GOLDSCHMIDT2008
FIELD TRIP #6

ENVIRONMENTAL GEOSCIENCE OF RECENT SURFICIAL DEPOSITS: GEOCHEMISTRY, SOILS AND LANDSLIDES OF SOUTH WESTERN BC

LEADERS:
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WHERE: Vancouver – Burns Bog – Fraser River Banks – Fort Langley – Cheam Landslide - Vancouver

WHEN: July 13, 2008. Day trip, pre-conference.

COST: $55 for 1st 10 students registered
$75 for non student rate

MINIMUM PARTICIPANTS: 25
MAXIMUM PARTICIPANTS: 52

GEAR: Strong comfortable shoes are recommended, and a light-weight waterproof jacket is essential.

- This trip will involve several short walks from the vehicle. The BC Coast is usually very pleasant in summer; however, rain showers are possible.

SUMMARY:
We will travel from Vancouver to Hope and examine the Quaternary geology and associated soils of the area. This one-day field tour will appeal to persons interested in surficial geology and its relationships with natural hazards. In this field tour participants will get a glimpse of the natural, cultural, and culinary landscapes of South Western British Columbia.

We will start from UBC and head to Burns Bog, the largest domed peat bog on the west coast of North America. This unique wetland had its origin after the last glacial retreat some 10,000 years ago. The peat has accumulated over these thousands of years from plants and mosses that are usually found in regions of tundra. Protected areas of the bog are a crucial wildlife refuge area, while peat-harvested zones are important cranberries farming grounds. The stop will examine the accumulated peat and the associated acidic and nutrient poor wetland.

We will then drive east through the Fraser River lowlands and the township of Cloverdale. The soils have a shallow deposit of organic materials that overlie clay rich and high water content marine deposits (Gleysolic soils). These soils are subject to subsidence due to organic matter decomposition. Cultivation during the past 35 years has led to a 40% loss of organic matter in some areas and the underlying mineral deposit is now showing on ridgetops. Groundwater in the region has residual effects of the marine origin of the deposit, including higher arsenic values than the surrounding glacial drift uplands.

We will then head to the Haney site to witness the remnants of the large quick clay slide that took place on January 30, 1880 in raised marine sediments. The relatively small-scale slide caused a 20m displacement wave to travel up and down the Fraser River. This wave caused extensive damage to dock, sunk boats and killed one person. A slide of similar magnitude today would result in extensive damage and large loss of life.
The Fraser River banks provide an opportunity to visualize the stratigraphic framework for the Fraser River lowlands. The Quaternary history of the Fraser Lowland is unique in BC, as there are three recognized stades of the late Wisconsin Fraser Glaciation. During deglaciation isostatic depression resulted in marine limit being ~200 m asl and extensive marine sediments being deposited on top of glacial deposits.

A light lunch will be served in historic Fort Langley, deemed the birthplace of British Columbia. We will tour a premium fruit winery specializing in cranberry wine and partake in wine tasting.

The Cheam rock avalanche will be our last stop. The slide occurred about 5000 years ago and is the largest known catastrophic landslide in western Canada (175 x 106 m3). Debris is up to 30 m thick and consists of rubbly debris derived from local argillaceous metasedimentary rocks. First Nation oral history suggests that the debris may have buried a village, causing the first known landslide fatalities in Canada. The slide is located next to Bridal falls, the sixth highest falls in Canada.

DETAILED ITINERARY:

Leave UBC 8:00

Burns Bog 8:45 – 9:45
Peat over overbank alluvial deposit.

On the bus: Cloverdale - agricultural practices and land subsidence

Bathroom break – Langley 10:10 – 10:40

Haney site 11:10 – 12:25
- Quick clay slide
- Fraser river bank cut – marine and glacial sediments. Quaternary geology overview

Fort Langley lunch 12:40 – 2:00
Lunch: sandwiches and platters at the winery
Fort Co. fruit winery tour

On the bus: overview of native and settlement history
Discussion of Quaternary geology

Bridal falls and Cheam landslide 2:45 – 4:00
- Cheam landslide viewed from the lake
- Refreshments
- Bridal falls

Return to UBC 6:00

Map Link:

http://maps.google.ca/maps/ms?hl=en&ie=UTF8&msa=0&msid=100310335906989458923.000446732d32897c07fe1&ll=49.198756,-123.009796&spn=0.200559,0.462799&z=11