43
G1033600_0001_J	2.0767704	2168.62	01Sep2019, 19:00	15.66

NEEL-SCHAFFER
Solutions you can build upon

1% AEP Proposed Channel Option 2 HEC-HMS Output

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
G1033600A	0.3725000	613.72	01Sep2019, 17:00	15.80
G1033600_0004_R	0.3725000	587.53	01Sep2019, 18:10	15.80
G1033600B	0.4467000	571.49	01Sep2019, 17:25	15.67
G1033600_0004_J	0.8192000	1137.03	01Sep2019, 18:05	15.73
G1033602A	0.3230704	598.44	01Sep2019, 16:45	15.65
G10336021A	0.1646000	344.02	01Sep2019, 16:35	15.58
G1033602_0001_J	0.4876704	936.98	01Sep2019, 16:40	15.62
G1033602_0000_R	0.4876704	216.79	01Sep2019, 21:20	15.48
G1033602B	0.1313000	206.83	01Sep2019, 16:55	16.06
G1033602_0000_J	0.6189704	336.61	01Sep2019, 18:10	15.60
G1033603A	0.0824000	146.78	01Sep2019, 16:45	15.57
G1033600_0003_J	1.5205704	1589.83	01Sep2019, 18:00	15.67
G1033600_0003_R	1.5205704	1533.24	01Sep2019, 18:30	15.67
G1033601A	0.1218000	201.60	01Sep2019, 16:50	15.52
G1033600_0002A_J	1.6423704	1684.76	01Sep2019, 18:25	15.66
G1033600_0002_R	1.6423704	1677.31	01Sep2019, 18:35	15.66
G1033600C	0.2362000	337.31	01Sep2019, 17:10	15.46
G1033600_0002_J	1.8785704	1962.09	01Sep2019, 18:30	15.63
G1033600_0000_R	2.0767704	2158.93	01Sep2019, 19:20	15.66
G1033600_0001_R	1.8785704	1949.91	01Sep2019, 19:05	15.63
G1033600D	0.1982000	313.83	01Sep2019, 17:00	15.91
G1033600E	0.1960000	142.28	01Sep2019, 19:20	15.55
G1033600_0000_J	2.2727704	2301.21	01Sep2019, 19:20	15.65
G1038004A	0.4183000	811.27	01Sep2019, 16:40	15.82
G1038004_0000_J	0.4183000	811.27	01Sep2019, 16:40	15.82
G1034500A	0.3911000	603.07	01Sep2019, 17:00	15.64
G1033900B	0.0797000	233.86	01Sep2019, 16:20	15.47
G1033900A	0.1087000	193.23	01Sep2019, 16:45	15.61
G1033900_0001_R	0.1087000	185.79	01Sep2019, 17:20	15.61
G1033900_0001_J	0.1884000	357.48	01Sep2019, 16:45	15.55
G1033900_0000_R	0.1884000	15.12	02Sep2019, 01:35	11.51

NEEL-SCHAFFER
Solutions you can build upon

1% AEP Proposed Channel Option 2 HEC-HMS Output

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
G1033900C	0.1545000	197.41	01Sep2019, 17:20	15.55
G1033900_0000_J	0.3429000	205.82	01Sep2019, 17:25	13.33
G1034601A	0.1787000	353.15	01Sep2019, 16:35	15.52
G1034600A	0.0455000	111.97	01Sep2019, 16:25	15.49
G1034600_0002_R	0.0455000	40.50	01Sep2019, 18:50	15.49
G1034600B	0.0099000	39.77	01Sep2019, 16:15	15.36
G1034600_0002_J	0.2341000	412.06	01Sep2019, 16:35	15.51
G1034600_0001_R	0.2341000	323.32	01Sep2019, 17:45	15.51
G1034600C	0.0159000	61.38	01Sep2019, 16:15	15.47
G1034600_0001_J	0.2500000	340.75	01Sep2019, 17:35	15.50
G1034600_0000_R	0.2500000	340.30	01Sep2019, 17:40	15.50
G1034600D	0.0477000	184.37	01Sep2019, 16:15	15.38
G1034600_0000_J	0.2977000	442.21	01Sep2019, 16:20	15.49

1% AEP 100-YEAR DETENTION VOLUME CALCULATION (CHANNEL)

Project Name: Kingwood Drainage Study
Location: Kingwood, Texas
Date: 5/8/2020

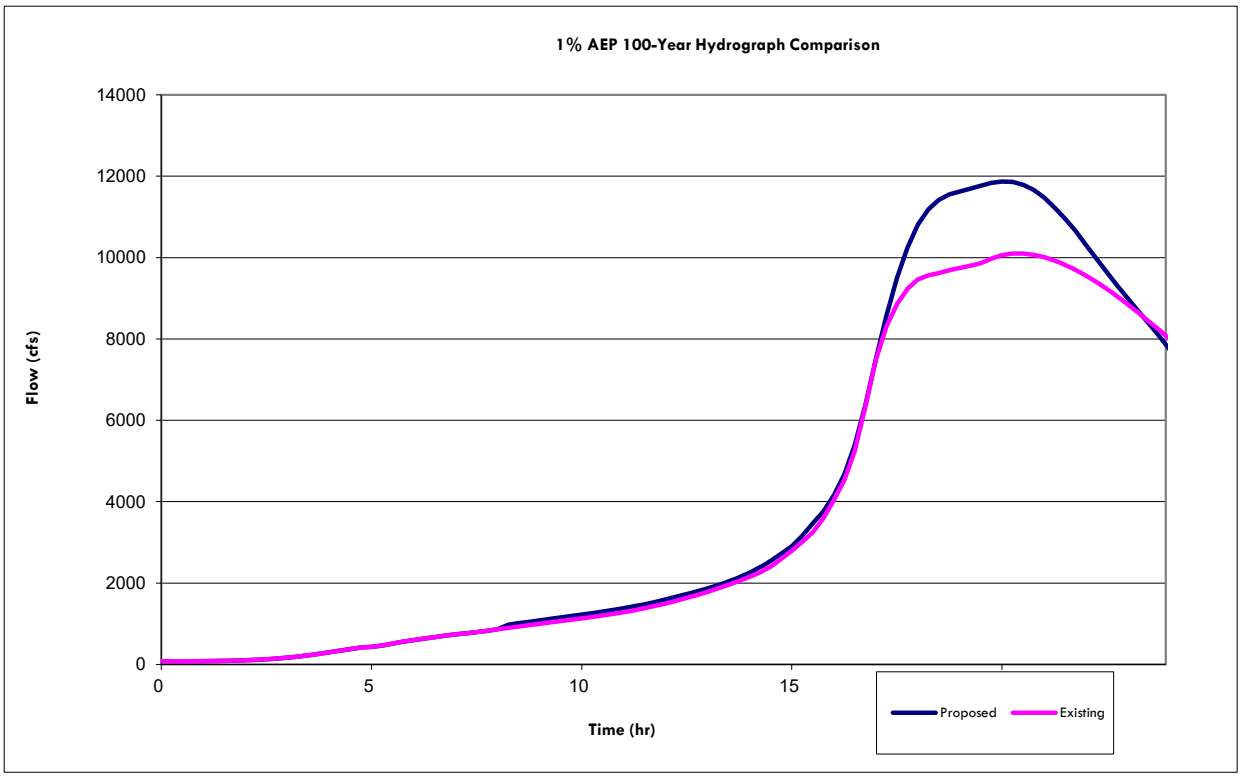
Watershed: **San Jacinto**
HCFCD Unit: **G103-38-00 (Improvement Option 1)**

Computation Parameters:

Design Storm = 1% AEP 100-year
Storm Duration = 24 hour

Calculated	Difference
Existing Peak Flow (cfs)	10100.4
Proposed Peak Flow (cfs)	11872.2
Flow (cfs)	1771.7
Volume (ac-ft)	695.3
Volume with 20% Contingency (ac-ft)	834.3

Time Interval (min) = 15



1% AEP 100-YEAR DETENTION VOLUME CALCULATION (CHANNEL & LOCAL)

Project Name: Kingwood Drainage Study
Location: Kingwood, Texas
Date: 5/8/2020

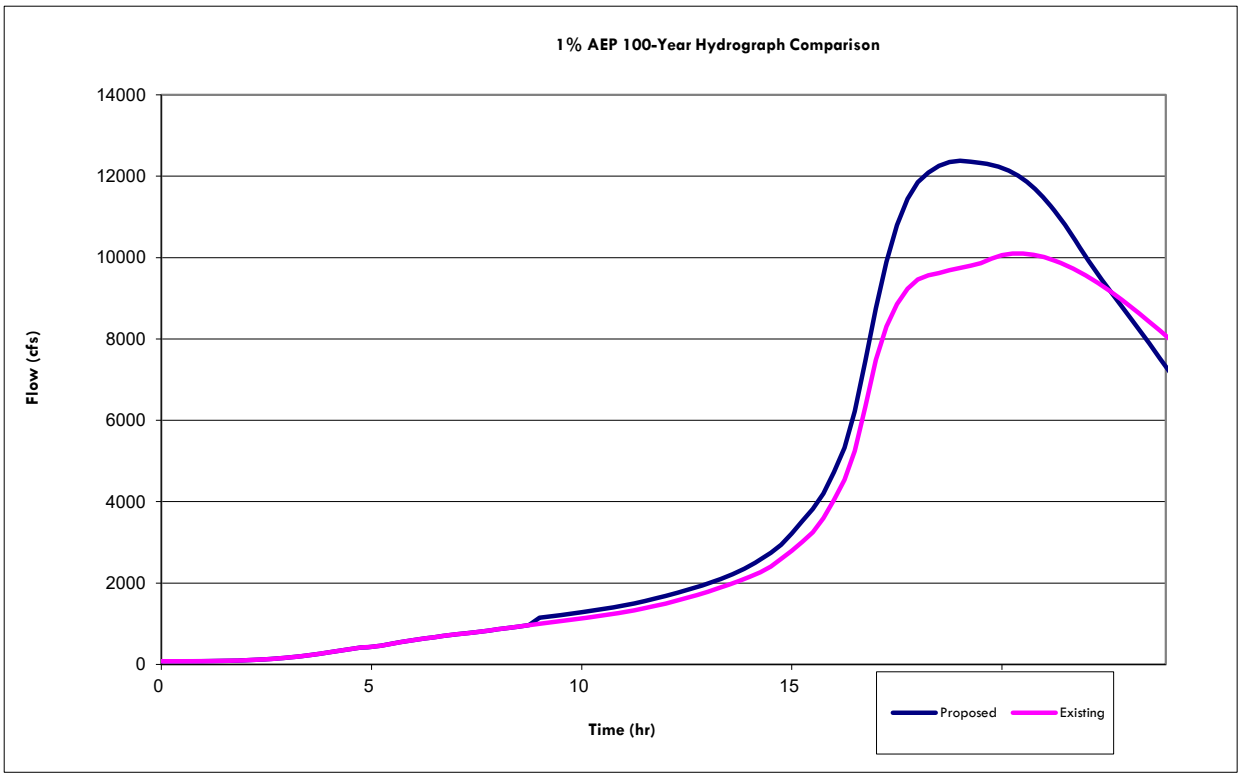
Watershed: **San Jacinto**
HCFCD Unit: **G103-38-00 (Improvement Option 1)**

Computation Parameters:

Design Storm = 1% AEP 100-year
Storm Duration = 24 hour

Calculated	Difference
Existing Peak Flow (cfs)	10100.4
Proposed Peak Flow (cfs)	12377.7
Flow (cfs)	2277.2
Volume (ac-ft)	1040.4
Volume with 20% Contingency (ac-ft)	1248.5

Time Interval (min) = 15



1% AEP 100-YEAR DETENTION VOLUME CALCULATION (CHANNEL)

Project Name: Kingwood Drainage Study
Location: Kingwood, Texas
Date: 5/8/2020

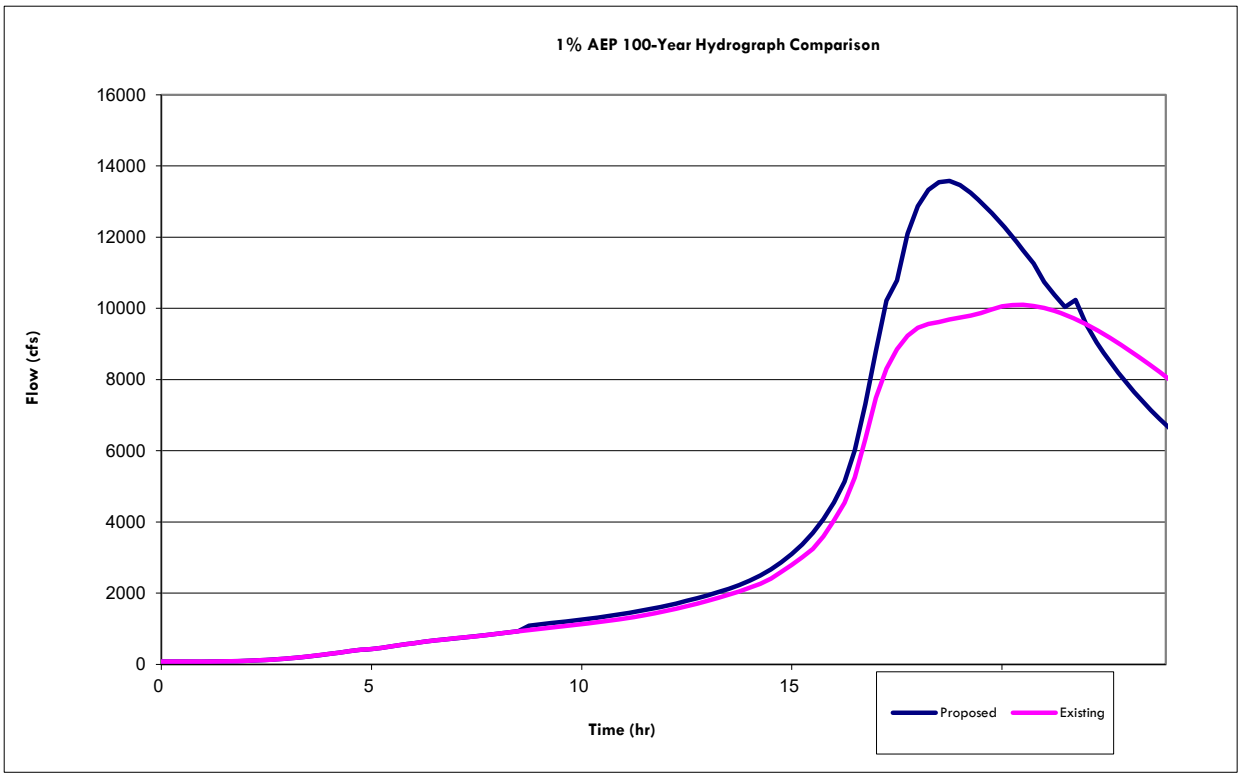
Watershed: **San Jacinto**
HCFCD Unit: **G103-33-00 (Improvement Option 2)**

Computation Parameters:

Design Storm = 1% AEP 100-year
Storm Duration = 24 hour

Calculated	Difference
Existing Peak Flow (cfs)	10100.4
Proposed Peak Flow (cfs)	13578.3
Flow (cfs)	3477.9
Volume (ac-ft)	1100.5
Volume with 20% Contingency (ac-ft)	1320.61

Time Interval (min) = 15



1% AEP 100-YEAR DETENTION VOLUME CALCULATION (CHANNEL & LOCAL)

Project Name: Kingwood Drainage Study
Location: Kingwood, Texas
Date: 5/8/2020

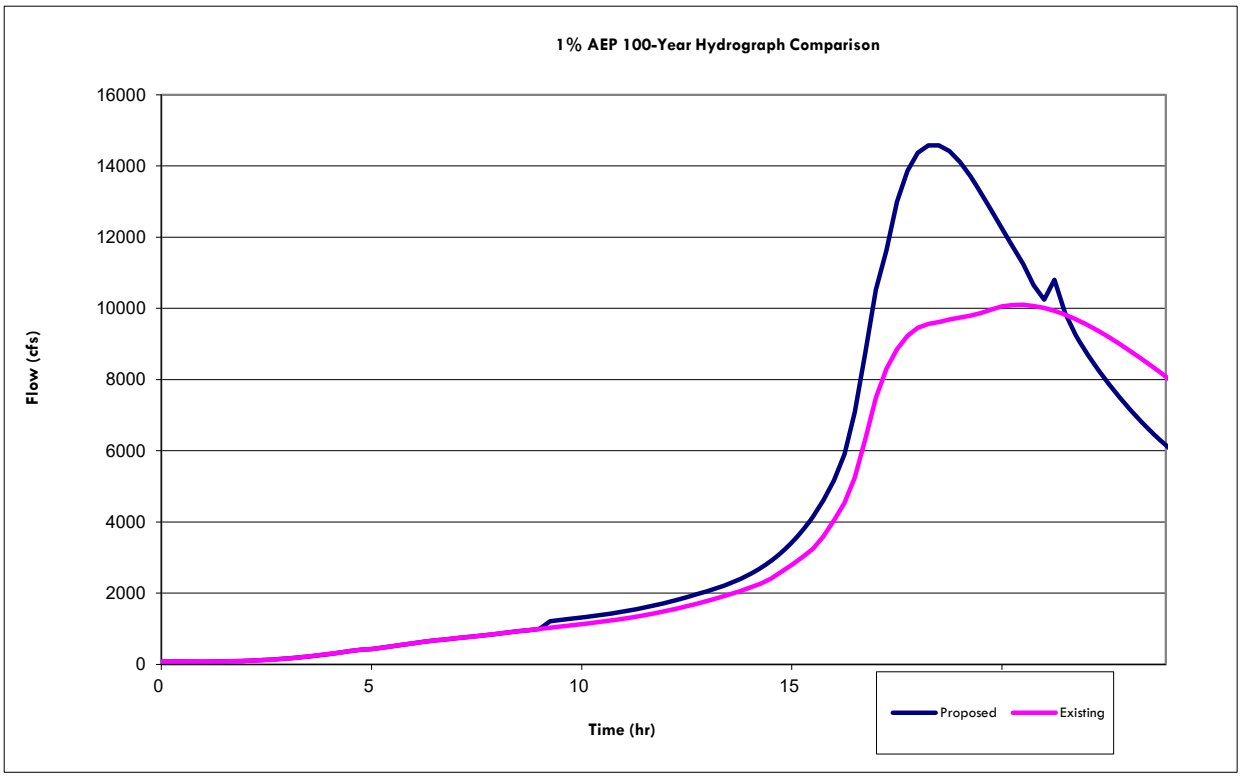
Watershed: **San Jacinto**
HCFCD Unit: **G103-33-00 (Improvement Option 2)**

Computation Parameters:

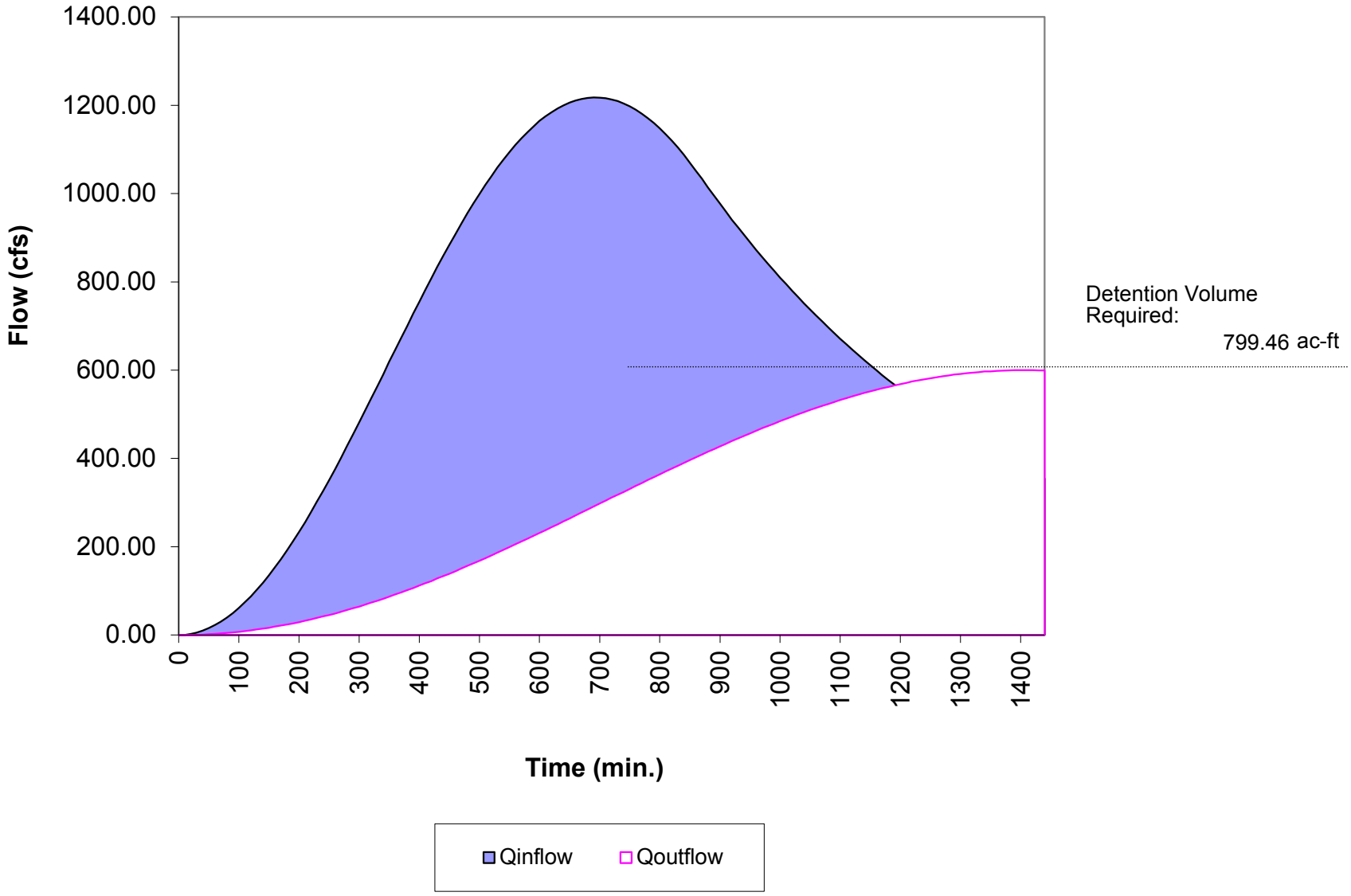
Design Storm = 1% AEP 100-year
Storm Duration = 24 hour

Calculated	Difference
Existing Peak Flow (cfs)	10100.4
Proposed Peak Flow (cfs)	14584.3
Flow (cfs)	4483.8
Volume (ac-ft)	1491.2
Volume with 20% Contingency (ac-ft)	1789.4

Time Interval (min) = 15



Upstream Taylor Gully
Montgomery County to Reduce Flow by 50%
Inflow vs. Outflow



Gauge ENGINEERING

4/29/2020

1% AEP 100-YEAR DETENTION VOLUME CALCULATION (CHANNEL)

Project Name: Kingwood Drainage Study
Location: Kingwood, Texas
Date: 5/8/2020

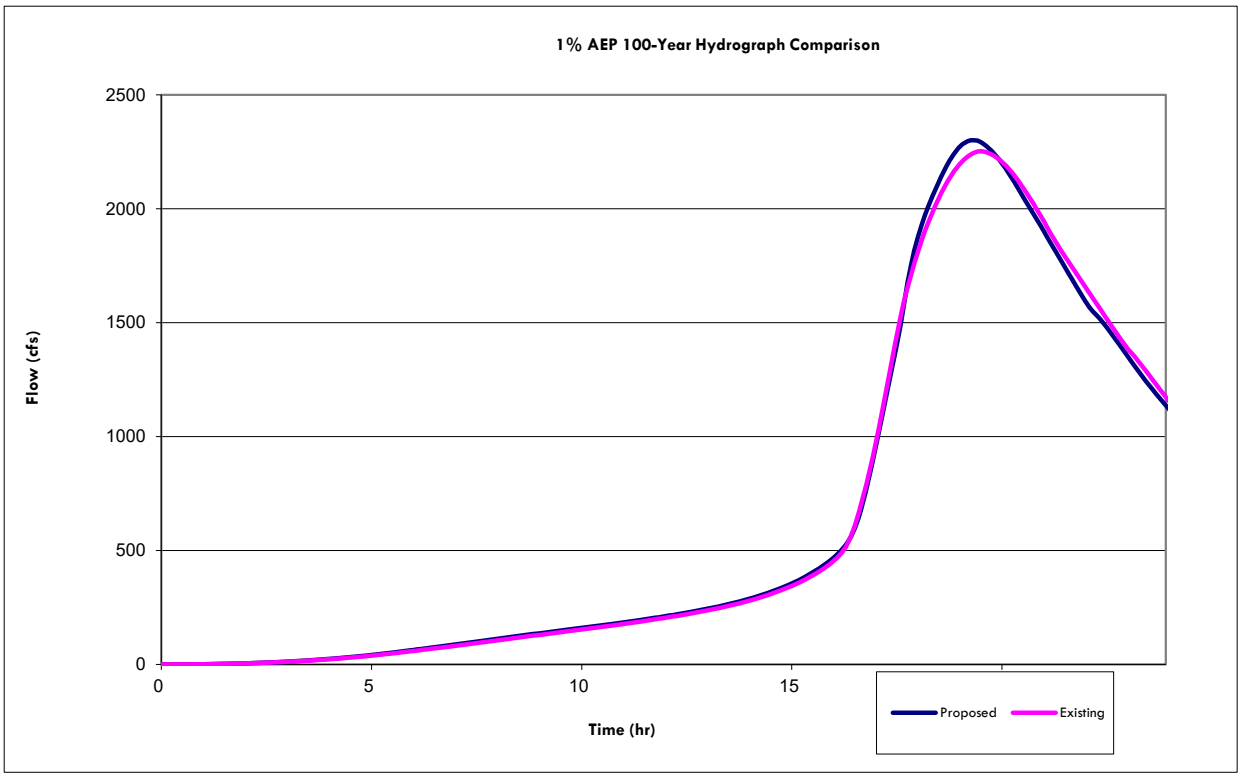
Watershed: **San Jacinto**
HCFCD Unit: **G103-36-00**

Computation Parameters:

Design Storm = 1% AEP 100-year
Storm Duration = 24 hour

Calculated	Difference
Existing Peak Flow (cfs)	2252.2
Proposed Peak Flow (cfs)	2301.2
Flow (cfs)	49.0
Volume (ac-ft)	15.0
Volume with 20% Contingency (ac-ft)	18.0

Time Interval (min) = 5



1% AEP 100-YEAR DETENTION VOLUME CALCULATION (CHANNEL & LOCAL)

Project Name: Kingwood Drainage Study
Location: Kingwood, Texas
Date: 5/8/2020

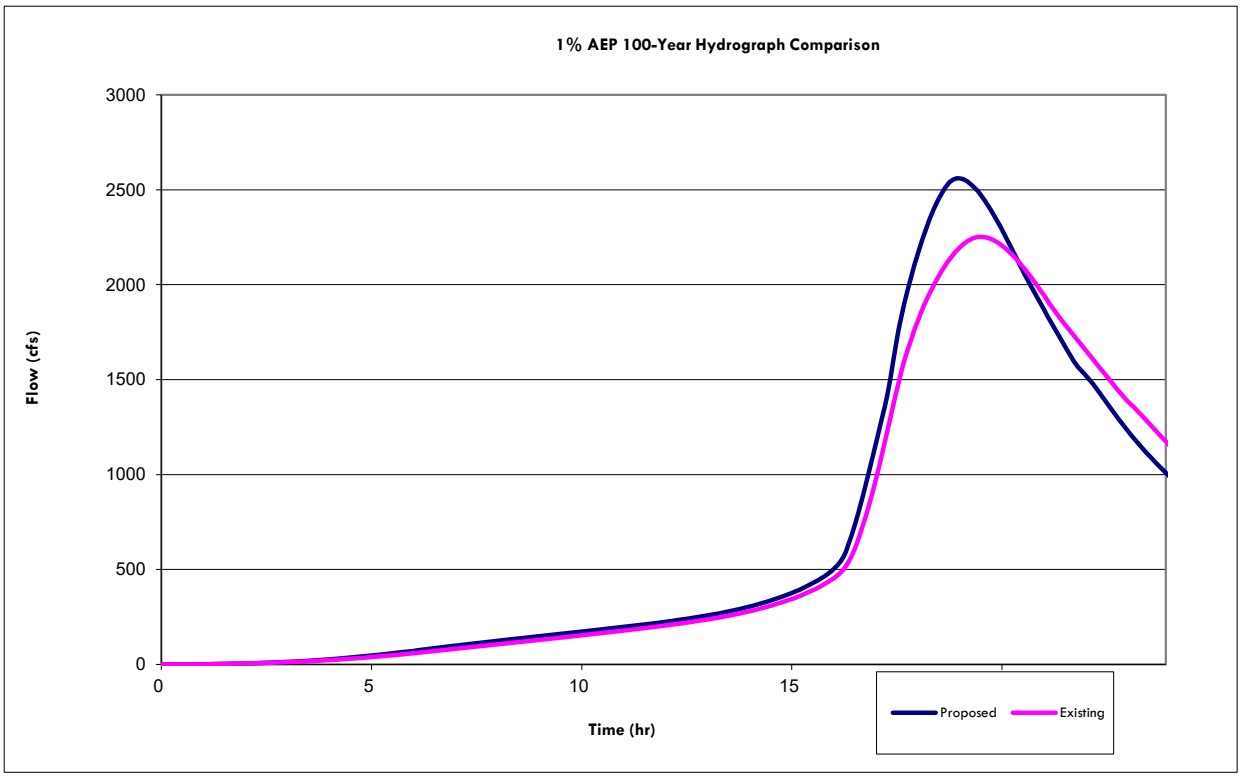
Watershed: **San Jacinto**
HCFCD Unit: **G103-36-00**

Computation Parameters:

Design Storm = 1% AEP 100-year
Storm Duration = 24 hour

Calculated	Difference
Existing Peak Flow (cfs)	2252.2
Proposed Peak Flow (cfs)	2560.7
Flow (cfs)	308.5
Volume (ac-ft)	103.0
Volume with 20% Contingency (ac-ft)	123.5

Time Interval (min) = 5



1% AEP 100-YEAR DETENTION VOLUME CALCULATION

Project Name: Kingwood Drainage Study
Location: Kingwood, Texas
Date: 4/20/2020

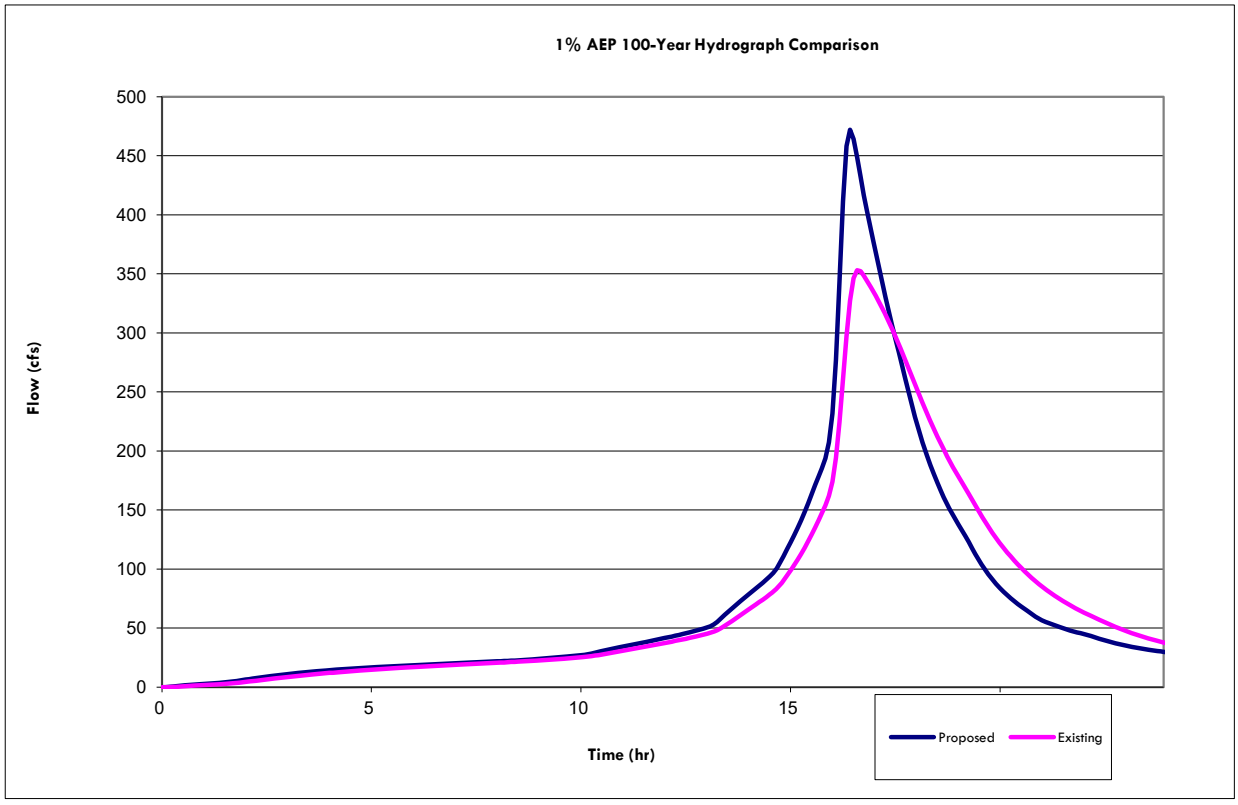
Watershed: **San Jacinto**
HCFCD Unit: **G103-46-01**

Computation Parameters:

Design Storm = 1% AEP 100-year
Storm Duration = 24 hour

Calculated	Difference
Existing Peak Flow (cfs)	353.2
Proposed Peak Flow (cfs)	472.2
Flow (cfs)	119.0
Volume (ac-ft)	16.1
Volume with 20% Contingency (ac-ft)	19.3

Time Interval (min) = 5



APPENDIX G

CONSTRUCTION COST CALCULATION

Cost Estimate for Proposed Improvements to HCFCD Unit G103-38-00						
			Reach 1		Reach 2	
Item Description	Unit of Measure	Unit Price	Estimated Unit of Quantity	Cost	Estimated Unit of Quantity	Cost
BASE UNIT PRICES - DRAINAGE ITEMS						
Site Preparation and Restoration, Including Clearing and Grubbing, Care & Control of Water and Facility for Engineer	LS	$ 300,000	1	$300,000		$0
Remove Bridge (100-499FT)	EA	$ 90,000	2	$180,000		$0
Remove Bridge (500-999FT)	EA	$ 226,000		$0		$0
Remove Bridge (>1000FT)	EA	$ 610,000		$0		$0
Remove Existing Culvert Crossing	LF	$ 120		$0		$0
Install Bridge (20-50FT)	SF	$ 130		$0		$0
Install Bridge (50-100FT)	SF	$ 120		$0		$0
Install Bridge (100-200FT)	SF	$ 90	6640	$597,600		$0
Reconstruct Culvert Crossing	SY	$ 60		$0		$0
Channel Excavation and Regrading	CY	$ 10	644523	$6,445,230		$0
Install 48-Inch Culvert	LF	$ 220		$0		$0
Install 60-Inch Culvert	LF	$ 250		$0		$0
Install 4-Foot by 2-Foot Box Culvert	LF	$ 220		$0		$0
Install 4-Foot by 3-Foot Box Culvert	LF	$ 265		$0		$0
Install 5-Foot by 4-Foot Box Culvert	LF	$ 300		$0		$0
Install 6-Foot by 3-Foot Box Culvert	LF	$ 310		$0		$0
Install 9-Foot by 8-Foot Box Culvert	LF	$ 800		$0		$0
Install 10-Foot by 6-Foot Box Culvert	LF	$ 860		$0		$0
Install 12-Foot by 8-Foot Box Culvert	LF	$ 1,215		$0		$0
Install 12' x 4' Concrete Low Flow Channel	LF	$ 350		$0		$0
Install 12' x 6' Concrete Low Flow Channel	LF	$ 400		$0		$0
Install 20' x 4' Concrete Low Flow Channel	LF	$ 500		$0		$0
Install 20' x 6' Concrete Low Flow Channel	LF	$ 600		$0		$0
Concrete Channel Lining (5")	SY	$ 65	34878	$2,267,070		$0
Borrow	CY	$ 10	83289	$832,890		$0
Hydro-mulch Seeding	AC	$ 1,680	69.75	$117,180		$0
Detention Pond Excavation - Channel Improvements	CY	$ 10		$0		$0
Detention Pond Excavation - Local Improvements	CY	$ 10		$0		$0
Structural Concrete (In-Line Structure)	EA	$ 2,500,000	1	$2,500,000		$0
Ancillary Drainage Items (10%)	LS			$1,323,997		$0
TOTAL BASE UNIT PRICES - DRAINAGE ITEMS				**$14,563,967**		**$0**
SUBTOTAL CONSTRUCTION				**$14,563,967**		**$0**
CONTINGENCY (30% CONSTRUCTION)				**$4,369,190**		**$0**
ENGINEERING FEE ESTIMATE (20% CONSTRUCTION)				**$2,912,793**		**$0**
LAND ACQUISITION						
ROW	SF	$ 6	559713	$3,582,163		$0
TOTAL LAND ACQUISITION				**$3,582,163**		**$0**
TOTAL				**$25,428,114**		**$0**
OVERALL PROJECT COST						**$25,428,114**

Cost Estimate for Proposed Detention for HCFCD Unit G103-38-00 Improvements						
			Reach 1		Reach 2	
Item Description	Unit of Measure	Unit Price	Estimated Unit of Quantity	Cost	Estimated Unit of Quantity	Cost
BASE UNIT PRICES - DRAINAGE ITEMS						
Site Preparation and Restoration, Including Clearing and Grubbing, Care & Control of Water and Facility for Engineer	LS	$ 300,000		$0		$0
Remove Bridge (100-499FT)	EA	$ 90,000		$0		$0
Remove Bridge (500-999FT)	EA	$ 226,000		$0		$0
Remove Bridge (>1000FT)	EA	$ 610,000		$0		$0
Remove Existing Culvert Crossing	LF	$ 120		$0		$0
Install Bridge (20-50FT)	SF	$ 130		$0		$0
Install Bridge (50-100FT)	SF	$ 120		$0		$0
Install Bridge (100-200FT)	SF	$ 90		$0		$0
Reconstruct Culvert Crossing	SY	$ 60		$0		$0
Channel Excavation and Regrading	CY	$ 10		$0		$0
Install 48-Inch Culvert	LF	$ 220		$0		$0
Install 60-Inch Culvert	LF	$ 250		$0		$0
Install 4-Foot by 2-Foot Box Culvert	LF	$ 220		$0		$0
Install 4-Foot by 3-Foot Box Culvert	LF	$ 265		$0		$0
Install 5-Foot by 4-Foot Box Culvert	LF	$ 300		$0		$0
Install 6-Foot by 3-Foot Box Culvert	LF	$ 310		$0		$0
Install 9-Foot by 8-Foot Box Culvert	LF	$ 800		$0		$0
Install 10-Foot by 6-Foot Box Culvert	LF	$ 860		$0		$0
Install 12-Foot by 8-Foot Box Culvert	LF	$ 1,215		$0		$0
Install 12' x 4' Concrete Low Flow Channel	LF	$ 350		$0		$0
Install 12' x 6' Concrete Low Flow Channel	LF	$ 400		$0		$0
Install 20' x 4' Concrete Low Flow Channel	LF	$ 500		$0		$0
Install 20' x 6' Concrete Low Flow Channel	LF	$ 600		$0		$0
Concrete Channel Lining (5")	SY	$ 65		$0		$0
Borrow	CY	$ 10		$0		$0
Hydro-mulch Seeding	AC	$ 1,680	249.71	$419,509		$0
Detention Pond Excavation - Channel Improvements	CY	$ 10	1346069	$13,460,690		$0
Detention Pond Excavation - Local Improvements	CY	$ 10	668243	$6,682,430		$0
Structural Concrete (In-Line Structure)	EA	$ 2,500,000		$0		$0
Ancillary Drainage Items (10%)	LS			$2,056,263		$0
TOTAL BASE UNIT PRICES - DRAINAGE ITEMS				**$22,618,892**		**$0**
SUBTOTAL CONSTRUCTION				**$22,618,892**		**$0**
CONTINGENCY (30% CONSTRUCTION)				**$6,785,668**		**$0**
ENGINEERING FEE ESTIMATE (20% CONSTRUCTION)				**$4,523,778**		**$0**
LAND ACQUISITION						
ROW	SF	$ 6		$0		$0
TOTAL LAND ACQUISITION				**$0**		**$0**
TOTAL				**$33,928,339**		**$0**
OVERALL PROJECT COST						**$33,928,339**

Cost Estimate for Proposed Improvements to HCFCD Unit G103-33-00										
			Reach 1		Reach 2		Reach 3		Reach 4	
Item Description	Unit of Measure	Unit Price	Estimated Unit of Quantity	Cost	Estimated Unit of Quantity	Cost	Estimated Unit of Quantity	Cost	Estimated Unit of Quantity	Cost
BASE UNIT PRICES - DRAINAGE ITEMS										
Site Preparation and Restoration, Including Clearing and Grubbing, Care & Control of Water and Facility for Engineer	LS	$ 300,000		$0	1	$300,000	1	$300,000	1	$300,000
Remove Bridge (100-499FT)	EA	$ 90,000		$0	1	$90,000	3	$270,000		$0
Remove Bridge (500-999FT)	EA	$ 226,000		$0		$0		$0		$0
Remove Bridge (>1000FT)	EA	$ 610,000		$0		$0		$0		$0
Remove Existing Culvert Crossing	LF	$ 120	118	$14,160	75	$9,000		$0		$0
Install Bridge (20-50FT)	SF	$ 130		$0		$0		$0		$0
Install Bridge (50-100FT)	SF	$ 120		$0		$0		$0		$0
Install Bridge (100-200FT)	SF	$ 90		$0	4760	$428,400	11248	$1,012,320		$0
Reconstruct Culvert Crossing	SY	$ 60		$0		$0		$0		$0
Channel Excavation and Regrading	CY	$ 10		$0	114110	$1,141,100	179071	$1,790,710	155544	$1,555,440
Install 48-Inch Culvert	LF	$ 220		$0		$0		$0		$0
Install 60-Inch Culvert	LF	$ 250		$0		$0		$0		$0
Install 4-Foot by 2-Foot Box Culvert	LF	$ 220		$0		$0		$0		$0
Install 4-Foot by 3-Foot Box Culvert	LF	$ 265		$0		$0		$0		$0
Install 5-Foot by 4-Foot Box Culvert	LF	$ 300		$0		$0		$0		$0
Install 6-Foot by 3-Foot Box Culvert	LF	$ 310		$0		$0		$0		$0
Install 9-Foot by 8-Foot Box Culvert	LF	$ 800	118	$94,400		$0		$0		$0
Install 10-Foot by 6-Foot Box Culvert	LF	$ 860		$0		$0		$0		$0
Install 12-Foot by 8-Foot Box Culvert	LF	$ 1,215		$0		$0		$0		$0
Install 12' x 4' Concrete Low Flow Channel	LF	$ 350		$0		$0		$0		$0
Install 12' x 6' Concrete Low Flow Channel	LF	$ 400		$0		$0		$0		$0
Install 20' x 4' Concrete Low Flow Channel	LF	$ 500		$0		$0		$0		$0
Install 20' x 6' Concrete Low Flow Channel	LF	$ 600		$0		$0		$0		$0
Concrete Channel Lining (5")	SY	$ 65		$0		$0		$0		$0
Borrow	CY	$ 10		$0	285	$2,850	868	$8,680	8933	$89,330
Hydro-mulch Seeding	AC	$ 1,680		$0	13.73	$23,066	35.21	$59,153	16.59	$27,871
Detention Pond Excavation - Channel Improvements	CY	$ 10		$0		$0		$0		$0
Detention Pond Excavation - Local Improvements	CY	$ 10		$0		$0		$0		$0
Structural Concrete (In-Line Structure)	EA	$ 2,500,000		$0		$0		$0		$0
Ancillary Drainage Items (10%)	LS			$10,856		$199,442		$344,086		$197,264
TOTAL BASE UNIT PRICES - DRAINAGE ITEMS				**$119,416**		**$2,193,858**		**$3,784,949**		**$2,169,905**
SUBTOTAL CONSTRUCTION				**$119,416**		**$2,193,858**		**$3,784,949**		**$2,169,905**
CONTINGENCY (30% CONSTRUCTION)				**$35,825**		**$658,157**		**$1,135,485**		**$650,972**
ENGINEERING FEE ESTIMATE (20% CONSTRUCTION)				**$23,883**		**$438,772**		**$756,990**		**$433,981**
LAND ACQUISITION										
ROW	SF	$ 6		$0	837481	$5,359,878	105802	$677,133	904638	$5,789,683
TOTAL LAND ACQUISITION				**$0**		**$5,359,878**		**$677,133**		**$5,789,683**
TOTAL				**$179,124**		**$8,650,665**		**$6,354,556**		**$9,044,541**
OVERALL PROJECT COST										**$24,228,887**

Cost Estimate for Proposed Detention of HCFCD Unit G103-33-00 Improvements										
			Reach 1		Reach 2		Reach 3		Reach 4	
Item Description	Unit of Measure	Unit Price	Estimated Unit of Quantity	Cost	Estimated Unit of Quantity	Cost	Estimated Unit of Quantity	Cost	Estimated Unit of Quantity	Cost
BASE UNIT PRICES - DRAINAGE ITEMS										
Site Preparation and Restoration, Including Clearing and Grubbing, Care & Control of Water and Facility for Engineer	LS	$ 300,000		$0		$0		$0		$0
Remove Bridge (100-499FT)	EA	$ 90,000		$0		$0		$0		$0
Remove Bridge (500-999FT)	EA	$ 226,000		$0		$0		$0		$0
Remove Bridge (>1000FT)	EA	$ 610,000		$0		$0		$0		$0
Remove Existing Culvert Crossing	LF	$ 120		$0		$0		$0		$0
Install Bridge (20-50FT)	SF	$ 130		$0		$0		$0		$0
Install Bridge (50-100FT)	SF	$ 120		$0		$0		$0		$0
Install Bridge (100-200FT)	SF	$ 90		$0		$0		$0		$0
Reconstruct Culvert Crossing	SY	$ 60		$0		$0		$0		$0
Channel Excavation and Regrading	CY	$ 10		$0		$0		$0		$0
Install 48-Inch Culvert	LF	$ 220		$0		$0		$0		$0
Install 60-Inch Culvert	LF	$ 250		$0		$0		$0		$0
Install 4-Foot by 2-Foot Box Culvert	LF	$ 220		$0		$0		$0		$0
Install 4-Foot by 3-Foot Box Culvert	LF	$ 265		$0		$0		$0		$0
Install 5-Foot by 4-Foot Box Culvert	LF	$ 300		$0		$0		$0		$0
Install 6-Foot by 3-Foot Box Culvert	LF	$ 310		$0		$0		$0		$0
Install 9-Foot by 8-Foot Box Culvert	LF	$ 800		$0		$0		$0		$0
Install 10-Foot by 6-Foot Box Culvert	LF	$ 860		$0		$0		$0		$0
Install 12-Foot by 8-Foot Box Culvert	LF	$ 1,215		$0		$0		$0		$0
Install 12' x 4' Concrete Low Flow Channel	LF	$ 350		$0		$0		$0		$0
Install 12' x 6' Concrete Low Flow Channel	LF	$ 400		$0		$0		$0		$0
Install 20' x 4' Concrete Low Flow Channel	LF	$ 500		$0		$0		$0		$0
Install 20' x 6' Concrete Low Flow Channel	LF	$ 600		$0		$0		$0		$0
Concrete Channel Lining (5")	SY	$ 65		$0		$0		$0		$0
Borrow	CY	$ 10		$0		$0		$0		$0
Hydro-mulch Seeding	AC	$ 1,680		$0		$0		$0	108.18	$181,742
Detention Pond Excavation - Channel Improvements	CY	$ 10		$0		$0		$0	784516	$7,845,160
Detention Pond Excavation - Local Improvements	CY	$ 10		$0		$0		$0	88153	$881,530
Structural Concrete (In-Line Structure)	EA	$ 2,500,000		$0		$0		$0		$0
Ancillary Drainage Items (10%)	LS			$0		$0		$0		$890,843
TOTAL BASE UNIT PRICES - DRAINAGE ITEMS				**$0**		**$0**		**$0**		**$9,799,276**
SUBTOTAL CONSTRUCTION				**$0**		**$0**		**$0**		**$9,799,276**
CONTINGENCY (30% CONSTRUCTION)				**$0**		**$0**		**$0**		**$2,939,783**
ENGINEERING FEE ESTIMATE (20% CONSTRUCTION)				**$0**		**$0**		**$0**		**$1,959,855**
LAND ACQUISITION										
ROW	SF	$ 6		$0		$0		$0		$0
TOTAL LAND ACQUISITION				**$0**		**$0**		**$0**		**$0**
TOTAL				**$0**		**$0**		**$0**		**$14,698,913**
OVERALL PROJECT COST										**$14,698,913**

Cost Estimate for Proposed Improvements to HCFCD Unit G103-33-04				
			Reach 1	
Item Description	**Unit of Measure**	**Unit Price**	**Estimated Unit of Quantity**	**Cost**
BASE UNIT PRICES - DRAINAGE ITEMS				
Site Preparation and Restoration, Including Clearing and Grubbing, Care & Control of Water and Facility for Engineer	LS	$ 300,000	1	$300,000
Remove Bridge (100-499FT)	EA	$ 90,000		$0
Remove Bridge (500-999FT)	EA	$ 226,000		$0
Remove Bridge (>1000FT)	EA	$ 610,000		$0
Remove Existing Culvert Crossing	LF	$ 120	400	$48,000
Install Bridge (20-50FT)	SF	$ 130		$0
Install Bridge (50-100FT)	SF	$ 120		$0
Install Bridge (100-200FT)	SF	$ 90		$0
Reconstruct Culvert Crossing	SY	$ 60		$0
Channel Excavation and Regrading	CY	$ 10	34100	$341,000
Install 48-Inch Culvert	LF	$ 220		$0
Install 60-Inch Culvert	LF	$ 250		$0
Install 4-Foot by 2-Foot Box Culvert	LF	$ 220		$0
Install 4-Foot by 3-Foot Box Culvert	LF	$ 265		$0
Install 5-Foot by 4-Foot Box Culvert	LF	$ 300		$0
Install 6-Foot by 3-Foot Box Culvert	LF	$ 310		$0
Install 9-Foot by 8-Foot Box Culvert	LF	$ 800		$0
Install 10-Foot by 6-Foot Box Culvert	LF	$ 860	600	$516,000
Install 12-Foot by 8-Foot Box Culvert	LF	$ 1,215		$0
Install 12' x 4' Concrete Low Flow Channel	LF	$ 350		$0
Install 12' x 6' Concrete Low Flow Channel	LF	$ 400		$0
Install 20' x 4' Concrete Low Flow Channel	LF	$ 500		$0
Install 20' x 6' Concrete Low Flow Channel	LF	$ 600		$0
Concrete Channel Lining (5")	SY	$ 65		$0
Borrow	CY	$ 10	620	$6,200
Hydro-mulch Seeding	AC	$ 1,680	7.02	$11,794
Detention Pond Excavation - Channel Improvements	CY	$ 10		$0
Detention Pond Excavation - Local Improvements	CY	$ 10		$0
Structural Concrete (In-Line Structure)	EA	$ 2,500,000		$0
Ancillary Drainage Items (10%)	LS			$122,299
TOTAL BASE UNIT PRICES - DRAINAGE ITEMS				**$1,345,293**
SUBTOTAL CONSTRUCTION				**$1,345,293**
CONTINGENCY (30% CONSTRUCTION)				**$403,588**
ENGINEERING FEE ESTIMATE (20% CONSTRUCTION)				**$269,059**
LAND ACQUISITION				
ROW	SF	$ 6	23484	$150,298
TOTAL LAND ACQUISITION				**$150,298**
TOTAL				**$2,168,237**
OVERALL PROJECT COST				**$2,168,237**

Cost Estimate for Proposed Improvements to HCFCD Unit G103-38-01						
			Reach 1		Reach 2	
Item Description	Unit of Measure	Unit Price	Estimated Unit of Quantity	Cost	Estimated Unit of Quantity	Cost
BASE UNIT PRICES - DRAINAGE ITEMS						
Site Preparation and Restoration, Including Clearing and Grubbing, Care & Control of Water and Facility for Engineer	LS	$ 300,000		$0	1	$300,000
Remove Bridge (100-499FT)	EA	$ 90,000		$0		$0
Remove Bridge (500-999FT)	EA	$ 226,000		$0		$0
Remove Bridge (>1000FT)	EA	$ 610,000		$0		$0
Remove Existing Culvert Crossing	LF	$ 120		$0		$0
Install Bridge (20-50FT)	SF	$ 130		$0		$0
Install Bridge (50-100FT)	SF	$ 120		$0		$0
Install Bridge (100-200FT)	SF	$ 90		$0		$0
Reconstruct Culvert Crossing	SY	$ 60		$0		$0
Channel Excavation and Regrading	CY	$ 10		$0	2758	$27,580
Install 48-Inch Culvert	LF	$ 220		$0		$0
Install 60-Inch Culvert	LF	$ 250		$0		$0
Install 4-Foot by 2-Foot Box Culvert	LF	$ 220		$0		$0
Install 4-Foot by 3-Foot Box Culvert	LF	$ 265		$0		$0
Install 5-Foot by 4-Foot Box Culvert	LF	$ 300		$0		$0
Install 6-Foot by 3-Foot Box Culvert	LF	$ 310		$0		$0
Install 9-Foot by 8-Foot Box Culvert	LF	$ 800		$0		$0
Install 10-Foot by 6-Foot Box Culvert	LF	$ 860		$0		$0
Install 12-Foot by 8-Foot Box Culvert	LF	$ 1,215		$0		$0
Install 12' x 4' Concrete Low Flow Channel	LF	$ 350		$0		$0
Install 12' x 6' Concrete Low Flow Channel	LF	$ 400		$0		$0
Install 20' x 4' Concrete Low Flow Channel	LF	$ 500		$0		$0
Install 20' x 6' Concrete Low Flow Channel	LF	$ 600		$0		$0
Concrete Channel Lining (5")	SY	$ 65		$0	15071	$979,615
Borrow	CY	$ 10		$0		$0
Hydro-mulch Seeding	AC	$ 1,680		$0		$0
Detention Pond Excavation - Channel Improvements	CY	$ 10		$0		$0
Detention Pond Excavation - Local Improvements	CY	$ 10		$0		$0
Structural Concrete (In-Line Structure)	EA	$ 2,500,000		$0		$0
Ancillary Drainage Items (10%)	LS			$0		$130,720
TOTAL BASE UNIT PRICES - DRAINAGE ITEMS				**$0**		**$1,437,915**
SUBTOTAL CONSTRUCTION				**$0**		**$1,437,915**
CONTINGENCY (30% CONSTRUCTION)				**$0**		**$431,374**
ENGINEERING FEE ESTIMATE (20% CONSTRUCTION)				**$0**		**$287,583**
LAND ACQUISITION						
ROW	SF	$ 6		$0		$0
TOTAL LAND ACQUISITION				**$0**		**$0**
TOTAL				**$0**		**$2,156,872**
OVERALL PROJECT COST						**$2,156,872**

Cost Estimate for Proposed Improvements to HCFCD Unit G103-38-01.1				
			Reach 1	
Item Description	**Unit of Measure**	**Unit Price**	**Estimated Unit of Quantity**	**Cost**
BASE UNIT PRICES - DRAINAGE ITEMS				
Site Preparation and Restoration, Including Clearing and Grubbing, Care & Control of Water and Facility for Engineer	LS	$ 300,000	1	$300,000
Remove Bridge (100-499FT)	EA	$ 90,000		$0
Remove Bridge (500-999FT)	EA	$ 226,000		$0
Remove Bridge (>1000FT)	EA	$ 610,000		$0
Remove Existing Culvert Crossing	LF	$ 120		$0
Install Bridge (20-50FT)	SF	$ 130		$0
Install Bridge (50-100FT)	SF	$ 120		$0
Install Bridge (100-200FT)	SF	$ 90		$0
Reconstruct Culvert Crossing	SY	$ 60		$0
Channel Excavation and Regrading	CY	$ 10	4693	$46,930
Install 48-Inch Culvert	LF	$ 220		$0
Install 60-Inch Culvert	LF	$ 250		$0
Install 4-Foot by 2-Foot Box Culvert	LF	$ 220		$0
Install 4-Foot by 3-Foot Box Culvert	LF	$ 265		$0
Install 5-Foot by 4-Foot Box Culvert	LF	$ 300		$0
Install 6-Foot by 3-Foot Box Culvert	LF	$ 310		$0
Install 9-Foot by 8-Foot Box Culvert	LF	$ 800		$0
Install 10-Foot by 6-Foot Box Culvert	LF	$ 860		$0
Install 12-Foot by 8-Foot Box Culvert	LF	$ 1,215		$0
Install 12' x 4' Concrete Low Flow Channel	LF	$ 350		$0
Install 12' x 6' Concrete Low Flow Channel	LF	$ 400		$0
Install 20' x 4' Concrete Low Flow Channel	LF	$ 500		$0
Install 20' x 6' Concrete Low Flow Channel	LF	$ 600		$0
Concrete Channel Lining (5")	SY	$ 65		$0
Borrow	CY	$ 10	0.25	$3
Hydro-mulch Seeding	AC	$ 1,680	2.01	$3,377
Detention Pond Excavation - Channel Improvements	CY	$ 10		$0
Detention Pond Excavation - Local Improvements	CY	$ 10		$0
Structural Concrete (In-Line Structure)	EA	$ 2,500,000		$0
Ancillary Drainage Items (10%)	LS			$35,031
TOTAL BASE UNIT PRICES - DRAINAGE ITEMS				**$385,340**
SUBTOTAL CONSTRUCTION				**$385,340**
CONTINGENCY (30% CONSTRUCTION)				**$115,602**
ENGINEERING FEE ESTIMATE (20% CONSTRUCTION)				**$77,068**
LAND ACQUISITION				
ROW	SF	$ 6		$0
TOTAL LAND ACQUISITION				**$0**
TOTAL				**$578,010**
OVERALL PROJECT COST				**$578,010**

Cost Estimate for Proposed Improvements to HCFCD Unit G103-80-03.1B (TAYLOR GULLY)								
			Reach 1		Reach 2		Reach 3	
Item Description	Unit of Measure	Unit Price	Estimated Unit of Quantity	Cost	Estimated Unit of Quantity	Cost	Estimated Unit of Quantity	Cost
BASE UNIT PRICES - DRAINAGE ITEMS								
Site Preparation and Restoration, Including Clearing and Grubbing, Care & Control of Water and Facility for Engineer	LS	$ 150,000	1.00	$150,000	6.00	$900,000	1.00	$150,000
Remove Bridge (100-499FT)	EA	$ 90,000		$0		$0		$0
Remove Bridge (500-999FT)	EA	$ 226,000		$0		$0		$0
Remove Bridge (>1000FT)	EA	$ 610,000		$0		$0		$0
Remove Existing Culvert Crossing	LF	$ 120		$0	92.00	$11,040		$0
Rem. & Dis. of Roadway Pvmt.	SY	$ 15		$0	277.78	$4,167		$0
Rem. & Dis. of Channel Lining	SY	$ 15		$0	5,853.00	$87,795		$0
Install Bridge (20-50FT)	SF	$ 130		$0		$0		$0
Install Bridge (50-100FT)	SF	$ 120		$0		$0		$0
Install Bridge (100-200FT) (Rustling Elms Dr)	SF	$ 90		$0	4,000.00	$360,000		$0
Reconstruct Culvert Crossing	SY	$ 60		$0		$0		$0
Channel Excavation and Regrading	CY	$ 10	7,012.46	$70,125	42,308.54	$423,085	14,000.00	$140,000
Install 4-Foot by 2-Foot Box Culvert	LF	$ 220		$0		$0		$0
Install 4-Foot by 3-Foot Box Culvert	LF	$ 265		$0		$0		$0
Install 5-Foot by 4-Foot Box Culvert	LF	$ 300		$0		$0		$0
Install 6-Foot by 3-Foot Box Culvert	LF	$ 310		$0		$0		$0
Install 9-Foot by 8-Foot Box Culvert	LF	$ 800		$0		$0		$0
Install 10-Foot by 6-Foot Box Culvert	LF	$ 860		$0		$0		$0
Install 12-Foot by 8-Foot Box Culvert	LF	$ 1,215		$0		$0		$0
Install 12' x 4' Concrete Low Flow Channel	LF	$ 350		$0		$0		$0
Install 12' x 6' Concrete Low Flow Channel	LF	$ 400		$0		$0		$0
Install 20' x 4' Concrete Low Flow Channel	LF	$ 700	1,500.00	$1,050,000	9,050.00	$6,335,000		$0
Install 20' x 6' Concrete Low Flow Channel	LF	$ 800		$0		$0		$0
Concrete Channel Lining (5")	SY	$ 65		$0	4,682.40	$304,356		$0
Borrow	CY	$ 10		$0		$0		$0
Hydro-mulch Seeding	AC	$ 1,680	3.24	$5,438	16.62	$27,923	0.60	$1,008
Detention Pond Excavation	CY	$ 10		$0		$0		$0
Structural Concrete (In-Line Structure) - at Montg. County Line	EA	$ 300,000	1.00	$300,000		$0		$0
Structural Concrete (In-Line Structure) - Modify Drop Structure	EA	$ 600,000		$0	1.00	$600,000		$0
Ancillary Drainage Items (10%)	LS			$157,556		$905,337		$29,101
TOTAL BASE UNIT PRICES - DRAINAGE ITEMS				**$1,733,119**		**$9,958,702**		**$320,109**
SUBTOTAL CONSTRUCTION				**$1,733,119**		**$9,958,702**		**$320,109**
CONTINGENCY (30% CONSTRUCTION)				**$519,936**		**$2,987,611**		**$96,033**
ENGINEERING FEE ESTIMATE (20% CONSTRUCTION)				**$346,624**		**$1,991,740**		**$64,022**
LAND ACQUISITION								
ROW	SF	$ 6		$0		$0		$0
TOTAL LAND ACQUISITION				**$0**		**$0**		**$0**
TOTAL				**$2,599,678**		**$14,938,054**		**$480,164**
OVERALL PROJECT COST								**$18,017,896**

Cost Estimate for Proposed Improvements to HCFCD Unit G103-80-03.1B (TAYLOR GULLY)								
			Reach 1		Reach 2		Reach 3	
Item Description	Unit of Measure	Unit Price	Estimated Unit of Quantity	Cost	Estimated Unit of Quantity	Cost	Estimated Unit of Quantity	Cost
BASE UNIT PRICES - DRAINAGE ITEMS								
Site Preparation and Restoration, Including Clearing and Grubbing, Care & Control of Water and Facility for Engineer	LS	$ 150,000		$0		$0		$0
Remove Bridge (100-499FT)	EA	$ 90,000		$0		$0		$0
Remove Bridge (500-999FT)	EA	$ 226,000		$0		$0		$0
Remove Bridge (>1000FT)	EA	$ 610,000		$0		$0		$0
Remove Existing Culvert Crossing	LF	$ 120		$0		$0		$0
Rem. & Dis. of Roadway Pvmt.	SY	$ 15		$0		$0		$0
Rem. & Dis. of Channel Lining	SY	$ 15		$0		$0		$0
Install Bridge (20-50FT)	SF	$ 130		$0		$0		$0
Install Bridge (50-100FT)	SF	$ 120		$0		$0		$0
Install Bridge (100-200FT) (Rustling Elms Dr)	SF	$ 90		$0		$0		$0
Reconstruct Culvert Crossing	SY	$ 60		$0		$0		$0
Channel Excavation and Regrading	CY	$ 10		$0		$0		$0
Install 4-Foot by 2-Foot Box Culvert	LF	$ 220		$0		$0		$0
Install 4-Foot by 3-Foot Box Culvert	LF	$ 265		$0		$0		$0
Install 5-Foot by 4-Foot Box Culvert	LF	$ 300		$0		$0		$0
Install 6-Foot by 3-Foot Box Culvert	LF	$ 310		$0		$0		$0
Install 9-Foot by 8-Foot Box Culvert	LF	$ 800		$0		$0		$0
Install 10-Foot by 6-Foot Box Culvert	LF	$ 860		$0		$0		$0
Install 12-Foot by 8-Foot Box Culvert	LF	$ 1,215		$0		$0		$0
Install 12' x 4' Concrete Low Flow Channel	LF	$ 350		$0		$0		$0
Install 12' x 6' Concrete Low Flow Channel	LF	$ 400		$0		$0		$0
Install 20' x 4' Concrete Low Flow Channel	LF	$ 700		$0		$0		$0
Install 20' x 6' Concrete Low Flow Channel	LF	$ 800		$0		$0		$0
Concrete Channel Lining (5")	SY	$ 65		$0		$0		$0
Borrow	CY	$ 10		$0		$0		$0
Hydro-mulch Seeding	AC	$ 1,680		$0		$0	15.97	$26,826
Detention Pond Excavation	CY	$ 10		$0		$0	186,501.33	$1,865,013
Structural Concrete (In-Line Structure) - at Montg. County Line	EA	$ 300,000		$0		$0		$0
Structural Concrete (In-Line Structure) - Modify Drop Structure	EA	$ 600,000		$0		$0		$0
Ancillary Drainage Items (10%)	LS			$0		$0		$189,184
TOTAL BASE UNIT PRICES - DRAINAGE ITEMS				**$0**		**$0**		**$2,081,023**
SUBTOTAL CONSTRUCTION				**$0**		**$0**		**$2,081,023**
CONTINGENCY (30% CONSTRUCTION)				**$0**		**$0**		**$624,307**
ENGINEERING FEE ESTIMATE (20% CONSTRUCTION)				**$0**		**$0**		**$416,205**
LAND ACQUISITION								
ROW	SF	$ 6		$0		$0		$0
TOTAL LAND ACQUISITION				**$0**		**$0**		**$0**
TOTAL				**$0**		**$0**		**$3,121,535**
OVERALL PROJECT COST								**$3,121,535**

Cost Estimate for Proposed Improvements to HCFCD Unit G103-36-00										
			Reach 1		Reach 2		Reach 3		Reach 4	
Item Description	Unit of Measure	Unit Price	Estimated Unit of Quantity	Cost	Estimated Unit of Quantity	Cost	Estimated Unit of Quantity	Cost	Estimated Unit of Quantity	Cost
BASE UNIT PRICES - DRAINAGE ITEMS										
Site Preparation and Restoration, Including Clearing and Grubbing, Care & Control of Water and Facility for Engineer	LS	$ 300,000	1	$300,000		$0		$0		$0
Remove Bridge (100-499FT)	EA	$ 90,000		$0		$0		$0		$0
Remove Bridge (500-999FT)	EA	$ 226,000		$0		$0		$0		$0
Remove Bridge (>1000FT)	EA	$ 610,000		$0		$0		$0		$0
Remove Existing Culvert Crossing	LF	$ 120	435	$52,200		$0		$0		$0
Install Bridge (20-50FT)	SF	$ 130		$0		$0		$0		$0
Install Bridge (50-100FT)	SF	$ 120		$0		$0		$0		$0
Install Bridge (100-200FT)	SF	$ 90		$0		$0		$0		$0
Reconstruct Culvert Crossing	SY	$ 60		$0		$0		$0		$0
Channel Excavation and Regrading	CY	$ 10	14580	$145,800		$0		$0		$0
Install 48-Inch Culvert	LF	$ 220		$0		$0		$0		$0
Install 60-Inch Culvert	LF	$ 250		$0		$0		$0		$0
Install 4-Foot by 2-Foot Box Culvert	LF	$ 220		$0		$0		$0		$0
Install 4-Foot by 3-Foot Box Culvert	LF	$ 265		$0		$0		$0		$0
Install 5-Foot by 4-Foot Box Culvert	LF	$ 300		$0		$0		$0		$0
Install 6-Foot by 3-Foot Box Culvert	LF	$ 310		$0		$0		$0		$0
Install 9-Foot by 8-Foot Box Culvert	LF	$ 800		$0		$0		$0		$0
Install 10-Foot by 6-Foot Box Culvert	LF	$ 860		$0		$0		$0		$0
Install 12-Foot by 8-Foot Box Culvert	LF	$ 1,215	435	$528,525		$0		$0		$0
Install 12' x 4' Concrete Low Flow Channel	LF	$ 350		$0		$0		$0		$0
Install 12' x 6' Concrete Low Flow Channel	LF	$ 400		$0		$0		$0		$0
Install 20' x 4' Concrete Low Flow Channel	LF	$ 500		$0		$0		$0		$0
Install 20' x 6' Concrete Low Flow Channel	LF	$ 600		$0		$0		$0		$0
Concrete Channel Lining (5")	SY	$ 65		$0		$0		$0		$0
Borrow	CY	$ 10	2388	$23,880		$0		$0		$0
Hydro-mulch Seeding	AC	$ 1,680	5.56	$9,341		$0		$0		$0
Detention Pond Excavation - Channel Improvements	CY	$ 10		$0		$0		$0		$0
Detention Pond Excavation - Local Improvements	CY	$ 10		$0		$0		$0		$0
Structural Concrete (In-Line Structure)	EA	$ 2,500,000		$0		$0		$0		$0
Ancillary Drainage Items (10%)	LS			$105,975		$0		$0		$0
TOTAL BASE UNIT PRICES - DRAINAGE ITEMS				**$1,165,720**		**$0**		**$0**		**$0**
SUBTOTAL CONSTRUCTION				**$1,165,720**		**$0**		**$0**		**$0**
CONTINGENCY (30% CONSTRUCTION)				**$349,716**		**$0**		**$0**		**$0**
ENGINEERING FEE ESTIMATE (20% CONSTRUCTION)				**$233,144**		**$0**		**$0**		**$0**
LAND ACQUISITION										
ROW	SF	$ 6		$0		$0		$0		$0
TOTAL LAND ACQUISITION				**$0**		**$0**		**$0**		**$0**
TOTAL				**$1,748,581**		**$0**		**$0**		**$0**
OVERALL PROJECT COST										**$1,748,581**

Cost Estimate for Proposed Detention for HCFCD Unit G103-36-00 Improvements										
			Reach 1		Reach 2		Reach 3		Reach 4	
Item Description	Unit of Measure	Unit Price	Estimated Unit of Quantity	Cost	Estimated Unit of Quantity	Cost	Estimated Unit of Quantity	Cost	Estimated Unit of Quantity	Cost
BASE UNIT PRICES - DRAINAGE ITEMS										
Site Preparation and Restoration, Including Clearing and Grubbing, Care & Control of Water and Facility for Engineer	LS	$ 300,000		$0		$0		$0		$0
Remove Bridge (100-499FT)	EA	$ 90,000		$0		$0		$0		$0
Remove Bridge (500-999FT)	EA	$ 226,000		$0		$0		$0		$0
Remove Bridge (>1000FT)	EA	$ 610,000		$0		$0		$0		$0
Remove Existing Culvert Crossing	LF	$ 120		$0		$0		$0		$0
Install Bridge (20-50FT)	SF	$ 130		$0		$0		$0		$0
Install Bridge (50-100FT)	SF	$ 120		$0		$0		$0		$0
Install Bridge (100-200FT)	SF	$ 90		$0		$0		$0		$0
Reconstruct Culvert Crossing	SY	$ 60		$0		$0		$0		$0
Channel Excavation and Regrading	CY	$ 10		$0		$0		$0		$0
Install 48-Inch Culvert	LF	$ 220		$0		$0		$0		$0
Install 60-Inch Culvert	LF	$ 250		$0		$0		$0		$0
Install 4-Foot by 2-Foot Box Culvert	LF	$ 220		$0		$0		$0		$0
Install 4-Foot by 3-Foot Box Culvert	LF	$ 265		$0		$0		$0		$0
Install 5-Foot by 4-Foot Box Culvert	LF	$ 300		$0		$0		$0		$0
Install 6-Foot by 3-Foot Box Culvert	LF	$ 310		$0		$0		$0		$0
Install 9-Foot by 8-Foot Box Culvert	LF	$ 800		$0		$0		$0		$0
Install 10-Foot by 6-Foot Box Culvert	LF	$ 860		$0		$0		$0		$0
Install 12-Foot by 8-Foot Box Culvert	LF	$ 1,215		$0		$0		$0		$0
Install 12' x 4' Concrete Low Flow Channel	LF	$ 350		$0		$0		$0		$0
Install 12' x 6' Concrete Low Flow Channel	LF	$ 400		$0		$0		$0		$0
Install 20' x 4' Concrete Low Flow Channel	LF	$ 500		$0		$0		$0		$0
Install 20' x 6' Concrete Low Flow Channel	LF	$ 600		$0		$0		$0		$0
Concrete Channel Lining (5")	SY	$ 65		$0		$0		$0		$0
Borrow	CY	$ 10		$0		$0		$0		$0
Hydro-mulch Seeding	AC	$ 1,680	24.71	$41,513		$0		$0		$0
Detention Pond Excavation - Channel Improvements	CY	$ 10	29088	$290,880		$0		$0		$0
Detention Pond Excavation - Local Improvements	CY	$ 10	170239	$1,702,390		$0		$0		$0
Structural Concrete (In-Line Structure)	EA	$ 2,500,000		$0		$0		$0		$0
Ancillary Drainage Items (10%)	LS			$203,478		$0		$0		$0
TOTAL BASE UNIT PRICES - DRAINAGE ITEMS				**$2,238,261**		**$0**		**$0**		**$0**
SUBTOTAL CONSTRUCTION				**$2,238,261**		**$0**		**$0**		**$0**
CONTINGENCY (30% CONSTRUCTION)				**$671,478**		**$0**		**$0**		**$0**
ENGINEERING FEE ESTIMATE (20% CONSTRUCTION)				**$447,652**		**$0**		**$0**		**$0**
LAND ACQUISITION										
ROW	SF	$ 6		$0		$0		$0		$0
TOTAL LAND ACQUISITION				**$0**		**$0**		**$0**		**$0**
TOTAL				**$3,357,392**		**$0**		**$0**		**$0**
OVERALL PROJECT COST										**$3,357,392**

Cost Estimate for Proposed Improvements to HCFCD Unit G103-36-03				
			Reach 1	
Item Description	**Unit of Measure**	**Unit Price**	**Estimated Unit of Quantity**	**Cost**
BASE UNIT PRICES - DRAINAGE ITEMS				
Site Preparation and Restoration, Including Clearing and Grubbing, Care & Control of Water and Facility for Engineer	LS	$ 300,000	1	$300,000
Remove Bridge (100-499FT)	EA	$ 90,000		$0
Remove Bridge (500-999FT)	EA	$ 226,000		$0
Remove Bridge (>1000FT)	EA	$ 610,000		$0
Remove Existing Culvert Crossing	LF	$ 120	279	$33,480
Install Bridge (20-50FT)	SF	$ 130		$0
Install Bridge (50-100FT)	SF	$ 120		$0
Install Bridge (100-200FT)	SF	$ 90		$0
Reconstruct Culvert Crossing	SY	$ 60		$0
Channel Excavation and Regrading	CY	$ 10		$0
Install 48-Inch Culvert	LF	$ 220	114	$25,080
Install 60-Inch Culvert	LF	$ 250	165	$41,250
Install 4-Foot by 2-Foot Box Culvert	LF	$ 220		$0
Install 4-Foot by 3-Foot Box Culvert	LF	$ 265		$0
Install 5-Foot by 4-Foot Box Culvert	LF	$ 300		$0
Install 6-Foot by 3-Foot Box Culvert	LF	$ 310		$0
Install 9-Foot by 8-Foot Box Culvert	LF	$ 800		$0
Install 10-Foot by 6-Foot Box Culvert	LF	$ 860		$0
Install 12-Foot by 8-Foot Box Culvert	LF	$ 1,215		$0
Install 12' x 4' Concrete Low Flow Channel	LF	$ 350		$0
Install 12' x 6' Concrete Low Flow Channel	LF	$ 400		$0
Install 20' x 4' Concrete Low Flow Channel	LF	$ 500		$0
Install 20' x 6' Concrete Low Flow Channel	LF	$ 600		$0
Concrete Channel Lining (5")	SY	$ 65		$0
Borrow	CY	$ 10		$0
Hydro-mulch Seeding	AC	$ 1,680		$0
Detention Pond Excavation - Channel Improvements	CY	$ 10		$0
Detention Pond Excavation - Local Improvements	CY	$ 10		$0
Structural Concrete (In-Line Structure)	EA	$ 2,500,000		$0
Ancillary Drainage Items (10%)	LS			$39,981
TOTAL BASE UNIT PRICES - DRAINAGE ITEMS				**$439,791**
SUBTOTAL CONSTRUCTION				**$439,791**
CONTINGENCY (30% CONSTRUCTION)				**$131,937**
ENGINEERING FEE ESTIMATE (20% CONSTRUCTION)				**$87,958**
LAND ACQUISITION				
ROW	SF	$ 6		$0
TOTAL LAND ACQUISITION				**$0**
TOTAL				**$659,687**
OVERALL PROJECT COST				**$659,687**

Cost Estimate for Proposed Improvements to HCFCD Unit G103-46-01						
			Reach 1		Reach 2	
Item Description	Unit of Measure	Unit Price	Estimated Unit of Quantity	Cost	Estimated Unit of Quantity	Cost
BASE UNIT PRICES - DRAINAGE ITEMS						
Site Preparation and Restoration, Including Clearing and Grubbing, Care & Control of Water and Facility for Engineer	LS	$ 300,000	1	$300,000	1	$300,000
Remove Bridge (100-499FT)	EA	$ 90,000		$0		$0
Remove Bridge (500-999FT)	EA	$ 226,000		$0		$0
Remove Bridge (>1000FT)	EA	$ 610,000		$0		$0
Remove Existing Culvert Crossing	LF	$ 120	460	$55,200	534	$64,080
Install Bridge (20-50FT)	SF	$ 130		$0		$0
Install Bridge (50-100FT)	SF	$ 120		$0		$0
Install Bridge (100-200FT)	SF	$ 90		$0		$0
Reconstruct Culvert Crossing	SY	$ 60		$0		$0
Channel Excavation and Regrading	CY	$ 10		$0		$0
Install 48-Inch Culvert	LF	$ 220		$0		$0
Install 60-Inch Culvert	LF	$ 250		$0		$0
Install 4-Foot by 2-Foot Box Culvert	LF	$ 220	160	$35,200		$0
Install 4-Foot by 3-Foot Box Culvert	LF	$ 265	80	$21,200		$0
Install 5-Foot by 4-Foot Box Culvert	LF	$ 300	300	$90,000		$0
Install 6-Foot by 3-Foot Box Culvert	LF	$ 310	120	$37,200	1602	$496,620
Install 9-Foot by 8-Foot Box Culvert	LF	$ 800		$0		$0
Install 10-Foot by 6-Foot Box Culvert	LF	$ 860		$0		$0
Install 12-Foot by 8-Foot Box Culvert	LF	$ 1,215		$0		$0
Install 12' x 4' Concrete Low Flow Channel	LF	$ 350		$0		$0
Install 12' x 6' Concrete Low Flow Channel	LF	$ 400		$0		$0
Install 20' x 4' Concrete Low Flow Channel	LF	$ 500		$0		$0
Install 20' x 6' Concrete Low Flow Channel	LF	$ 600		$0		$0
Concrete Channel Lining (5")	SY	$ 65		$0		$0
Borrow	CY	$ 10		$0		$0
Hydro-mulch Seeding	AC	$ 1,680		$0		$0
Detention Pond Excavation - Channel Improvements	CY	$ 10		$0		$0
Detention Pond Excavation - Local Improvements	CY	$ 10		$0		$0
Structural Concrete (In-Line Structure)	EA	$ 2,500,000		$0		$0
Ancillary Drainage Items (10%)	LS			$53,880		$86,070
TOTAL BASE UNIT PRICES - DRAINAGE ITEMS				**$592,680**		**$946,770**
SUBTOTAL CONSTRUCTION				**$592,680**		**$946,770**
CONTINGENCY (30% CONSTRUCTION)				**$177,804**		**$284,031**
ENGINEERING FEE ESTIMATE (20% CONSTRUCTION)				**$118,536**		**$189,354**
LAND ACQUISITION						
ROW	SF	$ 6		$0		$0
TOTAL LAND ACQUISITION				**$0**		**$0**
TOTAL				**$889,020**		**$1,420,155**
OVERALL PROJECT COST						**$2,309,175**

Cost Estimate for Proposed Detention for HCFCD Unit G103-46-01 Improvements						
			Reach 1		Reach 2	
Item Description	Unit of Measure	Unit Price	Estimated Unit of Quantity	Cost	Estimated Unit of Quantity	Cost
BASE UNIT PRICES - DRAINAGE ITEMS						
Site Preparation and Restoration, Including Clearing and Grubbing, Care & Control of Water and Facility for Engineer	LS	$ 300,000		$0		$0
Remove Bridge (100-499FT)	EA	$ 90,000		$0		$0
Remove Bridge (500-999FT)	EA	$ 226,000		$0		$0
Remove Bridge (>1000FT)	EA	$ 610,000		$0		$0
Remove Existing Culvert Crossing	LF	$ 120		$0		$0
Install Bridge (20-50FT)	SF	$ 130		$0		$0
Install Bridge (50-100FT)	SF	$ 120		$0		$0
Install Bridge (100-200FT)	SF	$ 90		$0		$0
Reconstruct Culvert Crossing	SY	$ 60		$0		$0
Channel Excavation and Regrading	CY	$ 10		$0		$0
Install 48-Inch Culvert	LF	$ 220		$0		$0
Install 60-Inch Culvert	LF	$ 250		$0		$0
Install 4-Foot by 2-Foot Box Culvert	LF	$ 220		$0		$0
Install 4-Foot by 3-Foot Box Culvert	LF	$ 265		$0		$0
Install 5-Foot by 4-Foot Box Culvert	LF	$ 300		$0		$0
Install 6-Foot by 3-Foot Box Culvert	LF	$ 310		$0		$0
Install 9-Foot by 8-Foot Box Culvert	LF	$ 800		$0		$0
Install 10-Foot by 6-Foot Box Culvert	LF	$ 860		$0		$0
Install 12-Foot by 8-Foot Box Culvert	LF	$ 1,215		$0		$0
Install 12' x 4' Concrete Low Flow Channel	LF	$ 350		$0		$0
Install 12' x 6' Concrete Low Flow Channel	LF	$ 400		$0		$0
Install 20' x 4' Concrete Low Flow Channel	LF	$ 500		$0		$0
Install 20' x 6' Concrete Low Flow Channel	LF	$ 600		$0		$0
Concrete Channel Lining (5")	SY	$ 65		$0		$0
Borrow	CY	$ 10		$0		$0
Hydro-mulch Seeding	AC	$ 1,680	3.85	$6,468		$0
Detention Pond Excavation - Channel Improvements	CY	$ 10		$0		$0
Detention Pond Excavation - Local Improvements	CY	$ 10	31089	$310,890		$0
Structural Concrete (In-Line Structure)	EA	$ 2,500,000		$0		$0
Ancillary Drainage Items (10%)	LS			$31,736		$0
TOTAL BASE UNIT PRICES - DRAINAGE ITEMS				**$349,094**		**$0**
SUBTOTAL CONSTRUCTION				**$349,094**		**$0**
CONTINGENCY (30% CONSTRUCTION)				**$104,728**		**$0**
ENGINEERING FEE ESTIMATE (20% CONSTRUCTION)				**$69,819**		**$0**
LAND ACQUISITION						
ROW	SF	$ 6		$0		$0
TOTAL LAND ACQUISITION				**$0**		**$0**
TOTAL				**$523,641**		**$0**
OVERALL PROJECT COST						**$523,641**