

WATER: A Statewide Inquiry Experience (2019-2024) launch project

(one of the many opportunities created by a coalition of WI teachers and water stewards to support local inquiry by youth investigators)
dpi.wi.gov/science/water & siftr.org/WisconsinWater

Sample Inquiry Question(s): (there are support activities and resources at the weblinks at the top of the page)

- What 'things' are collected in water flowing over our parking lots and how might this impact the plants, fish, water treatment process, and watershed?
- What water contaminants get super-concentrated on concrete and asphalt surfaces? How do these concentrated contaminants run off in the water to interact with the ecosystem.
- How much salt is on our parking lot? Can we find salt on our parking lots in the fall, winter, and spring?

Materials Tape measure, ruler, or string measuring 10 feet; clear container(s); broom and dustpan; chalk and marker



Locate your site

Locate and measure a 10 ft. x 10 ft. impervious surface (paved playground, parking lot, sidewalk, etc.)

Mark the perimeter with chalk, marker, or tape. You can use pavement corners or cracks to serve as benchmarks that can be used as a guide to sample the same area again another time.

- a. You can measure 10 foot string(s) to make the marking faster or use rulers or meter sticks
- b. If possible try to mark an area near where water runs off into a sewer, field, or street gutter.
- c. Multiple student groups can mark different spaces around your school for the project as well.



Sweep (set a schedule to sweep the same area - weekly, monthly, quarterly, etc.)

Sweep - Using a dustpan and broom to gently transfer the materials into the clear containers

You can decide how you want to organize your sweep collection(s)

Option 1 - 'stack' sample collections in the same container (separate layers with paper or other item)

Option 2 - use a separate container for each collection

Labeling and marking (do one or a combination of the following)

- a. Label the container to indicate the sample location area, the date, and group name on the container
- b. You can determine and add estimated markings for volume on your container
- c. If you are 'stacking' samples you can draw a line with the marker at the top of each new collection

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Snapshot - take a photo to share

Snapshot - Take a picture of what you collected to share with Wisconsin at siftr.org/WisconsinWater. You can add a brief description and any qualitative or quantitative data.

Connections & Extensions

Connections & Extensions - After you learn about what is on your parking lot and sidewalks that could interact with water there are many follow-up resources and activities to spur future inquiry and action at dpi.wi.gov/science/water & siftr.org/WisconsinWater. Please continue to share your stories of youth scientists investigating their local environments, their discoveries, and actions to support clean water.

Standards

Some of the connections between this activity and Wisconsin Science Standards:

CCC - All - Any could used as a lens to make sense of this phenomenon over time.

SEP 1,3,5,6 - Asking Questions, Carrying out Investigations, Analyzing Data, and Constructing Explanations

LS2 - Grades 5-12 - Explore ecosystems and the cycling of matter within ecosystems

PS1.B - Grades 2, 5, M, H - Explore physical and chemical properties and changes

ESS1.C - Grade 2 - Some earth changes occur quickly and some occur slowly.

ESS2.A - Grade 5, M, Interactions of earth systems (hydrosphere, biosphere, geosphere), and erosion.

ESS2.C - Grads 2, 5, M, H - Unique properties of water and its effect on earth processes

ESS3.C - Grades K, 5, M, H - Humans impact the world around them.

ETS1 - All grades - Designing and testing solutions to problems in the world around us

Resource Request

Use the link to [request up to \\$55](#) to purchase the supplies you need to carry out your investigations.

There will be links in the form to purchase sets of clear containers, salinity refractometer for an extension activity to estimate salt concentration in your sample, and an open-ended support for your inquiry project(s).

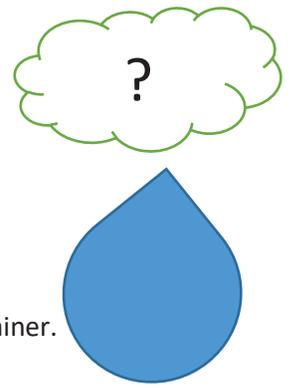
Limited support is available until project funds are exhausted. One request per teacher. It is expected that the recipient will provide a brief post of their use for others to learn from at siftr.org/wisconsinwater.

Here is the resource request link:

<https://warf.wufoo.com/forms/water-a-statewide-inquiry-experience-request/>

Launch project extension examples after 'parking lot' collection.

After you have collected your sample(s) what are some possible next steps in your inquiry?



Add water to the top of the container.

Salt

Place a drop of the liquid on a refractometer to measure salt concentration.



There are so many inquiries you can across grade levels and subject areas.
a few examples:

Math

Using your 10 foot by 10 foot square sample collection volume or weight:

Can you estimate the total amount of materials on your school parking lot?

Can you track changes over time and represent them in a graph?

Leaves

When leaves are left on sidewalks, streets, and parking lots they collect water and can release 'leaf tea' in the water flow that impacts the health of ponds, lakes, and streams.

Can you measure or estimate the amount of nitrates and/or phosphates that the wet leaves may release? There are many possible methods, please share what you did.

Does the salt concentration change in different areas of the school parking lot?

Is there salt present in the Fall, Winter, and Spring?

How does salt affect the environment and the living and non-living things in the ecosystem?

Are there different ways to apply salt that can keep things safe but not require as much salt?

What further inquiry can be done?

Plastics

What types of plastics are in your collection zones?

How do these plastics interact with water and breakdown overtime?

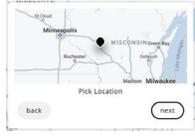
Can you find data sources to track the concentration of microplastics in your watershed?

Post the repeated data collection and analysis stories, new ideas for inquiry, etc. to siftr.org/WisconsinWater/

Take the next steps and integrate one of the over 60 WSS aligned teacher and water educators resources at dpi.wi.gov/science/water

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<h2>Quick steps to post on Siftr</h2> <p>go to https://siftr.org/WisconsinWater (there are also mobile apps available in the respective app stores)</p> <ol style="list-style-type: none"> 1. Login (or do a quick account setup if you don't have an account) 2. Click the '+' button 	
<h2>Photo or screenshot</h2> <ol style="list-style-type: none"> 3. Select a photo or screenshot that represents your post 	
<h2>Location:</h2> <ol style="list-style-type: none"> 4. Pick a WI location that represents your post 	

Categories:

5. What type of post is it? (You can post multiple types, just repeat the posting process for each one.)

	WATER Activity or Opportunity for others to use or access
	A note or story about a water activity that we participated in (photos, news media, etc.)
	Student generated data on WATER (from What's in your lot? Locate, Sweep, & Snapshot, citizen science, etc.)
	Existing professional WATER data sources (well monitoring, usage, water quality, etc.)
	Regional Water 'expert volunteer' to help support other educators
	Social Studies: Water social impact, issues, & stories

Description & post!:

6. Write a brief description of your WATER connected resource or story. You can include links in the description or in the comment field for others to access. That's it, watch for others posts about how they used your resources or reacted to your WATER story. Posts will be organized on <https://dpi.wi.gov/science/water> periodically to support K-12 use and WSS alignment.

[Project background planning overview slide deck](#)