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Miscellaneous Release—Data 387

Compilation of Soil, Rock and Lake Sediment Sampling Data from the Red Lake Area, Northwestern Ontario

Compiled by S.O. Lewis¹

This publication can be downloaded from

http://www.geologyontario.mndm.gov.on.ca/mndmaccess/mndm_dir.asp?type=pub&id=MRD387

This digital data release includes all of the soil, rock and lake sediment geochemical data collected by Laurentian Goldfields Ltd. (now PureGold Mining Inc.), from 2011 to 2012, at their Goldpines North and Goldpines South properties. The 4287 soil samples, 214 whole-rock samples, and 144 lake sediment samples were collected from an approximately 163 km² area in the Ear Falls area southeast of Red Lake, Ontario. These data were compiled from assessment files AFRI# 20000007485, 20000007991 and 2000008062. The analytical, quality assurance and quality control details can be found in the respective assessment file. All samples locations are provided using North American Datum 1983 (NAD83) in Zone 15. This release comprises 3 Microsoft® Excel® for Office 365 (.xlsx) workbook files and 1 document in portable document format (.pdf).

MRD387_Lake Sediments_Geochemistry.xlsx consists of 2 worksheets.

“20000007485” worksheet provides the geochemical analyses of 144 lake sediment samples from assessment file AFRI# 20000007485 (Chiang and Rennie 2013a). Samples were analyzed by Activation Laboratories in Ancaster, Ontario, using their Ultratrace method; UTM co-ordinates are provided in NAD83, Zone 15.

“Abbreviations” worksheet provides a list of the abbreviations used in the workbook with explanations.

MRD387_Rocks_Geochemistry.xlsx consists of 4 worksheets. Note that sample location information and/or rock names and descriptions are not available for every sample that was analyzed. UTM co-ordinates are provided in NAD83, Zone 15.

“20000007485” worksheet provides geochemical analyses of 162 rock samples from assessment file AFRI# 20000007485 (Chiang and Rennie 2013a); UTM co-ordinates are provided in NAD83, Zone 15. Samples were analyzed by ALS Minerals in North Vancouver, British Columbia, or ALS Chemex in Thunder Bay, Ontario, by inductively coupled plasma mass spectrometry (ME-MS61) and by atomic absorption for gold (Au-AA23).

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“20000007991” worksheet provides geochemical analyses of 43 rock samples from assessment file AFRI# 20000007991 (Chiang and Rennie 2013b); UTM co-ordinates are provided in NAD83, Zone 15. Samples were analyzed by ALS Minerals in North Vancouver, British Columbia, or ALS Chemex in Thunder Bay, Ontario, by inductively coupled plasma mass spectrometry (ME-MS61) and by atomic absorption for gold (Au-AA23).

“20000008062” worksheet provides geochemical analyses of 9 rock samples from assessment file AFRI# 20000008062 (Chiang and Labrenz 2013); UTM co-ordinates are provided in NAD83, Zone 15. Samples were analyzed by ALS Minerals in North Vancouver, British Columbia, or ALS Chemex in Thunder Bay, Ontario, by inductively coupled plasma mass spectrometry (ME-MS61) and by atomic absorption for gold (Au-AA23).

“Abbreviations” worksheet provides a list of the abbreviations used in the workbook with explanations.

MRD387_Soils_Geochemistry.xlsx consists of 6 worksheets.

“20000007485” worksheet provides geochemical analyses of 2390 soil samples from assessment file AFRI# 20000007485 (Chiang and Rennie 2013a); UTM co-ordinates are provided in NAD83, Zone 15.

“20000007991” worksheet provides geochemical analyses of 1466 soil samples from assessment file AFRI# 20000007991 (Chiang and Rennie 2013b); UTM co-ordinates are provided in NAD83, Zone 15.

“20000008062_1F15” worksheet provides geochemical analyses of 431 soil samples from assessment file AFRI# 20000008062 (Chiang and Labrenz 2013); UTM co-ordinates are provided in NAD83, Zone 15. Samples were analyzed by *aqua regia* digestion followed by inductively coupled plasma mass spectrometry (ME-MS61) and by atomic absorption for gold (Au-AA23).

“20000008062_1SLO” worksheet provides geochemical analyses of 431 soil samples from assessment file AFRI# 20000008062 (Chiang and Labrenz 2013); UTM co-ordinates are provided in NAD83, Zone 15. Samples were analyzed by leaching with sodium pyrophosphate followed by inductively coupled plasma mass spectrometry (ME-MS61) and by atomic absorption for gold (Au-AA23).

“20000008062_1SLW” worksheet provides geochemical analyses of 431 soil samples from assessment file AFRI# 20000008062 (Chiang and Labrenz 2013); UTM co-ordinates are provided in NAD83, Zone 15. Samples were analyzed by leaching with distilled water followed by inductively coupled plasma mass spectrometry (ME-MS61) and by atomic absorption for gold (Au-AA23).

“Abbreviations” worksheet provides a list of the abbreviations used in the workbook with explanations.

PURPOSE OF COMPILATION

The geochemical data in this compilation cover an area approximately 7.6 km long and 21.5 km wide in the Ear Falls area southeast of Red Lake, Ontario, centred on latitude 50°49'N and 93°30'W. The area lies within an area represented by National Topographic System (NTS) sheets 52 K/11, 52 K/12, 52 K/13 and 52 K/14. The data were originally collected by Laurentian Goldfields Limited (now PureGold Mining Inc.) on their Goldpines property between 2011 and 2012 and were tabulated in assessment file AFRI# 20000007485 (Chiang and Rennie 2013a), assessment file AFRI# 20000007991 (Chiang and Rennie 2013b), and assessment file AFRI# 20000008062 (Chiang and Labrenz 2013). Full details on the sampling methods and protocols, as well as details on the property itself, can be found in the aforementioned reports.

The Goldpines property straddles the boundary between the east-trending, Mesoproterozoic North Caribou terrane (Uchi Subprovince) to the north and the Winnipeg River terrane (English River Subprovince) to the south. The Sydney Lake fault occurs along the terrane boundary. The area is covered by geological maps by Breaks, Bond, McWilliams et al. (1975), Breaks, Bond, Desnoyers et al. (1976) and Sanborn-Barrie et al. (2004).

The reason these data were compiled is that the Ear Falls area, especially outside of the Goldpines property, is relatively underexplored. Yet, with the recent discoveries being made to the immediate north by Great Bear Resources Ltd. at their Dixie Lake project, there is renewed exploration activity in the Ear Falls area (Patterson

et al. 2019). Furthermore, the seismic survey by Zeng and Calvert (2006) identified seismic structures that correlate to the Pakwash Lake, Sydney Lake and an unnamed fault zone. This unnamed fault zone, now referred to as the LP fault, is characterized by a high-grade disseminated gold zone with broad moderate to lower grade envelopes and is believed to be a significant gold-hosting structure that has been seismically imaged to 14 km depth (Great Bear Resources Ltd. 2020). This seismic structure is adjacent and perpendicular to the Pakwash Lake and Sydney Lake seismic structures identified by Zeng and Calvert (2006) and now represents an excellent exploration target.

The data from this digital data release will add significant geological value for exploration activities along the Pakwash Lake and Sydney Lake fault zones, as it contains 4287 soil samples, 214 whole-rock samples and 144 lake sediment samples collected along an approximately 30 km strike length of both fault zones.

Summary of Quality Control and Security Protocols for the Data

The following details are summarized *from* Chiang and Rennie (2013a, 2013b) and *from* Chiang and Labrenz (2013).

Quality Control

Soil Samples

For samples collected in 2011, for every 10 samples submitted for analysis, high-purity silica sand blank was included to confirm quality control. For samples collected in 2012, the sand blank was included for every 50 samples. In all years, a duplicate sample was also taken at every 50 samples, to demonstrate the laboratories' abilities to duplicate results. A review of the internal quality assurance–quality control was conducted and all blanks and duplicates have passed Laurentian Goldfields' internal quality-control requirements. In addition to Laurentian Goldfields' internal quality-control measures, the laboratories systematically added commercially prepared standards and commercially prepared blanks to every sample batch. All analytical blanks and standard were compiled and plotted to ensure that the gold values fell within the acceptable limit. Standards were accepted if they were within 2 standard deviations of the actual value. Blanks were tolerated if the values obtained were no more than 5 ppb greater than the detection limit.

Lake Sediment Samples

Similar to soil samples, for every 10 samples submitted, silica blanks were included to confirm quality control. A duplicate sample was also collected for every 50th sample. A review of the internal quality assurance–quality control was conducted and all blanks and duplicates passed Laurentian Goldfields' internal quality-control requirements. The laboratory also performed a quality assurance–quality control of their own, which included the use of blanks, duplicates and standards for each blank.

Rock Samples

For every 10 samples submitted, a standard or blank was used to test the accuracy of the laboratories' results. The standard used was OREAS 6Pc. Internal quality assurance–quality control tests were performed to assure the accuracy of the lab; all standards met Laurentian Goldfields' internal quality-control requirements.

Security

Soil Samples

All Mining Mobile Metal Ions (MMI™) soil samples and standard soil samples were collected in zip-top bags (double-bagged). The zip-top bags were packaged in poly sample bags (generally 15–20 per bag), which were individually security tagged and placed in plastic tubs for shipping. Each tub was sealed with cable ties, labelled with laboratory address information, and chain of custody documentation was enclosed in the first tub of each

shipment. Laurentian Goldfields Chain of Custody (“LGCOC”) documentation was used for every shipment. On receipt at the laboratory, a laboratory representative signed the LGCOC and faxed a copy back to Laurentian Goldfields. All shipments and samples were received intact by the laboratories.

Lake Sediment Samples

Lake sediment samples were collected in Olefin™ bags and were hung outside to dry for a minimum of 2 to 3 days. The bags were then rolled, stuffed into poly bags (10 per bag), and placed into rice bags. The rice bags were sealed with a security tag and placed into plastic tubs for shipping. Each tub was sealed with cable ties, labelled with laboratory address information, and chain of custody documentation was enclosed in the first tub of each shipment. All shipments and samples were received intact by the laboratories.

Rock Samples

All rock and samples were individually secured using cable ties within poly sample bags. Samples were stored and shipped in rice bags (double-bagged). Sample numbers were written on the inside rice bag and transcribed for each shipment. Each rice bag was assigned a shipment and bag number. The inside bag was secured with a security tag. The inside bag was inserted into a second bag with laboratory shipment address information on it and secured with a cable tie. All shipments and samples were received intact by the laboratories.

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