



**Chesapeake
Monitoring
Cooperative**

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 predominate condition for each day)

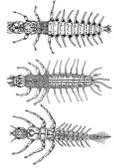
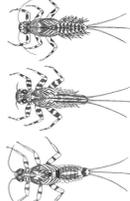
| | | | | | | |
|-----------------------|--------------------------------|-----------------------------------|--|--------------------------------------|-------------------------------------|-------------------------------|
| Today: | <input type="checkbox"/> Sunny | <input type="checkbox"/> Overcast | <input type="checkbox"/> Intermittent Rain | <input type="checkbox"/> Steady Rain | <input type="checkbox"/> Heavy Rain | <input type="checkbox"/> Snow |
| Yesterday: | <input type="checkbox"/> Sunny | <input type="checkbox"/> Overcast | <input type="checkbox"/> Intermittent Rain | <input type="checkbox"/> Steady Rain | <input type="checkbox"/> Heavy Rain | <input type="checkbox"/> Snow |
| Day Before Yesterday: | <input type="checkbox"/> Sunny | <input type="checkbox"/> Overcast | <input type="checkbox"/> Intermittent Rain | <input type="checkbox"/> Steady Rain | <input type="checkbox"/> Heavy Rain | <input type="checkbox"/> Snow |

Water Temperature: _____ C° Avg. Stream Width _____ ft.

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

SAMPLING NOTES

MACROINVERTEBRATE COUNT

| Macroinvertebrate | Tally | Count | Macroinvertebrate | Tally | Count |
|--|-------|-------|---|-------|-------|
| Worms  | | | Alderflies, Fishflies, and Hellgrammites  | | |
| Flat Worms  | | | Common Netspinning Caddisflies  | | |
| Leeches  | | | Most Caddisflies (not Netspinning)  | | |
| 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 <i>(This is your value for this metric.)</i> |
|-----------------|---|---------------------|---|---|--------------------|---|
| Metric 1 | Mayflies + Stoneflies + Most Caddisflies <i>(not Common Netspinning)</i> | | ÷ | | Multiply by 100 | % |
| Metric 2 | 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 | |
| Total Tolerant | |
| ÷ | |
| Total number of organisms in sample | |
| Multiply by 100 | |
| Percent <i>(This is your value for Metric 3.)</i> | % |

Metric 4: Non-Insect

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

NUMBER OF QUADRANTS FULLY PICKED (check one)

1 2 3 4

MULTIMETRIC INDEX (STREAM HEALTH SCORE)

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

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 (check all that apply)

| | | | |
|--|---|---|---|
| <p>Fish water quality indicators:</p> <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) | <p>Barriers to fish movement:</p> <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 _____ | <p>Surface water appearance:</p> <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 _____ | <p>Streambed deposit (bottom):</p> <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 _____ |
| <p>Odor:</p> <input type="checkbox"/> musky <input type="checkbox"/> oil <input type="checkbox"/> sewage <input type="checkbox"/> other _____ <input type="checkbox"/> none | <p>Stability of streambed (bed sinks beneath your feet in):</p> <input type="checkbox"/> no spots <input type="checkbox"/> a few spots <input type="checkbox"/> many spots | <p>Algae color:</p> <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 | <p>Algae located:</p> <input type="checkbox"/> everywhere <input type="checkbox"/> in spots <input type="checkbox"/> % covered _____ |
| <p>Stream channel shade:</p> <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 | <p>Streambank composition (=100%):</p> <p>_____ % trees</p> <p>_____ % shrubs</p> <p>_____ % grass</p> <p>_____ % bare soil</p> <p>_____ % rocks</p> <p>_____ % other</p> | <p>Streambank erosion:</p> <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 | |

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. Leave blank if not present.

| | | |
|----------------------------|---|---------------------------------|
| _____ 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 _____ |

LAND USE NOTES: 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.

Submit data online at www.cleanwaterhub.org. If you have any questions about this protocol, please contact the VA SOS Coordinator at 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.