Saskatchewan

Bedrock geology of the Sandy Islands area, Wollaston Lake, Wollaston Domain (Parts of NTS 64L/03 and /06)

at 1:10 000 scale

Preliminary Geological Map (2024)

by T.M. Foley and D.D. Johnstone

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Geological mapping and interpretation was done by Tyrin Foley and Dillon Johnstone with assistance from Sarah Mills, Kevin Johnson, Owen Kenkel, Petra Squirra, Kees Carriere and Peyton Stewart during the summer of 2023.

This map was printed from the geologist's digital file. Geological data were processed using Microsoft Access®, and ArcGIS Pro® 3.2.2 software. Cartographic elements and layout were processed using Adobe® Illustrator® 2023. Base map utilizes CanVec 1:50 000-scale digital cartographic maps provided by Natural Resources Canada. Grid coordinates are NAD83 CSRS98 UTM zone 13.

The map is part of the Summary of Investigations 2024, Volume 2, and is available from https://publications.saskatchewan.ca/#/categories/5994.

This map accompanies the following publication:
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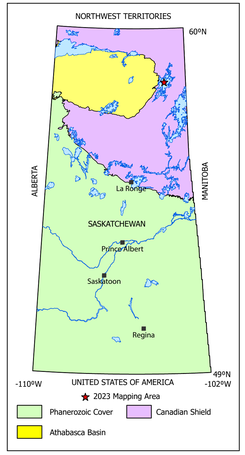
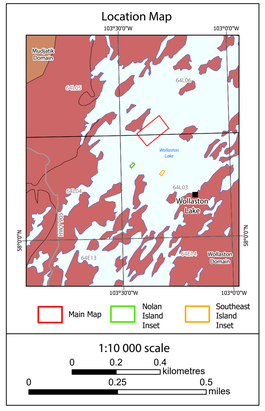
Foley, T. M. and Johnstone D.D. (2024): Bedrock geology of the Sandy Islands area, Wollaston Lake, Wollaston Domain (parts of NTS 64L/03 and /06); 1:10 000-scale preliminary map with Summary of Investigations 2024, Volume 2, Saskatchewan Geological Survey, Saskatchewan Ministry of Energy and Resources, Miscellaneous Report 2024-4.2-(1).





Legend

Quaternary cover

Carbonate–magnetite–apatite dyke: tan to brown, locally black and green; crystalline and equigranular, medium grained; homogenous composition; CI[1]: 5; carbonate (90%), magnetite (5%), apatite (5%) ±magnesiohornblende ±pyroxene; magnetic susceptibility: 30-47 (10^{-3} SI); radiometric signature: 20-35 counts per second (cps); millimetre-scale apatite aggregates; associated with centimetre-scale calc-silicate, pyroxene and amphibole lenses; cuts Gal.

Pegmatitic granite dyke: pink-red, orange to beige-white; medium grained to pegmatitic; homogenous composition; massive to weakly foliated; CI: 10-15; potassium-feldspar (40-45%), plagioclase (30-35%), quartz (20-25%), biotite (10-15%) ±magnetite ±tourmaline; magnetic susceptibility: 0.01-0.04 (10^{-3} SI); radiometric signature: 125-250 cps; contains leucogabbro xenoliths; associated with Car; cuts all units in the map area.

Quartz monzodiorite to granodiorite: grey, black, pink and creamy white; medium to coarse grained; heterogenous composition and fabric; weakly foliated to mylonitic; CI: 15-35; biotite (15-20%), hornblende (10-20%), magnetite (5-10%) ±clinopside ±titanite ±epidote ±muscovite ±chlorite ±calcite ±pyrite ±malachite; variable magnetic susceptibility: 20-65 (10^{-3} SI); radiometric signature: 150-295 cps; intruded by Gal and Bh.

Monzogabbro dyke: smoky grey to black; medium to coarse grained; sheeted and weakly foliated; CI: 20-30; plagioclase (40-45%), biotite (25-30%), potassium-feldspar (15-20%), hornblende (10-15%), clinopyroxene (5-10%), quartz (5%) ±sulfides; magnetic susceptibility: 93 (10^{-3} SI); radiometric signature: 86 cps; sharp contact with Gal.

Altered porphyritic dyke: light grey to light green; porphyritic; millimetre-scale veins of calcite and epidote; CI: 10-15; diopside (45-50%), scapolite (40-50%), muscovite (5-10%), biotite (5-10%), calcite (3-5%), titanite (2-5%) ±zircon ±epidote; magnetic susceptibility: 0.03-0.15 (10^{-3} SI); radiometric signature: 75-110 cps; sharp contact with Mfr; cuts Gal.

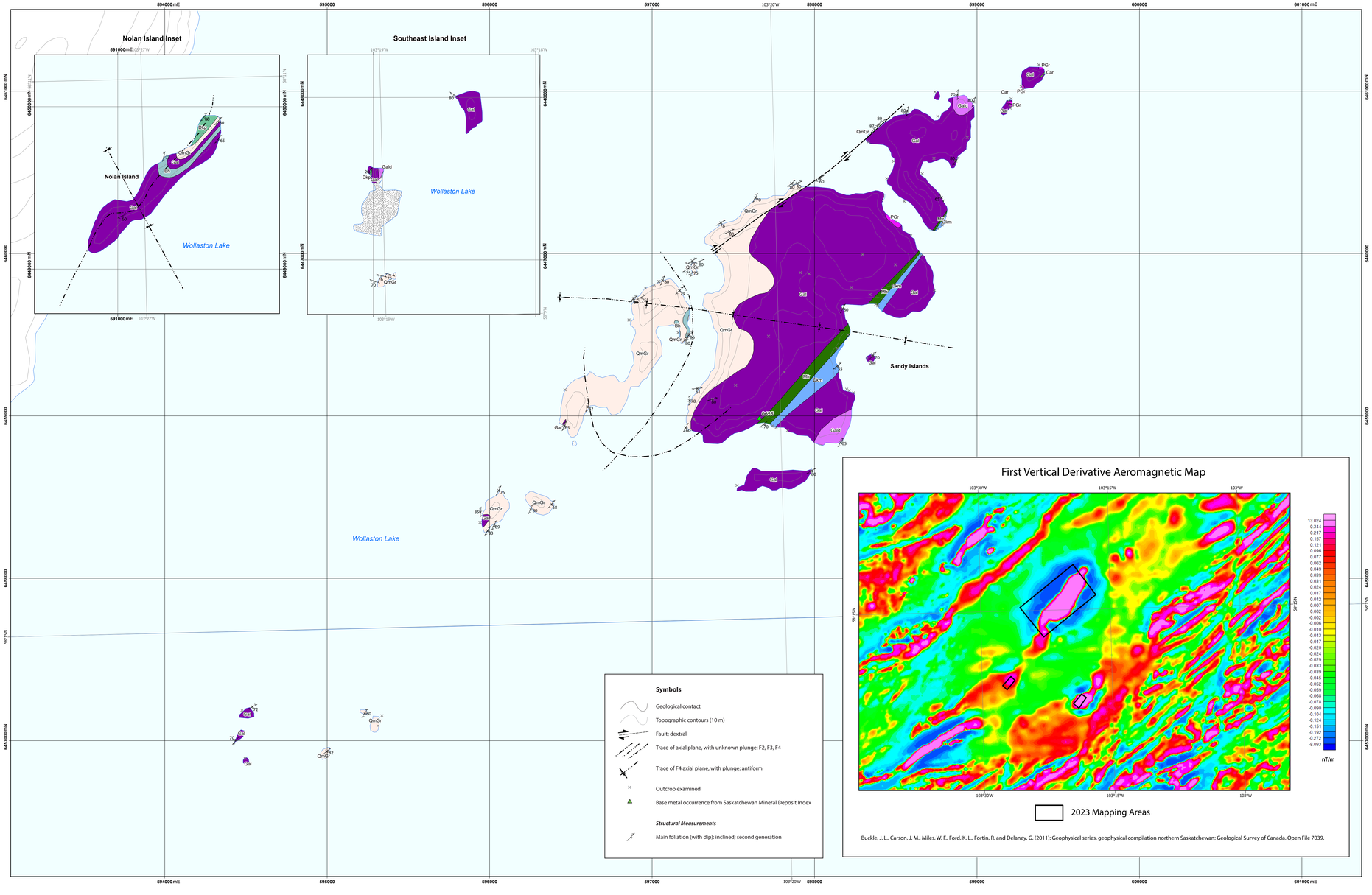
Fine-grained mafic rock: washed beige to grey-black; very fine to fine grained; homogenous composition; massive; characteristic and pervasive centimetre-scale *en échelon* calc-silicate veins; CI: 20-25; plagioclase (40-45%), potassium-feldspar (30%), biotite (20-25%), quartz (10-15%) ±titanite; magnetic susceptibility: 2.4-23.0 (10^{-3} SI); radiometric signature: 160-242 cps; sharp parallel, transposed contact to Dkp; cuts Gal.

Heterolithic breccia: grey-beige, black; fine- to medium-grained matrix, centimetre- to decimetre-scale subrounded to subangular clasts; bimodal clasts are amphibole-biotite and quartzofeldspathic composition and range; homogenous composition; massive to strongly foliated; CI 35-40; matrix mineralogy of feldspar (40-50%), quartz (20-25%), amphibole (20-25%), biotite (15-20%), magnetite (5%); magnetic susceptibility: 14-24 (10^{-3} SI); radiometric signature: 110-185 cps.

Leucogabbro: black, white, grey to blue and green; medium to coarse grained; homogenous composition; massive to weakly foliated, porphyroblastic; CI: 40-50; plagioclase (30%), hornblende (20-25%), potassium-feldspar (20%), biotite (15-20%), pyroxene (5-10%), quartz (5-10%), magnetite (5-10%) ±muscovite ±zircon ±chlorite ±titanite; magnetic susceptibility: 1-167 (10^{-3} SI); radiometric signature: 40-130 cps; intruded by Mfr, Dkm, Car and Dkp.

Leucogabbro: anorthositic and gabbroic; centimetre-scale primary igneous layering; magnetite porphyroblasts.

[1] CI: colour index of the rock is based on the percent of mafic minerals in the rock; it was used in the field to distinguish between mafic (>35), intermediate (35-15) and felsic (<15) rocks.



Buckle, J. L., Carson, J. M., Miles, W. F., Ford, K. L., Fortin, R. and Delaney, G. (2011): Geophysical series, geophysical compilation northern Saskatchewan; Geological Survey of Canada, Open File 7039.