

ESM 228

Report 1

Watershed and Groundwater Characterization

Due: Friday 2/7/08 by 5:00 to Tim Robinson's mailbox (faculty/staff room) or to Jose directly.

Type: Reports should be done in groups of 3 (self-organized, memo format, one to two groups per watershed).

Length: 15 pages or less with graphs, pictures, and *references*.

Guidelines: Relate lab and field experiences to your ongoing watershed characterization of the Tecolote Creek and Bell Canyon Creek catchments.

Topics to include:

Watershed delineation and characterization:

Describe how watershed delineations are done with topographic maps, field visits, and GIS technologies. Include why urban watershed delineation is important and the techniques to incorporate those areas in your drainage basin. Obtain basic map layers for your GIS database for both watersheds such as soils, streams, geology, roads, parcels, municipalities, monitoring sites, remote sensed imagery, landuse, impervious surface extent, etc. Use these layers to describe the physical characteristics of the watershed.

Groundwater Monitoring:

You have been awarded \$50,000 to do a groundwater assessment of **each** of the aquifers in the Tecolote Creek and Bell Canyon Creek drainages. Design a monitoring strategy and general work-plan to determine the extent and depth of the aquifer, flownet, water quality conditions, and whether your monitoring sites (TO02 and BC02) are influenced by groundwater during a variety of antecedent soil moisture conditions.

Soil Monitoring:

Describe how and why soil classifications are done. Include references to bulk density, infiltration, soil moisture, percolation, and hydraulic conductivity tests as part of a general sweep of field tests that might be done to better understand the properties of the unconsolidated soil zone.

Fish Passage Barrier Assessment and Remediation:

Are Southern Steelhead found in both study watersheds. Focus your analysis on the watershed with the greatest potential for steelhead recovery. If Southern Steelhead were found in the lagoon of that watershed but not in the upper watershed, there is a good chance that fish passage barriers are present along the stream network. How is this watershed ranked as far as decent habitat for steelhead and speculate why the other was not included in the 2002 Stoecker Report? Draft a proposal to assess fish passage issues in the basin, offering several alternatives to remove and subsequently monitor the success of the modifications of impediments proposed.

Habitat Assessment:

Describe a scenario that necessitates a habitat/ecological assessment of a site in the Tecolote Creek or Bell Canyon Creek watersheds. What types of conditions would prompt such an assessment, and generally how would you go about doing it?