

## **Glossary**

**Estuary:** Body of water that connects a river with the sea

**Eutrophication:** increased supply rate of organic matter to an ecosystem

**Freshwater Flow:** freshwater flowing in rivers or streams

**Fertilizer:** chemical substance added to land to make soils more fertile

**Groundwater:** water found beneath earth's surface in pore spaces of earth's soils, sand, and rock

**Impervious surfaces:** surfaces that fluid cannot penetrate or flow through

**Land Cover type:** Land cover displays the distribution of land covered by natural vegetation (i.e. forests and wetlands), farmland, urban areas within a pre-defined area.

**Runoff:** the water that drains from the land's surface and enters into a waterway.

**Watershed Boundary (Catchment Area):** an area of the earth's surface in which all the water that is caught in this area drains to the same point

# Activity Sheet 1

# The Watershed Game

Land Use Type	Area (cm <sup>2</sup> ) (Based on 16.9 oz water bottle)	Precipitation (ml)	Concentration of Atmospheric Nitrogen (mg/ml)	Concentration in "Ground Water" or Runoff Container (mg/ml)	Volume making it to "Ground Water" or Runoff Container (ml)*	Amount of Nitrogen Entering the System (mg Nutrient) from each land type
Natural Vegetation						
Agricultural Land						
Impervious Surfaces						

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Natural Vegetation	31.7	50	4	1	Will vary depending on time for introduction material. Expect Approximately half of precipitation value	20
Agricultural Land	31.7	50	4	20	Will vary depending on time for introduction material. Expect Approximately half of precipitation value	400
Impervious Surfaces	31.7	50	4	4	0	200

\* A value of 20 was chosen



State of Flower

Office of the Governor

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Dr. Doe, Water Quality Specialist  
Department of Ecology, Rose University  
P.O. Box 12345  
Sun, Flower 99996-5432

Dear Dr. Doe:

I understand that you are the lead water quality specialist in the Department of Ecology at Rose University here in Sun County. The research conducted by yourself and your colleagues have helped protect the pristine waters of Sun County and has allowed the waters of Sun County to be some of the cleanest waters on earth.

As your new governor, I am fully committed to maintaining the excellent water quality of all rivers in the state of Flower. I would like to develop the land in our neighboring county, Lily County. Currently Lily County is covered by 100% natural vegetation. I am proposing to convert 50% of the land cover to residential housing, 20% to shopping centers/malls, and the remaining 30% into pasture land.

I am requesting your expert opinion on my proposed alterations plan to nearby Lily County. Do you foresee any potential water quality problems with these land alterations? If so, how would you suggest I alter the land cover to ensure that the water quality in Lily County remains pristine, but still allowing some form of development in the county? I look forward to your prompt response.

Respectfully,

The Governor