9/13/07

Fred the Fish and Urban Stew

DRAFT

Activity Description

Students follow Fred down a stream that has been polluted from storm water runoff. Students observe how everyday activities can pollute the stream and eventually make Fred critically ill. Students should understand what toxic substances contribute to storm water pollution and why it is important to keep these substances out of the water. Also they learn the effects of toxic substances on fish in the streams and rivers.

Take Home Message

What humans use everyday becomes runoff with rain into the rivers and can harm the fish and aquatic life that rely on the rivers and other water sources around us.

Massachusetts Frameworks

Life Science

Organisms are adapted to their habitat #5
Food chains & webs#6

Supplies

- 2 large clear containers
- container of salt
- container of soil
- container of shredded paper (punches from hole puncher)
- container of oreo cookie crumbs
- syrup
- green sprinkles
- food coloring
- dish detergent
- 2 sponge fish, weighted
- map
- strainer
- Prize – Plastic fish

Set-Up

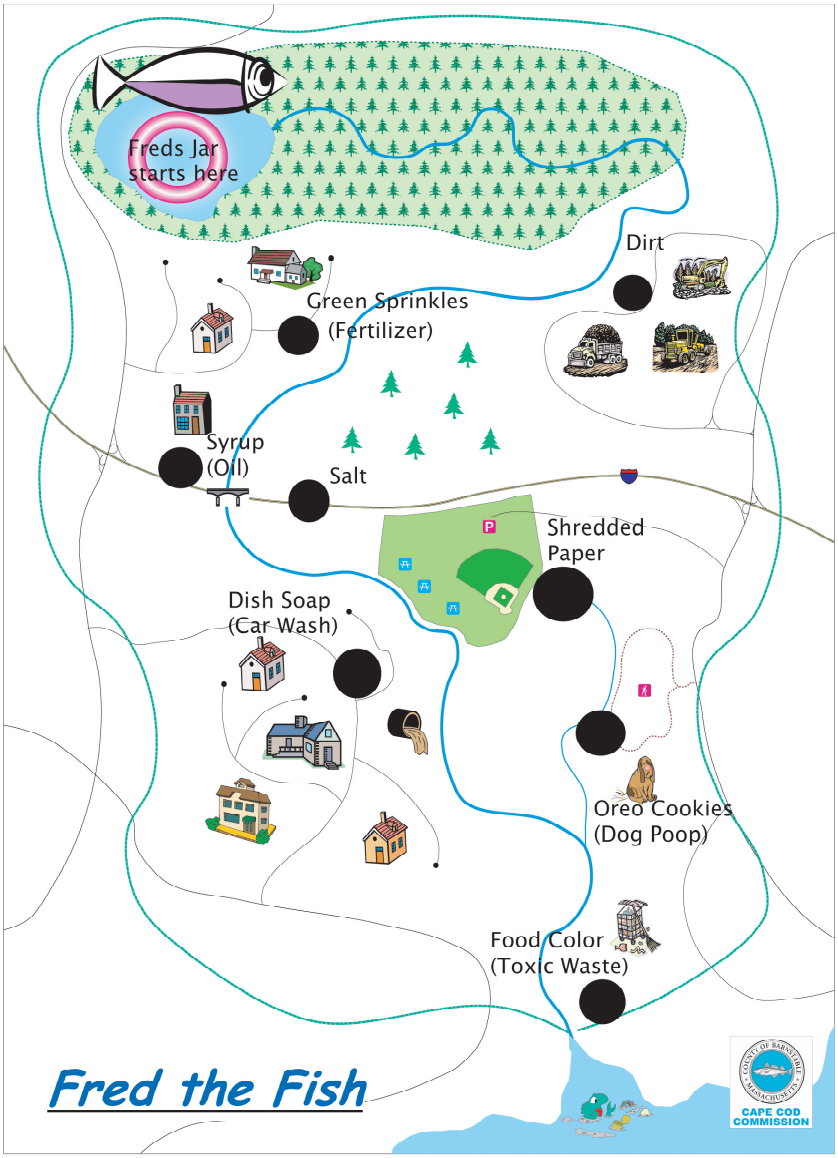
1. Spread the map out on the floor, or table top.
2. Fill one of the glass jars with water and have the sponge fish weighted down and suspended from the rod in the jar. Fill the other jar as well and have it off to the side with another weighted fish.

Have the containers and respective pollutants near their locations of the map. (you can also have them off to the side which keeps kids from playing with things if you feel that works better for you)

Activity Procedure/ Script

- Begin by asking the students to imagine a clean river meandering through the woods. Tell them that in the river lives Fred the Fish. Fred has lived in this river his whole life and is now ready for an adventure down the stream.
    - Ask the students, how is Fred?
    - Move the jar down the river to the construction site
- As Fred begins his journey he swims past a large construction site for a new mall. There is a lot of soil where the land has been leveled. It begins to rain and some of the soil washes into the river.
    - Have a student dump come soil into the jar.
    - Ask the students, how is Fred?
    - Move the jar to the housing development

Fred Fish Table Set-up
and placement of contaminants



- Fred nears a suburban development. Some fertilizer from the gardens and lawns washed into the river a few months back. The fertilizer made the plants in the river grown very fast and thick. Eventually the river couldn't furnish them with all the nutrients they needed so the plants died and started to decay. Their decomposition is using up some of Fred's oxygen.
    - Have a student drop in a green sprinkles to represent the fertilizer.
    - Ask the students, how is Fred?
    - Move the jar along the river
- Fred swims under a highway bridge. Some cars traveling across it are leaking oil. The rain is washing the oil into the river below.
    - Have a student pour some syrup into the jar.
    - Ask the students, how is Fred?
    - Move the jar along the river

- During a recent cold spell, ice formed on the bridge. County trucks spread salt on the road to prevent accidents. The rain is now washing salty slush into the river. Fred is a freshwater fish and adding too much salt can make it harder to live.
    - Have a student put salt into the jar
    - Ask the students, how is Fred?
    - Move the jar along the river
- Fred swims near the city park. Some picnickers didn't throw their trash in the garbage can. The wind is blowing it into the river.
    - Have a student sprinkle shredded paper into the jar
    - Ask the students, how is Fred?
    - Move the jar along the river
- As Fred nears another neighborhood, he sees bubbles floating in the water. They're soap bubbles coming from a storm drainpipe that runs from the neighborhood to the river. Someone in the neighborhood is washing her car on the street and the soapy water is running into the river.
    - Have a student pour some soap into the jar
    - Ask the students, how is Fred?
    - Move the jar along the river
- Up ahead, a stream joins the river. Fred wants to swim fast through this stretch, because he knows that the stream runs along a trail where people don't clean up after their pets.
    - Have a student pour some cookie crumbs into the jar
    - Ask the students, how is Fred?
    - Move the jar down the river
- Finally, Fred swims past a trash pile, where people have dumped everything from soda bottles to paint cans. Much of the trash is household hazardous waste that should have gone to the county hazardous waste collection, so it would not pollute the river.
    - Have a student put a few drops of red food coloring in the jar
    - Ask the students, how is Fred?
- By this time Fred won't be doing too well at all, an emergency call to 911 is made, and Fred is transported by aqua-copter to the hospital where he is revived. Fred recovers and returns to the scene to confront the evils that are spoiling his river
    - Start moving the jar back up the river
- At each place where you put in something ask the students what people could have done to protect Fred and prevent these problems in the future.

Clean-Up

During the Festival

- After each group empty the dirty water into a discharge bin. Keep the strainer over the discharge bin so the paper and other particles don't get in the bucket.
- After 2 groups go and refill the containers with clean water and rinse the "Fred" sponge off.

After the festival

- Empty all the buckets into the discharge with strainer.
- Dump the strainer contents in the trash and the discharge water in a sink. Make sure to clean the sink because there may be dirt and food coloring left in the sink after dumping the water.
- Clean and dry everything very thoroughly before returning it to the bin.
- Fold up the mat and put it away.
- Clean off the table and break it down

- NOTES: If the group is very large, or the kids are very young, it may be helpful to edit the story by removing one or more sources of contamination, thus shortening up the story. This is an easy dialog to be creative with, and tailor it to the community, or some current interest.