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**Goldcorp Canada Ltd.  
Opapimiskan Lake, North Shore Drilling  
2017/2018 Assessment report**

**2017 Diamond Drilling  
2018 Diamond Drilling**

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## Introduction

This report summarizes helicopter supported diamond drilling, and associated activities, performed on behalf of Goldcorp Canada Ltd. at their “North Shore Project” area immediately Northwest across Opapimiskan Lake from Goldcorp Canada Ltd.’s Musselwhite Mine in the District of Kenora, Skinner Lake Township, Northwestern Ontario. Detailed in separate sections of this report are the 2017 and 2018 diamond drilling programs. The 2017 program consisted of a single deep drill hole, while reported for 2018 is two deep holes drilled from two individual drill rigs. All three holes reported are collared at separate locations. The work was undertaken by staff geologists and other support staff employed at Goldcorp’s Musselwhite Mine with operational support and technical services commissioned from third party specialists and contractor groups. Total value of all work reported is \$2,712,341.22. A suite of authorizations and permits covering the work described below can be reviewed in the 2010 Musselwhite Mine Closure Plan Amendment, Ministry Registry Number MG 10-I-10 Published July 11, 2011.

## Summary

### 2017 Diamond Drilling

Exploration diamond drilling was conducted in 2017 on the north shore project with the objective of testing firstly, the down plunge continuity of Musselwhite Mine geology and secondly, to test for down plunge continuity of Musselwhite Mine’s most significant PQ-Limb ore bodies.

Hy-Tech Drilling Ltd., headquartered in Smithers, British Columbia, Canada was contracted to perform drilling services. Movement of equipment, materials, and personnel was accomplished with a Bell 206 Long Ranger helicopter provided and operated by Wisk Air Helicopters of Thunder Bay, Ontario. Drill hole core samples interpreted to be of economic or intellectual interest were submitted to Activation Laboratories Ltd. in Dryden, Ontario for chemical analysis. One diamond drill hole totaling 2130m is reported in this document.

The program did succeed in determining that the geology of Musselwhite Mine does have down strike continuity approximately 1km down-strike of the nearest in-mine exploration. Although several units containing high gold grades were intercepted, none have sufficient width to be considered solely economic, and the reported hole did not succeed in intersecting the targeted ore body projection. Despite the absence of significant intercepts, the presence of high-grade gold assays within the mine geology is encouraging for future exploration.

### 2018 Diamond Drilling

The primary objectives of the 2018 North Shore diamond drilling were to test down-strike geological continuity of Musselwhite Mine’s West Limb as was done successfully for the East limb (PQ-Limb) in the 2017 North Shore diamond drilling, to test for down-strike continuity of

Musselwhite Mine West-Limb ore bodies, and to follow up historical North Shore mineralization in Musselwhite Mine's PQ-Limb down strike of large ore bodies.

Diamond drilling services were contracted to Hy-Tech Drilling Ltd. headquartered in Smithers British Columbia and Boart Longyear of Haileybury, Ontario. Movement of materials, equipment, and personnel was accomplished with a Bell 206 Long Ranger helicopter provided and operated by Wisk Air Helicopters of Thunder Bay, Ontario. Drill hole core samples interpreted to be of economic or intellectual interest were submitted to Activation Laboratories Ltd. in Dryden, Ontario for chemical analysis Two drill holes are reported totaling 2585m

The PQ-Limb exploration hole succeeded in reaching its target, intersecting the lowest extents of a down-strike PQ-deeps ore zone projection. Encouraging assay values were returned. Unfortunately, the West Limb diamond drill hole was plagued by operational deficiencies and in-hole drilling complications. This hole was abandoned well short of target depth and was unsuccessful in meeting any of its objectives.

### Location and Access

The North Shore claim group and Musselwhite Mine are located in the District of Kenora, Northwest Ontario. Approximately 76 km South East of Weagamow First Nation, 103 km North of the town of Pickle Lake, 430 km Northwest of Thunder Bay. The project on which the drilling work detailed in this report are located approximately

Access is available through chartered air service to the town of Pickle Lake and a four-Season road extending North to Goldcorp's Musselwhite Mine. From Musselwhite mine the North Shore project must be accesses by crossing Opapimiskan Lake via boat or helicopter or traversing around the lake on foot.



Figure 1. Location of Musselwhite Mine within the Province of Ontario, Canada



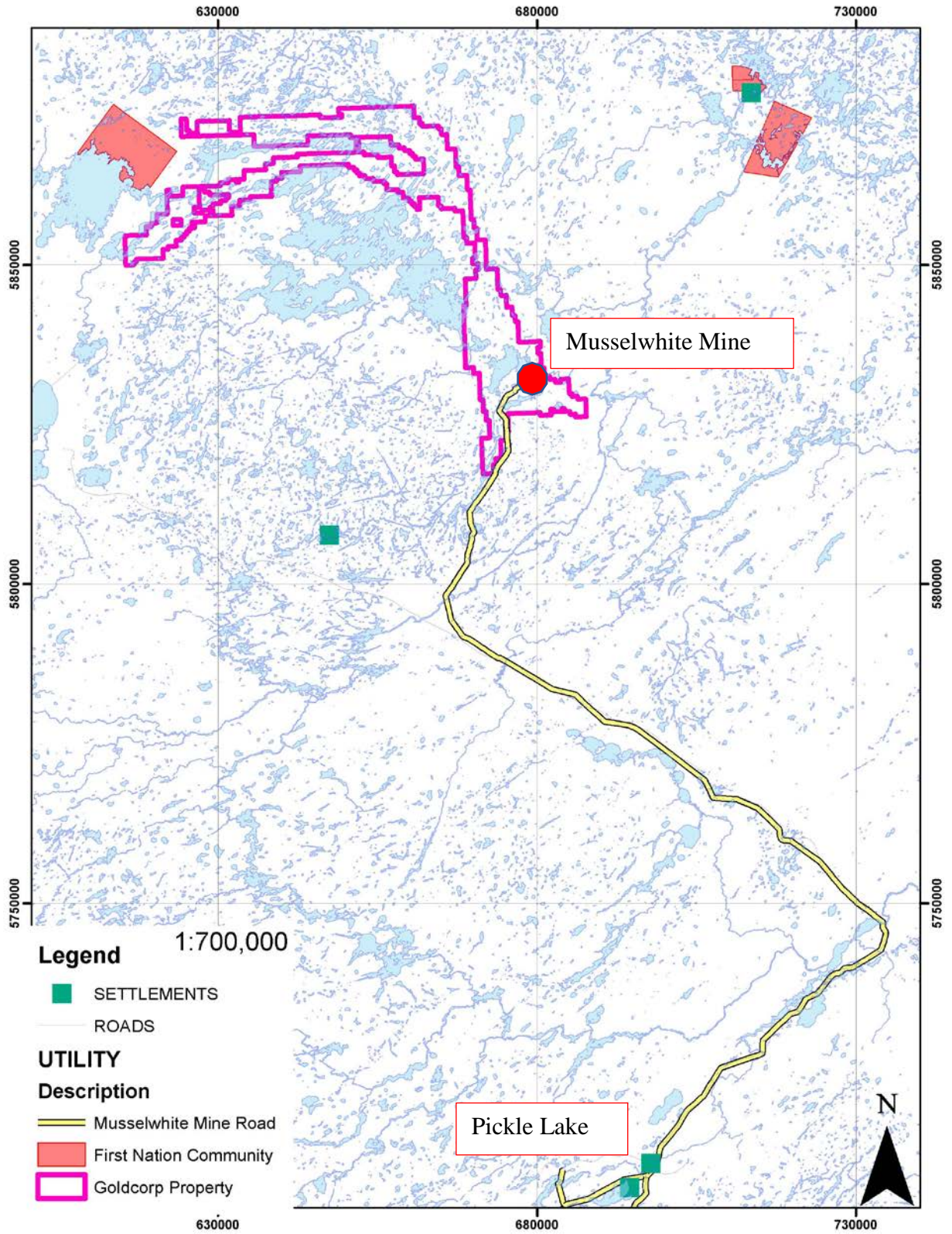


Figure 2. Location of Musselwhite Mine and the Goldcorp claim group relative to the town of Pickle Lake, Ontario, NAD 1983 UTM Zone 15N.



## History and Previous Work

1938 – (Satterly 1941) First geological map of the North Caribou Greenstone Belt produced at a scale of 1 inch to 1 Mile (1:63360).

1960 – Geological survey of Canada conducted an airborne magnetometer survey of the North Caribou Greenstone Belt.

1962 – Economic gold mineralization was first identified on the adjacent Musselwhite mining leases by the Musselwhite Brothers in 1962

1963 – The Karl Zeemal property was optioned by Kenpat Mines Ltd. in 1963. The company conducted geological and geophysical surveys.

1962 to 1963 – Inco Limited conducted an 18-hole diamond drill hole program in the Zeemal Lake area and an additional Eight holes in area of Karl and Markop Lakes.

1973 – The Musselwhite brothers optioned their property to a consortium led by Dome Exploration Ltd. Subsequent exploration activities resulted in the discovery of the “West Anticline Zone” in 1980.

1981 – The Dome Exploration Ltd Consortium. commissioned Aerodat Ltd. to conduct an airborne magnetic and electromagnetic geophysical survey over the area surrounding the Musselwhite deposit.

1984 – Dome Mines Ltd. excavated an exploration decline into the West Anticline Zone and delineated gold deposits totaling approximately 540,000 ounces.

1985 – The Ontario Geological Survey commissioned Aerodat Ltd. to perform an extensive Airborne Magnetic and Electromagnetic survey of the North Caribou Greenstone Belt. Maps 80744 and 80745 cover the Karl Zeemal area.

1986 – Extensive surface drilling by Dome Mines Ltd focused on the East Bay Synform

1986 to 1987 - A prefeasibility study was completed on the discovery, followed by an underground exploration program in 1988. A full feasibility study by the three partners (Placer Dome, Inco Gold, and Corona) in 1989 showed that development of the orebody could not be justified by the economics.

1992 and 1993 - Further drilling in focused on the OP and PQ mineralized zones. In 1994 a second underground program began on the T-Antiform structure, and drilling continued on the PQ zones.

1996 - The Musselwhite Joint Venture partners made the decision to put the property into construction in. Construction started immediately following a feasibility study.

1996 - Underground development of the T-Antiform and open pit mining on the OP zone both commenced. The first gold bar was poured March 10, 1997, and the mine entered commercial production April 1, 1997.

2003 - TVX/Normandy (the previous JV partner) merged with Kinross Gold Corporation, making Kinross the current joint venture partner. Current interest in the joint venture is held by Placer Dome (68%) and Kinross Gold Corporation (32%).

2006 - Barrick Gold acquired 100% of Placer Dome shares on January 20, 2006,

2006 – Goldcorp Canada Ltd. acquired sole ownership of Musselwhite Mine from Barrick Gold and Kinross Gold Corporation and has continued continuous operations henceforth.

### Physiography and Vegetation

The claim group is dominantly covered by low bogs which are densely forested by black spruce trees rooted in a wet, moss covered, forest floor, and moss-covered meadows which are typically dryer and dominantly vegetated by dense Labrador tea shrubs and sparse, small, black spruce trees. The entire region is dominated by glacial fluvial landforms, mostly eskers, and terminal or lateral moraines, dominantly composed of a sand and boulder till. Sparse occurrences of outcropping bedrock have little to no relief and are typically disguised by a thick veneer of moss and/or lichen.

### Regional Geology

The North Caribou greenstone belt (NCGB) is located on the northern edge of the North Caribou terrane, south of the Island Lake domain. It comprises various volcanic-dominated assemblages formed during two major magmatic phases dated at ca. 2980 and ca. 2870 Ma. Sedimentary-dominated assemblages lie in the core of the NCGB. They are interpreted to have been deposited after 2980 Ma in the northern NCGB, and after 2850 Ma in the southeastern NCGB. The greenstones are intruded by several batholiths emplaced during the two magmatic phases at ca. 2870-2850 Ma and ca. 2750-2690 Ma (Oswald, 2018 and all references therein)

The envelope of the main structural fabric and fold structures is roughly parallel to the contact of the narrow, elongate, two-arc shape of the North Caribou belt. Three major phases of ductile to brittle-ductile deformation have been documented (D1, D2, D3), in addition to minor late structures related to brittle deformation (“D4”). Several regional fault zones separate lithostratigraphic assemblages. The dominant regional structural pattern and main tectonometamorphic phase is related to D2 (Oswald, 2018 and references therein). The rocks of the North Caribou Greenstone Belt were metamorphosed to amphibolite facies around 2660 Ma (Oswald, 2018 and all references therein)

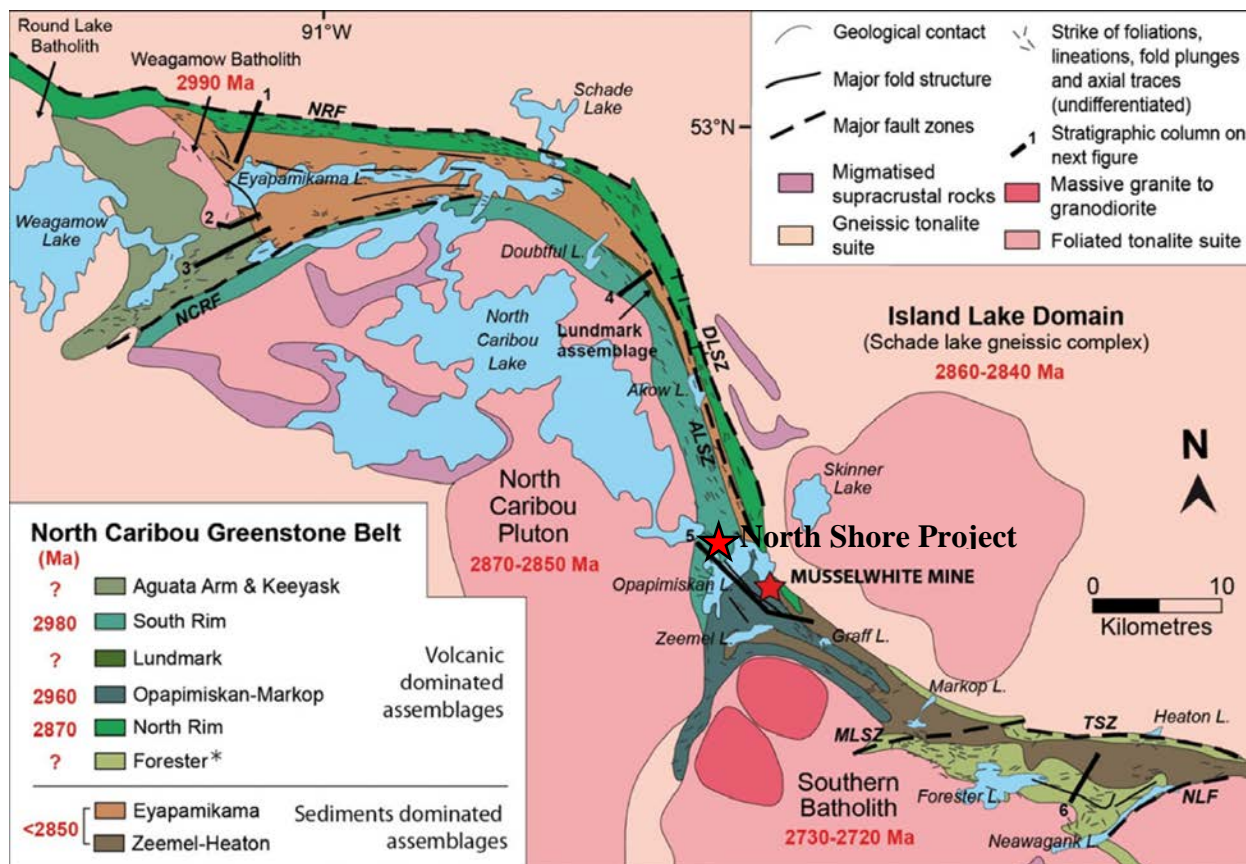


Figure 3. Simplified tectonostratigraphic map of the North Caribou belt modified from Oswald, 2018

## Local Geology

The South Rim assemblage outcrops on surface in the North Shore project area and is encountered in the tops of both drill holes. It is dominated by pillowed and massive flows with minor intermediate to felsic volcanic rocks, subordinate ultramafic rocks and sedimentary units (Oswald 2018, and references therein). The South Rim assemblage overlies the Opapimiskan-Markop assemblage which is host to Musselwhite Mine. The Opapimiskan-Markop assemblage is largely dominated by mafic volcanic rocks interlayered with significant units of silicate and oxide facies banded iron formations which may be continuous for tens of kilometers. The volcanic sequence comprises pillowed and massive mafic lava flows with several varieties of interflow metasedimentary rocks (Oswald 2018, and references therein). Interflow metasediments form thin lenses which are typically discontinuous along strike and up or down dip. These intraformational sedimentary units may host significant sulphide mineralization and anomalous to significant Au grades.

Economic mineralization in Musselwhite Mine can be classified into two dominant styles, although there are notable exceptions. The uppermost sub-unit of the Northern Iron Formation is a silicate facies banded iron formation which hosts significant pyrrhotite mineralization and economic Au grades within strain zones associated with regional D2 fold hinges and flexural slip along fold limbs. The second style of significant mineralization is dominant in the Western half of Musselwhite Mine referred to as the West Limb, or WEL. The west limb ore zones

occur most commonly where subtle axial planar strain zones within metavolcanic and metasedimentary units associated with mine scale D2 folding intersect in impermeable or weakly permeable fluid boundary such as an ultramafic intrusion or significant rheological contrast.

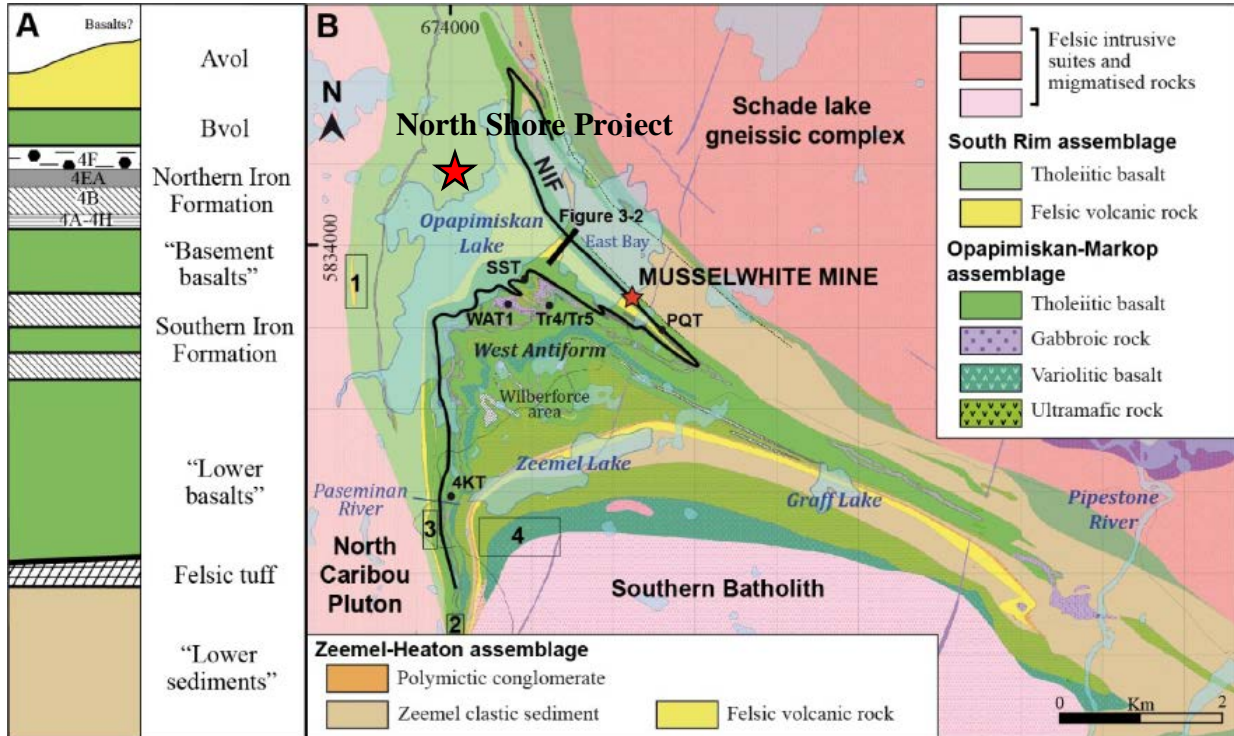


Figure 4. Local Musselwhite Mine bedrock geology and stratigraphic column. Modified from Oswald 2018.



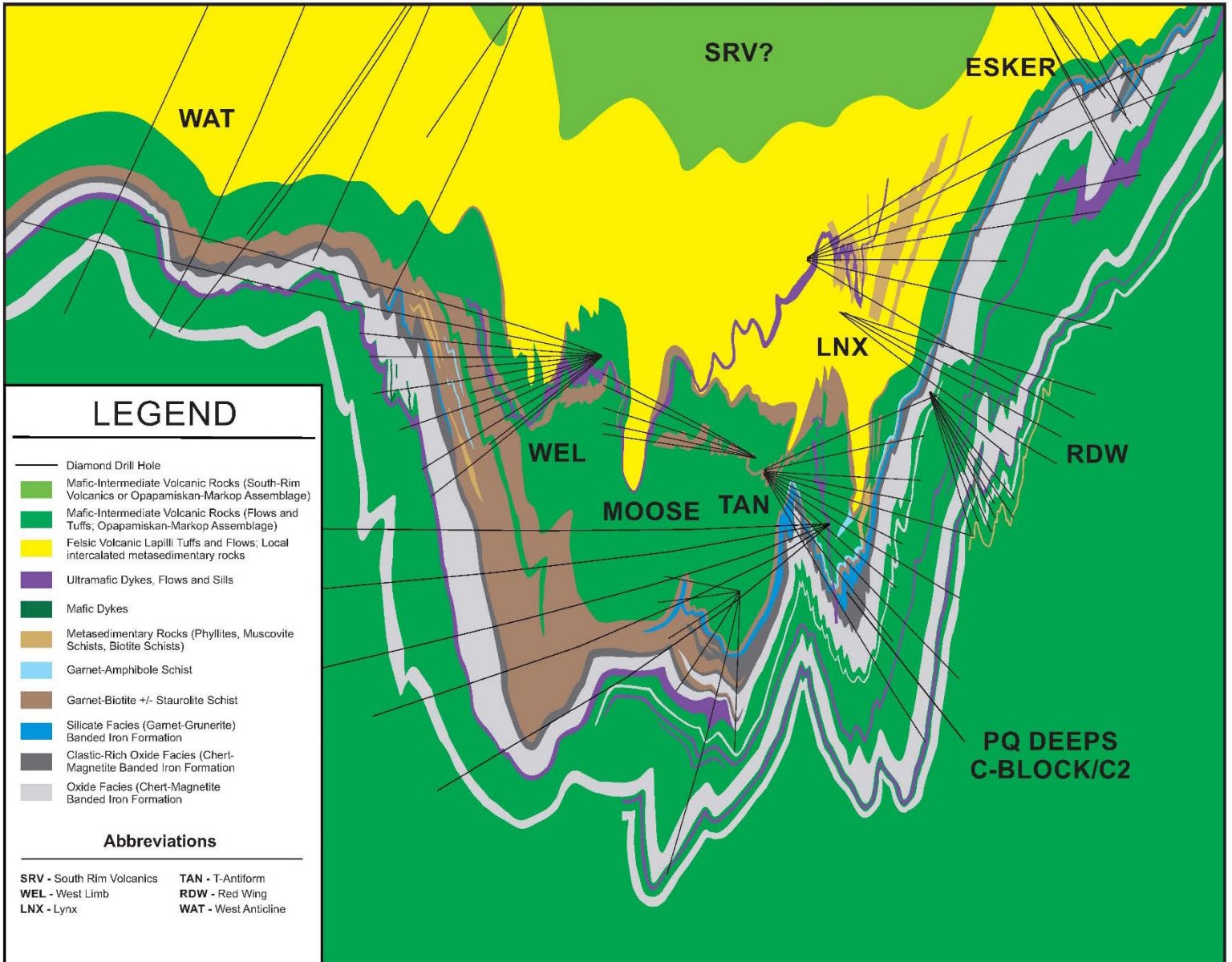


Figure 5. Generalized Composite Cross Section of Musselwhite Mine geology, showing generalized locations of major ore bodies and typical underground drilling availability



## 2017 North Shore Diamond Drilling

### Table of Claims

The 2017 North Shore diamond drill hole reported, 17-NSD-001, was collared on Goldcorp Canada Ltd.'s mining lease LEA-107583. Associated details can be seen in table 1 below.

Table 1. Mining Lease on which the work described in this section was conducted.

Hole ID	Mineral Rights Number	Tenure Type	Expiry Date	Township
17-NSD-001	LEA-107583	Lease	5/31/2025	Skinner Lake

### Description of Program

Exploration diamond drilling was conducted between May 19 and July 22, 2017 on the North shore of Opapimiskan Lake with the objective of testing firstly the down plunge continuity of Musselwhite Mine geology and secondly to test for down plunge continuity of Musselwhite Mine's most significant ore bodies, the C-Block and PQ-Deeps (Figure 3), hosted within the silicate facies hanging wall of the Northern Iron Formation. The drill hole was planned to target down plunge projections of these ore bodies at approximately 1km down-strike from the current proven extents. The work was conducted and supervised by geologists at Goldcorp Canada Ltd.'s Musselwhite Mine with services and assistance provided by other supporting staff and specialist contractor groups.

Prior to the commencement of drilling the area was surveyed by exploration geologists and environmental technicians to assess any operational challenges the selected location may present, or potential damages the activities could have on the local environment. Following selection and approval of the drill site it was surveyed into the Musselwhite Mine local grid by specialists from Total Precision Surveying of Sault Ste. Marie, Ontario.

Hy-Tech Drilling Ltd., headquartered in Smithers, British Columbia, Canada was contracted to perform all drilling services including, clearing and building of the rig pad. Movement of equipment, materials, and personnel was accomplished with a Bell 206 Long Ranger helicopter provided and operated by Wisk Air Helicopters of Thunder Bay, Ontario. Drill rig moves required the lifting capacity of a Bell 407 helicopter. As these machines are prohibited from operating at night a trail of lit buoys was placed across Opapimiskan Lake for emergency boat access and egress to the drill rig.

All drill core was flown back to Musselwhite Mine where it was logged by staff exploration geologist. All drill hole core interpreted to be of economic or intellectual interest were submitted to Activation Laboratories Ltd. in Dryden, Ontario for chemical analysis. All samples were divided into halves with an electric core saw before packaging and shipment to Actlabs. Unsampled core and reference core halves remain at Musselwhite Mine in storage. All assay certificates are appended to this report. A select number of priority samples were

analyzed by the internal laboratory at Musselwhite Mine and therefore no certificates are available.

The drill hole was grouted upon completion and the site completely remediated, all waste and materials removed, drill hole casing included. All drill bit cuttings were collected and disposed of in Musselwhite Mine tailings.

Table 2. Collar information, 2017 North Shore drill hole 17-NSD-001. UTM datum: NAD 1983 Zone 15N

Hole Number	Planned Dip (degrees)	Planned Azimuth (Mine North)	Planned Azimuth (Mine North)	Length (m)	Surveyed East (Mine Grid)	Surveyed North (Mine Grid)	Surveyed Mine Reference Level	UTM East (Converted)	UTM North (Converted)
17-NSD-001	-80	90	134.2	2130	7490.447	15415.849	5302.095	0673410	5835595

## Results and Conclusions

1209 sample of academic and economic interest were selected. Following a post drilling evaluation of the data it is interpreted that the program did succeed in determining the geology of Musselwhite Mine does have down strike continuity approximately 1km mine-north of the nearest in-mine exploration. Although the hole terminated well below the target, the stratigraphic sequence was a full reproduction of stratigraphy within Musselwhite Mine. A cross section of the 17-NSD-001 drill hole can be observed in appendix II.

Table 3 below contains a summary of all gold grade intercepts deemed to be significant. As one can observe several units of interflow clastic metasediments containing high gold grades were intercepted. Unfortunately, of none these intercepts are wide enough to be considered solely economic. Despite 17-NSD-001 intersecting the Northern Iron Formation far to the west of the down-dip ore zone projection an intercept of 2.7m @ 3.17g/t was returned from the hanging wall silicate iron formation sub-unit.

Table 3. Summary table of significant intercepts within 17-NSD-001

From (m)	To (m)	Length (m)	Zone	Lithology	Width (m)	Au g/t
1706.7	1707.9	1.2	undefined	Interflow Amphibole Garnet Schist	0.8	3.07
1728.8	1729.8	1.0	undefined	Garnetiferous Clastic Metasediment	0.9	33.00
1823.9	1824.9	1.0	undefined	Biotite Garnet Schist	0.9	8.53
1868.3	1869.0	0.7	undefined	Interflow Amphibole Garnet Schist	0.6	18.20
1930.4	1930.8	0.4	undefined	Interflow Amphibole Garnet Schist	0.2	34.30
1998.3	1999.0	0.7	undefined	Mafic metavolcanic	0.4	15.90
2036.3	2042.1	5.8	Northern IF	Garnet Grunerite Silicate Facies Iron Formation	2.7	3.17

## Recommendations

Although 17-NSD-001 did not intersect the targeted down-dip projections of the main Musselwhite Mine PQ-Limb ore zones valuable conclusions can be made which support continued exploration efforts. The higher-level controls on mineralization, as currently

understood, are largely related to the interaction between D2 fold structures, and geological units of contrasting rheologies. With the results of the drilling indicating that the stratigraphy and generally the geometry of the Musselwhite Mine geology is continuous out to this point. It is reasonable to speculate that these mineralizing conditions may persist as well. Additionally, from the seven intercepts reported in table 3, the geology evidently hosts anomalous abundances of gold at this northing. It is the opinion of the author that further exploration to identify locations which exhibit the mechanics known to concentrate gold in this geological system is justified. Future programs should prioritize wedging of these type of deep drill holes to facilitate multiple intersections of the Northern Iron formation within the PQ-Limb between the relative positions of the PQ-Deeps and Esker Zones (Figure 3).

### Summary of Costs

All costs incurred to execute the 2017 North Shore diamond drilling program are comprehensively detailed in table 4 below. All relevant receipts and invoices are appended to this report. Any invoiced amounts non-specific to this program have been deducted. Expenses totaled. \$1,031,897.64

Table 4. Summary of Costs incurred during the drilling of 17-NSD-001. Non-applicable charges on each invoice have been subtracted.

**Services and Materials**

Category	Invoice Date	Invoice Number	Payee	Description	Amount
Transportation	13-Jun-17	6623	Wisk Air Helicopters	22.3 flight hrs. Bell 206	\$29,079.20
	13-Jun-17	6623		17.5 flight hours bell407 - mobilization	\$35,682.50
	27-Jun-17	6630		40 flight hrs. Bell 206	\$49,812.80
	17-Jul-17	6642		32.3 flight hrs. Bell 206	\$42,119.20
	27-Jul-17	6661		29.3 flight hrs. Bell 206	\$38,207.20
	9-Aug-17	6665		19.5 flight hrs. Bell 206	\$25,428.00
	8-Nov-17	6739		17.9 flight hrs. Bell 407 - Demobilization	\$36,521.00
				<b>Subtotal</b>	\$256,849.90
Assaying	22-Jun-17	A17-05792	Activation Laboratories Ltd. Fire Assay 30g	184 samples @ \$14.00	\$2,576.00
	27-Jun-17	A17-06031		131 samples @ \$14.00	\$1,834.00
	30-Jun-17	A17-06176		18 samples @ \$14.00	\$252.00
	10-Jul-17	A17-06616		169 samples @ \$14.00	\$2,366.00
	20-Jul-17	A17-06757		32 samples @ \$14.00	\$448.00
	25-Jul-17	A17-06912		44 samples @ \$14.00	\$616.00
	25-Jul-17	A17-07007		90 samples @ \$14.00	\$1,260.00
	2-Aug-17	A17-07390		119 samples @ \$14.00	\$1,666.00
	17-Aug-17	A17-07747		84 samples @ \$14.00	\$1,176.00
14-Aug-17	A17-07799	284 samples @ \$14.00	\$3,976.00		
				<b>Subtotal</b>	\$16,170.00
Diamond Drilling	31-May-17	3503	Hy-Tech Drilling Ltd.	Mobilization and drilling	\$70,430.46
	15-Jun-17	3516		Drilling	\$133,509.06
	30-Jun-17	3531		Drilling	\$153,789.16
	15-Jul-17	3554		Drilling	\$170,279.42
	31-Jul-17	3578		Drilling	\$71,589.66
	15-Nov-17	3716		De-mobilization	\$16,800.00
				<b>Subtotal</b>	\$616,397.76
Surveying	19-Jun-17	4570018586	Total precision surveying	Mine grid expansion 5 field days	\$6,703.98
				<b>Subtotal</b>	\$6,703.98
Materials	3-May-17	22435	Lake Lite Inc.	lit bouy's to mark night-emergency egress boat path across Opapimiskan Lake	\$8,176.00
				<b>Subtotal</b>	\$8,176.00

**Personnel**

Category	Person	Rate/12 hr. Day	Person-days	Description	Amount
Planning and supervision	Exploration Geology Supervisor	\$840.00	70	1-person day per day of drilling	\$58,800.00

					<b>Subtotal</b>	\$58,800.00
Core Logging	Exploration Geologist	\$600.00	21	salary, approx. 100m logged per day		\$12,600.00
					<b>Subtotal</b>	\$12,600.00
Core Cutting	Core Cutter	\$420.00	12	salary, approx 100 samples per day		\$5,040.00
					<b>Subtotal</b>	\$5,040.00
Reporting	Project Geologist	\$750.00	4	salary		\$3,000.00
					<b>Subtotal</b>	\$3,000.00
Lodging	Goldcorp Personnel	\$80.00	107			\$8,560.00
	Hy-Tech	\$80.00	350			\$28,000.00
	TPS personnel	\$80.00	5		Musselwhite Mine Camp	\$400.00
	Wisk Air Personnel	\$80.00	140			\$11,200.00
					<b>Subtotal</b>	\$48,160.00
					<b>Program Total</b>	\$1,031,897.64



## 2018 North Shore Diamond Drilling

### Table of Leases

The 2018 North Shore diamond drill holes reported, 18-NSD-001 and 18-NSD-002 were collared on Goldcorp Canada Ltd.'s mining leases LEA-107584 and LEA-107532. Associated details can be seen in table below.

Table 5. Mining Leases held by Goldcorp Canada Ltd. on which 2018 North Shore diamond drill holes were collared.

Hole ID	Mineral Rights Number	Tenure Type	Expiry Date	Township
18-NSD-001	LEA-107584	Lease	5/31/2025	Skinner Lake
18-NSD-002	LEA-107532	Lease	5/31/2025	Skinner Lake

### Description of Program

Exploration diamond drilling was conducted between May 12 and Aug 10, 2018 on the North shore of Opapimiskan Lake. The primary objectives of the 2018 North Shore diamond drilling program were to test down-strike geological continuity of Musselwhite Mine's West Limb, as was done successfully for the East limb (PQ-Limb) in the 2017 North Shore diamond drilling. Secondly, to test for down-strike continuity of Musselwhite Mine West-Limb ore bodies, and to follow up historical North Shore mineralization in Musselwhite Mine's PQ-Limb Northern Iron Formation down strike of the main PQ-Deeps and C-Block Zones (Figure 3). The drill holes were planned to target down plunge projections of these ore bodies at approximately 1km down-strike from the current proven extents. The work was conducted and supervised by geologists at Goldcorp Canada Ltd.'s Musselwhite Mine with services and assistance provided by other supporting staff and specialist contractor groups. Two holes were drilled from two drill rigs at two locations; 18-NSD-001 targeting the PQ-Limb and 18-NSD-002 targeting the West Limb. Meters drilled in the 2018 program totaled 2585

Prior to the commencement of drilling the area was inspected by exploration geologists and environmental technicians from Goldcorp's Musselwhite Mine to assess any operational challenges the selected location may present, or potential damages the activities could have on the local environment.

Diamond drilling services were contracted to Hy-Tech Drilling Ltd. headquartered in Smithers British Columbia and Boart Longyear of Haileybury, Ontario. Movement of people and equipment and personnel was accomplished with a Bell 206 Long Ranger helicopter provided and operated by Wisk Air Helicopters of Thunder Bay, Ontario. The majority of tasks were completed utilizing a Bell 206 Long Ranger helicopter however mobilizing and demobilizing drill rigs required the lifting capacities of Bell 407 and Bell 412 helicopters. As these machines are prohibited from operating during nighttime hours a trail of lit buoys was placed across Opapimiskan lake to mark an emergency access and egress trail for boats.

Drill core from both holes was transported back to Musselwhite Mine where it was logged by staff geologist. All core of economic or intellectual interest was submitted to Activation Laboratories Ltd. in Dryden, Ontario for chemical analysis. Prior to submission core samples were halved at Musselwhite Mine with an electric core saw. Unsampled core and retained halves are retained at Musselwhite Mine in storage. All assay certificates are appended to this report. A select number of priority samples were analyzed by the internal laboratory at Musselwhite Mine and therefore no certificates are available.

18-NSD-002 was grouted upon completion and the site completely remediated, all waste and materials removed, drill hole casing included. All drill bit cuttings were collected and disposed of in Musselwhite Mine tailings. 18-NSD-001 has been left open for future wedging. The intention is to grout the hole and remove all casing upon completion. As with other North Shore drilling operations described in this report all drill cuttings were collected and disposed of in Musselwhite Mine tailings.

Table 6. Drill hole collar information for 2018 North Shore diamond drill holes 18-NSD-001 and 18-NSD-002

Hole Number	Planned Dip (degrees)	Planned Azimuth (Mine North)	Planned Azimuth (Mine North)	Length (m)	Surveyed East (Mine Grid)	Surveyed North (Mine Grid)	Surveyed Mine Reference Level	UTM East (Converted)	UTM North (Converted)
18-NSD-001	-80	80	124.2	2010	7862.649	15631.576	5302.04	0673527	5836009
18-NSD-002	-82	265	309.2	575	8223.715	14594.597	5305.001	0674508	5835517

## Results and Conclusions

### 18-NSD-001

18-NSD-001 succeeded in accomplishing its first objective by intersecting the lower extents of the targeted down-dip ore zone projections. The geology encountered through this intersection was as predicted. The intercept through the projection of the PQ-Deeps ore zone returned 4.2m @ 1.9g/t. Additionally, it can be seen in table 7 below that several units of interflow clastic metasedimentary rocks were encountered up hole of the target which returned high grade assays over intervals between 1m and 2m width. A full table of samples and assay values is appended to this report

The successful prediction of location of the Northern Iron Formation and This further supports the 2017 program conclusions that the stratigraphy and geometry of Musselwhite Mine geology are largely consistent over the approximately 1km distance between the North Shore drilling and the North-most underground exploration. This is of critical importance; as stated in conclusion from the 2017 North Shore drilling program also described in this report, any indications of down dip continuity of the stratigraphy and geometry of Musselwhite Mine geology, is also an indication that the higher-level conditions which permitted the formation of the deposit may persist down dip. The intersection through the down dip PQ-Deeps projection is sub-economic but encouraging. Despite the low grade, gold bearing pyrrhotite mineralization was present where it was predicted to be and over a significant width.

Table 7. Table of significant intercepts in 18-NSD-001

From (m)	To (m)	Length (m)	Zone	Lithology	Width (m)	Au g/t
1797.3	1798.8	1.5	undefined	Interflow Amphibole Garnet Schist	1.2	9.18
1812	1814.5	2.5	undefined	Interflow Amphibole Garnet Schist	1.7	5.80
1858.8	1860.4	1.6	undefined	Interflow Amphibole Garnet Schist	1.2	13.98
1902.9	1908.7	5.8	PQE-CBLOCK	Garnet Grunerite Silicate Facies Iron Formation	4.2	1.90

## 18-NSD-002

The program suffered from significant operational deficiencies and in-hole complications which lead to the abandonment of the drill hole at a depth of 575m, 1125m short of the planned 1700m length. It can be seen in the appended drill logs and cross section that the hole failed in drilling beyond the South Rim assemblage into the Opapimiskan-Markop Assemblage and all other objectives. 199 samples interpreted to be of potential academic and economic interest were selected and analyzed. No intervals of significant mineralization were intersected.

Table 8. Table of significant intercepts in 18-NSD-002

From (m)	To (m)	Length (m)	Zone	Lithology	Width (m)	Au g/t
-	-	-	-	-	-	-

## Recommendations

It is the opinion of the author that two conclusions drawn from the results of the 2018 North Shore diamond drilling justify further exploration. Firstly, the down dip continuity of the stratigraphy and geological geometries of Musselwhite Mine indicated by 17-NSD-001 are further supported by the drilling of 18-NSD-001. The greater the confidence that can be built in the continuity of these features the greater the confidence should be that higher-level geological conditions which permitted the formation of the Musselwhite deposit will persist 1km beyond currently proven extents.

## Summary of Costs

Total expenditures required to execute the 2018 North Shore diamond drilling program are comprehensively summarized in the table below. Charges on all invoices non-specific to this program have been deducted. All relevant invoices and receipts are appended to this report. Expenditures totaled \$1,680,443.58

Table 9. Table of costs incurred during the drilling of 18-NSD-001 and 18-NSD-002. Non-Applicable charges have been subtracted from each invoice.

**Services and Materials**

Category	Invoice Date	Invoice Number	Payee	Description	Amount
Transportation	30-May-18	6844	Wisk Air Helicopters	14.4 flight hrs. Bell 407 Mob	\$29,376.00
	31-May-18	6852		3.8 flight hrs. Bell 407 Mob	\$7,752.00
	31-May-18	6852		47.4 flight hrs. Bell 206	\$64,763.57
	30-May-18	6845		Mob Boart rig 11.1 flight hrs. Bell 412	\$47,347.50
	18-Jun-18	6872		14.4 flight hrs. Bell 204	\$46,588.50
	4-Jul-18	6900		14.4 flight hrs. Bell 204	\$51,025.50
	16-Jul-18	6921		54.8 flight hrs. Bell 204	\$71,514.00
	7-Aug-18	6945		36.9 flight hrs. Bell 204	\$48,154.50
	27-Aug-18	6976		50.9 flight hrs. Bell 204	\$66,424.50
	9-Oct-18	7020		De-Mob Boart Rig Bell 412 7.2 flight hrs.	\$30,780.00
				<b>Subtotal</b>	\$463,726.07
Assaying	3-Aug-18	A18-08837	Activation Laboratories Ltd. Fire Assay 30g	84 samples @ \$16.25	\$1,365.00
	14-Aug-18	A18-07210		8 samples @ \$16.25	\$130.00
	14-Aug-18	A18-08157		13 samples @ \$16.25	\$211.25
	29-Aug-18	A18-08832		39 samples @ \$16.25	\$633.75
	30-Aug-18	A18-09358		57 samples @ \$16.25	\$926.25
	30-Aug-18	A18-09359		26 samples @ \$16.25	\$422.50
	11-Sep-18	A18-10024		267 samples @ \$16.25	\$4,338.75
	12-Sep-18	A18-09415		209 samples @ \$16.25	\$3,396.25
				<b>Subtotal</b>	\$11,423.75
Diamond Drilling	15-May-18	3905	Hy-Tech Drilling Ltd.	Mobilization	\$13,680.00
	31-May-18	3911		Mobilization and Drilling	\$80,761.42
	15-Jun-18	3936		Drilling	\$161,464.99
	30-Jun-18	3965		Drilling	\$189,064.20
	15-Jul-18	3997		Drilling	\$165,219.68
	31-Jul-18	4002		Drilling	\$84,883.78
	11-Jun-18	2112023413		Mobilization and Drilling	\$63,268.78
	20-Jun-18	2112023453		Mobilization credit	-\$3,454.09
	30-Jun-18	2112023619		Drilling	\$19,718.11
	24-Jul-18	2112023825		Drilling	\$83,711.70
	8-Aug-18	2112023888		Drilling	\$27,778.47
	22-Aug-18	2112024118		Drilling	\$40,155.57
	22-Aug-18	2112024116		Drilling Supervisor	\$8,525.00
				<b>Subtotal</b>	\$934,777.61
Equipment Rentals	30-Apr-18	20181345	SurveyTECH Intruments & Service	Gryo and DeviAligner rental	\$17,987.75
	31-May-18	20187390			\$18,314.70
	30-Jun-18	20181418			\$26,891.70
	31-Jul-18	20181457			\$26,802.00
				<b>Subtotal</b>	\$89,996.15

**Personnel**

Category	Person	Rate/12 hr. Day	Person-days	Description	Amount
Planning and supervision	Exploration Geology Supervisor	\$840.00	91	1 person day per day of drilling	\$76,440.00
<b>Subtotal</b>					\$76,440.00
Core Logging	Exploration Geologist	\$600.00	26	salary, approx. 100m logged per day	\$15,600.00
<b>Subtotal</b>					\$15,600.00
Core Cutting	Core Cutter	\$420.00	7.5	salary, approx 100 samples per day	\$3,150.00
<b>Subtotal</b>					\$3,150.00
Reporting	Project Geologist	\$750.00	7	salary	\$5,250.00
<b>Subtotal</b>					\$5,250.00
Lodging	Goldcorp Personnel	\$80.00	132	Musselwhite Mine Camp	\$10,560.00
	Hy-Tech	\$80.00	375		\$30,000.00
	Boart	\$80.00	410		\$32,800.00
	Wisk Air Personnel	\$80.00	84		\$6,720.00
<b>Subtotal</b>					\$80,080.00
<b>Program Total</b>					\$1,680,443.58



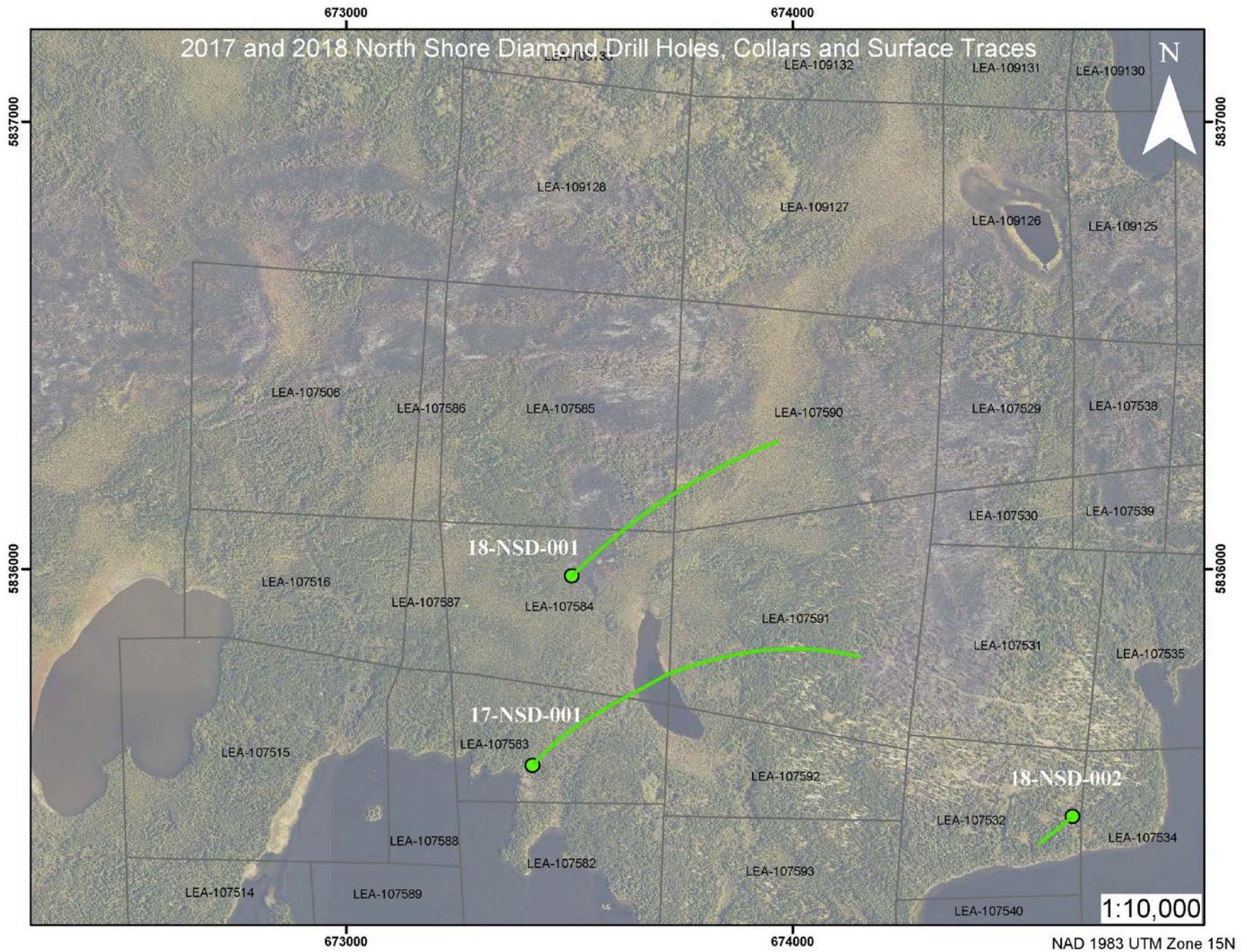


Figure 6. Surface Map of drill hole collar locations and plan view drill hole traces.

## References

Oswald, W. (2018). GEOLOGY OF THE BANDED IRON FORMATION-HOSTED MUSSELWHITE GOLD DEPOSIT, SUPERIOR PROVINCE, ONTARIO, CANADA (Unpublished master's thesis). Université du Québec Institut National de la Recherche Scientifique Centre Eau Terre Environnement.

2010 Closure Plan Amendment, Musselwhite Mine, Thunder Bay, Ontario. Report prepared for Goldcorp Canada Ltd. Musselwhite Mine. Ministry Registry Number 10-I-10 Published July 11, 2011

## Statement of Qualifications

I, David M. Murray, do hereby certify that:

I am a resident of the city of Halifax, Nova Scotia, Canada

I am a graduate of St. Francis Xavier University receiving Advanced Major Degree in Earth Science, concentrating in hard rock geoscience in 2011.

I am a professional geoscientist registered in good standing with the Association of Professional Geoscientists of Nova Scotia, member #236.

I am a core member in good standing of the Association of Prospectors and Developers of Canada.

I am a member in good standing of the Society of Economic Geologists.

I am employed by Goldcorp Canada Ltd, as a Project Geologist at Musselwhite Mine in the District of Kenora, Northwestern Ontario.

I agree with all the information contained within this report and believe that it is an accurate description of the work performed.

The above statements are valid as of the date signed below



Signature: \_\_\_\_\_

Date: Mar. 14 2019

## Appendices

### 2017 Diamond Drill Hole Program

Appendix I .....	Complete 17-NSD-001 diamond drill hole log
Appendix II .....	17-NSD-001 annotated cross section
	<ul style="list-style-type: none"> <li>- Litho Code Index</li> <li>- Cross Section</li> </ul>
Appendix III .....	Assay certificates
Appendix IV .....	Invoices and receipts
	<ul style="list-style-type: none"> <li>- Hytech Drilling</li> <li>- Wisk Air Helicopters</li> <li>- Activation Laboratories</li> <li>- Total Precision Surveying</li> <li>- Lake Light</li> </ul>

### 2018 Diamond Drill Hole Program

Appendix V .....	2018 diamond drill hole logs
	<ul style="list-style-type: none"> <li>- 18-NSD-001</li> <li>- 18-NSD-002</li> </ul>
Appendix VI .....	Annotated drill hole cross sections
	<ul style="list-style-type: none"> <li>- Litho Code Index</li> <li>- 18-NSD-001</li> <li>- 18-NSD-002</li> </ul>
Appendix VII .....	Assay certificates
Appendix IIX .....	Invoices and receipts
	<ul style="list-style-type: none"> <li>- Hytech Drilling</li> <li>- Boart Longyear Diamond Drilling</li> <li>- Wisk Air Helicopters</li> <li>- Activation Laboratories</li> <li>- Survey Tech Instruments and Services</li> </ul>

Appendix I  
17-NSD-001 Diamond Drill Log



## Diamond Drill Hole Major Lithology Code Legend

1	Unsubdivided Ultramafic Intrusive Unit
2	Unsubdivided Mafic Metavolcanic Flow
6	Unsubdivided Clastic Metasedimentary Unit
13	Lamprophyre Dyke
2A	Massive, Fine- to Medium-Grained Mafic Flow
2H	Mafic to Intermediate Tuff Breccia
2J	Medium to Course Grained Flow Centres
2K	Mafic Dykes, Sills and Other Small Intrusions
2M	Chlorite-Actinolite Schist
2T	Biotitized Mafic Metavolcanic Unit
2U	Garnetiferous Mafic Metavolcanic Unit
3A	Intermediate Metavolcanic Flow
3B	Intermediate Pyroclastic Breccia, Tuff Breccia
3C	Intermediate Tuff, Lapilli Tuff
3F	Felsic Lapilli Tuff
3H	Quartz-Plagioclase Porphyry
3P	Intermediate Dykes, Sills, and Small Intrusions
4A	Gruneritized and Silicified Chert-Magnetite Banded Iron Formation
4B	Chert-Magnetite Banded Iron Formation
4BF	Chert-Magnetite-Biotite-Garnet Banded Iron Formation
4E	Garnet Amphibole Iron Formation
4EA	Garnet Amphibole Grunerite Iron Formation
4EF	Garnet Amphibole Iron Formation With Intercalated Clastics
4F	Biotite Garnet Schist
4FE	Biotite Garnet Schist With intercalated Garnet Amphibole Iron Formation
4H	Pyrrhotite Cemented Breccia
6B	Matrix Supported Conglomerate
6W	Garnetiferous Meta-Mudstone/Siltstone/Sandstone
7A	Gabbro
8B	Quartz Diorite
QTZ VN	Massive Quartz Vein



# MUSSELWHITE MINE - GEOLOGY

Hole: **17-NSD-001**

Project: **NSD**

Mine Grid Easting: 7490.447

Planned Depth(m): 2500

Drill Start Date: 5/24/2017

Mine Grid Northing: 15415.849

Actual Depth (m): 2130

Drill End Date: 7/21/2017

Elevation: 5302.095

Core Diameter: NQ2

Mining Lease LEA-107583

UTM East:

Plugged: YES

**Target 1: PQD**

UTM North:

Grout Test: NO

**Target 2:**

UTM NAD1983 Zone 15N

Result: NO RESULTS

**Target 3:**

Drill Instructions:

Collar Comments:

## Survey

Depth	Azimuth	Dip	SurveyType
0	87.4	-82.2	MAXI
0	87.383	-82.184	SURV
5	87.4	-82.3	MAXI
10	88.6	-82.1	MAXI
15	87.5	-82.1	MAXI
20	87.5	-82.1	MAXI
25	88.4	-81.9	MAXI
30	87.2	-81.8	MAXI
35	87.3	-81.7	MAXI
40	88.3	-81.7	MAXI
45	88.1	-81.6	MAXI
50	89.5	-81.4	MAXI
55	89.1	-81.3	MAXI
60	89.1	-81.1	MAXI
65	89.4	-80.9	MAXI
70	89	-80.6	MAXI
75	89.6	-80.5	MAXI
80	89.5	-80.3	MAXI
85	89.7	-80.2	MAXI
90	89.6	-80.1	MAXI
95	89.7	-79.9	MAXI
100	89.7	-79.7	MAXI
105	90.2	-79.7	MAXI
110	90.7	-79.5	MAXI
115	90.2	-79.7	MAXI
120	90	-79.5	MAXI
125	90.7	-79.5	MAXI
130	91	-79.4	MAXI
135	90.7	-79.3	MAXI
140	91.1	-79.2	MAXI
145	91.4	-79.1	MAXI
150	91.6	-79.1	MAXI
155	92	-79	MAXI
160	92.1	-79	MAXI
165	92	-78.9	MAXI
170	92.3	-78.9	MAXI
175	92.1	-78.8	MAXI
180	91.7	-78.7	MAXI
185	91.9	-78.7	MAXI
190	91.9	-78.7	MAXI
195	91.6	-78.5	MAXI
200	91.9	-78.5	MAXI
205	92.3	-78.4	MAXI
210	92.4	-78.4	MAXI
215	92.2	-78.4	MAXI
220	92.4	-78.4	MAXI
225	92.4	-78.4	MAXI
230	92.2	-78.4	MAXI
235	92.4	-78.4	MAXI
240	92.5	-78.4	MAXI
245	92.8	-78.4	MAXI
250	92.8	-78.4	MAXI
255	92.8	-78.3	MAXI
260	93.2	-78.4	MAXI

# MUSSELWHITE MINE - GEOLOGY

Hole: **17-NSD-001**

Project: **NSD**

Mine Grid Easting: 7490.447

Planned Depth(m): 2500

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Mine Grid Northing: 15415.849

Actual Depth (m): 2130

Drill End Date: 7/21/2017

Elevation: 5302.095

Core Diameter: NQ2

Mining Lease LEA-107583

UTM East:

Plugged: YES

**Target 1: PQD**

UTM North:

Grout Test: NO

**Target 2:**

UTM NAD1983 Zone 15N

Result: NO RESULTS

**Target 3:**

Drill Instructions:

Collar Comments:

## Survey

Depth	Azimuth	Dip	SurveyType
265	93.4	-78.3	MAXI
270	93.3	-78.3	MAXI
275	93.3	-78.3	MAXI
280	93.3	-78.2	MAXI
285	93.8	-78.1	MAXI
290	93.8	-78	MAXI
295	94.3	-78	MAXI
300	94	-77.8	MAXI
305	94	-77.8	MAXI
310	94.1	-77.8	MAXI
315	94.3	-77.7	MAXI
320	94.2	-77.7	MAXI
325	94.1	-77.7	MAXI
330	94.2	-77.6	MAXI
335	94.1	-77.6	MAXI
340	93.8	-77.6	MAXI
345	93.8	-77.6	MAXI
350	93.7	-77.6	MAXI
355	93.3	-77.6	MAXI
360	93.8	-77.6	MAXI
365	93.9	-77.6	MAXI
370	93.7	-77.6	MAXI
375	93.5	-77.6	MAXI
380	93.7	-77.6	MAXI
385	93.7	-77.5	MAXI
390	93.5	-77.5	MAXI
395	93.5	-77.4	MAXI
400	93.5	-77.3	MAXI
405	93.9	-77.2	MAXI
410	94.8	-77.1	MAXI
415	95	-76.9	MAXI
420	95.5	-76.8	MAXI
425	95.9	-76.7	MAXI
430	96.2	-76.5	MAXI
435	96.2	-76.3	MAXI
440	96.2	-76.2	MAXI
445	96.6	-76	MAXI
450	96.6	-75.9	MAXI
455	97	-75.8	MAXI
460	96.8	-75.7	MAXI
465	96.5	-75.7	MAXI
470	97.2	-75.7	MAXI
475	96.7	-75.6	MAXI
480	96.8	-75.6	MAXI
485	96.8	-75.7	MAXI
490	96.7	-75.6	MAXI
495	97.1	-75.7	MAXI
500	97.3	-75.6	MAXI
505	96.9	-75.6	MAXI
510	96.9	-75.7	MAXI
515	97.2	-75.8	MAXI
520	97.1	-75.8	MAXI
525	97	-75.8	MAXI
530	96.9	-75.8	MAXI

# MUSSELWHITE MINE - GEOLOGY

Hole: **17-NSD-001**

Project: **NSD**

Mine Grid Easting: 7490.447

Planned Depth(m): 2500

Drill Start Date: 5/24/2017

Mine Grid Northing: 15415.849

Actual Depth (m): 2130

Drill End Date: 7/21/2017

Elevation: 5302.095

Core Diameter: NQ2

Mining Lease LEA-107583

UTM East:

Plugged: YES

**Target 1: PQD**

UTM North:

Grout Test: NO

**Target 2:**

UTM NAD1983 Zone 15N

Result: NO RESULTS

**Target 3:**

Drill Instructions:

Collar Comments:

## Survey

Depth	Azimuth	Dip	SurveyType
535	97.2	-75.8	MAXI
540	97.2	-75.7	MAXI
545	97.7	-75.8	MAXI
550	97.3	-75.8	MAXI
555	97.5	-75.8	MAXI
560	97.4	-75.8	MAXI
565	97.6	-75.7	MAXI
570	97.4	-75.7	MAXI
575	97.6	-75.7	MAXI
580	97.4	-75.7	MAXI
585	98	-75.8	MAXI
590	97.9	-75.7	MAXI
595	97.9	-75.8	MAXI
600	98.2	-75.8	MAXI
605	98.1	-75.8	MAXI
610	98.2	-75.8	MAXI
615	97.8	-75.7	MAXI
620	98	-75.7	MAXI
625	98.1	-75.8	MAXI
630	98.2	-75.7	MAXI
635	97.7	-75.8	MAXI
640	97.8	-75.8	MAXI
645	97.6	-75.7	MAXI
650	97.7	-75.7	MAXI
655	97.9	-75.7	MAXI
660	98.1	-75.7	MAXI
665	98.1	-75.6	MAXI
670	98.3	-75.7	MAXI
675	98.5	-75.5	MAXI
680	99	-75.3	MAXI
685	99.4	-75.1	MAXI
690	99.4	-75	MAXI
695	99.7	-74.9	MAXI
700	99.4	-74.9	MAXI
705	99.4	-74.8	MAXI
710	99.4	-74.9	MAXI
715	99.3	-74.8	MAXI
720	99.4	-74.8	MAXI
725	99.6	-74.7	MAXI
730	99.3	-74.7	MAXI
735	99.4	-74.7	MAXI
740	99.4	-74.7	MAXI
745	99.5	-74.7	MAXI
750	99.4	-74.7	MAXI
755	99.6	-74.7	MAXI
760	99.5	-74.6	MAXI
765	99.7	-74.7	MAXI
770	99.5	-74.7	MAXI
775	99.6	-74.7	MAXI
780	99.4	-74.7	MAXI
785	98.9	-74.7	MAXI
790	99	-74.7	MAXI
795	99.3	-74.7	MAXI
800	99.2	-74.7	MAXI

# MUSSELWHITE MINE - GEOLOGY

Hole: **17-NSD-001**

Project: **NSD**

Mine Grid Easting: 7490.447

Planned Depth(m): 2500

Drill Start Date: 5/24/2017

Mine Grid Northing: 15415.849

Actual Depth (m): 2130

Drill End Date: 7/21/2017

Elevation: 5302.095

Core Diameter: NQ2

Mining Lease LEA-107583

UTM East:

Plugged: YES

**Target 1: PQD**

UTM North:

Grout Test: NO

**Target 2:**

UTM NAD1983 Zone 15N

Result: NO RESULTS

**Target 3:**

Drill Instructions:

Collar Comments:

## Survey

Depth	Azimuth	Dip	SurveyType
805	99.4	-74.8	MAXI
810	99.4	-74.7	MAXI
815	99.1	-74.6	MAXI
820	99.3	-74.7	MAXI
825	99.1	-74.7	MAXI
830	99.4	-74.6	MAXI
831	99.3	-74.6	MAXI
832	99.2	-74.6	MAXI
833	99.2	-74.6	MAXI
834	99.3	-74.6	MAXI
835	99.3	-74.6	MAXI
836	99.2	-74.6	MAXI
837	99	-74.7	MAXI
838	99.1	-74.7	MAXI
839	99.3	-74.7	MAXI
840	99.4	-74.7	MAXI
841	99.5	-74.7	MAXI
842	99.5	-74.6	MAXI
843	99.3	-74.7	MAXI
844	99.2	-74.7	MAXI
845	99.4	-74.7	MAXI
846	99.4	-74.7	MAXI
847	99.4	-74.6	MAXI
848	99.6	-74.6	MAXI
849	99.7	-74.6	MAXI
850	99.6	-74.6	MAXI
851	99.4	-74.6	MAXI
852	99	-74.4	MAXI
853	98.1	-74.2	MAXI
854	97.2	-74	MAXI
855	96.3	-73.7	MAXI
860	95.5	-73.2	MAXI
865	95.6	-73.1	MAXI
870	95.8	-73.1	MAXI
875	96.3	-73.1	MAXI
880	96.2	-73	MAXI
885	96.6	-73	MAXI
890	96.5	-73	MAXI
895	96.5	-72.9	MAXI
900	96.6	-72.8	MAXI
905	96.7	-72.8	MAXI
910	96.7	-72.8	MAXI
915	96.5	-72.8	MAXI
920	96.6	-72.7	MAXI
925	96.7	-72.7	MAXI
930	96.5	-72.7	MAXI
935	96.6	-72.7	MAXI
940	96.8	-72.6	MAXI
945	96.8	-72.7	MAXI
950	96.7	-72.8	MAXI
955	96.6	-72.8	MAXI
960	96.7	-72.8	MAXI
965	96.7	-72.7	MAXI
970	97	-72.8	MAXI

# MUSSELWHITE MINE - GEOLOGY

Hole: **17-NSD-001**

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Actual Depth (m): 2130

Drill End Date: 7/21/2017

Elevation: 5302.095

Core Diameter: NQ2

Mining Lease LEA-107583

UTM East:

Plugged: YES

**Target 1: PQD**

UTM North:

Grout Test: NO

**Target 2:**

UTM NAD1983 Zone 15N

Result: NO RESULTS

**Target 3:**

Drill Instructions:

Collar Comments:

## Survey

Depth	Azimuth	Dip	SurveyType
975	97.3	-72.9	MAXI
980	97.7	-73	MAXI
985	97.6	-73.2	MAXI
990	98.1	-73.4	MAXI
995	98.9	-73.5	MAXI
1000	99.7	-73.4	MAXI
1005	101.3	-73.3	MAXI
1010	102.6	-73.1	MAXI
1015	103.3	-72.9	MAXI
1020	103.5	-72.9	MAXI
1025	103.8	-72.8	MAXI
1030	104.2	-72.7	MAXI
1035	104.3	-72.6	MAXI
1040	104.7	-72.6	MAXI
1045	104.9	-72.5	MAXI
1050	105.2	-72.4	MAXI
1055	105.1	-72.4	MAXI
1060	105.2	-72.3	MAXI
1065	105.5	-72.2	MAXI
1070	105.6	-72.1	MAXI
1075	105.7	-72.1	MAXI
1080	105.8	-72	MAXI
1085	105.6	-72	MAXI
1090	106.1	-71.9	MAXI
1095	105.8	-71.8	MAXI
1100	106.3	-71.8	MAXI
1105	106.4	-71.7	MAXI
1110	106.5	-71.7	MAXI
1115	106.5	-71.6	MAXI
1120	106.5	-71.6	MAXI
1125	106.6	-71.5	MAXI
1130	106.3	-71.6	MAXI
1134	108.8	-63.4	EZS
1135	106.2	-71.5	MAXI
1140	106.3	-71.4	MAXI
1145	106.3	-71.4	MAXI
1150	106.2	-71.4	MAXI
1155	106.5	-71.4	MAXI
1160	106.4	-71.4	MAXI
1164	108.9	-62.9	EZS
1165	106.7	-71.3	MAXI
1170	106.7	-71.3	MAXI
1175	106.8	-71.2	MAXI
1180	107.1	-71.2	MAXI
1185	107.3	-71.1	MAXI
1190	107.6	-70.9	MAXI
1194	111.8	-62.5	EZS
1195	107.9	-70.8	MAXI
1200	108.1	-70.8	MAXI
1205	108.3	-70.7	MAXI
1210	108.4	-70.6	MAXI
1215	108.3	-70.6	MAXI
1220	108.7	-70.5	MAXI
1225	108.6	-70.4	MAXI

# MUSSELWHITE MINE - GEOLOGY

Hole: **17-NSD-001**

Project: **NSD**

Mine Grid Easting: 7490.447

Planned Depth(m): 2500

Drill Start Date: 5/24/2017

Mine Grid Northing: 15415.849

Actual Depth (m): 2130

Drill End Date: 7/21/2017

Elevation: 5302.095

Core Diameter: NQ2

Mining Lease LEA-107583

UTM East:

Plugged: YES

**Target 1: PQD**

UTM North:

Grout Test: NO

**Target 2:**

UTM NAD1983 Zone 15N

Result: NO RESULTS

**Target 3:**

Drill Instructions:

Collar Comments:

## Survey

Depth	Azimuth	Dip	SurveyType
1230	108.9	-70.4	MAXI
1235	109.2	-70.3	MAXI
1236	109.2	-70.3	MAXI
1237	109.4	-70.3	MAXI
1238	109.4	-70.3	MAXI
1239	109.3	-70.3	MAXI
1240	109.3	-70.2	MAXI
1241	109.4	-70.3	MAXI
1242	109.5	-70.3	MAXI
1243	109.7	-70.2	MAXI
1244	109.6	-70.2	MAXI
1245	109.5	-70.2	MAXI
1246	109.5	-70.2	MAXI
1247	109.6	-70.2	MAXI
1248	109.5	-70.2	MAXI
1249	109.7	-70.2	MAXI
1250	109.7	-70.2	MAXI
1251	109.8	-70.2	MAXI
1252	109.8	-70.1	MAXI
1253	109.9	-70.2	MAXI
1254	110	-70.1	MAXI
1255	109.9	-70.1	MAXI
1260	108.9	-68.8	MAXI
1265	108.8	-68.1	MAXI
1270	109.4	-67.7	MAXI
1275	109.9	-67.3	MAXI
1280	109.9	-67.3	MAXI
1285	110	-67.2	MAXI
1290	110.2	-67.2	MAXI
1295	110.7	-67.2	MAXI
1300	110.9	-67.3	MAXI
1305	111	-67.3	MAXI
1310	111.3	-67.2	MAXI
1315	111.4	-67.2	MAXI
1320	111.9	-67.1	MAXI
1325	111.8	-67.1	MAXI
1330	111.9	-67	MAXI
1335	112.4	-67	MAXI
1340	112.1	-66.9	MAXI
1345	111.7	-66.8	MAXI
1350	111.7	-66.7	MAXI
1355	111.6	-66.4	MAXI
1356	111.4	-66.4	MAXI
1357	111.3	-66.3	MAXI
1358	111.2	-66.3	MAXI
1359	111.2	-66.2	MAXI
1360	111.2	-66.1	MAXI
1361	111.3	-65.9	MAXI
1362	111.1	-65.7	MAXI
1363	111	-65.6	MAXI
1364	111	-65.6	MAXI
1365	111	-65.5	MAXI
1366	111	-65.4	MAXI
1367	111.2	-65.2	MAXI



# MUSSELWHITE MINE - GEOLOGY

Hole: **17-NSD-001**

Project: **NSD**

Mine Grid Easting: 7490.447

Planned Depth(m): 2500

Drill Start Date: 5/24/2017

Mine Grid Northing: 15415.849

Actual Depth (m): 2130

Drill End Date: 7/21/2017

Elevation: 5302.095

Core Diameter: NQ2

Mining Lease LEA-107583

UTM East:

Plugged: YES

**Target 1: PQD**

UTM North:

Grout Test: NO

**Target 2:**

UTM NAD1983 Zone 15N

Result: NO RESULTS

**Target 3:**

Drill Instructions:

Collar Comments:

## Survey

Depth	Azimuth	Dip	SurveyType
1368	111.3	-65.1	MAXI
1369	111.3	-65	MAXI
1370	111.3	-64.9	MAXI
1371	111.3	-64.9	MAXI
1372	111.3	-64.8	MAXI
1373	111.5	-64.8	MAXI
1374	111.6	-64.8	MAXI
1375	111.5	-64.8	MAXI
1380	111.5	-63.9	MAXI
1385	112.2	-62.5	MAXI
1390	113.3	-61.7	MAXI
1395	114	-61.3	MAXI
1400	114.2	-61	MAXI
1405	114.5	-60.9	MAXI
1410	114.5	-60.8	MAXI
1415	114.7	-60.7	MAXI
1420	115	-60.6	MAXI
1425	115	-60.6	MAXI
1430	115.2	-60.6	MAXI
1435	115.2	-60.5	MAXI
1440	115.4	-60.4	MAXI
1445	115.7	-60.3	MAXI
1450	115.9	-60.2	MAXI
1455	116.4	-60.1	MAXI
1460	116.4	-60.1	MAXI
1465	116.8	-60	MAXI
1466	116.8	-60	MAXI
1467	116.8	-60	MAXI
1468	116.8	-59.9	MAXI
1469	116.8	-59.9	MAXI
1470	116.8	-59.9	MAXI
1471	116.8	-60	MAXI
1472	116.9	-59.9	MAXI
1473	117	-59.9	MAXI
1474	117	-59.8	MAXI
1475	117	-59.9	MAXI
1476	117	-59.9	MAXI
1477	117.1	-59.8	MAXI
1478	117.1	-59.8	MAXI
1479	117.1	-59.8	MAXI
1480	117.2	-59.8	MAXI
1481	117.2	-59.8	MAXI
1482	117.2	-59.7	MAXI
1483	117.2	-59.7	MAXI
1484	117.1	-59.7	MAXI
1485	117	-59.6	MAXI
1490	116.8	-59.3	MAXI
1495	116	-57.3	MAXI
1500	115.5	-55.8	MAXI
1505	114.9	-54.6	MAXI
1510	114.8	-54.2	MAXI
1515	115.1	-54	MAXI
1520	115.1	-53.9	MAXI
1525	115.3	-53.8	MAXI

# MUSSELWHITE MINE - GEOLOGY

Hole: **17-NSD-001**

Project: **NSD**

Mine Grid Easting: 7490.447

Planned Depth(m): 2500

Drill Start Date: 5/24/2017

Mine Grid Northing: 15415.849

Actual Depth (m): 2130

Drill End Date: 7/21/2017

Elevation: 5302.095

Core Diameter: NQ2

Mining Lease LEA-107583

UTM East:

Plugged: YES

**Target 1: PQD**

UTM North:

Grout Test: NO

**Target 2:**

UTM NAD1983 Zone 15N

Result: NO RESULTS

**Target 3:**

Drill Instructions:

Collar Comments:

## Survey

Depth	Azimuth	Dip	SurveyType
1530	115.5	-53.8	MAXI
1535	115.7	-53.7	MAXI
1540	115.9	-53.7	MAXI
1545	116.1	-53.7	MAXI
1550	116.3	-53.6	MAXI
1555	116.6	-53.5	MAXI
1560	116.7	-53.4	MAXI
1565	116.9	-53.3	MAXI
1570	117.1	-53.3	MAXI
1575	117.2	-53.2	MAXI
1580	117.4	-53.2	MAXI
1585	117.6	-53.1	MAXI
1590	117.9	-52.9	MAXI
1595	118.1	-52.8	MAXI
1600	118.5	-52.7	MAXI
1605	118.8	-52.6	MAXI
1610	119.3	-52.6	MAXI
1615	119.6	-52.5	MAXI
1620	119.9	-52.4	MAXI
1625	120.2	-52.3	MAXI
1630	120.4	-52.3	MAXI
1635	120.8	-52.3	MAXI
1640	121.2	-52.2	MAXI
1645	121.4	-52.1	MAXI
1650	121.7	-51.9	MAXI
1655	122.1	-51.8	MAXI
1660	122.3	-51.8	MAXI
1665	122.7	-51.7	MAXI
1670	122.9	-51.7	MAXI
1675	123.1	-51.5	MAXI
1680	123.4	-51.4	MAXI
1685	123.7	-51.3	MAXI
1690	123.9	-51.3	MAXI
1695	124.1	-51.1	MAXI
1700	124.4	-51	MAXI
1705	124.7	-50.9	MAXI
1710	124.9	-50.8	MAXI
1715	125.2	-50.7	MAXI
1720	125.5	-50.6	MAXI
1725	125.7	-50.5	MAXI
1730	125.9	-50.4	MAXI
1735	126.2	-50.3	MAXI
1740	126.5	-50.2	MAXI
1745	126.8	-50.2	MAXI
1750	126.9	-50	MAXI
1755	127.1	-49.9	MAXI
1760	127.3	-49.9	MAXI
1765	127.6	-49.7	MAXI
1770	127.7	-49.6	MAXI
1775	127.8	-49.5	MAXI
1780	127.9	-49.4	MAXI
1785	128.2	-49.3	MAXI
1790	128.5	-49.2	MAXI
1795	128.7	-49.1	MAXI

# MUSSELWHITE MINE - GEOLOGY

Hole: **17-NSD-001**

Project: **NSD**

Mine Grid Easting: 7490.447

Planned Depth(m): 2500

Drill Start Date: 5/24/2017

Mine Grid Northing: 15415.849

Actual Depth (m): 2130

Drill End Date: 7/21/2017

Elevation: 5302.095

Core Diameter: NQ2

Mining Lease LEA-107583

UTM East:

Plugged: YES

**Target 1: PQD**

UTM North:

Grout Test: NO

**Target 2:**

UTM NAD1983 Zone 15N

Result: NO RESULTS

**Target 3:**

Drill Instructions:

Collar Comments:

## Survey

Depth	Azimuth	Dip	SurveyType
1800	128.9	-49	MAXI
1805	129.1	-48.9	MAXI
1810	129	-48.8	MAXI
1815	129.1	-48.7	MAXI
1820	129.3	-48.6	MAXI
1825	129.6	-48.5	MAXI
1830	129.9	-48.5	MAXI
1835	130.2	-48.4	MAXI
1840	130.4	-48.3	MAXI
1845	130.6	-48.2	MAXI
1850	130.9	-48.3	MAXI
1855	131.2	-48.2	MAXI
1860	131.3	-48.1	MAXI
1865	131.5	-48	MAXI
1870	131.7	-48	MAXI
1875	132	-47.9	MAXI
1880	132	-47.8	MAXI
1885	132.1	-47.9	MAXI
1890	132.2	-47.9	MAXI
1895	132.3	-48	MAXI
1900	132.3	-48	MAXI
1905	132.4	-47.9	MAXI
1910	132.5	-47.7	MAXI
1915	132.3	-47.8	MAXI
1920	132.2	-47.8	MAXI
1925	132	-47.9	MAXI
1930	132	-48	MAXI
1935	131.9	-48.2	MAXI
1940	131.9	-48.4	MAXI
1945	131.9	-48.4	MAXI
1950	132.1	-48.5	MAXI
1955	132	-48.5	MAXI
1960	132	-48.5	MAXI
1965	132.1	-48.5	MAXI
1970	132	-48.6	MAXI
1975	131.9	-48.6	MAXI
1980	131.5	-48.7	MAXI
1985	131.2	-48.7	MAXI
1990	131.2	-48.8	MAXI
1995	131.2	-48.8	MAXI
2000	131.2	-48.9	MAXI
2005	130.9	-48.8	MAXI
2010	130.8	-48.8	MAXI
2015	130.5	-48.9	MAXI
2020	130.2	-48.8	MAXI
2025	129.8	-48.8	MAXI
2030	129.6	-48.7	MAXI
2035	129.3	-48.8	MAXI
2040	129.1	-48.7	MAXI
2045	128.9	-48.8	MAXI
2050	128.8	-48.8	MAXI
2055	128.9	-48.8	MAXI
2060	128.9	-48.7	MAXI
2065	129.1	-48.7	MAXI

# MUSSELWHITE MINE - GEOLOGY

Hole: **17-NSD-001**

Project: **NSD**

Mine Grid Easting: 7490.447

Planned Depth(m): 2500

Drill Start Date: 5/24/2017

Mine Grid Northing: 15415.849

Actual Depth (m): 2130

Drill End Date: 7/21/2017

Elevation: 5302.095

Core Diameter: NQ2

Mining Lease LEA-107583

UTM East:

Plugged: YES

**Target 1: PQD**

UTM North:

Grout Test: NO

**Target 2:**

UTM NAD1983 Zone 15N

Result: NO RESULTS

**Target 3:**

Drill Instructions:

Collar Comments:

## Survey

Depth	Azimuth	Dip	SurveyType
2070	129.1	-48.7	MAXI
2075	129.1	-48.7	MAXI
2080	129.2	-48.7	MAXI
2085	129.2	-48.7	MAXI
2090	129.3	-48.6	MAXI
2095	129.3	-48.6	MAXI
2100	129.4	-48.6	MAXI
2105	129.4	-48.6	MAXI
2110	129.5	-48.6	MAXI
2115	129.5	-48.6	MAXI
2120	129.6	-48.6	MAXI
2125	129.6	-48.6	MAXI
2130	129.7	-48.5	MAXI

















17-NSD-001

Depth	Assay				MAJOR UNIT						MINOR UNIT		ALTERATION									
	Sample	From	To	AU ppm	From	To	Unit	Col	Text	Comments	Comments	Unit	Comments	Bio	Car	Chl	Gru	Hem	Ser	Si	Comments	
	E856409	280	281	0.04	241	334.8	2	GG	FOL	Greenish-grey fg-mg Mafic Volcanic(2). Mod foliated. Locally magnetic. Weak green amphibole alteration and minor bands of biotite locally. Strong chlorite alteration in HZ. Minor fold observed in vn. 1-5% planar and stringer qtz+carb vn throughout with												
	E856411	281	282	0.027																		
	E856412	282	283	0.029																		
	E856413	283	284	0.028																		
	E856414	284	285	0.005																		
285	E856415	285	286	0.009																		
	E856416	286	287	0.005																		
	E856417	287	288	0.008																		
	E856418	288	289	0.008																		
	E856419	289	290	0.017																		
290	E856421	290	291	0.006																		
295																						
300																						
305																						
	E856422	308.1	309	0.007																		
	E856423	309	310	0.015																		
310	E856424	310	311	0.024																		
	E856425	311	312	0.008																		
	E856426	312	313	0.007																		
	E856427	313	314	0.008																		
	E856428	314	315	0.012																		
315	E856429	315	316	0.007																		
	E856431	316	317	0.008																		
	E856432	317	318	0.008																		
	E856433	318	319	0.007																		
	E856434	319	319.7	0.006																		
	E856435	319.7	320.3	0.01																		
320	E856436	320.3	321.3	0.007																		

~30cm massive qtz vn at 277.9m in HZ. Knife fault at 271 with sinl displacement in what looks like a chert band with 5% string of po concentrated along fault. Localized wisps of magnetic po observed mostly on/in veins, some smokey with cg diss po.



























17-NSD-001

Depth	Assay				MAJOR UNIT						MINOR UNIT		ALTERATION											
	Sample	From	To	AU ppm	From	To	Unit	Col	Text	Comments	Comments	Unit	Comments	Bio	Car	Chl	Gru	Hem	Ser	Si	Comments			
765					537	762.4	2	GG	FOL	Fine-grained, green-grey, well foliated mafic volcanics. Non-magnetic. Thin QZ-Ca veining throughout. Pervasive biotite alteration throughout. Bands of chlorite alteration host most of the po. mineralization in the unit. High strain zones	present with minor po mineralization. Up to 1% po. mineralization locally. Veins increase in density grading downhole, mineralization decreases grading downhole. LC is sharp.													
					762.4	765.7	3F	G	FOL	F.g. intense shearing, grey, felsic lapilli tuff. Non-magnetic. Pervasive carb and minor biotite alteration. Intercalated 6w with medium grained pink gts. No mineralization. LC is gradational and non-visible due to the high amount of shearing.														
	E856628	766.1	767.1	0.011																				
	E856629	767.1	767.7	0.011																				
	E856631	767.7	768.5	0.014																				
	E856632	768.5	769.5	0.015																				
770					765.7	774	2	GG	FOL	Fine-grained, well foliated, greenish/grey mafic volcanics. Non-magnetic. Pervasive biotite alt. Minor Qz-Ca veining present trending with foliation.														
775																								
780					774	786.6	2	GG	FOL	F.g. strongly foliated, Green/grey mafic volcanics. No-magnetic. Strong pervasive biotite and mod amphibole alteration. High strain zones present and show increased qz-carb veining trending with foliation. Shallow Fabric changes directions and returns	with both S and Z folds present. Possible fold hinge? No significant mineralization. LC is sharp.													
785																								
790					786.6	792.6	3P	G	MA	F.g. Weakly foliated, grey, Intermediate composition dyke. Non-magnetic. Fabric is opposite to surrounding rock. Minor (5%) qz-carb veining. Moderate pervasive biotite alt. No mineralization. LC is irregular and sharp.														
795					792.6	802.6	2H	GG	FOL	F.g. strong foliation, green/grey mafic volcanics. Non-magnetic. Strong pervasive biotite alt, moderate pervasive amph alt. 0.5-1 cm bands of coarse-grained Hbl that trend with foliation contain minor disseminated po min. No significant veining.	"Clasts" of grey volcanic tuff are present and seem to be elongated along the same plane as foliation. LC is sharp.													
	E856633	797.7	798.7	0.012																				
	E856634	798.7	799.1	0.01																				
	E856635	799.1	800.1	0.016																				
800																								

Fine-grained, massive, black mafic volcanic dyke. Strong biotite alt. Minor po. mineralization. Mag. sus. = ~1.0 x 10<sup>-3</sup>. Contacts are sharp and 40 degrees parallel to foliation.



















































17-NSD-001

Depth	Assay				MAJOR UNIT					MINOR UNIT		ALTERATION									
	Sample	From	To	AU ppm	From	To	Unit	Col	Text	Comments	Comments	Unit	Comments	Bio	Car	Chl	Gru	Hem	Ser	Si	Comments
	E809879	1681	1682	0.058	1641	1692	2	DG	FOL	Fine grained, dark green, mafic metavolcanic unit. Biotite alteration is weak to absent. Strongly and regularly foliated. 1-5 sub cm white carbonate and qtz carbonate veinlets per meter, sparse veins over 1cm wide.	Occasional high strain zones are marked by an intensification of biotite alteration in addition to pervasive carbonate alteration. These zones host 1-2% abundances of PO occurring as fine to medium grained blebs and foliation parallel stringers.										
	E809881	1682	1683	0.001																	
	E809882	1683	1684	0.012																	
	E809883	1684	1685	0.031																	
	E809884	1685	1686	0.068																	
	E809885	1686	1687	0.031																	
	E809886	1686.8	1688	0.052																	
	E809887	1687.2	1689	0.062																	
	E809888	1688	1690	0.038																	
	E809889	1688.3	1691	0.063																	
	E809891	1689	1692	0.076	1690	1692	2	DG	FOL	mafic metavolcanics similar base characteristics to those described above. Differs in the intensity of biotite alt and the presence of PO in sig. abundances w/ minor CPY. Biotite Alt is variable from weak to moderate. Veining dominated by white to grey-	sub cm qtz veins parallel to fol. 5-10, 1-2mm wide calc veinlets per meter. PO is very fine diss and threads to medium blebs, found within and adjacent to veins and within the rock mass. Abundances range from 2-15% locally. Similar in character to SAD.										
	E809892	1690	1692	0.093																	
	E809893	1691	1693	0.063																	
	E809894	1691.5	1693	0.551																	
	E809895	1692	1693	3.246																	
	E809896	1692.6	1693	0.336																	
	E809897	1693.1	1694	0.265																	
	E809898	1693.4	1694	0.46																	
	E809899	1693.9	1695	0.237																	
	E809901	1694.2	1696	0.067																	
	E809902	1694.7	1696	0.051	1692	1703.1	2	DG	FOL	Texturally variable 4E. First meter resembles mafic metavolcanics but contains sub cm wide bands of subhedral garnets. There are aphanitic grey qtz lenses interpreted to be boudinaged chert bands.	Character becomes more typical at 1704.5 where there is moderately well defined cm scale compositional banding and approx 4% PO down to the lower contact, occurring as blebs interstitial to garnet grains.										
	E809903	1695.2	1697	0.384																	
	E809904	1695.5	1697	0.238																	
	E809905	1696	1698	0.145																	
	E809906	1697	1699	0.533																	
	E809907	1698	1700	0.056																	
	E809908	1699	1700	0.054																	
	E809909	1700	1701	0.035																	
	E809911	1700.6	1702	0.269																	
	E809912	1701.6	1703	0.025																	
	E809913	1702.5	1704	0.489	1705	1705.2	4E	DG	BA	Porphyroblastic biotite staurolite garnet schist. Garnets are fine to medium grained and subhedral. Sparse sub cm qtz veinlets parallel to the foliation, no significant mineralization is noted.	There is a single 20cm intercalated 4E at 171.5 containing 5% PO. So cm translucent white qtz vein at lower contact.										
	E809914	1703.1	1704	0.201																	
	E809915	1704	1705	0.062																	
	E809916	1704.5	1706	0.179																	
	E809917	1705.2	1706	0.09																	
	E809918	1706	1707	0.152																	
	E809919	1706.7	1707	1.081																	
	E809921	1707.3	1707	5.064																	
	E809922	1707.9	1708	0.115																	
	E809923	1707.9	1709	0.015																	
	E809924	1708.8	1710	0.009	1709	1719.5	4F	B	POR BL	Biotite garnet schist. Intermittently the groundmass is composed of either staurolite or dark green amphibole in place of biotite. As this is a clastic sediment I interpret that this represents the primary compositional variability of the protolith.	No mineralization is observed.										
	E809925	1710.8	1711	0.005																	
	E809926	1711.8	1712	0.022																	
	E809927	1712.8	1713	0.029																	
	E809928	1713.8	1714	0.009																	
	E809929	1714.8	1715	0.009																	
	E809931	1715.4	1716	0.008																	
	E809932	1716	1717	0.013																	
	E809933	1716.8	1718	0.201																	
	E809934	1717.3	1719	0.02																	
	E809935	1718	1720	0.068	1720	1721.4	6W	B	POR BL	Porphyroblastic, clastic metasedimentary unit. 5-10% garnet porphyroblasts set in a fine grained, finely laminated brown groundmass. They unit is strongly folded throughout. There is a 20cm opaque white qtz veins at the upper contact. Dark green, fine grained, mafic metavolcanic unit. Moderately to strongly biotite altered and strongly foliated. 15-25 crack seal veinlets of an unidentified green mineral per meter. Highly variable orientations.	1-5 carbonate veinlets parallel to the foliation.										
	E809936	1719	1720	0.049																	
	E809937	1719.5	1721	0.859																	
	E809938	1720.5	1722	0.016																	
	E809939	1721.4	1723	0.107																	











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Depth	Assay				MAJOR UNIT							MINOR UNIT		ALTERATION								
	Sample	From	To	AU ppm	From	To	Unit	Col	Text	Comments	Comments	Unit	Comments	Bio	Car	Chl	Gru	Hem	Ser	Si	Comments	
1885	E820108	1882	1883	0.045	1869	1889	2	G	FOL	Fg green-grey mafic volcanics. Weak-mod foliated, non-magnetic. Weak-mod biotite alteration concentrated in 0.5-3cm wide bands. 3% thin Qz-carb stringers. Amphibole alteration increases downhole with mod sericite alteration between 1881.9-	1886m. Strong brittle fault at 1888.6m, chews up LC. No min.											
	E820109	1883	1884	0.013																		
	E820111	1884	1885	0.046																		
	E820112	1885	1886	0.012																		
	E820113	1886	1887	0.008																		
	E820114	1887	1888	0.01																		
	E820115	1888	1889	0.01																		
	E820116	1888.6	1889.3	0.008																		
	E820117	1889.3	1890	0.016																		
1890	E820118	1890	1891	0.048	1889	1898.9	4F	B	FOL	Brownish-maroon fg Garnet-Biotite Schist(4F). Mod foliated. Non-magnetic. Strongly biotitized throughout with varying sizes and abundances of garnets, larger and less garnets at contacts. Minor ~10cm bands of green amphibole with minor qtz+carb	veining. Patches of strong staurolite. Wisps of po+py and random stringers of cpy, parallel foliation. Sharp LC.											
	E820119	1891	1892	0.044																		
	E820121	1892	1893	0.009																		
	E820122	1893	1894	0.009																		
	E820123	1894	1895	0.193																		
1895	E820124	1895	1896	0.191																		
	E820125	1896	1897	0.062																		
	E820126	1897	1898	0.049																		
	E820127	1897.5	1898	1.01																		
	E820128	1898.3	1899	0.049																		
	E820129	1898.9	1899.4	0.059																		
1900	E820131	1899.4	1900	0.208	1898.9	1903.8	2	GG	FOL	Greenish-grey fg Mafic Volcanics(2). Mod foliated. Non-magnetic. Mod-strong biotitized as wisps and stringers throughout. Mod green amphibole alteration. Highly strained sections with strong qtz+carb veining. Minor garnets in HZ. Trace wisps of po	in HZ. Highly strained LC.											
	E820132	1900	1901	0.02																		
	E820133	1901	1902	0.05																		
	E820134	1902	1902.4	0.768																		
	E820135	1902.4	1903	0.018																		
	E820136	1903	1903.8	0.011																		
	E820137	1903.8	1904	0.005																		
1905	E820138	1904.4	1905	0.103																		
	E820139	1905	1906.4	0.013																		
	E820141	1905.6	1906.4	0.051																		
	E820142	1906.4	1907	0.03																		
	E820143	1907	1908	0.02																		
	E820144	1908	1909	0.087																		
	E820145	1909	1909.7	0.037																		
1910	E820146	1909.7	1910	0.024	1909	1909.7	4F	B	FOL	Brownish-grey-maroon fg Garnet-Biotite Schist(4F). Mod foliated. Non-magnetic. 5-15% 4-8mm garnets in fg biotite with strong pervasive staurolite. Weak bands of green amphibole. Trace wisps of po. Gradational LC.	Brownish-grey fg Metasediment(6). Weak Bedding. Non-magnetic. Weak-mod preserved bedding with minor 1cm garnets at UC. Trace garnets observed. 2% wisps of po at LC associated with weak carb+qtz veining. Diffuse LC.											
	E820147	1910	1911	0.033																		
	E820148	1911	1912	0.019																		
	E820149	1912	1913	0.011																		
	E820151	1913	1914	0.017																		
	E820152	1914	1915	0.019																		
1915	E820153	1915	1916	0.018																		
	E820154	1916	1917	0.013																		
	E820155	1917	1918	0.011																		
	E820156	1918	1919	0.015																		
	E820157	1919	1920	0.018																		
1920	E820158	1920	1921	0.047	1909.7	1930.4	2	GG	FOL	Greenish-grey fg Mafic Volcanic(2). Mod foliated. Non-magnetic. Weak-mod biotite alteration and mod green amphibole alteration. Patches of mod sericite alteration. 1% 2-5cm irregular qtz+carb veining.	High strain between 1923.9-1927.1m with strong qtz+carb veining. Trace po at margins of HZ.											
	E820159	1921	1922	0.018																		
	E820161	1922	1923	0.023																		



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Depth	Assay				MAJOR UNIT							MINOR UNIT				ALTERATION						
	Sample	From	To	AU ppm	From	To	Unit	Col	Text	Comments	Comments	Unit	Comments	Bio	Car	Chl	Gru	Hem	Ser	Si	Comments	
	E820214	1962	1963	0.018	1966.4	1967.8	6W	G	FOL	Grey-green fg Garnetiferous Metasediment(6W). Intensely foliated. Mod magnetic in sections. Strongly strained and intensely carb altered throughout unit. Strongly biotitized with minor green amphibole alteration. 1-2% elongated garnets intermittent	throughout. Minor boudinage observed in larger carb+qtz veining. Possibly unit is mafic with sections of 4E? but abundance of garnets suggests 6W. Up to 8% along veins parallel foliation. Diffuse LC. Rounded-subangular clasts observed closer to LC.											
	E820215	1963	1965	0.01																		
	E820216	1964	1966	0.077																		
	E820217	1965	1966	0.009																		
	E820218	1965.5	8	0.143																		
	E820219	1966	1967.8	0.007																		
	E820221	1966.8	1968.8	0.012																		
	E820222	1967.8	1969.8	0.012	1967.8	1971.7	2	G	FOL	Grey-green fg Mafic Volcanic(2). Mod foliated. Non-magnetic. Strongly strained and strong-intense carb veining throughout. Strongly biotitized with minor green amphibole alteration. 0.5-6cm rounded-subangular clasts observed, possibly lapilli? Possibly	strongly reactivated breccia? Trace localized garnets. Up to 4% wisps of po.											
	E820223	1968.8	1970.8	0.013																		
	E820224	1969.2	1971.7	0.01																		
	E820225	1970	1971.7	0.005																		
	E820226	1971	1972.7	0.007																		
	E820227	1971.7	1973.7	0.006																		
	E820228	1972.7	1974.7	0.006																		
	E820229	1973.7	1975.7	0.006	1971.7	1981.5	2	GG	MO	Green-grey/beige: fine grained; highly strained and altered mafic volcanic. Strong pale grey-beige wispy alteration - albite? 1-3 carb veinlets/m scattered throughout - much less than interval above. Weakly magnetic. Trace wispy threads and diss	fine grained PO-PY. Pseudo-clastic's within alteration indicate dextral rotation. Sharp LC											
	E820231	1974.7	1976.7	0.006																		
	E820232	1975.7	1977.7	0.005																		
	E820233	1976.7	1978.7	0.008																		
	E820234	1977.7	1979.7	0.006																		
	E820235	1978.7	1980.7	0.005																		
	E820236	1979.7	1981.7	0.005																		
	E820237	1980.7	1982.7	0.007	1981.5	1983.2	4E	GG	DI	Green-brown-maroon; fine grained; moderately foliated. Poorly developed garnet-amphibole schist - 5-10% bio locally. 5-7% med to coarse grained anhedral moderately attenuated grts creating amorphous blobs up to 3cm. 2-3% fine grained wispy	threads and blebs of PO. 2-3% qtz-carb veins. Sharp LC											
	E820238	1981.5	1983.2	0.138																		
	E820239	1982.5	1984.5	0.028																		
	E820241	1983.2	1985.2	0.018																		
	E820242	1984	1986.2	0.007																		
	E820243	1985	1986.2	0.009																		
	E820244	1985.9	1987.2	0.014								1986.2	1989.1	2	DG	MA	Dark green-maroon; fine grained; moderately banded. Moderately developed garnet-amphibole iron formation - ~5% chert-mag bands. Moderately folded. Trace blebby fine grained PO. 3-4% qtz-carb veins - parallel to banding. Sharp LC	remobilized in qtz-carb veins. Pale brown-beige bands appear locally and are possible relic chert interbeds? Sharp LC				
	E820245	1986.2	1988.2	0.007																		
	E820246	1987.2	1989.1	0.011																		
	E820247	1988.2	1989.1	0.011																		
	E820248	1989.1	1989.8	0.998																		
	E820249	1989.8	1991.8	0.075																		
	E820251	1990.8	1992.8	0.108	1989.8	1994.6	2	GG	FOL	Dark green; fine to med grained; moderately foliated. Moderately developed garnet-amphibole IF - slightly coarser grained that surrounding units. 3-4% sub to anhedral grts - weakly attenuated. 2-3% fine grained wispy threads of PO	associated with ~5% irregular qtz veining in lower 30cm. Sharp LC											
	E820252	1991.8	1993.8	0.064																		
	E820253	1992.8	1994.6	0.055																		
	E820254	1993.8	1995.8	0.05																		
	E820255	1994.6	1996.6	0.006																		
	E820256	1995.6	1997.6	0.005																		
	E820257	1996.6	1998.6	0.007								1994.6	1998.3	4F	B	DI	Brown-grey; fine grained; moderately strained - creating wispy texture in biotite. Mod to poorly developed garnet-biotite schist. Patchy DG amph altered bands. 2-4% fine to coarse grained grts up to 2cm - sub to euhedral. Trace diss fine grained PO.	Diffuse gradational LC.				
	E820258	1997.4	1999.4	0.01																		
	E820259	1998.3	2000.3	15.9																		
	E820261	1999	2000.8	0.228																		
	E820262	2000	2001.7	0.019																		
	E820263	2000.8	2002.8	0.045																		
	E820264	2001.7	2003.7	0.011	1998.3	2000.8	2	GG	FOL	Dark green-grey; fine grained; well foliated. Mafic volcanic. Strong qtz-carb veining proximal to UC - strong biotite alt associated with veining +/- anhedral grts. ~1% fine grained PO remobilized in veins. MOD amph-grun alt in lower 1m. Sharp LC	occurs interstitially within bio-grt bands - enriched by 3-4% sporadic irregular qtz veins. Locally folded. Gradational irregular LC.											
	E820262	2000	2001.7	0.019																		
	E820263	2000.8	2002.8	0.045	2000.8	2008.1	4F	B	POR BL	Brown-maroon-green; fine to med grained; moderately foliated - locally banded. Grt-bio schist - weak to mod amph alt increasing downhole. Patchy fine grained staurolite - stronger in grt poor intervals. Trace to 2% wispy threads of PO-PY -												
	E820264	2001.7	2003.7	0.011																		

Depth	Assay				MAJOR UNIT						MINOR UNIT		ALTERATION																			
	Sample	From	To	AU ppm	From	To	Unit	Col	Text	Comments	Comments	Unit	Comments	Bio	Car	Chl	Gru	Hem	Ser	Si	Comments											
2005	E820264	2001.7	2002.7	0.011	2000.8	2008.1	4F	B	POR BL	Brown-maroon-green; fine to med grained; moderately foliated - locally banded. Grt-bio schist - weak to mod amph alt increasing downhole. Patchy fine grained staurolite - stronger in grt poor intervals. Trace to 2% wispy threads of PO-PY -	occurs interstitially within bio-grt bands - enriched by 3-4% sporadic irregular qtz veins. Locally folded. Gradational irregular LC.																					
	E820265	2002.7	2003.7	0.01																												
	E820266	2003.7	2004.3	0.01																												
	E820267	2004.3	2005.3	0.008																												
	E820268	2005.3	2006.3	0.013																												
	E820269	2006.3	2007.1	0.008																												
	E820271	2007.1	2008.1	0.016																												
2010	E820272	2008.1	2009.7	1.57	2008.1	2009.7	4EA	LG	BA	Green-maroon; fine grained; mod to well banded. Well-developed. Garnet-amphibole-grunerite IF - could be well developed intraformational (ie 4E). 5-10% chert-mag bands - ~20cm of well banded to laminated interval at LC - bordering on amph-grun alt 4B.	2-3% fine grained blebby fine grained threads/stringers of PO. 5-6% banding parallel qtz veins. Sharp LC																					
	E820273	2009.7	2010.7	0.15																												
	E820274	2009.7	2011.7	0.021	2009.7	2017.4	2	DG	FOL	Dark green; fine grained; weak to moderately foliated. Mafic volcanic. Weak to moderate pervasive biotite alt. 2-5 qtz veins/m. Trace diss PO. Sharp LC																						
	E820275	2011.7	2012.7	0.012																												
	E820276	2012.7	2013.7	0.016																												
	E820277	2013.7	2014.7	0.057																												
	E820278	2014.7	2015.7	0.011																												
	E820279	2015.7	2016.7	0.017																												
	E820281	2016.7	2017.4	0.011																												
2015	E820282	2017.4	2018.4	0.012	2017.4	2020.9	4FE	GG	POR BL	Brown-green-maroon; Moderately banded. Heterogeneous garnet-biotite-amphibole schist. 20-30% grt-amph bands. Weakly magnetic throughout - stronger in 4E bands. 3-4% qtz-carb veins. 1-2% fine grained threads and disseminated PO +/- PY locally.	Mod folding. Sharp LC																					
	E820283	2018.4	2019.4	0.067																												
	E820284	2019.4	2020.4	0.197																												
2020	E820285	2020.4	2021.5	0.016																												
	E820286	2021.5	2022.3	0.352																												
	E820287	2022.3	2022.7	0.01																												
	E820288	2022.7	2023.3	0.009																												
	E820289	2023.3	2024.3	0.011																												
	E820291	2024.3	2025.3	0.035	2022	2023.3	4EF	GG	DI	Green-brown-maroon; fine grained; poorly banded - weakly strained. Heterogeneous poorly developed grt-amph-bio IF-schist. <5% chert-mag bands. Trace to 1% wispy threads/blebs of PO - primarily associated with 4E bands. ~25cm Bvol?	Or poorly developed 4F/6W band at 2022.7m 1-2% grts. Sharp LC																					
	E820292	2025.3	2026.3	0.015																												
2025	E820293	2026.3	2027.7	0.023																												
	E820294	2027.7	2028.7	0.017																												
	E820295	2028.7	2029.7	0.015																												
	E820296	2029.7	2030.5	0.361																												
	E820297	2030.5	2031.5	0.045																												
	E820298	2031.5	2032.5	0.013	2026.9	2027.7	4F	B	FOL	Brownish-grey maroon fg Garnet-Biotite Schist(4F). Weakly foliated. Non-magnetic. Mostly 20% garnets in fg biotite with minor grunerite/chert banding. Trace disseminated po. Sharp LC.																						
	E820299	2032.5	2033.5	0.012																												
	E820300	2033.5	2034.5	0.013																												
2030	E820299	2034.5	2035.5	0.012															2027.7	2030.5	4FE	GG	BA	Grey-light green-maroon fg Amphibole bearing Garnet-Biotite Schist(4FE). Weakly banded. Weakly magnetic. Mod folded 0.5-1cm bands of grunerite with minor chert in garnet-biotite matrix. 1% wisps of po. Gradational LC.								
	E820301	2035.5	2036.3	0.034																												
	E820302	2036.3	2037.3	0.027																												
	E820303	2037.3	2038.3	0.016																												
	E820304	2038.3	2039.3	0.014																												
2033	E820305	2039.3	2040.3	0.046	2030.5	2036.3	4EA	GG	BA	Light-green-maroon-grey fg Garnet-Grunerite IF(4EA). Well formed. Strongly magnetic. Strongly folded well formed 1cm grunerite-garnet bands with 10% biotite-garnet bands. Minor green amphibole bands. 15% chert bands. 10cm 2k at 2031.3m.	Trace disseminated po. Gradational LC..																					
	E820306	2040.3	2041.3	0.089																												
	E820307	2041.3	2042.3	0.089																												
	E820308	2042.3	2043.3	0.089																												
	E820309	2043.3	2044.3	0.064																												
	E820311	2044.3	2045.3	1.2																												
	E820312	2045.3	2046.3	1.31																												
2041	E820313	2046.3	2047.1	0.09	2039.8	2041.1	4BF	GG	BA	Light green-brown-maroon; fine grained; moderately banded - mod folding. Unit is composed of grt-bio bands and lesser grt-grun and chert - minor magnetite (minor wispy DG amph). Unit could be interpreted as a poorly developed 4EA - Light green-maroon-grey; fine grained; well banded - mod to strong folding. Well-developed garnet-grunerite iron formation - ~5% bio+amph bands dispersed throughout 1-5cm. 5-10% chert-mag bands. 1-10cm massive qtz veins - semi-parallel to banding.	5-15% grt-grun bands. 5-1cm wide. ~4% wispy PO stringers proximal to contacts. Gradational LC																					
	E820314	2047.1	2048.1	9.13																												
	E820315	2048.1	2049.1	8.28																												
	E820316	2049.1	2050.1	0.234																												
	E820317	2050.1	2051.1	0.234																												
	E820318	2051.1	2052.1	0.234																												

QTZ VN

Appears to be high strain interval - weak talc alteration - possible ultramafic intrusive dykelets - 20-25% qtz veins. Remainder of unit is composed of sericite-biotite-talc. Magsus is low .1-.2 Sl.



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Depth	Assay				MAJOR UNIT						MINOR UNIT		ALTERATION										
	Sample	From	To	AU ppm	From	To	Unit	Col	Text	Comments	Comments	Unit	Comments	Bio	Car	Chl	Gru	Hem	Ser	Si	Comments		
2045	E820316	2042.1	2043.1	0.234	2041.1	2047.1	4EA	GG	BA	Light green-maroon-grey; fine grained; well banded – mod to strong folding. Well-developed garnet-grunerite iron formation - ~5% bio+amph bands dispersed throughout 1-5cm. 5-10% chert-mag bands. 1-10cm massive qtz veins – semi-parallel to banding.	Trace to .5% blebby disseminated PO – strongest proximal to UC. Gradational LC												
	E820317	2043.1	2044.1	0.87																			
	E820318	2044.1	2045.1	0.049																			
	E820319	2045.1	2046.1	0.013																			
	E820321	2046.1	2047.1	0.02																			
2050	E820322	2047.1	2048	0.009	2047.1	2053.5	4BF	GG	BA	Green-grey; fine grained; well banded to laminated. Clastic chert-magnetite iron formation. 5-10% grunerite primarily on margins of grt-bio bands – patchy and weak below 2050m. Moderately folded. Bordering on 4B from 2050-2051.3m.	Trace wispy threads of fg PO and lesser AS. Sharp LC												
	E820323	2048	2049	0.009																			
	E820324	2049	2050	0.009																			
	E820325	2050	2051	0.015																			
	E820326	2051	2052	0.099																			
	E820327	2052	2053	0.157																			
	E820328	2053	2054	0.011																			
	E820329	2053.5	2054.2	0.005																			
	E820331	2054.2	2055	0.009																			
	E820332	2055	2056	0.02																			
2055	E820333	2056	2057.2	0.147	2054.2	2057.2	4B	GG	BA	Brown-black; fine to med grained; massive; Lamprophyre dyke. Moderately magnetic. 1-3mm round porphyroblasts of chlorite. Sharp LC	Mod gouge at 2055m. Sharp LC												
	E820334	2056.6	2057.2	0.394																			
	E820335	2057.2	2057.7	0.09																			
	E820336	2057.7	2058	0.2																			
	E820337	2058.7	2059.6	0.059																			
	E820338	2059.1	2059.6	0.011																			
	E820339	2059.6	2060	0.009																			
	E820341	2060.1	2061	0.005																			
	E820342	2061	2062	0.015																			
	E820343	2061.9	2063	0.428																			
2060	E820344	2062.5	2063	0.054	2060	2063	4B	GG	BA	Dark green-grey; fine grained; massive to weakly foliated. Mafic dyke. Weak biotite alt. Very weak patchy magnetism. No min. Sharp LC	Trace to 2% wispy threads of PO – remobilized along fractures. Sharp LC												
	E820345	2063	2064	0.012																			
	E820346	2064	2065	0.009																			
	E820347	2064.9	2066	0.007																			
	E820348	2065.5	2066	0.006																			
	E820349	2066	2067	0.008																			
	E820351	2066.9	2067.3	0.015																			
	E820352	2067.3	2067.9	0.02																			
	E820353	2067.9	2068.3	1.8																			
	E820354	2068.3	2069	0.739																			
2070	E820355	2069	2070	3.98	2066	2068.3	4F	B	BA	Brown-green-grey; fine grained; moderately banded. Clastic chert-magnetic iron formation ~15-20% chert-magnetite bands. Weak grunerite alt on margins of compositional bands. Mod boudinaging and folding. Trace to .5% wispy fine grained threads of PO.	Intervals bordering on 4FB. Gradational LC												
	E820356	2070	2071	0.065																			
	E820357	2071	2072	0.386																			
	E820358	2072	2073	0.156																			
	E820359	2073	2074	0.052																			
	E820361	2073.7	2074.9	0.012																			
	E820362	2074.3	2075	0.009																			
	E820363	2074.9	2076	0.037																			
	E820364	2075.9	2077	0.106																			
	E820365	2076.9	2078	0.018																			
2080	E820366	2077.9	2079	0.023	2073.7	2074.9	2K+	GG	FOL	Green-grey; fine grained; moderately foliated. Mafic volcanic. Weak biotite alt. No visible min. Not magnetic. Sharp LC.	Mod folding evident in preserved banding. Sharp irregular LC												
	E820367	2078.9	2080	0.022																			
	E820368	2079.9	2081	0.007																			
	E820369	2080.9	2082	0.007																			
	E820371	2081.9	2082	0.078																			













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Depth	MAJOR UNIT			MINERALS						QTZ VEINING						FABRIC					FOLD					FAULT												
	From	To	Unit	As%	Cp%	Mt%	Po%	Py%	VG Specks	Comments	From	To	Vein Type	Vein %	Tex	Contact Type	Alpha deg	Comments	From	To	Alpha deg	Int	Type	Comments	From	To	Alpha deg	Int	Type	Comments	From	To	Alpha deg	Int	Type	Comments		
	115.3	126.8	7A								122.5	122.6	QZ	90																								
125																																						
	126.8	129.7	2																																			
130											129.7	130	QZ	10																								
	129.7	138	1				0.1	0.1			130.7	135	QZ	25																								
135																																						
							0.1	0.2																														
140											135	138	QZ-C A	5																								
145																																						
	138	205.3	2					0.1																														
150																																						
155																																						

Strong qtz veining with fragments of mafics

Depth	MAJOR UNIT			MINERALS							QTZ VEINING							FABRIC					FOLD					FAULT																				
	From	To	Unit	As%	Cp%	Mt%	Po %	Py%	VG Specks	Comments	From	To	Vein Type	Vein %	Tex	Contact Type	Alpha deg	Comments	From	To	Alpha deg	Int	Type	Comments	From	To	Alpha deg	Int	Type	Comments	From	To	Alpha deg	Int	Type	Comments												
165   170   175   180 138 205.3   185   190   195			2				0.1					160.6	161.7						160.3	160.4	25	MOD	S1															160.6	161.7	15	MOD E	SZ						
								0.1	0.1				161.7	176.9	QZ-C A	10					171.4	171.5	30	MOD	S1																							
								2	0.5				176.9	177.1	QZ	75																																
													179	190.2	QZ-C A	10						184.5	184.6	45	MOD	S1																						
									0.2	0.3			190.2	191.2	QZ	5																																
									0.1					197.5	197.8	QZ	90																															

Very thin fractures filled with hard dark min(amphibole)?

Depth	MAJOR UNIT			MINERALS							QTZ VEINING							FABRIC					FOLD					FAULT									
	From	To	Unit	As%	Cp%	Mt%	Po%	Py%	VG Specks	Comments	From	To	Vein Type	Vein %	Tex	Contact Type	Alpha deg	Comments	From	To	Alpha deg	Int	Type	Comments	From	To	Alpha deg	Int	Type	Comments	From	To	Alpha deg	Int	Type	Comments	
138	205.3	2					0.5			Magnetic Pyrrhotite																											
205																			205.8	205.9	40	MOD	S1										206.1	206.2	10	MOD E	BR
210	205.3	216.4	2								207	216	QZ-C A	5																							
215							2				216.1	216.4	QZ	80																							
							7																														
220	216.4	223					2				216.4	220	QZ	10											216.1	221	30	MOD E									
											221.7	221.8	QZ	75																							
	223	224.3	2				0.1																														
225	224.3	228.3	6W				0.5				225.9	226.7	QZ	3					224.7	224.8	40	MOD	S1														
											226.7	227.4	QZ	1																							
230																																					
	228.3	241	2																																		
235							0.1													235.9	236	20	MOD	S1													
																									236.2	236.3	65	WEK	FD								
																									238.7	238.8	25	WEK	FD	qtz vn							





























Depth	MAJOR UNIT			MINERALS								QTZ VEINING							FABRIC						FOLD						FAULT										
	From	To	Unit	As%	Cp%	Mt%	Po%	Py%	VG Specs	Comments	From	To	Vein Type	Vein %	Tex	Contact Type	Alpha deg	Comments	From	To	Alpha deg	Int	Type	Comments	From	To	Alpha deg	Int	Type	Comments	From	To	Alpha deg	Int	Type	Comments					
725																																									
							0.5 1													725.5	725.6	35	MOD	S1																	
																				726.8	726.9	15	MOD	SF																	
730											718.8	740.7	QZ-C A	50						729.9	730	20	MOD	SF																	
																				734.1	734.2	20	MOD	FD																	
																				735.5	735.6	40	MOD	S1																	
740	537	762.4	2																																						
												740.7	741.2	QZ	80																										
																				742.9	743	40	MOD	S1																	
745																																									
											741.2	751.2	QZ-C A	40																											
750																																									
755																																									
												757	758.5	QZ-C A	60																										

Intense qtz carb veining replacing up to 65% of the mafic volcanic. Distorted and wavy with discrete folds but trending in the same overall direction. Locally gives the appearance of volcanic clasts (s-folded?) in a qtz-carb matrix.

Intense high strain zone. up to 60% qz-carb veins ~1 cm thick, and S-folding throughout following foliation.

Depth	MAJOR UNIT			MINERALS							QTZ VEINING							FABRIC					FOLD					FAULT										
	From	To	Unit	As%	Cp%	Mt%	Po%	Py%	VG Specks	Comments	From	To	Vein Type	Vein %	Tex	Contact Type	Alpha deg	Comments	From	To	Alpha deg	Int	Type	Comments	From	To	Alpha deg	Int	Type	Comments	From	To	Alpha deg	Int	Type	Comments		
	537	762.4	2																					761.4	761.5	15	MOD	SF										
765	762.4	765.7	3F																764.2	764.3	45	MOD	S1															
							0.5				763.9	768.7	QZ-C A	20																								
770	765.7	774	2								769	769.3	QZ-W H	70					772.1	772.3	40	MOD	S1															
775																																						
											777.5	778.5	QZ-C A	20										777.5	777.6	35	MOD	SF										
780	774	786.6	2								778.5	781.2	QZ-C A	15					780.3	780.4	20	MOD	S1															
																								780.9	781	30	MOD	SF										
																								781.3	781.4	25	MOD	SF										
																								782.5	782.6	25	MOD	FD										
785																																						
790	786.6	792.6	3P																																			
795	792.6	802.6	2H				0.5																															

Intense shearing with noticable movement. Pervasive carb alteration trending in the same direction as shearing. Some rotated clasts visible. No mineralization.

Moderate HZ with qz-carb veinlets present. Strong biotite alteration trending with veinlets and s-folds. Moderate high strain zone with qz-carbs veinlets. Moderate S-folding in veinlets.

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Depth	MAJOR UNIT			MINERALS						QTZ VEINING						FABRIC					FOLD					FAULT												
	From	To	Unit	As%	Cp%	Mt%	Po%	Py%	VG Specks	Comments	From	To	Vein Type	Vein %	Tex	Contact Type	Alpha deg	Comments	From	To	Alpha deg	Int	Type	Comments	From	To	Alpha deg	Int	Type	Comments	From	To	Alpha deg	Int	Type	Comments		
792.6	802.6	2H																																				
802.6	803.3	3P																																				
803.3	805	2H																																				
805	806	3P																																				
											806	808.5	QZ-CA	10					806.1	806.2	35	WEK	S1		806.6	806.7	5	WEK	SF									
																				808.3	808.4	20	MOD	SF														
							0.5																															
											808.5	812.9	QZ-CA	5					811.9	812	50	MOD	S1		811.9	812	40	MOD	FD									

Carb alt on margins of vein, pervasive biotite alt.



Depth	MAJOR UNIT			MINERALS							QTZ VEINING							FABRIC						FOLD						FAULT												
	From	To	Unit	As%	Cp%	Mt%	Po%	Py%	VG Spec%	Comments	From	To	Vein Type	Vein %	Tex	Contact Type	Alpha deg	Comments	From	To	Alpha deg	Int	Type	Comments	From	To	Alpha deg	Int	Type	Comments	From	To	Alpha deg	Int	Type	Comments						
885	879.4	890	2H																882	882.1	45	MOD	S1																			
										888	890	QZ	15					carbonate selvages																								
890	890	890.8	3P																																							
	890.8	895.5	2A							891	895.5	CA	15					crack seal, irregular orientations. moderate stockwork																								
895	895.5	896.1	3P																																							
900																		901	901.1	60	MOD	S1																				
905	896.1	959.8	2A																909.4	909.5	40	MOD	S1																			
910																														911.8	911.9	25	MOD	ZF		908.2	915.2	50	MOD	E	HZ	reduced grain size and foliated.
915																																										
																														915.3	915.5	90	MOD	E	GG		gouge to cobbles, angular to sub angular. unconsolidated.					







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Depth	MAJOR UNIT			MINERALS							QTZ VEINING							FABRIC					FOLD					FAULT											
	From	To	Unit	As%	Cp%	Mt%	Po%	Py%	VG Specks	Comments	From	To	Vein Type	Vein %	Tex	Contact Type	Alpha deg	Comments	From	To	Alpha deg	Int	Type	Comments	From	To	Alpha deg	Int	Type	Comments	From	To	Alpha deg	Int	Type	Comments			
1005																																							
1010																			1009.5	1009.6	50	MOD	S1																
1015																																							
1020	981	1137.6	2																1020.3	1020.4	55	MOD	S1																
1025																																							
1030																				1030.6	1030.7	55	MOD	S1															
1035																																							

Irregular fragmented veins. Fragments commonly have brown cores.

0.5





























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Depth	MAJOR UNIT			MINERALS								QTZ VEINING							FABRIC						FOLD						FAULT							
	From	To	Unit	As%	Cp%	Mt%	Po%	Py%	VG Specks	Comments	From	To	Vein Type	Vein %	Tex	Contact Type	Alpha deg	Comments	From	To	Alpha deg	Int	Type	Comments	From	To	Alpha deg	Int	Type	Comments	From	To	Alpha deg	Int	Type	Comments		
1547.6	1568.1	3F																																				
1565																			1565.5	1565.6	35	INT	S1															
1570																			1569.5	1569.6	40	INT	S1															
1568.1	1580.4	2																																				
1580										0.1								two grains of CPY																				
1582.1																			1582.1	1582.2	40	INT	S1															
1580.4	1632.8	3F																																				
1591.8																			1591.8	1591.9	55	INT	S1															
1580.4																			1580.4	1637.4	40	INT	HZ														intensely deformed 3F as seen in WEL	







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Depth	MAJOR UNIT			MINERALS								QTZ VEINING						FABRIC					FOLD					FAULT											
	From	To	Unit	As%	Cp%	Mt%	Po%	Py%	VG Specks	Comments	From	To	Vein Type	Vein %	Tex	Contact Type	Alpha deg	Comments	From	To	Alpha deg	Int	Type	Comments	From	To	Alpha deg	Int	Type	Comments	From	To	Alpha deg	Int	Type	Comments			
											1649	1683	CA	5																									
1685	1641	1692	2																																				
1690							0.5			spacially associated to veins																													
				0.1			10			spacially associated to veins																													
							2			spacially associated to veins																													
1695				0.1			2			spacially associated to veins																													
	1692	1703.1	2							spacially associated to veins	1691	1703.1	QZ	5			parallel to foliation, merialized area.	1697.2	1697.3	50	INT	S1																	
1700				0.1			1			spacially associated to veins																													
	1703.1	1705.2	4E																																				
1705							5																																
	1705.2	1706.7	4F																																				
	1706.7	1707.9	4E				5																																
1710																																							
	1707.9	1719.5	4F																																				
1715																																							
	1719.5	1721.4	6W								1719.5	1719.7	QZ	95											1719.3	1719.4	50	INT	ZF										
																								1719.5	1719.6	20	INT	FD	qtz vein										

carb and bio altered, strongly mineralized

















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Depth	MAJOR UNIT			MINERALS					QTZ VEINING						FABRIC					FOLD					FAULT																		
	From	To	Unit	As%	Cp%	Mt%	Po %	Py%	VG Specks	Comments	From	To	Vein Type	Vein %	Tex	Contact Type	Alpha deg	Comments	From	To	Alpha deg	Int	Type	Comments	From	To	Alpha deg	Int	Type	Comments	From	To	Alpha deg	Int	Type	Comments							
1998.3	2000.8	2					0.5	1										2002.2	2002.3	35	MOD	S1																					
2000.8	2008.1	4E						2	0.5															2004.9	2005.1	50	MOD	FD															
2008.1	2009.7	4EA							0.5															2009	2009.2	30	MOD	FD															
2009.7	2017.4	2																2012	2012.1	25	MOD	S1																					
2017.4	2020.9	4FE						2	0.25															2020.3	2020.8	10	MOD	ZF															
2020.9	2022	2						0.5										2022.6	2022.7	45	MOD	S1																					
2022	2023.3	4EF																																									
2023.3	2026.9	2						0.1																2028.7	2028.8	45	MOD	MF															
2026.9	2027.7	4E						1															2030.4	2030.5	20	MOD	ZF																
2027.7	2030.5	4FE															2031.4	2031.5	35	MOD	S0																						
2030.5	2036.3	4EA						0.2															2034.4	2034.5	40	MOD	SF																
2030.5	2036.3	4EA						2									2035.2	2035.3	25	MOD	S0																						
2036.3	2039.8	4EA																					2036.1	2036.2	50	MOD	SF																
2039.8	2041.1	4BF						4									2038.4	2038.5	80	MOD	SF																						
2039.8	2041.1	4BF															2039	2039.2	40	MOD	FD																						

2021.2 2022 30 MOD E SZ moderate carb veining  
 2022 2023.3 35 WEK HZ

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Depth	MAJOR UNIT			MINERALS							QTZ VEINING							FABRIC					FOLD					FAULT											
	From	To	Unit	As%	Cp%	Mt%	Po %	Py%	VG Specks	Comments	From	To	Vein Type	Vein %	Tex	Contact Type	Alpha deg	Comments	From	To	Alpha deg	Int	Type	Comments	From	To	Alpha deg	Int	Type	Comments	From	To	Alpha deg	Int	Type	Comments			
2039.8	2041.1	4BF				4																			2040.1	2040.2	40	MOD	ZF										
						4																			2041.6	2041.7	55	MOD	MF										
2041.1	2047.1	4EA																	2044	2045.1	30	MOD	S0		2044.7	2044.8	50	MOD	SF										
																									2046	2046.1	35	MOD	MF										
2047.1	2053.5	4BF																	2049.3	2049.4	55	MOD	S0		2050.1	2050.4	50	MOD	SF										
2053.5	2054.2	13																																					
2054.2	2057.2	4B																																					
2057.2	2057.7	2K																																					
2057.7	2059.6	4B				0.5																																	
2059.6	2060	2K				2																																	
2060	2063	4B				3																																	
						20																																	
2063	2066	4BF																																					
2066	2068.3	4F				0.5																																	
						3																																	
2068.3	2073.7	4B	0.25			0.5																																	
2073.7	2074.9	2K																																					
2074.9	2082.7	4B																																					

Quartz flooded high strain zone





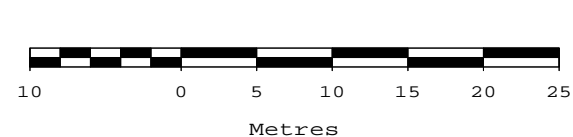
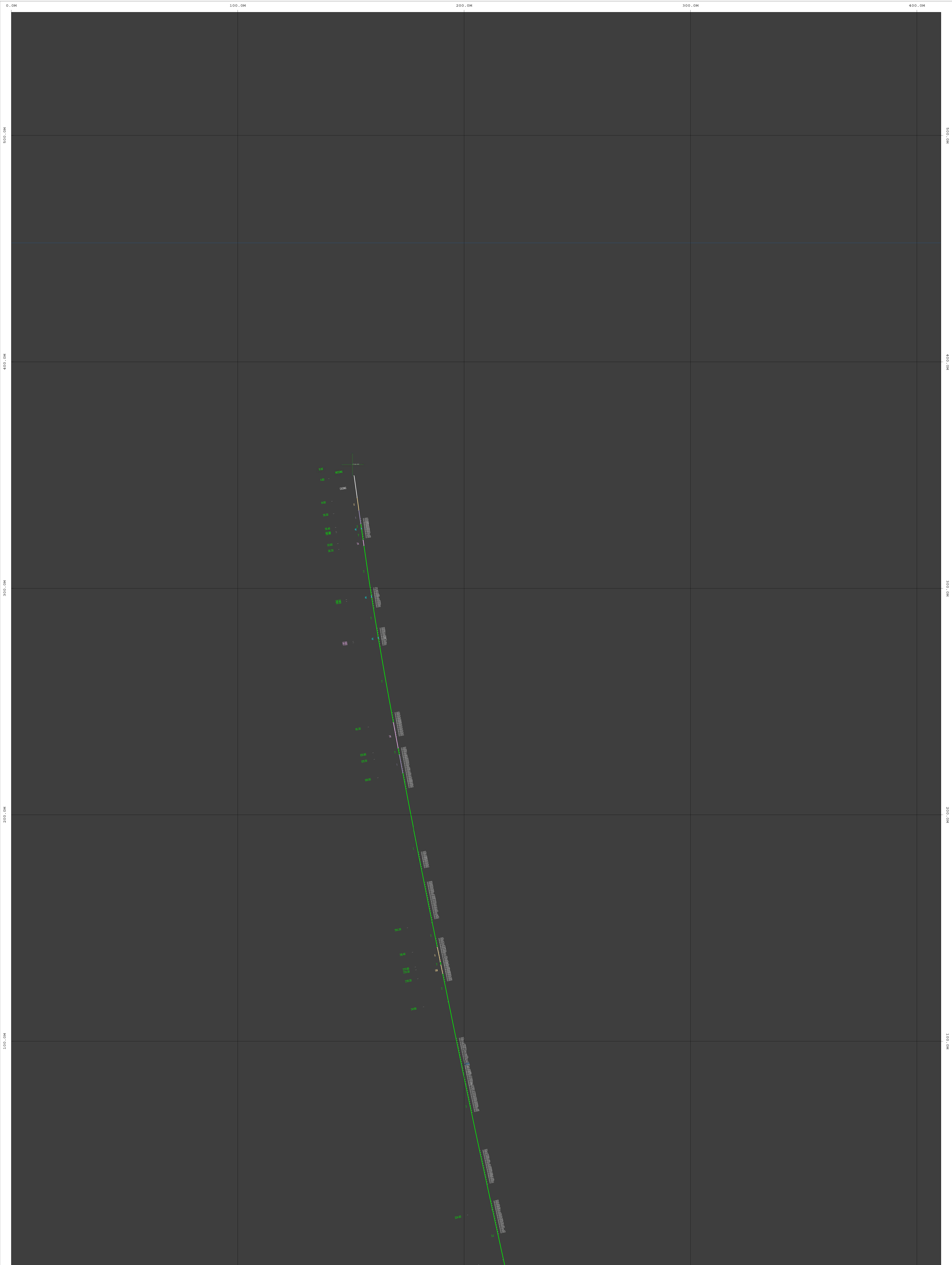
# Appendix II

## Annotated Cross Section

## Diamond Drill Hole Major Lithology Code Legend

1	Unsubdivided Ultramafic Intrusive Unit
2	Unsubdivided Mafic Metavolcanic Flow
6	Unsubdivided Clastic Metasedimentary Unit
13	Lamprophyre Dyke
2A	Massive, Fine- to Medium-Grained Mafic Flow
2H	Mafic to Intermediate Tuff Breccia
2J	Medium to Course Grained Flow Centres
2K	Mafic Dykes, Sills and Other Small Intrusions
2M	Chlorite-Actinolite Schist
2T	Biotitized Mafic Metavolcanic Unit
2U	Garnetiferous Mafic Metavolcanic Unit
3A	Intermediate Metavolcanic Flow
3B	Intermediate Pyroclastic Breccia, Tuff Breccia
3C	Intermediate Tuff, Lapilli Tuff
3F	Felsic Lapilli Tuff
3H	Quartz-Plagioclase Porphyry
3P	Intermediate Dykes, Sills, and Small Intrusions
4A	Gruneritized and Silicified Chert-Magnetite Banded Iron Formation
4B	Chert-Magnetite Banded Iron Formation
4BF	Chert-Magnetite-Biotite-Garnet Banded Iron Formation
4E	Garnet Amphibole Iron Formation
4EA	Garnet Amphibole Grunerite Iron Formation
4EF	Garnet Amphibole Iron Formation With Intercalated Clastics
4F	Biotite Garnet Schist
4FE	Biotite Garnet Schist With intercalated Garnet Amphibole Iron Formation
4H	Pyrrhotite Cemented Breccia
6B	Matrix Supported Conglomerate
6W	Garnetiferous Meta-Mudstone/Siltstone/Sandstone
7A	Gabbro
8B	Quartz Diorite
QTZ VN	Massive Quartz Vein

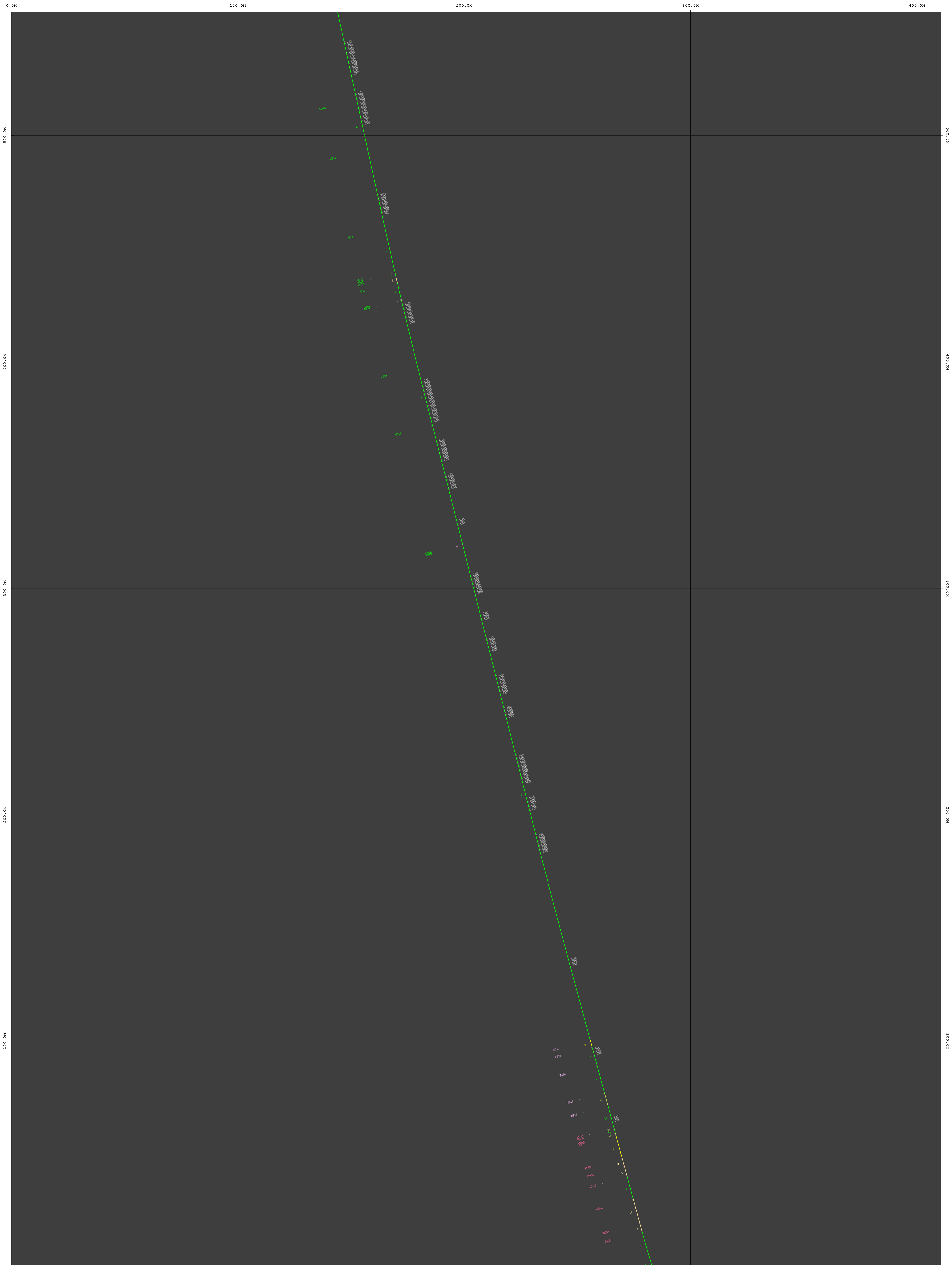




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Date: 20-Feb-2019
Project:
Drawn By:
Checked:
Approved:
Drawing No.

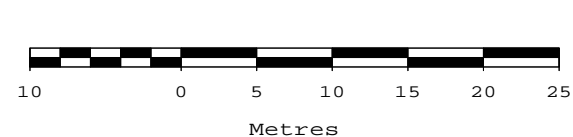
Goldcorp Canada Ltd.  
 Musselwhite Mine  
 North Shore Project

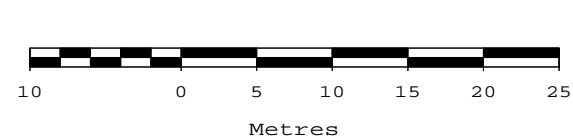
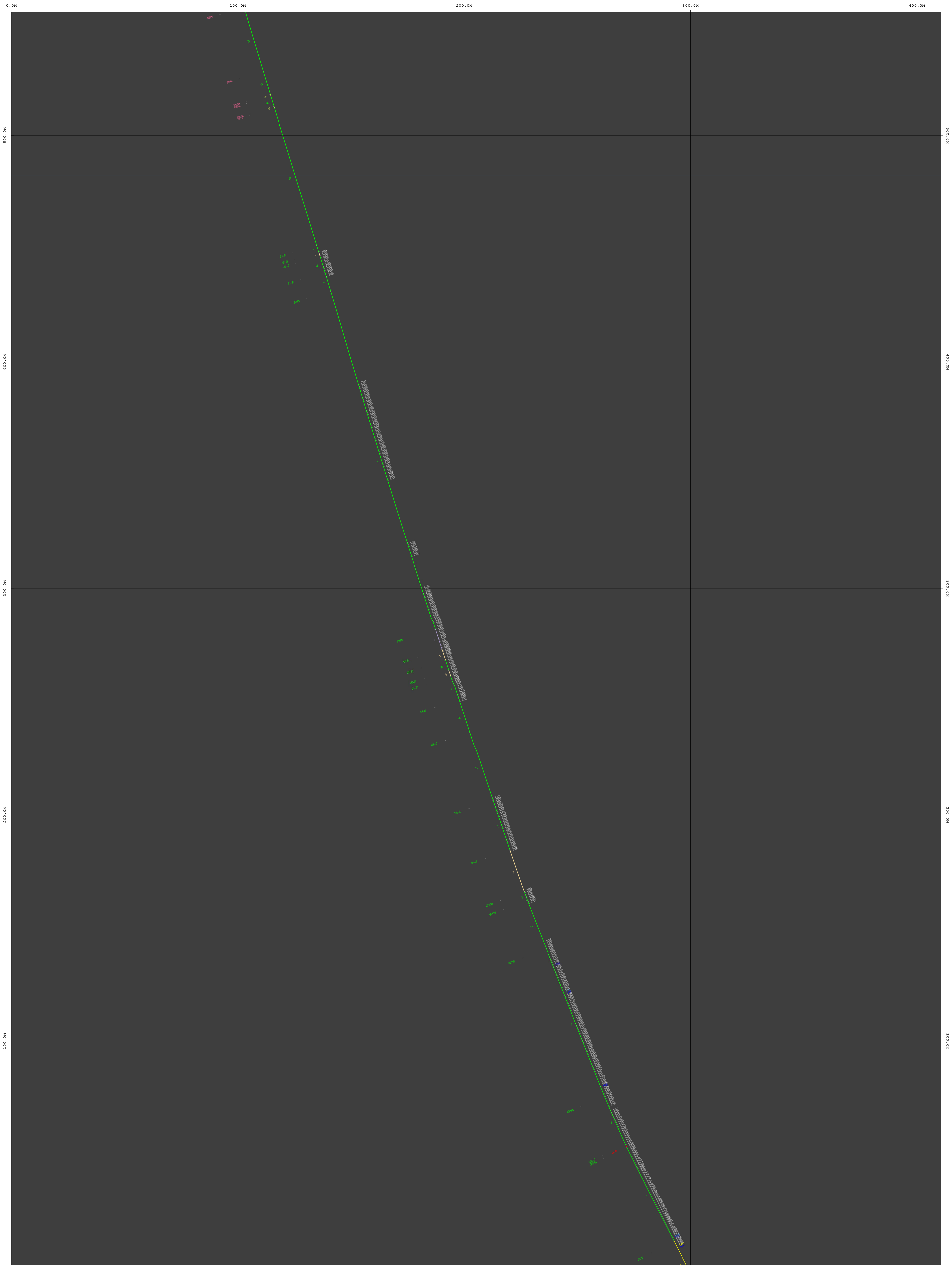


17-NSD-001 2 of 4

Goldcorp Canada Ltd.  
 Musselwhite Mine  
 North Shore Project

Scale: 1:500  
 Date: 20-Feb-2019  
 Project:  
 Drawn By:  
 Checked:  
 Approved:  
 Drawing No.

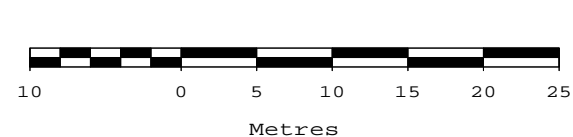
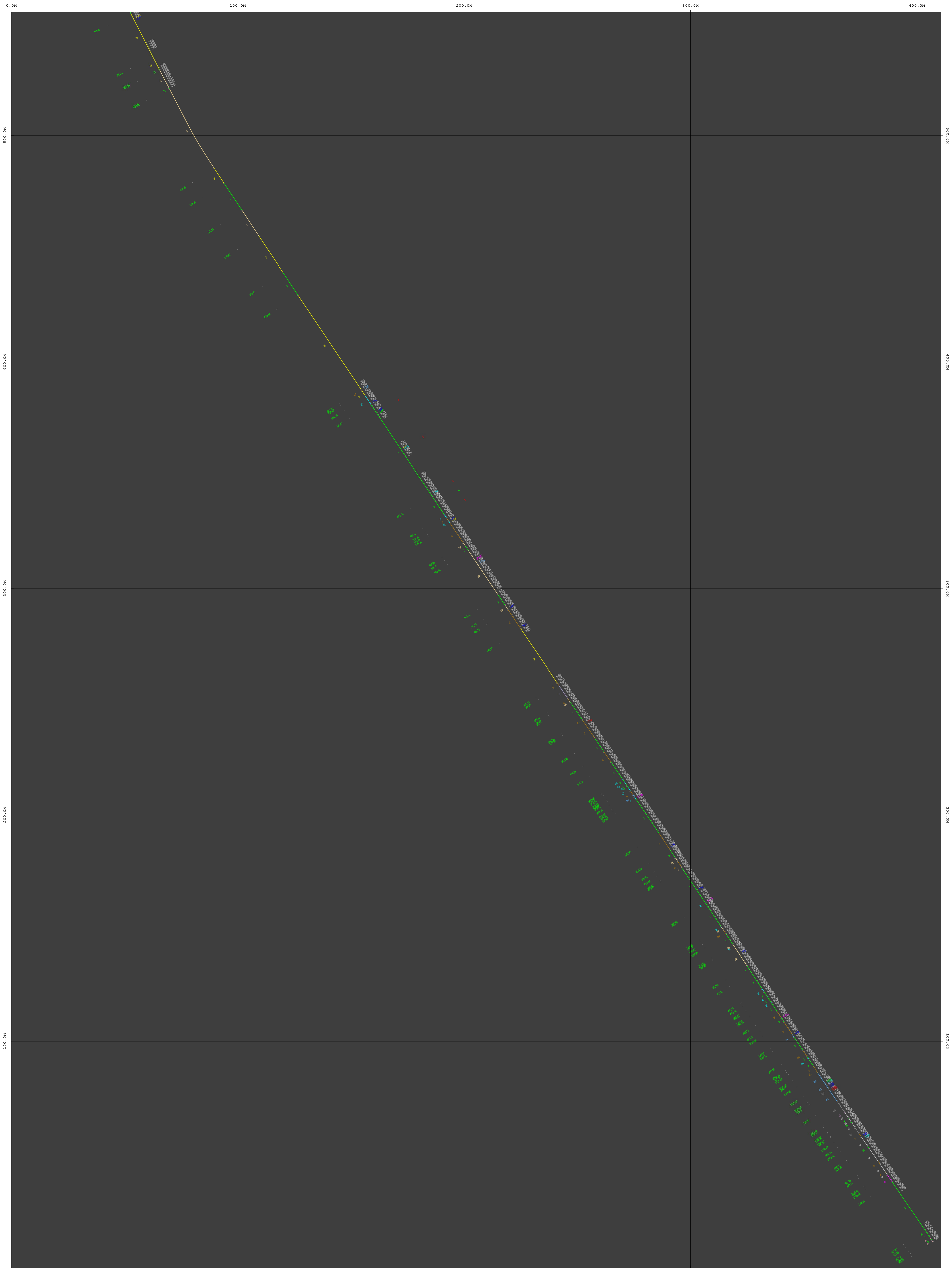




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Goldcorp Canada Ltd.	Scale: 1:500
Musselwhite Mine	Date: 20-Feb-2019
North Shore Project	Project:
	Drawn By:
	Checked:
	Approved:
	Drawing No.:





<b>17-NSD-001 4 of 4</b>	
Scale: 1:500	Date: 20-Feb-2019
Goldcorp Canada Ltd.	Project:
Musselwhite Mine	Drawn By:
North Shore Project	Checked:
	Approved:
	Drawing No.:

Appendix III  
Assay Certificates



**Date Submitted:** 09-Jun-17  
**Invoice No.:** A17-05792  
**Invoice Date:** 21-Jun-17  
**Your Reference:** Exploration

**GOLDCORP Canada Ltd--Musselwhite Mine**  
**P.O. Box 7500**  
**Thunder bay Ontario P7B 6S8**  
**Canada**

**ATTN: Katie Lucas**

## CERTIFICATE OF ANALYSIS

205 Core samples were submitted for analysis.

The following analytical package(s) were requested:

Code 1A2-GC Musselwhite Dryden Au - Fire Assay AA

REPORT **A17-05792**

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

CERTIFIED BY:

A handwritten signature in black ink, appearing to be "Emmanuel Esemé". The signature is written over a horizontal line.

Emmanuel Esemé , Ph.D.  
Quality Control

**ACTIVATION LABORATORIES LTD.**  
264 Government Road, Dryden, Ontario, Canada, P8N 2R3  
TELEPHONE +807 223-6168 or +1.888.228.5227 FAX +1.905.648.9613  
E-MAIL Dryden@actlabs.com ACTLABS GROUP WEBSITE www.actlabs.com

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E856257	0.005	
E856258	0.006	
E856259	0.006	
E856260	< 0.005	
E856261	0.007	
E856262	0.007	
E856263	0.007	
E856264	0.023	
E856265	0.009	
E856266	0.008	
E856267	0.009	
E856268	0.010	
E856269	0.009	
E856270	> 10.0	12.9
E856271	0.014	
E856272	0.014	
E856273	0.012	
E856274	0.013	
E856275	0.008	
E856276	0.011	
E856277	0.010	
E856278	0.009	
E856279	0.008	
E856280	0.007	
E856281	0.010	
E856282	0.008	
E856283	0.008	
E856284	0.007	
E856285	0.010	
E856286	0.066	
E856287	0.014	
E856288	0.023	
E856289	0.015	
E856290	3.86	
E856291	0.017	
E856292	0.005	
E856293	0.005	
E856294	0.005	
E856295	0.005	
E856296	0.006	
E856297	0.006	
E856298	0.005	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E856299	< 0.005	
E856300	< 0.005	
E856301	< 0.005	
E856302	< 0.005	
E856303	< 0.005	
E856304	< 0.005	
E856305	0.007	
E856306	0.008	
E856307	0.007	
E856308	0.015	
E856309	0.007	
E856310	3.42	
E856311	0.005	
E856312	0.009	
E856313	0.009	
E856314	0.005	
E856315	0.010	
E856316	0.006	
E856317	0.007	
E856318	0.005	
E856319	0.007	
E856320	< 0.005	
E856321	< 0.005	
E856322	0.005	
E856323	< 0.005	
E856324	0.007	
E856325	0.006	
E856326	< 0.005	
E856327	< 0.005	
E856328	0.007	
E856329	0.006	
E856330	7.10	
E856331	0.006	
E856332	< 0.005	
E856333	< 0.005	
E856334	0.005	
E856335	< 0.005	
E856336	0.009	
E856337	0.006	
E856338	0.009	
E856339	< 0.005	
E856340	< 0.005	
E856341	0.008	



	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E856342	0.012	
E856343	0.033	
E856344	0.008	
E856345	0.029	
E856346	0.039	
E856347	0.007	
E856348	0.007	
E856349	0.007	
E856350	0.520	
E856351	< 0.005	
E856352	0.011	
E856353	0.014	
E856354	0.007	
E856355	0.005	
E856356	0.015	
E856357	0.057	
E856358	0.512	
E856359	0.023	
E856360	< 0.005	
E856361	0.024	
E856362	0.023	
E856363	0.033	
E856364	0.017	
E856365	0.017	
E856366	0.499	
E856367	0.010	
E856368	0.005	
E856369	0.018	
E856370	> 10.0	12.1
E856371	0.005	
E856372	0.010	
E856373	0.009	
E856374	0.067	
E856375	0.006	
E856376	0.009	
E856377	0.009	
E856378	0.005	
E856379	0.008	
E856380	0.014	
E856381	< 0.005	
E856382	0.017	
E856383	0.012	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E856384	0.034	
E856385	0.060	
E856386	0.020	
E856387	0.042	
E856388	0.071	
E856389	0.018	
E856390	3.15	
E856391	0.030	
E856392	0.167	
E856393	0.145	
E856394	2.04	
E856395	0.022	
E856396	0.101	
E856397	0.012	
E856398	0.007	
E856399	0.007	
E856400	< 0.005	
E856401	0.200	
E856402	0.102	
E856403	0.032	
E856404	0.046	
E856405	0.097	
E856406	0.010	
E856407	0.141	
E856408	0.343	
E856409	0.040	
E856410	2.92	
E856411	0.027	
E856412	0.029	
E856413	0.028	
E856414	0.005	
E856415	0.009	
E856416	< 0.005	
E856417	0.008	
E856418	0.008	
E856419	0.017	
E856420	< 0.005	
E856421	0.006	
E856422	0.007	
E856423	0.015	
E856424	0.024	
E856425	0.008	
E856426	0.007	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E856427	0.008	
E856428	0.012	
E856429	0.007	
E856430	7.29	
E856431	0.008	
E856432	0.008	
E856433	0.007	
E856434	0.006	
E856435	0.010	
E856436	0.007	
E856437	0.008	
E856438	0.012	
E856439	0.007	
E856440	< 0.005	
E856441	0.007	
E856442	0.009	
E856443	0.005	
E856444	0.007	
E856445	0.012	
E856446	< 0.005	
E856447	0.005	
E856448	0.005	
E856449	0.008	
E856450	0.410	
E856451	0.005	
E856452	0.007	
E856453	0.009	
E856454	0.011	
E856455	< 0.005	
E856456	0.029	
E856457	0.010	
E856458	0.017	
E856459	< 0.005	
E856460	< 0.005	
E856461	0.005	
OREAS 214 Meas		3.06
OREAS 214 Cert		3.03
OREAS 214 Meas		2.94
OREAS 214 Cert		3.03
OREAS 216 (Fire Assay) Meas		6.72
OREAS 216 (Fire Assay) Cert		6.66

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
OREAS 216 (Fire Assay) Meas		6.66
OREAS 216 (Fire Assay) Cert		6.66
Oreas 203 Meas	0.890	
Oreas 203 Cert	0.871	
Oreas 203 Meas	0.880	
Oreas 203 Cert	0.871	
Oreas 203 Meas	0.886	
Oreas 203 Cert	0.871	
Oreas 203 Meas	0.856	
Oreas 203 Cert	0.871	
Oreas 203 Meas	0.887	
Oreas 203 Cert	0.871	
Oreas 203 Meas	0.871	
Oreas 203 Cert	0.871	
OREAS 223 (Fire Assay) Meas	1.78	
OREAS 223 (Fire Assay) Cert	1.78	
OREAS 223 (Fire Assay) Meas	1.81	
OREAS 223 (Fire Assay) Cert	1.78	
OREAS 223 (Fire Assay) Meas	1.80	
OREAS 223 (Fire Assay) Cert	1.78	
OREAS 223 (Fire Assay) Meas	1.80	
OREAS 223 (Fire Assay) Cert	1.78	
OREAS 223 (Fire Assay) Meas	1.84	
OREAS 223 (Fire Assay) Cert	1.78	
OREAS 223 (Fire Assay) Meas	1.78	
OREAS 223 (Fire Assay) Cert	1.78	
E856271 Orig	0.014	
E856271 Dup	0.011	
E856278 Orig	0.009	
E856278 Dup	0.009	
E856289 Orig	0.015	
E856289 Dup	0.016	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E856306 Orig	0.008	
E856306 Split	0.008	
E856309 Orig	0.007	
E856309 Dup	0.005	
E856317 Orig	0.007	
E856317 Dup	0.007	
E856325 Orig	0.006	
E856325 Dup	0.006	
E856340 Orig	< 0.005	
E856340 Dup	< 0.005	
E856347 Orig	0.007	
E856347 Dup	0.007	
E856356 Orig	0.015	
E856356 Split	0.013	
E856358 Orig	0.512	
E856358 Dup	0.511	
E856371 Orig	0.005	
E856371 Dup	0.012	
E856379 Orig	0.008	
E856379 Dup	0.007	
E856388 Orig	0.071	
E856406 Orig	0.010	
E856406 Split	0.012	
E856409 Orig	0.040	
E856409 Dup	0.043	
E856416 Orig	< 0.005	
E856416 Dup	< 0.005	
E856427 Orig	0.008	
E856427 Dup	0.008	
E856439 Orig	0.007	
E856439 Dup	0.007	
E856448 Orig	0.005	
E856448 Dup	0.005	
E856456 Orig	0.029	
E856456 Split	0.025	
E856457 Orig	0.010	
E856457 Dup	0.009	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	0.006	
Method Blank		< 0.03
Method Blank		< 0.03



**Date Submitted:** 15-Jun-17  
**Invoice No.:** A17-06031  
**Invoice Date:** 26-Jun-17  
**Your Reference:** Exploration

**GOLDCORP Canada Ltd--Musselwhite Mine**  
**P.O. Box 7500**  
**Thunder bay Ontario P7B 6S8**  
**Canada**

**ATTN: Katie Lucas**

## CERTIFICATE OF ANALYSIS

242 Core samples were submitted for analysis.

The following analytical package(s) were requested:

Code 1A2-GC Musselwhite Dryden Au - Fire Assay AA

Code 1A3-Dryden Au - Fire Assay Gravimetric (QOP Fire Assay Dryden)

REPORT **A17-06031**

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Notes:

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

CERTIFIED BY:

A handwritten signature in black ink, appearing to be "Emmanuel Esemé". The signature is written in a cursive style with a large, stylized 'E'.

Emmanuel Esemé , Ph.D.  
Quality Control

**ACTIVATION LABORATORIES LTD.**  
264 Government Road, Dryden, Ontario, Canada, P8N 2R3  
TELEPHONE +807 223-6168 or +1.888.228.5227 FAX +1.905.648.9613  
E-MAIL Dryden@actlabs.com ACTLABS GROUP WEBSITE www.actlabs.com

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E848705	0.008	
E848706	0.060	
E848707	0.023	
E848708	0.012	
E848709	0.228	
E848710	3.37	
E848711	0.605	
E848712	1.16	
E848713	0.130	
E848714	0.045	
E848715	0.403	
E848716	0.857	
E848717	0.362	
E848718	2.38	
E848719	0.241	
E848720	< 0.005	
E848721	0.150	
E848722	0.205	
E848723	0.442	
E848724	2.66	
E848725	0.369	
E848726	1.59	
E848727	0.395	
E848728	0.021	
E848729	0.244	
E848730	7.04	
E848731	0.337	
E848732	0.431	
E848733	0.050	
E848734	0.070	
E848735	0.020	
E848736	0.021	
E848737	5.45	
E848738	0.054	
E848739	0.014	
E848740	< 0.005	
E848741	0.015	
E848742	0.030	
E848743	0.112	
E848744	0.193	
E848745	0.136	
E848746	0.030	



	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E848747	0.055	
E848748	0.070	
E848749	0.053	
E848750	0.575	
E848751	0.962	
E848752	0.229	
E848753	0.055	
E848754	0.045	
E848755	0.034	
E848756	0.031	
E848757	0.027	
E848758	0.181	
E848759	0.416	
E848760	< 0.005	
E848761	0.112	
E848762	0.034	
E848763	0.186	
E848764	0.475	
E848765	0.036	
E848766	0.212	
E848767	0.050	
E848768	0.423	
E848769	1.72	
E848770	> 10.0	13.5
E848771	0.297	
E848772	0.675	
E848773	0.559	
E848774	0.022	
E848775	0.152	
E848776	0.102	
E848777	0.226	
E848778	0.074	
E848779	0.254	
E848780	< 0.005	
E848781	0.078	
E848782	0.056	
E848783	0.091	
E848784	0.107	
E848785	2.67	
E848786	0.165	
E848787	0.029	
E848788	0.084	
E848789	0.386	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E848790	3.40	
E848791	0.038	
E848792	2.83	
E848793	0.320	
E848794	0.357	
E848795	0.227	
E848796	3.73	
E848797	0.232	
E848798	0.439	
E848799	0.147	
E848800	< 0.005	
E848801	0.146	
E856462	0.015	
E856463	0.012	
E856464	0.008	
E856465	0.007	
E856466	0.007	
E856467	0.011	
E856468	< 0.005	
E856469	0.005	
E856470	> 10.0	12.5
E856471	0.008	
E856472	< 0.005	
E856473	< 0.005	
E856474	< 0.005	
E856475	0.005	
E856476	< 0.005	
E856477	< 0.005	
E856478	< 0.005	
E856479	< 0.005	
E856480	< 0.005	
E856481	< 0.005	
E856482	< 0.005	
E856483	0.006	
E856484	< 0.005	
E856485	< 0.005	
E856486	< 0.005	
E856487	< 0.005	
E856488	< 0.005	
E856489	< 0.005	
E856490	3.29	
E856491	< 0.005	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E856492	0.005	
E856493	< 0.005	
E856494	< 0.005	
E856495	< 0.005	
E856496	0.006	
E856497	< 0.005	
E856498	< 0.005	
E856499	< 0.005	
E856500	< 0.005	
E856501	< 0.005	
E856502	< 0.005	
E856503	< 0.005	
E856504	< 0.005	
E856505	< 0.005	
E856506	< 0.005	
E856507	< 0.005	
E856508	< 0.005	
E856509	< 0.005	
E856510	3.35	
E856511	< 0.005	
E856512	< 0.005	
E856513	< 0.005	
E856514	< 0.005	
E856515	< 0.005	
E856516	< 0.005	
E856517	< 0.005	
E856518	< 0.005	
E856519	< 0.005	
E856520	< 0.005	
E856521	< 0.005	
E856522	< 0.005	
E856523	< 0.005	
E856524	0.005	
E856525	< 0.005	
E856526	0.006	
E856527	0.009	
E856528	0.015	
E856529	0.012	
E856530	7.49	
E856531	0.029	
E856532	0.009	
E856533	0.025	
E856534	0.068	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E856535	0.016	
E856536	0.016	
E856537	0.101	
E856538	0.010	
E856539	0.011	
E856540	< 0.005	
E856541	0.252	
E856542	0.018	
E856543	0.005	
E856544	0.006	
E856545	0.008	
E856546	0.005	
E856547	< 0.005	
E856548	< 0.005	
E856549	< 0.005	
E856550	0.508	
E856551	0.005	
E856552	< 0.005	
E856553	0.006	
E856554	< 0.005	
E856555	0.005	
E856556	0.013	
E856557	0.045	
E856558	0.006	
E856559	0.006	
E856560	< 0.005	
E856561	0.008	
E856562	0.005	
E856563	0.005	
E856564	0.005	
E856565	< 0.005	
E856566	< 0.005	
E856567	< 0.005	
E856568	< 0.005	
E856569	< 0.005	
E856570	> 10.0	14.0
E856571	< 0.005	
E856572	0.006	
E856573	0.009	
E856574	< 0.005	
E856575	0.007	
E856576	< 0.005	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E856577	< 0.005	
E856578	< 0.005	
E856579	0.006	
E856580	< 0.005	
E856581	0.011	
E856582	0.006	
E856583	0.006	
E856584	0.006	
E856585	0.007	
E856586	0.006	
E856587	0.014	
E856588	0.010	
E856589	0.036	
E856590	3.41	
E856591	0.045	
E856592	0.007	
E856593	0.016	
E856594	0.012	
E856595	0.021	
E856596	0.025	
E856597	0.869	
E856598	0.030	
E856599	0.056	
E856600	< 0.005	
E856601	0.047	
E856602	0.013	
E856603	0.029	
E856604	0.007	
E856605	0.007	
E856606	0.012	
OREAS 203 (FA-Ancaster) Meas	0.861	
OREAS 203 (FA-Ancaster) Cert	0.871	
OREAS 214 Meas		3.03
OREAS 214 Cert		3.03
OREAS 216 (Fire Assay) Meas		6.67
OREAS 216 (Fire Assay) Cert		6.66
Oreas 203 Meas	0.864	
Oreas 203 Cert	0.871	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
Oreas 203 Meas	0.890	
Oreas 203 Cert	0.871	
Oreas 203 Meas	0.851	
Oreas 203 Cert	0.871	
Oreas 203 Meas	0.863	
Oreas 203 Cert	0.871	
Oreas 203 Meas	0.874	
Oreas 203 Cert	0.871	
Oreas 203 Meas	0.867	
Oreas 203 Cert	0.871	
OREAS 203 Meas	0.850	
OREAS 203 Cert	0.871	
OREAS 223 (Fire Assay) Meas	1.87	
OREAS 223 (Fire Assay) Cert	1.78	
OREAS 223 (Fire Assay) Meas	1.80	
OREAS 223 (Fire Assay) Cert	1.78	
OREAS 223 (Fire Assay) Meas	1.77	
OREAS 223 (Fire Assay) Cert	1.78	
OREAS 223 (Fire Assay) Meas	1.72	
OREAS 223 (Fire Assay) Cert	1.78	
OREAS 223 (Fire Assay) Meas	1.79	
OREAS 223 (Fire Assay) Cert	1.78	
OREAS 223 (Fire Assay) Meas	1.81	
OREAS 223 (Fire Assay) Cert	1.78	
OREAS 223 (Fire Assay) Meas	1.77	
OREAS 223 (Fire Assay) Cert	1.78	
OREAS 223 (Fire Assay) Meas	1.78	
OREAS 223 (Fire Assay) Cert	1.78	
E848715 Orig	0.403	
E848715 Dup	0.381	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E848724 Orig	2.66	
E848724 Dup	2.59	
E848733 Orig	0.050	
E848733 Dup	0.035	
E848754 Orig	0.049	
E848754 Split	0.056	
E848754 Orig	0.045	
E848754 Dup	0.052	
E848761 Orig	0.112	
E848761 Dup	0.115	
E848784 Orig	0.107	
E848784 Dup	0.139	
E856462 Orig	0.015	
E856462 Dup	0.014	
E856464 Orig	0.008	
E856464 Split	0.008	
E856478 Orig	< 0.005	
E856478 Dup	< 0.005	
E856487 Orig	< 0.005	
E856487 Dup	< 0.005	
E856496 Orig	0.006	
E856496 Dup	0.006	
E856512 Orig	< 0.005	
E856512 Dup	< 0.005	
E856514 Orig	< 0.005	
E856514 Split	< 0.005	
E856522 Orig	< 0.005	
E856522 Dup	< 0.005	
E856527 Orig	0.009	
E856527 Dup	0.009	
E856532 Orig	0.009	
E856532 Dup	0.009	
E856551 Orig	0.005	
E856551 Dup	0.005	
E856558 Orig	0.006	
E856558 Dup	0.007	
E856564 Orig	0.005	
E856564 Split	0.006	
E856569 Orig	< 0.005	
E856569 Dup	< 0.005	
E856581 Orig	0.011	
E856581 Dup	0.010	
E856591 Orig	0.045	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E856591 Dup	0.030	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	0.005	
Method Blank		< 0.03





**Date Submitted:** 20-Jun-17  
**Invoice No.:** A17-06176  
**Invoice Date:** 29-Jun-17  
**Your Reference:** Exploration

**GOLDCORP Canada Ltd--Musselwhite Mine**  
**P.O. Box 7500**  
**Thunder bay Ontario P7B 6S8**  
**Canada**

**ATTN: Katie Lucas**

## CERTIFICATE OF ANALYSIS

167 Core samples were submitted for analysis.

The following analytical package(s) were requested:

Code 1A2-GC Musselwhite Dryden Au - Fire Assay AA

REPORT      **A17-06176**

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

CERTIFIED BY:

A handwritten signature in black ink, consisting of several overlapping loops and a long horizontal stroke at the end.

---

Emmanuel Esemé , Ph.D.  
Quality Control

**ACTIVATION LABORATORIES LTD.**  
264 Government Road, Dryden, Ontario, Canada, P8N 2R3  
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E-MAIL Dryden@actlabs.com ACTLABS GROUP WEBSITE www.actlabs.com

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E855304	0.031	
E855305	0.318	
E855306	0.016	
E855307	0.008	
E855308	0.006	
E855309	0.007	
E855310	3.25	
E855311	0.013	
E855312	0.012	
E855313	0.076	
E855314	0.945	
E855315	3.54	
E855316	2.43	
E855317	0.216	
E855318	2.16	
E855319	0.028	
E855320	< 0.005	
E855321	0.048	
E855322	0.015	
E855323	0.110	
E855324	0.190	
E855325	0.419	
E855326	0.198	
E855327	0.106	
E855328	0.711	
E855329	0.025	
E855330	6.96	
E855331	0.074	
E855332	0.016	
E855333	0.006	
E855334	0.035	
E855335	0.007	
E855336	0.006	
E855337	0.008	
E855338	0.283	
E855339	0.011	
E855340	< 0.005	
E855341	0.017	
E855342	0.151	
E855343	3.56	
E855344	0.013	
E855345	0.016	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E855346	0.045	
E855347	0.028	
E855348	0.028	
E855349	0.059	
E855350	0.508	
E855388	0.303	
E855389	0.055	
E855390	3.16	
E855391	0.113	
E855392	0.038	
E855393	0.045	
E855394	0.015	
E855395	0.031	
E855396	0.104	
E855397	0.028	
E855398	0.093	
E855399	0.166	
E855400	< 0.005	
E855401	0.021	
E855402	0.080	
E855403	0.032	
E855404	0.028	
E855405	0.060	
E855406	< 0.005	
E855407	< 0.005	
E855408	< 0.005	
E855409	< 0.005	
E855410	3.44	
E855411	< 0.005	
E855412	0.011	
E855413	0.314	
E855414	0.329	
E855415	0.255	
E855416	2.23	
E855417	0.628	
E855418	0.319	
E855419	0.012	
E855420	< 0.005	
E855421	0.040	
E855422	0.707	
E855423	0.025	
E855424	0.172	
E855425	0.022	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E855426	0.007	
E855427	0.077	
E855428	0.126	
E855429	0.120	
E855430	7.13	
E855431	0.085	
E855432	1.49	
E855433	0.014	
E855434	0.008	
E855435	0.031	
E855436	< 0.005	
E855437	< 0.005	
E855438	0.006	
E855439	0.005	
E855440	< 0.005	
E855441	< 0.005	
E855442	< 0.005	
E855443	< 0.005	
E855444	0.045	
E855445	0.011	
E855446	0.496	
E855447	> 10.0	95.5
E855448	> 10.0	53.5
E855449	> 10.0	21.2
E855450	0.730	
E855451	2.33	
E855452	0.019	
E855453	0.150	
E855454	0.030	
E855455	1.19	
E855456	1.64	
E855457	> 10.0	11.1
E855458	5.42	
E855459	> 10.0	31.1
E855460	0.023	
E855461	> 10.0	17.4
E855462	> 10.0	22.7
E855463	> 10.0	12.7
E855464	4.12	
E855465	0.026	
E855466	0.020	
E855467	0.007	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E855468	0.005	
E855469	0.007	
E855470	> 10.0	13.6
E855471	0.007	
E855472	0.010	
E855473	0.023	
E855474	0.030	
E855475	0.197	
E855476	0.141	
E855477	0.837	
E855478	2.35	
E855479	3.43	
E855480	0.010	
E855481	6.23	
E855482	9.23	
E855483	8.55	
E855484	6.69	
E855485	0.045	
E855486	0.012	
E855487	0.028	
E856607	0.031	
E856608	0.061	
E856609	0.008	
E856610	2.95	
E856611	0.006	
E856612	< 0.005	
E856613	< 0.005	
E856614	< 0.005	
E856615	< 0.005	
E856616	< 0.005	
E856617	< 0.005	
E856618	< 0.005	
E856619	< 0.005	
E856620	< 0.005	
E856621	0.006	
E856622	0.010	
E856623	0.006	
E856624	0.011	
E856625	0.008	
E856626	0.022	
OREAS 214 Meas		2.95
OREAS 214 Cert		3.03
OREAS 214 Meas		3.15

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
OREAS 214 Cert		3.03
OREAS 216 (Fire Assay) Meas		6.59
OREAS 216 (Fire Assay) Cert		6.66
OREAS 216 (Fire Assay) Meas		6.60
OREAS 216 (Fire Assay) Cert		6.66
Oreas 203 Meas	0.880	
Oreas 203 Cert	0.871	
Oreas 203 Meas	0.837	
Oreas 203 Cert	0.871	
Oreas 203 Meas	0.876	
Oreas 203 Cert	0.871	
Oreas 203 Meas	0.873	
Oreas 203 Cert	0.871	
Oreas 203 Meas	0.862	
Oreas 203 Cert	0.871	
OREAS 223 (Fire Assay) Meas	1.81	
OREAS 223 (Fire Assay) Cert	1.78	
OREAS 223 (Fire Assay) Meas	1.79	
OREAS 223 (Fire Assay) Cert	1.78	
OREAS 223 (Fire Assay) Meas	1.76	
OREAS 223 (Fire Assay) Cert	1.78	
OREAS 223 (Fire Assay) Meas	1.81	
OREAS 223 (Fire Assay) Cert	1.78	
OREAS 223 (Fire Assay) Meas	1.81	
OREAS 223 (Fire Assay) Cert	1.78	
OREAS 223 (Fire Assay) Meas	1.78	
OREAS 223 (Fire Assay) Cert	1.78	
E855323 Orig	0.110	
E855323 Dup	0.093	
E855332 Orig	0.016	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E855332 Dup	0.015	
E855389 Orig	0.055	
E855389 Dup	0.053	
E855391 Orig	0.113	
E855391 Split	0.083	
E855397 Orig	0.028	
E855397 Dup	0.023	
E855408 Orig	< 0.005	
E855408 Dup	< 0.005	
E855424 Orig	0.172	
E855424 Dup	0.171	
E855431 Orig	0.085	
E855431 Dup	0.115	
E855441 Orig	< 0.005	
E855441 Split	< 0.005	
E855442 Orig	< 0.005	
E855442 Dup	< 0.005	
E855454 Orig	0.030	
E855454 Dup	0.028	
E855463 Dup	> 10.0	
E856609 Orig	0.008	
E856609 Split	0.007	
E856612 Orig	< 0.005	
E856612 Dup	< 0.005	
E856619 Orig	< 0.005	
E856619 Dup	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	0.006	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank		< 0.03



**Date Submitted:** 30-Jun-17  
**Invoice No.:** A17-06616  
**Invoice Date:** 07-Jul-17  
**Your Reference:** Exploration

**GOLDCORP Canada Ltd--Musselwhite Mine**  
**P.O. Box 7500**  
**Thunder bay Ontario P7B 6S8**  
**Canada**

**ATTN: Katie Lucas**

## CERTIFICATE OF ANALYSIS

285 Core samples were submitted for analysis.

The following analytical package(s) were requested:

Code 1A2-GC Musselwhite Dryden Au - Fire Assay AA

REPORT **A17-06616**

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

CERTIFIED BY:

A handwritten signature in black ink, appearing to be "Emmanuel Esemé". The signature is stylized with a large, looped 'E' and a long horizontal stroke at the end.

---

Emmanuel Esemé , Ph.D.  
Quality Control

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	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E855636	0.270	
E855637	0.022	
E855638	0.041	
E855639	0.005	
E855640	< 0.005	
E855641	0.009	
E855642	0.010	
E855643	0.032	
E855644	2.20	
E855645	3.80	
E855646	0.493	
E855647	0.614	
E855648	0.094	
E855649	0.039	
E855650	0.591	
E855651	0.037	
E855652	0.626	
E855653	0.038	
E855654	0.151	
E855655	0.342	
E855656	0.709	
E855657	0.064	
E855658	0.140	
E855659	0.222	
E855660	< 0.005	
E855661	0.207	
E855662	0.149	
E855663	0.009	
E855664	0.029	
E855665	0.011	
E855666	0.007	
E855667	0.015	
E855668	> 10.0	11.8
E855669	0.101	
E855670	> 10.0	13.6
E855671	9.18	
E855672	> 10.0	10.9
E855673	0.057	
E855674	0.096	
E855675	0.021	
E855676	0.035	
E855677	0.135	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E855678	0.143	
E855679	0.017	
E855680	< 0.005	
E855681	6.70	
E855682	6.02	
E855683	0.085	
E855684	0.086	
E855685	0.713	
E855686	0.015	
E855687	0.357	
E855688	0.049	
E855689	0.096	
E855690	2.91	
E855691	0.042	
E855692	0.048	
E855693	0.053	
E855694	0.022	
E855695	< 0.005	
E855696	< 0.005	
E855697	< 0.005	
E855698	0.005	
E855699	< 0.005	
E855700	< 0.005	
E855701	< 0.005	
E855702	0.021	
E855703	0.091	
E855704	0.169	
E855705	0.102	
E855706	0.013	
E855707	0.800	
E855708	0.064	
E855709	0.005	
E855710	3.37	
E855711	0.623	
E855712	0.050	
E855713	0.029	
E855714	0.007	
E855715	0.107	
E855716	0.159	
E855717	0.041	
E855718	0.114	
E855719	0.008	
E855720	< 0.005	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E855721	0.006	
E855722	0.005	
E855723	0.005	
E855724	0.006	
E855725	0.007	
E855726	0.425	
E855727	> 10.0	10.5
E855728	0.123	
E855729	0.010	
E855730	7.20	
E855731	0.017	
E855732	0.018	
E856627	0.015	
E856628	0.011	
E856629	0.011	
E856630	7.16	
E856631	0.014	
E856632	0.015	
E856633	0.012	
E856634	0.010	
E856635	0.016	
E856636	0.009	
E856637	0.012	
E856638	0.006	
E856639	0.006	
E856640	< 0.005	
E856641	0.007	
E856642	0.012	
E856643	0.008	
E856644	< 0.005	
E856645	0.007	
E856646	< 0.005	
E856647	< 0.005	
E856648	< 0.005	
E856649	0.006	
E856650	0.737	
E856651	0.115	
E856652	< 0.005	
E856653	< 0.005	
E856654	< 0.005	
E856655	0.010	
E856656	0.007	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E856657	0.017	
E856658	0.061	
E856659	0.035	
E856660	< 0.005	
E856661	0.005	
E856662	< 0.005	
E856663	< 0.005	
E856664	0.007	
E856665	< 0.005	
E856666	< 0.005	
E856667	< 0.005	
E856668	0.009	
E856669	0.007	
E856670	> 10.0	12.4
E856671	0.009	
E856672	0.008	
E856673	0.014	
E856674	0.015	
E856675	0.015	
E856676	0.011	
E856677	0.016	
E856678	0.019	
E856679	0.011	
E856680	< 0.005	
E856681	0.009	
E856682	0.011	
E856683	0.008	
E856684	0.007	
E856685	0.007	
E856686	0.006	
E856687	0.006	
E856688	0.011	
E856689	0.009	
E856690	3.04	
E856691	0.010	
E856692	0.012	
E856693	0.007	
E856694	0.012	
E856695	0.015	
E856696	0.012	
E856697	0.014	
E856698	0.010	
E856699	0.008	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E856700	< 0.005	
E856701	0.015	
E856702	0.007	
E856703	0.024	
E856704	0.055	
E856705	0.009	
E856706	0.027	
E856707	0.025	
E856708	0.006	
E856709	< 0.005	
E856710	3.47	
E856711	0.092	
E856712	< 0.005	
E856713	< 0.005	
E856714	0.010	
E856715	0.007	
E856716	< 0.005	
E856717	< 0.005	
E856718	0.005	
E856719	0.006	
E856720	< 0.005	
E856721	0.008	
E856722	< 0.005	
E856723	0.005	
E856724	< 0.005	
E856725	0.006	
E856726	< 0.005	
E856727	< 0.005	
E856728	< 0.005	
E856729	< 0.005	
E856730	7.27	
E856731	< 0.005	
E856732	0.005	
E856733	< 0.005	
E856734	< 0.005	
E856735	< 0.005	
E856736	< 0.005	
E856737	0.010	
E856738	0.017	
E856739	0.011	
E856740	< 0.005	
E856741	< 0.005	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E856742	< 0.005	
E856743	< 0.005	
E856744	0.005	
E856745	0.018	
E856746	0.652	
E856747	0.056	
E856748	0.007	
E856749	0.018	
E856750	0.466	
E856755	< 0.005	
E856756	0.011	
E856757	0.085	
E856758	0.019	
E856759	0.010	
E856760	< 0.005	
E856761	0.005	
E856762	0.006	
E856763	0.012	
E856764	0.006	
E856765	0.007	
E856766	< 0.005	
E856767	< 0.005	
E856768	0.011	
E856769	0.010	
E856770	> 10.0	13.6
E856771	0.032	
E856772	0.015	
E856773	0.021	
E856774	0.016	
E856775	0.016	
E856776	0.012	
E856777	0.035	
E856778	0.017	
E856779	0.020	
E856780	< 0.005	
E856781	0.060	
E856782	0.019	
E856783	0.032	
E856784	0.010	
E856785	0.015	
E856786	0.013	
E856787	0.007	
E856788	0.009	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E856789	0.009	
E856790	3.58	
E856791	0.010	
E856792	0.055	
E856793	0.023	
E856794	0.018	
E856795	0.044	
E856796	0.013	
E856797	0.107	
E856798	0.438	
E856799	0.440	
E856800	< 0.005	
E856801	0.046	
E856802	0.122	
E856803	0.106	
E856804	0.012	
E856805	0.013	
E856806	0.013	
E856807	0.015	
E856808	0.010	
E856809	0.011	
E856810	3.08	
E856811	0.012	
E856812	0.016	
E856813	0.010	
E856814	0.010	
E856815	0.017	
E856816	0.017	
E856817	0.021	
E856818	0.019	
OREAS 203 (FA-Ancaster) Meas	0.872	
OREAS 203 (FA-Ancaster) Cert	0.871	
OREAS 214 Meas		3.10
OREAS 214 Cert		3.03
OREAS 216 (Fire Assay) Meas		6.56
OREAS 216 (Fire Assay) Cert		6.66
Oreas 203 Meas	0.842	
Oreas 203 Cert	0.871	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
Oreas 203 Meas	0.911	
Oreas 203 Cert	0.871	
Oreas 203 Meas	0.819	
Oreas 203 Cert	0.871	
Oreas 203 Meas	0.843	
Oreas 203 Cert	0.871	
Oreas 203 Meas	0.838	
Oreas 203 Cert	0.871	
Oreas 203 Meas	0.873	
Oreas 203 Cert	0.871	
OREAS 203 Meas	0.846	
OREAS 203 Cert	0.871	
OREAS 203 Meas	0.866	
OREAS 203 Cert	0.871	
OREAS 203 Meas	0.844	
OREAS 203 Cert	0.871	
OREAS 223 (Fire Assay) Meas	1.80	
OREAS 223 (Fire Assay) Cert	1.78	
OREAS 223 (Fire Assay) Meas	1.74	
OREAS 223 (Fire Assay) Cert	1.78	
OREAS 223 (Fire Assay) Meas	1.86	
OREAS 223 (Fire Assay) Cert	1.78	
OREAS 223 (Fire Assay) Meas	1.77	
OREAS 223 (Fire Assay) Cert	1.78	
OREAS 223 (Fire Assay) Meas	1.78	
OREAS 223 (Fire Assay) Cert	1.78	
OREAS 223 (Fire Assay) Meas	1.76	
OREAS 223 (Fire Assay) Cert	1.78	
OREAS 223 (Fire Assay) Meas	1.76	
OREAS 223 (Fire Assay) Cert	1.78	
OREAS 223 (Fire Assay) Meas	1.78	



	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
OREAS 223 (Fire Assay) Cert	1.78	
OREAS 223 (Fire Assay) Meas	1.78	
OREAS 223 (Fire Assay) Cert	1.78	
OREAS 223 (Fire Assay) Meas	1.79	
OREAS 223 (Fire Assay) Cert	1.78	
E855651 Orig	0.037	
E855651 Dup	0.037	
E855657 Orig	0.064	
E855657 Dup	0.044	
E855668 Orig	> 10.0	
E855668 Dup	> 10.0	
E855685 Orig	0.713	
E855685 Split	0.691	
E855692 Orig	0.048	
E855692 Dup	0.051	
E855703 Orig	0.091	
E855703 Dup	0.081	
E855714 Orig	0.007	
E855714 Dup	0.010	
E855724 Orig	0.006	
E855724 Dup	0.006	
E856628 Orig	0.011	
E856628 Dup	0.011	
E856629 Orig	0.011	
E856629 Split	0.009	
E856642 Orig	0.012	
E856642 Dup	0.011	
E856652 Orig	< 0.005	
E856652 Dup	0.005	
E856662 Orig	< 0.005	
E856662 Dup	< 0.005	
E856679 Orig	0.011	
E856679 Split	0.009	
E856682 Orig	0.011	
E856682 Dup	0.009	
E856689 Orig	0.009	
E856689 Dup	0.009	
E856698 Orig	0.010	
E856698 Dup	0.009	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E856712 Orig	< 0.005	
E856712 Dup	0.007	
E856721 Orig	0.008	
E856721 Dup	0.007	
E856728 Orig	< 0.005	
E856728 Dup	< 0.005	
E856729 Orig	< 0.005	
E856729 Split	< 0.005	
E856745 Orig	0.018	
E856745 Dup	0.014	
E856759 Orig	0.010	
E856759 Dup	0.010	
E856769 Orig	0.010	
E856769 Dup	0.011	
E856783 Orig	0.032	
E856783 Split	0.035	
E856789 Orig	0.009	
E856789 Dup	0.008	
E856796 Orig	0.013	
E856796 Dup	0.013	
E856807 Orig	0.015	
E856807 Dup	0.016	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
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Method Blank	< 0.005	
Method Blank	0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank		< 0.03



**Date Submitted:** 05-Jul-17  
**Invoice No.:** A17-06757  
**Invoice Date:** 19-Jul-17  
**Your Reference:** Exploration

**GOLDCORP Canada Ltd--Musselwhite Mine**  
**P.O. Box 7500**  
**Thunder bay Ontario P7B 6S8**  
**Canada**

**ATTN: Katie Lucas**

## CERTIFICATE OF ANALYSIS

123 Core samples were submitted for analysis.

The following analytical package(s) were requested:

Code 1A2-GC Musselwhite Dryden Au - Fire Assay AA

Code 1A3-Dryden Au - Fire Assay Gravimetric (QOP Fire Assay Dryden)

REPORT **A17-06757**

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Notes:

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

CERTIFIED BY:

A handwritten signature in black ink, appearing to read "Elitsa Hrischeva". The signature is written in a cursive style with a horizontal line underneath.

Elitsa Hrischeva, Ph.D.  
Quality Control

**ACTIVATION LABORATORIES LTD.**  
264 Government Road, Dryden, Ontario, Canada, P8N 2R3  
TELEPHONE +807 223-6168 or +1.888.228.5227 FAX +1.905.648.9613  
E-MAIL Dryden@actlabs.com ACTLABS GROUP WEBSITE www.actlabs.com

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E855733	0.012	
E855734	0.005	
E855735	< 0.005	
E855736	0.141	
E855737	1.66	
E855738	0.041	
E855739	0.803	
E855740	< 0.005	
E855741	0.015	
E855742	0.060	
E855743	0.009	
E855744	0.022	
E855745	1.53	
E855746	0.205	
E855747	0.157	
E855748	1.89	
E855749	1.04	
E855750	0.439	
E855751	0.015	
E855752	0.007	
E855753	1.11	
E855754	0.095	
E855755	1.71	
E855756	7.36	
E855757	0.518	
E855758	2.57	
E855759	8.02	
E855760	0.012	
E855761	8.82	
E855762	3.44	
E855763	7.53	
E855764	1.11	
E855765	0.342	
E855766	0.585	
E855767	0.350	
E855768	0.050	
E855769	0.038	
E855770	> 10.0	12.5
E855771	0.007	
E855772	0.006	
E855773	0.006	
E855774	0.009	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E855775	0.013	
E855776	0.042	
E855777	0.191	
E855778	0.205	
E855779	2.01	
E855780	< 0.005	
E855781	0.109	
E855782	0.059	
E855783	0.292	
E855784	1.01	
E855785	0.268	
E855786	5.04	
E855787	1.33	
E855788	7.37	
E855789	0.942	
E855790	3.18	
E855791	1.37	
E855792	0.015	
E855793	0.017	
E855794	0.053	
E855795	0.026	
E855796	0.016	
E856819	0.016	
E856820	< 0.005	
E856821	0.007	
E856822	< 0.005	
E856823	0.024	
E856824	0.013	
E856825	0.016	
E856826	0.061	
E856827	0.017	
E856828	0.007	
E856829	< 0.005	
E856830	7.28	
E856831	0.006	
E856832	0.008	
E856833	0.009	
E856834	0.010	
E856835	0.015	
E856836	0.011	
E856837	0.012	
E856838	0.013	
E856839	0.010	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E856840	< 0.005	
E856841	0.019	
E856842	0.013	
E856843	0.021	
E856844	0.207	
E856845	1.05	
E856846	0.174	
E856847	0.934	
E856848	0.646	
E856849	0.111	
E856850	0.506	
E856851	0.027	
E856852	0.041	
E856853	0.082	
E856854	0.014	
E857176	0.518	
E857177	0.018	
E857178	0.029	
E857179	0.125	
E857180	< 0.005	
E857181	0.106	
E857182	0.064	
E857183	0.092	
E857184	0.067	
E857185	0.084	
E857186	0.029	
E857187	0.423	
E857188	1.24	
E857189	0.198	
E857190	3.54	
E857191	0.016	
E857192	0.011	
E857193	1.29	
E857194	0.018	
E857195	0.013	
E857196	0.610	
E857197	0.426	
E857198	0.043	
OREAS 203 (FA-Ancaster) Meas	0.885	
OREAS 203 (FA-Ancaster)	0.871	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
Cert		
OREAS 214 Meas		3.00
OREAS 214 Cert		3.03
OREAS 216 (Fire Assay) Meas		6.64
OREAS 216 (Fire Assay) Cert		6.66
Oreas 203 Meas	0.887	
Oreas 203 Cert	0.871	
Oreas 203 Meas	0.877	
Oreas 203 Cert	0.871	
OREAS 203 Meas	0.813	
OREAS 203 Cert	0.871	
OREAS 223 (Fire Assay) Meas	1.78	
OREAS 223 (Fire Assay) Cert	1.78	
OREAS 223 (Fire Assay) Meas	1.76	
OREAS 223 (Fire Assay) Cert	1.78	
OREAS 223 (Fire Assay) Meas	1.82	
OREAS 223 (Fire Assay) Cert	1.78	
OREAS 223 (Fire Assay) Meas	1.79	
OREAS 223 (Fire Assay) Cert	1.78	
OREAS 223 (Fire Assay) Meas	1.78	
OREAS 223 (Fire Assay) Cert	1.78	
OREAS 220 (Fire Assay) Meas	0.857	
OREAS 220 (Fire Assay) Cert	0.828	
E855752 Orig	0.007	
E855752 Dup	0.007	
E855762 Orig	3.44	
E855762 Dup	3.30	
E855782 Orig	0.054	
E855782 Split	0.038	
E855782 Orig	0.059	
E855782 Dup	0.050	
E855789 Orig	0.942	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E855789 Dup	0.964	
E856822 Orig	< 0.005	
E856822 Dup	< 0.005	
E856838 Orig	0.013	
E856838 Dup	0.013	
E856854 Orig	0.014	
E856854 Split	0.017	
E857177 Orig	0.018	
E857177 Dup	0.021	
E857189 Orig	0.198	
E857189 Dup	0.177	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	





**Date Submitted:** 07-Jul-17  
**Invoice No.:** A17-06912  
**Invoice Date:** 24-Jul-17  
**Your Reference:** Exploration

**GOLDCORP Canada Ltd--Musselwhite Mine**  
**P.O. Box 7500**  
**Thunder bay Ontario P7B 6S8**  
**Canada**

**ATTN: Katie Lucas**

## CERTIFICATE OF ANALYSIS

328 Core samples were submitted for analysis.

The following analytical package(s) were requested:

Code 1A2-GC Musselwhite Dryden Au - Fire Assay AA

Code 1A3-Dryden Au - Fire Assay Gravimetric (QOP Fire Assay Dryden)

REPORT      **A17-06912**

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Notes:

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

CERTIFIED BY:

A handwritten signature in black ink, appearing to be "Emmanuel Esemé". The signature is written over a horizontal line.

Emmanuel Esemé , Ph.D.  
Quality Control

**ACTIVATION LABORATORIES LTD.**  
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E-MAIL Dryden@actlabs.com ACTLABS GROUP WEBSITE www.actlabs.com

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E809613	4.88	
E809614	0.247	
E809615	0.104	
E809616	> 10.0	10.9
E809617	0.099	
E809618	0.330	
E809619	0.131	
E809620	< 0.005	
E809621	0.984	
E809622	> 10.0	34.6
E809623	1.88	
E809624	0.454	
E809625	0.016	
E809626	0.013	
E809627	9.63	
E809628	> 10.0	13.2
E809629	0.164	
E809630	7.03	
E809631	0.034	
E809632	0.044	
E809633	> 10.0	27.6
E809634	0.056	
E809635	0.009	
E809636	0.044	
E809637	0.007	
E809638	6.55	
E809639	0.077	
E809640	< 0.005	
E809641	0.067	
E809642	0.109	
E809643	0.954	
E809644	0.112	
E809645	0.257	
E809646	0.399	
E809647	8.83	
E809648	0.138	
E809649	0.078	
E809650	< 0.005	
E809651	1.20	
E809652	5.07	
E809653	0.040	
E809654	0.122	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E809655	0.077	
E809656	0.015	
E809657	0.410	
E809658	0.014	
E809659	0.056	
E809660	< 0.005	
E809661	0.581	
E809662	2.62	
E809663	1.73	
E809664	1.55	
E809665	1.70	
E809666	6.74	
E809667	1.41	
E809668	4.09	
E809669	0.184	
E809670	> 10.0	13.6
E809671	1.22	
E809672	3.04	
E809673	0.225	
E809674	0.910	
E809675	2.42	
E809676	2.62	
E809677	2.22	
E809678	0.771	
E809679	0.557	
E809680	< 0.005	
E809681	0.965	
E809682	2.31	
E809683	1.52	
E809684	7.07	
E809685	1.83	
E809686	0.653	
E809687	0.448	
E809688	1.93	
E809689	0.610	
E809690	3.06	
E809691	1.22	
E809692	0.751	
E809693	1.26	
E809694	0.268	
E809695	1.14	
E809696	0.387	
E809697	0.516	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E809698	1.76	
E809699	3.55	
E809700	< 0.005	
E809701	0.530	
E809702	0.121	
E809703	0.191	
E809704	1.08	
E809705	1.34	
E809706	1.97	
E809707	0.043	
E809708	4.74	
E809709	3.27	
E809710	0.335	
E809711	0.226	
E809712	1.16	
E809713	0.834	
E809714	0.089	
E809715	0.149	
E809716	2.04	
E809717	0.156	
E809718	0.287	
E809719	0.089	
E809720	< 0.005	
E809721	0.241	
E809722	1.13	
E809723	1.50	
E809724	2.50	
E809725	0.544	
E809726	0.557	
E809727	0.347	
E809728	0.339	
E809729	0.220	
E809730	7.29	
E809731	0.543	
E809732	0.564	
E809733	0.373	
E809734	0.277	
E809735	0.083	
E809736	0.011	
E809737	0.061	
E809738	0.051	
E809739	0.039	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E809740	< 0.005	
E809741	0.014	
E809742	0.013	
E809743	0.007	
E809744	0.010	
E809745	0.011	
E809746	0.299	
E809747	0.020	
E809748	0.009	
E812135	0.070	
E812136	0.013	
E812137	0.087	
E812138	0.054	
E812139	0.005	
E812140	< 0.005	
E812141	0.050	
E812142	0.023	
E812143	0.045	
E812144	0.068	
E812145	0.069	
E812146	0.005	
E812147	0.005	
E812148	0.005	
E812149	< 0.005	
E812150	0.518	
E812151	0.074	
E812152	0.023	
E812153	0.012	
E812154	0.045	
E812155	0.015	
E812156	0.011	
E812157	0.078	
E812158	0.010	
E812159	0.051	
E812160	< 0.005	
E812161	0.050	
E812162	0.401	
E812163	0.420	
E812164	0.958	
E812165	0.008	
E812166	0.014	
E812167	< 0.005	
E812168	0.005	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E812169	0.007	
E812170	> 10.0	13.3
E812171	< 0.005	
E812172	< 0.005	
E812173	0.005	
E812174	< 0.005	
E812175	< 0.005	
E812176	< 0.005	
E812177	< 0.005	
E812178	< 0.005	
E812179	0.017	
E812180	< 0.005	
E812181	0.046	
E812182	0.028	
E812183	0.037	
E812184	0.014	
E812185	0.008	
E812186	0.005	
E812187	0.006	
E812188	0.010	
E812189	0.010	
E812190	3.34	
E812191	0.014	
E812192	0.014	
E812193	0.030	
E812194	0.088	
E812195	0.025	
E812196	0.016	
E812197	0.211	
E812198	0.117	
E812199	0.565	
E812200	< 0.005	
E812201	0.119	
E812202	0.037	
E812203	0.311	
E812204	0.016	
E812205	0.005	
E812206	0.007	
E812207	0.010	
E812208	0.008	
E812209	0.006	
E812210	3.56	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E812211	0.008	
E812212	0.026	
E812213	0.006	
E812214	< 0.005	
E812215	< 0.005	
E812216	0.013	
E812217	0.007	
E812218	0.009	
E812219	0.005	
E812220	< 0.005	
E812221	0.010	
E812222	0.014	
E812223	0.006	
E812224	0.011	
E812225	0.013	
E812226	0.010	
E812227	0.008	
E812228	0.007	
E812229	0.007	
E812230	7.12	
E812231	0.006	
E812232	0.006	
E812233	0.007	
E812234	0.013	
E812235	0.007	
E812236	0.007	
E812237	< 0.005	
E812238	0.009	
E812239	0.005	
E812240	< 0.005	
E812241	< 0.005	
E812242	0.005	
E812243	0.006	
E812244	0.005	
E812245	0.008	
E812246	< 0.005	
E812247	0.005	
E812248	0.006	
E812249	0.006	
E812250	0.562	
E812251	0.005	
E812252	0.005	
E812253	0.005	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E812254	0.007	
E812255	0.042	
E812256	0.019	
E812257	0.006	
E812258	0.075	
E812259	0.045	
E812260	< 0.005	
E812261	0.013	
E812262	0.007	
E812263	0.013	
E812264	0.012	
E812265	0.007	
E812266	0.005	
E812267	0.008	
E812268	0.057	
E812269	0.055	
E812270	> 10.0	12.7
E812452	1.14	
E812453	0.449	
E812454	5.24	
E812455	6.54	
E812456	3.63	
E812457	0.990	
E812458	0.132	
E812459	0.974	
E856871	0.021	
E856872	0.015	
E856873	0.006	
E856874	0.011	
E856875	0.013	
E856876	0.007	
E856877	< 0.005	
E856878	< 0.005	
E856879	< 0.005	
E856880	< 0.005	
E856881	< 0.005	
E856882	< 0.005	
E856883	< 0.005	
E856884	< 0.005	
E856885	0.034	
E856886	0.009	
E856887	< 0.005	



	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E856888	< 0.005	
E856889	< 0.005	
E856890	3.31	
E856891	< 0.005	
E856892	0.005	
E856893	0.007	
E856894	0.005	
E856895	0.008	
E856896	0.017	
E856897	0.012	
E856898	0.010	
E856899	0.005	
E856900	< 0.005	
E856901	< 0.005	
E856902	0.011	
E856903	< 0.005	
E856904	0.009	
E856905	0.007	
E856906	0.005	
E856907	0.009	
E856908	0.021	
E856909	0.028	
E856910	3.26	
E856911	0.020	
E856912	0.010	
E856913	0.011	
E856914	0.014	
E856915	0.056	
E856916	0.106	
E856917	0.391	
E856918	0.040	
OxK110 Meas		3.68
OxK110 Cert		3.602
OXN117 Meas		7.90
OXN117 Cert		7.679
OREAS 251 Meas	0.508	
OREAS 251 Cert	0.504	
OREAS 251 Meas	0.503	
OREAS 251 Cert	0.504	
OREAS 254 Meas	2.53	
OREAS 254 Cert	2.55	
OREAS 254 Meas	2.56	
OREAS 254 Cert	2.55	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
OREAS 254 Meas	2.63	
OREAS 254 Cert	2.55	
OREAS 254 Meas	2.55	
OREAS 254 Cert	2.55	
OREAS 254 Meas	2.52	
OREAS 254 Cert	2.55	
OREAS 254 Meas	2.53	
OREAS 254 Cert	2.55	
OREAS 254 Meas	2.56	
OREAS 254 Cert	2.55	
OREAS 254 Meas	2.61	
OREAS 254 Cert	2.55	
OREAS 254 Meas	2.61	
OREAS 254 Cert	2.55	
OREAS 254 Meas	2.65	
OREAS 254 Cert	2.55	
OREAS 218 Meas	0.520	
OREAS 218 Cert	0.525	
OREAS 218 Meas	0.546	
OREAS 218 Cert	0.525	
OREAS 218 Meas	0.525	
OREAS 218 Cert	0.525	
OREAS 218 Meas	0.539	
OREAS 218 Cert	0.525	
OREAS 218 Meas	0.529	
OREAS 218 Cert	0.525	
OREAS 218 Meas	0.540	
OREAS 218 Cert	0.525	
OREAS 218 Meas	0.546	
OREAS 218 Cert	0.525	
OREAS 218 Meas	0.550	
OREAS 218 Cert	0.525	
OREAS 218 Meas	0.537	
OREAS 218 Cert	0.525	
OREAS 218 Meas	0.538	
OREAS 218 Cert	0.525	
E809625 Orig	0.016	
E809625 Dup	0.032	
E809628 Orig		13.2
E809628 Dup		12.3
E809634 Orig	0.056	
E809634 Dup	0.047	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E809643 Orig	0.954	
E809643 Dup	1.01	
E809657 Orig	0.410	
E809657 Dup	0.356	
E809662 Orig	2.62	
E809662 Split	2.94	
E809677 Orig	2.22	
E809677 Dup	2.31	
E809691 Orig	1.22	
E809691 Dup	1.12	
E809701 Orig	0.530	
E809701 Dup	0.490	
E809711 Orig	0.226	
E809711 Dup	0.223	
E809712 Orig	1.16	
E809712 Split	1.06	
E809725 Orig	0.544	
E809725 Dup	0.525	
E809735 Orig	0.083	
E809735 Dup	0.071	
E809745 Orig	0.011	
E809745 Dup	0.030	
E812148 Orig	0.005	
E812148 Split	< 0.005	
E812149 Orig	< 0.005	
E812149 Dup	< 0.005	
E812160 Orig	< 0.005	
E812160 Dup	< 0.005	
E812169 Orig	0.007	
E812169 Dup	0.006	
E812180 Orig	< 0.005	
E812180 Dup	< 0.005	
E812191 Orig	0.014	
E812191 Dup	0.013	
E812198 Orig	0.117	
E812198 Split	0.104	
E812200 Orig	< 0.005	
E812200 Dup	< 0.005	
E812217 Orig	0.007	
E812217 Dup	0.009	
E812226 Orig	0.010	
E812226 Dup	0.011	
E812235 Orig	0.007	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E812235 Dup	0.008	
E812248 Orig	0.006	
E812248 Split	0.008	
E812249 Orig	0.006	
E812249 Dup	0.005	
E812259 Orig	0.045	
E812259 Dup	0.029	
E812269 Orig	0.055	
E812269 Dup	0.059	
E856875 Orig	0.013	
E856875 Dup	0.014	
E856885 Orig	0.034	
E856885 Dup	0.049	
E856891 Orig	< 0.005	
E856891 Split	< 0.005	
E856895 Orig	0.008	
E856895 Dup	0.007	
E856909 Orig	0.028	
E856909 Dup	0.017	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
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Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank		< 0.03
Method Blank	< 0.005	



**Date Submitted:** 11-Jul-17  
**Invoice No.:** A17-07007  
**Invoice Date:** 24-Jul-17  
**Your Reference:** Exploration

**GOLDCORP Canada Ltd--Musselwhite Mine**  
**P.O. Box 7500**  
**Thunder bay Ontario P7B 6S8**  
**Canada**

**ATTN: Katie Lucas**

## CERTIFICATE OF ANALYSIS

285 Core samples were submitted for analysis.

The following analytical package(s) were requested:

Code 1A2-GC Musselwhite Dryden Au - Fire Assay AA

Code 1A3-Dryden Au - Fire Assay Gravimetric (QOP Fire Assay Dryden)

REPORT **A17-07007**

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Notes:

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

CERTIFIED BY:

A handwritten signature in black ink, appearing to be "Emmanuel Esemé". The signature is written in a cursive style with a horizontal line underneath.

Emmanuel Esemé , Ph.D.  
Quality Control

**ACTIVATION LABORATORIES LTD.**  
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	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E809749	0.011	
E809750	0.488	
E809751	0.028	
E809752	0.017	
E809753	0.065	
E809754	0.013	
E809755	0.058	
E809756	0.023	
E809757	0.033	
E809758	0.025	
E809759	0.025	
E809760	0.005	
E809761	0.012	
E809762	0.046	
E809763	0.027	
E809764	0.028	
E809765	0.065	
E809766	0.014	
E809767	0.014	
E809768	0.014	
E809769	0.011	
E809770	> 10.0	13.5
E809771	0.021	
E809772	0.020	
E809773	0.035	
E809774	0.150	
E809775	3.45	
E809776	0.021	
E809777	0.043	
E809778	6.13	
E809779	0.047	
E809780	0.008	
E809781	0.038	
E809782	0.137	
E809783	0.195	
E809784	0.021	
E809785	0.013	
E809786	0.014	
E809787	0.009	
E809788	0.043	
E809789	0.034	
E809790	3.03	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E809791	0.016	
E809792	0.026	
E809793	0.018	
E809794	0.038	
E809795	0.014	
E809796	0.837	
E809797	0.055	
E809798	0.024	
E809799	0.008	
E809800	< 0.005	
E809801	0.011	
E809802	0.011	
E809803	0.590	
E809804	0.025	
E809805	0.118	
E809806	0.473	
E809807	0.175	
E809808	0.340	
E809809	0.019	
E809810	3.28	
E809811	0.020	
E809812	0.051	
E809813	2.87	
E809814	1.21	
E809815	0.077	
E809816	0.059	
E809817	0.085	
E809818	0.022	
E809819	0.218	
E809820	0.014	
E809821	5.82	
E809822	1.09	
E809823	< 0.005	
E856919	0.202	
E856920	< 0.005	
E856921	1.40	
E856922	0.044	
E856923	0.169	
E856924	0.108	
E856925	0.214	
E856926	0.051	
E856927	0.053	
E856928	0.032	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E856929	0.009	
E856930	7.18	
E856931	0.019	
E856932	0.045	
E856933	0.025	
E856934	0.007	
E856935	0.018	
E856936	0.015	
E856937	0.011	
E856938	0.008	
E856939	0.010	
E856940	< 0.005	
E856941	0.009	
E856942	0.019	
E856943	0.020	
E856944	0.012	
E856945	0.039	
E856946	0.013	
E856947	0.013	
E856948	0.024	
E856949	0.011	
E856950	0.620	
E856951	0.108	
E856952	0.013	
E856953	0.218	
E856954	0.680	
E856955	0.040	
E856956	0.093	
E856957	0.177	
E856958	0.013	
E856959	0.019	
E856960	< 0.005	
E856961	0.016	
E856962	0.014	
E856963	0.024	
E856964	0.028	
E856965	0.057	
E856966	0.033	
E856967	0.612	
E856968	0.198	
E856969	0.415	
E856970	> 10.0	13.5



	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E856971	0.116	
E856972	0.075	
E856973	0.979	
E856974	0.021	
E856975	0.238	
E856976	0.021	
E856977	0.016	
E856978	0.014	
E856979	0.036	
E856980	< 0.005	
E856981	0.059	
E856982	0.172	
E856983	0.132	
E856984	0.173	
E856985	0.106	
E856986	0.019	
E856987	0.066	
E856988	0.056	
E856989	0.242	
E856990	2.91	
E856991	0.088	
E856992	0.217	
E856993	0.320	
E856994	0.312	
E856995	0.032	
E856996	0.012	
E856997	0.013	
E856998	0.019	
E856999	0.008	
E857000	< 0.005	
E857395	0.026	
E857396	0.159	
E857397	1.21	
E857398	0.055	
E857399	0.175	
E857400	< 0.005	
E857401	0.474	
E857402	0.251	
E857403	0.029	
E857404	0.020	
E857405	0.086	
E857406	0.012	
E857407	0.326	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E857408	0.024	
E857409	0.216	
E857410	3.30	
E857411	0.232	
E857412	0.016	
E857413	0.012	
E857414	0.031	
E857415	0.020	
E857416	0.013	
E857417	0.017	
E857418	0.019	
E857419	0.010	
E857420	< 0.005	
E857421	0.045	
E857422	0.127	
E857423	0.046	
E857424	0.040	
E857425	0.012	
E857426	0.007	
E857427	0.006	
E857428	0.010	
E857429	0.079	
E857430	7.18	
E857431	0.006	
E857432	0.020	
E857433	> 10.0	11.7
E857434	0.237	
E857435	0.996	
E857436	0.483	
E857437	0.143	
E857438	0.148	
E857439	0.189	
E857440	< 0.005	
E857441	2.28	
E857442	2.24	
E857443	0.041	
E857444	0.022	
E857445	0.492	
E857446	1.70	
E857447	1.81	
E857448	0.175	
E857449	5.47	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E857450	0.478	
E857451	0.939	
E857452	0.290	
E857453	0.019	
E857454	0.013	
E857455	0.030	
E857456	0.092	
E857457	0.011	
E857458	0.038	
E857459	0.042	
E857460	< 0.005	
E857461	0.031	
E857462	1.33	
E857463	0.508	
E857464	0.015	
E857465	0.021	
E857466	0.129	
E857467	0.494	
E857468	0.031	
E857469	0.020	
E857470	> 10.0	14.1
E857471	0.015	
E857472	0.015	
E857473	0.033	
E857474	0.111	
E857475	0.040	
E857476	0.016	
E857477	0.030	
E857478	0.071	
E857479	0.435	
E857480	< 0.005	
E857481	0.385	
E857482	0.024	
E857483	0.251	
E857484	0.391	
E857485	2.57	
E857486	0.131	
E857487	2.76	
E857488	0.544	
E857489	0.104	
E857490	3.01	
E857491	0.650	
E857492	0.271	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E857493	0.083	
E857494	0.037	
E857495	0.010	
E857496	0.009	
E857497	0.046	
E857498	0.343	
E857499	0.175	
E857500	< 0.005	
E857501	0.058	
E857502	0.212	
E857503	0.218	
E857504	0.495	
E857505	1.47	
E857506	0.165	
E857507	0.069	
E857508	0.195	
E857509	0.037	
E857510	2.96	
E857511	1.73	
E857512	1.46	
E857513	3.48	
E857514	0.314	
E857515	0.203	
E857516	0.074	
E857517	0.034	
E857518	0.034	
E857519	0.143	
E857520	0.005	
E857521	0.084	
E857522	0.177	
OREAS 203 (FA-Ancaster) Meas	0.864	
OREAS 203 (FA-Ancaster) Cert	0.871	
OREAS 214 Meas		3.01
OREAS 214 Cert		3.03
OREAS 216 (Fire Assay) Meas		6.56
OREAS 216 (Fire Assay) Cert		6.66
Oreas 203 Meas	0.857	
Oreas 203 Cert	0.871	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
Oreas 203 Meas	0.883	
Oreas 203 Cert	0.871	
Oreas 203 Meas	0.875	
Oreas 203 Cert	0.871	
Oreas 203 Meas	0.847	
Oreas 203 Cert	0.871	
Oreas 203 Meas	0.870	
Oreas 203 Cert	0.871	
Oreas 203 Meas	0.859	
Oreas 203 Cert	0.871	
Oreas 203 Meas	0.878	
Oreas 203 Cert	0.871	
Oreas 203 Meas	0.883	
Oreas 203 Cert	0.871	
OREAS 223 (Fire Assay) Meas	1.79	
OREAS 223 (Fire Assay) Cert	1.78	
OREAS 223 (Fire Assay) Meas	1.81	
OREAS 223 (Fire Assay) Cert	1.78	
OREAS 223 (Fire Assay) Meas	1.81	
OREAS 223 (Fire Assay) Cert	1.78	
OREAS 223 (Fire Assay) Meas	1.80	
OREAS 223 (Fire Assay) Cert	1.78	
OREAS 223 (Fire Assay) Meas	1.81	
OREAS 223 (Fire Assay) Cert	1.78	
OREAS 223 (Fire Assay) Meas	1.79	
OREAS 223 (Fire Assay) Cert	1.78	
OREAS 223 (Fire Assay) Meas	1.81	
OREAS 223 (Fire Assay) Cert	1.78	
OREAS 223 (Fire Assay) Meas	1.81	
OREAS 223 (Fire Assay) Cert	1.78	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
OREAS 223 (Fire Assay) Meas	1.83	
OREAS 223 (Fire Assay) Cert	1.78	
OREAS 223 (Fire Assay) Meas	1.81	
OREAS 223 (Fire Assay) Cert	1.78	
OREAS 220 (Fire Assay) Meas	0.832	
OREAS 220 (Fire Assay) Cert	0.828	
E809759 Orig	0.025	
E809759 Dup	0.023	
E809768 Orig	0.014	
E809768 Dup	0.015	
E809777 Orig	0.043	
E809777 Dup	0.042	
E809798 Orig	0.024	
E809798 Split	0.022	
E809805 Orig	0.118	
E809805 Dup	0.091	
E809816 Orig	0.059	
E809816 Dup	0.052	
E856927 Orig	0.053	
E856927 Dup	0.064	
E856934 Orig	0.007	
E856934 Dup	0.006	
E856943 Orig	0.020	
E856943 Split	0.018	
E856945 Orig	0.039	
E856945 Dup	0.036	
E856961 Orig	0.016	
E856961 Dup	0.026	
E856968 Orig	0.198	
E856968 Dup	0.214	
E856979 Orig	0.036	
E856979 Dup	0.044	
E856993 Orig	0.320	
E856993 Split	0.342	
E856996 Orig	0.012	
E856996 Dup	0.015	
E857408 Orig	0.024	
E857408 Dup	0.046	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E857419 Orig	0.010	
E857419 Dup	0.011	
E857437 Orig	0.143	
E857437 Split	0.156	
E857458 Orig	0.038	
E857458 Dup	0.036	
E857465 Orig	0.021	
E857465 Dup	0.019	
E857476 Orig	0.016	
E857476 Dup	0.016	
E857487 Orig	2.76	
E857487 Split	2.46	
E857489 Orig	0.104	
E857489 Dup	0.101	
E857498 Orig	0.343	
E857498 Dup	0.280	
E857507 Orig	0.069	
E857507 Dup	0.059	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
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Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank		< 0.03



**Date Submitted:** 19-Jul-17  
**Invoice No.:** A17-07390  
**Invoice Date:** 01-Aug-17  
**Your Reference:** Exploration

**GOLDCORP Canada Ltd--Musselwhite Mine**  
**P.O. Box 7500**  
**Thunder bay Ontario P7B 6S8**  
**Canada**

**ATTN: Katie Lucas**

## CERTIFICATE OF ANALYSIS

318 Core samples were submitted for analysis.

The following analytical package(s) were requested:

Code 1A2-GC Musselwhite Dryden Au - Fire Assay AA

REPORT **A17-07390**

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Notes:

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

CERTIFIED BY:

A handwritten signature in black ink, appearing to be "Emmanuel Esemé". The signature is written in a cursive style with some loops and flourishes.

Emmanuel Esemé , Ph.D.  
Quality Control

**ACTIVATION LABORATORIES LTD.**  
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	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E812371	0.020	
E812372	0.010	
E812373	0.079	
E812374	0.295	
E812375	0.245	
E812376	1.78	
E812377	0.966	
E812378	1.90	
E812379	1.18	
E812380	< 0.005	
E812381	0.824	
E812382	0.653	
E812383	0.038	
E812384	0.045	
E812385	0.060	
E812386	0.051	
E812387	0.035	
E812388	0.166	
E812389	0.027	
E812390	4.20	
E812391	0.045	
E812392	0.026	
E812393	0.070	
E812394	0.007	
E812395	< 0.005	
E812396	0.018	
E812397	0.005	
E812398	0.006	
E812399	0.006	
E812400	< 0.005	
E812401	0.036	
E812402	0.005	
E812403	0.101	
E812404	0.087	
E812405	0.020	
E812406	0.007	
E812407	0.007	
E812408	0.022	
E812409	3.42	
E812410	0.078	
E812411	0.042	
E812412	0.049	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E812413	0.013	
E812414	0.045	
E812415	0.018	
E812416	0.022	
E812417	0.017	
E812418	0.073	
E812419	0.044	
E812420	0.008	
E812421	0.023	
E812422	0.027	
E812423	0.010	
E812424	0.149	
E812425	0.085	
E812426	0.151	
E812427	0.032	
E812428	0.041	
E812429	6.23	
E812430	7.32	
E812431	0.006	
E812432	0.005	
E812433	0.010	
E812434	0.021	
E812435	0.017	
E812436	0.011	
E812437	0.028	
E812438	0.038	
E812439	0.635	
E812440	< 0.005	
E812441	0.009	
E812442	0.007	
E812443	0.793	
E812444	0.011	
E812445	< 0.005	
E812446	0.012	
E812447	0.032	
E812448	1.38	
E812449	0.062	
E812450	0.513	
E812451	0.170	
E812460	< 0.005	
E812461	0.504	
E812462	2.28	
E812463	0.087	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E812464	0.647	
E812465	0.330	
E812466	0.091	
E812467	0.044	
E812468	0.006	
E812469	0.006	
E812470	> 10.0	13.3
E812471	0.016	
E812472	0.008	
E812473	0.007	
E812474	0.006	
E812475	0.066	
E812476	3.39	
E812477	0.070	
E812478	0.904	
E812479	0.146	
E812480	< 0.005	
E812481	0.024	
E812482	0.088	
E812483	0.030	
E812484	0.020	
E812485	0.011	
E812486	0.058	
E812487	0.016	
E812488	0.008	
E812489	0.011	
E812490	3.25	
E812491	0.027	
E812492	0.020	
E812493	0.030	
E812494	0.012	
E812495	0.068	
E812496	2.33	
E812497	0.714	
E812498	0.308	
E812499	0.070	
E812500	0.005	
E812501	0.030	
E812502	0.029	
E812503	0.038	
E812504	0.032	
E812505	0.018	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E812506	0.096	
E812507	0.019	
E812508	0.015	
E812509	0.038	
E812510	3.31	
E812511	0.019	
E812512	0.045	
E812513	0.034	
E812514	0.023	
E812515	< 0.005	
E812516	< 0.005	
E812517	0.006	
E812518	< 0.005	
E812519	< 0.005	
E812520	< 0.005	
E812521	0.005	
E812522	0.029	
E812523	< 0.005	
E812524	< 0.005	
E812525	0.021	
E812526	0.251	
E812527	0.007	
E812528	< 0.005	
E812529	< 0.005	
E812530	7.40	
E812531	< 0.005	
E812532	< 0.005	
E812533	< 0.005	
E812534	0.006	
E812535	0.084	
E812536	0.006	
E812537	< 0.005	
E812538	< 0.005	
E812539	< 0.005	
E812540	< 0.005	
E812541	< 0.005	
E812542	< 0.005	
E812543	< 0.005	
E812544	< 0.005	
E812545	0.006	
E812546	0.006	
E812547	0.023	
E812548	0.048	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E812549	0.164	
E812550	0.505	
E812551	0.052	
E812552	0.861	
E812553	0.048	
E812554	0.452	
E812555	0.015	
E812556	0.171	
E812557	0.077	
E812558	3.79	
E812559	0.205	
E812560	0.011	
E812561	0.030	
E812562	0.018	
E812563	0.190	
E812564	0.008	
E809824	< 0.005	
E809825	< 0.005	
E809826	< 0.005	
E809827	< 0.005	
E809828	< 0.005	
E809829	0.006	
E809830	7.32	
E809831	0.008	
E809832	< 0.005	
E809833	< 0.005	
E809834	< 0.005	
E809835	< 0.005	
E809836	< 0.005	
E809837	0.007	
E809838	< 0.005	
E809839	< 0.005	
E809840	< 0.005	
E809841	< 0.005	
E809842	< 0.005	
E809843	< 0.005	
E809844	< 0.005	
E809845	0.006	
E809846	0.028	
E809847	0.872	
E809848	2.78	
E809849	0.047	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E809850	0.474	
E809851	0.007	
E809852	< 0.005	
E809853	0.025	
E809854	0.016	
E809855	0.486	
E809856	0.024	
E809857	0.064	
E809858	1.74	
E809859	0.526	
E809860	< 0.005	
E809861	0.017	
E809862	0.023	
E809863	0.114	
E809864	1.49	
E809865	4.79	
E809866	0.024	
E809867	0.043	
E809868	0.010	
E809869	0.034	
E809870	> 10.0	13.3
E809871	0.033	
E809872	0.026	
E809873	5.65	
E809874	3.85	
E809875	0.309	
E809876	0.057	
E809877	0.027	
E809878	0.017	
E809924	0.009	
E809925	0.005	
E809926	0.022	
E809927	0.029	
E809928	0.009	
E809929	0.009	
E809930	7.89	
E809931	0.008	
E809932	0.013	
E809933	0.201	
E809934	0.020	
E809935	0.068	
E809936	0.049	
E809937	0.859	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E809938	0.016	
E809939	0.107	
E809940	< 0.005	
E809941	0.105	
E809942	0.262	
E809943	0.054	
E809944	0.043	
E809945	0.013	
E809946	0.006	
E809947	0.261	
E809948	> 10.0	33.0
E809949	0.032	
E809950	0.543	
E809951	0.026	
E809952	2.39	
E809953	0.189	
E809954	0.025	
E809955	0.021	
E809956	0.028	
E809957	0.355	
E809958	0.030	
E809959	0.072	
E809960	< 0.005	
E809961	0.568	
E809962	0.014	
E809963	0.037	
E809964	0.359	
E809965	0.015	
E809966	0.008	
E809967	0.065	
E809968	0.037	
E809969	0.097	
E809970	> 10.0	13.9
E809971	0.152	
E809972	0.115	
E809973	0.154	
E809974	0.124	
E809975	0.021	
E809976	0.560	
E809977	0.274	
E809978	0.022	
E809979	0.020	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E809980	< 0.005	
E809981	0.069	
E809982	0.086	
E809983	1.28	
E809984	0.040	
E809985	0.185	
E809986	0.013	
E809987	0.006	
E809988	0.007	
E809989	0.006	
E809990	4.02	
E809991	0.016	
E809992	0.022	
E809993	0.238	
E809994	0.076	
E809995	1.03	
E809996	0.030	
E809997	0.042	
E809998	0.025	
E809999	0.473	
E810000	< 0.005	
OREAS 223 (Fire Assay) Meas	1.82	1.81
OREAS 223 (Fire Assay) Cert	1.78	1.78
OREAS 223 (Fire Assay) Meas	1.84	
OREAS 223 (Fire Assay) Cert	1.78	
OREAS 223 (Fire Assay) Meas	1.84	
OREAS 223 (Fire Assay) Cert	1.78	
OREAS 223 (Fire Assay) Meas	1.87	
OREAS 223 (Fire Assay) Cert	1.78	
OREAS 223 (Fire Assay) Meas	1.81	
OREAS 223 (Fire Assay) Cert	1.78	
OREAS 223 (Fire Assay) Meas	1.78	
OREAS 223 (Fire Assay) Cert	1.78	



	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
OREAS 223 (Fire Assay) Meas	1.76	
OREAS 223 (Fire Assay) Cert	1.78	
OREAS 223 (Fire Assay) Meas	1.80	
OREAS 223 (Fire Assay) Cert	1.78	
OREAS 223 (Fire Assay) Meas	1.76	
OREAS 223 (Fire Assay) Cert	1.78	
OREAS 223 (Fire Assay) Meas	1.77	
OREAS 223 (Fire Assay) Cert	1.78	
OREAS 223 (Fire Assay) Meas	1.82	
OREAS 223 (Fire Assay) Cert	1.78	
OREAS 220 (Fire Assay) Meas	0.856	0.90
OREAS 220 (Fire Assay) Cert	0.828	0.828
OREAS 220 (Fire Assay) Meas	0.858	
OREAS 220 (Fire Assay) Cert	0.828	
OREAS 220 (Fire Assay) Meas	0.894	
OREAS 220 (Fire Assay) Cert	0.828	
OREAS 220 (Fire Assay) Meas	0.884	
OREAS 220 (Fire Assay) Cert	0.828	
OREAS 220 (Fire Assay) Meas	0.873	
OREAS 220 (Fire Assay) Cert	0.828	
OREAS 220 (Fire Assay) Meas	0.865	
OREAS 220 (Fire Assay) Cert	0.828	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
OREAS 220 (Fire Assay) Meas	0.874	
OREAS 220 (Fire Assay) Cert	0.828	
OREAS 220 (Fire Assay) Meas	0.857	
OREAS 220 (Fire Assay) Cert	0.828	
OREAS 220 (Fire Assay) Meas	0.854	
OREAS 220 (Fire Assay) Cert	0.828	
OREAS 220 (Fire Assay) Meas	0.863	
OREAS 220 (Fire Assay) Cert	0.828	
E812381 Orig	0.824	
E812381 Dup	0.743	
E812391 Orig	0.045	
E812391 Dup	0.054	
E812399 Orig	0.006	
E812399 Dup	0.013	
E812420 Orig	0.008	
E812420 Dup	0.011	
E812421 Orig	0.023	
E812421 Split	0.025	
E812427 Orig	0.032	
E812427 Dup	0.030	
E812467 Orig	0.044	
E812467 Dup	0.037	
E812476 Orig	3.39	
E812476 Dup	3.17	
E812478 Orig	0.904	
E812478 Split	0.802	
E812503 Orig	0.038	
E812503 Dup	0.034	
E812528 Split	0.005	
E812531 Orig	< 0.005	
E812531 Dup	0.005	
E812538 Orig	< 0.005	
E812538 Dup	< 0.005	
E812540 Orig	< 0.005	
E812540 Dup	< 0.005	
E812560 Orig	0.011	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E812560 Dup	< 0.005	
E809829 Orig	0.006	
E809829 Dup	0.018	
E809837 Orig	0.007	
E809837 Split	0.006	
E809839 Orig	< 0.005	
E809839 Dup	0.005	
E809853 Orig	0.025	
E809853 Dup	0.029	
E809863 Orig	0.114	
E809863 Dup	0.146	
E809873 Orig	5.65	
E809873 Dup	5.17	
E809932 Orig	0.013	
E809932 Split	0.012	
E809933 Orig	0.201	
E809933 Dup	0.258	
E809941 Orig	0.105	
E809941 Dup	0.073	
E809953 Orig	0.189	
E809953 Dup	0.148	
E809967 Orig	0.065	
E809967 Dup	0.053	
E809977 Orig	0.274	
E809977 Dup	0.293	
E809982 Orig	0.086	
E809982 Split	0.100	
E809982 Split	0.100	
E809987 Orig	0.006	
E809987 Dup	0.007	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	0.007	
Method Blank	< 0.005	
Method Blank	< 0.005	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank		< 0.03



**Date Submitted:** 25-Jul-17  
**Invoice No.:** A17-07747  
**Invoice Date:** 09-Aug-17  
**Your Reference:** Exploration

**GOLDCORP Canada Ltd--Musselwhite Mine**  
**P.O. Box 7500**  
**Thunder bay Ontario P7B 6S8**  
**Canada**

**ATTN: Katie Lucas**

## CERTIFICATE OF ANALYSIS

372 Core samples were submitted for analysis.

The following analytical package(s) were requested:

Code 1A2-GC Musselwhite Dryden Au - Fire Assay AA

REPORT **A17-07747**

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

CERTIFIED BY:

A handwritten signature in black ink, appearing to be "Emmanuel Esemé". The signature is stylized and written over a horizontal line.

Emmanuel Esemé , Ph.D.  
Quality Control

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	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E810501	0.019	
E810502	0.024	
E810503	0.025	
E810504	0.038	
E810505	7.15	
E810506	> 10.0	18.9
E810507	2.32	
E810508	0.049	
E810509	0.022	
E810510	2.92	
E810511	0.016	
E810512	0.015	
E810513	0.018	
E810514	0.022	
E810515	0.032	
E810516	0.019	
E810517	0.428	
E810518	4.77	
E810519	6.04	
E810520	0.007	
E810521	2.50	
E810522	0.084	
E810523	0.014	
E810524	0.024	
E810525	0.899	
E810526	0.020	
E810527	0.013	
E810528	0.031	
E810529	0.014	
E810530	7.00	
E810531	0.028	
E810532	0.021	
E810533	0.015	
E810534	0.023	
E810535	4.66	
E810536	0.012	
E810537	0.014	
E810538	0.010	
E810539	0.006	
E810540	< 0.005	
E810541	0.006	
E810542	0.096	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E810543	0.008	
E810544	0.009	
E810545	0.007	
E810546	0.022	
E810547	0.010	
E810548	0.030	
E810549	0.295	
E810550	0.538	
E810551	0.250	
E810552	3.01	
E810553	1.88	
E810554	0.092	
E810555	0.010	
E810556	0.012	
E810557	0.015	
E810558	0.030	
E810559	0.024	
E810560	< 0.005	
E810561	0.208	
E810562	0.052	
E810563	0.038	
E810564	0.030	
E810565	0.035	
E810566	0.042	
E810567	0.020	
E810568	0.021	
E810569	0.021	
E810570	> 10.0	13.8
E810571	0.015	
E810572	0.028	
E810573	0.286	
E810574	0.607	
E810575	0.600	
E810576	1.50	
E810577	2.83	
E810578	0.017	
E810579	0.017	
E810580	< 0.005	
E810581	0.034	
E810582	0.017	
E810583	0.018	
E810584	0.008	
E810585	0.016	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E810586	0.011	
E810587	0.010	
E810588	0.020	
E810589	0.056	
E810590	3.00	
E810591	0.311	
E810592	0.029	
E810593	0.029	
E810594	0.169	
E810595	0.064	
E810596	0.016	
E810597	0.016	
E810598	0.047	
E810599	0.044	
E810600	< 0.005	
E810601	0.015	
E810602	0.060	
E810603	0.089	
E810604	0.011	
E810605	0.014	
E810606	0.014	
E810607	0.029	
E810608	0.013	
E810609	< 0.005	
E810610	3.04	
E810611	0.007	
E810612	0.009	
E810613	0.021	
E810614	0.012	
E810615	0.013	
E810616	0.011	
E810617	0.078	
E810618	0.022	
E810619	0.059	
E810620	< 0.005	
E810621	0.182	
E810622	0.311	
E810623	0.213	
E810624	0.031	
E810625	0.059	
E810626	0.044	
E810627	0.056	



	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E810628	0.043	
E810629	0.037	
E810630	7.14	
E810631	0.640	
E810632	0.402	
E810633	0.032	
E810634	0.022	
E810635	0.032	
E810636	0.107	
E820001	0.010	
E820002	0.027	
E820003	0.023	
E820004	0.010	
E820005	0.021	
E820006	0.095	
E820007	0.048	
E820008	< 0.005	
E820009	0.016	
E820010	2.94	
E820011	0.010	
E820012	0.012	
E820013	0.009	
E820014	0.007	
E820015	0.008	
E820016	0.014	
E820017	0.012	
E820018	0.028	
E820019	0.489	
E820020	< 0.005	
E820021	0.014	
E820022	0.034	
E820023	0.033	
E820024	0.072	
E820025	0.007	
E820026	0.025	
E820027	< 0.005	
E820028	0.027	
E820029	0.028	
E820030	7.22	
E820031	0.007	
E820032	0.014	
E820033	8.53	
E820034	0.012	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E820035	0.006	
E820036	0.016	
E820037	0.013	
E820038	0.009	
E820039	0.014	
E820040	< 0.005	
E820041	0.009	
E820042	0.013	
E820043	0.011	
E820044	0.018	
E820045	0.027	
E820046	0.018	
E820047	0.112	
E820048	0.025	
E820049	0.299	
E820050	0.483	
E820051	0.163	
E820052	0.060	
E820053	0.026	
E820054	0.072	
E820055	0.024	
E820056	0.017	
E820057	0.013	
E820058	0.008	
E820059	0.008	
E820060	< 0.005	
E820061	0.008	
E820062	0.111	
E820063	0.015	
E820064	0.027	
E820065	0.016	
E820066	0.013	
E820067	0.013	
E820068	0.012	
E820069	0.014	
E820070	> 10.0	13.7
E820071	0.011	
E820072	0.007	
E820073	0.261	
E820074	0.082	
E820075	0.011	
E820076	0.013	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E820077	0.029	
E820078	0.012	
E820079	0.027	
E820080	< 0.005	
E820081	0.011	
E820082	0.038	
E820083	0.013	
E820084	0.009	
E820085	0.009	
E820086	0.006	
E820087	0.015	
E820088	0.011	
E820089	0.030	
E820090	3.40	
E820091	0.080	
E820092	0.040	
E820093	> 10.0	18.2
E830064	0.247	
E830065	0.238	
E830066	0.104	
E830067	0.022	
E830068	0.026	
E830069	0.014	
E830070	> 10.0	13.2
E830071	0.012	
E830072	0.040	
E830073	0.289	
E830074	0.072	
E830075	1.20	
E830076	0.481	
E830077	0.023	
E830078	0.327	
E830079	0.047	
E830080	< 0.005	
E830081	0.028	
E830082	0.176	
E830083	0.457	
E830084	1.10	
E830085	0.048	
E830086	1.06	
E830087	0.561	
E830088	0.109	
E830089	0.041	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E830090	3.37	
E830091	0.877	
E830092	1.40	
E830093	0.532	
E830094	1.09	
E830095	0.457	
E830096	0.079	
E830097	0.274	
E830098	0.027	
E830099	0.008	
E830100	< 0.005	
E830101	0.238	
E830102	0.005	
E830103	0.011	
E830104	0.007	
E830105	0.047	
E830106	0.467	
E830107	0.099	
E830108	0.028	
E830109	0.049	
E830110	3.00	
E830111	0.117	
E830112	0.803	
E830113	0.185	
E830114	0.215	
E830115	0.663	
E830116	0.025	
E830117	0.862	
E830118	0.351	
E830119	0.082	
E830120	< 0.005	
E830121	0.290	
E830122	0.207	
E830123	3.13	
E830124	0.167	
E830125	0.081	
E830126	0.049	
E830127	0.013	
E830128	0.098	
E830129	0.012	
E830130	6.93	
E830131	0.170	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E830132	0.037	
E830133	0.245	
E830134	0.182	
E830135	0.086	
E830136	0.374	
E830137	0.359	
E830138	2.57	
E830139	0.185	
E830140	< 0.005	
E830141	4.87	
E830142	3.41	
E830143	0.365	
E830144	3.30	
E830145	2.08	
E830146	> 10.0	14.4
E830147	1.03	
E830148	3.28	
E830149	1.21	
E830150	0.486	
E830151	3.43	
E830152	2.06	
E830153	1.35	
E830154	1.88	
E830155	3.70	
E830156	0.218	
E830157	4.42	
E830158	0.405	
E830159	0.656	
E830160	< 0.005	
E830161	0.080	
E830162	0.316	
E830163	0.139	
E830164	1.13	
E830165	0.444	
E830166	0.127	
E830167	6.74	
E830168	> 10.0	16.9
E830169	0.898	
E830170	> 10.0	13.6
E830171	9.25	
E830172	1.47	
E830173	4.88	
E830174	0.611	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E830175	0.514	
E830176	3.86	
E830177	3.31	
E830178	0.068	
E830179	0.009	
E830180	< 0.005	
E830181	1.13	
E830182	0.018	
E830183	0.027	
E830184	0.210	
E830185	0.165	
E830186	0.404	
E830187	0.017	
E830188	0.013	
E830189	0.130	
E830190	3.57	
E830191	3.50	
E830192	0.217	
E830193	0.011	
E830194	0.006	
E830195	0.012	
E830196	0.027	
E830197	0.014	
E830198	0.006	
E830199	0.009	
E830200	< 0.005	
E830201	< 0.005	
E830202	0.007	
E830203	0.008	
E830204	0.005	
E830205	0.006	
E830206	0.007	
OREAS 214 Meas		3.02
OREAS 214 Cert		3.03
OREAS 216 (Fire Assay) Meas		6.69
OREAS 216 (Fire Assay) Cert		6.66
OREAS 223 (Fire Assay) Meas	1.73	
OREAS 223 (Fire Assay) Cert	1.78	
OREAS 223 (Fire Assay) Meas	1.82	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
OREAS 223 (Fire Assay) Cert	1.78	
OREAS 223 (Fire Assay) Meas	1.82	
OREAS 223 (Fire Assay) Cert	1.78	
OREAS 223 (Fire Assay) Meas	1.79	
OREAS 223 (Fire Assay) Cert	1.78	
OREAS 223 (Fire Assay) Meas	1.77	
OREAS 223 (Fire Assay) Cert	1.78	
OREAS 223 (Fire Assay) Meas	1.74	
OREAS 223 (Fire Assay) Cert	1.78	
OREAS 223 (Fire Assay) Meas	1.77	
OREAS 223 (Fire Assay) Cert	1.78	
OREAS 223 (Fire Assay) Meas	1.76	
OREAS 223 (Fire Assay) Cert	1.78	
OREAS 223 (Fire Assay) Meas	1.77	
OREAS 223 (Fire Assay) Cert	1.78	
OREAS 223 (Fire Assay) Meas	1.82	
OREAS 223 (Fire Assay) Cert	1.78	
OREAS 223 (Fire Assay) Meas	1.75	
OREAS 223 (Fire Assay) Cert	1.78	
OREAS 223 (Fire Assay) Meas	1.78	
OREAS 223 (Fire Assay) Cert	1.78	
OREAS 220 (Fire Assay) Meas	0.881	
OREAS 220 (Fire Assay) Cert	0.828	
OREAS 220 (Fire Assay) Meas	0.862	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
OREAS 220 (Fire Assay) Cert	0.828	
OREAS 220 (Fire Assay) Meas	0.867	
OREAS 220 (Fire Assay) Cert	0.828	
OREAS 220 (Fire Assay) Meas	0.867	
OREAS 220 (Fire Assay) Cert	0.828	
OREAS 220 (Fire Assay) Meas	0.853	
OREAS 220 (Fire Assay) Cert	0.828	
OREAS 220 (Fire Assay) Meas	0.835	
OREAS 220 (Fire Assay) Cert	0.828	
OREAS 220 (Fire Assay) Meas	0.835	
OREAS 220 (Fire Assay) Cert	0.828	
OREAS 220 (Fire Assay) Meas	0.842	
OREAS 220 (Fire Assay) Cert	0.828	
OREAS 220 (Fire Assay) Meas	0.846	
OREAS 220 (Fire Assay) Cert	0.828	
OREAS 220 (Fire Assay) Meas	0.856	
OREAS 220 (Fire Assay) Cert	0.828	
OREAS 220 (Fire Assay) Meas	0.851	
OREAS 220 (Fire Assay) Cert	0.828	
OREAS 220 (Fire Assay) Meas	0.857	
OREAS 220 (Fire Assay) Cert	0.828	
E810515 Orig	0.032	
E810515 Dup	0.044	
E810522 Orig	0.084	
E810522 Dup	0.076	
E810533 Orig	0.015	



	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E810533 Dup	0.015	
E810545 Orig	0.007	
E810545 Dup	0.006	
E810551 Orig	0.250	
E810551 Split	0.166	
E810555 Orig	0.010	
E810555 Dup	0.008	
E810565 Orig	0.035	
E810565 Dup	0.029	
E810580 Orig	< 0.005	
E810580 Dup	< 0.005	
E810589 Orig	0.056	
E810589 Dup	0.049	
E810598 Orig	0.047	
E810598 Dup	0.035	
E810601 Orig	0.015	
E810601 Split	0.015	
E810618 Orig	0.022	
E810618 Dup	0.022	
E810625 Orig	0.059	
E810636 Orig	0.107	
E810636 Dup	0.090	
E820013 Orig	0.009	
E820013 Dup	0.009	
E820014 Orig	0.007	
E820014 Split	0.006	
E820022 Orig	0.034	
E820022 Dup	0.021	
E820031 Orig	0.007	
E820031 Dup	0.007	
E820051 Orig	0.163	
E820058 Orig	0.008	
E820058 Dup	0.008	
E820064 Orig	0.027	
E820064 Split	0.027	
E820069 Orig	0.014	
E820069 Dup	0.015	
E820080 Orig	< 0.005	
E820080 Dup	< 0.005	
E820091 Orig	0.080	
E820091 Dup	0.080	
E830071 Orig	0.012	
E830071 Dup	0.011	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E830084 Orig	1.10	
E830084 Split	1.29	
E830085 Orig	0.048	
E830085 Dup	0.055	
E830095 Orig	0.457	
E830095 Dup	0.462	
E830105 Orig	0.047	
E830105 Dup	0.038	
E830134 Orig	0.182	
E830134 Split	0.205	
E830142 Orig	3.41	
E830142 Dup	2.89	
E830158 Orig	0.405	
E830158 Dup	0.346	
E830176 Orig	3.86	
E830176 Dup	4.47	
E830184 Orig	0.210	
E830184 Split	0.329	
E830188 Orig	0.013	
E830188 Dup	0.016	
E830198 Orig	0.006	
E830198 Dup	0.006	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
Method Blank	0.005	
Method Blank	< 0.005	
Method Blank		< 0.03



**Date Submitted:** 26-Jul-17  
**Invoice No.:** A17-07799  
**Invoice Date:** 16-Aug-17  
**Your Reference:** Exploration

**GOLDCORP Canada Ltd--Musselwhite Mine**  
**P.O. Box 7500**  
**Thunder bay Ontario P7B 6S8**  
**Canada**

**ATTN: Katie Lucas**

## CERTIFICATE OF ANALYSIS

379 Core samples were submitted for analysis.

The following analytical package(s) were requested:

Code 1A2-GC Musselwhite Dryden Au - Fire Assay AA

REPORT **A17-07799**

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Notes:

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

CERTIFIED BY:

A handwritten signature in black ink, appearing to be "Emmanuel Esemé". The signature is stylized and somewhat cursive, written over a horizontal line.

Emmanuel Esemé , Ph.D.  
Quality Control

**ACTIVATION LABORATORIES LTD.**  
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	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E810637	0.031	
E810638	0.032	
E810639	0.014	
E810640	0.006	
E810641	0.078	
E810642	0.036	
E810643	0.270	
E810644	0.020	
E810645	0.019	
E810646	0.024	
E810647	0.062	
E810648	0.044	
E810649	0.270	
E810650	0.468	
E810651	0.126	
E810652	0.021	
E810653	0.024	
E810654	0.121	
E810655	0.151	
E810656	1.24	
E810657	0.412	
E810658	0.553	
E810659	0.082	
E810660	0.009	
E810661	0.040	
E810662	0.022	
E810663	0.021	
E810664	0.024	
E810665	1.13	
E810666	0.142	
E810667	0.887	
E810668	0.018	
E810669	0.201	
E810670	> 10.0	13.5
E810671	0.019	
E810672	0.145	
E810673	0.041	
E810674	0.028	
E810675	0.118	
E810676	0.502	
E810677	1.46	
E810678	0.484	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E810679	0.787	
E810680	< 0.005	
E810681	1.46	
E810682	0.180	
E810683	0.610	
E810684	5.92	
E810685	1.32	
E810686	0.110	
E810687	0.170	
E810688	0.085	
E810689	0.010	
E810690	3.27	
E810691	0.007	
E810692	0.016	
E810693	0.029	
E810694	0.124	
E810695	0.990	
E810696	0.638	
E810697	0.021	
E810698	< 0.005	
E810699	0.014	
E810700	< 0.005	
E820094	0.045	
E820095	0.072	
E820096	0.022	
E820097	0.118	
E820098	0.039	
E820099	0.015	
E820100	0.005	
E820101	0.014	
E820102	0.162	
E820103	0.133	
E820104	0.009	
E820105	0.018	
E820106	0.018	
E820107	0.073	
E820108	0.045	
E820109	0.013	
E820110	3.53	
E820111	0.046	
E820112	0.012	
E820113	0.008	
E820114	0.010	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E820115	0.010	
E820116	0.008	
E820117	0.016	
E820118	0.048	
E820119	0.044	
E820120	0.005	
E820121	0.009	
E820122	0.009	
E820123	0.193	
E820124	0.191	
E820125	0.062	
E820126	0.049	
E820127	1.01	
E820128	0.049	
E820129	0.059	
E820130	7.34	
E820131	0.208	
E820132	0.020	
E820133	0.050	
E820134	0.768	
E820135	0.018	
E820136	0.011	
E820137	0.005	
E820138	0.103	
E820139	0.013	
E820140	< 0.005	
E820141	0.051	
E820142	0.030	
E820143	0.020	
E820144	0.087	
E820145	0.037	
E820146	0.024	
E820147	0.033	
E820148	0.019	
E820149	0.011	
E820150	0.601	
E820151	0.017	
E820152	0.019	
E820153	0.018	
E820154	0.013	
E820155	0.011	
E820156	0.015	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E820157	0.018	
E820158	0.047	
E820159	0.018	
E820160	< 0.005	
E820161	0.023	
E820162	1.25	
E820163	0.385	
E820164	0.284	
E820165	0.320	
E820166	0.027	
E820167	0.009	
E820168	0.010	
E820169	0.029	
E820170	> 10.0	14.9
E820171	> 10.0	34.3
E820172	0.035	
E820173	0.127	
E820174	0.011	
E820175	0.018	
E820176	0.022	
E820177	0.183	
E820178	0.008	
E820179	0.008	
E820180	< 0.005	
E820181	0.007	
E820182	0.007	
E820183	0.012	
E820184	0.012	
E820185	0.051	
E820186	0.013	
E820187	0.009	
E820188	0.010	
E820189	0.018	
E820190	3.54	
E820191	0.009	
E820192	< 0.005	
E820193	< 0.005	
E820194	0.007	
E820195	0.006	
E820196	< 0.005	
E820197	0.009	
E820198	< 0.005	
E820199	< 0.005	



	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E820200	< 0.005	
E820201	< 0.005	
E820202	0.006	
E820203	0.008	
E820204	0.013	
E820205	0.067	
E820206	0.469	
E820207	0.014	
E820208	0.007	
E820209	0.008	
E820210	3.27	
E820211	0.017	
E820212	1.69	
E820213	0.063	
E820214	0.018	
E820215	0.010	
E820216	0.077	
E820217	0.009	
E820218	0.143	
E820219	0.007	
E820220	< 0.005	
E820221	0.012	
E820222	0.012	
E820223	0.013	
E820224	0.010	
E820225	0.005	
E820226	0.007	
E820227	0.006	
E820228	0.006	
E820229	0.006	
E820230	7.07	
E820231	0.006	
E820232	0.005	
E820233	0.008	
E820234	0.006	
E820235	< 0.005	
E820236	< 0.005	
E820237	0.007	
E820238	0.138	
E820239	0.028	
E820240	< 0.005	
E820241	0.018	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E820242	0.007	
E820243	0.009	
E820244	0.014	
E820245	0.007	
E820246	0.011	
E820247	0.011	
E820248	0.998	
E820249	0.075	
E820250	0.453	
E820251	0.108	
E820252	0.064	
E820253	0.055	
E820254	0.050	
E820255	0.006	
E820256	< 0.005	
E820257	0.007	
E820258	0.010	
E820259	> 10.0	15.9
E820260	0.009	
E820261	0.228	
E820262	0.019	
E820263	0.045	
E820264	0.011	
E820265	0.010	
E820266	0.010	
E820267	0.008	
E820268	0.013	
E820269	0.008	
E820270	> 10.0	12.9
E820271	0.016	
E820272	1.57	
E820273	0.150	
E820274	0.021	
E820275	0.012	
E820276	0.016	
E820277	0.057	
E820278	0.011	
E820279	0.017	
E820280	< 0.005	
E820281	0.011	
E820282	0.012	
E820283	0.067	
E820284	0.197	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E820285	0.016	
E820286	0.352	
E820287	0.010	
E820288	0.009	
E820289	0.011	
E820290	3.43	
E820291	0.035	
E820292	0.015	
E820293	0.023	
E820294	0.017	
E820295	0.015	
E820296	0.361	
E820297	0.045	
E820298	0.013	
E820299	0.012	
E820300	< 0.005	
E820301	0.034	
E820302	0.027	
E820303	0.016	
E820304	0.014	
E820305	0.046	
E820306	0.089	
E820307	4.00	
E820308	3.53	
E820309	0.064	
E820310	3.16	
E820311	1.20	
E820312	1.31	
E820313	0.090	
E820314	9.13	
E820315	8.28	
E820316	0.234	
E820317	0.870	
E820318	0.049	
E820319	0.013	
E820320	< 0.005	
E820321	0.020	
E820322	0.009	
E820323	0.009	
E820324	0.009	
E820325	0.015	
E820326	0.099	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E820327	0.157	
E820328	0.011	
E820329	< 0.005	
E820330	7.26	
E820331	0.009	
E820332	0.020	
E820333	0.147	
E820334	0.394	
E820335	0.090	
E820336	0.200	
E820337	0.059	
E820338	0.011	
E820339	0.009	
E820340	< 0.005	
E820341	< 0.005	
E820342	0.015	
E820343	0.428	
E820344	0.054	
E820345	0.012	
E820346	0.009	
E820347	0.007	
E820348	0.006	
E820349	0.008	
E820350	0.642	
E820351	0.015	
E820352	0.020	
E820353	1.80	
E820354	0.739	
E820355	3.98	
E820356	0.065	
E820357	0.386	
E820358	0.156	
E820359	0.052	
E820360	< 0.005	
E820361	0.012	
E820362	0.009	
E820363	0.037	
E820364	0.106	
E820365	0.018	
E820366	0.023	
E820367	0.022	
E820368	0.007	
E820369	0.007	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E820370	> 10.0	14.8
E820371	0.078	
E820372	0.007	
E820373	0.038	
E820374	0.067	
E820375	0.115	
E820376	0.104	
E820377	0.252	
E820378	0.288	
E820379	0.032	
E820380	< 0.005	
E820381	0.060	
E820382	0.159	
E820383	0.188	
E820384	0.186	
E820385	0.120	
E820386	0.199	
E820387	0.016	
E820388	< 0.005	
E820389	0.007	
E820390	3.79	
E820391	0.024	
E820392	0.043	
E820393	0.006	
E820394	0.005	
E820395	< 0.005	
E820396	0.005	
E820397	0.006	
E820398	0.006	
E820399	0.014	
E820400	< 0.005	
E820401	0.007	
E820402	0.013	
E820403	0.006	
E820404	0.006	
E820405	0.012	
E820406	0.011	
E820407	0.008	
E820408	0.012	
OREAS 214 Meas		3.15
OREAS 214 Cert		3.03
OREAS 214 Meas		2.92

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
OREAS 214 Cert		3.03
OREAS 216 (Fire Assay) Meas		6.78
OREAS 216 (Fire Assay) Cert		6.66
OREAS 216 (Fire Assay) Meas		6.66
OREAS 216 (Fire Assay) Cert		6.66
OREAS 223 (Fire Assay) Meas	1.86	
OREAS 223 (Fire Assay) Cert	1.78	
OREAS 223 (Fire Assay) Meas	1.85	
OREAS 223 (Fire Assay) Cert	1.78	
OREAS 223 (Fire Assay) Meas	1.76	
OREAS 223 (Fire Assay) Cert	1.78	
OREAS 223 (Fire Assay) Meas	1.82	
OREAS 223 (Fire Assay) Cert	1.78	
OREAS 223 (Fire Assay) Meas	1.81	
OREAS 223 (Fire Assay) Cert	1.78	
OREAS 223 (Fire Assay) Meas	1.81	
OREAS 223 (Fire Assay) Cert	1.78	
OREAS 223 (Fire Assay) Meas	1.89	
OREAS 223 (Fire Assay) Cert	1.78	
OREAS 223 (Fire Assay) Meas	1.77	
OREAS 223 (Fire Assay) Cert	1.78	
OREAS 223 (Fire Assay) Meas	1.84	
OREAS 223 (Fire Assay) Cert	1.78	
OREAS 223 (Fire Assay) Meas	1.83	
OREAS 223 (Fire Assay) Cert	1.78	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
Assay) Cert		
OREAS 223 (Fire Assay) Meas	1.83	
OREAS 223 (Fire Assay) Cert	1.78	
OREAS 223 (Fire Assay) Meas	1.79	
OREAS 223 (Fire Assay) Cert	1.78	
OREAS 220 (Fire Assay) Meas	0.892	
OREAS 220 (Fire Assay) Cert	0.828	
OREAS 220 (Fire Assay) Meas	0.840	
OREAS 220 (Fire Assay) Cert	0.828	
OREAS 220 (Fire Assay) Meas	0.860	
OREAS 220 (Fire Assay) Cert	0.828	
OREAS 220 (Fire Assay) Meas	0.869	
OREAS 220 (Fire Assay) Cert	0.828	
OREAS 220 (Fire Assay) Meas	0.865	
OREAS 220 (Fire Assay) Cert	0.828	
OREAS 220 (Fire Assay) Meas	0.874	
OREAS 220 (Fire Assay) Cert	0.828	
OREAS 220 (Fire Assay) Meas	0.882	
OREAS 220 (Fire Assay) Cert	0.828	
OREAS 220 (Fire Assay) Meas	0.845	
OREAS 220 (Fire Assay) Cert	0.828	
OREAS 220 (Fire Assay) Meas	0.856	
OREAS 220 (Fire Assay) Cert	0.828	
OREAS 220 (Fire Assay) Meas	0.896	
OREAS 220 (Fire Assay) Cert	0.828	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
Assay) Cert		
OREAS 220 (Fire Assay) Meas	0.860	
OREAS 220 (Fire Assay) Cert	0.828	
OREAS 220 (Fire Assay) Meas	0.872	
OREAS 220 (Fire Assay) Cert	0.828	
OREAS 220 (Fire Assay) Meas	0.860	
OREAS 220 (Fire Assay) Cert	0.828	
E810647 Orig	0.062	
E810647 Dup	0.059	
E810686 Orig	0.120	
E810686 Split	0.117	
E810686 Orig	0.110	
E810686 Dup	0.130	
E810693 Orig	0.029	
E810693 Dup	0.026	
E820097 Orig	0.118	
E820097 Dup	0.166	
E820109 Orig	0.013	
E820109 Dup	0.013	
E820129 Orig	0.059	
E820129 Split	0.088	
E820147 Orig	0.033	
E820147 Dup	0.037	
E820154 Orig	0.013	
E820154 Dup	0.014	
E820165 Orig	0.320	
E820165 Dup	0.251	
E820178 Orig	0.008	
E820178 Dup	0.008	
E820179 Orig	0.008	
E820179 Split	0.005	
E820187 Orig	0.009	
E820187 Dup	0.009	
E820196 Orig	< 0.005	
E820196 Dup	< 0.005	
E820211 Orig	0.017	
E820211 Dup	0.017	
E820221 Orig	0.012	



	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E820221 Dup	0.010	
E820229 Orig	0.006	
E820229 Split	0.007	
E820231 Orig	0.006	
E820231 Dup	0.008	
E820245 Orig	0.007	
E820245 Dup	0.009	
E820255 Orig	0.006	
E820255 Dup	0.005	
E820265 Orig	0.010	
E820265 Dup	0.010	
E820279 Orig	0.017	
E820279 Split	0.015	
E820285 Orig	0.016	
E820285 Dup	0.015	
E820292 Orig	0.015	
E820292 Dup	0.016	
E820303 Orig	0.016	
E820303 Dup	0.017	
E820324 Orig	0.009	
E820324 Dup	0.010	
E820329 Orig	< 0.005	
E820329 Split	0.005	
E820334 Orig	0.394	
E820334 Dup	0.391	
E820349 Orig	0.008	
E820349 Dup	0.008	
E820358 Orig	0.156	
E820358 Dup	0.128	
E820367 Orig	0.022	
E820367 Dup	0.021	
E820379 Orig	0.032	
E820379 Split	0.036	
E820388 Orig	< 0.005	
E820388 Dup	0.006	
E820395 Orig	< 0.005	
E820395 Dup	< 0.005	
E820406 Orig	0.011	
E820406 Dup	0.013	
Method Blank	0.007	
Method Blank	0.008	
Method Blank	< 0.005	
Method Blank	< 0.005	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
Method Blank	< 0.005	
Method Blank	0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	0.005	
Method Blank		< 0.03
Method Blank		< 0.03
Method Blank	< 0.005	

Appendix IV  
2017 Invoices and Receipts

Appendix V  
2018 Diamond Drill Hole Logs

## Diamond Drill Hole Major Lithology Code Legend

1	Unsubdivided Ultramafic Intrusive Unit
2	Unsubdivided Mafic Metavolcanic Flow
6	Unsubdivided Clastic Metasedimentary Unit
13	Lamprophyre Dyke
2A	Massive, Fine- to Medium-Grained Mafic Flow
2H	Mafic to Intermediate Tuff Breccia
2J	Medium to Course Grained Flow Centres
2K	Mafic Dykes, Sills and Other Small Intrusions
2M	Chlorite-Actinolite Schist
2T	Biotitized Mafic Metavolcanic Unit
2U	Garnetiferous Mafic Metavolcanic Unit
3A	Intermediate Metavolcanic Flow
3B	Intermediate Pyroclastic Breccia, Tuff Breccia
3C	Intermediate Tuff, Lapilli Tuff
3F	Felsic Lapilli Tuff
3H	Quartz-Plagioclase Porphyry
3P	Intermediate Dykes, Sills, and Small Intrusions
4A	Gruneritized and Silicified Chert-Magnetite Banded Iron Formation
4B	Chert-Magnetite Banded Iron Formation
4BF	Chert-Magnetite-Biotite-Garnet Banded Iron Formation
4E	Garnet Amphibole Iron Formation
4EA	Garnet Amphibole Grunerite Iron Formation
4EF	Garnet Amphibole Iron Formation With Intercalated Clastics
4F	Biotite Garnet Schist
4FE	Biotite Garnet Schist With intercalated Garnet Amphibole Iron Formation
4H	Pyrrhotite Cemented Breccia
6B	Matrix Supported Conglomerate
6W	Garnetiferous Meta-Mudstone/Siltstone/Sandstone
7A	Gabbro
8B	Quartz Diorite
QTZ VN	Massive Quartz Vein

# MUSSELWHITE MINE - GEOLOGY

Hole: **18-NSD-001**

Project: **NSD**

Mine Grid Easting: 7862.649

Planned Depth(m): 2150

Drill Start Date: 5/12/2018

Mine Grid Northing: 15631.576

Actual Depth (m): 2010

Drill End Date: 7/25/2018

Elevation: 5302.04

Core Diameter: NQ2

Mining Lease: LEA-107584

UTM East:

Plugged: YES

**Target 1: PQD**

UTM North:

Grout Test: NO

**Target 2:**

UTM NAD 1983 Zone 15N

Result: NO RESULTS

**Target 3:**

Drill Instructions:

Collar Comments: Methane Fault DEGASSED @ 1695.1m for 2.5 hours

Logged by Musselwhite Mine geologists Andrew Stone P.Geo and Michael D'Angelo

## Survey

Depth	Azimuth	Dip	SurveyType
0	85.038	-84.006	SURV
9	85.4	-84.3	GYRO SHOT
24	86.5	-84.1	GYRO SHOT
54	92.3	-83.4	GYRO SHOT
69	93.6	-83.2	GYRO SHOT
90	93.4	-83.2	GYRO SHOT
108	94.1	-83.2	GYRO SHOT
114	93	-83.2	GYRO SHOT
123	80.3	-82.8	GYRO SHOT
129	83.7	-82.1	GYRO SHOT
141	85.85	-82.3	GYRO SHOT
153	87.05	-82.17	GYRO SHOT
165	88.78	-82.02	GYRO SHOT
177	88.47	-81.94	GYRO SHOT
189	90	-81.9	GYRO SHOT
201	89.94	-81.91	GYRO SHOT
213	93.46	-81.78	GYRO SHOT
225	94.63	-81.48	GYRO SHOT
237	99.15	-81.43	GYRO SHOT
249	101.42	-80.82	GYRO SHOT
261	100.17	-80.63	GYRO SHOT
273	100.45	-80.38	GYRO SHOT
282	94.24	-79.68	GYRO SHOT
294	100.23	-79.13	GYRO SHOT
306	98.2	-78.89	GYRO SHOT
318	102.83	-78.64	GYRO SHOT
330	99.34	-78.33	GYRO SHOT
342	101.05	-77.42	GYRO SHOT
354	101.79	-77.19	GYRO SHOT
366	101.8	-76.82	GYRO SHOT
378	103.42	-76.48	GYRO SHOT
387	103.33	-76.44	GYRO SHOT
399	105.14	-76.15	GYRO SHOT
408	99.67	-75.48	GYRO SHOT
420	98.61	-75.03	GYRO SHOT
432	92.83	-75.01	GYRO SHOT
444	92.4	-74.73	GYRO SHOT
456	93.25	-74.49	GYRO SHOT
468	92.79	-74.15	GYRO SHOT
480	93.38	-73.89	GYRO SHOT
492	94.01	-73.72	GYRO SHOT
504	94.67	-73.62	GYRO SHOT
513	94.42	-73.33	GYRO SHOT
522	92.42	-74.71	GYRO SHOT
534	92.12	-74.58	GYRO SHOT
546	93.72	-74.46	GYRO SHOT
558	93.18	-74.31	GYRO SHOT
570	92.81	-74.25	GYRO SHOT
594	94.93	-73.49	GYRO SHOT
606	95.67	-72.94	GYRO SHOT
621	94.31	-73.09	GYRO SHOT
624	94.12	-73.14	GYRO SHOT
633	92.05	-74.02	GYRO SHOT
648	92.61	-73.53	GYRO SHOT

# MUSSELWHITE MINE - GEOLOGY

Hole: **18-NSD-001**

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Mine Grid Easting: 7862.649

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Mine Grid Northing: 15631.576

Actual Depth (m): 2010

Drill End Date: 7/25/2018

Elevation: 5302.04

Core Diameter: NQ2

Mining Lease: LEA-107584

UTM East:

Plugged: YES

**Target 1: PQD**

UTM North:

Grout Test: NO

**Target 2:**

UTM NAD 1983 Zone 15N

Result: NO RESULTS

**Target 3:**

Drill Instructions:

Collar Comments: Methane Fault DEGASSED @ 1695.1m for 2.5 hours  
 Logged by Musselwhite Mine geologists Andrew Stone P.Geo and Michael D'Angelo

## Survey

Depth	Azimuth	Dip	SurveyType
657	91.68	-74.77	GYRO SHOT
669	94.1	-74.16	GYRO SHOT
678	91.77	-75.19	GYRO SHOT
690	93.67	-74.62	GYRO SHOT
699	92.37	-76.07	GYRO SHOT
702	92.98	-76.24	GYRO SHOT
708	93.88	-76.1	GYRO SHOT
717	94.29	-77.72	GYRO SHOT
729	94.53	-77.6	GYRO SHOT
738	96.05	-78.89	GYRO SHOT
753	96.43	-78.72	GYRO SHOT
765	97.26	-78.53	GYRO SHOT
777	97.81	-78.41	GYRO SHOT
801	97.23	-78.13	GYRO SHOT
813	98.98	-77.99	GYRO SHOT
825	98.07	-77.91	GYRO SHOT
837	99.24	-77.79	GYRO SHOT
849	99.43	-77.68	GYRO SHOT
861	100.28	-77.78	GYRO SHOT
873	101.28	-77.74	GYRO SHOT
885	100.99	-77.56	GYRO SHOT
897	101.93	-77.52	GYRO SHOT
909	101.5	-77.34	GYRO SHOT
921	104.47	-77.22	GYRO SHOT
927	104.37	-77.13	GYRO SHOT
933	103.9	-77.08	GYRO SHOT
945	103.24	-76.93	GYRO SHOT
957	104.37	-76.83	GYRO SHOT
969	107.17	-76.82	GYRO SHOT
981	96.69	-76.2	GYRO SHOT
993	96.69	-75.99	GYRO SHOT
1011	98.91	-75.62	GYRO SHOT
1023	100.57	-75.58	GYRO SHOT
1038	100.12	-75.53	GYRO SHOT
1053	100.85	-75.39	GYRO SHOT
1065	101.27	-75.35	GYRO SHOT
1077	101.9	-75.28	GYRO SHOT
1089	103.21	-75.29	GYRO SHOT
1101	103.56	-75.15	GYRO SHOT
1113	104.64	-75.1	GYRO SHOT
1125	105.11	-74.99	GYRO SHOT
1137	105.01	-75	GYRO SHOT
1149	105	-74.93	GYRO SHOT
1161	105.54	-74.91	GYRO SHOT
1173	105.85	-74.85	GYRO SHOT
1185	105.9	-74.85	GYRO SHOT
1197	106.79	-74.88	GYRO SHOT
1209	106.03	-74.78	GYRO SHOT
1227	107.09	-74.7	GYRO SHOT
1239	106.69	-74.73	GYRO SHOT
1251	107.46	-74.81	GYRO SHOT
1263	107.74	-74.75	GYRO SHOT
1275	108.1	-74.76	GYRO SHOT
1287	109.16	-74.69	GYRO SHOT

# MUSSELWHITE MINE - GEOLOGY

Hole: **18-NSD-001**

Project: **NSD**

Mine Grid Easting: 7862.649

Planned Depth(m): 2150

Drill Start Date: 5/12/2018

Mine Grid Northing: 15631.576

Actual Depth (m): 2010

Drill End Date: 7/25/2018

Elevation: 5302.04

Core Diameter: NQ2

Mining Lease: LEA-107584

UTM East:

Plugged: YES

**Target 1: PQD**

UTM North:

Grout Test: NO

**Target 2:**

UTM NAD 1983 Zone 15N

Result: NO RESULTS

**Target 3:**

Drill Instructions:

Collar Comments: Methane Fault DEGASSED @ 1695.1m for 2.5 hours

Logged by Musselwhtie Mine geologists Andrew Stone P.Geog and Michael D'Angelo

## Survey

Depth	Azimuth	Dip	SurveyType
1293	107.75	-74.64	GYRO SHOT
1305	104.71	-75.96	GYRO SHOT
1315.5	105.02	-75.71	GYRO SHOT
1326	99.46	-74.92	GYRO SHOT
1338	99.77	-74.77	GYRO SHOT
1350	99.32	-74.63	GYRO SHOT
1362	101.65	-74.5	GYRO SHOT
1374	100.36	-74.34	GYRO SHOT
1386	101.98	-74.25	GYRO SHOT
1398	101.59	-74.25	GYRO SHOT
1410	101.83	-74.16	GYRO SHOT
1422	104.17	-73.87	GYRO SHOT
1434	102.39	-73.88	GYRO SHOT
1446	102.32	-73.78	GYRO SHOT
1461	104.77	-73.73	GYRO SHOT
1473	103.13	-73.74	GYRO SHOT
1485	103.49	-73.65	GYRO SHOT
1497	105.02	-73.59	GYRO SHOT
1509	105.24	-73.43	GYRO SHOT
1521	104.77	-73.4	GYRO SHOT
1533	106.64	-73.2	GYRO SHOT
1545	105.3	-73.16	GYRO SHOT
1557	105.71	-73.09	GYRO SHOT
1569	106.52	-72.99	GYRO SHOT
1581	108.16	-73.17	GYRO SHOT
1593	108.21	-72.98	GYRO SHOT
1605	108.29	-72.93	GYRO SHOT
1617	108.86	-72.77	GYRO SHOT
1629	108.71	-72.49	GYRO SHOT
1641	109.5	-72.35	GYRO SHOT
1653	109.18	-72.17	GYRO SHOT
1665	109.25	-71.87	GYRO SHOT
1677	110.04	-71.81	GYRO SHOT
1689	110.62	-71.69	GYRO SHOT
1701	110.8	-71.59	GYRO SHOT
1713	111.31	-71.43	GYRO SHOT
1725	110.92	-71.38	GYRO SHOT
1737	111.38	-71.28	GYRO SHOT
1752	112.3	-71.14	GYRO SHOT
1764	112.23	-71.14	GYRO SHOT
1776	112.19	-71.06	GYRO SHOT
1788	113.08	-70.95	GYRO SHOT
1800	113.3	-70.66	GYRO SHOT
1812	113.6	-70.5	GYRO SHOT
1824	114.85	-70.34	GYRO SHOT
1836	116.82	-69.57	GYRO SHOT
1848	118.23	-69.54	GYRO SHOT
1860	118.43	-69.53	GYRO SHOT
1872	119.69	-69.49	GYRO SHOT
1884	120.51	-69.48	GYRO SHOT
1896	121.39	-69.48	GYRO SHOT
1908	122.08	-69.44	GYRO SHOT
1920	122.67	-68.92	GYRO SHOT
1932	123.98	-68.82	GYRO SHOT



# MUSSELWHITE MINE - GEOLOGY

Hole: **18-NSD-001**

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Mine Grid Easting: 7862.649

Planned Depth(m): 2150

Drill Start Date: 5/12/2018

Mine Grid Northing: 15631.576

Actual Depth (m): 2010

Drill End Date: 7/25/2018

Elevation: 5302.04

Core Diameter: NQ2

Mining Lease: LEA-107584

UTM East:

Plugged: YES

**Target 1: PQD**

UTM North:

Grout Test: NO

**Target 2:**

UTM NAD 1983 Zone 15N

Result: NO RESULTS

**Target 3:**

Drill Instructions:

Collar Comments: Methane Fault DEGASSED @ 1695.1m for 2.5 hours

Logged by Musselwhite Mine geologists Andrew Stone, P.Geo and Michael D'Angelo

## Survey

Depth	Azimuth	Dip	SurveyType
1944	123.82	-68.72	GYRO SHOT
1956	124.56	-68.43	GYRO SHOT
1962	124.56	-68.22	GYRO SHOT
1980	126.56	-67.75	GYRO SHOT
1992	127.23	-67.69	GYRO SHOT
2004	127.78	-67.13	GYRO SHOT

































































































18-NSD-001

Depth	Assay				MAJOR UNIT							MINOR UNIT		ALTERATION									
	Sample	From	To	AU ppm	From	To	Unit	Col	Text	Comments	Comments	Unit	Comments	Bio	Car	Chl	Gru	Hem	Ser	Si	Comments		
1720	E882223	1722.5	1723.5	0.005	1717.4	1725.5	3F	G	FOL	Fg grey, mod foliated, felsic lapilli tuff. Non-magnetic. Abundant mg white relict lapilli. Mod-strong banded ser alteration. Continuation of overlying 3F, but with more intense methane faulting and staining of the unit	overprinting much of the original lapilli.												
	E882224	1723.5	1724.5	0.005																			
	E882225	1724.5	1725.5	0.005																			
	E882226	1725.5	1726.5	0.006	1725.5	1729.9	4F	BK	POR BL	Fg black, porphyroblastic grt-bt schist. Non-magnetic. ~30% cg red grt porphyroblasts in a bt-schist matrix. 1% planar white Qz veins. Brittle fault from 1726.1-1727.4m.													
	E882227	1726.4	1727.4	0.049																			
	E882228	1727.3	1728.3	0.005																			
	E882229	1728.2	1729.2	0.005																			
	E882231	1729	1729.9	0.007																			
	1730	E882232	1729.9	1729.9	0.009	1729.9	1730.4	4F	DG	POR BL	Fg dark green, porphyroblastic, mod foliated grt-amp schist. Non-magnetic. ~20% cg red grt porphyroblasts in a green amp schist matrix. 3-5% Qz stringers. 0.5% po wisps.												
		E882233	1730.4	1731.3	0.008	1730.4	1731.3	4F	BK	POR BL	Fg black, porphyroblastic grt-bt schist. Non-magnetic. ~30% cg red grt porphyroblasts in a bt-schist matrix. 1% planar white Qz veins. Gradational LC with 6W.												
E882234		1731.3	1731.3	0.005	1731.3	1732.4	6W	G	POR BL	Fg grey/black, weakly foliated, porphyroblastic grt-bearing metasediments. Non-magnetic. 3-5% cg red grt porphyroblasts in a bt-rich, metasedimentary matrix.													
E882235		1731.9	1731.9	0.005																			
E882236		1732.4	1733.3	0.03	1732.4	1739.7	4FE	BK	POR BL	Fg black and dark-green banded, porphyroblastic grt-bt schist with grt-amp schist beds. Weakly magnetic locally. ~40% cg red grt porphyroblasts in a bt- and amp-schist matrix. Irregular bands of grt-bt and grt-amp schist,	with local bands of agglomerated grt. 10% folded white Qz veins. 0.5-1% interstitial and thready po.												
E882237		1733.3	1733.9	0.158																			
E882238		1734.2	1734.4	0.282																			
E882239		1735.1	1735.4	0.121																			
E882241		1735.7	1736.3	0.193																			
E882242		1736.3	1737.2	1.18																			
E882243	1737.2	1738.1	0.611																				
E882244	1738.1	1738.7	1.73																				
1740	E882245	1738.9	1739.7	0.154	1739.7	1751.2	2	G	FOL	Fg grey/green-grey, mod foliated mafic volcanics. Non-magnetic. Weak patchy bt alteration throughout, with mod banded bt alteration locally. 1-3% wispy Qz-carb stringers locally. Sharp LC with underlying ultramafic.													
	E882246	1739.7	1740.3	0.023																			
	E882247	1740.7	1741.2	0.026																			
	E882248	1741.7	1742.7	0.031																			
1745			1738.1		1739.7	1751.2	2	G	FOL	Fg grey/green-grey, mod foliated mafic volcanics. Non-magnetic. Weak patchy bt alteration throughout, with mod banded bt alteration locally. 1-3% wispy Qz-carb stringers locally. Sharp LC with underlying ultramafic.													
			1738.9																				
			1739.7																				
			1740.7																				
			1741.7																				
1755			1751.2		1751.2	1756.6	1	G	FOL	Fg grey, mod foliated ultramafic. Weakly magnetic (SI = 1.2-98.6). Mod pervasive dark-grey serp-mag alteration. Local pale-grey/white seams of tic alteration. Basal 40cm is greener in colour than rest of unit.	Brittle fault zone starts at 1755.9m and continues across contact with underlying mafic volcanics.												
			1756.6																				
			1760.3																				
1760			1761.3		1756.6	1763.3	2	GG	FOL	Fg grey/green-grey, mod foliated mafic volcanics. Non-magnetic. Weak patchy bt alteration throughout, with mod banded bt alteration locally. 25-30% planar white Qz veins 1759.1-1760m. A number of brittle faults cut the unit.													
	E882249	1760.3	1761.3	0.016																			
	E882251	1761.3	1762.3	0.009																			











18-NSD-001

Depth	Assay				MAJOR UNIT					MINOR UNIT		ALTERATION																							
	Sample	From	To	AU ppm	From	To	Unit	Col	Text	Comments	Comments	Unit	Comments	Bio	Car	Chl	Gru	Hem	Ser	Si	Comments														
	E882373	1921.5	1922.5	0.335	1915	1922.5	4EA	GG	BA	Grey-green; fine grained; well banded. Moderately developed grt-grun-amph iron formation. Transitional interval from well-developed 4EA to 4BF. Grun is being replaced by DG amph and biotite. Trace to 2% fine grained blebby threads and diss PO.	1-3 irreg qtz-cb veins/m. Gradational LC																								
	E882374	1922.5	1923.5	0.038																															
	E882375	1923.5	1924.5	0.039																															
	E882376	1924.5	1925.5	0.046																															
	E882377	1925.5	1926.5	0.011																															
	E882378	1926.5	1927.5	0.04																															
	E882379	1927.5	1928.5	0.022																															
	E882381	1928	1928.5	0.648																															
	E882382	1928.8	1929.8	0.01																															
	E882383	1929.8	1930.8	0.037	1922.5	1932.2	4BF	GG	BA	Grey-green; fine grained; well banded. Clastic chert-magnetite iron formation. Weak to mod patchy grun alt on margins of grt-bio bands. Subtle HZ's observed as wispy bio-chl and qtz flooding. Trace to 2% fine grained blebby stringers of PO	associated with grun alt and HZ's. Moderately folded. Gradational LC as clastic beds become less prominent.																								
	E882384	1930.8	1931.5	0.012																															
	E882385	1931.5	1932.2	0.026																															
	E882386	1932.2	1933	0.262																															
	E882387	1933	1934	0.016																															
	E882388	1934	1935	0.017																															
	E882389	1935	1936	0.352																															
	E882391	1936	1939	0.089																															
	E882392	1937	1940	0.089																															
	E882393	1938	1942	0.045	1932.2	1940.3	4B	GG	LA	Dark greenish-grey, aph, chert-mag IF (4B) alternating laminations, strongly magnetic. Rare minor grt-bt bands associated w/ increased strain, local HZ's causing moderate distortion and trace po min. 1-5 grey qz veins per m. LC is gradational.																									
	E882394	1939	1943	0.008																															
	E882395	1939.4	1944	0.006																															
	E882396	1940.3	1944	0.005																															
	E882397	1941	1945	0.052																															
	E882398	1942	1946	0.283																															
	E882399	1943	1946	0.005																															
	E882401	1944	1946	0.008																															
	E882402	1944.7	1947	0.023																															
	E882403	1945.4	1948	0.013	1940.3	1945.4	4BF	GG	BA	Dark greenish-grey/blue, aph, chert-mag IF w/ abundant grt-bt bands (4BF) weakly distorted to planar alternating bands, strongly magnetic. Local carb alteration of chert bands. Patchy grey qz stringers/flooding. Trace local disseminated po.	LC is gradational.																								
	E882404	1946	1948	0.011																															
	E882405	1946.5	1949	0.007																															
	E882406	1946.8	1950	0.01																															
	E882407	1947.6	1950	0.023																															
	E882408	1948.6	1950	0.056																															
	E882409	1949.4	1950	5.88																															
	E882411	1950	1951	8.81																															
	E882412	1950.5	1951	1.61																															
	E882413	1950.9	1951	0.93																															
	E882414	1951.5	1952	0.959	1945.4	1947.6	4EA	GG	BA	Greenish-grey/beige, aph groundmass, poorly developed grt-gru-amp IF (4EA) alternating planar banding, fgr porph grts, strongly magnetic. Poor grt amp development. Local trace (~0.25%) po disseminations. LC is gradational.																									
	E882415	1951.8	1952	0.018																															
	E882416	1952.4	1953	0.006																															
	E882417	1953	1954	0.008																															
	E882418	1954	1955	0.008																															
	E882419	1955	1956	0.05																															
	E882421	1956	1956	1.08																															
	E882422	1956.4	1957	3.67																															
	E882423	1956.8	1958	0.125																															
	E882424	1957.8	1958	0.008	1947.6	1959.5	4BF	GG	BA	Dark greenish-grey/blue, aph, chert-mag IF w/ abundant grt-bt bands (4BF) planar to strongly distorted laminae, fgr porph grts, strongly magnetic. Local carb alt of chert bands.	Sporadic HZ's causing strong qz flooding and associated w/ 6-16% blebs and wisps of po min. LC is gradational.																								
	E882425	1958.8	1959	0.021																															
	E882426	1959.5	1960	0.025																															
	E882427	1960.5	1961	10.4																															
	E882428	1961	1962	0.036																															
	E882429	1962	1963	0.107																															
	E882426	1959.5	1961	0.025																1959.5	1988.1	4B	DG	LA	Dark green/blue, aph, chert-mag IF (4B) planar alternating laminae, locally distorted, strongly magnetic. Grey qz veining throughout locally hosting 30% wisps and blebs of po. 2-20mm bio-grt bands occur locally up to 10%. Gradational LC as	magnetite bands become less prevalent.									
	E882427	1960.5	1961	10.4																															
	E882428	1961	1962	0.036																															







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Depth	MAJOR UNIT			MINERALS							QTZ VEINING							FABRIC					FOLD					FAULT										
	From	To	Unit	As%	Cp%	Mt%	Po%	Py%	VG Specks	Comments	From	To	Vein Type	Vein %	Tex	Contact Type	Alpha deg	Comments	From	To	Alpha deg	Int	Type	Comments	From	To	Alpha deg	Int	Type	Comments	From	To	Alpha deg	Int	Type	Comments		
37.8	42.5	7A									1.4	42.5	CA	3					40	40.1	25	MOD	S1															
42.5	43.1																																					
43.1	50.3	7A									44	55.3	QZ-CA	3					51.1	51.2	10	MOD	S1															
50.3	51.5																																					
51.5	55.6	7A																																				
55.6	57.1	QTZ-VN									55.6	57.1	QZ-WH	90																								
57.1	93.3	7A									57.7	85.7	QZ-CA	3					60	60.1	30	MOD	S1															
60																																						
61.5	61.6																																					
77.3																																						

mod distortion, wispy qz-carb abundance increases, strong patchy bt

79 83 20 WEK HZ









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Depth	MAJOR UNIT			MINERALS							QTZ VEINING							FABRIC					FOLD					FAULT												
	From	To	Unit	As%	Cp%	Mt%	Po%	Py%	VG Specks	Comments	From	To	Vein Type	Vein %	Tex	Contact Type	Alpha deg	Comments	From	To	Alpha deg	Int	Type	Comments	From	To	Alpha deg	Int	Type	Comments	From	To	Alpha deg	Int	Type	Comments				
194.7	203.1	2																																						
203.1	211.7	2								203.1	206.7	QZ-CA	75						205.9	206	5	MOD	S1																	
207.2	212									207.2	212	CA	10																											
211.7	221.5	2																	213	213.1	45	MOD	S1																	
218.7	223.5									218.7	223.5	CA	8						220.9	221	50	MOD	S1																	
221.5	223.7	2M																																						
223.7	264.5	2								224.9	234.5	QZ-WH	3						232	232.1	35	MOD	S1																	

intense qz-ca veining and carb alt, fabric become shallower; almost parallel TCA.

Intense talc alt, thick crack seal carb/white qz veins.





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Depth	MAJOR UNIT			MINERALS							QTZ VEINING							FABRIC					FOLD					FAULT									
	From	To	Unit	As%	Cp%	Mt%	Po%	Py%	VG Specks	Comments	From	To	Vein Type	Vein %	Tex	Contact Type	Alpha deg	Comments	From	To	Alpha deg	Int	Type	Comments	From	To	Alpha deg	Int	Type	Comments	From	To	Alpha deg	Int	Type	Comments	
325																			322	322.1	25	MOD	S1														
											324.9	327.6	QZ-WH	2																							
330	298.9	341.5	2																329	329.1	40	MOD	S1														
340	341.5	341.8	GW				3	1.5			341.1	341.2	QZ-FDS	95					342	342.1	40	MOD	S1														
345	341.8	351.2	2																					344.6	344.7	40	MOD	SF		343.7	346.5	40	MOD	HZ			
350	351.2	351.7	2																																		
355	351.7	400.5	2																																		
																														353	353.2		MOD	BR	cgr fault gauge		

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Depth	MAJOR UNIT			MINERALS							QTZ VEINING							FABRIC					FOLD					FAULT											
	From	To	Unit	As%	Cp%	Mt%	Po%	Py%	VG Specks	Comments	From	To	Vein Type	Vein %	Tex	Contact Type	Alpha deg	Comments	From	To	Alpha deg	Int	Type	Comments	From	To	Alpha deg	Int	Type	Comments	From	To	Alpha deg	Int	Type	Comments			
											360.4	363.1	QZ-WH	2																									
365																			364.8	364.9	40	MOD	S1																
370																																							
											372.8	373.5	QZ-GS	5							372	372.1	45	MOD	S1														
375																									374.4	375.6	40	MODE											
380	351.7	400.5	2																	379.9	380	45	MOD	S1															
385																																							
390																				390	390.1	45	MOD	S1															
395											395	399	QZ-CA	2																									
																				398.9	399	50	MOD	S1															
																										397.4	397.5	45	MODE	KF									sinistral offset

























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Depth	MAJOR UNIT			MINERALS							QTZ VEINING							FABRIC						FOLD						FAULT												
	From	To	Unit	As%	Cp%	Mt%	Po%	Py%	VG Specks	Comments	From	To	Vein Type	Vein %	Tex	Contact Type	Alpha deg	Comments	From	To	Alpha deg	Int	Type	Comments	From	To	Alpha deg	Int	Type	Comments	From	To	Alpha deg	Int	Type	Comments						
	792.5	801.7	2H																															792.5	801.7	45	WEK	HZ				
																			802.8	802.9	50	MOD	S1																			
805	801.7	811.1	2				1.5				803.1	808.1	CA	20																			803.2	808.1	55	INT	SZ					
810																																										
																																			811	814	50	INT	SZ			
815																																										
820	811.1	833.8	3F								811	830.1	CA	20																												
825																																				814	834.3	20	INT	SZ		
830																																										
	833.8	834.8	GW				1																												834.5	834.6	15	MOD	SF			
835	834.8	841.9	3F																																							
											839.3	841.9	QZ	15																						834.8	841.9	30	MOD E	HZ		









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Depth	MAJOR UNIT			MINERALS							QTZ VEINING							FABRIC					FOLD					FAULT											
	From	To	Unit	As%	Cp%	Mt%	Po%	Py%	VG Specs	Comments	From	To	Vein Type	Vein %	Tex	Contact Type	Alpha deg	Comments	From	To	Alpha deg	Int	Type	Comments	From	To	Alpha deg	Int	Type	Comments	From	To	Alpha deg	Int	Type	Comments			
972.5	1002.4	[Redacted]																																					
1005		[Green pattern]				3																																	
1006.6	1010	[Redacted]									1006.6	1010	QZ-C A	4					1007.5	1007.6	35	MOD	S1																
1010		[Green pattern]																																					
1002.4	1021.4	[Redacted]									1010	1014.3	QZ-C A	10																									
1015		[Green pattern]																																					
1015		[Green pattern]																																					
1015		[Green pattern]																																					
1020		[Green pattern]																																					
1021.4	1022.5	[Redacted]																	1021.5	1021.6	40	MOD	S0																
1021.4	1035	[Redacted]																																					
1021.4	1022.5	[Redacted]																																					
1022.6	1074.8	[Redacted]									1022.6	1074.8	QZ	5																									
1029	1029.1	[Redacted]																																					
1031.4	1031.5	[Redacted]																																					
1032.9	1033	[Redacted]																																					
1033.9	1034	[Redacted]																																					
1035		[Green pattern]																																					
1035	1042	[Redacted]																																					
1039.6	1042	[Redacted]																																					
		[Redacted]																																					
		[Redacted]																																					
		[Redacted]																																					
		[Redacted]																																					
		[Redacted]																																					

fractured core - predominantly drill induced

















18-NSD-001

Depth	MAJOR UNIT			MINERALS							QTZ VEINING							FABRIC					FOLD					FAULT										
	From	To	Unit	As%	Cp%	Mt%	Po%	Py%	VG Specks	Comments	From	To	Vein Type	Vein %	Tex	Contact Type	Alpha deg	Comments	From	To	Alpha deg	Int	Type	Comments	From	To	Alpha deg	Int	Type	Comments	From	To	Alpha deg	Int	Type	Comments		
1325																			1325	1325.1	40	MOD	S1															
1330	1301.8	1343.4	3F																																			
1335																																						
1340																																						
1345	1343.4	1344.8	2																1345	1345.1	35	MOD	S1															
1350																																						
1355	1344.8	1415.8	3F				0.5				1346.6	1387.8	QZ-C A	20					1354	1354.1	30	MOD	S1															intense carb veining and strain overprinting what appears to be angular, brittle fault clasts in areas

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Depth	MAJOR UNIT			MINERALS						QTZ VEINING							FABRIC					FOLD					FAULT															
	From	To	Unit	As%	Cp%	Mt%	Po%	Py%	VG Specks	Comments	From	To	Vein Type	Vein %	Tex	Contact Type	Alpha deg	Comments	From	To	Alpha deg	Int	Type	Comments	From	To	Alpha deg	Int	Type	Comments	From	To	Alpha deg	Int	Type	Comments						
1365																																										
1370																																										
1375											1346.6	1387.8	QZ-CA	20					1374	1374.1	40	MOD	S1																			
1380	1344.8	1415.8	3F																																							
1385							0.5																																			
1390																																										
1395							1												1394	1394.1	35	MOD	S1																			
																								1395.8	1395.9	60	MOD	FD														

intense carb veining and strain overprinting what appears to be angular, brittle fault clasts in areas

















18-NSD-001

Depth	MAJOR UNIT			MINERALS						QTZ VEINING						FABRIC					FOLD					FAULT												
	From	To	Unit	As%	Cp%	Mt%	Po%	Py%	VG Specs	Comments	From	To	Vein Type	Vein %	Tex	Contact Type	Alpha deg	Comments	From	To	Alpha deg	Int	Type	Comments	From	To	Alpha deg	Int	Type	Comments	From	To	Alpha deg	Int	Type	Comments		
1685	1667.4	1688.2	3F				1																															
1690	1688.2	1690.6	6W				0.25																															
	1690.6	1691.7	4EF				0.25																															
	1691.7	1692.7	4				1																															
1695																		1694	1694.1	50	MOD	S1																
1700	1692.7	1705.5	3F																																			
1705	1705.5	1705.9	QT VN																																			
1710																																						
	1705.9	1717.4	3F																																			
1715																																						
	1717.4	1725.5	3F																																			

DEGASSED multiple thin, healed splays with greenish staining

1cm wide healed methane fault with pink staining

multiple thin healed splays with greenish staining

abundant thin, cross-cutting splays with pink/green staining that bleeds into bedding planes of host rocks. Local 1-2cm wide healed breccias.

18-NSD-001

Depth	MAJOR UNIT			MINERALS							QTZ VEINING							FABRIC					FOLD					FAULT																
	From	To	Unit	As%	Cp%	Mt%	Po%	Py%	VG Specks	Comments	From	To	Vein Type	Vein %	Tex	Contact Type	Alpha deg	Comments	From	To	Alpha deg	Int	Type	Comments	From	To	Alpha deg	Int	Type	Comments	From	To	Alpha deg	Int	Type	Comments								
1725	1717.4	1725.5	3F																																		abundant thin, cross-cutting splay with pink/green staining that bleeds into bedding planes of host rocks. Local 1-2cm wide healed breccias.							
	1725.5	1729.9	4F																1726.4	1726.5	55	WEK	S1													1726	1727.4	60	MOD E	BR				
	1729.9	1730.4	4F				0.5																																					
	1730.4	1731.3	4F																																									
	1731.3	1732.4	6W																																									
1735	1732.4	1739.7	4FE				0.5				1734.5	1738.4	QZ-W H	10					1735.3	1735.4	50	MOD	FD																					
1740																																												
1745	1739.7	1751.2	2																																									
1750																																												
1755	1751.2	1756.6	1																																									
	1756.6	1763.3	2																																									
											1759.1	1760	QZ-W H	25																									1755.9	1757.1	40	WEK	BR	
																																							1758.8	1759	45	INT	BR	

















# MUSSELWHITE MINE - GEOLOGY

Hole: **18-NSD-002**

Project: **NSD**

Mine Grid Easting: 8223.715

Planned Depth(m): 1700

Drill Start Date: 5/23/2018

Mine Grid Northing: 14594.597

Actual Depth (m): 575

Drill End Date: 8/10/2018

Elevation: 5305.001

Core Diameter: NQ2

Mining Lease: LEA-107532

UTM East:

Plugged: YES

**Target 1: WEL-A**

UTM North:

Grout Test: NO

**Target 2:**

UTM NAD 1983 Zone 15N

Result: NO RESULTS

**Target 3:**

Drill Instructions: EOH is GEO CALL

To be drilled by Boart Longyear at an azimuth of 309.2 degrees (true North) and a dip of -82 degrees

Collar Comments:

## Survey

Depth	Azimuth	Dip	SurveyType
0	265.049	-82.022	SURV
9	265.2	-82.25	GYRO SHOT
21	265.6	-82.2	GYRO SHOT
34	265.3	-82.3	GYRO SHOT
47	266.3	-82.2	GYRO SHOT
68	265.7	-82.3	GYRO SHOT
80	261.3	-82.3	GYRO SHOT
140	259.4	-81.2	GYRO SHOT
152	259.9	-81.8	GYRO SHOT
164	259.6	-81.8	GYRO SHOT
176	258.6	-81.8	GYRO SHOT
200	258.6	-81.4	GYRO SHOT
212	258.1	-81.29	GYRO SHOT
224	259.3	-81.19	GYRO SHOT
236	258.1	-81.4	GYRO SHOT
248	257.8	-81.06	GYRO SHOT
260	259.57	-80.95	GYRO SHOT
272	257.15	-80.95	GYRO SHOT
284	258.63	-80.82	GYRO SHOT
296	259.15	-80.66	GYRO SHOT
308	259.7	-80.62	GYRO SHOT
320	257.55	-80.51	GYRO SHOT
332	257.71	-80.34	GYRO SHOT
344	259.06	-80.21	GYRO SHOT
356	259.63	-79.96	GYRO SHOT
368	259.61	-79.94	GYRO SHOT
380	258.92	-79.8	GYRO SHOT
428	258.38	-79.42	GYRO SHOT
440	260.23	-79.31	GYRO SHOT
452	261.05	-79.34	GYRO SHOT
464	261.1	-79.24	GYRO SHOT
476	259.44	-79.29	GYRO SHOT
488	260.45	-79.25	GYRO SHOT
500	260.54	-79.36	GYRO SHOT
512	261.6	-79.26	GYRO SHOT
524	261.8	-79.32	GYRO SHOT
536	260.3	-79.74	GYRO SHOT
548	260.27	-79.66	GYRO SHOT



















































18-NSD-002

Depth	MAJOR UNIT			MINERALS						QTZ VEINING						FABRIC					FOLD					FAULT														
	From	To	Unit	As%	Cp%	Mt%	Po%	Py%	VG Specs	Comments	From	To	Vein Type	Vein %	Tex	Contact Type	Alpha deg	Comments	From	To	Alpha deg	Int	Type	Comments	From	To	Alpha deg	Int	Type	Comments	From	To	Alpha deg	Int	Type	Comments				
236.1	281.8	3B																																						
281.8	291.7																		288	288.1	25	MOD	S0																	
291.7	312.5	6B																	301	301.1	15	MOD	S1																	
312.5	373.9	6B																	315	315.1	10	MOD	S1																	
																										316.8	316.9	5	MOD	FD										











Depth	MAJOR UNIT			MINERALS							QTZ VEINING							FABRIC						FOLD						FAULT					
	From	To	Unit	As%	Cp%	Mt%	Po%	Py%	VG Specks	Comments	From	To	Vein Type	Vein %	Tex	Contact Type	Alpha deg	Comments	From	To	Alpha deg	Int	Type	Comments	From	To	Alpha deg	Int	Type	Comments	From	To	Alpha deg	Int	Type
485																																			
490	454	498.9	7A																																
495																		495	495.1	20	MOD	S1													
500	498.9	501.6	3B																											498.9	501.6	25	MOD E	SZ	
	501.6	503.7	2																																
	503.7	504.2	3H																											503.2	503.7	25	WEK	HZ	2-3% millimeter scale cb veins
505	504.2	506.3	2																																
	506.3	509.6																												506.3	509.6				
510																														507.3	507.7	35	MOD E	HZ	
																														510.3	511.8	25	MOD E	HZ	
515	509.6	522.2	2																																



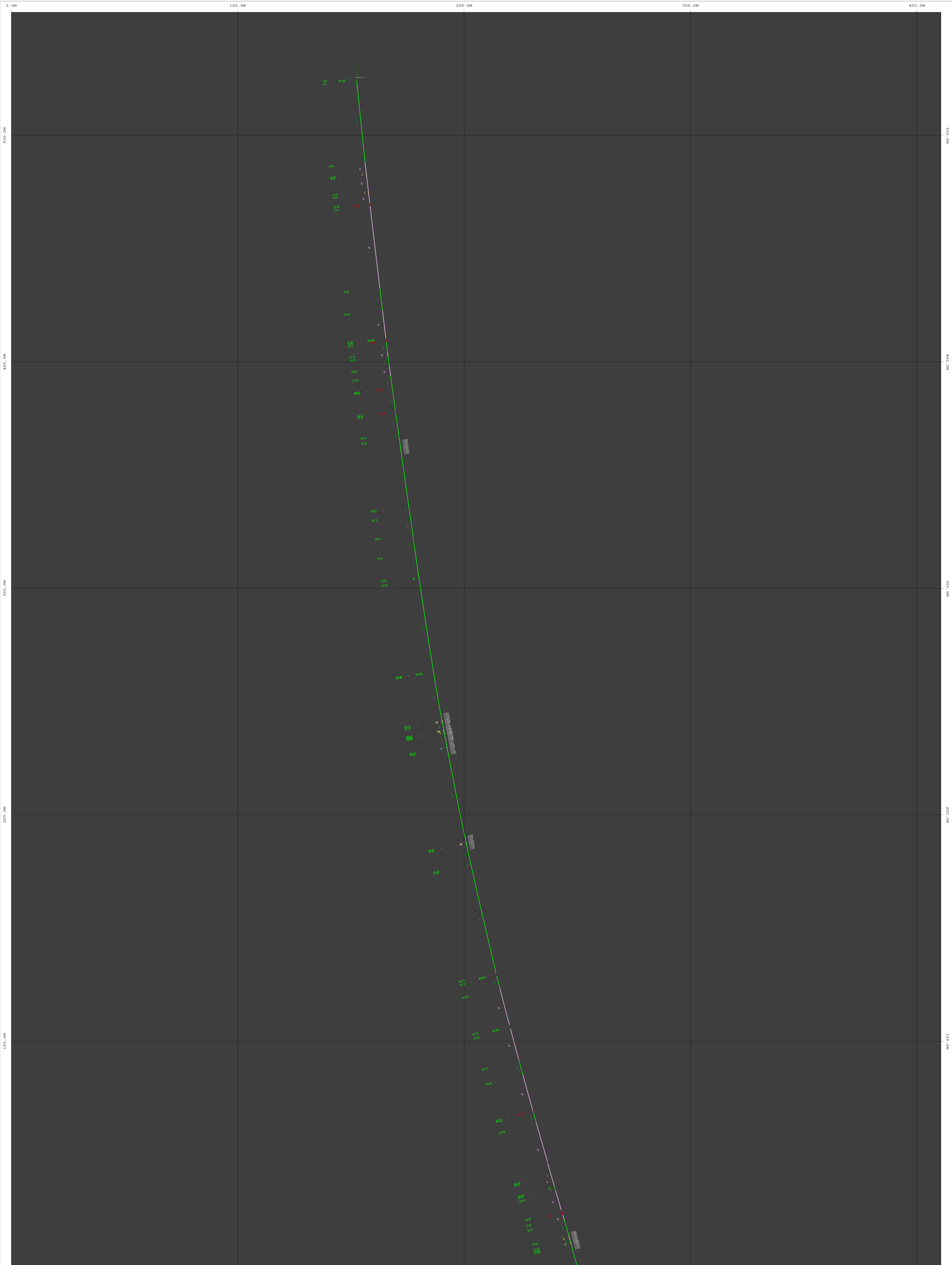


Appendix VI  
2018 Annotated Drill Hole Cross Sections

## Diamond Drill Hole Major Lithology Code Legend

1	Unsubdivided Ultramafic Intrusive Unit
2	Unsubdivided Mafic Metavolcanic Flow
6	Unsubdivided Clastic Metasedimentary Unit
13	Lamprophyre Dyke
2A	Massive, Fine- to Medium-Grained Mafic Flow
2H	Mafic to Intermediate Tuff Breccia
2J	Medium to Course Grained Flow Centres
2K	Mafic Dykes, Sills and Other Small Intrusions
2M	Chlorite-Actinolite Schist
2T	Biotitized Mafic Metavolcanic Unit
2U	Garnetiferous Mafic Metavolcanic Unit
3A	Intermediate Metavolcanic Flow
3B	Intermediate Pyroclastic Breccia, Tuff Breccia
3C	Intermediate Tuff, Lapilli Tuff
3F	Felsic Lapilli Tuff
3H	Quartz-Plagioclase Porphyry
3P	Intermediate Dykes, Sills, and Small Intrusions
4A	Gruneritized and Silicified Chert-Magnetite Banded Iron Formation
4B	Chert-Magnetite Banded Iron Formation
4BF	Chert-Magnetite-Biotite-Garnet Banded Iron Formation
4E	Garnet Amphibole Iron Formation
4EA	Garnet Amphibole Grunerite Iron Formation
4EF	Garnet Amphibole Iron Formation With Intercalated Clastics
4F	Biotite Garnet Schist
4FE	Biotite Garnet Schist With intercalated Garnet Amphibole Iron Formation
4H	Pyrrhotite Cemented Breccia
6B	Matrix Supported Conglomerate
6W	Garnetiferous Meta-Mudstone/Siltstone/Sandstone
7A	Gabbro
8B	Quartz Diorite
QTZ VN	Massive Quartz Vein

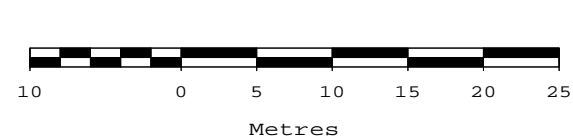


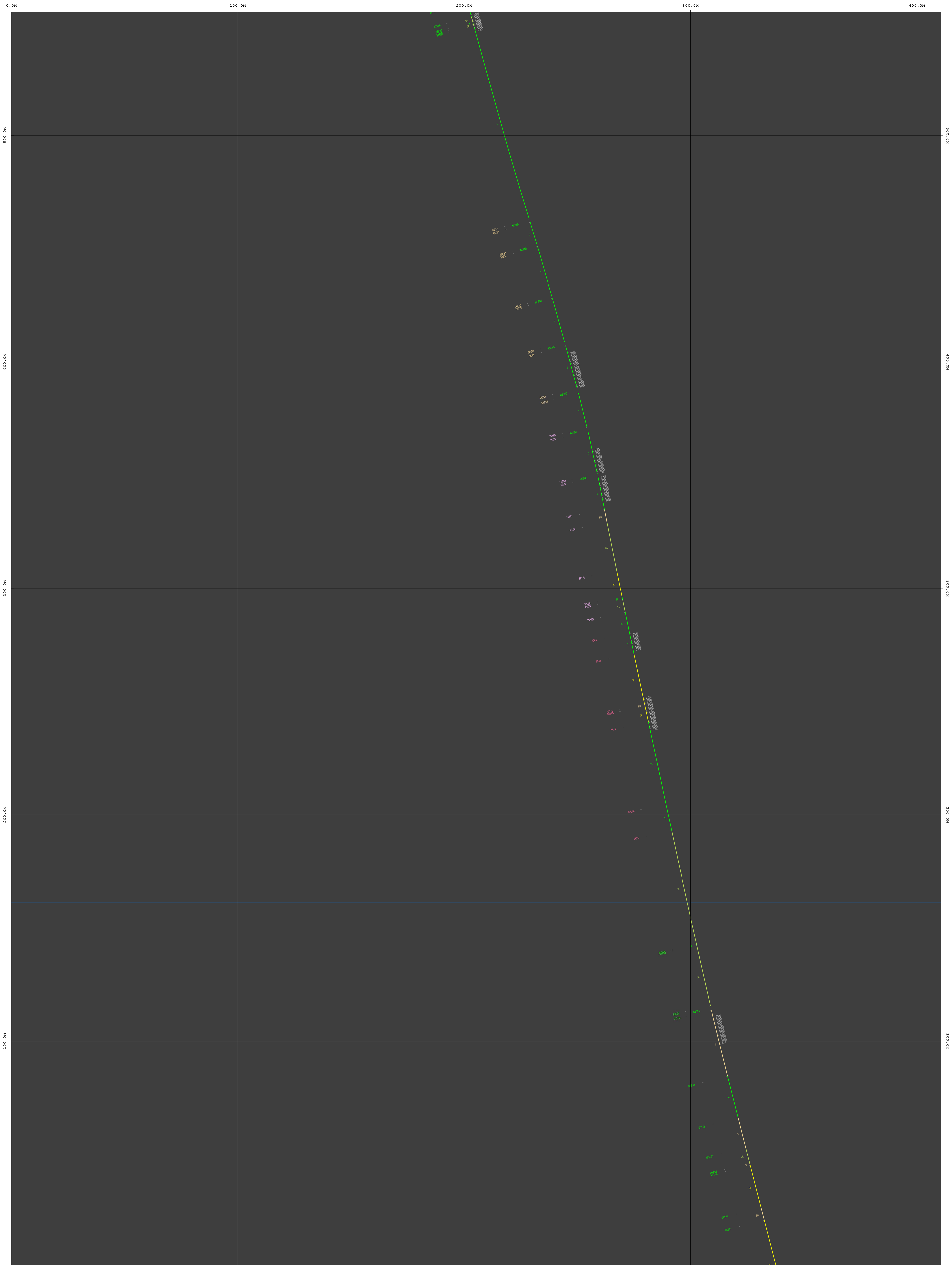


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Goldcorp Canada Ltd.  
 Musselwhite Mine  
 North Shore Project

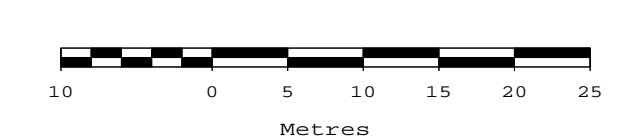
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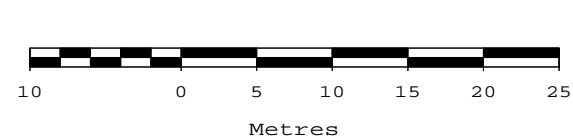
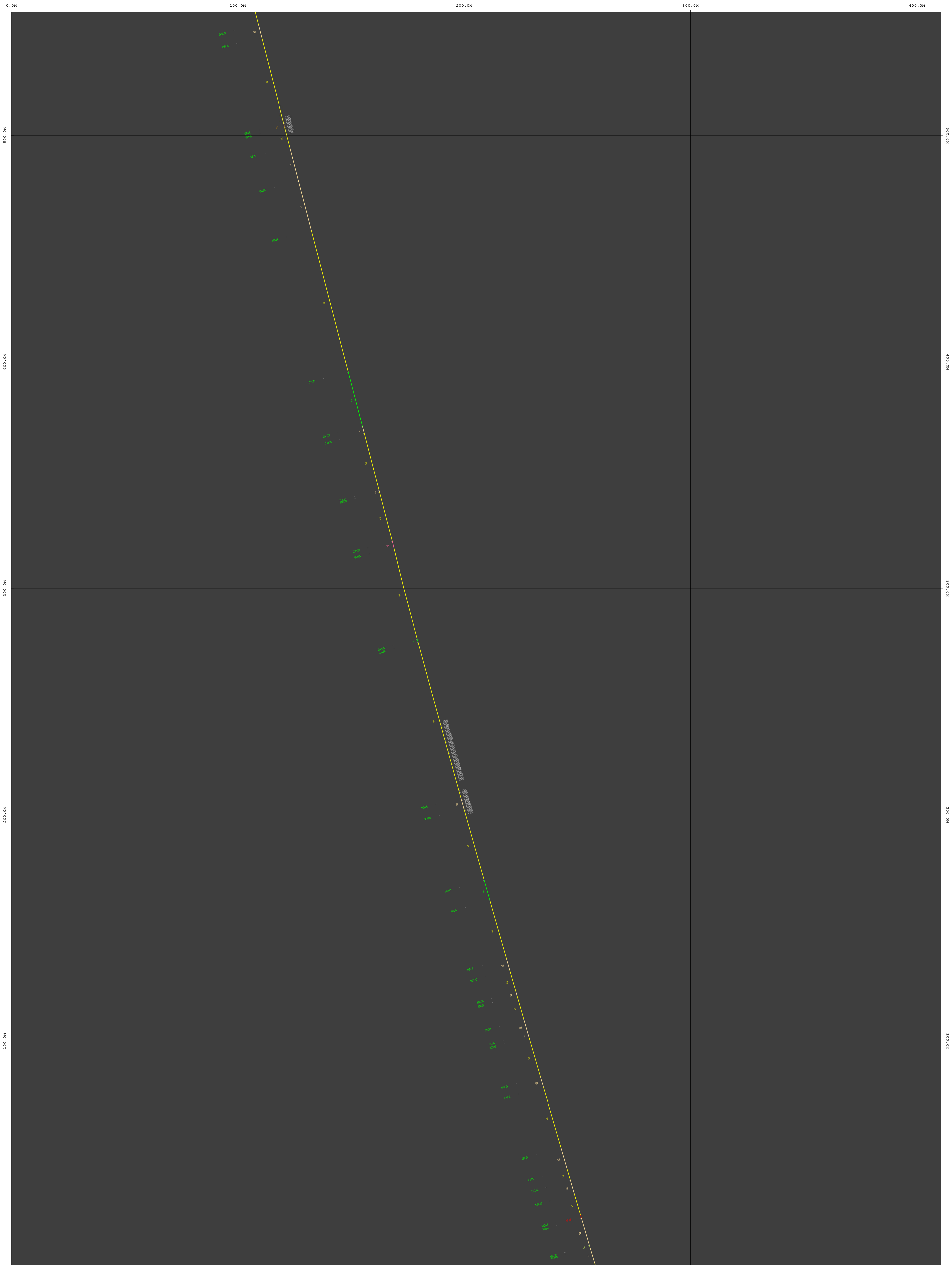




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Checked:	Approved:
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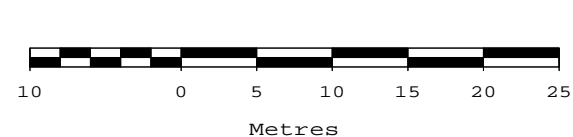
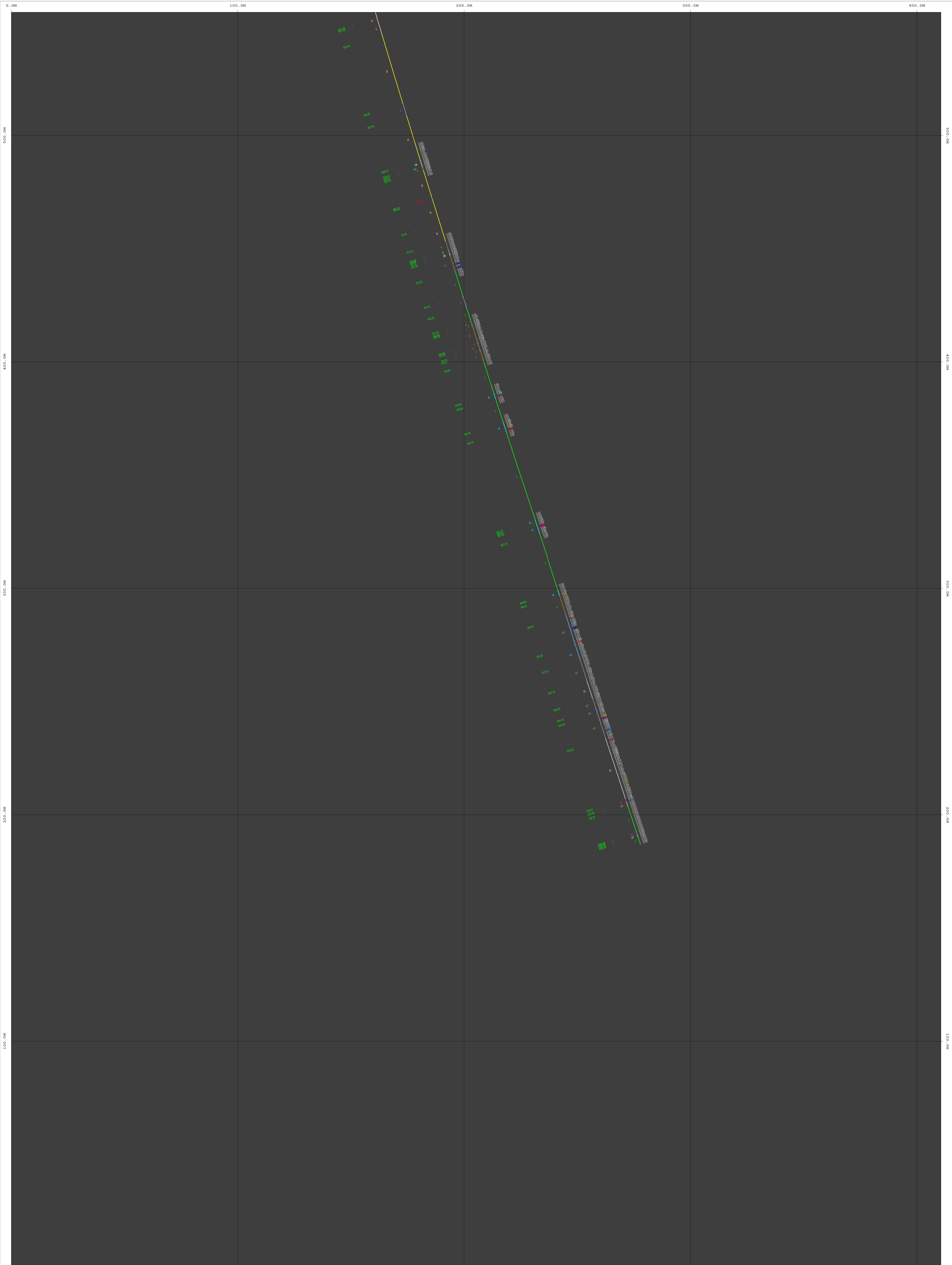
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 Musselwhite Mine  
 North Shore Project





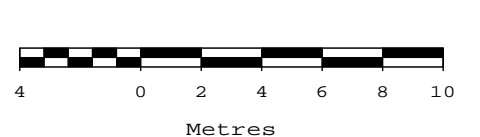
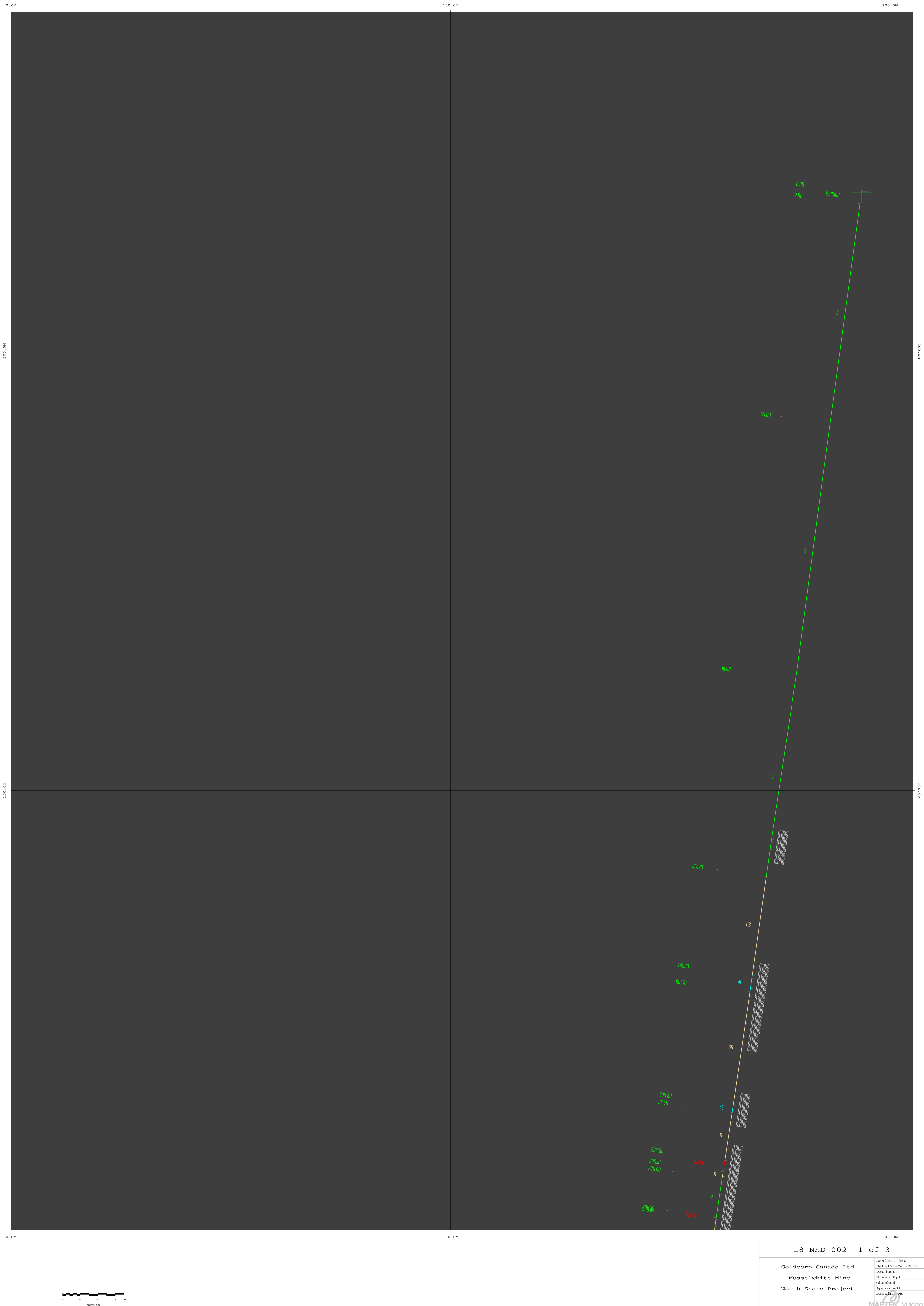
18-NSD-001 3 of 4

Goldcorp Canada Ltd.	Scale: 1:500
Musselwhite Mine	Date: 20-Feb-2019
North Shore Project	Project:
	Drawn By:
	Checked:
	Approved:
	Drawing No.:



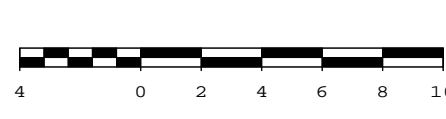
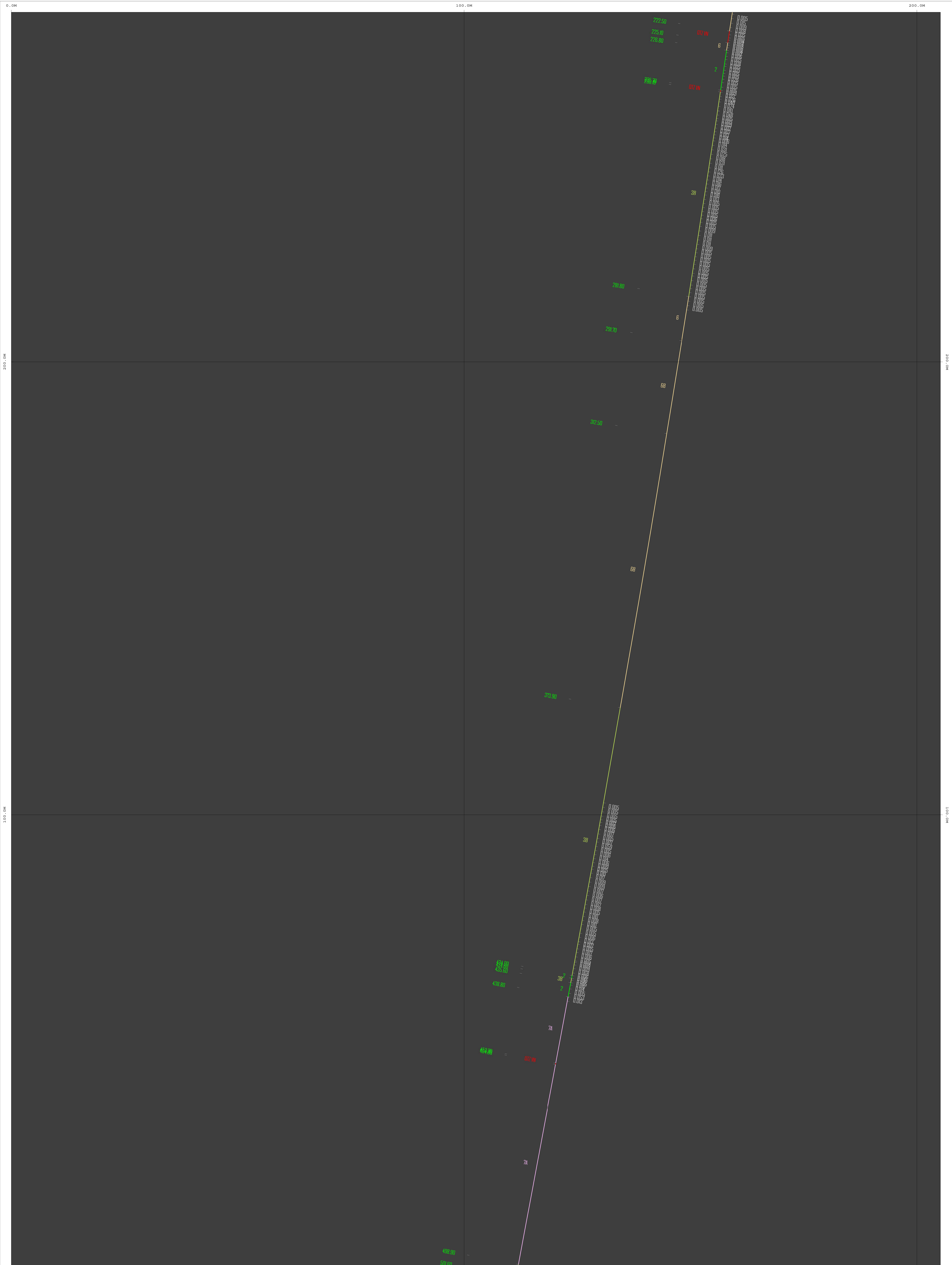
Goldcorp Canada Ltd.	Scale: 1:500
Musselwhite Mine	Date: 20-Feb-2019
North Shore Project	Project:
	Drawn By:
	Checked:
	Approved:
	Drawing No.:



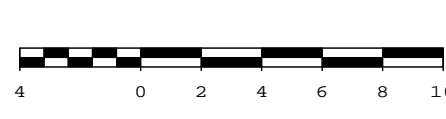
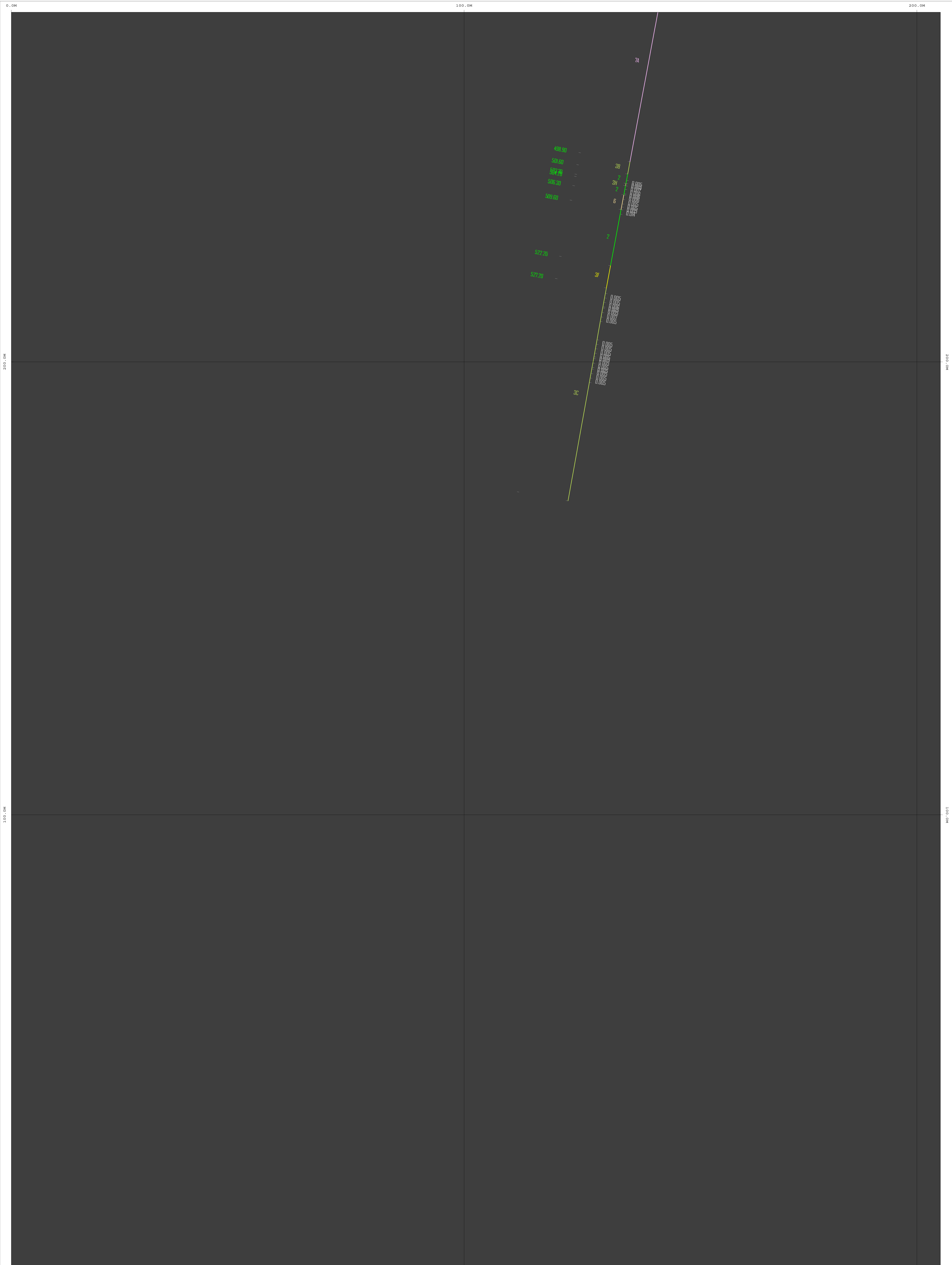


18-NSD-002 1 of 3

Scale: 1:250	Date: 21-Feb-2019
Project: Goldcorp Canada Ltd.	Drawn By:
Project: Musselwhite Mine	Checked:
Project: North Shore Project	Approved:
	Drawing No.:



Goldcorp Canada Ltd.	Scale: 1:250
Musselwhite Mine	Date: 21-Feb-2019
North Shore Project	Project:
	Drawn By:
	Checked:
	Approved:
	Drawing No.:



18-NSD-002 3 of 3

Goldcorp Canada Ltd.  
 Musselwhite Mine  
 North Shore Project

Scale: 1:250  
 Date: 21-Feb-2019  
 Project:  
 Drawn By:  
 Checked:  
 Approved:  
 Drawing No.



Appendix VII  
2018 Assay Certificates





**Date Submitted:** 01-Jun-18  
**Invoice No.:** A18-07210  
**Invoice Date:** 10-Aug-18  
**Your Reference:** Exploration

**GOLDCORP Canada Ltd--Musselwhite Mine**  
**P.O. Box 7500**  
**Thunder bay Ontario P7B 6S8**  
**Canada**

**ATTN: Katie Lucas**

## CERTIFICATE OF ANALYSIS

182 Core samples were submitted for analysis.

The following analytical package(s) were requested:

Code 1A2-GC Musselwhite Dryden Au - Fire Assay AA

REPORT **A18-07210**

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Notes:

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

CERTIFIED BY:

A handwritten signature in black ink, consisting of several loops and a long horizontal stroke at the end.

Emmanuel Esemé , Ph.D.  
Quality Control

**ACTIVATION LABORATORIES LTD.**  
264 Government Road, Dryden, Ontario, Canada, P8N 2R3  
TELEPHONE +807 223-6168 or +1.888.228.5227 FAX +1.905.648.9613  
E-MAIL Dryden@actlabs.com ACTLABS GROUP WEBSITE www.actlabs.com

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E884362	0.042	
E884363	0.043	
E884364	0.007	
E884365	0.011	
E884366	0.009	
E884367	< 0.005	
E884368	0.007	
E884369	< 0.005	
E884370	> 10.0	12.1
E884371	0.006	
E884372	0.008	
E884373	0.015	
E884374	0.005	
E884375	1.15	
E884376	0.011	
E884377	0.018	
E884378	0.208	
E884379	> 10.0	18.9
E884380	0.011	
E884381	0.494	
E884382	2.68	
E884383	0.118	
E884384	0.346	
E884385	0.335	
E884386	0.544	
E884387	0.074	
E884388	0.029	
E884389	< 0.005	
E884390	3.69	
E884391	< 0.005	
E884392	< 0.005	
E884393	0.023	
E884394	0.030	
E884395	0.031	
E884396	< 0.005	
E884397	< 0.005	
E884398	< 0.005	
E884399	0.005	
E884400	< 0.005	
E884401	0.013	
E884402	< 0.005	
E884403	< 0.005	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E884404	< 0.005	
E884405	< 0.005	
E884406	< 0.005	
E884407	0.005	
E884408	< 0.005	
E884409	0.005	
E884410	3.60	
E884411	0.005	
E884412	< 0.005	
E884413	0.017	
E884414	0.076	
E884415	0.038	
E884416	0.152	
E884417	0.043	
E884418	0.025	
E884419	0.280	
E884420	0.006	
E884421	5.99	
E884422	0.424	
E884423	0.128	
E884424	0.023	
E884425	0.040	
E884426	0.253	
E884427	0.147	
E884428	0.488	
E884429	0.260	
E884430	7.24	
E884431	2.59	
E884432	0.158	
E884433	0.041	
E884434	0.037	
E884435	0.286	
E884436	0.132	
E884437	0.030	
E884438	0.597	
E884439	0.270	
E884440	< 0.005	
E884441	0.287	
E884442	0.016	
E884443	0.006	
E884444	0.008	
E884445	0.013	
E884446	0.023	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E884447	0.103	
E884448	0.009	
E884449	0.086	
E884450	0.453	
E884451	6.34	
E884452	0.226	
E884453	0.885	
E884454	0.022	
E884455	0.025	
E884456	0.009	
E884457	0.006	
E884458	0.005	
E884459	0.005	
E884460	< 0.005	
E884461	0.015	
E884462	< 0.005	
E884463	0.060	
E884464	< 0.005	
E884465	0.006	
E884466	0.006	
E884467	0.006	
E884468	0.016	
E884469	0.147	
E884470	> 10.0	13.0
E884471	3.62	
E884472	8.75	
E884473	0.370	
E884474	3.39	
E884475	1.03	
E884476	1.21	
E884477	0.469	
E884478	1.18	
E884479	1.18	
E884480	0.006	
E884481	0.019	
E884482	0.018	
E884483	0.010	
E884484	0.016	
E884485	0.009	
E884486	0.007	
E884487	0.009	
E884488	0.090	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E884489	0.229	
E884490	3.69	
E884491	0.057	
E884492	0.013	
E884493	0.017	
E884494	0.471	
E884495	2.65	
E884496	2.20	
E884497	2.24	
E884498	3.02	
E884499	2.78	
E884500	0.008	
E884501	3.93	
E884502	0.152	
E884503	0.067	
E884504	0.062	
E884505	0.020	
E884506	0.054	
E884507	0.170	
E884508	0.025	
E884509	0.015	
E884510	3.62	
E884511	0.059	
E884512	0.014	
E884513	0.013	
E884514	0.011	
E884515	0.048	
E884516	0.027	
E884517	0.009	
E884518	0.014	
E884519	0.016	
E884520	0.007	
E884521	0.012	
E884522	0.011	
E884523	0.013	
E884524	0.389	
E884525	0.021	
E884526	0.012	
E884527	0.014	
E884528	0.010	
E882001	0.009	
E882002	0.009	
E882003	0.010	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E882004	0.033	
E882005	0.010	
E882006	0.006	
E882007	0.005	
E884529	< 0.005	
E884530	7.54	
E884531	0.006	
E884532	0.061	
E884533	0.011	
E884534	0.008	
E884535	0.011	
E884536	0.008	
OREAS 214 Meas		3.07
OREAS 214 Cert		3.03
OREAS 216 (Fire Assay) Meas		6.39
OREAS 216 (Fire Assay) Cert		6.66
OREAS 220 (Fire Assay) Meas	0.859	
OREAS 220 (Fire Assay) Cert	0.866	
OREAS 220 (Fire Assay) Meas	0.865	
OREAS 220 (Fire Assay) Cert	0.866	
OREAS 220 (Fire Assay) Meas	0.836	
OREAS 220 (Fire Assay) Cert	0.866	
OREAS 220 (Fire Assay) Meas	0.833	
OREAS 220 (Fire Assay) Cert	0.866	
OREAS 220 (Fire Assay) Meas	0.875	
OREAS 220 (Fire Assay) Cert	0.866	
OREAS 220 (Fire Assay) Meas	0.876	
OREAS 220 (Fire Assay) Cert	0.866	
OREAS 220 (Fire Assay) Meas	0.871	
OREAS 220 (Fire Assay) Cert	0.866	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
OREAS 209 (Fire Assay) Meas	1.58	
OREAS 209 (Fire Assay) Cert	1.58	
OREAS 209 (Fire Assay) Meas	1.58	
OREAS 209 (Fire Assay) Cert	1.58	
OREAS 209 (Fire Assay) Meas	1.59	
OREAS 209 (Fire Assay) Cert	1.58	
OREAS 209 (Fire Assay) Meas	1.57	
OREAS 209 (Fire Assay) Cert	1.58	
OREAS 209 (Fire Assay) Meas	1.52	
OREAS 209 (Fire Assay) Cert	1.58	
OREAS 209 (Fire Assay) Meas	1.60	
OREAS 209 (Fire Assay) Cert	1.58	
OREAS 209 (Fire Assay) Meas	1.60	
OREAS 209 (Fire Assay) Cert	1.58	
E884376 Orig	0.011	
E884376 Dup	0.009	
E884383 Orig	0.118	
E884383 Dup	0.105	
E884394 Orig	0.030	
E884394 Dup	< 0.005	
E884411 Orig	< 0.005	
E884411 Split	< 0.005	
E884411 Orig	0.005	
E884411 Dup	< 0.005	
E884417 Orig	0.043	
E884417 Dup	0.042	
E884428 Orig	0.488	
E884428 Dup	0.509	
E884431 Orig	2.59	
E884431 Dup	2.61	
E884451 Orig	6.34	
E884451 Dup	6.50	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E884461 Orig	0.015	
E884461 Split	0.015	
E884462 Orig	< 0.005	
E884462 Dup	0.005	
E884479 Orig	1.18	
E884479 Dup	1.22	
E884486 Orig	0.007	
E884486 Dup	0.008	
E884497 Orig	2.24	
E884497 Dup	2.26	
E884500 Orig	0.008	
E884500 Dup	0.007	
E884511 Orig	0.059	
E884511 Split	0.064	
E884512 Orig	0.014	
E884512 Dup	0.012	
E884519 Orig	0.016	
E884519 Dup	0.015	
E882002 Orig	0.009	
E882002 Dup	0.009	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	0.005	
Method Blank	< 0.005	
Method Blank	0.005	
Method Blank	0.006	
Method Blank	< 0.005	
Method Blank		< 0.03
Method Blank	< 0.005	





**Date Submitted:** 25-Jun-18  
**Invoice No.:** A18-08157  
**Invoice Date:** 10-Aug-18  
**Your Reference:** Exploration

**GOLDCORP Canada Ltd--Musselwhite Mine**  
**P.O. Box 7500**  
**Thunder bay Ontario P7B 6S8**  
**Canada**

**ATTN: Katie Lucas**

## CERTIFICATE OF ANALYSIS

432 Core samples were submitted for analysis.

The following analytical package(s) were requested:

Code 1A2-GC Musselwhite Dryden Au - Fire Assay AA

REPORT **A18-08157**

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Notes:

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

CERTIFIED BY:

A handwritten signature in black ink, appearing to be "Emmanuel Esemé". The signature is stylized and somewhat cursive, with a prominent vertical stroke on the right side.

---

Emmanuel Esemé , Ph.D.  
Quality Control

**ACTIVATION LABORATORIES LTD.**  
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E-MAIL Dryden@actlabs.com ACTLABS GROUP WEBSITE www.actlabs.com

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E881681	0.008	
E881682	0.007	
E881683	0.005	
E881684	0.007	
E881685	0.009	
E881686	0.010	
E881687	0.012	
E881688	0.064	
E881689	0.031	
E881690	3.47	
E881691	0.064	
E881692	0.011	
E881693	0.668	
E881694	0.215	
E881695	0.690	
E881696	0.166	
E881697	0.044	
E881698	0.013	
E881699	0.012	
E881700	0.006	
E881701	0.012	
E881702	0.017	
E881703	0.016	
E881704	0.024	
E881705	0.020	
E881706	0.010	
E881707	0.025	
E881708	0.019	
E881709	0.014	
E881710	3.54	
E881711	0.036	
E881712	0.018	
E881713	0.014	
E881714	0.013	
E881715	4.73	
E881716	0.015	
E881717	0.072	
E881718	0.038	
E881719	0.035	
E881720	0.005	
E881721	0.014	
E881722	0.015	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E881723	0.011	
E881724	0.013	
E881725	0.287	
E881726	1.99	
E881727	0.183	
E881728	0.023	
E881729	0.017	
E881730	6.98	
E881731	0.008	
E881732	0.008	
E881733	0.013	
E881734	0.022	
E881735	0.025	
E881736	0.009	
E881737	0.013	
E881738	0.074	
E881739	0.018	
E881740	< 0.005	
E881741	0.010	
E881742	0.012	
E881743	9.45	
E881744	0.648	
E881745	0.018	
E881746	0.016	
E881747	0.023	
E881748	0.106	
E881749	0.031	
E881750	0.512	
E881751	0.018	
E881752	0.020	
E881753	0.011	
E881754	0.025	
E881755	0.020	
E881756	0.018	
E881757	> 10.0	30.8
E881758	> 10.0	16.5
E881759	0.056	
E881760	0.011	
E881761	0.023	
E881762	0.015	
E881763	0.073	
E881764	0.300	
E881765	0.016	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E881766	0.015	
E881767	0.013	
E881768	0.009	
E881769	0.011	
E881770	> 10.0	13.0
E881771	0.017	
E881772	0.014	
E881773	0.012	
E881774	0.013	
E881775	0.011	
E881776	0.017	
E881777	0.014	
E881778	0.413	
E881779	0.067	
E881780	< 0.005	
E881781	0.054	
E881782	0.028	
E881783	0.091	
E881784	0.287	
E881785	0.039	
E881786	0.029	
E881787	0.271	
E881788	> 10.0	18.9
E881789	0.035	
E881790	3.19	
E881791	0.043	
E881792	0.098	
E881793	0.216	
E881794	0.099	
E881795	0.025	
E881796	0.981	
E881797	0.602	
E881798	0.014	
E881799	0.015	
E881800	< 0.005	
E881801	0.011	
E881802	0.016	
E881803	0.012	
E881804	0.016	
E881805	0.011	
E881806	0.034	
E881807	0.123	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E881808	0.015	
E881809	0.023	
E881810	3.09	
E881811	0.021	
E881812	0.232	
E881813	0.681	
E881814	0.300	
E881815	0.812	
E881816	5.19	
E881817	1.85	
E881818	0.023	
E881819	0.413	
E881820	0.006	
E881821	0.014	
E881822	0.014	
E881823	0.014	
E881824	0.018	
E881825	0.008	
E881826	0.068	
E881827	0.026	
E881828	0.015	
E881829	0.009	
E881830	7.04	
E881831	0.016	
E881832	0.012	
E881833	0.009	
E881834	0.009	
E881835	0.009	
E881836	0.010	
E881837	0.013	
E881838	0.045	
E881839	0.013	
E881840	< 0.005	
E881841	0.011	
E881842	0.206	
E881843	0.247	
E881844	0.013	
E881845	0.012	
E881846	0.021	
E881847	0.010	
E881848	0.014	
E881849	0.028	
E881850	0.544	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E881851	0.017	
E881852	0.930	
E881853	3.72	
E881854	0.154	
E881855	2.35	
E881856	0.901	
E881857	0.013	
E881858	0.031	
E881859	0.056	
E881860	0.006	
E881861	0.121	
E881862	0.079	
E881863	0.068	
E881864	0.056	
E881865	1.24	
E881866	0.122	
E881867	0.388	
E881868	0.025	
E881869	0.011	
E881870	> 10.0	12.9
E881871	0.018	
E881872	0.010	
E881873	0.010	
E881874	0.009	
E881875	0.011	
E881876	0.011	
E881877	0.009	
E881878	0.010	
E881879	0.012	
E881880	0.008	
E881881	0.063	
E881882	0.023	
E881883	0.020	
E881884	0.029	
E881885	0.014	
E881886	0.011	
E881887	< 0.005	
E881888	< 0.005	
E881889	< 0.005	
E881890	3.33	
E881891	0.006	
E881892	0.005	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E881893	< 0.005	
E881894	0.005	
E881895	0.005	
E881896	0.006	
E881897	0.017	
E881898	0.017	
E881899	0.018	
E881900	< 0.005	
E881901	0.021	
E881902	0.008	
E881903	0.007	
E881904	0.007	
E881905	0.083	
E881906	0.010	
E881907	0.006	
E881908	0.007	
E881909	0.007	
E881910	3.46	
E881911	0.006	
E881912	0.010	
E881913	0.054	
E881914	0.074	
E881915	0.015	
E881916	0.015	
E881917	0.007	
E881918	0.012	
E881919	0.020	
E881920	< 0.005	
E881921	< 0.005	
E881922	0.024	
E881923	0.014	
E881924	0.040	
E881925	0.046	
E881926	0.020	
E881927	< 0.005	
E881928	0.124	
E881929	0.013	
E881930	6.87	
E881931	0.009	
E881932	0.005	
E881933	0.015	
E881934	0.011	
E881935	0.016	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E881936	0.021	
E881937	0.025	
E881938	0.011	
E881939	0.015	
E881940	< 0.005	
E881941	0.024	
E881942	0.008	
E881943	0.011	
E881944	0.005	
E881945	0.013	
E881946	0.005	
E881947	0.009	
E881948	0.244	
E881949	0.009	
E881950	0.473	
E885251	0.022	
E885252	0.007	
E885253	0.007	
E885254	0.007	
E885255	0.006	
E885256	0.010	
E885257	0.007	
E885258	< 0.005	
E885259	< 0.005	
E885260	< 0.005	
E885261	0.005	
E885262	0.010	
E885263	0.056	
E885264	0.035	
E885265	0.013	
E885266	0.006	
E885267	0.011	
E885268	0.007	
E885269	< 0.005	
E885270	> 10.0	13.9
E885271	0.013	
E885272	< 0.005	
E885273	0.005	
E885274	0.007	
E885275	0.013	
E885276	0.020	
E885277	0.009	



	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E885278	0.005	
E885279	0.012	
E885280	0.005	
E882047	< 0.005	
E882048	0.008	
E882049	< 0.005	
E882050	0.504	
E882051	< 0.005	
E882052	< 0.005	
E882053	0.011	
E882054	< 0.005	
E882055	< 0.005	
E882056	0.006	
E882057	< 0.005	
E882058	0.005	
E878627	0.006	
E878628	0.005	
E878629	0.007	
E878630	7.51	
E878631	0.012	
E878632	0.009	
E878633	0.005	
E878634	0.007	
E878635	0.011	
E878636	0.008	
E878637	0.015	
E878638	0.055	
E878639	1.50	
E878640	< 0.005	
E878641	0.018	
E878642	0.013	
E878643	0.016	
E878644	0.005	
E878645	0.011	
E878646	0.052	
E878647	0.007	
E878648	< 0.005	
E878649	< 0.005	
E878650	0.469	
E878651	< 0.005	
E878652	0.009	
E878653	0.026	
E878654	< 0.005	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E878655	0.221	
E878656	0.028	
E878657	0.136	
E878658	0.030	
E878659	0.021	
E878660	< 0.005	
E878661	0.016	
E878662	0.671	
E878663	0.032	
E878664	0.016	
E878665	0.011	
E878666	0.033	
E878667	0.055	
E878668	0.029	
E878669	0.069	
E878670	> 10.0	12.6
E878671	0.011	
E878672	0.018	
E878673	0.022	
E878674	0.124	
E878675	0.071	
E878676	0.025	
E878677	0.016	
E878678	0.005	
E878679	0.010	
E878680	< 0.005	
E878681	0.049	
E878682	0.046	
E878683	0.047	
E878684	0.008	
E878685	0.013	
E878686	0.034	
E878687	0.045	
E878688	0.057	
E878689	0.006	
E878690	3.25	
E878691	0.007	
E878692	0.011	
E878693	0.016	
E878694	0.032	
E878695	0.030	
E878696	0.032	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E878697	0.067	
E878698	0.030	
E878699	0.010	
E878700	0.006	
E878701	0.025	
E878702	0.008	
E878703	0.009	
E878704	0.031	
E878705	0.497	
E878706	2.56	
E878707	> 10.0	26.8
E878708	0.282	
E878709	0.048	
E878710	3.54	
E878711	0.112	
E878712	0.015	
E878713	0.029	
E878714	0.126	
E878715	0.076	
E878716	0.018	
E878717	0.030	
E878718	0.062	
E878719	0.156	
E878720	< 0.005	
E878721	1.17	
E878722	0.743	
E878723	0.065	
E878724	0.044	
E878725	0.023	
E878726	0.011	
E878727	0.019	
E878728	0.029	
E878729	0.131	
E878730	7.20	
E878731	0.093	
E878732	0.819	
E878733	0.030	
E878734	0.183	
E878735	0.080	
E878736	0.052	
E878737	0.032	
E878738	0.912	
E878739	0.086	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E878740	< 0.005	
E878741	0.032	
E878742	0.028	
E878743	0.014	
E878744	0.018	
E878745	0.032	
E878746	0.028	
OXN117 Meas		7.61
OXN117 Cert		7.679
SN75 Meas		8.46
SN75 Cert		8.67
OREAS 214 Meas		2.90
OREAS 214 Cert		3.03
OREAS 216 (Fire Assay) Meas		6.54
OREAS 216 (Fire Assay) Cert		6.66
OREAS 218 Meas	0.506	
OREAS 218 Cert	0.531	
OREAS 218 Meas	0.537	
OREAS 218 Cert	0.531	
OREAS 218 Meas	0.523	
OREAS 218 Cert	0.531	
OREAS 218 Meas	0.517	
OREAS 218 Cert	0.531	
OREAS 218 Meas	0.510	
OREAS 218 Cert	0.531	
OREAS 218 Meas	0.531	
OREAS 218 Cert	0.531	
OREAS 218 Meas	0.527	
OREAS 218 Cert	0.531	
OREAS 218 Meas	0.523	
OREAS 218 Cert	0.531	
OREAS 218 Meas	0.485	
OREAS 218 Cert	0.531	
OREAS 218 Meas	0.506	
OREAS 218 Cert	0.531	
OREAS 218 Meas	0.511	
OREAS 218 Cert	0.531	
OREAS 218 Meas	0.523	
OREAS 218 Cert	0.531	
OREAS 218 Meas	0.522	
OREAS 218 Cert	0.531	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
OREAS 220 (Fire Assay) Meas	0.837	
OREAS 220 (Fire Assay) Cert	0.866	
OREAS 220 (Fire Assay) Meas	0.875	
OREAS 220 (Fire Assay) Cert	0.866	
OREAS 224 Meas	2.20	
OREAS 224 Cert	2.15	
OREAS 224 Meas	2.13	
OREAS 224 Cert	2.15	
OREAS 224 Meas	2.09	
OREAS 224 Cert	2.15	
OREAS 224 Meas	2.08	
OREAS 224 Cert	2.15	
OREAS 224 Meas	2.09	
OREAS 224 Cert	2.15	
OREAS 224 Meas	2.05	
OREAS 224 Cert	2.15	
OREAS 224 Meas	2.11	
OREAS 224 Cert	2.15	
OREAS 224 Meas	2.08	
OREAS 224 Cert	2.15	
OREAS 224 Meas	2.11	
OREAS 224 Cert	2.15	
OREAS 224 Meas	2.15	
OREAS 224 Cert	2.15	
OREAS 224 Meas	2.03	
OREAS 224 Cert	2.15	
OREAS 224 Meas	2.09	
OREAS 224 Cert	2.15	
OREAS 224 Meas	2.09	
OREAS 224 Cert	2.15	
OREAS 224 Meas	2.06	
OREAS 224 Cert	2.15	
OREAS 209 (Fire Assay) Meas	1.55	
OREAS 209 (Fire Assay) Cert	1.58	
E881691 Orig	0.064	
E881691 Dup	0.054	
E881700 Orig	0.006	
E881700 Dup	0.007	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E881711 Orig	0.036	
E881711 Dup	0.035	
E881725 Orig	0.287	
E881725 Dup	0.254	
E881731 Orig	0.008	
E881731 Split	0.006	
E881734 Orig	0.022	
E881734 Dup	0.021	
E881744 Orig	0.648	
E881744 Dup	0.615	
E881759 Orig	0.056	
E881759 Dup	0.049	
E881769 Orig	0.011	
E881769 Dup	0.010	
E881779 Orig	0.067	
E881779 Dup	0.063	
E881781 Orig	0.054	
E881781 Split	0.065	
E881793 Orig	0.216	
E881793 Dup	0.266	
E881803 Orig	0.012	
E881803 Dup	0.012	
E881828 Orig	0.015	
E881828 Dup	0.011	
E881831 Orig	0.016	
E881831 Split	0.011	
E881837 Orig	0.013	
E881837 Dup	0.012	
E881847 Orig	0.010	
E881847 Dup	0.009	
E881862 Orig	0.079	
E881862 Dup	0.081	
E881872 Orig	0.010	
E881872 Dup	0.010	
E881881 Orig	0.063	
E881881 Split	0.060	
E881881 Split	0.060	
E881896 Orig	0.006	
E881896 Dup	0.005	
E881906 Orig	0.010	
E881906 Dup	0.009	
E881916 Orig	0.015	
E881916 Dup	0.016	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E881931 Orig	0.009	
E881931 Split	0.005	
E881931 Orig	0.009	
E881931 Dup	0.008	
E881941 Orig	0.024	
E881941 Dup	0.025	
E885251 Orig	0.022	
E885251 Dup	0.025	
E885265 Orig	0.013	
E885265 Dup	0.013	
E885275 Orig	0.013	
E885275 Dup	0.008	
E882047 Orig	< 0.005	
E882047 Split	< 0.005	
E882051 Orig	< 0.005	
E882051 Dup	< 0.005	
E878633 Orig	0.005	
E878633 Dup	0.006	
E878653 Orig	0.026	
E878653 Dup	0.025	
E878664 Orig	0.016	
E878664 Split	0.014	
E878667 Orig	0.055	
E878667 Dup	0.050	
E878677 Orig	0.016	
E878677 Dup	0.020	
E878687 Orig	0.045	
E878687 Dup	0.041	
E878702 Orig	0.008	
E878702 Dup	0.009	
E878712 Orig	0.015	
E878712 Dup	0.014	
E878714 Orig	0.126	
E878714 Split	0.120	
E878721 Orig	1.17	
E878721 Dup	1.05	
E878736 Orig	0.052	
E878736 Dup	0.022	
E878746 Orig	0.028	
E878746 Dup	0.028	
Method Blank	< 0.005	
Method Blank	< 0.005	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	0.012	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	0.005	
Method Blank	0.005	
Method Blank	0.005	
Method Blank		< 0.03
Method Blank		< 0.03
Method Blank		< 0.03





**Date Submitted:** 09-Jul-18  
**Invoice No.:** A18-08832  
**Invoice Date:** 28-Aug-18  
**Your Reference:** Exploration

**GOLDCORP Canada Ltd--Musselwhite Mine**  
**P.O. Box 7500**  
**Thunder bay Ontario P7B 6S8**  
**Canada**

**ATTN: Katie Lucas**

## CERTIFICATE OF ANALYSIS

365 Core samples were submitted for analysis.

The following analytical package(s) were requested:

Code 1A2-GC Musselwhite Dryden Au - Fire Assay AA

REPORT **A18-08832**

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

CERTIFIED BY:

A handwritten signature in black ink, appearing to be "Emmanuel Esemé". The signature is stylized and somewhat abstract, with a large, sweeping flourish at the end.

Emmanuel Esemé , Ph.D.  
Quality Control

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	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E883387	0.028	
E883388	0.020	
E883389	0.025	
E883390	3.43	
E883391	0.042	
E883392	0.018	
E883393	0.027	
E883394	0.042	
E883395	0.044	
E883396	0.200	
E883397	3.76	
E883398	0.244	
E883399	0.361	
E883400	< 0.005	
E885281	0.171	
E885282	0.226	
E885283	0.025	
E885284	0.862	
E885285	0.560	
E885286	0.038	
E885287	0.072	
E885288	0.054	
E885289	0.053	
E885290	3.52	
E885291	0.022	
E885292	0.198	
E885293	0.125	
E885294	0.335	
E885295	2.14	
E885296	0.191	
E885297	0.129	
E885298	1.61	
E885299	0.082	
E885300	< 0.005	
E885301	0.017	
E885302	0.021	
E885303	1.64	
E885304	0.016	
E885305	0.017	
E885306	0.759	
E885307	0.093	
E885308	5.02	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E885309	0.036	
E885310	3.76	
E885311	4.58	
E885312	> 10.0	10.7
E885313	0.519	
E885314	0.178	
E885315	1.52	
E885316	0.107	
E885317	0.440	
E885318	0.022	
E885319	0.063	
E885320	< 0.005	
E885321	0.247	
E885322	0.027	
E885323	0.021	
E885324	0.024	
E885325	0.055	
E885326	0.566	
E885327	0.842	
E885328	0.033	
E885329	0.381	
E885330	7.19	
E885331	0.639	
E885332	0.433	
E885333	1.08	
E885334	1.25	
E885335	5.74	
E885336	> 10.0	39.8
E885337	6.05	
E885338	> 10.0	21.3
E885339	1.99	
E885340	0.005	
E885341	0.120	
E885342	0.134	
E885343	2.24	
E885344	0.038	
E885345	0.013	
E885346	2.38	
E885347	> 10.0	12.5
E885348	2.21	
E885349	0.994	
E885350	0.517	
E885351	1.45	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E885352	0.103	
E885353	0.430	
E885354	0.073	
E885355	0.011	
E885356	0.089	
E885357	0.045	
E885358	0.061	
E885359	0.117	
E885360	< 0.005	
E885361	0.178	
E885362	0.029	
E885363	0.089	
E885364	0.435	
E885365	0.015	
E885366	0.013	
E885367	0.573	
E885368	0.047	
E885369	0.380	
E885370	> 10.0	13.9
E885371	0.015	
E885372	0.014	
E885373	0.013	
E885374	0.021	
E885375	0.040	
E885376	0.185	
E885377	0.137	
E885378	> 10.0	38.0
E885379	0.036	
E885380	< 0.005	
E885381	> 10.0	29.9
E885382	0.350	
E885383	0.264	
E885384	1.47	
E885385	0.023	
E885386	0.028	
E885387	0.028	
E885388	0.018	
E885389	0.057	
E885390	3.53	
E885391	0.042	
E885392	0.162	
E885393	0.276	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E885394	0.107	
E885395	0.054	
E885396	0.141	
E885397	0.026	
E885398	< 0.005	
E885399	< 0.005	
E885400	< 0.005	
E882008	0.005	
E882009	0.006	
E882010	3.68	
E882011	0.009	
E882012	0.005	
E882013	0.008	
E882014	0.029	
E882015	0.011	
E882016	0.015	
E882017	0.013	
E882018	0.016	
E882019	0.011	
E882020	< 0.005	
E882021	0.008	
E882022	0.012	
E882023	0.014	
E882024	0.007	
E882025	0.009	
E882026	0.006	
E882027	0.008	
E882028	0.008	
E882029	0.008	
E882030	7.25	
E882031	0.013	
E882032	0.012	
E882033	0.011	
E882034	0.039	
E882035	0.035	
E882036	0.017	
E882037	0.010	
E882038	0.009	
E882039	0.008	
E882040	< 0.005	
E882041	0.007	
E882042	0.010	
E882043	0.035	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E882044	0.007	
E882045	0.010	
E882046	0.014	
E889001	0.006	
E889002	< 0.005	
E889003	0.012	
E889004	0.006	
E889005	0.007	
E889006	0.009	
E889007	0.010	
E889008	0.036	
E889009	0.019	
E889010	3.58	
E889011	0.023	
E889012	0.016	
E889013	0.015	
E889014	0.013	
E889015	0.019	
E889016	0.024	
E889017	0.020	
E889018	0.011	
E889019	0.013	
E889020	< 0.005	
E889021	0.014	
E889022	0.008	
E889023	0.008	
E889024	0.009	
E889025	0.061	
E889026	0.006	
E889027	0.005	
E889028	< 0.005	
E889029	< 0.005	
E889030	7.02	
E889031	0.007	
E889032	0.008	
E889033	< 0.005	
E889034	< 0.005	
E889035	0.036	
E889036	0.037	
E889037	0.008	
E889038	0.480	
E889039	0.894	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E889040	< 0.005	
E889041	0.020	
E889042	0.159	
E889043	0.116	
E889044	0.044	
E889045	0.077	
E889046	0.011	
E889047	0.014	
E889048	0.032	
E889049	0.064	
E889050	0.526	
E889051	0.027	
E889052	0.177	
E889053	0.020	
E889054	1.04	
E889055	> 10.0	18.0
E889056	0.212	
E889057	0.114	
E889058	0.167	
E889059	0.028	
E889060	< 0.005	
E889061	< 0.005	
E889062	0.008	
E889063	0.009	
E889064	0.010	
E889065	0.007	
E889066	0.028	
E889067	> 10.0	13.6
E889068	> 10.0	20.7
E889069	2.49	
E889070	> 10.0	13.2
E889071	0.037	
E889072	0.057	
E889073	1.13	
E889074	0.013	
E889075	0.010	
E889076	0.013	
E889077	0.010	
E889078	0.174	
E889079	0.170	
E889080	< 0.005	
E889081	0.039	
E889082	0.020	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E889083	0.372	
E889084	0.011	
E889085	0.335	
E889086	0.021	
E889087	0.140	
E889088	0.050	
E889089	0.024	
E889090	3.57	
E889091	0.035	
E889092	0.022	
E889093	0.028	
E889094	0.013	
E889095	0.015	
E889096	0.027	
E889097	0.045	
E889098	0.016	
E889099	0.019	
E889100	< 0.005	
E889101	0.019	
E889102	0.018	
E889103	0.054	
E889104	0.106	
E889105	0.045	
E889106	0.019	
E889107	0.031	
E889108	0.369	
E889109	0.027	
E889110	3.71	
E889111	0.011	
E889112	< 0.005	
E889113	0.005	
E889114	0.012	
E889115	0.020	
E889116	0.245	
E889117	0.056	
E889118	0.007	
E889119	0.007	
E889120	< 0.005	
E889121	0.026	
E889122	0.047	
E889123	0.029	
E889124	0.019	



	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E889125	0.013	
E889126	0.010	
E889127	0.007	
E889128	0.011	
E889129	0.009	
E889130	7.28	
E889131	0.076	
E889132	0.005	
E889133	0.021	
E889134	0.015	
E889135	0.037	
E889136	3.22	
E889137	0.026	
E889138	0.048	
E889139	0.032	
E889140	< 0.005	
E889141	0.042	
E889142	0.010	
E889143	0.011	
E889144	0.032	
E889145	0.026	
E889146	0.016	
E889147	0.028	
E889148	0.018	
E889149	0.024	
E889150	0.466	
E889151	0.109	
E889152	0.077	
E889153	0.033	
E889154	1.16	
E889155	0.020	
E889156	0.011	
E889157	0.017	
E889158	0.010	
E889159	0.024	
E889160	< 0.005	
E889161	0.024	
E889162	0.028	
E889163	0.005	
E889164	0.006	
E889165	0.008	
E889166	0.007	
E889167	0.037	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E889168	0.008	
E889169	0.008	
E889170	> 10.0	12.8
E889171	0.115	
E889172	0.372	
E889173	0.007	
E889174	0.005	
E889175	0.006	
E889176	0.010	
E889177	0.020	
E889178	0.008	
E889179	0.013	
E889180	< 0.005	
E889181	0.023	
E889182	0.068	
E889183	0.059	
E889184	0.095	
E889185	0.058	
E889186	0.014	
E889187	0.272	
E889188	0.431	
E889189	0.016	
E889190	3.58	
E889191	0.011	
E889192	0.140	
OREAS 214 Meas		2.98
OREAS 214 Cert		3.03
OREAS 216 (Fire Assay) Meas		6.70
OREAS 216 (Fire Assay) Cert		6.66
OREAS 220 (Fire Assay) Meas	0.825	
OREAS 220 (Fire Assay) Cert	0.866	
OREAS 220 (Fire Assay) Meas	0.853	
OREAS 220 (Fire Assay) Cert	0.866	
OREAS 220 (Fire Assay) Meas	0.888	
OREAS 220 (Fire Assay) Cert	0.866	
OREAS 220 (Fire Assay) Meas	0.904	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
Assay) Meas		
OREAS 220 (Fire Assay) Cert	0.866	
OREAS 220 (Fire Assay) Meas	0.889	
OREAS 220 (Fire Assay) Cert	0.866	
OREAS 220 (Fire Assay) Meas	0.870	
OREAS 220 (Fire Assay) Cert	0.866	
OREAS 220 (Fire Assay) Meas	0.883	
OREAS 220 (Fire Assay) Cert	0.866	
OREAS 220 (Fire Assay) Meas	0.847	
OREAS 220 (Fire Assay) Cert	0.866	
OREAS 220 (Fire Assay) Meas	0.851	
OREAS 220 (Fire Assay) Cert	0.866	
OREAS 220 (Fire Assay) Meas	0.847	
OREAS 220 (Fire Assay) Cert	0.866	
OREAS 220 (Fire Assay) Meas	0.875	
OREAS 220 (Fire Assay) Cert	0.866	
OREAS 209 (Fire Assay) Meas	1.59	
OREAS 209 (Fire Assay) Cert	1.58	
OREAS 209 (Fire Assay) Meas	1.61	
OREAS 209 (Fire Assay) Cert	1.58	
OREAS 209 (Fire Assay) Meas	1.60	
OREAS 209 (Fire Assay) Cert	1.58	
OREAS 209 (Fire Assay) Meas	1.63	
OREAS 209 (Fire Assay) Cert	1.58	
OREAS 209 (Fire Assay) Meas	1.66	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
Assay) Meas		
OREAS 209 (Fire Assay) Cert	1.58	
OREAS 209 (Fire Assay) Meas	1.60	
OREAS 209 (Fire Assay) Cert	1.58	
OREAS 209 (Fire Assay) Meas	1.60	
OREAS 209 (Fire Assay) Cert	1.58	
OREAS 209 (Fire Assay) Meas	1.56	
OREAS 209 (Fire Assay) Cert	1.58	
OREAS 209 (Fire Assay) Meas	1.54	
OREAS 209 (Fire Assay) Cert	1.58	
OREAS 209 (Fire Assay) Meas	1.57	
OREAS 209 (Fire Assay) Cert	1.58	
OREAS 209 (Fire Assay) Meas	1.60	
OREAS 209 (Fire Assay) Cert	1.58	
E885281 Orig	0.171	
E885281 Dup	0.217	
E885288 Orig	0.054	
E885288 Dup	0.061	
E885299 Orig	0.082	
E885299 Dup	0.079	
E885316 Orig	0.107	
E885316 Split	0.098	
E885322 Orig	0.027	
E885322 Dup	0.032	
E885336 Orig	> 10.0	
E885336 Dup	> 10.0	
E885356 Orig	0.089	
E885356 Dup	0.077	
E885366 Orig	0.013	
E885366 Split	0.013	
E885367 Orig	0.573	
E885367 Dup	0.589	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E885381 Orig	> 10.0	
E885381 Dup	> 10.0	
E885389 Orig	0.057	
E885389 Dup	0.059	
E885398 Orig	< 0.005	
E885398 Dup	< 0.005	
E882018 Orig	0.016	
E882018 Dup	0.015	
E882023 Orig	0.014	
E882023 Split	0.016	
E882031 Orig	0.013	
E882031 Dup	0.010	
E882038 Orig	0.009	
E882038 Dup	0.011	
E889006 Orig	0.009	
E889006 Dup	0.009	
E889019 Orig	0.013	
E889019 Dup	0.009	
E889027 Orig	< 0.005	
E889027 Split	< 0.005	
E889027 Orig	0.005	
E889027 Dup	< 0.005	
E889048 Orig	0.032	
E889048 Dup	0.032	
E889055 Orig	> 10.0	
E889055 Dup	> 10.0	
E889066 Orig	0.028	
E889066 Dup	0.029	
E889068 Orig		20.7
E889068 Dup		23.0
E889075 Orig	0.010	
E889075 Dup	0.014	
E889077 Orig	0.010	
E889077 Split	0.010	
E889087 Orig	0.140	
E889087 Dup	0.122	
E889093 Orig	0.028	
E889093 Dup	0.028	
E889103 Orig	0.054	
E889103 Dup	0.056	
E889123 Orig	0.029	
E889123 Dup	0.043	
E889127 Orig	0.007	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E889127 Split	0.009	
E889133 Orig	0.021	
E889133 Dup	0.025	
E889137 Orig	0.026	
E889137 Dup	0.027	
E889157 Orig	0.017	
E889157 Dup	0.008	
E889168 Orig	0.008	
E889168 Dup	0.006	
E889177 Orig	0.020	
E889177 Split	0.015	
E889177 Split	0.015	
E889189 Orig	0.016	
E889189 Dup	0.014	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
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Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank		< 0.03



**Date Submitted:** 09-Jul-18  
**Invoice No.:** A18-08837  
**Invoice Date:** 02-Aug-18  
**Your Reference:** Exploration

**GOLDCORP Canada Ltd--Musselwhite Mine**  
**P.O. Box 7500**  
**Thunder bay Ontario P7B 6S8**  
**Canada**

**ATTN: Katie Lucas**

## CERTIFICATE OF ANALYSIS

378 Core samples were submitted for analysis.

The following analytical package(s) were requested:

Code 1A2-GC Musselwhite Tbay Au - Fire Assay AA

REPORT **A18-08837**

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Notes:

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

CERTIFIED BY:

A handwritten signature in black ink, appearing to be "Emmanuel Esemé". The signature is stylized with a large 'E' and 'S'.

Emmanuel Esemé , Ph.D.  
Quality Control

**ACTIVATION LABORATORIES LTD.**  
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	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E878747	0.039	
E878748	0.048	
E878749	0.017	
E878750	0.507	
E878751	0.128	
E878752	0.039	
E878753	0.016	
E878754	0.013	
E878755	0.019	
E878756	0.013	
E878757	0.025	
E878758	0.012	
E878759	0.009	
E878760	< 0.005	
E878761	0.026	
E878762	0.066	
E878763	0.025	
E878764	0.009	
E878765	0.005	
E878766	< 0.005	
E878767	0.027	
E878768	0.543	
E878769	0.025	
E878770	> 10.0	13.4
E878771	0.042	
E878772	0.128	
E878773	0.036	
E878774	1.85	
E878775	0.090	
E878776	0.018	
E878777	0.010	
E878778	0.014	
E878779	0.032	
E878780	< 0.005	
E878781	0.035	
E878782	0.013	
E878783	0.007	
E878784	0.014	
E878785	0.007	
E878786	0.013	
E878787	0.015	
E878788	0.010	



	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E878789	< 0.005	
E878790	3.46	
E878791	0.008	
E878792	0.007	
E878793	2.36	
E878794	0.244	
E878795	0.087	
E878796	0.014	
E878797	0.061	
E878798	0.014	
E878799	0.136	
E878800	< 0.005	
E878801	0.016	
E878802	0.021	
E878803	0.021	
E878804	0.026	
E878805	0.015	
E878806	0.021	
E878807	0.217	
E878808	0.066	
E878809	0.061	
E878810	3.56	
E878811	0.017	
E878812	0.113	
E878813	0.064	
E878814	0.072	
E878815	0.175	
E878816	0.024	
E878817	0.032	
E878818	2.26	
E878819	0.447	
E878820	< 0.005	
E878821	0.028	
E878822	0.018	
E878823	0.016	
E878824	0.169	
E878825	0.010	
E878826	< 0.005	
E878827	< 0.005	
E878828	< 0.005	
E878829	< 0.005	
E878830	6.96	
E878831	0.006	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E878832	0.638	
E878833	0.147	
E878834	0.084	
E878835	0.024	
E878836	0.015	
E878837	0.051	
E878838	0.166	
E878839	0.569	
E878840	< 0.005	
E878841	0.082	
E878842	0.091	
E878843	0.041	
E878844	0.018	
E878845	0.013	
E878846	0.032	
E878847	0.088	
E878848	0.013	
E878849	0.015	
E878850	0.473	
E878851	3.60	
E878852	0.146	
E878853	2.24	
E878854	0.058	
E878855	0.007	
E878856	0.056	
E878857	0.517	
E878858	2.64	
E878859	0.029	
E878860	< 0.005	
E878861	0.027	
E878862	0.036	
E878863	0.129	
E878864	2.47	
E878865	0.599	
E878866	0.153	
E878867	0.020	
E878868	0.150	
E878869	1.37	
E878870	> 10.0	13.0
E878871	0.055	
E878872	0.199	
E878873	0.012	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E878874	0.031	
E878875	0.230	
E878876	0.024	
E878877	< 0.005	
E878878	0.008	
E878879	0.064	
E878880	< 0.005	
E878881	0.007	
E878882	0.006	
E878883	0.005	
E878884	0.175	
E878885	0.011	
E878886	0.006	
E878887	0.009	
E878888	0.005	
E878889	0.009	
E878890	3.41	
E878891	0.019	
E878892	0.007	
E878893	0.007	
E878894	0.009	
E878895	0.158	
E878896	0.093	
E878897	0.022	
E878898	0.064	
E878899	0.220	
E878900	< 0.005	
E878901	0.037	
E878902	0.270	
E878903	7.06	
E878904	0.042	
E878905	0.020	
E878906	0.094	
E878907	0.026	
E878908	0.027	
E878909	0.129	
E878910	3.58	
E878911	0.026	
E878912	0.023	
E878913	0.012	
E878914	0.046	
E878915	0.129	
E878916	0.079	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E878917	0.020	
E878918	0.028	
E878919	0.033	
E878920	< 0.005	
E878921	0.051	
E878922	0.162	
E878923	0.118	
E878924	0.180	
E878925	0.007	
E878926	< 0.005	
E878927	< 0.005	
E878928	< 0.005	
E878929	< 0.005	
E878930	7.12	
E878931	< 0.005	
E878932	< 0.005	
E878933	< 0.005	
E878934	< 0.005	
E878935	< 0.005	
E878936	< 0.005	
E878937	< 0.005	
E878938	0.024	
E878939	0.008	
E878940	< 0.005	
E878941	0.022	
E878942	0.011	
E878943	0.013	
E878944	0.192	
E882059	< 0.005	
E882060	< 0.005	
E882061	< 0.005	
E882062	0.006	
E882063	< 0.005	
E882064	< 0.005	
E882065	< 0.005	
E882066	< 0.005	
E882067	0.017	
E882068	< 0.005	
E882069	< 0.005	
E882070	> 10.0	13.6
E882071	< 0.005	
E882072	< 0.005	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E882073	0.007	
E882074	< 0.005	
E882075	< 0.005	
E882076	< 0.005	
E882077	0.006	
E882078	0.013	
E882079	0.010	
E882080	< 0.005	
E882081	0.011	
E882082	0.005	
E882083	0.034	
E882084	0.011	
E882085	0.006	
E882086	0.009	
E882087	0.010	
E882088	< 0.005	
E882089	0.006	
E882090	3.75	
E882091	0.009	
E882092	0.007	
E882093	< 0.005	
E882094	< 0.005	
E882095	< 0.005	
E882096	0.005	
E882097	< 0.005	
E882098	< 0.005	
E882099	0.012	
E882100	< 0.005	
E882101	< 0.005	
E882102	< 0.005	
E882103	< 0.005	
E882104	0.007	
E882105	< 0.005	
E882106	< 0.005	
E882107	< 0.005	
E882108	< 0.005	
E882109	< 0.005	
E882110	3.48	
E882111	< 0.005	
E882112	0.008	
E882113	< 0.005	
E882114	< 0.005	
E882115	< 0.005	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E882116	< 0.005	
E882117	0.032	
E882118	< 0.005	
E882119	< 0.005	
E882120	< 0.005	
E882121	< 0.005	
E882122	< 0.005	
E882123	< 0.005	
E882124	< 0.005	
E882125	0.014	
E882126	0.023	
E882127	0.007	
E882128	0.005	
E882129	< 0.005	
E882130	7.03	
E882131	< 0.005	
E882132	< 0.005	
E882133	< 0.005	
E882134	< 0.005	
E882135	< 0.005	
E882136	0.013	
E882137	0.005	
E882138	< 0.005	
E882139	0.006	
E882140	< 0.005	
E882141	< 0.005	
E882142	< 0.005	
E883169	0.665	
E883170	> 10.0	13.2
E883171	0.051	
E883172	2.44	
E883173	4.80	
E883174	0.099	
E883175	0.392	
E883176	0.962	
E883177	0.053	
E883178	3.29	
E883179	3.44	
E883180	< 0.005	
E883181	1.32	
E883182	1.38	
E883183	0.133	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E883184	0.768	
E883185	> 10.0	15.4
E883186	> 10.0	20.7
E883187	8.96	
E883188	0.930	
E883189	0.174	
E883190	3.61	
E883191	0.072	
E883192	1.04	
E883193	2.18	
E883194	0.090	
E883195	0.214	
E883196	0.148	
E883197	0.152	
E883198	0.050	
E883199	0.046	
E883200	< 0.005	
E883201	0.478	
E883202	0.019	
E883203	0.034	
E883204	0.051	
E883205	0.016	
E883206	0.134	
E883207	0.024	
E883208	0.247	
E883209	0.095	
E883210	3.73	
E883211	0.493	
E883212	0.243	
E883213	0.762	
E883214	2.04	
E883215	1.89	
E883216	1.14	
E883217	1.51	
E883218	0.159	
E883219	0.044	
E883220	< 0.005	
E883221	0.036	
E883222	1.04	
E883223	0.175	
E883224	0.065	
E883225	0.144	
E883226	0.714	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E883227	0.998	
E883228	4.68	
E883229	0.073	
E883230	6.88	
E883231	0.038	
E883232	0.067	
E883233	0.369	
E883234	0.044	
E883235	0.008	
E883236	0.020	
E883237	0.194	
E883238	0.069	
E883239	0.022	
E883240	< 0.005	
E883241	0.018	
E883242	0.028	
E883243	0.041	
E883244	0.209	
E883245	0.018	
E883246	0.043	
E883247	0.334	
E883248	0.029	
E883249	1.58	
E883250	0.511	
E883251	0.149	
E883252	0.015	
E883253	0.051	
E883254	0.095	
E883255	1.02	
E883256	0.035	
E883257	0.042	
E883258	3.21	
E883259	0.107	
E883260	< 0.005	
E883261	0.035	
E883262	0.689	
E883263	0.011	
E883264	0.995	
OREAS 216 (Fire Assay) Meas		6.70
OREAS 216 (Fire Assay) Cert		6.66
OREAS 229 (Fire		12.0



	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
Assay) Meas		
OREAS 229 (Fire Assay) Cert		12.1
OREAS 217 (Fire Assay) Meas	0.340	
OREAS 217 (Fire Assay) Cert	0.338	
OREAS 217 (Fire Assay) Meas	0.320	
OREAS 217 (Fire Assay) Cert	0.338	
OREAS 217 (Fire Assay) Meas	0.327	
OREAS 217 (Fire Assay) Cert	0.338	
OREAS 217 (Fire Assay) Meas	0.321	
OREAS 217 (Fire Assay) Cert	0.338	
OREAS 217 (Fire Assay) Meas	0.340	
OREAS 217 (Fire Assay) Cert	0.338	
OREAS 217 (Fire Assay) Meas	0.337	
OREAS 217 (Fire Assay) Cert	0.338	
OREAS 217 (Fire Assay) Meas	0.325	
OREAS 217 (Fire Assay) Cert	0.338	
OREAS 217 (Fire Assay) Meas	0.332	
OREAS 217 (Fire Assay) Cert	0.338	
OREAS 217 (Fire Assay) Meas	0.338	
OREAS 217 (Fire Assay) Cert	0.338	
OREAS 217 (Fire Assay) Meas	0.338	
OREAS 217 (Fire Assay) Cert	0.338	
OREAS 217 (Fire Assay) Meas	0.318	
OREAS 217 (Fire Assay) Cert	0.338	
OREAS 217 (Fire Assay) Meas	0.334	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
Assay) Meas		
OREAS 217 (Fire Assay) Cert	0.338	
OREAS 215 (Fire Assay) Meas	3.43	
OREAS 215 (Fire Assay) Cert	3.54	
OREAS 215 (Fire Assay) Meas	3.43	
OREAS 215 (Fire Assay) Cert	3.54	
OREAS 215 (Fire Assay) Meas	3.37	
OREAS 215 (Fire Assay) Cert	3.54	
OREAS 215 (Fire Assay) Meas	3.42	
OREAS 215 (Fire Assay) Cert	3.54	
OREAS 215 (Fire Assay) Meas	3.46	
OREAS 215 (Fire Assay) Cert	3.54	
OREAS 215 (Fire Assay) Meas	3.49	
OREAS 215 (Fire Assay) Cert	3.54	
OREAS 215 (Fire Assay) Meas	3.46	
OREAS 215 (Fire Assay) Cert	3.54	
E878759 Orig	0.009	
E878759 Dup	0.008	
E878768 Orig	0.543	
E878768 Dup	0.486	
E878777 Orig	0.010	
E878777 Dup	0.010	
E878796 Orig	0.014	
E878796 Split	0.017	
E878804 Orig	0.026	
E878804 Dup	0.024	
E878815 Orig	0.175	
E878815 Dup	0.172	
E878825 Orig	0.010	
E878825 Dup	0.008	
E878835 Orig	0.024	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E878835 Dup	0.037	
E878845 Orig	0.013	
E878845 Dup	0.012	
E878846 Orig	0.032	
E878846 Split	0.048	
E878862 Orig	0.036	
E878862 Dup	0.048	
E878873 Orig	0.012	
E878873 Dup	0.010	
E878883 Orig	0.005	
E878883 Dup	0.006	
E878896 Orig	0.093	
E878896 Split	0.095	
E878897 Orig	0.022	
E878897 Dup	0.020	
E878905 Orig	0.020	
E878905 Dup	0.018	
E878914 Orig	0.046	
E878914 Dup	0.050	
E878931 Orig	< 0.005	
E878931 Dup	< 0.005	
E878940 Orig	< 0.005	
E878940 Dup	< 0.005	
E882061 Orig	< 0.005	
E882061 Split	< 0.005	
E882062 Orig	0.006	
E882062 Dup	< 0.005	
E882076 Orig	< 0.005	
E882076 Dup	< 0.005	
E882086 Orig	0.009	
E882086 Dup	0.008	
E882096 Orig	0.005	
E882096 Dup	0.006	
E882111 Orig	< 0.005	
E882111 Split	< 0.005	
E882113 Orig	< 0.005	
E882113 Dup	< 0.005	
E882124 Orig	< 0.005	
E882124 Dup	< 0.005	
E882134 Orig	< 0.005	
E882134 Dup	< 0.005	
E883174 Orig	0.099	
E883174 Dup	0.074	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E883185 Orig	> 10.0	
E883185 Dup	> 10.0	
E883186 Orig	> 10.0	21.0
E883186 Split	> 10.0	21.2
E883186 Orig		20.7
E883186 Dup		21.4
E883194 Orig	0.090	
E883194 Dup	0.073	
E883226 Orig	0.714	
E883226 Dup	0.724	
E883236 Orig	0.020	
E883236 Split	0.015	
E883242 Orig	0.028	
E883242 Dup	0.028	
E883260 Orig	< 0.005	
E883260 Dup	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
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Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank		< 0.03



**Date Submitted:** 19-Jul-18  
**Invoice No.:** A18-09358  
**Invoice Date:** 29-Aug-18  
**Your Reference:** Exploration

**GOLDCORP Canada Ltd--Musselwhite Mine**  
**P.O. Box 7500**  
**Thunder bay Ontario P7B 6S8**  
**Canada**

**ATTN: Katie Lucas**

## CERTIFICATE OF ANALYSIS

147 Core samples were submitted for analysis.

The following analytical package(s) were requested:

Code 1A2-GC Musselwhite Dryden Au - Fire Assay AA

REPORT **A18-09358**

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Notes:

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

CERTIFIED BY:

A handwritten signature in black ink, appearing to be "Emmanuel Esemé". The signature is stylized and somewhat cursive, written over a horizontal line.

Emmanuel Esemé , Ph.D.  
Quality Control

**ACTIVATION LABORATORIES LTD.**  
264 Government Road, Dryden, Ontario, Canada, P8N 2R3  
TELEPHONE +807 223-6168 or +1.888.228.5227 FAX +1.905.648.9613  
E-MAIL Dryden@actlabs.com ACTLABS GROUP WEBSITE www.actlabs.com

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E882143	< 0.005	
E882144	< 0.005	
E882145	< 0.005	
E882146	0.141	
E882147	< 0.005	
E882148	< 0.005	
E882149	0.005	
E882150	0.532	
E882151	0.005	
E882152	0.005	
E882153	< 0.005	
E882154	< 0.005	
E882155	< 0.005	
E882156	0.007	
E882157	0.016	
E882158	0.024	
E882159	0.097	
E882160	< 0.005	
E882161	0.015	
E882162	0.011	
E882163	0.019	
E882164	0.005	
E882165	< 0.005	
E882166	0.012	
E882167	0.005	
E882168	< 0.005	
E882169	< 0.005	
E882170	> 10.0	13.7
E882171	0.019	
E882172	< 0.005	
E882173	0.013	
E882174	< 0.005	
E882175	< 0.005	
E882176	< 0.005	
E882177	< 0.005	
E882178	0.009	
E882179	0.168	
E882180	< 0.005	
E882181	0.007	
E882182	0.022	
E882183	0.220	
E882184	0.023	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E882185	< 0.005	
E882186	< 0.005	
E882187	0.013	
E882188	< 0.005	
E882189	< 0.005	
E882190	3.50	
E882191	0.005	
E882192	0.006	
E882193	0.014	
E882194	0.015	
E882195	< 0.005	
E882196	< 0.005	
E882197	< 0.005	
E882198	< 0.005	
E883265	0.841	
E883266	0.336	
E883267	2.74	
E883268	2.23	
E883269	0.377	
E883270	> 10.0	13.6
E883271	2.87	
E883272	0.124	
E883273	0.014	
E883274	0.260	
E883275	0.033	
E883276	0.350	
E883277	0.020	
E883278	0.101	
E883279	0.019	
E883280	< 0.005	
E883281	0.061	
E883282	0.070	
E883283	0.262	
E883284	0.260	
E883285	1.18	
E883286	0.777	
E883287	0.072	
E883288	0.656	
E883289	1.66	
E883290	3.75	
E883291	0.701	
E883292	0.071	
E883293	0.098	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E883294	0.015	
E883295	0.008	
E883296	0.048	
E883297	0.016	
E883298	> 10.0	18.2
E883299	0.802	
E883300	< 0.005	
E883301	0.089	
E883302	0.182	
E883303	0.068	
E883304	0.414	
E883305	0.141	
E883306	0.030	
E883307	0.043	
E883308	0.032	
E883309	0.030	
E883310	3.42	
E883311	0.031	
E883312	0.038	
E883313	0.021	
E883314	0.142	
E883315	0.079	
E883316	0.434	
E883317	0.021	
E883318	0.009	
E883319	0.006	
E883320	< 0.005	
E883321	0.027	
E883322	< 0.005	
E883323	0.006	
E883324	< 0.005	
E883325	0.089	
E883326	0.106	
E883327	0.014	
E883328	0.210	
E883329	0.050	
E883330	7.08	
E883331	5.27	
E883332	0.014	
E883333	0.152	
E883334	0.024	
E883335	0.111	



	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E883336	0.077	
E883337	0.019	
E883338	0.016	
E883339	0.006	
E883340	< 0.005	
E883341	< 0.005	
E883342	0.006	
E883343	< 0.005	
E883344	0.008	
E883345	< 0.005	
E883346	< 0.005	
E883347	< 0.005	
E883348	0.015	
E883349	0.203	
E883350	0.486	
E883351	0.102	
E883352	0.162	
E883353	0.015	
E883354	0.012	
E883355	0.019	
OREAS 216 (Fire Assay) Meas		6.75
OREAS 216 (Fire Assay) Cert		6.66
OREAS 229 (Fire Assay) Meas		11.8
OREAS 229 (Fire Assay) Cert		12.1
OREAS 217 (Fire Assay) Meas	0.329	
OREAS 217 (Fire Assay) Cert	0.338	
OREAS 217 (Fire Assay) Meas	0.339	
OREAS 217 (Fire Assay) Cert	0.338	
OREAS 217 (Fire Assay) Meas	0.327	
OREAS 217 (Fire Assay) Cert	0.338	
OREAS 217 (Fire Assay) Meas	0.337	
OREAS 217 (Fire Assay) Cert	0.338	
OREAS 217 (Fire Assay) Meas	0.333	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
Assay) Meas		
OREAS 217 (Fire Assay) Cert	0.338	
OREAS 217 (Fire Assay) Meas	0.337	
OREAS 217 (Fire Assay) Cert	0.338	
OREAS 215 (Fire Assay) Meas	3.39	
OREAS 215 (Fire Assay) Cert	3.54	
OREAS 215 (Fire Assay) Meas	3.60	
OREAS 215 (Fire Assay) Cert	3.54	
OREAS 215 (Fire Assay) Meas	3.59	
OREAS 215 (Fire Assay) Cert	3.54	
OREAS 215 (Fire Assay) Meas	3.61	
OREAS 215 (Fire Assay) Cert	3.54	
OREAS 215 (Fire Assay) Meas	3.55	
OREAS 215 (Fire Assay) Cert	3.54	
OREAS 215 (Fire Assay) Meas	3.55	
OREAS 215 (Fire Assay) Cert	3.54	
E882152 Orig	0.005	
E882152 Dup	< 0.005	
E882162 Orig	0.011	
E882162 Dup	0.011	
E882172 Orig	< 0.005	
E882172 Dup	< 0.005	
E882187 Orig	0.013	
E882187 Dup	0.006	
E882192 Orig	0.006	
E882192 Split	< 0.005	
E882196 Orig	< 0.005	
E882196 Dup	< 0.005	
E883287 Orig	0.072	
E883287 Dup	0.079	
E883297 Orig	0.016	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E883297 Dup	0.022	
E883298 Orig		18.2
E883298 Dup		16.4
E883307 Orig	0.043	
E883307 Dup	0.052	
E883308 Orig	0.032	
E883308 Split	0.033	
E883321 Orig	0.027	
E883321 Dup	0.026	
E883341 Orig	< 0.005	
E883341 Dup	< 0.005	
E883353 Orig	0.015	
E883353 Dup	0.014	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank		< 0.03



**Date Submitted:** 19-Jul-18  
**Invoice No.:** A18-09359  
**Invoice Date:** 29-Aug-18  
**Your Reference:** Exploration

**GOLDCORP Canada Ltd--Musselwhite Mine**  
**P.O. Box 7500**  
**Thunder bay Ontario P7B 6S8**  
**Canada**

**ATTN: Katie Lucas**

## CERTIFICATE OF ANALYSIS

221 Core samples were submitted for analysis.

The following analytical package(s) were requested:

Code 1A2-GC Musselwhite Dryden Au - Fire Assay AA

REPORT **A18-09359**

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Notes:

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

CERTIFIED BY:

A handwritten signature in black ink, appearing to be "Emmanuel Esemé". The signature is written in a cursive, somewhat stylized font.

Emmanuel Esemé , Ph.D.  
Quality Control

**ACTIVATION LABORATORIES LTD.**  
264 Government Road, Dryden, Ontario, Canada, P8N 2R3  
TELEPHONE +807 223-6168 or +1.888.228.5227 FAX +1.905.648.9613  
E-MAIL Dryden@actlabs.com ACTLABS GROUP WEBSITE www.actlabs.com

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E889379	0.658	
E889380	< 0.005	
E889381	0.253	
E889382	0.032	
E889383	0.054	
E889384	0.069	
E889385	1.27	
E889386	0.106	
E889387	0.027	
E889388	0.113	
E889389	0.316	
E889390	3.55	
E889391	0.418	
E889392	0.065	
E889393	0.033	
E889394	0.065	
E889395	0.230	
E889396	0.021	
E889397	0.026	
E889398	0.019	
E889399	0.019	
E889400	< 0.005	
E889401	0.029	
E889402	0.014	
E889403	0.023	
E889404	0.028	
E889405	0.094	
E889406	0.021	
E889407	0.025	
E889408	0.047	
E889409	0.070	
E889410	3.41	
E889411	0.081	
E889412	0.005	
E889413	0.005	
E889414	0.009	
E889415	0.021	
E889416	0.135	
E889417	0.151	
E889418	3.66	
E889419	0.221	
E889420	< 0.005	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E889421	0.269	
E889422	0.080	
E889423	0.184	
E889424	0.482	
E889425	0.495	
E889426	0.246	
E889427	0.692	
E889428	0.048	
E889429	0.095	
E889430	7.15	
E889431	0.061	
E889432	0.158	
E889433	0.194	
E889434	0.164	
E889435	0.037	
E889436	0.008	
E889437	0.345	
E889438	0.617	
E889439	0.604	
E889440	< 0.005	
E889441	0.008	
E889442	0.017	
E889443	0.030	
E889444	0.058	
E889445	0.008	
E889446	0.011	
E889447	0.005	
E889448	0.007	
E889449	1.22	
E889450	0.474	
E889451	0.060	
E889452	0.052	
E889453	0.006	
E889454	0.005	
E889455	0.015	
E889456	0.006	
E889457	0.008	
E889458	0.008	
E889459	0.008	
E889460	< 0.005	
E889461	0.011	
E889462	0.012	
E889463	0.006	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E889464	0.007	
E889465	0.007	
E889466	0.010	
E889467	0.076	
E889468	0.040	
E889469	1.24	
E889470	> 10.0	13.4
E889471	0.216	
E889472	0.095	
E889473	0.147	
E889474	0.028	
E889475	0.020	
E889476	0.087	
E889477	0.016	
E889478	0.014	
E889479	0.005	
E889480	< 0.005	
E889481	0.026	
E889482	0.016	
E889483	0.035	
E889484	0.078	
E889485	0.071	
E889486	2.33	
E889487	0.515	
E889488	0.754	
E889489	0.139	
E889490	3.43	
E889491	0.184	
E889492	0.057	
E889493	0.073	
E889494	0.039	
E889495	0.075	
E889496	0.030	
E889497	0.057	
E889498	0.255	
E889499	0.029	
E889500	< 0.005	
E889501	0.056	
E889502	0.022	
E889503	0.030	
E889504	0.016	
E889505	0.064	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E889506	0.027	
E889507	0.075	
E889508	0.065	
E889509	0.010	
E889510	3.68	
E889511	0.021	
E889512	0.013	
E889513	0.015	
E889514	0.194	
E889515	0.128	
E889516	0.059	
E889517	0.069	
E889518	0.030	
E889519	0.037	
E889520	< 0.005	
E889521	0.112	
E889522	0.084	
E889523	0.385	
E889524	0.105	
E889525	1.63	
E889526	0.379	
E889527	0.016	
E889528	0.018	
E889529	0.030	
E889530	7.04	
E889531	0.419	
E889532	0.253	
E889533	0.609	
E889534	0.174	
E889535	1.78	
E889536	1.60	
E889537	0.963	
E889538	0.208	
E889539	0.104	
E889540	< 0.005	
E889541	0.044	
E889542	0.070	
E889543	1.03	
E889544	3.80	
E889545	0.633	
E889546	1.57	
E889547	1.37	
E889548	0.344	



	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E889549	7.82	
E889550	0.437	
E889551	0.772	
E889552	0.036	
E889553	0.008	
E889554	0.006	
E889555	0.008	
E889556	0.005	
E889557	0.007	
E889558	0.007	
E889559	0.009	
E889560	< 0.005	
E889561	0.547	
E889562	0.239	
E889563	< 0.005	
E889564	< 0.005	
E889565	< 0.005	
E889566	0.005	
E889567	< 0.005	
E889568	< 0.005	
E889569	< 0.005	
E889570	> 10.0	13.7
E889571	0.012	
E889572	< 0.005	
E889573	< 0.005	
E889574	< 0.005	
E882501	< 0.005	
E882502	0.006	
E882503	0.008	
E882504	0.008	
E882505	< 0.005	
E882506	< 0.005	
E882507	0.005	
E882508	0.005	
E882509	0.006	
E882510	3.53	
E882511	< 0.005	
E882512	< 0.005	
E882513	< 0.005	
E882514	< 0.005	
E882515	< 0.005	
E882516	0.005	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E882517	< 0.005	
E882518	< 0.005	
E882519	< 0.005	
E882520	< 0.005	
E882521	< 0.005	
E882522	< 0.005	
E882523	< 0.005	
E882524	< 0.005	
E882525	< 0.005	
OREAS 216 (Fire Assay) Meas		6.75
OREAS 216 (Fire Assay) Cert		6.66
OREAS 229 (Fire Assay) Meas		11.8
OREAS 229 (Fire Assay) Cert		12.1
OREAS 217 (Fire Assay) Meas	0.329	
OREAS 217 (Fire Assay) Cert	0.338	
OREAS 217 (Fire Assay) Meas	0.323	
OREAS 217 (Fire Assay) Cert	0.338	
OREAS 217 (Fire Assay) Meas	0.325	
OREAS 217 (Fire Assay) Cert	0.338	
OREAS 217 (Fire Assay) Meas	0.325	
OREAS 217 (Fire Assay) Cert	0.338	
OREAS 217 (Fire Assay) Meas	0.330	
OREAS 217 (Fire Assay) Cert	0.338	
OREAS 217 (Fire Assay) Meas	0.330	
OREAS 217 (Fire Assay) Cert	0.338	
OREAS 217 (Fire Assay) Meas	0.327	
OREAS 217 (Fire Assay) Cert	0.338	
OREAS 217 (Fire Assay) Meas	0.326	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
OREAS 217 (Fire Assay) Cert	0.338	
OREAS 215 (Fire Assay) Meas	3.39	
OREAS 215 (Fire Assay) Cert	3.54	
OREAS 215 (Fire Assay) Meas	3.43	
OREAS 215 (Fire Assay) Cert	3.54	
OREAS 215 (Fire Assay) Meas	3.43	
OREAS 215 (Fire Assay) Cert	3.54	
OREAS 215 (Fire Assay) Meas	3.41	
OREAS 215 (Fire Assay) Cert	3.54	
OREAS 215 (Fire Assay) Meas	3.37	
OREAS 215 (Fire Assay) Cert	3.54	
OREAS 215 (Fire Assay) Meas	3.47	
OREAS 215 (Fire Assay) Cert	3.54	
OREAS 215 (Fire Assay) Meas	3.35	
OREAS 215 (Fire Assay) Cert	3.54	
OREAS 215 (Fire Assay) Meas	3.42	
OREAS 215 (Fire Assay) Cert	3.54	
E889388 Orig	0.113	
E889388 Dup	0.138	
E889398 Orig	0.019	
E889398 Dup	0.016	
E889409 Orig	0.070	
E889409 Dup	0.085	
E889423 Orig	0.184	
E889423 Dup	0.202	
E889428 Orig	0.048	
E889428 Split	0.037	
E889432 Orig	0.158	
E889432 Dup	0.158	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E889442 Orig	0.017	
E889442 Dup	0.012	
E889458 Orig	0.008	
E889458 Dup	0.009	
E889467 Orig	0.076	
E889467 Dup	0.077	
E889477 Orig	0.016	
E889477 Dup	0.016	
E889478 Orig	0.014	
E889478 Split	0.017	
E889491 Orig	0.184	
E889491 Dup	0.166	
E889501 Orig	0.056	
E889501 Dup	0.056	
E889511 Orig	0.021	
E889511 Dup	0.019	
E889523 Orig	0.385	
E889523 Dup	0.465	
E889528 Orig	0.018	
E889528 Split	0.019	
E889535 Orig	1.78	
E889535 Dup	1.82	
E889561 Orig	0.547	
E889561 Dup	0.629	
E889571 Orig	0.012	
E889571 Dup	0.009	
E882504 Orig	0.008	
E882504 Split	0.006	
E882505 Orig	< 0.005	
E882505 Dup	< 0.005	
E882518 Orig	< 0.005	
E882518 Dup	< 0.005	
E882520 Orig	< 0.005	
E882520 Dup	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank		< 0.03



**Date Submitted:** 20-Jul-18  
**Invoice No.:** A18-09415  
**Invoice Date:** 11-Sep-18  
**Your Reference:** Exploration

**GOLDCORP Canada Ltd--Musselwhite Mine**  
**P.O. Box 7500,**  
**Thunder bay Ontario P7B 6S8 Canada**

**ATTN: Katie Lucas**

## CERTIFICATE OF ANALYSIS

209 Core samples were submitted for analysis.

The following analytical package(s) were requested:

Code 1A2-GC Musselwhite Dryden Au - Fire Assay AA

REPORT **A18-09415**

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Notes:

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

CERTIFIED BY:

A handwritten signature in black ink, consisting of several loops and a long horizontal stroke at the end.

Emmanuel Esemé , Ph.D.  
Quality Control

**ACTIVATION LABORATORIES LTD.**  
264 Government Road, Dryden, Ontario, Canada, P8N 2R3  
TELEPHONE +807 223-6168 or +1.888.228.5227 FAX +1.905.648.9613  
E-MAIL Dryden@actlabs.com ACTLABS GROUP WEBSITE www.actlabs.com

	FA-AA
SAMPLE	Au
DESCRIPTION	g/mt
E882526	0.007
E882527	< 0.005
E882528	< 0.005
E882529	0.005
E882530	7.13
E882531	0.014
E882532	< 0.005
E882533	< 0.005
E882534	< 0.005
E882535	< 0.005
E882536	< 0.005
E882537	< 0.005
E882538	< 0.005
E882539	< 0.005
E882540	< 0.005
E882541	< 0.005
E882542	< 0.005
E882543	< 0.005
E882544	0.005
E882545	0.015
E882546	0.009
E882547	0.008
E882548	< 0.005
E882549	0.005
E882550	0.436
E882551	0.008
E882552	0.007
E882553	0.008
E882554	0.006
E882555	0.008
E882556	0.007
E882557	0.006
E882558	0.005
E882559	0.008
E882560	< 0.005
E882561	< 0.005
E882562	0.005
E882563	< 0.005
E882564	< 0.005
E882565	0.026
E882566	< 0.005
E882567	< 0.005
E882568	< 0.005

	FA-AA
SAMPLE	Au
DESCRIPTION	g/mt
E882569	< 0.005
E882570	7.06
E882571	0.013
E882572	0.026
E882573	0.040
E882574	0.024
E882575	0.010
E882576	0.048
E882577	< 0.005
E882578	< 0.005
E882579	0.009
E882580	< 0.005
E882581	0.007
E882582	0.007
E882583	0.013
E882584	0.014
E882585	0.006
E882586	0.014
E882587	0.031
E882588	0.025
E882589	0.018
E882590	3.40
E882591	0.031
E882592	0.011
E882593	0.126
E882594	0.033
E882595	0.014
E882596	0.016
E882597	0.017
E882598	0.010
E882599	0.016
E882600	< 0.005
E882601	0.013
E882602	< 0.005
E882603	< 0.005
E882604	< 0.005
E882605	< 0.005
E882606	0.006
E882607	< 0.005
E882608	< 0.005
E882609	0.009
E882610	3.79
E882611	0.011



	FA-AA
SAMPLE	Au
DESCRIPTION	g/mt
E882612	0.011
E882613	0.011
E882614	0.009
E882615	< 0.005
E882616	0.005
E882617	< 0.005
E882618	< 0.005
E882619	< 0.005
E882620	< 0.005
E882621	< 0.005
E882622	< 0.005
E882623	< 0.005
E882624	< 0.005
E882625	< 0.005
E882626	< 0.005
E882627	< 0.005
E882628	< 0.005
E882629	< 0.005
E882630	6.91
E882631	< 0.005
E882632	< 0.005
E882633	< 0.005
E882634	< 0.005
E882635	< 0.005
E882636	0.007
E882637	0.006
E882638	0.006
E882639	0.007
E882640	< 0.005
E882641	0.005
E882642	0.007
E882643	0.059
E882644	0.005
E882645	0.006
E882646	0.014
E882647	0.006
E882648	0.009
E882649	< 0.005
E882650	0.466
E882651	0.010
E882652	0.017
E882653	0.009
E882654	0.009

	FA-AA
SAMPLE	Au
DESCRIPTION	g/mt
E882655	0.007
E882656	0.006
E882657	0.007
E882658	0.007
E882659	0.008
E882660	< 0.005
E882661	< 0.005
E882662	0.010
E882663	0.008
E882664	0.010
E882665	0.005
E882666	0.005
E882667	0.006
E882668	0.013
E882669	0.007
E882670	6.88
E882671	0.005
E882672	0.007
E882673	0.006
E882674	< 0.005
E882675	0.008
E882676	< 0.005
E882677	0.009
E882678	0.068
E882679	0.006
E882680	< 0.005
E882681	0.010
E882682	0.022
E882683	< 0.005
E882684	0.010
E882685	0.014
E882686	< 0.005
E882687	0.053
E882688	0.013
E882199	< 0.005
E882200	0.007
E882201	< 0.005
E882202	< 0.005
E882203	< 0.005
E882204	0.018
E882205	< 0.005
E882206	0.011
E882207	< 0.005

	FA-AA
SAMPLE	Au
DESCRIPTION	g/mt
E882208	< 0.005
E882209	< 0.005
E882210	3.55
E882211	0.006
E882212	< 0.005
E882213	0.007
E882214	< 0.005
E882215	0.008
E882216	0.012
E882217	0.005
E882218	0.012
E882219	< 0.005
E882220	< 0.005
E882221	0.022
E882222	0.006
E882223	< 0.005
E882224	< 0.005
E882225	< 0.005
E882226	0.006
E882227	0.049
E882228	0.005
E882229	< 0.005
E882230	7.11
E882231	0.007
E882232	0.009
E882233	0.008
E882234	< 0.005
E882235	< 0.005
E882236	0.030
E882237	0.158
E882238	0.282
E882239	0.121
E882240	< 0.005
E882241	0.193
E882242	1.18
E882243	0.611
E882244	1.73
OREAS 220 (Fire Assay) Meas	0.829
OREAS 220 (Fire Assay) Cert	0.866
OREAS 220 (Fire Assay) Meas	0.886
OREAS 220 (Fire	0.866

	FA-AA
SAMPLE	Au
DESCRIPTION	g/mt
Assay) Cert	
OREAS 220 (Fire Assay) Meas	0.823
OREAS 220 (Fire Assay) Cert	0.866
OREAS 220 (Fire Assay) Meas	0.826
OREAS 220 (Fire Assay) Cert	0.866
OREAS 220 (Fire Assay) Meas	0.848
OREAS 220 (Fire Assay) Cert	0.866
OREAS 220 (Fire Assay) Meas	0.835
OREAS 220 (Fire Assay) Cert	0.866
OREAS 220 (Fire Assay) Meas	0.861
OREAS 220 (Fire Assay) Cert	0.866
OREAS 220 (Fire Assay) Meas	0.851
OREAS 220 (Fire Assay) Cert	0.866
OREAS 220 (Fire Assay) Meas	0.855
OREAS 220 (Fire Assay) Cert	0.866
OREAS 209 (Fire Assay) Meas	1.56
OREAS 209 (Fire Assay) Cert	1.58
OREAS 209 (Fire Assay) Meas	1.52
OREAS 209 (Fire Assay) Cert	1.58
OREAS 209 (Fire Assay) Meas	1.57
OREAS 209 (Fire Assay) Cert	1.58
OREAS 209 (Fire Assay) Meas	1.58
OREAS 209 (Fire Assay) Cert	1.58
OREAS 209 (Fire Assay) Meas	1.58
OREAS 209 (Fire Assay) Cert	1.58

	FA-AA
SAMPLE	Au
DESCRIPTION	g/mt
OREAS 209 (Fire Assay) Meas	1.57
OREAS 209 (Fire Assay) Cert	1.58
OREAS 209 (Fire Assay) Meas	1.57
OREAS 209 (Fire Assay) Cert	1.58
OREAS 209 (Fire Assay) Meas	1.63
OREAS 209 (Fire Assay) Cert	1.58
OREAS 209 (Fire Assay) Meas	1.58
OREAS 209 (Fire Assay) Cert	1.58
E882526 Orig	0.007
E882526 Dup	< 0.005
E882546 Orig	0.009
E882546 Dup	0.010
E882557 Orig	0.006
E882557 Dup	0.005
E882561 Orig	< 0.005
E882561 Dup	< 0.005
E882575 Orig	0.010
E882575 Split	0.016
E882580 Orig	< 0.005
E882580 Dup	< 0.005
E882591 Orig	0.031
E882591 Dup	0.033
E882609 Orig	0.009
E882609 Dup	0.009
E882616 Orig	0.005
E882616 Dup	< 0.005
E882625 Orig	< 0.005
E882625 Split	< 0.005
E882626 Orig	< 0.005
E882626 Dup	< 0.005
E882643 Orig	0.059
E882643 Dup	0.039
E882651 Orig	0.010
E882651 Dup	0.009
E882661 Orig	< 0.005
E882661 Dup	< 0.005
E882675 Orig	0.008

	FA-AA
SAMPLE	Au
DESCRIPTION	g/mt
E882675 Split	0.007
E882677 Orig	0.009
E882677 Dup	0.010
E882684 Orig	0.010
E882684 Dup	0.014
E882205 Orig	< 0.005
E882205 Dup	0.014
E882218 Orig	0.012
E882218 Dup	0.012
E882227 Orig	0.049
E882227 Dup	0.030
E882235 Orig	< 0.005
E882235 Split	< 0.005
E882235 Split	< 0.005
Method Blank	< 0.005
Method Blank	< 0.005
Method Blank	< 0.005
Method Blank	< 0.005
Method Blank	< 0.005
Method Blank	< 0.005
Method Blank	< 0.005
Method Blank	< 0.005
Method Blank	< 0.005
Method Blank	< 0.005
Method Blank	< 0.005
Method Blank	< 0.005
Method Blank	< 0.005
Method Blank	< 0.005
Method Blank	< 0.005
Method Blank	< 0.005
Method Blank	< 0.005
Method Blank	< 0.005
Method Blank	< 0.005
Method Blank	< 0.005



**Date Submitted:** 27-Jul-18  
**Invoice No.:** A18-10024  
**Invoice Date:** 11-Sep-18  
**Your Reference:** Exploration

**GOLDCORP Canada Ltd--Musselwhite Mine**  
**P.O. Box 7500**  
**Thunder bay Ontario P7B 6S8**  
**Canada**

**ATTN: Katie Lucas**

## CERTIFICATE OF ANALYSIS

410 Core samples were submitted for analysis.

The following analytical package(s) were requested:

Code 1A2-GC Musselwhite Tbay Au - Fire Assay AA

REPORT **A18-10024**

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Notes:

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

CERTIFIED BY:

A handwritten signature in black ink, appearing to be "Emmanuel Esemé". The signature is stylized and somewhat cursive, with a prominent loop at the end.

Emmanuel Esemé , 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

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E882245	0.154	
E882246	0.023	
E882247	0.026	
E882248	0.031	
E882249	0.016	
E882250	0.557	
E882251	0.009	
E882252	0.015	
E882253	0.008	
E882254	< 0.005	
E882255	0.006	
E882256	< 0.005	
E882257	0.011	
E882258	< 0.005	
E882259	0.012	
E882260	< 0.005	
E882261	0.005	
E882262	0.010	
E882263	0.010	
E882264	0.007	
E882265	0.005	
E882266	0.010	
E882267	0.011	
E882268	0.029	
E882269	0.055	
E882270	7.18	
E882271	0.024	
E882272	0.009	
E882273	0.011	
E882274	0.060	
E882275	0.011	
E882276	0.009	
E882277	0.005	
E882278	0.012	
E882279	0.007	
E882280	< 0.005	
E882281	0.009	
E882282	0.010	
E882283	0.077	
E882284	0.017	
E882285	0.011	
E882286	0.045	



	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E882287	3.89	
E882288	> 10.0	13.8
E882289	0.031	
E882290	3.48	
E882291	0.048	
E882292	0.025	
E882293	0.017	
E882294	0.012	
E882295	0.014	
E882296	0.320	
E882297	0.158	
E882298	0.177	
E882299	5.20	
E882300	< 0.005	
E882301	0.092	
E882302	2.16	
E882303	> 10.0	13.6
E882304	0.714	
E882305	0.010	
E882306	0.011	
E862089	0.282	
E862090	3.52	
E862091	0.105	
E862092	4.04	
E862093	0.013	
E862094	0.044	
E862095	0.053	
E862096	0.200	
E862097	0.028	
E862098	0.084	
E862099	0.102	
E862100	< 0.005	
E862101	0.302	
E862102	0.212	
E862103	0.133	
E862104	0.066	
E862105	0.327	
E862106	0.059	
E862107	0.030	
E862108	0.028	
E862109	0.895	
E862110	3.73	
E862111	0.032	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E862112	0.182	
E862113	0.074	
E862114	0.043	
E862115	0.139	
E862116	0.005	
E862117	0.040	
E862118	0.062	
E862119	0.126	
E862120	< 0.005	
E862121	0.214	
E862122	0.294	
E862123	0.197	
E862124	0.247	
E862125	0.948	
E862126	0.005	
E862127	< 0.005	
E862128	< 0.005	
E862129	0.047	
E862130	7.27	
E862131	0.006	
E862132	< 0.005	
E862133	< 0.005	
E862134	< 0.005	
E882324	0.013	
E882325	0.015	
E882326	0.018	
E882327	0.095	
E882328	< 0.005	
E882329	0.010	
E882330	7.27	
E882331	> 10.0	11.5
E882332	> 10.0	18.1
E882333	0.041	
E882334	0.037	
E882335	0.144	
E882336	0.010	
E882337	0.006	
E882338	0.007	
E882339	0.463	
E882340	< 0.005	
E882341	0.016	
E882342	0.024	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E882343	0.024	
E882344	2.51	
E882345	0.007	
E882346	7.44	
E882347	0.053	
E882348	< 0.005	
E882349	0.020	
E882350	0.510	
E882351	0.005	
E882352	0.017	
E882353	0.028	
E882354	0.071	
E882355	0.135	
E882356	0.287	
E882357	0.613	
E882358	0.452	
E882359	0.065	
E882360	< 0.005	
E882361	0.021	
E882362	7.94	
E882363	0.141	
E882364	0.114	
E882365	0.089	
E882366	0.032	
E882367	0.119	
E882368	0.462	
E882369	0.009	
E882370	7.03	
E882371	0.017	
E882372	0.009	
E882373	0.335	
E882374	0.038	
E882375	0.039	
E882376	0.046	
E882377	0.011	
E882378	0.040	
E882379	0.022	
E882380	< 0.005	
E882381	0.648	
E882382	0.010	
E882383	0.037	
E882384	0.012	
E882385	0.026	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E882386	0.262	
E882387	0.016	
E882388	0.017	
E882389	0.352	
E882390	3.50	
E882391	0.089	
E882392	0.089	
E882393	0.045	
E882394	0.008	
E882395	0.006	
E882396	< 0.005	
E882397	0.052	
E882398	0.283	
E882399	0.005	
E882400	< 0.005	
E882401	0.008	
E882402	0.023	
E882403	0.013	
E882404	0.011	
E882405	0.007	
E882406	0.010	
E882407	0.023	
E882408	0.056	
E882409	5.88	
E882410	3.41	
E882411	8.81	
E882412	1.61	
E882413	0.930	
E882414	0.959	
E882415	0.018	
E882416	0.006	
E882417	0.008	
E882418	0.008	
E882419	0.050	
E882420	< 0.005	
E882421	1.08	
E882422	3.67	
E882423	0.125	
E882424	0.008	
E882425	0.021	
E882426	0.025	
E882427	> 10.0	10.4

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E882428	0.036	
E882429	0.107	
E882430	7.43	
E882431	0.015	
E882432	0.055	
E882433	0.022	
E882434	0.069	
E882435	0.009	
E882436	0.013	
E882437	0.045	
E882438	0.078	
E882439	0.162	
E882440	< 0.005	
E882441	0.223	
E882442	0.143	
E882443	0.054	
E882444	0.022	
E882445	0.044	
E882446	0.233	
E882447	0.051	
E882448	0.064	
E882449	0.177	
E882450	0.541	
E882451	0.709	
E882452	0.259	
E882453	0.200	
E882454	0.826	
E882455	6.80	
E882456	0.262	
E882457	0.462	
E882458	0.037	
E882459	0.083	
E882460	< 0.005	
E882461	0.048	
E882462	0.083	
E882463	0.275	
E882464	0.125	
E882465	0.176	
E882466	0.085	
E882467	2.36	
E882468	0.005	
E882469	0.005	
E882470	7.25	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E882471	0.005	
E882472	< 0.005	
E882473	< 0.005	
E882474	< 0.005	
E882475	< 0.005	
E882476	< 0.005	
E882477	< 0.005	
E882478	< 0.005	
E882479	< 0.005	
E882480	< 0.005	
E882481	< 0.005	
E882482	< 0.005	
E882483	< 0.005	
E882484	< 0.005	
E882485	0.023	
E882486	0.005	
E882487	0.016	
E882488	< 0.005	
E882489	< 0.005	
E882490	3.40	
E882491	< 0.005	
E882492	< 0.005	
E882689	0.005	
E882690	3.59	
E882691	< 0.005	
E882692	0.007	
E882693	0.006	
E882694	0.006	
E882695	0.006	
E882696	< 0.005	
E882697	< 0.005	
E882698	< 0.005	
E882699	0.014	
E882700	< 0.005	
E882701	< 0.005	
E882702	< 0.005	
E882703	0.006	
E882704	< 0.005	
E882705	0.005	
E882706	0.007	
E882707	0.005	
E882708	< 0.005	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E882709	< 0.005	
E882710	3.57	
E882711	< 0.005	
E882712	< 0.005	
E882713	< 0.005	
E882714	< 0.005	
E882715	< 0.005	
E882716	< 0.005	
E882717	0.005	
E882718	< 0.005	
E882719	< 0.005	
E882720	< 0.005	
E889822	0.007	
E889823	0.007	
E889824	0.005	
E889825	0.305	
E889826	0.109	
E889827	0.012	
E889828	< 0.005	
E889829	0.419	
E889830	6.88	
E889831	0.048	
E889832	3.22	
E889833	0.018	
E889834	0.112	
E889835	0.029	
E889836	0.307	
E889837	1.56	
E889838	0.061	
E889839	0.049	
E889840	< 0.005	
E889841	0.028	
E889842	0.017	
E889843	0.012	
E889844	0.128	
E889845	0.025	
E889846	0.011	
E889847	0.022	
E889848	0.007	
E889849	0.064	
E889850	0.454	
E889851	0.037	
E889852	0.059	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E889853	0.317	
E889854	0.030	
E889855	0.290	
E889856	5.44	
E889857	0.102	
E889858	0.114	
E889859	0.115	
E889860	< 0.005	
E889861	0.025	
E889862	0.022	
E889863	0.018	
E889864	0.082	
E889865	0.069	
E889866	0.164	
E889867	0.415	
E889868	0.035	
E889869	0.126	
E889870	7.40	
E889871	7.72	
E889872	2.10	
E889873	0.425	
E889874	0.266	
E889875	0.580	
E889876	0.095	
E889877	1.18	
E889878	0.042	
E889879	0.102	
E889880	< 0.005	
E889881	0.035	
E889882	0.055	
E889883	0.088	
E889884	0.127	
E889885	0.284	
E889886	0.287	
E889887	0.144	
E889888	0.056	
E889889	0.046	
E889890	3.55	
E889891	0.031	
E889892	0.099	
E889893	0.069	
E889894	0.056	



	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E889895	0.772	
E889896	0.095	
E889897	0.098	
E889898	0.154	
E889899	0.090	
E889900	< 0.005	
E889901	0.034	
E889902	0.664	
E889903	0.082	
E889904	< 0.005	
E889905	< 0.005	
E889906	< 0.005	
E889907	< 0.005	
E889908	0.011	
E889909	0.006	
E889910	3.73	
E889911	0.024	
E889912	0.006	
E889913	0.010	
E889914	0.005	
E889915	< 0.005	
E889916	< 0.005	
E889917	< 0.005	
E889918	< 0.005	
E889919	0.007	
E889920	< 0.005	
E889921	0.005	
E889922	0.006	
OREAS 216 (Fire Assay) Meas		6.97
OREAS 216 (Fire Assay) Cert		6.66
OREAS 216 (Fire Assay) Meas		6.62
OREAS 216 (Fire Assay) Cert		6.66
OREAS 229 (Fire Assay) Meas		12.1
OREAS 229 (Fire Assay) Cert		12.1
OREAS 229 (Fire Assay) Meas		12.1
OREAS 229 (Fire Assay) Cert		12.1

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
OREAS 217 (Fire Assay) Meas	0.337	
OREAS 217 (Fire Assay) Cert	0.338	
OREAS 217 (Fire Assay) Meas	0.348	
OREAS 217 (Fire Assay) Cert	0.338	
OREAS 217 (Fire Assay) Meas	0.344	
OREAS 217 (Fire Assay) Cert	0.338	
OREAS 217 (Fire Assay) Meas	0.339	
OREAS 217 (Fire Assay) Cert	0.338	
OREAS 217 (Fire Assay) Meas	0.321	
OREAS 217 (Fire Assay) Cert	0.338	
OREAS 217 (Fire Assay) Meas	0.329	
OREAS 217 (Fire Assay) Cert	0.338	
OREAS 217 (Fire Assay) Meas	0.334	
OREAS 217 (Fire Assay) Cert	0.338	
OREAS 217 (Fire Assay) Meas	0.354	
OREAS 217 (Fire Assay) Cert	0.338	
OREAS 217 (Fire Assay) Meas	0.336	
OREAS 217 (Fire Assay) Cert	0.338	
OREAS 217 (Fire Assay) Meas	0.334	
OREAS 217 (Fire Assay) Cert	0.338	
OREAS 217 (Fire Assay) Meas	0.334	
OREAS 217 (Fire Assay) Cert	0.338	
OREAS 215 (Fire Assay) Meas	3.53	
OREAS 215 (Fire Assay) Cert	3.54	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
OREAS 215 (Fire Assay) Meas	3.52	
OREAS 215 (Fire Assay) Cert	3.54	
OREAS 215 (Fire Assay) Meas	3.54	
OREAS 215 (Fire Assay) Cert	3.54	
OREAS 215 (Fire Assay) Meas	3.56	
OREAS 215 (Fire Assay) Cert	3.54	
OREAS 215 (Fire Assay) Meas	3.52	
OREAS 215 (Fire Assay) Cert	3.54	
OREAS 215 (Fire Assay) Meas	3.59	
OREAS 215 (Fire Assay) Cert	3.54	
OREAS 215 (Fire Assay) Meas	3.62	
OREAS 215 (Fire Assay) Cert	3.54	
OREAS 215 (Fire Assay) Meas	3.58	
OREAS 215 (Fire Assay) Cert	3.54	
OREAS 215 (Fire Assay) Meas	3.43	
OREAS 215 (Fire Assay) Cert	3.54	
OREAS 215 (Fire Assay) Meas	3.54	
OREAS 215 (Fire Assay) Cert	3.54	
OREAS 215 (Fire Assay) Meas	3.51	
OREAS 215 (Fire Assay) Cert	3.54	
OREAS 215 (Fire Assay) Meas	3.62	
OREAS 215 (Fire Assay) Cert	3.54	
OREAS 215 (Fire Assay) Meas	3.49	
OREAS 215 (Fire Assay) Cert	3.54	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
OREAS 215 (Fire Assay) Meas	3.58	
OREAS 215 (Fire Assay) Cert	3.54	
E882254 Orig	< 0.005	
E882254 Dup	< 0.005	
E882264 Orig	0.007	
E882264 Dup	0.008	
E882274 Orig	0.060	
E882274 Dup	0.041	
E882287 Orig	3.89	
E882287 Dup	4.37	
E882294 Orig	0.012	
E882294 Split	0.009	
E882298 Orig	0.177	
E882298 Dup	0.149	
E882303 Orig		13.6
E882303 Dup		15.3
E862091 Orig	0.105	
E862091 Dup	0.083	
E862105 Orig	0.327	
E862105 Dup	0.473	
E862115 Orig	0.139	
E862115 Dup	0.111	
E862125 Orig	0.948	
E862125 Dup	0.984	
E862126 Orig	0.005	
E862126 Split	< 0.005	
E882328 Orig	< 0.005	
E882328 Dup	< 0.005	
E882329 Orig	0.010	
E882329 Dup	0.007	
E882331 Orig		11.5
E882338 Orig	0.007	
E882338 Dup	0.007	
E882348 Orig	< 0.005	
E882348 Dup	< 0.005	
E882363 Orig	0.141	
E882363 Dup	0.161	
E882365 Orig	0.089	
E882365 Split	0.072	
E882368 Orig	0.462	
E882368 Dup	0.481	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E882372 Orig	0.009	
E882372 Dup	0.009	
E882382 Orig	0.010	
E882382 Dup	0.012	
E882397 Orig	0.052	
E882397 Dup	0.037	
E882407 Orig	0.023	
E882407 Dup	0.028	
E882415 Orig	0.018	
E882415 Split	0.021	
E882416 Orig	0.006	
E882416 Dup	0.006	
E882431 Orig	0.015	
E882431 Dup	0.010	
E882442 Orig	0.143	
E882442 Dup	0.147	
E882451 Orig	0.709	
E882451 Dup	0.702	
E882465 Orig	0.171	
E882465 Split	0.159	
E882465 Orig	0.176	
E882465 Dup	0.167	
E882475 Orig	< 0.005	
E882475 Dup	< 0.005	
E882485 Orig	0.023	
E882485 Dup	0.021	
E882696 Orig	< 0.005	
E882696 Dup	< 0.005	
E882706 Orig	0.007	
E882706 Dup	< 0.005	
E882711 Orig	< 0.005	
E882711 Split	< 0.005	
E882715 Orig	< 0.005	
E882715 Dup	< 0.005	
E889831 Orig	0.048	
E889831 Dup	0.056	
E889841 Orig	0.028	
E889841 Dup	0.025	
E889851 Orig	0.037	
E889851 Dup	0.041	
E889862 Orig	0.022	
E889862 Split	0.029	
E889865 Orig	0.069	

	FA-AA	FA- GRA
SAMPLE	Au	Au
DESCRIPTION	g/mt	g/tonne
E889865 Dup	0.075	
E889875 Orig	0.580	
E889875 Dup	0.599	
E889900 Orig	< 0.005	
E889900 Dup	< 0.005	
E889911 Orig	0.024	
E889911 Dup	0.024	
E889912 Orig	0.006	
E889912 Split	0.006	
E889919 Orig	0.007	
E889919 Dup	0.006	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
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Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank	< 0.005	
Method Blank		< 0.03
Method Blank	< 0.005	
Method Blank		< 0.03
Method Blank	< 0.005	

Appendix IIX  
2018 Invoices and Receipts