



Re-Certification Exam

The purpose of this test is to re-certify WV Save Our Streams volunteer monitors. This test is to be completed within one-year after receiving your initial certification and every other year thereafter. Save this document to your computer, complete the test, then email the file to the [Coordinator](#); or, it can be printed, and the completed test can be mailed to the address below.

Note: There are a few [hyper-links](#) provided throughout; if you use the links to leave this document, your answers may not be saved when you return to the test. It is best to move your mouse over the link, right-click and open the link in a second window so that you can easily return to this page and perhaps not lose your work.

WV Dept. of Environmental Protection
47 School St., Philippi WV 26476
Attn: Save Our Streams Coordinator

E-mail: Callie.C.Sams@wv.gov
Office: (304) 341-6095
Website: <https://go.wv.gov/sos>

Name _____ Date _____
Affiliation _____ Phone _____
Mailing _____
address _____
Email _____

1. Benthic macroinvertebrates are usually more diverse in which of the following riverine habitat?
- A. Rocky and sandy bottom areas with fast flowing water.
 - B. Bedrock with fast flowing water and swirling currents.
 - C. Soft-bottom deep areas with slow-moving or standing water.
 - D. Rocky areas with many of the rocks staked, and water moving rapidly over the rocks.

Answer _____

2. The length of a typical stream survey is?
- A. 100 meters
 - B. 100 feet
 - C. 50 meters
 - D. 10 times the average width of the stream

Answer _____

3. From the list below, choose the most efficient equipment for collecting benthic macroinvertebrates from riffle habitats. Provide a brief explanation for your choice.
- A. Two-pole screen barrier net
 - B. Leaf packs
 - C. Rectangular style kick-net
 - D. D-net

Answer _____

4. Briefly explain the importance of a reference condition for monitoring trends in your adopted stream's characteristics.

5. Which of the invertebrates below uses silk strands to anchor itself to rocks in fast current, and is a common predator of cool alkaline streams?

- A. Order Plecoptera; family Perlidae (Common stonefly)
- B. Order Trichoptera; family Rhyacophilidae (Free-living caddisfly)
- C. Order Megaloptera; family Corydalidae (Hellgrammite)
- D. Order Megaloptera; family Sialidae (Alderfly)

Answer _____

6. [True or False] An ephemeral stream is one that retains water throughout the year, except during extreme drought conditions.

Answer _____

7. A well-forested watershed, having healthy streams is clear-cut. Describe at least two impacts that this activity could have on the resident streams.

1.

2.

8. Which of the following water quality analyses are commonly used to measure of concentration of nutrients in a stream?

- A. Alkalinity and acidity
- B. Nitrate and phosphate
- C. Temperature and dissolved oxygen
- D. Conductivity and pH

Answer _____

9. **Identify the organism with the following characteristics:** Hard bodied, slender sometimes clubbed antennae; forewings have rows of indentations; legs are long compared to the body length.

- A. Order Coleoptera; family Elmidae (Riffle beetle)
- B. Order Coleoptera; family Dytiscidae (Predaceous diving beetle)
- C. Sub-order Anisoptera; family Gomphidae (Clubtail dragonfly)
- D. Sub-order Anisoptera; family Aeshnidae (Darner dragonfly)

Answer _____

10. A pebble count is a procedure used to characterize which part of the stream's conditions?

- A. It is an estimate of the suspended sediment load.
- B. It is a method for measuring the width of the riparian buffer.
- C. It is a method for measuring the composition of the streambed.
- D. It is a procedure used to determine the correct riffles for macroinvertebrate samples.

Answer _____

11. This metal is often found in streams contaminated by polluted coalmine drainage?

- A. Cobalt
- B. Mercury
- C. Lead
- D. Iron

Answer _____

12. **Identify the organism with the following characteristics:** Plate-like or feathered gills attached to most of the abdominal segments; three caudal filaments extend from the end of the abdomen; the body, head and legs are femora (flattened).

- A. Order Ephemeroptera; family Heptageniidae (Flathead mayfly)
- B. Order Ephemeroptera; family Isonychiidae (Brush-legged mayfly)
- C. Order Plecoptera; family Capniidae (Small winter stonefly)
- D. Order Coleoptera; family Psephenidae (Water penny)

Answer _____

13. Embeddedness is defined as the degree to which larger rocks such as coarse gravel, cobble and boulders are covered and surrounded by smaller particles such as sand, silt and clay. Why this condition is important to assess during your stream survey and what is its significance?

14. **Identify the organism with the following characteristics:** Head hardened and rounded bearing a pair of labral fans (mouth brushes); prolegs on lower thorax; lower third of the abdomen is swollen (vase-like) and terminates in a ring of hooks.

- A. Order Diptera; family Tipulidae (Crane fly)
- B. Order Trichoptera; family Philopotamidae (Tube-net netspinner)
- C. Order Diptera; family Dixidae (Dixid midge)
- D. Class Oligochaeta (Aquatic worm)
- E. Order Diptera; family Simuliidae (Black fly)

Answer _____

15. The chemical parameter that measures the cloudiness of the water is?

- A. Conductivity
- B. Turbidity
- C. Total dissolved solids
- D. Dissolved oxygen

Answer _____

16. Describe the steps for measuring stream discharge using the velocity head rod method.

17. Determine the percent saturation of dissolved oxygen in a stream given the following information: Temperature 13° Celsius; Dissolved oxygen 7.6 mg/L

Answer _____

18. **Identify the organism with the following characteristics:** Top of all thoracic segments hardened; abdomen ends with a pair of pro-legs surrounded by brush-like hairs; most of the abdominal segments have tufts of finely branched gills attached.
- A. Order Diptera; family Simuliidae (Black fly)
 - B. Order Trichoptera; family Hydropsychidae (Common netspinner)
 - C. Order Trichoptera; family Philopotamidae (Tube-net netspinner)
 - D. Order Diptera; family Tipulidae (Crane fly)

Answer _____

19. **Benthic macroinvertebrate** samples were collected upstream (Sample 1) and downstream (Sample 2) of a small tributary discharging acidic water. The results of these collections are provided below. Use the metrics given to evaluate the differences between these communities and provide a brief interpretation of your results.

Sample 1			Sample 2		
	Total	Taxa		Total	Taxa
Plecoptera (Stoneflies)	21	2	Plecoptera (Stonefly)	3	1
Ephemeroptera (Mayflies)	45	3	Philopotamidae (Finger-net caddisfly)	3	1
Trichoptera (Case-building caddisflies)	7	2	Hydropsychidae (Common netspinner)	8	1
Philopotamidae (Finger-net caddisfly)	6	1	Elmidae (Riffle beetle)	2	1
Hydropsychidae (Common netspinner)	27	1	Chironomidae (Non-biting midge)	12	1
Elmidae (Riffle beetle)	8	1	Cambaridae (Crayfish)	1	1
Psephenidae (Water penny)	3	1	Asellidae (Aquatic sowbug)	2	1
Chironomidae (Non-biting midge)	1	1	Oligochaeta (Aquatic worm)	4	1
Simuliidae (Black fly)	2	1			
Cambaridae (Crayfish)	2	1			
Oligochaeta (Aquatic worm)	1	1			

Metrics	Sample 1	Sample 2	Comments:
Total number			
Total taxa			
EPT taxa			
Biotic Index			
Stream score			
Integrity rating			

20. Which of the statements below accurately describe the goals and objectives of the **Clean Water Act** (CWA) since its reauthorization in 1972?
- A. To restore the conditions of navigable waters in the United States, so that they are fishable and swimmable.
 - B. To restore and maintain the chemical, physical and biological integrity of the Nation's waters.
 - C. To make sure industry receives the appropriate tax breaks when applying the minimum treatments to their water discharges.
 - D. To restore and maintain the conditions of our Nation's waters so that they are safe for human consumption.

Answer _____

Continue your certification by identifying **BMI**s. Go to: <https://dep.wv.gov/WWE/getinvolved/sos/Pages/MacroID.aspx> to complete the BMI-ID portion of your test.

Upon completion mail or email your certification test to the Program Coordinator.

Mailing address
WV Department of Environmental Protection
Save Our Streams Program
47 School Street, Suite 301
Philippi, WV 26476

Attn: Callie Cronin Sams
 E-mail: Callie.C.Sams@wv.gov