GS-3 EDEN LAKE

(64C-9)

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Introduction

Mapping at a scale of 1:50 000 was carried out in the Eden Lake area (64C-9) to complete the geologic coverage of the unmapped area between Barrington Lake and Turnbull Lake sheets.

Previous work by McRitchie (1976) in the Outlaw Bay region, outlined a section of quartz monzonite containing rafts of metasedimentary and metavolcanic gneisses.

General Geology

The map-area is underlain by granitoid intrusives, some of which contain rafts of metasedimentary and metavolcanic rocks.

The dominant rock type is a foliated grey granodiorite which covers most of the southern half of the map sheet. A train of rafts of metasedimentary and metavolcanic gneisses can be traced through the granodiorite south of Eden Lake from Outlaw Bay in the east to Stag Lake in the west (Fig. GS-3-1). A coarse porphyroblastic quartz monzonite stretches northward in an arc from Outlaw Bay to the northeast corner of the map sheet and down to the northeast shore of Eden Lake. A fine-grained massive pink granite lies within the centre of the quartz monzonite body, east of Eden Lake. Late pegmatites and aplites in the east half of the area are assumed to be related to a massive red granite centered on Eden Lake. Several intrusive bodies of quartz monzonite to granite composition lie along the west boundary of the area. These are weakly foliated and free of inclusions of gneisses and veins of the younger pegmatite.

Two areas near the northern boundary contain large rafts of metasedimentary and metavolcanic rocks related to the greenstone belt to the north.

Gneisses and associated Migmatites (unit 1)

A complex of siliceous metasedimentary and amphibolite gneisses is found along the shoreline of Outlaw Bay, in the southern part of the area, extending westward as far as Stag Lake. These generally occur as large rafts in the main granodiorite body (unit 2a) ranging in size from 10 to 1,000 m. It is not possible to establish any consistent stratigraphic relationships between the sub-units in the gneisses.

The most common inclusions consist of fine grained, light grey weathering psammitic gneisses. These occur throughout the granodiorite south of Eden Lake. Locally the psammite is garnetiferous and in some locations resembles the metagreywackes of the Burntwood River "Supergroup". Fine grained amphibolite and a biotite gneiss which is slightly more mafic than the psammite, are associated with these rocks. Rare occurrences of arkosic gneiss similar to some of the Sickle arkoses were observed.

A fine grained, layered amphibolite occurs sporadically and is locally interlayered with fine grained tuffaceous material. These are found on both the Outlaw Bay shoreline and further west near the southern end of Eden Lake. More massive mafic fragmental rocks were also noted on Outlaw Bay.

At two locations near the north end of Eden Lake the porphyroblastic quartz monzonite (unit 3a) contains abundant rafts of metasedimentary and metavolcanic rocks. The volcanic rocks have been tentatively identified as mafic to intermediate flow and fragmental rocks whereas the majority of the sedimentary material comprises a fine grained, light grey meta-arkose.

The gneisses also occur as more highly assimilated inclusions throughout the granodiorite (unit 2a) and the porphyroblastic quartz monzonite (unit 3a).

Granodiorite and Tonalite (unit 2); Foliated Granodiorite (unit 2a)

Medium to coarse grained grey granodiorite is the most common rock type in the southern part of the area. It is generally well foliated, weakly porphyroblastic and contains schlieren and small inclusions of biotite gneiss. It has been locally agmatized by younger granite along the

western shore of Eden Lake. In the eastern half of the area it is cut by numerous intersecting veins of pink to brick red pegmatite and buff to pink aplite.

The granodiorite is white to buff weathering and contains plagioclase, feldspar, quartz, biotite and hornblende. In most locations it contains small amounts of magnetite.

Massive Granodiorite (unit 2b)

In the Stag Lake area and west of Eden Lake the granodiorite is more massive, weakly foliated, and free of inclusions. It is not intruded by the pegmatite and aplite that is common in the eastern part of the area.

Tonalite (unit 2c)

Bodies of coarse grained hornblende tonalite, composed of plagioclase, quartz, hornblende and biotite, are found on Stag Lake, on the eastern arm of Outlaw Bay and at the north end of Eden Lake. The tonalite is white weathering and has a coarsely pitted surface due to preferential weathering of the hornblende megacrysts. It is well foliated and intruded by a network of white aplitic veins which are most resistant to weathering than the tonalite.

Granite and Quartz Monzonite (unit 3); Porphyroblastic Quartz Monzonite (unit 3a)

A large horseshoe-shaped outcrop belt of distinctive porphyroblastic quartz monzonite lies in the northeast corner of the map-area. It stretches from the northern end of Outlaw Bay up the eastern boundary of the area and down through the northern part of Eden Lake. In some locations on the west shore of Eden Lake the quartz monzonite contains inclusions of the granodiorite (unit 2a).

The quartz monzonite is very coarse grained, buff to pink weathering and contains numerous 1 to 3 cm rectangular blasts of pink feldspar. The blast size decreases to the southwest and the composition becomes more granitic. Generally the rock contains potassium-feldspar, some plagioclase, quartz, biotite and hornblende. Magnetite is usually abundant, giving the unit a high aeromagnetic signature.

The rock is well foliated and contains numerous small inclusions of psammitic gneiss, amphibolite and biotite gneiss (unit 1). It is cut by numerous intersecting veins of pegmatite, aplite and massive pink granite.

Massive fine grained Granite (unit 3b)

A fine to medium grained pink granite occupies the centre of the quartz monzonite body (unit 3a). The granite is non-foliated, homogeneous, equigranular and contains little or no magnetite. It is intruded by veins of younger pegmatite and aplite and contains few inclusions or schlieren.

Typically it contains potassium-feldspar, plagioclase, quartz, and biotite. The central part of the body lacks hornblende and magnetite but both of these are present in the granite ridges near the east shore of Eden Lake.

Massive red Syenogranite (unit 3c)

A dark pink to brick red granite, assumed to be the source of the late pegmatites and aplites throughout the area, is centered on Eden Lake. The composition varies from coarse grained pink granite to red syenogranite. It is non-foliated and contains no inclusions. In some locations on the west shore and on some of the islands on Eden Lake, large angular blocks of the grey granodiorite (unit 2a) are rafted and agmatized by the granite.

Massive medium grained Granite and Quartz Monzonite (unit 3d)

Several bodies of medium grained intrusive rocks occur along the southern half of the western boundary of the area. These vary in composition from granite to quartz monzonite. They are medium grained, grey to pink weathering, massive, and poorly foliated. No gneissic inclusions, schlieren or pegmatitic veins occur in these bodies. The granites contain minor chlorite in addition to plagioclase, potassium-feldspar, quartz and biotite, but magnetite is not as common as in the granites further east.

Economic Geology

Radiometric anomalies detected during the Federal/Provincial Uranium Reconnaissance Program (1977) outline an area centered on the porphyroblastic quartz monzonite (unit 3a) and the massive fine grained granite (unit 3b) in the northeastern part of the map sheet. Fluorite and andradite have been noted in the late pegmatites within these units. Fluorite, while not a common accessory mineral in granites, is known to occur in similar granitic regions elsewhere in Manitoba.

The only sulphide minerals noted in the area were sporadic occurrences of pyrite and pyrrhotite in rafts of amphibolite on Outlaw Bay, Stag Lake, and northwest of Eden Lake. These rafts locally contain small sulphide-bearing gossan zones. The granodiorite (unit 2a) and quartz monzonite (unit 3a) near these inclusions also contain traces of pyrite and pyrrhotite.

References

Geological Survey of Canada
1977: Uranium Reconnaissance Program Map 35364G.

McRitchie, W.D.
1976: Paskwachi-Waskaiowaka Regional Compilation; *Man. Min. Res. Div.*, Geol. Surv. Report of Field Activities 1976 GS-2.

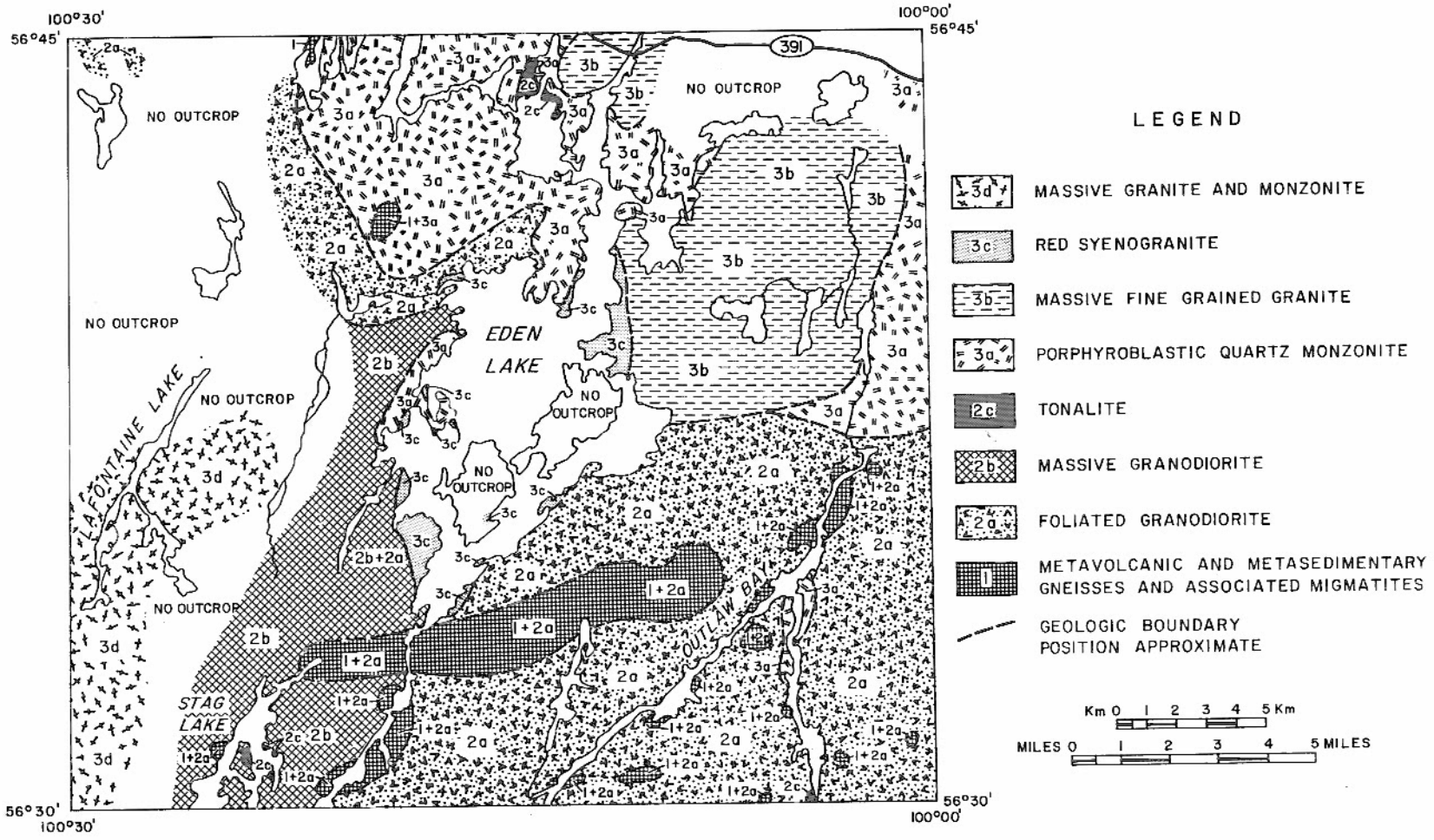

Figure GS-3-1: General Geology of the Eden Lake Area.