YUKON DIGITAL SURFICIAL GEOLOGY - INTERIM RELEASE OF STANDARDIZED DATA

May 21, 2010

CITE AS

Lipovsky, P.S. & Bond, J.D. (compilers), 2010. Yukon digital surficial geology - interim release of standardized data. Downloaded from Yukon Geological Survey ftp site on XXX (replace XXX with date of download).

INTRODUCTION

In an effort to make surficial geology baseline data across Yukon Territory more consistent and GIS accessible over 150 regional surficial geology maps have been compiled by the Yukon Geological Survey (YGS) into a standardized digital (ArcGIS) format. Preliminary versions of all data captured for this project are available as an interim product in this data release.

The maps provide 80% coverage of the territory at scales ranging between 1:250 000 and 1:25 000 (Figure 1). The Geological Survey of Canada has published approximately 4/5 of the maps since the 1960s. Most of the remaining maps were published by the Yukon Geological Survey in the last 10 years.

The wide variety of authors, map scales and terrain within the territory have made standardizing the map legends a challenge. About half of the maps have been digitized from hard copy formats, while the remainder have been converted from various digital formats into a single standardized ArcGIS geodatabase format.

The data are a valuable resource for a variety of land-use applications in the territory, including: mineral and placer exploration, geotechnical engineering, infrastructure planning, granular resource assessments, permafrost modeling, agricultural assessments, forest management and biophysical or ecological land classification.

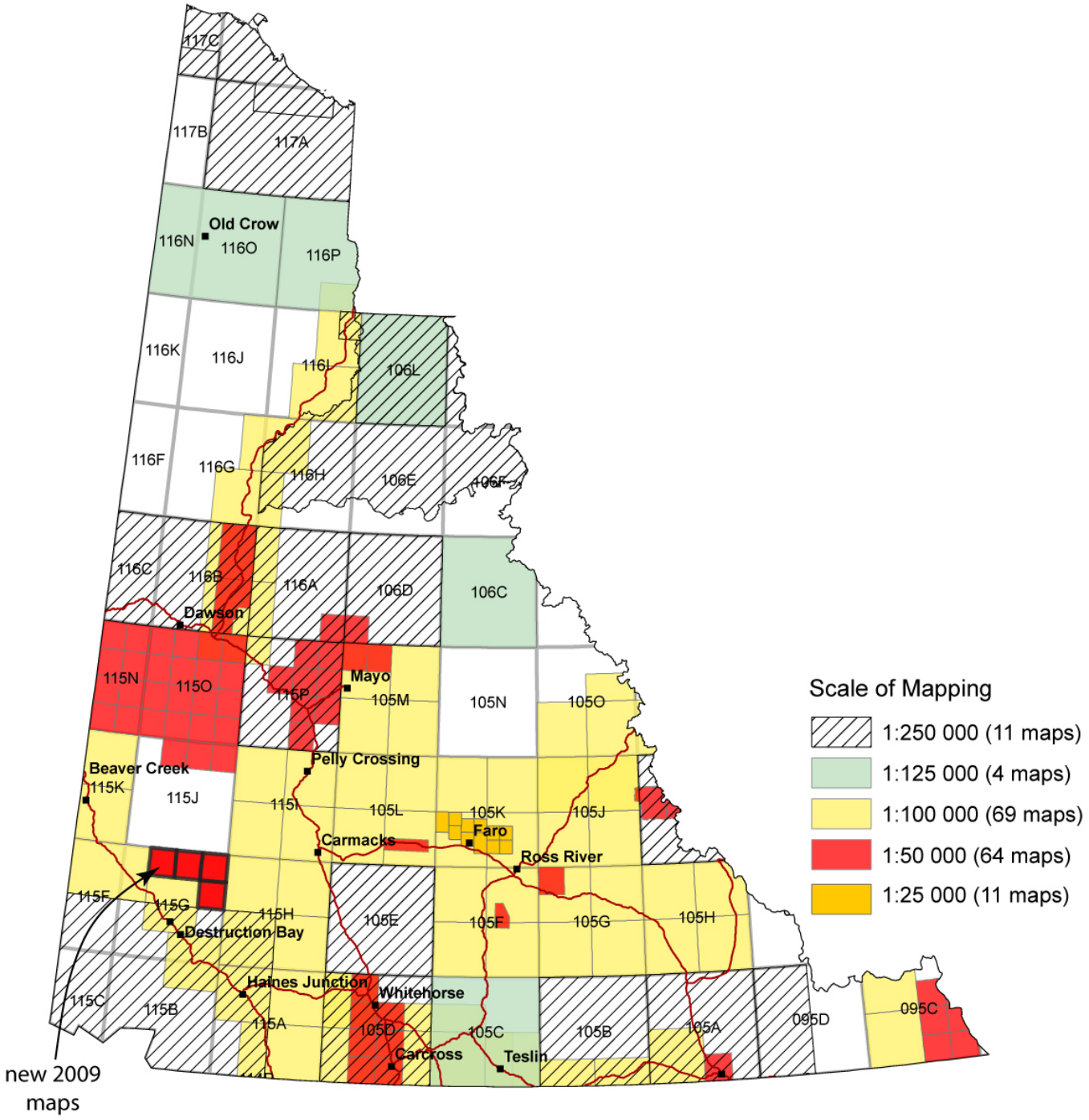

Figure 1: extent of existing Yukon surficial geology maps included in digital compilation

SUMMARY OF DATA COMPILATION PROCESS

1) DATA CAPTURE
(completed and interim data available in this open file)

The initial stage of data capture involved providing detailed instructions to GIS contractors who captured both spatial and non-spatial data as described below.

Spatial data for each map were captured as point, line or polygon features inside a standardized ArcGIS geodatabase by:

- digitizing georeferenced scans of hard copy maps (79 maps); or
- importing older GIS vector formats such as AutoCAD drawings and ESRI shapefiles (72 maps).

Non-spatial data were also captured, including original terminology used for feature descriptions and polygon labels; all original legends, descriptive notes and stratigraphic section descriptions.

Rigorous quality control measures, multiple rounds of revisions and topology checks were used at all stages of the data capture process to ensure data capture accuracy.

2) ATTRIBUTE STANDARDIZATION
(currently underway; expected completion: late-2009)

Map unit and feature descriptions are converted to standardized terminology that is applied consistently for all maps across the territory. The geodatabase structure and overall mapping system used for the final compilation is based on the British Columbia terrain classification system (Howes & Kenk, 1997) with some minor coding modifications. This system was selected largely because of its flexibility, the existence of well documented digital capture standards, the ease with which particular surficial geology characteristics can be searched, the potential to produce derivative maps for a variety of end-users and to maintain a consistent map legend between Yukon and BC.

The standardizing process extracts details from original legend descriptions such as, surficial material texture, relative ages and geomorphological processes, which are then added to point, line and polygon features to increase geodatabase detail and provide the ability for complex searches. Expanded polygon labels are then subdivided into individual fields so that specific surficial material characteristics can be easily searched.

3) FINAL PUBLICATION
(expected completion: winter 2010)

A digital open file will be released containing all standardized vector data and supporting documentation, including standardized digital legends, symbology and GIS project files. The data will be accessible online using a web interface for downloading and searching the data.

ACCESSING THE FTP SITE

1) Paste this link into Microsoft Internet Explorer (many people seem to have difficulties accessing the ftp site from other browsers): ftp://demon.gov.yk.ca

2) Go up to the File menu and choose "Login as…"
- User name = "ygsgsc"
- Password = "3dm0nd" (the 0 is a zero)

3) Navigate to folder: "…/interim_digital_surficial"

CONTENTS OF FTP FOLDERS

1) "standardized_geodatabases_ArcGIS_9":

- These files have undergone final conversion to BC terrain system standards.
- The data are provided in Yukon Albers (NAD83) projection. Specific projection parameters can be viewed in ArcGIS ArcCatalog.
- Adjacent maps that were originally published by the same author(s) or as part of the same series are grouped together into single geodatabases and are organized by NTS map sheet.
- The primary data layer in each geodatabase is the "**surficial_polygons**" layer.
    - The two key attribute fields within the "surficial_polygons" layer are "LABEL" and "LABEL_FNL":

      "**LABEL**" = map unit as published on the original map
      "**LABEL_FNL**" = standardized map unit (converted to BC standards)

    - The rest of the fields are derived from splitting the LABEL_FNL map unit into up to 4 different components (A,B,C,D) with up to three different geomorphological processes (A,B,C) and various textural and surface expression modifiers, all following BC terrain system standards.

    - Detailed polygon field descriptions can be found in the following file in the "metadata" folder: "Yukon_surficial_polygon_attributes.pdf"
- Point and line features are found in the "surficial_points" and "surficial_lines" feature datasets.
- Stratigraphic descriptions and till geochemistry results are also found in separate layers ("stratigraphic_sections" and "till_geochemistry" layers) where applicable.

- The remaining tables are non-spatial and just document the legend and map unit descriptions shown on the original maps, as well as our corresponding label conversions.

- "ArcGIS_layer_symbology" subfolder contains symbology files that can be loaded into ArcGIS for the surficial_points, surficial_lines and surficial_polygons layers. Please not that the font files found in the "custom_symbol_fonts" folder must first be copied to your system fonts folder (C:\WINDOWS\Fonts) for some of the symbology to display correctly.

2) "metadata"

While no formal metadata is available for the GIS files at this time, the following files provide documentation of attribute values and associated definitions used in the GIS data.

- **BC_TERRAIN_CLASS_SYSTEM.pdf**: a guide to the BC terrain classification system (Howes & Kenk, 1997)

- **Yukon_digital_surficial_attribute_definitions.mdb**: Access database with various tables containing definitions of "surficial_polygon" attribute values

- **Yukon_surficial_polygon_attributes.pdf**: brief descriptions of the "surficial_polygon" attribute fields (data types, field length, etc)

3) "surficial_map_index"

This folder contains an index shapefile that shows the spatial extent of each map included in the compilation. A variety of attribute information for each map (scale, author, date, map title, etc) is included in this shapefile.

LINKS TO ORIGINAL SURFICIAL GEOLOGY MAPS IN PDF FORMAT

- YGS-published surficial geology maps and legends and related reports are available in pdf format from: http://www.geology.gov.yk.ca/search_publications_maps.html

- For further details on individual Geological Survey of Canada (GSC) maps and legend descriptions, please refer to the original maps that are available in pdf format from their GEOSCAN database: http://ess.nrcan.gc.ca/esic/geoscan_e.php

AVAILABILITY OF OTHER DATA FORMATS

Due to size limitations on the ftp site, data is only posted in ArcGIS geodatabase format. Interim data is also available in shapefile format. Georeferenced TIFF images produced by scanning original paper maps are also available for many maps. If you require these other formats please contact us and we will send you the data.

ACKNOWLEDGEMENTS

This project was largely funded through the Indian and Northern Affair's Strategic Investment in Northern Economic Development (SINED) Targeted Investment Program.

Sincere gratitude is also owed to the following people for their contributions and hard work digitizing and converting the maps and performing quality control:

- Ram Krishna (Sunram Systems Inc., Toronto, ON)
- Vytas Janusaukas and Ali Buckingham (Dendron Resource Surveys Inc., Ottawa, ON)
- Michal Pawlina (GISMO Solutions Ltd., Edmonton, AB)
- Mike Segouin and Rod Smith (Geological Survey of Canada)
- Shannon Mallory, Bailey Staffen and Aubrey Sicotte (Yukon Geological Survey)

REFERENCE

Howes, D.E. and Kenk, E., 1997. Terrain classification system for British Columbia (version 2). Province of British Columbia, Resource Inventory Branch, Ministry of Environment, Lands and Parks; Recreational Fisheries Branch, Ministry of Environment; and Surveys and Mapping Branch, Ministry of Crown Lands.

CONTACT INFORMATION

Please notify either one of us if you encounter inaccuracies or problems with the data. We thank you for your patience as this project gets refined and we hope you find this information useful.

Panya Lipovsky
Panya.Lipovsky@gov.yk.ca
867-667-8520

Jeffrey Bond
Jeff.Bond@gov.yk.ca
867-667-8514

Yukon Geological Survey
Department of Energy, Mines & Resources, Yukon Government
2099 2nd Avenue, Whitehorse, YT, Y1A 3B5