Appendix 1. Summary of bank transect locations, number of erosion pins per transect, bank erosion index values, mean bank height, and erosion rates.

[Bank right and left are denoted using "br" and "bl" respectively, right bank is determined by looking downstream. Fish and Wildlife Service sites (denoted by FS) tend to be in triplicates spaced 50 meters apart. LL denotes left bank lower, LM denotes left bank middle, and LU denotes left bank upper. RL, RM, and RU use the same naming convention for right bank]

Site	River kilometer	Number of pins	Erosion rate (millimeters per year)	Mass wasting	Mean bank height (meters)
45BR	32	7	135.8	1	3.1
45BL	32	8	49.6	1	6.1
3BL	38	10	18.7	0	6.9
72BR	40	9	8.6		2.9
72BL	40	10	35.8		2.8
C12BR	42	7	82.5	0	5.5
C12BL	42	8	30.1	0	5.3
C16BR	48	9	95.8		6.4
C16BL	48	6	18.3		4.6
50BR	52	7	17.2	0	5.0
50BL	52	9	9.9	0	5.0
57BR	59.5	9	34.1	1	6.5
57BL	59.5	8	-5.4	1	6.2
58BR	61.5	7	134.6	1	5.2
58BL	61.5	6	140.9	1	5.4
C27BR	66	8	47.6	3	4.8
C27BL	66	7	27.4	3	6.2
8BR	72	8	33.9		5.9
8BL	72	8	35.4		5.5
61BR	77	5	-20.7	3	4.3
61BL	77	8	100.9	3	5.8
11BR	80	8	7.3	5	5.2
11BL	80	10	76.1	5	5.9
9BR	82	7	16.8		
10BR	85	7	55.1	0	5.0
10 BL	85	9	3.8	0	5.2
C41BR	88	7	6.3	5	4.2
C41BL	88	8	-10.0	5	5.2
12BR	95	8	20.8	0	5.8
12BL	95	8	22.8	0	4.5
C49BR	100	6	25.8	3	5.0
C49BL	100	8	39.3	3	4.8
FS12-LL	104	5	2.1	1	3.7
FS12-LM	104	6	-9.6	1	3.7
FS12-LU	104	5	-11.6	1	3.7
FS12-RL	104	3	8.5	1	3.7
FS12-RU	104	5	3.2	1	3.7
FS11-LL	105	5	81.9	2	4.3
FS11-LU	105	5	86.6	2	3.4
16BRL	108	5	57.7		4.8
16BRU	108	6	24.8		4.8
16L	108	7	1.7		4.8
FS10-LL	109	4	79.8		3.9
FS10-LM	109	5	166.1		3.9
FS10-LU	109	5	69.4		3.9

Site	River kilometer	Number of pins	Erosion rate (millimeters per year)	Mass wasting	Mean bank height (meters)
FS10BR	109	4	-33.2		3.3
FS9-LL	111.5	9	96.0	3	3.1
FS9-LM	111.5	3	210.5	3	3.1
FS9-LU	111.5	4	20.1	3	3.1
FS9-RL	111.5	5	31.7	3	2.8
FS9-RM	111.5	3	3.1	3	2.8
FS9-RU	111.5	4	-0.8	3	2.8
15BR	112	7	286.2		4.0
15BL	112	9	20.8		4.3
C58BR	115	5	28.3	5	
C58BL	115	6	68.5	5	
C60BR	119	8	9.8	4	3.9
C60BL	119	8	123.5	4	3.8
T19BR	122	8	21.9	3	4.2
T19BL	122	7	37.0	3	3.8
C65BR	127	7	39.0		3.6
C65BL	127	9	11.0		3.3
C67BR	130	4	233.1	5	
T23BR	131.5	7	382.6	5	3.5
T23BL	131.5	7	-55.1	5	2.9
FS8-LL	133.5	4	52.6	3	
FS8-LM	133.5	4	233.7	3	
FS8-LU	133.5	4	239.4	3	
FS8-RL	133.5	4	4.0	3	
FS8-RM	133.5	5	60.6	3	
FS8-RU	133.5	6	61.3	3	
FWS 7BR	135.5	4	43.8		2.7
FS7BL	135.5	6	46.5		2.4
FS6-LL	137	4	-15.3	5	
FS6-LM	137	5	-8.4	5	
FS6-LU	137	6	19.1	5	
FS6-RL	137	4	2.0	5	
FS6-RM	137	4	-11.3	5	
FS6-RU	137	4	33.0	5	
C72BR	138	5	47.4	5	3.0
C72BL	138	6	10.3	5	2.8
FS5R	139.5	6	-4.8	3	
FS5L	139.5	5	16.2	3	
FS4-LL	141	3	30.9		
FS4-LM	141	6	2.3		
FS4-LU	141	5	12.8		
FS4-RL	141	3	25.0		
FS4-RM	141	4	11.0		
FS4-RU	141	4	10.5		
T25BR	141.5	7	18.3	6	2.6
T25BL	141.5	6	24.3	6	2.5
FS3-LL	146	3	66.3	3	
FS3-LM	146	5	45.8	3	
FS3-LU	146	3	23.3	3	
FS3-LU-M	146	2	36.0	3	
FS3-RL	146	4	29.8	3	
FS3-RM	146	5	1.9	3	
FS3-RU	146	4	24.0	3	

Site	River kilometer	Number of pins	Erosion rate (millimeters per year)	Mass wasting	Mean bank height (meters)
C78BR	147.5	5	39.5		2.4
C78BL	147.5	7	22.3		2.2
FS2-LL	154	5	8.7	2	
FS2-LM	154	4	21.6	2	
FS2-LU	154	5	107.6	2	
FS2-RL	154	6	17.4	2	
FS2-RM	154	5	12.1	2	
FS2-RU	154	5	49.9	2	
C84BR	156	6	24.8	2	1.9
C84BL	156	6	15.9	2	1.8
FS1-LL	157	3	32.7	6	
FS1-LM	157	3	38.1	6	
FS1-LU	157	3	65.6	6	
FS1-RL	157	6	23.7	6	
FS1-RM	157	6	10.7	6	
FS1-RU	157	4	48.4	6	
C87BR	161	7	88.3	2	1.6
C87BL	161	5	13.7	2	1.2
37BR	165.5	4	23.3		1.1
37BL	165.5	4	13.4		1.0
C92BR	168.5	4	-0.7	1	0.9
C92BL	168.5	4	39.1	1	0.9
39BL	172.5	3	47.8		0.8
38BR	172.5	3	-5.6		0.6
C97BR	175.5	3	25.7		0.6
C97BL	175.5	3	12.7		0.6

Appendix 2. Erosion pin measurements for each of the 701 bank erosion pins.

[Bank right and left are denoted using "BR" and "BL" respectively, right bank is determined by looking downstream. U.S. Fish and Wildlife Service sites (denoted by FS) tend to be in triplicates spaced 50 meters apart. LL denotes left bank lower, LM denotes left bank middle, and LU denotes left bank upper. RL, RM, and RU use the same naming convention for right bank. m, meters; mm, millimeters; mm/yr, millimeters per year]

Installation date	Reach type	Site name	Pin no.	Cumulative erosion, 2005–08 (mm)	Erosion rate, 2005–08 (mm/yr)	Mean rate of erosion, 2005–08 (mm/yr)	Top of bank to bottom of toe bank height (m)	Top of bank to edge of water bank height (m)	River kilometer
9/20/2005	Straight	T45BR	1	325	115.3	135.8	6.8	3.1	32.0
			2	586	207.9				
			3	838	297.2				
			4	382	135.5				
			5	554	196.5				
			6	10	3.5				
			7	-15	-5.3				
9/20/2005	Straight	T45BL	1	160	56.8	49.6	8.1	6.1	32.0
			2	-35	-12.4				
			3	202	71.7				
			4	787	279.2				
			5	-28	-9.9				
			6	17	6.0				
			7	15	5.3				
			8	0	0.0				
9/20/2005	Straight	3BL	1	265	94.0	18.7		6.9	38.0
			2	301	106.8				
			3	-50	-17.7				
			4	0	0.0				
			5	130	46.1				
			6	-40	-14.2				
			7	-5	-2.8				
			8	-30	-10.6				
			9	-15	-5.3				
			10	-25	-8.9				
9/20/2005	Straight	T72BR	1	108	38.3	8.6	8.5	2.9	40.0
			2	66	23.4				
			3	12	4.3				
			4	-20	-7.1				
			5	-2	-0.7				
			6	0	0.0				
			7	24	8.5				
			8	28	9.9				
			9	2	0.7				
9/20/2005	Straight	T72BL	1	153	54.3	35.8	9.0	2.8	40.0
			2	561	199.0				
			3	-98	-34.8				
			4	232	82.3				
			5	-21	-7.4				
			6	-24	-8.5				
			7	12	4.3				
			8	-8	-2.8				

Installation date	Reach type	Site name	Pin no.	Cumulative erosion, 2005–08 (mm)	Erosion rate, 2005–08 (mm/yr)	Mean rate of erosion, 2005–08 (mm/yr)	Top of bank to bottom of toe bank height (m)	Top of bank to edge of water bank height (m)	River kilometer
9/21/2005	Straight	C12BR	1	400	142.0	82.5	7.5	5.5	42.0
			2	501	177.9				
			3	10	3.6				
			4	296	105.1				
			5	415	147.3				
			6	0	0.0				
			7	5	1.8				
9/21/2005	Straight	C12BL	1	373	132.4	30.1	7.3	5.3	42.0
			2	200	71.0				
			3	5	1.8				
			4	-125	-44.4				
			5	31	11.0				
			6	25	8.9				
9/21/2005	Straight	C16BR	1	348	123.6	95.8	9.9	6.4	48.0
			2	964	342.3				
			3	840	298.2				
			4	4	1.4				
			5	9	3.2				
			6	0	0.0				
			7	-3	-1.1				
			8	-4	-1.4				
9/21/2005	Straight	C16BL	1	309	109.7	18.3	7.0	4.6	48.0
			2	-74	-26.3				
			3	-84	-29.8				
			4	152	54.0				
			5	-45	-16.0				
9/19/2005	Inside	50BR	1	0	0.0	17.2	7.2	5.0	52.0
			2	244	86.5				
			3	140	49.6				
			4	-15	-5.3				
			5	51	18.1				
			6	-26	-9.2				
			7	-5	-1.8				
			8	0	0.0				
9/19/2005	Outside	50BL	1	120	42.5	9.9	7.0	5.0	52.0
			2	143	50.7				
			3	-91	-32.2				
			4	-77	-27.3				
			5	-5	-1.8				
			6	15	5.3				
			7	100	35.4				
			8	47	16.7				
			9	0	0.0				
9/21/2005	Straight	57BR	1	353	125.3	34.1	9.7	6.5	59.5
			2	190	67.5				
			3	215	76.3				
			4	47	16.7				
			5	66	23.4				
			6	-10	-3.6				
			7	2	0.7				
			8	2	0.7				
			9	-1	-0.4				

Installation date	Reach type	Site name	Pin no.	Cumulative erosion, 2005–08 (mm)	Erosion rate, 2005–08 (mm/yr)	Mean rate of erosion, 2005–08 (mm/yr)	Top of bank to bottom of toe bank height (m)	Top of bank to edge of water bank height (m)	River kilometer
9/22/2005	Straight	57BL	1	-367	-130.4	-5.4	7.7	6.2	59.5
			2	46	16.3				
			3	127	45.1				
			4	-10	-3.6				
			5	65	23.1				
			6	22	7.8				
			7	-5	-1.8				
			8	0	0.0				
9/22/2005	Inside	58BR	1	400	806.6	134.6	7.8	5.2	61.5
			2	234	83.2				
			3	0	0.0				
			4	48	17.1				
			5	34	12.1				
			6	65	23.1				
			7	0	0.0				
9/22/2005	Outside	58BL	1	619	220.0	140.9	9.1	5.4	61.5
			2	376	133.6				
			3	347	123.3				
			4	237	84.2				
			5	545	193.7				
			6	254	90.3				
9/22/2005	Straight	C27BR	1	308	109.5	47.6	7.4	4.8	66.0
			2	185	65.7				
			3	405	143.9				
			4	58	20.6				
			5	15	5.3				
			6	10	3.6				
			7	-5	-1.8				
			8	95	33.8				
9/22/2005	Straight	C27BL	1	265	94.2	27.4	7.9	6.2	66.0
			2	152	54.0				
			3	77	27.4				
			4	-65	-23.1				
			5	87	30.9				
			6	40	14.2				
			7	31	11.0				
			8	10	10.9				
9/22/2005	Straight	8BR	1	418	148.6	33.9	8.8	5.9	72.0
			2	55	19.5				
			3	505	179.5				
			4	-170	-60.4				
			5	-70	-24.9				
			6	-165	-58.6				
9/22/2005	Straight	8BL	1	412	146.4	35.4	6.4	5.5	72.0
			2	68	24.2				
			3	212	75.3				
			4	23	8.2				
			5	57	20.3				
			6	2	0.7				
			7	7	2.5				
			8	16	5.7				

Installation date	Reach type	Site name	Pin no.	Cumulative erosion, 2005–08 (mm)	Erosion rate, 2005–08 (mm/yr)	Mean rate of erosion, 2005–08 (mm/yr)	Top of bank to bottom of toe bank height (m)	Top of bank to edge of water bank height (m)	River kilometer
10/5/2005	Inside	61BR	1	-200	-72.0	-20.7	5.4	4.3	77.0
			2	-290	-104.4				
			3	22	7.9				
			4	-103	-37.1				
			5	226	81.4				
			6	0	0.0				
10/5/2005	Outside	61BL	1	815	293.1	100.9	13.4	5.8	77.0
			2	120	43.2				
			3	85	30.6				
			4	143	51.4				
			5	400	143.8				
			6	120	43.2				
10/5/2005	Straight	11BR	1	164	59.0	7.3	8.8	5.2	80.0
			2	199	71.6				
			3	-125	-45.0				
			4	5	1.8				
			5	-50	-18.0				
			6	0	0.0				
			7	-30	-10.8				
			8	0	0.0				
10/5/2005	Straight	11BL	1	624	224.4	76.1	6.9	5.9	80.0
			2	658	236.6				
			3	472	169.7				
			4	-20	-7.2				
			5	70	25.2				
			6	-24	-8.6				
			7	-87	-31.3				
			8	0	0.0				
5/31/2006	Inside	9BR	1	130	61.1	16.8			82.0
			2	144	67.6				
			3	0	0.0				
			4	-9	-4.2				
			5	-15	-7.0				
			6	0	0.0				
			7	0	0.0				
10/5/2005	Straight	10BR	1	385	138.4	55.1	7.0	5.0	85.0
			2	495	178.0				
			3	152	54.7				
			4	35	12.6				
			5	-5	-1.8				
			6	0	0.0				
			7	10	3.6				
10/5/2005	Straight	10 BL	1	55	19.8	3.8	5.1	5.2	85.0
			2	125	45.0				
			3	50	18.0				
			4	40	14.4				
			5	20	7.2				
			6	-140	-50.3				
			7	-55	-19.8				
			8	0	0.0				
			9	0	0.0				

Installation date	Reach type	Site name	Pin no.	Cumulative erosion, 2005–08 (mm)	Erosion rate, 2005–08 (mm/yr)	Mean rate of erosion, 2005–08 (mm/yr)	Top of bank to bottom of toe bank height (m)	Top of bank to edge of water bank height (m)	River kilometer
10/5/2005	Straight	C41BR	1	517	185.9	6.3	7.9	4.2	88.0
			2	-73	-26.3				
			3	-115	-41.4				
			4	-164	-59.0				
			5	-78	-28.0				
			6	14	5.0				
			7	22	7.9				
10/5/2005	Straight	C41BL	1	149	53.6	-10.0	9.6	5.2	88.0
			2	54	19.4				
			3	-100	-36.0				
			4	-230	-82.7				
			5	-40	-14.4				
			6	-30	-10.8				
			7	-25	-9.0				
			8	0	0.0				
10/5/2005	Straight	C41BRD	1	-10			7.9	4.2	88.0
			2	-105					
			3	-62					
			4	0					
			5	-40					
			6	47					
10/5/2005	Straight	C41BRU	1	-80			7.9	4.2	88.0
			2	-50					
			3	-20					
			4	-25					
			5	0					
10/4/2005	Straight	12BR	1	177	63.6	20.8	8.3	5.8	95.0
			2	114	41.0				
			3	116	41.7				
			4	0	0.0				
			5	0	0.0				
			6	-2	-0.7				
			7	0	0.0				
10/4/2005	Straight	12BL	1	143	51.4	22.8	7.3	4.5	95.0
			2	153	55.0				
			3	178	63.9				
			4	35	12.6				
			5	-52	-18.7				
			6	-3	-1.1				
			7	-9	-3.2				
10/4/2005	Straight	C49BR	1	137	49.2	25.8	7.2	5.0	100.0
			2	46	16.5				
			3	43	15.4				
			4	125	44.9				
			5	142	51.0				
			6	0	0.0				
			7	10	3.6				

Installation date	Reach type	Site name	Pin no.	Cumulative erosion, 2005–08 (mm)	Erosion rate, 2005–08 (mm/yr)	Mean rate of erosion, 2005–08 (mm/yr)	Top of bank to bottom of toe bank height (m)	Top of bank to edge of water bank height (m)	River kilometer
10/6/2005	Straight	C49BL	1	265	95.4	39.3	5.9	4.8	100.0
			2	196	70.6				
			3	140	50.4				
			4	94	33.8				
			5	54	19.4				
			6	130	46.8				
			7	-5	-1.8				
			8	-1	-0.4				
11/20/2000		FS12-RU	1	114	14.9	3.2	8.2	3.7	104.0
			2	20	2.6				
			3	204	26.6				
			4	-235	-30.7				
			5	25	3.3				
			6	17	2.2				
11/20/2000		FS12-RL	1	117	15.3	8.5	8.2	3.7	104.0
			2	-20	-2.6				
			3	23	3.0				
			4	75	9.8				
			5	130	17.0				
7/22/2004		FS12-LU	1	0	-46.9	-11.6	7.2	3.7	104.0
			2	0	0.0				
			3	-65	-16.3				
			4	20	5.0				
			5	0	0.0				
11/20/2000		FS12-LM	1		9.8		7.2	3.7	104.0
			2		-52.7				
			3		-31.5				
			4		16.8				
			5		0.0				
			6		0.0				
11/20/2000		FS12-LL	1	186	24.3	2.1	7.2	3.7	104.0
			2	-179	-23.4				
			3	-15	-2.0				
			4	76	9.9				
			5	11	1.4				
11/20/2000		FS11-LU	1						
			2	2,042	266.7	86.6	8.4	4.3	105.0
			3	169	22.1				
			4	129	16.8				
			5	314	41.0				
11/20/2000		FS11-LL	1	1,358	177.3	81.9	8.4	4.3	105.0
			2	224	29.2				
			3	801	104.6				
			4	143	18.7				
			5	612	79.9				
6/1/2006	Straight	16BRL	1	165	77.6	57.7	8.9	4.8	108.0
			2	230	108.2				
			3	166	78.1				
			4	141	66.3				
			5	-89	-41.6				

Installation date	Reach type	Site name	Pin no.	Cumulative erosion, 2005–08 (mm)	Erosion rate, 2005–08 (mm/yr)	Mean rate of erosion, 2005–08 (mm/yr)	Top of bank to bottom of toe bank height (m)	Top of bank to edge of water bank height (m)	River kilometer
6/1/2006		16RM	1	--					
			2	--					
			3	128					
			4	55					
			5	162					
			6	25					
			7	0					
			8	0					
6/1/2006	Straight	16BRU	1	39	18.3	24.8	8.9	4.8	108.0
			2	-59	-27.8				
			3	153	72.0				
			4	16	7.5				
			5	162	76.2				
			6	5	2.4				
6/1/2006		16L	1	20	9.4	1.7			108.0
			2	-100	-47.0				
			3	50	23.5				
			4	50	23.5				
			5	5	2.4				
7/22/2004		FS10-LU	1	165	41.4	69.4	16.3	3.9	109.0
			2	253	63.4				
			3	330	82.7				
			4	287	71.9				
			5	349	87.5				
11/20/2000		FS10-LM	1	1,190	155.3	166.1	16.3	3.9	109.0
			2	2,005	261.7				
			3	2,487	324.7				
			4	576	75.2				
			5	102	13.3				
11/20/2000		FS10-LL	1	-5	-0.7	79.8	16.3	3.9	109.0
			2	717	93.6				
			3	1,397	182.4				
			4	335	43.7				
7/22/2004		FS10BR	1	-49	-12.3	-33.2	3.7	3.3	109.0
			2	-153	-38.4				
			3	-301	-75.5				
			4	-27	-6.8				
7/22/2004		FS9-LU	1	97	24.3	20.1	5.7	3.1	111.5
			2	188	47.1				
			3	0	0.0				
			4	35	8.8				
11/20/2000		FS9-LM	1	1,864	243.3	210.5	5.7	3.1	111.5
			2	1,548	202.1				
			3	1,425	186.0				
11/20/2000		FS9-LL	1	610	91.7	96.0	5.7	3.1	111.5
			2	1,330	173.6				
			3	1,400	182.8				
			4	1,215	158.6				
			5	1,085	66.4				
			6	288	37.6				
			7	842	109.9				
			8	174	22.7				
			9	155	20.2				

Installation date	Reach type	Site name	Pin no.	Cumulative erosion, 2005–08 (mm)	Erosion rate, 2005–08 (mm/yr)	Mean rate of erosion, 2005–08 (mm/yr)	Top of bank to bottom of toe bank height (m)	Top of bank to edge of water bank height (m)	River kilometer
7/22/2004		FS9-RU	1	-36	-9.0	-0.8	7.4	2.8	111.5
			2	-5	-1.3				
			3	-30	-7.5				
			4	59	14.8				
7/22/2004		FS9-RM	1	40	10.0	3.1	7.4	2.8	111.5
			2	-33	-8.3				
			3	30	7.5				
7/22/2004		FS9-RL	1	110	27.6	31.7	7.4	2.8	111.5
			2	227	56.9				
			3	65	16.3				
			4	275	68.9				
			5	-45	-11.3				
10/6/2005	Straight	15BR	1	1,358	488.3	286.2	7.2	4.0	112.0
			2	1,220	438.7				
			3	520	292.0				
			4	885	318.3				
			5	310	111.5				
			6	190					
10/6/2005		15BRU	1	275					
			2	395					
			3	130					
			4	210					
			5	0					
10/6/2005		15BRL	1	10					
			2	0					
			3	135					
			4	82					
			5	270					
			6	80					
10/6/2005	Straight	15BL	1	25	9.0	20.8	5.6	4.3	112.0
			2	51	18.3				
			3	160	57.5				
			4	105	37.8				
			5	185	66.5				
			6	0	0.0				
			7	0	0.0				
			8	0	0.0				
			9	-5	-1.8				
10/6/2005	Straight	C15BDR	1	2					
			2	0					
			3	0					
			4	0					
			5	0					
4/19/2006	Transect:	C58 BR	1	135	60.1	28.3			115.0
			2	116	51.6				
			3	58	25.8				
			4	62	27.6				
			5	0	0.0				
			6	11	4.9				

Installation date	Reach type	Site name	Pin no.	Cumulative erosion, 2005–08 (mm)	Erosion rate, 2005–08 (mm/yr)	Mean rate of erosion, 2005–08 (mm/yr)	Top of bank to bottom of toe bank height (m)	Top of bank to edge of water bank height (m)	River kilometer
4/19/2006	Transect:	C58 BL	1	-3	-1.3	68.5			115.0
			2	176	78.3				
			3	317	141.1				
			4	390	173.6				
			5	37	16.5				
			6	7	3.1				
4/19/2006	Transect:	C60 BR	1	102	45.4	9.8		3.9	119.0
			2	113	50.3				
			3	-15	-6.7				
			4	-31	-13.8				
			5	-83	-36.9				
			6	33	14.7				
			7	58	25.8				
4/19/2006	Transect:	C60 BL	1	409	182.1	123.5		3.8	119.0
			2	-217	-96.6				
			3	351	156.2				
			4	372	165.6				
			5	750	333.8				
			6	355	158.0				
			7	204	90.8				
			8	-5	-2.2				
10/6/2005	Straight	T19BR	1	101	36.3	21.9	7.7	4.2	122.0
			2	101	36.3				
			3	63	22.7				
			4	30	10.8				
			5	69	24.8				
			6	8	2.9				
			7	55	19.8				
10/6/2005	Straight	T19BL	1	98	35.2	37.0	7.7	3.8	122.0
			2	185	66.5				
			3	26	9.3				
			4	92	33.1				
			5	-9	-3.2				
			6	320	115.1				
			7	9	3.2				
11/9/2005	Inside	C65BR	1	144	53.6	39.0	5.0	3.6	127.0
			2	111	41.3				
			3	122	45.4				
			4	144	53.6				
			5	85	31.6				
			6	105	39.1				
			7	23	8.6				
11/9/2005	Outside	C65BL	1	374	139.2	11.0	9.0	3.3	127.0
			2	106	39.4				
			3	-245	-91.2				
			4	-170	-63.3				
			5	-90	-33.5				
			6	232	86.3				
			7	0					
4/20/2006	Transect:	C67 BR	1	501	223.3	233.1			130.0
			2	344	153.3				
			3	722	321.8				
			4	525	234.0				

Installation date	Reach type	Site name	Pin no.	Cumulative erosion, 2005–08 (mm)	Erosion rate, 2005–08 (mm/yr)	Mean rate of erosion, 2005–08 (mm/yr)	Top of bank to bottom of toe bank height (m)	Top of bank to edge of water bank height (m)	River kilometer
11/7/2005	Straight	T23BR	1	1,850	686.9	382.6	9.2	3.5	131.5
			2	1,086	403.2				
			3	1,074	398.8				
			4	1,080	401.0				
			5	1,087	403.6				
			6	5	1.9				
11/7/2005	Straight	T23BL	1	-380	-141.1	-55.1	5.7	2.9	131.5
			2	-445	-165.2				
			3	-112	-41.4				
			4	-70	-26.0				
			5	-25	-9.3				
			6	-8	-3.0				
			7						
7/22/2004		FS8-LU	1	1,020	255.7	239.4			133.5
			2	960	240.7				
			3	690	173.0				
			4	1,150	288.3				
7/22/2004		FS8-LM	1	1,980	496.4	233.7			133.5
			2	531	133.1	0.0			
			3	1,128	282.8	0.0			
			4	0	22.5	0.0			
7/22/2004		FS8-LL	1	654	163.9	52.6			133.5
			2	136	34.1				
			3	60	15.0				
			4	-10	-2.5				
11/20/2000		FS8-RU	1	1,180	154.0	61.3			133.5
			2	647	84.5				
			3	194	25.3				
			4	667	87.1				
			5	45	5.9				
			6	85	11.1				
11/20/2000		FS8-RM	1	450	58.7	60.6			133.5
			2	564	73.6				
			3	370	48.3				
			4	120	15.7				
			5	817	106.7				
7/22/2004		FS8-RL	1	-34	-8.5	4.0			133.5
			2	58	14.5				
			3	40	10.0				
			4						
4/20/2006	Outside	FS 7BR	1	10	4.2	4.4	9.2	2.7	135.5
			2	9	3.9				
			3	19	8.4				
			4	2	1.0				
4/20/2006	Inside	FS7BL	1	746	324.9	46.5	6.0	2.4	135.5
			2	23	10.0				
			3	25	10.9				
			4	-38	-16.6				
			5	-93	-40.5				
			6	-23	-10.0				

Installation date	Reach type	Site name	Pin no.	Cumulative erosion, 2005–08 (mm)	Erosion rate, 2005–08 (mm/yr)	Mean rate of erosion, 2005–08 (mm/yr)	Top of bank to bottom of toe bank height (m)	Top of bank to edge of water bank height (m)	River kilometer
3/20/2004		FS6-LU	1	-110	-25.1	19.1			137.0
			2	-555	-126.7				
			3	-75	-17.1				
			4	35	8.0				
			5	225	51.4				
			6	545	224.3				
3/20/2004		FS6-LM	1	-380	-86.7	-8.4			137.0
			2	-255	-58.2				
			3	310	70.8				
			4	-34	-7.8				
			5	175	39.9				
7/22/2004		FS6-LL	1	-100	-24.7	-15.3			137.0
			2	113	28.0				
			3	160	39.6				
			4	-420	-103.9				
7/22/2004		FS6-RU	1	240	59.4	33.0			137.0
			2	-25	-6.2				
			3	191	47.3				
			4	128	31.7				
7/22/2004		FS6-RM	1	-493	-122.0	-11.3			137.0
			2	130	32.2				
			3	113	28.0				
			4	68	16.8				
7/22/2004		FS6-RL	1	-135	-33.4	2.0			137.0
			2	-136	-33.7				
			3	164	40.6				
			4	140	34.6				
11/7/2005	Straight	C72BR	1	373	135.9	47.4		3.0	138.0
			2	83	30.2				
			3	197	71.8				
			4	-15	-5.5				
			5	12	4.4				
11/7/2005	Straight	C72BL	1	86	50.7	10.3		2.8	138.0
			2	23	13.6	0.0			
			3	14	8.3				
			4	4	1.5				
			5	-5	-1.8				
4/19/2006	Straight	FWS 5BR	1	-35	-15.2	-4.8			139.5
			2	-170	-74.0				
			3	87	37.8				
			4	52	22.6				
4/19/2006	Straight	FWS 5L	1	122	53.1	16.2			139.5
			2	-190	-82.7				
			3	104	45.2				
			4	135	58.7				
			5	15	6.5				
11/20/2000		FS4-LU	1	129	16.7	12.8			141.0
			2	33	4.3				
			3	109	14.1				
			4	25	3.2				
			5	196	25.4				

Installation date	Reach type	Site name	Pin no.	Cumulative erosion, 2005–08 (mm)	Erosion rate, 2005–08 (mm/yr)	Mean rate of erosion, 2005–08 (mm/yr)	Top of bank to bottom of toe bank height (m)	Top of bank to edge of water bank height (m)	River kilometer
11/20/2000		FS4-LM	1	-124	-16.0	2.3			141.0
			2	17	2.2				
			3	13	1.7				
			4	25	3.2				
			5	62	8.0				
			6	115	14.9				
7/22/2004		FS4-LL	1	103	25.5	30.9			141.0
			2	131	32.4				
			3	141	34.9				
11/20/2000		FS4-RU	1	-471	-61.1	10.5			141.0
			2	143	21.5				
			3	346	44.9				
			4	284	36.8				
11/20/2000		FS4-RM	1	200	25.9	11.0			141.0
			2	27	3.5				
			3	81	10.5				
			4	32	4.1				
7/22/2004		FS4-RL	1	72	17.8	25.0			141.0
			2	28	6.9				
			3	203	50.2				
11/7/2005	Outside	T25BR	1	126	45.9	18.3	5.3	2.6	141.5
			2	51	18.6				
			3	88	32.1				
			4	76	27.7				
			5	15	5.5				
			6	0	0.0				
			7	-4	-1.5				
11/7/2005	Inside	T25BL	1	138	50.3	24.3	6.0	2.5	141.5
			2	126	45.9				
			3	55	20.0				
			4	91	33.1				
			5	-10	-3.6				
11/20/2000		FS3-LU	1	216	28.0	23.3			146.0
			2	162	21.0				
			3	160	20.7				
11/20/2000		FS3-LU-M	1	351	45.5	36.0			146.0
			2	205	26.6				
11/20/2000		FS3-LM	1	236	30.6	45.8			146.0
			2	148	19.2				
			3	438	56.8				
			4	239	31.0				
			5	707	91.7				
7/22/2004		FS3-LL	1	112	27.7	66.3			146.0
			2	114	28.2				
			3	578	143.0				
7/22/2004		FS3-RU	1	28	6.9	24.0			146.0
			2	267	66.1	0.0			
			3	31	7.7				
			4	62	15.3				

Installation date	Reach type	Site name	Pin no.	Cumulative erosion, 2005–08 (mm)	Erosion rate, 2005–08 (mm/yr)	Mean rate of erosion, 2005–08 (mm/yr)	Top of bank to bottom of toe bank height (m)	Top of bank to edge of water bank height (m)	River kilometer
7/22/2004		FS3-RM	1	-122	-30.2	1.9			146.0
			2	-140	-34.6				
			3	165	40.8				
			4	111	27.5				
			5	25	6.2				
7/22/2004		FS3-RL	1	65	16.1	29.8			146.0
			2	389	96.3				
			3	40	9.9				
			4	-12	-3.0				
11/7/2005	Straight	C78BR	1	110	40.1	39.5	7.0	2.4	147.5
			2	286	104.2				
			3	72	26.2				
			4	74	27.0				
11/7/2005	Straight	C78BL	1	25	9.1	22.3	5.9	2.2	147.5
			2	169	61.6				
			3	99	36.1				
			4	61	22.0				
			5	75	27.3				
			6	-10	-3.6				
			7	10	3.6				
3/20/2004		FS2-LU	1	416	94.8	107.6			154.0
			2	349	79.7				
			3	462	105.5				
			4	442	100.9				
			5	688	157.0				
11/20/2000		FS2-LM	1	207	26.8	21.6			154.0
			2	12	1.6				
			3	92	11.9				
			4	355	46.0				
11/20/2000		FS2-LL	1	5	0.7	8.7			154.0
			2	141	18.3				
			3	0	0.0				
			4	35	4.5				
			5	153	19.8				
3/20/2004		FS2-RU	1		20.1	49.9			154.0
			2		17.8				
			3		95.9				
			4		59.8				
			5		55.7				
11/20/2000		FS2-RM	1	-195	-25.3	12.1			154.0
			2	-60	-7.8				
			3	446	57.8				
			4	70	9.1				
			5	204	26.5				
11/20/2000		FS2-RL	1	-80	-10.4	17.4			154.0
			2	155	20.1				
			3	254	32.9				
			4	145	18.8				
			5	145	21.6				
			6	163	21.1				

Installation date	Reach type	Site name	Pin no.	Cumulative erosion, 2005–08 (mm)	Erosion rate, 2005–08 (mm/yr)	Mean rate of erosion, 2005–08 (mm/yr)	Top of bank to bottom of toe bank height (m)	Top of bank to edge of water bank height (m)	River kilometer
11/8/2005	Straight	C84BR	1	35	12.8	24.8	7.3	1.9	156.0
			2	193	70.2				
			3	70	25.5				
			4	84	30.6				
			5	22	8.0				
			6	5	1.8				
11/8/2005	Straight	C84BL	1	--	--	15.9	7.9	1.8	156.0
			2	--	--				
			3	96	34.8				
			4	117	42.7				
			5	79	28.8				
			6	-30	-10.9				
7/22/2004		FS1-LU	1	-30	-7.4	65.6			157.0
			2	340	84.1				
			3	485	120.0				
7/22/2004		FS1-LM	1	275	68.1	38.1			157.0
			2	137	33.9				
			3	50	12.4				
7/22/2004		FS1-LL	1	38	9.4	32.7			157.0
			2	105	26.0				
			3	254	62.9				
7/22/2004		FS1-RU	1	95	23.5	48.4			157.0
			2	57	14.1				
			3	246	60.9				
			4	385	95.3				
7/22/2004		FS1-RM	1	-30	-7.4	10.7			157.0
			2	-101	-25.0				
			3	12	3.0				
			4	130	32.2				
			5	178	44.0				
			6	70	17.3				
7/22/2004		FS1-RL	1	-161	-39.8	23.7			157.0
			2	10	2.5				
			3	99	24.5				
			4	95	23.5				
			5	365	90.3				
			6	167	41.3				
11/8/2005	Straight	C87BR	1	1,142	416.0	88.3	8.1	1.6	161.0
			2	309	112.6				
			3	192	69.9				
			4	-5	-1.8				
			5	60	21.9				
			6	-2	-0.7				
11/8/2005	Straight	C87BL	1	48	17.5	13.7	10.4	1.2	161.0
			2	27	9.8				
			3	83	30.2				
			4	35	12.7				
			5	-5	-1.8				
11/8/2005	Straight	37BR	1	89	32.4	23.3	5.8	1.1	165.5
			2	123	44.8				
			3	84	30.6				
			4	-40	-14.6				

Installation date	Reach type	Site name	Pin no.	Cumulative erosion, 2005–08 (mm)	Erosion rate, 2005–08 (mm/yr)	Mean rate of erosion, 2005–08 (mm/yr)	Top of bank to bottom of toe bank height (m)	Top of bank to edge of water bank height (m)	River kilometer
11/8/2005	Straight	37BL	1	116	42.3	13.4	6.5	1.0	165.5
			2	54	19.7				
			3	5	1.8				
			4	-28	-10.2				
11/8/2005	Straight	C92BR	1	-5	-1.8	-0.7	5.3	0.9	168.5
			2	12	4.4				
			3	-13	-4.7				
11/8/2005	Straight	C92BL	1	66	24.0	39.1	5.3	0.9	168.5
			2	201	73.2				
			3	167	60.8				
			4	-5	-1.8				
11/8/2005	Outside	38BR	1	35	12.7	47.8		0.6	172.5
			2	377	137.3				
			3	-18	-6.6				
11/8/2005	Inside	38BL	1	-130	-47.4	-5.6	3.5	0.8	172.5
			2	73	26.6				
			3	11	4.0				
11/8/2005	Straight	C97BR	1	70	25.5	25.7	7.7	0.6	175.5
			2	146	53.2				
			3	-4	-1.5				
11/8/2005	Straight	C97BL	1	73	26.6	12.7	5.4	0.6	175.5
			2	25	9.1				
			3	7	2.5				

Appendix 3A. Cross-sectional data from selected bank sites along the Lower Roanoke River.

[Survey methodology is presented as DL = dumpy and level, BATH = bathymetric survey, and LASER = bank survey conducted using a laser rangefinder. Left and right edges of water are noted as LEW or REW, respectively. Elevation is in respect to mean sea level (meters, NAVGD1988) determined by Light Detection Radar (LiDaR) elevation of the top of bank adjacent to cross-sections, accuracy is unknown. m, meters; m^3/s, cubic meters per second]

Survey date	Site name
6/28/2007	T45, T3, T72, C12, C16, T50/51, T57, T58, C27, T8, T61, T11, T9, T10, T41, T12
7/19/2007	C49, FS12, FS11, T16, FS10, FS9, T15, C60, T19, C65, T23, FS8, FS7, C72, FS5, T25
8/7/2007	C78, C84, C87, T37, C92, T39, C97

Survey date	Gage location	USGS streamgage no.	River kilometer	Mean gage height (m)	Mean discharge (m^3/s)
6/28/2007	Roanoke Rapids, N.C.	02080500	0	1.17	97.13
	Halifax, N.C.	0208062765	25	6.10	
	Scotland Neck, N.C.	02081000	56	2.19	
	Hamilton, N.C.	02081028	117	1.10	
	Williamston, N.C.	02081054	152	1.40	
	Jamesville, N.C.	02081094	180	0.33	
7/19/2007	Roanoke Rapids	02080500	0	0.98	69.09
	Halifax, N.C.	0208062765	25	5.68	
	Scotland Neck, N.C.	02081000	56	1.92	
	Hamilton, N.C.	02081028	117	1.09	
	Williamston, N.C.1	02081054	152	1.44	
	Jamesville, N.C.	02081094	180	0.37	
8/7/2007	Roanoke Rapids	02080500	0	1.18	106.19
	Halifax, N.C.	0208062765	25	6.00	
	Scotland Neck, N.C.	02081000	56	1.93	
	Hamilton, N.C.	02081028	117	0.98	
	Williamston, N.C.2	02081054	152	1.47	
	Jamesville, N.C.	02081094	180	0.38	

[1]Data are from July 18, 2007.

[2]Data are from August 5, 2007.

Appendix 3B. Cross-sectional data from selected bank sites along the Lower Roanoke River collected June 28, 2007.

[Survey methodology is presented as DL = dumpy and level, BATH = bathymetric survey, and LASER = bank survey conducted using a laser rangefinder. Left and right edges of water are noted as LEW or REW, respectively. Elevation is in respect to mean sea level (meters, NAVGD1988) determined by Light Detection Radar (LiDaR) elevation of the top of bank adjacent to cross-sections, accuracy is unknown. m, meters; m3/s, cubic meters per second]

Distance (m)	Depth (m)	Method	Comments
		T45	
12.8	9.60	DL	
11	9.71	DL	
8.05	9.75	DL	
5.43	9.35	DL	R-Pin 6
4.75	9.26	DL	
3.9	9.06	DL	R-Pin 5
3.93	8.98	DL	
3.55	8.42	DL	R-Pin 4
2.9	8.28	DL	
2.43	8.15	DL	
2.1	7.78	DL	
1.75	7.22	DL	
1.02	7.12	DL	R-Pin 2
0.75	6.89	DL	
0.4	6.88	DL	
0.35	6.75	DL	REW (June 26, 2007)
0	6.55	DL	R-Pin 1
-0.2	6.49	DL	
-35.1	3.75	BATH	
-33.8	3.90	BATH	
-34	3.81	BATH	
-32.3	3.90	BATH	
-30.4	3.81	BATH	
-27.9	3.87	BATH	
-26	3.87	BATH	
-25.7	3.84	BATH	
-24.6	3.75	BATH	
-23.3	3.81	BATH	
-22.3	3.81	BATH	
-22	3.81	BATH	
-21.1	4.36	BATH	
-19	3.75	BATH	
-18.6	3.66	BATH	
-17.3	3.81	BATH	
-16.2	3.75	BATH	
-15	3.66	BATH	
-14.3	3.51	BATH	
-14	3.48	BATH	
-12.6	3.42	BATH	
-11.2	3.32	BATH	
-9.9	3.20	BATH	
-9.2	3.17	BATH	
-7.9	3.14	BATH	
-6.9	3.29	BATH	
-6.4	3.63	BATH	

Distance (m)	Depth (m)	Method	Comments
-6	3.90	BATH	
-5.2	4.12	BATH	
-4.9	4.42	BATH	
-4.3	4.73	BATH	
-3.3	5.43	BATH	
-2.8	5.30	BATH	
-2.4	5.49	BATH	
0	6.55	DL	R-Pin 1
0	6.49	DL	REW (8/6/2007)
-0.5	6.19	DL	
-1	5.82	DL	
-1.5	5.43	DL	
-2	5.09	DL	
-2.5	5.12	DL	
-3	4.70	DL	
-33.8	3.90	BATH	
-43.2	3.60	BATH	
-46.4	3.48	BATH	
-48.7	3.45	BATH	
-50.3	3.38	BATH	
-51.5	3.45	BATH	
-52.5	3.35	BATH	
-53.8	3.48	BATH	
-55.7	3.57	BATH	
-56.8	3.69	BATH	
-58.2	3.78	BATH	
-59.6	3.90	BATH	
-61.4	3.99	BATH	
-63	4.12	BATH	
-64.2	4.15	BATH	
-65.7	4.24	BATH	
-66.6	4.24	BATH	
-68.4	4.21	BATH	
-68.5	4.21	BATH	
-69.7	4.13	BATH	
-70.7	5.18	BATH	
-71.6	4.73	BATH	
-72.2	4.85	BATH	
-72.6	5.00	BATH	
-72.9	5.15	BATH	
-73.3	5.15	BATH	
-73.6	5.12	BATH	
-74.4	5.12	BATH	
-74.6	5.15	BATH	
-75.2	5.27	BATH	
-76	5.43	BATH	
-76.3	5.58	BATH	
-76.7	5.82	BATH	
-77.5	6.49	DL	LEW/Pin 1 (8/6/2007)
-77	6.25	DL	
-76.5	6.04	DL	
-76	5.78	DL	
-75.5	5.55	DL	

Distance (m)	Depth (m)	Method	Comments
-75	5.38	DL	
-74.5	5.23	DL	
-74	5.09	DL	
-33.8	3.90	DL	
-77.5	6.49	DL	LEW/Pin 1 (6/26/2007)
-78.5	7.11	DL	
-79.5	7.93	DL	
-80.5	8.54	DL	L-Pin 3
-81.5	8.80	DL	
-81.7	9.20	DL	L-Pin 4
-83.4	9.86	DL	L-Pin 5
-84.4	10.45	DL	
-85.3	11.07	DL	L-Pin 6
-86.5	11.49	DL	
-87	11.61	DL	L-Pin 7
-87.9	12.08	DL	
-88.8	12.55	DL	L-Pin 8
-89.2	12.73	DL	
-90	12.99	DL	
		T3	
-109.8	11.58	DL	
-104.8	11.25	DL	
-99.8	10.93	DL	
-98.5	10.75	DL	L-Pin 10
-96.8	10.54	DL	
-95.8	10.19	DL	
-94.8	9.53	DL	L-Pin 9
-93.8	8.91	DL	L-Pin 8
-92	8.62	DL	L-Pin 7
-89.8	8.53	DL	L-Pin 6
-87.4	8.17	DL	L-Pin 5
-86.7	7.96	DL	
-85.8	7.46	DL	L-Pin 4
-83.8	6.38	DL	L-Pin 3
-82.6	5.95	DL	
-81.7	5.45	DL	L-Pin 2
-80.8	5.12	DL	LEW (6/26/2007)
-79.8	4.79	DL	L-Pin 1
-80.1	5.05	DL	LEW (8/6/2007)
-79.8	4.78	DL	L-Pin 1
-79.6	4.75	DL	
-79.1	4.69	DL	
-78.6	4.60	DL	
-78.1	4.50	DL	
-77.6	4.34	DL	
-77.1	4.12	DL	
-76.6	4.06	DL	
-51	1.88	BATH	
-52.1	1.97	BATH	
-54.2	1.97	BATH	
-56	2.07	BATH	
-58.6	2.10	BATH	
-59.4	2.00	BATH	

Distance (m)	Depth (m)	Method	Comments
-61.6	2.07	BATH	
-62.7	2.22	BATH	
-63.4	2.13	BATH	
-64.3	2.13	BATH	
-65.6	2.07	BATH	
-66.2	2.03	BATH	
-66.8	2.16	BATH	
-69.3	2.49	BATH	
-69.7	2.31	BATH	
-71.1	2.71	BATH	
-71.4	2.80	BATH	
-71.7	2.80	BATH	
-72.5	2.80	BATH	
-73.7	3.32	BATH	
-75.4	3.59	BATH	
-75.8	3.59	BATH	
-76.3	3.65	BATH	
-76.6	3.71	BATH	
-76.8	3.77	BATH	
-77.6	4.08	BATH	
-78.3	4.23	BATH	
-27.3	3.51	BATH	
-26.3	3.48	BATH	
-24.7	3.57	BATH	
-23.7	3.66	BATH	
-21.7	3.69	BATH	
-19.4	3.63	BATH	
-17.6	3.66	BATH	
-15.6	3.60	BATH	
-14.3	3.51	BATH	
-10.4	3.45	BATH	
-7.3	4.21	BATH	
-5	3.48	BATH	
-3.8	3.51	BATH	
-2.6	3.66	BATH	
-1.5	3.84	BATH	
-0.9	4.03	BATH	
		T72	
0	4.89	DL	R-Pin 1?
1	5.11	DL	
2	5.37	DL	R-Pin 2
3	5.71	DL	
3.9	6.11	DL	R-Pin 3
5	6.62	DL	
6	7.02	DL	R-Pin 4
7	7.32	DL	
8.5	7.77	DL	R-Pin 5
10.4	8.23	DL	
13	8.70	DL	R-Pin 7
14.5	9.43	DL	R-Pin 8
16.2	10.13	DL	R-Pin 9
18	10.59	DL	
19	10.79	DL	Ground at TBM

Distance (m)	Depth (m)	Method	Comments
20	10.83	DL	
21.5	10.97	DL	
-39	2.83	BATH	
-37.8	2.74	BATH	
-36.1	2.74	BATH	
-34.7	2.77	BATH	
-32.8	2.71	BATH	
-31.1	2.80	BATH	
-30.6	2.80	BATH	
-28.4	2.80	BATH	
-26.8	2.92	BATH	
-25.6	2.77	BATH	
-23.9	2.86	BATH	
-23.1	2.89	BATH	
-22.7	2.99	BATH	
-21.9	2.96	BATH	
-20.5	2.99	BATH	
-19.1	3.05	BATH	
-17.5	3.02	BATH	
-16.2	2.99	BATH	
-15.2	2.99	BATH	
-13.6	2.96	BATH	
-12.5	2.86	BATH	
-11.9	2.77	BATH	
-10.9	2.80	BATH	
-9.6	2.71	BATH	
-8.7	2.68	BATH	
-7.8	2.65	BATH	
-7	2.77	BATH	
-6.2	2.83	BATH	
-5.3	2.83	BATH	
-4.4	2.89	BATH	
-3.7	3.05	BATH	
-3.1	3.29	BATH	
-2.5	3.53	BATH	
0	4.89	DL	R-Pin 1
-0.2	4.69	DL	REW (8/6/2007)
-0.5	4.32	DL	
-1	3.86	DL	
-1.5	3.60	DL	
-2	3.44	DL	
-2.5	3.17	DL	
-3	2.99	DL	
-3.5	2.80	DL	
-36.5	2.65	BATH	
-54.6	2.32	BATH	
-55.2	2.19	BATH	
-57.3	2.13	BATH	
-59.6	2.04	BATH	
-59.7	2.04	BATH	
-61	2.01	BATH	
-61.9	2.10	BATH	
-63.1	2.07	BATH	

Distance (m)	Depth (m)	Method	Comments
-64	1.98	BATH	
-65.3	1.98	BATH	
-66.8	2.07	BATH	
-68.4	2.01	BATH	
-70.6	1.92	BATH	
-71.5	2.13	BATH	
-72.4	2.28	BATH	
-73.1	2.19	BATH	
-73.8	2.22	BATH	
-74.4	2.13	BATH	
-75	2.16	BATH	
-75.4	2.16	BATH	
-75.8	2.19	BATH	
-76.4	2.10	BATH	
-76.9	1.89	BATH	
-77.6	1.89	BATH	
-78.1	2.38	BATH	
-78.4	2.53	BATH	
-79	2.68	BATH	
-79.3	2.80	BATH	
-79.7	3.05	BATH	
-80	3.26	BATH	
-80.3	3.41	BATH	
-80.7	3.57	BATH	
-82	5.17	DL	L-Pin 2
-81.5	4.69	DL	LEW (8/6/2007)
-81.3	4.49	DL	L-Pin 1
-81	4.19	DL	
-80.5	3.84	DL	
-80	3.66	DL	
-79.5	3.35	DL	
-79	3.12	DL	
-78.5	2.83	DL	
-78	2.68	DL	
-36.5	2.35	BATH	
-81	4.50	DL	
-81.2	4.70	DL	
-82	5.17	DL	L-Pin 2
-82.6	5.72	DL	
-83.7	5.87	DL	
-84.5	6.11	DL	L-Pin 4
-85.2	6.57	DL	
-86.2	6.81	DL	
-87.2	7.10	DL	L-Pin 6
-88.7	7.55	DL	L-Pin 7 (near)
-90.2	8.16	DL	
-92.2	8.37	DL	
-94.2	8.64	DL	L-Pin 9 (near)
-96.2	9.16	DL	
-96.8	9.38	DL	L-Pin 10
-98.2	9.75	DL	
-100.2	10.14	DL	
-101.2	10.28	DL	

Distance (m)	Depth (m)	Method	Comments
-106.2	10.62	DL	
-111.2	10.76	DL	
		C12	
0.3	4.41	DL	
0.4	4.47	DL	REW (6/26/2007)
0.5	4.79	DL	R-Pin 1
1	4.91	DL	
1.5	5.08	DL	
2	5.25	DL	
3.5	5.65	DL	
4.1	6.19	DL	R-Pin 3
5.2	6.88	DL	
5.7	7.20	DL	
6.1	7.80	DL	R-Pin 5
6.7	8.47	DL	Top RB
9.1	8.78	DL	R-Pin 6
10.5	9.09	DL	
11.5	9.46	DL	
12.6	9.95	DL	R-Pin 7
13.3	10.22	DL	
14.5	10.37	DL	
-32.6	2.32	BATH	
-28.7	2.17	BATH	
-27.5	2.23	BATH	
-25.6	2.23	BATH	
-24.3	2.20	BATH	
-22.4	2.11	BATH	
-20.4	2.05	BATH	
-18.9	1.96	BATH	
-17.7	1.96	BATH	
-16.4	1.90	BATH	
-15.7	1.99	BATH	
-14	1.96	BATH	
-13.2	1.99	BATH	
-10.9	2.17	BATH	
-9.8	2.11	BATH	
-8.8	2.11	BATH	
-7.9	2.02	BATH	
-7	1.99	BATH	
-6.3	1.96	BATH	
-5.3	2.11	BATH	
-4.5	2.29	BATH	
-3.9	2.54	BATH	
0.5	4.79	DL	R-Pin 1
0	4.24	DL	REW (8/6/2007)
-0.5	3.91	DL	
-1	3.57	DL	
-1.5	3.27	DL	
-2	2.94	DL	
-2.5	2.54	DL	
-3	2.14	DL	
-40.2	1.96	BATH	
-58.3	2.75	BATH	

Distance (m)	Depth (m)	Method	Comments
-61	2.84	BATH	
-62.4	2.78	BATH	
-64.1	2.84	BATH	
-65.7	2.78	BATH	
-67.3	2.72	BATH	
-69.6	2.81	BATH	
-71.4	2.72	BATH	
-73.1	2.66	BATH	
-74.9	2.93	BATH	
-76.7	2.81	BATH	
-78.4	2.75	BATH	
-80.1	2.66	BATH	
-81.6	2.90	BATH	
-82.7	2.78	BATH	
-83.9	2.87	BATH	
-85.3	2.84	BATH	
-86.8	2.78	BATH	
-88.5	2.69	BATH	
-90	2.75	BATH	
-91.1	3.30	BATH	
-91.5	3.57	BATH	
-93.2	3.66	BATH	
-95.1	4.97	DL	L-Pin 1
-94.1	4.24	DL	LEW (8/6/2007)
-93.6	3.98	DL	
-93.1	3.88	DL	
-92.6	3.79	DL	
-92.1	3.64	DL	
-91.6	3.51	DL	
-91.1	3.27	DL	
-90.6	2.99	DL	
-40.2	1.96	BATH	
-95.1	4.97	DL	L-Pin 1
-96.2	5.46	DL	L-Pin 2
-97.6	6.15	DL	L-Pin 3
-99.7	6.74	DL	L-Pin 4
-101.1	7.15	DL	
-102.6	7.61	DL	L-Pin 5
-104.7	8.58	DL	L-Pin 6
-105.6	9.01	DL	
-106.4	9.28	DL	L-Pin 7
-108.5	10.06	DL	Ground at TBM
-111.6	10.20	DL	
		C16	
0.7	3.30	DL	R-Pin 1
2.1	4.02	DL	R-Pin 2
3.4	4.68	DL	R-Pin 3
4.7	5.44	DL	R-Pin 4
6.1	5.85	DL	R-Pin 5, top of block
7.2	6.19	DL	Top of old slump block
8.2	6.28	DL	R-Pin 6, top of block
9.6	6.63	DL	Top of old slump block
11.1	7.06	DL	R-Pin 7, top of block

Distance (m)	Depth (m)	Method	Comments
12.2	7.40	DL	Top of old slump block
15.5	8.81	DL	
16.3	9.01	DL	
17.9	9.75	DL	R-Pin 9
0	2.93	DL	REW (8/6/2007)
0.7	3.30	DL	R-Pin 1
-0.3	2.84	DL	
-0.8	2.55	DL	
-1.3	2.24	DL	
-1.8	1.78	DL	
-2.3	1.42	DL	
-2.8	1.29	DL	
-3.3	1.07	DL	
-28.9	-1.49	BATH	
-23.8	-1.46	BATH	
-21.8	-1.21	BATH	
-20.1	-1.39	BATH	
-17.5	-1.64	BATH	
-14.7	-2.25	BATH	
-12.8	-1.64	BATH	
-11.2	-1.94	BATH	
-9.6	-1.03	BATH	
-7.7	-0.88	BATH	
-6.8	-0.42	BATH	
-5.8	-0.11	BATH	
-4.8	0.50	BATH	
-4	0.80	BATH	
-3.1	1.10	BATH	
-53.1	0.19	BATH	
-55.9	0.19	BATH	
-57.3	0.68	BATH	
-59.2	0.80	BATH	
-61.6	1.04	BATH	
-63.3	0.92	BATH	
-65.9	0.92	BATH	
-67.3	1.38	BATH	
-70	1.32	BATH	
-72.2	1.01	BATH	
-73.2	0.98	BATH	
-74.1	0.62	BATH	
-75.2	0.65	BATH	
-76.3	0.77	BATH	
-77.4	0.80	BATH	
-77.6	0.56	BATH	
-78.5	0.50	BATH	
-82.75	2.98	DL	L-Pin 1
-82.6	2.93	DL	LEW (8/6/2007)
-82.25	2.83	DL	
-81.75	2.67	DL	
-81.25	2.52	DL	
-80.75	2.37	DL	
-80.25	2.22	DL	
-79.75	2.06	DL	

Distance (m)	Depth (m)	Method	Comments
-79.25	1.91	DL	
-47.2	2.93	BATH	
-82.75	2.99	DL	L-Pin 1
-83.75	3.34	DL	
-84.75	3.94	DL	
-85.35	4.15	DL	L-Pin 2
-86.55	4.62	DL	
-87.35	4.84	DL	L-Pin 3
-88.75	5.26	DL	
-89.55	5.90	DL	L-Pin 4
-90.75	6.56	DL	Top LB
-92.45	6.71	DL	L-Pin 5
-93.75	6.87	DL	
-94.25	6.94	DL	
-95.25	7.20	DL	L-Pin 6
-96.75	7.67	DL	
-96.95	7.84	DL	
-99.75	7.98	DL	
		T50/51	
0	0	DL	R-Pin 1/REW
1.8	0.85	DL	R-Pin 2
2.7	1.36	DL	R-Pin 3
4.6	2.16	DL	R-Pin 4
6.5	2.86	DL	R-Pin 5
8.5	3.54	DL	R-Pin 6
10.4	3.83	DL	R-Pin 7
12.2	4.4	DL	R-Pin 8
13	4.95	DL	
15	5.07	DL	Ground at TBM
17	5.16	DL	
-29.1	-2.47	BATH	
-27.4	-2.50	BATH	
-26.2	-2.50	BATH	
-24.7	-2.53	BATH	
-24	-2.59	BATH	
-22.8	-2.56	BATH	
-21.7	-2.62	BATH	
-20.4	-2.59	BATH	
-19.1	-2.59	BATH	
-17.5	-2.65	BATH	
-16.7	-2.59	BATH	
-15.9	-2.62	BATH	
-14.8	-2.68	BATH	
-13.8	-2.74	BATH	
-12.8	-2.74	BATH	
-11.9	-2.77	BATH	
-10.9	-2.71	BATH	
-9.9	-2.77	BATH	
-9.2	-2.77	BATH	
-8.8	-2.80	BATH	
-7.8	-2.77	BATH	
-7	-2.83	BATH	
-6.3	-2.38	BATH	

Distance (m)	Depth (m)	Method	Comments
-5.7	-2.13	BATH	
-4.9	-2.16	BATH	
-4.4	-2.16	BATH	
-3.7	-2.07	BATH	
-3.2	-2.10	BATH	
-2.6	-1.95	BATH	
-2.1	-1.89	BATH	
-1.8	-1.92	BATH	
0	0.00	DL	REW
-0.5	-0.62	DL	
-1	-0.97	DL	
-1.5	-1.31	DL	
-2	-1.52	DL	
-2.5	-2.00	DL	
-48.7	-2.68	BATH	
-64.1	-2.83	BATH	
-64	-2.77	BATH	
-63.9	-2.83	BATH	
-64.7	-2.44	BATH	
-66.4	-2.29	BATH	
-67.7	-2.32	BATH	
-68.6	-2.80	BATH	
-69.6	-2.83	BATH	
-70.6	-2.80	BATH	
-71.6	-2.59	BATH	
-73.1	-2.44	BATH	
-74.7	-2.38	BATH	
-76.6	-2.47	BATH	
-77.6	-2.44	BATH	
-79.1	-2.59	BATH	
-80.1	-2.62	BATH	
-81.2	-2.77	BATH	
-82.1	-2.62	BATH	
-83.1	-2.29	BATH	
-84.2	-2.13	BATH	
-85.2	-2.10	BATH	
-86.2	-1.77	BATH	
-86.9	-1.65	BATH	
-86.3	-1.52	BATH	
-86.5	-1.68	BATH	
-89	0.00	DL	LEW
-88.5	-0.62	DL	
-88	-1.08	DL	
-87.5	-1.40	DL	
-87	-1.63	DL	
-86.5	-1.89	DL	
-48.7	-2.68	DL	
-89	0	DL	L-Pin 1/LEW
-90.2	0.59	DL	L-Pin 2
-91.3	1.13	DL	L-Pin 3
-92.5	1.53	DL	L-Pin 4
-93.7	2.15	DL	L-Pin 5
-95	2.44	DL	L-Pin 6

Distance (m)	Depth (m)	Method	Comments
-96.7	2.97	DL	L-Pin 7
-98.8	3.72	DL	L-Pin 8
-101	4.28	DL	L-Pin 9
-102	4.36	DL	Ground at TBM
-105	4.46	DL	
		T57	
0	4.22	DL	Pin 1/REW (6/27/2007)
0.9	4.56	DL	
1.9	4.84	DL	R-Pin 2
3.1	5.27	DL	R-Pin 3
4.9	5.95	DL	R-Pin 4
7.6	7.10	DL	R-Pin 5
9.6	7.70	DL	R-Pin 6
11	8.08	DL	
12.1	8.43	DL	R-Pin 7
13.9	8.96	DL	
15.1	9.56	DL	R-Pin 8
15.6	10.00	DL	R-Pin 9
18.6	10.53	DL	Ground at TBM
19.8	10.86	DL	
21.8	10.97	DL	
-29	1.64	BATH	
-27.2	1.74	BATH	
-22.6	1.52	BATH	
-21.3	1.55	BATH	
-20.1	1.58	BATH	
-19.2	1.37	BATH	
-18.1	1.25	BATH	
-16.9	1.13	BATH	
-16.1	1.10	BATH	
-15.3	1.10	BATH	
-14.2	1.16	BATH	
-12.8	1.16	BATH	
-12.6	1.13	BATH	
-11.7	1.04	BATH	
-10.7	0.97	BATH	
-10.1	0.94	BATH	
-9.4	1.04	BATH	
-8.4	1.89	BATH	
-7.7	1.64	BATH	
-7.1	1.68	BATH	
-3.2	2.04	BATH	
-2.8	1.98	BATH	
-2.4	2.22	BATH	
-1.9	2.35	BATH	
-1.4	2.77	BATH	
0	4.22	DL	R-Pin 1
0	4.05	DL	REW (8/8/2007)
-0.5	3.44	DL	
-1	3.11	DL	
-1.5	2.93	DL	
-2	2.42	DL	
-2.5	2.23	DL	

Distance (m)	Depth (m)	Method	Comments
-3	2.19	DL	
-30.1	1.58	BATH	
-55.8	2.43	BATH	
-57.8	2.37	BATH	
-59.6	2.37	BATH	
-62	2.43	BATH	
-64.7	2.53	BATH	
-66.6	2.53	BATH	
-68.3	2.56	BATH	
-69.7	2.50	BATH	
-70.5	2.53	BATH	
-71.3	2.50	BATH	
-72	2.56	BATH	
-72.5	2.50	BATH	
-73.2	2.46	BATH	
-73.9	2.50	BATH	
-74.6	2.43	BATH	
-75.3	2.40	BATH	
-76.2	2.37	BATH	
-77.2	2.53	BATH	
-79	2.83	BATH	
-79.9	3.01	BATH	
-80.5	3.23	BATH	
-83.4	4.26	DL	LEW (8/8/2007)
-82.9	4.20	DL	
-82.4	4.04	DL	
-81.9	3.81	DL	
-81.4	3.95	DL	
-80.9	3.55	DL	
-80.4	3.37	DL	
-79.9	3.16	DL	
-79.4	2.94	DL	
-30.1	1.79	DL	
-83.4	4.05	DL	LEW (6/27/2007)
-84.4	4.53	DL	
-85.4	4.80	DL	
-86.4	5.15	DL	
-87.4	5.93	DL	
-88.4	6.40	DL	
-89.4	7.21	DL	
-90.4	7.54	DL	
-91.4	7.71	DL	
-92.4	7.83	DL	
-93.4	7.94	DL	
-95.4	8.58	DL	
-96.4	9.24	DL	
-96.7	9.49	DL	Top of Left Bank
-97.4	9.63	DL	
-98.4	9.72	DL	
		T58	
0.5	4.76	DL	R-Pin 2
1.5	5.15	DL	
2.4	5.54	DL	R-Pin 3

Distance (m)	Depth (m)	Method	Comments
4	5.98	DL	
5.5	6.41	DL	R-Pin 4
7.7	6.95	DL	R-Pin 5
9.3	7.24	DL	
10.8	6.75	DL	
11.4	8.06	DL	R-Pin 6
12.4	8.38	DL	R-Pin 7
16.1	8.83	DL	
18.9	9.14	DL	Ground at TBM
-34.7	0.98	BATH	
-33.4	1.17	BATH	
-31.4	1.20	BATH	
-29.5	1.23	BATH	
-28.3	1.29	BATH	
-27.2	1.29	BATH	
-26.2	1.26	BATH	
-24.8	1.26	BATH	
-23.6	1.35	BATH	
-22.4	1.41	BATH	
-21.2	1.50	BATH	
-20.1	1.59	BATH	
-18.9	1.62	BATH	
-18	1.68	BATH	
-17.1	1.65	BATH	
-16.1	1.71	BATH	
-14.7	1.77	BATH	
-13.8	1.87	BATH	
-12.8	1.87	BATH	
-12.2	1.84	BATH	
-11.1	1.68	BATH	
-10.1	1.74	BATH	
-9.4	1.84	BATH	
-8.5	1.90	BATH	
-7.7	2.02	BATH	
-7	2.05	BATH	
-6.2	2.14	BATH	
-5.4	2.26	BATH	
-4.7	2.41	BATH	
-4.2	2.75	BATH	
-3.7	2.99	BATH	
-3.4	3.15	BATH	
-2.8	3.36	BATH	
0.5	4.76	DL	R-Pin 2
0	4.27	DL	REW (8/8/2007)
-0.5	4.08	DL	
-1	3.83	DL	
-1.5	3.76	DL	
-2	3.60	DL	
-2.5	3.49	DL	
-3	3.32	DL	
-3.5	3.10	DL	
-46.2	1.07	BATH	
-47.9	1.13	BATH	

Distance (m)	Depth (m)	Method	Comments
-49.3	1.17	BATH	
-51	1.23	BATH	
-52.7	1.32	BATH	
-54.5	1.35	BATH	
-56	1.29	BATH	
-58.2	1.17	BATH	
-59.7	1.04	BATH	
-60.8	0.77	BATH	
-61.8	0.62	BATH	
-62.9	0.46	BATH	
-63.9	0.22	BATH	
-65	0.16	BATH	
-66.2	-0.02	BATH	
-67.3	-0.12	BATH	
-68.6	0.01	BATH	
-69.7	0.19	BATH	
-70.7	0.62	BATH	
-71.4	0.80	BATH	
-72.4	1.35	BATH	
-75.9	4.27	DL	LEW (8/8/2007)
-75.7	4.12	DL	
-75.5	3.65	DL	
-75.3	2.27	DL	
-74.8	2.07	DL	
-74.2	1.59	DL	
-73.1	0.89	DL	
-73.7	1.27	DL	
-37.9	0.92	DL	
-75.9	4.27	LASER	LEW (6/27/2007)
-75.97	4.45	LASER	L-Pin 1
-78.03	5.41	LASER	L-Pin 2
-79.4	6.40	LASER	L-Pin 3
-80.18	7.62	LASER	L-Pin 4
-80.51	9.65	LASER	L-Pin 5
-80.42	9.97	LASER	Top of Left Bank
		C27	
-0.5	5.25	DL	REW (6/27/2007)
1	5.91	DL	R-Pin 1
2.7	6.63	DL	R-Pin 2
3.7	7.18	DL	R-Pin 3
4.7	7.50	DL	R-Pin 4
6.7	8.07	DL	R-Pin 5
8.6	8.36	DL	R-Pin 6
10.6	8.82	DL	
10.8	8.84	DL	Ground at TBM
11.9	9.51	DL	R-Pin 7
12.3	9.75	DL	Top of Right Bank
-30.5	1.79	BATH	
-29.4	1.85	BATH	
-27.9	1.57	BATH	
-26	1.76	BATH	
-24.3	1.94	BATH	
-22.4	1.94	BATH	

Distance (m)	Depth (m)	Method	Comments
-21.3	2.00	BATH	
-20.4	2.06	BATH	
-19	2.09	BATH	
-17.5	2.09	BATH	
-16.6	2.12	BATH	
-15.6	2.09	BATH	
-14.1	2.09	BATH	
-13.2	2.12	BATH	
-11.7	2.15	BATH	
-10.6	2.18	BATH	
-9.3	2.09	BATH	
-8.2	2.15	BATH	
-7.4	2.21	BATH	
-6.8	2.24	BATH	
-6	2.31	BATH	
-5.2	2.40	BATH	
-4.4	2.58	BATH	
-4	2.79	BATH	
-3.4	3.01	BATH	
-3	3.34	BATH	
-2.4	3.68	BATH	
-1.7	3.83	BATH	
-1.5	3.98	BATH	
1	5.91	DL	R-Pin 1
0	5.35	DL	REW (8/8/2007)
-0.5	4.88	DL	
-1	4.61	DL	
-1.5	4.14	DL	
-2	4.03	DL	
-2.5	3.63	DL	
-3	3.33	DL	
-32	1.88	BATH	
-52.4	3.34	BATH	
-54.4	3.40	BATH	
-56	3.52	BATH	
-57.8	3.65	BATH	
-59.6	3.74	BATH	
-60.8	3.74	BATH	
-62	3.71	BATH	
-63.1	3.46	BATH	
-64.2	3.49	BATH	
-65	3.40	BATH	
-66	3.28	BATH	
-67.2	3.40	BATH	
-68.2	3.22	BATH	
-69	3.31	BATH	
-69.9	3.40	BATH	
-70.9	3.52	BATH	
-71.9	3.62	BATH	
-73	3.83	BATH	
-74.2	4.29	BATH	
-76.4	5.35	DL	LEW (8/8/2007)
-76.2	5.27	DL	

Distance (m)	Depth (m)	Method	Comments
-76.1	5.13	DL	
-75.9	4.97	DL	
-75.4	4.53	DL	
-74.9	4.25	DL	
-74.4	4.13	DL	
-73.9	4.02	DL	
-73.2	3.84	DL	
-76.4	5.39	DL	L-Pin 1
-76.8	5.61	DL	LEW (6/27/2007)
-77.4	5.92	DL	
-78.4	6.41	DL	
-79.4	6.69	DL	
-80	7.20	DL	L-Pin 3
-80.9	7.74	DL	Top of Left Bank
-82.8	8.25	DL	Bottom of Terrace
-83.1	8.58	DL	
-84.4	9.16	DL	
-85.4	9.58	DL	L-Pin 6
-86.4	9.83	DL	
-87.4	9.99	DL	
-88.4	10.55	DL	
-88.5	10.36	DL	L-Pin 7
-90.4	11.76	DL	Top of Left Bank
-90	11.62	DL	
		T8	
0	3.00	DL	REW (6/27/2007)
0.2	3.11	DL	R-Pin 1
2.3	4.10	DL	R-Pin 4
3.2	5.05	DL	
3.8	5.29	DL	R-Pin 5
4.4	5.47	DL	
6.4	5.79	DL	R-Pin 6
8	6.38	DL	
9.7	6.98	DL	R-Pin 7
10.1	7.30	DL	Ground at TBM
-35.3	1.14	BATH	
-33.6	1.17	BATH	
-31.7	1.05	BATH	
-29.7	0.87	BATH	
-28.1	0.53	BATH	
-26.5	0.38	BATH	
-24.1	0.26	BATH	
-22.1	0.20	BATH	
-20.5	0.16	BATH	
-18.5	0.13	BATH	
-17	0.07	BATH	
-15.7	-0.05	BATH	
-13.9	-0.26	BATH	
-12.7	-0.38	BATH	
-11.6	-0.41	BATH	
-10.6	-0.41	BATH	
-9.7	-0.38	BATH	
-9.2	-0.32	BATH	

Distance (m)	Depth (m)	Method	Comments
-8.7	-0.32	BATH	
-8.3	-0.29	BATH	
-7.8	-0.29	BATH	
-7.1	-0.08	BATH	
-6.6	0.16	BATH	
-5.8	0.35	BATH	
-5.3	0.59	BATH	
-4.6	0.87	BATH	
-4.1	1.08	BATH	
-3.7	1.38	BATH	
-3.4	1.63	BATH	
-3.1	1.84	BATH	
-2.8	1.99	BATH	
-2.5	2.15	BATH	
-2.3	2.30	BATH	
-2.4	2.36	BATH	
-1.9	2.48	BATH	
-1.7	2.66	BATH	
-1.5	2.69	BATH	
-48.3	1.08	BATH	
-60.4	1.30	BATH	
-60.7	1.36	BATH	
-61.4	1.42	BATH	
-62.4	1.33	BATH	
-63.7	1.48	BATH	
-65.6	1.54	BATH	
-67.5	1.63	BATH	
-70.2	1.69	BATH	
-72.5	1.54	BATH	
-74.5	1.66	BATH	
-75.8	1.66	BATH	
-77	1.48	BATH	
-78	1.48	BATH	
-78.3	1.39	BATH	
-79.4	1.57	BATH	
-80.7	1.48	BATH	
-82.2	1.39	BATH	
-83.4	1.66	BATH	
-84.6	1.54	BATH	
-85.8	1.60	BATH	
-87	1.94	BATH	
-91.4	3.10	DL	LEW (8/8/2007)
-91.2	3.00	DL	
-90.7	2.85	DL	
-90.2	2.79	DL	
-89.7	2.62	DL	
-89.2	2.54	DL	
-88.7	2.27	DL	
-88.2	2.27	DL	
-87.7	2.13	DL	
-87.2	2.00	DL	
-48.3	1.08	BATH	
-90.7	2.90	DL	LEW (6/27/2007)

Distance (m)	Depth (m)	Method	Comments
-91.4	3.10	DL	L-Pin 1
-91.7	3.24	DL	
-92.7	3.66	DL	
-93.2	3.83	DL	L-Pin 2
-93.7	3.98	DL	
-94.7	4.29	DL	
-95.3	4.65	DL	L-Pin 3
-96	5.02	DL	
-96.7	5.40	DL	L-Pin 4
-97.7	5.82	DL	
-98.7	6.32	DL	L-Pin 5
-99.7	6.72	DL	
-100.7	7.09	DL	L-Pin 6
-101.7	7.56	DL	
-102.7	7.89	DL	
-104.7	8.24	DL	
-106.7	8.53	DL	

Distance (m)	Depth (m)	Method	Comments
		T61	
-2.5	1.63	DL	
-0.7	2.01	DL	REW (6/28/2007)
0	2.13	DL	
1	2.35	DL	
1.7	2.57	DL	R-Pin 2
2.5	2.87	DL	
3.5	3.07	DL	
4	3.29	DL	
4.9	3.62	DL	R-Pin 3
5.5	3.80	DL	
6.3	4.12	DL	
7.3	4.22	DL	
8	4.29	DL	R-Pin 4
8.5	4.45	DL	
9.5	4.69	DL	
10.7	4.93	DL	R-Pin 5
11.5	5.16	DL	
12.5	5.45	DL	
13.5	5.70	DL	
14.5	6.95	DL	
16.5	7.70	DL	
-30.4	-6.51	BATH	
-28.9	-6.17	BATH	
-29.1	-5.99	BATH	
-28.6	-5.81	BATH	
-27.9	-5.62	BATH	
-27.1	-5.29	BATH	
-26.7	-5.17	BATH	
-26.3	-5.08	BATH	
-26.2	-4.83	BATH	
-25.8	-4.53	BATH	
-25	-3.86	BATH	
-24.5	-3.67	BATH	
-23.2	-3.06	BATH	
-22.5	-2.79	BATH	
-22	-2.42	BATH	
-21.1	-2.15	BATH	
-20.7	-1.94	BATH	
-20.1	-1.75	BATH	
-19.5	-1.51	BATH	
-18.8	-1.30	BATH	
-18.6	-1.20	BATH	
-17.8	-1.14	BATH	
-17	-0.96	BATH	
-16.6	-0.87	BATH	
-16	-0.72	BATH	
-15.1	-0.59	BATH	
-14.1	-0.44	BATH	
-13.2	-0.26	BATH	
-12.3	-0.20	BATH	
-11.7	-0.08	BATH	
-10.6	0.02	BATH	

Distance (m)	Depth (m)	Method	Comments
-9.9	0.08	BATH	
-7.5	0.23	BATH	
-6.9	0.47	BATH	
-5.3	0.59	BATH	
-4.4	0.90	BATH	
-3.2	1.08	BATH	
1.7	2.57	DL	R-Pin 2
0	1.87	DL	REW (8/8/2007)
-0.5	1.73	DL	
-1	1.63	DL	
-1.5	1.49	DL	
-2	1.36	DL	
-2.5	1.23	DL	
-3	1.08	DL	
-33.8	-7.88	BATH	
-36.5	-9.53	BATH	
-37.5	-9.62	BATH	
-39	-9.07	BATH	
-40.8	-8.24	BATH	
-41.9	-7.64	BATH	
-42.8	-7.39	BATH	
-43.8	-7.21	BATH	
-44.3	-6.72	BATH	
-44.8	-6.66	BATH	
-45.8	-6.05	BATH	
-46.8	-5.44	BATH	
-47.2	-5.41	BATH	
-47.5	-5.35	BATH	
-47.7	-5.29	BATH	
-48.5	-4.40	BATH	
-49	-3.06	BATH	
-49.5	-2.76	BATH	
-49.8	-2.58	BATH	
-50.4	-2.55	BATH	
-51	-1.94	BATH	
-54.2	2.07	DL	L-Pin 2
-53.7	1.87	DL	LEW (6/28/2007)
-53.5	1.45	DL	
-53.2	1.77	DL	
-53	1.68	DL	
-52.7	1.10	DL	
-52.6	0.73	DL	
-52.4	-0.34	DL	
-33.8	-7.88	BATH	
-53.2	1.88	DL	LEW (8/8/2007)
-54.2	2.07	DL	L-Pin 2
-55.9	2.36	DL	
-57.7	2.57	DL	L-Pin 3
-59.1	3.01	DL	
-60.5	3.44	DL	L-Pin 4
-61.7	3.85	DL	
-63.4	4.67	DL	L-Pin 5
-64.1	5.82	DL	L-Pin 6

Distance (m)	Depth (m)	Method	Comments
-64.4	6.68	DL	
-66.4	7.17	DL	
-68.4	7.32	DL	Ground at TBM
-68.9	7.29	DL	
		T11	
-1.4	2.35	DL	R-Pin 1
-0.1	2.68	DL	REW (6/28/2007)
0	2.82	DL	R-Pin 2
0.6	3.24	DL	
1.2	3.57	DL	R-Pin 3
1.6	3.74	DL	
2.6	4.17	DL	
3.1	4.33	DL	R-Pin 4
4.6	5.00	DL	
4.2	4.89	DL	R-Pin 5
6	5.47	DL	R-Pin 6
7.6	5.87	DL	
7.9	5.94	DL	R-Pin 7
8.6	6.10	DL	
9.9	6.72	DL	R-Pin 8
10.6	7.05	DL	
12.6	7.66	DL	
-36.6	0.64	BATH	
-32.7	0.64	BATH	
-29.9	0.73	BATH	
-28.1	0.67	BATH	
-27	0.79	BATH	
-25.7	0.73	BATH	
-24.4	0.85	BATH	
-22.8	0.76	BATH	
-20.4	0.91	BATH	
-18.7	0.85	BATH	
-17.3	0.73	BATH	
-15.9	0.70	BATH	
-14.3	0.70	BATH	
-12.6	0.76	BATH	
-11.7	0.79	BATH	
-10.7	0.76	BATH	
-9.8	0.73	BATH	
-9	0.76	BATH	
-8.3	0.76	BATH	
-7.4	0.76	BATH	
-6.8	0.82	BATH	
-5.5	1.09	BATH	
-4.7	1.55	BATH	
-4	1.70	BATH	
-3.4	1.73	BATH	
-2.9	1.92	BATH	
-2.4	2.01	BATH	
-2.1	2.04	BATH	
0	2.82	DL	R-Pin 2
0	2.62	DL	REW (8/8/2007)
-0.5	2.37	DL	

Distance (m)	Depth (m)	Method	Comments
-1	2.19	DL	
-1.5	2.09	DL	
-2	1.97	DL	
-2.5	1.87	DL	
-3	1.75	DL	
-43.6	0.61	BATH	
-37.4	0.57	BATH	
-40.8	0.64	BATH	
-43.2	0.54	BATH	
-44.9	0.51	BATH	
-45.8	0.48	BATH	
-47.3	0.42	BATH	
-48.7	0.42	BATH	
-49.7	0.39	BATH	
-50.7	0.36	BATH	
-52	0.27	BATH	
-54.1	0.24	BATH	
-56.6	0.15	BATH	
-58.6	0.06	BATH	
-60	-0.10	BATH	
-62.3	-0.19	BATH	
-63.7	-0.37	BATH	
-65.5	-0.55	BATH	
-66.4	-0.71	BATH	
-67.9	-0.83	BATH	
-69.5	-0.92	BATH	
-70.7	-0.98	BATH	
-72	-1.01	BATH	
-73	-1.25	BATH	
-74.1	-1.47	BATH	
-74.9	-1.25	BATH	
-75.7	-1.16	BATH	
-76.2	-1.16	BATH	
-76.4	-0.95	BATH	
-77	-0.58	BATH	
-77.3	-0.34	BATH	
-77.8	0.09	BATH	
-78.4	0.88	BATH	
-78.9	1.15	BATH	
-79.5	1.28	BATH	
-82.6	2.62	DL	L-Pin 1/LEW (8/8/2007)
-82.4	2.57	DL	
-82.3	2.48	DL	
-82.1	2.15	DL	
-81.6	2.10	DL	
-81.1	1.90	DL	
-80.6	1.81	DL	
-80.1	1.53	DL	
-79.6	1.34	DL	
-43.6	0.61	BATH	
-82.4	2.53	DL	LEW (6/28/2007)
-82.6	2.62	DL	L-Pin 1
-85	3.51	DL	L-Pin 2

Distance (m)	Depth (m)	Method	Comments
-85.8	4.42	DL	
-86.9	4.83	DL	
-88.3	5.62	DL	L-Pin 3
-89.8	5.74	DL	L-Pin 4
-91.5	5.97	DL	L-Pin 5
-92.7	6.19	DL	
-93.4	6.92	DL	
-94.3	7.06	DL	L-Pin 7
-95.6	7.18	DL	
-96.8	7.32	DL	Ground at TBM
		T9	
-22.9	-1.05	BATH	
-22.5	-1.05	BATH	
-21.8	-1.08	BATH	
-20.7	-1.11	BATH	
-19.7	-1.11	BATH	
-18.6	-1.11	BATH	
-17.7	-1.08	BATH	
-16.7	-1.05	BATH	
-15.2	-1.02	BATH	
-14.3	-0.95	BATH	
-13.4	-0.89	BATH	
-12.6	-0.86	BATH	
-11.8	-0.86	BATH	
-10.9	-0.80	BATH	
-9.7	-0.80	BATH	
-9	-0.74	BATH	
-7.7	-0.65	BATH	
-7	0.02	BATH	
-6.4	-0.38	BATH	
-5.8	-0.19	BATH	
-5.1	-0.01	BATH	
-4.4	0.02	BATH	
-3.9	0.30	BATH	
-3.5	0.39	BATH	
-3	0.39	BATH	
-2.7	0.39	BATH	
-2.3	0.48	BATH	
-2	0.57	BATH	
-1.6	0.63	BATH	
-1.3	0.69	BATH	
1	2.10	DL	R-Pin 1
0	1.55	DL	REW (8/8/2007)
-0.5	1.34	DL	
-1	0.83	DL	
-1.5	0.65	DL	
-2	0.50	DL	
-2.5	0.34	DL	
-3.1	0.23	DL	
-0.5	1.38	DL	
0	1.56	DL	REW (6/28/2007)
0.5	1.89	DL	
1	2.10	DL	R-Pin 1

Distance (m)	Depth (m)	Method	Comments
1.5	2.34	DL	
2.5	2.92	DL	
2.6	3.15	DL	R-Pin 2
3.5	3.81	DL	R-Pin 3
4.5	4.13	DL	
5.5	4.67	DL	R-Pin 4
6	4.77	DL	
7.3	5.38	DL	
7.8	5.59	DL	R-Pin 5
9.5	5.84	DL	
10.3	5.91	DL	R-Pin 6
11.5	6.02	DL	
12.7	6.29	DL	R-Pin 7
13.5	6.50	DL	
14.5	6.72	DL	
15.5	6.64	DL	Root Pit Tree Fall
16.5	7.05	DL	
18.5	7.01	DL	
19.1	7.28	DL	
19.2	7.32	DL	
19	7.12	DL	
		T10	
-0.1	1.56	DL	REW (6/28/2007)
0	1.87	DL	R-Pin 1
1.4	2.44	DL	
2.4	2.64	DL	R-Pin 2
3.2	3.19	DL	
4.7	3.84	DL	R-Pin 3
6.3	4.20	DL	
7.8	4.56	DL	R-Pin 5
9.5	4.79	DL	
11	5.13	DL	
11.7	5.71	DL	R-Pin 7
12.2	6.06	DL	
13.1	6.28	DL	
-35.8	-0.78	BATH	
-32.6	-0.84	BATH	
-30.8	-0.96	BATH	
-29.1	-1.15	BATH	
-27.8	-1.12	BATH	
-22.9	-1.03	BATH	
-21.1	-1.15	BATH	
-19	-1.15	BATH	
-17.8	-1.21	BATH	
-16.6	-1.21	BATH	
-15.6	-1.18	BATH	
-14.2	-1.21	BATH	
-13.1	-1.30	BATH	
-11.9	-1.33	BATH	
-10.1	-1.42	BATH	
-8.9	-1.57	BATH	
-8	-1.73	BATH	
-7.2	-1.85	BATH	

Distance (m)	Depth (m)	Method	Comments
-6.4	-1.79	BATH	
-5.5	-1.48	BATH	
-5	-1.18	BATH	
-4.3	-0.75	BATH	
-3.3	0.10	BATH	
-2.3	0.50	BATH	
-1.7	0.56	BATH	
-0.4	0.93	BATH	
0	1.87	DL	R-Pin 1
0	1.57	DL	REW (8/8/2007)
-0.5	1.42	DL	
-1	0.97	DL	
-1.5	0.71	DL	
-2	0.36	DL	
-2.5	0.13	DL	
-3	-0.05	DL	
-54.4	-0.90	BATH	
-54.4	-0.32	BATH	
-59.8	-0.45	BATH	
-62.4	-0.39	BATH	
-64.3	-0.26	BATH	
-67.5	-0.20	BATH	
-69.5	-0.20	BATH	
-71.4	-0.20	BATH	
-72.7	-0.17	BATH	
-74.3	-0.14	BATH	
-75.7	-0.17	BATH	
-77.1	-0.08	BATH	
-78.7	-0.14	BATH	
-79.7	-0.14	BATH	
-81.3	-0.02	BATH	
-82.4	-0.08	BATH	
-83.3	-0.08	BATH	
-84.6	-0.05	BATH	
-85.7	0.10	BATH	
-86.5	0.22	BATH	
-87.3	0.19	BATH	
-90.4	1.87	DL	L-Pin 2
-90.2	1.57	DL	LEW (8/8/2007)
-89.7	1.37	DL	
-89.2	1.00	DL	
-88.7	0.80	DL	
-88.2	0.62	DL	
-87.7	0.29	DL	
-87.2	0.12	DL	
-86.7	0.07	DL	
-54.4	-0.90	BATH	
-90.1	1.75	DL	LEW (6/28/2007)
-90.4	1.87	DL	L-Pin 2
-91.4	2.39	DL	L-Pin 3
-92.4	2.74	DL	
-92.7	2.91	DL	L-Pin 4
-93.4	3.32	DL	

Distance (m)	Depth (m)	Method	Comments
-93.8	3.59	DL	L-Pin 5
-94.4	3.96	DL	
-95.4	4.32	DL	L-Pin 6
-96.4	4.60	DL	
-97.2	4.75	DL	L-Pin 7
-98.4	4.99	DL	
-99.8	5.73	DL	L-Pin 8
-101.4	6.31	DL	
-102.9	6.63	DL	L-Pin 9
-103.7	6.71	DL	
		C41	
0	2.96	DL	R-Pin 1
0	3.14	DL	REW (6/28/2007)
0.5	3.44	DL	
1	3.61	DL	
2	3.93	DL	
3.1	4.16	DL	R-Pin 3
4	4.37	DL	
5.1	4.82	DL	R-Pin 4
5.8	5.03	DL	R-Pin 5
7	5.47	DL	
7.7	5.69	DL	R-Pin 6
8.5	6.05	DL	
9.1	6.44	DL	R-Pin 7
10	6.76	DL	Top of Right Bank
11	6.91	DL	
-29.3	-0.39	BATH	
-26.9	-0.36	BATH	
-24.8	-0.36	BATH	
-22.8	-0.42	BATH	
-20.4	-0.51	BATH	
-18.8	-0.54	BATH	
-17.1	-0.72	BATH	
-15.9	-0.75	BATH	
-14.9	-0.85	BATH	
-13.9	-1.03	BATH	
-13	-1.12	BATH	
-12	-1.24	BATH	
-11.2	-1.18	BATH	
-10.4	-1.12	BATH	
-9.7	-1.06	BATH	
-9	-1.06	BATH	
-8.4	-0.66	BATH	
-7.8	-0.30	BATH	
-7.1	0.22	BATH	
-6.6	0.34	BATH	
-6.2	0.56	BATH	
-5.5	0.89	BATH	
-4.8	1.04	BATH	
-4.3	1.32	BATH	
-3.9	1.53	BATH	
-3.5	1.68	BATH	
-3.2	1.74	BATH	

Distance (m)	Depth (m)	Method	Comments
-3	1.87	BATH	
-2.5	2.02	BATH	
-2.2	2.11	BATH	
-1.7	2.29	BATH	
0	2.96	DL	R-Pin 1
0	3.06	DL	REW (8/8/2007)
-0.5	2.60	DL	
-1	2.39	DL	
-1.5	2.23	DL	
-2	2.11	DL	
-2.5	1.96	DL	
-3	1.85	DL	
-38.7	-0.45	BATH	
-48.5	-0.51	BATH	
-49.5	-0.51	BATH	
-51.4	-0.54	BATH	
-52.4	-0.57	BATH	
-54.2	-0.60	BATH	
-55.6	-0.66	BATH	
-56.8	-0.63	BATH	
-58.5	-0.69	BATH	
-59.8	-1.03	BATH	
-61.3	-1.03	BATH	
-62.3	-0.82	BATH	
-63.3	-0.75	BATH	
-64.6	-0.30	BATH	
-65.7	-0.11	BATH	
-66.5	0.13	BATH	
-67.1	0.40	BATH	
-67.5	0.53	BATH	
-67.4	0.65	BATH	
-68.8	1.01	BATH	
-69.6	1.10	BATH	
-72	2.36	DL	L-Pin 2
-72	3.06	DL	LEW (8/8/2007)
-71.5	2.57	DL	
-71	2.17	DL	
-70.5	2.29	DL	
-70	1.23	DL	
-69.5	1.10	DL	
-69	0.95	DL	
-68.5	0.68	DL	
-38.7	-0.45	DL	
-72	2.36	DL	L-Pin 2
-72.8	2.60	DL	
-73.9	2.96	DL	L-Pin 3
-75.2	3.61	DL	L-Pin 4
-76.3	3.81	DL	
-77.6	4.40	DL	L-Pin 5
-79	5.14	DL	L-Pin 6
-79.8	5.34	DL	Ground at TBM
-82.2	5.71	DL	
-83.2	6.06	DL	

Distance (m)	Depth (m)	Method	Comments
-84.2	6.44	DL	L-Pin 8
-84.8	6.71	DL	
		T12	
0.5	1.05	DL	R-Pin 2
1.6	1.63	DL	R-Pin 3
2.9	2.46	DL	R-Pin 4
4.4	3.08	DL	
5	3.52	DL	R-Pin 5
5.9	3.99	DL	R-Pin 6
6.9	4.40	DL	
8.5	4.68	DL	
13.5	5.91	DL	
13.9	6.75	DL	R-Pin 8
15.5	6.27	DL	Ground at TBM
-37.6	-1.39	BATH	
-37.7	-1.42	BATH	
-33.2	-1.42	BATH	
-30.9	-1.54	BATH	
-28.5	-1.54	BATH	
-26.4	-1.48	BATH	
-23.4	-1.57	BATH	
-21.8	-1.63	BATH	
-19.6	-1.75	BATH	
-17.7	-1.87	BATH	
-15.7	-2.09	BATH	
-13.6	-2.30	BATH	
-11.4	-2.36	BATH	
-9.6	-2.24	BATH	
-7.8	-1.91	BATH	
-6.3	-1.81	BATH	
-5.6	-1.54	BATH	
-4.9	-1.30	BATH	
-4.4	-1.23	BATH	
-3.8	-1.05	BATH	
-3.1	-0.84	BATH	
-2.5	-0.53	BATH	
-1.6	-0.14	BATH	
0.5	1.06	DL	R-Pin 2
0	0.72	DL	REW (8/8/2007)
-0.5	0.38	DL	
-1	0.16	DL	
-1.5	-0.06	DL	
-2	-0.32	DL	
-2.5	-0.64	DL	
-37.6	-1.45	BATH	
-61.1	-1.66	BATH	
-64.5	-1.63	BATH	
-66.7	-1.63	BATH	
-69.6	-1.69	BATH	
-71.2	-1.66	BATH	
-73	-1.66	BATH	
-74.7	-1.63	BATH	
-76.2	-1.60	BATH	

Distance (m)	Depth (m)	Method	Comments
-78	-1.60	BATH	
-79.6	-1.60	BATH	
-81.1	-1.60	BATH	
-82.1	-1.66	BATH	
-83.8	-1.69	BATH	
-85.2	-1.72	BATH	
-86.7	-1.78	BATH	
-87.9	-1.81	BATH	
-89.4	-1.87	BATH	
-91	-1.75	BATH	
-92	-1.48	BATH	
-92.9	-1.36	BATH	
-93.5	-1.11	BATH	
-94	-0.87	BATH	
-94.5	-0.75	BATH	
-94.7	-0.56	BATH	
-97.8	1.40	DL	L-Pin 1
-97	0.72	DL	LEW (8/8/2007)
-96.5	0.23	DL	
-96	0.05	DL	
-95.5	-0.27	DL	
-95	-0.56	DL	
-94.5	-0.76	DL	
-94	-0.87	DL	
-37.6	-1.45	BATH	
-97.8	1.40	DL	L-Pin 1
-98.3	1.65	DL	LEW (6/28/2007)
-98.8	1.92	DL	
-99.3	2.18	DL	L-Pin 2
-99.8	2.46	DL	
-100.6	2.87	DL	L-Pin 3
-101.2	3.72	DL	Lip of Sink Hole
-101.8	2.96	DL	Bottom of Sink Hole
-102.2	3.22	DL	Middle of Sink Hole
-102.4	3.88	DL	L-Pin 5
-102.8	4.16	DL	
-103.3	4.41	DL	L-Pin 6
-103.8	4.61	DL	
-105	4.98	DL	L-Pin 7
-105.8	5.14	DL	
-106.8	5.32	DL	L-Pin 8
-107.8	5.47	DL	
-108.8	5.78	DL	
-110.8	6.10	DL	

Appendix 3C. Cross-sectional data from selected bank sites along the Lower Roanoke River collected July 19, 2007.

[Survey methodology is presented as DL = dumpy and level, BATH = bathymetric survey, and LASER = bank survey conducted using a laser rangefinder. Left and right edges of water are noted as LEW or REW, respectively. Elevation is in respect to mean sea level (meters, NAVGD1988) determined by Light Detection Radar (LiDaR) elevation of the top of bank adjacent to cross-sections, accuracy is unknown. m, meters; m3/s, cubic meters per second]

Distance (m)	Depth (m)	Method	Comments
		C49 left	
-8.55	5.39	DL	Ground at TBM
-11.15	5.42	DL	
-10.15	5.49	DL	
-8.05	5.16	DL	
-7.25	4.78	DL	L-Pin 8
-6.35	4.43	DL	
-5.55	3.95	DL	L-Pin 7
-4.45	3.52	DL	
-4.15	3.18	DL	L-Pin 5
-3.05	2.43	DL	L-Pin 4
-2.35	1.81	DL	
-1.85	1.55	DL	L-Pin 3
-1.05	1.11	DL	L-Pin 2
-0.15	0.86	DL	L-Pin 1
0	0.56	DL	LEW
0	0.56	BATH	LEW
0.35	0.38	BATH	
0.85	0.21	BATH	
1.35	-0.16	BATH	
1.85	-0.31	BATH	
2.35	-0.77	BATH	
2.85	-0.98	BATH	
11	-1.09	BATH	
9	-1.09	BATH	
4.4	-1.21	BATH	
6	-1.18	BATH	
7	-1.18	BATH	
8	-1.15	BATH	
12	-1.03	BATH	
		C49 right	
-0.7	0.32	LASER	R-Pin 1
0	0.56	LASER	REW
0.88	1.15	LASER	R-Pin 2
1.71	2.05	LASER	R-Pin 3
2.77	2.95	LASER	R-Pin 4
4.21	3.65	LASER	R-Pin 5
5.76	5.14	LASER	R-Pin 6
4.73	5.34	LASER	Top of right bank
0	0.56	DL	REW
-0.7	0.31	DL	R-Pin 1
-17.3	-1.06	DL	
-12	-1.27	DL	
-11	-1.15	DL	

Distance (m)	Depth (m)	Method	Comments
-9	-1.15	DL	
-8	-1.18	DL	
-7	-1.24	DL	
-6	-1.39	DL	
-5	-1.58	DL	
-3	-1.49	DL	
-2	-1.03	DL	
-2	-1.00	DL	
-1	-0.08	DL	
-1	0.13	DL	
-27.7	-1.79	BATH	
-39.4	-1.58	BATH	
-55.6	-1.21	BATH	
		FS12 left	
0	1.4964	DL	LEW
-0.25	1.7964	DL	L-Pin 1
-2.05	2.5664	DL	L-Pin 2
-3.95	3.5164	DL	L-Pin 3
-5.75	3.9464	DL	
-7.25	4.1764	DL	L-Pin 4
-8.95	4.4364	DL	
-10.75	4.9664	DL	L-Pin 5
-11.85	5.4864	DL	L-Pin 6
-8.25	4.4564	DL	Ground at TBM
0	1.4964	BATH	LEW
0.25	1.28304	BATH	
0.75	1.25256	BATH	
1.25	1.16112	BATH	
1.25	1.10016	BATH	
7.75	-1.76496	BATH	
6.75	-1.42968	BATH	
5.75	-1.0944	BATH	
4.75	-0.82008	BATH	
3.75	-0.36288	BATH	
2.75	0.1248	BATH	
1.75	0.67344	BATH	
		FS12 right	
0	1.50	DL	R-Pin 1
0.5	1.74	DL	
1	2.03	DL	
1.9	2.40	DL	R-Pin 2
2.5	2.67	DL	
3	2.73	DL	
3.5	2.81	DL	
4	2.91	DL	
6.1	3.30	DL	R-Pin 3
6.9	3.78	DL	
8.8	4.20	DL	
9.4	4.52	DL	
9.6	4.87	DL	R-Pin 4
9.9	5.01	DL	

Distance (m)	Depth (m)	Method	Comments
10.2	5.13	DL	
10.9	5.30	DL	R-Pin 5
0	1.50	DL	REW
-0.8	1.25	DL	
-2.1	0.86	DL	
-2.7	0.67	DL	
-2.3	0.80	DL	
-2.7	0.67	BATH	
-3	0.34	BATH	
-5.3	-1.25	BATH	
-6.4	-2.31	BATH	
-8	-2.65	BATH	
-9.8	-3.14	BATH	
-11.2	-3.35	BATH	
-14.9	-3.14	BATH	
-16.8	-3.23	BATH	
-16.32	-3.08	BATH	
-15.7	-2.95	BATH	
-17.2	-3.20	BATH	
-20.4	-3.05	BATH	
-22.8	-3.08	BATH	
-24.7	-3.08	BATH	
-26.5	-3.08	BATH	
-28.6	-2.95	BATH	
-30.9	-2.77	BATH	
-32.8	-2.62	BATH	
-34.7	-2.53	BATH	
-36.8	-2.44	BATH	
-38.8	-2.37	BATH	
-41.3	-2.28	BATH	
-43	-2.19	BATH	
-44.1	-2.07	BATH	
-45.7	-1.95	BATH	
-46.8	-1.89	BATH	
-48	-1.83	BATH	
-49.7	-1.83	BATH	
-48.2	-1.80	BATH	
-52.5	-2.07	BATH	
-54.9	-2.01	BATH	
-56.3	-1.86	BATH	
-57.5	-1.86	BATH	
-60.3	-1.70	BATH	
-62	-1.58	BATH	
		FS11 left	
0	1.39	LASER	LEW
-0.3	1.89	LASER	L-Pin 1
-1	2.89	LASER	Ledge
-1.5	3.29	LASER	L-Pin 2
-2.7	3.99	LASER	L-Pin 3
-3.8	4.89	LASER	L-Pin 4
-3.9	5.49	LASER	Top of left bank

Distance (m)	Depth (m)	Method	Comments
0	1.39	DL	LEW
0.1	1.36	DL	
0.6	1.20	DL	
1.1	1.14	DL	
1.6	1.20	DL	
2.1	0.65	DL	
2.6	-0.05	DL	
3.1	-0.11	DL	
3.6	-0.26	DL	
4	-0.26	BATH	
4.4	-0.23	BATH	
4.6	-0.20	BATH	
5.6	-0.56	BATH	
6.6	-0.72	BATH	
9.6	-1.72	BATH	
10.1	-1.78	BATH	
11.8	-3.22	BATH	
13.2	-3.58	BATH	
15.7	-3.98	BATH	
18.3	-3.52	BATH	
		T16 left	
0	0.57	DL	LEW
-0.25	0.87	DL	L-Pin 2
-1.25	1.31	DL	
-2.25	1.53	DL	L-Pin 3
-3.15	1.97	DL	
-3.55	2.20	DL	L-Pin 4
-4.05	2.43	DL	
-4.65	2.92	DL	L-Pin 5
-5.55	3.54	DL	L-Pin 6
-6.35	3.86	DL	
-7.25	4.25	DL	
-9.15	4.67	DL	L-Pin 7
-11.15	4.88	DL	Ground at TBM
0	0.57	DL	LEW
0.25	0.44	DL	
0.75	0.34	DL	
1.25	0.26	DL	
1.75	0.08	DL	
2.25	-0.12	DL	
2.75	-0.20	DL	
3.25	-0.20	DL	
3.75	-0.52	DL	
2.1	-0.04	BATH	
2.9	-0.50	BATH	
3.2	-0.53	BATH	
3.5	-0.59	BATH	
3.4	-0.56	BATH	
3.6	-0.56	BATH	
4.1	-0.59	BATH	
4.9	-0.65	BATH	

Distance (m)	Depth (m)	Method	Comments
5.5	-0.74	BATH	
6	-0.87	BATH	
7.3	-1.14	BATH	
7.2	-0.99	BATH	
7.8	-1.38	BATH	
9.6	-1.63	BATH	
11.6	-2.36	BATH	
13.8	-2.24	BATH	
15.4	-2.15	BATH	
16.9	-1.93	BATH	
19.4	-1.78	BATH	
21.6	-1.72	BATH	
23.8	-1.69	BATH	
		T16 right	
12	5.50	DL	
9.8	5.44	DL	
8.4	5.48	DL	
7.6	5.26	DL	R-Pin 7
6.9	4.89	DL	
5.9	4.55	DL	R-Pin 6
5	3.97	DL	
4.6	3.55	DL	R-Pin 5
2.4	2.33	DL	R-Pin 4
1.3	1.70	DL	
1.1	1.40	DL	R-Pin 3
1	1.08	DL	
0	0.57	DL	R-Pin 2/REW
0	0.57	DL	R-Pin 2/REW
-0.5	0.44	DL	
-1	0.32	DL	
-1.5	-0.09	DL	
-2	-0.44	DL	
-2.5	-0.65	DL	
-3	-0.87	DL	
-3.5	-1.20	DL	
-3.1	-0.99	BATH	
-3.2	-0.96	BATH	
-7.2	-2.08	BATH	
-7.4	-2.05	BATH	
-7.7	-2.27	BATH	
-5.6	-1.63	BATH	
-5.1	-1.32	BATH	
-4.5	-1.17	BATH	
-5	-1.26	BATH	
-10.2	-2.97	BATH	
-10.4	-3.12	BATH	
-16.5	-3.70	BATH	
-19.5	-3.55	BATH	
-21.4	-3.27	BATH	
-23	-3.21	BATH	
-23.6	-3.12	BATH	

Distance (m)	Depth (m)	Method	Comments
		FS10	
0	0.57	DL	REW
0.5	0.67	DL	
0.5	0.89	DL	
0.8	0.95	DL	
1	1.08	DL	
5.1	1.60	DL	R-Pin 1
5.3	1.85	DL	
6.1	2.08	DL	
6.4	2.23	DL	
7.8	2.45	DL	R-Pin 2
9	2.64	DL	
11	2.97	DL	
14	3.56	DL	R-Pin 3
15.5	3.91	DL	
17.3	4.05	DL	
18.9	4.13	DL	R-Pin 4
22	4.32	DL	
24	4.36	DL	
26	4.36	DL	
27.4	4.38	DL	Ground at TBM
0	0.58	DL	REW
-0.5	0.45	DL	
-1	0.45	DL	
-1.5	0.42	DL	
-2	0.39	DL	
-2.5	0.38	DL	
-3	0.27	DL	
-3.5	0.20	DL	
-4	-0.03	DL	
-4.5	-0.19	DL	
-4.6	-0.25	BATH	
-4.9	-0.43	BATH	
-5.3	-0.43	BATH	
-6.7	-0.46	BATH	
-6.3	-0.49	BATH	
-6.6	-0.55	BATH	
-6.8	-0.55	BATH	
-7.6	-0.61	BATH	
-12.4	-1.56	BATH	
-14.2	-1.68	BATH	
-15.1	-1.68	BATH	
-16.3	-1.47	BATH	
-20.7	-1.65	BATH	
-23.7	-2.50	BATH	
-26.5	-2.78	BATH	
-29.7	-3.45	BATH	
-35	-4.57	BATH	
-37.2	-5.46	BATH	
-60.3	-13.63	BATH	
-81.9	0.58	DL	LEW

Distance (m)	Depth (m)	Method	Comments
-81.57	0.45	DL	
-81.07	0.39	DL	
-80.57	0.27	DL	
-80.07	-0.34	DL	
-79.57	0.18	DL	
-79.07	-1.07	DL	
-78.57	-1.43	DL	
-60.3	-13.63	BATH	
-61.4	-13.35	BATH	
-62.8	-12.56	BATH	
-66.8	-12.71	BATH	
-68.1	-12.71	BATH	
-69.9	-9.27	BATH	
-72.7	-7.93	BATH	
-74.1	-6.56	BATH	
-74.7	-7.17	BATH	
-74.3	-4.94	BATH	
-74.8	-3.69	BATH	
-76.1	-2.47	BATH	
-76.9	-1.74	BATH	
-77.9	-0.67	BATH	
-79.1	-0.12	BATH	
-80	0.09	BATH	
-81.9	0.58	LASER	LEW
-82	0.88	LASER	L-Pin 1
-82.6	1.18	LASER	
-82.7	1.38	LASER	L-Pin 2
-83.4	2.78	LASER	L-Pin 3
-84.2	3.48	LASER	L-Pin 4
-84.5	4.68	LASER	L-Pin 5
-84.4	4.88	LASER	Top of left bank
		FS9	
0	1.28	DL	REW
0.6	1.59	DL	R-Pin 1
1	1.90	DL	
1.8	2.11	DL	R-Pin 2
2.4	2.19	DL	
3	2.43	DL	
4	3.07	DL	
5	2.93	DL	R-Pin 3
6.6	3.22	DL	
8.3	3.75	DL	R-Pin 4
9.5	3.96	DL	
10.8	4.32	DL	
11.9	4.47	DL	R-Pin 5
13.1	4.55	DL	
14.3	4.39	DL	
16	4.12	DL	
17.2	3.93	DL	
19.1	3.80	DL	
25.5	4.07	DL	

Distance (m)	Depth (m)	Method	Comments
27	3.86	DL	Ground at TBM
0	1.28	DL	REW
-0.5	1.19	DL	
-1	1.14	DL	
-1.5	1.11	DL	
-2	0.87	DL	
-2.5	0.65	DL	
-3	0.48	DL	
-3.5	0.21	DL	
-2.3	0.70	BATH	
-2.8	0.70	BATH	
-3.5	0.09	BATH	
-4.3	-0.55	BATH	
-5.3	-0.58	BATH	
-6.3	-0.83	BATH	
-8.2	-1.31	BATH	
-9.2	-1.47	BATH	
-9.5	-1.47	BATH	
-9.8	-1.62	BATH	
-10.8	-1.74	BATH	
-11.7	-1.86	BATH	
-12.8	-1.74	BATH	
-13.9	-1.83	BATH	
-14.9	-1.89	BATH	
-16	-1.92	BATH	
-16.9	-2.38	BATH	
-19.8	-1.86	BATH	
-20.7	-1.92	BATH	
-66.9	-2.93	BATH	
-88.9	1.28	DL	L-Pin 1/LEW
-88.4	1.19	DL	
-87.9	1.11	DL	
-87.4	0.76	DL	
-86.9	0.45	DL	
-86.4	0.27	DL	
-85.9	-0.09	DL	
-85.4	-0.37	DL	
-84.9	-0.38	DL	
-66.9	-2.93	BATH	
-69.5	-2.59	BATH	
-71.8	-2.84	BATH	
-73.3	-2.66	BATH	
-75.8	-2.96	BATH	
-76.7	-2.81	BATH	
-79.1	-2.72	BATH	
-81.3	-1.80	BATH	
-81.9	-1.28	BATH	
-82.7	-1.37	BATH	
-83.2	-1.28	BATH	
-83.6	-1.25	BATH	
-84.2	-0.98	BATH	

Distance (m)	Depth (m)	Method	Comments
-84.8	-0.46	BATH	
-86.1	-0.09	BATH	
-87.3	0.58	BATH	
-88.9	1.28	DL	LEW
-89	1.48	DL	L-Pin 2
-89.2	2.18	DL	L-Pin 3
-89.4	2.88	DL	L-Pin 4
-89.3	3.08	DL	L-Pin 5
-90	3.78	DL	L-Pin 6
-89.7	3.88	DL	
-89.9	4.08	DL	L-Pin 7
-90.1	4.18	DL	L-Pin 8
-89.3	4.88	DL	L-Pin 9 and top of left bank
		T15 left	
0	1.02	DL	L-Pin 2/LEW
-1.7	1.61	DL	
-1.8	1.72	DL	L-Pin 3
-2.7	2.14	DL	L-Pin 4
-3.8	2.51	DL	
-4	2.71	DL	L-Pin 5
-5.5	3.55	DL	L-Pin 6
-5.9	3.77	DL	
-6.6	3.98	DL	L-Pin 7
-7.9	4.43	DL	L-Pin 8
-9.2	4.72	DL	
-10.3	4.84	DL	L-Pin 9
-11.3	4.87	DL	
-12.4	4.88	DL	Ground at TBM
-14	4.86	DL	
0	1.02	DL	LEW/Pin 2
0.05	0.97	DL	
0.55	0.89	DL	
0.15	0.83	DL	
1.55	0.77	DL	
2.05	0.70	DL	
2.55	0.62	DL	
3.05	0.45	DL	
3.55	0.32	DL	
23.7	-1.97	BATH	
23.2	-2.00	BATH	
21.9	-1.73	BATH	
20.3	-1.42	BATH	
18.5	-1.21	BATH	
17	-0.96	BATH	
14.9	-0.87	BATH	
13.8	-0.81	BATH	
12.6	-0.84	BATH	
11.7	-0.84	BATH	
10.3	-0.75	BATH	
9.3	-0.63	BATH	
8.4	-0.57	BATH	

Distance (m)	Depth (m)	Method	Comments
7.6	-0.60	BATH	
7.1	-0.54	BATH	
6.3	-0.42	BATH	
5.7	-0.23	BATH	
5.1	0.32	BATH	
4.2	0.16	BATH	
3.5	0.35	BATH	
2.7	0.47	BATH	
		T15 right	
0	1.02	LASER	REW
0.2	1.22	LASER	R-Pin 1
0.3	1.82	LASER	
1.3	2.62	LASER	R-Pin 2
1.8	3.62	LASER	R-Pin 3
2.1	4.92	LASER	R-Pin 4
0	1.02	DL	REW
-0.25	0.94	DL	
-0.75	0.86	DL	
-1.25	0.74	DL	
-1.75	0.47	DL	
-2.25	0.16	DL	
-2.75	-0.10	DL	
-3.25	-0.39	DL	
-3.75	-0.69	DL	
-4.25	-0.99	DL	
-35.1	-1.67	BATH	
-33.8	-1.79	BATH	
-32.1	-1.79	BATH	
-29.3	-1.88	BATH	
-27.6	-1.85	BATH	
-25.6	-1.88	BATH	
-24.1	-1.85	BATH	
-22.5	-1.91	BATH	
-21.2	-2.03	BATH	
-19.6	-2.15	BATH	
-18.3	-2.18	BATH	
-16.8	-2.40	BATH	
-15.1	-2.70	BATH	
-13.4	-1.57	BATH	
-11.9	-1.73	BATH	
-10.5	-2.03	BATH	
-9.1	-2.18	BATH	
-7.4	-1.73	BATH	
-6.1	-1.15	BATH	
-4.3	-0.51	BATH	
-2.6	0.44	BATH	
-3	-0.11	BATH	
-2.7	0.16	BATH	
-2.4	0.10	BATH	
-2.4	0.19	BATH	
		C60 left	

Distance (m)	Depth (m)	Method	Comments
0	1.02	DL	LEW
-0.2	1.05	DL	L-Pin 1
-1.2	1.48	DL	L-Pin 2
-2.4	1.80	DL	
-2.4	2.10	DL	L-Pin 3
-2.8	2.46	DL	
-3.6	2.63	DL	L-Pin 4
-4.1	3.06	DL	
-5.1	3.72	DL	L-Pin 5
-4.6	3.95	DL	L-Pin 6
-5	4.26	DL	
-5.7	4.54	DL	L-Pin 7
-6.6	4.73	DL	
-7.9	4.86	DL	Ground at TBM
0	1.02	DL	LEW
0.5	0.93	DL	
1	0.88	DL	
1.5	0.80	DL	
2	0.62	DL	
2.5	0.45	DL	
3	0.15	DL	
3.5	-0.17	DL	
18.3	-4.59	BATH	
17.2	-4.68	BATH	
15.9	-4.50	BATH	
15.5	-4.32	BATH	
15.3	-4.23	BATH	
14.4	-3.98	BATH	
13.7	-3.77	BATH	
12.8	-3.43	BATH	
12	-3.25	BATH	
11.3	-3.19	BATH	
9.9	-2.70	BATH	
9.4	-2.64	BATH	
9.3	-2.73	BATH	
8.7	-2.03	BATH	
7.5	-1.70	BATH	
6.5	-1.39	BATH	
5.9	-1.12	BATH	
5.4	-0.93	BATH	
4.8	-0.75	BATH	
4.4	-0.51	BATH	
3.9	-0.26	BATH	
3.5	-0.02	BATH	
2.7	0.41	BATH	
2.1	0.56	BATH	
		C60 right	
0	1.02	DL	R-Pin 1/REW
1.1	1.48	DL	R-Pin 2
1.7	1.62	DL	
2.5	1.94	DL	R-Pin 3

Distance (m)	Depth (m)	Method	Comments
4.4	2.41	DL	R-Pin 4
6.15	2.78	DL	R-Pin 5
8.4	3.15	DL	
8.95	3.34	DL	
9.45	3.52	DL	R-Pin 6
11.2	3.95	DL	
11.6	4.13	DL	R-Pin 7
12.35	4.50	DL	Ground at TBM
13.15	4.60	DL	R-Pin 8
15.65	4.89	DL	
0	1.02	DL	REW
-0.5	0.89	DL	
-1	0.86	DL	
-1.5	0.71	DL	
-2	0.56	DL	
-2.5	0.38	DL	
-3	0.19	DL	
-3.5	-0.11	DL	
-4	-0.35	DL	
-21.9	-4.32	BATH	
-22	-4.32	BATH	
-20.8	-4.44	BATH	
-19.5	-4.50	BATH	
-18.5	-4.62	BATH	
-17.3	-4.87	BATH	
-16.3	-4.96	BATH	
-14.5	-5.14	BATH	
-13.3	-5.29	BATH	
-11.5	-4.62	BATH	
-9.9	-4.26	BATH	
-9.2	-3.68	BATH	
-8.4	-2.73	BATH	
-7.5	-1.97	BATH	
-6.4	-2.09	BATH	
-5.4	-1.54	BATH	
-4.5	-0.84	BATH	
-3.9	0.01	BATH	
-3.2	0.13	BATH	
-2.7	0.50	BATH	
		T19 left	
0.3	0.58	DL	L-Pin 1
0	0.62	DL	LEW
-0.5	0.74	DL	
-0.7	1.02	DL	L-Pin 2
-1.3	1.34	DL	
-2.2	1.76	DL	L-Pin 3
-2.4	1.81	DL	
-2.6	2.01	DL	
-3.3	2.15	DL	
-3.4	2.26	DL	L-Pin 4
-3.9	2.46	DL	

Distance (m)	Depth (m)	Method	Comments
-4.5	2.61	DL	L-Pin 5
-5.8	3.02	DL	
-6.2	3.53	DL	L-Pin 6
-6.2	4.10	DL	
-5.9	3.99	DL	
-6.7	4.21	DL	L-Pin 7
-7.15	4.27	DL	
0	0.62	DL	LEW
0.38	0.55	DL	
0.5	0.53	DL	
1	0.37	DL	
1.5	0.29	DL	
2	0.09	DL	
2.5	-0.17	DL	
3	-0.49	DL	
3.5	-0.75	DL	
16.3	-3.61	BATH	
14.4	-3.76	BATH	
12.2	-3.55	BATH	
11.1	-3.52	BATH	
10.5	-3.34	BATH	
9.9	-3.37	BATH	
9.4	-3.34	BATH	
8.9	-2.91	BATH	
7.9	-2.52	BATH	
6.8	-2.27	BATH	
6.3	-2.15	BATH	
5.6	-1.81	BATH	
5.4	-1.63	BATH	
4.9	-1.39	BATH	
4.4	-1.11	BATH	
3.8	-0.93	BATH	
3.2	-0.72	BATH	
2.8	-0.50	BATH	
2.2	-0.14	BATH	

Distance (m)	Depth (m)	Method	Comments
		T19 right	
0	0.62	DL	R-Pin 1/REW
0.3	0.78	DL	
0.6	1.10	DL	R-Pin 2
1.85	1.74	DL	R-Pin 3
3.3	2.56	DL	R-Pin 4
4.85	3.17	DL	R-Pin 5
6.2	3.45	DL	R-Pin 6
7.1	3.51	DL	
7.75	3.72	DL	
8	3.95	DL	R-Pin 7
8.25	4.12	DL	
9.45	4.38	DL	Ground at TBM
10.15	4.63	DL	
-20.6	-3.43	BATH	
-19.6	-3.37	BATH	
-19.3	-3.25	BATH	
-17	-3.16	BATH	
-15.8	-3.09	BATH	
-15.1	-3.09	BATH	
-13.9	-3.12	BATH	
-12.7	-2.61	BATH	
-10.9	-2.15	BATH	
-10	-2.85	BATH	
-8.1	-2.52	BATH	
-7.5	-2.30	BATH	
-6.6	-1.91	BATH	
-5.9	-1.54	BATH	
-4.7	-1.05	BATH	
-2.4	-0.08	BATH	
-2.2	0.05	BATH	
0	0.62	DL	R-Pin 1/REW
-0.5	0.47	DL	
-1	0.32	DL	
-1.5	0.17	DL	
-2	0.01	DL	
-2.5	-0.14	DL	
-3	-0.29	DL	
		C65	
-0.2	0.49	DL	R-Pin 1
0	0.79	DL	REW
0.72	0.97	DL	R-Pin 2
1.6	1.38	DL	R-Pin 3
2.55	1.74	DL	R-Pin 4
3.5	2.06	DL	
3.8	2.39	DL	R-Pin 5
3.8	3.27	DL	R-Pin 6
3.8	3.68	DL	R-Pin 7
3.8	4.09	DL	Edge of levee
13.8	4.02	DL	Ground at TBM
-0.2	0.67	DL	

Distance (m)	Depth (m)	Method	Comments
-0.5	0.57	DL	
-1	0.21	DL	
-1.5	-0.28	DL	
-2	-0.77	DL	
-2.5	-1.04	DL	
-3	-1.33	DL	
-16.9	-6.22	BATH	
-15.8	-6.31	BATH	
-14.6	-6.37	BATH	
-12.9	-6.53	BATH	
-11.6	-6.68	BATH	
-10.4	-6.65	BATH	
-9.3	-6.53	BATH	
-8.5	-6.37	BATH	
-7.3	-6.40	BATH	
-5.7	-5.64	BATH	
-4.3	-4.00	BATH	
-3.9	-1.59	BATH	
-3.4	-1.35	BATH	
-2.7	-1.22	BATH	
-1.9	-0.74	BATH	
-1.2	-0.19	BATH	
-31.3	-4.55	BATH	
-68.1	0.79	DL	LEW
-67.6	0.67	DL	
-67.1	0.62	DL	
-66.6	0.45	DL	
-66.1	0.22	DL	
-65.6	-0.02	DL	
-65.1	-0.22	DL	
-64.6	-0.42	DL	
-51	-3.81	BATH	
-49.7	-3.72	BATH	
-50	-3.39	BATH	
-51.3	-3.24	BATH	
-52.4	-2.84	BATH	
-53.7	-2.53	BATH	
-55	-2.29	BATH	
-56.2	-2.11	BATH	
-56.7	-1.99	BATH	
-57.5	-1.89	BATH	
-57.9	-2.11	BATH	
-58.5	-2.17	BATH	
-59.7	-1.80	BATH	
-60.3	-1.68	BATH	
-60.9	-1.59	BATH	
-61.3	-1.50	BATH	
-62	-1.31	BATH	
-62.6	-1.13	BATH	
-63	-1.04	BATH	
-63.3	-0.95	BATH	

Distance (m)	Depth (m)	Method	Comments
-63.5	-0.83	BATH	
-63.9	-0.74	BATH	
-64.1	-0.61	BATH	
-64.5	-0.34	BATH	
-31.3	-4.55	BATH	
-68.1	0.79	DL	LEW
-68.4	1.00	DL	L-Pin 2
-68.9	1.40	DL	
-69.3	1.67	DL	
-69.8	1.48	DL	L-Pin 3
-70.4	1.91	DL	
-70.6	2.07	DL	
-72.1	2.28	DL	L-Pin 4
-73.5	2.44	DL	L-Pin 5
-74.9	2.71	DL	
-75.4	2.97	DL	L-Pin 6
-75.7	3.18	DL	
-76.5	3.48	DL	L-Pin 7
-77.1	3.66	DL	
-78.3	3.61	DL	L-Pin 8
-79.4	3.49	DL	
-82.6	3.51	DL	
		T23	
5	3.75	DL	
2.4	3.62	DL	Ground at TBM
0.9	3.65	DL	R-Pin 7
0.6	0.94	DL	Top of right bank
0.3	0.37	DL	
0	0.20	DL	REW
0	0.20	DL	REW
-0.5	-0.14	DL	
-1	-0.62	DL	
-1.5	-0.84	DL	
-2	-1.31	DL	
-2.5	-1.50	DL	
-6.9	-4.34	BATH	
-6.1	-3.76	BATH	
-3.4	-1.45	BATH	
-1.7	-0.44	BATH	
-3.2	-1.87	BATH	
-3.4	-1.91	BATH	
-3.5	-2.12	BATH	
-3.8	-2.33	BATH	
-3.9	-2.45	BATH	
-4.2	-2.58	BATH	
-4.4	-3.25	BATH	
-4.8	-3.28	BATH	
-4.8	-3.12	BATH	
-4.6	-2.58	BATH	
-9.3	-7.27	BATH	
-10.7	-6.84	BATH	

Distance (m)	Depth (m)	Method	Comments
-11.2	-6.90	BATH	
-24.9	-6.63	BATH	
-24.9	-6.63	BATH	
-40.8	-6.63	BATH	
-41.4	-5.62	BATH	
-42.1	-5.99	BATH	
-43.1	-6.02	BATH	
-44.1	-5.93	BATH	
-45	-5.59	BATH	
-45.7	-5.26	BATH	
-46.9	-4.07	BATH	
-48	-4.68	BATH	
-48.6	-5.14	BATH	
-49.3	-5.08	BATH	
-49.9	-4.68	BATH	
-50.5	-4.80	BATH	
-51	-4.65	BATH	
-51.9	-4.47	BATH	
-53	-4.71	BATH	
-53.9	-4.16	BATH	
-54.7	-2.91	BATH	
-55.4	-2.30	BATH	
-55.9	-1.97	BATH	
-56.1	-1.97	BATH	
-56.2	-2.45	BATH	
-56.9	-1.02	BATH	
-56.9	-1.02	BATH	
-57.6	-0.66	BATH	
-58.3	-0.47	BATH	
-60.8	0.20	DL	LEW
-60.3	0.14	DL	
-59.8	0.08	DL	
-59.3	-0.02	DL	
-58.8	-0.14	DL	
-58.3	-0.32	DL	
-57.8	-0.44	DL	
-60.8	0.20	DL	LEW
-61.95	0.63	DL	L-Pin 1?
-62.8	0.73	DL	L-Pin 2
-63.6	0.93	DL	L-Pin 3
-64.2	1.17	DL	
-64.8	2.24	DL	L-Pin 4
-68.1	1.77	DL	L-Pin 5
-72.25	2.02	DL	L-Pin 6
-73.5	2.26	DL	
-76.2	2.70	DL	L-Pin 7
-78.3	3.05	DL	Ground at TBM
		FS8	
-0.2	-0.08	LASER	R-Pin 1
0	0.02	LASER	REW
0.5	0.52	LASER	R-Pin 2

Distance (m)	Depth (m)	Method	Comments
1.2	1.22	LASER	R-Pin 3
1.8	1.72	LASER	
2.2	2.42	LASER	R-Pin 4
2.1	2.72	LASER	R-Pin 5
1.2	3.32	LASER	R-Pin 6
0	0.02	DL	REW
-0.17	-0.12	DL	R-Pin 1
-0.5	-0.42	DL	
-1	-0.65	DL	
-1.5	-0.95	DL	
-2	-1.29	DL	
-2.5	-1.93	DL	
-14.9	-8.15	BATH	
-14.5	-8.24	BATH	
-14.3	-7.69	BATH	
-14.7	-7.75	BATH	
-14.8	-7.45	BATH	
-11.9	-7.42	BATH	
-11	-7.29	BATH	
-10	-6.56	BATH	
-7.9	-5.50	BATH	
-6.9	-4.67	BATH	
-6.1	-3.67	BATH	
-4.9	-3.15	BATH	
-3.8	-2.45	BATH	
-2.6	-1.90	BATH	
-1.9	-1.26	BATH	
-39.6	-5.65	BATH	
-69.1	0.02	DL	LEW
-68.6	-0.10	DL	
-68.1	-0.16	DL	
-67.6	-0.47	DL	
-67.1	-0.79	DL	
-66.6	-1.01	DL	
-66.1	-1.41	DL	
-56.7	-4.25	BATH	
-57.6	-4.22	BATH	
-57.9	-4.12	BATH	
-58.4	-4.06	BATH	
-59.2	-3.91	BATH	
-59.9	-3.70	BATH	
-60.5	-3.48	BATH	
-61.2	-3.24	BATH	
-62.7	-2.48	BATH	
-63.6	-2.11	BATH	
-64.4	-1.90	BATH	
-65	-1.75	BATH	
-65.5	-1.62	BATH	
-65.7	-1.47	BATH	
-65.9	-1.44	BATH	
-39.6	-5.65	BATH	

Distance (m)	Depth (m)	Method	Comments
-69.1	0.02	DL	LEW
-69.5	0.21	DL	L-Pin 1
-69.7	0.42	DL	
-70.6	0.68	DL	
-71.2	1.24	DL	L-Pin 2
-72.3	1.50	DL	
-73.3	1.61	DL	L-Pin 3
-75.5	1.73	DL	
-77	1.81	DL	
-79.1	2.02	DL	L-Pin 4
-80.7	2.21	DL	
-84	2.36	DL	
-84.9	2.44	DL	Ground at TBM

Distance (m)	Depth (m)	Method	Comments
		FS7	
0	0.71	DL	REW
0.6	1.05	DL	R-Pin 1
1.2	1.54	DL	R-Pin 2
1.7	1.65	DL	
2.2	2.22	DL	R-Pin 3
2.8	3.25	DL	R-Pin 4
3.3	3.74	DL	Top of right bank
5	3.74	DL	
7.9	3.75	DL	
0	0.71	DL	REW
-0.2	0.53	DL	
-0.3	0.19	DL	
-0.5	-0.05	DL	
-1.6	-0.57	BATH	
-3.1	-1.06	BATH	
-3.2	-1.79	BATH	
-3.5	-1.97	BATH	
-4.1	-2.19	BATH	
-4.6	-2.37	BATH	
-5.1	-2.80	BATH	
-5.6	-3.04	BATH	
-6.5	-3.38	BATH	
-7.4	-3.62	BATH	
-8	-3.77	BATH	
-8.5	-3.96	BATH	
-8.8	-4.08	BATH	
-32.1	-5.21	BATH	
-59.8	-3.59	BATH	
-61.4	-3.50	BATH	
-63.2	-3.50	BATH	
-65	-3.38	BATH	
-66.4	-3.47	BATH	
-67.5	-3.38	BATH	
-68.5	-3.41	BATH	
-69.2	-3.28	BATH	
-70.1	-3.19	BATH	
-71.9	-3.16	BATH	
-73.4	-3.01	BATH	
-74.4	-2.92	BATH	
-75.3	-2.80	BATH	
-76.7	-2.49	BATH	
-77.7	-2.31	BATH	
-78.3	-1.73	BATH	
-79.8	-1.15	BATH	
-81.1	-0.69	BATH	
-82.5	-0.51	BATH	
-83.1	-0.42	BATH	
-83.8	-0.11	BATH	
-86.8	0.71	DL	LEW
-86.3	0.62	DL	

Distance (m)	Depth (m)	Method	Comments
-85.8	0.57	DL	
-85.3	0.49	DL	
-84.8	0.36	DL	
-84.3	0.16	DL	
-83.8	-0.08	DL	
-83.3	-0.25	DL	
-32.1	-5.21	DL	
-86.8	0.71	DL	L-Pin 1/LEW
-87.7	0.93	DL	
-87.9	1.12	DL	L-Pin 2
-88.3	1.24	DL	
-89.05	1.60	DL	L-Pin 3
-89.95	2.02	DL	L-Pin 4
-90.2	2.14	DL	
-91.95	2.36	DL	L-Pin 5
-93.35	2.50	DL	
-94.9	2.63	DL	L-Pin 6
-97.65	3.05	DL	Ground at TBM
		C72	
0	-0.26	DL	R-Pin 1
0	-0.31	DL	REW
1.3	0.52	DL	R-Pin 2
1.3	1.43	DL	R-Pin 3
2.65	1.85	DL	
3.5	2.24	DL	R-Pin 4
4.75	2.56	DL	
5.95	2.58	DL	R-Pin 5
8.15	2.68	DL	Ground at TBM
-22	-5.95	BATH	
-21.4	-5.92	BATH	
-19.9	-5.86	BATH	
-17.2	-6.01	BATH	
-16.3	-6.01	BATH	
-15.5	-5.92	BATH	
-15.1	-5.83	BATH	
-13.5	-5.67	BATH	
-12.9	-5.52	BATH	
-12.1	-5.43	BATH	
-11.1	-5.22	BATH	
-10	-5.03	BATH	
-8.8	-4.58	BATH	
-7.5	-3.17	BATH	
-6.3	-3.57	BATH	
-5.3	-3.39	BATH	
-4.6	-2.99	BATH	
0	-0.31	DL	REW
-0.5	-0.55	DL	
-1	-0.69	DL	
-1.5	-1.59	DL	
-2	-1.94	DL	
-2.5	-2.33	DL	

Distance (m)	Depth (m)	Method	Comments
-3	-2.57	DL	
-47.9	-6.28	BATH	
-80.7	-0.31	DL	LEW
-80.3	-0.38	DL	L-Pin 1
-79.7	-0.46	DL	
-79.2	-0.52	DL	
-78.7	-0.65	DL	
-78.2	-0.92	DL	
-77.7	-1.18	DL	
-77.2	-1.65	DL	
-63.2	-6.01	BATH	
-63.3	-6.04	BATH	
-63.5	-5.83	BATH	
-64.4	-5.92	BATH	
-65.1	-5.89	BATH	
-65.9	-5.80	BATH	
-66.7	-5.70	BATH	
-67.5	-5.34	BATH	
-68.3	-5.31	BATH	
-69	-5.31	BATH	
-69.5	-4.67	BATH	
-71	-4.30	BATH	
-72.6	-4.03	BATH	
-73.9	-3.72	BATH	
-74.5	-3.14	BATH	
-75.5	-2.66	BATH	
-76.4	-2.32	BATH	
-77.1	-1.62	BATH	
-77.8	-0.92	BATH	
-47.9	-6.28	BATH	
-80.3	-0.39	DL	L-Pin 0
-80.7	-0.31	DL	LEW
-81.2	-0.09	DL	
-81.8	0.06	DL	
-82.3	0.46	DL	L-Pin 2
-82.6	0.53	DL	
-82.9	0.74	DL	
-83.2	0.83	DL	L-Pin 3
-83.9	1.27	DL	L-Pin 4
-85.4	1.94	DL	L-Pin 5
-86	2.05	DL	
-87.4	2.35	DL	L-Pin 6
-88.7	2.44	DL	Ground at TBM
		FS5	
0	-0.19	DL	R-Pin 1/REW
0.4	-0.06	DL	
1.25	0.56	DL	R-Pin 2
1.9	1.30	DL	R-Pin 3
2.35	1.59	DL	
3.18	2.73	DL	R-Pin 4
3.9	2.28	DL	R-Pin 5

Distance (m)	Depth (m)	Method	Comments
4.55	2.44	DL	
5.15	2.55	DL	R-Pin 6
7.58	2.62	DL	Ground at TBM
-21.9	-6.59	BATH	
-19.9	-6.56	BATH	
-18.3	-6.65	BATH	
-16.8	-6.59	BATH	
-15.9	-6.80	BATH	
-15	-6.83	BATH	
-14.2	-6.47	BATH	
-13.1	-6.47	BATH	
-12.5	-6.22	BATH	
-11.1	-6.07	BATH	
-10.1	-5.74	BATH	
-9.2	-5.10	BATH	
-8.4	-4.67	BATH	
-7.8	-3.63	BATH	
-7.4	-3.66	BATH	
-6.9	-4.00	BATH	
-6.6	-3.85	BATH	
-5.7	-3.21	BATH	
-4.9	-3.21	BATH	
-4.2	-2.87	BATH	
0	-0.19	DL	REW
-0.5	-0.29	DL	
-1	-0.40	DL	
-1.5	-0.61	DL	
-2	-1.27	DL	
-2.5	-1.56	DL	
-3	-1.85	DL	
-3.5	-2.47	DL	
-44.2	-5.34	BATH	
-76.9	-0.19	DL	LEW
-76.5	-0.27	DL	L-Pin 1
-76.4	-0.31	DL	
-75.9	-0.43	DL	
-75.4	-0.71	DL	
-74.9	-1.07	DL	
-74.4	-1.29	DL	
-73.9	-1.47	DL	
-61.3	-5.31	BATH	
-63.2	-5.00	BATH	
-64.3	-4.58	BATH	
-65.5	-4.24	BATH	
-66.4	-4.18	BATH	
-67.9	-3.45	BATH	
-69.7	-2.93	BATH	
-70.6	-2.60	BATH	
-71.4	-2.29	BATH	
-72.3	-1.93	BATH	
-73.2	-1.90	BATH	

Distance (m)	Depth (m)	Method	Comments
-73.8	-1.56	BATH	
-74.2	-1.29	BATH	
-44.2	-5.34	BATH	
-76.5	-0.27	DL	L-Pin 1
-76.9	-0.19	DL	LEW
-77	-0.04	DL	
-77.2	0.01	DL	
-77.3	0.20	DL	
-77.7	0.30	DL	L-Pin 2
-78.4	0.61	DL	L-Pin 3
-79	1.31	DL	L-Pin 4
-79.2	1.78	DL	Top of left bank
-79.5	1.98	DL	L-Pin 5
-80	2.18	DL	
-81.2	2.44	DL	
		T25	
0	0.02	DL	R-Pin 1/REW
0.35	0.20	DL	
0.9	0.45	DL	R-Pin 2
1.9	0.74	DL	R-Pin 3
2.3	1.05	DL	
2.95	1.35	DL	R-Pin 4
3.65	1.97	DL	R-Pin 5
4.15	2.25	DL	
4.3	2.36	DL	R-Pin 6
4.85	2.71	DL	
5.87	2.75	DL	R-Pin 7
10.25	2.68	DL	Ground at TBM
-24.1	-8.63	BATH	
-20.6	-8.39	BATH	
-18.6	-8.08	BATH	
-17	-7.72	BATH	
-15.2	-7.44	BATH	
-14.7	-7.38	BATH	
-13.8	-7.60	BATH	
-12.6	-4.43	BATH	
-10.9	-6.74	BATH	
-9.5	-6.38	BATH	
-8.7	-3.15	BATH	
-8.1	-2.11	BATH	
-7.4	-2.23	BATH	
-7.1	-3.15	BATH	
-6.4	-3.02	BATH	
-5.2	-2.17	BATH	
-4.1	-2.11	BATH	
-4.3	-1.74	BATH	
-3.9	-1.80	BATH	
-3.4	-1.22	BATH	
-3.1	-1.01	BATH	
-2.9	-0.77	BATH	
-2.6	-0.62	BATH	

Distance (m)	Depth (m)	Method	Comments
0	0.02	DL	REW
-0.5	-0.10	DL	
-1	-0.26	DL	
-1.5	-0.52	DL	
-2	-0.86	DL	
-2.5	-1.19	DL	
-3	-1.68	DL	
-3.5	-2.05	DL	
-98.4	0.02	DL	LEW
-98	-0.16	DL	
-97.5	-0.31	DL	
-97	-0.43	DL	
-96.5	-0.68	DL	
-96	-0.94	DL	
-95.5	-1.07	DL	
-95	-1.19	DL	
-80	-2.81	BATH	
-80.7	-2.81	BATH	
-82.2	-2.57	BATH	
-83.8	-2.41	BATH	
-85.2	-2.29	BATH	
-86.3	-2.20	BATH	
-87	-2.20	BATH	
-87.5	-2.11	BATH	
-88.1	-2.02	BATH	
-88.7	-1.90	BATH	
-89.5	-1.80	BATH	
-90.5	-1.71	BATH	
-91.7	-1.68	BATH	
-92.7	-1.65	BATH	
-93.5	-1.56	BATH	
-93.8	-1.19	BATH	
-94.3	-1.38	BATH	
-94.6	-1.29	BATH	
-94.8	-0.89	BATH	
-95.7	-0.98	BATH	
-98.4	0.02	DL	L-Pin 1/LEW
-99.1	0.55	DL	
-99.2	0.84	DL	L-Pin 2
-99.8	1.18	DL	L-Pin 3
-100.2	1.58	DL	L-Pin 4
-100.5	1.80	DL	
-100.8	1.87	DL	
-101	2.15	DL	L-Pin 5
-101.4	2.29	DL	Top of left bank
-103	2.42	DL	L-Pin 6
-106.4	2.44	DL	
-108.2	2.39	DL	Ground at TBM

Appendix 3D. Cross-sectional data from selected bank sites along the Lower Roanoke River collected August 6, 2007.

[Survey methodology is presented as DL = dumpy and level, BATH = bathymetric survey, and LASER = bank survey conducted using a laser rangefinder. Left and right edges of water are noted as LEW or REW, respectively. Elevation is in respect to mean sea level (meters, NAVGD1988) determined by Light Detection Radar (LiDaR) elevation of the top of bank adjacent to cross-sections, accuracy is unknown. m, meters; m^3/s, cubic meters per second]

Distance (m)	Depth (m)	Method	Comments
		C78	
0	-0.37	DL	REW
0	-0.30	DL	R-Pin 1
1	0.23	DL	R-Pin 2
1.8	0.66	DL	R-Pin 3
2.3	1.52	DL	R-Pin 4
2.9	1.88	DL	Top of right bank
4.1	1.86	DL	R-Pin 5
5.7	2.03	DL	Ground at TBM
-25.6	-6.01	BATH	
-23.6	-6.07	BATH	
-21.9	-6.32	BATH	
-20.9	-6.41	BATH	
-19.9	-6.59	BATH	
-19	-6.71	BATH	
-17.8	-6.80	BATH	
-16.7	-6.71	BATH	
-16	-6.71	BATH	
-14.7	-6.47	BATH	
-12.6	-6.41	BATH	
-11.2	-6.38	BATH	
-10.4	-6.38	BATH	
-9.7	-6.41	BATH	
-9	-6.16	BATH	
-7.8	-5.98	BATH	
-7	-5.62	BATH	
-6.4	-5.25	BATH	
-5.6	-5.16	BATH	
-5.3	-5.07	BATH	
-5.1	-4.95	BATH	
-4.7	-4.58	BATH	
-4.1	-4.40	BATH	
-3	-4.03	BATH	
-2.4	-3.12	BATH	
-1.8	-2.87	BATH	
-1.5	-2.38	BATH	
-1.1	-1.74	BATH	
-0.8	-1.38	BATH	
0	-0.37	DL	REW
-0.5	-0.63	DL	
-1	-0.83	DL	
-1.5	-1.81	DL	
-2	-2.50	DL	
-2.5	-3.50	DL	
-3	-3.40	DL	

Distance (m)	Depth (m)	Method	Comments
-39.1	-5.71	BATH	
-42	-5.65	BATH	
-43.3	-5.62	BATH	
-44.7	-5.55	BATH	
-46.9	-5.43	BATH	
-48.9	-5.43	BATH	
-49.7	-5.65	BATH	
-50.8	-5.37	BATH	
-51.5	-5.31	BATH	
-52.1	-5.19	BATH	
-53	-5.04	BATH	
-53.6	-4.91	BATH	
-54.3	-4.76	BATH	
-55.5	-4.52	BATH	
-56.8	-4.18	BATH	
-57.9	-4.00	BATH	
-58.44	-3.79	BATH	
-60	-3.42	BATH	
-61.1	-3.06	BATH	
-61.5	-2.81	BATH	
-62.8	-1.84	BATH	
-63.2	-2.11	BATH	
-64.1	-1.96	BATH	
-64.6	-1.78	BATH	
-64.9	-1.47	BATH	
-65.3	-1.32	BATH	
-69.0	-0.37	DL	LEW
-68.5	-0.43	DL	
-68.0	-0.50	DL	
-67.5	-0.55	DL	
-67.0	-0.71	DL	
-66.5	-1.12	DL	
-66.0	-1.23	DL	
-65.5	-1.53	DL	
-69.0	-0.37	DL	LEW
-69.1	-0.34	DL	L-Pin 1
-70.0	-0.07	DL	L-Pin 2
-70.9	0.41	DL	L-Pin 3
-71.6	0.98	DL	L-Pin 4
-72.2	1.40	DL	L-Pin 5
-73.0	1.75	DL	L-Pin 6
-73.5	1.83	DL	Top of left bank
-75.0	1.80	DL	
-77.2	1.81	DL	L-Pin 7
		C84	
-0.7	-0.69	DL	R-Pin 1
0	-0.52	DL	REW
0.9	-0.32	DL	
1.6	-0.25	DL	R-Pin 2
2.4	0.05	DL	R-Pin 3
3.3	0.43	DL	

Distance (m)	Depth (m)	Method	Comments
3.7	0.71	DL	R-Pin 4
4.3	0.90	DL	R-Pin 5
5.1	1.18	DL	Top of right bank
5.5	1.27	DL	R-Pin 6
6.8	1.36	DL	
-0.5	-0.61	DL	
-1	-0.63	DL	R-Pin 1
-1.5	-1.01	DL	
-2	-0.87	DL	
-2.5	-1.08	DL	
-3	-1.53	DL	
-3.5	-1.68	DL	
-30.5	-7.68	BATH	
-24.9	-7.35	BATH	
-23.7	-7.32	BATH	
-23.0	-7.29	BATH	
-21.9	-7.26	BATH	
-20.8	-7.23	BATH	
-20.1	-7.23	BATH	
-19.1	-7.20	BATH	
-17.5	-7.01	BATH	
-17.5	-6.92	BATH	
-15.8	-6.89	BATH	
-14.7	-6.68	BATH	
-13.8	-6.34	BATH	
-13.0	-6.07	BATH	
-11.8	-5.00	BATH	
-10.1	-4.42	BATH	
-8.9	-4.06	BATH	
-8.8	-3.87	BATH	
-8.1	-3.66	BATH	
-7.3	-3.57	BATH	
-6.3	-3.45	BATH	
-6.2	-3.51	BATH	
-4.3	-2.47	BATH	
-3.9	-2.11	BATH	
-3.5	-1.92	BATH	
-3.2	-1.65	BATH	
-2.7	-1.44	BATH	
-77.9	-0.52	DL	LEW
-77.4	-0.65	DL	
-76.9	-0.75	DL	
-76.4	-0.96	DL	
-75.9	-1.29	DL	
-75.4	-1.80	DL	
-74.9	-1.98	DL	
-74.4	-2.24	DL	
-52.9	-6.71	BATH	
-54.4	-6.74	BATH	
-54.6	-6.71	BATH	
-56.5	-6.71	BATH	

Distance (m)	Depth (m)	Method	Comments
-58.2	-6.71	BATH	
-59.5	-6.71	BATH	
-60.5	-6.62	BATH	
-61.7	-6.53	BATH	
-62.8	-6.40	BATH	
-62.0	-6.25	BATH	
-65.1	-6.16	BATH	
-65.6	-6.13	BATH	
-66.2	-6.07	BATH	
-66.8	-5.98	BATH	
-68.0	-5.40	BATH	
-68.8	-4.54	BATH	
-70.3	-4.09	BATH	
-70.8	-3.57	BATH	
-71.7	-3.45	BATH	
-72.7	-2.99	BATH	
-73.0	-1.95	BATH	
-74.1	-1.95	BATH	
-74.3	-1.92	BATH	
-74.8	-2.20	BATH	
-75.1	-2.08	BATH	
-75.5	-1.80	BATH	
-76.6	-1.19	BATH	
-77.9	-0.52	DL	LEW
-78.3	-0.32	DL	L-Pin 2
-79.0	0.04	DL	L-Pin 3
-79.8	0.76	DL	L-Pin 4
-80.1	0.94	DL	
-80.3	1.03	DL	L-Pin 5
-80.5	1.14	DL	
-81.8	1.21	DL	L-Pin 6
-83.4	1.22	DL	Ground at TBM
		C87	
0	-0.48	DL	New Pin 1/REW
1.0	-0.29	DL	Head of Pin 2
1.6	-0.21	DL	
1.6	-0.02	DL	R-Pin 3
1.7	0.03	DL	
2.5	0.19	DL	R-Pin 4
3.3	0.39	DL	
3.9	0.54	DL	R-Pin 5
4.5	0.77	DL	
5.0	0.86	DL	R-Pin 6
6.4	1.04	DL	
8.9	0.98	DL	R-Pin 7
10.3	0.97	DL	
12.5	0.96	DL	Ground at TBM
-0.5	-0.58	DL	
-1	-0.66	DL	
-1.5	-0.85	DL	
-2	-1.17	DL	

Distance (m)	Depth (m)	Method	Comments
-2.5	-1.47	DL	
-3	-1.71	DL	
-24.0	-7.10	BATH	
-23.2	-7.10	BATH	
-22.4	-6.98	BATH	
-18.5	-6.82	BATH	
-17.6	-6.79	BATH	
-16.9	-6.70	BATH	
-16.3	-6.61	BATH	
-15.4	-6.52	BATH	
-14.3	-6.46	BATH	
-13.3	-6.46	BATH	
-12.4	-6.37	BATH	
-11.6	-5.94	BATH	
-9.7	-5.09	BATH	
-8.2	-4.51	BATH	
-7.2	-3.87	BATH	
-6.2	-3.23	BATH	
-5.0	-2.59	BATH	
-4.0	-2.10	BATH	
-2.8	-1.52	BATH	
-2.1	-1.12	BATH	
-1.5	-0.94	BATH	
-37.5	-7.95	BATH	
-39.2	-7.43	BATH	
-40.3	-7.10	BATH	
-41.7	-6.67	BATH	
-42.7	-6.37	BATH	
-43.6	-6.09	BATH	
-45.3	-5.57	BATH	
-46.6	-5.18	BATH	
-48.3	-4.66	BATH	
-49.6	-4.26	BATH	
-51.1	-3.81	BATH	
-52.3	-3.44	BATH	
-53.5	-3.07	BATH	
-55.1	-2.59	BATH	
-56.3	-2.22	BATH	
-57.2	-1.95	BATH	
-58.5	-1.55	BATH	
-59.9	-1.12	BATH	
-60.5	-0.94	BATH	
-62.00	-0.49	DL	L-Pin 1/LEW
-62.50	-0.42	DL	L-Pin 2
-62.80	-0.10	DL	L-Pin 3
-63.60	0.22	DL	L-Pin 4
-64.30	0.50	DL	Top of left bank
-64.80	0.61	DL	
-66.00	0.58	DL	L-Pin 5
-66.80	0.57	DL	

Distance (m)	Depth (m)	Method	Comments
0	4.53	DL	REW
0.2	4.94	DL	R-Pin 2
0.8	5.33	DL	R-Pin 3
1.1	5.47	DL	
2.7	5.59	DL	
4.8	5.59	DL	R-Pin 4
7.0	5.62	DL	
10.0	5.59	DL	
13.3	5.57	DL	Ground at TBM
0	4.53	DL	REW
-0.5	4.40	DL	
-1	4.26	DL	
-1.5	3.95	DL	
-2	3.60	DL	
-2.5	3.28	DL	
-3	2.96	DL	
-3.5	2.71	DL	
-4	2.45	DL	
-31.4	-0.25	BATH	
-30.4	-0.28	BATH	
-29.7	-0.25	BATH	
-28.9	-0.16	BATH	
-27.1	-0.31	BATH	
-26.1	-0.22	BATH	
-24.6	-0.19	BATH	
-23.4	-0.25	BATH	
-22.4	-0.43	BATH	
-21.4	-0.86	BATH	
-20.6	-1.04	BATH	
-20.1	-0.89	BATH	
-18.8	-0.46	BATH	
-16.1	-0.19	BATH	
-15.1	-0.16	BATH	
-13.8	0.02	BATH	
-13.0	-0.01	BATH	
-11.9	0.08	BATH	
-11.0	0.11	BATH	
-10.1	0.21	BATH	
-9.4	0.36	BATH	
-9.0	0.42	BATH	
-8.5	0.72	BATH	
-7.2	1.00	BATH	
-6.4	1.61	BATH	
-5.2	2.28	BATH	
-4.3	2.83	BATH	
-3.4	3.59	BATH	
-1.2	3.95	BATH	
-1.1	4.14	BATH	
-77	4.26	DL	
-76.5	3.77	DL	
-76	3.12	DL	

Distance (m)	Depth (m)	Method	Comments
-75.5	2.86	DL	
-75	2.42	DL	
-49.2	-0.53	BATH	
-51.1	-0.19	BATH	
-52.6	-0.31	BATH	
-53.6	-0.37	BATH	
-54.9	-0.40	BATH	
-57.4	-0.59	BATH	
-59.1	-0.71	BATH	
-60.6	-0.98	BATH	
-62.3	-1.07	BATH	
-64.5	-0.92	BATH	
-66.1	-0.86	BATH	
-67.3	-0.50	BATH	
-68.3	-0.28	BATH	
-69.2	-0.07	BATH	
-70.4	0.60	BATH	
-71.5	1.03	BATH	
-73.1	1.94	BATH	
-74.2	3.01	BATH	
-75.2	3.62	BATH	
-77.4	4.48	DL	L-Pin 1
-77.5	4.54	DL	LEW
-77.8	4.88	DL	L-Pin 2
-78.5	5.26	DL	L-Pin 3
-79.2	5.45	DL	Top of left bank
-79.8	5.48	DL	L-Pin 4
-80.4	5.49	DL	
		C92	
0	-0.24	DL	REW
1	-0.03	DL	R-Pin 2
2	0.14	DL	
2.5	0.22	DL	R-Pin 3
3.1	0.46	DL	Top of right bank
4	0.58	DL	R-Pin 4
5.5	0.58	DL	
-0.5	-0.33	DL	
-1	-0.36	DL	
-1.5	-0.44	DL	
-2	-0.61	DL	
-2.5	-0.85	DL	
-36.5	-5.39	BATH	
-33.8	-5.30	BATH	
-32	-5.33	BATH	
-30.1	-5.27	BATH	
-28.6	-5.27	BATH	
-27.1	-4.96	BATH	
-25.6	-4.93	BATH	
-23.8	-4.78	BATH	
-22.6	-4.75	BATH	
-22	-4.66	BATH	

Distance (m)	Depth (m)	Method	Comments
-19.4	-4.60	BATH	
-18.3	-4.60	BATH	
-17.4	-4.63	BATH	
-16.7	-4.63	BATH	
-15.2	-4.69	BATH	
-14.8	-4.81	BATH	
-12.9	-4.93	BATH	
-11.5	-5.09	BATH	
-10.1	-4.54	BATH	
-9.3	-4.36	BATH	
-8.5	-4.11	BATH	
-7.9	-3.56	BATH	
-6.6	-3.04	BATH	
-5.3	-2.47	BATH	
-4.4	-1.83	BATH	
-3.9	-1.40	BATH	
-3.4	-1.03	BATH	
-2.9	-0.76	BATH	
-85.1	-0.24	DL	LEW
-84.6	-0.32	DL	
-84.1	-0.40	DL	
-83.6	-0.47	DL	
-83.1	-0.63	DL	
-82.6	-0.87	DL	
-82.1	-1.44	DL	
-62.8	-5.45	BATH	
-63.4	-5.30	BATH	
-64.0	-5.27	BATH	
-64.6	-5.21	BATH	
-65.2	-5.12	BATH	
-66.0	-4.93	BATH	
-67.1	-4.84	BATH	
-68.6	-4.69	BATH	
-69.5	-4.66	BATH	
-71.6	-4.63	BATH	
-71.1	-4.60	BATH	
-71.8	-4.63	BATH	
-72.9	-4.72	BATH	
-73.9	-4.75	BATH	
-74.7	-4.66	BATH	
-75.2	-4.51	BATH	
-76.5	-4.26	BATH	
-76.9	-4.08	BATH	
-78.4	-3.01	BATH	
-79.5	-2.71	BATH	
-80.2	-2.47	BATH	
-80.3	-2.25	BATH	
-80.8	-2.07	BATH	
-81.0	-1.76	BATH	
-81.3	-1.64	BATH	
-81.7	-1.49	BATH	

Distance (m)	Depth (m)	Method	Comments
-82.2	-1.25	BATH	
-82.2	-0.85	BATH	
-85.1	-0.24	DL	LEW
-85.4	-0.20	DL	
-85.4	0.12	DL	L-Pin 2
-85.5	0.25	DL	L-Pin 3
-85.6	0.39	DL	
-86.4	0.39	DL	L-Pin 4
-87.9	0.61	DL	Ground at TBM
		T39	
0	-0.14	DL	REW
0.1	0.10	DL	R-Pin 2
0.5	0.28	DL	
1	0.40	DL	
2	0.45	DL	
3.6	0.45	DL	R-Pin 3
8.1	0.40	DL	
-0.5	-0.32	DL	
-1.0	-0.39	DL	
-1.5	-0.52	DL	
-2.0	-0.89	DL	
-2.5	-1.18	DL	
-2.7	-1.51	DL	
-3.0	-2.05	DL	
-3.5	-2.44	DL	
-28.0	-6.85	BATH	
-26.6	-6.63	BATH	
-25.0	-6.66	BATH	
-22.9	-6.85	BATH	
-21.5	-7.06	BATH	
-20.0	-7.52	BATH	
-18.6	-7.70	BATH	
-17.9	-7.82	BATH	
-15.9	-8.03	BATH	
-14.9	-8.13	BATH	
-12.6	-8.31	BATH	
-11.6	-8.34	BATH	
-10.8	-8.46	BATH	
-10.5	-8.31	BATH	
-9.8	-7.94	BATH	
-9.1	-7.97	BATH	
-8.5	-7.97	BATH	
-8.1	-8.00	BATH	
-7.6	-8.07	BATH	
-7.2	-7.27	BATH	
-6.9	-7.67	BATH	
-6.5	-6.24	BATH	
-5.3	-5.26	BATH	
-5.0	-4.93	BATH	
-4.9	-5.02	BATH	
-4.5	-3.80	BATH	

Distance (m)	Depth (m)	Method	Comments
-4.0	-3.46	BATH	
-3.8	-2.73	BATH	
-3.5	-2.64	BATH	
-3.2	-1.33	BATH	
-2.9	-2.06	BATH	
-2.7	-1.79	BATH	
-79.7	-0.22	DL	
-79.2	-0.27	DL	
-78.7	-0.28	DL	
-78.2	-0.32	DL	
-77.7	-0.34	DL	
-77.2	-0.37	DL	
-76.7	-0.41	DL	
-76.2	-0.43	DL	
-41.9	-4.10	BATH	
-42.8	-4.26	BATH	
-44.9	-4.13	BATH	
-45.4	-3.98	BATH	
-47.9	-3.83	BATH	
-48.4	-3.74	BATH	
-49.1	-3.62	BATH	
-51.1	-3.43	BATH	
-52.9	-3.28	BATH	
-54.0	-3.19	BATH	
-54.6	-3.13	BATH	
-56.2	-3.04	BATH	
-57.2	-2.91	BATH	
-58.1	-2.79	BATH	
-59.1	-2.64	BATH	
-60.2	-2.49	BATH	
-61.7	-2.43	BATH	
-63.0	-2.21	BATH	
-64.7	-1.97	BATH	
-66.0	-1.63	BATH	
-67.0	-1.12	BATH	
-68.7	-0.81	BATH	
-69.0	-0.75	BATH	
-69.1	-0.72	BATH	
-69.8	-0.69	BATH	
-70.6	-0.66	BATH	
-71.5	-0.63	BATH	
-73.0	-0.60	BATH	
-79.2	-0.24	DL	L-Pin 1? (DNF)
-80.2	-0.14	DL	LEW
-81.6	-0.02	DL	
-82.3	0.10	DL	L-Pin 2
-85.4	0.37	DL	L-Pin 3
-88.6	0.61	DL	Ground at TBM

Appendix 4. Bathymetric, water clarity, and mass wasting data collected on an approximately 200-kilometer river survey from near Halifax, N.C., to the Alblemarle Sound.

Water depth was measured at time of survey, height column represents the height of exposed bank at time of survey (BR = bank right, BL = bank left), and width is the width of channel as recorded at breast height during the survey]

Date	Site	River kilometer	Location	Water depth (meters)	Height BR (meters)	Height BL (meters)	Mean height (meters)	Width (meters)	Width-to-depth ratio	Bank erosion index	Secchi depth (meters)
6/12/2007	1	25	N36.33417 W77.58267	2.9	5.9	4.3	5.1	83.5	10.4	1	n/a
10:42am	2	28	N36.32000 W77.57383	2.5	5.8	6.4	6.1	95.8	11.1	1	1.44
	3	29	N36.30883 W77.56250	2.1	4.1	8.9	6.5	93.9	10.9	2	1.49
	4	31	N36.30367 W77.54700	2.6	3.8	5.1	4.5	90.8	12.9	1	1.44
	5	32	N36.30583 W77.53100	2.9	2.3	6.1	4.2	86.3	12.2	1	1.27
11:11am	6	33	N36.30783 W77.51533	2.0	3.4	4	3.7	93.9	16.5	1	1.27
	7	35	N36.30867 W77.49783	2.1	3.5	2.3	2.9	94.1	18.9	1	1.45
	8	36	N36.31667 W77.48567	1.4	4.6	3.1	3.9	110	20.9	1	1.28
	9	38	N36.32167 W77.46883	2.3	7.1	6	6.6	92.9	10.5	0	1.14
11:47am	10	39	N36.32433 W77.45200	1.6	6.0	5.4	5.7	105.3	14.5	1	1.05
	11	41	N36.32050 W77.43617	1.8	4.0	6.9	5.5	101.6	14.0	0	1.17
	12	42	N36.30917 W77.42800	1.8	5.5	5.1	5.3	98.1	13.9	0	1.12
	13	45	N36.29750 W77.41867	2.1	5.6	4.8	5.2	100.3	13.8	1	1.06
12:45pm	14	46	N36.28517 W77.41200	2.9	4.4	4.3	4.4	89.6	12.4	1	1.13
	15	47	N36.27050 W77.41183	2.1	3.7	7	5.4	92.8	12.5	2	1.03
	16	49	N36.26100 W77.40500	2.2	4.6	3.9	4.3	87.2	13.6	1	0.97
	17	51	N36.25400 W77.38850	2.3	5.6	4.7	5.2	89	12.0	2	0.93
	18	52	N36.24300 W77.37617	2.0	5.6	4.8	5.2	90.8	12.6	0	1.06
	19	54	N36.22950 W77.37933	1.7	6.2	4.5	5.4	95.8	13.6	1	1.07
1:15pm	20	55	N36.21933 W77.38333	1.4	4.9	5.9	5.4	111.1	16.4	1	1.02
	21	56	N36.20783 W77.37917	3.7	3.6	4.6	4.1	74.7	9.6	2	0.99
	22	58	N36.20067 W77.36450	2.5	4.4	4.3	4.4	82.4	12.0	1	1.04
	23	60	N36.19200 W77.35000	2.2	7.6	5.2	6.4	97.1	11.3	1	0.98
1:40pm	24	61	N36.19283 W77.33317	2.0	5	4.9	5.0	84.2	12.0	1	0.89
	25	63	N36.18500 W77.32283	2.3	4.8	5.0	4.9	85.9	12.0	1	0.94
	26	64	N36.18050 W77.30750	5.5	6	6.3	6.2	105.5	9.0	1	0.77
	27	66	N36.16833 W77.30800	2.5	6.7	4.2	5.5	90.3	11.3	3	0.95
	28	67	N36.16817 W77.29233	3.3	6.2	5.5	5.9	75.9	8.3	3	0.89
	29	69	N36.16383 W77.27950	1.9	4.1	6.6	5.4	93.2	12.9	0	0.92
	30	70	N36.15917 W77.26750	1.2	5.6	4.3	5.0	104.3	16.9	1	0.91
2:20pm	32	74	N36.13833 W77.25817	1.8	4.4	4.8	4.6	99.8	15.7	0	0.81
	33	75	N36.12883 W77.25233	1.8	4.7	6.8	5.8	97.9	13.0	3	0.84
	34	77	N36.12217 W77.24333	2.2	5.4	3.7	4.6	86.1	12.7	3	0.84
	35	78	N36.11750 W77.25000	3.5	4.9	4.7	4.8	79.4	9.6	3	0.79
	36	80	N36.11150 W77.23750	3.3	5.4	4.5	5.0	97.8	11.9	5	0.72
6/12/2007	37	81	N36.10183 W77.23450	1.5	4.6	5.6	5.1	109.6	16.6	3	0.72
2:50pm	38	83	N36.09783 W77.24933	3.6	4.6	5.7	5.2	79.9	9.1	1	0.79
	39	85	N36.09300 W77.26683	1.6	3.9	5.6	4.8	94.4	14.8	0	0.71
	40	86	N36.09650 W77.28333	1.4	5.0	4.1	4.6	109.1	18.2	1	0.71
	41	88	N36.09000 W77.29967	3.5	3.8	5.7	4.8	83	10.1	5	0.72
	42	89	N36.08600 W77.31567	3.5	5.5	4.6	5.1	84.6	9.9	2	0.73
	43	91	N36.07567 W77.32733	11.1	30.1	5.5	17.8	66.6	2.3	0	0.64
	44	92	N36.06267 W77.32417	3.1	3.8	4.2	4.0	76.1	10.8	1	0.66
3:30pm	45	95	N36.05333 W77.31233	4.5	4.4	3.3	3.9	71	8.5	0	0.73
	46	96	N36.04667 W77.29633	3.1	4.9	3.8	4.4	89.2	11.9	0	0.70
	47	98	N36.03767 W77.27950	2.8	4.7	4.9	4.8	94.3	12.5	2	0.64

Date	Site	River kilometer	Location	Water depth (meters)	Height BR (meters)	Height BL (meters)	Mean height (meters)	Width (meters)	Width-to-depth ratio	Bank erosion index	Secchi depth (meters)
	48	99	N36.03117 W77.26333	3.0	4.5	5.4	5.0	80.4	10.1	2	0.76
	49	100	N36.02333 W77.24483	3.3	4.8	4.7	4.8	82.7	10.2	3	0.72
3:55pm	50	102	N36.01617 W77.23000	3.3	4.9	3.6	4.3	90.2	12.0	3	0.68
6/13/2007											
10:35am	50	102									0.69
	51	104	N36.01200 W77.21283	4.2	2.9	4.3	3.6	87.1	11.2	1	0.70
	52	105	N36.00233 W77.20733	4.9	5	4.3	4.7	81.2	8.5	2	0.71
	53	106	N35.99133 W77.21283	2.5	4.4	3.9	4.2	95.3	14.4	5	0.62
	54	108	N35.99150 W77.19583	5.7	2.3	3.8	3.1	64.5	7.3	5	0.60
	55	110	N35.97900 W77.19517	3.7	4	4.5	4.3	87	10.9	2	0.61
	56	111	N35.96650 W77.19617	9.3	4.3	3.8	4.1	67.8	5.1	3	0.53
	57	113	N35.95667 W77.19200	3.3	3.3	4.5	3.9	75.8	10.5	5	0.69
	58	115	N35.94817 W77.19467	4.0	3.4	4.4	3.9	74.4	9.4	5	0.63
	59	117	N35.94233 W77.19917	4.5	3	2.5	2.8	76.2	10.5	5	0.60
11:35am	60	119	N35.93200 W77.18417	4.1	13.3	4.1	8.7	80.6	6.3	4	0.64
	61	120	N35.93000 W77.17000	6.3	13.5	4.1	8.8	66.2	4.4	5	0.63
	62	121	N35.93783 W77.15783	5.1	3.2	3.5	3.4	79	9.3	3	0.61
	63	123	N35.93400 W77.13917	4.0	3.8	2.8	3.3	75.9	10.4	3	0.63
12pm	64	125	N35.93633 W77.12750	3.6	2.3	3.4	2.9	81	12.5	3	0.65
	65	126	N35.92833 W77.11833	4.5	4.2	3.9	4.1	81.9	9.6	4	0.58
12:44pm	66	129	N35.93367 W77.10517	4.4	3.4	3.4	3.4	81.5	10.4	3	0.66
	67	130	N35.92617 W77.09233	2.4	3.1	2.8	3.0	99	18.6	5	0.64
	68	131	N35.93250 W77.08183	5.3	3.2	1.8	2.5	67.2	8.6	5	0.62
	69	132	N35.93533 W77.07117	3.0	3.8	2.9	3.4	82	12.8	5	0.60
6/13/2007	70	134	N35.94400 W77.06850	6.5	3.2	3.1	3.2	72.7	7.6	3	0.70
	71	137	N35.94200 W77.05650	7.0	2.8	2.3	2.6	71.6	7.5	5	0.65
	72	138	N35.94283 W77.04250	5.9	2.5	7.0	4.8	78.3	7.3	5	0.66
	73	139	N35.92983 W77.03600	7.1	3.1	2.2	2.7	67.7	6.9	3	0.62
	74	142	N35.92233 W77.02917	5.5	2.7	2.8	2.8	73.5	8.9	6	0.63
1:25pm	75	143	N35.91217 W77.02650	5.2	2.4	2.0	2.2	88.7	12.0	4	0.62
	76	144	N35.90250 W77.02517	6.2	2.6	2.5	2.6	81.4	9.3	5	0.71
	77	145	N35.88983 W77.02417	4.5	1.8	2.5	2.2	75.1	11.4	3	0.65
	78	147	N35.88967 W77.03683	13.4	2.2	1.5	1.9	66.4	4.4	3	0.64
	79	148	N35.88033 W77.03083	8.0	1.6	2.1	1.9	94.9	9.6	5	0.61
	80	150	N35.87500 W77.04450	13.0	1.8	1.8	1.8	108.1	7.3	2	0.73
2:00pm	81	152	N35.86167 W77.04333	6.3	2.1	1.3	1.7	92.2	11.6	0	0.68
	82	153	N35.85733 W77.03117	6.4	2.5	1.5	2.0	84.4	10.0	2	0.68
	83	155	N35.86300 W77.01550	7.1	1.7	1.6	1.7	76.3	8.7	2	0.63
	84	156	N35.86200 W77.00083	6.5	1.9	1.2	1.6	81.8	10.2	2	0.66
	85	157	N35.86550 W76.99133	6.0	2.0	1.6	1.8	69.5	8.9	6	0.74
	86	159	N35.87683 W76.98467	6.2	1.8	1.6	1.7	73.7	9.3	4	0.65
	87	161	N35.88283 W76.96833	6.3	1.2	1.2	1.2	72.3	9.6	2	0.77
	88	162	N35.88833 W76.95583	6.6	1.2	0.6	0.9	78.4	10.5	2	0.80
	89	164	N35.89717 W76.94717	8.2	1.0	1.2	1.1	66.2	7.1	1	0.76
	90	165	N35.90067 W76.93283	5.0	1.3	1.0	1.2	82.1	13.3	2	0.89
2:45pm	91	166	N35.89633 W76.91867	5.0	1.0	1.1	1.1	93.1	15.3	0	0.77
	92	168	N35.88433 W76.91183	4.2	1.5	0.5	1.0	87.4	16.9	1	0.86
	93	170	N35.87317 W76.90350	5.1	0.8	0.9	0.9	76.1	12.7	1	0.74
	94	171	N35.86483 W76.89267	3.2	≤1	≤1	0.5	95.8	26.1	1	0.84
3:03pm	95	173	N35.85417 W76.89850	6.4	≤1	≤1	0.5	71.6	10.3	0	0.89

Date	Site	River kilometer	Location	Water depth (meters)	Height BR (meters)	Height BL (meters)	Mean height (meters)	Width (meters)	Width-to-depth ratio	Bank erosion index	Secchi depth (meters)
8/9/2007	92	168	N35.88433 W76.91183								0.89
	93	170	N35.87317 W76.90350								0.89
	94	171	N35.86483 W76.89267								1.00
	95	173	N35.85417 W76.89850								0.93
	96	174	N35.84183 W76.90217	4.7				87	18.7		0.88
	97	175	N35.83317 W76.89283	3.1				110.1	35.1		0.97
	98	177	N35.82500 W76.89617	5.5				83.4	15.2		0.91
	100	180	N35.81300 W76.89183	4.8				142.1	29.9		0.93
	101	181	N35.81400 W76.87533	7.9				105.9	13.4		0.93
8/9/2007	102	182	N35.82383 W76.86350	4.9				182.9	37.5		1.04
	103	184	N35.83383 W76.85883	4.2				196.2	46.3		0.99
	104	186	N35.84333 W76.84233	4.8				187.8	39.5		1.05
	105	187	N35.85617 W76.83300	4.8				159.9	33.2		1.10
	106	189	N35.87600 W76.83800	4.5				272.1	60.7		1.03
	107	192	N35.88833 W76.82367	9.9				154.6	15.6		1.01
	108	194	N35.88100 W76.80067	5.6				215.3	38.6		0.87
	109	197	N35.86550 W76.78050	4.6				234.7	50.7		0.97
	110	199	N35.86633 W76.75583	7.7				159.1	20.7		0.80
	111	201	N35.88017 W76.73733	5.3				197	36.9		0.82
	112	203	N35.89917 W76.72900	4.6				326.6	71.0		0.72
	113	206	N35.91817 W76.72033	5.9				173.9	29.7		0.84
	114	208	N35.92817 W76.69983	5.3				252.7	47.6		0.91
	115	209	N35.94077 W76.69617	3.2				354.8	110.9		0.75
	116	210	N35.94550 W76.69183	3.2							0.95
	117	211	N35.95133 W76.67217	3.6							1.03

Appendix 5. Mean floodplain sedimentation from a 2002 to 2005 study measured using feldspar clay pads on transects perpendicular to channel.

[Methods and further information on floodplain sediment dynamics available in the associated General Services Administration Bulletin journal article. Source: Hupp and others, 2009]

Site	Deposition rate (millimeters per year)	River kilometer
T1	4.2	14
T47	4.1	32
T45	7.5	32
T3	7.6	38
T71	5.4	40
T72	1.0	40
T4	4.1	40
T50	2.6	50
T51	1.5	72
T57	1.7	60
T58	1.6	62
T61	4.7	78
T8	2.0	72
T9	2.1	79
T11	4.8	80
T10	3.5	85
T12	10.9	95
T14	4.9	96
T16	3.2	108
T67	5.4	111
T15	12.6	112
T17	6.5	112
T68	12.8	120
T19	2.0	122
T21	2.4	123
T22	6.0	125
T69	10.5	140
T23	5.5	132
T70	7.7	129
T25	3.3	142
T26	3.2	148
T27	6.0	147
T28	2.5	147
T28b	4.1	147
29	6.2	146
T30	4.5	154
T31	4.9	158
T36	10.5	162
T37	9.9	166
T38	10.3	173
T39	10.1	173
T40	10.5	176
T41	7.0	176
T52	17.6	170
53	6.3	188
54	5.1	188
55	2.7	193
56	4.1	193

Appendix 6A. Stage-discharge relationships at selected U.S. Geological Survey streamgages as observed for multiday dam releases.

[The discharge was observed at the Roanoke Rapids U.S. Geological Survey (USGS) streamgage, the stage was observed at the stage-only USGS streamgage of interest (for example, Scotland Neck, 02081000). A prolonged discharge was required to accurately determine the downstream stage at each of the downstream USGS streamgages. Dates for each of the observed prolonged discharge events are noted in the "dates observed" column of each table]

Discharge (cubic meters per second)	Stage height (meters)	Dates observed
Scotland Neck, N.C. USGS streamgage 02081000		River kilometer 56
79.3	2.1	February 7–26 (2009)
121.8	2.7	April 30–June 1 (2006)
223.7	4.3	April 23–May 5 (2008)
345.5	5.5	April 12–19 (2008)
419.1	6.2	April 16–24 (2004)
577.7	7.0	January 16–20 (2009)
965.6	9.0	April 13–28 (2003)
Oak City streamgage, N.C. USGS streamgage 02081022		River kilometer 104
79.3	1.5	February 7–26 (2009)
121.8	2.3	April 30–June 1 (2006)
223.7	3.8	April 23–May 5 (2008)
345.5	4.6	April 12–19 (2008)
419.1	5.2	April 16–24 (2004)
577.7	5.3	January 16–20 (2009)
965.6	6.6	April 13–28 (2003)
Hamilton, N.C. USGS streamgage 2081028		River kilometer 117
79.3	1.0	February 7–26 (2009)
121.8	1.8	April 30–June 1 (2006)
223.7	3.3	April 23–May 5 (2008)
345.5	4.0	April 12–19 (2008)
419.1	4.4	April 16–24 (2004)
577.7	4.6	January 16–20 (2009)
965.6	5.4	April 13–28 (2003)
Williamston, N.C. USGS streamgage 2081054		River kilometer 152
79.3	1.3	February 7–26 (2009)
121.8	1.8	April 30–June 1 (2006)
223.7	2.6	April 23–May 5 (2008)
345.5	2.8	April 12–19 (2008)
419.1	2.9	April 16–24 (2004)
577.7	2.9	January 16–20 (2009)
965.6	3.6	April 13–28 (2003)

Appendix 6B. Pins submerged at various river discharges at selected bank transects near USGS streamgages as determined by the stage-discharge relationship.

[Sub. pins indicates pin numbers submerged at each of the representative flows]

Scotland Neck, N.C. USGS streamgage 02081000			
Discharge (cubic meters per second)	Site 57 sub. pins	Site 50 sub. pins	Site 58 sub. pins
79.3	—	—	—
121.8	1	1	1
223.7	1…4	1…3	1…2
345.5	1…5	1…5	1…3
419.1	1…6	1…7	1…4
577.7	1…7	1…8	1…4
965.6	1…9	1…8	1…5

Oak City streamgage, N.C. USGS streamgage 02081022			
Discharge (cubic meters per second)	C49br sub. pins	16br sub. pins	12bl sub. pins
79.3	1	2	1
121.8	1…2	2	1…2
223.7	1…3	2…3	1…5
345.5	1…5	2…5	1…6
419.1	1…5	2…5	1…8
577.7	1…5	2…5	1…8
965.6	1…6	2…7	1…8

Hamilton, N.C. USGS streamgage 02081028			
Discharge (cubic meters per second)	19br sub. pins	C60br sub. pins	15br sub. pins
79.3	—	—	—
121.8	1…2	1…2	1
223.7	1…4	1…5	1…2
345.5	1…6	1…6	1...3
419.1	1…6	1…7	1...3
577.7	1…7	1…7	1…3
965.6	1…7	1…8	1…4

Williamston, N.C. USGS streamgage 02081054		
Discharge (cubic meters per second)	C78br sub. pins	C84br sub. pins
79.3	—	—
121.8	1	1
223.7	1…3	1…3
345.5	1…3	1…3
419.1	1…3	1…3
577.7	1…3	1…4
965.6	1…4	1…6

Appendix 6C. River stage information between pin measurement dates at selected U.S. Geological Survey streamgages.

	Stage (m)			
	September 2005–March 2006	March 2006–August 2006	August 2006–June 2007	June 2007–July 2008
	Scotland Neck, N.C. USGS streamgage 02081000			River kilometer 56
Mean	3.2	2.8	4.5	1.8
Median	2.6	2.6	4.2	1.8
Mode	1.9	2.7	2.3	2.1
Max	7.0	7.4	7.6	4.7
Min	1.5	1.7	1.6	1.1
	Oak City streamgage, N.C. USGS streamgage 02081022			River kilometer 104
Mean	2.6	2.3	3.9	1.2
Median	2.0	2.0	3.8	1.2
Mode	1.2	1.2	6.1	1.1
Max	5.7	5.8	6.2	3.2
Min	1.0	1.1	1.2	0.1
	Hamilton, N.C. USGS streamgage 02081028			River kilometer 117
Mean	2.2	1.8	3.3	0.9
Median	1.6	1.6	3.3	0.9
Mode	1.0	0.8	5.2	0.7
Max	4.9	4.9	5.3	2.6
Min	0.7	0.7	0.9	0.5
	Williamston, N.C. USGS streamgage 02081054			River kilometer 152
Mean	2.0	1.8	2.6	1.4
Median	1.7	1.7	2.6	1.4
Mode	1.6	1.3	2.5	1.4
Max	3.3	3.2	3.5	2.1
Min	1.0	1.1	1.3	0.9

Appendix 6D. Bank erosion rates as observed at Scotland Neck, N.C., between measurement dates.

[Submerged and exposed rates determined by river stage at the Scotland Neck, N.C., U.S. Geological Survey streamgage and transect survey. Submerged pins (pins underwater) was determined for the mean, median, and mode river stages. All pins are submerged for some period between measurement dates. Empty cells indicate that no pins meet that value. A value of 0 indicates that mean erosion rate was zero centimeters per year for that date and condition]

		Erosion (millimeters per year)				
		September 2005–March 2006	March 2006–August 2006	August 2006–June 2007	June 2007–July 2008	2005–2008
50br:						
Mean	Submerged	N/A	N/A	26.5		
	Exposed	N/A	N/A		23.8	
Median	Submerged	N/A	N/A	26.5		
	Exposed	N/A	N/A		23.8	
Mode	Submerged	N/A	N/A			
	Exposed	N/A	N/A	26.5	23.8	
Total		N/A	N/A	26.5	23.8	17.2
50bl:						
Mean	Submerged	N/A	N/A	31.6		
	Exposed	N/A	N/A		-2.3	
Median	Submerged	N/A	N/A	31.6		
	Exposed	N/A	N/A		-2.3	
Mode	Submerged	N/A	N/A			
	Exposed	N/A	N/A	31.6	-2.3	
Total		N/A	N/A	31.6	-2.3	9.9
57br:						
Mean	Submerged	13.2	44.4	64.2		
	Exposed	0.0	1.6		34.1	
Median	Submerged	23.4	51.4	64.2		
	Exposed	-1.0	7.1		34.1	
Mode	Submerged		51.4	41.5		
	Exposed	9.5	7.1	67.9	34.1	
Total		9.5	26.1	64.2	50.8	34.1
58br:						
Mean	Submerged	168.8	76.4	-5.3		
	Exposed	-10.0	35.6		23.6	
Median	Submerged	285.4	93.6	-5.3		
	Exposed	36.6	47.4		23.6	
Mode	Submerged		192.0	41.5		
	Exposed	143.2	184.9	-14.7	23.6	
Total		143.2	62.8	-5.3	23.6	134.6

Appendix 6E. Bank erosion rates as observed at Oak City, N.C., between measurement dates.

[Submerged and exposed rates determined by river stage at the Oak City, N.C., U.S. Geological Survey streamgage and transect survey. Submerged pins (pins underwater) was determined for the mean, median, and mode river stages. All pins are submerged for some period between measurement dates. Empty cells indicate that no pins meet that value. A value of 0 indicates that mean erosion rate was zero centimeters per year for that date and condition]

		Erosion (millimeters per year)				
		September 2005–March 2006	March 2006–August 2006	August 2006–June 2007	June 2007–July 2008	2005–2008
12br:						
Mean	Submerged	22.5	56.4	28.6		
	Exposed	0.0	0.0		10.6	
Median	Submerged	33.8	83.2	28.6		
	Exposed	0.0	-6.0		10.6	
Mode	Submerged			28.6		
	Exposed	19.3	32.2		10.6	
Total		19.3	32.2	28.6	10.6	20.8
12bl:						
Mean	Submerged	-0.4	-9.1	49.5		
	Exposed		21.6		33.7	
Median	Submerged	16.6	-19.2	49.5		
	Exposed	-34.4	26.4		33.7	
Mode	Submerged			49.5		
	Exposed	-0.4	-4.0		33.7	
Total		-0.4	-4.0	49.5	33.7	27.2
c49br:						
Mean	Submerged	27.5	47.4	56.5		
	Exposed		0.0		20.9	
Median	Submerged	45.8	43.2	56.5		
	Exposed	0.0	30.0		20.9	
Mode	Submerged			56.5		
	Exposed	27.5	37.9		20.9	
Total		27.5	37.9	56.5	20.9	35.4
c49bl:						
Mean	Submerged	30.4	64.4	28.1		
	Exposed	-4.3	0.0		61.1	
Median	Submerged	36.5	88.2	28.1		
	Exposed	15.6	-15.6		61.1	
Mode	Submerged			28.1		
	Exposed	26.0	53.6		61.1	
Total		26.0	53.6	28.1	61.1	39.3

Appendix 6F. Bank erosion rates at Hamilton, N.C., as observed between measurement dates.

[Submerged and exposed rates determined by river stage at the Hamilton, N.C., U.S. Geological Survey streamgage and transect survey. Submerged pins (pins underwater) was determined for the mean, median, and mode river stages. All pins are submerged for some period between measurement dates. Empty cells indicate that no pins meet that value. A value of 0 indicates that mean erosion rate was zero centimeters per year for that date and condition]

		Erosion (millimeters per year)				
		September 2005–March 2006	March 2006–August 2006	August 2006–June 2007	June 2007–July 2008	2005–2008
15br:						
Mean	Submerged	150.6	870.5	446.6		
	Exposed	61.6	24.0		456.0	
Median	Submerged	226.0	870.5	446.6		
	Exposed	46.2	24.0		456.0	
Mode	Submerged			446.6		
	Exposed	106.1	447.2		456.0	
Total		106.1	447.2	446.6	456.0	286.2
15bl:						
Mean	Submerged	12.2	153.7	31.1		
	Exposed	0.0	0.0		10.8	
Median	Submerged	23.9	192.1	31.1		
	Exposed	-5.4	0.0		10.8	
Mode	Submerged			31.1		
	Exposed	10.9	96.1		10.8	
Total		10.9	96.1	31.1	10.8	20.8
19br:						
Mean	Submerged	11.8	9.0	32.2		
	Exposed		8.0		25.0	
Median	Submerged	18.8	16.0	32.2		
	Exposed	6.5	3.0		25.0	
Mode	Submerged			32.2		
	Exposed	11.8	8.6		25.0	
Total		11.8	8.6	32.2	25.0	21.9
19bl:						
Mean	Submerged	32.6	24.0	63.0		
	Exposed		0.0		60.9	
Median	Submerged	67.4	12.6	63.0		
	Exposed	-36.9	34.8		60.9	
Mode	Submerged			63.0		
	Exposed	32.6	20.0		60.9	
Total		32.6	20.0	63.0	60.9	37.0

Appendix 6G. Bank erosion rates at Williamston, N.C., as observed between measurement dates.

[Submerged and exposed rates determined by river stage at the Williamston, N.C., U.S. Geological Survey streamgage and transect survey. Submerged pins (pins underwater) was determined for the mean, median, and mode river stages. All pins are submerged for some period between measurement dates. Empty cells indicate that no pins meet that value. A value of 0 indicates that mean erosion rate was zero centimeters per year for that date and condition]

		Erosion (millimeters per year)				
		September 2005–March 2006	March 2006–August 2006	August 2006–June 2007	June 2007–July 2008	2005–2008
c78br:						
Mean	Submerged	58.6	43.7	35.8		
	Exposed	0.0			77.0	
Median	Submerged	0.0	65.6	35.8		
	Exposed	58.6	0.0		77.0	
Mode	Submerged	0.0		35.8		
	Exposed	58.6	43.7		77.0	
Total		43.9	43.7	35.8	77.0	49.4
c78bl:						
Mean	Submerged	-17.9	124.8	37.1		
	Exposed	0.0	0.0		22.1	
Median	Submerged	-56.8	187.3	37.1		
	Exposed	14.0	0.0		22.1	
Mode	Submerged	-194.7	231.4	37.1		
	Exposed	30.8	35.8		22.1	
Total		-14.3	74.9	37.1	22.1	22.3
c84br:						
Mean	Submerged	105.4	393.6	-9.9		
	Exposed	0.0	0.0		-0.6	
Median	Submerged	175.7	393.6	-9.9		
	Exposed	0.0	0.0		-0.6	
Mode	Submerged	263.6		-9.9		
	Exposed	0.0	196.8		-0.6	
Total		87.9	196.8	-9.9	-0.6	24.8
c84bl:						
Mean	Submerged	76.0	-11.1	-10.0		
	Exposed	0.0	59.6		29.7	
Median	Submerged	108.6	-11.1	-10.0		
	Exposed	18.0	59.6		29.7	
Mode	Submerged	162.2		-10.0		
	Exposed	13.9	17.2		29.7	
Total		63.3	17.2	-10.0	29.7	15.9