

Figure 1. Northwest Mahony Lake map area (NTS 96-FNW) showing seismic lines on record with the National Energy Board (NEB) that were used to augment the bedrock geology interpretation. Line names are provided in the digital data files.

**Abstract**  
The northwest quadrant of the Mahony Lake map area (NTS 96-F) encompasses a low, vegetated plateau at the western edge of the Great Bear Plain, Northwest Territories. The somewhat higher ground between Mahony Lake and the Hare Indian River to the north is informally referred to as the Mahony dome. Most of the area is underlain by broadly folded Paleozoic carbonate strata, disrupted locally by steeply reverse faults. The structural features suggest a geological kinship with the Franklin Mountains to the west. Due to a veneer of unconsolidated Quaternary deposits, bedrock exposures are not abundant; however, the presence of carbonate very close to surface has allowed for the development of numerous karst features, such as sinkholes, disappearing streams, and turloughs, where bedrock may be exposed. Cratonic siliclastic strata are preserved in a synclinal structure west of Mahony Lake. Truncations of Ordovician to Devonian strata beneath the sub-Cretaceous unconformity delineate part of the Keele Arch, a feature that stood topographically higher than the surrounding area before deposition of the Cretaceous strata.

**Résumé**  
Le quadrant nord-ouest de la région cartographique de Mahony Lake (SNRC 96-F) est occupé par un bas plateau couvert de végétation situé à la limite occidentale de la plaine du Grand lac de l'Ours (Territoires du Nord-Ouest). Le terrain quelque peu plus élevé s'étendant entre le lac Mahony et la rivière Hare indien au nord porte l'appellation informelle de dôme de Mahony. La plus grande partie de la région est occupée par des strates carbonatées du Paléozoïque, déformées en grands plis ouverts et déplacées par endroits par des failles inverses fortement inclinées. Le style structural suggère une affinité avec les monts Franklin à l'ouest. En raison de la présence d'un placage de dépôts meubles du Quaternaire, les affleurements du socle sont peu abondants; cependant, la présence de roches carbonatées très près de la surface a permis la formation de nombreuses formes karstiques telles que des dolines, des ruisseaux infiltrants et des lacs asséchés. Des strates siliclastiques du Crétacé ont été conservées dans une structure synclinale à l'ouest du lac Mahony. La truncature des strates de l'Ordovicien au Dévonien sous la discordance à la base du Crétacé permet de reconnaître l'arche de Keele, une entité qui s'élevait au-dessus des terrains environnants avant le dépôt des strates du Dévonien ainsi que de celui des strates du Crétacé.

96LSE	96KSW	96KSE
96FNE	96FNW	96FSE
CGM 99	CGM 88	CGM 89
96ESE	96FSW	96ESE
CGM 100	CGM 91	CGM 90

National Topographic System reference and index to adjoining published Geological Survey of Canada maps

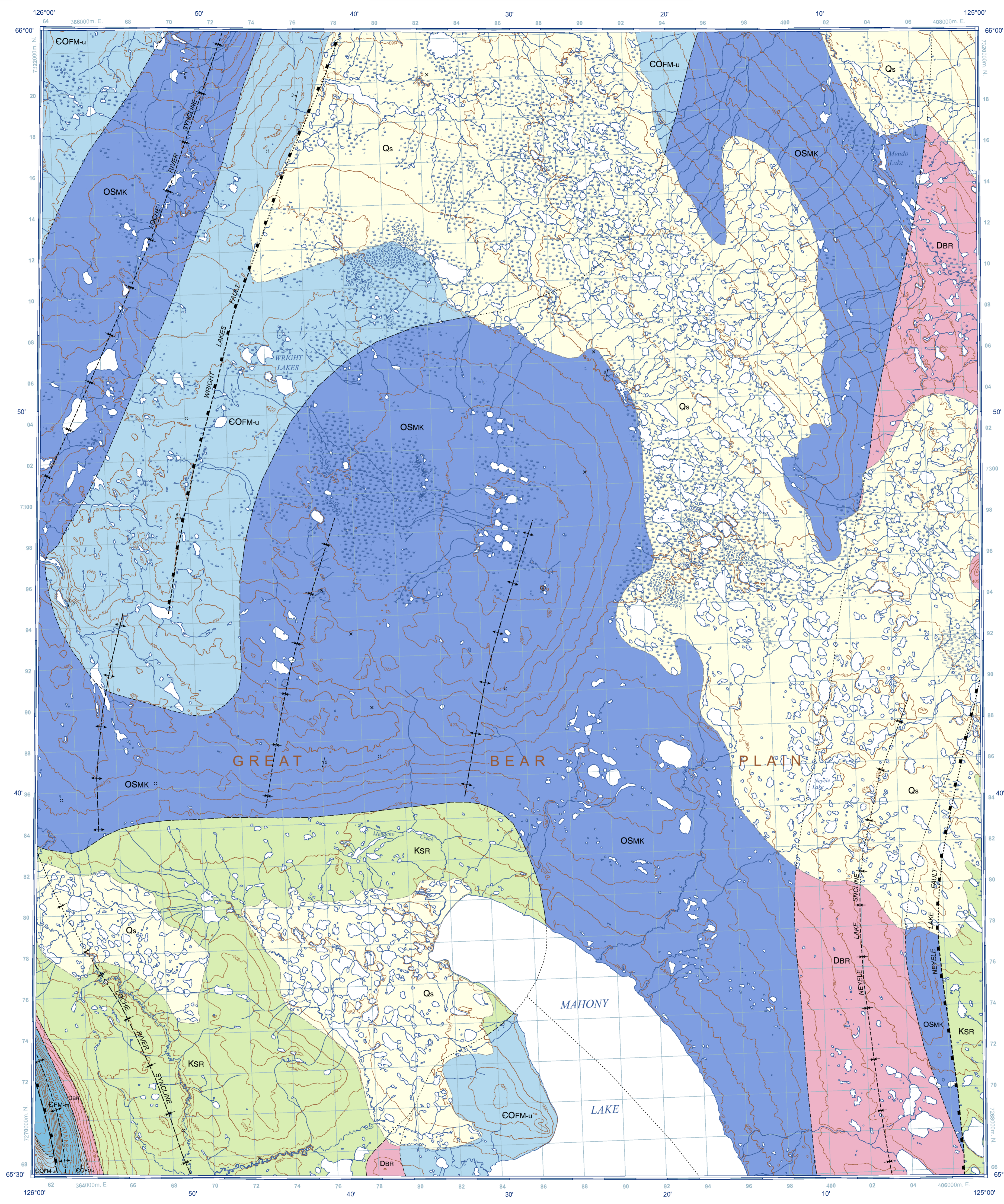
**Cover illustration**  
Helicopter perched atop Mount Kindle Formation dolomite exposed in a turlough (a karst feature) on the Mahony dome, north of Mahony Lake, Northwest Territories. Photograph by K.M. Fallas, 2012-085

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**CANADIAN GEOSCIENCE MAP 88**  
**GEOLOGY**  
**MAHONY LAKE (NORTHWEST)**  
Northwest Territories  
1:100 000



**QUATERNARY**  
Qs Quaternary sediment: mud, sand, and gravel; unconsolidated.

**LATE CRETACEOUS**  
KSR **Slater River Formation:** shale and mudstone: dark brown to dark grey, black, or rusty-brown, soft, crumbly, and fissile, sideritic concretions common, rare fish scales, minor bentonites and ash tuff; white to yellow, pale green, or orange-brown, and minor sandstone: fine-wedge, brown, grey, or rusty, very thin- to thin-bedded, cross-laminated, and bioturbated.

**DEVONIAN**  
DBR **Bear Rock Formation:** limestone breccia: variably dolomitic and petrolierous, angular clasts range from granule- to boulder-sized, greyish-brown to grey, weathers light grey, vuggy, massive and rubby with rare bedded intervals of laminated carbonate, tends to form hoodoos.

**ORDOVICIAN TO SILURIAN**  
OSMK **Mount Kindle Formation:** dolomite: dolowackestone to dolopelagite and dololimestone, siliceous and cherty, light to dark grey or brownish-grey fresh and weathered surfaces, thin- to very thick-bedded, vuggy, recrystallized, bioturbated, and fossiliferous (mainly silicified corals, crinoids, orthocone cephalopods, and stromatoporoids).

**CAMBRIAN TO ORDOVICIAN**  
COFM-u **Franklin Mountain Formation, upper member:** dolomite: crystalline dolomite, commonly cherty and siliceous, cream to beige or grey, weathers white to light grey, very thin- to thick-bedded, vuggy and nodular, locally stromatolitic, bioturbated, intracast-bearing, and bioturbated.

**CAMBRIAN**  
CFM-m **Franklin Mountain Formation, middle member:** dolomite: dolomudstone to dolopelagite, rarely calcareous or cherty, light grey to cream or beige, weathers light yellowish-grey to orange-brown, thin- to thick-bedded, typically recrystallized obliterating primary textures, locally vuggy, stromatolitic or thrombotic, bioturbated, coiled, cross-bedded, or intracast-bearing; rare shale partings. Alternation, at 1-2 m intervals, of cool dolopelagite with dolomudstone produces a locally prominent striped appearance.

- NOTES**  
The author has updated and revised map unit terminology from the Operation Norman map (Aikens and Cook, 1976). In general, Silurian and Devonian usage follows that of Morrow (1991), and Cretaceous to Paleozoic formation names are those of Dixon (1969). Cambrian to Ordovician units have recently undergone revision to their terminology, as outlined below.
- Previous work by the Geological Survey of Canada in the Mahony Lake map area (Aikens and Cook, 1976) subdivided the Cambro-Ordovician Franklin Mountain Formation into three informal units. In ascending order they are: Cyclic member, Rhythmic member, and Cherty member (Norford and Macqueen, 1975). On the present maps, these older unit names correspond, in ascending order, to informal lower, middle, and upper members of the Franklin Mountain Formation. These lower, middle, and upper members correspond to the units 1, 2, and 3 of the Franklin Mountain Formation described by Turner (2011).
- For detailed information on surficial deposits, here shown as "Quaternary sediment", see Chawin et al. (1975).
- The names Wright Lakes Fault, Neyeve Lake Fault, Loche River syncline, and Neyeve Lake syncline have been introduced to facilitate discussion of these structural features. The representation of the Wright Lakes and Neyeve Lake faults as reverse faults is based on the interpretation from seismic-reflection data that these faults originated as steep normal faults that were later inverted during Cordilleran compression, as shown schematically in Figure 2.
- ACKNOWLEDGMENTS**  
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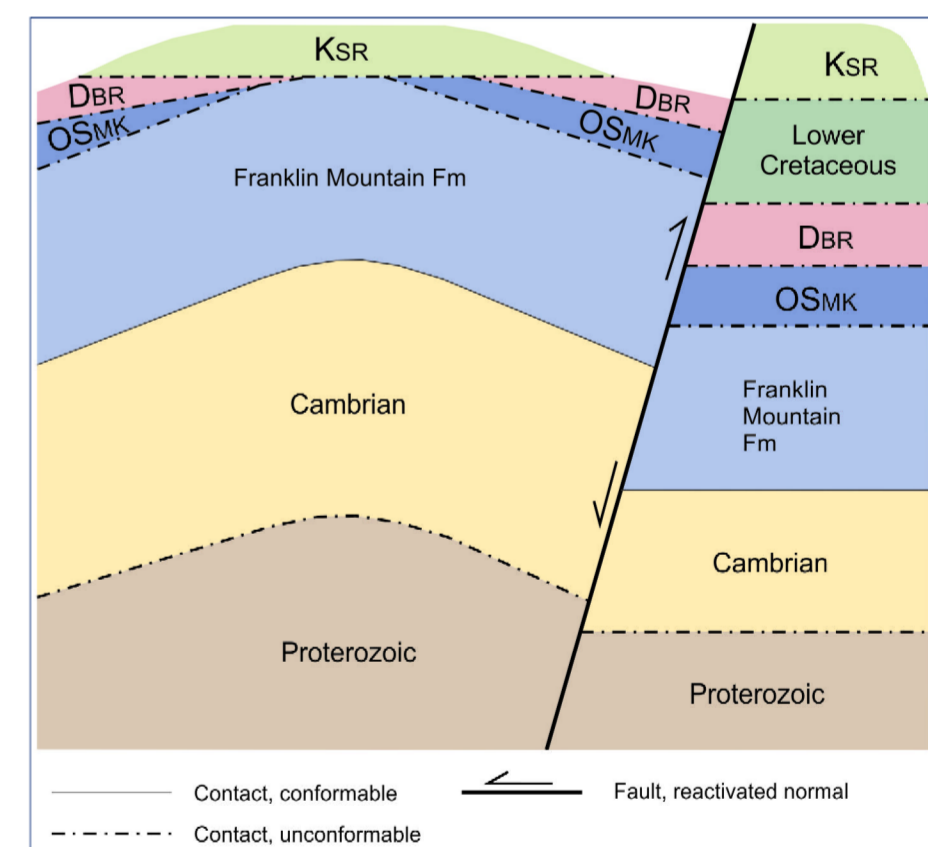
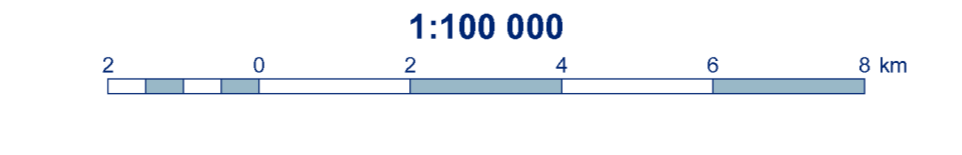


Figure 2. Schematic stratigraphic relationship diagram for northwest Mahony Lake map area (NTS 96-FNW). Subsurface units are constrained by seismic data. The major erosional unconformity between Ordovician and Cretaceous units is an expression of a paleotopographic high, the Keele Arch, which was periodically active from Paleozoic to Cretaceous.

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**GEOLOGY**  
**MAHONY LAKE (NORTHWEST)**  
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1:100 000



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Geological field observations by K.M. Fallas, R.B. MacKinnon 2009-2011, R. Van Everdingen 1975-1977, J.D. Aikens, and D.G. Cook 1968-1969  
Seismic data interpretation by B.C. MacLean 2010-2012  
Geomatics by K.M. Fallas, S.D. Orzeck, and N. Raska  
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Map projection Universal Transverse Mercator, zone 10, North America Datum 1983  
Base map at the scale of 1:50 000 from Natural Resources Canada, with modifications  
Elevations in metres above mean sea level

Some geographic names on this map are not official.  
Mean magnetic declination 2013, 23°25'E, decreasing 32' annually. Readings vary from 23°36'E in the NW corner to 23°14'E in the SE corner of the map.  
The Geological Survey of Canada welcomes corrections or additional information from users.  
Data may include additional features not portrayed on this map.  
See documentation accompanying the data.  
Additional references are included in the map information document.  
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