

FIELD PROCEDURE: POOLS SURVEY

EQUIPMENT NEEDED:

- stadia rod
- bankfull width calculation from cross-section data sheet
- data sheet, clipboard, pencil

1. During your Cross Section Survey, you determined the bankfull width of your reach. Find your bankfull width on the following chart to determine the minimum residual pool depth for your reach (*from Schuett-Hames et al., TFW 1994*):

BANKFULL WIDTH	MINIMUM RESIDUAL POOL DEPTH
0-8.2' (ft.)	0.3' (ft.)
8.2-16.4'	0.7'
16.4-32.8'	0.8'
32.8-49.2'	1.0'
49.2-65.6'	1.2'
>65.6'	1.3'

2. Walk along your reach with the stadia rod, looking for possible pools. These will be areas with deeper water and slower current. (Pools partially within your reach will still count.)
3. If you find a possible pool, determine whether it has the minimum residual pool depth that you determined above. Residual depth is the level of water that would be in the pool if the water level were so low that water wasn't running out of it any more. To measure it, you need two measurements (see accompanying diagrams):
 - a) the **maximum depth**, which won't necessarily be in the middle of the pool (estimate the maximum depth if the pool is too deep to fully access); and
 - b) the pool's **outlet depth**, taken at deepest point of the crest or obstruction that forms the pool's downstream outlet. The downstream end of the pool is the

point at which the calm water begins to accelerate. Look for a narrowing tongue of calm pool water that runs down the middle or side of the stream on the downstream end of the pool. The apex of that tongue should be the deepest part of the outlet.

The pool's **residual depth** is the difference between these two depths.

4. If the pool qualifies according to the above criteria, write its residual depth to the nearest tenth of a foot on your data sheet.
5. For each pool, record pool-forming factors. Keep in mind that pools form in two ways:
 - Obstructions can dam the stream and form a pool upstream of the dam.
 - Objects or channel features can direct the water flow in such a way that it scours out the stream bottom in a certain place. Such scour pools are formed and maintained during high-water events, when the stream has a great deal of energy to move sediment. If you visualize these high-water events, you'll often be able to surmise what created a scour pool.

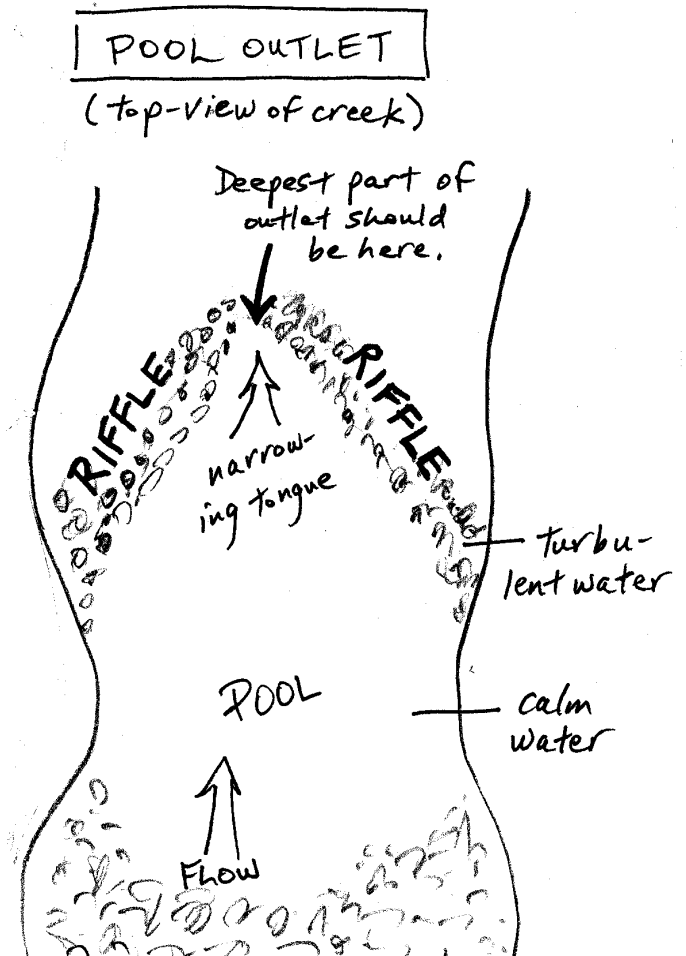
On your data sheet, check off as many of these pool-forming factors as apply:

- a) **Instream wood:** A piece of wood can dam the water upstream of it; cause turbulence downstream that digs out a pool; or do both.
- b) **Instream rocks or exposed bedrock:** Same as instream wood.
- c) **Roots of standing trees or stumps:** Can cause the stream to dig out an area underneath or downstream.
- d) **Outside of bend:** Greater hydraulic energy at the outsides of bends can dig pools out of the bank.
- e) **Resistant banks upstream** (may be rock, clay or armored): Can "bounce"

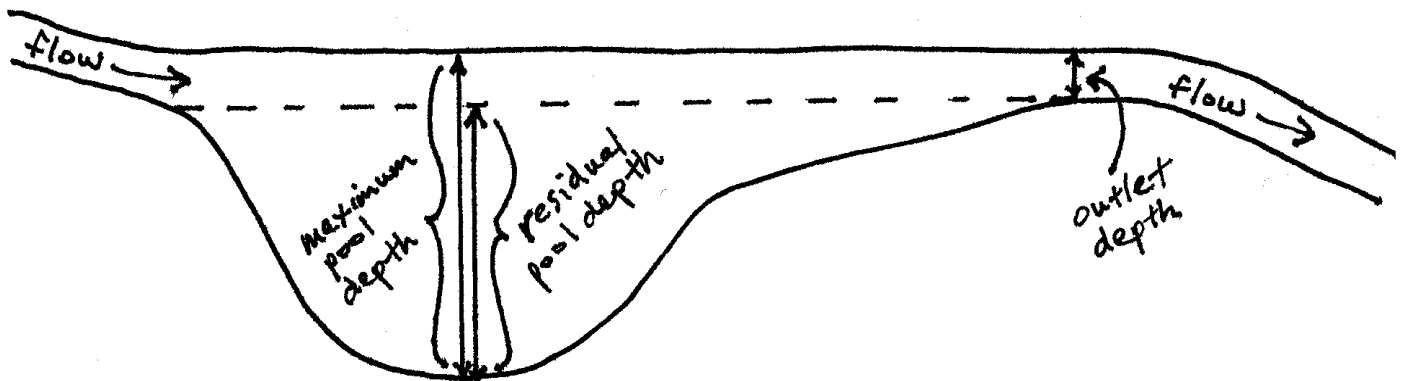
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high-current energy downstream to dig out a pool elsewhere.

- f) **Beaver dam:** Uncommon, but obvious when they occur.
 - g) **Other/Unknown:** Describe possible pool-forming factors if you can.
6. If there are no pools, write "None" on the data sheet.
 7. In the "Sampler's Initials" box to the right of the data boxes, put all the initials of one sampler taking responsibility for the data, even if all you wrote was "None." If more than one person worked on this data, put the initials of the person with the most experience or knowledge.



RESIDUAL POOL DEPTH
(side-view of creek)



$\text{residual pool depth} = \text{maximum depth} - \text{outlet depth}$
(From TFW diagram)