

Freshwater Tool Kit activities are multi-disciplinary, interactive, and creatively grow a stronger relationship to a “sense of place” of the Milwaukee area’s waterways, history and communities. These activities meet the [Wisconsin Science Standards for Environmental Literacy and Sustainability](#) to connect, explore and engage students and applicable State of Wisconsin Common Core State Standards. The content also meets the Disciplinary Core Ideas (DCI) and crosscutting concepts of the [Next Generation Science Standards](#) as outlined below. These activities connect to earth science, chemistry, math, social studies (history and geography), art, and responsible citizenship disciplines.

Freshwater Tool Kit activities will easily fit into your **project and inquiry-based** lessons to create “critical thinkers” and answer **phenomena-based questions** occurring in their community, such as, “Why so some Milwaukee area beaches close or are full of stinky green rotting plants?”, “Why is rainwater after a storm dangerous?”, or “Why are fish in Lake Michigan changing sex?”.

The content offers a brief introduction to understand basic and local content on water resources and systems that affect water quality, including how watersheds work and convey stormwater and pollutants for treatment or directly into our waterways. This content is an important base of knowledge for students to prepare them for deeper dives in water quality in the community, on other aspects of water resources and/or work with water resource educators.

For example, the *Freshwater 101* presentation and 3D watershed demo, that can be presented by a water educator or on your own and in the space of a class period, shows students the importance of our waters, how water shaped the Milwaukee area, water resource challenges and successes in improving water quality and the global water crisis. This 30,000-foot view of freshwater will create a greater connection and respect for this resource and help cultivate the realization that Milwaukee area residents are lucky to live in this freshwater-rich region. This presentation can be adapted to the time and content that makes sense for your lessons.

Each student will also become empowered to become part of the solution to improve water quality through receiving easy ideas in a copy of the [Simple Solutions Guide](#) that is also available in Spanish. Activities in the Freshwater Tool Kit will enhance student’s ability to understand the importance of freshwater and impacts on our lives, ecosystems health, economy and quality of life.

Connections to Next Generation Science Standards

Freshwater Tool Kit activities can be added to your curriculum to introduce, enhance, or reinforce the following **Next Generation Science Standards**:

Standard: Grade K-2

K-ESS3-1 Earth and Human Activity

Use a model to represent the relationship between the needs of different plants and animals (including humans) and the places they live.

K-ESS3-3 Earth and Human Activity

Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment.*

2-LS4-1 Biological Evolution: Unity and Diversity

Make observations of plants and animals to compare the diversity of life in different habitats.

2-ESS2-1 Earth's Systems

Compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land.*

2-ESS2-2 Earth's Systems

Develop a model to represent the shapes and kinds of land and bodies of water in an area.

2-ESS2-3 Earth's Systems

Obtain information to identify where water is found on Earth and that it can be solid or liquid.

K-2-ETS1-1 Engineering Design

Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.

Standard: Grade 3-5

3-LS4-3 Biological Evolution: Unity and Diversity

Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.

3-LS4-4 Biological Evolution: Unity and Diversity

Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change.*

3-ESS3-1 Earth and Human Activity

Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard.*

4-ESS2-2 Earth's Systems

Analyze and interpret data from maps to describe patterns of Earth's features.

4-ESS3-2 Earth and Human Activity

Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans.*

5-LS2-1 Ecosystems: Interactions, Energy, and Dynamics

Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.

5-ESS2-1 Earth's Systems

Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact.

5-ESS2-2 Earth's Systems

Describe and graph the amounts and percentages of water and fresh water in various reservoirs to provide evidence about the distribution of water on Earth.

5-ESS3-1 Earth and Human Activity

Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.

Standard: Grade 6-8 Middle School

MS-PS1-1 Matter and its Interactions

Develop models to describe the atomic composition of simple molecules and extended structures.

MS-PS1-4 Matter and its Interactions

Develop a model that predicts and describes changes in particle motion, temperature, and state of a pure substance when thermal energy is added or removed.

MS-LS2-3 Ecosystems: Interactions, Energy, and Dynamics

Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem.

MS-ESS2-1 Earth's Systems

Develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process.

MS-ESS2-4 Earth's Systems

Develop a model to describe the cycling of water through Earth's systems driven by energy from the sun and the force of gravity.

MS-ESS3-2 Earth and Human Activity

Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects.

MS-ESS3-3 Earth and Human Activity

Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.*

MS-ESS3-4 Earth and Human Activity

Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems.

Standard: Grade 9-12

HS-LS2-7 Ecosystems: Interactions, Energy, and Dynamics

Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity.*

HS-ESS2-5 Earth's Systems

Plan and conduct an investigation of the properties of water and its effects on Earth materials and surface processes.