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These data accompany

Preliminary Map P.3841, *Precambrian Geology of Kenogaming Township, Northern Swayze Area, Abitibi Greenstone Belt, Northeastern Ontario*.

-and-

Preliminary Map P.3842, *Precambrian Geology of Penhorwood Township, Northern Swayze Area, Abitibi Greenstone Belt, Northeastern Ontario*.

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Miscellaneous Release—Data 378 – Revised

Geological, Geochemical and Geophysical Data Related to Penhorwood and Kenogaming Townships, Northern Swayze Area, Abitibi Greenstone Belt, Northeastern Ontario

by L.E.D. Vice and P.J. MacDonald

This publication can be downloaded from

http://www.geologyontario.mndm.gov.on.ca/mndmaccess/mndm_dir.asp?type=pub&id=MRD378-REV

This digital data release contains field data, field photographs, whole-rock geochemical data, geochronology information, and magnetic susceptibility data related to 1:20 000 scale mapping of Penhorwood and Kenogaming townships, along with parts of Pharand and Regan townships, northeastern Swayze area (Project NE-18-003), collected during the summers of 2018 and 2019. This revision provides an additional 21 element analyses for 140 samples and omits unreliable Rh data for 2 samples (see note below for details). Also included are previously published *Summary of Field Work and Other Activities* articles related to the project. This release comprises 192 photographs (as *.jpg* files), 8 Microsoft® Excel® for Office 365 (*.xlsx*) workbook files and 9 documents in portable document format (*.pdf*). These data augment Preliminary Maps P.3842, *Precambrian Geology of Penhorwood Township, Northern Swayze Area, Abitibi Greenstone Belt, Northeastern Ontario*, and P.3841, *Precambrian Geology of Kenogaming Township, Northern Swayze Area, Abitibi Greenstone Belt, Northeastern Ontario*; the geological legend for the maps is also provided.

The authors would like to acknowledge the bedrock geology mapping conducted by Justin Bisailon, Sarah Bowie and Sarah McLeod during the 2018 field season that is contained herein (i.e., stations identified with the prefix “18JB”, “18SB” and “18SM”, respectively).

CONTENTS

Data are organized into 6 folders, 1 of which has 4 subfolders:

1. Field Data
2. Geology and Photographs
3. Geochemistry
4. Geochronology
5. Geophysics
6. Poster and Publications

1. Field Data. This folder contains 4 Microsoft® Excel® for Office 365 (.xlsx) files.

MRD378_Penhorwood-Kenogaming twps_Station field notes.xlsx consists of 2 worksheets.

These worksheets also contain the location data (“Easting” and “Northing”) for 658 stations and 1315 outcrops; the Universal Transverse Mercator (UTM) co-ordinates are provided in North American Datum 1983 (NAD83), Zone 17. For explanations about rock codes, see “P.3842_Legend.pdf” and “P.3841_Legend.pdf” in the folder “Geology and Photographs”.

“Station_Summary” worksheet provides station locations with accompanying GPS location quality data, a summary of corresponding field rock codes (as published on Preliminary Maps P.38432 and P.3841), number of representative photograph(s) (as provided in the folder “Geology and Photographs”), geochemistry sample numbers (with data provided in the folder “Geochemistry”) and geochronology sampling sites (with data provided in the folder “Geochronology”).

“Outcrop_Summary” worksheet provides the outcrop stations with their accompanying rock codes and notes.

MRD378_Penhorwood-Kenogaming twps_Lithology field notes.xlsx consists of 4 worksheets.

These worksheets, separated into different rock types, provide the lithological descriptions for all rocks mapped in the area during the summer of 2018.

“Volcanic Flows” worksheet contains descriptive information for observations of 229 lithologies.

“Pyroclastic Volcanic Rocks” worksheet contains descriptive information for observations of 89 lithologies.

“Metasedimentary Rocks” worksheet contains descriptive information for observations of 80 lithologies.

“Intrusive Rocks” worksheet contains descriptive information for observations of 386 lithologies.

MRD378_Penhorwood-Kenogaming twps_Structure field notes.xlsx consists of 1 worksheet.

“Structure” worksheet contains structural measurements and notes from mapping during the summer of 2018.

MRD378_Penhorwood-Kenogaming twps_Alteration-Mineralization.xlsx consists of 2 worksheets.

“Alteration” worksheet provides alteration observations collected while mapping during the summer of 2018.

“Mineralization” worksheet provides mineralization observations collected while mapping during the summer of 2018.

2. Geology and Photographs. This folder contains 2 portable document format (.pdf) files, 1 Microsoft® Excel® for Office 365 (.xlsx) file and 1 subfolder, “MRD378_Penhorwood-Kenogaming twps_Field Photos”, with 192 field photographs (as .jpg files).

P.3842_Legend.pdf and *P.3841_Legend.pdf* are the legends used for Ontario Geological Survey Preliminary Map P.3842, *Precambrian Geology of Penhorwood Township, Northern Swayze Area, Abitibi Greenstone Belt, Northeastern Ontario* (MacDonald, Vice and Bisailon 2020), and P.3841, *Precambrian Geology of Kenogaming Township, Northern Swayze Area, Abitibi Greenstone Belt*,

Northeastern Ontario (Vice and MacDonald 2019), respectively. Material in the *Photo Description* file and in the *Station field notes* and *Structure field notes* files in the Field Data folder is cross-referenced to rock codes in these legends.

MRD378_Penhorwood-Kenogaming twps_Photo Descriptions.xlsx consists of 1 worksheet, which provides station identification and location, rock code (as shown on “P.3842_Legend.pdf” and “P.3841_Legend.pdf”), brief photo description, identification of the scale used, and orientation of the 192 photos. Photo file names for the *.jpg* files are based on station location, e.g., 18JB002_4 is photograph number 4 at station JB002 in 2018. Station location information is provided in UTM co-ordinates, Zone 17, NAD83.

3. Geochemistry. This folder contains 1 Microsoft® Excel® for Office 365 (*.xlsx*) file and 3 portable document format (*.pdf*) files.

MRD378-REV_Penhorwood-Kenogaming twps_Geochemistry.xlsx consists of 2 worksheets.

Both worksheets also contain sample identification, “Rock Type” for each sample collected and the station and station location data (“Easting”, “Northing”, and “Township”); UTM co-ordinates are provided in North American Datum 1983 (NAD83), Zone 17.

“Geochemistry” worksheet contains 305 whole-rock geochemical analyses acquired from samples collected as part of this study during the summers of 2018 and 2019. The geochemical analyses were performed at the Geoscience Laboratories (Geo Labs), Ontario Geological Survey, Sudbury. The methods used, lower detection limit for each method, and reported units for each method are included for each element (and oxide) listed. The methods are described in more detail in the accompanying files “*2018 Geo Labs Brochure.pdf*” and “*2019 Geo Labs Brochure.pdf*”.

Please note that the abbreviation “du” (for “data unreliable”) is used in the spreadsheet where data from the original MRD release have been removed after examination of the instrumental quality control data obtained during sample analysis indicated an elevated background for Rh. This background may have significantly affected the measured concentrations, which now are considered unreliable and not to be used.

“‡ Additional Analyses” worksheet contains 21 additional element analyses for 140 samples acquired from samples collected as part of this study during the summer of 2018. The geochemical analyses were performed at the Geoscience Laboratories (Geo Labs), Ontario Geological Survey, Sudbury. The method used, lower detection limit and reported units for the method are included for each element listed. The method is described in more detail in the accompanying file “*2020 Geo Labs Brochure.pdf*”. Note, the detection limit for these analyses may differ from those in the “Geochemistry” worksheet for the same method.

2018 Geo Labs Brochure.pdf describes the analytical methods used at the Ontario Geological Survey Geoscience Laboratories in 2018.

2019 Geo Labs Brochure.pdf describes the analytical methods used at the Ontario Geological Survey Geoscience Laboratories in 2019.

2020 Geo Labs Brochure.pdf describes the analytical methods used at the Ontario Geological Survey Geoscience Laboratories in 2020.

4. Geochronology. This folder contains 1 Microsoft® Excel® for Office 365 (*.xlsx*) file.

MRD378_Penhorwood-Kenogaming twps_Geochronology.xlsx provides information about geochronological samples presented on maps P.3842 and P.3841. Sample location data provided as UTM co-ordinates in North American Datum 1983 (NAD83), Zone 17.

5. Geophysics. This folder contains 1 Microsoft® Excel® for Office 365 (.xlsx) file.

MRD378_Penhorwood-Kenogaming twps_Magnetic Susceptibility.xlsx contains 1 worksheet.

“MagSus_Data” worksheet provides magnetic susceptibility data from the study area collected during the summer of 2018.

Measurements were collected using Exploranium® KT-10 magnetic susceptibility meters. Magnetic susceptibility is defined as the degree to which a substance can be magnetized and, in this case, is expressed as the ratio of the intensity of magnetization (k) to the ratio of the Earth’s magnetic field to magnetic field induced by the susceptibility meter. The readings (k) are expressed as 10^{-3} times the SI unit for susceptibility and are dimensionless. The minimum value that can be recorded by the meter is 0.001×10^{-3} SI units; the largest value is 999×10^{-3} SI units. Sample location information is given in UTM co-ordinates, Zone 17, NAD83.

6. Poster and Publication. This folder contains 3 portable document format (.pdf) files that are publications associated with this project.

MRD378_Penhorwood-Kenogaming twps_SoFW2018-06 MacDonald Bisailon Vice.pdf: An article (MacDonald, Bisailon and Vice 2018), published in the Ontario Geological Survey *Summary of Field Work and Other Activities, 2018* volume, outlining the activities and results of field work in Penhorwood Township (Project NE-18-003) during the summer of 2018.

MRD378_Penhorwood-Kenogaming twps_SoFW2018-07 Vice and MacDonald.pdf: An article (Vice and MacDonald 2018), published in the Ontario Geological Survey *Summary of Field Work and Other Activities, 2018* volume, outlining the activities and results of field work in Kenogaming Township (Project NE-18-003) during the summer of 2018.

MRD378_Penhorwood-Kenogaming twps_POSTER_OGS Bedrock Mapping Projects in NE Ontario_OPES 2019.pdf is a poster, entitled “Precambrian Bedrock Mapping Projects in Northeastern Ontario”, presented at the 2018 Ontario Prospectors Exploration Showcase (OPES) in Thunder Bay, on April 2–3, 2019.

References and Related Publications

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- Gemmell, T.P. and MacDonald, P.J. 2017. Precambrian geology of the Yeo and Chester townships area, Chester intrusive complex, southern Abitibi greenstone belt; Ontario Geological Survey, Preliminary Map P.3817, 1:20 000.
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- Krogh, T.E., Corfu, F., Davis, D.W., Dunning, G.R., Heaman, L.M., Kamo, S.L., Machado, N., Greenough, J.D. and Nakamura, E. 1987. Precise U-Pb isotopic ages of diabase dikes and mafic to ultramafic rocks using trace amounts of baddeleyite and zircon; *in* Mafic Dike Swarms, Geological Association of Canada, Special Paper 34, p.147-152.
- MacDonald, P.J., Bisailon, J.M. and Gemmell, T.P. 2018. Precambrian geology of the Osway and Huffman townships area, Opeepeesway basin, southern Abitibi greenstone belt; Ontario Geological Survey, Preliminary Map P.3819, scale 1:20 000.
- MacDonald, P.J., Bisailon, J.M. and Vice, L.E.D. 2018. Preliminary geology of Penhorwood Township, northern Swayze area, Abitibi greenstone belt; *in* Summary of Field Work and Other Activities, 2018, Ontario Geological Survey, Open File Report 6350, p.6-1 to 6-10.

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- Osmani, I.A. 1991. Proterozoic mafic dike swarms in the Superior Province of Ontario; *in* Geology of Ontario, Ontario Geological Survey, Special Volume 4, Part 1, p.661-681.
- Vice, L.E.D. and MacDonald, P.J. 2018. Preliminary geology of Kenogaming Township, northern Swayze area, Abitibi greenstone belt; *in* Summary of Field Work and Other Activities, 2018, Ontario Geological Survey, Open File Report 6350, p.7-1 to 7-9.
- 2019. Precambrian geology of Kenogaming Township, northern Swayze area, Abitibi greenstone belt, northeastern Ontario; Ontario Geological Survey, Preliminary Map P.3841, scale 1:20 000.
- 2021. Precambrian geology of Reeves Township, northern Swayze area, Abitibi greenstone belt, northeastern Ontario; Ontario Geological Survey, Preliminary Map P.3847, scale 1:20 000.
- 2021. Precambrian geology of Sewell Township, northern Swayze area, Abitibi greenstone belt, northeastern Ontario; Ontario Geological Survey, Preliminary Map P.3848, scale 1:20 000.