CGN 6933-002
Transport in Porous Media

Spring 2005   University of South Florida
Homework #1   Civil & Environmental Eng.
Due Mon., Jan. 24, 2005   J. A. Cunningham

(1) Write a short professional autobiography. It should probably be about $\frac{1}{2}$–1 page in length. Please write it in the style of a short biography, and answer most/all of the following questions (not necessarily in this order; you decide what sounds best). From what state, province, or country do you come? How long have you been at USF? For what degree are you studying? With which department or division are you affiliated? In what field is your undergraduate degree? Do you have any professional or work experience that is related to water resources or environmental engineering? Why are you interested in learning about groundwater engineering? What do you hope to gain from this class? Please be aware that you will be graded on the *quality of your writing* as well as the content of your answers. Part of the point of this assignment is to have you practice some writing, of the type that you might have to do in engineering practice.

(2) Sign up for the class e-mail list. Your professor will give you instructions on how to do that as soon as he figures it out.

(3) (a) Read the course syllabus.
   (b) After reading the syllabus, send an e-mail to the instructor stating that you have done so. If there is anything that you did not understand, or would like clarified, indicate that in your e-mail.
   (c) In the same e-mail, indicate to the instructor any time periods that you are **not** available for class office hours due to **academic or family commitments**. As a courtesy to your fellow students, please don't block off time for reasons like "I like to nap at 1 in the afternoon" or "it's too hot after 10 AM." You know what's reasonable.

(4) Write a short report on a topic that is related to this class. You may choose any **one** of the following topics.
   (a) Write about a site in the U.S. where the groundwater is contaminated. It must be a site where the contamination originated elsewhere and was then transported through the groundwater (e.g., a municipal well that was closed because of contamination from a nearby industry). Indicate what contaminants are present, where the contamination originated, and how long it took for the contamination to migrate. Discuss any physical, chemical, and/or biological processes that are relevant to the

contamination migration. Tell me anything else that is interesting or special about this particular site. Indicate what is being done about the site today or in the future.

(b) Write about a science or engineering problem **other** than contaminant transport in groundwater, but where transport in porous media is still central to the problem. Explain why it is an important or interesting problem. Explain why transport in porous media is relevant to the problem.

(c) Read and summarize a research paper from a scientific journal such as *Transport in Porous Media*. The paper can be from any peer-reviewed journal you choose, and it may be related to contaminant transport in groundwater, or to another topic of your choice, just as long as transport in porous media is a central issue in the paper. In your summary, be sure to indicate the goal(s) of the research conducted, how the researchers approached the problem, what they found out, and how transport in porous media is related to the research.

Your report must be written in your own words. Be sure to cite your sources. Internet sites are acceptable, but you *must* cite the URL address(es). Your report will be graded on three criteria: (1) the content; (2) the writing, i.e., if it is clear and easy to understand; and (3) how well you cite appropriate references. If it is determined that most of your report was just copied from another source, you will not receive credit for the problem. Please type your report with reasonable font size, margins, and spacing. Your report should be 1–5 pages in length. Please don't exceed 5 pages.

(5) Write a short computer program in the MatLab programming language. Your program should do the following: input two numbers as arguments, then print out the reciprocal of the sum of those two numbers. For instance, if my program is called homework1, and I type in

```
>> homework1(3, 4)
```

at the MatLab prompt, then I should get the following result from MatLab:

```
ans = 0.1429
```

Please turn in your code to the instructor.