Build a Watershed: Just Add Water

Timing
After "Go Fish" and "Pour a Pond."

Duration
About 30 minutes.

Location
Classroom or outdoors.

Life Skills
Responsible citizenship, communication, concern for others, self-responsibility, critical thinking, decision-making, and problem-solving.

OBJECTIVES

Participants will be able to:

- **Define and describe a watershed.**
- **Understand the term "drainage basin."**
- **Make inferences about the statement, "We all live downstream."**
- **As an angler, make a decision to care for our waterways.**

Age/Stage
Fry, fingerling, young adult.

Across the Curriculum
Science.

Correlations
Science:

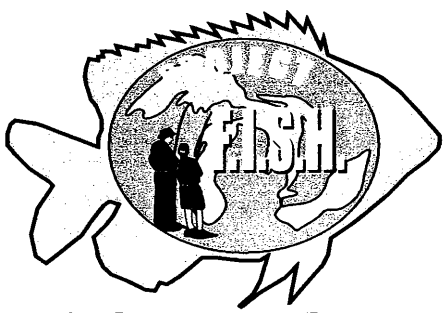
Background
Precipitation that falls on land either soaks into the ground or runs off. Water that does not soak in runs off into streams. Streams usually follow well-defined paths or channels. Channels then converge into a river. These small streams, channels, and rivers drain a well-defined or somewhat defined land area. This area of land drained is known as a **watershed.**

The size and shape of a watershed are defined by elevated lands, primarily hills and other land features. Elevated lands separate watersheds from one another by causing precipitation runoff to flow in different directions down one side or the other of the elevated area.

All watersheds eventually empty their waters into larger bodies of water (such as one of the Great Lakes). These larger bodies of water then transport their waters to a sea or ocean. Watersheds can be enormous or quite small. Large, well-established watersheds supporting major rivers are known as river or **drainage basins.** Michigan has 12 major drainage basins: Detroit, St. Clair, Maumee, St. Joseph, Grand, Muskegon, Manistee, Saginaw, Au Sable, St. Marys, Escanaba, and the Menominee Rivers. Contact your local MDNR office to learn about the basin where you live or use a county map guide or large stream map.

The Fisheries Division of the MDNR is now organized to address fisheries management on a basin-wide basis (see map). This allows managers and those living in a watershed to better understand how to work together to improve watersheds for fish, fishing, and enjoyment.

Understanding what a watershed is and its function helps us



FRIENDS INVOLVED IN SPORTFISHING HERITAGE

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to comprehend how we are connected to our resources. Some of the precipitation that falls in your backyard runs off to ditches, storm sewers, and brooks. Eventually, this flows into a creek, lake, or river. We use these waters for drinking, swimming, *fishing,* and other activities. Wildlife, too, depend on these waters.

What goes into the water at one place may travel downstream to many other locations. What goes into a watershed far upstream (e.g., eroded soil) may eventually make its way down to where you live. The water running by your town comes from areas upstream. The treated sewage water from your town may be fed back into the same river downstream of your town. The saying, "We all live downstream," is intended to make people realize that everyone lives in a watershed and is dependent upon others for clean water.

Materials

- Newspaper
- Large white garbage bag or plastic sheet
- Two or more spray bottles filled with water
- Washable markers and powdered drink mix

Procedure

Before the activity:

1. Fill spray bottles with water; use at least two and maybe more.
2. Find a nice level spot that can get wet or is easily cleaned up, preferably outside.

During the activity:

3. Crumple newspaper sheets and form a pile. Use at least six sheets; use more to make a larger watershed.
4. Cover the pile with a large white plastic bag, or fill the trash bag with the crumpled paper for a smaller watershed. Point out to the participants the topography, i.e. all of the high points, ridges, and low areas. Tell them that this plastic represents how our land looks, only on a much smaller scale.
5. With a colored marker, have a few of the participants mark where they would like to live. Use a different colored marker for each participant. Usually they will choose high areas away from each other. This adds to the impact of the following steps.
6. Have participants make "precipitation" over the watershed by spraying the plastic with the spray bottles. (**Note:** Spray bottle setting should be set to "mist.")
7. Once enough precipitation has fallen, have the participants note the "lakes" that form and the paths runoff takes (streams and rivers). Ask them if one participant has any impact on another and have them describe their reactions.
8. Define what a watershed is to the participants. A watershed is an area of well-defined or somewhat well defined land that is drained by small streams, channels or rivers.
9. Revisit the concepts learned in "Go Fish" and "Pour a Pond." For example: Ask, what are limiting factors for fish or ask if participants remember the diversity of life found in the hoola-hoop ponds they examined. Stress the importance of good habitat to sustain positive fish populations as seen in these activities.

   Question whether our actions impact the quality of water in our watersheds. Ask what could be done to minimize pollutants (e.g., oils, fertilizers, or even eroded soil) from entering the watershed. Answers will be "don't use them," "use less," "plant things to stop or clean the water."

Tips for Success

- Listen to comments and build from them for teachable moments about your watershed.
- Be sure that there are enough ridges and low areas for real impact.

Adaptation

- Create two watersheds, one with no pollutants and one with powdered drink mix sprinkled over the area. The color of the watershed will change colors when the precipitation and runoff occur.
- Change the shape of the watershed (height, slope, flatness) and see the differences in flow speed and retention. Add a small sponge to one of the low areas to represent a wetland.

Extensions/ Additional Resources

Soil erosion...how does it or can it affect the watershed that provides fish habitat? (it may change or alter spawning habitat, nesting cover, or cover for fish food sources, e.g., aquatic invertebrates). See the activity "Runoff Race." Try activities from the *Wonders of Wetlands* curriculum produced by Environmental Concern, Inc., St. Michaels, Maryland, (410) 745-9620. Michigan workshops are provided through MUCC and Designs by Nature, P.O. Box 126, Mason, MI 48854, (517) 251-8585.

See also Simply Science—"Ridges to Rivers" Watershed Explorations, Michigan State University Extension and Berrien County Intermediate School District.

Introduce and teach this activity with topographic maps of your community. Obtain these

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maps through MUCC at (517) 371-1041 or www.mucc@mucc.org.

Community Service

Share this activity with others at a fishing or sport show, fair, community function, or in school. Work with a local biologist or service club to do stream bank improvements or native vegetation plantings to reduce runoff.

Exhibits/Sharing

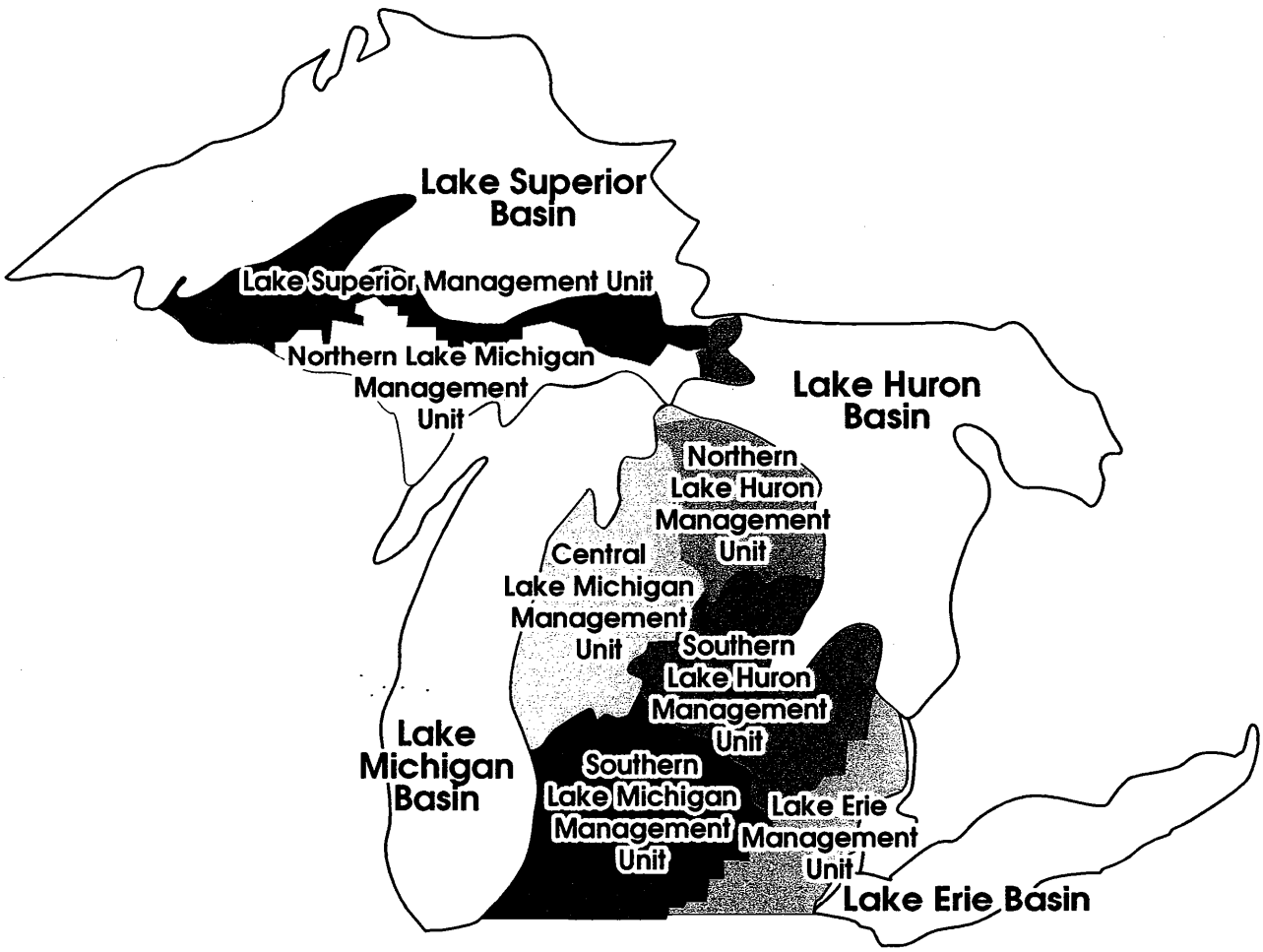
Set up a watershed model at a local public function. Educate the public as to the importance of caring for our watersheds. Natural Resource Conservation Districts and MDNR/MDEQ offices often need volunteers to provide public information at various functions.

Career Opportunities

Natural resource manager, land use planner, geologist, Extension agent, drain commissioner, organizer for a local watershed council.

Source

Adapted by Mark Stephens, MSU Department of Fisheries and Wildlife, from an activity in the National 4-H Sportfishing Curriculum by Carl Richardson, Pennsylvania Fish and Boat Commission, Bureau of Boating and Education.



Great Lake Basin and Management Unit Boundaries

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