

Geologic Hazard Rankings Pelly Crossing, Yukon (1:20 000 scale)

HAZARD RANKING

The potential environmental changes identified in the preceding sections of this report can be used to identify current and future landscape hazards in the Pelly Crossing region. The combined properties of surficial material type, landform shape and slope, hydrological regime, climate regime, and permafrost conditions have been used to arrive at a set of hazard 'rankings' that can be used to assess the potential stability of landscape units around the community of Pelly Crossing.

It is important to note that hazard rankings are based on general observations of surface materials, drainage, slope angle, vegetation and the presence of permafrost landforms; limited subsurface information was used in determining hazard rankings. This has resulted in a projected risk ranking that will require geotechnical and/or engineering analyses to quantify.

In classifying polygons, we have taken a precautionary approach and applied a category of higher risk where we are not confident in lower categories. However, every polygon will contain zones of low and higher risk than the overall polygon classification. It is for this reason that this map should serve only as an initial guide for planning purposes. Any development will still require detailed site investigations.

Based on processes acting on distinct geological units, a hazard ranking of low, medium, or high has been assigned to each geological unit in the hazard map area. Rankings are qualitatively assigned to reflect the following conditions:

- Low:** Stable landform. Unlikely to be affected by mass movement, thermokarst, subsidence, bank erosion, flooding or instability. These landforms typically consist of gravel or sand, are well drained and have shallow to moderate slopes. Low hazard landforms may contain little to no permafrost and are above the floodplain of the Pelly River. Low hazard landforms are unlikely to become unstable under predicted changes in climate.
- Medium:** Moderately stable landform. Unlikely to be affected by mass movement, thermokarst, subsidence, bank erosion, flooding or instability. These landforms typically consist of gravel, sand, glacial diamicton or colluvial materials. They are well to moderately drained and have shallow to steep slopes. Medium hazard landforms may have moderate amounts of permafrost and may occur within an area of shallow groundwater. Landforms containing permafrost may be susceptible to ground subsidence which could be accelerated by thermal erosion in areas of shallow groundwater. Permafrost thaw may also cause slope instability in some landforms. Medium hazard landforms are likely to become either more or less stable under predicted changes in climate.
- High:** Unstable landform. Likely to be affected by mass movement, thermokarst, subsidence, bank erosion, flooding or instability. These landforms typically consist of glacial diamicton, colluvium, glaciolacustrine, lacustrine and fluvial deposits. They are generally moderately to poorly drained and have shallow to steep slopes. High hazard landforms may have a significant thickness of permafrost containing high ice contents, be prone to gravity-induced erosion, and occur within the floodplain of the Pelly River or its tributaries. High hazard landforms are likely to become either more or less stable under predicted changes in climate.

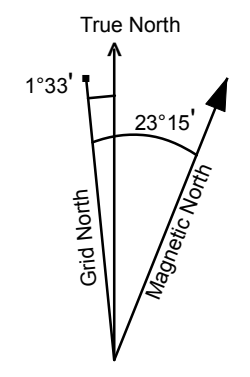
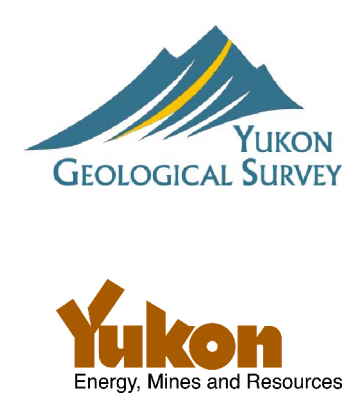
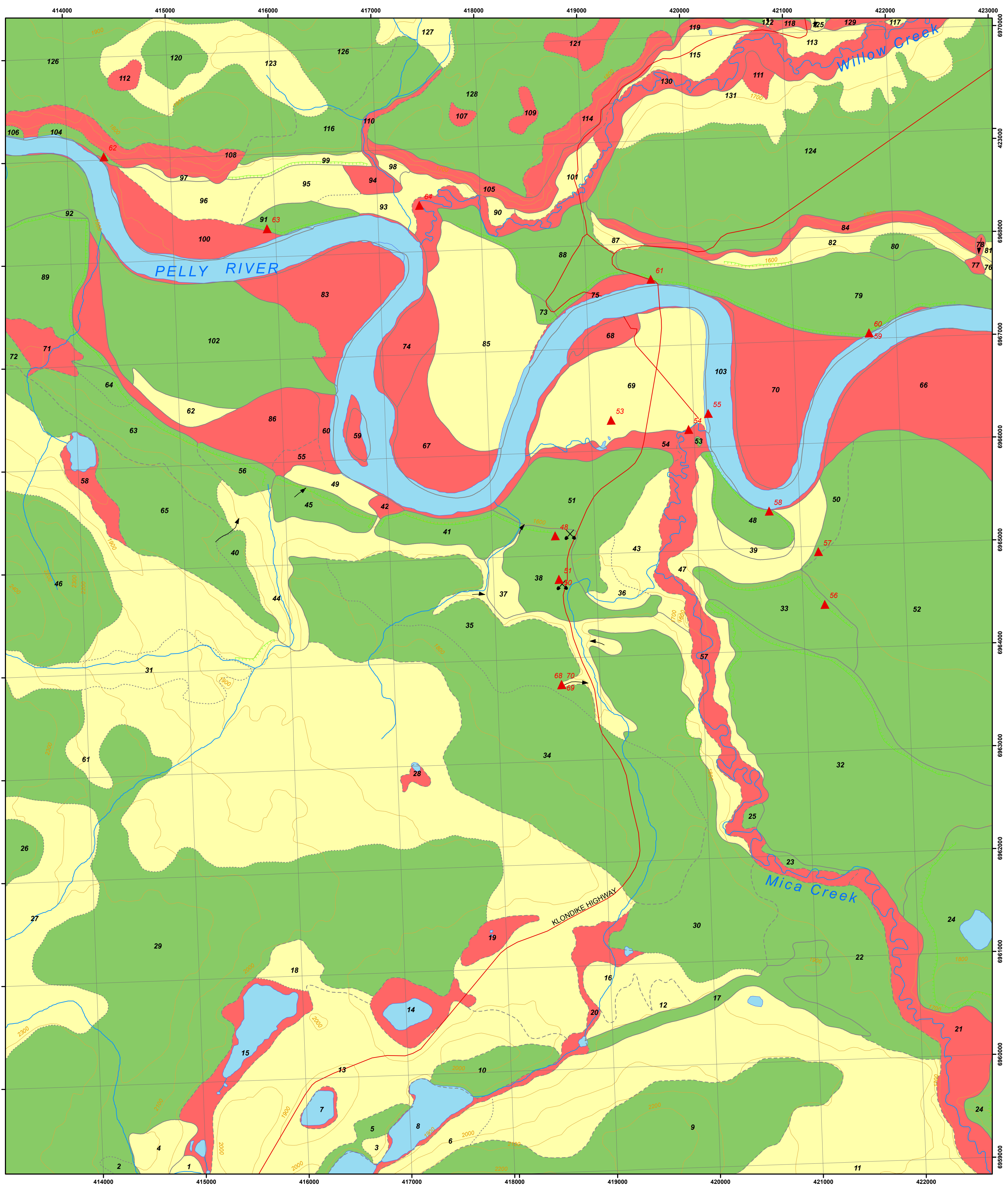
SYMBOLS

- textural sample locations (see Appendix A)
 - polygon identification number (see Appendix C and Table 1 below)
 - gravel pit
 - water courses
 - roads
 - elevation contours
 - gully
 - escarpment
- Geological boundaries**
- defined boundary
 - approximate boundary
 - assumed boundary

Table 1. Hazard or combined hazards for individual polygons on adjacent map.

Flowline number	Landscape Hazards
1	permafrost
2	permafrost
3	permafrost
4	permafrost
5	permafrost
6	permafrost, slope stability
7	permafrost
8	permafrost, shallow groundwater
9	permafrost
10	permafrost
11	permafrost
12	permafrost, slope stability
13	permafrost, slope stability
14	permafrost, shallow groundwater
15	permafrost, shallow groundwater
16	permafrost, slope stability
17	permafrost
18	permafrost
19	permafrost, shallow groundwater
20	permafrost, shallow groundwater, slope stability
21	flooding risk
22	permafrost
23	permafrost
24	permafrost
25	permafrost
26	permafrost
27	permafrost
28	permafrost
29	permafrost
30	permafrost
31	permafrost, slope stability
32	permafrost
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34	permafrost
35	permafrost
36	permafrost
37	permafrost
38	permafrost
39	permafrost
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55	permafrost
56	permafrost
57	permafrost
58	permafrost, shallow groundwater, slope stability
59	permafrost
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126	permafrost
127	permafrost

NOTE: Linework for map is based on aerial photography from 1989 and may not match basedata (contours, streams) derived from 1:50 000 scale



Use diagram only to obtain numerical values
APPROXIMATE MEAN DECLINATION
FEBRUARY 2011 FOR CENTRE OF MAP

GEOLOGIC HAZARD RANKINGS PELLY CROSSING, YUKON part of NTS 1151/15

SCALE 1:20 000

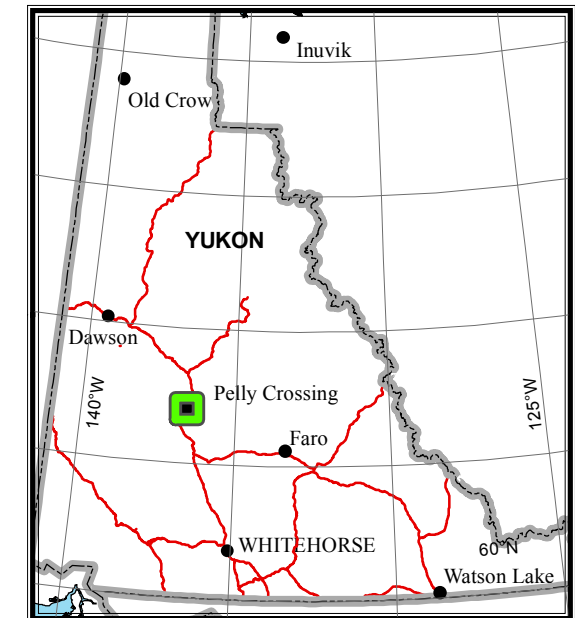


1:50 000-scale topographic base data
produced by
CENTRE FOR TOPOGRAPHIC
INFORMATION,
NATURAL RESOURCES CANADA

ONE THOUSAND METRE GRID
Universal Transverse Mercator
Projection

CONTOUR INTERVAL 100 FEET
Elevations in feet above Mean Sea Level

115P/03 COLDSPRING MOUNTAIN	115P/02 WILLOW LAKE	115P/01 CRYSTAL LAKE
115I/14 VOLCANO MOUNTAIN	115I/15 MAP LOCATION	115I/16 STODDART CREEK
115I/11 DARK CREEK	115I/10 MINTO	115I/09 PTARMIGAN MOUNTAIN



This map accompanies the report "Pelly Crossing Landscape Hazards: Geological Mapping for Climate Change Adaptation Planning" released in 2011 by the Northern Climate Exchange, Yukon Research Centre, Yukon College. For copies of the report, or additional information, please contact Lacia Kinneer at lkinneer@yukoncollege.yk.ca.