

**CLINTON RIVER ASSESSMENT
PHYSICAL HABITAT FIELD DATA SHEET - RIFFLE/RUN STREAMS**

(As characterized by repeating riffle/run sequences, river bottom primarily composed of coarse sand/gravel, and have moderate to high gradients.)

Habitat Parameter	Condition Category			
	Excellent	Good	Marginal	Poor
1. Substrate/Available Cover/Natural Structures in the stream <i>(e.g. cobble, large rocks, fallen trees, logs and branches, and undercut banks available for refuge, feeding, or spawning and nursery sites)</i>	Greater than 70% of substrate favorable for natural structures and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not a new fall).	40-70% mix of stable habitat; well-suited for adequate habitat for maintenance of populations; presence of additional substrate in the form of new fall, but not yet appropriate for aquatic habitat.	20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking.
Circle One	Excellent	Good	Marginal	Poor
2. Embeddedness <i>(e.g. extent to which rocks and snags are covered or sunken into silt, sand, or mud in stream bottom)</i>	Gravel, cobble, and boulder particles are 0-25% surrounded by fine sediment. Layering of cobble provides diversity of niche space.	Gravel, cobble, and boulder particles are 25-50% surrounded by fine sediment.	Gravel, cobble, and boulder particles are 50-75% surrounded by fine sediment.	Gravel, cobble, and boulder particles are more than 75% surrounded by fine sediment.
Circle One	Excellent	Good	Marginal	Poor
3. Velocity/Depth Regime	All four velocity/depth regimes present (slow-deep, slow-shallow, fast-deep, fast-shallow). (Slow is <1.0 f/s, deep is >2 ft.).	Only 3 of the 4 regimes present.	Only 2 of the 4 habitat regimes present.	Dominated by 1 velocity/depth regime (usually slow-deep).
Circle One	Excellent	Good	Marginal	Poor
4. Sediment Deposition <i>(e.g. amount of sediment accumulating in a pool as a result of large scale sediment movement; forms islands, point bars, or shoals; usually caused by debris or obstructions)</i>	Little or no enlargement of islands or point bars and less than 5% of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand, or fine sediment; 5-30% of the bottom affected; slight deposition in pools.	Moderate deposition of new gravel, sand, or fine sediment on old and new bars; 30-50% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.	Heavy deposits of fine material, increased bar development; more than 50% of the bottom changing frequently; pools almost absent due to substantial sediment deposition.
Circle One	Excellent	Good	Marginal	Poor
5a. Channel Flow Status - Maintained Flow Volume <i>(Base flow observations of water present and availability of channel)</i>	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.	Very little water in channel and mostly present as standing pools.
Circle One	Excellent	Good	Marginal	Poor
5b. Channel Flow Status - Flashiness <i>(Evidence of the speed and magnitude of flow response to rain events.)</i>	Vegetation along the stream bank is complete nearly to the waters edge. Little or no evidence of frequent changes in discharge and/or frequent high water events that scours stream bank vegetation.	Some evidence of bank scour approximately 4-8 inches above the waters surface. Channel retention devices (if present) mostly stable and extending partially into the active stream channel.	Bank scour evidence 9-18 inches above the waters surface. Channel retention devices (if present) tend to may more against the stream bank rather than extending into the active channel.	Bank scour (>20 inches) along the stream channel. Channel retention devices are generally absent from the active channel and/or may exist as woody debris jams along the stream bank above the active channel.
Circle One	Excellent	Good	Marginal	Poor

Habitat Parameter	Condition Category			
	Excellent	Good	Marginal	Poor
6. Channel Alteration (e.g. measures large scale changes in the shape of the stream channel; artificial embankments, riprap, bridges, dams).	Channelization or dredging absent or minimal; stream looks normal.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging (greater than past 20 yr) may be present, but recent channelization is not present.	Channelization is continuous but not recent (>5 years). Embankments without mature trees and dominated by grasses and shrubs.	Stream reach has been recently channelized (<5 years) . OR Banks shored with gabion, rock, cement or bare earth. Instream habitat greatly altered or removed entirely. Bank vegetation moderately dense to absent.
Circle One	Excellent	Good	Marginal	Poor
7. Frequency of Riffles (or bends) (e.g. frequency of different types of aquatic habitat, riffles, runs, pools, and glides)	Occurrence of riffles and bends are relatively frequent; variety of habitat is key. In streams where riffles are continuous, placement of boulders or other large, natural obstruction is important.	Occurrence of riffles frequent.	Occasional riffle or bend; bottom contours provide some habitat.	Generally all flat water or shallow riffles; poor habitat.
Circle One	Excellent	Good	Marginal	Poor
8. Bank Stability (score each bank) (e.g. measure of streambank erosion, crumbling soil, exposed tree roots or soil, bare banks) Note: determine left or right side by facing upstream.	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.
Circle One (Left Bank)	Excellent	Good	Marginal	Poor
Circle One (Right Bank)	Excellent	Good	Marginal	Poor
9. Vegetative Protection (score each bank) (e.g. degree of vegetative protection on the streambank and the near-stream portion of the floodplain)	More than 90% of the stream bank surfaces and immediate riparian zone covered by native vegetation, including trees, or understory shrubs; little disruption through mowing; almost all plants allowed to grow naturally.	70-90% of the stream bank surfaces covered by native vegetation; disruption evident but not affecting full plant growth potential to any great extent.	50-70% of the stream bank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common.	Less than 50% of the stream bank surfaces covered by vegetation; disruption of stream bank vegetation is very high; vegetation is 2 inches or less average height.
Circle One (Left Bank)	Excellent	Good	Marginal	Poor
Circle One (Right Bank)	Excellent	Good	Marginal	Poor
10. Riparian Vegetative Zone Width (score each bank riparian zone) (e.g. the width of natural vegetation from the edge of the streambank out through the riparian zone)	Width of riparian zone >150 feet and dominated by native vegetation including trees, shrubs, or wetlands; vegetative disruption through mowing minimal or not evident; almost all plants allowed to grow naturally. Human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.	Width of riparian zone 75-150 feet; human activities have impacted zone only minimally.	Width of riparian zone 10-75 feet; human activities have impacted zone a great deal.	Width of riparian zone <10 feet; little or no riparian vegetation due to human activities.
Circle One (Left Bank)	Excellent	Good	Marginal	Poor
Circle One (Right Bank)	Excellent	Good	Marginal	Poor