

**ENGINEERING CERTIFICATION**

Community: <u>370328</u>	County: <u>Harnett</u>	State: <u>North Carolina</u>
<u>Marc Gettleman</u> Applicant	<u>10/4/2016</u> Date	<u>Hilliard Engineering, PLLC</u> Engineer
<u>8945 NC 27 West</u> Address	<u>749 Walker Road</u> Address	
<u>Lillington, NC 27546</u> City, State, Zip Code	<u>Sanford, NC 27332</u> City, State, Zip Code	
<u>910-893-6355</u> Telephone	<u>919-352-2834</u> Telephone	

**SITE DATA:**

1. Location: 8945 NC 27 West, Lillington, NC 27546
2. Panel(s) No. of NFIP map(s) affected: 0506
3. Type/description of development: 40'Lx40'Wx14'H Steel Building
4. Name of flooding source: Upper Little River
5. Flooding source classification: Zone AE

**COMMENTS:**

Certification based upon hydraulic analysis utilizing the effective HEC-RAS model for the Upper Little River. 100-year base flood elevation was determined to be 186.54 ft-msl

**CERTIFICATION:**

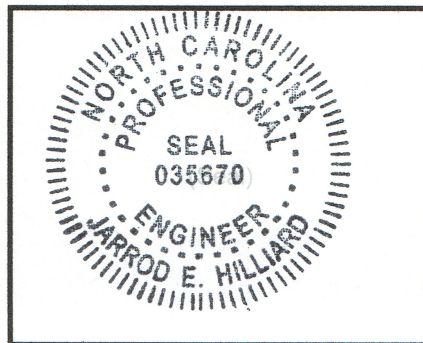
This is to certify that I am a duly qualified Engineer licensed to practice in the state of North Carolina. It is to further certify that the attached technical data supports the fact that the proposed development described above will not cause an increase greater than 1.0' to the 100-year flood elevations or the floodway elevations, in the vicinity of the project location and on said flooding source above, at published cross sections in the Flood Insurance Study for the above community dated 10/3/2006, and will not cause an increase greater than 1.0' to the 100-year flood elevations or the floodway elevations, in the vicinity of the project location and on said flooding source above, at unpublished cross sections.

[Signature]  
Signature

10/4/16  
Date

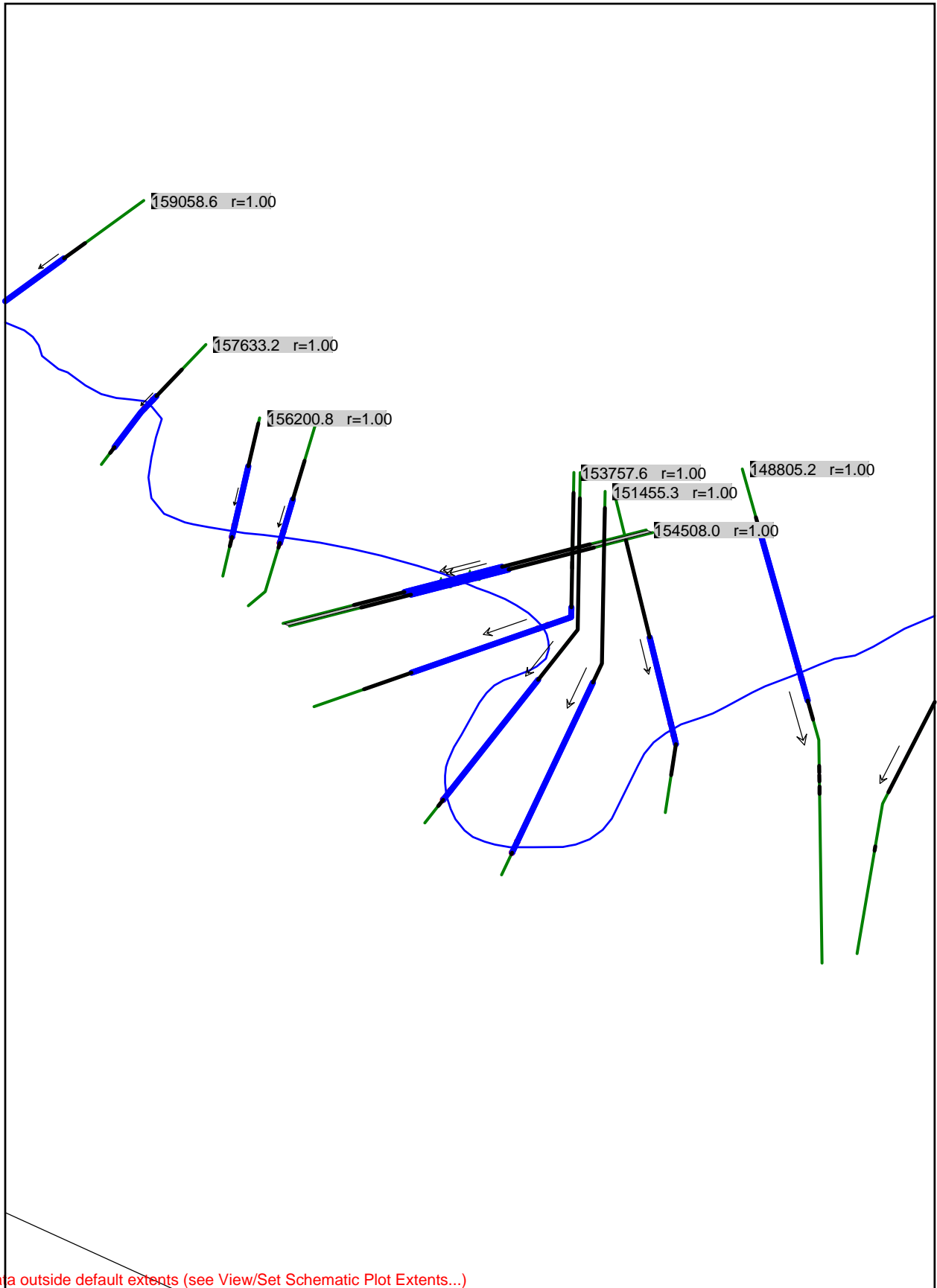
749 Walker Road  
Address

Sanford, NC 27332  
City, State, Zip Code



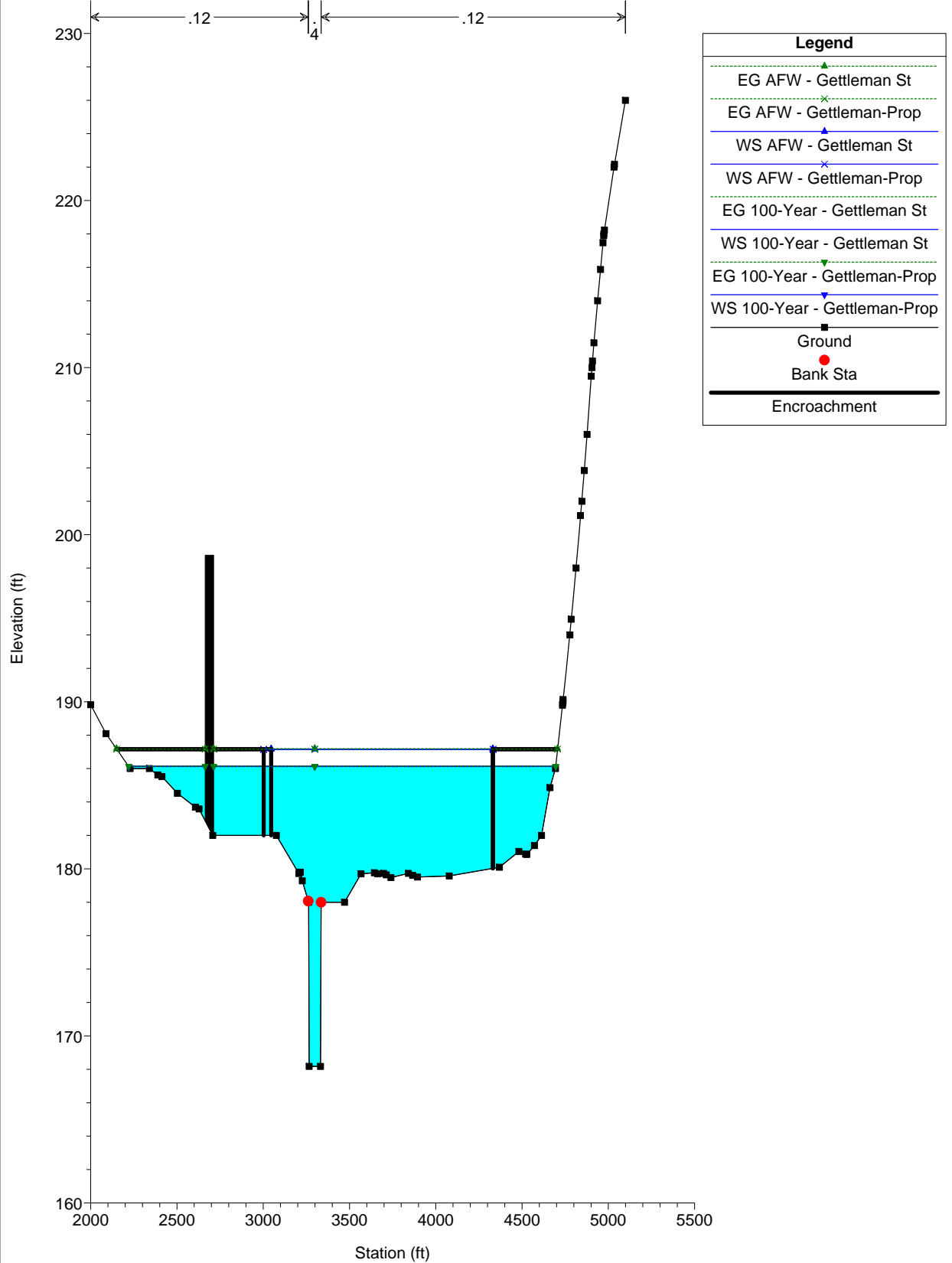
HEC-RAS River: UpperLittleRiver Reach: Reach - 1

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
Reach - 1	154482.0			Bridge									
Reach - 1	154456.0	100-Year	Gettleman St	11584.00	168.55	186.73	178.72	186.75	0.001236	0.81	9420.09	1719.72	0.03
Reach - 1	154456.0	100-Year	Gettleman-Prop	11584.00	168.55	186.70	178.72	186.73	0.001244	0.82	9378.70	1704.76	0.03
Reach - 1	154456.0	AFW	Gettleman St	11584.00	168.55	187.74	178.72	187.79	0.001229	0.84	7101.48	747.08	0.03
Reach - 1	154456.0	AFW	Gettleman-Prop	11584.00	168.55	187.72	178.72	187.76	0.001237	0.84	7093.63	748.97	0.03
Reach - 1	153757.6	100-Year	Gettleman St	11584.00	168.17	186.14		186.15	0.000619	0.55	12963.92	2475.38	0.02
Reach - 1	153757.6	100-Year	Gettleman-Prop	11584.00	168.17	186.12		186.14	0.000600	0.54	12742.80	2425.03	0.02
Reach - 1	153757.6	AFW	Gettleman St	11584.00	168.17	187.17		187.19	0.000611	0.57	10544.66	1284.23	0.02
Reach - 1	153757.6	AFW	Gettleman-Prop	11584.00	168.17	187.15		187.17	0.000593	0.56	10761.09	1329.33	0.02
Reach - 1	152153.1	100-Year	Gettleman St	11584.00	167.30	185.14		185.15	0.000625	0.56	13296.08	2417.69	0.02
Reach - 1	152153.1	100-Year	Gettleman-Prop	11584.00	167.30	185.14		185.15	0.000625	0.56	13296.08	2417.69	0.02
Reach - 1	152153.1	AFW	Gettleman St	11584.00	167.30	186.17		186.20	0.000622	0.55	10188.94	1137.21	0.02
Reach - 1	152153.1	AFW	Gettleman-Prop	11584.00	167.30	186.17		186.20	0.000622	0.55	10188.94	1137.21	0.02
Reach - 1	151455.3	100-Year	Gettleman St	11584.00	166.92	184.71		184.72	0.000628	0.60	13443.14	2593.78	0.03
Reach - 1	151455.3	100-Year	Gettleman-Prop	11584.00	166.92	184.71		184.72	0.000628	0.60	13443.14	2593.78	0.03
Reach - 1	151455.3	AFW	Gettleman St	11584.00	166.92	185.74		185.76	0.000628	0.57	10985.13	1400.85	0.02
Reach - 1	151455.3	AFW	Gettleman-Prop	11584.00	166.92	185.74		185.76	0.000628	0.57	10985.13	1400.85	0.02
Reach - 1	149844.5	100-Year	Gettleman St	11584.00	166.23	182.98		183.01	0.002166	1.08	8083.89	1661.73	0.05
Reach - 1	149844.5	100-Year	Gettleman-Prop	11584.00	166.23	182.98		183.01	0.002166	1.08	8083.89	1661.73	0.05
Reach - 1	149844.5	AFW	Gettleman St	11584.00	166.23	184.00		184.06	0.002142	1.11	6465.45	816.43	0.05
Reach - 1	149844.5	AFW	Gettleman-Prop	11584.00	166.23	184.00		184.06	0.002142	1.11	6465.45	816.43	0.05

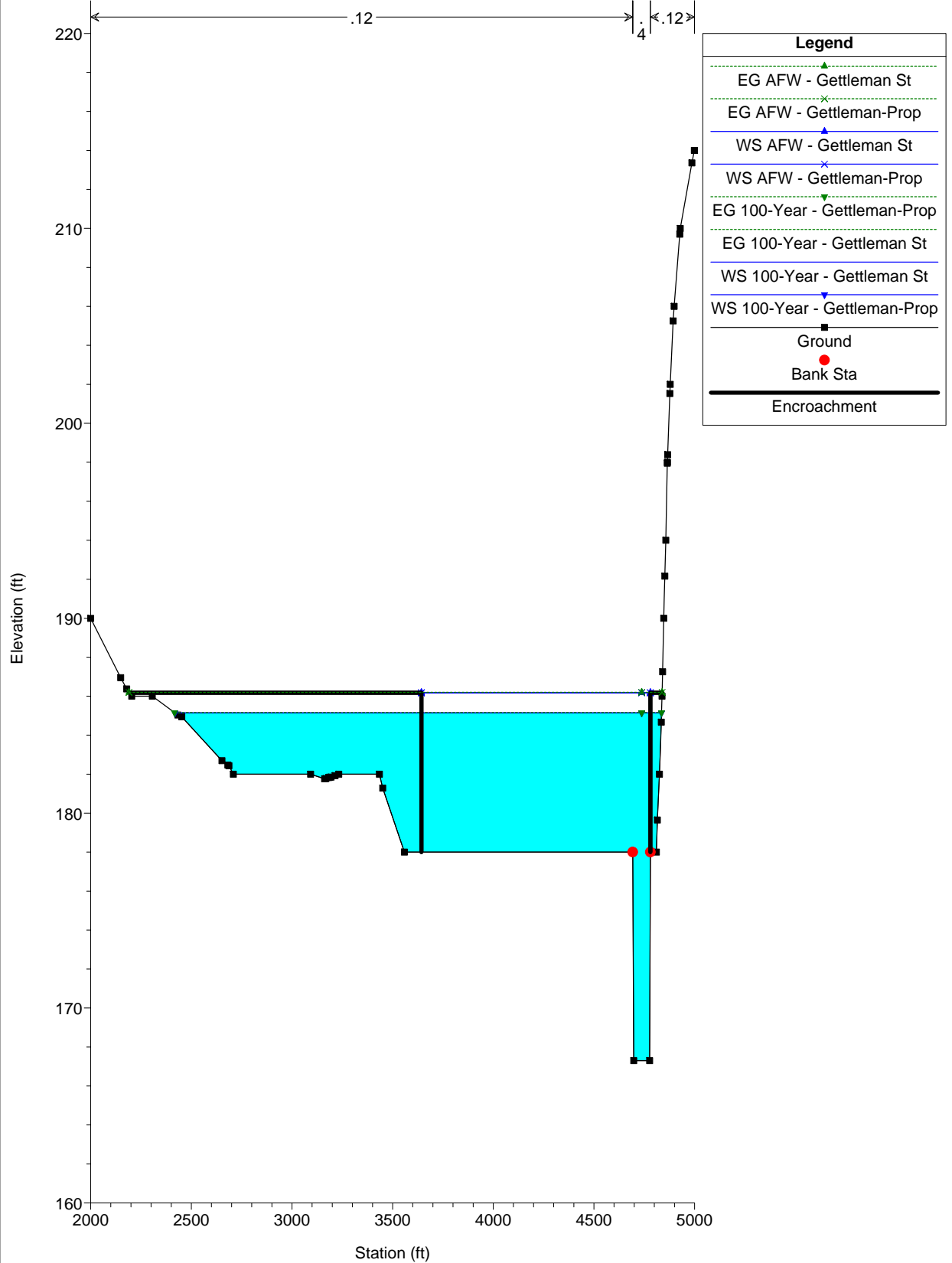


Some schematic data outside default extents (see View/Set Schematic Plot Extents...)

New XS 1-1



New XS 2-2



**Table 17 - Limited Detailed Flood Hazard Data**

Cross Section	Stream Station	Flood Discharge (cfs)	1% Annual Chance Water-Surface Elevation (feet NAVD 88)	Non-Encroachment Width (feet) Left/Right from Stream Centerline
025	2,504	73	181.3	25 / 25
032	3,161	68	181.3	25 / 25
<b>Upper Little River</b>				
206	20,579	13,017	109.5	929 / 405
231	23,148	13,017	114.2	609 / 641
247	24,660	13,017	117.6	943 / 450
282	28,180	13,017	120.2	766 / 519
287	28,676	13,017	120.5	971 / 590
289	28,869	13,017	120.5	487 / 1,379
289	28,917	13,017	121.1	487 / 1,379
301	30,104	13,017	121.4	65 / 2,099
340	34,006	13,017	122.0	1,298 / 842
347	34,721	13,017	122.2	444 / 1,362
363	36,266	12,924	122.6	66 / 1,870
373	37,260	12,924	122.8	285 / 1,514
388	38,801	12,924	123.2	1,314 / 533
397	39,669	12,914	123.5	1,614 / 190
402	40,243	12,914	123.6	1,579 / 931
416	41,581	12,914	123.8	2,592 / 853
434	43,358	12,914	124.0	2,396 / 1,107
452	45,198	12,863	124.2	357 / 2,068
460	45,990	12,863	124.4	979 / 1,430
482	48,206	12,835	124.9	77 / 3,499
497	49,694	12,832	125.2	64 / 2,905
507	50,693	12,832	125.5	351 / 2,133
522	52,185	12,832	126.7	154 / 965
527	52,686	12,832	128.7	228 / 529
527	52,746	12,832	129.0	228 / 529
539	53,872	12,772	130.0	282 / 2,127
547	54,684	12,772	130.2	586 / 1,484
555	55,511	12,772	130.4	696 / 1,102
564	56,370	12,733	130.6	1,092 / 1,256
572	57,198	12,733	130.8	770 / 2,020
581	58,074	12,733	130.9	453 / 2,156
587	58,744	12,733	131.0	837 / 2,282
591	59,143	12,733	131.1	774 / 2,227
598	59,772	12,733	131.2	1,399 / 2,472
608	60,819	12,733	131.4	63 / 1,903
618	61,845	12,733	131.9	794 / 1,181
637	63,687	12,733	132.6	2,922 / 360
656	65,565	12,672	133.3	2,262 / 597
669	66,916	12,672	133.9	1,924 / 480
681	68,077	12,672	134.4	2,622 / 656
693	69,281	12,672	135.0	1,819 / 1,715
716	71,571	12,523	135.8	2,630 / 1,149

**Table 17 - Limited Detailed Flood Hazard Data**

Cross Section	Stream Station	Flood Discharge (cfs)	1% Annual Chance Water-Surface Elevation (feet NAVD 88)	Non-Encroachment Width (feet) Left/Right from Stream Centerline
726	72,603	12,521	136.2	1,962 / 1,852
740	73,963	12,521	137.2	2,451 / 1,487
753	75,316	12,521	138.3	1,854 / 832
771	77,137	12,467	141.0	1,400 / 821
788	78,789	12,467	143.8	1,138 / 327
798	79,794	12,467	145.5	617 / 78
813	81,348	12,467	149.2	71 / 275
821	82,058	12,445	150.0	444 / 61
826	82,649	12,445	150.4	328 / 100
832	83,189	12,445	151.2	253 / 104
841	84,107	12,445	153.2	347 / 97
842	84,175	12,445	153.8	347 / 97
860	85,986	12,445	154.3	317 / 653
880	87,996	12,445	154.4	490 / 2,029
889	88,942	12,445	154.4	61 / 2,292
909	90,933	12,386	154.5	2,439 / 1,103
930	92,956	12,210	154.6	1,000 / 1,730
975	97,525	12,210	154.8	3,877 / 60
992	99,182	12,210	154.9	3,605 / 1,146
1017	101,707	12,190	155.0	3,804 / 58
1055	105,477	12,153	155.4	1,786 / 1,218
1070	106,952	12,153	155.8	2,050 / 609
1082	108,194	12,153	156.6	990 / 559
1090	109,042	12,153	157.2	1,663 / 59
1105	110,541	11,853	158.1	2,142 / 57
1118	111,849	11,853	159.2	1,885 / 57
1151	115,074	11,853	161.1	57 / 1,876
1166	116,617	11,807	161.8	57 / 2,491
1197	119,747	11,775	163.1	1,885 / 819
1212	121,181	11,775	164.0	1,515 / 56
1222	122,192	11,775	165.2	2,339 / 586
1222	122,246	11,775	166.6	2,339 / 586
1254	125,403	11,775	167.1	3,418 / 56
1296	129,646	11,775	168.1	1,291 / 1,034
1326	132,567	11,775	169.5	1,574 / 55
1343	134,274	11,700	170.3	2,455 / 55
1386	138,595	11,696	172.2	2,471 / 56
1418	141,784	11,675	175.2	980 / 775
1427	142,725	11,675	176.0	1,256 / 382
1446	144,641	11,638	177.4	550 / 545
1456	145,635	11,608	178.8	456 / 525
1473	147,339	11,606	181.7	55 / 863
1488	148,805	11,584	182.4	1,092 / 238
1498	149,845	11,584	183.0	791 / 136
<b>1515</b>	<b>151,455</b>	<b>11,584</b>	<b>184.7</b>	<b>1,523 / 55</b>

**Table 17 - Limited Detailed Flood Hazard Data**

Cross Section	Stream Station	Flood Discharge (cfs)	1% Annual Chance Water-Surface Elevation (feet NAVD 88)	Non-Encroachment Width (feet) Left/Right from Stream Centerline
1545	154,456	11,584	187.1	405 / 454
1545	154,508	11,511	187.6	405 / 454
1558	155,839	11,511	189.3	302 / 55
1562	156,201	11,511	190.0	524 / 55
1576	157,633	11,504	191.2	87 / 420
1591	159,059	11,504	191.8	702 / 87
1602	160,221	11,504	192.2	696 / 66
1618	161,774	11,482	192.8	145 / 584
1631	163,146	11,482	193.2	896 / 332
1657	165,678	10,254	193.5	46 / 1,545
1675	167,512	10,254	193.7	249 / 1,657
1693	169,331	10,254	194.0	1,169 / 520
1704	170,399	10,238	194.4	1,251 / 287
1713	171,285	10,238	195.5	875 / 152
1726	172,586	10,238	196.7	1,197 / 40
1737	173,682	10,238	197.2	533 / 1,014
1742	174,155	10,238	197.5	88 / 1,546
1742	174,205	10,238	197.6	88 / 1,546
1757	175,706	10,238	199.3	46 / 1,185
1776	177,614	10,162	202.8	46 / 826
1795	179,545	10,155	205.0	716 / 46
1810	180,988	10,155	206.1	46 / 566
1823	182,318	10,155	206.5	1,188 / 36
1840	184,013	10,136	206.8	590 / 639
1856	185,569	10,122	207.4	138 / 565
1871	187,078	10,122	208.9	718 / 204
1880	187,965	10,122	209.2	1,104 / 169
1887	188,732	10,039	209.6	539 / 237
1922	192,186	10,039	214.5	36 / 687
1933	193,311	10,039	215.4	528 / 511
1941	194,105	10,039	216.2	405 / 205
1947	194,715	10,039	216.9	407 / 347
1948	194,763	10,039	217.4	407 / 347
1954	195,406	9,977	217.8	421 / 44
1968	196,786	9,977	219.2	533 / 97
1986	198,638	9,915	219.7	756 / 443
1991	199,133	9,915	219.9	170 / 467
2002	200,236	9,911	220.6	44 / 751
2022	202,237	9,911	221.2	1,425 / 44
2038	203,761	9,911	221.6	864 / 274
2048	204,784	9,911	222.2	455 / 406
2078	207,834	9,911	224.0	185 / 1,008
2095	209,494	9,911	225.0	44 / 1,049
2108	210,772	9,859	226.4	515 / 268
2130	212,964	9,859	227.9	628 / 200