Introduction to the Outdoor Environment at Chapel Hill High School

The campus of Chapel Hill High School and the town of Chapel Hill are typical of many urban areas in North Carolina. We are in a fast-growing area and with this growth come environmental problems previously associated with big cities. For example, our area has been allowed to develop with no comprehensive transportation plans other than private automobile. When transportation is improved, these improvements consist of cutting down trees and older structures in order to widen and pave roads. The resulting decrease in vegetation and increase in pavement and erosion further impacts the area.

The purpose of this activity is to increase your awareness of our urban environment and the problems associated with it.

MAP – A map (to scale) should be attached to the back of this packet. Make sure measurements are clearly shown. Your map should include a scale, a key/legend, and a compass showing direction of north. Storm drains should be visible. Permeable surfaces (vegetation) should be distinguished from impermeable surfaces (pavement, sidewalks, etc.). Neatness counts!

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PART I: AREA

Estimate, mathematically (based on your measurements) how much of your area is covered with vegetation, and how much with sidewalks, parking lots, etc.

Vegetation/Permeable Surface Area (in m^2) _____

Paved/Impermeable Surface Area (in m^2) _____

Total _____

Show calculations

PART II: TEMPERATURE

Measure the air temperature one meter above ground at two locations (in the sun over the pavement, in the shade over the vegetation). Allow five minutes at each site for the thermometer to stabilize before you record the temperature.

In the Sun Over Pavement: _____ ^{o}C

In the Shade Over Vegetation: _____ ^{o}C

Discuss your results.

What are the implications (of the results) for the environment of the campus?

Extrapolate to the entire town of Chapel Hill/Carrboro (what are the implications of these results for the town?)

Explain the ecological benefits of vegetation.

PART III: RUNOFF

Calculate the volume of water (in gallons) that runs off from the *impermeable surfaces* in your area after a rainfall of just one inch. SHOW YOUR CALCULATIONS.

Volume = _____ gallons

Discuss the implications of this amount of runoff.

Locate the storm drains in your area. Make sure to include them in your map. Where do these drains empty, in general, on the campus? (you may have to think a bit about this)

PART IV: LITTER

What is the predominant type of litter in your section of campus?

What are some steps you could recommend to reduce the amount of litter?