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How to Use This Guide
This guide supports the Community Waters Science Unit Teacher Manual with information, maps, and images specific to your school and neighborhood. It is written for teachers; its goal is to provide a better understanding of what is happening with stormwater in and around your school. The points of interest and walking field trip route are suggestions and should be adapted as desired.

If you have any questions about these maps, accompanying lessons, or stormwater around your school, contact IslandWood staff at communitywaters@IslandWood.org.
Stormwater in the Schoolyard– Lesson 3

This map and points of interest (photos and info) can be used to guide your class’ exploration of the schoolyard. You will find the student worksheet for this lesson following the teacher guide version. Please use the extra space on the pages to add your own notes and questions!

***Construction was going on in the front parking lot at the time of our scouting so we could not investigate the entire campus***

The red squares represent storm drains.
A. Large drain:
Here’s a very large drain. Is it a storm drain? How much water will it collect if it is raised above the ground? (Or, is it a maintenance drain?)
What clues can you find that could tell you what it’s for?

B. Downspouts:
See if the students can spot these downspouts. Where are they collecting water from? Where do you think it goes?
Keep these in mind when you study the stormwater pipe system in Lesson 11.

C. Sloped ground and roof:
Observe all of the surfaces in this area. Where does the water go? What do you see that slows down stormwater? What speeds it up? Can you find the downspouts?
D. Gardens:
Does this garden help with stormwater runoff or make it worse? Why or why not?
Hint: Consider that vegetation slows stormwater by helping it soak into the ground and holding soil in place with its roots. However, anything that is put in the garden or on the plants may be washed off—including chemicals or fertilizers, if they are used. Presumably, school gardens have few or no chemicals.

E. Tree, woodchips, storm drain:
How do trees influence stormwater? Do you think trees help with stormwater issues or not? What would be different if they were not there?

Woodchips also offer a good comparison of permeability. Do woodchips help with stormwater problems or not? (Think about how well stormwater will absorb compared to pavement, but also consider how the woodchips might get washed into the storm drain!)

F. Storm drains:
Consider the slope and surfaces of this area. How do these surfaces and vegetation affect the stormwater runoff here? How does it compare with the other types of soil that you have seen in other places on the school grounds? Think about the soil comparisons you studied in the models in class. Which does this type of soil most resemble?

Hint: The dry, hard-packed soil probably does not hold much water compared to other surfaces like the woodchips and mulch areas. Have students observed stormwater runoff here?
Mapping Your Schoolyard – Maple

Include on your map:
- Symbols from the Key including flow of water, surfaces, and storm drains.
- Partially pervious surfaces can be shown with less dots.
- Label locations of litter, pollution and places where puddles form.
- Sketch any specific stormwater problems you see or are aware of.

Map Key
- Direction of water flow
- Pervious Surface
- Impervious Surface
- Storm Drain

Add your own symbol here!
Local Stormwater Systems – Lesson 5

What happens with the Stormwater Pipes around your school?

• Stormwater that falls on your school enters stormwater pipes (green on map) through gutters and the blue storm drains.
• These stormwater pipes then flow into the orange combined flow pipes. These pipes are called combined flow because they carry both stormwater and sewage water.
• The combined pipes flow south and then west under I5 (shown on the “Pipes Near Maple Elementary” student map).

Where does the stormwater runoff end up?

• Your neighborhood’s combined water joins up with water from other parts of the city in a larger pipe that heads north along the Duwamish River (shown on the “Combined Sewer Pipes and Overflow” map).
• Water in the large treatment plant pipes is pumped north through downtown, to the West Point Wastewater Treatment Plant in Discovery Park (shown on “Treatment Plant Pipes” map). At West Point, all of this water is treated and is then released into Puget Sound as clean water.
• During big storm events with a lot of rain, the orange combined flow pipes cannot handle the amount of stormwater being emptied into them. This causes them to overflow directly into bodies of water at points called combined sewage overflows (CSOs). These are shown as yellow circles on the student maps. The stormwater from your school and community can flow out of CSOs directly into the Duwamish Waterway, Elliott Bay, and/or Salmon Bay depending on where (and if) it surpasses the capacity of the pipes.
• Since your stormwater ends up in the river or bay during big storms as “Combined Sewer Overflow,” we suggest watching the “Drained: Urban Stormwater Pollution” video (OPTION B) from 0:00 to 2:11 during Lesson 5. Point out to your students that the CSO during a big storm would have everything described, PLUS everything from the sewers (including human waste). You can find this video linked on communitywaters.org or at https://vimeo.com/51603152.

Please Note: The pipes information provided here is our best estimate of the stormwater flow in your community based on the information we have currently. If you encounter more information in the course of your investigation please let us know so we can update future versions of this document.
Stormwater in Our Community – Lesson 6

Please use this map and points of interest as suggestions for your walking field trip, recognizing there may be other things of importance to note in other areas. It may be useful to bring the stormwater pipes map with you for reference. Questions posed are intended to be posed to students as desired.

Suggested Route: Exit the schoolyard by the north playground, and walk up the hill to the ballfield to check out what is uphill from your school. If you can get a view to the west from the path at the edge of the field, looking out over Georgetown, that might be helpful for students to visualize what might be happening to stormwater on a larger scale. There might be too much foliage for kids to see through, though! Once your class has explored up by the field, walk down to Corson Ave S. and cross the road onto S. Ferdinand Street. Turn right at 12th Ave S. and walk south one block. Take another right at S. Shelton Street and return to the school.
Points of Interest

A. Sloped ground/hill:
This can be a great opportunity to visualize how stormwater would move over a landscape on a large scale. Where does water flow as it leaves the field? Can you see the neighborhood downhill from the park? Who or what might be impacted by stormwater down the hill?

If it helps, you can remind students of the models they made in class. How did the water move through the model? What is similar about the model and this landscape?

B. Ball field:
Compare the surface of this ballfield to the other types of ground you see. How does stormwater and rain affect this surface/soil?

Recall your studies of soil types. What type does the ground of this ball field remind you of the most? Do you think water running off this field would carry lots of soil, or not very much? Why?

C. Storm drain:
Keep an eye out for storm drains around the neighborhood. See if the students can spot this one hidden in the grass on the hill!

Where does the water that enters the drain come from? What else might be going in it besides water? Where do you think the water goes once it goes down the drain?
D. Storm drain in street:
Here’s another storm drain. What do you think might end up in this drain versus the other ones that you’ve seen? When we scouted, there was some trash that looked like it was washing into the drain. Have students noticed this?
Also spot the tiny bit of street art someone put into the curb!

E. Sloped driveways:
Notice several driveways along this street slope down toward the houses. What issues could this cause for the people who live there? What have you seen in the area that might help with these problems, and what might make them worse?

F. Traffic circle with plants:
Do you think this garden helps with stormwater at all? Is it a stormwater ‘solution’? Can any runoff enter the garden from the street? If not, how could it be changed to help collect more runoff?