

Example Application

Water Quality Detectives

EYH 2012 Cornell University

- I. *What is the main goal of your workshop? In 2-3 sentences describe what the participants should know, be able to do, etc., after attending. Participants will understand how water moves across the landscape and the basic idea of a watershed. We will especially focus on how human changes to the landscape (ie: adding lots of buildings and parking lots) can affect how water moves and how contaminants end up in streams.*

Participants will understand how water moves across the landscape and the basic idea of a watershed. We will especially focus on how human changes to the landscape (ie: adding lots of buildings and parking lots) can affect how water moves and how contaminants end up in streams.

- II. *Please provide us with a bulleted summary of your planned activities during the workshop and the learning objectives for each one. We would like to use these to get an idea as to what the exact content of the workshop would be, please be as detailed as possible. Remember, you will have an entire hour.*

1. 10 min: Introduction
 - Show map of example watershed to explain watershed concept
 - Show aerial images of a few watersheds with variation in land use/urbanization
 - Show short video clips of flooding
 - *Learning Objective: introduce why land use might impact flooding & water quality and get girls excited about the topic*
2. 40 min: Hands-on watershed models
 - In teams of 2, girls will build their own “watershed” on pieces of plywood using different materials to mimic different landcovers (ie: sponges for soil, plastic for parking lots & buildings, astroturf pieces for vegetation)
 - Teams will build a variety of landscapes, to represent more natural or forested landscapes, or more urbanized landscapes
 - Once they’re done, each team will pour blue water (dyed with food coloring) down the top of their landscape and use a stopwatch to time how fast the water reaches the water sample bottle at the bottom. They can also measure how much water runs off into the bottle vs. how much water was left/stored in their “watershed”.
 - *Learning Objective: visualize how much water comes off a landscape with a certain land use pattern*
 - Teams can then experiment with adding different “contaminants” to their watershed model (ie: glitter to represent heavy metals), and observing how these contaminants move through the landscape.
 - *Learning objective: visualize how various contaminants might be transported in water, and how more water usually means more contaminants transported*

3. 10 min: Discussion

- We'll compare results from each team's experiment, and talk about the differences in how fast water travelled across the different landscapes and why way more water ran off certain landscapes
 - *Learning objective: urbanized landscapes typically generate more runoff (which can cause flooding), with more contaminants*
- -We will have the girls brainstorm ways to reduce human impacts on flooding and pollutant transport. We will also have some prepared images of existing solutions in case they have trouble conceptualizing.
 - *Learning objective: while human development of our land is having some bad impacts on flooding and water quality, there are many ways that we can lessen these impacts (ie: better land planning, green roofs in cities, permeable parking lots, etc)*

III. *What prior knowledge (if any) do you expect the girls to have to complete your workshop?*

None.

IV. *What materials do you anticipate needing to obtain to make the workshop as interactive and engaging as possible?*

Some basic materials for building the watershed models, such as sponges, garbage bags (for plastic cover), fake grass, glitter, food coloring, clay