Preliminary bedrock geology of the Kitsault River area, northwestern British Columbia: GIS data

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Front cover:
Unnamed volcano-sedimentary unit, upper Hazelton Group. Folded interstratified siltstone, sandstone, limestone, and light-weathering tuff beds. Taken facing northeast at 55.612759°N, 129.679048°W. **Photo by Emily Miller.**

Back cover:
Unconformable contact (yellow line) between Betty Creek Formation andesitic fragmental volcanic rocks at top (resistant, pale weathering) cutting into Stuhini Group siltstone to fine-grained sandstone (recessive, dark weathering). Facing north at 55.681286°N, 129.593108°W. **Photo by Alexandra Pipe.**

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Abstract
This release provides a digital preliminary update to 1:50,000-scale mapping in the Kitsault River area including GIS files for bedrock geology and sites examined (outcrop, subcrop, float, and drill holes) and unit description spreadsheets.

Keywords: Kitsault River, Stikinia, Triassic, Jurassic, Eocene, Stuhini Group, Hazelton Group, Kinskuch unit, Betty Creek Formation, Kitsault unit, Smithers Formation, Bowser Lake Group, Texas Creek plutonic suite, Hyder plutonic suite, Alice Arm plutonic suite, Golden Triangle

1. Introduction

Herein we provide, in digital format, a preliminary update to the 1:50,000-scale Kitsault River area bedrock geology map, supporting results in Miller et al. (2025a). This release (BCGS_GF2025-20.zip) includes bedrock geology and mapping station GIS files and unit description spreadsheets. GIS files use the WGS 1984 Web Mercator auxiliary sphere (EPSG: 3857) projection.

2. Bedrock geology GIS files

The bedrock geology is provided in ArcGIS shape and ArcGIS geopackage file format that include geological linework, centroid, polygon, and point station files. Features are attributed using the BC Digital Geology geospatial frame data model (Cui et al., 2017; Cui, 2021). The bedrock geology extends across an area of ~3,750 km^2. Bedrock geology unit codes are in the *strat_unit* field of the centroid and polygon files. Preliminary descriptions for all stratigraphic units are included in a Microsoft Excel file (see Section 3 below). All features are attributed by source (*f_source*). Previous work used to support our mapping include Aldrick et al. (1986), Atikinson and Kramer (2018), Devlin (1987), Greig et al. (1994), Miller (2024), Evenchick et al. (2008), Baker and Swanton (2014), Bahrami (2017), Perry and Febbo (2017), and Sebert (pers. comm., 2022; 2024; unpublished internal geological maps, Dolly Varden Silver Corp.).

GF2025-20_KITS_GeoLines. GIS files consisting of all bedrock geology polygon forming linework. Line types are attributed by line type (*f_class*: e.g., contact, fault, limit of mapping; and *f_type*: e.g., contact, fault, dextral, strike-slip, oblique, reverse), confidence level (*f_conf*: e.g., defined, approximate, inferred), source year (*f_updateyear*), and comments regarding source of linework (*f_remark*).

GF2025-20_KITS_Geocentroids. GIS files consisting of all centroids to attribute bedrock geology polygons, and source references.

GF2025-20_KITS_GeoPolys. GIS files consisting of all bedrock geology polygons. Polygons are generated from GeoLines and attributed using GeoCentroids.

GF2025-20_KITS_Stations. A comma delimited table (.csv format), and GIS shape file (.shp format) containing 1,608 field stations in the Kitsault River area that were visited between 2015-2024. Each station is attributed with a unique station ID (*stat_label*), date of data collection (*stat_date*), station disposition (*stat_disp*; e.g., outcrop, subcrop, float, or diamond drill hole). Where drill hole collar data are included: drill hole ID (*dhole_id*), drill hole end of hole length (*dhole_eoh*), drill hole azimuth (*dhole_azi*), drill hole dip (*dhole_dip*). Coordinates are

provided in both WGS 1984 Web Mercator auxiliary sphere (EPSG: 3857) and UTM NAD 83, Zone 9 north (EPSG 26909) projections.

GF2025-20_KITS_Strat_ArcStyle. An ArcGIS style file (.stylx format) containing map symbols for reproduction.

GF2025-20_KITS.gpkg. Arc geopackage, including Geolines, Geocentroids, Geopoly, and Station layers as described above.

3. Unit descriptions

This folder contains spreadsheets with descriptions, metadata, and suggested colour codes for each geological unit. Descriptions follow the BC Digital Geology geospatial frame data model (Cui et al., 2017; Cui, 2021).

GF2025-20_StratDescriptions. A Microsoft Excel file (.xlsx format) and a comma delimited text file (.csv format) containing descriptions of all geological units in the GIS files. These descriptions are related, and may be linked to, the centroid and polygon files through the *strat_unit* field. The unit descriptions use easily parsed, machine-readable pipe symbols (e.g., '|') to separate descriptors of composition, colour, texture, mineralogy, structure, other distinguishing features, and age (isotopic, fossil). Reported geological ages are from Carter (1981), Cordey et al. (1992), Mortensen and Kirkham (1992), Greig and Gehrels (1995), Evenchick et al. (2008), Han et al. (2020), Hunter and van Straaten (2020), Hunter et al. (2022), Cordey (pers. comm., 2020, 2023), Golding et al. (2023), Miller et al. (2019; 2020; 2025a; b), and Miller (2024).

GF2025-20_StratColours. A comma delimited text file (.csv format) containing suggested Hex and RGB codes for each stratigraphic unit. These codes are related to and may be linked to the centroid and polygon files through the *strat_unit* field.

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