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673923

1250 Wellington Drive  
North Vancouver, B.C.  
May 10, 1979.

Mr. J. C. Stephen  
J. C. Stephen Exploration  
North Vancouver, B.C.

Dear Cam,

Re: Tery Project, Northern B.C. / Yukon Terr.

In assessing this area for surficial materials, in particular, the gravels and their sources, I have directed most of my efforts to the main valleys of the Swept and Smart Rivers to determine directions of stream flow during deglaciation. I have put all the information from the photos onto the 1:50,000 topographic sheets of the area for your own use and ease of interpretation. You will notice a few gaps - these are because there were a few photos lacking or because the photography was somewhat erratic. For the most part, these do not change the general interpretation of what happened in the area; rather, there is a little less supportive evidence than might have been.

During deglaciation, meltwater appears to have flowed in much the same direction as do present streams and rivers, except for some minor variations as down-wasting ice reached new levels. One example of this is near the gravel pit in question. At some stage during deglaciation there was probably an ice mass in the

Swift River valley to the south while the slightly higher pass over to the Morley drainage was ice free.

Meltwater channels well above the river in this area suggest that streams may have flowed over this pass in a northwesterly direction for a short period of time. This variation and others like it would not however have had much, if any, effect on the source of the gravels in the gravel pit. General flow direction is still east to west.

There are some lateral meltwater channels as well as what appear to be ice-contact deposits well above river level in the Smart River valley. The sources of the materials are very likely the hills and mountains and tributary streams in the immediate area, since those areas at higher elevations, following the normal pattern of deglaciation, were the first to become ice free. On the west side of Logjam Creek between 3300' and 4000' there are a great number of meltwater channels and associated ice-contact deposits. This material, too, probably originated from local sources. From limited stereo coverage in this area, the streams appear to flow generally southwestward paralleling the main valley walls of Swift River.

From the photos, it would appear that the gravels or at least some of the material in the gravel pit were derived from sources to the east. The float found in this gravel pit likely came from the known showings or the immediate vicinity of the showings at the

head of Logjam Creek. Whether the float came via the Smart River or the Swift River would depend on which side of the mountains it originated.

I would recommend that field checking be carried out to determine more accurately the nature, extent and distribution of the glaciofluvial materials if more work is going to be done in tracing the float or looking for more of it.

Enclosed in this package are aerial photographs, surficial geology map (1:50,000), general topo. maps with photo coverage (1:250,000), G.S.C. Paper 68-34 and colour key and terrain classification for map.

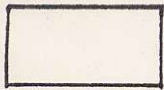
I hope this information will be of use to you for the project. Best of luck for the summer field season!

Yours Truly,

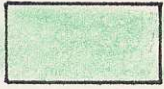
Marilynn Rode

# COLOUR KEY

[SMART RIVER]



Organic deposits, bogs



Usually flat or gently sloping stream deposits, where bogs are associated with them. Occasionally active streams are present.



Active floodplain area of streams and rivers; occasional bogs or swampy areas may be present.



River deposits usually forming terraces above the flood level; may have old channels or channel scars present; materials well-sorted



River deposits above flood level, on bedrock; materials probably tend to be shallow.



Active stream, fan deposits; materials generally moderately sorted, poor stratification.



Colluvial deposits, generally derived from unconsolidated deposits of till & ice contact forms.



Deep or thick deposit of ice-contact and glacio-fluvial deposits; generally deposits appear to be quite coarse textured although variation is characteristic of this kind of material. Includes kames, kame terraces, kame deltas.



Thin deposits of ice-contact and fluvio-glacial material usually over bedrock.



Thick deposits of mixed glacial till and ~~ice~~ glacio-fluvial deposits. Till is somewhat impervious to water; glacio-fluvial allows for more internal drainage; often has ~~is~~ undrained depressions.



Thick till deposits, generally undulating topography, some undrained depressions.



Thin till deposits, reflecting the shape of the underlying bedrock.



Rock-derived colluvium - generally angular fragments forming steep cones or aprons.



Bedrock and bedrock-derived colluvium.

## TERRAIN CLASSIFICATION \*

### TEXTURE

- s sandy - round or angular fragments 0.062 - 2 mm in diameter.  
g gravelly - accumulation of rounded particles greater than 2 mm but may include interstitial sand.  
f fines - a mixture of silt and clay; may also contain a minor fraction of sand.

When only one term is used, that texture is very dominant (> 75%)  
When two terms are used together the second term is dominant (50-75%)

Omission of a textural symbol implies the following:

- 1) In areas of ground access, the material displays the entire range of textures included in the description of the genetic material.
- 2) In areas of air photo interpretations, texture of the material lies some where within the range of that ~~is~~ included in the description of the genetic material.

### GENETIC MATERIALS (Assumed status in brackets: A - active, I - inactive)

- C Colluvial (A) - product of mass-wastage; materials that have reached their present position by direct, gravity-induced movement; texture depends on the nature of the material from which it was derived.
- F Fluvial (I) - materials transported by streams and rivers; generally consists of gravels and/or sand with a minor fraction of silt; commonly well-sorted, stratified deposits.
- (FG) (I) - fluvioglacial deposits: fluvial materials deposited either directly in front of, or in contact with glacier ice.
- M Morainal (I) - the material ~~is~~ transported beneath, beside, on, within and in front of a glacier; generally consists of well-compacted material that is non-stratified and contains a heterogeneous mixture of particles, often in a matrix of sand, silt and clay.
- O Organic (A) - materials resulting from vegetative growths decay and accumulation in and around closed basins or on gentle slopes.
- R Bedrock - outcrop and rock covered by less than 10 cm of unconsolidated materials.

### SURFACE EXPRESSION

- a apron - a relatively gentle slope at the foot of a steeper slope, and formed by materials derived from the steep upper slope.
- b blanket - a mantle of unconsolidated materials thick enough to mask minor irregularities in the underlying unit, but which still conforms to the general underlying topography.
- f fan - a fan-shaped form that can be likened to the segment of a cone and possessing a perceptible gradient from apex to toe.

- h hummocky - steep sided hillocks and hollows with multi-directional slopes dominantly between  $10^\circ$  and  $35^\circ$  and with local relief greater than one metre. In plan, an assemblage of non-linear, generally chaotic forms.
- m subdued - linear and non-linear forms with slopes ranging up to  $10^\circ$  and with local relief greater than one metre.
- l level - a flat or very gently sloping surface with a generally constant unidirectional slope.
- r ridged - narrow, steep sided elongate hillocks with slopes dominantly between  $10^\circ$  and  $35^\circ$  and with local relief greater than one metre. In plan, an assemblage of parallel and subparallel linear forms.
- t terraced - scarp face and the horizontal or gently inclined surface (tread) above it.
- v veneer - unconsolidated materials too thin to mask the minor irregularities of the underlying unit surface. If no stratigraphic information is supplied, it is assumed that the veneer overlies bedrock.

#### QUALIFYING DESCRIPTORS

A number of descriptors have been introduced to qualify either the Genetic Materials or the Modifying Process terms. These are denoted by an uppercase superscript following the term so modified.

- G Glacial - used to modify non-glacial genetic materials or process modifiers and implies that glacier ice was close to the site of deposition of a material or the site of operation of a process.
- A Active - any evidence of a recurrent nature of a modifying process or of a contemporary nature of the process forming a genetic material.

#### MODIFYING PROCESSES (Status in brackets)

Terms which describe those geological processes that have modified or are currently modifying genetic materials and their surface expression.

- E Channelled (I) - surfaces crossed by a series of channels
- V Gullied (A) - modification of surfaces by fluvial erosion resulting in the development of parallel and sub-parallel, steep-sided and narrow ravines in both consolidated and unconsolidated materials.

COMPOSITE UNITS

Not all terrain units can be expressed as simple units since terrain units commonly occur ~~as~~ that are of small areal extent and cannot be delimited individually at the scale of mapping. The relative amounts of each terrain type within a common unit boundary are indicated by the use of the symbols =, /, //. Components are always expressed with the most abundant first.

- = components on either side of this symbol are approximately equal
- / the component in front of the symbol (left side) is more abundant than the one that follows.
- // the component in front of this symbol is considerably more abundant than the one that follows.

The relative proportions of the components of two-term composite units are approximately:

- 45-55% = 45-55%
- 55-70% = 30-45%
- 70-90% = 10-30%

ON-SITE SYMBOLS

On-site symbols or map symbols are used to describe features or processes in the terrain which express either a limited (by scale) areal function or are simply ~~to~~ point observations.

Glacial meltwater channel, small



Escarpment



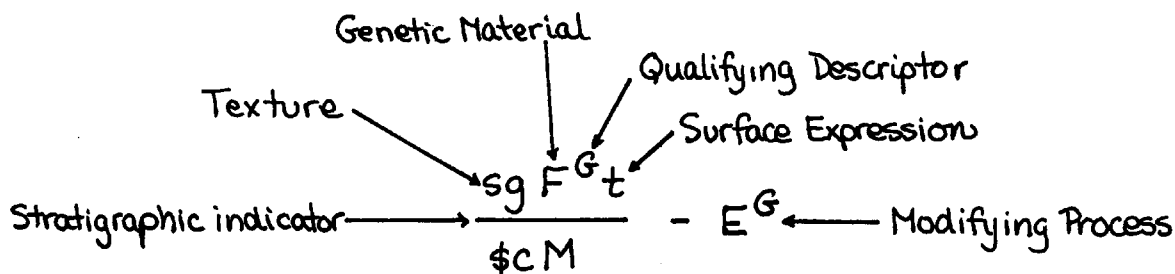
Gravel locations



Unit boundary



EXAMPLE OF TERRAIN UNIT SYMBOLOGY



A sandy gravelly glaciofluvial terrace over silty clayey moraine whose surface has been eroded by glacial melt-water channels.

\* Terrain Classification System, Resource Analysis Branch, Ministry of the Environment, B.C., 1976.

[NB. Only the parts needed for this map are provided in the preceding pages. Similar systems are used in the Canadian System of Soil Class'n]