ISBN 978-1-4606-8063-6 (CD)
ISBN 978-1-4606-8062-9 (zip file)

THESE TERMS GOVERN YOUR USE OF THIS DOCUMENT

Your use of this electronic information product ("EIP"), and the digital data files contained on it (the "Content"), is governed by the terms set out on this page ("Terms of Use"). By opening the EIP and viewing the Content , you (the "User") have accepted, and have agreed to be bound by, the Terms of Use.

EIP and Content: This EIP and Content is offered by the Province of Ontario's *Ministry of Northern Development and Mines* (MNDM) as a public service, on an "as-is" basis. Recommendations and statements of opinions expressed are those of the author or authors and are not to be construed as statement of government policy. You are solely responsible for your use of the EIP and its Content. You should not rely on the Content for legal advice nor as authoritative in your particular circumstances. Users should verify the accuracy and applicability of any Content before acting on it. MNDM does not guarantee, or make any warranty express or implied, that the Content is current, accurate, complete or reliable or that the EIP is free from viruses or other harmful components. MNDM is not responsible for any damage however caused, which results, directly or indirectly, from your use of the EIP or the Content. MNDM assumes no legal liability or responsibility for the EIP or the Content whatsoever.

Links to Other Web Sites: This EIP or the Content may contain links, to Web sites that are not operated by MNDM. Linked Web sites may not be available in French. MNDM neither endorses nor assumes any responsibility for the safety, accuracy or availability of linked Web sites or the information contained on them. The linked Web sites, their operation and content are the responsibility of the person or entity for which they were created or maintained (the "Owner"). Both your use of a linked Web site, and your right to use or reproduce information or materials from a linked Web site, are subject to the terms of use governing that particular Web site. Any comments or inquiries regarding a linked Web site must be directed to its Owner.

Copyright: Canadian and international intellectual property laws protect the Content. Unless otherwise indicated, copyright is held by the Queen's Printer for Ontario.

It is recommended that reference to the Content be made in the following form:

Van De Kerckhove, S.R. and Easton, R.M. 2016. Geological, geochemical and geophysical data from the Nepewassi area, Central Gneiss Belt, Grenville Province; Ontario Geological Survey, Miscellaneous Release—Data 338.

Use and Reproduction of Content: The EIP and the Content may be used and reproduced only in accordance with applicable intellectual property laws. *Non-commercial* use of unsubstantial excerpts of the Content is permitted provided that appropriate credit is given and Crown copyright is acknowledged. Any substantial reproduction of the Content or any *commercial* use of all or part of the Content is prohibited without the prior written permission of MNDM. Substantial reproduction includes the reproduction of any illustration or figure, such as, but not limited to graphs, charts and maps. Commercial use includes commercial distribution of the Content, the reproduction of multiple copies of the Content for any purpose whether or not commercial, use of the Content in commercial publications, and the creation of value-added products using the Content.

Contact:

FOR FURTHER INFORMATION ON	PLEASE CONTACT:	BY TELEPHONE:	BY E-MAIL:
The Reproduction of the EIP or Content	MNDM Publication Services	Local: (705) 670-5691 Toll-Free: 1-888-415-9845, ext. 5691 (inside Canada, United States)	Pubsales.ndm@ontario.ca
The Purchase of MNDM Publications	MNDM Publication Sales	Local: (705) 670-5691 Toll-Free: 1-888-415-9845, ext. 5691 (inside Canada, United States)	Pubsales.ndm@ontario.ca
Crown Copyright	Queen's Printer	Local: (416) 326-2678 Toll-Free: 1-800-668-9938 (inside Canada, United States)	Copyright@ontario.ca

For information on purchasing all publications, including digital data, contact:

Publication Sales
Ministry of Northern Development and Mines
933 Ramsey Lake Rd., Level A3
Sudbury, Ontario P3E 6B5
Tel: 1-888-415-9845, ext. 5691 (toll-free inside Canada and the United States)
Tel: (705) 670-5691 (local calls)
Fax: (705) 670-5770

Users of OGS products are encouraged to contact those Aboriginal communities whose traditional territories may be located in the mineral exploration area to discuss their project.

Miscellaneous Release—Data 338

Geological, Geochemical and Geophysical Data from the Nepewassi Area, Central Gneiss Belt, Grenville Province

by S.R. Van De Kerckhove[1] and R.M. Easton[2]

This publication can be downloaded from
http://www.geologyontario.mndm.gov.on.ca/mndmaccess/mndm_dir.asp?type=pub&id=MRD338

This digital release contains a geological map, a station location map, field notes, outcrop photographs, whole rock geochemical data, and magnetic susceptibility and scintillometer data collected as part of the Nepewassi mapping project (Project Unit 13-029) between June 2013 and September 2015, and related publications by the authors.

The Nepewassi mapping project was undertaken to improve our understanding of the Nepewassi domain of the Central Gneiss Belt of the Grenville Province. The project area is located to the west of Lake Nipissing, and consists of a regional study area, bounded by latitudes 46°05′N to 46°27′N and longitudes 80°05′W to 80°30′W, and a detailed study area, bounded by latitudes 46°11′N to 46°19′N and longitudes 80°11′W to 80°26′W. S.R. Van De Kerckhove worked in the regional study area in 2013, but spent most of the 2014 field season mapping in the detailed study area as part of the requirements of an MSc thesis study at the Department of Earth Sciences at Dalhousie University in Halifax, Nova Scotia (Culshaw, Van De Kerckhove and Jamieson 2013; Van De Kerckhove 2014, 2015). R.M. Easton mapped in the regional study area in 2014 (Easton 2014). This digital data release contains all the data collected as part of both studies.

This release comprises 492 images (as *.jpg* files), 6 Microsoft® Excel® 2010 (*.xlsx*) workbook files and 12 documents in portable document format (*.pdf*).

---

[1] *Department of Earth Sciences, Dalhousie University, Halifax, Nova Scotia B3H 4R2*
[2] *Earth Resources and Geoscience Mapping Section, Ontario Geological Survey, Sudbury, Ontario P3E 6B5*

Data are organized in 6 folders:

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

1. Field Data. This folder contains 2 Microsoft® Excel® 2010 (*.xlsx*) workbook files. The workbook files in this folder contain raw data collected while working in the field during the summers of 2013 and/or 2014 using a customized ESRI® ArcPad® application on a portable computer (Trimble® Juno™ SB Handheld).

MRD338_Nepewassi_Field Data_RME-2014.xlsx contains 7 worksheets of field notes collected by R.M. Easton during the 2014 field season from the regional study area, bounded by latitudes 46°05′N to 46°27′N and longitudes 80°05′W to 80°30′W. Note that the ArcPad® station numbers do not include the 1000 prefix used elsewhere in this digital data release (e.g., ArcPad® station number 14RME050 is equivalent to 14RME-1050 and so on) because of the limitations of the software used in ArcPad®. The original files have been edited and abridged; in particular, blank columns have been removed from the original files. Some columns, such as Object Identifier and Lithology Identifier, have been retained in the workbooks to facilitate the import of these files into either ESRI® ArcGIS® or database software.

"Station" worksheet contains a brief description of each station visited, including descriptions of the observed outcrops, as well as the date and time of each visit and the geographic co-ordinates for each station (in both Universal Transverse Mercator (UTM) co-ordinates and in latitude and longitude using North American Datum 1983 (NAD83, Zone 17)).

"Intrusive" worksheet contains a description of each outcrop classified as an intrusive rock, regardless of whether it was metamorphosed or not.

"Metamorphic" worksheet contains a description of each outcrop classified as a metamorphic rock.

"Sedimentary" worksheet contains a description of each outcrop classified as a metasedimentary rock.

"Structure" worksheet contains any planar, linear, and curvilinear (folded) structural features measured in 2014, including the classification, orientation, and a brief description for each feature. Abbreviations in this worksheet correspond to those listed in Jackson, Muir and Romkey (1995, 2010).

"Photo" worksheet contains a brief description of each photographic site in the field.

"Sample" worksheet contains a brief description of each rock sample collected in the field, along with the purpose for collecting each sample.

MRD338_Nepewassi_Field Data_SVDK-2013-2014.xlsx contains 9 worksheets of field notes collected by S.R. Van De Kerckhove during the 2013 and 2014 field seasons. Data are located primarily in the detailed study area, bounded by latitudes 46°11′N to 46°19′N and longitudes 80°11′W to 80°26′W. The original files have been edited and abridged; in particular, blank columns have been removed from the original files. Some columns, such as Object Identifier and Lithology Identifier, have been retained in the workbooks to facilitate the import of these files into either ESRI® ArcGIS® or database software.

"Station" worksheet contains a brief description of each station visited in 2014, including descriptions of the observed outcrops, as well as the date and time of each visit and the geographic co-ordinates for each station (in both UTM co-ordinates and in latitude and longitude using North American Datum 1983 (NAD83, Zone 17)).

"Intrusive" worksheet contains a description of each outcrop, visited in 2014, which was classified as an intrusive rock, regardless of whether it was metamorphosed or not.

"Metamorphic" worksheet contains a description of each outcrop, visited in 2014, which was classified as a metamorphic rock.

"Sedimentary" worksheet contains a description of each outcrop, visited in 2014, which was classified as a metasedimentary rock.

"Structure" worksheet contains any planar, linear, and curvilinear (folded) structural features measured in 2014, including the classification, orientation, and a brief description for each feature. Abbreviations in this worksheet correspond to those listed in Jackson, Muir and Romkey (1995, 2010).

"Photo" worksheet contains a brief description of each photographic site in the field in 2014.

"Sample" worksheet contains a brief description of each rock sample collected in the field in 2014, along with the purpose for collecting each sample.

"Station_2013" worksheet contains a brief description of each station visited in 2013. Geographic co-ordinates for each station are provided in both UTM co-ordinates and latitude and longitude in NAD83, Zone 17.

"Structure_2013" worksheet contains any planar, linear, and curvilinear (folded) structural features measured in 2013.

2. Geochemistry. This folder contains 1 Microsoft® Excel® 2010 (*.xlsx*) file and 1 portable document format *(.pdf*) file.

MRD338_Nepewassi_Major and Trace Elements.xlsx consists of 1 worksheet that contains the results of all geochemical analyses 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. This worksheet also contains location data ("Easting", "Northing" and "Township"), "Rock Type", and stratigraphic information, if known, for each sample collected; UTM co-ordinates are provided in NAD83, Zone 17.

2015 Geo Labs Brochure.pdf describes the analytical methods used at the Ontario Geological Survey Geoscience Laboratories.

3. Geology. This folder contains 1 Microsoft® Excel® 2010 (*.xlsx*) file and 3 portable document format *(.pdf*) files.

MRD338_Nepewassi_Corporate Data.xlsx contains 3 worksheets.

"Geochronology" worksheet contains geochronology data for the regional and detailed study areas that were available at the start of the study in 2014.

"GSC Lake Sediment" worksheet contains lake sediment geochemical data collected by the Geological Survey for the regional and detailed study areas. Data are *from* Hornbrook and Fiske (1988).

"MDI" worksheet contains annotated mineral deposit occurrence information from the Ontario Geological Survey Mineral Deposit Inventory (MDI) database (Ontario Geological Survey 2015).

MRD338_Nepewassi_Figure 1_Detailed Area_Geology.pdf provides a 1:20 000 scale geological map of the detailed study area, prepared by S.R. Van De Kerckhove based on field work in 2013 and 2014 and laboratory and petrographic studies conducted in 2014 and 2015.

MRD338_Nepewassi_Figure 2_Detailed Area_Station Locations.pdf provides a 1:20 000 scale map showing station locations and station numbers for the detailed study area, prepared by S.R. Van De Kerckhove based on field work in 2013 and 2014.

MRD338_Nepewassi_Field Trip Guide(Easton).pdf is a field trip guidebook, with road log, for a one-day trip that includes field trip stops in both the detailed and regional study areas. The trip route follows highways 64 and 535. The guidebook was prepared by R.M. Easton in April 2016.

4. Geophysics. This folder contains 2 Microsoft® Excel® 2010 (*.xlsx*) files.

MRD338_Nepewassi_Magnetic Susceptibility Data.xlsx contains 2 worksheets.

"Magnetic Susceptibilty" worksheet contains all magnetic susceptibility data from the detailed study area collected during the summer of 2014.

Measurements were collected using an Exploranium® KT-10 magnetic susceptibility meter. 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 0.01×10^{-3} SI units; the largest value is 999×10^{-3} SI units. Sample location information is provided as UTM co-ordinates, NAD83, Zone 17.

"Pick Lists, Notes" worksheet provides additional information about the pick-lists for fields ("Geological Province", "Meter Number", "UTM Zone", "Rock Type Pick List", "Rock Types Corresponding to Pick List", "Dike Swarm Name", "Metamorphic Grade") used in the workbook.

MRD338_Nepewassi_Scintillometer Data.xlsx contains 2 worksheets.

"Scintillometer" worksheet contains scintillometer data from the regional study area and the detailed study area collected during the summer of 2014.

Measurements were collected using an Exploranium® GR-130 MiniSpec gamma-ray spectrometer, serial number 4885, calibrated on February 22, 2006, using a NaI crystal and software version 501GEO. The instrument was stabilized daily, and data were recorded using the assay mode with a 5-minute count time. Quoted accuracy is 0.1% K, 0.4 ppm U, and 0.7 ppm Th for a sample with 2% K, 2 ppm U and 8 ppm Th. Sample location information is provided as UTM co-ordinates, NAD83, Zone 17. Easton (2009) provides precision and reproducibility data for the instrument.

"Pick Lists, Notes" worksheet provides additional information about the pick-lists for fields ("Geological Province", "Meter Number", "UTM Zone", "Rock Type Pick List", "Rock Types Corresponding to Pick List", "Dike Swarm Name", "Metamorphic Grade") used in the workbook.

5. Photographs. This folder contains 4 subfolders consisting of 492 images (as *.jpg* files) and 4 portable document format *(.pdf*) files.

"Regional Photos" subfolder contains 160 photographs (as *.jpg* files) related to the regional mapping study conducted by R.M. Easton. Each photograph is labelled with its corresponding station number for the outcrop at which the photo was taken (e.g., 14RME-1074-2.jpg).

MRD338_Nepewassi_Regional Photos(Easton)_Captions.pdf provides the photograph number (with station location), a brief photo description and identifies the scale used in the photo. Station location information is provided as UTM co-ordinates, NAD83, Zone 17.

"Detailed Study Area" subfolder contains 240 photographs (as *.jpg* files) related to the detailed mapping study conducted by S.R. Van De Kerckhove. Each photograph is labelled with its corresponding station number for the outcrop at which the photo was taken (e.g., 14SV-0050.jpg).

MRD338_Nepewassi_Detailed Photos(VanDeKerckhove)_Captions.pdf provides the photograph number (with station location), a brief photo description and identifies the scale used in the photo. Station location information is provided as UTM co-ordinates, NAD83, Zone 17.

"Photomicrographs" subfolder contains detailed photomicrographs, and petrographic analyses and descriptions performed by S.R. Van De Kerckhove for samples collected from the detailed study area. Also provided are 81 individual photomicrographs (as *.jpg* files).

MRD338_Nepewassi_Thin Sections(VanDeKerckhove)_Descriptions.pdf provides petrographic descriptions with accompanying photomicrographs.

"Ziron Images" subfolder contains 11 back-scatter scanning electron microscope images (as *.jpg* files) of zircons from 4 samples of the West Bay migmatite. These images were taken to better understand why the whole-rock geochemical analyses of samples from the West Bay migmatite exhibited a significant difference in zirconium content (>200 ppm Zr) between the X-ray fluorescence (XRF) and inductively coupled plasma mass spectrometry (ICP–MS) methods.

MRD338_Nepewassi_Zircon Images(Easton)_Captions.pdf provides the photograph name (with station location) and descriptive notes about the photo. Station location information for the sample is provided as UTM co-ordinates, NAD83, Zone 17.

6. Publications. This folder contains 4 portable document format (*.pdf*) files for publications associated with this project.

MRD338_SoFW2013-18_Culshaw et al.pdf is an article (Culshaw, Van de Kerckhove and Jamieson 2013), published in the Ontario Geological Survey *Summary of Field Work and Other Activities, 2013* volume, describing reconnaissance field work conducted in the regional study area during the summer of 2013.

MRD338_SoFW2014-16_Easton.pdf is an article (Easton 2014), published in the Ontario Geological Survey *Summary of Field Work and Other Activities, 2014* volume, describing reconnaissance field work conducted in the regional study area in the summer of 2014.

MRD338_SoFW2014-17_VanDeKerckhove.pdf is an article (Van De Kerckhove 2014), published in the Ontario Geological Survey *Summary of Field Work and Other Activities, 2014* volume, describing field work conducted in the detailed study area during the summer of 2014.

MRD338_SoFW2015-20_VanDeKerckhove.pdf is an article (Van De Kerckhove 2015), published in the Ontario Geological Survey *Summary of Field Work and Other Activities, 2015* volume, describing laboratory studies in 2015 related to the detailed study area.

Acknowledgments

Some of the digital data on this release were collected during field studies that constitute part of the requirements of an MSc thesis by the senior author at the Department of Earth Sciences, Dalhousie University, under the supervision of Professors Nicholas Culshaw and Rebecca Jamieson. This work was supported by the Ontario Geological Survey (OGS) as part of a collaborative bedrock mapping agreement with Dalhousie University. The Ontario Geological Survey provided support for the 2014 mapping season, geophysical data maps, thin and polished sections for petrographic study, and geochemical analysis on a number of rock samples. Further information pertaining to this thesis study is available through the senior author. Further information pertaining to the regional project is available through the second author.

References

Culshaw, N., Van de Kerckhove, S.[R.] and Jamieson, R.A. 2013. Reconnaissance geological mapping in Nepewassi domain, Central Gneiss Belt, Grenville Province; *in* Summary of Field Work and Other Activities, 2013, Ontario Geological Survey, Open File Report 6290, p.18-1 to 18-5.

Easton, R.M. 2009. Characterization of rock units in the Grenville and Southern Provinces by *in-situ* geophysical measurements and geochemistry; *in* Summary of Field Work and Other Activities, 2009, Ontario Geological Survey, Open File Report 6240, p.9-1 to 9-4.

——— 2014. Geology and mineral potential of the Nepewassi domain, Central Gneiss Belt, Grenville Province; *in* Summary of Field Work and Other Activities, 2014; Ontario Geological Survey, Open File Report 6300, p.16-1 to 16-12.

Hornbrook, E.H.W. and Friske, P.W.B. 1988. Regional lake sediment and water geochemical reconnaissance data, Bruce area, Ontario; Geological Survey of Canada, Open File 1639, 141p.

Jackson, S.L., Muir, T.L. and Romkey, S.W. 1995. A library of digital bedrock mapping symbols. Part 1: Figures and descriptions; Ontario Geological Survey, Open File Report 5909, 56p.

——— 2010. Digital bedrock mapping symbols; Ontario Geological Survey, Miscellaneous Release—Data 252.

Ontario Geological Survey 2015. Mineral Deposit Inventory—2015; Ontario Geological Survey, Mineral Deposit Inventory (July 2015 update), online database.

Van De Kerckhove, S.R. 2014. Reconnaissance geological mapping in Nepewassi domain, Central Gneiss Belt, Grenville Province; *in* Summary of Field Work and Other Activities, 2014, Ontario Geological Survey, Open File Report 6300, p.17-1 to 17-5.

——— 2015. Geologic studies in the Nepewassi domain, Central Gneiss Belt, Grenville Province; *in* Summary of Field Work and Other Activities, 2015, Ontario Geological Survey, Open File Report 6313, p.20-1 to 20-8.