



Natural Resources  
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**GEOLOGICAL SURVEY OF CANADA  
CANADIAN GEOSCIENCE MAP 214  
BRITISH COLUMBIA GEOLOGICAL SURVEY  
GEOSCIENCE MAP 2015-3  
SURFICIAL GEOLOGY**

**GNAWED MOUNTAIN AREA**

British Columbia

Parts of NTS 92-I/6, NTS 92-I/7, NTS 92-I/10,  
and NTS 92-I/11



**Map Information  
Document**

Preliminary

**Canadian  
Geoscience Maps**

2015

**Canada**

## PUBLICATION



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### Title

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### Scale

1:50 000

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### ABSTRACT

The Gnawed Mountain area includes the Highland Valley Copper mine (porphyry Cu-Mo) which is a major copper producer in Canada. The most areally extensive glacial sediment in the region of the mine is till deposited during the Late Wisconsinan Fraser Glaciation. Glaciers dominantly flowed south to southeastward during this glacial event as indicated by the orientation of numerous drumlins and flutings. During ice retreat, lateral meltwater channels were eroded in the flanks of valleys and the hillsides of

mountains indicating that ice occupied low ground when higher elevations were ice-free. Accumulations of glaciofluvial sand and gravel, too small to be mapped at this scale, can be found in proximity to these meltwater channels. The glaciofluvial drainage was generally to the south during ice retreat with aggradation of glaciofluvial sediments in the Guichon Creek valley. Glacial lake sediments in the Witches Brook valley were deposited in a glacial lake which formed when the eastward drainage was blocked by a mixture of ice and sediments. Mine tailings (anthropogenic deposits) are present near the open-pits and in the valley which extends northwest from the mine (previously occupied by Pukaist Creek). Limited field work was completed in this region in 2011 and 2012. Field station locations are shown on the map.

## RÉSUMÉ

La mine Highland Valley Copper (gîte porphyrique Cu-Mo) est l'un des principaux producteurs de cuivre au Canada et fait partie de la région de la montagne Gnawed. Le sédiment glaciaire le plus répandu dans la région de la mine est le till de la glaciation de Fraser du Wisconsin tardif. Les glaciers se sont principalement écoulés vers le sud et sud-est pendant cet épisode glaciaire comme en témoigne l'orientation des nombreux drumlins et cannelures. Pendant le retrait glaciaire, des chenaux d'eau de fonte de marge glaciaire ont été érodés sur les flancs des vallées et les versants des montagnes indiquant que de la glace occupait les points les plus bas alors que les hautes régions étaient déglacées. Des accumulations de sable et gravier fluvioglaciaires, trop peu étendues pour être cartographiées à cette échelle peuvent se retrouver à proximité de ces chenaux d'eau de fonte. Le drainage fluvioglaciaire était généralement vers le sud pendant le retrait glaciaire avec une accumulation de sédiments fluvioglaciaires dans la vallée du ruisseau Guichon. Les sédiments glaciolacustres dans la vallée du ruisseau Witches ont été mis en place dans un lac glaciaire qui s'est formé suite à l'obstruction du drainage vers l'est par de la glace et des sédiments. Des résidus miniers (dépôts anthropiques) sont présents près des mines à ciel ouvert et dans la vallée qui s'étend au nord-ouest de la mine (anciennement occupée par le ruisseau Pukaist). Des travaux de terrain limités ont été faits dans cette région en 2011 et 2012. La localisation des stations de terrain est indiquée sur la carte.

## ABOUT THE MAP

### General Information

Authors: A. Plouffe and T. Ferbey

Geology by A. Plouffe and T. Ferbey, 2011, 2012

Geology conforms to Surficial Data Model v. 2.0.2

Geomatics by L. Robertson

Cartography by G.S. Hanna

Joint initiative of the Geological Survey of Canada and the British Columbia Geological Survey, conducted under the auspices of the Intrusion-Related Ore System project as part of Natural Resources Canada's Targeted Geoscience Initiative-4 program

Map projection Universal Transverse Mercator, zone 10.  
North American Datum 1983

Base map at the scale of 1:50 000 from Natural Resources Canada, with modifications.  
Elevations in feet above mean sea level

Shaded relief image derived from the digital elevation model supplied by Natural Resources Canada.  
Illumination: azimuth 315°, altitude 45°, vertical factor 1x

Magnetic declination 2015, 16°36'E, decreasing 9.7' annually.

This map is not to be used for navigational purposes.

Title photograph: Looking north from the east edge of the Valley Pit at Highland Valley Copper Mine in south central British Columbia.

Photograph by A. Plouffe. 2014-250

The Geological Survey of Canada welcomes corrections or additional information from users.

Data may include additional observations not portrayed on this map.  
See documentation accompanying the data.

This publication is available for free download through GEOSCAN (<http://geoscan.nrcan.gc.ca/>).

Preliminary publications in this series have not been scientifically edited.

## Map Viewing Files

The published map is distributed as a Portable Document File (PDF), and may contain a subset of the overall geological data for legibility reasons at the publication scale.

## ABOUT THE GEOLOGY

### Author Contact

Questions, suggestions, and comments regarding the geological information contained in the data sets should be addressed to:

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## **Coordinate System**

Projection: Universal Transverse Mercator

Units: metres

Zone: 10

Horizontal Datum: NAD83

Vertical Datum: mean sea level

## **Bounding Coordinates**

Western longitude: 121°11'00" W

Eastern longitude: 120°45'00" W

Northern latitude: 50°35'00" N

Southern latitude: 50°20'00" N

## **Surficial Data Model Information**

The Geological Survey of Canada (GSC) through the Geomapping for Energy and Minerals Program (GEM) has undertaken the Geological Map Flow to develop protocols for the collection, management (compilation, interpretation), and dissemination of surficial and bedrock geology data and map information. To this end, a data model has been created.

The Surficial Data Model (SDM) was designed using ESRI geodatabase architecture. The XML workspace document provided can be imported into a geodatabase, and the geodatabase will then be populated with the feature datasets, feature classes, tables, relationship classes, subtypes and domains.

Shapefile and table (.dbf) versions of the data are included within the data. Column names have been simplified and the text values have been maintained within the shapefile attributes. The direction columns are numerical, to display rotation for points, and the symbol fields will hold the correct values to be matched to the appropriate style file.

For a more in depth description of the data model please refer to the official publication:

Deblonde, C., Plouffe, A., Eagles, S., Everett, D., Huntley, D.H., Inglis, E., Kerr, D.E., Moore, A., Parent, M., Robertson, L., Smith, I.R., St-Onge, D.A., and Weatherston, A., 2014. Science language for an integrated Geological Survey of Canada data model for surficial geology maps, version 2.0; Geological Survey of Canada, Open File 7631, 464 p. doi:10.4095/294225

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