A site assessment

Site assessments are the first step in any land-use project; they can be followed by remediation or by a more extensive survey or by construction.

Depending on the agency or company involved, there are protocols which should be followed. These protocols assure that certain standards (such as lab technique, mapping methodology, etc.) are met. Generally, though, most protocols follow these steps:

A. Defining the scope and nature of the project
B. Mapping the site (if appropriate) and researching the site’s history
C. Performing the analysis (including any laboratory work) — the date and time are crucial parameters, especially for field work
D. Writing the report, complete with results, supporting evidence and recommendations.

In the site assessment you and your team will perform, you will be responsible for B, C and D; I will provide A and any equipment you will need.

Procedure:
You may work individually or in teams. Pick one of the following projects:

1. There is an artesian spring called the 164th Street Well in Alderwood. You can access it by heading north on I-5, getting off at the 164th St. SW exit (one exit north of the I-405/Alderwood Mall exit) and going west about one-third of a mile. The well is a steel pipe about three feet high, bent horizontally at the top. People drive for many miles to fill up jugs at this spring; as one fellow commented "No fluoride and no chlorine and no government involved in any of it". We may not be able to test for government involvement, but we can certainly test the other two claims!
   Measure the flow out of the spring and estimate the discharge in cubic feet per second (an empty gallon milk jug and a watch would be handy here). Obtain a sample of the water. Cap the sample tightly.
   Look at the sediment above the spring and below the spring and determine why the spring exists here. Look on the map and determine if there are higher elevation surface water available to recharge the spring's aquifer (this spring runs year-round — hint: higher ground is to the east). Go to this possible surface water source and look for possible sources of contamination. Obtain a sample of this water. Cap the sample tightly.
   Finally, return home and obtain a sample of city tap water. Measure the iron and total chlorine content of all three samples.
   Then let all three samples of water sit uncovered overnight; then test each again for iron and total chlorine content. Is the fellow right about chlorine? Does iron from the source contaminate the spring water? Or does the flow rate and the material the groundwater flows through make a difference?

   Needed: Water collection bottles; iron testing kit; chloride testing kit; map

2. In 2002, the Burke Gilman Trail was nearly covered by a landslide north of its intersection with Lakeside Place NE. The city deemed this to be an imminent danger to the safety of trail users, and so the next year began a study on ways to remediate the slide. In 2004, the recommendations of the study were put in place. Go to this site and document, with photographs:
In addition, determine if the slide plane is along some geological contact and then estimate the volume of material moved by figuring out the areal extent of the slump on a map. Conclude whether the city’s efforts have paid off.

**Needed:** Map, camera, tape measure, machete or other blackberry-removing implement

3. Chris Smith is a Seattle Post-Intelligencer columnist who writes a weekly garden column called “Good Enough to Eat”. In a couple of recent columns, he outlines a seemingly simple test to determine the texture of a soil (recall the soil texture triangle from lab 7). Read about the test at http://seattlepi.nwsource.com/nwgardens/100490_goodtoeat19.shtml and perform the test on the five soil samples we used in class in lab 7, for which you have determine the soil texture already using the “three-test method”. Is Smith’s method of determining soil texture as good as the three-test method? Compare both of these tests against a “true” value by sieving a sample of each of the soils according to grain size, and weighing each fraction to get an idea of the percentage of each grain size in the soil.

**Needed:** A couple of jars, the soils from lab 7, a balance and a set of sieves.

4. Thornton Creek’s North Fork, which begins at Ronald Bog, traverses an area that is home to about 140,000 people. That many people means a lot of ground disturbance due to development and other human activities, and a lot of human input into the stream which may change the chemical makeup of the stream. Some non-point source pollutants in the water of the stream are carried by runoff off of suburban lawns into the stream. Collect a jar of water from the outlet of Ronald Bog, the outlet of Twin Ponds, the outlet from Jackson Park, and anywhere south of the confluence of the South and North branches of the creek (so downstream of Meadowbrook). Cap the jars tightly and bring them to the lab to test for phosphate, nitrate and iron. Make observations of the level of algae and any runaway growth (pond scum). Note that you should do the measurements all on the same day, so that precipitation changes will not play a factor in any water quality changes you see.

**References:** The contact information given in the article at the website http://www.cityofshoreline.com/cityhall/projects/water/index.cfm may be helpful.

**Needed:** Map, water sample jars, tape (to put on jars to indicate locality of water sample), phosphate test kit, nitrate test kit, iron test kit.

**Assignment:**
Each group will write a two- to three-page report summarizing your findings and conclusions, excluding any photos or other illustrations. Be sure to title your report such that it is clear which site assessment you performed! Include the names of all group members. All reports are due Wednesday, March 15 at 4 p.m.