


Abstract	Résumé
<p>The Grayling River area (N45°-N46°N) in the western Liard Basin is underlain by Triassic and Lower Cretaceous rocks. The regional structural pattern is characterized by a series of N-S trending faults and folds that are uniformly at the base of the Cretaceous down cuts and are truncated by the Cretaceous structural style. These probably formed in the latest Cretaceous and are well exposed along Liard River and where the regional structural pattern is significant. The orientation of the structures from northwest in the Rocky Mountain Foothills through the area to north or northeast in the Liard Thrust and Fold Belt (northern part of area) occurs. Cross-cutting faults and high angle faults are also present in the area where both trends are developed. This map incorporates the geological study of the Liard River corridor prepared for BC Hydro in 1984 and a new data collected during the first half of the GEM project.</p>	<p>La région cartographique de Grayling River (SNRC 94-0000), dans la partie ouest du bassin de Liard, repose sur des roches triasiques et crétacées inférieures. Le schéma structural régional est caractérisé par une série de failles et de plis orientés N-S, qui sont uniformément à la base du Cretacé inférieur. Une discordance régionale est observée à la base du Cretacé supérieur. Les structures sont interrompues par le schéma structural du Cretacé supérieur et à l'est. Des plis caractéristiques l'élément dominant du schéma structural. Ceux-ci se sont probablement formés à la fin du Crétacé et sont bien exposés le long de la rivière Liard et aux endroits où le schéma structural régional est significatif. L'orientation des structures varie du nord-ouest dans les Montagnes Rocheuses à l'est, à travers la zone à l'est, à l'est du Liard et vers le nord ou le nord-est dans la zone de la Liard Thrust and Fold Belt (partie septentrionale de la zone). Des failles transversales et des failles à grand angle sont également présentes dans la zone où les deux tendances sont développées. Cette carte incorpore l'étude géologique de la zone de la Liard River préparée pour BC Hydro en 1984 et de nouvelles données recueillies pendant la première moitié du projet GEM.</p>

94-N12	94-N11	94-N10
94-N5	94-N6 CGM 115	94-N7
94-N4	94-N3 CGM 102	94-N2

Cover illustration
Chevron-style anticline outlined by resistant sandstones of the Liard Formation near Boiler Canyon, Liard River. Recessive shale of the Garbutt Formation underlie valleys on flanks of fold.
Photograph by M.E. McMechan. 2013-021

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CANADIAN GEOSCIENCE MAP 115
GEOLOGY
GRAYLING RIVER
British Columbia
1:50 000

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Preliminary

**Canadian
Geoscience Maps**




Author: M.E. McEwan	
Geological compilation of the McEwan (1913) based on ground and aerial observations by M.E. McEwan (1912), ground observations by R.L. Brown (1982), F. Fern (1912), J.J. Young (1923), J.A. and E.D. Kindle (1943), J.F. Pauka (1982) and unpublished geological maps compiled by Geotex Resources (1983). P.B. Reimer (1983) has a map area along the Liard River, and studies of vertical air photographs and high resolution orthorectified satellite imagery.	Geomatics by J. Gardner and M. Le Cartography by J. Gardner Joint initiative of the Geological Survey of Canada and the British Columbia Ministry of Natural Gas Development, Geoscience and Strategic Initiatives Branch, conducted under the auspices of the Yukon Sedimentary Basins project as part of Natural Resources Canada's Geo-mapping for Energy and Minerals (GEM) program.

Geomatics by J. Gardner and M. Le
Cartography by J. Gardner

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The map displays a variety of geological features. A prominent feature is a large area of 'Gneiss' (G) in the upper right. To the left, there is a large area of 'Granite' (Gr). A significant portion of the central and lower-left areas is labeled 'Sedimentary' (S). A small area in the lower right is labeled 'Basalt' (B). A scale bar at the bottom indicates distances from 0 to 4 km. The map is titled 'GEOLOGY GRAYLING RIVER' and 'British Columbia' with a scale of '1:50 000'.

Map projection Universal Transverse Mercator, zone10. North American Datum 1983	The Geological Survey of Canada welcomes corrections or additional information from users.
Base map at the scale of 1:50 000 from Natural Resources Canada, with modifications. Elevations in feet above mean sea level	The data may include additional observations not portrayed on this map. See documentation accompanying the data. Additional descriptive notes and references are included in the map information document.
Magnetic declination 2013, 20°49'E, decreasing 21' annually.	This publication is available for free download through natural resources Canada's open access portal.

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See documentation accompanying the data.

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Preliminary publications in this series have not been scientifically edited.

QUATERNARY	
Qa	Till, alluvium, colluvium, lake silt: Deposits of gravel, sand, and silt. This unit is shown only where these deposits cover the bedrock extensively.

CRETACEOUS
Lower Cretaceous

KSB	Scatter Formation, Bulwell Member: Sandstone: fine- to very fine-grained, grey and greenish grey, thin- to thick-bedded, commonly laminated, abundant ripple-marks, worm burrows, trails, castings, crossbedding, commonly glauconitic, interbedded with argillaceous silty sandstone and silty mudstone.
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Kgr	<p>Garbutt Formation: Shale: silty, dark grey, dark grey-weathering, with numerous thin, parallel laminated or crosslaminated siltstone to sandstone lenses and beds giving the unit a striped appearance (lower part); mudstone and shale: dark grey, commonly rusty-weathering, rubbly, with rows of reddish brown-weathering concretions and common interbeds of grey, planar or crosslaminated, very fine-grained, sandstone to siltstone near the top (upper part). Slump structures occur locally. Sandstone: argillaceous, glauconitic, fine-grained up to 1.5 m (4–5 feet) occurs locally at the base. Elsewhere glauconitic mudstone or a few chert nodules mark the base.</p>
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TL	<p>Liard Formation: Sandstone: calcareous, very fine- to locally medium-grained, medium to dark grey, light grey- to orange-brown-weathering, medium- to very thick-bedded, crossbeds, ripples, laminations, scour features, burrows, and concretions or coquinooid layers are locally common; minor limestone: sandy or conglomeratic, light to dark grey, buff- to light grey-weathering, medium- to very thick-bedded; minor interbedded dark grey siltstone and shale.</p>
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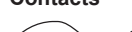

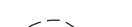















Tt **Toad Formation:** Siltstone: calcareous, dark grey, dark grey- to brown-weathering, thin- to thick-bedded, commonly laminated, platy; minor shale: calcareous, dark grey to black, dark grey- or brown-weathering; minor sandstone: calcareous, very fine- to fine-grained, commonly laminated and sharp based, more common in the middle and upper part.
























Gyraling Formation	
TG-mu	<p>Graying Formation, middle and upper parts: Shale; noncalcareous, medium grey, light grey-weathering, flaky laminated; shale: calcareous or dolomitic, medium grey, light medium grey-weathering; siltstone: dark to medium grey, medium grey-weathering; thin-bedded of sandstone: light medium grey, brown-weathering, fine-grained, thin-to thickbeds with locally abundant ripples, flute casts (middle part); shale: medium grey, light grey-weathering with thick laminae to very thin interbeds of sandstone; calcareous, light medium grey, brown-weathering, very fine-grained, commonly cross-laminated (upper part).</p>

Grayling Formation, upper part: Shale: medium grey, light grey-weathering with thick laminae to very thin interbeds of sandstone: calcareous, light medium grey, brown-weathering, very fine-grained, commonly cross-laminated.

Tg-m	<p>Graying Formation, middle part: Shale: noncalcareous, medium grey, light grey-weathering, flaky, laminated; shale: calcareous or dolomitic, medium grey, light medium grey-weathering; siltstone: dark to medium grey, medium grey-weathering; with interbeds of sandstone: light medium grey, brown-weathering, fine-grained, thin-to thick-bedded with locally abundant ripples, flute casts, locally form sandstone dominated intervals up to 10 m thick.</p>
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Station	
X	Outcrop, visited
∴	Aerial observation
Bedding	
19 ↘	Overturned, top known
52 ↘	Inclined, top known
61 ↘	Inclined, top unknown
↘	Vertical, top unknown
Cleavage	
↘	Cleavage, vertical
87 ↘	Cleavage, inclined

Contacts	
	Defined
	Approximate
	Inferred
	Concealed
	Mapping precision change
Faults	
	Motion undefined, approximate
	Motion undefined, inferred
	Motion undefined, concealed
	Normal fault, approximate
	Normal fault, inferred
	Normal fault, concealed
	Thrust fault, approximate
	Thrust fault, inferred
	Back-thrust fault, inferred
	Oblique-slip, sinistral, reverse fault, approximate
	Oblique-slip, sinistral, reverse fault, inferred
	Sinistral strike-slip fault, approximate
	Sinistral strike-slip fault, concealed

Folds	
	Anticline, upright, approximate
	Anticline, upright, inferred
	Anticline, upright, concealed
	Anticline, upright, homoclinic, shorter arrow on steeper limb, approximate
	Anticline, upright, homoclinic, shorter arrow on steeper limb, inferred
	Anticline, overturned, approximate
	Anticline, overturned, inferred
	Anticline, overturned, concealed
	Anticline, asymmetrical, upright, approximate
	Anticline, asymmetrical, upright, concealed
	Monocline, anticlinal bend, upright, approximate, flat to dipping
	Monocline, anticlinal bend, upright, inferred, flat to dipping
	Monocline, synclinal bend, upright, approximate
	Monocline, synclinal bend, upright, inferred
	Syncline, upright, approximate
	Syncline, upright, inferred
	Syncline, upright, concealed
	Syncline, upright, homoclinic, shorter arrow on steeper limb, approximate
	Syncline, overturned, approximate
	Syncline, overturned, inferred
	Syncline, overturned, concealed
	Syncline, asymmetrical, upright, approximate
	Syncline, asymmetrical, upright, concealed

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