FOR 3456: THE WRITING OF THE FOURTH REPORT

OBJECTIVE - To model forested watershed responses to clearcutting in terms of water flow, retention, and soil trafficability

TITLE PAGE - Title, authors, course number, report number, Faculty, UNB, date.

TITLE – Provide a "crisp", unique, and highly informative title regarding modelling water flow and retention through a watershed including off-road soil trafficability, based on basic watershed properties pertaining to soil permeability, and extent of forest cover, using a 4-year daily weather record. *20 words, max.*

INTRODUCTION - Focus on presenting the STELLA modeling approach, by re-introducing and expanding on the relevant water reservoirs, and quantifying flows into and/or out of each reservoir. Show model diagram with labels, and define model entries and terms in a text box. Specify the objectives of this exercise:

1. to model (predict) summer to winter water flow and soil moisture retention in a watershed based on a 4-year daily precipitation and air temperature records ;
2. to initialize and calibrate this model by specifying how each of the water flows are calculated in relation to daily variations in hydraulic gradient, temperature, and water uptake via evapotranspiration; this also requires specifications regarding SP, FC, PWP, PL, LL, Ksat, and LAI (leaf-area index);
3. to test the model output regarding soil moisture %, stream discharge, and soil trafficability and mudslide ratings by changing the percentage of forest cover of the watershed from 100 to 0 %.

250 words min, 300 words, max; 1 generic model diagram, 1 table specifying generic relationships, refer to Summary of Lectures 7 and 8.

METHODS - Describe the process of watershed model initiation using your soil specific data. List actual model inputs and equations used. List and describe model output. Use your SP, FC, PWP, PL, LL, Ksat from the preceding lab reports. For trafficability assessments, also determine machine specifications. *200 words min, 250 words max; refer to Summary of Lectures 7 and 8.*

RESULTS – Show and describe your 4-year results using the examples in the Lecture 7 and 8 for general orientation. Do this for precipitation, air temperature, stream discharge, AET and the trafficability and mudslide warnings for the forested and clear-cut condition.

DISCUSSION – Describe the model output in terms of the overall harvesting effect across the watershed and on soil moisture and trafficability conditions. Itemize what can be realized using the approach / model as provided.

Also address some of the limitations/assumptions made and how addressing these limitations/assumptions could modify the model output.

Examples pertaining limitations/assumptions: uniform soil and forest conditions, weather records limited to ppt and air temperature, snowmelt process and soil frost conditions highly simplified, etc.

250 words min; 300 words max.

CONCLUSIONS - What was learned from this exercise in terms of in terms of modelling watershed responses to clear cutting? *Point form; min. 100 words, max 150 words.*

REPORT FORMATTING - Use font type, text size (font 12), left-right justified, section and sub-section headings (left adjusted, font size 14, bold). Lines single spaced. Paragraphs separated by single line. Pagination: bottom right. All as above.

TABLES - Best done in excel, then paste into report using MS Excel worksheet format (allows for in-text worksheet correction).

DIAGRAMS - best constructed in ppt, STELLA diagrams can be pasted, re-formatted, and assembled in ppt. Paste ppt-processed diagrams into text as metafiles.

DEADLINE - Report to be submitted no later than one (1) week from your lab day, by 5:30 pm.

Marking scheme - same as with first report.