

Descriptive Notes

Field investigations within this map area involved a canoe traverse from Jackpine Lake down the Whitefish River in July 1990, with hiking traverses to inspect the surrounding terrain along the way. Other observations were made during helicopter overflights in the 2000 to 2002 field seasons.

The map area is broadly characterized as rolling bedrock ridges and valley topography of the Hyland plateau. Devonian to Carboniferous Beza River and Mattson formation shale and sandstone (Fallas et al., 2014) outcrop along ridge crests, and within the walls of deep, glacially incised river valleys. Large, rotational bedrock landslides are abundant in the eastern half of the map, and along incised valleys. Till veneer extensively covers the region, with localized thicker till blanket deposits in the south and west parts of the map area. This comprises a sandy-silt to clayey-silt matrix, and contain mostly locally derived clast lithologies (shale, sandstone, siltstone, and chert). A prominent north-east-trending dispersal train of igneous and volcanic erratics associated with Palaeogene trachyte, syenite, and basalt outcrops south of the map area (syenite, basalt, tuff, and proxenes, orthoclase, and columnar quartz crystals) were found across the central and southern parts of the map area. This map area lies within the extensive discontinuous permafrost zone (Heginbottom et al., 1995). Fine-grained glacio-lacustrine and glaciofluvial deposits in valley bottoms contain abundant ground ice, including segregated ice lenses up to 1 m thick. Slopes adjacent to the valley bottoms illustrate "drunken forest" morphologies, indicative of active permafrost degradation.

The northwest La Biche River map area was glaciated by the Cordilleran Ice Sheet during the last (Late Wisconsinan) glaciation, overtopping all summits (which range up to 1573 m above sea level). Ice flowed east to northeast across the map area, producing extensive areas of fluted and drumlinized bedrock and thin till veneer. Coincidence with the Laurentide Ice Sheet occurred east and south of this map area (Smith, 2003a, b, 2004a, b; Bednarski, 2008), and the progressive buttressing between the two ice sheets is recorded here by crosscutting and rotation of glacially streamlined landforms in progressively more northward directions. During deglaciation, as ice cover thinned and the Laurentide Ice Sheet retreated eastward, the remnants of Cordilleran ice became increasingly topographically confined, flowing northward along major valleys. At the north end of this map area, meltwater drained northward across the regional topographic divide, into the Nahanni River basin. Ice-contact glaciofluvial deposits that lead to deltas further north (within NTS 95-F) and east of this map area (95-C/15, Smith, in press), along with glacio-lacustrine blankets, formed in glacial Lake Nahanni, which was impounded by the eastward retreating Laurentide Ice Sheet (Ford, 1976; Bednarski, 2008). Continued south and westward glacial retreat in this map area is constrained by ice-contact deltas and lateral kames (often kettled) recording impoundment of southward drainage, and lateral meltwater channels recording both proglacial and ice-marginal drainage.

Acknowledgments

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Abstract

This map is situated in the Hyland plateau, west of the Mackenzie Mountains, in southeast Yukon. The area was inundated by the Cordilleran Ice Sheet during the Late Wisconsinan glaciation. Ice advanced east to northeast across the rolling bedrock terrain, producing dense networks of sometimes crosscutting bedrock flutings and drumlinoid ridges. During deglaciation, ice flow became increasingly topographically constrained, shifting to more northward flow along major valleys. Meltwater flowing north initially crossed the drainage divide into the Nahanni River basin. Later, as ice retreated south and eastwards, ice-contact deltas and kame terraces formed along the retreating margins. The area is largely covered by till veneer, with bedrock exposed along most ridge crests and glacially incised valley walls. Shale units within the Beza River and Mattson formations are prone to failure, and large rotational landslides are common.

Résumé

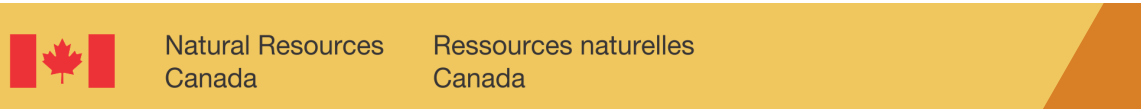
La présente carte couvre le plateau Hyland, à l'ouest des monts Mackenzie, dans le sud-est du Yukon. La région a été envahie sous l'influence de la Cordillère pendant la glaciation du Wisconsinien supérieur. La glace a progressé dans une direction variant de l'est au nord-est sur un relief rocheux et vallonné, produisant des réseaux denses de drumlinoides et de camélines dans le substratum rocheux, qui affleurent parfois des relations de recouvrement. Pendant la déglaciation, l'écoulement glaciaire est devenu de plus en plus régi par la topographie, s'orientant davantage vers le nord le long des principales vallées. L'eau de fonte s'écoulant vers le nord a d'abord traversé la ligne de partage des eaux pour atteindre le bassin de la rivière Nahanni. Plus tard, lorsque la glace s'est retirée vers le sud et l'est, des terrasses de kame et des deltas glacio-lacustres se sont formés le long des marges en retrait. La région est en grande partie recouverte d'un placage de till. Le substratum rocheux est exposé sur le pluspart des crêtes et le long des parois des vallées entaillées par les glaciers. Les unités de shale des formations de Beza River et de Mattson semblent endinées à la rupture, et de grands glissements rotationnels sont courants.

95-07	95-08	95-09	95-10	95-11	95-12	95-13	95-14	95-15	95-16	95-17	95-18	95-19	95-20	95-21	95-22	95-23	95-24	95-25	95-26	95-27	95-28	95-29	95-30	95-31	95-32	95-33	95-34	95-35	95-36	95-37	95-38	95-39	95-40	95-41	95-42	95-43	95-44	95-45	95-46	95-47	95-48	95-49	95-50	95-51	95-52	95-53	95-54	95-55	95-56	95-57	95-58	95-59	95-60	95-61	95-62	95-63	95-64	95-65	95-66	95-67	95-68	95-69	95-70	95-71	95-72	95-73	95-74	95-75	95-76	95-77	95-78	95-79	95-80	95-81	95-82	95-83	95-84	95-85	95-86	95-87	95-88	95-89	95-90	95-91	95-92	95-93	95-94	95-95	95-96	95-97	95-98	95-99	95-100
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National Topographic System reference and index to adjoining published Geological Survey of Canada maps

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CANADIAN GEOSCIENCE MAP 455

SURFICIAL GEOLOGY

LA BICHE RIVER NORTHWEST

Yukon–Northwest Territories

NTS 95-C/11, 12, 13, and 14

1:100 000



SURFICIAL GEOLOGY

LA BICHE RIVER NORTHWEST

Yukon–Northwest Territories

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1:100 000



Mean magnetic declination 2022, 19°05'E, decreasing 11.3' annually. Readings vary from 18°59'E in the SE corner to 19°12'E in the NW corner of the map.

This map is not to be used for navigational purposes.

Title photograph: Twelve metre high section of frozen glacio-lacustrine sediment exposed along the Whitefish River, beneath a glaciofluvial terrace, Yukon. Photograph by I.R. Smith. NRCan photo 2021-951

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Geological Survey of Canada
Canadian Geoscience Maps

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Geology by I.R. Smith, based on fieldwork (1999 to 2001), and air photographs (1961, 1:60 000)

Geological compilation by I.R. Smith, 2000, 2001, and 2022

Geological data conforms to Surficial Data Model v. 2.4.0 (Deblonde et al., 2019)

Geomatics by L. Robertson and S. Eagles

Cartography by D. Vner

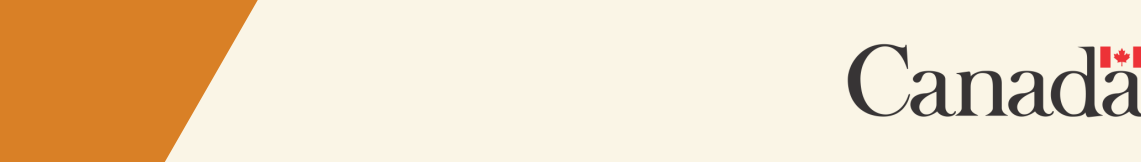
Scientific editing by L. Ewert

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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



SURFICIAL GEOLOGY

LA BICHE RIVER NORTHWEST

Yukon–Northwest Territories

NTS 95-C/11, 12, 13, and 14