

# School Water Budget

# Runoff

# Team



College of Natural Sciences  
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Colorado  
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University



# **Runoff Team**

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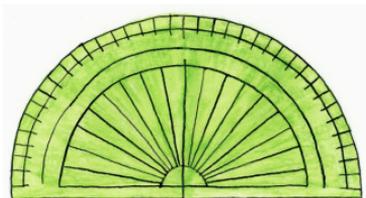


## *Introduction*

**W**ater that falls from the sky as precipitation can follow several different pathways as it hits the ground. It can Evaporate, Infiltrate, be used by plants and animals, or Runoff. Your team will focus on Runoff. Runoff is simply any water that flows over the surface of the ground. So, the shape of the surface and the type of surface controls where and how fast the water will flow.

***The Runoff Team has Four Tasks:***

- 1.** Learn what controls the rate of runoff.
- 2.** Make a map showing where runoff goes.
- 3.** Teach the rest of the class what Runoff is and how you determine where it goes.
- 4.** Answer a challenge question that will be used in the final class discussion.



## *How to Measure Runoff*

### **Make a Sketch Map of the study site**

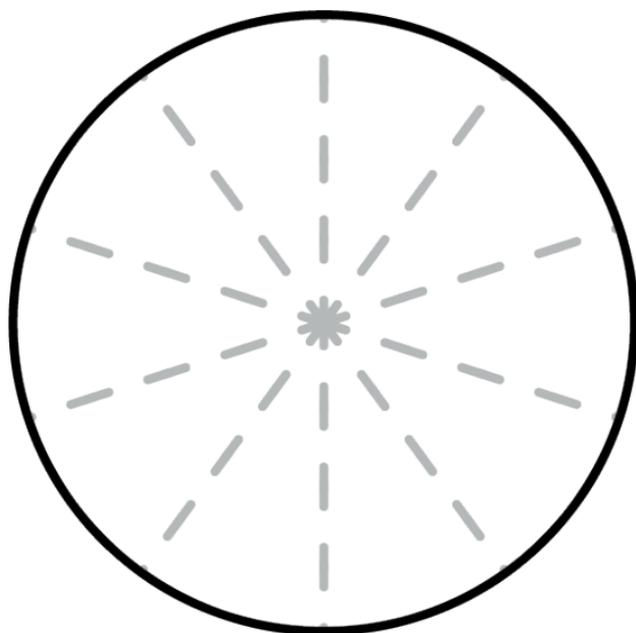
Using the blank grid, a measuring tape, and colored pencils, draw a map of the field site as accurately as you can. The corners of your map should match the corners of your field site. Be sure to label the different types of surfaces you have in your study area: grass, asphalt, concrete, mulch, gravel, sand, etc.

### **Determine the Proportions of Different Surface Types**

Using the grid as a guide, count the number of squares covered by each of the different surface types you find. To make it easier for you, there are 100 squares on the grid. Record your results on the table below. Use the pie chart template to show the relative proportions of the different surface types.

Surface Type	Number of Squares	Proportion of Total

## Proportions of Different Surface Types



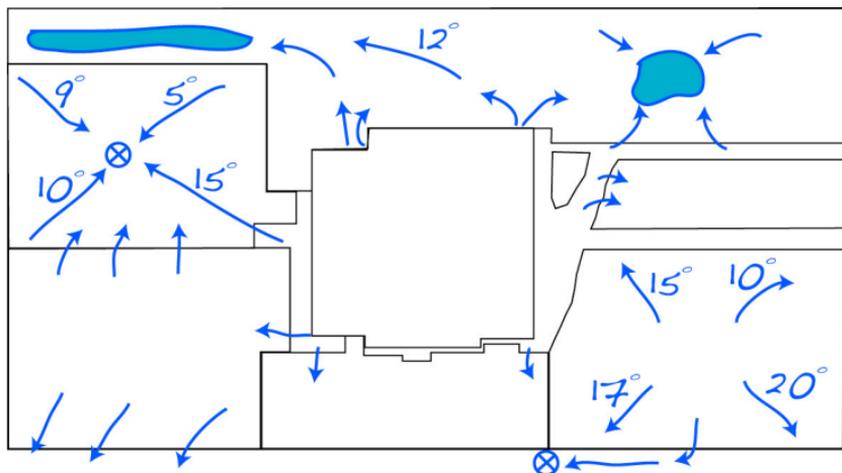
## Determine where water will flow

An Inclinator is a useful tool for measuring the slope of the ground surface. Use it to add blue arrows and angles to your map, showing where water would flow or pool. See examples below.

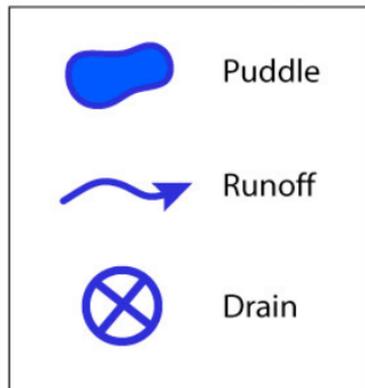
### Do this:

Place the inclinometer on the ground as shown in the diagram below. Rotate the inclinometer about a vertical axis to find the direction on the slope that produces the maximum deflection of the washer on the string. Record this direction using a blue arrow on the map. Record the angle of deflection next to the arrow.





## Runoff Annotations

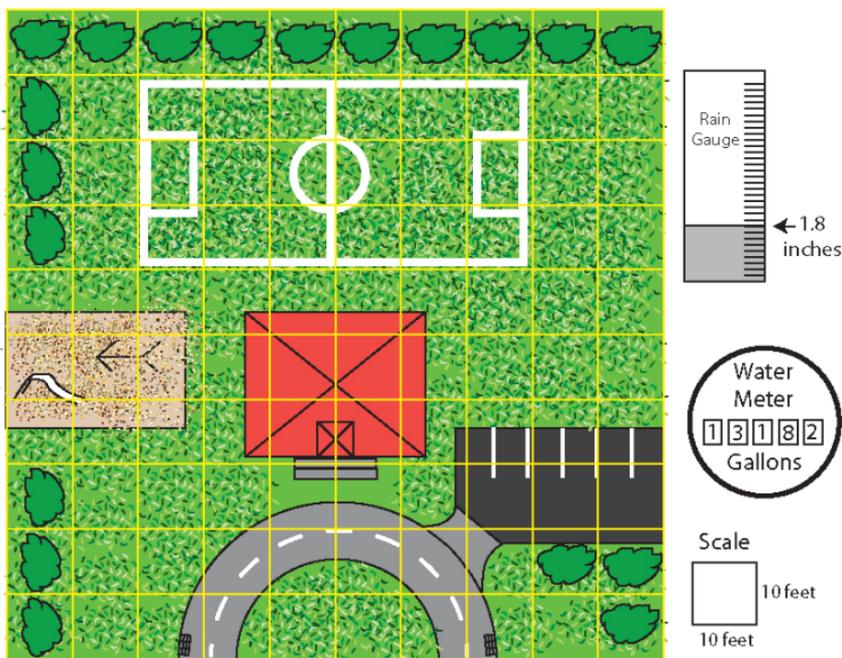


**Science Notebook:** Cut out your map and glue or tape it into your science notebook. Write a paragraph that describes what you did to determine what controls the rate of runoff. Over which surface will the water flow the fastest? Over which surface will the water flow the slowest? Where does the water pool, and why? Where does the water that flows out of the study site go? Where does water that flow down a storm drain go?

**\*\*Be prepared to teach the rest of the class what you learned.**

## Team Challenge

There were four rainstorms last month at Clear-view School. The ground remained wet for two days after each storm. The rain gauge shows how much rain fell last month. The water meter shows how much water was used by the school last month.



**A.** Within your team, discuss the following question: How could the school realistically capture the water that falls from the sky? Where could they store it? Record your ideas in your science notebook.

**B.** Within your team, discuss the following question: Make a list of all of the things that could get mixed with water as it runoff. Record your ideas in your science notebook.



## *How Much Water Does Your School Use?*

**C**an you use the skills and techniques we learned to figure out how much water falls on your entire school lot in a year? How much evaporates, infiltrates, and runs off? Ask your principal to tell you how much water the school uses in a year. Is it more or less than what falls from the sky? If your school uses more water, where does the extra water come from? Is your school using water in a sustainable way?

**Tip:** The website: [www.arcgis.com/explorer/](http://www.arcgis.com/explorer/) has a nice map measuring tool that you can use to quickly measure your school grounds.

### **Materials Needed**

50 foot measuring tape

Inclinometer

10 x 10 grid

Clipboard

Science notebooks and colored pencils

**For more information, visit:**

[www.cns-eoc.colostate.edu/  
schoolwaterbudget.html](http://www.cns-eoc.colostate.edu/schoolwaterbudget.html)



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