

Stream Channel & Riparian Area Monitoring Guide

WHY MONITOR?

It is important for landowners to monitor stream channels and adjacent riparian areas to assess whether their streamside management practices are affecting the condition and health of these areas. Healthy riparian areas are important:

- They act as filters to maintain water quality for you and your neighbor
- They reduce streambank erosion and maintain a higher water table
- They provide forage and shelter for livestock and wildlife
- They offer recreational and fisheries values

WHAT WILL MONITORING TELL YOU?

Monitoring is the process of observing, collecting, and interpreting data to evaluate progress toward resource management objectives. Several years of monitoring data should indicate the long-term trend (upward, stable or downward) of the stream channel and riparian area. The following observations indicate a downward trend:

Stream Channel	Riparian Area
<ul style="list-style-type: none">• Channel widening• Unvegetated, eroding streambanks• Increased frequency of new streambanks• Channel downcutting• Increased silt/clay on channel bottom• Stream unable to overflow its banks during annual spring runoff	<ul style="list-style-type: none">• Noxious weed invasion• Hedged shrubs• Encroachment of upland shrub species• Riparian shrubs and trees are mostly old with few young plants• Riparian shrubs and trees are mostly old with few young plants• Fewer native grasses

SUPPLIES NEED FOR MONITORING

- Camera and film
- 8 ½" x 11" paper
- 100-foot tape measure
- waders, rubber boots or sneakers for getting into stream
- stakes and survey tape
- felt pen and pencil
- spray paint

CONSISTENCY IS THE KEY

It is extremely important that the monitoring information be collected in the same manner, at the same location, and at the same time each year. Monitoring is usually done annually following spring run-off or during late summer-early fall when stream flows are lower.

MONITORING HELP

The attached monitoring form is designed for use in riparian areas. Monitoring Montana Rangeland (MSU Extension Bulletin #369) is recommended for monitoring uplands. Neither is intended to replace monitoring efforts used by state and federal agencies on grazing allotments. It is suggested that monitoring efforts on grazing allotments be coordinated with the permitting agency. For further assistance contact:

1. Natural Resources Conservation Service/Conservation District Field Offices
2. Local County Extension Offices

- Developed by the Montana Riparian Wetland Association Education Committee and the Montana Grazing Lands Conservation Initiative.

MONITORING INSTRUCTIONS

1. Identify all pastures with streams.
2. Select on 200' length of stream to monitor in each pasture that is representative of the entire length of stream. If possible, select two 200' lengths of stream to monitor at the upper and lower ends of the pasture.
3. Before beginning the monitoring form, walk the entire 200' length of stream to be monitored, making notes as you go about the type and condition of streamside vegetation, presence of eroding banks, shape of the stream channel, and so on.
4. Draw a site location map (on photo page).
5. Identify and mark a permanent photo point using spray paint, stakes, or survey tape. Each photo site should be identified with a site number, pasture name, and the date the photo was taken. It is helpful to write all of this information on an 8 ½" x 11" paper and actually place it next to the stream before you take the picture.
6. Now you are ready to begin the Monitoring Form!

INTERPRETING YOUR MONITORING DATA

After several years of collecting monitoring data, you should be able to determine if your stream channel and riparian area are functioning properly, on an upward trend, or on a downward trend. Questions 1-3 on the monitoring form provide baseline information. Questions 4-9 evaluate the response of the streambanks and riparian area to your management practices. Questions 10-15 record your annual management practices and wildlife use.

The following responses indicate a properly functioning stream channel:

- The channel is NOT side and shall. (Q.2)
- The stream overflows its banks almost every year. (Q.3)
- Streambanks are anchored securely by plants with deep and fibrous root systems. (Q.7).
- The stream is able to move its sediment (at least annual during flood flows) and new stream bars (deposition of silt or gravel) are rare. (Q.5 & Q.6).

- There is not evident of eroding or sloughing streambanks. (Q.4 & Q7).

The following responses indicate a healthy riparian area:

- Banks are well-vegetated with native grasses, sedges, or shrubs. (Q.7).
- Noxious weeds and disturbance-induced plants are rare. (Q.7).
- There is not bare or compacted soil. (Q.7).
- Shrubs and trees (if present) are of mixed ages. (Q.8).
- Shrubs and trees aren't misshapen by heavy browsing. (Q.9).
- Grasses are 3" + in height at end of the growing season. (Q.12).
- Photo of riparian area shows diverse, vigorous, water-loving plant species.

The following responses indicate that your management practices are NOT adversely impacting riparian areas:

- Stream channel width is not widening due to bank erosion and sediment entering the stream (Q.4. & Q.7).
- Silt, clay, or sand isn't eroding from your streambanks (Q.5 & Q.6).
- All streambanks are well-vegetated and a health streamside buffer of grasses or shrubs is present to filter runoff from pastures and uplands. (Q.7, 8, 9)
- At least 3" to 4" of grass height is present at the end of the growing season. (Q.12).

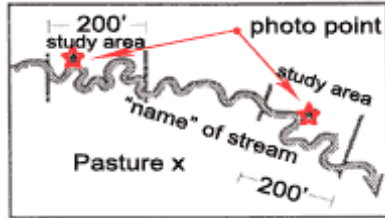
Remember, this monitoring data is only for you. Use the form as a way to get more familiar with your stream and to gauge the effects of you management practices on your riparian areas and stream channels. Obviously, your streamside management practices are not the only influences to the stream. If necessary, seek assistance from a resource professional to help with further interpretation of your monitoring data.

Stream Channel & Riparian Area Monitoring Form

Operator/Observer: _____ Date: _____

Stream _____ Pasture _____ Site# _____

Draw site location map of 200' length of stream to be monitored at the upper and lower end of each pasture (see sample drawing)



Sketch your map on photo page.

Identify and mark a permanent photo point and monitoring location. Note the location in your drawing. Take a least 3 photos to record:

1. Stream channel (facing downstream)
2. Riparian area along left bank
3. Riparian area along right bank

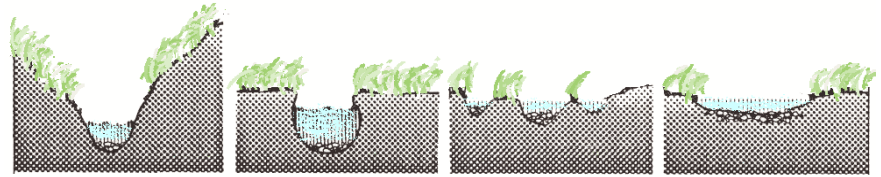
Weather Characteristics

Current year precipitation: (circle) dry normal wet
 Current year streamflow: (circle) low normal high
 Rain gauge (recommended): _____ (total inches per year)
 Describe any unusual runoff, flooding, or upstream activity that occurred this year: _____

Stream Channel Characteristics

1. Type of stream on a normal year. (circle)
 - Perennial (flows almost year round)
 - Intermittent (only flows during wet season/spring)
 - Ephemeral (only flows after extreme storm)
 - Seep or spring-fed
 - Other

2. Which diagram best fits your stream channel shape? (circle)

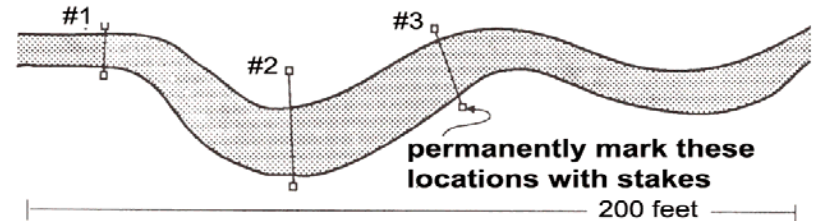


- (A) V-shape (B) U-shape (C) braided (D) wide/shallow

3. Did your stream overflow its banks this year? (circle) Yes No

4. Measure channel width between high water marks at 3 places along 200' stream length and average:

$$(\text{---} + \text{---} + \text{---}) \div 3 = + \text{---} \text{ (average channel width)}$$








5. Count the number of new, un-vegetated streambars



Draw streambars on your site location map





6. Estimate the percentage of channel bed materials of each size at the 3 location in Q4:

	silt/clay	#1	#2	#3
		%	%	%
	sand	%	%	%
	gravel	%	%	%
	cobble	%	%	%
	bedrock	%	%	%


7. Measure length of each streambank that has:

ft.	ft.	Banks breaking off or eroding
ft.	ft.	Banks with overhanging shrubs (willows, dogwood, alders, etc.)
ft.	ft.	Banks with desirable native grasses and sedges
ft.	ft.	Banks with weeds (knapweed, leafy spurge, dandelion, Canada thistle, other)
ft.	ft.	Banks with rock
ft.	ft.	Banks with other disturbance (trampled, beaver, etc.) Describe:

8. Which picture looks most like your streamside shrubs/trees? (circle)

All grass no shrubs	All young shrubs /	Mixed ages	All mature
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	trees		
9.			
			
None/light	Some/moderate	Severely used	Widely spaced & mostly dead

Grazing Management Information for Pasture Containing the Riparian Monitoring Area

10. Pasture size (acres):

11. Describe your grazing system:

12. Time of grazing this year (dates):

1 st grazing period	Turn in:	Grass height (before)
	Turn out:	Grass height (after)
2 nd grazing period (if in same year)	Turn in:	Grass height (before)
	Turn out:	Grass height (after)

13. Number of livestock grazing the pasture:
 _____ yearling _____ cow/calf _____ sheep _____ other

14. Estimate amount of wildlife use in pasture: N=none S=slight M=moderate H=heavy
 _____ elk _____ deer _____ moose _____ antelope _____ beaver
 _____ other (name)

Map Worksheet

Operator/Observer: _____ Date: _____

Stream _____ Pasture _____ Site# _____

Draw you site location map of 200 ft. length of stream
monitored in each pasture.

Photo Worksheet

Operator/Observer: _____ Date: _____

Stream _____ Pasture _____ Site# _____

Attach photos of your riparian areas here, or keep digital photos on your computer for future monitoring.