We are committed to providing accessible customer service.
If you need accessible formats or communications supports, please contact us.

Nous tenons à améliorer l’accessibilité des services à la clientèle.
Si vous avez besoin de formats accessibles ou d’aide à la communication, veuillez nous contacter.

GEOCHEMICAL REPORT ON THE JORDAIN LAKE PROSPECT, NORTHWESTERN ONTARIO, CANADA

Thunder Bay Mining Division

Wardrope Township
NTS 52 H/4NW
N48° 57’ 22.8’’ and W89°59’55.3’’
UTM Zones U15 and U16
280490E, 5426936N (U16)

for

Empire Rock Minerals Inc.
702-889 West Pender St.
Vancouver, B.C.
V6C 3B2

by

Bohumil (Boris) Molak, PhD., P. Geo (BC) & William J. Richmond

July 10, 2017

Table of Contents

Figures

Table

Appendices

SUMMARY

The Jordain Lake Prospect ("JLP") is a potential platinum group element ("PGE") target situated approximately 95 km northwest of Thunder Bay in Northwestern Ontario. The JLP consists of 1 contiguous mining claim (16 claim units) covering about 256 hectares. Recorded holder of Jordain Lake Claim W. J. Richmond entered into an option agreement ("OA") with Empire Rock Minerals Inc. ("Empire") entitled "NAP and Jordain Claims Mineral Property Option Agreement" on October 13, 2015. Under the OA, Empire gains the right to explore the Jordain Claims and acquire a 100% beneficial and legal interest in and to the claims for the cash payment of $74,000 and issuance of 80,000 non-assessable common shares under the terms and conditions specified in the OA.

In May 2017, the writers conducted outcrop mapping and rock sampling survey on the JLP on behalf of Empire Metals Corp. The survey results indicate that further work on the JLP is warranted and should include an airborne geophysical survey and systematic outcrop mapping to test the presumed mafic/ultramafic body below the overburden.

1. INTRODUCTION

Empire Metals Corp ("Empire") retained the writers on May 1, 2017 to conduct prospecting and outcrop mapping/sampling on the JLP and to prepare a report for filing. The first writer is a consulting geologist residing in Vancouver, BC, and a Professional Geoscientist with over forty years of experience in geology, mineral exploration and research. He, together with the second writer conducted a field program on the JLP on May 10 and 18, 2017. Subject to agreement with Empire, the writers consent to the filing of this report with the Provincial Mining Recorder Office, Ministry of Northern Development and Mines of Ontario.

1.1. Location and Access

The JLP is situated in Northwestern Ontario, approximately 95 kilometers northwest of Thunder Bay. The prospect lies within the Thunder Bay Mining Division (Figs. 1, 2) on the Map Sheet NTS 52 H/4 and is centered at N48°57'22.8'' latitude and W89°59'55.3'' longitude, the UTM coordinates 280490E and 5426936 N, zones U15 and U16 (NAD83).

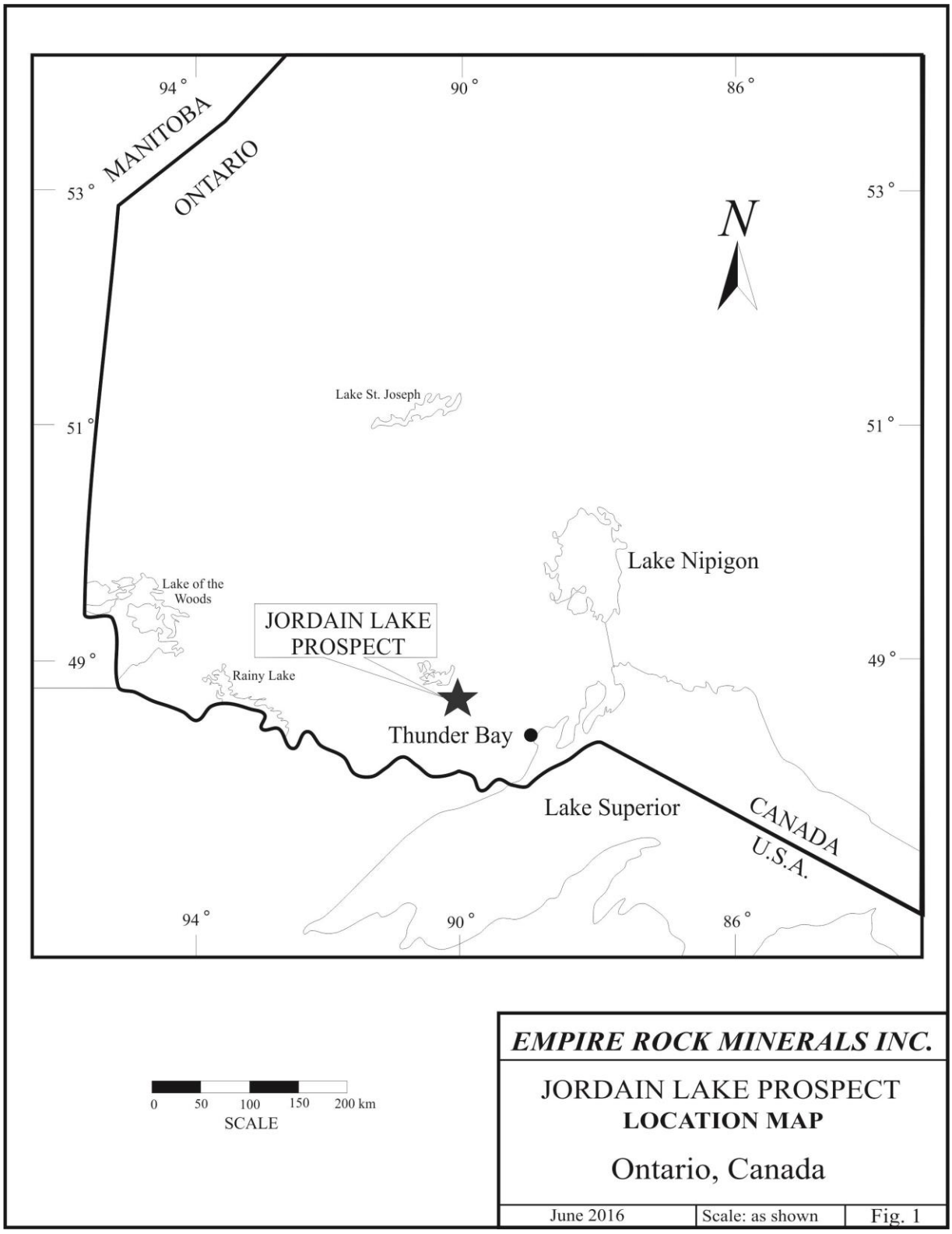
The access from Thunder Bay is by Highway 17 and then via all-weather Dog River Road for about 10.5 km north where a dirt road branches off west and runs across the JLP. A network of maintained and non-maintained dirt roads provides access to other parts of the prospect.

1.2. The Claims

The JLP consist of 1 mineral claim (16 claim units) covering approximately 2.56 sq. kms (256 ha). The claim information as of July 14, 2016 is listed in table 1 below:

Table 1

Claim No.	Township	Units	Due date	Recorded Holder	Reserve
4266050	Wardrope	16	21-Jul-2017	Richmond William J.	0


94 °
90 °
86 °
MANITOBA
ONTARIO
53 °
N
Lake St. Joseph
51 °
Lake Nipigon
Lake of the Woods
JORDAIN LAKE PROSPECT
49 °
Rainy Lake
Thunder Bay
Lake Superior
CANADA
U.S.A.
0 50 100 150 200 km
SCALE
EMPIRE ROCK MINERALS INC.
JORDAIN LAKE PROSPECT
LOCATION MAP
Ontario, Canada
June 2016
Scale: as shown
Fig. 1

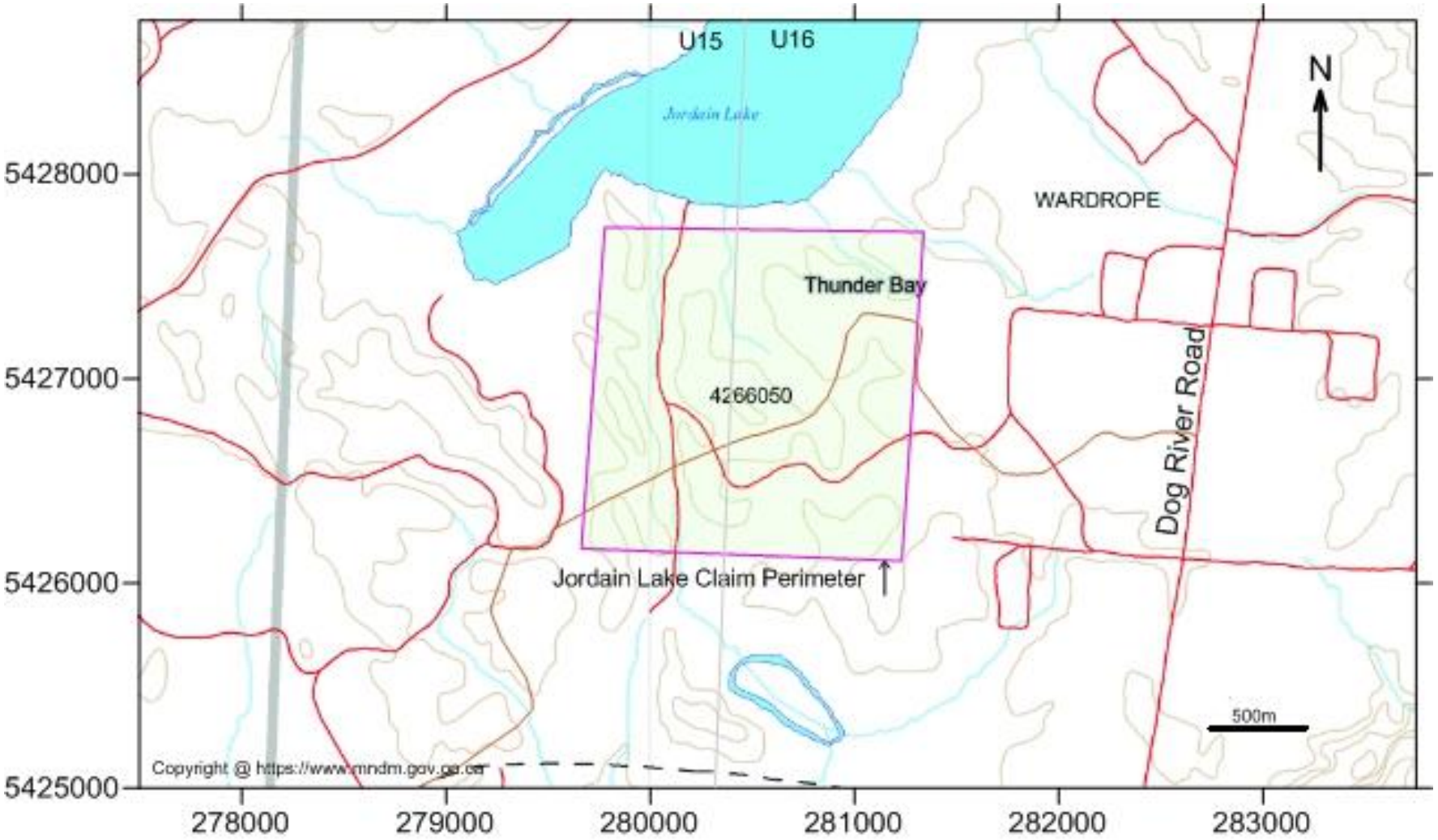


Fig. 2: Jordain Lake Prospect, claim map.

W. J. Richmond staked the JLP claim in 2014, based on the occurrence of mafic/ultramafic float and possibly sub-crops, creating a potential for a mafic-ultramafic body ± PGE mineralization being buried below the fluvio-glacial overburden.

1.3. Topography, Vegetation and Local Resources

Topographic relief is moderately flat ranging from 470 meters to 490 meters above sea level. The area belongs to boreal forest eco-region characterized by numerous lakes and swamps. The area is characterized by hot summers with maximum temperatures of 38 º C and cold, snowy winters, with minimum temperature of - 40 º C. Mean annual precipitation is about 715 mm. The area is snow covered for up to 5.5 months per year. Relative humidity ranges from 50 per cent to 80 per cent and the prevailing winds in the area blow from the northwest.

The vegetation consists of mature stands of black spruce, jack pine, poplar and birch with moss covered regolith and little underbrush composed mainly of willow and Labrador teeth. Patchy areas of thick willow, alder and dwarf cedar bushes are common and usually represent slightly lower elevated areas or along old logging roads. Most of the area is covered by glacial till and outcrop is very scarce

The city of Thunder Bay is the closest main centre that provides all services required to conduct mineral exploration. It includes an airport with daily flights to major Canadian cities, rail and an ocean connection via Great Lakes and St. Lawrence Seaway.

1.4. History

The mafic/ultra-mafic intrusions of Northwestern Ontario were targeted for their copper – nickel - PGE potential since the 1950's. In 1962, the Ontario Department of Mines in conjunction with the Geological Survey of Canada conducted an aeromagnetic survey in the area (ODM-GSC 1962).

Ontario Geological Survey released the geological map 1:1,000,000 Bedrock Geology of Ontario and Explanatory Notes and Legend, Map 2545, and Bedrock Geology of Ontario west-central sheet, Map 2542 (1991).

W. J. Richmond staked the claim 4266050 in 2014 based on the occurrence of mafic to ultra-mafic float and possibly outcrops.

1.5. Regional Geology

The JLP is located in the Wabigoon Subprovince of Northwestern Ontario, within an Archean granite/gneiss terrain. The area is underlain predominantly by an earlier, gneissic to foliated tonalite to granodiorite suite and supracrustal rocks of the Bo Lake - Heaven Lake greenstone belt. The Neo- to Mesoarchean greenstone belt consists of greenstones surrounded and cut into by granitic rocks 3,200 to 2,650 MA ago. The Mafic plain assemblage ("MPA") consisting of mafic to lesser amount of ultramafic flow rocks with minor layers of deep-water graphite schists and argillites are also part of the greenstone belt (Blackburn et al, 1991).

A relatively younger granitoid suite comprising granodiorite, tonalite, quartz diorite and granite, intrudes both gneissic tonalite and supracrustal rocks, and is thought to be coeval with mafic to ultramafic intrusive rocks of the Lac des Iles - Buck Lake area (Smith and Sutcliffe, 1988). Middle Proterozoic diabase dikes and sills were emplaced during the Keweenawan rifting (1.1 Ga) and intrude all the above rock types (Osmani 1991).

The whole rock geochemistry indicates that the mafic/ultramafic rocks are of calc-alkaline to tholeiitic affinity, and as such probably formed in an island arc environment. The geological setting and rock association indicates that the parental magma contained water, which probably became concentrated during fractional crystallization until hornblende appeared as a liquidus phase. Such parental magmas are typical features of igneous provinces formed at destructive plate boundaries (Osmani, 2001).

The mafic-ultramafic intrusions in the area occur on a circular structure about 30 kilometers across, which includes the Lac des Iles Intrusion, the Tib Lake Intrusion, the Buck Lake Intrusion, the Dog River Intrusion, the Shelby Lake Intrusion, the Demars Lake Intrusion, the Wakinoo Lake Intrusion and the Taman Lake Intrusion. The largest of them, the Lac des Iles Intrusive Complex, hosts the Lac des Iles PGE deposit. The intrusions are characterized by magnetic and Bouger gravity anomalies (Gupta and Sutcliffe 1990).

All these intrusions are similar in that they are late tectonic, emplaced into tonalite gneiss and commonly contain phases ranging from ultra-mafic peridotite and pyroxenitic cumulates to magnesium gabbronorite and iron-rich gabbro with hybrid marginal zones consisting of hornblendite intruded by hornblende diorite and are thought to be contamination of the mafic magma by a granitoide component (Sutcliffe, 1986). Texturally, they are massive to varied with variable degrees of brecciation and hydrothermal alteration and most contain PGE mineralization.

The Quetico Fault, a large regional northeast trending fault that has been referred to as a zone of structural weakening, is a structure along which several mafic to ultra-mafic intrusions were emplaced (OGS, 1991).

1.6. Local Geology

The JLP is believed to be underlain at least in part by mafic-ultramafic intrusive rocks of similar setting and composition as the Lac des Iles intrusion, Buck Lake Intrusion and other MUM intrusions occurring on a circular structure 30 km in diameters, situated north of the JLP. The Bedrock Geology Map, west-central sheet shows the JLP area to be underlain by massive to foliated granodiorite to granite with K-feldspar megacrystsNeo- to Mesoarchean (OGS, 1991).

2. LITHO-GEOCHEMICAL SAMPLING AND PROSPECTING

The fieldwork on the JLP was carried out on May 10 and May 18, 2017 and consisted of prospecting, outcrop mapping and sampling in the western portion of the JLP (Figs. 3, 4). Rationale of the survey was to locate and sample the mafic-ultramafic outcrops and to recommend further work. The area is covered mainly by fluvio-glacial deposits and swamps and no obvious outcrops were located. A total of 5 chip and float samples were collected and descriptions and platinum and palladium assays are presented in Fig. 5 and Appendix I. The assay certificates are appended in Appendix II.

2.1. Itinerary

May 10, 2017: Geologist B. B. Molak (BM) and claim holder W. J. Richmond (WR) conduct outcrop mapping and sampling in western portion of the claim block (Fig. 4). The area is covered mainly by glacial and/or fluvio-glacial deposits including granitoide and mafic/ultramafic volcanic boulders up to several meters in diameter.

May 18, 2017: BM and WR prospects the western portions of the area and collect three float sample (Figs. 4, 5). Although most boulders show evidence of glacial and/or fluvial transport or abrasion, some appear to have undergone limited transport and may be close to their original source.

May 19, 2017: BM and WR demobilize and transport samples to Activation Laboratories in Thunder Bay.

2.2. Sampling Method and Analysis

The chip and float samples were placed in standard polypropylene bags, provided with tags with sample numbers and closed with flagging tape. The sample locations (Fig. 4) were recorded using GPS (NAD 83, zones 15 and 16, respectively) (Appendix I). The samples were not modified after collection. The writers personally dispatched samples from JLP to Activation Laboratories ("Actlabs") in Thunder Bay for analysis.

Actlabs is ISO 17025 and CAN-P-1579 accredited for specific registered tests and their quality system complies with international standards. The protocol for sample preparation involves drying, crushing, splitting, pulverizing and matting. If necessary, the samples are placed in a drying oven prior to preparation (approximately 50 º C) until dry. The entire sample is prepared (RX1+1000) by crushing to a nominal minus 10 mesh (1.7 mm), mechanically split (riffle) to obtain a representative sample and then pulverized to at least 95% minus 150 mesh (106 microns).

The platinum, palladium and gold determinations are conducted by fire assay and ICP method (FA-ICP). The basic procedure for fire assay involves mixing an aliquot of powdered sample (10g, 15g, 30g, or 50g) with sodium carbonate, sodium borate, litharge (PbO), baking flour, silica and potassium nitrate. To this mixture, Ag as a collector can be added in solution or as a foil. The well mixed material is fired at temperatures ranging from 1100C to 1200C. The lead button is cupelled at 950 degrees C in a magnesia cupel. A tiny Ag bead which contains Au, Pt and Pd can be dissolved and analyzed by ICP. The assay for 38 elements (AR-ICP) includes fusion with ICP.

The protocol for whole rock assay (FUS-ICP-WR) involves fusion, dilution and analysis by Perkin Elmer Sciex ELAN 6000, 6100 or 9000 ICP/MS. Three blanks and five controls are analyzed per group of samples. Duplicates are fused and analyzed every 15 samples. Instrument is recalibrated every 40 samples.

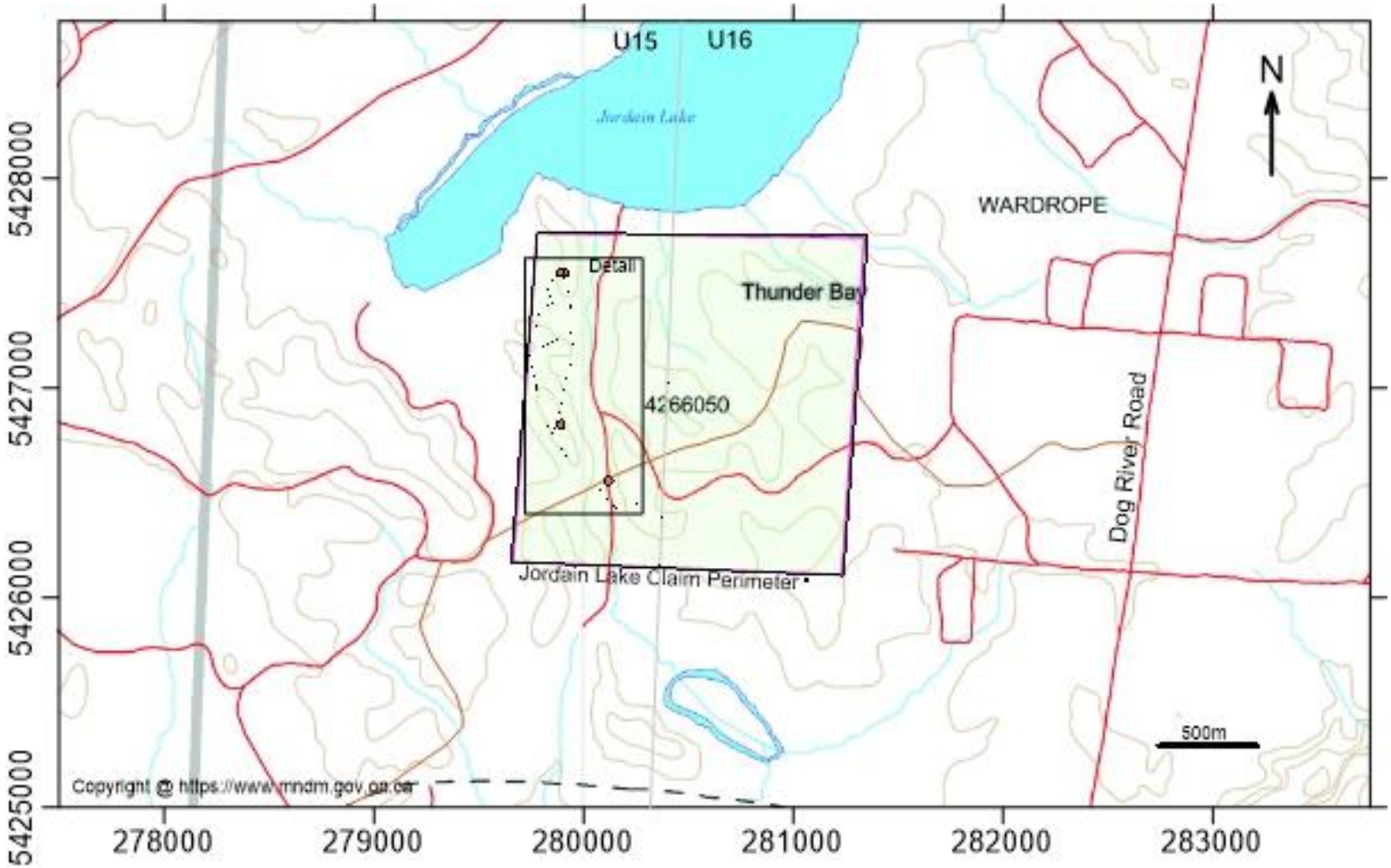


Fig. 3: JLP claim block, 2017 rock sampling area (U16).

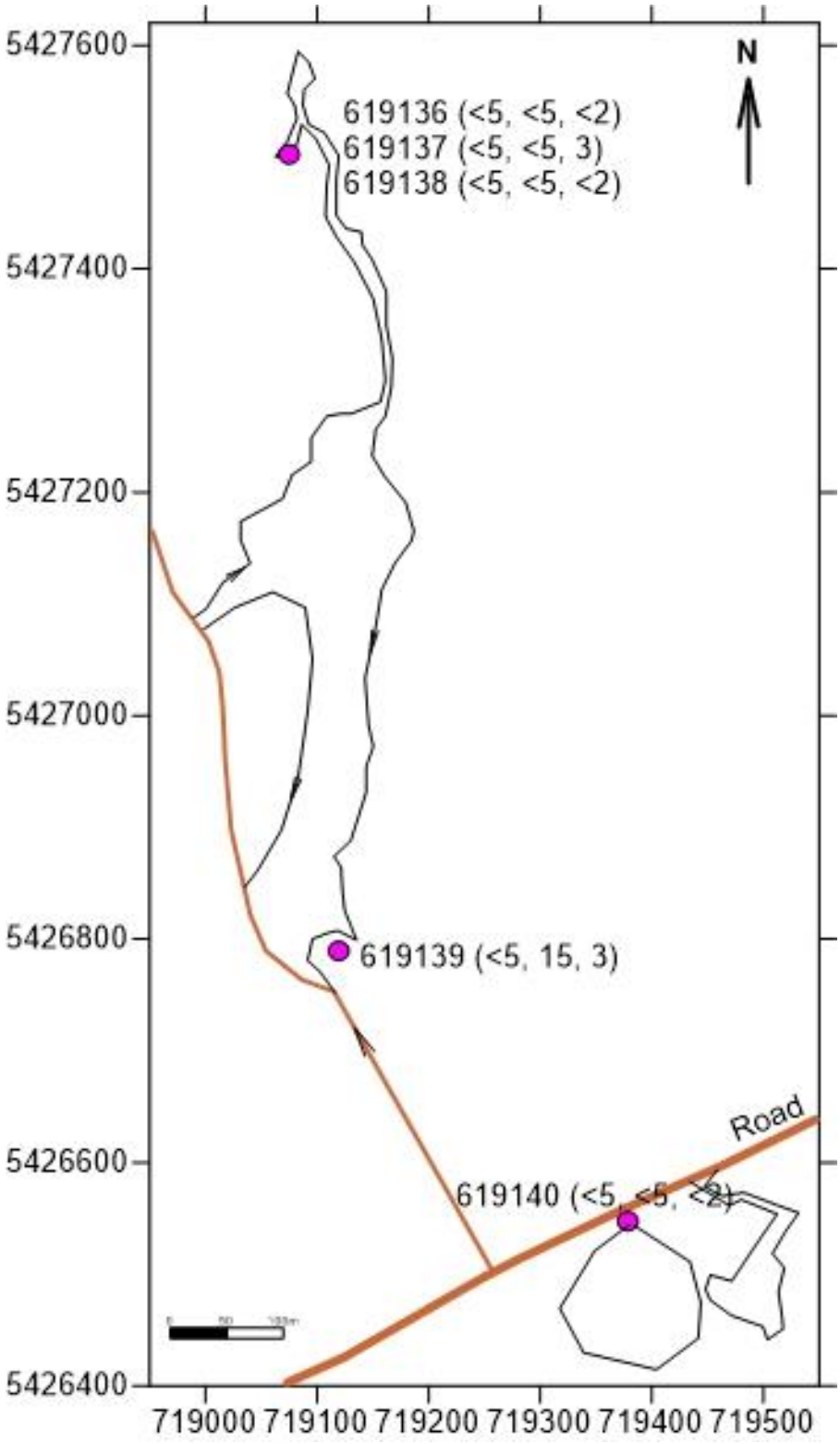


Fig. 4: Traverse map with sample locations (U15).

The samples from JLP have all platinum values below DL. One sample assayed 15 ppb palladium and two samples returned 3 ppb gold (Fig. 6). Silver also is below DL and the base metals range from <2 to 182 ppm. Nickel ranges from 94 to 188 ppm (Fig. 7).

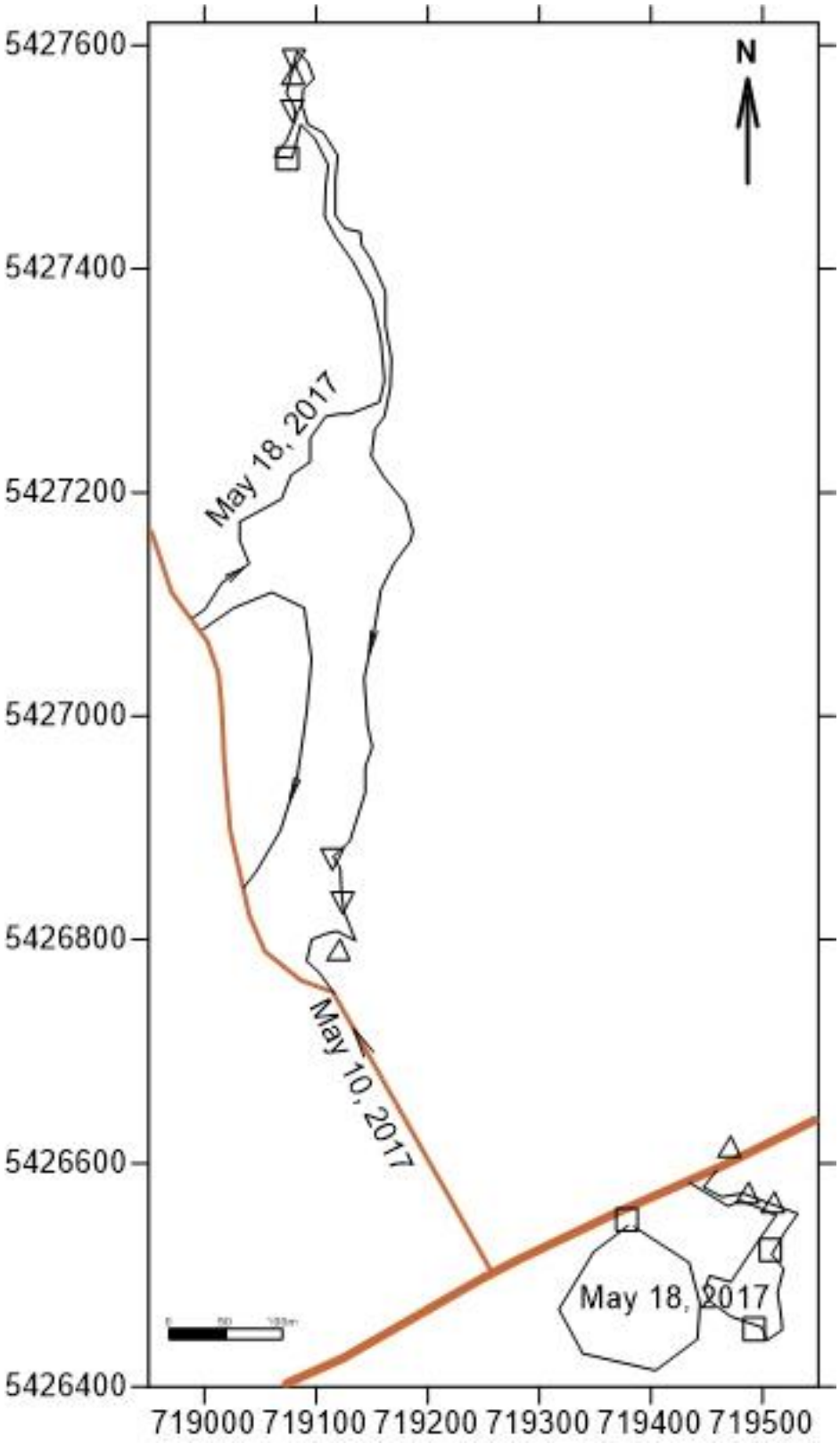


Fig. 5: Traverses, boulder locations (squares – large boulders; triangles – small boulders; inverted triangles – granitoids; upright triangles – mafic/ultramafic rocks).

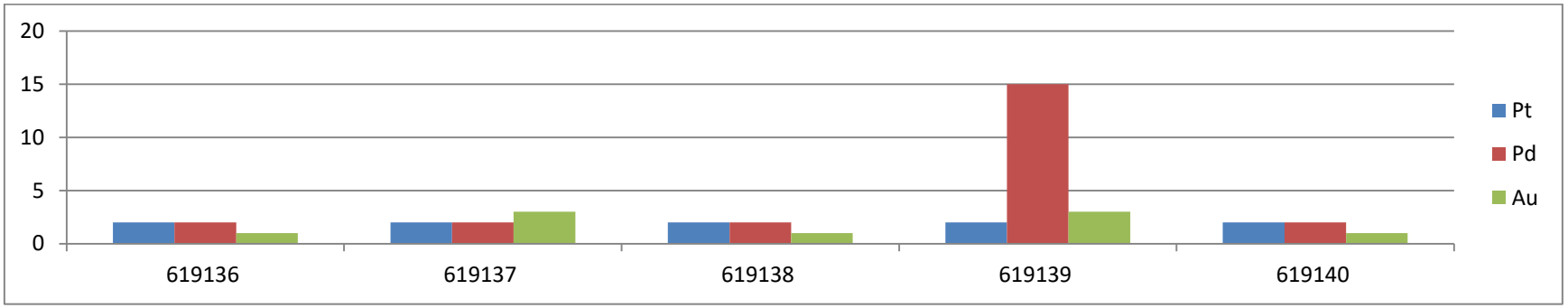


Fig. 6: Graph for platinum (Pt), palladium (Pd) and gold (Au); (all in ppb); (values below DL replaced with 1/2 DL).

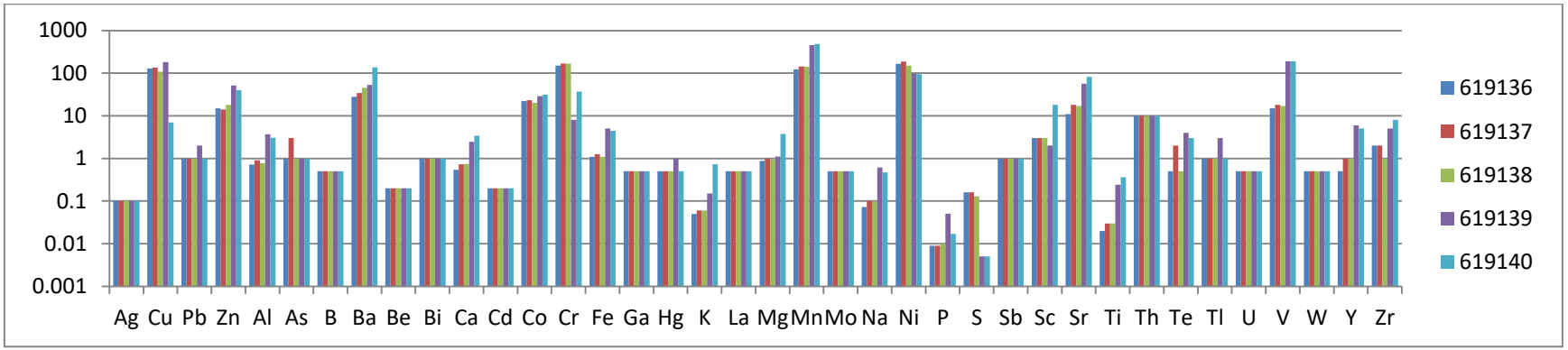


Fig. 7: Graph for 38 elements (Al, Ca, Fe, K, Mg, Na, P, S and Ti in %, all other elements in ppm; logarithmic Y axis).

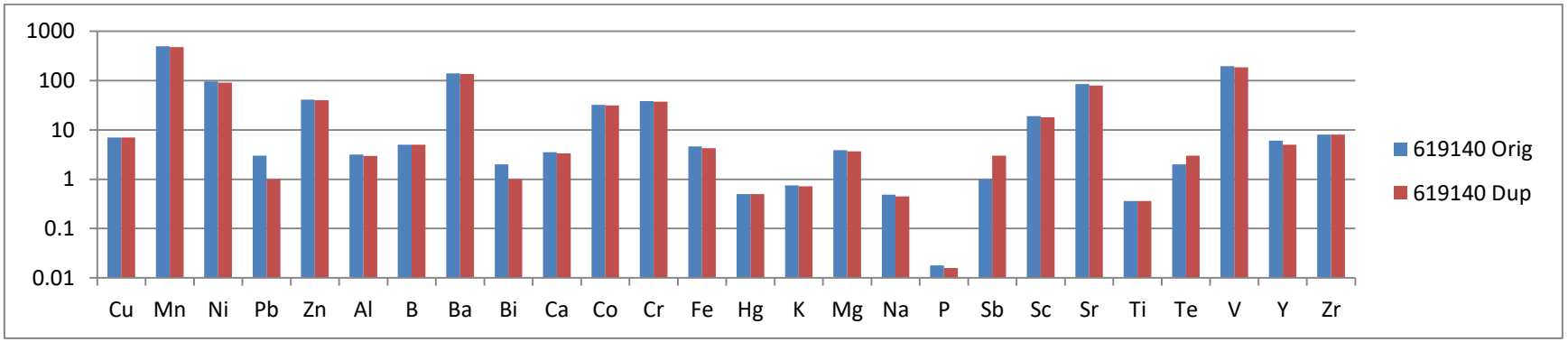


Fig. 8: Original vs duplicate assays (logarithmic Y axis).

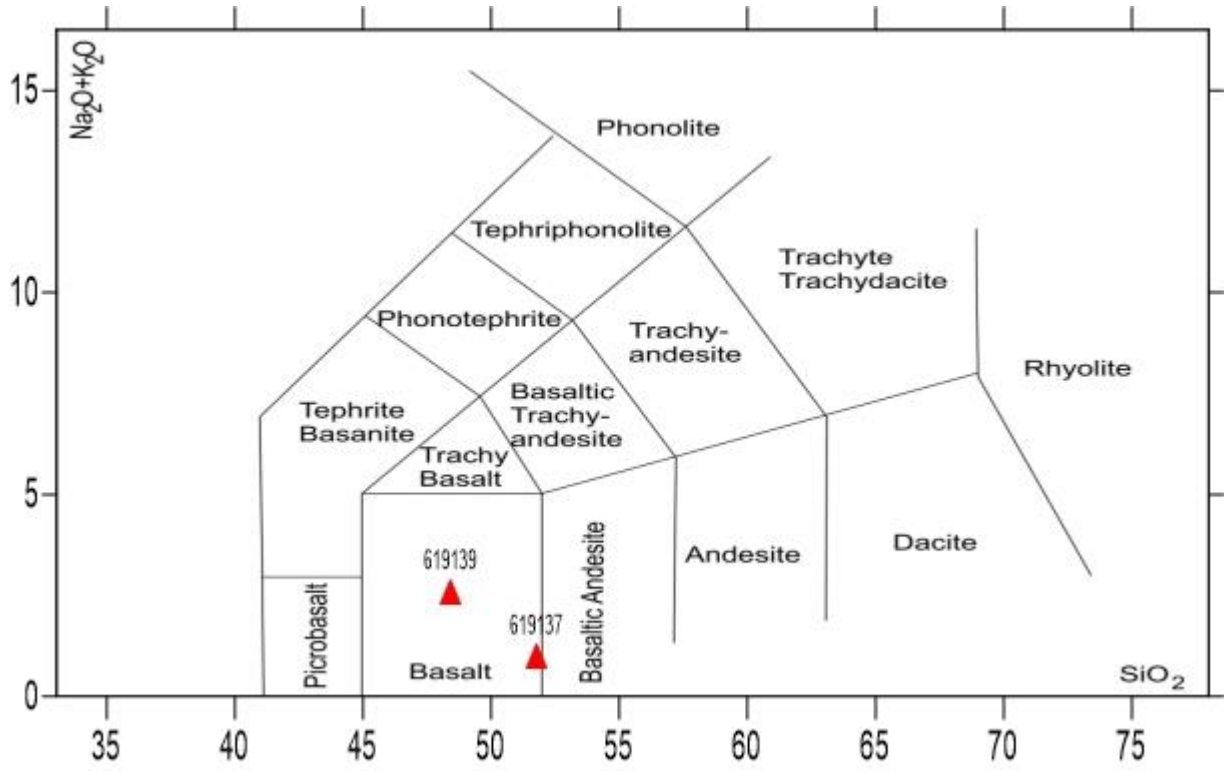


Fig. 9: Classification diagram (after LeBas et al., 1986).

Two whole rock assays were made and the results (Figs. 9 and 10) indicate that both have a basalt affinity and can be classified as either iron tholeiite or komatiite. Thus, the glacial boulders appear to be derived from the Abitibi or other Greenstone Belts of Ontario.

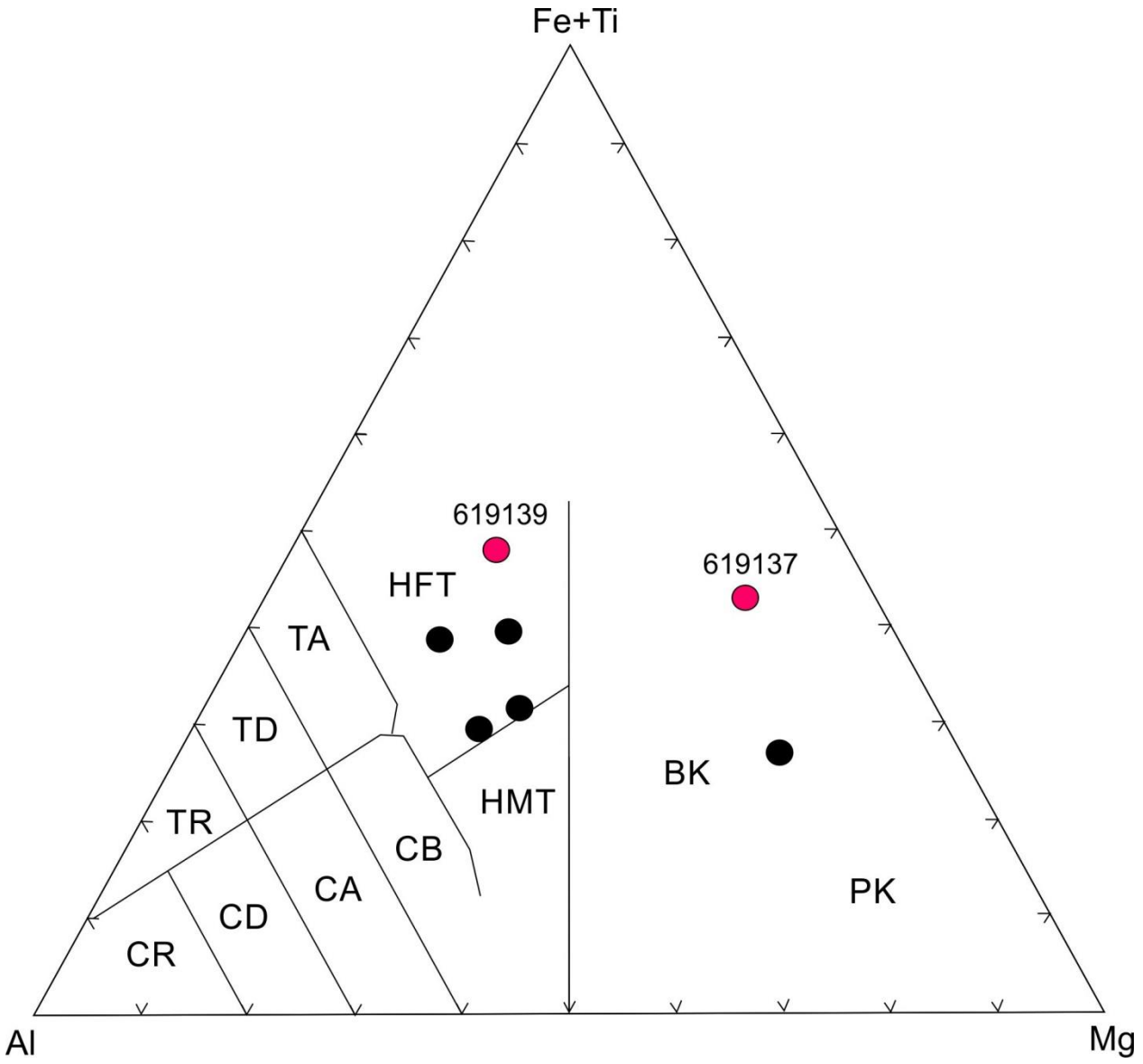


Fig. 10: Al-Fe+Ti-Mg cation plot with samples 619137 and 619139 (red circles) from JLC; five samples of pyroxenitic and gabbroic rocks from Buck Lake PGE Prospect and Gwyn Lake Gold Prospect (black circles) shown for comparison; fields from Jensen (1976). C - calc-alkaline; T - tholeiitic; K - komatiitic; P - picritic; R - rhyolite; D - dacite; A - andesite; B - basalt; HF - high Fe; HM - high Mg.

No descriptive statistics and/or correlations were made because most assays for precious metals fall below detection limit (DL). Graph for platinum, palladium and gold is in Fig. 6 and the 38 elements are in Fig. 7.

2.3. Quality Control

Actlabs' perform their assays so that the accuracy is within the 1-3% range as long as the analyte is greater than 100 times the detection limit of the method. For some elements more difficult to analyze, this may stretch to 5%.

For the assays in this report, Actlabs used the standards PK-2 and CDN-PGM-25 for platinum, palladium and gold and GXR-1 for 38 elements. The measured standards for Pt, Pd and Au ranged within 2.2 % minus to 6.2 % plus. The blanks for platinum, palladium and gold are all below DL. The blanks for 38 elements are all below DL, except nickel. QA for the whole rock analysis was made on sample 619137 and the results are in Fig. 8. To independently check the laboratory performance, we collected one field duplicate (619138) and the results are displayed in Fig. 12. As shown, the platinum, palladium and gold values in the original and duplicate are below DL. The quality assurance results are attached in Appendix II.

In conclusion we can state that Actlabs's assays and quality control made for this project meet the industry standards and are sufficient for this stage of the project. Most assays are reproducible, and should Empire realize in the future that there is a need for a higher degree of reproducibility, it can request the laboratory to apply different preparation and/or assay methods.

3. CONCLUSIONS AND RECOMMENDATIONS

Empire's 2017 fieldwork consisted of outcrop mapping and sampling in the western portion of the JLP. Traversed area is covered by fluvio-glacial deposits including felsic and mafic/ultramafic boulders, which probably originate from the Greenstone Belts. The whole rock analysis indicates a basalt composition and tholeiite to komatiite affinity. Some samples contained up to 1 %, disseminated sulphides, but only one assay returned 15 ppb palladium and two assayed 3 ppb gold.

The JLP has a potential to host a mafic-ultramafic body below the fluvio-glacial overburden, similar in composition and mineralization as the Buck Lake PGE prospect. We recommend an airborne magnetic and electromagnetic survey and contingent on the results, mechanical trenching program would be conducted to expose the bedrock for sampling.

Proposed Budget	
Geologist (3 days @ $600/day)	$ 1,800.00
Prospector (3 days @ $350/day)	$ 1,050.00
Prospector (3 days @ $250/day)	$ 750.00
Truck Rentals (3 days @ $70.00/day)	$ 210.00
Airborne geophysical survey (all in)	$20,000.00
Mob, demob	$ 1,000.00
Accommodation, food	$ 1,000.00
Gas	$ 100.00
Assays (10 samples)	$ 350.00
Miscellaneous	$ 500.00
Compilation, digitizing and report	$ 4,000.00
Total	**$30,760.00**

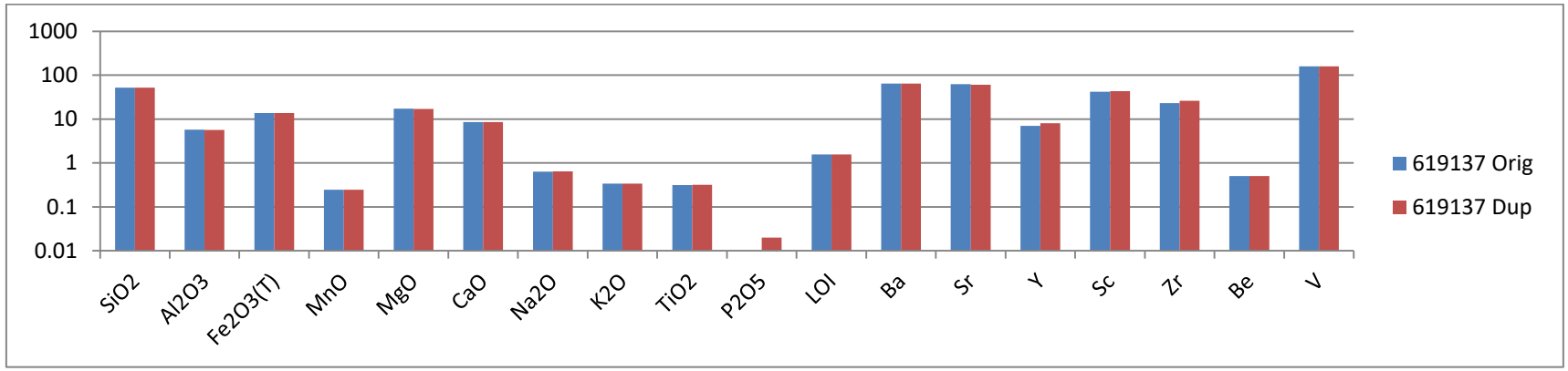


Fig. 11: Whole rock assay, original vs duplicate, sample 619137.

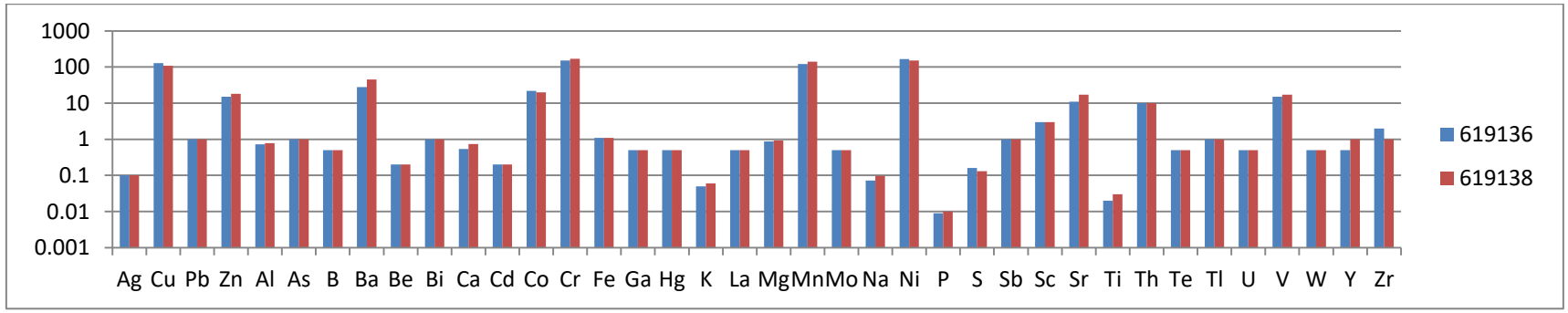


Fig. 12: Original (blue) vs field duplicate (brown).

5. REFERENCES

Blackburn C. E., Johns G. W., Ayer J. and Davis D. W., 1991: Wabigoon Subprovince; in Geology of Ontario, Ontario Geological Survey, Special Volume 4, Part 1, p. 303-381.

Gupta V. K. and Sutcliffe, R.H., 1990. Mafic-ultramafic intrusives and their gravity field: Lac Des Iles area, northern Ontario; Geol. Soc. of America Bull., Vol. 96, p.1471-1483.

Hart T. R., MacDonald C. A. K. and Lepine, C., 2001: Precambrian geology, Lac des Iles Greenstone Belt, Northwestern Ontario; Ontario Geological Survey.

Lavigne, M. J., and Michaud, M. J. 2001: Geology of North American Palladium Ltd.'s Roby Zone Deposit, Lac des Iles; Exploration and Mining Geology, v.10, Nos. 1 and 2, p.1-17.

ODM-GSC, 1962: Lac des Iles. Thunder Bay District, Ontario Department of Mines, Geological Survey of Canada, Map 2099 G, scale 1:63,360.

Ontario Geological Survey, 1991: Bedrock Geology of Ontario, west-central sheet; Map 2542, scale 1:1000000.

Ontario Geological Survey, 1991: Bedrock Geology of Ontario, explanatory notes and legend; Map 2545.

Osmani I. A., 2001: North American Palladium Ltd., Lac des Iles Mines Ltd.; 2000 Summer exploration program, Buck Lake property; Assess. report 2.23314.

Sutcliffe, R. H., 1986: Regional Geology of the Lac des Iles Area, District of Thunder Bay (in: Summary of Field Work and Other Activities 1986, by the Ontario Geological Survey, edited by P.C. Thurston, Owen L. White, R.B. Barlow, M.E. Cherry and A.C. Colvine; Ontario Geological Survey Miscellaneous Paper 132, 435 p. (accompanied by 1 Chart).

6. STATEMENT OF QUALIFICATIONS

I, Bohumil (Boris) Molak, Ph.D., P.Geo (BC) do hereby certify that:

I am a Professional Geoscientist residing at # 704, 6689 Willingdon Avenue, Burnaby, V5H 3Y8, B.C., Canada.

I am a member of the Association of Professional Engineers and Geoscientists of British Columbia (License No. 28600) in good standing.

I graduated from the Comenius University, Czechoslovakia, with a Bachelor of Science (Mag.) in Economic Geology in 1970. From the same university I obtained in 1980 the title Master of Science in Economic Geology (RNDr.) and in 1990 the title Doctor of Philosophy (CSc.). I have practiced my profession continuously since 1970.

Since 1970 I have been involved in the geological, prospecting, exploration and research projects on precious, base and ferrous metals, industrial minerals and hydrocarbons in Czechoslovakia, Bulgaria, Zambia, Cuba, Guinea, Canada, Chile and Argentina.

Since 2003 until present I am a self-employed consulting geologist.

I conducted the litho-geochemical sampling program on the Jordain Lake PGE Prospect on May 10 and May 18, 2017.

I am responsible for all the items in this report except the Item “IN ACCOUNT WITH”, which was prepared by Xyquest Mining Corp. The sources of all information not based on personal examination are quoted in the references item. The information provided by other parties is to the best of my knowledge correct.

As of the date of this Statement I am not aware of any material fact or material change with respect to the subject matter of this report that is not reflected in this report, the omission of which would make the report misleading.

I am independent of Empire Rock Minerals Inc.

Dated at Vancouver, BC, Canada, this the 10th day of July, 2017.

7. STATEMENT OF QUALIFICATIONS

I, William J. Richmond do hereby certify that:

I am a Prospector residing at # 413 Lillian Street, Thunder Bay, ON, Canada.

I am a holder of Permanent Prospector's License.

From 1970 to 1991 I completed the courses as follows: Natural Resources Course at Hammarskjold High School, Thunder Bay, Grades 11-12, Geology, Mineralogy; baseline cutting; claim staking; geophysics; mineral prospecting.

From 1988 to 1998 I optioned the following properties: Smiley Lake Property (to John North of Newnorth Exploration, Toronto, ON); Clive Brooks (to Home Ventures, Vancouver, BC); East Dog River Property; Mirage Lake Property.

From 1992 to 1997 I conducted the OPAP programs on the Dog River, Orbit Buck Lake, Mirage Lake and Buck Lake prospects.

I took part in the litho-geochemical sampling program on the Jordain Lake Prospect on May 10 and May 18, 2017.

Dated at Thunder Bay, ON, Canada, this the 10th day of July, 2017.

APPENDIX I

Sample Description with Platinum, Palladium and Gold Assays

Easting	Northing	Sample #	Description	Type	Pt	Pd	Au
719072	5427503	619136	A boulder 1.5 by 1.5 m, mafic/ultramafic (lherzolite?) ~ 1% disseminated sulphides	F	<5	<5	<2
719072	5427503	619137	A boulder 1.5 by 1.5 m, mafic/ultramafic (lherzolite?) ~ 1% disseminated sulphides	F	<5	<5	3
719072	5427503	619138	Field duplicate of 619136	F	<5	<5	<2
719121	5426788	619139	A boulder, 0.5 by 0.5 m, mafic rock (gabbro?), no sulphides visible	F	<5	15	3
719377	5426549	619140	A boulder, 3 by 2 m, mafic/ultramafic rock, ~ 1% disseminated sulphides	F	<5	<5	<2

Note: F – float; Pt, Pd and Au in ppb.

APPENDIX II

Assays and Quality Assurance

Analyte Symbol	Au	Pd	Pt	Ag	Cd	Cu	Mn	Mo	Ni	Pb	Zn
Unit Symbol	ppb	ppb	ppb	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Detection Limit	2	5	5	0.2	0.5	1	5	1	1	2	2
Analysis Method	FA-ICP	FA-ICP	FA-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP
619136	< 2	< 5	< 5	< 0.2	< 0.5	129	122	< 1	166	< 2	15
619137	3	< 5	< 5	< 0.2	< 0.5	135	143	< 1	188	< 2	14
619138	< 2	< 5	< 5	< 0.2	< 0.5	108	141	< 1	150	< 2	18
619139	3	15	< 5	< 0.2	< 0.5	182	456	< 1	98	2	51
619140	< 2	< 5	< 5	< 0.2	< 0.5	7	483	< 1	94	< 2	40

Analyte Symbol	Al	As	B	Ba	Be	Bi	Ca	Co	Cr	Fe	Ga
Unit Symbol	%	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	%	ppm
Detection Limit	0.01	2	10	10	0.5	2	0.01	1	1	0.01	10
Analysis Method	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP
619136	0.72	< 2	< 10	28	< 0.5	< 2	0.54	22	151	1.1	< 10
619137	0.91	3	< 10	34	< 0.5	< 2	0.73	23	168	1.25	< 10
619138	0.78	< 2	< 10	45	< 0.5	< 2	0.74	20	168	1.09	< 10
619139	3.69	< 2	< 10	53	< 0.5	< 2	2.47	29	8	5.06	< 10
619140	3.06	< 2	< 10	138	< 0.5	< 2	3.43	31	37	4.43	< 10

Analyte Symbol	Hg	K	La	Mg	Na	P	S	Sb	Sc	Sr	Ti
Unit Symbol	ppm	%	ppm	%	%	%	%	ppm	ppm	ppm	%
Detection Limit	1	0.01	10	0.01	0.001	0.001	0.01	2	1	1	0.01
Analysis Method	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP
619136	< 1	0.05	< 10	0.88	0.072	0.009	0.16	< 2	3	11	0.02
619137	< 1	0.06	< 10	1	0.1	0.009	0.16	< 2	3	18	0.03
619138	< 1	0.06	< 10	0.93	0.097	0.01	0.13	< 2	3	17	0.03
619139	1	0.15	< 10	1.11	0.611	0.051	< 0.01	< 2	2	56	0.24
619140	< 1	0.73	< 10	3.77	0.468	0.017	< 0.01	< 2	18	82	0.36

Analyte Symbol	Th	Te	Tl	U	V	W	Y	Zr
Unit Symbol	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Detection Limit	20	1	2	10	1	10	1	1
Analysis Method	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP
619136	< 20	< 1	< 2	< 10	15	< 10	< 1	2
619137	< 20	2	< 2	< 10	18	< 10	1	2
619138	< 20	< 1	< 2	< 10	17	< 10	1	1
619139	< 20	4	3	< 10	191	< 10	6	5
619140	< 20	3	< 2	< 10	190	< 10	5	8

Al, Ca, Fe, K, Mg, Na, Si in %, all other elements in ppm.

Report Number: A17-04997 Report Date: 2/6/2017												
Analyte Symbol	Au	Pd	Pt	Ag	Cd	Cu	Mn	Mo	Ni	Pb	Zn	Al
Unit Symbol	ppb	ppb	ppb	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%
Detection Limit	2	5	5	0.2	0.5	1	5	1	1	2	2	0.01
Analysis Method	FA-ICP	FA-ICP	FA-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP
GXR-1 Meas				32.5	2.9	1210	882	13	43	740	748	0.36
GXR-1 Cert				31	3.3	1110	852	18	41	730	760	3.52
GXR-4 Meas				3.7	< 0.5	6690	142	301	42	46	74	2.82
GXR-4 Cert				4	0.86	6520	155	310	42	52	73	7.2
GXR-6 Meas				0.3	< 0.5	72	1070	1	27	106	126	7.3
GXR-6 Cert				1.3	1	66	1010	2.4	27	101	118	17.7
PK2 Meas	5030	6070	4840									
PK2 Cert	4790	5918.000	4749.000									
PK2 Meas	5170	6310	4950									
PK2 Cert	4790	5918.000	4749.000									
CDN-PGMS-25 Meas	506	1900	424									
CDN-PGMS-25 Cert	483	1830	400									
CDN-PGMS-25 Meas	494	1900	409									
CDN-PGMS-25 Cert	483	1830	400									
619136 Orig	9	< 5	< 5									
619136 Dup	< 2	< 5	< 5									
619140 Orig				< 0.2	< 0.5	7	496	< 1	96	3	41	3.15
619140 Dup				< 0.2	< 0.5	7	471	< 1	91	< 2	40	2.97
Method Blank				< 0.2	< 0.5	< 1	< 5	< 1	1	< 2	< 2	< 0.01

Report Number: A17-04997 Report Date: 2/6/2017												
Analyte Symbol	As	B	Ba	Be	Bi	Ca	Co	Cr	Fe	Ga	Hg	K
Unit Symbol	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	%	ppm	ppm	%
Detection Limit	2	10	10	0.5	2	0.01	1	1	0.01	10	1	0.01
Analysis Method	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP
GXR-1 Meas	446	< 10	451	0.9	1530	0.87	7	7	24.4	< 10	3	0.03
GXR-1 Cert	427	15	750	1.22	1380	0.96	8.2	12	23.6	13.8	3.9	0.050
GXR-4 Meas	108	< 10	47	1.4	9	0.97	13	60	3.09	10	< 1	1.69
GXR-4 Cert	98	4.5	1640	1.9	19	1.01	14.6	64	3.09	20	0.11	4.01
GXR-6 Meas	223	< 10	889	0.9	< 2	0.15	13	85	6.03	20	3	1.14
GXR-6 Cert	330	9.8	1300	1.4	0.29	0.18	13.8	96	5.58	35	0.068	1.87
PK2 Meas												
PK2 Cert												
PK2 Meas												
PK2 Cert												
CDN-PGMS-25 Meas												
CDN-PGMS-25 Cert												
CDN-PGMS-25 Meas												
CDN-PGMS-25 Cert												
619136 Orig												
619136 Dup												
619140 Orig	< 2	< 10	140	< 0.5	2	3.52	32	38	4.58	< 10	< 1	0.75
619140 Dup	< 2	< 10	136	< 0.5	< 2	3.34	31	37	4.28	< 10	< 1	0.72
Method Blank	< 2	< 10	< 10	< 0.5	< 2	< 0.01	< 1	< 1	< 0.01	< 10	< 1	< 0.01

Report Number: A17-04997 Report Date: 2/6/2017												
Analyte Symbol	La	Mg	Na	P	S	Sb	Sc	Sr	Ti	Th	Te	Tl
Unit Symbol	ppm	%	%	%	%	ppm	ppm	ppm	%	ppm	ppm	ppm
Detection Limit	10	0.01	0.001	0.001	0.01	2	1	1	0.01	20	1	2
Analysis Method	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP
GXR-1 Meas	< 10	0.15	0.059	0.046	0.22	92	1	173	< 0.01	< 20	14	< 2
GXR-1 Cert	7.5	0.217	0.052	0.065	0.257	122	1.58	275	0.036	2.44	13	0.39
GXR-4 Meas	44	1.64	0.141	0.124	1.82	7	6	66	0.13	< 20	< 1	< 2
GXR-4 Cert	64.5	1.66	0.564	0.12	1.77	4.8	7.7	221	0.29	22.5	0.97	3.2
GXR-6 Meas	< 10	0.42	0.086	0.034	0.01	5	19	26		< 20	< 1	4
GXR-6 Cert	13.9	0.609	0.104	0.035	0.016	3.6	27.6	35		5.3	0.018	2.2
PK2 Meas												
PK2 Cert												
PK2 Meas												
PK2 Cert												
CDN-PGMS-25 Meas												
CDN-PGMS-25 Cert												
CDN-PGMS-25 Meas												
CDN-PGMS-25 Cert												
619136 Orig												
619136 Dup												
619140 Orig	< 10	3.88	0.484	0.018	< 0.01	< 2	19	85	0.36	< 20	2	< 2
619140 Dup	< 10	3.66	0.451	0.016	< 0.01	3	18	79	0.36	< 20	3	< 2
Method Blank	< 10	< 0.01	0.012	< 0.001	< 0.01	< 2	< 1	< 1	< 0.01	< 20	< 1	< 2

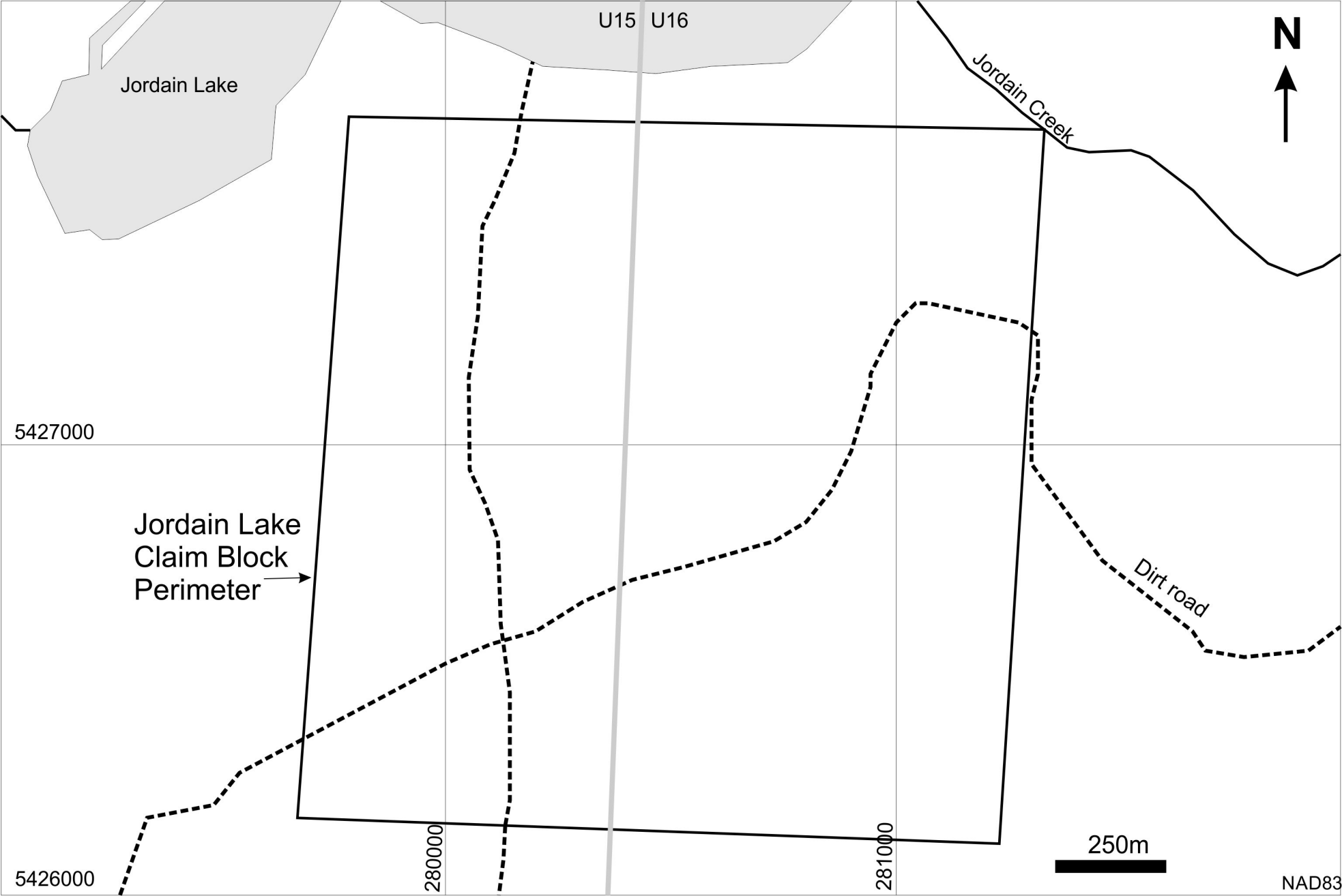
Report Number: A17-04997 Report Date: 2/6/2017					
Analyte Symbol	U	V	W	Y	Zr
Unit Symbol	ppm	ppm	ppm	ppm	ppm
Detection Limit	10	1	10	1	1
Analysis Method	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP
GXR-1 Meas	31	83	178	26	13
GXR-1 Cert	34.9	80	164	32	38
GXR-4 Meas	< 10	82	11	11	9
GXR-4 Cert	6.2	87	30.8	14	186
GXR-6 Meas	< 10	172	< 10	5	6
GXR-6 Cert	1.54	186	1.9	14	110
PK2 Meas					
PK2 Cert					
PK2 Meas					
PK2 Cert					
CDN-PGMS-25 Meas					
CDN-PGMS-25 Cert					
CDN-PGMS-25 Meas					
CDN-PGMS-25 Cert					
619136 Orig					
619136 Dup					
619140 Orig	< 10	195	< 10	6	8
619140 Dup	< 10	185	< 10	5	8
Method Blank	< 10	< 1	< 10	< 1	< 1

Analyte Symbol	SiO2	Al2O3	Fe2O3(T)	MnO	MgO	CaO	Na2O	K2O	TiO2	P2O5	LOI
Unit Symbol	%	%	%	%	%	%	%	%	%	%	%
Detection Limit	0.01	0.01	0.01	0.001	0.01	0.01	0.01	0.01	0.001	0.01	
Analysis Method	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP
619137	51.8	5.67	13.72	0.245	17.15	8.51	0.64	0.34	0.315	0.02	1.56
619139	48.44	14.67	14.95	0.198	7.67	9.82	2.26	0.33	1.219	0.14	0.14

Analyte Symbol	Total	Ba	Sr	Y	Sc	Zr	Be	V
Unit Symbol	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Detection Limit	0.01	2	2	1	1	2	1	5
Analysis Method	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP
619137	99.97	64	61	8	42	24	< 1	158
619139	99.83	120	146	21	31	78	< 1	296

APPENDIX III

Jordain Lake Prospect, Claim Map 1:10,000


U15
U16
Jordain Lake
Jordain Creek
N
5427000
Jordain Lake
Claim Block
Perimeter
Dirt road
280000
281000
5426000
250m
NAD83

Quality Analysis ... *Innovative Technologies*

Date Submitted: 19-May-17
Invoice No.: A17-04997 (i)
Invoice Date: 30-Jun-17
Your Reference:

Empire Metals Corp.
702-889 W. Pender St
Vancouver BC
Canada

ATTN: Boris Molak

CERTIFICATE OF ANALYSIS

40 Rock samples were submitted for analysis.

The following analytical package(s) were requested: Code 4B (1-10) Major Elements Fusion ICP(WRA)

REPORT **A17-04997 (i)**

Notes:

Total includes all elements in % oxide to the left of total.

Values which exceed the upper limit should be assayed for accurate numbers.

CERTIFIED BY:

Emmanuel Eseme , Ph.D.
Quality Control

ACTIVATION LABORATORIES LTD.
41 Bittern Street, Ancaster, Ontario, Canada, L9G 4V5
TELEPHONE +905 648-9611 or +1.888.228.5227 FAX +1.905.648.9613
E-MAIL Ancaster@actlabs.com ACTLABS GROUP WEBSITE www.actlabs.com

Date Submitted: 19-May-17
Invoice No.: A17-04997 (i)
Invoice Date: 30-Jun-17
Your Reference:

Empire Metals Corp.
702-889 W. Pender St
Vancouver BC
Canada

ATTN: Boris Molak

CERTIFICATE OF ANALYSIS

40 Rock samples were submitted for analysis.

The following analytical package(s) were requested: Code 1C-OES-Tbay Fire Assay ICPOES (QOP Fire Assay Tbay)
Code 1E3-Tbay Aqua Regia ICP(AQUAGEO)

REPORT **A17-04997 (i)**

Notes:

Total includes all elements in % oxide to the left of total.

Values which exceed the upper limit should be assayed for accurate numbers.

CERTIFIED BY:

Emmanuel Eseme , Ph.D.
Quality Control

ACTIVATION LABORATORIES LTD.
1201 Walsh Street West, Thunder Bay, Ontario, Canada, P7E 4X6
TELEPHONE +807 622-6707 or +1.888.228.5227 FAX +1.905.648.9613
E-MAIL Tbay@actlabs.com ACTLABS GROUP WEBSITE www.actlabs.com

Analyte Symbol	SiO2	Al2O3	Fe2O3(T)	MnO	MgO	CaO	Na2O	K2O	TiO2	P2O5	LOI	Total	Ba	Sr	Y	Sc	Zr	Be	V
Unit Symbol	%	%	%	%	%	%	%	%	%	%	%	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Lower Limit	0.01	0.01	0.01	0.001	0.01	0.01	0.01	0.01	0.001	0.01		0.01	2	2	1	1	2	1	5
Method Code	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP
619137	51.80	5.67	13.72	0.245	17.15	8.51	0.64	0.34	0.315	0.02	1.56	99.97	64	61	8	42	24	< 1	158
619139	48.44	14.67	14.95	0.198	7.67	9.82	2.26	0.33	1.219	0.14	0.14	99.83	120	146	21	31	78	< 1	296

Analyte Symbol	SiO2	Al2O3	Fe2O3(T)	MnO	MgO	CaO	Na2O	K2O	TiO2	P2O5	LOI	Total	Ba	Sr	Y	Sc	Zr	Be	V
Unit Symbol	%	%	%	%	%	%	%	%	%	%	%	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Lower Limit	0.01	0.01	0.01	0.001	0.01	0.01	0.01	0.01	0.001	0.01		0.01	2	2	1	1	2	1	5
Method Code	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP
NIST 694 Meas	11.36	1.96	0.76	0.010	0.35	42.97	0.88	0.54	0.120	30.22									1589
NIST 694 Cert	11.2	1.80	0.790	0.0116	0.330	43.6	0.860	0.510	0.110	30.2									1740
DNC-1 Meas	47.78	18.40	9.97	0.150	10.03	11.51	1.94	0.23	0.480	0.07			107	147	16	32	36		154
DNC-1 Cert	47.15	18.34	9.97	0.150	10.13	11.49	1.890	0.234	0.480	0.070			118	144.0	18.0	31	38		148
GBW 07113 Meas	72.00	13.17	3.14	0.140	0.16	0.60	2.51	5.44	0.280	0.04			501	43	44	5	392	4	< 5
GBW 07113 Cert	72.8	13.0	3.21	0.140	0.160	0.590	2.57	5.43	0.300	0.0500			506	43.0	43.0	5.00	403	4.00	5.00
W-2a Meas	52.37	15.70	10.92	0.170	6.38	11.09	2.18	0.60	1.060	0.13			171	200	19	35	88	< 1	268
W-2a Cert	52.4	15.4	10.7	0.163	6.37	10.9	2.14	0.626	1.06	0.130			182	190	24.0	36.0	94.0	1.30	262
SY-4 Meas	49.81	20.03	5.89	0.100	0.52	8.01	6.92	1.66	0.280	0.13			347	1186	113	1	534	3	8
SY-4 Cert	49.9	20.69	6.21	0.108	0.54	8.05	7.10	1.66	0.287	0.131			340	1191	119	1.1	517	2.6	8.0
BIR-1a Meas	48.13	15.65	11.53	0.170	9.69	13.43	1.84	0.02	0.970	0.02			8	111	14	44	16	< 1	331
BIR-1a Cert	47.96	15.50	11.30	0.175	9.700	13.30	1.82	0.030	0.96	0.021			6	110	16	44	18	0.58	310
619137 Orig	51.52	5.71	13.78	0.245	17.23	8.49	0.63	0.34	0.314	0.01	1.56	99.83	64	62	7	42	23	< 1	158
619137 Dup	52.08	5.62	13.67	0.245	17.07	8.53	0.64	0.34	0.316	0.02	1.56	100.1	64	60	8	43	26	< 1	159
Method Blank	< 0.01	0.02	0.04	0.002	0.02	0.02	< 0.01	< 0.01	0.001	< 0.01			< 2	< 2	< 1	< 1	2	< 1	< 5

Quality Analysis ... *Innovative Technologies*

Date Submitted: 19-May-17
Invoice No.: A17-04997
Invoice Date: 02-Jun-17
Your Reference:

Boris Molak
702-889 W. Pender St
Vancouver BC
Canada

ATTN: Boris Molak

CERTIFICATE OF ANALYSIS

40 Rock samples were submitted for analysis.

The following analytical package(s) were requested: Code 1C-OES-Tbay Fire Assay ICPOES (QOP Fire Assay Tbay)

Code 1E3-Tbay Aqua Regia ICP(AQUAGEO)

REPORT **A17-04997**

Notes:

Values which exceed the upper limit should be assayed for accurate numbers.

CERTIFIED BY:

Emmanuel Eseme , Ph.D.
Quality Control

ACTIVATION LABORATORIES LTD.
1201 Walsh Street West, Thunder Bay, Ontario, Canada, P7E 4X6
TELEPHONE +807 622-6707 or +1.888.228.5227 FAX +1.905.648.9613
E-MAIL Tbay@actlabs.com ACTLABS GROUP WEBSITE www.actlabs.com

Analyte Symbol	Au	Pd	Pt	Ag	Cd	Cu	Mn	Mo	Ni	Pb	Zn	Al	As	B	Ba	Be	Bi	Ca	Co	Cr	Fe	Ga	Hg
Unit Symbol	ppb	ppb	ppb	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	%	ppm	ppm
Lower Limit	2	5	5	0.2	0.5	1	5	1	1	2	2	0.01	2	10	10	0.5	2	0.01	1	1	0.01	10	1
Method Code	FA-ICP	FA-ICP	FA-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP
619101	4	< 5	< 5	< 0.2	< 0.5	88	245	< 1	98	2	16	4.81	< 2	< 10	146	< 0.5	< 2	4.20	21	34	1.80	< 10	1
619102	3	< 5	7	< 0.2	< 0.5	81	186	< 1	92	2	13	4.15	< 2	< 10	92	< 0.5	< 2	3.44	17	22	1.44	< 10	< 1
619103	2	< 5	9	< 0.2	< 0.5	108	313	< 1	94	6	20	4.49	< 2	< 10	170	< 0.5	< 2	4.08	19	41	1.95	< 10	1
619104	< 2	< 5	< 5	< 0.2	< 0.5	36	191	< 1	43	< 2	17	3.51	< 2	< 10	184	< 0.5	< 2	2.69	13	9	1.23	< 10	2
619105	4	90	106	< 0.2	< 0.5	25	200	< 1	54	< 2	14	0.90	< 2	< 10	73	< 0.5	< 2	2.38	12	47	0.75	< 10	1
619106	< 2	< 5	< 5	< 0.2	< 0.5	402	812	< 1	36	< 2	52	1.31	< 2	< 10	35	< 0.5	< 2	2.11	31	31	3.65	< 10	< 1
619107	< 2	< 5	< 5	< 0.2	< 0.5	280	957	< 1	7	3	127	2.64	< 2	< 10	85	< 0.5	< 2	3.47	32	8	8.25	< 10	< 1
619108	< 2	< 5	< 5	< 0.2	< 0.5	526	1290	< 1	51	< 2	37	1.89	< 2	< 10	38	< 0.5	< 2	2.29	27	50	3.78	< 10	< 1
619109	< 2	< 5	< 5	< 0.2	< 0.5	43	421	< 1	85	5	48	3.83	< 2	< 10	141	0.7	< 2	2.92	57	13	3.71	< 10	< 1
619110	< 2	6	7	< 0.2	< 0.5	184	228	< 1	198	< 2	17	1.06	< 2	< 10	37	< 0.5	< 2	1.35	47	620	1.80	< 10	< 1
619111	37	59	93	0.4	< 0.5	432	177	< 1	641	4	13	0.86	< 2	< 10	22	< 0.5	< 2	2.04	36	162	1.35	< 10	< 1
619112	16	44	24	1.5	< 0.5	247	278	2	307	8	18	1.15	3	< 10	34	< 0.5	2	1.63	148	304	8.20	< 10	< 1
619113	< 2	19	14	< 0.2	< 0.5	62	558	< 1	141	< 2	36	3.75	< 2	< 10	93	< 0.5	< 2	4.11	36	379	5.45	< 10	3
619114	< 2	57	33	< 0.2	< 0.5	78	278	< 1	331	< 2	18	1.83	< 2	< 10	74	< 0.5	< 2	1.19	35	719	2.82	< 10	< 1
619115	29	1740	1640	0.3	< 0.5	936	199	< 1	967	2	15	3.26	< 2	< 10	35	< 0.5	< 2	2.39	192	126	5.48	< 10	3
619116	110	3360	2810	0.4	< 0.5	2510	212	< 1	2810	11	17	3.27	< 2	< 10	41	< 0.5	2	2.57	120	109	3.54	< 10	1
619117	< 2	21	13	< 0.2	< 0.5	126	389	< 1	111	< 2	22	3.36	< 2	< 10	55	< 0.5	< 2	3.42	35	21	2.67	< 10	< 1
619118	< 2	6	< 5	< 0.2	< 0.5	68	271	< 1	99	3	28	3.14	< 2	< 10	43	< 0.5	< 2	2.16	26	60	2.53	< 10	< 1
619119	< 2	12	12	< 0.2	< 0.5	70	260	< 1	119	< 2	27	2.61	< 2	< 10	40	< 0.5	< 2	1.99	26	101	2.41	< 10	< 1
619120	31	778	1020	< 0.2	< 0.5	519	170	< 1	566	< 2	12	3.41	2	< 10	32	< 0.5	< 2	2.54	89	104	2.70	< 10	< 1
619121	< 2	8	< 5	< 0.2	< 0.5	35	358	< 1	190	< 2	30	3.38	< 2	< 10	89	< 0.5	< 2	3.23	29	208	2.68	< 10	1
619122	< 2	7	< 5	< 0.2	< 0.5	7	570	< 1	172	< 2	41	3.86	< 2	< 10	99	< 0.5	< 2	4.33	28	333	3.96	< 10	< 1
619123	< 2	< 5	< 5	< 0.2	< 0.5	20	475	< 1	19	< 2	82	1.51	< 2	< 10	121	< 0.5	< 2	1.77	15	30	4.47	< 10	1
619124	< 2	< 5	< 5	< 0.2	< 0.5	< 1	573	< 1	210	< 2	57	2.62	< 2	< 10	242	0.7	< 2	2.41	24	586	3.66	< 10	< 1
619125	< 2	< 5	< 5	< 0.2	< 0.5	50	228	< 1	82	< 2	19	4.62	< 2	< 10	71	< 0.5	< 2	3.67	20	26	1.77	< 10	1
619126	< 2	< 5	< 5	< 0.2	< 0.5	50	311	< 1	16	2	34	1.86	< 2	< 10	114	< 0.5	< 2	2.06	5	30	1.61	< 10	< 1
619127	< 2	15	10	< 0.2	< 0.5	39	785	< 1	94	< 2	46	3.38	< 2	< 10	128	< 0.5	< 2	4.12	27	236	4.63	< 10	< 1
619128	< 2	< 5	< 5	< 0.2	< 0.5	20	544	< 1	188	< 2	48	2.73	< 2	< 10	324	< 0.5	< 2	2.19	28	544	3.53	< 10	< 1
619129	< 2	< 5	< 5	< 0.2	< 0.5	39	304	< 1	28	5	43	1.75	< 2	< 10	403	< 0.5	< 2	1.98	20	16	3.50	< 10	< 1
619130	< 2	< 5	< 5	< 0.2	< 0.5	29	449	< 1	38	5	51	2.92	< 2	< 10	559	< 0.5	< 2	2.98	24	17	4.63	< 10	< 1
619131	10	18	25	0.5	< 0.5	320	121	7	191	3	12	0.66	< 2	< 10	17	< 0.5	4	0.95	734	47	5.90	< 10	< 1
619132	9	21	38	0.2	< 0.5	241	193	< 1	145	< 2	14	1.21	< 2	< 10	31	< 0.5	< 2	1.48	354	60	3.75	< 10	< 1
619133	< 2	< 5	< 5	< 0.2	< 0.5	72	209	< 1	73	2	20	3.14	< 2	< 10	182	< 0.5	< 2	2.99	19	12	1.47	< 10	< 1
619134	7	19	29	< 0.2	< 0.5	86	150	< 1	94	< 2	13	0.95	< 2	< 10	82	< 0.5	< 2	1.38	15	52	1.11	< 10	< 1
619135	< 2	34	42	< 0.2	< 0.5	9	221	< 1	60	< 2	17	1.13	< 2	< 10	48	< 0.5	< 2	1.69	11	72	1.13	< 10	< 1
619136	< 2	< 5	< 5	< 0.2	< 0.5	129	122	< 1	166	< 2	15	0.72	< 2	< 10	28	< 0.5	< 2	0.54	22	151	1.10	< 10	< 1
619137	3	< 5	< 5	< 0.2	< 0.5	135	143	< 1	188	< 2	14	0.91	3	< 10	34	< 0.5	< 2	0.73	23	168	1.25	< 10	< 1
619138	< 2	< 5	< 5	< 0.2	< 0.5	108	141	< 1	150	< 2	18	0.78	< 2	< 10	45	< 0.5	< 2	0.74	20	168	1.09	< 10	< 1
619139	3	15	< 5	< 0.2	< 0.5	182	456	< 1	98	2	51	3.69	< 2	< 10	53	< 0.5	< 2	2.47	29	8	5.06	< 10	1
619140	< 2	< 5	< 5	< 0.2	< 0.5	7	483	< 1	94	< 2	40	3.06	< 2	< 10	138	< 0.5	< 2	3.43	31	37	4.43	< 10	< 1

Analyte Symbol	K	La	Mg	Na	P	S	Sb	Sc	Sr	Ti	Th	Te	Tl	U	V	W	Y	Zr
Unit Symbol	%	ppm	%	%	%	%	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Lower Limit	0.01	10	0.01	0.001	0.001	0.01	2	1	1	0.01	20	1	2	10	1	10	1	1
Method Code	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP
619101	0.20	< 10	1.58	0.555	0.045	0.18	< 2	4	434	0.07	< 20	< 1	< 2	< 10	32	< 10	2	4
619102	0.11	< 10	1.19	0.469	0.036	0.11	< 2	3	397	0.04	< 20	3	2	< 10	21	< 10	1	3
619103	0.22	12	1.95	0.566	0.046	0.11	< 2	6	420	0.06	< 20	< 1	< 2	< 10	34	< 10	2	6
619104	0.16	10	1.02	0.456	0.038	0.05	3	2	310	0.04	< 20	< 1	< 2	< 10	19	< 10	1	3
619105	0.04	10	0.76	0.077	0.050	0.04	< 2	3	105	0.07	< 20	1	< 2	< 10	21	< 10	3	5
619106	0.15	< 10	0.79	0.179	0.080	0.61	< 2	11	11	0.30	< 20	2	< 2	< 10	101	< 10	14	5
619107	0.27	< 10	1.27	0.445	0.119	0.66	4	22	14	0.39	< 20	6	< 2	< 10	135	< 10	32	7
619108	0.10	< 10	0.45	0.190	0.023	0.91	< 2	6	17	0.18	< 20	< 1	< 2	< 10	75	< 10	9	4
619109	0.32	19	2.65	0.157	0.133	0.25	< 2	6	102	0.25	< 20	< 1	< 2	< 10	89	< 10	9	9
619110	0.03	< 10	1.67	0.086	0.022	0.39	2	4	19	0.06	< 20	< 1	< 2	< 10	33	< 10	2	6
619111	0.03	< 10	1.38	0.053	0.014	0.26	< 2	3	24	0.03	< 20	2	< 2	< 10	20	< 10	1	4
619112	0.12	< 10	2.37	0.116	0.026	2.42	3	9	25	0.07	< 20	< 1	< 2	< 10	50	< 10	2	9
619113	0.31	< 10	2.94	0.405	0.012	0.31	3	17	97	0.29	< 20	< 1	< 2	< 10	118	< 10	4	6
619114	0.31	< 10	2.56	0.145	0.023	0.15	3	5	22	0.11	< 20	6	< 2	< 10	60	< 10	3	5
619115	0.07	< 10	1.11	0.359	0.028	2.09	3	4	141	0.03	< 20	3	< 2	< 10	26	< 10	1	4
619116	0.09	< 10	1.08	0.417	0.046	1.50	3	4	166	0.04	< 20	4	< 2	< 10	31	< 10	2	4
619117	0.16	< 10	1.96	0.364	0.022	0.23	< 2	11	106	0.07	< 20	4	< 2	< 10	61	< 10	2	4
619118	0.09	< 10	1.85	0.287	0.051	0.09	< 2	4	82	0.07	< 20	< 1	< 2	< 10	41	< 10	1	4
619119	0.09	< 10	1.69	0.261	0.065	0.08	< 2	4	76	0.08	< 20	5	< 2	< 10	40	< 10	2	4
619120	0.04	< 10	0.96	0.363	0.015	0.80	< 2	3	124	0.02	< 20	1	< 2	< 10	18	< 10	< 1	2
619121	0.24	< 10	2.63	0.262	0.017	0.09	2	8	84	0.06	< 20	4	< 2	< 10	45	< 10	2	4
619122	0.35	< 10	2.89	0.440	0.038	0.20	< 2	11	95	0.19	< 20	5	< 2	< 10	89	< 10	5	8
619123	0.38	19	0.99	0.136	0.158	0.03	< 2	7	15	0.22	< 20	2	< 2	< 10	71	< 10	9	5
619124	1.39	31	3.52	0.210	0.133	0.02	3	8	54	0.29	< 20	4	< 2	< 10	83	< 10	9	8
619125	0.10	< 10	1.42	0.524	0.018	0.07	< 2	3	303	0.07	< 20	3	< 2	< 10	29	< 10	1	3
619126	0.27	11	0.78	0.109	0.021	0.12	< 2	3	28	0.13	< 20	< 1	< 2	< 10	41	< 10	4	2
619127	0.63	10	3.05	0.345	0.058	0.05	< 2	17	57	0.19	< 20	4	< 2	< 10	128	< 10	7	7
619128	1.40	15	3.15	0.246	0.084	0.07	3	8	45	0.24	< 20	3	< 2	< 10	83	< 10	5	16
619129	0.37	34	1.27	0.126	0.217	0.23	3	3	82	0.14	< 20	8	< 2	< 10	86	< 10	5	5
619130	0.49	40	1.92	0.337	0.224	0.22	< 2	7	159	0.19	< 20	< 1	2	< 10	114	< 10	7	7
619131	0.03	< 10	0.64	0.053	0.033	6.90	3	3	45	0.07	< 20	7	3	< 10	24	< 10	3	7
619132	0.09	< 10	1.28	0.111	0.040	3.09	< 2	5	85	0.08	< 20	4	< 2	< 10	32	< 10	3	7
619133	0.15	13	1.23	0.276	0.059	0.14	< 2	2	260	0.06	< 20	< 1	< 2	< 10	27	< 10	2	3
619134	0.10	< 10	1.11	0.094	0.028	0.08	< 2	4	68	0.05	< 20	< 1	< 2	< 10	25	< 10	2	4
619135	0.09	13	1.22	0.095	0.053	< 0.01	< 2	5	75	0.09	< 20	2	< 2	< 10	28	< 10	3	5
619136	0.05	< 10	0.88	0.072	0.009	0.16	< 2	3	11	0.02	< 20	< 1	< 2	< 10	15	< 10	< 1	2
619137	0.06	< 10	1.00	0.100	0.009	0.16	< 2	3	18	0.03	< 20	2	< 2	< 10	18	< 10	1	2
619138	0.06	< 10	0.93	0.097	0.010	0.13	< 2	3	17	0.03	< 20	< 1	< 2	< 10	17	< 10	1	1
619139	0.15	< 10	1.11	0.611	0.051	< 0.01	< 2	2	56	0.24	< 20	4	3	< 10	191	< 10	6	5
619140	0.73	< 10	3.77	0.468	0.017	< 0.01	< 2	18	82	0.36	< 20	3	< 2	< 10	190	< 10	5	8

Analyte Symbol	Au	Pd	Pt	Ag	Cd	Cu	Mn	Mo	Ni	Pb	Zn	Al	As	B	Ba	Be	Bi	Ca	Co	Cr	Fe	Ga	Hg
Unit Symbol	ppb	ppb	ppb	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	%	ppm	ppm
Lower Limit	2	5	5	0.2	0.5	1	5	1	1	2	2	0.01	2	10	10	0.5	2	0.01	1	1	0.01	10	1
Method Code	FA-ICP	FA-ICP	FA-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP
GXR-1 Meas				32.5	2.9	1210	882	13	43	740	748	0.36	446	< 10	451	0.9	1530	0.87	7	7	24.4	< 10	3
GXR-1 Cert				31.0	3.30	1110	852	18.0	41.0	730	760	3.52	427	15.0	750	1.22	1380	0.960	8.20	12.0	23.6	13.8	3.90
GXR-4 Meas				3.7	< 0.5	6690	142	301	42	46	74	2.82	108	< 10	47	1.4	9	0.97	13	60	3.09	10	< 1
GXR-4 Cert				4.0	0.860	6520	155	310	42.0	52.0	73.0	7.20	98.0	4.50	1640	1.90	19.0	1.01	14.6	64.0	3.09	20.0	0.110
GXR-6 Meas				0.3	< 0.5	72	1070	1	27	106	126	7.30	223	< 10	889	0.9	< 2	0.15	13	85	6.03	20	3
GXR-6 Cert				1.30	1.00	66.0	1010	2.40	27.0	101	118	17.7	330	9.80	1300	1.40	0.290	0.180	13.8	96.0	5.58	35.0	0.0680
PK2 Meas	5030	6070	4840																				
PK2 Cert	4790	5918.000	4749.000																				
PK2 Meas	5170	6310	4950																				
PK2 Cert	4790	5918.000	4749.000																				
CDN-PGMS-25 Meas	506	1900	424																				
CDN-PGMS-25 Cert	483	1830	400																				
CDN-PGMS-25 Meas	494	1900	409																				
CDN-PGMS-25 Cert	483	1830	400																				
619111 Orig	38	57	89																				
619111 Dup	37	60	97																				
619113 Orig				< 0.2	< 0.5	62	560	< 1	142	< 2	37	3.71	< 2	< 10	93	< 0.5	< 2	4.09	36	376	5.39	< 10	4
619113 Dup				< 0.2	< 0.5	62	557	< 1	141	< 2	36	3.80	< 2	< 10	93	< 0.5	< 2	4.14	36	381	5.51	< 10	1
619121 Orig	< 2	8	8																				
619121 Dup	< 2	7	< 5																				
619127 Orig				< 0.2	< 0.5	39	772	< 1	94	< 2	45	3.35	< 2	< 10	129	< 0.5	< 2	4.04	27	231	4.62	< 10	< 1
619127 Dup				< 0.2	< 0.5	40	798	1	93	2	47	3.41	< 2	< 10	127	< 0.5	< 2	4.20	28	240	4.63	< 10	1
619132 Orig	8	20	36																				
619132 Dup	9	21	39																				
619136 Orig	9	< 5	< 5																				
619136 Dup	< 2	< 5	< 5																				
619140 Orig				< 0.2	< 0.5	7	496	< 1	96	3	41	3.15	< 2	< 10	140	< 0.5	2	3.52	32	38	4.58	< 10	< 1
619140 Dup				< 0.2	< 0.5	7	471	< 1	91	< 2	40	2.97	< 2	< 10	136	< 0.5	< 2	3.34	31	37	4.28	< 10	< 1
Method Blank				< 0.2	< 0.5	< 1	< 5	< 1	1	< 2	< 2	< 0.01	< 2	< 10	< 10	< 0.5	< 2	< 0.01	< 1	< 1	< 0.01	< 10	< 1
Method Blank	< 2	< 5	< 5																				
Method Blank	< 2	< 5	< 5																				
Method Blank	< 2	< 5	< 5																				

Analyte Symbol	K	La	Mg	Na	P	S	Sb	Sc	Sr	Ti	Th	Te	Tl	U	V	W	Y	Zr
Unit Symbol	%	ppm	%	%	%	%	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Lower Limit	0.01	10	0.01	0.001	0.001	0.01	2	1	1	0.01	20	1	2	10	1	10	1	1
Method Code	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP
GXR-1 Meas	0.03	< 10	0.15	0.059	0.046	0.22	92	1	173	< 0.01	< 20	14	< 2	31	83	178	26	13
GXR-1 Cert	0.050	7.50	0.217	0.0520	0.0650	0.257	122	1.58	275	0.036	2.44	13.0	0.390	34.9	80.0	164	32.0	38.0
GXR-4 Meas	1.69	44	1.64	0.141	0.124	1.82	7	6	66	0.13	< 20	< 1	< 2	< 10	82	11	11	9
GXR-4 Cert	4.01	64.5	1.66	0.564	0.120	1.77	4.80	7.70	221	0.29	22.5	0.970	3.20	6.20	87.0	30.8	14.0	186
GXR-6 Meas	1.14	< 10	0.42	0.086	0.034	0.01	5	19	26		< 20	< 1	4	< 10	172	< 10	5	6
GXR-6 Cert	1.87	13.9	0.609	0.104	0.0350	0.0160	3.60	27.6	35.0		5.30	0.0180	2.20	1.54	186	1.90	14.0	110
PK2 Meas																		
PK2 Cert																		
PK2 Meas																		
PK2 Cert																		
CDN-PGMS-25 Meas																		
CDN-PGMS-25 Cert																		
CDN-PGMS-25 Meas																		
CDN-PGMS-25 Cert																		
619111 Orig																		
619111 Dup																		
619113 Orig	0.31	< 10	2.93	0.402	0.012	0.30	3	17	97	0.29	< 20	< 1	< 2	< 10	117	< 10	4	6
619113 Dup	0.31	< 10	2.95	0.408	0.012	0.31	3	17	98	0.29	< 20	< 1	< 2	< 10	118	< 10	4	6
619121 Orig																		
619121 Dup																		
619127 Orig	0.63	10	3.03	0.347	0.058	0.05	< 2	17	56	0.19	< 20	6	< 2	< 10	125	< 10	7	7
619127 Dup	0.63	11	3.06	0.343	0.059	0.05	< 2	18	58	0.20	< 20	3	< 2	< 10	132	< 10	7	7
619132 Orig																		
619132 Dup																		
619136 Orig																		
619136 Dup																		
619140 Orig	0.75	< 10	3.88	0.484	0.018	< 0.01	< 2	19	85	0.36	< 20	2	< 2	< 10	195	< 10	6	8
619140 Dup	0.72	< 10	3.66	0.451	0.016	< 0.01	3	18	79	0.36	< 20	3	< 2	< 10	185	< 10	5	8
Method Blank	< 0.01	< 10	< 0.01	0.012	< 0.001	< 0.01	< 2	< 1	< 1	< 0.01	< 20	< 1	< 2	< 10	< 1	< 10	< 1	< 1
Method Blank																		
Method Blank																		
Method Blank																		