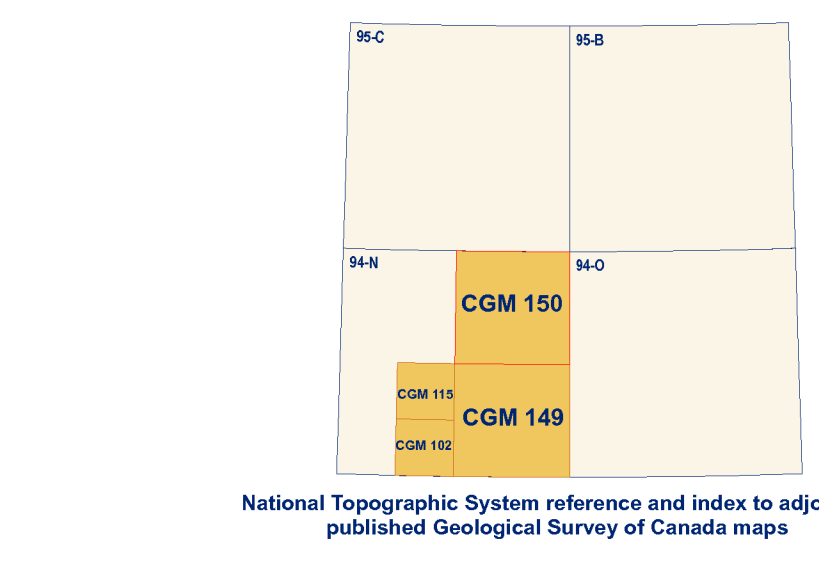


| | UWI | Well Name |
|-----|-------------------|---|
| 1. | 200C096094N1500 | NEXEN INC. LA JOLIE C-096-1094-N-09 |
| 2. | 200B07094N1500 | SUNCOOR WESTAR LA JOLIE B-070-1094-N-09 |
| 3. | 200D08F094N1500 | DAKWOOD JOE ET AL SCATTERER D-08F-1094-N-10 |
| 4. | 200D09H094N1500 | AMOCO CHEVRON CROW D-09H-1094-N-15 |
| 5. | 200D16A094N1500 | PENN WEST CROW D-16A-1094-N-15 |
| 6. | 200D2016A094N1500 | DEVON NEC CROW C-016-A-1094-N-15 |
| 7. | 200C037094N1600 | TALISMAN BEAVER B-037-1094-N-16 |
| 8. | 200C045K094N1600 | PAN AM BEAVER C-045-K-094-N-16 |
| 9. | 200A075K094N1609 | TRANSEURO HZ BEAVER D-A074-K-094-N-16 |
| 10. | 200C054K094N1607 | TRANSEURO HZ BEAVER C-054-K-094-N-16 |
| 11. | 200C027K094N1603 | TRANSEURO BEAVER C-027-K-094-N-16 |
| 12. | 200A019K094N1602 | TRANSEURO BEAVER B-019-K-094-N-16 |
| 13. | 200D073K094N1606 | TRANSEURO BEAVER D-073-K-094-N-16 |
| 14. | 202B019K094N1600 | TRANSEURO BEAVER B-A019-K-094-N-16 |
| 15. | 200C074K094N1602 | TRANSEURO ET AL BEAVER B-074-K-094-N-16 |
| 16. | 200A036K094N1600 | TRANSEURO ET AL BEAVER B-036-K-094-N-16 |
| 17. | 200D083K094N1602 | TRANSEURO ET AL BEAVER A-083-K-094-N-16 |
| 18. | 200D043K094N1603 | TRANSEURO BEAVER D-043-K-094-N-16 |

Table 1. List of wells.

Abstract
The Toad River northeast area (NTS 94-N1NE) in western Lland Basin is underlain by a thick Mississippian to Cretaceous clastic-dominated succession deformed into a few north- or northeast-trending folds. Local deepening in the thickness of Permian sandstone-carbonate and chert units indicate episodes of older block faulting. A major unconformity at the base of the Cretaceous has removed much of the Triassic succession preserved to the southwest. A prominent escarpment capped by Upper Cretaceous Dunvegan conglomerate marks the west limb of the Lland syncline. To the east, poorly exposed Upper Cretaceous conglomerate, shale, and sandstone outline gentle folds. In the Lland Fold and Thrust Belt to the west, four prominent, south-plunging anticlines occur near 60°N. West-directed backthrusts, that follow the trace of older structures and die out southwest, offset their steeper west limb at Paleozoic levels. Significant natural gas reserves occur in middle Devonian carbonate beneath the Beaver River Anticline.

Résumé
Le secteur nord-est de la région cartographique de Toad River (NTS 94-N1NE), dans la partie ouest du bassin de Lland, repose sur une épaisse succession du Mississippien au Crétacé à dominante détritico-clastique, déformée par quelques plis de direction nord ou nord-est. De brusques changements locaux de l'épaisseur d'unités de grès-roches carbonatées et de chert du Permien témoignent d'anciennes épisodes de déformations en blocs par des failles. Une importante escarpement couronné par le Crétacé supérieur de Dunvegan marque le bord ouest de la succession du Trias qui a été conservée au sud-ouest. Un escarpement proéminent, coiffé du conglomérat de Dunvegan du Crétacé supérieur, définit le flanc ouest du synclinal de Lland. À l'est, des conglomérats, shales et grès du Crétacé supérieur, peu représentés en affleurements, dessinent des plis très ouverts. Dans la zone de plissement et de chevauchement de Lland à l'ouest, quatre anticlinaux prononcés à plongement sud sont observés près de 60°N. Des rétrochassements à vergence sud, qui empruntent d'anciennes structures avant de s'évanouir vers le sud, décalent leurs flancs ouest plus abrupts au niveau du Paléozoïque. Des réserves significatives de gaz naturel sont présentes dans les strates carbonatées du Dévonien moyen dans les profondeurs de l'anticlinal de Beaver River.



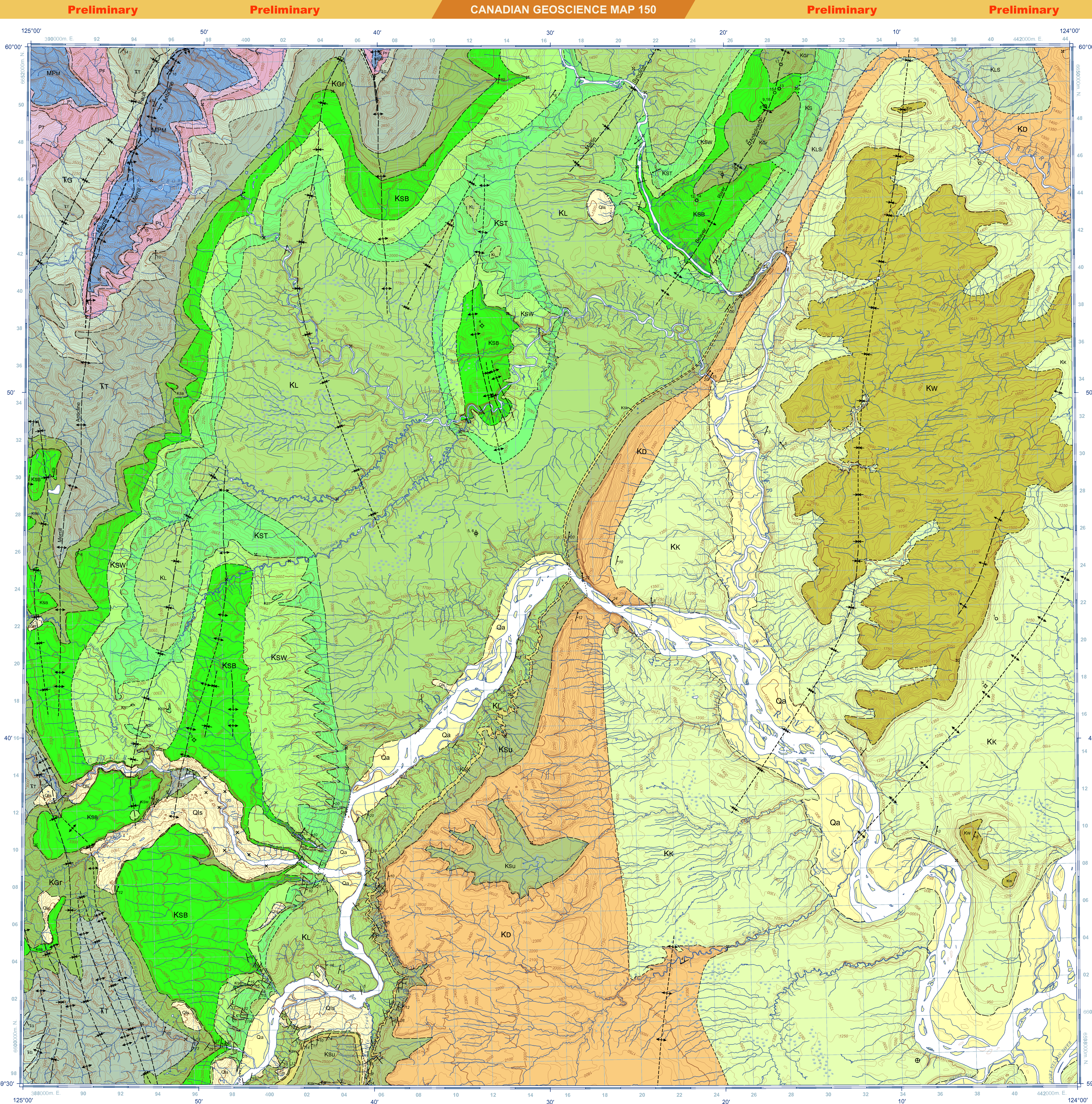
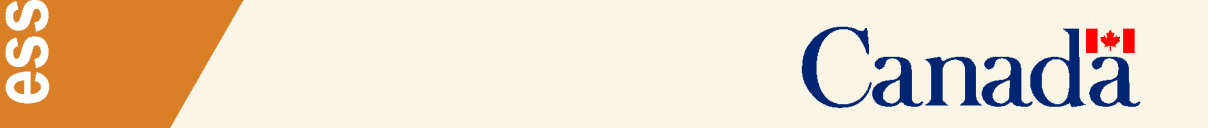
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CANADIAN GEOSCIENCE MAP 150
GEOLOGY
TOAD RIVER (NORTHEAST)
British Columbia
1:100 000

Canadian Geoscience Maps



QUATERNARY

- Qls** Landslide: slumps and/or blocks of nearby bedrock.
- Qa** Till, alluvium, coluvium, lake silt: deposits of gravel, sand, and silt. This unit is shown only where these deposits cover the bedrock extensively.

CRETACEOUS

UPPER CRETACEOUS

- Kw** Wasipi Formation: interlayered sandstone, mudstone, minor conglomerate and coal. Poorly exposed unit.
- Kk** Kotaneewee Formation: shale, dark grey to black, rusty-weathering with siltstone concretions and a few intervals of sandstone: fine- to medium-grained, thin- to thick-bedded, brown-weathering, locally cross-bedded, burrow-mottled, fossiliferous, in the upper part of formation.
- Kd** Dunvegan Formation: pebble to cobble conglomerate, variably sandy with common crude horizontal stratification and large-scale crossbeds in resistant conglomerate-dominated cycles with sandstone. Sandstone is fine-grained to conglomeratic, brown-weathering, commonly laminated or cross-bedded and may grade upwards into siltstone and silty mudstone. Cycles overlie a resistant basal sandstone commonly capped by a thin coal or carbonaceous mudstone. A thick interval of variably carbonaceous mudstone and siltstone with minor sandstone and rare thin coal forms the recessive upper part of the formation in the Dunsden River area. Multistage channel cut-and-fill infilled with interbedded siltstone and very fine-grained to pebbly sandstone with local ripple crosslamination and crossbeds are common in the upper part of the formation.

LOWER AND UPPER CRETACEOUS

Fort St. John Group (Kgi-KLs)

- KLs** Lepine and Sully formations: interbedded dark grey shale, dark grey mudstone, dark grey locally laminated siltstone and minor grey or greenish-grey, thin-bedded sandstone. Siltstone concretions common. Includes equivalent to the Sikanni Formation.
- Ksu** Sully Formation: mudstone; silty, dark grey to black, rusty-weathering with reddish-brown siltstone concretions; shale, black, medium to light grey-weathering, flaky to fissile with interbeds of light grey-weathering platy siltstone, interbeds of sandstone, fine-grained, grey, thin-bedded, laminated and crosslaminated, occur near the top.

LOWER CRETACEOUS

- Ksk** Sikanni Formation: sandstone, argillaceous or siliceous, fine-grained, grey, light brown-grey-weathering, finely laminated, locally cross-laminated, cross-bedded in 2 or 3 sandy bands separated by more recessive intervals of dark-grey to black mudstone with a few concretions. Sandstone changes facies northeast into siltstone, very argillaceous sandstone, and mudstone that are included in the Lepine and Sully formations.
- KL** Lepine Formation: shale, black, flaky to fissile, overlain by mudstone; silty, dark grey, commonly rusty-weathering with reddish brown weathering siltstone in middle and upper part. South of 50°23' S the Lepine Formation includes the stratigraphic equivalents of the Wilbom and Tussock members of the Scatter Formation, and silty, black, concretionary mudstone with common ammonites in concretions, and a few units of argillaceous siltstone form a basal unit.
- KS** Scatter Formation (KSB-KST)
- KST** Scatter Formation: undivided.
- KST** Tussock Member: alternating units of sandstone, siltstone and silty mudstone; sandstone: argillaceous, glauconitic, silty, greenish grey, thin- to thick-bedded with common burrow-mottling, worm trails, laminae; siltstone: argillaceous, dark grey, grey or rusty-weathering, finely laminated, mudstone: silty, black, weathering blocky and rusty.
- Ksw** Wilbom Member: mudstone; silty, black, dark-grey to rusty-weathering dark grey, reddish brown weathering siltstone concretions become more common in the upper part. Thin beds of argillaceous siltstone and sandstone occur near the top.
- Ksb** Bulwell Member: sandstone: fine- to very fine-grained, grey and greenish grey, thin- to thick-bedded, commonly glauconitic, laminated, abundant ripple-marks, worm burrows, trails, casting, cross-bedded, commonly glauconitic, interbedded with argillaceous, silty sandstone and silty mudstone.
- Kgr** Garbutt Formation: shale, silty, dark grey, dark grey-weathering, with numerous thin, parallel laminated or cross-laminated siltstone to sandstone lenses and beds giving the unit a striped appearance (lower part); mudstone and shale: dark grey, commonly rusty-weathering, tabby, with rows of reddish brown-weathering concretions and common interbeds of grey, planar or cross-laminated, very fine-grained, sandstone to siltstone near the top (upper part). Slump structures occur locally. Sandstone: argillaceous, silty, 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.

TRIASSIC

- 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.
- Tg** Grayling Formation: shale: noncalcareous, medium grey light grey-weathering, flaky, laminated with minor interbeds of sandstone: fine-grained, medium grey, brown-grey weathering, very thin- to thin-bedded, and minor shale: dolomitic, medium grey, laminated. Sandstone: calcareous or dolomitic, very fine- to fine-grained, medium grey, brown-weathering, medium- to very thick-bedded, interbedded with dark grey fissile shale, occurs at base.

PERMIAN

- Pf** Fantaque Formation: chert: spiculate, dark to medium grey, rusty-brown-weathering, medium- to very thick-bedded, interbedded with minor siltstone: siliceous, dark grey to dark brown, very resistant weathering.
- Pt** Tila Formation: sandstone: calcareous, fine-grained, grey light brown-weathering, with local trace fossils, interbedded with limestone or dolomite: sandy, buff-weathering, thin- to thick-bedded, commonly facies in Beaverrow Mountain area, overlain in Beaverrow Mountain area by siltstone: dark grey, medium grey to rusty-weathering, well fractured, sandstone: glauconitic, grey, brown-weathering, cross-bedded, occurs at base.

MISSISSIPPIAN AND PENNSYLVANIAN

- Mpm** Mattson Formation: quartz arenite: fine- to very fine-grained, light grey or buff, grey- to orange-weathering, thin- to medium-bedded, well-indurated, with crossbeds, cross-lamination, trace fossils, and ripples common locally, interbedded with minor intervals of dark grey siltstone and shale, typically forms coarsening-upward sequences (lower member); sandstone: calcareous, very fine- to medium-grained, white to medium grey to buff, light grey- to buff- to orange-brown weathering, thin- to very thick-bedded, massive, cross-bedded, rippled, locally with minor interbeds of siltstone and shale; medium to dark grey, medium grey-weathering (middle member); overlain by sandstone: calcareous or dolomitic, fine- to coarse-grained, light to medium grey, light grey-weathering, thin- to thick-bedded, commonly cross-bedded; locally interbedded with minor limestone: sandy, grey, medium- to thick-bedded, typically fossiliferous; minor dolomite: grey; minor siltstone and shale: dark grey, brown- to orange-weathering (upper member).

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GEOLOGY
TOAD RIVER (NORTHEAST)
British Columbia
1:100 000

Author: M.E. McMechan
Geology by M.E. McMechan based on ground and aerial observations by M.E. McMechan (2011-2012), ground observations by F. Fern (2010-2012), E.D. Kindle (1943), D.F. Stott (1965), K.A. Fallick (2002) and unpublished geological map compiled by Geolux Consultants (1984) P.B. Read, principal compiler for the area along the Lland River, and studies of vertical air photographs and high resolution orthorectified satellite images by M.E. McMechan.

Geomatics and cartography by T. Konopky

Mean magnetic declination 2013, 20'50"E, decreasing 2' annually. Readings very from 20'30"E in the SE corner to 21'01"E in the NW corner of the map.

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. Additional descriptive notes and references are included in the map information document.

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

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.

Preliminary publications in this series have not been scientifically edited.

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