• PROCEDURE for the STREAM HABITAT ASSESSMENT •

Huron River Watershed Council

Protecting the river since 1965

updated: July 2011

Overview:

Summary: Map and make observations on a 300-foot stretch of the stream, and measure transects on the downstream half of that (150 feet). Record information on the stream habitat assessment form. Draw a map that fulfills the quality assurance questions asked on the back of the map form.

1. To begin the inventory, label all pages of stream habitat assessment form.

2. The team member in charge of drawing the map can begin this process.

3. At the same time, the other team members can conduct 10 transects, each separated by 15 feet. Start at the downstream end of your study site and work upstream.

3. After transects and map are complete, walk the remainder of the 300 foot stream segment and then finish the rest of the assessment. Your observations must come from the entire 300 stream feet of the study site.

4. We encourage you to take pictures: of the stream, of your team in the stream, and anything else that helps explain your observations. Email your pictures to **psteen@hrwc.org** or bring them into the office on a CD or flash drive.

Map Drawing Instructions:

The goal of the map is to create something simple that is easily interpreted by someone who is not familiar with the site. Before drawing the map, consult the following list of questions. You want to make sure that you will be able to answer "yes" to each one. Draw your first transect only. This map will be used by River Roundup participants to help them find this location, and so should not be filled up with information only pertinent to this Measuring and Mapping program, but contain information of a more general use.

1) Are you using a pencil?
2) Is all of your writing in printing, and not cursive?
3) Is north facing the top of the page? (In the case of east-west streams, please keep north at the top of the page anyway. Just make the picture smaller.)
4) Have you included a parking location?
5) Have you included nearby roads?
6) Have you included the direction of stream flow?
7) Have you included some major, unmovable, instream landmarks that are unlikely to be affected by changes in water level (large rocks, pipes, pools)?
8) Have you included a couple of major, unmovable landmarks near the stream (large trees, buildings, fire hydrants, big rocks)?
9) Have you included approximately 300 feet of stream length on the map?
10) Did you lightly draw your **first and last** transect?
11) Have you kept the map simple, free from too much writing, and easy on the eyes?
12) Do you think another volunteer would be able to understand your map and use it to park near the stream and find the stream?

I. Transects and Stream Bank Measurements

A. TEN TRANSECTS

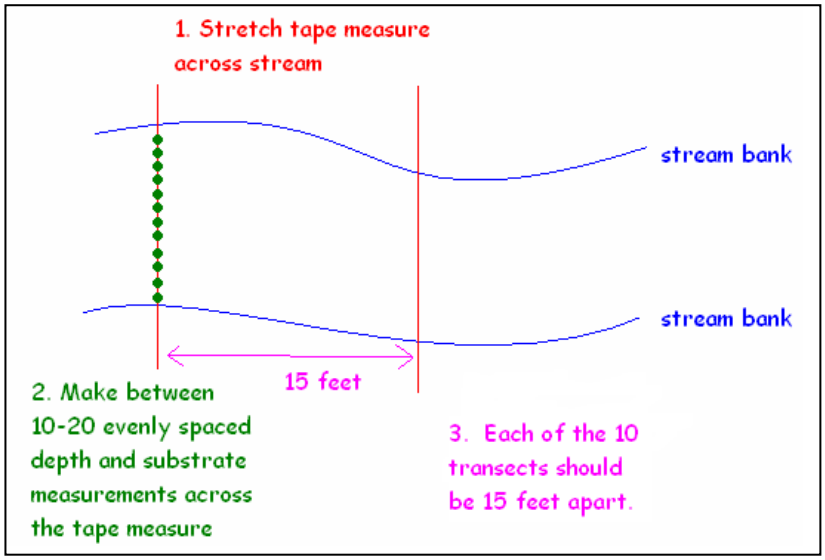
1) Start at the downstream end of the study site. Stretch the tape measure perpendicular across the stream. Measure the active channel width and the water's edge width (see diagrams).

2) Use the rod to measure depth (D) and substrate (S) at more than 10 but less than 20 regular intervals along the tape measure. (For streams less than 10 feet wide, measure approximately every 1/2 foot, for streams greater than 10 feet wide, measure every foot, etc.)

3) At every depth measurement, identify the single piece of substrate that the rod lands on (If it lands on two pieces, please pick one of them). Refer to the data sheet to see the different types of substrate.

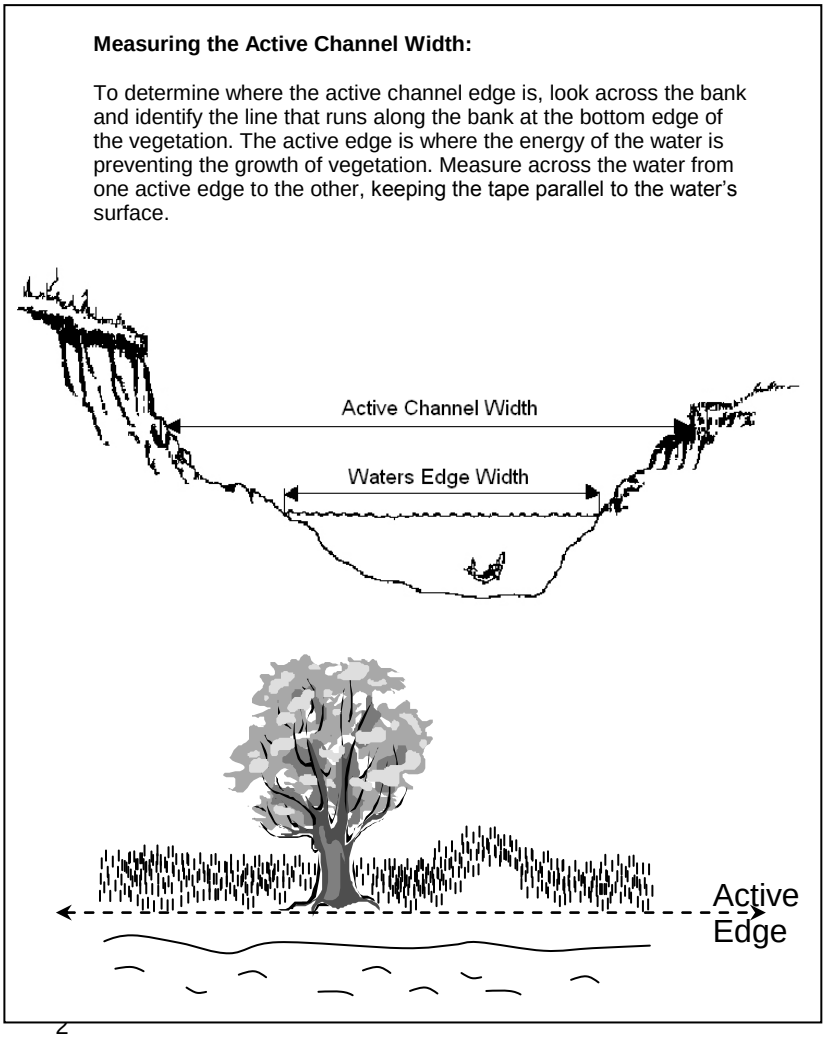
4) For every measurement, enter the number on the tape measure, the depth measurement, and the substrate type on the data sheet.

5) After the transect is complete, move upstream 15 feet and repeat the process. Repeat many times- please do 10 transects in total.



B. BANK HEIGHT

Vertical banks higher than 3 feet are usually unstable, while banks less than 1 foot, especially with overhang, provide good habitat for fish. While doing transects, measure the bank heights and draw the angle of the bank (right, acute, obtuse) as indicated on the data sheet. Also, if the bank angle is acute (undercut), record its width.



Observations

The remainder of the habitat questions refers to the entire 300 foot stretch. Answer these after the transects are completed so you will have had time to become more familiar with the stream. The answers to these questions are often subjective and will require the team to discuss and reach a consensus. If the team can not agree, record all answers. Do not overly stress about getting the exact "right" answer. Feel free to write comments anywhere on the data form.

II. General Characteristics

A. Flow patterns: As you walk, look for **pools** (areas of slower flow and greater depth than the surrounding areas), **eddies** (areas where the water seems to be moving against the main current or in a circular motion, usually on the sides), and **riffles** (wanna-be rapids, where the surface ripples), and note them on the Map. For each **pool** and **riffle** *of a reasonable size*, record the **depth** and the **length** in the table on the assessment.

B. Bends: Note whether the stream is straight and count the number of bends in the 300 foot study site.

C. Stream flow: estimate the current stream flow. Examine the banks for signs of the high water mark, and from this make your best guess of dry/stagnant, low, medium, or high.

D. Shade: Stand in the middle of the stream and estimate the percent of the stream that could be shaded by vegetation on the banks. Leafy shrubs and trees provide food (fallen leaves) as well as shade that help to keep the water cool.

E. Cool areas: Look for any places where the water seems cool or any places where springs occur, and if the springs are accompanied by an orange-yogurt like substance. This is a natural iron-containing substance produced by some types of bacteria.

F. Trash: If a large amount of trash is present, please note that. You are welcome to clean it up but that is not required.

G. Appearance or Odor: Note whether the water looks or smells strange, or if there is the presence of foam or oil sheens.

H. Pipes: Are there pipes flowing into the stream? Please note whether the opening extends out over the water or whether it empties onto the bank (this could potentially cause erosion.) Also, note areas of erosion around or behind the pipe; this occurs often with broken pipes.

ARE THERE ANY PROBLEMS THAT THE WATERSHED COUCIL NEEDS TO KNOW ABOUT?
Our volunteers are the eyes and ears of the watershed council. If there is a disturbance that seems to be happening at this location, please let the watershed council staff know by writing a comment in this section. If the problem is of immediate concern, please email Paul Steen at psteen@hrwc.org or call 734-769-5123 x 601.

III. Riparian Zone and Plant Community

Important: When identifying the left and right stream bank, please look downstream (everyone doing it this way will create consistency in the data).

A1&2. Riparian zone land use: Circle the land use types that you can see from the stream reach. Do not postulate or theorize on the land use that lies beyond your vision.

A2) Riparian zone size and quality: Rate the riparian zone between 0 (bad) and 10 (good) based on the criteria given in the data sheet. Plants next to the stream are very beneficial. The roots hold the banks in place and keep soil from being washed away during storms. Shade moderates summer temperatures. Plant parts that fall into the stream provide hiding and nesting places as well as food for microbes and other creek inhabitants. Stems and branches reduce the force of the water and provide stable, secluded substrate for creatures to rest in or live on.

B. Plant Community: Using the scale given on the datasheet, estimate the relative abundance of the different types of plants in the riparian zone (shrubs, trees, grasses) and in the stream (macrophytes, algae on rocks and plants, filamentous algae). You are also encouraged to record the names of plants that you can identify.

IV. Stream Substrate and Sediment

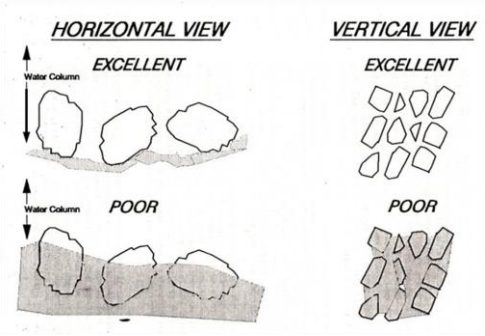
A. Stable Habitat (Hiding Places): Hiding places can be comprised of rocks, logs, undercut banks, grocery carts, trash, etc.

B. Sediment beyond the transects: Consider the amount of sediment or fine particles that cover the stream bottom in the area where the transects were measured and beyond. After completing the transects, note if the amount of fine material at the rest of the site is more, less, or the same amount as in the area of the transects. Do the same for large sediment: gravel, rock, cobble, boulders.

C. Sediment deposition: Note if new or recent deposition has occurred. Sediment deposition may cause the formation of islands, point bars (areas of increased deposition usually at the beginning of a meander that increases in size as the channel is diverted toward the outer bank) or shoals, or result in the filling of runs and pools. Usually deposition is evident in areas that are obstructed by natural or human-made debris and areas where the stream flow decreases, such as bends. High levels of sediment deposition are symptoms of an unstable and continually changing environment that becomes unsuitable to many organisms.

D. Soft bottom: Answer the questions about locations in the stream that have a soft bottom. Soft bottoms are usually the result of muck deposits or loose deposits of sand. Use caution around soft bottoms because walking across them can be difficult and you might get stuck in the muck.

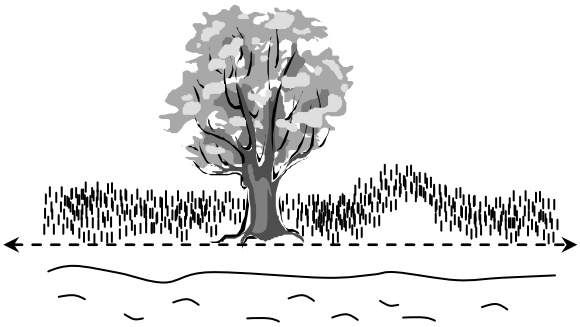
E. Embeddedness: In the upstream or central portions of riffles, estimate the extent to which the bottom substrate (gravel, rocks, logs, etc.) is covered by or sunken into the silt. We are using this question to assess whether living spaces are available to aquatic creatures or if they have been filled in by deposited muck or sand. On the datasheet, please note the percent of substrate **IN THE RIFFLE OR COBBLE AREA** that has been filled in by depositional materials. If the whole stream substrate is composed of fine sediment, there is also a place to record this information.



V. Bank Stability

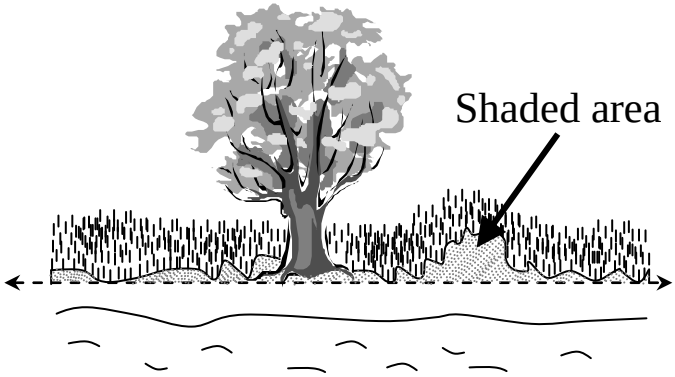
A. Bare Banks: Estimate the percent of the banks above the active edge that are bare soil. Bank areas covered by rocks, rip-rap, or anything else should not be considered bare. This is the area of the stream most susceptible to erosion. Take a photo of any large bare area. Also, estimate the percent of the bank heavily armored (by human action)- covered in concrete or rock.

B. Bank Stability: Estimate the stability of the banks over the entire 300 feet on a scale of 1 through 10, with 10 indicating no bank erosion and 0 indicating massive erosion. Use the descriptions on the data sheet as a guide.



Look for bare areas on the bank above the active edge.

Active Edge



Bare areas are shaded and appear to be about 25% of the areas between the Active Edge and the top of the bank.

Before You Leave

- Photograph one or more views that typify the state of the stream and make notes before leaving about what the photos show. Notes should include a reference to north, the direction of flow, and the approximate width of the stream. When photographing the site, stand in the middle of the stream and try to capture a significant length of the area studied. You may wish to take a photo of the beginning of the site and then move to capture the end of it, or you may wish to stand in the middle of the site and photograph upstream and downstream of your position.

- Be sure that someone **checks each page** of the Habitat Data Form and the Maps to be sure that they have been labeled and that **all** questions have been answered. The checker should initial each page after checking it.

- Finally, note the time you end the habitat assessment and double check that you have all the equipment.

- Thank you so much for your efforts!