Nashua River Watershed Investigations for Grades K-8

Lesson # 5-2

Title: 5-2 Investigating Polluted Run-Off with Data Collection Methods

Grade Level & Standard: Grade 5
5-ESS3-1 Obtain and combine information about ways communities reduce impact on earth resources and environment by changing an agricultural, industrial, or community practice or process.

Objective:
Students will look for polluted surfaces around school grounds or in community (dog waste, oil in parking lots, trash, excess sand, storm drain issues, erosion). Then they will do an outdoor investigation to collect data around the school. Students will generate ideas on how to reduce the impact of polluted runoff.

Vocabulary:

- **Polluted runoff** - Contamination that occurs when rainwater, snowmelt, or irrigation washes off plowed fields, city streets, or suburban backyards. As this runoff moves across the land surface, it picks up soil particles and pollutants, such as nutrients and pesticides.
- **Permeable surface** - a surface that allows water to drain into the soil
- **Non-permeable surface** - a surface that does not allow water to drain into the soil such as pavement

Discussion Points:
What is polluted runoff? What are some examples of pollution around our school? How can we measure the effect of permeable vs. non-permeable surfaces and how does a contaminated surface influence runoff?

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Materials:

- Outdoor Watershed Data Sheet
- pencil
- 50 foot measuring tape (or metric)
- timer
- 2 liters of water in two containers.

Procedure (40 minutes to 60 minutes):

1. Before students go outside, teacher should locate pollution that is observable ie. dog waste, litter, oil and/or sand on the parking lot. Also look for storm drains since they are good topics of discussion. Teachers will also need to find a grassy and paved area similar in slope.

2. Watershed survey of school - walk with students and look for non-permeable surfaces that have pollution on them. Students will tally locations on data sheet.

3. Pour water on grass and measure the distance and time that the water traveled. Then pour water on the pavement of similar slope & measure both distance and time again. Calculate velocity.

4. Compare the two locations.

Data Sheet:

- Outdoor Watershed data sheet

Evaluation: Use the NRWI Lesson 5-2 Outdoor Watershed data sheet as a reflection of participation.

Extension:

- NRWA E. Coli Monitoring Results https://www.nashuariverwatershed.org/what-we-do/protect-water-and-land/river-water-quality-overview/wqm-data-historic.html
- Mural or posters of best practices to reduce runoff
- Elodea and fertilizer experiment - research on web

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OUTDOOR WATERSHED DATA SHEET **NRWI Lesson 5-2**

School _____Student Name_____

1. Complete this land survey of area near your school

Pollutant or land feature	How many can you count?
dog waste	
oil	
litter	
sand	
storm drain	
other	

What is the most common source of runoff pollution near your school?

2. Permeable vs non-permeable surfaces

surface	distance traveled	time	speed or velocity = distance/time
Grass on a slope (permeable)			
Pavement on a slope (non-permeable)			

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