BRIDGES

Lesson Plan: **Stormwater Sleuthing**

Defining stormwater problem spaces at my school

Alignment with STEM Framework

Investigator **Designer**

Overview

For this lesson, youth will go on a stormwater sleuthing walk around their schools, taking pictures of notable areas where stormwater runoff problems may occur. Youth will then get together, and focus on 1 - 4 different pictures that pique their interests, which they will then see, think, and wonder about what problems (pollution, erosion, volume) may be present in the picture(s) and what they can do to solve them.

Practice Goals

- ☐ Asking questions and defining problems
- ☐ Developing and using models
- ☐ Engaging in argument from evidence
- ☐ Obtaining, evaluating, and communicating evidence

Content Goals

- ☐ What do stormwater problems look like at my school?
- ☐ How can I solve these problems?
- ☐ What makes each problem different in the context of pollution, erosion, and volume?

Purpose

The purpose of this lesson is for youth to visually identify problems stemming from stormwater runoff in real life within their own community. By first recognizing, then undergoing a see, think, wonder process youth will be able to extend their understanding to actionable solutions.

Teacher Background Information

Guided by youth around the school, teachers will be familiar with the setting and problem spaces. Knowing the difference between pollution, erosion, and volume problems concerning stormwater runoff sites (pictures) is important.

Stormwater pollution
https://www.cleanwateraction.org/features/stormwater-pollution

Erosion
http://www.stormwater.allianceforthebay.org/glossary-of-terms/erosion#:~:text=In%20terms%20of%20stormwater%2C%20erosion,rapid%20stream%20flows%20and%20erosion.

Volume
http://www.stormwater.allianceforthebay.org/glossary-of-terms/erosion#:~:text=In%20terms%20of%20stormwater%2C%20erosion,rapid%20stream%20flows%20and%20erosion.

Affinity Goals

I can act like an **Investigator** by helping out scientists who are conducting field studies by aiding in sample and data collection and analysis.

I can act like a **Designer** by evaluating the chemical indicators in local bodies of water and planning solutions to address negative human impact.

Materials

- ☐ Laptops
- ☐ Cameras
- ☐ Printers
- ☐ Whiteboard Markers

Time Needed

TBD

Instructional Sequence

Youth will:

- ☐ Using the *Stormwater Sleuthing Look-fors* handout, lead a stormwater sleuthing walk with teachers around their schools. Youth will take pictures of notable instances of stormwater runoff problem areas.

Teacher will:

- ☐ At the end of the walk, print out each photo taken and spread the assortment out on a table. Teacher will create a mindmap on a whiteboard with the three stormwater issues.

Youth will:

- ☐ Work together to identify in each photo what the stormwater issue is: pollution, erosion, volume and sort photos accordingly. Youth will tape photos to the appropriate stormwater issue label on the whiteboard.
- ☐ Go through photos on the whiteboard and agree on 3 - 4 different pictures that are the most interesting problem spaces to them.
- ☐ Break into groups based on the problem spaces and stormwater issues they are most interested in.
- ☐ Go through a see, think, wonder process with their chosen picture.
    - See: Youth will look at their pictures and ask a simple question: What do I see? These initial observations will be noted.
    - Think: Now youth will dive deeper and think about what is actually happening in the picture. What may have caused flooding? What may have caused pollution?
    - Wonder: Now after thinking about what caused the problem present in the picture, youth will begin to wonder about what they can do to alleviate these problems.
- ☐ After the see, think, wonder, process youth will present their ideas to the rest group.

Stormwater Sleuthing Look-fors

_Where is the high ground and where is the low ground?

_What type of roof is on the nearby buildings?

_What design features on the building are there to guide the water?

_Where are the building features directing the water?

_Do the building features work?

_Where is there evidence of puddles or standing water?

_Has mulch been moved around by rain or has the soil been pushed to a new location? Is there erosion?

_How long does it take the water to dry up?

_Are there drains?

_Are the drains at a high point, a low point or on a level surface?

_Is there anything blocking the drain?

_Are there objects going down the drain?

_Is there standing water on flat surfaces?

_What sort of vegetation is around?

_Do puddles form around the plants?

_Are the trees thriving? Is the ground around the trees damp, wet or very dry?

_Is the base of the building damp? The foundation will look darker if it is wet.

_Is there moss or mold growing on or around the building?