



- LEGEND**
- 7 Massive, fine- to medium-grained, pink, leucocratic granite and granodiorite
 - 6 Gabbro, diorite, hornblende, pyroxenite
 - 5 Foliated medium- to coarse-grained quartz diorite, granodiorite, and quartz monzonite; 5a, porphyritic
 - 4 Paragneiss, lit-par-lit gneiss
 - 3 Iron-formation
 - 2 Sedimentary rocks; derived schists
 - 1 Volcanic rocks and undifferentiated basic intrusions; derived schists; in part younger than 2
 - 8 Massive and foliated granitic rocks, undifferentiated 5 and 7

- Heavily drift-covered area
- Sand plain
- Geological boundary (approximate, assumed)
- Bedding (inclined, vertical)
- Gneissosity, schistosity (inclined, vertical, dip unknown)
- Lineament (from air photographs)
- Fault (approximate)
- Joints (inclined, vertical)
- Glacial striae (direction of ice movement known)
- Drumlin, drift ridge
- Esker
- Glacial-lake beaches
- Major moraine
- Area of small moraines
- Gold mine (producing, past producer)

Geology by J. A. Donaldson, 1959, in part compiled from maps published by Ontario Department of Mines

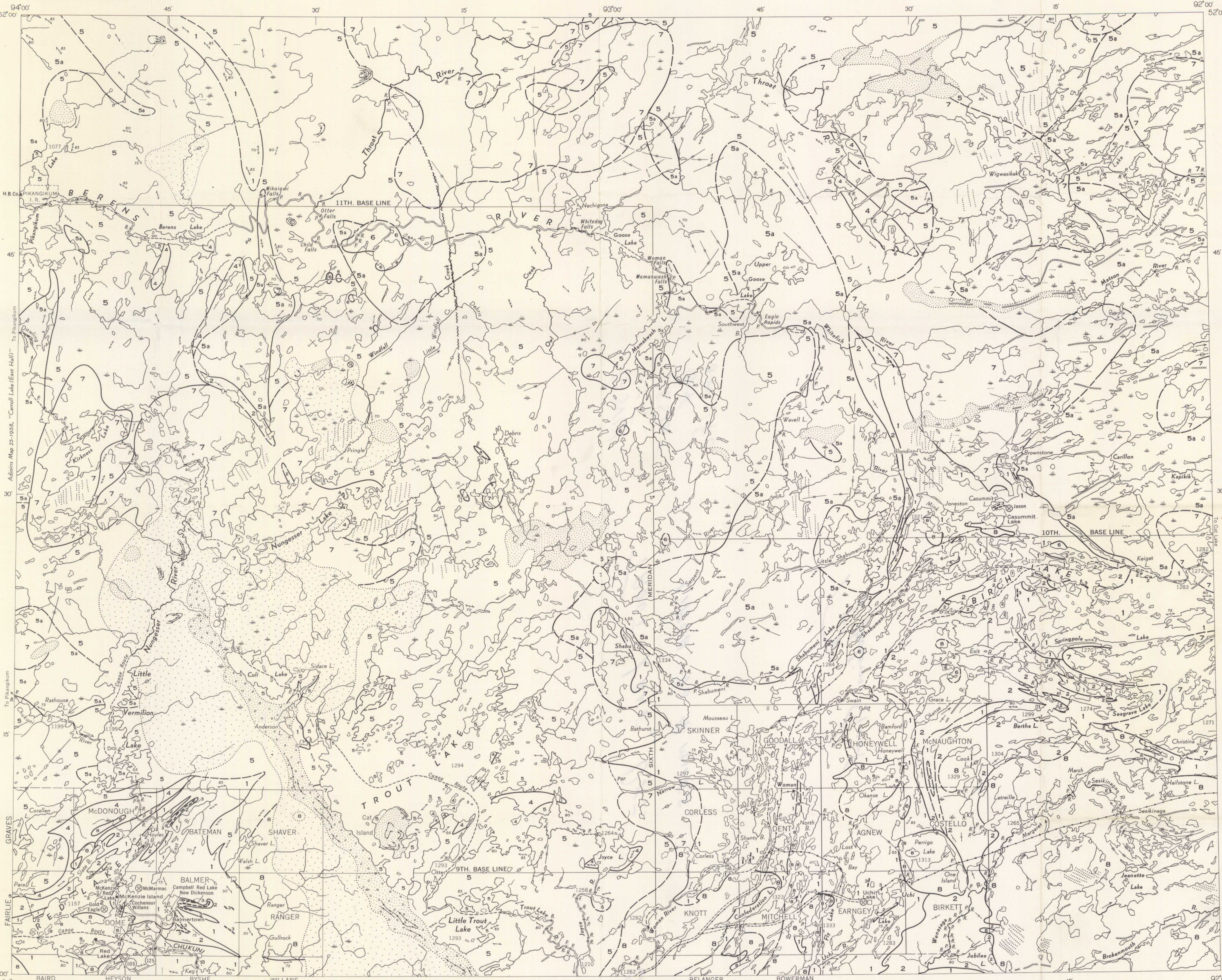
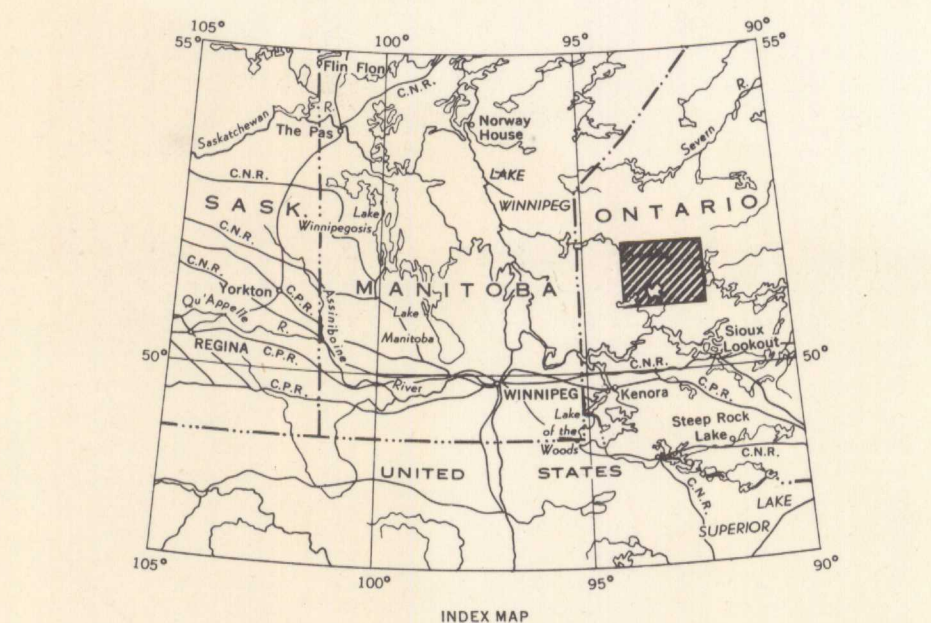
- Main highway
- Other roads
- Trail, portage or canoe route
- Township boundary (surveyed, unsurveyed)
- Power line
- Marsh
- Falls and rapids
- Height in feet above mean sea-level

Cartography by the Geological Survey of Canada, 1960

Approximate magnetic declination, 04° 18' East

Air photographs covering this area may be obtained through the National Air Photographic Library, Topographical Survey, Ottawa

In response to public demand for earlier publication, Preliminary Series maps are issued in this simplified form and will be clearer to read if all or some of the map-units are hand-coloured



DESCRIPTIVE NOTES

An all-weather highway connects Red Lake, in the southwest corner of the map-area, with the road systems of Ontario and Manitoba. Bus service is provided from Red Lake Road on the Canadian National Railway, and Vermilion Bay, on the Canadian Pacific Railway. Red Lake is also served by scheduled passenger flights from Winnipeg (Trans Air) and Kenora (Ontario Central Airlines). Many parts of the map-area may be conveniently reached by canoe, and float planes are available for charter at Red Lake.

The most prominent topographic feature in the map-area is the moraine west of Trout Lake. Abandoned beaches flank both sides of the moraine at coincident elevations. The highest beach is some 200 feet above points along the postulated shoreline of Lake Agassiz as shown on the Glacial Map of Canada. Sand, clay, and gravel form thick deposits west and north of the moraine. Drift cover elsewhere, consisting mostly of boulder till and sand outwash, is relatively thin except in the extreme eastern part of the map-area, where outcrops are commonly restricted to the shorelines of lakes. The direction of glacial advance varies from due west in the northern part of the area to S40°W in the southern part.

Most volcanic rocks (1) are fine-grained, dark green to greyish green basalts and andesites, but a few acidic flows outcrop east of Trout Lake and south of Shabumen River. Slate, argillite, quartzite, greywacke, and conglomerate (2) are the most abundant sedimentary rocks. Banded iron-formation (3), consisting of fine-grained interbeds of quartz, magnetite, and iron silicates, is exposed east and southeast of Balmer Lake, north of Uchi Lake, west of Trout Lake north of Blondin Lake, and near the east end of Birch Lake. Because of strong magnetic attraction, the belts of iron-formation commonly can be traced in drift-covered areas. Most parts of the map-area underlain by units 1 and 2 have been mapped in detail by the Ontario Department of Mines.

Medium- to coarse-grained diorite, granodiorite, and quartz monzonite (5) underlie more than half the map-area. A porphyritic variety (5a) is characterized by subhedral phenocrysts of potash feldspar, as much as 2 inches long, which compose 20 to 60% of the rock. Most rocks of map-unit 5 exhibit massive-weathered surfaces, but well-developed foliation marks a local disposition of mineral grains, can commonly be seen on fresh surfaces. Fresh and weathered surfaces range from grey for the quartz diorites to salmon pink for the quartz monzonites. Biotite and hornblende compose 5 to 30% of the rocks.

Pronounced mineralogical layering suggestive of relict bedding characterizes the hybrid gneisses (4) in the eastern part of Trout Lake, south of Berens Lake, and along the Trout River headwaters. These gneisses are predominantly fine grained, grey and dark weathering, and contain abundant biotite and hornblende. Many bodies of hybrid gneiss, too small to be shown, occur within map-unit 5.

Massive, medium- to coarse-grained, basic intrusive rocks (6) occur as scattered plugs, sills, and irregular bodies. Where age relations can be established, they are younger than the gneissic rocks (5), but older than the massive rocks (7).

Fine- to medium-grained granite, quartz monzonite, and granodiorite (7) compose large masses that truncate foliations in older rocks. They are characterized by a paucity of ferromagnesian minerals and an absence of regional foliation. Apatite and pegmatite dykes of similar composition are abundant throughout the area, and have been seen to cut all other rock types. Large masses of pegmatitic granite, which show striking graphic intergrowths of quartz and potash feldspar, outcrop east of Kirkness Lake. Lamprophyre dykes cut all other rocks except for a few younger apatites and pegmatites.

There were at least two periods of folding in the Red Lake and Birch Lake areas. Northeast-trending folds at Red Lake have been crossfolded along northwest-trending axes, and the west-trending belt of volcanic rocks north of Springpole Lake, which arcs southwest along Woman and Confederation Lakes, is apparently interrupted by northwest-trending crossfolds along Shabu and Blondin Lakes. Two near-vertical regional joint sets, which trend approximately northwest and northeast, cut all rocks in the map-area. Prominent lineaments, a few of which are shown on the map, closely correspond in trend to joints measured in outcrops. The mapped faults are marked by zones of mylonitization and rock alteration.

There are five producing gold mines in the Red Lake district. Most gold occurs in silicified zones, where it is commonly associated with finely disseminated sulphides, and in quartz-carbonate veins. The major orebodies are restricted to shear and fracture zones in volcanic and basic intrusive rocks. Several gold mines have been operated in the vicinity of Birch Lake, but all were inactive in 1959. Most parts of the volcanic and sedimentary belts have been intensely prospected, but some localities, such as north of Blondin Lake and east of Pikangikum, have apparently escaped attention. The basic intrusive rocks commonly contain sparsely disseminated pyrite. Pegmatite dykes carrying a few flakes of molybdenite outcrop on the south shore of the Berens River, 1 mile downstream from the confluence with Windfall Creek.

References

Bateman, J. D., 1939: Geology and gold deposits of the Uchi-Slate Lakes area; Ont. Dept. Mines, vol. 48, pt. 8.

Brace, E. L., 1928: Gold deposits of Woman, Narrow and Confederation Lakes; Ont. Dept. Mines, vol. 36, pt. 4.

Chisholm, E. O., 1951: Geology of Balmer Township; Ont. Dept. Mines, vol. 69, pt. 10.

Fursey, G. D., 1933: Shabumen-Birch Lakes area; Ont. Dept. Mines, vol. 42, pt. 6.

Gray, J. W., 1927: Woman and Narrow Lake Gold Area; Ont. Dept. Mines, vol. 36, pt. 3.

Harding, W. B., 1936: Geology of the Birch-Springpole Lakes area; Ont. Dept. Mines, vol. 45, pt. 4.

Horwood, H. C., 1937: Geology of the Casummit Lake area and the Argo Mine; Ont. Dept. Mines, vol. 46, pt. 7.

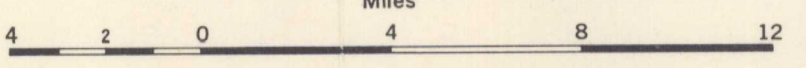
Horwood, H. C., 1940: Geology and Mineral Deposits of the Red Lake area; Ont. Dept. Mines, vol. 49, pt. 2.

Thompson, J. E., 1938: The Uchi Lake area; Ont. Dept. Mines, vol. 47, pt. 10.

Wilson, J. T., ed., 1958: Glacial Map of Canada; Geol. Assoc. Canada.

MAP 58-1959
GEOLOGY
TROUT LAKE
KENORA DISTRICT
ONTARIO

Scale: One Inch to Four Miles = $\frac{1}{253,440}$ Miles



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MAP 58-1959
TROUT LAKE
ONTARIO
SHEET 52 N