

The Watershed Institute | **HABITAT AND MACROINVERTEBRATE DATA SHEET**

Date:		Start Time:		Organization:	
Investigators:				Project Name:	
Site ID:		Site Location Description:			
Approximate Reach Length <small>(aim for 100m):</small>		Current Weather Conditions:		Time Since Last Rain or Snowmelt:	
Air Temp (°C):	Water Temp (°C):	<input type="checkbox"/> Clear <input type="checkbox"/> Partly Cloudy <input type="checkbox"/> Overcast <input type="checkbox"/> Light Rain (no runoff) <input type="checkbox"/> Heavy Rain (runoff) <input type="checkbox"/> Snow <input type="checkbox"/> Heavy Snow Melt		<input type="checkbox"/> Within 24 hours <input type="checkbox"/> 24-48 hours ago <input type="checkbox"/> More than 2 days ago <input type="checkbox"/> Unknown	

Representative Wetted Width <small>(indicate units):</small>		Representative Depth Profile (measured at five equidistant points across representative width) <small>(indicate units): _____, _____, _____, _____, _____ = Avg. _____</small>			
Velocity					
Distance (aim for 3-5 meters) _____ (if using feet, convert to meters before calculating velocity) <div style="text-align: right;">= Avg. Velocity _____ m/s</div>					
Float Time: _____ = Avg. _____ seconds					
<input type="checkbox"/> Check here if this section is not completed due to nonwadable assessment.					

Stream Flow: <input type="checkbox"/> Slow (barely moving or not at all) <input type="checkbox"/> Moderate (clearly moving, surface flat) <input type="checkbox"/> Swift (clearly moving, surface disturbed)	Water Odor: <input type="checkbox"/> Normal <input type="checkbox"/> Anaerobic <input type="checkbox"/> Sulfuric <input type="checkbox"/> Sewage <input type="checkbox"/> Petroleum <input type="checkbox"/> Other:	Turbidity: <input type="checkbox"/> Clear <input type="checkbox"/> Slightly turbid <input type="checkbox"/> Turbid/Muddy <input type="checkbox"/> Milky <input type="checkbox"/> Green pea soup	Surface Coating: <input type="checkbox"/> None <input type="checkbox"/> Foam <input type="checkbox"/> Scum <input type="checkbox"/> "Paint" streaks <input type="checkbox"/> Duckweed or vegetation <input type="checkbox"/> Oil <input type="checkbox"/> Other:	Water Color: <input type="checkbox"/> Clear <input type="checkbox"/> Green <input type="checkbox"/> Blue-green <input type="checkbox"/> Tea-stained <input type="checkbox"/> Brown <input type="checkbox"/> Yellow <input type="checkbox"/> Gray <input type="checkbox"/> Other:
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Stream Morphology: <input type="checkbox"/> Riffle: _____% <input type="checkbox"/> Run: _____% <input type="checkbox"/> Pool: _____%	Macroinvertebrate Habitat Types: <input type="checkbox"/> Riffles and cobble <input type="checkbox"/> Wood and submerged logs <input type="checkbox"/> Leaf packs <input type="checkbox"/> Aquatic vegetation <input type="checkbox"/> Overhanging vegetation <input type="checkbox"/> Undercut banks <input type="checkbox"/> Gravel/Sand <input type="checkbox"/> Other:	Benthic Substrate Characterization <small>(check if present or indicate relative percentage):</small> <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:50%;">Clay and Silt: (<0.06 mm)</td> <td style="width:50%;">Sand: (0.06-2mm, gritty)</td> </tr> <tr> <td>Gravel: (2-64mm, 0.1-2.5")</td> <td>Cobble: (2.5-10")</td> </tr> <tr> <td>Boulder: (>10")</td> <td>Bedrock: (unbroken)</td> </tr> <tr> <td colspan="2">Other:</td> </tr> </table>	Clay and Silt: (<0.06 mm)	Sand: (0.06-2mm, gritty)	Gravel: (2-64mm, 0.1-2.5")	Cobble: (2.5-10")	Boulder: (>10")	Bedrock: (unbroken)	Other:	
Clay and Silt: (<0.06 mm)	Sand: (0.06-2mm, gritty)									
Gravel: (2-64mm, 0.1-2.5")	Cobble: (2.5-10")									
Boulder: (>10")	Bedrock: (unbroken)									
Other:										
Woody Debris: <input type="checkbox"/> None <input type="checkbox"/> Scarce <input type="checkbox"/> Moderate <input type="checkbox"/> Abundant										

Aquatic Veget. Type: <input type="checkbox"/> Emergent <input type="checkbox"/> Submergent <input type="checkbox"/> Rooted floating <input type="checkbox"/> Floating Amount: <input type="checkbox"/> Absent <input type="checkbox"/> Scarce <input type="checkbox"/> Moderate <input type="checkbox"/> Abundant	Algae Type: <input type="checkbox"/> Biofilm <input type="checkbox"/> Filamentous <input type="checkbox"/> Floating <input type="checkbox"/> Suspected HAB Amount: <input type="checkbox"/> Absent <input type="checkbox"/> Scarce <input type="checkbox"/> Moderate <input type="checkbox"/> Abundant	Bank Vegetation: <input type="checkbox"/> Trees <input type="checkbox"/> Shrubs <input type="checkbox"/> Grasses <input type="checkbox"/> Lawns <input type="checkbox"/> Invasive species <input type="checkbox"/> None <input type="checkbox"/> Other:	Tree Canopy (at full leaf): <input type="checkbox"/> Open (0-25%) <input type="checkbox"/> Mostly Open (25-50%) <input type="checkbox"/> Mostly Closed (50-75%) <input type="checkbox"/> Closed (75-100%)
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Land Uses in ¼ Mile Radius: <input type="checkbox"/> Rural/Low Density Residential <input type="checkbox"/> Medium Density Residential <input type="checkbox"/> High Density Residential <input type="checkbox"/> Urban <input type="checkbox"/> Commercial <input type="checkbox"/> Industrial <input type="checkbox"/> Roads <input type="checkbox"/> Parking Lot	<input type="checkbox"/> Agriculture (cropland) <input type="checkbox"/> Agriculture (livestock) <input type="checkbox"/> Meadow/Field <input type="checkbox"/> Forested <input type="checkbox"/> Preserved Open Space <input type="checkbox"/> Athletic Fields <input type="checkbox"/> Construction <input type="checkbox"/> Other:	Structures: <input type="checkbox"/> None <input type="checkbox"/> Bridge <input type="checkbox"/> Culvert <input type="checkbox"/> Outfall <input type="checkbox"/> Dam <input type="checkbox"/> Drainage Ditch <input type="checkbox"/> Other:	Litter: <input type="checkbox"/> None <input type="checkbox"/> Scarce <input type="checkbox"/> Moderate <input type="checkbox"/> Abundant <input type="checkbox"/> Dump site Comments:	Wildlife Observations: <input type="checkbox"/> Fish <input type="checkbox"/> Frogs <input type="checkbox"/> Turtles <input type="checkbox"/> Crayfish <input type="checkbox"/> Clams/Mussels <input type="checkbox"/> Salamanders <input type="checkbox"/> Waterfowl <input type="checkbox"/> Other:
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Comments/Observations:

Site Sketch Indicate roads, buildings, landmarks, parking area, access point(s) to stream, stream flow direction, in-stream habitat for macroinvertebrate sampling (i.e. riffles, pools, aquatic vegetation, woody debris), outfalls, etc.:

Regional Scored Habitat Assessment: High Gradient Habitat Assessment Low Gradient Habitat Assessment

COMPLETE THIS SECTION ONLY IF MACROINVERTEBRATE SAMPLING WAS PERFORMED.

Sample Equipment: <input type="checkbox"/> D-net <input type="checkbox"/> Other:	Preservation Method: <input type="checkbox"/> Tier 3.3, 3.2: Detritus preservation <input type="checkbox"/> Organism-only preservation <input type="checkbox"/> None: Tier 3.1 Field identification <input type="checkbox"/> Other:	Form Attached: <input type="checkbox"/> Tier 3.3, 3.2: Chain of Custody Form <input type="checkbox"/> Tier 3.1: Macroinvertebrate Tally Sheet <input type="checkbox"/> Other:
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EPA Rapid Bioassessment | LOW GRADIENT HABITAT ASSESSMENT

Habitat Parameter	Condition Category																				
	Optimal					Suboptimal					Marginal					Poor					
1. Epifaunal Substrate and Available Cover	Greater than 50% of substrate favorable for epifaunal colonization 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 <u>not</u> new fall and <u>not</u> transient).					30-50% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of new fall, but not yet prepared for colonization (may rate at high end of scale).					10-30% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.					Less than 10% stable habitat; lack of habitat is obvious; substrate unstable or lacking.					
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
2. Pool Substrate Characterization	Mixture of substrate materials, with gravel and firm sand prevalent; root mats and submerged vegetation common.					Mixture of soft sand, mud, or clay; mud may be dominant; some root mats and submerged vegetation present.					All mud or clay or sand bottom; little or no root mat; no submerged vegetation.					Hard-pan clay or bedrock; no root mat or vegetation.					
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
3. Pool Variability	Even mix of large-shallow, large-deep, small-shallow, small-deep pools present. (Deep > 1m; large is width or length > half cross-section of stream)					Majority of pools large-deep; very few shallow.					Shallow pools much more prevalent than deep pools.					Majority of pools small-shallow or pools absent.					
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
4. Sediment Deposition	Little or no enlargement of islands or point bars and less than 20% of the bottom affected by sediment deposition.					Some new increase in bar formation, mostly from gravel, sand or fine sediment; 20-50% of the bottom affected; slight deposition in pools.					Moderate deposition of new gravel, sand or fine sediment on old and new bars; 50-80% 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 80% of the bottom changing frequently; pools almost absent due to substantial sediment deposition.					
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
5. Channel Flow Status	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.					
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

SCORE	HABITAT CONDITION
160 – 200	OPTIMAL
110 – 159	SUB-OPTIMAL
60 – 109	MARGINAL
< 60	POOR

TOTAL HABITAT SCORE	HABITAT CONDITION

Habitat Parameter	Condition Category																				
	Optimal					Suboptimal					Marginal					Poor					
6. Channel Alteration	Channelization or dredging absent or minimal; stream with normal pattern.					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 may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.					Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. In stream habitat greatly altered or removed entirely.					
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
7. Channel Sinuosity	The bends in the stream increase the stream length by 3 to 4 times compared to if it was in a straight line. (Note - channel braiding is considered normal in coastal plains and other low-lying areas. This parameter is not easily rated in these areas).					The bends in the stream increase the stream length by 2 to 3 times compared to if it was in a straight line.					The bends in the stream increase the stream length by 1 to 2 times compared to if it was in a straight line.					Channel straight; waterway has been channelized for a long distance.					
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
8. Bank Stability (score each bank)	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.					
Note: determine left or right side by facing DOWNSTREAM.																					
SCORE – LEFT BANK	10 9					8 7 6					5 4 3					2 1 0					
SCORE – RIGHT BANK	10 9					8 7 6					5 4 3					2 1 0					
9. Bank Vegetative Protection (score each bank)	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or non-woody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.					70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.					50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.					Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.					
Note: determine left or right side by facing DOWNSTREAM.																					
SCORE – LEFT BANK	10 9					8 7 6					5 4 3					2 1 0					
SCORE – RIGHT BANK	10 9					8 7 6					5 4 3					2 1 0					
10. Riparian Vegetative Zone Width (score each bank)	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.					Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.					Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.					Width of riparian zone <6 meters: little or no riparian vegetation due to human activities.					
Note: determine left or right side by facing DOWNSTREAM.																					
SCORE – LEFT BANK	10 9					8 7 6					5 4 3					2 1 0					
SCORE – RIGHT BANK	10 9					8 7 6					5 4 3					2 1 0					