Teaching Methods in Groundwater Hydrology Workshop

Robert M. Newton
Department of Geology, Smith College, Northampton, MA 01063

Steve Mabee
Department of Geosciences, University of Massachusetts, Amherst, MA 01020

WORKSHOP GOAL

The goal of the workshop was to discuss course content and methods of teaching groundwater geology and to share ideas about inquiry-oriented class projects. The workshop was, in part, an outgrowth of successful class projects at Smith and Amherst which involved a study of groundwater contamination at a local Air Force base.

DISCUSSION TOPICS

Initial discussions centered on course content. One of the first point for discussion was what constitutes a groundwater course and how much geology, surface water hydrology, groundwater hydrology and chemistry can and should be included. Robert Newton presented an outline of his course as an example for discussion. Considerable time was spent examining the laboratory component of the course and there was a general exchange of ideas and examples of laboratory assignments.

Steve Mabee made a presentation on the use of groundwater models and gave a demonstration of Visual Modflow during the Saturday afternoon session. A general discussion on the use of computers in groundwater courses followed with demonstrations of Excel, Kaleidagraph, Macpump, and Flownet as they can be applied to groundwater problems.

There was also a discussion of field equipment and how to set up your own experimental well field for students to do pumping tests. This was followed with discussions of how field projects could be designed to engage students in "real-life" hydrology.

WORKSHOP PRODUCTS

Participants received lecture notes, laboratory exercises, and field project examples in two bound volumes. In order to keep participants in contact with each other a World Wide Web page has been established at:

www.science.smith.edu/geology/keckgw/keck.html

This page contains general reference information on topics such as textbooks, films etc. It has downloadable excel files for use in pumping test problems and includes links to other groundwater world wide web sites.

WORKSHOP AGENDA

Saturday, January 11

8:30 AM	Opening Remarks
8:40	What Constitutes a Groundwater Course
	Prerequisites?
	How much geology, hydrology, chemistry?
	Textbooks?
	Syllabus - R. Newton
	Syllabus - S. Maybee
10:00	Coffee Break
10:15	The Laboratory Component
	Experiments - Darcy tube, physical models, electric analog models.

Map exercises (Davis Basin)
Pumping test analysis
Groundwater chemical analysis

12:00 LUNCH

1:00 Use of Computers
- Spreadsheets (Excel), graphing (Kaleidagraph)
- Pumping test software (MacPump)
- Simple flow models (Flownet)
- Visual Modflow
- Oasis

6:00 DINNER

Sunday, January 12

8:30 Field Projects
- Field Equipment Needs
- Easthampton Aquifer Study
- Westover Air Reserve Base General Discussion

10:00 Coffee Break

10:15 General Discussion

12:00 Workshop Ends