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# Assessment Report on Sampling, Petrography and Mineralogy Chrome Property, Thunder Bay South District, Ontario

Patented Claims

PAT-16032 (TB10835), PAT-16033 (TB10836), PAT-16035 (TB10827), PAT-16036 (TB10828) Staked Claims

289661, 328865, 270180, 195573, 121686, 262223, 328866, 282278 (legacy claim TB4285401)
Obonga Lake Area (G-0100), Thunder Bay Mining Division
Latitude 49° 58′ 23″ N, Longitude 89° 29′ 39″ W;
UTM WGS84 Zone 16U 321165 mE, 5538605 mN;
NTS 52H 14 - Gull Bay

For:

Pavey Ark Minerals Inc. Client number 411465

Prepared By: Richard Sutcliffe, P.Geo. (Client number 225603) 100 Broad Leaf Crescent, Ancaster, ON, L9G 3R8

October 30, 2018

#### **Executive Summary**

This assessment report documents geological sampling, assays, petrographic studies and SEM mineralogy on the Chrome Property, Thunder Bay Mining Division, Ontario. The exploration targets chromite mineralization associated with the past producing Chrome Lake Mine and Puddy serpentinite and tested for gold mineralization in quartz veins in sheared tonalite adjacent to the serpentinite.

The Chrome Property is located 179 km north of the city Thunder Bay, 49 km southwest of the town of Armstrong Station, and 1,043 km northwest of Toronto, Ontario. Highway 527, a paved highway that extends north from Thunder Bay to Armstrong, is located 25 km east of the Property. The property is accessed from the Obonga Lake and Scalp Creek roads and then a 2.2 km long hiking/snowmobile trail that extends SW to the Property from the west end of the Scalp Creek road.

Field work for this report was carried out August 18 to 20, 2018 on patented claims PAT-16032 (TB10835), PAT-16033 (TB10836), PAT-16035 (TB10827), PAT-16036 (TB10828) and staked cell claims 289661, 328865, 270180, 195573, 121686, 262223, 328866, 282278 that were converted from legacy claim TB4285401. Reporting was completed on October 30, 2018. Total expenditures were \$9,120.

The Chrome Property is underlain by the Chrome-Puddy serpentinite intrusion. Historically, exploration in the eastern portion of the serpentinite on which this work was performed has targeted chromite. Following the discovery of chromite at Chrome Lake in 1928, Consolidated Chromium Corporation completed trenching, drilling and shaft sinking at the Chrome Lake mine where 7,672 tons of chromite were mined between 1934 and 1938. The ultramafic rocks have been completely altered to serpentine, talc, chlorite, carbonate, magnetite, and amphibole. Medium-grained, strongly foliated biotite tonalite bounds the serpentinite to the north and east.

Rock and mineralogical analyses were done at Activation Laboratories Ltd. ("ActLabs"), Ancaster, Ontario. Twelve ultramafic rocks were analyzed for Pt, Pt, Au by fire assay and for Cr, Ni and other elements by ICP-OES following peroxide fusion. Thirteen rocks were analyzed for gold by fire assay and other elements by ICP-OES following 4-acid digestion. Polished thinsections were examined for twelve ultramafic samples including 1 sample collected in 2016, 6 samples collected in 2017, and 5 samples collected during the current program. Three of the polished sections of ultramafic rocks were investigated by scanning electron microscope (SEM) at ActLabs and includes representative analyses of oxide minerals including chromite.

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#### **Executive Summary**

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#### 1.0 Introduction

This assessment report documents geological sampling, assays, petrographic studies and SEM mineralogy on the Chrome Property, Thunder Bay South District, Thunder Bay Mining Division, Ontario. Field work for this report was carried out August 18 to 20, 2018 on patented claims PAT-16032 (TB10835), PAT-16033 (TB10836), PAT-16035 (TB10827), PAT-16036 (TB10828) and staked cell claims 289661, 328865, 270180, 195573, 121686, 262223, 328866, 282278 that were converted from legacy claim TB4285401. Reporting was completed on October 30, 2018. The exploration targets chromite mineralization associated with the Puddy serpentinite and tested for gold mineralization in quartz veins in sheared tonalite adjacent to the serpentinite. Total expenditures were \$9,120.

#### 2.0 Location and Access

The Chrome Property is located in the Thunder Bay Mining District of northwestern Ontario. The property is 179 km north of the city Thunder Bay, 49 km southwest of the town of Armstrong Station, and 1,043 km northwest of Toronto, Ontario. Highway 527, a paved highway that extends north from Thunder Bay to Armstrong, is located 25 km east of the Property.

Logging roads east of the Property come to within 2.2 km of Chrome Lake. The logging road access route is from the "Obonga Lake Road" which is a signed gravel road west of highway 527 and located 30 km south of Armstrong Station. From the Obonga Lake Road, the property is accessed from the Scalp Creek Road and then a hiking/snowmobile trail. The trail is approximately 2.2 km long and extends SW to the Property from the west end of the Scalp Creek road.

Armstrong, Station Chrome Puddy 11 Lac des lles Current Lake  $\Delta$ Thunder Bay Image 100 km Image

**Figure 1. Chrome Property Location** 

Source: Google Earth 2016

#### 3.0 Claim Holdings and Property Disposition

The work for this assessment was completed on the eastern part of Pavey Ark's Property that includes patented claims PAT-16032 (TB10835), PAT-16033 (TB10836), PAT-16035 (TB10827), PAT-16036 (TB10828) and contiguous staked cell claims 289661, 328865, 270180, 195573, 121686, 262223, 328866, 282278 that were converted from legacy claim TB4285401. All claims are 100% owned by Pavey Ark Minerals Inc., a private company. The complete list of patented and staked claims that forms the Chrome – Puddy Property is provided in Appendices 1 and 2.

#### 4.0 Previous Work

Historically, exploration and development in the eastern portion of the Chrome-Puddy serpentinite has targeted chromite, while the western portions of the intrusion have been

explored for nickel and precious metals. Historic exploration activity on the property, as documented by Puumala et al. (2012) is summarized below.

Chromite was first discovered in the vicinity of Chrome Lake in 1928 by W.K. Keefe and R.A. MacDonald who staked the occurrence and transferred ownership to Golden Centre Mines Inc. of New York. In 1930 Consolidated Chromium Corporation, a subsidiary of Golden Centre Mines, began development work, including stripping, trenching, drilling and shaft sinking. The shaft was sunk to a depth of 350 feet, with levels at 100 and 225 feet. Operations ceased in late fall of 1930 and did not resume until 1933, when new owner Chromium Alloy Co. sent 70 tons of ore to Niagara Falls, New York, for beneficiation tests. Chromium Mining and Smelting Corp. Ltd. was formed and took control of the property in 1934 and re-commenced operations in 1936. Underground work was discontinued in 1937 because of poor ore recovery, and all activities on the site ceased in 1938. The Chrome property has been inactive since 1938.

Between 1964 and 1967, Commerce Nickel Mines carried out the first significant exploration program targeting nickel in the western portion of the Puddy serpentinite, including trenching, geological mapping, geochemical and geophysical surveys and diamond drilling (24 diamond-drill holes, totalling 5,590 feet). Between 1967 and 1968, Newmont Mining Corp. of Canada completed trenching, electromagnetic surveying and diamond drilling (10 holes, totalling 3106 feet). By the mid- to late-1980s, the area began to receive attention for its PGE potential. Between 1985 and 1993, K. Kuhner carried out prospecting, outcrop stripping, surface sampling and ground geophysical surveys on claims located on the south side of Puddy Lake. The property was transferred to Obongo Precious Metals Ltd. in 1993, and Obongo completed approximately 20 diamond-drill holes between 1993 and 1996. Imperial Platinum Corp. carried out geological mapping, sampling and ground geophysical surveys in 1987 and 1988 over an adjacent property encompassing areas west, north and southeast of Puddy Lake.

The OGS completed airborne magnetic and electromagnetic surveys with the Dighem EM system in 2000 with 200m line spacing and a nominal 58m terrain clearance (OGS 2000). The most recent exploration activity includes ground magnetic and electromagnetic surveys conducted by Vale Inco Ltd. in 2007 over a property covering the western half of the Puddy Lake serpentinite that identified a number of east west trending conductors, particularly north of Puddy Lake. D. Plumridge has carried out prospecting and sampling of a claim near the southeast end of Puddy Lake since 2004. Pavey Ark Minerals Inc reported results of mapping, portable XRF analysis and prospecting in 2014 and 2015. Pavey Ark conducted geological mapping and VLF-EM surveying on a 3.7 km grid west of the Chrome Mine shaft in 2016. This grid was extended to the northwest in 2017 with an additional 2.75 km of grid combined with geological mapping and VLF-EM surveying by Pavey Ark.

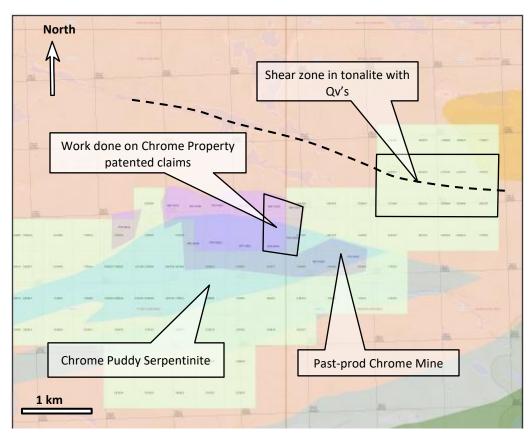
#### 5.0 Geology

The Chrome-Puddy Property is located in the Obonga metavolcanic and metasedimentary greenstone belt of the Archean Superior Province. The Obonga greenstone belt is a relatively small (approximately 10 x 40 km) greenstone belt, situated between the Sturgeon-Savant belt

on the west and the Onaman-Tashota belt to the east, and has been considered to be part of the Wabigoon Subprovince (Percival and Stott 2000).

The Chrome Puddy Property is underlain by the Chrome-Puddy serpentinite intrusion that is exposed for 7 km along strike and is approximately 1 km in width (Figure 2). Whittaker (1986) reports that rocks of the intrusion include dunite, peridotite, and minor pyroxenite, all of which are serpentinized. Medium-grained, biotite tonalite bounds the Serpentinite to the north. South of Puddy Lake, the serpentinite intrusion is bound by mylonite and mixed metasedimentary and granitic rocks. North-striking and east-striking diabase dikes of probable middle Proterozoic age cut the Serpentinite.

**Figure 2. Chrome Puddy Property geology and claims.** Chrome Property patented claims and staked claims that are the subject of the current assessment report are outlined in black.



Base map source: MLAS 2018

#### 6.0 Rock Samples and Petrography

A list of samples with UTM locations and descriptions is provided in Appendix 3. Sample locations are provided on Map 2.

Samples CR1710, CR1801 to CR1806, CR1813 to CR1817 are from quartz veins and/or hematite-chlorite altered and sheared tonalite from a northwest-southeast trending and south dipping shear zone extending through legacy claim TB4285401. Sample CR1709 was a sample from outside of the claim area. The quartz veins range from narrow veinlets to 30 cm wide veins with associated tourmaline, muscovite and pyrite. The sheared tonalite, varies from strongly foliated to sub-mylonitic texture and locally has chlorite alteration of biotite and rusty weathering. Foliations range from approximately 120° to 90° with consistent moderate south dips of 40 to 60° south. Several samples were taken as the rocks appeared prospective for gold mineralization, however, assays did not reveal significant mineralization.

Samples CR1701 to CR1708 and CR1807 to CR1812 are from the large ultramafic outcrop exposed east of Chrome Lake. The samples were selected to be representative of textural variants of the serpentinite and to investigate the extent of potential disseminated chromite mineralization.

The ultramafic rocks have been completely altered to serpentine, talc, chlorite, carbonate, magnetite, and amphibole. The alteration, metamorphism and deformation of the serpentinite has made the interpretation of protoliths in the intrusion difficult (Graham 1930; Hurst 1931; Simpson and Chamberlain 1967; Whittaker 1986). Although no ultramafic rocks with primary mineralogy remain, the original rock types in some areas can be inferred with confidence by comparison with the results of studies on known types of serpentine pseudomorphs. The best preserved primary texture in the serpentinite is relict a relict olivine cumulate texture that locally exceeds 90% of the rock and indicates the original rock was probably a dunite. In some rocks, the presence of intercumulus poikilitic amphibole probably replaces pyroxene and is indicative of peridotite.

Petrographic descriptions of the ultramafic rocks are provided in Appendix 4.

#### 7.0 SEM Oxide Mineralogical Investigation

An investigation of oxide minerals in selected polished sections of serpentinite (samples CR1604, CR1811 and CR1812) was carried out on October 11, 2018 at Activation Laboratories (ActLabs) in Ancaster Ontario using a MLA FEI 650F scanning electron microscope (SEM). Representative back scatter electron (BSE) images were collected from polished sections to evaluate textures of oxide grains and representative energy dispersive spectra (EDX Spectra) were collected to determine the composition and mineral species.

Sample CR1604 was previously collected in 2016 from the area of the Chrome Mine shaft and been previously determined to contain over 22% Cr2O3. The other ultramafic samples were all collected from the large ultramafic outcrop that occurs approximately 2 km NW of the shaft.

Backscatter electron images and associated EDX Spectra show that high Cr spinel (chromite) is the dominant mineral phase in CR1604 (Figure 3). The chromite forms 0.5 to 1 mm euhedral, cumulate grains that are fractured into angular pieces. Chromite grains have a fine rim with

lower Cr/Fe composition. The matrix consists of fine alteration minerals resulting from serpentinization.

Figure 3 BSE images for chromite in CR1604.

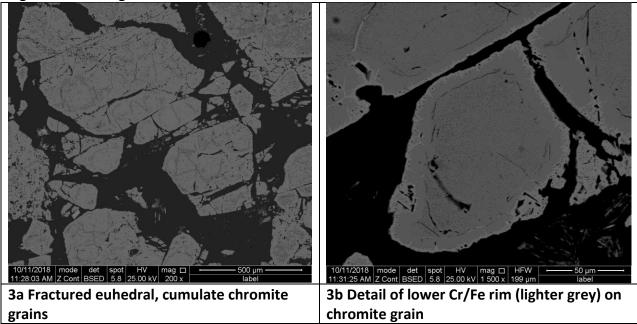
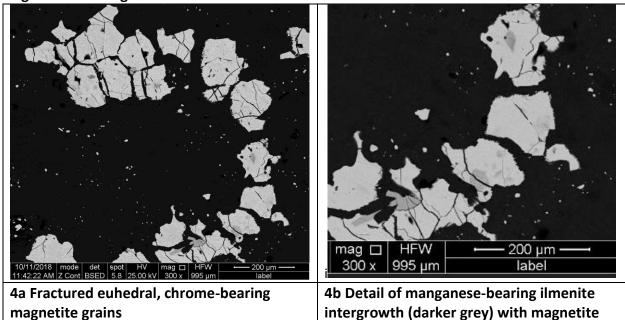


Table 1 shows that the chromite contains up to 28% atomic Cr with atomic Cr/Fe of 1.8/1 with moderate Mg and Al contents. The grains show weak zonation with rims that are higher in Fe and lower Cr, Mg and Al contents.

Several serpentinite samples including CR1811 have up to 10% disseminated subhedral oxide. These oxides typically occur in clusters and impart a "peppery" texture to the weathered surface of the serpentinite. The clustered habit is shown in Figure 4.

Figure 4 BSE images for oxides in CR1811.



EDX spectra collected from these grains (Table 1) indicate that they are a Cr-bearing magnetite with Cr contents of approximately 5 atomic % and Cr/Fe ratios of 0.1/1. In sample C1811, the Cr bearing magnetite is intergrown with Mn ilmenite with over 31 atomic% Ti and 13 atomic% Mn.

Table 1. Representative analyses of oxide minerals – atomic %

Sample	CR1604	CR1604	CR1604	CR1811	CR1811
Description	Core of	Edge	Cr	Cr	Mn
	chromite	chromite	magnetite	magnetite	Ilmenite
Element					
0	43.24	44.90	41.93	33.55	35.57
Mg	5.23	5.11		1.79	
Al	8.00	2.89	-		-
Cr	28.13	24.75	5.54	5.35	1
Fe	15.31	19.61	52.53	59.3	19.26
Mn		2.33	1		13.49
Ti		0.40			31.69

#### 8.0 Assay Samples

Twenty five (25) rock samples were submitted for assay at Activation Laboratories Ltd. (ActLabs), in Ancaster Ontario. Sample locations are shown on map 2. The analytical certificate is presented as Appendix 6. Twelve (12) ultramafic samples were submitted for fire assay with ICP finish for Pt, Pd, Au and multi-element analyses using a sodium peroxide fusion and ICP finish. The sodium peroxide fusion was used to ensure total dissolution of refractory minerals

such as chromite. An additional 13 samples of potentially gold mineralized quartz veins and altered tonalite were submitted for fire assay with AA finish for Au, and multi-element analyses using a conventional 4-acid dissolution and ICP finish.

All of the ultramafic samples contained relatively low precious metal values. The highest values were from 35ppb Pd+Pt from CR1811 (lab #677211). Ni values were relatively high with most samples containing over 0.10%, however, Cu values were mostly below detection limits. The highest Cr value was 1.05% from CR1811 and probably reflects the presence of Cr-bearing magnetite.

The samples from the quartz veins and chlorite altered sheared tonalite did not contain any significant precious metals mineralization.

#### 10.0 Conclusions and Recommendations

The petrographic studies confirm that the ultramafic rocks east of Chrome Lake consist of serpentinized dunite and peridotite with relict olivine cumulate textures and locally intercumulus amphibole that likely replace pyroxenes. Disseminated oxide phases in the serpentinite are primarily Cr-bearing magnetite with minor amounts of Mn-bearing ilmenite. Chromite is locally present as massive layers.

Further work on the ultramafic intrusion should focus on identification of massive chromite layers similar to those found at the Chrome mine and on potential base metal sulphide mineralization at the basal contact of the intrusion. Background PGM contents in the eastern part of the Puddy serpentinite appear to be relatively low.

Quartz veins with minor amounts of tourmaline, pyrite and muscovite associated with chlorite altered and sheared tonalite located northeast of the ultramafic intrusion appear to have limited potential for precious metal mineralization.

#### 11.0 References

Graham, A.R., 1930, Obonga Lake Chromite Area, District of Thunder Bay, in the Thirty-Ninth Annual Report of the Ontario Department of Mines, Vol. XXXIX, Part II, pp. 51-60.

Hurst, M.E., 1931, Chromite Deposits of the Obonga Lake Area, District of Thunder Bay, in the Fortieth Annual Report of the Ontario Department of Mines, Vol. XL, Part IV, pp. 111-119.

Ontario Geological Survey, 2000, Airborne magnetic and electromagnetic surveys, Garden-Obonga area, Ontario Geological Survey, Map 82-097, Scale 1:20,000.

Percival, J.A., and Stott, G.M. 2000, toward a revised stratigraphy and structural framework for the Obonga Lake greenstone belt, Ontario, Geological Survey of Canada, Current Research 2000-C22, 8 p.

Puumala, M., et al. 2013, Report of Activities 2012, Resident Geologists Program, Thunder Bay South District, Ontario Geological Survey P6285.

Simpson, P.R., and Chamberlain, J.A., 1967: Nickel Distribution in Serpentinites from Puddy Lake, Ontario; Geo. Assoc. Canada Proceedings, Vol. 18, p.67-91.

Whittaker, P.J., 1986, Chromite Deposits in Ontario, Ontario Geological Survey, Study 55, 97p.

#### 12.0 Statement of Qualifications

I, Richard H. Sutcliffe, of 100 Broadleaf Crescent, Ancaster, Ontario, do hereby certify that:

I am a graduate of University of Toronto (B.Sc. Geology, 1977, M.Sc Geology 1980), and a graduate of University of Western Ontario (Ph.D. Geology, 1986) and I have been practising my profession as a geologist since.

I am a member with the Association of Professional Geoscientists of Ontario (#852). I have direct knowledge of the exploration work performed for this assessment and I am indirectly the owner of the claims on which the work was performed.

Signed

"R.H. Sutcliffe"

Richard H. Sutcliffe, Ph.D., P.Geo. October 30, 2018 Ancaster, Ontario

Appendix 1. List of Patented Claims owned by Pavey Ark

MLAS Mining	Patent	Recorded Claim	Area	Area
Rights Number	Number	Number	(acres)	(hectares)
PAT-16029	TB 8420	TB 14414 &	88.55	35.84
		TB14413		
PAT-16030	TB 8421	TB 14415	50.91	20.60
PAT-16031	TB 8422	TB 14412	33.90	13.72
PAT-16032	TB 8423	TB 10835	66.41	26.88
PAT-16033	TB 8424	TB 10836	69.24	28.02
PAT-16034	TB 8425	TB 10826	44.63	18.06
PAT-16035	TB 8426	TB 10827	41.87	16.94
PAT-16036	TB 8427	TB 10828	31.88	12.90
PAT-16037	TB 8428	TB 10883	17.83	7.22
PAT-16038	TB 8814	TB 8814	74.67	30.22
PAT-16039	TB 9294	TB 19207	40.56	16.41
			Total 560.45	226.81

**Appendix 2. List of Staked Claims comprising the Chrome Puddy Property** 

Legacy Claim Id	Township / Area	Tenure ID	Tenure Type	Anniversary Date	Work Required	Work Applied	Total Reserve	Conversion Bank Credit
4244587	OBONGA LAKE AREA	164485	Single Cell Mining Claim	2019-10-22	200	0	0	0
4244587	OBONGA LAKE AREA	279745	Single Cell Mining Claim	2019-10-22	200	0	274	0
4244587	OBONGA LAKE AREA	268426	Single Cell Mining Claim	2019-10-22	200	0	0	0
4244587	OBONGA LAKE AREA	261066	Single Cell Mining Claim	2019-10-22	200	0	0	0
4244587	OBONGA LAKE AREA	261065	Single Cell Mining Claim	2019-10-22	400	0	0	0
4254343	PUDDY LAKE AREA	106762	Single Cell Mining Claim	2018-11-27	400	0	0	0
4254343	PUDDY LAKE AREA	340260	Single Cell Mining Claim	2018-11-27	400	0	0	0
4254343	PUDDY LAKE AREA	339676	Single Cell Mining Claim	2019-10-22	400	0	0	0
4254343	PUDDY LAKE AREA	301528	Single Cell Mining Claim	2018-11-27	400	0	0	0
4254343	PUDDY LAKE AREA	301527	Single Cell Mining Claim	2018-11-27	400	0	0	0
4254343	PUDDY LAKE AREA	301526	Single Cell Mining Claim	2018-11-27	400	0	0	0
4254343	PUDDY LAKE AREA	281284	Single Cell Mining Claim	2018-11-27	400	0	0	0
4254343	PUDDY LAKE AREA	233274	Single Cell Mining Claim	2018-11-27	400	0	0	0
4254343	PUDDY LAKE AREA	225270	Single Cell Mining Claim	2018-11-27	400	0	0	0
4254343	PUDDY LAKE AREA	225269	Single Cell Mining Claim	2018-11-27	400	0	0	0
4254343	PUDDY LAKE AREA	184717	Single Cell Mining Claim	2020-03-21	400	400	0	0
4254343	PUDDY LAKE AREA	178105	Single Cell Mining Claim	2019-10-22	400	0	0	0
4254343	PUDDY LAKE AREA	149425	Single Cell Mining Claim	2018-11-27	400	0	0	0
4254343	PUDDY LAKE AREA	121453	Single Cell Mining Claim	2018-11-27	400	0	0	0
4254343	PUDDY LAKE AREA	121452	Single Cell Mining Claim	2018-11-27	400	0	0	32

4254345         OBONGA LAKE AREA         106043         Single Cell Mining Claim         2019-11-27         200         200           4254345         OBONGA LAKE AREA         340354         Single Cell Mining Claim         2018-11-27         400         0           4254345         OBONGA LAKE AREA         281892         Single Cell Mining Claim         2019-11-27         200         200           4254345         OBONGA LAKE AREA         252884         Single Cell Mining Claim         2018-11-27         400         0           4254345         OBONGA LAKE AREA         233023         Single Cell Mining Claim         2019-10-20         400         0           4254345         OBONGA LAKE AREA         179321         Single Cell Mining Claim         2018-11-27         400         0           4254345         OBONGA LAKE AREA         179320         Single Cell Mining Claim         2018-11-27         400         0           4254345         OBONGA LAKE AREA         166580         Single Cell Mining Claim         2018-11-27         400         0           4254345         OBONGA LAKE AREA         149533         Single Cell Mining Claim         2018-11-27         400         0	
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	0 0
4254345 OBONGA LAKE AREA 149533 Single Cell Mining Claim 2018-11-27 400 0	
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4254345 OBONGA LAKE AREA 134085 Single Cell Mining Claim 2019-11-27 200 200	0 0
4254345 OBONGA LAKE AREA 121686 Single Cell Mining Claim 2019-10-20 400 0	0 0
4254346 PUDDY LAKE AREA 301445 Boundary Cell Mining Claim 2019-10-22 200 0	0 0
4254346 PUDDY LAKE AREA 290692 Single Cell Mining Claim 2018-11-27 400 0	0 0
4254346 PUDDY LAKE AREA 282629 Single Cell Mining Claim 2019-11-27 200 200	0 0
4254346 PUDDY LAKE AREA 180062 Single Cell Mining Claim 2018-11-27 400 0	0 124
4254346 PUDDY LAKE AREA 180047 Single Cell Mining Claim 2019-11-27 200 200	0 0
4254346 PUDDY LAKE AREA 120740 Boundary Cell Mining Claim 2020-03-21 200 200	0 (
OBONGA LAKE AREA,PUDDY LAKE	
4254346         AREA         341571         Single Cell Mining Claim         2019-11-27         200         200	0 0
OBONGA LAKE AREA,PUDDY LAKE	
4254346 AREA 180061 Single Cell Mining Claim 2018-11-27 400 0	0 0
OBONGA LAKE AREA, PUDDY LAKE	
4254346         AREA         134850         Single Cell Mining Claim         2018-11-27         400         0	0 0
4254346         OBONGA LAKE AREA         302837         Single Cell Mining Claim         2018-11-27         400         0	0 0
4265979         PUDDY LAKE AREA         289296         Boundary Cell Mining Claim         2019-10-22         200         0	0 0
4265987         PUDDY LAKE AREA         106244         Single Cell Mining Claim         2019-10-22         400         0	0 0
4265987         PUDDY LAKE AREA         341568         Single Cell Mining Claim         2019-10-22         400         0	0 0
4265987         PUDDY LAKE AREA         319502         Single Cell Mining Claim         2019-10-22         400         0	0 0
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4265987         PUDDY LAKE AREA         302817         Single Cell Mining Claim         2019-10-22         400         0	0 0
4265987         PUDDY LAKE AREA         289295         Boundary Cell Mining Claim         2019-10-22         200         0	0 0
4265987         PUDDY LAKE AREA         282627         Single Cell Mining Claim         2019-10-22         400         0	0 0
4265987         PUDDY LAKE AREA         252204         Boundary Cell Mining Claim         2019-10-22         200         0	0 0
4265987         PUDDY LAKE AREA         234611         Single Cell Mining Claim         2019-10-22         400         0	0 0
4265987 PUDDY LAKE AREA 234610 Single Cell Mining Claim 2019-10-22 400 0	0 0
4265987 PUDDY LAKE AREA 234609 Single Cell Mining Claim 2019-10-22 400 0	0 0
4265987 PUDDY LAKE AREA 199015 Single Cell Mining Claim 2019-10-22 400 0	0 0
4265987 PUDDY LAKE AREA 186806 Single Cell Mining Claim 2019-10-22 400 0	0 0
4265987 PUDDY LAKE AREA 186805 Single Cell Mining Claim 2019-10-22 400 0	0 0
4265987 PUDDY LAKE AREA 134829 Single Cell Mining Claim 2019-10-22 400 0 9	4 (
4265987 PUDDY LAKE AREA 134828 Single Cell Mining Claim 2019-10-22 400 0	0 0

		ı		ı				
4265987	PUDDY LAKE AREA	132895	Single Cell Mining Claim	2019-10-22	200	0	0	0
4265987	PUDDY LAKE AREA	106245	Single Cell Mining Claim	2019-10-22	400	0	0	0
4265988	PUDDY LAKE AREA	121380	Boundary Cell Mining Claim	2019-10-22	200	0	0	0
4265988	PUDDY LAKE AREA	280709	Single Cell Mining Claim	2019-10-22	200	0	0	0
4265988	PUDDY LAKE AREA	178104	Single Cell Mining Claim	2019-10-22	200	0	0	0
4265988	PUDDY LAKE AREA	164572	Single Cell Mining Claim	2019-10-22	200	0	0	0
4285401	OBONGA LAKE AREA	341225	Single Cell Mining Claim	2019-10-20	400	0	0	0
4285401	OBONGA LAKE AREA	328866	Single Cell Mining Claim	2019-10-20	400	0	0	0
4285401	OBONGA LAKE AREA	328865	Single Cell Mining Claim	2019-10-20	400	0	0	0
4285401	OBONGA LAKE AREA	289661	Single Cell Mining Claim	2019-10-20	400	0	0	0
4285401	OBONGA LAKE AREA	282278	Single Cell Mining Claim	2019-10-20	400	0	0	0
4285401	OBONGA LAKE AREA	270180	Single Cell Mining Claim	2019-10-20	400	0	0	0
4285401	OBONGA LAKE AREA	262224	Single Cell Mining Claim	2019-10-20	400	0	0	0
4285401	OBONGA LAKE AREA	262223	Single Cell Mining Claim	2019-10-20	400	0	0	0
4285401	OBONGA LAKE AREA	214260	Single Cell Mining Claim	2019-10-20	400	0	0	0
4285401	OBONGA LAKE AREA	195573	Single Cell Mining Claim	2019-10-20	400	0	0	0
4285401	OBONGA LAKE AREA	195572	Single Cell Mining Claim	2019-10-20	400	0	0	0
4285401	OBONGA LAKE AREA	179678	Single Cell Mining Claim	2019-10-20	400	0	0	0
4285401	OBONGA LAKE AREA	179677	Single Cell Mining Claim	2019-10-20	400	0	0	0
4285401	OBONGA LAKE AREA	160829	Single Cell Mining Claim	2019-10-20	400	0	0	0

# Appendix 3. Sample Locations and field descriptions

Sample No	Lab #	wpt	Easting	Northing	Field comments
CR1604					Chromitite from chrome mine shaft
					area
CR1701		1823	320261	5538958	Serpentinite
CR1702	677201	1835	320383	5538883	Serpentinite, mgt veinlets, 5-10%
					diss oxides, magnetic
CR1703	677202	1836	320401	5538879	Serpentinite, relict cum ol, 10%
					intercum oxide, weakly mag
CR1704	677203	1850	320414	5538883	Peridotite, serpentinized, relict cum
					olivine, poss. Poikilitic pyroxene, <
					5% oxide, weakly mag
CR1705	677204	1852	320245	5538934	Serpentinite, possible chromite, 5%
					oxides, weakly mag
CR1706	677205	1853	320206	5538978	Serpentinite, "peppered" texture,
					5-10% oxides, weakly mag, TS
CR1707	677206	1854	320200	5538971	Serpentinite, heavily "peppered",
					10% oxides, weakly magnetic, TS
CR1708		1765	320103	5538982	Serpentinite, poss. Relict ol, with
					intercumulus oxide, magnetic,
					sampled 1 <sup>st</sup> day
CR1709	677213	1753	320806	5540327	Rusty float at first creek crossing

CR1710	677214	1749	322741	5539364	30 cm QV with tourmaline
CR1801	677215	1962	322669	5539367	Boulder, altered tonalite in stream
					bed
CR1802	677216	1963	322702	5539376	o/c, tonalite with chlorite alteration
CR1803	677217	1966	322738	5539373	6 cm QV with tour+musc+py at
					150/80N in foliated tonalite
CR1804	677218	1969	322733	5539367	Float block, 4 cm QV with tour+py
					in altered tonalite
CR1805	677219	1972	322800	5539294	QV in pink altered tonalite with chl
CR1806	677220	1973	322848	5539279	Float block, 12 cm QV in alt tonalite
CR1807	677207	002	320237	5538882	Serpentinite, blocky cleavage,
					black, weak mag
CR1808	677208	003	320248	5538920	Serpentinite, less than 5% oxide,
					massive
CR1809	677209	004	320245	5538935	Serpentinite, massive, magnetic
					10% oxide, may have been sampled
					in 2017
CR1810	677210	006	320240	5538967	Serpentinite, massive
CR1811	677211	007	320225	5538987	Serpentinite, peppered, 10%
					oxides, massive
CR1812	677212	009	320185	5539011	Serpentinite, massive, relict cum ol
CR1813	677221	015	322550	5539397	Altered tonalite with QV'lets,
					chlorite, rusty
CR1814	677222	017	322545	5539397	QVs in chlorite altered tonalite,
					rusty
CR1815	677223	019	322477	5539425	Altered tonalite, sub-mylonite,
					rusty
CR1816	677224	020	322457	5539426	Float, rusty QV
CR1817	677225	030	323435	5539242	Sub-mylonite, QV

# **Appendix 4. Petrographic Descriptions**

Sample #	Description	Petrography
CR1604	Chromitite –	80% broken originally <b>euhedral chromite</b> grains, average grain
	orange weathered	size originally 1 to 2 mm, now fractured into angular smaller
	surface, metallic	grains, faint translucence, deep red/brown
	fresh surface	20% fine matrix, possibly talc, carbonate+serpentine;
		Photograph for massive chromitite
CR1702	Serpentinite, after	80% relict olivine 2 to 3 mm grains replaced by serpentine,
	dunite (ol	10% intercumulus colourless fibrous amphibole (tremolite),
	cumulate)	locally shows amphibole cleavage, with associated serpentine,
		fibrous chlorite, possible epidote
		10% opaques – probably magnetite, 1 to 2 mm clusters of very
		fine grains, also veinlets of v. fine grains
CR1703	Serpentinite after	80% relict euheral cumulate 1 to 2 mm olivine grains
	dunite (ol+chr	pseudomorphed by serpentine,
	cumulate),	10% euhedral 0.1 to 0.2 mm oxides, very faint red brown
	cumulate olivine	translucence, interstitial to olivine, rimmed by v. fine granular

	visible on	ovide probably magnetite
	weathered surface	oxide probably magnetite,  10% altered intercumulus groundmass consisting of fine granular oxide (probably mgt)/ chlorite (pale green pleochroic) Veinlets of serpentine (?) with minor carbonate and talc(?)
CR1704	Peridotite, serpentinized	70% fibrous tremolite, colourless, end sections show amphibole cleavage, some grains to 0.5 mm but mostly 0.1 mm or finer, 15% serpentine, possibly replacing olivine grains but less clear than previous examples, 10% oxides, fine granular aggregates in groundmass, also clusters of 0.1 mm subhedral grains, 5% groundmass consisting of serpentine, possibly chlorite, iddingsite
CR1705	Serpentinite	85% Fine serpentine groundmass, no relict textures; 5% Colourless amphibole, 2 to 4 mm poililitic ragged grains; 5% Fine granular magnetite, grains less than 0.1 mm, mixed with serpentine; 5% anhedral oxides, 1 to 2 mm, no evidence of translucence; Veinlets with fine granular magnetite
CR1706	Serpentinite	80% serpentine, fine groundmass, no relict textures; 10% chlorite and possibly tremolite in groundmass; 5% Oxides, Subhedral 0.5 to 1 mm grains, disseminated, fractured, surrounded by fine granular opaques, no translucence; 2% Oxides, granular in very fine clusters, probably magnetite alteration
CR1707	Serpentinite	85% serpentine, fine groundmass, no relict textures; 5% 1 to 2 mm blades, possibly antigorite; 5% Oxides, Subhedral 0.5 to 1 mm grains, disseminated, fractured, surrounded by fine granular opaques; 5% Oxides, granular in very fine clusters, probably magnetite alteration
CR1807	Serpentinite	90% serpentine, varies from fine groundmass to blades of antigorite, no relict textures, but blades of antigorite define foliation; 5% oxides, very fine alteration with serpentine in groundmass, also forms fine veinlets cutting rock; 2% euhedral to subhedral 0.5 to 1mm grains, very weak dark brownish red translucence
CR1808	Serpentinite	80% serpentine, fine groundmass, local possible relict cumulate olivine textures defined by granular oxide rich groundmass, 10% tremolite, large ragged, prismatic grains to 5 mm; 5% euhedral 0.5 mm oxides; 5% fine granular opaques, probably magnetite.
CR1810	Serpentinite	80% serpentine, very fine groundmass, no relict textures; 10% tremolite, large ragged, prismatic grains to 5 mm; 10% oxides, fractured 0.5 to 1 mm subhedral grains; 2% very fine granular opaques, probably magnetite

CR1811	Serpentinite	90% serpentine, very fine groundmass, no relict textures 10% oxides, fractured 0.5 to 1 mm subhedral disseminated grains: TR very fine granular opaques, probably magnetite
CR1812	Serpentinite, after dunite (ol + chr cumulate)	80% serpentine, fine goundmass, locally pseudomorphs 2 to 3 mm relict olivine grains; 5% tremolite, ragged prismatic grains to 2 mm, probably intercumulus; 10% oxides, 0.5 to 2 mm subhedral to euhedral grains, fractured, with weak translucence, rimmed by granular opaques, probably magnetite; 5% opaques, fine granular alteration, probably magnetite;

# Appendix 5. Expenditures

Item	Units	Unit Cost	HST	Total
Assays				
ActLabs – Rock assays plus SEM mineralogy	25 rocks		\$187.14	\$1,626.64
VanPetro – Polished thin sections	12	\$50/section	\$76.80	\$716.80
Geologist – R. Sutcliffe				
Field work – August 19 to 21, 2018	3 days	\$650/day	253.50	\$2,203.50
Petrography, SEM work – Sept 16, Oct 11	1.5 days -	\$650/day	126.75	\$1,101.75
Sample Prep, Data Entry and Reporting – 2	2 days	\$650/day	169.00	\$1,469.00
days, August 24, 25, October 29, 2018				
Subtotal				\$4,774.25
Travel				
Personal Vehicle – 1 trip Ancaster/T	3,460 km	\$0.50/km		\$1,730.00
Bay/Armstrong/Ancaster				
Food and Accommodation				
Groceries – per diem – 5 days incl travel	5 days	\$35/day		\$175.00
Office Supplies & Field consumables				
Canada Post – samples to VanPetro			2.09	\$43.81
Sat Phone – In Reach			6.17	\$53.67
TOTAL EXPENDITURES				\$9,120.17

# Appendix 6. ActLabs Certificate

### Quality Analysis ...



# Innovative Technologies

Date Submitted: 27-Aug-18
Invoice No.: A18-11654
Invoice Date: 22-Oct-18

Your Reference: Chrome lake Project

Pavey Ark Minerals Inc. 100 Broad Leaf Cresent Ancaster ON L9G 3R8 Canada

ATTN: Richard H. Sutcliffe

## **CERTIFICATE OF ANALYSIS**

25 Rock samples were submitted for analysis.

The following analytical package(s) were requested: Code 1A2 Au - Fire Assay AA

Code 1C-OES Fire Assay ICPOES
Code 1F2 Total Digestion ICP(TOTAL)

Code 8-Peroxide ICP Sodium Peroxide Fusion ICP

REPORT **A18-11654** 

This report may be reproduced without our consent. If only selected portions of the report are reproduced, permission must be obtained. If no instructions were given at time of sample submittal regarding excess material, it will be discarded within 90 days of this report. Our liability is limited solely to the analytical cost of these analyses. Test results are representative only of material submitted for analysis.

Notes:

If value exceeds upper limit we recommend reassay by fire assay gravimetric-Code 1A3

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

Results	Activation Laboratories Ltd.	Report: A18-11654
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Analyte Symbol	Au	Au	Pd	Pt	Ag	Al	As	Ва	Ве	Bi	Ca	Cd	Со	Cr	Cu	Fe	Ga	Hg	К	Mg	Li	Mn	Мо
Unit Symbol	ppb	ppb	ppb	ppb		%	ppm		ppm	ppm	%	ppm	ppm	ppm	ppm	%	ppm	ppm	%		ppm	ppm	ppm
Lower Limit	5	· ·	5	5	0.3	0.01	3	7	1	2	0.01	0.3	1	1		0.01	1	1	0.01	0.01	1	1	1
Method Code	FA-AA	FA-ICP	FA-ICP	FA-ICP	TD-ICP																		
677201		2	8	5																			
677202		< 2	< 5	< 5																			
677203		< 2	< 5	< 5																			
677204		< 2	< 5	< 5																			
677205		< 2	< 5	< 5																			
677206		< 2	< 5	< 5																			
677207		< 2	9	< 5																			
677208		< 2	13	< 5																			
677209		< 2	< 5	< 5																			
677210		< 2	< 5	< 5																			
677211		< 2	18	17																			
677212		< 2	< 5	< 5																			
677213	< 5				< 0.3	2.07	< 3	108	< 1	< 2	1.13	< 0.3	7	40	49	1.69	9	< 1	0.77	0.77	34	328	< 1
677214	5				< 0.3	0.32	< 3	42	< 1	< 2	0.08	< 0.3	2	14	29	0.48	< 1	< 1	0.08	0.09	2	53	< 1
677215	< 5				< 0.3	7.69	< 3	927	< 1	< 2	1.02	< 0.3	3	15	62	1.29	17	< 1	3.23	0.38	18	143	< 1
677216	< 5				< 0.3	7.86	< 3	> 1000	< 1	< 2	2.00	< 0.3	11	23	21	3.22	17	< 1	3.05	1.57	51	372	< 1
677217	< 5				< 0.3	2.35	< 3	406	< 1	< 2	0.76	< 0.3	7	13	17	1.25	6	< 1	0.78	0.43	13	170	< 1
677218	< 5				< 0.3	3.15	< 3	326	< 1	< 2	0.81	< 0.3	3	13	22	1.09	7	< 1	0.82	0.40	15	180	< 1
677219	< 5				< 0.3	5.27	< 3	103	1	< 2	0.61	< 0.3	1	5	6	0.54	13	< 1	0.25	0.10	5	74	< 1
677220	< 5				< 0.3	0.45	< 3	99	< 1	< 2	0.11	< 0.3	< 1	5	4	0.40	1	< 1	0.22	0.03	2	46	< 1
677221	< 5				< 0.3	7.67	< 3	636	< 1	< 2	2.46	< 0.3	_		8	3.32	18	< 1	2.08	1.38		410	< 1
677222	< 5				< 0.3	7.58	< 3	836	< 1	< 2	2.22	< 0.3	10	23	126	2.89	18	< 1	2.61	1.22	40	427	< 1
677223	< 5				< 0.3	8.00	< 3	592	< 1	< 2	2.46	< 0.3	9	26	3	2.40	19	< 1	1.47	1.07	31	315	< 1
677224	< 5				< 0.3	6.62	< 3	615	< 1	< 2	1.23	< 0.3	6	13	9	1.71	14	< 1	1.78	0.66	31	213	< 1
677225	< 5				< 0.3	5.40	< 3	648	1	< 2	1.01	< 0.3	2	9	17	0.94	14	< 1	2.56	0.23	9	135	< 1

Analyte Symbol	Na	Ni	Р	Pb	Sb	S	Sc	Sr	Te	Ti	TI	U	V	W	Υ	Zn	Zr	Al	As	Be	Ca	Co	Cr
Unit Symbol	%	ppm	%	ppm	ppm	%	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	%	%	%	%	%
Lower Limit	0.01		0.001	3		0.01	4	1	2	0.01	5	10	2	5	1	1						0.002	0.01
Method Code	TD-ICP	TD-ICP	TD-ICP	TD-ICP	TD-ICP	TD-ICP	TD-ICP	TD-ICP	TD-ICP	TD-ICP	TD-ICP	TD-ICP	TD-ICP	TD-ICP	TD-ICP	TD-ICP	-	FUS-	FUS-			FUS-	FUS-
077004															_							Na2O2	Na2O2
677201																		1.85	< 0.01	< 0.001	2.01	0.010	0.33
677202																		1.25	< 0.01	< 0.001	0.57	0.013	0.74
677203																		1.83	< 0.01	< 0.001	2.76	0.013	0.70
677204																		1.03	< 0.01	< 0.001	0.07	0.024	0.35
677205																		1.29	< 0.01	< 0.001	0.13	0.011	0.37
677206																		1.14	< 0.01	< 0.001	0.12	0.019	0.74
677207																		0.77	< 0.01	< 0.001	0.13	0.007	0.33
677208																		1.13	< 0.01	< 0.001	0.06	0.008	0.32
677209																		1.01	< 0.01	< 0.001	0.06	0.017	0.33
677210																		1.01	< 0.01	< 0.001	0.01	0.020	0.44
677211																		1.49	< 0.01	< 0.001	0.10	0.022	1.05
677212																		1.53	< 0.01	< 0.001	0.54	0.016	0.42
677213	0.06	19	0.013	< 3	< 5	< 0.01	< 4	78	< 2	0.05	< 5	< 10	24	< 5	3	21	13						
677214	0.03	3	< 0.001	< 3	< 5	< 0.01	< 4	14	< 2	< 0.01	< 5	< 10	6	< 5	< 1	4	< 5						
677215	3.08	3	0.022	9	< 5	< 0.01	< 4	308	< 2	0.12	< 5	< 10	26	< 5	4	16	94						
677216	2.72	19	0.076	3	< 5	< 0.01	9	453	< 2	0.17	< 5	< 10	56	< 5	8	40	66						
677217	0.61	6	0.014	< 3	< 5	< 0.01	< 4	112	< 2	0.07	< 5	< 10	33	< 5	2	13	11						
677218	1.26	6	0.017	< 3	< 5	< 0.01	< 4	165	< 2	0.08	< 5	< 10	18	< 5	2	21	14						
677219	3.34	1	0.009	4	< 5	< 0.01	< 4	418	< 2	0.04	< 5	< 10	6	< 5	< 1	7	15						
677220	0.06	1	< 0.001	< 3	< 5	< 0.01	< 4	13	< 2	< 0.01	< 5	< 10	6	< 5	< 1	2	< 5						
677221	2.87	19	0.061	6	< 5	< 0.01	8	501	< 2	0.13	< 5	< 10	46	< 5	8	42	55						
677222	2.82	15	0.056	5	< 5	< 0.01	7	460	< 2	0.12	< 5	< 10	45	< 5	6	39	57						
677223	2.96	17	0.045	8	< 5	< 0.01	6	458	< 2	0.14	< 5	< 10	33	< 5	5	51	67						
677224	2.60	6	0.027	< 3	< 5	< 0.01	< 4	318	< 2	0.13	< 5	< 10	28	< 5	4	29	106						
677225	2.19	2	0.013	13	< 5	< 0.01	< 4	250	< 2	0.08	< 5	< 10	16	< 5	3	14	33						

Report:	A18-11654	

-														
Analyte Symbol	Cu	Fe	K	Li	Mg	Mn	Ni	Pb	S	Sb	Si	Ti	W	Zn
Unit Symbol	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Lower Limit	0.005	0.05	0.1	0.01	0.01	0.01	0.005	0.01	0.01	0.01	0.01	0.01	0.005	0.01
Method Code	FUS- Na2O2													
677201	< 0.005	8.09	< 0.1	< 0.01	18.1	0.09	0.097	< 0.01	< 0.01	< 0.01	17.9	0.09	< 0.005	< 0.01
677202	< 0.005	8.74	< 0.1	< 0.01	20.0	0.14	0.090	< 0.01	0.03	< 0.01	17.8	0.07	< 0.005	0.01
677203	< 0.005	8.68	< 0.1	< 0.01	17.6	0.12	0.133	< 0.01	0.01	< 0.01	18.4	0.09	< 0.005	< 0.01
677204	< 0.005	8.66	< 0.1	< 0.01	20.8	0.07	0.131	< 0.01	< 0.01	< 0.01	17.5	0.04	< 0.005	< 0.01
677205	< 0.005	6.93	< 0.1	< 0.01	20.7	0.10	0.107	< 0.01	< 0.01	< 0.01	18.1	0.05	< 0.005	< 0.01
677206	< 0.005	11.2	< 0.1	< 0.01	19.8	0.05	0.133	< 0.01	< 0.01	< 0.01	16.7	0.05	< 0.005	0.01
677207	< 0.005	6.38	< 0.1	< 0.01	21.8	0.05	0.107	< 0.01	< 0.01	< 0.01	17.4	0.02	< 0.005	< 0.01
677208	< 0.005	6.60	< 0.1	< 0.01	21.6	0.07	0.090	< 0.01	0.02	< 0.01	17.7	0.04	< 0.005	< 0.01
677209	< 0.005	8.58	< 0.1	< 0.01	20.9	0.07	0.095	< 0.01	< 0.01	< 0.01	17.4	0.04	< 0.005	< 0.01
677210	< 0.005	10.5	< 0.1	< 0.01	24.7	0.09	0.135	< 0.01	< 0.01	< 0.01	18.9	0.05	< 0.005	< 0.01
677211	0.007	7.80	< 0.1	< 0.01	25.0	0.17	0.110	< 0.01	0.03	< 0.01	19.3	0.07	0.008	0.01
677212	< 0.005	9.87	< 0.1	< 0.01	23.8	0.13	0.110	< 0.01	< 0.01	< 0.01	19.1	0.07	< 0.005	< 0.01
677213														
677214														
677215														
677216														
677217														
677218														
677219														
677220														
677221														
677222														
677223														
677224														
677225														

Analyte Symbol	Au	Au	Pd	Pt	Ag	Al	As	Ва	Ве	Bi	Ca	Cd	Со	Cr	Cu	Fe	Ga	Hg	K	Mg	Li	Mn	Мо
	ppb	ppb		ppb	ppm		ppm		ppm	ppm	%	ppm	ppm	ppm	ppm	%					ppm	ppm	ppm
Lower Limit	5	2	5		0.3	0.01	3	7	1	2	0.01	0.3	1	1	1	0.01	1	1	0.01	0.01	1	1	1
Method Code	FA-AA	FA-ICP	FA-ICP	FA-ICP	TD-ICP	TD-ICP	TD-ICP	TD-ICP	TD-ICP	TD-ICP	TD-ICP	TD-ICP	TD-ICP										
GBW 07113 Meas																							
GBW 07113 Cert																							
GXR-4 Meas					3.4	6.59	99	70	2	14	1.00	< 0.3	14	37	6410	3.03	17	< 1	3.84	1.73	12	161	324
GXR-4 Cert					4.0	7.20	98.0	1640	1.90	19.0	1.01	0.860	14.6	64.0	6520	3.09	20.0	0.110	4.01	1.66	11.1	155	310
PTM-1a Meas																							
PTM-1a Cert																							
SDC-1 Meas						7.80	< 3	637	3		1.02		17	43	28	4.65	21	< 1	2.77	1.00	34	898	
SDC-1 Cert						8.34	0.220	630	3.00		1.00		18.0	64.00	30.000	4.82	21.00	0.20	2.72	1.02	34	880.00	
GXR-6 Meas					0.4	12.8	270	> 1000	1	< 2	0.17	0.3	14	59	67	5.70	28	< 1	2.12	0.62	34	1100	< 1
GXR-6 Cert					1.30	17.7	330	1300	1.40	0.290	0.180	1.00	13.8	96.0	66.0	5.58	35.0	0.0680	1.87	0.609	32.0	1010	2.40
CD-1 Meas																							
CD-1 Cert																							
NIST 696 Meas																							
NIST 696 Cert																							
DTS-2b Meas																							
DTS-2b Cert																							
GBW 07239 (NCS DC 70007) Meas																							
GBW 07239 (NCS DC 70007) Cert																							
GBW 07239 (NCS DC 70007) Meas																							
GBW 07239 (NCS DC 70007) Cert																							
GBW 07238 (NCS DC 70006) Meas																							
GBW 07238 (NCS DC 70006) Cert																							
Oreas 74a (Fusion) Meas																							
Oreas 74a (Fusion) Cert																							
MP-1b Meas																							
MP-1b Cert																							
OREAS 97 (4 Acid) Meas					19.3					10			64		> 10000								
OREAS 97 (4					19.6					40.1			62.9		63100.								
Acid) Cert															00								
OREAS 98 (4 Acid) Meas					42.9					19			122		> 10000								
OREAS 98 (4 Acid) Cert					45.1					97.2			121		14800 0.0								
AMIS 0129 Meas																							
AMIS 0129 Cert																							
DNC-1a Meas								98			7.14		51	121	96	6.65	13				5		

Analyte Symbol	Au	Au	Pd	Pt	Ag	Al	As	Ва	Ве	Bi	Ca	Cd	Со	Cr	Cu	Fe	Ga	Hg	К	Mg	Li	Mn	Мо
Unit Symbol	ppb	ppb		ppb	ppm	%			ppm	ppm	<del>                                     </del>	ppm	ppm	ppm	ppm	%	ppm	ppm		%	ppm	ppm	ppm
Lower Limit	5	2	5	5	0.3	0.01	3	7	1	2		0.3	1	1	1	0.01	1	1		0.01	1	1	1
Method Code	-		FA-ICP				TD-ICP	TD-ICP	TD-ICP	TD-ICP	TD-ICP		TD-ICP	TD-ICP	TD-ICP		TD-ICP	TD-ICP	TD-ICP		TD-ICP	TD-ICP	TD-ICP
DNC-1a Cert				77.101	12 .0.		12 .0.	118		12 .0.	8.21	12 .0.	57	270		6.97	15		12 .0.	. 5 . 6.	5.2		15 101
OREAS 13b																							
(fusion) Meas																							
OREAS 13b																							
(fusion) Cert																							<u> </u>
PK2 Meas		4630	5530	4640																			
PK2 Cert		4785	5918	4749																			
CPB-2 Meas																							
CPB-2 Cert																							
CZN-4 Meas																							
CZN-4 Cert																							
SBC-1 Meas							23	425	3	3		0.3	21	87	29		25				154		2
SBC-1 Cert							25.7	788.0	3.20	0.70		0.40	22.7	109	31.0		27.0				163		2
OREAS 45d						7.79	3	184	< 1	< 2	0.19		31	460	376	13.9	20		0.39	0.25	22	515	< 1
(4-Acid) Meas												ļ									ļ		<u> </u>
OREAS 45d						8.150	13.8	183.0	0.79	0.31	0.185		29.50	549	371	14.5	21.20		0.412	0.245	21.5		2.500
(4-Acid) Cert															-							490.000	├──
Copper Shot Meas																							
Copper Shot Cert																							
OREAS 922																							
(Peroxide Fusion) Meas																							
OREAS 922																							
(Peroxide Fusion)																							
Cert																							<del>                                     </del>
CCU-1e Meas																							<del> </del>
CCU-1e Cert	0070																						├──
OREAS 214 Meas	2970																						<del>                                     </del>
OREAS 214 Cert	3030																						<del>                                     </del>
OREAS 218 Meas	530		-		-		-				-										<del>                                     </del>		<del> </del>
OREAS 218 Cert	531				11.1					10		<del>                                     </del>	40		10000						-		<del></del>
OREAS 96 (4 Acid) Meas					11.1					13			49		> 10000								
OREAS 96 (4 Acid) Cert					11.5					26.3			49.9		39300								
677210 Orig		< 2	< 5	< 5																			
677210 Dup		< 2	10	13																			
677212 Orig																							
677212 Dup																							
677216 Orig	< 5																						
677216 Dup	< 5																						
677221 Orig	6																						
677221 Dup	< 5																						
Method Blank	l T																						

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Analyte Symbol	Au	Au	Pd	Pt	Ag	Al	As	Ва	Be	Bi	Ca	Cd	Co	Cr	Cu	Fe	Ga	Hg	K	Mg	Li	Mn	Мо
Unit Symbol	ppb	ppb	ppb	ppb	ppm	%	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	%	ppm	ppm	%	%	ppm	ppm	ppm
Lower Limit	5	2	5	5	0.3	0.01	3	7	1	2	0.01	0.3	1	1	1	0.01	1	1	0.01	0.01	1	1	1
Method Code	FA-AA	FA-ICP	FA-ICP	FA-ICP	TD-ICP																		
Method Blank																							
Method Blank					< 0.3	< 0.01	< 3	< 7	< 1	< 2	< 0.01	< 0.3	< 1		4	< 0.01	< 1	< 1	< 0.01	< 0.01	< 1		< 1
Method Blank					< 0.3	< 0.01	< 3	< 7	< 1	< 2	< 0.01	< 0.3	< 1		< 1	< 0.01	< 1	< 1	< 0.01	< 0.01	< 1	< 1	< 1
Method Blank					< 0.3	< 0.01	< 3	< 7	< 1	< 2	< 0.01	< 0.3	< 1		< 1	< 0.01	< 1	< 1	< 0.01	< 0.01	< 1	2	< 1
Method Blank					< 0.3	< 0.01	< 3	< 7	< 1	< 2	< 0.01	< 0.3	< 1		< 1	< 0.01	< 1	< 1	< 0.01	< 0.01	< 1	< 1	< 1
Method Blank	< 5																						
Method Blank	< 5																						

Analyte Symbol	Na	Ni	Р	Pb	Sb	S	Sc	Sr	Te	Ti	TI	U	V	w	Υ	Zn	Zr	Al	As	Ве	Ca	Co	Cr
Unit Symbol	%	ppm	%	ppm	ppm	%	ppm	ppm	ppm	%	ppm	%	%	%	%	%	%						
Lower Limit	0.01	1	0.001	3	5	0.01	4	1	2	0.01	5	10	2	5	1	1					0.01		0.01
Method Code	TD-ICP		FUS- Na2O2	FUS-	FUS-	FUS- Na2O2	FUS- Na2O2	FUS- Na2O2															
GBW 07113 Meas																		6.91		< 0.001			
GBW 07113 Cert																		6.88		0.00040 0			
GXR-4 Meas	0.49	42	0.129	43	< 5	1.83	7	221	< 2	0.26	< 5	< 10	88	39	13	72	42						
GXR-4 Cert	0.564	42.0	0.120	52.0	4.80	1.77	7.70	221	0.970	0.29	3.20	6.20	87.0	30.8	14.0	73.0	186						
PTM-1a Meas																			0.22			2.07	
PTM-1a Cert																			0.220			2.05	
SDC-1 Meas	1.44	35	0.053	20	< 5		14	177		0.10	< 5	< 10	36	< 5		101	31						
SDC-1 Cert	1.52	38.0	0.0690	25.00	0.54		17.00	180.00		0.606	0.70	3.10	102.00	0.80		103.00	290.00						
GXR-6 Meas	0.09	26	0.036	96	< 5	0.02	25	41	< 2		< 5	< 10	151	< 5	11	132	78						
GXR-6 Cert	0.104	27.0	0.0350	101	3.60	0.0160	27.6	35.0	0.0180		2.20	1.54	186	1.90	14.0	118	110						
CD-1 Meas																			0.68				
CD-1 Cert																			0.660				
NIST 696 Meas																		28.9					0.03
NIST 696 Cert																		28.9					0.03210
DTS-2b Meas																						0.012	1.61
DTS-2b Cert																						0.0120	1.55
GBW 07239 (NCS																			< 0.01			< 0.002	
DC 70007) Meas																							
GBW 07239 (NCS DC 70007) Cert																			0.0001			0.00135	
GBW 07239 (NCS DC 70007) Meas																			< 0.01			< 0.002	
GBW 07239 (NCS DC 70007) Cert																			0.0001			0.00135	
GBW 07238 (NCS DC 70006) Meas																			< 0.01				
GBW 07238 (NCS DC 70006) Cert																			0.00016 0				
Oreas 74a (Fusion) Meas																			< 0.01			0.056	0.17
Oreas 74a (Fusion) Cert																			0.005			0.058	0.18
MP-1b Meas																			2.30		2.47		
MP-1b Cert																			2.30	+	2.47		
OREAS 97 (4				133	< 5	7.04										607			=:50				
Acid) Meas						7.0 +																	
OREAS 97 (4 Acid) Cert				147	9.23	6.07										646							
OREAS 98 (4 Acid) Meas				310	< 5	16.5										1250							
OREAS 98 (4 Acid) Cert				345	20.1	15.5										1360							
AMIS 0129 Meas																							
																				<u> </u>			

Analyte Symbol	Na	Ni	Р	Pb	Sb	S	Sc	Sr	Те	Ti	TI	U	V	W	γ	Zn	Zr	Al	As	Ве	Ca	Со	Cr
Unit Symbol	%	ppm	%	ppm		%			ppm	%	ppm	ppm	ppm		<u> </u>	ppm	ppm	%	%	%		%	%
Lower Limit	0.01	1	0.001	3		0.01	<b>д</b>	ppm 1	2	0.01	5	10	2	5	1	1				0.001			0.01
Method Code		TD-ICP	TD-ICP				TD-ICP	TD-ICP	TD-ICP					TD-ICP	TD-ICP	TD-ICP		FUS-	FUS-	FUS- Na2O2	FUS-	FUS-	FUS- Na2O2
AMIS 0129 Cert																							
DNC-1a Meas	1.35	247		7	< 5		27	133		0.26			138		14	59	33						
DNC-1a Cert	1.40	247		6.3	0.96		31	144		0.29			148		18.0	70	38.0						
OREAS 13b (fusion) Meas																		8.38			5.38		1.08
OREAS 13b (fusion) Cert																		8.41			5.57		1.08
PK2 Meas																							
PK2 Cert																							
CPB-2 Meas																		0.06					
CPB-2 Cert																		0.074					
CZN-4 Meas																		0.07	0.03			0.009	
CZN-4 Cert	<del> </del>								<u> </u>									0.0715	0.0356			0.009	<b>-</b>
SBC-1 Meas	<del>                                     </del>	86	1	30	< 5		19	178		0.45	< 5	< 10	211	< 5	30	182	111	0.07 10	0.0000	-		0.003	<del>                                     </del>
SBC-1 Cert	1	83		35.0	1.01		20.0	178.0		0.43	0.89		220.0	1.60	36.5	186							<del> </del>
OREAS 45d	0.09	244				0.04	50	34		0.14	< 5		95			43	56						
(4-Acid) Meas																							<u> </u>
OREAS 45d (4-Acid) Cert	0.101	231.0	0.042	21.8	0.82	0.049	49.30	31.30		0.773	0.27	2.63	235.0	1.62	9.53	45.7	141						<u> </u>
Copper Shot Meas																							
Copper Shot Cert																							
OREAS 922 (Peroxide Fusion) Meas																		7.38			0.50	< 0.002	< 0.01
OREAS 922																		7.59			0.49	0.002	0.009
(Peroxide Fusion) Cert																							
CCU-1e Meas																		0.14	0.10		0.17	0.031	
CCU-1e Cert																		0.139	0.101		0.129	0.0301	
OREAS 214 Meas	;																						
OREAS 214 Cert																							
OREAS 218 Meas	;											İ			İ				Ì				
OREAS 218 Cert																							
OREAS 96 (4 Acid) Meas				88	< 5	4.27										431							
OREAS 96 (4 Acid) Cert				101	5.09	4.19										457							
677210 Orig			<u> </u>																				
677210 Dup																							
677212 Orig	<b>+</b>	<del>                                     </del>	1	<b>t</b>										<del>                                     </del>				1.52	< 0.01	< 0.001	0.53	0.016	0.43
677212 Dup	<del>                                     </del>	<del>                                     </del>	1	<del>                                     </del>					<u> </u>		-	-		<del>                                     </del>	<del> </del>			1.54		< 0.001	0.54	0.016	
677216 Orig	1		1							1					<u> </u>			1.54	₹ 0.01	< 0.001	0.54	0.010	0.41
677216 Dup	<del>                                     </del>	1	1							1	1	<del>                                     </del>			<del>                                     </del>				<u> </u>	-			<del>                                     </del>
077210 Dup	+	<del>                                     </del>	-	-			<b> </b>		-	-	<del>                                     </del>	<del>                                     </del>		-	-					-			─

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Analyte Symbol	Na	Ni	Р	Pb	Sb	S	Sc	Sr	Те	Ti	TI	U	V	W	Υ	Zn	Zr	Al	As	Ве	Ca	Co	Cr
Unit Symbol	%	ppm	%	ppm	ppm	%	ppm	ppm	ppm	%	ppm	%	%	%	%	%	%						
Lower Limit	0.01	1	0.001	3	5	0.01	4	1	2	0.01	5	10	2	5	1	1	5	0.01	0.01	0.001	0.01	0.002	0.01
Method Code	TD-ICP	TD-ICP	TD-ICP	TD-ICP	TD-ICP	TD-ICP	TD-ICP	TD-ICP	TD-ICP	TD-ICP	TD-ICP	TD-ICP	TD-ICP	TD-ICP	TD-ICP	TD-ICP	TD-ICP		FUS- Na2O2			FUS- Na2O2	FUS- Na2O2
677221 Orig																							
677221 Dup																							
Method Blank																		< 0.01	< 0.01	< 0.001	< 0.01	< 0.002	< 0.01
Method Blank																		< 0.01	< 0.01	< 0.001	0.03	< 0.002	< 0.01
Method Blank	< 0.01	< 1	< 0.001	< 3	< 5	< 0.01	< 4	< 1	< 2	< 0.01	< 5	< 10	< 2	< 5	< 1	< 1	< 5						
Method Blank	< 0.01	< 1	< 0.001	< 3	< 5	< 0.01	< 4	< 1	< 2	< 0.01	< 5	< 10	< 2	< 5	< 1	< 1	< 5						
Method Blank	< 0.01	< 1	< 0.001	< 3	< 5	< 0.01	< 4	< 1	< 2	< 0.01	< 5	< 10	< 2	< 5	< 1	< 1	< 5						
Method Blank	< 0.01	< 1	< 0.001	< 3	< 5	< 0.01	< 4	< 1	< 2	< 0.01	< 5	< 10	< 2	< 5	< 1	< 1	< 5						
Method Blank																							
Method Blank																							

Analyte Symbol	Cu	Fe	K	Li	Mg	Mn	Ni	Pb	S	Sb	Si	Ti	W	Zn
Unit Symbol	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Lower Limit	0.005	0.05	0.1	0.01	0.01	0.01	0.005	0.01	0.01	0.01	0.01	0.01	0.005	0.01
Method Code	FUS- Na2O2	FUS- Na2O2	FUS- Na2O2	FUS- Na2O2	FUS- Na2O2	FUS- Na2O2	FUS- Na2O2	FUS- Na2O2	FUS- Na2O2	FUS- Na2O2	FUS- Na2O2	FUS- Na2O2	FUS- Na2O2	FUS- Na2O2
GBW 07113 Meas		2.26	4.6		0.08	0.11					33.3	0.17		
GBW 07113 Cert		2.24	4.51		0.10	0.11					34.03	0.18		
GXR-4 Meas														
GXR-4 Cert														
PTM-1a Meas	25.1						47.5		23.0					
PTM-1a Cert	24.96						47.44		22.4					
SDC-1 Meas														
SDC-1 Cert														
GXR-6 Meas														
GXR-6 Cert														
CD-1 Meas							1			3.57			1	
CD-1 Cert										3.57				
NIST 696 Meas			i	<u> </u>			<u> </u>					i	<u> </u>	
NIST 696 Cert				1			1					1	1	
DTS-2b Meas	< 0.005				30.1	0.08	0.410	< 0.01		< 0.01	18.2			0.0
DTS-2b Cert	0.00030				29.8	0.0830	0.378	0.00040 0	<del>                                     </del>	0.00006	18.4			0.0045
GBW 07239 (NCS DC 70007) Meas						1.14	< 0.005	< 0.01					0.105	0.0
GBW 07239 (NCS DC 70007) Cert	0.005					1.15	0.00209	0.003					0.10	0.0
GBW 07239 (NCS DC 70007) Meas	< 0.005					1.16	< 0.005	< 0.01					0.105	0.0
GBW 07239 (NCS DC 70007) Cert	0.005					1.15	0.00209	0.003					0.10	0.0
GBW 07238 (NCS DC 70006) Meas	0.020					1.07	< 0.005	< 0.01					0.384	0.0
GBW 07238 (NCS DC 70006) Cert	0.00936					1.084	0.00178	0.00187					0.360	0.0065
Oreas 74a (Fusion) Meas	0.119	13.7					3.16		7.12		14.7			
Oreas 74a (Fusion) Cert	0.124	13.7					3.24		7.25		15.14			
MP-1b Meas	2.98	8.13			0.02			2.04			15.9		0.104	16.
MP-1b Cert	3.07	8.19			0.024			2.09	13.79		16.79		0.110	16.
OREAS 97 (4 Acid) Meas														
OREAS 97 (4 Acid) Cert														
OREAS 98 (4 Acid) Meas														
OREAS 98 (4 Acid) Cert														
AMIS 0129 Meas		42.9				0.26					<b>-</b>	14.0		

					QC	QC Activation Laboratories Ltd.										
Analyte Symbol	Cu	Fe	К	Li	Mg	Mn	Ni	Pb	s	Sb	Si	Ti	w	Zn		
Unit Symbol	%	%	%	%	%	%	%	%	%	%	%	%	%	%		
Lower Limit	0.005	0.05	0.1	0.01	0.01	0.01	0.005	0.01	0.01	0.01	0.01	0.01	0.005	0.01		
Method Code	FUS-	FUS-	FUS-	FUS-	FUS-	FUS-	FUS-	FUS-	FUS-	FUS-	FUS-	FUS-	FUS-	FUS-		
	Na2O2	Na2O2	Na2O2	Na2O2	Na2O2	Na2O2	Na2O2	Na2O2	Na2O2	Na2O2	Na2O2	Na2O2	Na2O2	Na2O2		
AMIS 0129 Cert		43.573				0.28						13.75				
DNC-1a Meas																
DNC-1a Cert																
OREAS 13b (fusion) Meas		8.50	2.3		2.93	0.13			1.26		23.2	0.77				
OREAS 13b		8.41	2.30		3.01	0.130			1.19		22.9	0.711				
(fusion) Cert																
PK2 Meas																
PK2 Cert																
CPB-2 Meas	0.129	6.89			0.07			62.8						6.08		
CPB-2 Cert	0.1213	7.065			0.0683			63.52						6.04		
CZN-4 Meas	0.406							0.18	33.4					55.2		
CZN-4 Cert	0.403							0.1861	33.07					55.07		
SBC-1 Meas																
SBC-1 Cert																
OREAS 45d (4-Acid) Meas																
OREAS 45d (4-Acid) Cert																
Copper Shot Meas	99.8															
Copper Shot Cert	99.999															
OREAS 922 (Peroxide Fusion) Meas	0.223	5.72	2.5	< 0.01	1.55	0.08	< 0.005	< 0.01	0.42		30.3	0.44		0.03		
OREAS 922 (Peroxide Fusion) Cert	0.222	5.71	2.60	0.003	1.61	0.09	0.004	0.006	0.389		30.51	0.439		0.03		
CCU-1e Meas	22.8	31.1			0.74	< 0.01		0.69	35.1	0.01				3.01		
CCU-1e Cert	22.9	30.7		<del>                                     </del>		0.00960		0.703		0.0104	<del>                                     </del>		<del>                                     </del>	3.02		
OREAS 214 Meas		00.7			0.7.00	0.0000		0.700	55.5	0.0.0.				0.02		
OREAS 214 Cert																
OREAS 218 Meas																
OREAS 218 Cert	1			<del>                                     </del>				<del>                                     </del>		<del>                                     </del>	<del>                                     </del>		<del>                                     </del>			
OREAS 96 (4																
Acid) Meas																
OREAS 96 (4 Acid) Cert																
677210 Orig																
677210 Dup																
677212 Orig	< 0.005	9.86	< 0.1	< 0.01	24.2	0.13	0.110	< 0.01	< 0.01	< 0.01	18.7	0.07	< 0.005	< 0.01		
677212 Dup	< 0.005			< 0.01	23.4	0.13	-	< 0.01	0.02	< 0.01	19.5	0.07	0.011	-		
677216 Orig																
677216 Dup																
	<del>                                     </del>	<del>                                     </del>	<del>                                     </del>		<del>                                     </del>	<del>                                     </del>	<del></del>		<del>                                     </del>							

Analyte Symbol	Cu	Fe	K	Li	Mg	Mn	Ni	Pb	S	Sb	Si	Ti	W	Zn
Unit Symbol	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Lower Limit	0.005	0.05	0.1	0.01	0.01	0.01	0.005	0.01	0.01	0.01	0.01	0.01	0.005	0.01
Method Code		FUS- Na2O2				FUS- Na2O2		FUS- Na2O2		FUS- Na2O2	FUS- Na2O2			FUS- Na2O2
677221 Orig														
677221 Dup														
Method Blank	< 0.005	< 0.05	< 0.1	< 0.01	< 0.01	< 0.01	< 0.005	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.005	< 0.01
Method Blank	< 0.005	< 0.05	< 0.1	< 0.01	< 0.01	< 0.01	< 0.005	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.005	< 0.01
Method Blank														
Method Blank														
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Method Blank														



Ontario Ministry of Northern Development and Mines Mining Lands Claim Map

# **Administrative Districts**

Township

OBONGA LAKE AREA

Mining Division

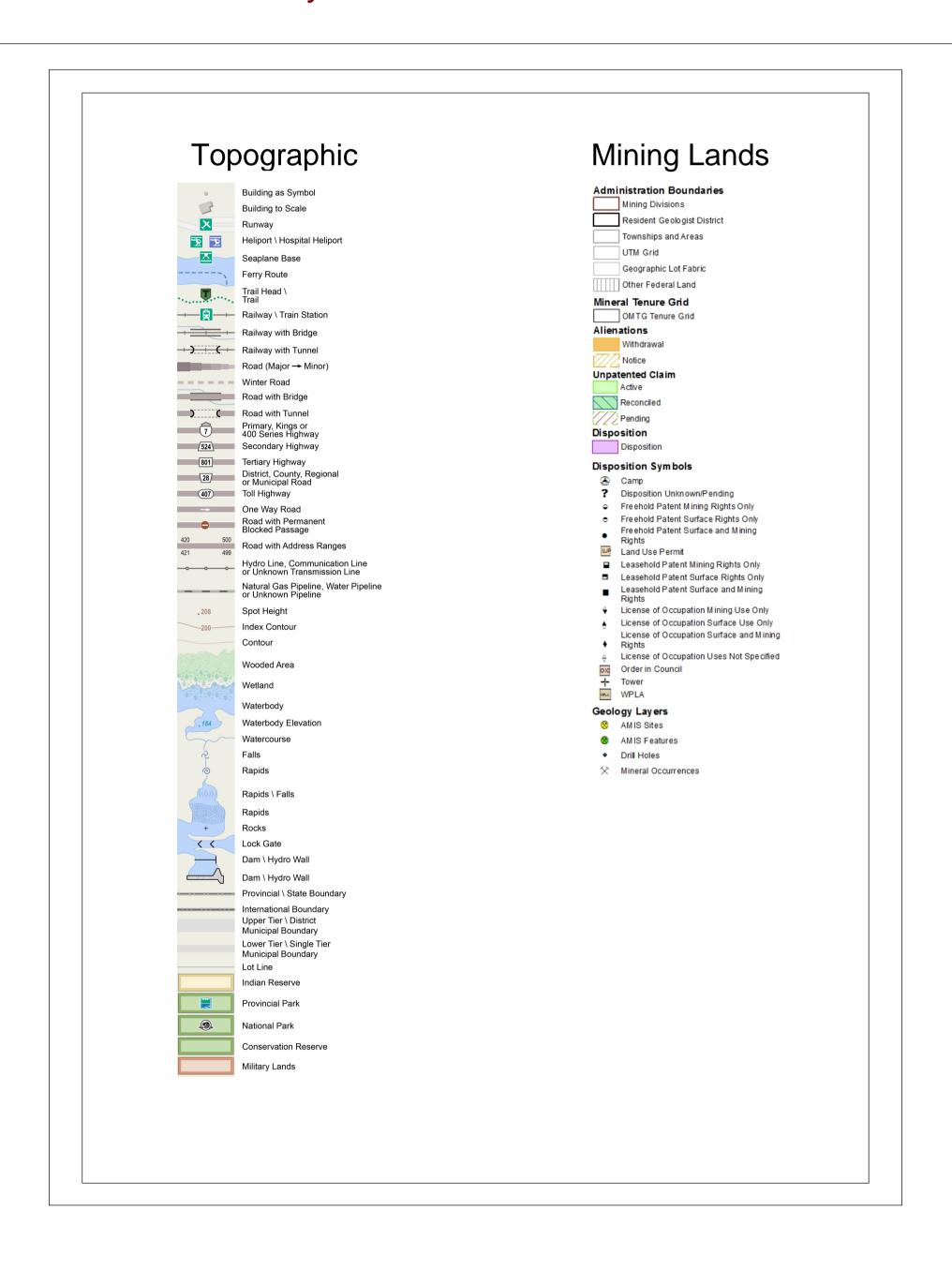
Thunder Bay

Land Registry

THUNDER BAY

MNRF District Office

Thunder Bay

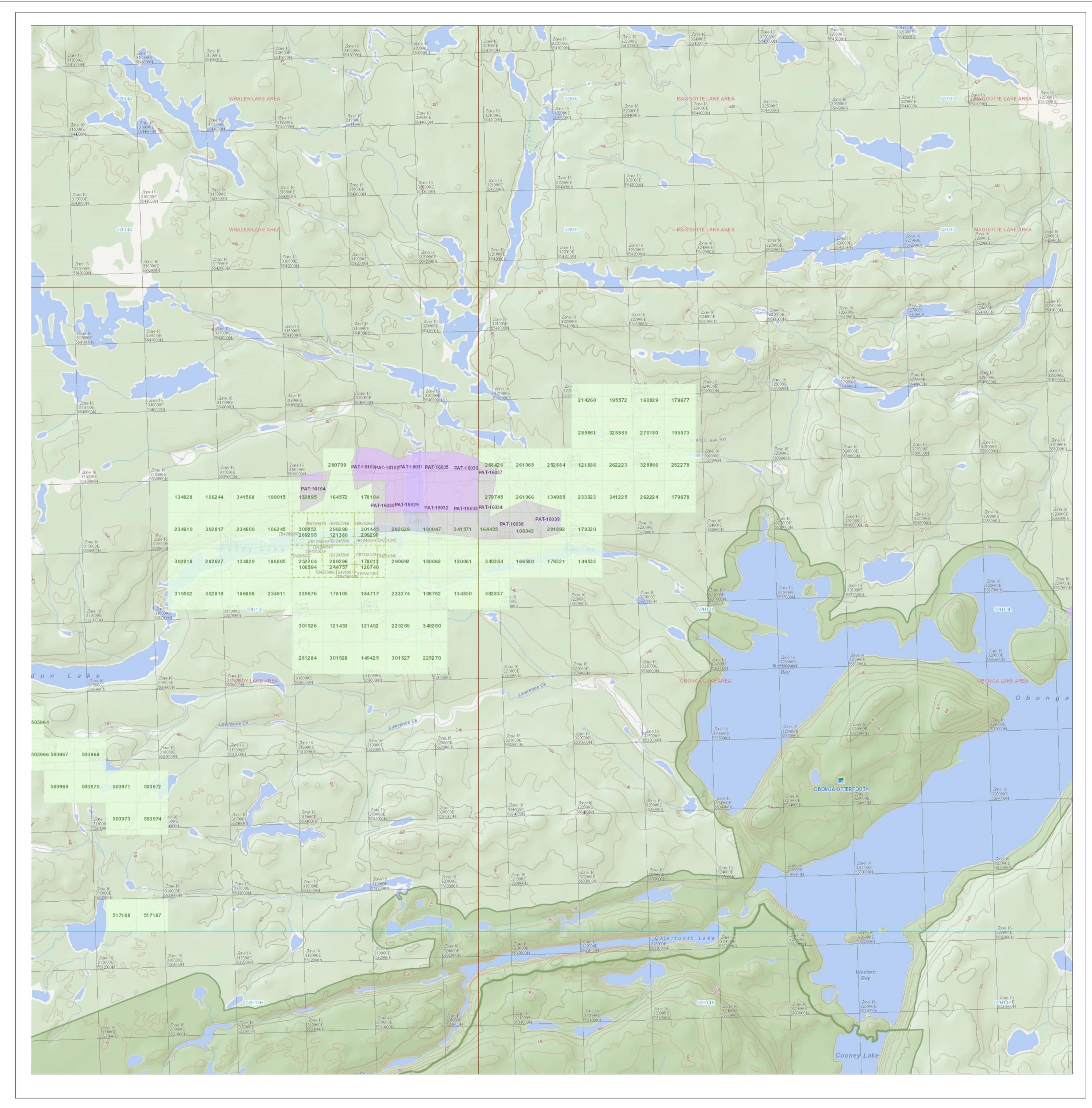


Scale: 1:20,000

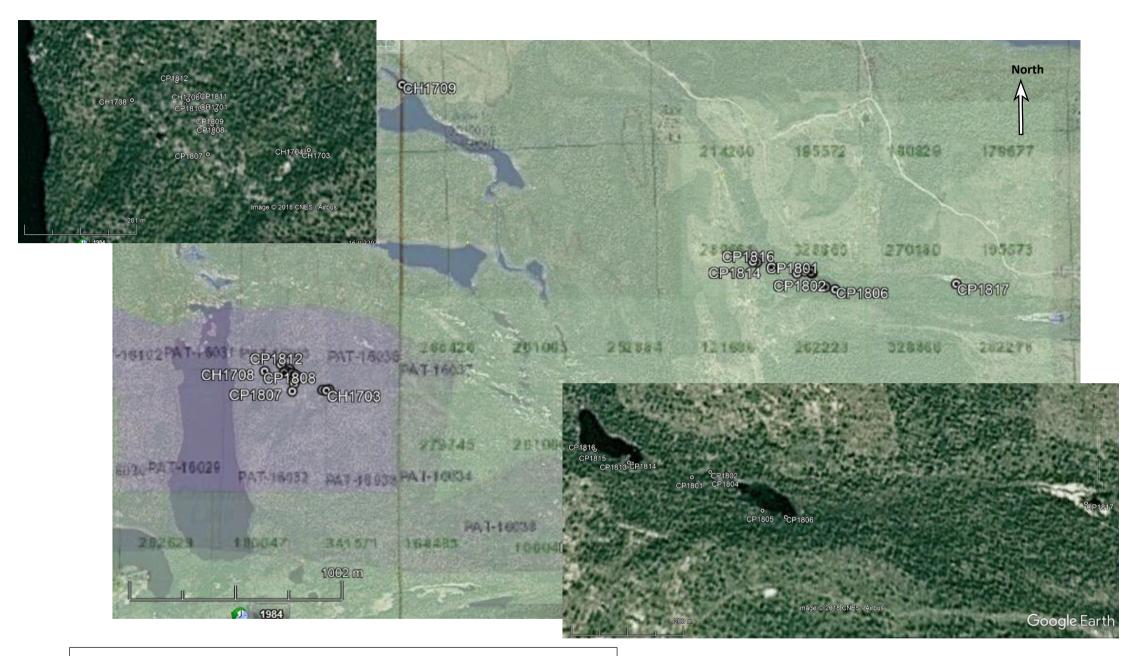
4.00 km

# Map Datum: NAD 83 Projection: Web Mercator





Additional information may also be obtained through the local Land Titles or Registry Office, or the Ministry of Natural Resources and Forestry. The information shown is derived from digital data available in the Provincial Mining Recorders' Office at the time of downloading from the Ministry of Northern Development and Mines web site. © Queen's Printer for Ontario, 2016



## **Map 2. Chrome Property Sample Locations**

Scale 1:2,000

Claims TB4285401 and Patented Claims TB10835, TB10836, TB10827, TB10826

G-0100, Obonga Lake area, Thunder Bay Mining Division

NTS 52H 14 - Gull Bay

Datum NAD83, UTM Zone 16U Magnetic declination  $3^{\circ}$  53' W

For: Pavey Ark Minerals Inc., Client number 41165

Prepared By: R. H. Sutcliffe, P.Geo. October 30, 2018