**Stream Quality Handout**

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| **Engage!**  List 5 things you would expect to see in a healthy stream | |
| 1. Fish  2. Clear water  3. Trees and plants  4. Rocks  5. Bugs | |
| **Stream Habitat (Virtual Reality 360 Photo)**  Record some observations of Stream A and Steam B. Does one stream seem healthier than the other? | |
| **Stream A**  Carbondale Photo   * Riparian Zone is full of trees * Turning left stream looks healthy * Turning right the stream looks very unhealthy * The unhealthy stream and healthy stream (tributaries meet) * There looks to be chemical pollution * Water is orange and there is white looking material in the stream   This stream has Acid Mine Drainage.  \*\* Other lesson plans are available to learn about AMD and its effects on water quality.  This is the “unhealthy stream”. | **Stream B**  Waterloo Photo   * No evidence of pollution in water * Trees are providing shade to the water to keep water cool * There is some pieces of woody debris downstream that can add stability to the stream and provide organic matter for bugs and fish * Exposed roots in the water provides habitat space for fish and bugs   This stream is the “healthy stream”. |
| **Water Chemistry (Water Quality Meter)**  Record observations and water quality data below. | |
| **Stream A**  Students should record water chemistry parameters that the device can read in each box for each respective water sample, such as:  pH  turbidity  temperature  dissolved oxygen  etc. | **Stream B** |
| **Biology (Bug Identification)**  Record what bugs are present and what that may indicate for the water quality. | |
| **Stream A**  Students should write the bugs observed in the macroinvertebrate jar.  Students should write down relative sensitivity to pollution.  Results should indicate that there are few bugs, if any that are sensitive to pollution. | **Stream B**  Students should write the bugs observed in the macroinvertebrate jar.  Students should write down relative sensitivity to pollution.  Results should indicate that there are more bugs sensitive to pollution in this sample. |

Write a short paragraph (3 to 5 sentences) describing which stream, A or B, has higher water quality and why. Be sure to use the vocabulary and use your observations to discuss what differs between the two streams. Explain why physical habitat, chemistry and biology are used in stream quality investigation.

“The stream with the better habitat and water quality is stream B. I know this because Stream A has orange pollution in the channel, which is an obvious indicator of pollution. There are also fewer bugs that are sensitive to pollution in Stream A, which suggests that there is more pollution. Although neither stream has obvious riffles, stream B has exposed roots, and some woody debris, and a small riffle far downstream that would serve as good habitat for fish and bugs. There is also not much evidence of eroded banks, and a lot of suspended dirt in the water (murky water) that would suggest poor water quality.”

Students should also refer to their water chemistry metrics.