Field Techniques in Hydrogeology

Earth Sciences 416

Section: E100

Term: 2012 Spring

Instructor: Dr. Diana Allen
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Discussion Topics: General:

Field Methods in Hydrogeology is intended to complement the theoretical aspects of hydrogeology (physical and chemical) by providing students with hands-on experience using hydrogeological equipment (data loggers, pumps, chemical sampling equipment), implementing sampling and testing protocols, and observing state-of-the-art monitoring and geophysical tools.

The course entails 1) a pre-field session assignment involving background research and data interpretation on the hydrogeology of the Fraser Delta (including surficial geology, regional geochemistry and geophysical characteristics), 2) one week at a hydrogeology field site on the Fraser River Delta, and 3) one week of extensive analysis and interpretation of data gathered during the field session complemented with regional data acquired during preliminary investigations, and the completion of a detailed hydrogeological report.

This inter-university field school is also attended by students from the University of British Columbia, University of Calgary. The course normally runs for about three weeks following Spring Session Final Examinations.

Course Topics:

1. Regional Hydrogeology of the Fraser Delta and Examination of Regional Data Sets

2. Site Geology and an Introduction to Field Techniques

3. Flow System Characterization in Tidal-Influenced Aquifers

4. Water Quality Sampling

5. Hydraulic Response Tests

6. Infiltration Measurement Techniques

7. Measurement and Sampling Procedures for Westbay Multiport System

Course Organization:

2 lectures/lab sessions (pre-field session):
- Early April (3 hours; date and time TBA). A pre-field session reading and work assignment (containing geophysics, geochemistry and surficial geology exercies related to the regional hydrogeology) will bhe undertaken during lab time, and will be included in the final report.
- April 25th (day prior to field school) from 9:30 - 12:30.
- A 5-day field session April 26th to April 30th (thursday to Monday)
- a 10 day period following field school to analyze data and write the final report. Studetns may work at home. TA/Prof will be available during this period for questions.

Grading: 1. Final Report 80%

2. Participation 20%

Required Texts: None.

Field Techniques in Hydrogeology

Recommended Texts: Applied Hydrogeology 4th Edition. Fetter, C.W. 2001. Prentice Hall 598pp.

Materials/Supplies:

Prerequisite/Corequisite: Prerequisite: EASC 304, EASC 412

Recommended: EASC 207 and/or EASC 307

Notes: Detailed course notes will be provided on the first day of field school. The field site is situated in Richmond at the corner of River Road and No. 4 Road. Students will have to make their own way to and from the field school site on a daily basis. On the first day, we meet at UBC and then head out to the field site in the afternoon. there is public transportation (Canada Line Sky Train to Bridgeport, or bus, then walk to the site) or we will try to arrange car pooling. We will be outside all day, rain or shine. Appropriate clothing and footwear should be worn. Further details regarding safety, food, transportation, and field supplies will be discussed prior to the field school.
Be aware that during the field trip there will be periods of strenuous hiking, hiking close to cliffs and crossing roads with busy traffic. Appropriate clothing and footwear should be worn. Further details regarding safety, food, housing and field supplies will be discussed prior to the field trip.
IMPORTANT NOTE: Final grade will not be submitted in time for spring convocation. The earliest a student can graduate is the summer semester.