

# Rocky Bottom Protocol

## Objective:

Sampling up to four riffles, use kick net to collect 200+ macroinvertebrates to identify and tally. Use the VA SOS metrics datasheet to calculate a stream health score.

## Step 1: Identify Riffles

Identify which four riffles you will sample during your collection. Look for riffles where maximum bubbling action occurs and there are plenty of cobble sized rocks. Riffles can be aligned vertically moving upstream, horizontally across a wide stream, or both! The total distance between your riffles should not exceed 100 meters.

**Riffle:** a shallow, fast-moving area of water with a depth of 3 to 12 inches and cobble-sized stones (2 to 10 inches) or larger

## Step 2: Decide First Net Time

Net times should be anywhere between 20-90 seconds. The first net at a new site should be 20 seconds. Adjust net times as needed during protocol to best reach 200 bugs collected. No more than 4 nets can be taken.

## Step 3: Approach From Downstream

Start with the most downstream riffle and approach from downstream. Avoid disturbing riffle areas before your sample collection begins to avoid disrupting or double counting bugs.





## Step 4: Place Kick Net Below Riffle

Place your kick net downstream of the riffle you aim to sample. Kick net should be placed perpendicular to water flow and held at approximately a 45 degree angle. Be sure that water is flowing *through* the net, and not over the top. Spread net as widely as possible and allow direct flow of water into the center of the net.



## Step 5: Line Net Edge with Rocks

To avoid losing any macroinvertebrates beneath the net, place anchor rocks along the bottom edge of the net. Anchor rocks should be taken from OUTSIDE of the sample area and cleaned off of any bugs before placing.



**NOTE:** Though the kick net is 3 feet wide, your sample area is only 1 square foot in front of the net. Use the net to approximate one foot width.

## Step 6: Rub Stream Rocks

Spend 75% of your chosen net time rubbing rocks. Pick up cobbles in your sample area and rub them quickly and thoroughly underwater. Get to as many rocks as possible during your allotted time. The aim is to dislodge any macros that are clinging to the rocks and capture them in the net.

75%





## Step 7: Disturb the Substrate

Spend 25% of your chosen net time disturbing the substrate of the stream within your 1 sq/ft sampling area. Use a clean rock, hand rake, or trowel to rigorously stir up stream bottom.

*\*Using your hand is not recommended to avoid injury. Using your feet is also not recommended.*

## Step 8: Clean and Remove Anchor Rocks

Your macros have evolved to cling to rocks as if their life depends on it - because it does. They may have grabbed onto your anchor rocks during your collection, so you must clean those rocks off into your net before removing.

## Step 9: Take Net to Table to Process

Take net back to your table to pick your macroinvertebrates. Be sure not to lose any of your sample on your way.

**NOTE:** You may catch vertebrates like minnows and salamanders in your net. You can make a note of their presence on your datasheet, but you will not count them as part of the VA SOS calculation. Return them to the stream promptly.





## Step 10: Processing Your Sample

Using forceps, spoons, or pipettes, pick ALL macroinvertebrates off of the net and place into ice cube trays. Periodically wet the net with a spray bottle to keep bugs alive and moving. Swap positions around the table to double check for bugs not picked yet.

When picking your net, start by completely picking bugs off of the top. Then roll the net away and pick any bugs stuck on the underside of the net. Once all bugs are off of the net, examine the tablecloth for any bugs that crawled through.

**TIP: Use the 5 minute rule! If 5 minutes pass without finding a bug, the net is fully picked.**

**NOTE: You must FULLY pick every net. Do not stop picking when you reach 200 organisms if there are still bugs on net. Picking every bug ensures that the composition of the stream is accurately reflected when calculating a stream health score.**

## Step 11: Count and Identify Macroinvertebrates

If your first net yields 200 or more bugs, you are done! If not, bring your net to your second riffle and take a second net. Repeat this process until you have reached 200+ bugs OR completed 4 nets.

**\*If 4 nets fail to collect 200 organisms the metric calculation should still be made with the total that is obtained. If 4 nets do not collect 200 bugs, 3 out of 4 nets must be 90 seconds for data to be approved and sent to DEQ.**

**NOTE: To avoid capturing an excessive number of bugs, 20 seconds is ideal for the first time monitoring a new station. Net times should be adjusted to ensure capturing 200+ organisms, but cannot exceed 90 seconds. No more than 4 nets can be taken.**

