West Virginia's Nonpoint Source Program: Natural Stream Channel Design & Riparian Improvement Project Monitoring Coversheet

Project			
Grant		**Fiscal year**	

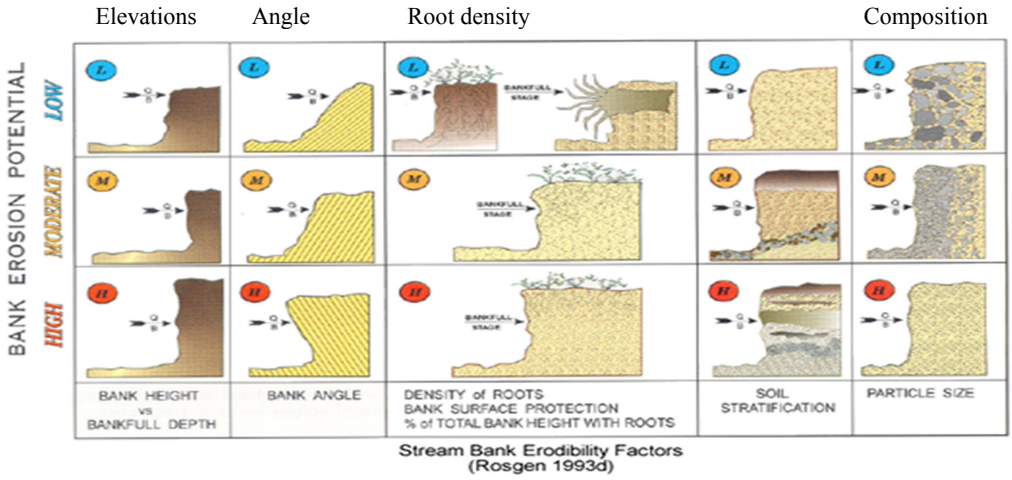
Location Information			
Watershed			
Stream			
County			
Latitude	**Longitude**	**Location description**	

Monitors		
Landowner(s)	**Name(s)**	
	Address	
	Phone(s)	
	E-mail	

Important Dates			
Planning		**Other**	
Pre-Project			
Post-Project			

Sketch the project area showing approximate location of monitoring sites.

Bank Erosion Potential Rating



Stream Bank Erodibility Factors
(Rosgen 1993d)

Evaluate each condition for both the right and left banks throughout your designated study area. Use the table at the bottom of the next page to record your scores. The study areas are defined as the length of your project site or if you are determining general conditions the length of your reach. The length of the reach is determined by the pattern and profile of the stream or the project length, at a minimum it should be 100 meters.

Stream name _____ Watershed _____

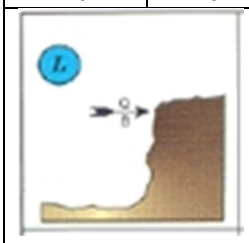
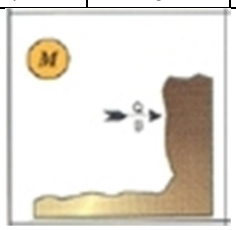
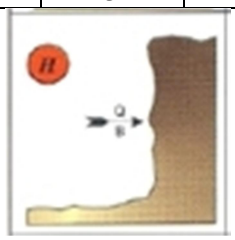
Site name _____ Sub-watershed _____

Surveyed by: _____ Date _____

Site description _____ RR-miles _____ Latitude _____ Longitude _____

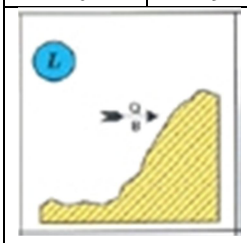
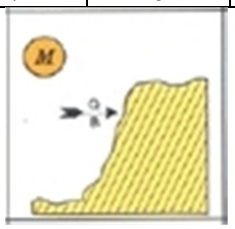
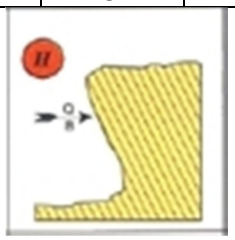
Reach length _____

Bankfull elevations

10	9	8	7	6	5	4	3	2	1
 Bankfull indicators very common throughout the reach; their elevations are mostly at or near the top of the bank; stream has access to its floodplain during high water and bankfull flow events as shown by leaf lines or debris in the floodplain.			 Bankfull indicators somewhat common along portions of the reach; their elevations are usually below the top of the bank and more commonly at the middle or lower portions of the bank; channel may be somewhat incised.				 Bankfull indicators very infrequent throughout the reach; if observed, their elevations are in the middle and lower portions of the bank; channel is usually deeply incised.		

LB		RB	

Bankfull angles

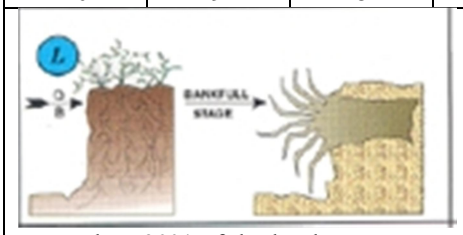
10	9	8	7	6	5	4	3	2	1
 Banks have a slight to moderate angle throughout most of the reach; may have some areas of erosion (< 30%) but mostly the reach shows little sign of disturbance.			 Banks have a moderate to steep slope throughout much of the reach; some erosion is occurring (30-60%) within the reach. Note: some banks are often steep but very stable especially is covered by hard surfaces or vegetation (score higher if this is the case).				 Banks have a steep angle or are undercut throughout much of the reach (> 60%); there are obvious signs of erosions such as bare soils, exposed roots etc. along with many depositional features (point bars, islands, lateral bars etc.) in the channel.		

LB		RB	

Bank Erosion Potential Rating

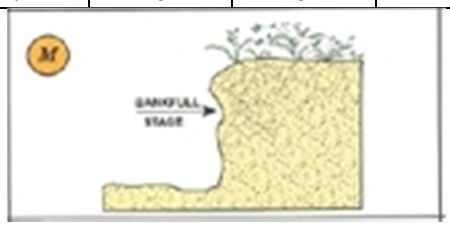
Root density

10	9	8	7	6	5	4	3	2	1

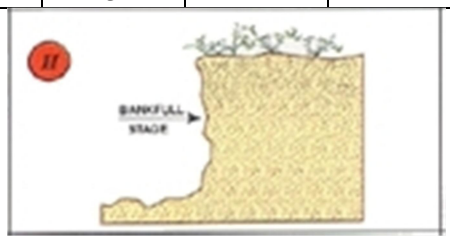


More than 90% of the banks are covered by natural undisturbed vegetation (all layers are well represented); most roots systems probably extend to the lower portions of the bank.

LB		RB	



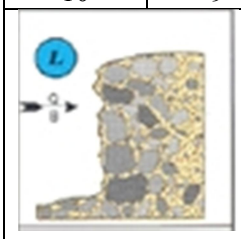
60-90% of the banks are covered by natural vegetation (most layers represented but some may be absent); some disturbances such as mowed areas, pastures, trails etc. are evident; most root systems probably extend to the lower or middle sections of the bank.



< 60% of the banks covered by natural vegetation (only one or two layers represented but most are missing); areas of disturbance very obvious throughout most of the reach or non-native species dominate.

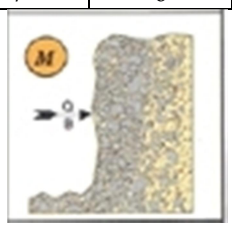
Composition

10	9	8	7	6	5	4	3	2	1

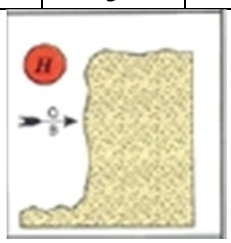


Banks consist primarily of large sized materials (cobble and boulder); smaller materials may be present but these can be seen only at the tops of the banks or on floodplain or terrace surfaces.

LB		RB	



Banks consist of a mix of materials from large to smaller sizes (boulder to fine gravel); some sand may be intermixed but it usually makes up < 20%.



Banks are primarily made up of small materials (mostly fine gravel and sand); silts and clay may be present. Score higher if clay is observed in greater concentrations (e.g. > 50%).

Summary

Left bank scores		Right bank scores		Overall average	
Bank elevation		Bank elevation		Bank elevation	
Bank angles		Bank angles		Bank angles	
Root density		Root density		Root density	
Bank composition		Bank composition		Bank composition	
Total ÷ 4 =		Total ÷ 4 =		Total ÷ 4 =	
Erosion rate		Erosion rate		Erosion rate	

Compare your totals to the erosion rating scale below to determine your overall rating and the rating for both the left and right banks.

10	9	8	7	6	5	4	3	2	1
Low			Moderate				High		

Pebble Count Data Sheet

Materials	Size ranges (mm)	Counts			Station
		Riffles	Runs	Pools	
Silt/clay	< 0.06				
Very fine sand	0.06 – 0.125				
Fine sand	0.126 – 0.25				
Medium sand	0.26 – 0.5				
Coarse sand	0.5 – 1				
Very coarse sand	1 - 2				
Very fine gravel	2 - 4				
Fine gravel	5 - 8				
Medium gravel	9 - 16				
Coarse gravel	17 - 32				
Very coarse gravel	33 - 64				
Small cobble	65 - 90				
Medium cobble	91 - 128				
Large cobble	129 - 180				
Very large cobble	181 - 255				
Small boulder	256 - 512				
Medium boulder	513 - 1024				
Large boulder	1025 – 2048				
Very large boulder	> 2048				
Bedrock	Large solid unbroken surface				
Woody debris	Logs, sticks and leaf packs				
	Totals				

Based upon your count determine the % of each channel feature within your study reach.

Riffles	Runs	Pools

Indicate the location of your transects (**stations**) along your tape measure. Note: Use a sand gage to categorize the small materials (fine – very course sands)

Cross Sectional Measurements

Location description:	Latitude	Longitude
	Project/Reach length (ft)	

Left side pin		Date		Pin #		Right side pin		Date		Pin #	
Measurement	**Distance (ft)**					**Measurement**	**Distance (ft)**				
Pin to rod		Notes:				Pin to rod		Notes:			
TOB to rod						TOB to rod					
MB to rod						MB to rod					
BB to rod						BB to rod					
Rod to TW						Rod to TW					
TOB to SB						TOB to SB					

Left side pin		Date		Pin #		Right side pin		Date		Pin #	
Measurement	**Distance (ft)**					**Measurement**	**Distance (ft)**				
Pin to rod		Notes:				Pin to rod		Notes:			
TOB to rod						TOB to rod					
MB to rod						MB to rod					
BB to rod						BB to rod					
Rod to TW						Rod to TW					
TOB to SB						TOB to SB					

Left side pin		Date		Pin #		Right side pin		Date		Pin #	
Measurement	**Distance (ft)**					**Measurement**	**Distance (ft)**				
Pin to rod		Notes:				Pin to rod		Notes:			
TOB to rod						TOB to rod					
MB to rod						MB to rod					
BB to rod						BB to rod					
Rod to TW						Rod to TW					
TOB to SB						TOB to SB					

Left side pins		Date		Pin #		Right side pin		Date		Pin #	
Measurement	**Distance (ft)**					**Measurement**	**Distance (ft)**				
Pin to rod		Notes:				Pin to rod		Notes:			
TOB to rod						TOB to rod					
MB to rod						MB to rod					
BB to rod						BB to rod					
Rod to TW						Rod to TW					
TOB to SB						TOB to SB					

Bank Profile							

Stretch a tape from bank to bank and anchor it at both ends. Move from left to right facing in an upstream direction; measure the distance from the stream bottom to the top of the tape at selected intervals (i.e. every foot). Record your measurements in the table at the left. The table provides spaces multiple measurements; if more are necessary you can create your own table on a separate piece of paper. Your tape measure will probably not start at zero so make sure to record the actual position of the tape as you measure across the channel.

Acronyms: LS - Left side facing downstream: RS – Right side facing downstream; U/S - upstream; TOB - top of bank; MB – mid Bank; BB – bottom of Bank; TW – thalweg; SB – streambed; TOB – SB (bank height)

Copy this data sheet as many times as needed to complete additional cross section measurements.

Total Reach Bank Erosion Calculations

Project							
Pin #		Date		Latitude		Longitude	
Measurement	Erosion Area (feet)		Bank Height (feet)	Section Length (feet)		Total Erosion (cubic feet)	
Top of Bank							
Mid Bank							
Bottom of Bank							
Average width							
Divide Total Erosion by 27 cubic feet/cubic yards = Total Erosion in cubic yards							
Multiply Total Erosion by 1.3 = Total Erosion in tons							
Time Frame (years)		Divide Total Erosion by Time Frame = tons/year					

Project							
Pin #		Date		Latitude		Longitude	
Measurement	Erosion Area (feet)		Bank Height (feet)	Section Length (feet)		Total Erosion (cubic feet)	
Top of Bank							
Mid Bank							
Bottom of Bank							
Average width							
Divide Total Erosion by 27 cubic feet/cubic yards = Total Erosion in cubic yards							
Multiply Total Erosion by 1.3 = Total Erosion in tons							
Time Frame (years)		Divide Total Erosion by Time Frame = tons/year					

Project							
Pin #		Date		Latitude		Longitude	
Measurement	Erosion Area (feet)		Bank Height (feet)	Section Length (feet)		Total Erosion (cubic feet)	
Top of Bank							
Mid Bank							
Bottom of Bank							
Average width							
Divide Total Erosion by 27 cubic feet/cubic yards = Total Erosion in cubic yards							
Multiply Total Erosion by 1.3 = Total Erosion in tons							
Time Frame (years)		Divide Total Erosion by Time Frame = tons/year					

Additional comments/information	

PHOTOGRAPH LOG

Project/Landowner Information			
Stream name		Latitude	Longitude
Landowner name			
Landowner address			
Phone:		E-mail	
Survey completed by			
Notes			

Photo Information Location 1				Photo descriptions
Date		Photo ID		
Date		Photo ID		
Date		Photo ID		
Date		Photo ID		
Date		Photo ID		
Date		Photo ID		
Date		Photo ID		
Date		Photo ID		
Date		Photo ID		
Date		Photo ID		
Photo Information Location 2				Photo descriptions
Date		Photo ID		
Date		Photo ID		
Date		Photo ID		
Date		Photo ID		
Date		Photo ID		
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Photo Information Location 3				Photo descriptions
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