APPENDIX E – HILTON RUN
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HILTON RUN, ST. MARY'S COUNTY, MD

Drainage Area (sq. mi.):	2.40	Rosgen Stream Type:	E4
Stream Order:	2	Survey Date:	March 2005
Percent Imperviousness:	18.6		

Land Use (%): Residential: 21.76 Agricultural: 10.76 Forest: 57.31 Commercial: 10.17

General Study Reach Description: The study reach is located on private property approximately 4500 feet upstream of Point Lookout Road. The gravel bed stream is vertically and laterally stable with riffle/pool features. Both the pool and riffle features contain woody debris. There are few depositional features in the channel. The floodplain consists of forested wetlands, which results in the reach having undulating banks and several locations in which drainage from the wetlands enters the channel. The floodplain is densely forested with a canopy of tulip poplar, red maple, and oak. The understory consists of a sparse layer of holly and greenbrier. Map and GPS coordinates are not provided for sites located on private property.

Photo 1. Looking downstream from top of study reach.

Photo 2. Looking downstream from monumented Cross Section 4

Photo 3. Looking downstream at bottom of study reach.

Photo 4. Downstream view of monumented Cross Section 1.

Photo 5. Upstream view of monumented classification Cross Section 2.

Photo 6. Downstream view of monumented Cross Section 3.

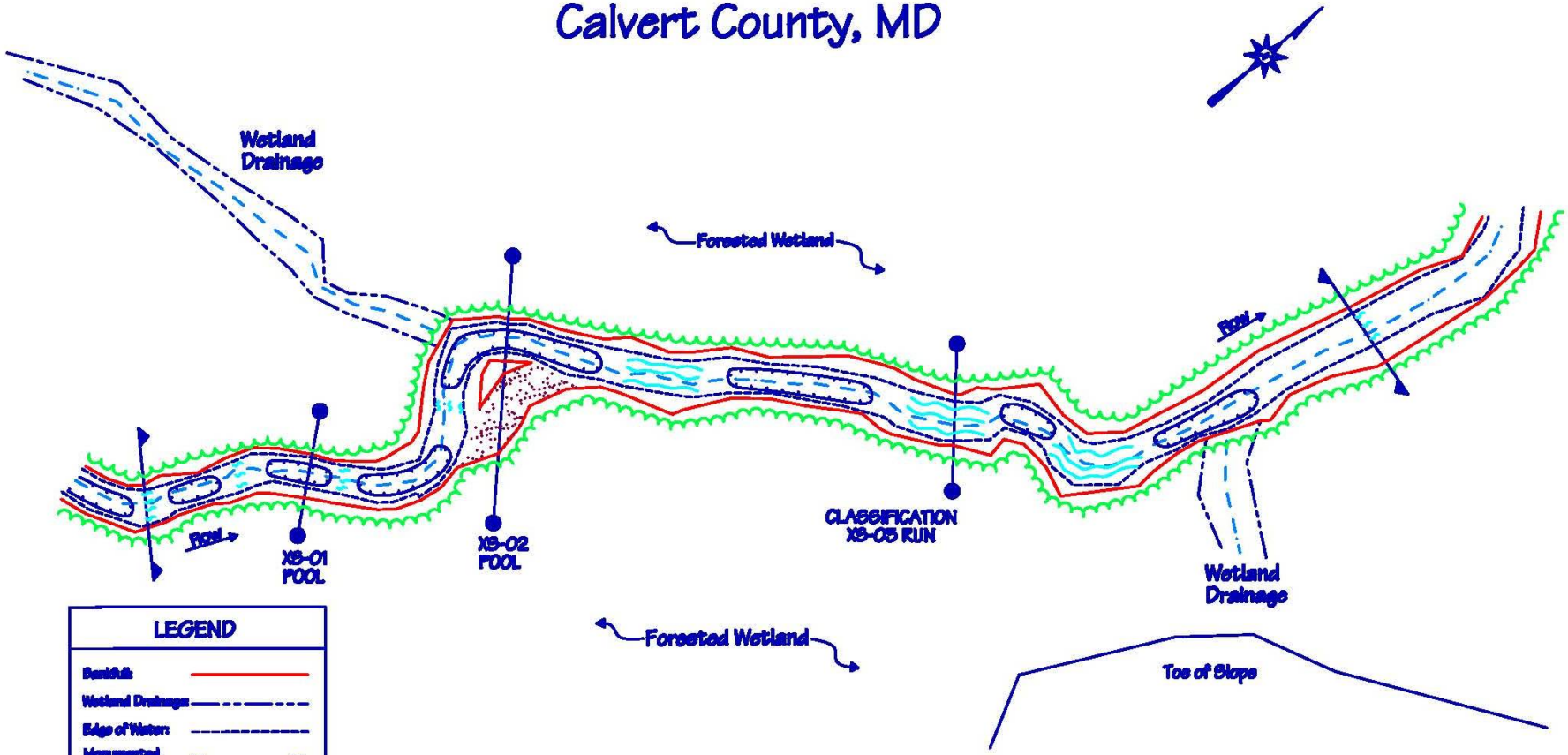
Photo 7. Downstream view of monumented Cross Section 4.

Photo 8. Upstream view of monumented Cross Section 5.

Cross Section Summary Table

	Monumented				
	XS-01 Pool	**XS-02 Classification Riffle**	**XS-03 Riffle**	**XS-04 Pool**	**XS-05 Riffle**
Bankfull Width (ft)	17.10	10.31	13.09	11.21	12.34
Bankfull Cross-sectional Area (ft^2)	38.69	18.33	21.35	21.91	25.85
Hydraulic Radius (ft)	1.77	1.27	1.32	1.24	1.51
Mean Bankfull Depth (ft)	2.26	1.78	1.63	1.95	2.09
Maximum Bankfull Depth (ft)	2.97	2.65	2.50	2.77	2.78
Wetted Perimeter (ft)	21.90	14.43	16.19	17.71	17.10
Width/Depth Ratio	7.57	5.79	8.03	5.75	5.90
Entrenchment Ratio	N/A	22.21	N/A	N/A	N/A

PLUM POINT CREEK
Calvert County, MD

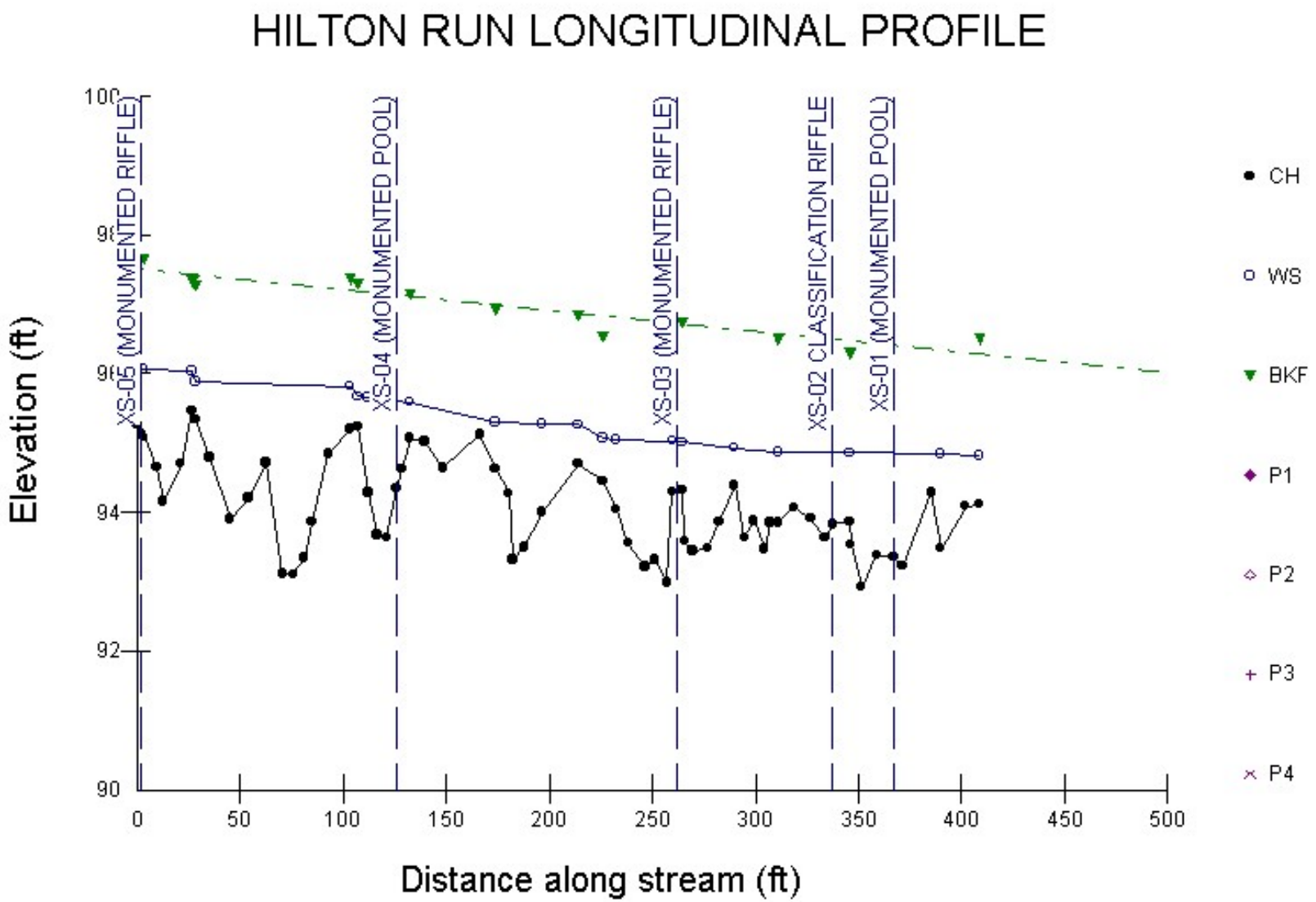


LEGEND

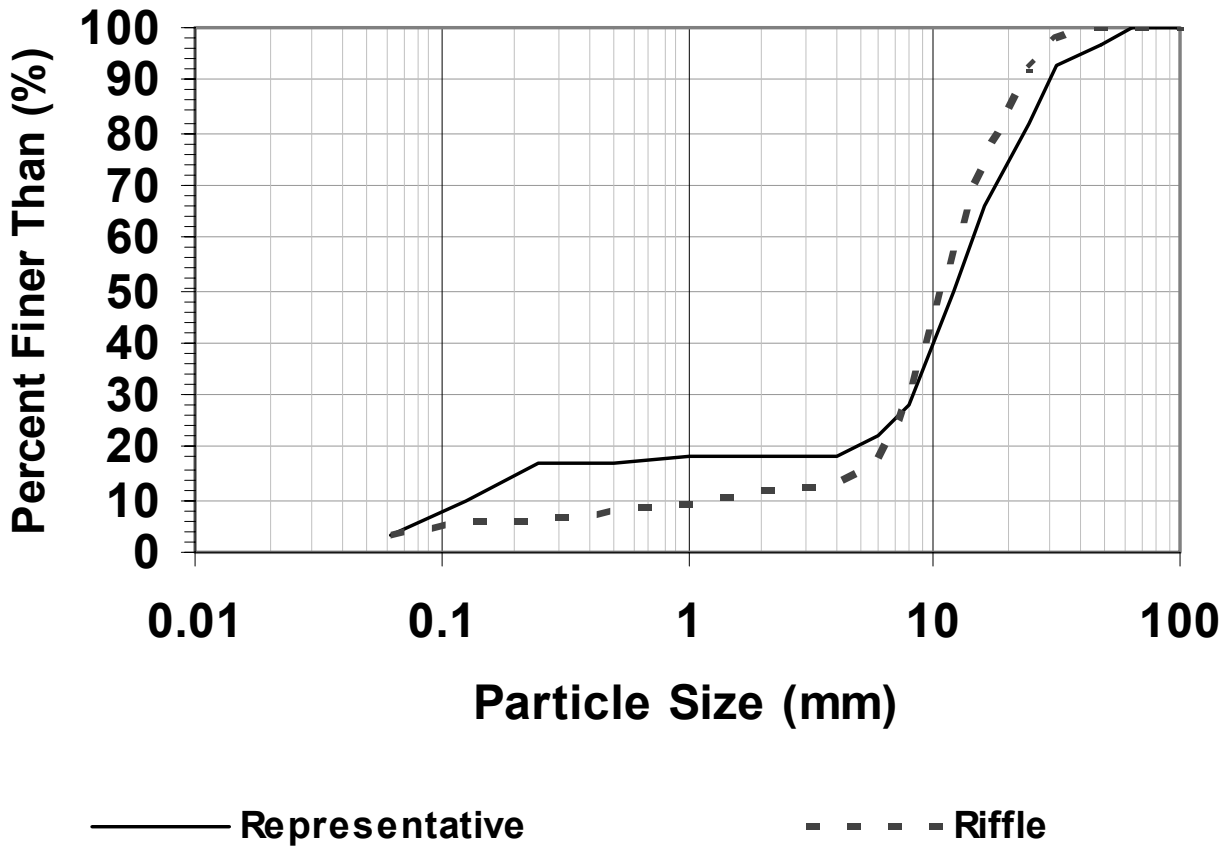
- Bankfull
- Wetland Drainage
- Edge of Water
- Monumented Cross-section
- Thalweg
- Riffle
- Run
- Pool
- Treeline
- Bar
- Large Woody Debris
- Study Reach End Point

Survey Dates: 03/10/04 & 03/12/04
Study Reach Length: 472'

Scale (ft): 0 25 50 100


HILTON RUN LONGITUDINAL PROFILE
Elevation (ft)
Distance along stream (ft)
XS-05 (MONUMENTED RIFFLE)
XS-04 (MONUMENTED POOL)
XS-03 (MONUMENTED RIFFLE)
XS-02 CLASSIFICATION RIFFLE
XS-01 (MONUMENTED POOL)
CH
WS
BKF
P1
P2
P3
P4
100
98
96
94
92
90
0
50
100
150
200
250
300
350
400
450
500

Hilton Run Particle Size Distribution



Reference Reach Data Summary

No.	Variable	Symbol	Units		Hilton Run
1	Stream type				E4
2	Drainage area		mi^2		2.40
3	Riffle Bankfull width	W_{bkf}	feet	Mean	11.91
				Min	10.31
				Max	13.09
4	Riffle Bankfull mean depth	d_{bkf}	feet	Mean	1.83
				Min	1.63
				Max	2.09
5	Width depth ratio	W/d		Mean	6.58
				Min	5.79
				Max	8.03
6	Riffle Bankfull cross sectional area	A_{bkf}	ft_2	Mean	21.84
				Min	18.33
				Max	25.85
7	Pool Bankfull cross sectional area	A_{pool}	ft_2	Mean	29.31
				Min	21.91
				Max	38.69
8	Riffle Bankfull maximum depth	d_{max}	feet	Mean	2.64
				Min	2.50
				Max	2.78
9	Max Riffle depth/ Mean riffle depth	d_{riff}/d_{bkf}		Mean	1.49
				Min	1.40
				Max	1.56
10	Low bank height to max d_{bkf} ratio	LBH/d_{riff}		Mean	1.00
				Min	N/A
				Max	N/A
11	Width of flood prone area	W_{fpa}	feet	Mean	229
				Min	N/A
				Max	N/A
12	Entrenchment Ratio	W_{fpa}/W_{bkf}		Mean	22.21
				Min	N/A
				Max	N/A
13	Meander Length	L_m	feet	Mean	104.87
				Min	61.96
				Max	132.16
14	Ratio of meander length to bankfull width	L_m/W_{bkf}		Mean	10.17
				Min	6.01
				Max	12.82
15	Radius of curvature	R_c	feet	Mean	27.10
				Min	18.60
				Max	43.08
16	Ratio: Radius of curvature to bankfull width	R_c/W_{bkf}		Mean	2.63
				Min	1.80
				Max	4.18
17	Belt Width	W_{blt}	feet	Mean	83.02
				Min	33.02
				Max	133.02
18	Meander width ratio	W_{blt}/W_{bkf}		Mean	8.05
				Min	3.20
				Max	12.90

Reference Reach Data Summary

No.	Variable	Symbol	Units		Hilton Run
19	Sinuosity	K			1.60
20	Valley Slope	S_{val}	ft/ft		0.0050
21	Average Water Surface Slope	S_{avg}	ft/ft		0.0031
22	Pool Water Surface Slope	S_{pool}	ft/ft	Mean	0.0017
				Min	0.0004
				Max	0.0031
23	Pool WS slope / Average WS slope	S_{pool}/S_{avg}		Mean	0.55
				Min	0.13
				Max	1.01
24	Riffle Water Surface slope	Sriff	ft/ft	Mean	0.0047
				Min	0.0030
				Max	0.0071
25	Riffle WS slope / Average WS slope	S_{riff}/S_{avg}		Mean	1.51
				Min	0.97
				Max	2.27
26	Run WS Slope	S_{run}/S_{avg}	ft/ft	Mean	0.0022
				Min	0.0012
				Max	0.0037
27	Run WS slope / Average WS slope	S_{run}/S_{avg}	ft/ft	Mean	0.69
				Min	0.39
				Max	1.19
28	Glide WS Slope	S_{glide}		Mean	0.0013
				Min	0.0006
				Max	0.0025
29	Glide WS slope / Average WS slope	S_{glide}/S_{avg}	ft/ft	Mean	0.43
				Min	0.19
				Max	0.80
30	Maximum pool depth	d_{pool}	feet	Mean	3.59
				Min	3.25
				Max	4.19
31	Ratio of max pool depth to average bankfull depth	d_{pool}/d_{bkf}		Mean	2.02
				Min	1.83
				Max	2.35
32	Max Run Depth	d_{run}	feet	Mean	2.48
				Min	2.35
				Max	2.62
33	Ratio of max run depth to average bankfull depth	d_{run}/d_{bkf}		Mean	1.39
				Min	1.32
				Max	1.47
34	Max Glide Depth	d_{glide}	feet	Mean	2.35
				Min	2.19
				Max	2.55
35	Ratio of max glide depth to average bankfull depth	d_{glide}/d_{bkf}	feet	Mean	1.32
				Min	1.23
				Max	1.43

Reference Reach Data Summary

No.	Variable	Symbol	Units		Hilton Run
36	Pool length	L_{pool}	feet	Mean	39.85
				Min	17.02
				Max	74.79
37	Ratio of pool length to bankfull width	L_{pool}/W_{bkf}	feet	Mean	3.87
				Min	1.65
				Max	7.25
38	Pool width	W_{pool}	feet	Mean	12.67
				Min	10.75
				Max	17.10
39	Ratio of pool width to bankfull width	W_{pool}/W_{bkf}		Mean	1.23
				Min	1.04
				Max	1.66
40	Ratio of pool area to bankfull area	A_{pool}/A_{bkf}		Mean	1.60
				Min	1.20
				Max	2.11
41	Point bar slope	S_{pb}	ft/ft	Mean	N/A
				Min	N/A
				Max	N/A
42	Pool to pool spacing	p-p	feet	Mean	58.75
				Min	41.73
				Max	80.07
43	Ratio of pool to pool spacing to bankfull width	$p\text{-}p/W_{bkf}$		Mean	5.70
				Min	4.05
				Max	7.77
Materials					
44	Particle Size Distribution - Channel	D_{16}	mm		0.23
		D_{35}	mm		9.05
		D_{50}	mm		11.30
		D_{84}	mm		24.31
		D_{95}	mm		38.50
45	Particle Size Distribution - Riffle	D_{16}	mm		5.34
		D_{35}	mm		8.63
		D_{50}	mm		10.42
		D_{84}	mm		19.43
		D_{95}	mm		27.22
46	Particle Size Distribution - Bar	D_{16}	mm		N/A
		D_{35}	mm		N/A
		D_{50}	mm		N/A
		D_{84}	mm		N/A
		D_{95}	mm		N/A
47	Largest Particle Size		mm		N/A

USFWS-SHARP COARSE WOODY DEBRIS	
Stream: Hilton Run	Page 1 of 1
Reach: Reference Reach	Date: 6/3/2005
adapted from E.G. Robinson and R.L. Beschta. 1990	Crew: MAS & SD

Survey total = Number of LWD pieces greater than 0.65 ft (20 cm) in diameter (small end) and 4.9 ft (1.5 m) in length

Reach Length (ft) = 408				BF Width (ft) = 12				
Large end diam (ft)	Avg. diam (ft)	Length (ft)	Influence Zones	Horiz. Orient.	Rootwad instream/out	Debris Grouped / Ungrouped	Provides Grade Control	Notes (CWD location - pool, run, riffle, glide) (CWD responsible for pool formation: dominant, secondary, negligible)
1.2	0.9	45.0	1 2 3 4	90	Out	G	N	Pool - neg
1.0	0.8	13.0	1 2	90	Out	G	Y	Pool - sec
1.0	0.8	16.5	1 2 3 4	90	Out	G	N	Pool - neg
1.4	1.4	22.8	2 3 4	60	Out	G	N	Pool - neg
0.9	0.5	7.2	1	90	Out	UG	N	Riffle
0.7	0.6	29.5	1 2 3 4	70	In	UG	N	Pool - neg
1.0	1.0	8.0	3 4	90	Out	UG	N	Pool - neg
0.8	0.8	11.0	1 2 3	90	Out	UG	N	Pool - neg

Influence Zone and Horizontal Orientation - see back of sheet

Rootwad in/out refers to the rootwad being located in or out of the stream

Debris Grouped/Ungrouped: grouped debris is debris that is part of collection of debris, ungrouped debris is a single piece by itself