

# C. STUDENT FIELD DATA SHEETS

Student Name \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_

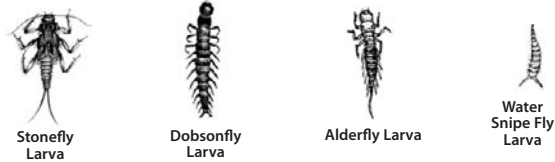
Stream \_\_\_\_\_ Location \_\_\_\_\_

Parameter to find	Your Group's Results			Units
<b>Transparency</b>	trial 1	trial 2	average	cm
<b>Water Temperature</b>				°C
<b>Air Temperature</b>				°C
<b>Weather</b>	<input type="checkbox"/> sunny <input type="checkbox"/> partly sunny <input type="checkbox"/> mostly cloudy <input type="checkbox"/> raining <input type="checkbox"/> snowing			--
<b>Dissolved Oxygen</b>	# drops of thiosulfate / 2 = _____			mg/L
<b>Habitat Score</b>	Total of all scores from Habitat Checklist _____			--

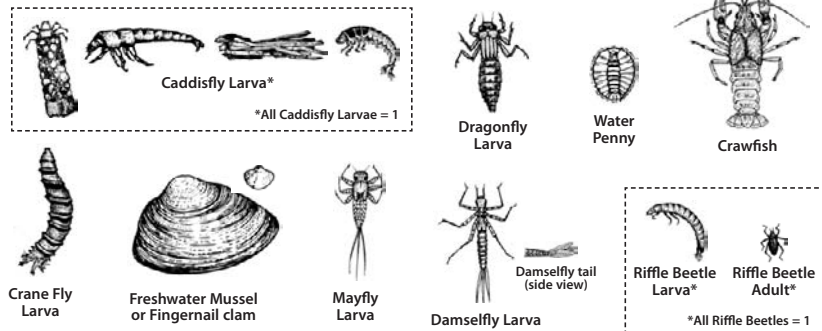
Stream Flow	
Length assessed _____	
Stream width _____	
Interval	Depth (indicate units)
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	
Velocity float trials	Time (seconds)
1	
2	
3	
4	

## Biotic Index (size of illustrations not proportional)

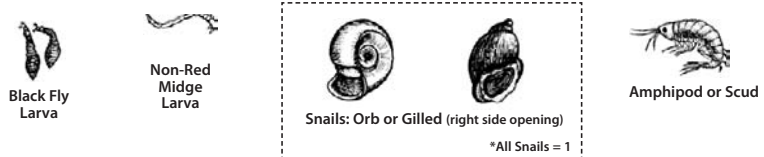
**Group 1: These are sensitive to pollutants. Circle each animal found.**



**Group 2: These are semi-sensitive to pollutants. Circle each animal found.**



**Group 3: These are semi-tolerant of pollutants. Circle each animal found.**



**Group 4: These are tolerant of pollutants. Circle each animal found.**



## Finding Your Watershed

Refer to your map and answer the following questions:

1. What is the scale on this map? \_\_\_\_\_
2. Locate the stream you are studying. Now locate your school. What is the straight-line distance from stream to your school? (Estimate the distance if your school and the stream site are not located on the same map.)  
\_\_\_\_\_
3. What bodies of water flow into the stream you are studying? \_\_\_\_\_
4. Are the contour lines close together or far apart near the stream at your monitoring site? \_\_\_\_\_
5. What does this tell you about the slope of the land alongside the stream?  
\_\_\_\_\_
6. Describe the watershed surrounding this stream (e.g., How is the land used?, What is the topography like?, etc.)  
\_\_\_\_\_  
\_\_\_\_\_
7. What body of water does this stream flow into? \_\_\_\_\_
8. What else can you say about this stream and the land nearby it, by studying this map?  
\_\_\_\_\_  
\_\_\_\_\_

## Magic Spot

Take a moment to observe your surroundings using four of your senses. List descriptive words for each:

SIGHT	HEARING	SMELL	TOUCH
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Now use some of those descriptive words to write about this location/experience/habitat, etc. You might choose to write a few Haikus (three lines consisting of 5-7-5 syllables, respectively) or a descriptive paragraph.

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Student Name \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_

Stream \_\_\_\_\_ Location \_\_\_\_\_

**Habitat Assessment for ROCKY-Bottom Streams**



*Directions:* Each parameter is listed in the column along the left-hand side, starting with riparian vegetation. Read each numbered category in the row to find the best match for your stream. Circle the number in that category. Add up your scores for both left and right banks (or one total score) and enter total at left under parameter description. **Determine left or right banks by looking upstream (where water is coming from).**

Habitat Parameter	4	3	2	1
<p><b>1. Riparian Vegetation</b> Estimate width of riparian vegetation along each bank. Score entire 300 ft.</p> <p>Left Bank: _____</p> <p>Right Bank: _____</p> <p>Total Score: _____</p>	<p>Width of riparian vegetation is more than 50 feet; no evidence of human activities (e.g. parking lots, roadbeds, mowed areas, crops, clearcuts) within the zone.</p> <p>Left Bank: 4 Right Bank: 4</p>	<p>Width of riparian vegetation is 36-50 feet.</p> <p>Left Bank: 3 Right Bank: 3</p>	<p>Width of riparian vegetation is 20-35 feet.</p> <p>Left Bank: 2 Right Bank: 2</p>	<p>Width of riparian vegetation is less than 20 feet.</p> <p>Left Bank: 1 Right Bank: 1</p>
<p><b>2. Bank Vegetation</b> Estimate percentage of vegetation along each bank. Score entire 300 ft.</p> <p>Left Bank: _____</p> <p>Right Bank: _____</p> <p>Total Score: _____</p>	<p>More than 90% of the streambank surfaces covered by natural vegetation, including trees, shrubs, or other plants. No evidence of grazing or mowing; almost all plants allowed to grow naturally.</p> <p>Left Bank: 4 Right Bank: 4</p>	<p>Seventy to 90% of the streambank surfaces covered by natural vegetation; plant variety limited to one or two species. Slight vegetative disruption evident.</p> <p>Left Bank: 3 Right Bank: 3</p>	<p>Fifty to 69% of the streambank surfaces covered by vegetation. Patches of bare soil or closely cropped vegetation more common.</p> <p>Left Bank: 2 Right Bank: 2</p>	<p>Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very common; vegetation has been cut to 2 inches or less; resembles a lawn.</p> <p>Left Bank: 1 Right Bank: 1</p>
<p><b>3. Bank Stability</b> Estimate stability of each bank. Note: artificial embankments are classified as channel alterations in #4. Score entire 300 ft.</p> <p>Left Bank: _____</p> <p>Right Bank: _____</p> <p>Total Score: _____</p>	<p>Banks stable – no evidence of erosion or bank slumping (less than 5%).</p> <p>Left Bank: 4 Right Bank: 4</p>	<p>Moderately stable; infrequent, small areas of erosion mostly healed over with new vegetation evident.</p> <p>Left Bank: 3 Right Bank: 3</p>	<p>Moderately unstable; over half of banks in site have areas of erosion; high erosion potential during floods (no vegetation, steeply sloping banks).</p> <p>Left Bank: 2 Right Bank: 2</p>	<p>Unstable; many eroded areas; bare areas frequent along straight sections and bends; obvious bank collapse or failure; half to all of the bank has erosional scars.</p> <p>Left Bank: 1 Right Bank: 1</p>
<p><b>4. Channel Alteration</b> Estimate extent of channel modification for entire 300 ft.</p> <p>Total Score: _____</p>	<p>Stream with normal or meandering pattern. No channelization, dredging or artificial embankments (e.g., riprap).</p> <p>4</p>	<p>Some stream straightening, artificial embankments or dams are present, (usually in area of bridge abutments) no evidence of recent channel alteration activity.</p> <p>3</p>	<p>Artificial embankments present on both banks and more than half of stream site straightened, dredged or otherwise altered.</p> <p>2</p>	<p>Banks shored with gabions (a fortified embankment) or concrete; over 80% of the site straightened or disrupted.</p> <p>1</p>
<p><b>5. Channel Flow Status</b> Assess water level within stream channel for entire 300 ft.</p> <p>Total Score: _____</p>	<p>Water reaches base of both shorelines and a minimal amount of channel substrate is exposed.</p> <p>4</p>	<p>Water fills more than 75% of the channel; some channel substrate is exposed.</p> <p>3</p>	<p>Water fills about half of the channel and/or riffle substrates are mostly exposed. Water is shallow (less than 18 inches deep).</p> <p>2</p>	<p>Very little water in channel.</p> <p>1</p>

Flip over  
↓  
more

(continued from other side)

**Habitat Assessment for ROCKY-Bottom Streams**

Habitat Parameter	4	3	2	1
<p><b>6. Stream velocity/depth</b> To estimate velocity, time how long it takes a stick to float 20 ft. Repeat five times. Divide average time into 20 to get feet per second. Slow is less than one foot per second. Shallow is &lt;18".</p>	<p>All four velocity/depth combinations are present:  A. slow/deep B. fast/deep C. slow/shallow D. fast/shallow</p>	<p>Three of the four velocity/depth combinations are present. Circle three that are present:  A. slow/deep B. fast/deep C. slow/shallow D. fast/shallow</p>	<p>Only two of the four velocity/depth combinations are present. Circle two that are present:  A. slow/deep B. fast/deep C. slow/shallow D. fast/shallow</p>	<p>Dominated by one velocity/depth category. Circle one that is present:  A. slow/deep B. fast/deep C. slow/shallow D. fast/shallow</p>
Total Score: _____	4	3	2	1
<p><b>7. In-stream habitat for fish</b> Assess available habitat structure for fish within the stream. Score entire 300 ft.</p>	<p>Over 50% of the site has submerged logs, undercut banks, large rocks/cobble or other stable habitat.</p>	<p>Thirty percent to 50% of site has submerged logs, undercut banks, large rocks/cobble or other stable habitat.</p>	<p>Less than 30% of site has submerged logs, undercut banks, rocks/cobble or other stable habitat.</p>	<p>Less than 10% of site has any fish habitat; lack of habitat obvious.</p>
Total Score: _____	4	3	2	1
<p><b>8. Sediment Deposition</b> Sediments are naturally deposited in slow-flow parts of streams. High levels of deposition create an unstable, continually changing bottom.</p>	<p>Very little of bottom affected; minor accumulation of fine and coarse material at snags and submerged vegetation; little or no enlargement of islands or point bars.</p>	<p>Less than half of the bottom affected; moderate accumulation; substantial sediment/sand movement only during major storm event; some new increase in bar formation.</p>	<p>More than half of bottom affected with major deposits; pools shallow, heavily silted; large deposits may be present on both banks; sediment deposits are an obstruction to the water flow.</p>	<p>Heavy deposits of fine material. Increased bar development. More than 50% of the bottom changing frequently. Pools almost absent due to substantial sediment/sand deposition.</p>
Total score: _____	4	3	2	1
<p><b>9. Embeddedness</b> Estimate how much sand or sediment is burying rocks in stream bottom. Assess only at riffle or run areas (fast, turbulent waters).</p>	<p>Rocks are easy to move, very little surrounding sediment.</p>	<p>Rocks are half buried by fine sediment, more difficult to move.</p>	<p>Rocks mostly covered by fine sediment and need to be dislodged.</p>	<p>Fine sediment covering rocks; mostly buried. Rocks will not dislodge without digging out.</p>
Total score: _____	4	3	2	1
<p><b>10. Attachment Sites for Macroinvertebrates</b> Assess riffle size and substrate as habitat for macroinvertebrates. Assess only at riffle areas (fast, turbulent waters).</p>	<p>Riffle is as wide as stream and length is twice as long; cobble predominates; boulders and gravel are common.</p>	<p>Riffle is as wide and as long as stream width. Cobble less abundant; boulders and gravel common.</p>	<p>Riffle is not as wide as stream and length is less than the width. Run area may be lacking. Gravel or large boulders and bedrock prevalent; some cobble present.</p>	<p>Riffle is virtually non-existent; large boulders and bedrock prevalent; cobble lacking.</p>
Total score: _____	4	3	2	1

**Grand total score for 1-10** \_\_\_\_\_

Student Name \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_

Stream \_\_\_\_\_ Location \_\_\_\_\_

**Habitat Assessment for SOFT-Bottom Streams**



*Directions:* Each parameter is listed in the column along the left-hand side, starting with riparian vegetation. Read each numbered category in the row to find the best match for your stream. Circle the number in that category. Add up your scores for both left and right banks (or one total score) and enter total at left under parameter description. **Determine left or right banks by looking upstream (where water is coming from).**

Habitat Parameter	4	3	2	1
<p><b>1. Riparian Vegetation</b> Estimate average width of riparian vegetation along each bank for entire 300 ft.</p> <p>Left Bank: _____</p> <p>Right Bank: _____</p> <p>Total Score: _____</p>	<p>Width of riparian vegetation is more than 50 feet; no evidence of human activities (e.g. parking lots, roadbeds, mowed areas, crops, clearcuts) within the zone.</p> <p>Left Bank: 4 Right Bank: 4</p>	<p>Width of riparian vegetation is 36-50 feet.</p> <p>Left Bank: 3 Right Bank: 3</p>	<p>Width of riparian vegetation is 20-35 feet.</p> <p>Left Bank: 2 Right Bank: 2</p>	<p>Width of riparian vegetation is less than 20 feet.</p> <p>Left Bank: 1 Right Bank: 1</p>
<p><b>2. Bank Vegetation</b> Estimate percentage of vegetation along each bank for entire 300 ft.</p> <p>Left Bank: _____</p> <p>Right Bank: _____</p> <p>Total Score: _____</p>	<p>More than 90% of the streambank surfaces covered by natural vegetation, including trees, shrubs, or other plants. No evidence of grazing or mowing; almost all plants allowed to grow naturally.</p> <p>Left Bank: 4 Right Bank: 4</p>	<p>Seventy to 90% of the streambank surfaces covered by natural vegetation; plant variety limited to one or two species. Slight vegetative disruption evident.</p> <p>Left Bank: 3 Right Bank: 3</p>	<p>Fifty to 69% of the streambank surfaces covered by vegetation. Patches of bare soil or closely cropped vegetation more common.</p> <p>Left Bank: 2 Right Bank: 2</p>	<p>Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very common; vegetation has been cut to 2 inches or less; resembles a lawn.</p> <p>Left Bank: 1 Right Bank: 1</p>
<p><b>3. Bank Stability</b> Assess bank stability/erosion for entire 300 ft.</p> <p>Left Bank: _____</p> <p>Right Bank: _____</p> <p>Total Score: _____</p>	<p>Banks stable – no evidence of erosion or bank slumping (less than 5%).</p> <p>Left Bank: 4 Right Bank: 4</p>	<p>Moderately stable; infrequent, small areas of erosion mostly healed over with new vegetation evident.</p> <p>Left Bank: 3 Right Bank: 3</p>	<p>Moderately unstable; over half of banks in site have areas of erosion; high erosion potential during floods (no vegetation, steeply sloping banks).</p> <p>Left Bank: 2 Right Bank: 2</p>	<p>Unstable; many eroded areas; bare areas frequent along straight sections and bends; obvious bank collapse or failure; half to all of the bank has erosional scars.</p> <p>Left Bank: 1 Right Bank: 1</p>
<p><b>4. Channel Alteration</b> Estimate extent of channel modification for entire 300 ft.</p> <p>Total Score: _____</p>	<p>Stream with normal or meandering pattern. No channelization, dredging or artificial embankments (e.g., riprap).</p> <p>4</p>	<p>Some stream straightening, artificial embankments or dams are present, (usually in area of bridge abutments) no evidence of recent channel alteration activity.</p> <p>3</p>	<p>Artificial embankments present on both banks and more than half of stream site straightened, dredged or otherwise altered.</p> <p>2</p>	<p>Banks shored with gabions (a fortified embankment) or concrete; over 80% of the site straightened or disrupted.</p> <p>1</p>
<p><b>5. Channel Flow Status</b> Assess water level within stream channel for entire 300 ft.</p> <p>Total Score: _____</p>	<p>Water reaches base of both shorelines and a minimal amount of channel substrate is exposed.</p> <p>4</p>	<p>Water fills more than 75% of the channel; some channel substrate is exposed.</p> <p>3</p>	<p>Water fills about half of the channel and/or riffle substrates are mostly exposed. Water is shallow (less than 18 inches deep).</p> <p>2</p>	<p>Very little water in channel; banks blown out by excessive erosion and the normal flow does not reach the new shorelines.</p> <p>1</p>

Flip over for more ↓

(continued from other side)

**Habitat Assessment for SOFT-Bottom Streams**

Habitat Parameter	4	3	2	1
<p><b>6. Channel Sinuosity</b> Assess how bends in the stream affect its length for entire 300 ft.</p>	The bends in the stream increase the stream length by three or four times if the channel were straightened out.	The bends in the stream increase the stream length more than two to three times if the channel were straightened out.	The bends in the stream increase the stream length one to two times if the channel were straightened out.	Channel is straight; waterway has been straightened for a long distance.
Total Score: _____	4	3	2	1
<p><b>7. Sediment Deposition</b> Sediments are naturally deposited in slow-flow parts of streams. High levels of deposition create an unstable, continually changing bottom.</p>	Very little of bottom affected; minor accumulation of fine and coarse material at snags and submerged vegetation; little or no enlargement of islands or point bars.	Less than half of the bottom affected; moderate accumulation; substantial sediment/sand movement only during major storm event; some new increase in bar formation.	More than half of bottom affected with major deposits; pools shallow, heavily silted; large deposits may be present on both banks; sediment deposits are an obstruction to the water flow.	Heavy deposits of fine material. Increased bar development. More than 50% of the bottom changing frequently. Pools almost absent due to substantial sediment/sand deposition.
Total score: _____	4	3	2	1
<p><b>8. Pool Variability</b> Assess pool size and depth. Shallow=less than 18 inches deep. Score pools within entire 300 ft.</p>	All size/depth combinations present: A. large-shallow B. large-deep C. small-shallow D. small-deep	Majority of pools: A. large-deep	Majority of pools: A. shallow	Majority of pools: A. small-shallow or B. absent
Total score: _____	4	3	2	1
<p><b>9. Pool Substrate</b> Assess bottom materials within pools. Score pool areas only.</p>	Mixture of substrate materials with gravel and firm sand prevalent. Root mats, submerged vegetation or other fish cover common.	Mixture of soft sand, mud, or clay; mud may be dominant. Some root mats, submerged vegetation or other fish cover present.	All mud, clay or sand bottom. Little or no root mat, submerged vegetation, or other fish cover.	Hardpan clay or bedrock; no cover of any kind for fish or other aquatic life.
Total score: _____	4	3	2	1
<p><b>10. Attachment Sites for Macroinvertebrates; Shelter for Fish</b> Assess habitat structure for fish and macroinvertebrates. Score entire 300 ft.</p>	Over half of the site has submerged logs, snags, undercut banks or other stable habitat that provides cover for fish and aquatic life.	One-third to one-half of the site has submerged logs, undercut banks or other stable habitat.	Less than one-third of the site has submerged logs, undercut banks or other stable habitat.	Very little fish habitat; lack of habitat for fish and aquatic life obvious.
Total score: _____	4	3	2	1

**Grand total score for 1-10** \_\_\_\_\_