



## Biological Monitoring Data Form for Muddy Bottom Method

Name of Stream: \_\_\_\_\_ Station ID: \_\_\_\_\_

Name of Certified Monitor(s): \_\_\_\_\_

Group/Organization: \_\_\_\_\_ Number of Participants: \_\_\_\_\_

Latitude: \_\_\_\_\_ Longitude: \_\_\_\_\_

County/State: \_\_\_\_\_

Survey Date: \_\_\_\_\_ Start Time: \_\_\_\_\_ End Time: \_\_\_\_\_

Description of Site Location: \_\_\_\_\_

### MUDDY BOTTOM SAMPLING

Record the number of jabs taken from each habitat type (20 jabs total). Total jabs taken from a particular habitat type should be proportionate to the overall percentage of the habitat type in the sample area.

Banks \_\_\_\_\_ Woody Snags \_\_\_\_\_

Riffles (Cobble Areas) \_\_\_\_\_ Submerged Aquatic Vegetation \_\_\_\_\_

### PHYSICAL CONDITIONS (check all that apply)

Today: ☐ Sunny ☐ Overcast ☐ Intermittent Rain ☐ Steady Rain ☐ Heavy Rain ☐ Snow  
Yesterday: ☐ Sunny ☐ Overcast ☐ Intermittent Rain ☐ Steady Rain ☐ Heavy Rain ☐ Snow  
Day Before Yesterday: ☐ Sunny ☐ Overcast ☐ Intermittent Rain ☐ Steady Rain ☐ Heavy Rain ☐ Snow

Water Temperature: \_\_\_\_\_ °C Avg. Stream Width \_\_\_\_\_ ft.

Flow Rate: \_\_\_\_\_ (high, normal, low) Avg. Stream Depth \_\_\_\_\_ in.

### OTHER COMMENTS

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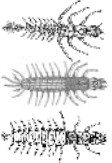




















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**MACROINVERTEBRATE COUNT**

Macroinvertebrate	Tally	Count	Macroinvertebrate	Tally	Count
Worms 			Alderflies, Fishflies, and Hellgrammites 		
Flat Worms 			Common Net-spinning Caddisflies 		
Leeches 			Most Caddisflies (not Net-spinning) 		
Crayfish 			Beetles 		
Sowbugs 			Midges 		
Scuds 			Black Flies 		
Shrimp (Freshwater) 			True Bugs 		
Stoneflies 			True Flies 		
Mayflies 			Gilled Snails 		
Dragonflies (not Gomphidae) and Damselflies 			Lunged Snails 		
Gomphidae (clubtail) Dragonfly 			Clams 		
			Other benthic macroinvertebrates		
			Total number of organisms in the sample (include "other" category)		

## INDIVIDUAL METRICS

	Organism Groups	Number of Organisms		Total Number of Organisms in the Sample		Percent (This is your value for this metric.)
<b>Metric 1</b>	Mayflies + Stoneflies + Most Caddisflies ( <i>not Common Netspinning</i> )		÷		Multiply by 100	%
<b>Metric 2</b>	Gomphidae (clubtail) Dragonflies		÷		Multiply by 100	%

### Metric 3: Tolerant

Organism Groups	Number of Organisms
Black Flies	
Clams	
Dragonflies and Damselflies	
Flatworms	
Leeches	
Lunged Snails	
Midges	
Scuds	
Sowbugs	
Worms	
<b>Total Tolerant</b>	
÷	
<b>Total number of organisms in sample</b>	
Multiply by 100	
<b>Percent</b> (This is your value for Metric 3.)	%

### Metric 4: Non-Insect

Organism Groups	Number of Organisms
Clams	
Crayfish	
Flatworms	
Gilled Snails	
Leeches	
Lunged Snails	
Scuds	
Sowbugs	
Worms	
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<b>Total Non-Insect</b>	
÷	
<b>Total number of organisms in sample</b>	
Multiply by 100	
<b>Percent</b> (This is your value for Metric 4.)	%

## MULTIMETRIC INDEX (STREAM HEALTH SCORE)

	<b>Metric Organism</b>	<b>Your Metric Value</b>	<b>6</b>	<b>3</b>	<b>0</b>
<b>Metric 1</b>	Mayflies + Stoneflies+ Most Caddisflies		Greater than 7.8	0.85 - 7.8	Less than 0.85
<b>Metric 2</b>	Gomphidae (clubtail) Dragonflies		Greater than 0.5	0 - 0.5	0
<b>Metric 3</b>	Tolerant		Less than 63	63 - 85	Greater than 85
<b>Metric 4</b>	Non-Insects		Less than 27	27 - 70	Greater than 70
			<b>Total # of 6s:</b>	<b>Total # of 3s:</b>	<b>Total # of 0s:</b>
			<b>Multiply by 6:</b>	<b>Multiply by 3:</b>	<b>Multiply by 0:</b>
		<b>SUBTOTALS</b>			

Add the three subtotals to get the Save Our Streams Multimetric Index Score: \_\_\_\_\_

- ☐ **Acceptable Ecological Condition (Greater than 14)**
- ☐ **Ecological conditions cannot be determined at this time/Grayzone (8 - 14)**
- ☐ **Unacceptable Ecological Condition (0 - 7)**

## STREAM CONDITIONS

<b>Fish water quality indicators:</b> <input type="checkbox"/> scattered individuals <input type="checkbox"/> scattered schools <input type="checkbox"/> trout (pollution sensitive) <input type="checkbox"/> bass (somewhat sensitive) <input type="checkbox"/> catfish (pollution tolerant) <input type="checkbox"/> carp (pollution tolerant)	<b>Barriers to fish movement:</b> <input type="checkbox"/> beaver dams <input type="checkbox"/> man-made dams <input type="checkbox"/> waterfalls (> 1 ft.) <input type="checkbox"/> none <input type="checkbox"/> other _____	<b>Surface water appearance:</b> <input type="checkbox"/> clear <input type="checkbox"/> clear, but tea colored <input type="checkbox"/> colored sheen (oily) <input type="checkbox"/> foamy <input type="checkbox"/> milky <input type="checkbox"/> muddy <input type="checkbox"/> black <input type="checkbox"/> grey <input type="checkbox"/> other _____	<b>Streambed deposit (bottom):</b> <input type="checkbox"/> grey <input type="checkbox"/> orange/red <input type="checkbox"/> yellow <input type="checkbox"/> black <input type="checkbox"/> brown <input type="checkbox"/> silt <input type="checkbox"/> sand <input type="checkbox"/> other _____
<b>Odor:</b> <input type="checkbox"/> musky <input type="checkbox"/> oil <input type="checkbox"/> sewage <input type="checkbox"/> other _____ <input type="checkbox"/> none	<b>Stability of streambed</b> (bed sinks beneath your feet in): <input type="checkbox"/> no spots <input type="checkbox"/> a few spots <input type="checkbox"/> many spots	<b>Algae color:</b> <input type="checkbox"/> light green <input type="checkbox"/> dark green <input type="checkbox"/> brown coated <input type="checkbox"/> matted on stream bed <input type="checkbox"/> hairy	<b>Algae located:</b> <input type="checkbox"/> everywhere <input type="checkbox"/> in spots <input type="checkbox"/> % covered _____
<b>Stream channel shade:</b> <input type="checkbox"/> full (more than 75%) <input type="checkbox"/> high (50% - 74%) <input type="checkbox"/> moderate (25% - 49%) <input type="checkbox"/> slight (1% - 24%) <input type="checkbox"/> none	<b>Streambank composition (=100%):</b> <input type="checkbox"/> trees <input type="checkbox"/> shrubs <input type="checkbox"/> grass <input type="checkbox"/> bare soil <input type="checkbox"/> rocks <input type="checkbox"/> other _____	<b>Streambank erosion:</b> <input type="checkbox"/> severe (more than 75%) <input type="checkbox"/> high (50% - 74%) <input type="checkbox"/> moderate (25% - 49%) <input type="checkbox"/> slight (1% - 24%) <input type="checkbox"/> none	<b>Riffle composition (=100%):</b> _____ % silt (mud) _____ % sand (1/16" - 1/4" grains) _____ % gravel (1/4" - 2" stones) _____ % cobbles (2" - 10" stones) _____ % boulders (> 10" stones) (Not applicable to Muddy Bottom Streams)

## LAND USES IN THE WATERSHED (UPSTREAM AND SURROUNDING SAMPLING SITE)

Indicate whether the following land uses within a one-mile radius of your sampling site have a high (H), moderate (M), slight (S), or no (N) potential impact to the quality of your stream.

_____ Oil & gas drilling	_____ Urban uses (parking lots, highways, etc.)	_____ Agriculture (type: _____)
_____ Housing developments	_____ Sanitary landfill	_____ Trash dump
_____ Forestry	_____ Active construction	_____ Fields
_____ Logging	_____ Mining (type: _____)	_____ Livestock pasture
		_____ Other _____

**COMMENTS:** Describe the amount and type of litter in and around the stream and indicate the current and potential future threats to the stream's health.

Please send your datasheets to your regional coordinator or submit them online at [www.vasos.org](http://www.vasos.org). If you have any questions about this protocol, please contact the VA SOS Coordinator at [vasos@iwla.org](mailto:vasos@iwla.org). Data sheets must be stored for five years after sampling. If you are unable to keep your datasheets, please contact the VA SOS Coordinator.