

Appendix M. Visual Assessment Protocol

Buffalo Creek Visual Assessment

Sampler(s) name _____ Date _____

Stream name _____ Reach location: Latitude _____ Longitude _____

Reach location description _____

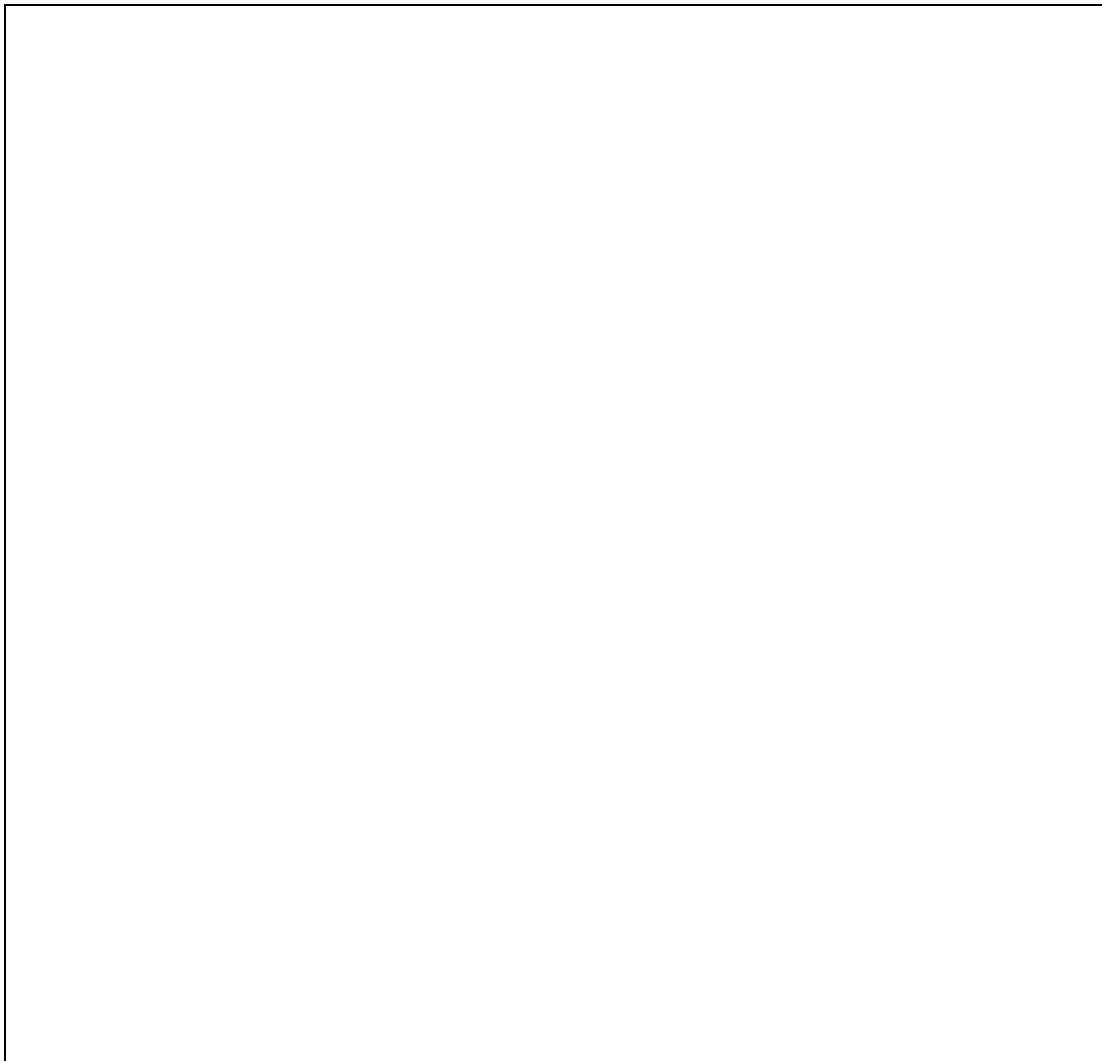
Land use (%): row crop _____ grazing/pasture _____ forest _____ residential _____ hayland _____
industrial _____ Conservation Reserve _____ other: _____

Weather conditions-today _____ Past 2-5 days _____

Active channel width _____ Dominant substrate: boulder _____ cobble _____ gravel _____ sand _____
silt _____ mud _____

Photos taken? Y/N if yes, please describe: _____

Topographic Map of Reach Location



Scoring Descriptions

Each assessment element is rated with a value of 1 to 10. Rate only those elements appropriate to the stream reach. Record the score that best fits the observations you make based on the narrative description provided.

Channel Condition

Natural channel; no structures, dikes. No evidence of down-Cutting or excessive lateral cutting.	Evidence of past channel alteration, but with significant recovery of channel and banks. Any dikes or levees are set back to provide access to an adequate flood plain.	Altered channel; <50% of the reach with riprap and/or channelization. Excess aggradation ; braided channel. Dikes or levees restrict flood plain width.	Channel is actively downcutting or widening. >50% of the reach with riprap or channelization. Dikes or levees prevent access to the flood plain.
10 9 8	7 6 5 4	3 2	1

aggradation: The process by which a stream's gradient steepens due to increased deposition of sediment.

Riparian Zone

Natural Vegetation extends at least two active channel widths on each side.	Natural vegetation extends one active channel width on each side. Or If less than one width, covers entire flood plain.	Natural vegetation extends half of the active channel width on each side.	Natural vegetation extends a third of the active channel width on each side. Or Filtering function moderately compromised.	Natural vegetation less than a third of the active channel width on each side. Or Lack of regeneration. Or Filtering function severely compromised.
10 9	8 7 6	5 4	3 2	1

Bank Stability

Banks are stable; 33% or more of eroding surface area of banks in outside bends is protected by roots that extend to the base-flow elevation.	Moderately stable; less than 33% of eroding surface area of banks in outside bends is protected by roots that extend to the base-flow elevation.	Moderately unstable; banks may be low, but typically are high; outside bends are actively eroding (overhanging vegetation at top of bank, some mature trees falling into stream annually, some slope failures apparent).	Unstable; banks may be low, but typically are high; some straight reaches and inside edges of bends are actively eroding as well as outside bends (overhanging vegetation at top of bare bank, numerous mature trees falling into stream annually, numerous slope failures apparent).
10 9 8	7 6 5 4	3 2	1

Note: when looking at bank stability, look at the slope of the bank. A steep or vertical slope indicates an unstable bank. Vegetation is also an important factor when looking at stability. A steep bank that has a good amount of vegetation or dense root cover would be more stable than a steep bank with little or no vegetation or root cover. A gradual sloping bank with a good amount of vegetation would indicate good bank stability.

Water Appearance

Very clear, or clear but tea-colored; objects visible at depth 3 to 6 ft (less if slightly colored); no oil sheen on surface; no noticeable film on submerged objects or rocks.	Occasionally cloudy; objects visible at depth 1.5 to 3 ft; may have slightly green color; no oil sheen on water surface.	Considerable cloudiness most of time; objects visible to depth 0.5 to 1.5 ft; slow sections may appear pea-green; bottom rocks or submerged objects covered with heavy green or olive-green film. Or Moderate odor of ammonia or rotten eggs.	Very turbid or muddy appearance most of the time; objects visible to depth <0.5 ft; slow moving water may be bright-green; other obvious water pollutants; floating algal mats, surface scum, sheen or heavy coat of foam on surface. Or Strong odor of chemicals, oil, sewage, other pollutants.
10 9 8	7 6 5 4	3 2	1

Nutrient Enrichment

Clear water along entire reach; little algal growth present.	Fairly clear or slightly greenish water along entire reach; moderate algal growth on stream substrates.	Greenish water along entire reach; overabundance of lush green macrophytes; abundant algal growth, especially during warmer months.	Pea green, gray or brown water along entire reach; dense stands of macrophytes clog stream; severe algal blooms create thick algal mats in stream.
10 9 8	7 6 5 4	3 2	1

Fish Barriers

No barriers.	Seasonal water withdrawals inhibit movement within the reach.	Drop structures, culverts, dams or diversions (<1ft drop) within the reach.	Drop structures, culverts, dams or diversions (>1ft drop) within 3 miles of reach.	Drop structures, culverts, dams or diversions (>1ft drop) within the reach.
10 9	8 7 6	5 4	3 2	1

Instream Fish Cover

>7 cover types available	6 to 7 cover types available	4 to 5 cover types available	2 to 3 cover types available	None to 1 cover type available
10 9	8 7 6	5 4	3 2	1

Cover types: Logs/large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats, dense macrophyte beds, isolated/backwater pools, other: _____

Embeddedness

Gravel or cobble particles are <20% embedded.	Gravel or cobble particles are 20 to 30% embedded.	Gravel or cobble particles are 30 to 40% embedded.	Gravel or cobble particles are >40% embedded.	Completely embedded.
10 9	8 7 6	5 4	3 2	1

Note: embeddedness is defined as the degree to which objects in the stream bottom are surrounded by fine sediment. Only evaluate this item in riffles & runs. Measure the depth to which objects are buried by sediment.

Insect/invertebrate Habitat

At least 5 types of habitat available. Habitat is at a stage to allow full insect colonization (woody debris and logs not freshly fallen).	3 to 4 types of habitat. Some potential habitat exists, such as overhanging trees, which will provide habitat, but have not yet entered the stream.	1 to 2 types of habitat. The substrate is often disturbed, covered, or removed by high stream velocities and scour or by sediment deposition.	None to 1 type of habitat.
10 9 8	7 6 5 4	3 2	1

Cover types: Fine woody debris, submerged logs, leaf packs, undercut banks, cobble, boulders, coarse gravel, other:

Canopy Cover

Coldwater fishery

>75% of water surface shaded and upstream 2 to 3 miles generally well shaded.	> 50% shaded in reach. Or >75% in reach, but upstream 2 to 3 miles poorly shaded.	20 to 50% shaded.	<20% of water surface in reach shaded.
10 9 8	7 6 5 4	3 2	1

Warmwater fishery

25 to 90% of water surface shaded; mixture of conditions.	>90% shaded; full canopy; same shading condition throughout reach.	(Intentionally blank)	<25% water surface shaded in reach.
10 9 8	7 6 5 4		1

Sewage (if applicable)

(Intentionally blank)	Noticeable odor, excess plant growth and siltation.	Noticeable odor, excess plant growth. And Questionable pipe and black stream substrate.	Visible pipe with effluent, heavy odor.
	5 4	3 2	1

Manure Presence (if applicable)

(Intentionally blank)	Evidence of livestock access to riparian zone.	Occasional manure in stream or waste storage structure located on the flood plain.	Extensive amount of manure on banks or in stream. Or Untreated human waste discharge pipes present.
	5 4	3 2	1

Assessment Scores

- Channel condition
- Riparian zone
- Bank stability
- Water appearance
- Nutrient enrichment
- Fish barriers
- Instream fish cover
- Embeddedness
- Invertebrate habitat
- Canopy Cover

Overall score _____
(Total divided by number scored)

Score only if applicable

Sewage	<input type="checkbox"/>
Manure presence	<input type="checkbox"/>

- <6.0 **Poor**
- 6.1-7.4 **Fair**
- 7.5-8.9 **Good**
- >9.0 **Excellent**