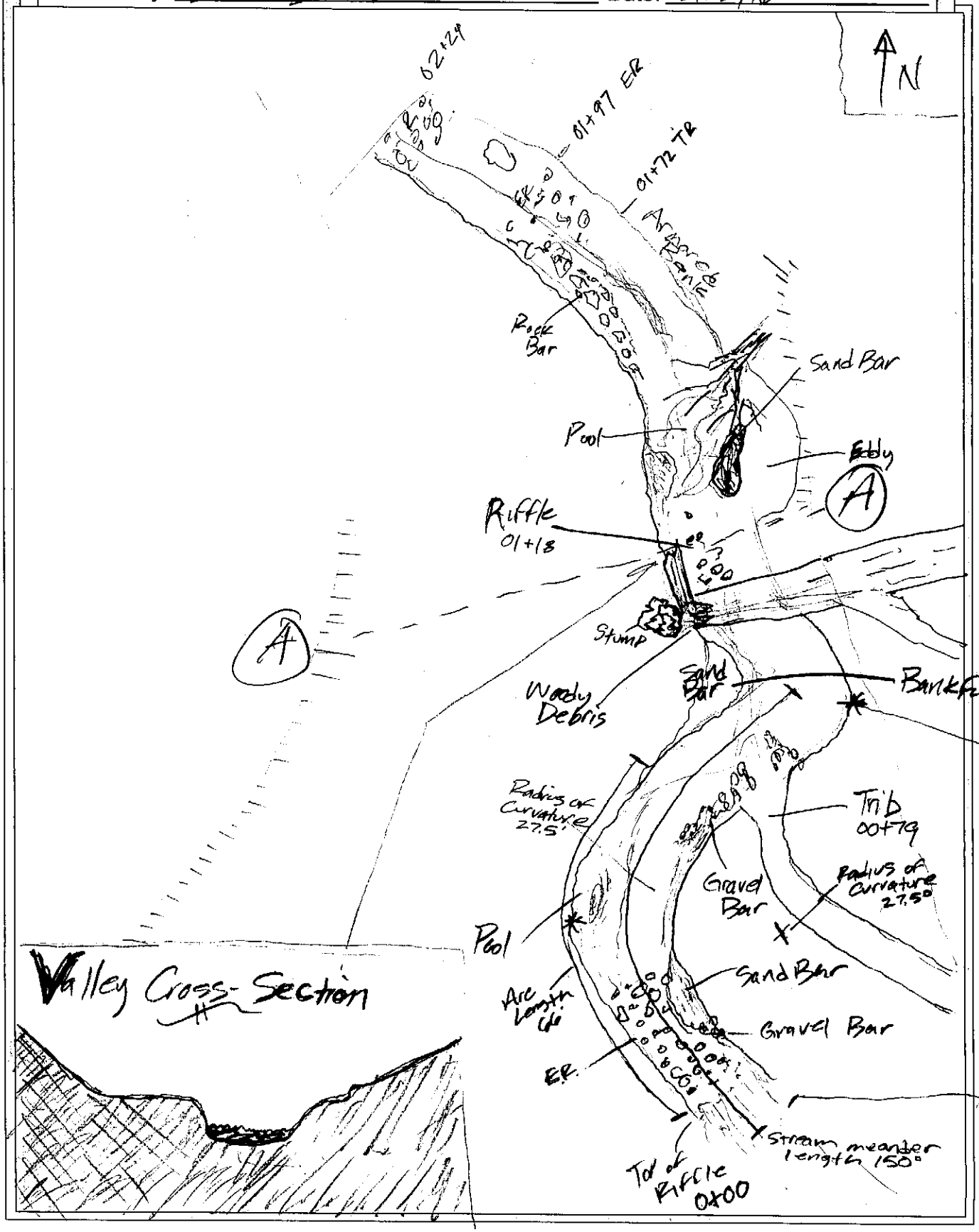
AREA-SITE LOCATION....REACH MAP

Stream: Sweet Run Reach: 01

Drawn By: Brian Bartos Date: 3/22/16



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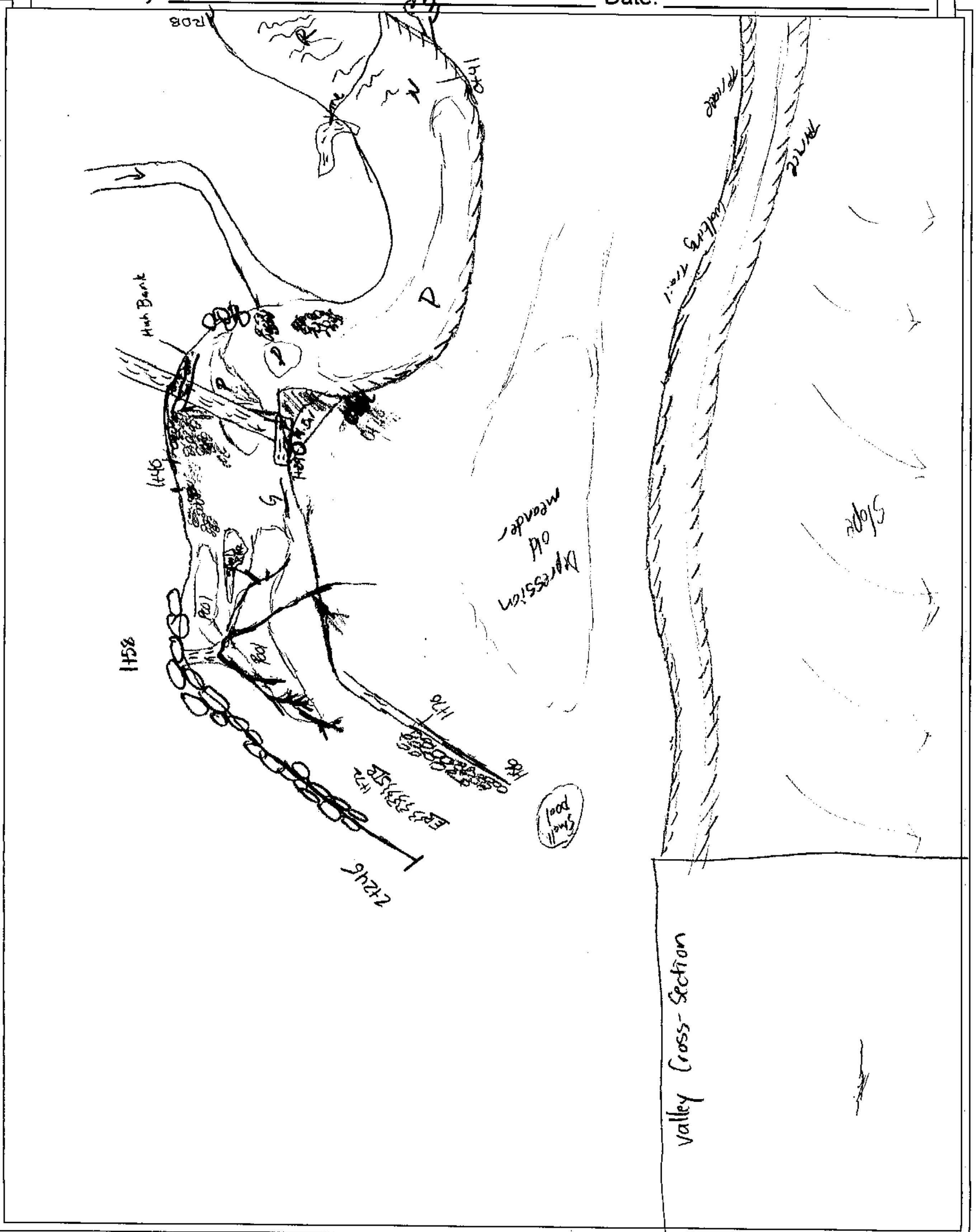
AREA-SITE LOCATION....REACH MAP

Stream: Sweet Run Reach:

Drawn By: Date:



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AREA-SITE LOCATION....REACH MAP

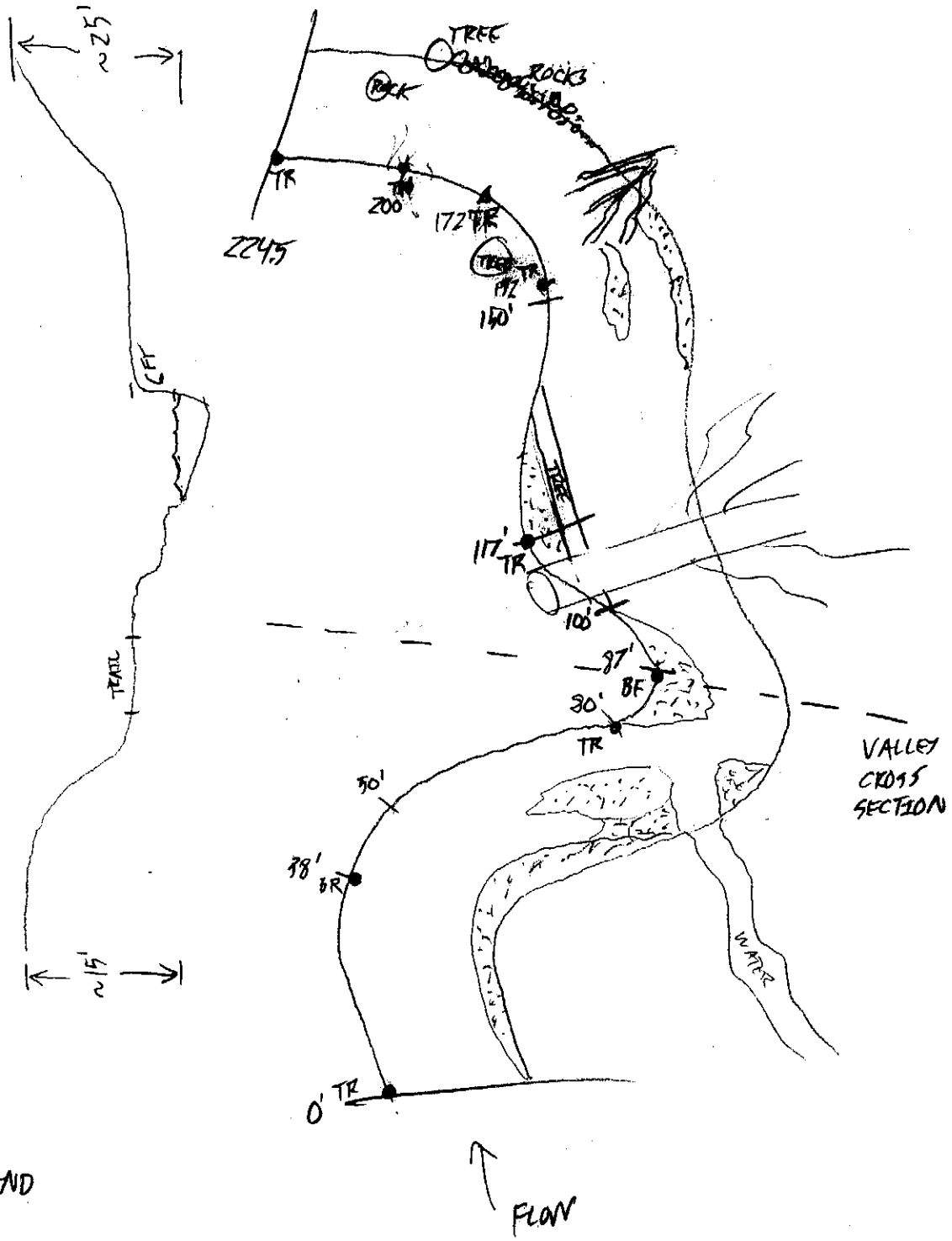
Stream: _____ Reach: _____

Drawn By: _____ Date: _____

REACH LENGTH = 224.5

BANKFULL WIDTH = 19.5

20x BANKFULL W = 390



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Geometry Measurements

Stream name/location: SWEET RUN – REACH 1 – UPSTREAM

Date: 22 MAR 2016 Team members: _____

Meander 1

Attribute	Measurement 1	Measurement 2	Measurement 3	Measurement 4	Measurement 5	Range	Average
Radius of Curvature **(R_c)**	27.5'						
Meander (Linear) Wavelength **(λ)**	86'						
Stream Meander Length **(L_m)**	150'						
Belt Width **(W_{blt})**	65.5'						
Arc Length **(A_L)**	66'						

Sinuosity

Stream length = 224.5

Valley length = 153.3

Sinuosity =

Geometry Measurements

Stream name/location: Sweet Run

Date: 3/22/16 Team members: Lindsey, Chris, Trisha

Meander at 1+58 · Stream meander length taken to downstream apex past stream reach

Attribute	Measurement 1	Measurement 2	Measurement 3	Measurement 4	Measurement 5	Range	Average
Radius of Curvature **(R_c)**	38 ft						
Meander (Linear) Wavelength **(λ)**	103.5 ft						
Stream Meander Length **(L_m)**	137 ft						
Belt Width **(W_{blt})**	110.5 ft						
Arc Length **(A_L)**	47.0 ft						

Sinuosity

Stream length =
Valley length =
Sinuosity =

SURVEY DATA ⟶ **CROSS - SECTION 1**

SITE: Sweet Run Reach 1 - Riffle **Date:** 3/23/16

Location: 0+00

Party / Notes: Shea, Kennedy, Bartos **HUC:**

Item	Distance, Point, or STATION (ft)	Back-Sight BS (ft)	Height of Instrument HI (ft)	Fore-Sight FS (ft)	Elevation (ft)	NOTES / COMMENTS / REMARKS
1		3.7	103.7		100	Re-bar bench mark # 0+00 R1
2	0.0			4.33		Top of left bank
3	1.5			5.10		Mid-left bank
4	2.5			5.98		Bottom left bank
5	4.0			6.30		Bank Shot - floodplain
6	6.0			6.43		Bankfull 6.43
7	7.5			7.51		water's edge left bank
8	9.0			7.63		Channel Shot (C.S)
9	11.0			7.59		C.S.
10	13.0			7.81		C.S.
11	14.5			7.83		C.S.
12	15.5			8.20		thalweg
13	17.0			7.80		C.S.
14	18.5			7.73		C.S
15	20.0			7.42		water's edge right bank
16	21.0			7.31		Mid-rt bank
17	22.5			5.91		Mid-rt bank
18	24.0			5.53		mid-rt bank
19	25.0			5.40		top rt bank (end of shot)
20				3.70	100	benchmark
21						
22						max depth 1.77x2
23						2x max 3.54
24						TW-2x 4.66
25						Flood-Prone W.=70.7
26						
27						Bankfull elevation 97.27
28						

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SURVEY DATA ⟹ **CROSS - SECTION 1**

SITE: Sweet Run **Date:** 3/22/16

Location: REACH 1 - POOL CROSS SECTION

Party / Notes: Aaron, Lindsey, Trisha **HUC:**

Item	Distance, Point, or STATION (ft)	Back-Sight BS (ft)	Height of Instrument HI (ft)	Fore-Sight FS (ft)	Elevation (ft)	NOTES / COMMENTS / REMARKS
1	BM	2.41	102.41			
2	0.00			3.50		L TOB LEFT TOP OF BANK
3	1.2			3.71		LB LEFT BANK
4	1.9			4.14		LB LEFT BANK
5	2.2			4.59		LB LEFT BANK
6	2.2			6.52		LEW LEFT EDGE OF WATER SURFACE
7	2.3			7.07		CHANNEL SHOT
8	~~4.0~~ 3.8			7.27		CHANNEL SHOT
9	4.5			7.48		CS
10	5.8			7.74		CS
11	6.6			7.90		CS
12	7.1			7.94		THALWEG
13	7.6			7.77		CS
14	8.2			7.54		CS
15	9.0			7.34		CS
16	9.7			7.12		CS
17	11.0			6.61		RIGHT EDGE OF WATER
18	12.6			6.17		RB
19	14.6			5.89		RB
20	16.7			5.85		RB
21	18.3			5.72		RB
22	19.4			~~5.00~~	5.51	RB
23	20.5			5.13		RB
24	22.7			4.73		RB
25	24.8			4.53		RB
26	26.5			4.21		RB
27	28.0			4.24		RB
28	VALIDATION	2.41				

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SURVEY DATA ⟶ **LONGITUDINAL PROFILE 1**

SITE: Sweet Run Date: 3/22/16

Location: Reach 1

Party / Notes: HUC:

	Distance, Point, or STATION (ft)	Back-Sight BS (ft)	Height of Instrument HI (ft)	Thalweg Fore-Sight FS (ft)	Thalweg Elevation Elev. (ft)	Water Surface Fore-Sight FS (ft)	Water Surface Elevation Elev. (ft)	Bankfull Fore-Sight FS (ft)	Bankfull Elevation Elev. (ft)	Low Bank HI Fore-Sight FS (ft)	Low Bank HI Elevation Elev. (ft)	NOTES e.g. Riffle Run Pool Glide
1	BM100	2.27	102.27									assumed! 100 elevation
2	2+24			8.17		7.63				LD 4.[illegible]		EN/TR
3	2+15			8.26		7.70				LD 4.33		MN
4	1+98			7.99		7.49				LD 4.18		TN/ER
5	1+86			7.72		7.30				LD 4.24		MR
6	1+67			7.70		7.04				LD 3.88		TR/EG
7	1+64			7.94		7.06				LD 3.91		MG
8	1+61			8.36		7.09				LD 3.90		TG/EP
9	1+56			8.29		7.00				3.84		DP
10	1+40			7.57		6.93				3.71		TP/BN
11	1+36			7.61		6.93				3.55		MN
12	1+31			7.56		6.90				3.57		TN/BR
13	1+23			7.21		6.80				3.29		MR
14												
15												
16												
17												
18												
19												
20												
21												
22												
23												
24												
25												
26												
27												

DP = deepest part of pool

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SURVEY DATA ⟹ **LONGITUDINAL PROFILE 2**

SITE: Sweet Run Reach 1 Date: 3-~~23~~ 22-16

Location:

Party / Notes: HUC:

	Distance, Point, or STATION ft	Back-Sight BS ft	Height of Instrument HI ft	Thalweg Fore-Sight FS ft	Thalweg Elevation Elev. ft	Water Surface Fore-Sight FS ft	Water Surface Elevation Elev. ft	Bankfull Fore-Sight FS ft	Bankfull Elevation Elev. ft	Low Bank HI Fore-Sight FS ft	Low Bank HI Elevation Elev. ft	NOTES e.g. Riffle Run Pool Glide
28	100	2,27	102,27									BM 1
29	0'00			6,60		6,11		4,98		4,98		TOR
30	0'26			6,71		6,21				3,83		MOR
31	0'35			6,81		6,40				4,18		TON
32	0'43			7,59		6,47				5,49		MON
33	0'49			7,84		6,51				4,07		TOP
34	0'56			7,76		6,55				4,25		MOP
35	0'62			7,62		6,54				4,25		TOG
36	0'73			7,08		6,53				5,43		MOG
37	0'80			7,00		6,57				6,27		TON — Mouth of Trib
38	0'84			7,25		6,58				4,64		MON — Low bank switches
39	0'86			7,67		6,59				4,64		TOP
40	0'87			7,77		6,73				4,64		MOP
41	0'88			7,57		6,63				4,64		TOG
42	0'88.5			7,19		6,63		5,76		4,64		TON/BOG
43	0'90			7,15		6,69				~~5,99~~ 3,99		MON
44	0'101			8,46		6,83				3,81		TOP
45	0'104			8,92		6,77				3,81		MOP — Tree
46	0'117			7,25		6,78				3,71		TOR
47												
48												
49												
50												
51												
52												
53												
54												

7,42 − 0,17 = 7,25

7,42 − 0,76 − 0,5 = ,17

8,46 − 1,63 = 6,83

8,92 − 2,15 = 6,77

7,61 − 0,30 = 7,31

0,86 − 0,56

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ROSGEN REPRESENTATIVE REACH PEBBLE COUNT

STREAM: Sweet Run	**DATE:** 3-23-16
REACH: 1	**CREW:** Aaron, Trisha, Lucas

PARTICLE TALLY COUNTS BY TRANSECT Bankfull Surface

ft	PARTICLE	mm		1	2	3	4	5	6	7	Count 8	Tot Both 9	10	Tot Pool	Tot Riff	Comb Tot	%CUM
	Silt/Clay	< .062	S/C			1	1	1		11	5	6					
	Very Fine	.062 - .125	S								Ø	1					
	Fine	.125 - .25	A				1		1		1	1					
	Medium	.25 - .50	N	1		11			11		5	7					
	Coarse	.50 - 1.0	D	1	11	111	111	111	111 1	1	19	20					
	Vry Coarse	1.0 - 2	S				11	111	11		7	8					
	Very Fine	2 - 4		1	1			1			3	3					
	Fine	4 - 6	G		1	1				1	3	4					
	Fine	6 - 8	R	1							1	3					
	Medium	8 - 12	A	1	1	1	1111			11	9	14					
	Medium	12 - 16	V				1	11		11	5	9					
	Coarse	16 - 24	E			1				1	2	5					
	Coarse	24 - 32	L							1	1	1					
	Vry Coarse	32 - 48	S	11		1					2	3					
	Vry Coarse	48 - 64									Ø	2					
0.21-0.31	Small	64 - 96	C	11	1						3	3					
0.31-0.42	Small	96 - 128	O	1	1						2	3					
0.42-0.63	Large	128 - 192	B	11	111					1	4	5					
0.63-0.84	Large	192 - 256	L								Ø	1					
0.84-1.26	Small	256 - 384	B									1					
1.26-1.68	Small	384 - 512	L									0					
1.68-3.36	Medium	512 - 1024	D									2					
3.36-6.72	Lrg	1024 - 2048	R									0					
6.72-13.43	Vry Lrg	2048-4096															
	Bedrock	>4096	BDRK														
		FEATURE SAMPLED															

	Length	Proportion	No. Units	Sampled
REACH				
POOL				
RIFFLE				
RUN				

Transect		Feature	Length	Width
L ✓ 1	219	RN		17
2	167	RN		17
R ✓ 3	135	RN		18.5
4	134	RN		15.0
L ✓ 5	131	RN		17.0
6	107	GP		12.0
R ✓ 7	81	RN		
8				
9				
10				

Wet to Wet

RIFFLE PEBBLE COUNT AND LARGEST PARTICLE ON BAR COUNT

STREAM: | **DATE:**

REACH: | **CREW:**

XS No.: | **Riffle Location (also mark on reach sketch):** Bankfull surface

Riffle surface — Particle Count → Reach wide (Recon) — TOTALS

ft	PARTICLE	mm		1	2	3	4	5		#194	#37	#76	TOTAL	10	Tot #	% Cum
	Silt/Clay	< .062	S/C						0			1	1			
	Very Fine	.062 - .125	S		1				1	1			1			
	Fine	.125 - .25	A		1			1	2							
	Medium	.25 - .50	N	11			11	1	5		1	1	2			
	Coarse	.50 - 1.0	D	1		1	1		3		1		1			
	Vry Coarse	1.0 - 2	S	1			11		3		1		1			
	Very Fine	2 - 4		1					1				0			
	Fine	4 - 6	G	1					1			1	1			
	Fine	6 - 8	R			1111			4	1		1	2			
	Medium	8 - 12	A	111	11	1		1	7	1	11	11	5			
	Medium	12 - 16	V	1	1111	11	111	1	11	1		111	4			
	Coarse	16 - 24	E	11	111	11	111	111	13	1	11		3			
	Coarse	24 - 32	L		11	1		111	6				0			
	Vry Coarse	32 - 48	S	1	1	1111	1111	111	14	1			1			
	Vry Coarse	48 - 64					1		1	1	1		2			
0.21-0.31	Small	64 - 96	C		11	1	111	11	8				0			
0.31-0.42	Small	96 - 128	O		1		1		2	1			1			
0.42-0.63	Large	128 - 192	B	11	1	11	1	111	9	1			1			
0.63-0.84	Large	192 - 256	L	1	1	111			5			1	1			
0.84-1.26	Small	256 - 384	B	1	111				4	1			1			
1.26-1.68	Small	384 - 512	L						0				0			
1.68-3.36	Medium	512 - 1024	D						0	11	11		2			
3.36-6.72	Lrg	1024 - 2048	R						0				0			
6.72-13.43	Vry Lrg	2048-4096							0				0			
	Bedrock	>4096	BDRK						0							

LARGEST PARTICLES ON BAR 17 22 21 22 18 → Reach wide Wetted

Bar Location (also mark on reach sketch):

Bar Length:
Bar Width (Thalweg - BF):
Sketch bar profile (Thalweg - BF)

Part. #	mm	Part. #	mm	Part. #	mm
1		6		11	
2		7		12	
3		8		13	
4		9		14	
5		10		15	

Worksheet 26. Bar sample form

Point / Side BAR-BULK MATERIALS SAMPLE DATA: Size Distribution Analysis

Party: Team 1

Location: Sweet Run

Date: 3-23-16

Notes:

SUB SAMPLES	Sieve SIZE <2mm		Sieve SIZE 2		Sieve SIZE 4		Sieve SIZE 8		Sieve SIZE 16		Sieve SIZE 32		Sieve SIZE		Sieve SIZE		Sieve SIZE	
	Tare Weight 1000g		Tare Weight 850g		Tare Weight 850g		Tare Weight 850g		Tare Weight		Tare Weight		Tare Weight		Tare Weight		Tare Weight	
	Sample Weights		Sample Weights		Sample Weights		Sample Weights		Sample Weights		Sample Weights		Sample Weights		Sample Weights		Sample Weights	
	Total	Net	Total	Net	Total	Net	Total	Net	Total	Net	Total	Net	Total	Net	Total	Net	Total	Net
1	193oz		86oz		96oz		74oz		37oz									
2	5471g		2438g		2722g		2098g		1049g									
3	~~85oz~~		~~325oz~~		~~324oz~~		~~84oz~~		80oz									
4					~~324oz~~		80g											
5																		
6																		
7																		
8																		
9																		
10																		
11																		
12																		
13																		
14																		
15																		
Net Wt. Total																		
% Grand Tot.																		
Accum. % =<																		

1

2

16 5/0

16 3/54

5.4 66 / 4.0

16 5 30

16 5 5/0

SURFACE MATERIALS DATA
(Two Largest Particles)

No.	Dia.	WT.
1		
2		

Bucket + Materials Weight_____

Bucket Tare Weight_____

Materials Weight_____
(Materials less than: _____mm.)

Be Sure to Add Separate Material Weights to Grand Total

GRAND TOTAL SAMPLE WEIGHT

NOTES

Riffle #2

Riffle Stability Index

Material	Size Range (mm)		Pebble Counts			% in Class	Cumulative
silt/clay	0	0.062					
very fine sand	0.062	0.13			~~Grand Total~~		
fine sand	0.13	0.25		2	2		
medium sand	0.25	0.5			~~8~~		
coarse sand	0.5	1		2	8		
very coarse sand	1	2		5	13		
very fine gravel	2	4		2	2		
fine gravel	4	6		3	4		
fine gravel	6	8		4	7		
medium gravel	8	11		2	7		
medium gravel	11	16		4	10		
coarse gravel	16	22		4	7		
coarse gravel	22	32		8	14		
very coarse gravel	32	45		4	11		
very coarse gravel	45	64		3	6		
small cobble	64	90		11	19		
medium cobble	90	128		8	12		
large cobble	128	180		3	9		
very large cobble	180	256		7	13		
small boulder	256	362		6	8		
small boulder	362	512		1	3		
medium boulder	512	1024			1		
large boulder	1024	2048					
very large boulder	2048	4096					

Total Particles =

Enter intermediate diameters (mm) of 10 – 30 particles on bar:

1	90	11		21	
2	81	12		22	
3	81	13		23	
4		14		24	
5		15		25	
6		16		26	
7		17		27	
8		18		28	
9		19		29	
10		20		30	

Geometric Mean Grain Size (mm) =

Riffle #3

Riffle Stability Index Lindsy, Lucas, Trisha

Material	Size Range (mm)		Pebble Counts		% in Class	Cumulative
silt/clay	0	0.062				
very fine sand	0.062	0.13				
fine sand	0.13	0.25				
medium sand	0.25	0.5				
coarse sand	0.5	1	6			
very coarse sand	1	2	8			
very fine gravel	2	4				
fine gravel	4	6	1			
fine gravel	6	8	3			
medium gravel	8	11	5			
medium gravel	11	16	6			
coarse gravel	16	22	3			
coarse gravel	22	32	6			
very coarse gravel	32	45	7			
very coarse gravel	45	64	3			
small cobble	64	90	8			
medium cobble	90	128	4			
large cobble	128	180	6			
very large cobble	180	256	6			
small boulder	256	362	2			
small boulder	362	512	2			
medium boulder	512	1024	1			
large boulder	1024	2048				
very large boulder	2048	4096				

Total Particles =

Transect Stations
173
176
179
182
185

~~1.5~~
1.5
~~1.5~~
~~.5~~
~~1.5~~
.5
1.5

Enter intermediate diameters (mm) of 10 – 30 particles on bar:

1	68	11	90	21	58
2	81	12	61	22	74
3	92	13	62	23	61
4	105	14	61	24	84
5	81	15	65	25	58
6	63	16	93	26	48
7	115	17	98	27	84
8	63	18	51	28	56
9	62	19	70	29	59
10	64	20	110	30	52

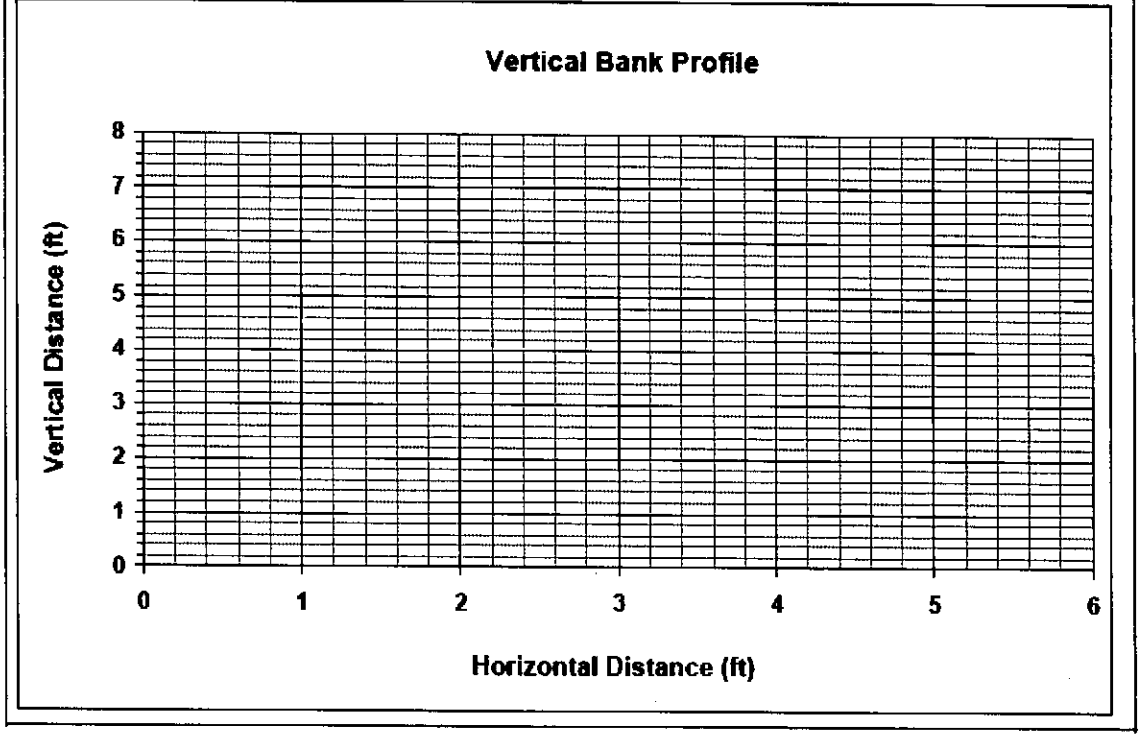
Geometric Mean Grain Size (mm) = 70.91 mm = 71

58.591

Worksheet 6-2. Bank profile and bank erosion summary data form.

Stream:	Observers:
Location:	Date:
Cross-section:	BEHI adjective:
Bank: #2	NBS adjective:
Toe pin station (ft):	Predicted erosion (ft):
Toe pin elevation (ft):	Measured erosion (ft):

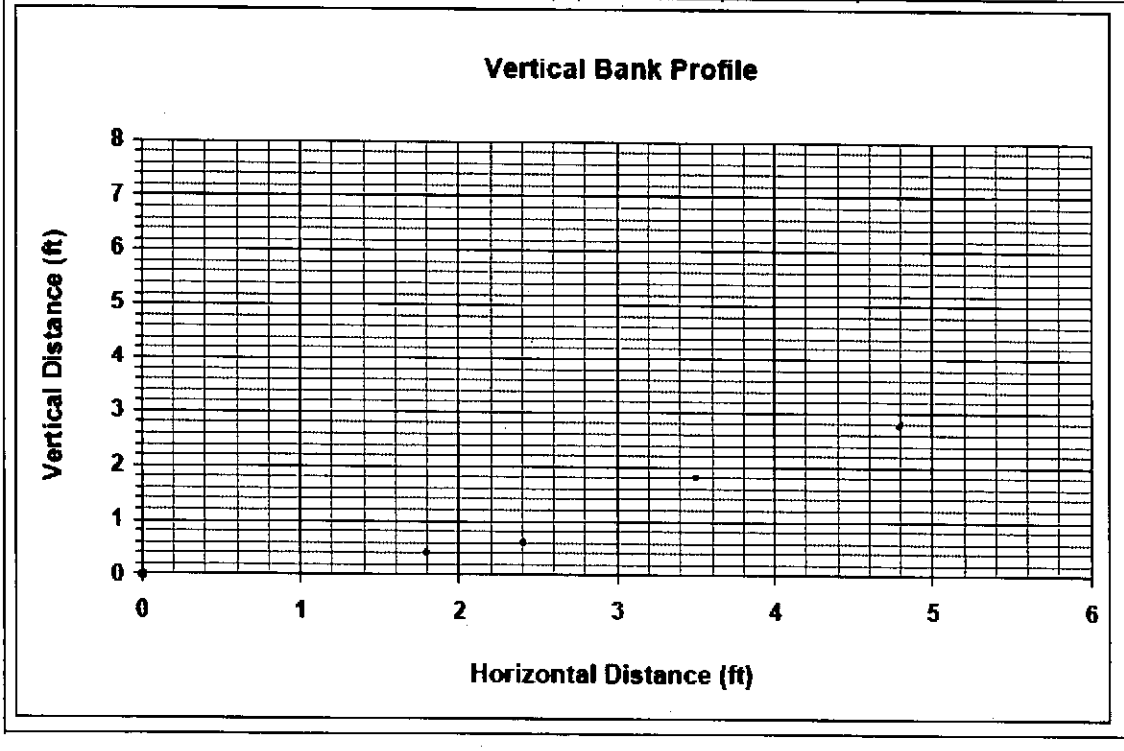
	Date:				Date:		
					2.57	4.09	
	0.0	0.0	1st point				
	[redacted]	[redacted]	mound rod				
	0.98	0.45					
	1.79	0.86					
	2.08	1.25					
	2.24	1.55					
	2.23	1.83					
	2.16	2.58					
	2.26	2.18	− +0.43				
−0.31	2.26	2.54	+0.71 + 2.11				
−0.57	1.95	2.85	+0.9				
−0.9	1.36	3.36	+1.25				
1.24	1.24	3.57	☆				
	1.50	3.79					
	1.91	3.94					



Worksheet 6-2. Bank profile and bank erosion summary data form.

Stream: Sweet Run	Observers:
Location:	Date:
Cross-section:	BEHI adjective:
Bank: #1	NBS adjective:
Toe pin station (ft):	Predicted erosion (ft):
Toe pin elevation (ft):	Measured erosion (ft):

Date:			Date:		
0	0	1st			
1.82	0.4				
2.38	0.65				
3.51	1.74	?			
4.75	2.81				
6.65	4.50				
7.43	5.40				
8.00	6.08				
9.01	6.36				



Field Data Sheet for Discharge Measurements

Stream Discharge Measurement Sheet

Site ID #: Sweet Run Downstream
Name and Location: Reach 1
Date: 3-24-16 Crew: L, Lucas, Brian, Chris

County:
Weather:
Cross-section Location: Upstream of trib. @ 74 ft.
Meter: Hach

Station	Width	Depth	Area (Width x Depth)	Run Length	Secs	Velocity (fs)	Average Velocity Use with 2pt method (0.2+0.8)/2	Discharge (Area x Velocity) (cfs)
0.25	0.55	0.45	0.23			0.06		0.07
0.75	0.5	0.7	0.35			0.46		0.16
1.25	0.5	0.6	0.30			0.89		0.27
1.75	0.5	0.6	0.30			1.01		0.30
2.25	0.5	0.6	0.30			1.04		0.31
2.75	0.5	0.5	0.25			0.88		0.22
3.25	0.5	0.5	0.25			0.96		0.24
3.75	0.5	0.5	0.25			0.94		0.24
4.25	0.5	0.45	0.23			0.88		0.20
4.75	0.5	0.4	0.20			0.75		0.15
5.25	0.5	0.4	0.20			0.80		0.16
5.75	0.5	0.2	0.10			0.34		0.03

Total Discharge: 2.29 CFS (oMeasured, o Estimated)

Comments:

Field Data Sheet for Discharge Measurements

Stream Discharge Measurement Sheet

Site ID #: 74 ft Downstream
Name and Location: Sweet Run - Reach 1
Date: 3/24/16 Crew: Lindsay, Aaron, Trisha

County: _____
Weather: _____
Cross-section Location: _____
Meter: _____

Station	Width	Depth (ft)	Area (Width x Depth)	Run Length	Secs	Velocity (fs)	Average Velocity Use with 2pt method (0.2+0.8)/2	Discharge (Area x Velocity) (cfs)
0.5	0.5	0.5	.25			.08		0.02
1.0		0.61	.305			.24		0.0732
1.5		0.7	.35			.67		0.2345
2.0		0.62	.310			.85		0.2635
2.5		0.60	.30			.93		0.279
3.0		0.55	.275			.97		0.2668
3.5		0.5	.25			.83		0.2075
4.0		0.42	.210			.91		0.1911
4.5		0.42	.210			.83		0.1743
5.0		0.42	.210			.71		0.1491
5.5		0.38	.190			.64		0.1216
6.0		0.3	.150			.36		0.054
6.5								~~1.943~~
7.0							Total	2.0346
7								

Total Discharge: 2.03 CFS (oMeasured, o Estimated)

Comments:

.61 .5 .305 .62 .5 310
.55 .5 275 .42 .5 210

Field Data Sheet for Discharge Measurements

Stream Discharge Measurement Sheet

Site ID #: _____
Name and Location: Sweet Run - Reach #1, upstream
Date: 3/24/16 Crew: _____

County: Loudon
Weather: Sunny, 75°
Cross-section Location: _____
Meter: _____

Station	Width	Depth	Area (Width x Depth)	Run Length	Secs	Velocity (fs)	Average Velocity Use with 2pt method (0.2+0.8)/2	Discharge (Area x Velocity) (cfs)
2.5	0.5	0.40	0.2			0.17		0.034
3.0	0.5	0.38	0.19			0.15		0.029
3.5	0.5	0.42	0.21			0.39		0.082
4.0	0.5	0.40	0.20			0.36		0.072
4.5	0.5	0.40	0.20			0.39		0.078
5.0	0.5	0.30	0.15			0.36		0.05
5.5	0.5	0.30	0.15			0.33		0.05
6.0	0.5	0.30	0.15			0.59		0.09
6.5	0.5	0.34	0.17			0.53		0.09
7.0	0.5	0.34	0.17			0.51		0.09
7.5	0.5	0.35	0.18			0.54		0.10
8.0	0.5	0.38	0.19			0.70		0.13
8.5	0.5	0.40	0.20			0.85		0.17
9.0	0.5	0.40	0.20			0.99		0.20
9.5	0.5	0.42	0.21			1.11		0.23
10.0	0.5	0.46	0.23			0.84		0.19
10.5	0.5	0.44	0.22			0.71		0.16
11.0	0.5	0.42	0.21			0.99		0.21
11.5	0.5	0.40	0.20			0.72		0.14
12.0	0.5	0.25	0.13			0.48		0.06
—	—	0.20	—			— Ø		—

Total Discharge: 2.255 CFS (oMeasured, o Estimated)

Comments:

Field Data Sheet for Discharge Measurements

Stream Discharge Measurement Sheet

13

Site ID #: 9 ft Upstream
Name and Location:
Date: Crew: Lindsay, Aaron, Tisha

County:
Weather:
Cross-section Location:
Meter:

TAKEN AT 3RD FULL READING

Station	Width	Depth	Area (Width x Depth)	Run Length	Secs	Velocity (fs)	Average Velocity Use with 2pt method (0.2+0.8)/2	Discharge (Area x Velocity) (cfs)
2.1 2.4 2.35	0.5	0.40	0.2			0.16		0.032
2.7 3.0 2.85		0.37	0.185			0.28		0.0518
3. 3.6 3.35		0.32	0.16			~~0.49~~ 0.42		0.0672
4.2 3.85		0.31	0.155			~~0.46~~ 0.44		0.0682
4.8 4.35		0.40	0.2			~~0.73~~ 0.33		0.066
5.4 4.85		0.29	0.145			~~0.37~~ 0.26		0.0377
6.0 5.35		0.29	0.145			0.37		0.05365
6.6 5.85		0.30	0.15			0.51		0.0765
7.2 6.35		~~0.35~~ 0.28	0.14			0.33		0.0462
7.8 6.85		0.28	0.14			0.68		0.0952
8.4 7.35		0.35	0.175			0.47		0.08225
9.0 7.85		0.32	0.16			0.73		0.1168
9.6 8.35		0.36	0.18			0.81		0.1458
10.2 8.85		0.40	0.20			0.92		0.184
10.8 9.35		0.44	0.22			1.07		0.2354
11.4 9.85		0.45	0.225			0.88		0.198
12.0 10.35		0.45	0.225			0.70		0.1575
12.6 10.85		0.40	0.2			0.87		0.174
11.35		0.36	0.18			0.77		0.1386
11.85		0.25	0.125			0.44		0.055
12.35		0.15	0.075			0.00		0
12.85								

Total Discharge: 2.08 CFS (oMeasured, o Estimated) 2.0818

Comments:

Stream Sweet Run Location: Reach #1 Team: #1

Systematic transects spaced at 2 mean stream widths intervals. *Velocity*, *Depth*, *Substrate*, and *Embeddedness* measurements taken at points 0.25, 0.5, and 0.75 wetted stream width of transect. Four substrate measurements taken at each observation point. Measurements taken from left descending bank to right descending bank

Silt (<0.062) = 1, Sand (0.062 - 2 mm) = 2, Gravel (fine; 2 – 16 mm) = 3, Gravel (coarse or "Pebble"; 17 – 63 mm) = 4, Cobble (64 – 256 mm) = 5, Boulder (256 – 4,096 mm) = 6, Bedrock (> 4,096 mm)

Embeddedness: **1** = <5%, **2** = 5 – 25%, **3** = 26 – 50%, **4** = 51 – 75%, **5** > 75%

Canopy presence/absence: taken with tube densiometer at 10 evenly spaced points per transect; P = 1.

Strip transect: *Instream cover* (2 foot intervals); >10 cm = 2 surfaces, <10 cm = 1 surface, <3 cm apart = 1 surface, > 3 cm apart = 2 surfaces; *Structural complexity* (6 foot intervals)

At each end of transect: *Bank angle* (taken with clinometer), *Riparian cover* density (taken with spherical densiometer)

Distance (feet)	Wetted Width	Velocity (ft/sec)	Depth (inches)	Substrate	Embedded	Bank angle L R	Instr Cover	Mesohabitat Type	Rip density L R	Canopy P/A
45ft 25% 2.6ft	10.5	ϕ	ϕ.17	5 5 1 2	5	L = 128% R = 15%	2 2 1 1 0 Total = 6	Pool Lateral Scour	L = 15 R = 17	P P P P P P P P P P P P=10
45ft 50% 5.2 ft	10.5	ϕ.ϕ5	ϕ.88	2 4 6 6	4					
45ft 75% 7.8ft	10.5	ϕ.38	ϕ.5ϕ	2 2 2 2	N/A					

Stream Sweet Run Location: Reach 1 Team: 1-Lucas, Brian, Chris

1) Extend both ends of the systematic transects for instream habitat to bankful locations. Where transect intercepts bankful location, center a 1 x 5 m quadrat perpendicular to the transect, with the bankful line marking the center of the streamside quadrat boundary. Make hardwood stem density counts just above ground level within each 1 x 5 m quadrat.
2) Extend both ends of the systematic transects for instream habitat 5 m into the riparian zone. Use a cruise prism to estimate area of board feet per acre via "point sampling". Multiply "in trees" by 10 to estimate basal area per acre in square feet.*

Distance (feet)	L or R Bank	Stem Density (#)	Point Sample # of "In" Trees	Basal Area (ft^2/acre)	L or R Bank	Stem Density (#)	Point Sample # of "In" Trees	Basal Area (ft^2/acre)
45 ft	R	19	20	20	L	12	8	80

The prism is held a comfortable distance away from the eye with the bottom edge parallel to the ground, and trees are sighted through the prism approximately 4.5 ft. above the ground. A tree is an "in" tree if the offset section of the tree overlaps the bole. A tree where the offset section of the trunk is perfectly aligned with the original bole is a borderline tree and commonly in practice, every other borderline tree is counted. A tree where the offset section of the tree does not overlap or touch the original bole is an "out" tree and is not counted. Basal area is estimated by multiplying the count of "in" trees at a given point by the 'factor' of the prism.

D.90: 310 D50: 56 25% 50% 75% Transect

Stream _____ Location: _____ Team: TEAM 1

Systematic transects spaced at 2 mean stream widths intervals. *Velocity*, *Depth*, *Substrate*, and *Embeddedness* measurements taken at points 0.25, 0.5, and 0.75 wetted stream width of transect. Ten substrate measurements taken at each observation point, centered on observation point. Measurements taken from left descending bank to right descending bank

Silt (<0.062) = 1, Sand (0.062 - 2 mm) = 2, Gravel (fine; 2 – 16 mm) = 3, Gravel (coarse or "Pebble"; 17 – 63 mm) = 4, Cobble (64 – 256 mm) = 5, Boulder (256 – 4,096 mm) = 6, Bedrock (> 4,096 mm)

25,50,75 *Embeddedness*: Best **1** = <5%, **2** = 5 – 25%, **3** = 26 – 50%, **4** = 51 – 75%, **5** > 75% Worst

least seds

Canopy presence/absence: taken with tube densiometer at 10 evenly spaced points per transect; P = 1.

Strip transect: *Instream cover* (2 foot intervals); >10 cm = 2 surfaces, <10 cm = 1 surface, <3 cm apart = 1 surface, > 3 cm apart = 2 surfaces;

multi-wood plant

At each end of transect: *Bank angle* (taken with clinometer), *Riparian cover* density (taken with spherical densiometer)

Distance (feet)	Wetted Width	Velocity (ft/sec)	Depth (~~inches~~) ft	Substrate – convert to categories	Embedded optional	Bank angle L	Bank angle R	Instream Cover	Mesohabitat Type	Rip density L (# out of 17)	Rip density R (# out of 17)	Canopy P/A (out of 10)
25%	2.3	0.24	0.32	85, 121, 149, 340	2			2		16	14	P A
20 50%	9.3 4.65	1.22	0.30	Med sand, 80, 290, 134	2	90°	5°	0 TOTAL = 4	RIFFLE			~~IIII~~ ~~IIII~~
75%	6.97	0.34	0.30	53, 26, 6, 43	3	TRANSECT INTERSECTS LARGE TREE ROOTS		2 $\frac{4}{9.3}$ = 0.43				

20ft 45ft 75ft

Sub from 180 (undercut bank)

90 - vertical
>90 - undercut
<90 gentle slope

Stream Sweet Run- Reach 1 Location: Reach 1 Team: Lindsay, Aaron, Trisha

1) Extend both ends of the systematic transects for instream habitat to bankful locations. Where transect intercepts bankful location, center a 1 x 5 m quadrat perpendicular to the transect, with the bankful line marking the center of the streamside quadrat boundary. Make hardwood stem density counts just above ground level within each 1 x 5 m quadrat.
2) Extend both ends of the systematic transects for instream habitat 5 m into the riparian zone. Use a cruise prism to estimate area of board feet per acre via "point sampling". Multiply "in trees" by 10 to estimate basal area per acre in square feet.*

10 x factor on prism

Distance (feet)	L or R Bank	Stem Density (#)	Point Sample # of "In" Trees	Basal Area (ft^2/acre)	L or R Bank	Stem Density (#)	Point Sample # of "In" Trees	Basal Area (ft^2/acre)
20	R	3	IIII TRIAL 1 III TRIAL 2	50 TRIAL 1 30 TRIAL 2				
20	L	10	IIII IIII	100				

The prism is held a comfortable distance away from the eye with the bottom edge parallel to the ground, and trees are sighted through the prism approximately 4.5 ft. above the ground. A tree is an "in" tree if the offset section of the tree overlaps the bole. A tree where the offset section of the trunk is perfectly aligned with the original bole is a borderline tree and commonly in practice, every other borderline tree is counted. A tree where the offset section of the tree does not overlap or touch the original bole is an "out" tree and is not counted. Basal area is estimated by multiplying the count of "in" trees at a given point by the 'factor' of the prism.

Worksheet A-1. Field Form for Level II Stream Classification.

Stream: Sweet Run	
Basin: Potomac	Drainage Area: acres 2,122 mi²
Location: 39.2835°N -77.74147°W	
Twp.&Rge:	Sec.&Qtr.:
Cross-Section Monuments (Lat./Long.):	Date: 3/25/16
Observers: Team 1	Valley Type:

Bankfull WIDTH (W_{bkf}) WIDTH of the stream channel at bankfull stage elevation, in a riffle section.	15.9	ft
Bankfull DEPTH (d_{bkf}) Mean DEPTH of the stream channel cross-section, at bankfull stage elevation, in a riffle section ($d_{bkf} = A_{bkf} / W_{bkf}$).	1.16	ft
Bankfull X-Section AREA (A_{bkf}) AREA of the stream channel cross-section, at bankfull stage elevation, in a riffle section.	18.5	ft²
Width/Depth Ratio (W_{bkf} / d_{bkf}) Bankfull WIDTH divided by bankfull mean DEPTH, in a riffle section.	13.71	ft/ft
Maximum DEPTH (d_{max}) Maximum depth of the bankfull channel cross-section, or distance between the bankfull stage and Thalweg elevations, in a riffle section.	1.8	ft
WIDTH of Flood-Prone Area (W_{fpa}) Twice maximum DEPTH, or ($2 \times d_{mbkf}$) = the stage/elevation at which flood-prone area WIDTH is determined in a riffle section.	70.7	ft
Entrenchment Ratio (ER) The ratio of flood-prone area WIDTH divided by bankfull channel WIDTH (W_{fpa} / W_{bkf}) (riffle section).	4.45	ft/ft
Channel Materials (Particle Size Index) D_{50} The D_{50} particle size index represents the median or dominant diameter of channel materials, as sampled proportionately from the channel surface, between the bankfull stage and Thalweg elevations.	36	mm
Water Surface SLOPE (S) Channel slope = "rise over run" for a reach approximately 20–30 bankfull channel widths in length, with the "riffle-to-riffle" water surface slope representing the gradient at bankfull stage.	0.0068	ft/ft
Channel SINUOSITY (k) Sinuosity is an index of channel pattern, determined from a ratio of stream length divided by valley length (SL / VL); or estimated from a ratio of valley slope divided by channel slope (S_{val} / S).	1.46	

Stream Type C4 **See Classification Key (Figure A-2)**

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