



WOW: WATERSHEDS

POST-ACTION AUDIT, GRADES K-2

Did the team/class work with any resource experts and/or volunteers? () Yes () No

Please list if applicable: _____

Ask students to respond to this survey question just as they did for the Baseline Audit. Insert the number of students who responded *Yes* and *No*.

- I know what a watershed is. _____ Yes _____ No

TABLE 1. GEOGRAPHIC INFORMATION

1. Confirm the GPS coordinates for the study site, comparing them to the coordinates from the baseline audit. Use your smartphone's GPS or go to: https://www.whatsmygps.com to find the coordinates.	Latitude N _____ Longitude W _____
--	---------------------------------------



WOW: Watersheds

POST-ACTION AUDIT, GRADES K-2



TABLE 2. WATERSHED CHARACTERISTICS AND BENEFITS

<p>1. What percentage of students understand that a watershed is not just about water, but movement of water over an area of land?</p>	<p>_____ %</p>
<p>2. There are several characteristics that are used to “define” a watershed. The list below is not exhaustive, but are elements students at this age should identify. What percentage of students can identify one or more elements related to a watershed?</p> <ul style="list-style-type: none"> • Land features (basic) • Water quality • Plants • Soils 	<p>A. _____ 0 elements</p> <p>B. _____ 1 element</p> <p>C. _____ 2-3 elements</p> <p>D. _____ 4 elements</p>
<p>3. A watershed is a system. What percentage of students can identify one or more system benefits associated with a healthy watershed?</p> <ul style="list-style-type: none"> • Healthy plants and animals • Tourism and recreation • Spiritual celebrations, relaxation, physical fitness or other health benefits 	<p>_____ %</p>

Think about the following question as you summarize the data in Table 2.

1. How did survey responses change? Explain.
2. How has team/class understanding changed from the baseline audit to the post-action audit or between audit years?



WOW: Watersheds

POST-ACTION AUDIT, GRADES K-2



TABLE 3. TEMPERATURE AND PRECIPITATION

<p>1. For today’s date, collect the weather data listed to the right. Use your local weather website, application or use the following:</p> <ul style="list-style-type: none"> • http://www.weatherbase.com/weather/state.php3?c=US • www.weather.com 	<p>_____ Temperature in degrees Fahrenheit</p> <p>_____ Precipitation in inches</p>	
<p>2. Change Over Time and Patterns</p> <p>The team/class has been collecting temperature and precipitation data throughout the schoolyear or over an extended period of time. Enlist the help of students in the upper grades or adult members of the team to calculate the temperature and precipitation averages for the year. For months where students are not in school, collect the historical data from one of the two websites listed.</p> <ul style="list-style-type: none"> • http://www.weatherbase.com/weather/state.php3?c=US • www.weather.com 		
January	_____ °F	_____ inches
February	_____ °F	_____ inches
March	_____ °F	_____ inches
April	_____ °F	_____ inches
May	_____ °F	_____ inches
June	_____ °F	_____ inches
July	_____ °F	_____ inches
August	_____ °F	_____ inches
September	_____ °F	_____ inches
October	_____ °F	_____ inches
November	_____ °F	_____ inches
December	_____ °F	_____ inches
Yearly Average	_____ °F	_____ inches



WOW: Watersheds

POST-ACTION AUDIT, GRADES K-2



Think about the following questions as you summarize the data in Table 3.

1. Did temperature and precipitation changed over the year? Explain.
2. Did weather impact the study site? Impact animal homes? Explain.
3. Describe one action the team/class took to help wildlife deal with weather impacts, such as floods, drought, development or pollution?



WOW: Watersheds

POST-ACTION AUDIT, GRADES K-2



TABLES 4, 5 and 6. Consider contacting a watershed outreach coordinator (city water department) college or university, or local watershed non-profit. Their involvement is a great way to connect to the community, inspire students, demonstrate career possibilities and share resource expertise. If you cannot conduct a study within your watershed please determine the best way to gather the data, i.e. a phone call, an email or ideally a SKYPE, Zoom or Google Hangout with someone who works as a biologist, ecologist, volunteer, etc. at your nearest water quality or soil quality monitoring station. Contact your city’s water department for resources specialists or recommendations.

Remember the water within the watershed is a network of connected systems. Water quality and/or pollutants upstream impact water quality downstream. Whether or not you are physically able to go to a nearby creek, stream, river, lake, etc., students can still collect water and soil data from samples you bring to the classroom for investigation.

Invite parents and community members to participate in the auditing process. Students can take on the role of educator by working with volunteers on citizen science. This experience is a great way to build community.

TABLE 4. LANDSCAPE

1. Take a second panoramic or set of images of your study area and insert them in the summary for Table 4. Be prepared to explain how the study site has changed from the first set(s) of photos to the post-action set of photos. If you are unable to be at your study site, use Google Earth or Google Maps, locating your study site using the GPS coordinates from Table 1. Take screen shots of the features listed below.

In the photo you want to see the following features.

- Banks of the waterbody
- Waterbody
- Surrounding land features

2. From your study site what types of land do you see?

	Forested-private land		Forested-public land		Open green space (such as a park)
	Open space-rocky or little vegetation		Housing or businesses		Farm/ranch (crops or animals)

Continued on the next page.



WOW: Watersheds

POST-ACTION AUDIT, GRADES K-2



Insert photos here. Compare and contrast photos from the baseline to the most recent set of photos (if this site has been studied over multiple years, review all images).

Think about the following questions as you summarize the information in Table 4.

1. Have students observed changes to the landscape since the baseline audit? Explain.
2. If changes have been observed, how might the changes impact the waterbody or wildlife?



WOW: Watersheds

POST-ACTION AUDIT, GRADES K-2



TABLE 5. SOIL AND WATER QUALITY

<p>1. Soil Temperature</p> <p>Test 1 _____ °F</p> <p>Test 2 _____ °F</p> <p>Test 3 _____ °F</p>	<p>2. Soil pH</p> <p>Test 1 _____ pH level</p> <p>Test 2 _____ pH level</p> <p>Test 3 _____ pH level</p> <p>() Acidic () Neutral () Basic</p>
<p>3. Is there trash on the ground that you can see from the study site?</p>	<p>() Yes () No</p>
<p>4. Describe how the soil looks, feels and smells. Come to a consensus with the class/team on 5-10 soil descriptors.</p>	
<p>5. Water Temperature</p> <p>Test 1 _____ °F</p> <p>Test 2 _____ °F</p> <p>Test 3 _____ °F</p>	<p>6. Water pH</p> <p>Test 1 _____ pH level</p> <p>Test 2 _____ pH level</p> <p>Test 3 _____ pH level</p> <p>() Acidic () Neutral () Basic</p>
<p>7. Transparency</p> <p>Test 1 _____ cm Test 2 _____ cm Test 3 _____ cm () greater than depth of transparency tube</p>	
<p>8. Is there trash in the waterbody that you can see?</p>	<p>() Yes () No</p>
<p>9. Is it raining now or has it rained in the last 24 hours? Stormwater runoff from surrounding areas can impact watershed quality and appearance, including temperatures and pH. If possible, monitor and track temperature and pH throughout the schoolyear. Help students identify patterns, see how data changes as seasons change and problem solve big changes in data (What could be happening/why are our numbers so different than before?)</p>	<p>() Yes () No</p>

Continued on the next page.



WOW: Watersheds

POST-ACTION AUDIT, GRADES K-2



Think about the following questions as you summarize the data in Tables 5.

1. Review why it is important to observe and test soil and water at the study site?
2. Review the impacts trash on the land or in the water have on,
 - Water quality
 - Soil quality
 - Wildlife
3. Describe one action the team/class took to be better watershed stewards?



WOW: Watersheds

POST-ACTION AUDIT, GRADES K-2



Consider contacting a watershed outreach coordinator (city water department) college or university, or local watershed non-profit. Their involvement is a great way to connect to the community, inspire students, demonstrate career possibilities and share resource expertise. If you cannot conduct a study at your watershed please determine the best way to gather the data, i.e. a phone call, an email or ideally a SKYPE or Google Hangout with someone who works as a biologist, ecologist, volunteer, etc. at your nearest watershed monitoring station. Contact your city's water department for resources specialists or recommendations.

Remember the water in your watershed has a direct connection upstream and downstream to your location. Whether or not you are physically able to go to a nearby creek, stream, river, lake, etc., students can still collect water and soil data from samples you bring to the classroom for investigation.

Involve parents in their child's learning. Invite parents to participate in the auditing process, especially the macroinvertebrate studies. Animal counts are a fun family experience and a great way to connect families to nature.

TABLE 6. WILDLIFE

<p>1. Count how many different plants and animals are observed on this day?</p>	<p>_____ amphibians _____ birds</p> <p>_____ fish _____ insects</p> <p>_____ mammals _____ reptiles</p> <p>_____ aquatic plants _____ terrestrial plants</p> <p>_____ total plants and animals observed</p>
--	---

Continued on the next page.



WOW: Watersheds

POST-ACTION AUDIT, GRADES K-2



Volunteers needed for macroinvertebrate studies. Consider speaking to a resource expert before completing this section. They may have materials that you can borrow or they may be able to come assist you.

There are several macroinvertebrate resources, such as Stroud or GLOBE. Please use a resource that works best for your team.

Stroud - <http://www.stroudcenter.org/macros/>

GLOBE - <https://goo.gl/p6niFW>

To help you with identification and assessment please refer to the handout on the WOW-Audits page, titled Macroinvertebrate Studies Guide.

Reminder: Please attach photos or student work to the audit as evidence.

2. How many macroinvertebrates were collected total?	_____
3. How many different types were collected?	_____

Insert photos here.

Continued on the next page.



WOW: Watersheds

POST-ACTION AUDIT, GRADES K-2



Think about the following questions as you summarize the data in Table 6.

1. Do students better understand the importance of having many different types of plants and animals in an ecosystem or specific location?
2. Describe one action taken to support current watershed programs/initiatives?

Review of All Data

1. Based on what is known and has been learned, does the team/class think there is evidence to support the claim that the watershed is healthy?
2. Did students find **patterns** in the data they collected? Explain.
3. Did students identify any **relationships**?
 - Number of wildlife and temperature?
 - Number of wildlife and the amount of precipitation?
 - Temperature and precipitation?
 - Soil quality and temperature or precipitation?
 - Water quality and temperature or precipitation?