

BEHI Estimates and Calculations

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Appendix C of the Mill Creek Watershed Based Plan

Mill Creek Webber property

2/20/08 began by estimating with other methods Ryan knows - came up with 2.7 sq miles drainage area

Bankfull width measured (?) to be 21.5'

VL = 5-9.5
L = 10-19.5
Mod = 20-29.5
High = 30-39.5
VH = 40-45
Extr = 46-50

"Avg" Bankfull Depth = 1.3 --> 1.7'

x-s area = 28 sq ft.

cfs, Q = 87 cfs

reach	Bank Ht (A)	Bankfull Ht (B)	A/B	INDEX 1	Root Depth (C)	C/A	INDEX 2	Root Density (D)	D*(C/A)	INDEX 3	Bank Angle	INDEX 4	Surface Protection	INDEX 5	Materials	Stratification
31	2.3	1.7	1.35	5.5	2.3	1.00	1	60	60.0	3	35	2.6	60	3	5	0
44	4.3	1.7	2.53	8.6	1.3	0.30	5.9	30	9.1	8.8	50	3.3	5	10	5	0
85	5	1.7	2.94	10	5	1.00	1	50	50.0	4.3	45	3.2	70	2.7	5	0
131L	2.4	1.7	1.41	--	2.3	0.96	--	60	57.5	--	85	--	30	--	--	--
104	2.1	1.7	1.24	4	1.9	0.90	1.9	50	45.2	4.8	45	3.2	15	7.9	5	0
154L	4	1.7	2.35	--	4	1.00	--	15	15.0	--	40	--	30	--	--	--
172L	4	1.7	2.35	8.5	4	1.00	1	25	25.0	6.6	90	7.9	40	5.2	5	0
230	1.7	1.7	1.00	1	1.7	1.00	1	70	70.0	2.8	30	2.5	50	4.5	5	0
414	2.4	1.7	1.41	--	2.4	1.00	--	30	30.0	--	80	--	35	--	--	--
537L	1.7	1.7	1.00	--	1.7	1.00	--	70	70.0	--	20	--	80	--	--	--
Trib:																
84	15	1.7	8.82	10	15	1.00	1	25	25.0	6.5	80	5.9	30	5.9	5	5
107	2	1.7	1.18	4	2	1.00	1	20	20.0	7.3	90	7.9	15	7.9	5	5
130	5	1.7	2.94	10	1	0.20	7.2	10	2.0	10	85	7	0	10	5	5

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Total Score	BEHI Adjective
20.1	Mod -
41.6	VH-
26.2	Mod
--	--
26.8	Mod
--	--
34.2	High
16.8	Low
--	--
--	--

39.3	High +
38.1	High +
54.2	> Extreme

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Mill Creek Webber property BEHI lengths tally sheet Everything is in feet!

	Very Low	Low	Moderate	High	Very High	Extreme
Mainstem						
Mill Creek	100	30	50	30	15	0
	35	50	52	60	17	
		53	40	32	15	
			13	50	47	
			62	84	42	
			12	60	35	
			32		34	
			56			
			61			
			215			
			60			
			142			
			107			
Mainstem Totals >>	<u>135</u>	<u>133</u>	<u>902</u>	<u>316</u>	<u>205</u>	<u>0</u>
Tributary of						
Mill Creek	0	0	17	38	0	69
			9	12		15
				16		
				19		
Tributary Totals >>	<u>0</u>	<u>0</u>	<u>26</u>	<u>85</u>	<u>0</u>	<u>84</u>
overall totals	<u>135</u>	<u>133</u>	<u>928</u>	<u>401</u>	<u>205</u>	<u>84</u>

Mill Creek length, both sides, on this property = 1964' as
Trib length on this property = 470 as measured by our ta

1964+470 = **2434**
minus 1886 = 548

* we had those 2 figure
McDonalds but I don't
mattered?

1886 total BEHI lengths*

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measured by our tape
ape

is depositional*

es wrong at
think it

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BEHI Estimates and Calculations

Dave Webber property, Mill Creek
 Observers: RG, KM, AH
 Total Bank length = 2434'
 Stream Type = C4

Date: 2/26/08
 Graph used: North Carolina, except Low and Very Low, right?
 (for erosion rate)

BEHI adjective	Near Bank Stress Adj	Erosion Rate (ft/yr)	Length of Bank (ft)	Bank Ht (ft)*	Sub-Total (cu ft/yr)
Very Low	Moderate	0.008	135	2	2.16
Low	Moderate	0.02	133	2	5.32
Moderate	Moderate	0.05	928	3	139.2
High	Moderate	0.15	401	4	240.6
Very High	Moderate	0.75	205	4	615
Extreme	Moderate	2.5	84	4	840

1842.3 Total Eros. (cu ft/yr)
 68.2 Total Eros. (cu yd/yr)
88.7 Total Eros. (tons/yr)

*estimated based on field experience of this reach.

If I want to see how much sediment we might reduce with NSD, I re-do the above table with all the Moderate, High, Very High, nd Extreme lengths lumped into "low."

133+928+401+205+84= **1751** feet of Low

BEHI adjective	Near Bank Stress Adj	Erosion Rate (ft/yr)	Length of Bank (ft)	Bank Ht (ft)*	Erosion Sub-Total (cu ft/yr)
Very Low	Moderate	0.008	135	2	2.16
Low	Moderate	0.02	1751	2	70.04
Moderate	Moderate	0.05	928	3	
High	Moderate	0.15	401	4	
Very High	Moderate	0.75	205	4	
Extreme	Moderate	2.5	84	4	

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BEHI Estimates and Calculations

72.2 Total Eros. (cu ft/yr)

2.7 Total Eros. (cu yd/yr)

3.5 Total Eros. (tons/yr)

88.7 minus 3.5 = **85.2**

That's how much we could reduce at Webber

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Mill Creek Conley, 2/26/08

photo #	Bank Ht (A)	Bankfull Ht (B)	A/B	INDEX 1	Root Depth (C)	C/A	INDEX 2	Root Density (D)	D*(C/A)	INDEX 3	Bank Angle	INDEX 4	Surface Protection	INDEX 5	Materials	Stratification
143	4.2	2	2.10	8	2	0.48	4.1	5	2.4	10	85	7	0	10	5	0
144	3.5	2	1.75	7	2	0.57	3.5	20	11.4	8.8	80	5.9	70	2.5	5	0
145	4	2	2.00	7.9	4	1.00	1	10	10.0	8.5	40	3	20	7.2	5	2
147	10	2	5.00	10	1	0.10	8.5	5	0.5	10	50	7.9	0	10	5	5
148	2	2	1.00	1	2	1.00	1	50	50.0	4.5	20	1.9	70	2.8	5	0
150	2.3	2	1.15	3	2.3	1.00	1	20	20.0	7.2	65	4.4	30	5.9	5	0

VL = 5-9.5
L = 10-19.5
Mod = 20-29.5
High = 30-39.5
VH = 40-45
Extr = 46-50

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Total Score	BEHI Adjective
44.1	Very high originally we got 43.1 so no big deal
32.7	High
34.6	High
56.4	> Extreme
16.2	Low
26.5	Moderate

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		BEHI Estimates and Calculations							
Mill Creek Conley property		BEHI lengths tally sheet					Everything is in feet!		
Mainstem	Very Low	Low	Moderate	High	Very High	Extreme	Dep.	both sides of creek on this property would be 1225 x 2 = 2450	
Mill Creek		32	67	21	36	190	28		
		105	158	103	118				
		94	98	86	106				
		94	159	115	25				
				39	112				
				53	23				
				54	158				
				62	57				
				257					
		<u>325</u>	<u>482</u>	<u>790</u>	<u>635</u>	<u>190</u>	<u>28</u>	<u>2450</u>	

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BEHI Estimates and Calculations

Conley property, Mill Creek
 Observers: SPM, KM, AH
 Total Bank length = 2450'
 Stream Type = ?

Date: 3/5/08
 Graph used: North Carolina, **except Low and Very Low (Colorado)**
 (for erosion rate)

BEHI adjective	Near Bank Stress Adj	Erosion Rate (ft/yr)	Length of Bank (ft)	Bank Ht (ft)*	Erosion Sub-Total (cu ft/yr)
Very Low	Moderate	0.008	0	2	0
Low	Moderate	0.02	325	2	13
Moderate	Moderate	0.05	482	3	72.3
High	Moderate	0.15	790	4	474
Very High	Moderate	0.75	635	4	1905
Extreme	Moderate	2.5	190	4	1900
			2422		4364.3 cu ft/yr 161.6407 cu yd/yr 210.133 tons/yr

BEHI adjective	Near Bank Stress Adj	Erosion Rate (ft/yr)	Length of Bank (ft)	Bank Ht (ft)*	Erosion Sub-Total (cu ft/yr)
Very Low	Moderate	0.008	0	2	0
Low	Moderate	0.02	2422	2	96.88
Moderate	Moderate	0.05	482	3	
High	Moderate	0.15	790	4	
Very High	Moderate	0.75	635	4	
Extreme	Moderate	2.5	190	4	
			4519		96.88 cu ft/yr 3.588148 cu yd/yr 4.664593 tons/yr

210-4.7= **205.3** reduction possible with NSD