

Topic: Codorus Creek and the environmental concerns for the watershed, specifically the city of York.

Content:

- Key concepts: -basic water cycle
- watersheds
- land use
- pollution, point and non-point
- buffer zones

Key vocabulary:

1. Watershed- the area of land from which runoff from mountains drains into specific streams, rivers, lakes, and finally the ocean.
2. Water Cycle- cycle of evaporation and condensation that controls the distribution of earth's water. (Evaporation, condensation, precipitation)
3. Pollution- contamination of water, soil, or the atmosphere by the accidental or intentional discharge of harmful substances.
4. Point pollution-pollution that is discharged from a specific, identifiable source. Example: literally out of a pipe as with a sewage treatment facility.
5. Non-point pollution-pollution that comes from an unidentifiable source. Example: nitrogen from agricultural runoff.
6. Riparian zone- the green zones along streams containing plants, trees, flowers, etc.

*Other vocabulary to discuss and make sure children have understanding of erosion, nutrients, fertilizer, agriculture, levees, sediment, runoff, evaporation, condensation, and precipitation (rain, snow).

Goals:

1. Children will understand the basic watershed concept
2. Children will be able to identify 2 pollution sources affecting Codorus Creek
3. Children will understand the function of a riparian buffer zone and discuss ideas to improve the buffer zone in York.

Objectives:

-The children should be able to understand the way water moves through a watershed and discuss this in relation to the environmental concerns facing Codorus Creek. The discussion must include some mention of pollution sources as well as why the importance of having a healthy buffer zone.

Materials:

1. blackboard/chalk board
2. water movement model
3. identification worksheet

4. word hunt worksheet
5. white construction paper
6. colored pencils/crayons

PROCEDURE/METHODS

Introduction: Question students about what stream runs through York? Have they ever been there? What is it like? Who likes to fish? Collect bugs? What if there were no bugs? Fish?

Development: 1. Discuss a very basic concept of water cycle focusing on comprehension of the water movement rather than actual specific mechanics. Draw a picture of cycle as a visual aid. Emphasis on fact that water is recycled*

2. Define, explain, and discuss a watershed, giving specifics of the Codorus Creek Watershed: Codorus Creek Watershed drains almost 300 square miles of York County. Codorus Creek feeds into the Susquehanna which ultimately drains the Chesapeake Bay.

3. Have a group brainstorm about what things might be bad for the creek? (i.e. trash, oil, pollution-o.k. so then get into what kinds of pollution are affecting the Codorus, nutrient runoff, erosion, trash downtown, etc.) What things might be good? (Plants, trees, buffer zone) The brainstorm will lead to a discussion of the problems of Codorus Creek, specifically pollution, land-use activities that cause it (explain point and non-point).

4. Explain the buffer zone and its importance: green zone/ streamside forest, diverse vegetation benefits the stream, shelter for wildlife, helps to control erosion because the plant's roots stabilize the bank, controls sediment pollution which can smother the fish (no more fish!), provides food for many different organisms.

Practice:

1. Guide students through the water movement model, explaining step by step how it relates to what is happening to Codorus Creek. After the water moves all the way through the model bring up the point that the pollution doesn't just go away, but it gets cycled back through the water cycle.

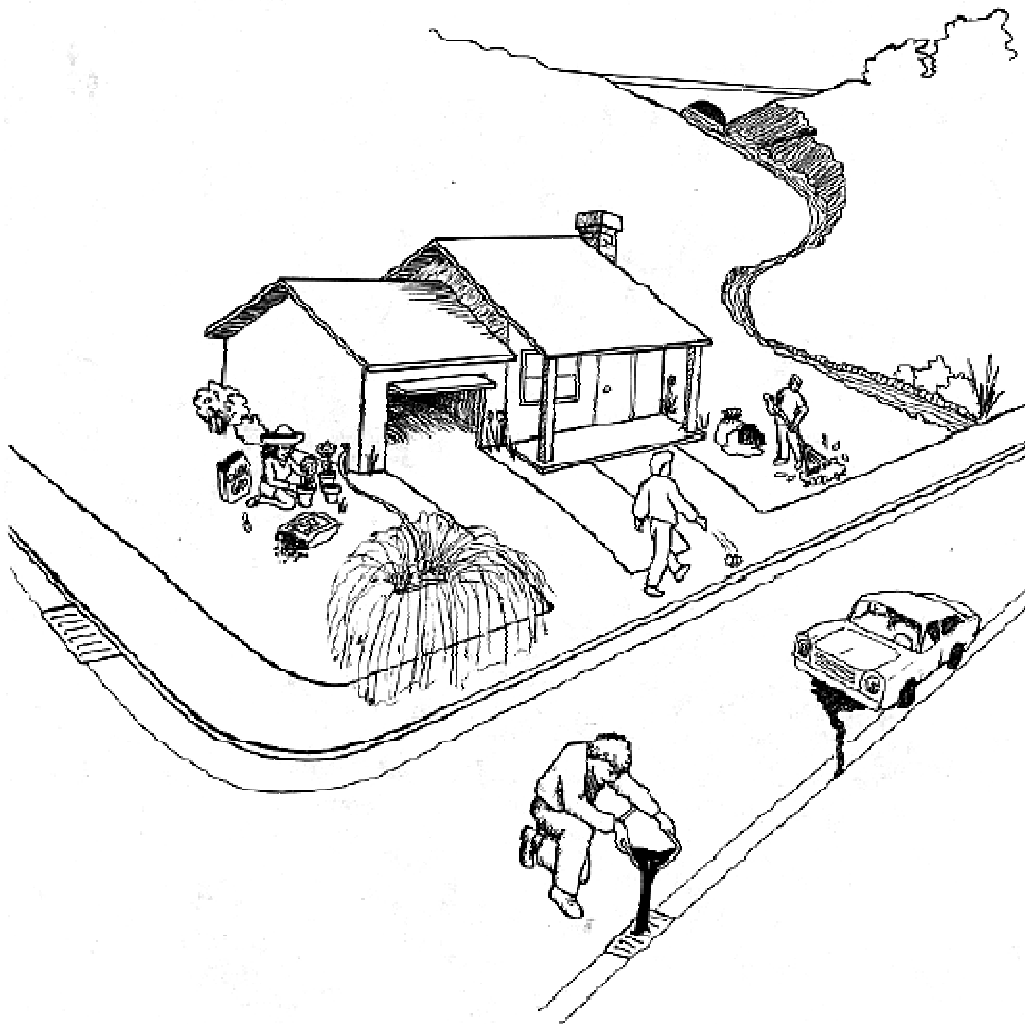
Independent Practice:

1. Pollutant identification worksheet
2. Word hunt worksheet

Closure:

1. Reiterating important concepts learned in the lesson. What did they remember as important concepts?
2. Asking students to think of some of the things they could start doing to prevent pollution in Codorus Creek?
3. Leave them with the idea of stewardship and the importance of taking care of our local streams because they impact larger rivers, national rivers, bays, etc.
4. Fun! Distribute construction paper and crayons/colored pencils and request that students draw what they now know to be a healthy stream. (i.e., trees/plants for buffer zone, fish, stable banks, etc.)

What's **WRONG** With This Picture???



[Return to the NPS Kids' Page](#)

[OWOW Homepage](#) || [NPS Homepage](#)

[EPA HOMEPAGE](#) | [WATER HOME](#) | [SEARCH](#) | [COMMENTS](#)

Environmental Protection Agency's Office of Wetlands, Oceans, & Watersheds
Revised October 15, 1997

url:<http://www.epa.gov/owow/nps/kids/whatwrng.htm>

Name _____

Date _____

River and Watershed Word Hunt

-	E	O	A	P	R	T	S	R	S	N	-	N	E	Z	P	E	W	O	N	N	S	I	N	E
N	I	K	R	S	N	I	A	W	R	A	R	T	O	O	N	O	I	T	A	W	N	D	R	C
O	Z	I	I	U	R	I	S	N	I	R	N	I	E	E	I	O	U	O	N	N	W	R	I	
C	N	H	E	H	O	O	I	U	I	D	E	S	N	P	R	D	N	S	R	-	O	R	N	E
L	E	O	U	N	N	K	N	T	R	I	F	I	M	O	E	R	-	N	U	-	I	I		
C	R	R	Z	W	A	N	D	N	O	W	I	Z	I	I	E	Z	N	P	N	I	N	E	N	
O	O	I	E	Z	C	T	E	O	W	F	I	C	O	O	P	S	N	I	O	O	N	C	R	U
T	E	D	E	N	L	E	I	R	P	A	O	K	L	T	O	O	C	F	L	O	I	U	O	P
N	O	D	O	I	O	T	R	E	R	N	T	I	N	L	R	F	F	O	R	I	R	N	I	I
I	N	I	R	U	I	O	A	R	T	N	E	P	N	N	T	E	L	S	P	T	F	T	I	
E	U	A	Z	L	U	O	R	E	R	D	E	O	R	U	K	W	I	F	T	N	E	R	O	E
S	N	F	L	T	O	S	Z	E	D	E	O	C	S	E	N	Z	E	R	O	E	E	E	E	W
N	C	O	R	R	D	O	E	R	R	N	A	R	C	H	D	E	C	N	O	N	D	E	F	
P	P	N	I	S	N	E	E	C	I	O	R	S	I	Z	P	E	D	O	E	O	E	I	U	O
R	I	D	E	R	P	U	O	R	R	O	D	L	N	O	E	C	D	E	Z	S	A	I	P	L
N	R	Z	P	O	S	S	R	N	N	E	F	D	I	F	O	-	R	T	A	O	E	O	E	
F	E	A	L	N	N	I	P	R	N	R	E	N	U	C	N	S	N	N	N	O	Z	Z	P	I
S	N	T	L	E	E	R	L	S	T	E	T	K	T	T	O	A	N	O	S	I	P	Z	A	N
E	I	N	N	R	F	I	E	R	I	E	R	C	K	E	I	C	A	I	R	O	C	H	U	P
P	O	I	O	E	R	R	O	U	S	I	O	F	R	O	O	O	P	S	O	T	N	P	I	
E	O	D	R	I	M	U	R	N	I	N	I	F	A	D	I	R	E	M	H	Z	N	E	H	E
I	K	-	Z	S	I	R	T	N	R	L	P	N	I	O	U	I	E	R	O	F	I	O	O	
O	F	I	I	R	N	O	D	H	H	R	I	N	N	P	M	E	T	R	L	F	I	O	N	
R	R	O	D	O	I	E	R	E	R	S	S	Z	L	R	N	T	N	E	T	E	O	N		
T	T	R	R	I	E	N	F	E	S	S	O	O	I	E	O	D	N	R	S	O	R	S	A	

Codorus Creek

runoff

watershed

riparian zone

pollution

point

erosion

non-point

fertilizer

sediment

To Make FREE Word Search Sheets Visit: (www.teach-nology.com)

Appendix B: Questionnaire

1. What is the name of the stream that runs through downtown York?
2. What does the word watershed mean?
3. What watershed is your school in?
4. What are two processes in the water cycle?
5. Is water recycled? Where does it go?
6. What is pollution?
7. What are some of the causes of pollution in streams?
8. How does a green buffer zone help a stream?
9. What are two of the big environmental problems for Codorus Creek?
10. How can people help streams and creeks stay healthy?

* Written for Codorus Creek Improvement Partnership by Amanda J. Bridenhagen in Luce Semester-December 12, 2005.