

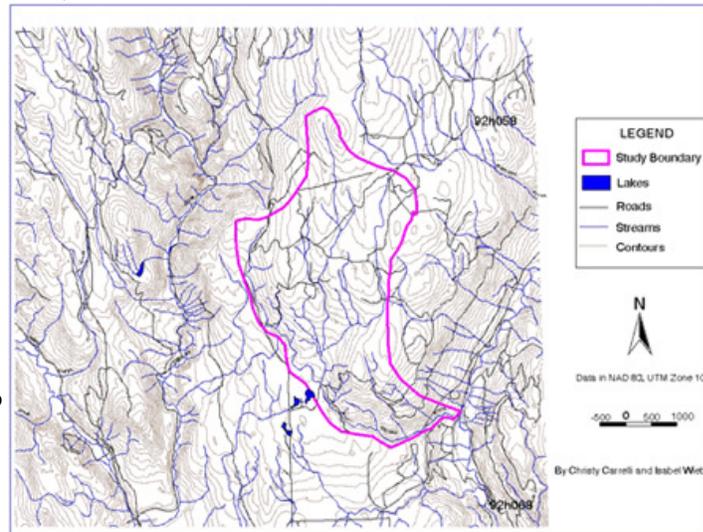
**Preparing Study Grids
and Determining Areas of Interest
for an Archaeological Study.
By Christy Carrelli and Isabel Wiebe.**

Proposal: An archaeologist is interested in completing an archaeological inventory of the Christina Creek Watershed in Southern BC. (Map sheets 92h058 and 92h068, just above Princeton, BC.) The archaeologist is looking for evidence of early occupation such as hunting campsites, fishing campsites, trails, culturally modified trees (these are trees the First Nations people may have taken bark off of, or modified in some other way). Other potential finds include rare burial sites, rock shelters and rock art.

Before the archaeologist begins his study he would like to have some idea of where he might be most likely to find such sites within his study area. He knows from past experience that most of the campsites are located on relatively flat ground close to water sources.

The rock shelters and rock art are most often found in areas of steep terrain, but should also be close to a water source. The archaeologist believes that some of the meadows and low brush landscape types in his study area may have been swamps or wetlands in the past and should be included in the study.

The archaeologist would like a map showing areas that meet these criteria. He would like the map to have an overlay of a 1000 x 1000 meter grid that he can use to better orient himself. Since the final map will be used in the field it should also show roads, private land, stream locations, rivers, and anything else that will help him keep his bearing in the field.



Study Criteria: Potential sites must meet all of the following criteria.

- Criteria 1: The 'captured' areas must fall within 500 meters of a fish-bearing stream, or any brush, swamp, meadow, lake, open range or river.
- Criteria 2: The captured areas must have less than 20% slope or greater than 70% slope.
- Criteria 3: The captured area must fall within the Christina Creek watershed.
- Criteria 4: The captured area cannot be private land. (The archaeologist does not have permission to work on private property).

Data Sets (Input): The archaeologist has provided the following data sets for use in the study:

- 1) Streams (a line coverage in Arc/Info export format). The streams have already been classified as fish-bearing or non fish-bearing by a biologist. The fish bearing attribute is called 'Fish' and can be found within the Arc Attribute Table of the coverage.
- 2) TRIM elevation data (a point coverage in Arc/Info export format) that will be used to generate the slope data.
- 3) Contours (a line coverage in Arc/Info export format). This file will be used on the final map.
- 4) Landscape and forest cover (a polygon coverage in Arc/Info export format). This file contains the swamps, non-productive brush areas, meadows, open range, lakes and rivers. The item 'npforestdesc' indicates the landscape type.
- 5) Neatlines (an Autocad .DXF file) containing the boundary of each mapsheet.
- 6) Roads (a line coverage in Arc/Info export format). Each road is identified by its road type.
- 7) Orthophoto coverage of the study area that can be used to confirm the location of roads, streams and which may be helpful in determining the watershed boundary .
- 8) Cadastre data showing private land (a polygon coverage in Arc/Info export format).
- 9) Stream names, river names and other miscellaneous text (an Arc/Info export file containing annotation) that will be used on the final map.

The study boundary will be digitized in Arcedit, using the streams and contours as a guide to determine the watershed boundary.

All of the files are stored as Universal Transverse Mercator, Zone 10, North American Datum 1983 . The data is stored in meters.

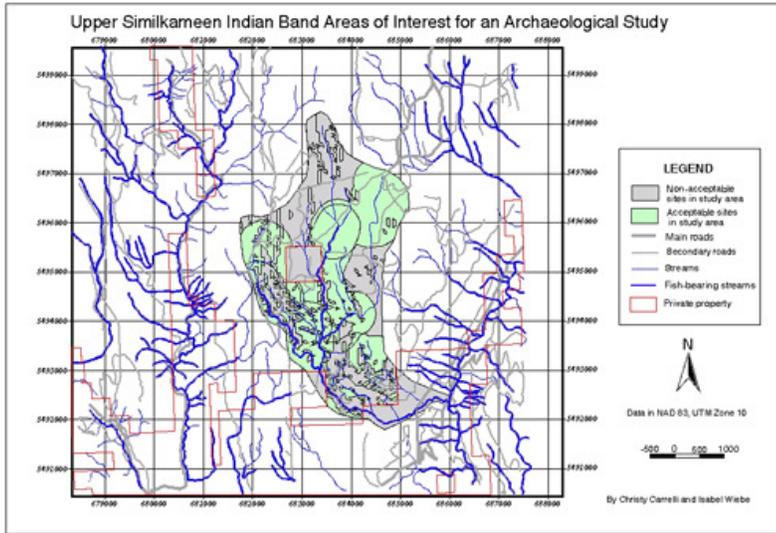
Processing, Database and Analysis: A number of processing methods will be used in the analysis:

- 1) The digital data sets will be converted from Arc/Info export format and DXF files to Arc/Info coverages for the analysis.
- 2) A new coverage will be created to hold the watershed boundary information, and the boundary will be digitized using the streams, contours and orthophoto as a guide.
- 3) The stream linework and landscape polygons of interest will be buffered by 500 meters to determine those areas meeting Criteria 1

of the study.

- 4) The TRIM elevation data will be converted to a Triangulated Irregular Network (TIN) and then to a polygon coverage to determine the areas meeting Criteria 2 of the study.
- 5) The union command will be used to determine those areas meeting both Criteria 1 and 2 of the study.
- 6) The areas meeting both Criteria 1 and 2 of the study will be clipped back to the study boundary.
- 7) The private land will be clipped out of the study area using the erase command.
- 8) The statistics command will be used in ArcEdit to determine the final study statistics (total area of study in hectares, total area meeting each criteria in hectares).
- 9) A map will be created in ArcView showing the study boundary, the areas meeting the study criteria and an overlay grid for the archaeologist's study.

Output : The archaeologist is most interested in getting a map showing the study area, with the areas meeting their criteria highlighted and with a 1000by 1000 meter grid overlay. The map will be used in the field so it should show any other relevant information that will help him keep his bearing in the field. The archaeologist would also like some statistics listing the total study area in hectares and the total area within the watershed that meet his criteria for potential sites.



The map shows those areas that are most likely to contain archaeological evidence of past occupation. Access routes allow the archaeologist to determine routes into the area and how the study will take place in the 1000m by 1000m grid areas. Those areas that meet the criteria for artifacts have a higher probability of containing evidence and are of greater interest to the archaeologist. This is where archaeological surveys should focus on.