**Lesson Plan Summary for ‘Infiltration’**

1. **Summary**

Students explore infiltration as a critical component in the water balance. This assignment takes ~2-3 hours for students to complete.

**2 Learning Goals**

Topical Goals

Learn about infiltration as a component in the water balance. What factors affect infiltration rate?

Play with units of precipitation.

Learn how infiltration can be measured in the field.

Quantitative Skills Goals

Learn to quantify rates of change from a graph.

Use spreadsheets to plot data time series ands make simple calculations, learn to draw trendlines.

Learn to look for ranges of values for variables from online databases.

**3 Context to use**

This activity is part of the ‘water balance models’ set of spreadsheets. There are comparable exercises for precipitation and evaporation.

This exercise works when assigned as a problem set and is set to be completed individually or in groups of 2 students. It encourages students to learn quantitative reasoning about the physical process. It can serve as a material for students in environmental sciences and in introduction to hydrology.

**4 Teaching Notes and Tips**

**It will not require much to add-on a physical experiment to this exercise. Ring infiltrometers are easy to design, and one would need to have stopwatch and a column of sand versus a column of clay as a demonstration.**

Question 5 could be done as a classroom discussion. Make a matrix of factors that the students found. Instructor can tabelize the rates of the different components*.*

5 **Assessment**

Grading includes checking for reasonable verbal explanations of different phenomena. The instructor can check students’ ability to make annotated graphs, to derive trendlines, and calculate a linear slope from a data time series.

It is important in the spreadsheet on the Richards equation that students look up reasonable ranges for pressure heads and hydraulic conductivity.

In evaluating the reports, we place greater emphasis on demonstration of a reasonable thought process than on arrival at the correct answer.