

**InnovExplo – Consulting Firm
Mines & Exploration**
560, 3rd Avenue
Val-d'Or, Québec, Canada, J9P 1S4
Telephone: 819.874.0447
Facsimile: 819.874.0379
Toll-free: 866.749.8140
Email: info@innovexplo.com
Web site: www.innovexplo.com



**TECHNICAL REPORT AND
PRELIMINARY ECONOMIC ASSESSMENT
FOR THE MOSS LAKE PROJECT**
(compliant with Regulation 43-101 / NI 43-101 and Form 43-101F1)

Project Location

Latitude: 48° 32' North; Longitude: 90° 41' West
Moss Township
Province of Ontario, Canada

Prepared for



**MOSS LAKE
GOLD MINES LTD**

Moss Lake Gold Mines Ltd
8 King Street East, Suite 1305
Toronto, Ontario
M5C 1B5

Prepared by:

Sylvie Poirier, Eng
InnovExplo – Consulting Firm
Val-d'Or (Québec)

Gary Anthony Patrick, B.Sc
Consulting Metallurgist
Perth (Australia)

Pierre-Luc Richard, M.Sc, P.Geo
InnovExplo – Consulting Firm
Val-d'Or (Québec)

Julie Palich, M.Sc, P.Geo
Caracle Creek
Toronto (Ontario)

Effective Date: May 31, 2013
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CERTIFICATE OF AUTHOR – PIERRE-LUC RICHARD

I, Pierre-Luc Richard, M.Sc, P.Geo. (APGO No. 1714, OGQ No. 1119), do hereby certify that:

1. I am employed as a geologist by and carried out this assignment for: InnovExplo – Consulting Firm in Mines and Exploration, 560, 3rd Avenue, Val-d'Or, Québec, Canada, J9P 1S4.
2. I graduated with a Bachelor's degree in geology from the Université du Québec à Montréal in 2004. In addition, I obtained an MSc from the Université du Québec à Chicoutimi in 2012.
3. I am a member in good standing of the Ordre des Géologues du Québec (OGQ No. 1119) and of the Association of Professional Geoscientists of Ontario (APGO No. 1714).
4. I have worked as a geologist for more than nine (9) years since my graduation from university.
5. I have read the definition of "Qualified Person" set out in Regulation 43-101 ("NI 43-101") and certify that by reason of my education, affiliation with a professional association (as defined in Regulation 43-101/NI 43-101) and past relevant work experience, I fulfill the requirements to be a "Qualified Person" for the purposes of Regulation 43-101/NI 43-101.
6. I am responsible for the preparation of sections 4 to 12, 14 and 23 and co-author of section 1, 25, 26 and 27 of the technical report titled Technical Report and Preliminary Economic Assessment for the Moss Lake Project (compliant with Regulation 43-101/NI 43-101 and Form 43-101F1) (the "Technical Report"), effective date of May 31, 2013 and signature date dated of July 30, 2013. I also supervised the writing of the entire report. I visited the Moss Lake property on November 6 and 7, 2012.
7. I have not had prior involvement with the property that is the subject of the Technical Report.
8. I am not aware of any material fact or material change with respect to the subject matter of the Technical Report that is not reflected in the Technical Report, the omission to disclose which makes the Technical Report misleading.
9. I am independent of the issuer applying all of the tests in section 1.5 of Regulation 43-101.
10. I have read Regulation 43-101 respecting standards of disclosure for mineral projects, as well as Form 43-101F1, and the Technical Report has been prepared in accordance with that regulation and form.
11. ¹ I consent to the filing of the Technical Report with any stock exchange and other regulatory authority and any publication by them for regulatory purposes, including electronic publication in the public company files on their websites accessible by the public, of the Technical Report.

Effective Date: May 31, 2013

Signature Date: July 30, 2013

(Original signed and sealed)
Pierre-Luc Richard, M.Sc, P.Geo.
InnovExplo Inc
pierreluc.richard@innovexplo.com

¹ If an issuer is using this certificate to accompany a technical report that it will file only with the exchange, then the exchange recommends that this paragraph is included in the certificate.

CERTIFICATE OF AUTHOR – SYLVIE POIRIER

I, Sylvie Poirier, Eng. (OIQ No.112196, PEO No.100156918), do hereby certify that:

1. I am a Consulting Engineer of: InnovExplo, 560, 3rd Avenue, Val-d'Or, Québec, Canada, J9P 1S4.
2. I graduated with a Bachelor's degree in Mining Engineering from École Polytechnique (Montréal, Québec) in 1994.
3. I am a member of the Ordre des Ingénieurs du Québec (OIQ, No. 112196), the Professional Engineers of Ontario (PEO No. 100156918), and the Canadian Institute of Mines (No. 145365).
4. I have worked as an engineer for a total of nineteen (19) years since graduating from university. My mining expertise was acquired while working for Lafarge Canada and for Placer Dome and McWatters at the Sigma mine, as well as for Natural Resources Canada on a special research initiative program on narrow-vein mining. I have been a consulting engineer for InnovExplo Inc since September 2008.
5. I have read the definition of "Qualified Person" set out in Regulation 43-101 and certify that by reason of my education, affiliation with a professional association (as defined in Regulation 43-101) and past relevant work experience, I fulfill the requirements to be a "Qualified Person" for the purposes of Regulation 43-101.
6. I am responsible for the supervision of the technical report and the author of sections 2, 3, 15, 16, 19, 22 and 24, and co-author of sections 1, 18, 21, and 25 to 27 of the report relating to the Moss Lake property titled "Technical Report and Preliminary Economic Assessment for the Moss Lake Project (compliant with Regulation 43-101/NI 43-101 and Form 43-101F1)" (the "Technical Report"), effective date of May 31, 2013 and signature date of July 30, 2013.
7. I have never had any prior involvement with the property that is the subject of the Technical Report.
8. I am not aware of any material fact or material change with respect to the subject matter of the Technical Report that is not reflected in the Technical Report, the omission to disclose which makes the Technical Report misleading.
9. I am independent of the issuer applying all of the tests in section 1.5 of Regulation 43-101.
10. I have read Regulation 43-101 respecting standards of disclosure for mineral projects and Form 43-101F1, and the sections of the Technical Report for which I was responsible have been prepared in accordance with that regulation and form.
11. ¹ I consent to the filing of the Technical Report with any stock exchange and other regulatory authority and any publication by them for regulatory purposes, including electronic publication in the public company files on their websites accessible by the public, of the Technical Report.

Effective Date: May 31, 2013

Signature Date: July 30, 2013

(Original signed and sealed)
Sylvie Poirier, Eng.
sylvie.poirier@innovexplo.com

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CERTIFICATE OF AUTHOR – JULIE PALICH

I, Julie Palich, do hereby certify that:

1. I am employed as a Geophysicist and Geochemist for the geological consulting firm of: Caracle Creek International Consulting Inc. Canada (Caracle Creek).
2. I am responsible for and author of Section 20 and co-author of sections 1, 21 and 25 to 27 of the Technical Report titled “Technical Report and Preliminary Economic Assessment for the Moss Lake Project (compliant with Regulation 43-101/NI 43-101 and Form 43-101F1)” (the “Technical Report”), effective date of May 31, 2013 and signature date of July 30, 2013, prepared for Moss Lake Gold Mines Ltd.
3. I hold the following academic qualifications: B.Sc. in Geophysical Engineering from the Colorado School of Mines (1996) and a M.Sc. in Geology (Geophysics/Geochemistry specialty) from Monash University (2001).
4. I am a member of the Association of Professional Geoscientists of Ontario (Member #1880), the Association of the Professional Engineers and Geoscientists of BC (Member #37646), and the Australasian Institute of Mining and Metallurgy (AUSIMM Member #301564). I am a member in good standing of the Society of Exploration Geophysicists (SEG), and Canadian Exploration Geophysical Society (KEGS).
5. I have been practicing geophysics and geochemistry continuously since 1996 and have worked on a variety of properties in industry including gold, nickel-sulphides, Cu-Pb-Zn, coal and mineral sands. I am a Qualified Person for the purpose of this instrument.
6. I am independent of the issuer of this report applying all the tests in section 1.5 of National Instrument 43-101.
7. I did not visit the property that is the subject of the Technical Report.
8. I have had no prior involvement with the property that is the subject of this Technical Report.
9. I have read Regulation 43-101 and Form 43-101F1, and the Technical Report has been prepared in compliance with that instrument and form.
10. ¹ I consent to the filing of the Technical Report with any stock exchange and other regulatory authority and any publication by them, including electronic publication in the public company files on their websites accessible by the public.
11. As of the effective date of this technical report, to the best of my knowledge, information and belief, the technical report contains all scientific and technical information that is required to be disclosed to make the technical report not misleading.

Effective Date: May 31, 2013

Signature Date: July 30, 2013

(Original signed and sealed)

Julie Palich, M.Sc, P.Geo.

Geophysicist/Geochemist, Caracle Creek Canada

jpalich@caraclecreek.com

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CERTIFICATE OF AUTHOR – GARY ANTHONY PATRICK

I, Gary Anthony Patrick, B.Sc., do hereby certify that:

1. I am a Consulting Metallurgist of: 10 Morriston Street, North Perth, Perth, W.A., Australia, 6006.
2. I graduated with a Bachelor's degree in Chemistry / Extractive Metallurgy from Murdoch University (Perth, Australia) in 1989.
3. I am a member of the AusIMM (No. 108090) and hold CP (Met) qualifications.
4. I have worked as a metallurgist for a total of twenty-three (23) years since graduating from university. My mining expertise has been gained in all facets of metallurgy and processing, while working for gold projects in Australia. I have been a consulting metallurgist for my own company Metallurg Pty Ltd since 2004 and have worked on project in the Caucasus, Central Asia, Republic of China, and in Russia. I am well versed in the preparation of studies and have been study manager on a couple of development projects.
5. I have read the definition of "Qualified Person" set out in Regulation 43-101 and certify that by reason of my education, affiliation with a professional association (as defined in Regulation 43-101) and past relevant work experience, I fulfill the requirements to be a "Qualified Person" for the purposes of Regulation 43-101.
6. I am responsible for the preparation and author of sections 13 and 17, and co-author of sections 1, 18, 21, 25 and 26 of the report relating to the Moss Lake property titled "Technical Report and Preliminary Economic Assessment for the Moss Lake Project (compliant with Regulation 43-101/NI 43-101 and Form 43-101F1)" (the "Technical Report"), effective date of May 31, 2013 and signature date of July 30, 2013.
7. I have never had any prior involvement with the property that is the subject of the Technical Report.
8. I am not aware of any material fact or material change with respect to the subject matter of the Technical Report that is not reflected in the Technical Report, the omission to disclose which makes the Technical Report misleading.
9. I am independent of the issuer applying all of the tests in section 1.5 of Regulation 43-101.
10. I have read Regulation 43-101 respecting standards of disclosure for mineral projects and Form 43-101F1, and the sections of the Technical Report for which I was responsible have been prepared in accordance with that regulation and form.
11. ¹ I consent to the filing of the Technical Report with any stock exchange and other regulatory authority and any publication by them for regulatory purposes, including electronic publication in the public company files on their websites accessible by the public, of the Technical Report.

Effective Date: May 31, 2013

Signature Date: July 30, 2013

(Original signed and sealed)
Gary A. Patrick, B.Sc.
metallurg@powerdsl.com.au

¹ If an issuer is using this certificate to accompany a technical report that it will file only with the exchange, then the exchange recommends that this paragraph is included in the certificate.

1. SUMMARY

On August 12, 2012, InnovExplo Inc. (“InnovExplo”) was contracted by Mr. George Mannard, M.Sc., P.Geo., president of Moss Lake Gold Mines Ltd (“Moss Lake Gold Mines” or “the issuer”), to complete a Preliminary Economic Assessment (“PEA”) and Technical Report (“the report”) for the Moss Lake Project (“the project” or “the property”) in compliance with Regulation 43-101/NI 43-101 and Form 43-101F1. Moss Lake Gold Mines is a Canadian mineral exploration company trading publicly on the TSX Venture Exchange in Canada (TSX-V: MOK). InnovExplo is an independent mining and exploration consulting firm based in Val-d’Or (Québec).

This report presents the results of the PEA for the Moss Lake Project. The PEA is based on a Mineral Resource Estimate produced by InnovExplo in an earlier report prepared for the issuer titled “Technical Report and Mineral Resource Estimate for the Moss Lake Project (compliant with Regulation 43-101 / NI 43-101 and Form 43-101F1)”, dated April 4, 2013. The Mineral Resource Estimate is compliant with the Canadian Securities Administrators National Instrument 43-101 Standards of Disclosure for Mineral Properties (NI 43-101) and Form 43-101F1 Technical Report.

In addition to the principal author, Sylvie Poirier, Eng., (OIQ No. 112196, PEO No. 100156918), of InnovExplo, the other Qualified Persons responsible for the preparation of this report were: Pierre-Luc Richard, M.Sc., P.Geo. (APGO No. 1714, OGQ No. 1119), Julie Palich M.Sc. (APGO No. 1880; APEG of BC #37646; AUSIMM No. 301564), Gary Patrick B.Sc. (AusIMM No. 108090). In addition, Alain Tremblay, Eng., formerly of InnovExplo, and Marie-Claire Dagenais, Jr Eng., of InnovExplo, helped prepare this report under the supervision of Sylvie Poirier.

This Preliminary Economic Assessment (PEA) is preliminary in nature as it includes Inferred Mineral Resources that are too speculative geologically to have the economic considerations applied to them that would enable them to be categorized as mineral reserves, and there is no certainty that the PEA will be realized.

Moss Lake property

The Moss Lake property is located in Moss Township, approximately 100 km west of the city of Thunder Bay, in the province of Ontario, Canada. The nearest settlement is Kashabowie, located 24 km to the northeast on provincial Highway 11 (part of the TransCanada highway system). The property lies within NTS map sheet 52B/10. Most of the property lies within Moss Township and the remainder in the Burchell Lake area. The property consists of one block of land comprised of 105 unpatented mining claims and two 21-year mining leases comprising 15 patented claims. The mining claims and leases are of irregular shapes and sizes aggregating a total of 3,224.09 ha. All the unpatented mining claims and mining leases are registered 100% in the name of Moss Lake Gold Mines Ltd.

Geology, mineralization and exploration model

The property lies about 2 to 3 km southeast of the boundary between the Quetico and Wawa subprovinces, in the westernmost Ontarian part of the Wawa Subprovince. A considerable portion of the Moss Lake property is underlain by intermediate to felsic volcanoclastic rocks of the northeast-trending, fault-bounded Central Felsic to Intermediate Metavolcanic Belt (Osmani, 1997), a subunit of the

Shebandowan Greenstone Belt, itself part of the Wawa Subprovince of the Superior Province.

Gold mineralization in the Moss Lake deposit, between Snodgrass Lake and Span Lake, occurs in sheared intermediate to felsic metavolcanic rocks and in sheared and fractured diorite to gabbro or feldspar and quartz-feldspar porphyry bodies emplaced within intermediate to felsic metavolcanic rocks of the CFB. Gold mineralization in the Snodgrass Lake area has been described in detail by Chorlton (1987) and Harris (1970). At the Moss Lake deposit, the diorite to gabbro bodies, the quartz-feldspar and feldspar porphyries, and the felsic metavolcanics are all cut by the Snodgrass Shear Zone, a steeply dipping ductile shear zone up to 4.5 metres wide and striking NE (N040) to ENE (N060-N075).

Other anomalous gold values were also obtained from fractured diorite, sheared feldspar porphyry, and a moderately deformed, pink-weathering quartz-amphibole-phyric intrusion. This relatively late porphyry dyke or sill intrudes the diorite and felsic schist. In hand specimen, the quartz-amphibole-phyric intrusion is said to show a strong resemblance to the syenogranitic rocks of the Moss Lake Stock, suggesting both may be related to the same magmatic event.

Previous reports agreed that a model for the Moss Lake gold deposit most certainly implies an “intrusion-related gold deposit”. Although some authors have favoured a porphyry-style deposit, others have thought of it as a hybrid model between porphyry and more classical orogenic models.

During their site visit, authors examined numerous mineralized intersections that collectively suggest gold grades may occur within sheared rocks, although not exclusively. Mineralization appears as disseminated sulphides, quartz-albite veining and flooding, as well as late faulting. Alteration minerals related to mineralization consist mainly of silica, albite, sericite, carbonates, and sulphides (pyrite and minor chalcopyrite). Other alteration minerals not necessarily associated with mineralization are chlorite, hematite and epidote.

2013 Mineral Resource Estimate

Based on the density of the processed data, the search ellipse criteria, and the specific interpolation parameters, the authors are of the opinion that the current Mineral Resource Estimate can be classified as Indicated and Inferred Resources. The estimate follows CIM standards and guidelines for reporting mineral resources and reserves. A minimum mining width of 5 metres (true width) and a cut-off grade of 0.5 g/t (open pit potential) and 2.0 g/t Au (underground potential) were used for the Mineral Resource Estimate.

InnovExplo received a Gems / MS Access diamond drill hole database for the Moss Lake Project. Following adequate verifications and updates, the database used for the resource estimate contains 320 surface diamond drill holes and 32 underground diamond drill holes with conventional analytical gold assay results, as well as coded lithologies from the drill core logs descriptions. The 352 drill holes cover the strike-length of the project at a drill spacing varying from 15 metres to 50 metres.

The Mineral Resource Estimate detailed in this report was made using 3D block modelling and the inverse distance square interpolation (ID2) method for a corridor

of the Moss Lake Project with a strike-length of 3.2 km and a width of approximately 1.2 km, down to a vertical depth of 750 metres below surface. The result of the study is a single Mineral Resource Estimate for eighteen (18) mineralized zones and one (1) envelope zone containing the remaining isolated gold intercepts, with Indicated and Inferred Resources, for both a Whittle-optimized in-pit volume and a complementary underground volume. The effective date of this Mineral Resource Estimate is February 8, 2013.

InnovExplo estimates that the Moss Lake deposit has Indicated Resources of 39,797,000 tonnes grading 1.1 g/t Au (1,377,300 ounces of gold) and Inferred Resources of 50,364,000 tonnes grading 1.1 g/t Au (1,751,600 ounces of gold).

Mineral resource estimate results for the Moss Lake Project

Moss Lake - 2013 MINERAL RESOURCE ESTIMATE						
Open Pit Potential - Mineral Resource > 0.5 g/t Au (within Pit Shell)						
Zone	Indicated Resource			Inferred Resource		
	Tonnes	g/t Au	Ounces	Tonnes	g/t Au	Ounces
101	7 655 000	1.1	268 800	2 684 000	1.4	120 100
102	32 140 000	1.1	1 108 500	9 984 000	1.1	360 000
Other				36 235 000	1.0	1 136 200
Sub-Total	39 795 000	1.1	1 377 300	48 904 000	1.0	1 616 300
Underground Potential - Mineral Resource > 2.0 g/t Au (outside Pit Shell)						
Zone	Indicated Resource			Inferred Resource		
	Tonnes	g/t Au	Ounces	Tonnes	g/t Au	Ounces
101				223 000	3.2	22 700
102				290 000	2.4	22 600
Other				949 000	3.0	90 100
Sub-Total				1 461 000	2.9	135 400
Mineral Resource Total (Open Pit and Underground Potential combined)						
Zone	Indicated Resource			Inferred Resource		
	Tonnes	g/t Au	Ounces	Tonnes	g/t Au	Ounces
101	7 655 000	1.1	268 800	2 907 000	1.5	142 800
102	32 140 000	1.1	1 108 500	10 274 000	1.2	382 600
Other				37 184 000	1.0	1 226 300
Total	39 795 000	1.1	1 377 300	50 364 000	1.1	1 751 600

- The Independent and Qualified Persons for the Mineral Resource Estimate, as defined by Regulation 43-101, are Pierre-Luc Richard, M.Sc., P.Geo. (InnovExplo Inc), and Carl Pelletier, B.Sc., P.Geo. (InnovExplo Inc), and the effective date of the estimate is February 8, 2013.
- These Mineral Resources are not Mineral Reserves as they do not have demonstrated economic viability.
- In-Pit results are presented undiluted and in situ, within Whittle-optimized pit shells. Underground results are presented undiluted and in situ, outside Whittle-optimized pit shells. The estimate includes 18 gold-bearing zones and 1 envelope containing isolated gold intercepts.
- In-Pit and Underground resources were compiled at cut-off grades from 0.3 to 5.0 g/t Au (for sensitivity characterization). A cut-off grade of 0.5 g/t Au was selected as the official in-pit cut-off grade and a cut-off grade of 2.0 g/t Au was selected as the official underground cut-off grade.
- Whittle parameters: mining cost = C\$2.28; pit slope angle = 50.0 degrees; production cost = C\$9.55; mining Dilution = 5%; mining recovery = 95%; processing recovery = 80% to 85%; gold price = C\$1,500.
- Cut-off grades must be re-evaluated in light of prevailing market conditions (gold price, exchange rate and mining cost).
- The estimate is based on 352 diamond drill holes (90,978 m) drilled from 1983 and 2008.
- A fixed density of 2.78 g/cm³ was used.
- A minimum true thickness of 5.0 m was applied, using the grade of the adjacent material when assayed or a value of zero when not assayed.
- Capping was established at 35 g/t Au, supported by statistical analysis and the high grade distribution within the deposit.

- Compositing was done on drill hole sections falling within the mineralized zone solids (composite = 1 m).
- Resources were evaluated from drill hole samples using the ID2 interpolation method in a multi-folder percent block model using Gems version 6.4. Based on geostatistics, the ellipse range for interpolation was 75m x 67.5m x 40m.
- The Indicated category is defined by combining the blocks within the two main zones (101 and 102) and various statistical criteria, such as average distance to composites, distance to closest composite, quantity of drill holes within the search area.
- Ounce (troy) = metric tons x grade / 31.10348. Calculations used metric units (metres, tonnes and g/t).
- The number of metric tons was rounded to the nearest thousand. Any discrepancies in the totals are due to rounding effects; rounding followed the recommendations in Regulation 43-101.
- The pitshell used for the resource estimate extends slightly beyond the property limits in its northeastern portion. Although the entire resource lies within the property limits, some waste material outside the property limits will need to be removed to access some of the resource. Consequently, this portion of the pit may need to be re-considered in a future economic study.
- InnovExplo is not aware of any known environmental, permitting, legal, title-related, taxation, socio-political or marketing issues or any other relevant issue that could materially affect the Mineral Resource Estimate.

Mining method

Mining of the Moss Lake deposit has been designed as an open pit with a planned production of 13,400,000 tonnes per year (13.4M tpy), or 40,000 tpd of mineralized material processed at the mill for an average of 335 days per year of mill operation and 350 days per year of mine operation.

The mineral resource block model developed by InnovExplo has been imported into Whittle™ software from Dassault Systèmes GEOVIA (formerly Gemcom Software International). Design parameters such as operating costs, mine recovery, dilution and gold price were used to generate an optimal pit shell.

The mine design parameters are:

- Maximum capacity of 225 metric tonnes for off-road haul trucks;
- 10 metre high mining bench;
- Double bench at final walls;
- Ramp gradient of 10%;
- 30 metre wide ramp – double-lane traffic;
- 20 metre wide ramp – single-lane traffic;
- One-way ramp for the last two (2) permanent benches on the east side of the pit;
- Temporary ramp for the last two (2) benches.

Metallurgy and processing

The proposed Moss Lake Process Plant design is based on well known and established Gravity/CIL technology, which consists of single stage crushing, SAG milling, ball milling, gravity recovery of free gold followed by leaching/adsorption of gravity tailings, detoxification of tailings, elution & gold smelting and tailings disposal. Services to the process plant will include reagent mixing, storage and distribution, water, and compressed air services.

The plant will treat 14.0 million tonnes per annum of mineralized material¹. The plant design accommodates the sequential and combined processing of the different types of mineralized material while keeping the design as simple as possible.

¹ The 101 and 102 zones more or less contain what was previously known as the Main and QES zones.

Environment

Environmental baseline studies (EBS) have predominantly not been undertaken by Moss Lake Gold Mines or past operators. Baseline studies will need to be initiated prior to, or concurrent with, the start of the prefeasibility study to identify existing site conditions and environmental sensitivities associated with the Moss Lake Project (the "Project"). In accordance with regulatory expectations, environmental baseline studies will need to address potentially sensitive physical, biological and human components including, but not necessarily limited to: physiography and climate, hydrology and surface water quality, hydrogeology and groundwater quality, acid rock drainage and metal leaching, soils, fisheries and aquatic environments, terrestrial wildlife, vegetation and wetlands, air quality, noise, archaeology and heritage, socio-economic and land use, traditional use/traditional knowledge. The comprehensive EBS study will be designed in consultation with regulatory authorities and First Nations/community stakeholders.

There are no Protected Areas within the project area; the nearest Protected Area is the Quetico Provincial Park located 20 km west of the property. According to regional land cover mapping, the property is predominantly covered by wooded areas and lakes. Several low-lying areas have been mapped as wetlands around Snodgrass and Kawawagamak Lakes and may require special consideration in any permitting and planning activities. Towards the southern property boundary the ground cover trends more predominantly to wetlands and "herbs".

The property comprises three named lake systems: Moss Lake, Snodgrass Lake, and Kawawagamak Lake and several smaller open water bodies. Drainage is south into Quetico Provincial Park through a series of stream/creek and lake systems. Development of the open pit will necessitate diverting Wawag River, which drains an upstream watershed of 143 km², and drainage of Snodgrass Lake, which is only 2-4 metres deep. A fish habitat replacement area, comprising 51 ha, has been incorporated into the initial Project design immediately downstream of the open pit. Detailed evaluation of the hydrology, fish habitat and aquatic environment in this area will be necessary to facilitate permitting of these activities.

Proposed surface infrastructure

New infrastructure for the Moss Lake operations will be required. Following is a list of the proposed new infrastructure:

- Crusher and mill complex;
- Office, garage, camp and associated services buildings;
- New electrical main line, site substation and site electrical distribution installations;
- Pit dewatering system, surface water management and water treatment plant;
- Access roads to the site and on the site.

The waste stockpile will be large, covering a surface area of approximately 2.68M m². The overburden stockpile will be smaller than the waste stockpile. Its surface area will be approximately 1.07M m². Low-grade mineralized material will be transported to the stockpile to eventually be milled. The proposed stockpile will have a capacity of 15M tonnes.

Capital and Operating Costs

The PEA study is based on capital pricing as of the first quarter 2013. The capital costs include various added contingencies depending on the sector. The pre-production costs are estimated at \$542,503,252, including \$35,997,057 of capitalized operating costs. Sustaining capital is estimated at \$315,216,116, excluding \$28.4M for final closure costs.

The total capital expenditure of \$857.72M for the Moss Lake Project is estimated in eight (8) components: Capitalized operating cost, overburden removal cost, owners cost, site development and preparation, surface installation and equipment, electricity and communication, water management, environmental cost.

Breakdown of the capital cost (Section 21 – Table 21.1)

Description	Pre-production	Sustaining	Total cost
Capitalized operating cost	\$ 35,997,057		\$ 35,997,057
Overburden removal cost	\$ 4,484,987	\$ 106,695,767	\$ 111,180,754
Owners cost	\$ 14,636,420		\$ 14,636,420
Site development & preparation	\$ 7,014,184		\$ 7,014,184
Surface installation & equipment	\$ 424,876,684	\$ 183,597,549	\$ 608,474,233
Electricity and communication	\$ 25,889,000		\$ 25,889,000
Water management	\$ 11,737,600		\$ 11,737,600
Environmental	\$ 17,867,320	\$ 24,922,800	\$ 42,790,120
Total capital expenditures	\$ 542,503,251	\$ 315,216,116	\$ 857,719,367

The following assumptions were made in the capital cost estimation:

- The expected accuracy range of the capital cost estimates for this PEA study is $\pm 35\%$.
- Currency is expressed in Canadian dollars (C\$ or CAD) unless stated otherwise.
- Most of the item costs were derived from CostMine 2011.
- The principal equipment costs were given by Toromont.
- The pumping system was provided by Pompackon.
- The surface water management costs were provided by Stavibel.
- The environmental costs study has been prepared by Caracle Creek.
- The modular camp cost was provided by ATCO Structures & Logistics Ltd.
- The mill capital cost was provided by Metallurg Pty Ltd.
- All remaining costs were estimated using in-house cost data from recent projects or preliminary budget prices from suppliers.

Operating costs for the Moss Lake Project are estimated in 2013 Canadian dollars with no allowance for escalation. InnovExplo estimated mine operating costs using data from similar operations and from budget quotes supplied by contractors and suppliers.

Operating costs summary (Section 21 – Table 21.3)

Description	Total cost	Unit cost	
General & Administration	\$ 162,357,221	1.27 \$/t milled	67 US\$/oz
Milling and transportation	\$ 993,072,544	7.75 \$/t milled	407 US\$/oz
Mining costs	\$ 1,089,302,935	8.50 \$/t milled	446 US\$/oz
Environmental monitoring	\$ 5,557,500	0.04 \$/t milled	2 US\$/oz
Total	\$ 2,250,290,200	17.56 \$/t milled	922 US\$/oz

Financial analysis

An after-tax model was developed for the Moss Lake Project. All costs are in 2013 Canadian dollars with no allowance for inflation or escalation.

The Moss Lake Project is subject to the following taxes:

- Ontario mining tax rate of 10% (2013 rate);
- Income tax rate of 26.5% (15% federal and 11.5% provincial).

The Moss Lake property is subject to a royalty equal to 8.75% of the net profit.

The economic evaluation of both project scenarios was performed using the Internal Rate of Return (IRR) and the Net Present Value (NPV) methods. The IRR on an investment is defined as the rate of interest earned on the unrecovered balance of an investment. The discount rate makes the NPV of all cash flows equal to zero. The NPV method converts all cash flows for investments and revenues occurring throughout the planning horizon of a project to an equivalent single sum at present time at a specific discount rate. The discount rate used in the analysis is 5%.

According to the NPV method, a positive NPV represents a profitable investment where the initial investment plus any financing interest are recovered.

The following parameters were considered in the financial analyses:

- An average gold price of US\$1546/oz and an exchange rate of 1.0033CAD/1USD (3-yr trailing average as at May 31, 2013);
- Milling recovery of 79.2% in the southern portion of the deposit and 84.2% in the northern portion of the deposit;
- Royal Mint Fees of \$3/oz;
- Royalty of 8.75% of Net Profit.

This Preliminary Economic Assessment (PEA) is preliminary in nature as it includes Inferred Mineral Resources that are too speculative geologically to have the economic considerations applied to them that would enable them to be categorized as mineral reserves, and there is no certainty that the PEA will be realized.

The financial analysis for the Base Case (gold at US\$1546/oz) indicates an after-tax NPV at a 5% discount rate of \$196 million, with an IRR of 12% and a payback period of 1.75 years.

A 10% reduction in gold price, which corresponds to C\$1396/oz, reduces the NPV to \$27.9M and drops the IRR from 12% to 6%.

The resulting main parameters and cash flow analysis are presented in the following Table.

Cash flow analysis summary (Section 22 – Table 22.1)

Parameters	Results
Potentially Mineable resources	128,154,775 tonnes @ 0.73 g/t
Total contained gold input	3,000,684 ounces
Total contained gold output	2,439,678 ounces
Total waste	314,662,647 tonnes
Total OVB	64,056,410 tonnes
Total moved	506,873,832 tonnes
Mine life (excluding 4 years of pre-production)	10 years
Daily mine production	40,000 tpd
Metal recovery	79.2% and 84.2%
Average operating cash cost	17.56 CAN\$/t. milled
	922 CAN\$/oz
Pre-production capital	\$542,503,252
Sustaining capital	\$315,216,115
Total gross revenue	\$3,784,428,468
Total operating cost	\$2,250,290,200
Total project cost	\$3,108,009,568
Closure cost estimate	\$28,430,000
Selling cost (3\$/oz)	\$7,319,034
Royalty (8.75% net profits after-tax)	\$43,959,565
Net cash flow (including closure cost)	\$705,457,624
Pre-tax NPV (5%) excluding royalty	\$353,451,548
Pre-tax IRR excluding royalty	17%
After-tax NPV (5%)	\$196,176,417
After-tax IRR	12%
Payback period	1.75 years

Sensitivity analyses were performed on parameters for their potential impact on the outcome of the economic evaluation. The following parameters were analyzed:

Production parameters:

- Gold price (\$).

Economic parameters:

- Operating expenditure (OPEX);
- Capital expenditure (CAPEX).

Sensitivity calculations were performed on the project's NPV and IRR, applying a range of variation ($\pm 20\%$) to the parameter values. The sensitivity analysis

demonstrates that the Moss Lake Project is highly sensitive to changes in gold price. It is moderately sensitive to changes in OPEX and CAPEX.

Interpretation and conclusions

The Moss Lake deposit is at an advanced stage of exploration and hosts significant gold mineralization.

InnovExplo developed a new interpretation for the Moss Lake deposit using section and plan views. Eighteen (18) mineralized zones enclosed within a gold mineralized envelop characterize the Moss Lake deposit. InnovExplo considers a structural study and surface mapping would greatly improve the understanding of key geological parameters controlling gold mineralization within the project area. Re-logging is also proposed prior to any new drilling program.

After conducting a detailed review of all pertinent information and completing the present Mineral Resource Estimate, InnovExplo concludes the following:

- The geological and grade continuities of the gold mineralized zones of the Moss Lake Project were demonstrated;
- The Moss Lake Project contains at least eighteen (18) continuous mineralized zones;
- The lenses have strike lengths ranging up to 2,500 metres;
- In spite of the current drill spacing, geological continuity seems steady throughout the mineralized zones;
- The zones encountered at the Moss Lake deposit have significant possibility to expand as all the extensions are open. The only limitation is the property boundary to the NE that is close to the deposit;
- The potential is high for upgrading Inferred Resources to Indicated Resources with more diamond drilling in all of the zones;
- The potential is high for adding new resources in the extensions of known zones with additional diamond drilling;
- The potential is high for identifying new parallel zones with additional diamond drilling.

The reader should know that the pit shell used for the resource estimate extends slightly beyond the property limits in its northeastern portion. The entire resource lies within the property limits, and this PEA pit optimization constrained pit limits to the property boundaries.

The property is strategically positioned in an area known to be associated with gold mineralization. InnovExplo considers the present Mineral Resource Estimate to be reliable, thorough, based on quality data, reasonable hypotheses, and parameters compliant with Regulation 43-101 and CIM standards regarding mineral resource estimations. InnovExplo believes that the Moss Lake Project mineral resources are sufficiently advanced for a preliminary economic assessment study.

The open-pit mining plan resulted in 2.44 million ounces of recoverable gold. The mine plan was designed for a nominal 40,000 tonne-per-day operation, with an average stripping ratio of 2.96:1 when including overburden, and 2.46:1 without overburden. The life of mine (LOM) is estimated at ten (10) years. Average yearly gold production for the first five (5) years is 295,825 ounces, and the average for the

last five (5) years is 192,111 ounces. A yearly average of 243,968 gold ounces is predicted over the LOM.

The estimated mill cut-off grade is 0.38 g/t Au in the northern portion of the deposit (formerly known as the Main Zone) and 0.32 g/t Au in the southern portion (formerly known as the QES Zone). The mill cut-off grade was calculated by WHITTLE™ and is based on the input parameters.

InnovExplo concludes that this PEA demonstrates the potential viability of the Moss Lake Project and has upside that could improve the economics of the project such as:

- The possibility of increasing the potentially mineable resource by eliminating the property constraint on the northeast side of the property.
- Increasing the resource within the pit shell through additional drilling in areas identified by geologists.
- Defining pit slopes based on a geotechnical study.

Water management represents a potential risk to the viability of the project and will have to be studied fully in order to develop a safe and feasible option.

The PEA presents a base case scenario that recovers only runoff from the pit and the TMF. In the case that all water would need to be collected and treated, this would significantly affect the required infrastructure elements and increase the treatment costs, thereby representing a potential risk to the viability of the project.

InnovExplo believes that definition drilling and more advanced engineering work are mandatory for the Moss Lake Project to eventually advance to the pre-feasibility study stage.

InnovExplo considers the present PEA to be reliable, thorough, based on quality data, reasonable hypotheses, and parameters compliant with Regulation 43-101 (NI 43-101) and CIM standards regarding mineral resource estimations.

Recommendations

InnovExplo recommends additional work to confirm the economic potential of the Moss Lake deposit and the rest of Moss Lake property.

Despite the fact that the PEA demonstrates a marginally economic result for the project, InnovExplo recommends additional study to further advance the project. The project has sufficient potential to increase its value by eliminating the current boundary constraint on the northeast side, by increasing resources within the current pit limit, and by better defining the water management scenario. A geotechnical study would be required to better define the pit wall slope configuration.

Caracle Creek recommends that environmental and socio-economic studies and public consultation proceed with the objective of gaining provincial and federal environmental approvals for the project in line with the feasibility timing.

The information gained from the environmental studies should be integrated into all infrastructure layout and design options under study for the next phase of development.

Estimated reclamation costs and bonding requirements should be reassessed in the next phase of development.

The peak discharge for the Wawiag diversion channel between the open pit and the TMF should be better estimated by constructing a complete hydrological model for the Wawiag River upstream from the mine site. This hydrological model should be calibrated using data from surrounding gaged watersheds with similar characteristics, like the Whitefish River watershed for Water Survey Canada gage number 01AB017.

InnovExplo recommends additional test work on rock samples to define the characteristics and risks related to the water runoff from all the industrial and piling areas on the property. At this time, there is no evidence of acid mine drainage associated with the historical underground exploration program and from the acid base accounting test work. However, additional test work should evaluate whether other deleterious elements would suggest the need to collect and treat these waters.

The pit considered in the PEA is limited to the northeast by the property boundary. Even though the current resources are within the property, this limit is a restriction on the pit size if deeper resources are defined and need to be reached. It is recommended that the issuer examine the possibility of acquiring additional mining titles and surface rights to the north.

If the exploration work outcome is positive, InnovExplo recommends an engineering study, a resource update, and a prefeasibility study in order to further advance the project.

InnovExplo is of the opinion that the character of the Moss Lake property is of sufficient merit to warrant the recommended exploration program and the work described below. The program is divided into two (2) phases. Expenditures for Phase I of the work program are estimated at C\$ 6,325,000 (including 15% for contingencies). Expenditures for Phase II of the work program are estimated at C\$ 7,164,500 (including 15% for contingencies). The grand total is C\$ 13,489,500 (including 15% for contingencies). Phase II of the program is contingent upon the success of Phase I.

Table 26.1 presents the estimated costs for the various phases of the recommended work program.

**Estimated costs for the recommended work program (in Canadian dollars)
(Section 26 – Table 26.1)**

Budget for Phase 1 – Exploration work	Cost Estimate
Compilation, re-logging, surface mapping and structural study	\$ 250,000
In-fill drilling	\$ 3,000,000
Drilling extensions of mineralized zones	\$ 1,500,000
Drilling targets generated from compilation work, re-logging, surface mapping and structural study.	\$ 750,000
Contingency (15%)	\$ 825,000
Total phase 1	\$ 6,325,000
Budget for Phase 2 – Resources estimate, engineering and environmental study	
Geotechnical study	\$ 1,500,000
Hydrogeological and water management study	\$ 500,000
Metallurgical test work	\$ 1,100,000
Resources update & pre-feasibility report	\$ 450,000
Environmental baseline study	\$ 1,480,000
Community consultation	\$ 200,000
Environmental assessment application	\$ 600,000
Permitting application	\$ 400,000
Contingency (15%)	\$ 934,500
Total Phase 2	\$ 7,164,500
TOTAL Phase 1 and Phase 2	\$ 13,489,500

2. INTRODUCTION

On August 12, 2012, InnovExplo Inc (“InnovExplo”) was contracted by Mr. George Mannard, M.Sc., P.Geo., president of Moss Lake Gold Mines Ltd (“Moss Lake Gold Mines” or “the issuer”), to complete a Preliminary Economic Assessment (“PEA”) and Technical Report (“the report”) for the Moss Lake Project (“the project” or “the property”) in compliance with Regulation 43-101/NI 43-101 and Form 43-101F1. Moss Lake Gold Mines is a Canadian mineral exploration company trading publicly on the TSX Venture Exchange in Canada (TSX-V: MOK). InnovExplo is an independent mining and exploration consulting firm based in Val-d’Or (Québec).

This report presents the results of the PEA for the Moss Lake Project. The PEA is based on a Mineral Resource Estimate produced by InnovExplo in an earlier report prepared for the issuer titled “Technical Report and Mineral Resource Estimate for the Moss Lake Project (compliant with Regulation 43-101 / NI 43-101 and Form 43-101F1)”, dated April 4, 2013. The Mineral Resource Estimate is compliant with the Canadian Securities Administrators National Instrument 43-101 Standards of Disclosure for Mineral Properties (NI 43-101) and Form 43-101F1 Technical Report.

2.1 TERMS OF REFERENCE AND SCOPE OF WORK

The issuer requested a Preliminary Economic Assessment (PEA). The global objectives of the PEA are to:

- Examine the potential economic viability of exploiting the Moss Lake deposit;
- Propose a strategy and preliminary timetable to develop the project.

The PEA herein evaluates and/or provides the following items:

- The best project design determined from multiple options;
- The most appropriate mining method determined according to the geometry and grade of the Moss Lake deposit;
- The basic design for most of the facilities and the infrastructure needed to access, develop and mine the mineralized zones;
- The estimated capital and operating cost;
- A preliminary cash flow model;
- Recommendations for additional work to be done in order to advance the project to a pre-feasibility stage;
- A technical report compliant with Form 43-101F1.

2.2 PRINCIPAL SOURCES OF INFORMATION

InnovExplo’s review of the Moss Lake Project was based on published material as well as the data, professional opinions and unpublished material submitted by Moss Lake or requested by InnovExplo to complete the study. The following specialists provided information for the specified portions of the study:

- The metallurgical study and associated information was taken from an internal report prepared by SGS Canada Inc. for Moss Lake Gold Mines dated November 19, 2012;
- Carl Dufour, Engineering Director at ASDR, provided an assessment for dewatering a portion of Snodgrass Lake along with a cost estimate for erecting dams and the dewatering;
- Patrick Sholz, Hydrological Engineer at Stavibel provided an assessment of surface water management options and related costs;
- Andrew Moebus, Mining Applications Specialist at Toromont Cat, supplied the mobile fleet requirements and budgetary costs;
- Emile P. Molgat, Business Support at Orica, provided the budgetary quote for explosives products and associated services;
- Bernard Marcoux, Eng., Project Leader at Pompacktion, provided the budgetary quote for the mine dewatering system;
- Shawn Bertrand, Territory Sales Manager at ATCO Structures & Logistics Ltd, provided budgetary cost for the camp installation;
- Lucie Chouinard, M.Fisc., Chartered Accountant at Samson Bélair/Deloitte & Touche, completed the after-tax cash flow estimation;
- Marie-Claire Dagenais, junior engineer, and Véronique Gendron, mine technician, both of InnovExplo, provided the technical support for the planning work;
- Venetia Bodycomb, M.Sc., of Vee Geoservices, performed a linguistic revision of a draft version of the report.

InnovExplo estimated costs using quotes from contractors and suppliers, as well as data provided in the 2011 volumes of Mining Cost Service (with a subscription to Cost Data Update Services) published by CostMine, a division of InfoMine USA Inc.

Tenova Mining & Minerals–Bateman Engineering Pty Ltd (“Tenova-Bateman”) prepared the process costs study using Tenova-Bateman in-house data for mechanical equipment, for factored bulk commodities, and from similar installations adjusted to suit the plant complexity and locality.

Caracle Creek provided the environmental and processing sections and costs study.

InnovExplo has reviewed the data provided by the issuer and/or by its agents. InnovExplo has also consulted other information sources, such as the Ontario government’s claims management database for assessment work and the status of mining titles.

InnovExplo conducted a review and appraisal of the information used in the preparation of this report and to formulate its conclusions and recommendations, and believes that such information is valid and appropriate considering the status of the project and the purpose for which the report is prepared. The authors have fully researched and documented the conclusions and recommendations made in the report.

2.3 QUALIFIED PERSONS AND INSPECTION ON THE PROPERTY

In addition to the principal author, Sylvie Poirier, Eng. (OIQ No. 112196, PEO No. 100156918), of InnovExplo, the other Qualified Persons responsible for the preparation of this report were: Pierre-Luc Richard, M.Sc., P.Geo. (APGO No. 1714, OGQ No. 1119), Julie Palich (APGO No. 1714; OGQ No. 1119), Gary Patrick B.Sc. (AusIMM No. 108090). In addition, Alain Tremblay, Eng., formerly of InnovExplo, and Marie-Claire Dagenais, Jr Eng., of InnovExplo, helped prepare this report under the supervision of Sylvie Poirier. The list below presents the sections for which each Qualified Person was responsible:

- Sylvie Poirier: author of sections 2, 3, 15, 16, 19, 22, 24; co-author of sections 1, 18, 21, 25, 26, 27.
- Pierre Luc Richard: author of sections 4, 5, 6, 7, 8, 9, 10, 11, 12, 14, 23; co-author of sections 1, 25, 26, 27.
- Julie Palich: author of section 20; co-author of sections 1, 21, 25, 26, 27.
- Gary Patrick: author of sections 13, 17; co-author of sections 1, 18, 21, 25, 26.

Pierre-Luc Richard, accompanied by Remi Verschelden (of InnovExplo) and Alain Tremblay (formerly of InnovExplo), visited the Moss Lake project site on November 6-7, 2012. Pierre-Luc Richard has a good knowledge of the geological setting of the area and its mineral potential. He also has a good understanding of mineral deposit exploration models for Archean gold deposits.

2.4 UNITS AND CURRENCIES

All currency amounts are stated in Canadian Dollars (\$) or US dollars (US\$). Quantities are stated in metric units, as per standard Canadian and international practice, including metric tons (tonnes, t) and kilograms (kg) for weight, kilometres (km) or metres (m) for distance, hectares (ha) for area, and grams (g) or grams per metric ton (g/t) for gold grades. Wherever applicable, imperial units have been converted to the International System of Units (SI units) for consistency. A list of abbreviations used in this report is provided in Appendix 1.

3. RELIANCE ON OTHER EXPERTS

The authors, Qualified and Independent Persons as defined by Regulation 43-101, were contracted by the issuer to study technical documentation relevant to the report, to perform a mineral resource estimate on the Moss Lake Project, and to recommend a work program if warranted. The authors have reviewed the mining titles and their statuses, as well as any agreements and technical data supplied by the issuer (or its agents) and any available public sources of relevant technical information.

Some of the geological and technical reports for projects in the vicinity of the Moss Lake property were prepared before the implementation of National Instrument 43-101 in 2001 and Regulation 43-101 in 2005. The authors of such reports appear to have been qualified and the information prepared according to standards that were acceptable to the exploration community at the time. In some cases, however, the data are incomplete and do not fully meet the current requirements of Regulation 43-101. The authors have no known reason to believe that any of the information used to prepare this report is invalid or contains misrepresentations.

The authors relied on reports and opinions as follows for information that is not within the authors' fields of expertise:

- Information about the mining titles and option agreements was supplied by the issuer. InnovExplo is not qualified to express any legal opinion with respect to the property titles or current ownership and possible litigation.

The authors believe the information used to prepare the report and to formulate its conclusions and recommendations is valid and appropriate considering the status of the project and the purpose for which the report is prepared.

The authors, by virtue of their technical review of the project's exploration potential, affirm that the work program and recommendations presented in the report are in accordance with Regulation 43-101 and CIM technical standards.

4. PROPERTY DESCRIPTION AND LOCATION

4.1 LOCATION

The Moss Lake property is located in Moss Township, approximately 100 km west of the city of Thunder Bay, in the province of Ontario, Canada (Fig. 4.1). The nearest settlement is Kashabowie, located 24 km to the northeast on provincial Highway 11 (part of the TransCanada highway system). The property lies within NTS map sheet 52B/10. Most of the property lies within Moss Township and the remainder in the Burchell Lake area. The approximate geographic centre coordinates of the Moss Lake property are 90°41'38.0"W and 48°32'17.0"N (UTM coordinates: 670223.5E and 5378673.5N, NAD 83, Zone 15). The surrounding land has an altitude of about 445 to 490 metres above mean sea level. The overall Moss Lake property covers an area of 3,224.09 ha.

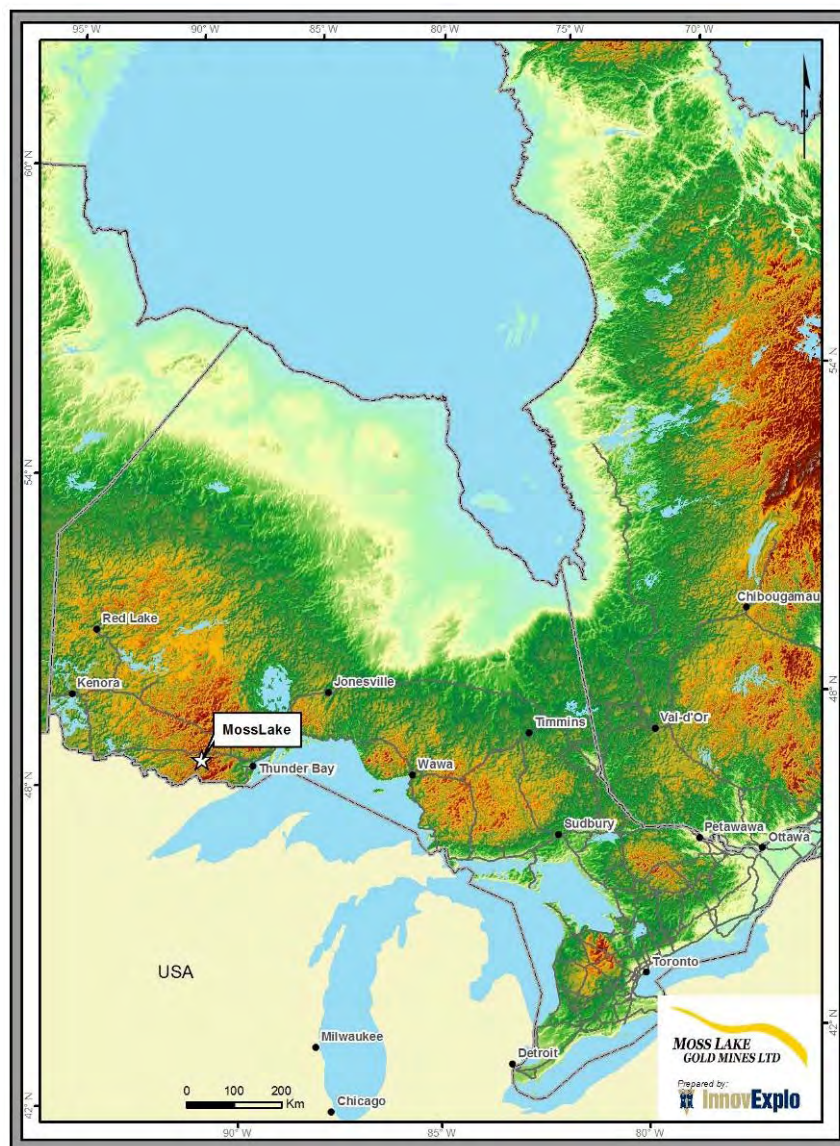


Figure 4.1 – Location map for the Moss Lake Project

4.2 MINING TITLE AND CLAIM STATUS

Claim status was supplied by George Mannard, president and CEO for Moss Lake Gold Mines Ltd. InnovExplo verified the status for all claims using the Ontario government's online claim management system via the Geo-Claims website at: <http://www.geologyontario.mndm.gov.on.ca/website/geoclaims>.

4.2.1 Mining titles

The property consists of one block of land comprised of 105 unpatented mining claims and two 21-year mining leases comprising 15 patented claims. The mining claims and leases are of irregular shapes and sizes aggregating a total of 3,224.09 ha.

Although each claim within a mining lease must be legally surveyed as part of the leasing process, the authors do not know with certainty whether the two leases (107488 and 108107) have been surveyed. The unpatented claims have not been surveyed and convey no surface rights.

All the unpatented mining claims and mining leases are registered 100% in the name of Moss Lake Gold Mines Ltd. Tables 4.1 and 4.2 provide details of the mining titles constituting the Moss Lake property, and their locations are shown on the map in Figure 4.2.

Table 4.1 – Moss Lake property mining leases

Lease	Title	NTS	Township	Area (ha)	Starting Date	Expiration Date	Rights	Owner (according to Geo-Claims)
107488	TB288295	52B/10	Moss	12.94	2004-02-01	2025-01-31	Surface and Mining	Moss Lake Gold Mines Ltd
	TB288296	52B/11	Moss	14.72	2004-02-01	2025-01-31	Surface and Mining	Moss Lake Gold Mines Ltd
	TB288297	52B/12	Moss	20.11	2004-02-01	2025-01-31	Surface and Mining	Moss Lake Gold Mines Ltd
	TB288298	52B/13	Moss	14.76	2004-02-01	2025-01-31	Surface and Mining	Moss Lake Gold Mines Ltd
	TB288299	52B/14	Moss	17.73	2004-02-01	2025-01-31	Surface and Mining	Moss Lake Gold Mines Ltd
	TB288300	52B/15	Moss	15.07	2004-02-01	2025-01-31	Surface and Mining	Moss Lake Gold Mines Ltd
108107	TB433177	52B/16	Moss	20.94	2007-09-01	2028-08-31	Mining	Moss Lake Gold Mines Ltd
	TB433178	52B/17	Moss	17.90	2007-09-01	2028-08-31	Mining	Moss Lake Gold Mines Ltd
	TB433216	52B/18	Moss	13.27	2007-09-01	2028-08-31	Mining	Moss Lake Gold Mines Ltd
	TB433217	52B/19	Moss	6.51	2007-09-01	2028-08-31	Mining	Moss Lake Gold Mines Ltd
	TB433221	52B/20	Moss	12.12	2007-09-01	2028-08-31	Mining	Moss Lake Gold Mines Ltd
	TB433222	52B/21	Moss	7.18	2007-09-01	2028-08-31	Mining	Moss Lake Gold Mines Ltd
	TB433223	52B/22	Moss	17.48	2007-09-01	2028-08-31	Mining	Moss Lake Gold Mines Ltd
	TB433226	52B/23	Moss	9.50	2007-09-01	2028-08-31	Mining	Moss Lake Gold Mines Ltd
	TB433227	52B/24	Moss	14.32	2007-09-01	2028-08-31	Mining	Moss Lake Gold Mines Ltd

Table 4.2 – Moss Lake property unpatented mining claims

Title	NTS	Status	Township	Area (ha)	Staking Date	Expiration Date	Owner (according to Geo-Claims)
811237	52B/10	Active	Moss	23.55	1984-09-14	2014-09-14	Moss Lake Gold Mines Ltd. (100.00 %)
811238	52B/10	Active	Moss	14.78	1984-09-14	2014-09-14	Moss Lake Gold Mines Ltd. (100.00 %)
811239	52B/10	Active	Moss	14.73	1984-09-14	2013-09-14	Moss Lake Gold Mines Ltd. (100.00 %)
812242	52B/10	Active	Moss	18.19	1985-03-08	2014-03-08	Moss Lake Gold Mines Ltd. (100.00 %)
812243	52B/10	Active	Moss	16.78	1985-03-08	2014-03-08	Moss Lake Gold Mines Ltd. (100.00 %)
812244	52B/10	Active	Moss	15.34	1985-03-08	2014-03-08	Moss Lake Gold Mines Ltd. (100.00 %)
812245	52B/10	Active	Moss	14.69	1985-03-08	2014-03-08	Moss Lake Gold Mines Ltd. (100.00 %)
812246	52B/10	Active	Moss	11.66	1985-03-08	2014-03-08	Moss Lake Gold Mines Ltd. (100.00 %)
812247	52B/10	Active	Moss	13.68	1985-03-08	2014-03-08	Moss Lake Gold Mines Ltd. (100.00 %)
812248	52B/10	Active	Moss	14.97	1985-03-08	2014-03-08	Moss Lake Gold Mines Ltd. (100.00 %)
812249	52B/10	Active	Moss	12.00	1985-03-08	2014-03-08	Moss Lake Gold Mines Ltd. (100.00 %)
812250	52B/10	Active	Moss	9.32	1985-03-08	2014-03-08	Moss Lake Gold Mines Ltd. (100.00 %)
812251	52B/10	Active	Moss	12.71	1985-03-08	2014-03-08	Moss Lake Gold Mines Ltd. (100.00 %)
812252	52B/10	Active	Moss	12.69	1985-03-08	2014-03-08	Moss Lake Gold Mines Ltd. (100.00 %)
812253	52B/10	Active	Moss	13.87	1985-03-08	2014-03-08	Moss Lake Gold Mines Ltd. (100.00 %)
812254	52B/10	Active	Moss	15.16	1985-03-08	2014-03-08	Moss Lake Gold Mines Ltd. (100.00 %)
812255	52B/10	Active	Moss	14.21	1985-03-08	2014-03-08	Moss Lake Gold Mines Ltd. (100.00 %)
812256	52B/10	Active	Moss	13.31	1985-03-08	2014-03-08	Moss Lake Gold Mines Ltd. (100.00 %)
812257	52B/10	Active	Moss	12.29	1985-03-08	2014-03-08	Moss Lake Gold Mines Ltd. (100.00 %)
812258	52B/10	Active	Moss	13.52	1985-03-08	2014-03-08	Moss Lake Gold Mines Ltd. (100.00 %)
812259	52B/10	Active	Moss	10.43	1985-03-08	2014-03-08	Moss Lake Gold Mines Ltd. (100.00 %)
812260	52B/10	Active	Moss	17.09	1985-03-08	2014-03-08	Moss Lake Gold Mines Ltd. (100.00 %)
812261	52B/10	Active	Moss	15.18	1985-03-08	2014-03-08	Moss Lake Gold Mines Ltd. (100.00 %)
812262	52B/10	Active	Moss	16.99	1985-03-08	2014-03-08	Moss Lake Gold Mines Ltd. (100.00 %)
812263	52B/10	Active	Moss	18.27	1985-03-08	2014-03-08	Moss Lake Gold Mines Ltd. (100.00 %)
812264	52B/10	Active	Moss	20.63	1985-03-08	2014-03-08	Moss Lake Gold Mines Ltd. (100.00 %)
812265	52B/10	Active	Moss	18.44	1985-03-08	2014-03-08	Moss Lake Gold Mines Ltd. (100.00 %)
812266	52B/10	Active	Moss	15.40	1985-03-08	2014-03-08	Moss Lake Gold Mines Ltd. (100.00 %)
812267	52B/10	Active	Moss	17.46	1985-03-08	2014-03-08	Moss Lake Gold Mines Ltd. (100.00 %)
812268	52B/10	Active	Moss	22.18	1985-03-08	2014-03-08	Moss Lake Gold Mines Ltd. (100.00 %)
821438	52B/10	Active	Moss	20.98	1984-10-30	2013-10-30	Moss Lake Gold Mines Ltd. (100.00 %)
821439	52B/10	Active	Moss	17.15	1984-10-30	2013-10-30	Moss Lake Gold Mines Ltd. (100.00 %)
821777	52B/10	Active	Moss	15.13	1984-10-30	2013-10-30	Moss Lake Gold Mines Ltd. (100.00 %)
821778	52B/10	Active	Moss	10.89	1984-10-30	2013-10-30	Moss Lake Gold Mines Ltd. (100.00 %)
821782	52B/10	Active	Moss	18.40	1984-10-30	2013-10-30	Moss Lake Gold Mines Ltd. (100.00 %)
829141	52B/10	Active	Moss	27.33	1984-10-30	2013-10-30	Moss Lake Gold Mines Ltd. (100.00 %)
830076	52B/10	Active	Moss	21.13	1985-02-22	2014-02-22	Moss Lake Gold Mines Ltd. (100.00 %)
830077	52B/10	Active	Moss	17.06	1985-02-22	2014-02-22	Moss Lake Gold Mines Ltd. (100.00 %)
830082	52B/10	Active	Moss	12.87	1985-02-22	2014-02-22	Moss Lake Gold Mines Ltd. (100.00 %)
830083	52B/10	Active	Moss	13.90	1985-02-22	2014-02-22	Moss Lake Gold Mines Ltd. (100.00 %)
830084	52B/10	Active	Moss	16.12	1985-02-22	2014-02-22	Moss Lake Gold Mines Ltd. (100.00 %)
830089	52B/10	Active	Moss	17.33	1985-02-22	2014-02-22	Moss Lake Gold Mines Ltd. (100.00 %)
830090	52B/10	Active	Moss	15.74	1985-02-22	2014-02-22	Moss Lake Gold Mines Ltd. (100.00 %)
830091	52B/10	Active	Moss	15.37	1985-02-22	2014-02-22	Moss Lake Gold Mines Ltd. (100.00 %)
830092	52B/10	Active	Moss	12.54	1985-02-22	2014-02-22	Moss Lake Gold Mines Ltd. (100.00 %)
830231	52B/10	Active	Moss	19.46	1985-02-22	2014-02-22	Moss Lake Gold Mines Ltd. (100.00 %)
830232	52B/10	Active	Moss	23.85	1985-02-22	2014-02-22	Moss Lake Gold Mines Ltd. (100.00 %)
830233	52B/10	Active	Moss	20.91	1985-02-22	2014-02-22	Moss Lake Gold Mines Ltd. (100.00 %)
830234	52B/10	Active	Moss	17.11	1985-02-22	2014-02-22	Moss Lake Gold Mines Ltd. (100.00 %)
830478	52B/10	Active	Moss	24.69	1985-03-08	2014-03-08	Moss Lake Gold Mines Ltd. (100.00 %)
830479	52B/10	Active	Moss	18.04	1985-03-08	2014-03-08	Moss Lake Gold Mines Ltd. (100.00 %)
830480	52B/10	Active	Moss	19.65	1985-03-08	2014-03-08	Moss Lake Gold Mines Ltd. (100.00 %)
830481	52B/10	Active	Moss	26.65	1985-03-08	2014-03-08	Moss Lake Gold Mines Ltd. (100.00 %)
830482	52B/10	Active	Moss	13.71	1985-03-27	2014-03-27	Moss Lake Gold Mines Ltd. (100.00 %)

Table 4.2 – Moss Lake property unpatented mining claims (cont'd)

Title	NTS	Status	Township	Area (ha)	Staking Date	Expiration Date	Owner (according to Geo-Claims)
830483	52B/10	Active	Moss	10.22	1985-03-08	2014-03-08	Moss Lake Gold Mines Ltd. (100.00 %)
834671	52B/10	Active	Moss	11.23	1985-02-22	2014-02-22	Moss Lake Gold Mines Ltd. (100.00 %)
834672	52B/10	Active	Moss	14.38	1985-02-22	2014-02-22	Moss Lake Gold Mines Ltd. (100.00 %)
834673	52B/10	Active	Moss	14.37	1985-03-27	2014-03-27	Moss Lake Gold Mines Ltd. (100.00 %)
834674	52B/10	Active	Moss	13.00	1985-03-27	2014-03-27	Moss Lake Gold Mines Ltd. (100.00 %)
834675	52B/10	Active	Moss	14.64	1985-03-27	2014-03-27	Moss Lake Gold Mines Ltd. (100.00 %)
834676	52B/10	Active	Moss	16.11	1985-03-27	2014-03-27	Moss Lake Gold Mines Ltd. (100.00 %)
834680	52B/10	Active	Moss	12.76	1985-03-27	2014-03-27	Moss Lake Gold Mines Ltd. (100.00 %)
834876	52B/10	Active	Moss	11.99	1985-03-27	2014-03-27	Moss Lake Gold Mines Ltd. (100.00 %)
834877	52B/10	Active	Moss	14.05	1985-03-27	2014-03-27	Moss Lake Gold Mines Ltd. (100.00 %)
834878	52B/10	Active	Moss	11.35	1985-03-27	2014-03-27	Moss Lake Gold Mines Ltd. (100.00 %)
834879	52B/10	Active	Moss	12.96	1985-03-27	2014-03-27	Moss Lake Gold Mines Ltd. (100.00 %)
940414	52B/10	Active	Moss	15.83	1986-09-05	2013-09-05	Moss Lake Gold Mines Ltd. (100.00 %)
940415	52B/10	Active	Moss	13.18	1986-09-05	2013-09-05	Moss Lake Gold Mines Ltd. (100.00 %)
940416	52B/10	Active	Moss	12.12	1986-09-05	2013-09-05	Moss Lake Gold Mines Ltd. (100.00 %)
940417	52B/10	Active	Moss	11.73	1986-09-05	2013-09-05	Moss Lake Gold Mines Ltd. (100.00 %)
940418	52B/10	Active	Moss	14.33	1986-09-05	2013-09-05	Moss Lake Gold Mines Ltd. (100.00 %)
940419	52B/10	Active	Moss	14.49	1986-09-05	2013-09-05	Moss Lake Gold Mines Ltd. (100.00 %)
940420	52B/10	Active	Moss	16.55	1986-09-05	2013-09-05	Moss Lake Gold Mines Ltd. (100.00 %)
940703	52B/10	Active	Moss	15.73	1986-09-05	2013-09-05	Moss Lake Gold Mines Ltd. (100.00 %)
940704	52B/10	Active	Moss	18.34	1986-09-05	2013-09-05	Moss Lake Gold Mines Ltd. (100.00 %)
940705	52B/10	Active	Moss	21.25	1986-09-05	2013-09-05	Moss Lake Gold Mines Ltd. (100.00 %)
940706	52B/10	Active	Moss	17.25	1986-09-05	2013-09-05	Moss Lake Gold Mines Ltd. (100.00 %)
940707	52B/10	Active	Moss	12.92	1986-09-05	2013-09-05	Moss Lake Gold Mines Ltd. (100.00 %)
940708	52B/10	Active	Moss	14.10	1986-09-05	2013-09-05	Moss Lake Gold Mines Ltd. (100.00 %)
940709	52B/10	Active	Moss	21.48	1986-09-05	2013-09-05	Moss Lake Gold Mines Ltd. (100.00 %)
940710	52B/10	Active	Moss	16.99	1986-09-05	2013-09-05	Moss Lake Gold Mines Ltd. (100.00 %)
940711	52B/10	Active	Moss	12.65	1986-09-05	2013-09-05	Moss Lake Gold Mines Ltd. (100.00 %)
940712	52B/10	Active	Moss	14.13	1986-09-05	2013-09-05	Moss Lake Gold Mines Ltd. (100.00 %)
940743	52B/10	Active	Burchell Lake Area	18.88	1986-10-22	2014-10-22	Moss Lake Gold Mines Ltd. (100.00 %)
942009	52B/10	Active	Burchell Lake Area	18.26	1986-10-22	2014-10-22	Moss Lake Gold Mines Ltd. (100.00 %)
942010	52B/10	Active	Burchell Lake Area	21.36	1986-10-22	2014-10-22	Moss Lake Gold Mines Ltd. (100.00 %)
942011	52B/10	Active	Burchell Lake Area	20.95	1986-10-22	2014-10-22	Moss Lake Gold Mines Ltd. (100.00 %)
942012	52B/10	Active	Moss	15.63	1986-10-22	2013-10-22	Moss Lake Gold Mines Ltd. (100.00 %)
942013	52B/10	Active	Moss	17.02	1986-10-22	2013-10-22	Moss Lake Gold Mines Ltd. (100.00 %)
942014	52B/10	Active	Moss	16.91	1986-10-22	2013-10-22	Moss Lake Gold Mines Ltd. (100.00 %)
942015	52B/10	Active	Moss	15.59	1986-10-22	2013-10-22	Moss Lake Gold Mines Ltd. (100.00 %)
942016	52B/10	Active	Moss	14.35	1986-10-22	2013-10-22	Moss Lake Gold Mines Ltd. (100.00 %)
942017	52B/10	Active	Moss	15.53	1986-10-22	2013-10-22	Moss Lake Gold Mines Ltd. (100.00 %)
1216282	52B/10	Active	Moss	31.54	1998-02-09	2015-02-09	Moss Lake Gold Mines Ltd. (100.00 %)
1232109	52B/10	Active	Moss	81.78	1998-02-16	2014-02-16	Moss Lake Gold Mines Ltd. (100.00 %)
1232111	52B/10	Active	Moss	76.20	1998-02-16	2014-02-16	Moss Lake Gold Mines Ltd. (100.00 %)
1232112	52B/10	Active	Moss	66.56	1998-02-16	2014-02-16	Moss Lake Gold Mines Ltd. (100.00 %)
1233264	52B/10	Active	Moss	220.52	1999-01-19	2014-02-19	Moss Lake Gold Mines Ltd. (100.00 %)
1233265	52B/10	Active	Moss	250.05	1999-01-19	2014-02-19	Moss Lake Gold Mines Ltd. (100.00 %)
1237946	52B/10	Active	Burchell Lake Area	234.51	1999-10-22	2014-10-22	Moss Lake Gold Mines Ltd. (100.00 %)
1241038	52B/10	Active	Moss	121.17	2001-02-07	2015-02-07	Moss Lake Gold Mines Ltd. (100.00 %)
1241039	52B/10	Active	Moss	202.59	2001-02-07	2014-02-07	Moss Lake Gold Mines Ltd. (100.00 %)
1246780	52B/10	Active	Moss	145.27	2001-05-16	2014-05-16	Moss Lake Gold Mines Ltd. (100.00 %)
4212018	52B/10	Active	Moss	49.64	2007-02-22	2015-02-22	Moss Lake Gold Mines Ltd. (100.00 %)
4212034	52B/10	Active	Moss	39.57	2007-02-22	2015-02-22	Moss Lake Gold Mines Ltd. (100.00 %)

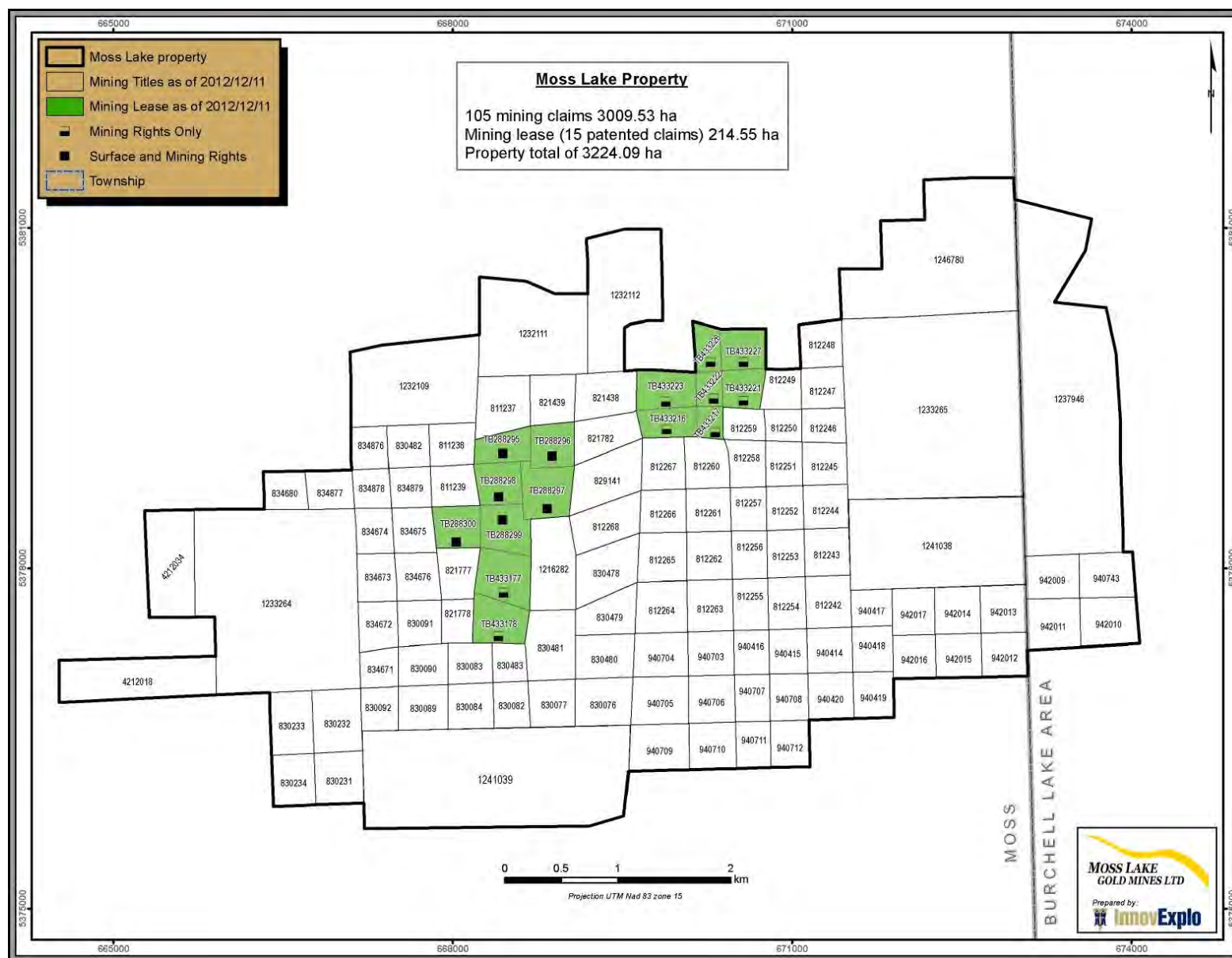


Figure 4.2 – Location map showing mining titles and leases constituting the Moss Lake property

4.2.2 Ownership history and underlying agreements

The following information is modified from Risto and Breede (2010).

In September 1982, Tandem Resources Ltd (“Tandem”) entered into an agreement (“the underlying agreement”) whereby it could acquire a 100% interest in a group of forty-two (42) contiguous staked claims, including the fifteen (15) brought to lease in 1983 and 1986 from a group composed of three individuals and two junior companies (the “Group”). The claims were centred on the original Snodgrass Lake showing dating from the 1930s. Storimin Exploration Ltd (“Storimin”) entered into a joint venture (“JV”) agreement covering the 42 claims with Tandem in 1984. The Tandem/Storimin JV earned the 100% interest and thereafter the Group was entitled to the greater of a collective \$25,000 annual advance royalty payment or a collective 10% Net Profits Royalty (“NPR”).

In September 1990, Central Crude Limited (“CCL”) optioned the same property from Tandem/Storimin, inheriting the underlying agreement. CCL thereby obtained the right to earn a 51% interest in the property by fulfilling expenditure and cash payment obligations, and the right to earn an additional 9% to earn a 60% interest in the property by fulfilling additional obligations. CCL staked and optioned new claims adjacent or close to the 42-claim group but these were not included in the underlying agreement. Many of these additional claims have lapsed and some, if not all, have been restaked by third parties since that time. CCL fulfilled its obligations to earn a 51% interest in the 42 claims, and reorganized in 1994 to become Moss Lake Gold Mines Limited (“Moss Lake Gold Mines”). Tandem/Storimin exchanged their collective 49% interest in the original 42-claim property for shares in Moss Lake Gold Mines.

Moss Lake Gold Mines subsequently optioned additional claims from other parties, as detailed below, all contiguous with the original 42 claims to form one large block. Moss Lake Gold Mines also staked a small number of additional claims, largely to replace the Moss Lake Gold Mines claims that came open.

In June 1999, Moss Lake Gold Mines purchased the 1.25% royalty held by Golden Hart Explorations Inc. (formerly known as Belore Mines Limited), one of the parties to the underlying agreement. Thereafter and to the time of writing of the 2010 report by Watts, Griffis and McOuat (Risto and Breede, 2010), the four remaining members of the Group remained entitled to the greater of a collective \$21,875 annual advance royalty payment or collective 8.75% NPR.

In early 1998, sixteen (16) claims forming part of the north portion of the original 42-claim property came open and were restaked by Berland Resources Ltd and Benton Resources Corp as three mining claims (1232109, 1232111 and 1232112) totalling 15 single-unit claims. In July 1998, Moss Lake Gold Mines purchased a 100% interest in these three claims. The two vendors are entitled to a collective 1% Net Smelter Returns royalty (“NSR”). These three “new” claims are included in the underlying agreement; therefore this portion of the underlying agreement portion of the overall property is subject to a 1% NSR and an 8.75% NPR.

In September 1999, Moss Lake Gold Mines acquired a 100% interest in the Fountain Lake property consisting of 99 mining claims with a surface area equivalent to 149 single unit claims, adjacent to the Moss Lake property, from Landis Mining

Corporation, John Ternowesky, Eugene Belisle and Noel Belisle. In return, the vendors received one-time cash payments and shares in Moss Lake Gold Mines. They are entitled to a collective 2.5% NSR. Moss Lake Gold Mines may purchase 40% of the 2.5% NSR for \$1,000,000. Since the Fountain Lake agreement came into effect, a small number of claims have come open and been restaked by or for Moss Lake Gold Mines and remain part of the agreement. One claim that came open was restaked by a third party and is no longer part of the agreement. The Fountain Lake property remains essentially the same size and shape it was in September 1999.

4.3 ENVIRONMENT, PERMITS AND DEVELOPMENT EXPENDITURES

Other than the rights conceded by the mining claims and leases described above, the authors are not aware if other permits or authorizations have been granted to Moss Lake Gold Mines Ltd with respect to future work to be done on the property. The authors believe that environmental consultation and permitting will be needed if this project moves forward to the development and mining stage. The Wawiag River, as well as outflows from Moss Lake, will likely have to be diverted around an eventual open pit operation.

Other permitting and expenditures to be considered may include the rehabilitation of the access road (21 km) and erection of a power line from Highway 11 to the project.

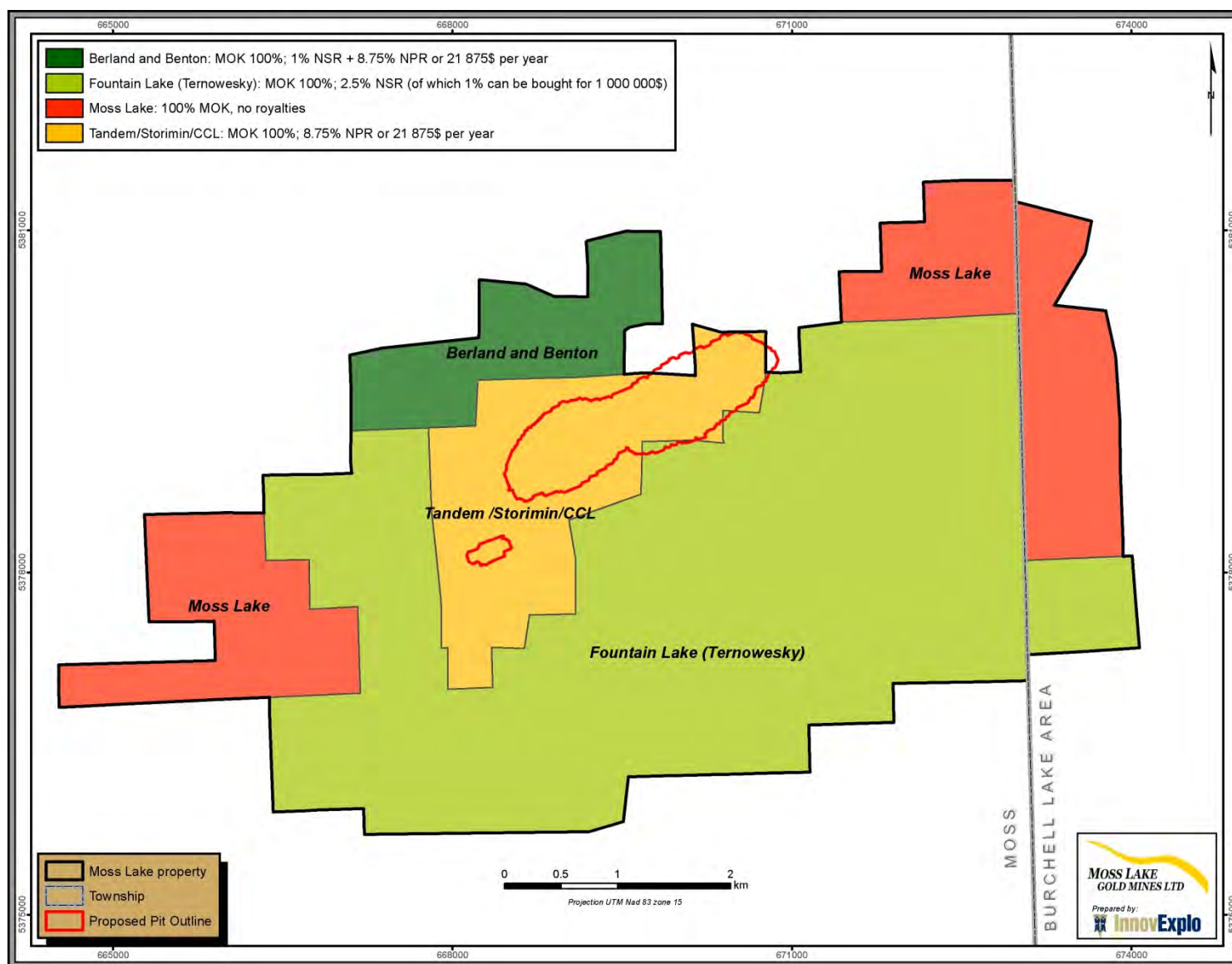


Figure 4.3 – Underlying agreements and previous owners for the Moss Lake property

The pit shell used for the resource estimate extends slightly beyond the property limits in its northeastern portion. Although the entire resource lies within the property limits, some waste material outside the property limits will need to be removed to access some of the resource.

5. ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY

5.1 ACCESSIBILITY

The Moss Lake property is located in Moss Township and Burchell Lake Area in the western part the province of Ontario. It lies approximately 100 km west of the city of Thunder Bay (Fig. 4.1), which is located at the western (Canadian) end of Lake Superior. Access is by road, generally from Thunder Bay via provincial highways 11/17 west to Shabaqua Corners and west again on Highway 11 towards Fort Frances, Rainy River and the state of Minnesota. Twelve (12) km west of the village of Kashabowie, the “Swamp Road” gravel road, part of a network of sporadically used logging roads, branches off towards the south. The Moss Lake property is approximately 15 km south of Highway 11 in a direct line, and approximately 21 km via the logging roads. A four-wheel drive pickup truck is necessary, particularly for the last segment of the drive after reaching Hermia Lake Road.

5.2 CLIMATE

The region is under the influence of a continental climate marked by cold, dry winters and hot, humid summers. The average temperature for July is 17.6°C and the average for January is -14.8°C. The mean annual temperature is 2.5°C. The historical recorded low was -41.1°C and the high 40.3°C. Historical records of annual precipitation rates indicate a mean rainfall of 559 mm and a mean annual snowfall of 188 cm. There is an average of 203 days of frost per year. Freeze-up usually occurs in late December and break-up in March. Snow accumulates from October to May, with a peak from December to March. These data are for Thunder Bay, taken from Environment Canada Website at:

http://www.climate.weatheroffice.gc.ca/climate_normals.

5.3 LOCAL RESOURCES AND INFRASTRUCTURE

The property has no permanent inhabitants, although there is a well-equipped small cabin owned and maintained by Moss Lake Gold Mines. The cabin is situated on the eastern shore of Moss Lake and within walking distance of the mineralized zones. A watchman visits and stays in the cabin frequently, depending on the level of activity in the area. The available water and aggregate material are more than sufficient for exploration and mining purposes, although there is only a limited amount of harvestable timber as the general area has seen extensive logging activities over the last 30 years.

There is ample and suitable room available for the establishment of mining and processing operations, waste piles, and a tailings management area.

Some of the historical buildings have been demolished. The ramp portal has been blocked with muck and the ramp was allowed to naturally flood. The only remaining building, a few metres beside the ramp portal, is currently used as a core shack and storage facility by Moss Lake Gold Mines Ltd. The yard around the portal holds numerous core racks.

Grid power is available on Highway 11. Natural gas is available at Shabaqua Corners, approximately 40 km east of Kashabowie and in Atikokan to the west. A branch of the CN railroad parallels Highway 11 near Kashabowie.

The nearest settlement is the village of Kashabowie, with only a small number of residents and limited services. The town of Atikokan, located immediately north of Highway 11 and 80 km west of the turnoff to Moss Lake, is a former mining community, with a population of 2,800, a hospital, schools, government and commercial services, and a supply of labour.

Thunder Bay, a 1.5-hour drive to the east, is by far the largest city in the region with 113,000 inhabitants. All services required to service a mining operation may be found in this city. A regional airport provides regularly scheduled daily flights to the east and west, and seaport facilities are available from the end of March through to late-December (with seasons extending in recent years as weather permits).

5.4 PHYSIOGRAPHY

The property is characterized by northeast-trending ridges of bedrock and is generally covered by a mixture of small spruce, fir, birch, poplar and alder. Big pine trees are sparse as logging activities cleared large areas of the original forest. Between the ridges are low-lying spruce trees and covered to open swampy areas. The land around Snodgrass Lake and all along Wawiag Creek up to Fountain Lake is a swampy lowland valley with grass and shrubs, ranging from 100 to nearly 400 metres across. There are several shallow lakes and narrow creeks on or crossing the property. Snodgrass Lake is near the centre of the property at the west end of the Moss Lake deposit. The elevation of the property and its surroundings ranges from about 445 to 490 metres above mean sea level.

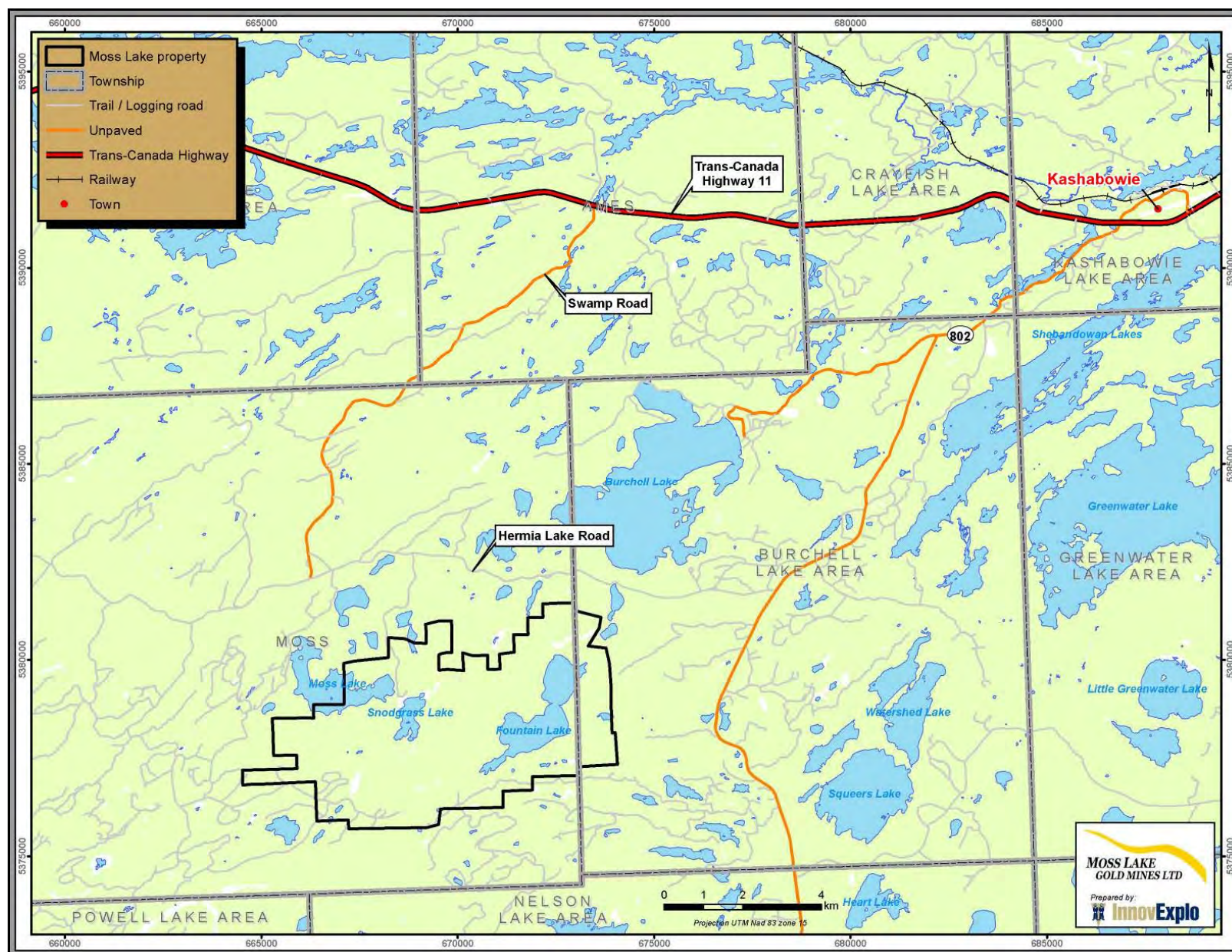


Figure 5.1 – Moss Lake property access

6. HISTORY

This historical review, effective as at January 2013, is based on the 2010 Watts, Griffis and McOuat report (Risto and Breede, 2010), assessment files from the Ministry of Northern Development and Mines of Ontario (MNDM)², the Ontario Geological Survey and the Geological Survey of Canada, and unfiled reports and publications made available by the issuer. A useful historical review of Fountain Lake area is provided by an Ovalbay Geological Services report by Larouche (1995; report 52B10SE0006).

This section summarizes previous exploration work on the property by period of activity. Table 6.1 lists all previous Mineral Resource Estimates (historical or 43-101 compliant), Table 6.2 lists all historical work executed on the property and Table 6.3 provides an overview of historical drilling. Figure 6.1 displays the locations of all mineral occurrences identified on the property.

Various groups of claims around Fountain Lake were often referred to as “Fountain Lake property” by many different companies over the years. Today, land in this area also forms part of the Moss Lake property. It is important to note that the term “Fountain Lake” in this report refers to the physical lake located in the east part of the property. The easternmost small bay of this lake crosses the Moss Township / Burchell Lake Area boundary. Some maps refer to the lake as “Kawawagamak Lake” (e.g., the Ontario Geo-Claims website). The name “Fountain Lake” was used in this report to be consistent with historical data.

In 1936, Mining Corporation of Canada examined the Snodgrass showing by digging seven (7) trenches along the mineralized zone. No reference was found on how the showing was initially discovered. In 1945, Lobanor Gold Mines Limited drilled twelve (12) holes for a total footage of 4,695 ft (1,431.0 m), reportedly intersecting three (3) zones of Au and Ag intervals.

Around the same time, a gold showing was found by claim owner Cramette on a point along the western shore of Fountain Lake (today referred to as Gold Point). It was then drilled by Airways Exploration Ltd. In a letter to Airways Exploration in 1947, C.L. Emery writes about the 500 ft (152.4 m) of X-Ray diamond drilling, stating: “Hole No. 1, which I spotted, went down under the find on the point (...) We assayed only the better looking sections (...) From 33 to 36 the assay was 3.12 oz. per ton...”. Although no assay record seems to exist from this discovery, later exploration programs confirmed the presence of gold in this area. Other drill holes are also mentioned, but no information is given regarding their location, logs or lengths (52B10SE0237).

In 1947, Airways Exploration Ltd found gold working on claims around Fountain Lake belonging to prospectors Fisher and Cramette. In 1952, Airways Exploration optioned these claims to Great Lakes Copper Mines Ltd (“Great Lakes”). A geological survey was carried out that same year. Great Lakes subsequently acquired control of the claims, and in 1954, Newkirk Mining Corporation optioned the ground. A resistivity survey was completed, which located several anomalies. Two years later, in 1956, the property reverted to Great Lakes Copper Mines Ltd who carried out an electromagnetic survey, and then drilled fifteen (15) holes totalling 5,477 ft in 1956-57.

² <http://www.mndm.gov.on.ca/en/mines-and-minerals/applications/geologyontario>

Beginning in the 1970s, gold exploration intensified on the property when Falconbridge drilled the Snodgrass Lake occurrence.

During the spring of 1979, Mountainview Explorations Inc. carried out a horizontal loop EM survey over the ice on Fountain Lake. Conductors were located, some of which were interpreted to be caused by faults or shears.

In 1982, Canadian Nickel Company of Canada Limited (Inco) conducted a regional magnetic and electromagnetic airborne geophysical survey and also drilled a gold showing in the immediate northeast extension of the Moss Lake resource area, today known as the Span Lake Zone.

In 1983, Tandem Resources Ltd ("Tandem") drilled five surface holes totalling 2,170 ft (661.4 m).

In 1984, a new joint venture was signed between Tandem and Storimin Exploration Ltd ("Storimin"), sometimes referred to in historical documents as "A.E. Storey in trust".

In 1985, the original showing was stripped and washed by the new Tandem/Storimin joint venture (JV).

From 1986 to 1989, the Tandem/Storimin JV drilled 204 surface holes totalling 164,743 ft (50,213.6 m). This objective was to define the Main Zone as it was traced along strike and down-dip from the original showing. The last Tandem/Storimin surface hole was numbered 89-177. In 1987 and 1988, the JV carried out an underground exploration program via a decline and drifts. The underground development included 2,217 ft (675.7 m) of decline, 183 ft (55.8 m) of cross cuts, and 904 ft (275.5 m) of drifting on the Main Zone. This development reached a vertical depth of 316 ft (96.3 m). The JV drilled 32 underground holes totalling 4,967 ft (1,513.9 m) and carried out extensive muck, face and back sampling. During the underground program, an on-site laboratory provided rapid sample turnaround. Check assaying was done at Bell-White Analytical Laboratories Limited ("Bell-White") in Haileybury, Ontario, and Assayers (Ontario) Limited in Toronto, Ontario. The Watts, Griffis and McQuat report of 2010 (Risto and Breede, 2010) provides the supported and on-site results. Drill core samples were assayed at Bell-White. Underground development was carried out by Graham Mining Contractors of Manitouwadge, Ontario.

The JV surface drilling identified several fairly closely-spaced, parallel to subparallel, gold-bearing veins over a strike length of 4,000 ft and width of 800 ft (1,219 m by 244 m), largely hosted by altered, sheared, ($\pm$ pyritic) diorite. The Main Zone was recognized over a 1,200 ft (365 m) strike length to a depth of 1,300 ft (396 m) and dips near vertically. It was interpreted to be cut off by N-S trending faults on both the west and east sides.

At that time, the JV had not yet intersected what subsequently became known as the QES Zone, located approximately 600 ft (180 m) northeast along strike and slightly fault-offset to the south from the Main Zone area.

In 1987, Tamavack Resources Inc. and International Maple Leaf Resources Corporation were granted an option to acquire a 100% interest in part of the property

(known at the time as the Fountain Lake property). In May of 1987, OreQuest Consultants Ltd was contracted by Prime Explorations Ltd to carry out a complete ground exploration program on the former Fountain Lake property. The program concentrated on 87 claims surrounding the Snodgrass Lake deposit and eastward to Fountain Lake. Initial exploration consisted of line cutting, geological mapping, biogeochemical, soil, humus and rock sampling, ground magnetometer and VLF-EM surveys, detailed prospecting and limited induced polarization. Diamond drilling completed by Tamavack Resources Inc. and International Maple Leaf Resource Corp totals 25,038 ft in 41 holes. About 75% of the drill footage was directed towards gold targets located near Fountain Lake and just south of the Moss Lake deposit (Boundary Zone). Furthermore, about 13.2 line-miles (21.2 line-km) were covered by IP surveying.

A June 1988 report prepared by Marstan Explorers Ltd (Elliot, 1988) for the Tandem/Storimin JV subsequent to the completion of the underground program, reported a drill-indicated reserve estimate for Zone 1, Zone 2 and the North Zone totalling 373,272 tons grading 0.156 oz/t Au (338,722 t grading 5.35 g Au/t). Details concerning this historical estimate are vague, although the bulk of the tonnage is from the underground mining and sampling area. The same report mentions that a 0.10 oz/t Au (3.43 g/t Au) cut-off grade and minimum 6 ft (1.83 m) width were used for the estimate. Note that this reserve estimate is historical in nature and should not be relied upon. It is unlikely it conforms to current Regulation 43-101 criteria or to CIM Standards and Definitions, and it has not been verified to determine its relevance or reliability. The historical reserve estimate is included in this section for illustrative purposes only and should not be disclosed out of context.

In September 1988, Lakefield Research Ltd, now SGS Minerals Services Ltd, carried out metallurgical test work.

In September 1990, Central Crude Limited ("CCL") optioned the 42-claim Moss Lake property, and an intensive surface exploration program began in January 1990 following the signing of a letter of intent. Sixty-nine (69) holes totalling 80,399 ft (24,505.6 m) were drilled by June 1991, largely on the QES Zone found by Noranda while testing for an ENE extension of the Main Zone. In late 1992, an additional seven (7) holes totalling 14,380 ft (4,383.0 m) were drilled at depth on the QES Zone. In addition to diamond drilling, historical trenches were rehabilitated and resampled, geological mapping, prospecting and soil sampling were carried out. Following 22 km of IP surveying by G. Bélanger in 1990, IP anomalies were tested using 37 "trenches" (actually stripped and washed outcrop areas) totalling 1,515 metres in length. The trenches were sampled along diamond-saw cut channels. Noranda optioned several adjacent and nearby properties during the same time period. Small portions of some of these properties form part of the present Moss Lake property.

In 1989 and 1990, all Noranda and/or Noranda/CCL holdings were covered by a regional airborne magnetic and VLF survey and a DIGHEM III AEM survey. Results indicated that the Moss Lake mineralized zones occur in a sheared and altered diorite sill about 1,500 ft long (457 m), striking N060, bounded to the north and south by felsic volcanics.

Between May 1990 and February 1992, several historical Mineral Resource Estimates were completed. Four are documented in Table 6.1. These historical

estimates should not be relied upon as it is unlikely they conform to current Regulation 43-101 criteria or to CIM Standards and Definitions, and they have not been verified to determine their relevance or reliability. They are included in this section for illustrative purposes only and should not be disclosed out of context.

In 1991, a discovery of gold-zinc mineralization was made during the course of field mapping by Osmani (1997; Ontario Geological Survey). The occurrence is situated approximately 700 metres southwest of Fountain Lake. Zinc mineralization is associated with fine-grained, disseminated pyrite and sphalerite in a sheared felsic metavolcanic rock near the contact of felsic and mafic to intermediate metavolcanic rocks. A grab sample of mineralized felsic metavolcanic rock yielded 6,550 ppm Zn and 870 ppb Au (Osmani, 1997).

In 1995, Geologica Groupe Conseil ("Geologica") of Val-d'Or, Québec, prepared an assessment report on the property. Recommendations from Geologica included compilation of previous work, and diamond drilling elsewhere than in the resources area. Computerized modelling of the mineralized zone and an economic feasibility study on the project were also recommended.

In 1996, Moss Lake Gold Mines carried out a 17-hole diamond drilling program. Eleven (11) of these holes were infill holes in the Main Zone area, five (5) were infill holes on the QES Zone, and the last hole completed on a drilling section across a gold-anomalous area on the southwest portion of the property. The 1996 program was carried out by Northwest Geophysics Ltd of Thunder Bay.

In 1999, Moss Lake Gold Mines Ltd acquired the Fountain Lake property from Landis Mining Corporation, John Ternowesky, Eugene Belisle and Noel Belisle (referred to as the Fountain Lake / Ternowesky agreement).

During the summer of 1999, SDA Geological Services Limited ("SDA") of Thunder Bay prepared a comprehensive compilation report on the enlarged property for Moss Lake Gold Mines, concentrating on the Fountain Lake claims. SDA recommended work focusing on mineralized areas that had been identified but not fully followed-up in the past, particularly during the period of intense activity by Noranda/CCL when numerous properties adjacent to or near the original 42-claim Moss Lake property were acquired and sometimes only superficially explored. In particular it was recommended that work be undertaken on the following: the Boundary Zone, 500 metres SE of the QES Zone, with representative drill core intersections of 1.46 g/t Au over 3.05 metres and 5.14 g/t Au over 1.5 metres; the Corner Zone, 1 km SW of Snodgrass Lake, with representative drill core intersections of 2.95 g/t Au over 2.0 metres and 1.25 g/t Au over 1.82 metres; the Fountain Lake West Zone on the SW corner of Fountain Lake and 2 km south of the QES Zone, with a representative drill core intersection of 2.49 g/t Au over 2.13 metres; and the Middle Zone, between the Boundary and Fountain Lake West Zones, where gold in rock and humus values were reported over a 1.5-km strike length.

Late in 1999, Val-d'Or Geosciences Services Inc. ("VDG") of Val-d'Or conducted VLF and magnetometer surveys for Moss Lake Gold Mines, each covering 56.6 line-km over the central portion of the property, concentrating on the areas highlighted by SDA. Lines were cut at 400-ft spacing (122-m) with pickets each 100 ft (30.5 m) and readings every 50 ft (15 m). The magnetometer, a GEM model GMS-19, measured

total field values using a base station of the same model to correct diurnal variations. VDG identified several anomalies and recommended IP surveying.

In early 2000, Moss Lake Gold Mines contracted Geosig Inc. ("Geosig") of Ste-Foy, Québec, to carry out an IP survey over the same grid covered earlier by VDG. A total of 32.16 km of grid lines were surveyed. Several high-chargeability/low-resistivity anomalies were identified, some corresponding with the SDA targets.

In summer 2000 and autumn 2001, SDA carried out two mapping programs over the geophysical grids for Moss Lake Gold Mines. The purpose was to map lithologies and mineral showings at a scale of 1:5,000 and to identify priorities for more detailed follow-up work. Mapping in 2000 was carried out on grid lines cut in November 1999, and mapping in 2001 was mostly done using lines cut in winter. These lines, spaced 400 ft (122 m) apart with pickets every 100 ft (3.05 m), were referenced to the previous Noranda grid. The grid location, with reference points and UTM coordinates, is well described in SDA reports. Ninety-four (94) rock samples were collected over the course of the 2000 field mapping season and 176 samples were collected in 2001. In the northern part of the grid, in the Boundary Zone area, sampling was carried out on a widely spaced grid pattern (300 to 600 ft sample spacing along grid lines). Elsewhere on the grid, grab samples were taken of mineralized and/or altered rock. SDA's recommendations include a compilation update, an assessment of the base metal potential of the entire property, and gold exploration work focusing on the southeast corner of the property. Ground follow-up on other significant areas as well as drill holes were recommended to test several targets.

In early 2001, VDG conducted VLF and magnetometer surveys for Moss Lake Gold Mines to the northeast and southwest of the area surveyed in 1999. The northeast block covered 69.1 km and the southwest block 71.6 km (total of 140.7 km). VDG again identified several anomalies, in particular highlighting the ENE-WSW deformation corridor, and recommended IP surveying.

In January of 2002, Geosig carried out an 11.8-km IP survey for Moss Lake Gold Mines in the extreme southwest corner of the property. The covered lines extend in an E-W direction, with NNW-SSE lines from 7600W to 10800W and 400 ft between lines. Several high-chargeability / high-resistivity anomalies were outlined. Geosig noted it was difficult to distinguish between increases of chargeability caused by disseminated mineralization or thinner overburden.

In summer 2002, Moss Lake Gold Mines completed a 7-hole diamond drilling program was undertaken. Holes ML-02-001 to 005 targeted the IP anomalies that Geosig had identified earlier in 2002 in the southwest corner of the property; a sixth hole tested the Boundary Zone and the seventh hole an IP anomaly. All holes intersected largely silicified and deformed mafic, intermediate and felsic volcanics with sporadic low-grade gold values, sometimes over widths of several metres. The drilling program management and sampling were carried out for Moss Lake Gold Mines by Sharpstone Geoservices Ltd of Thunder Bay. The 2002 program was carried out by Chibougamau Diamond Drilling Ltd of White River, Ontario.

In 2003, Moss Lake Gold Mines completed a 7-hole drilling program for 4,941 ft (1,506 m) between the south end of Snodgrass Lake and the southwest corner of Fountain Lake to test IP and gold-in-humus anomalies in an area of known

mineralized occurrences west of Fountain Lake. Holes ML-03-08, 03-09, 03-13 and 03-14 did not intersect any significant values. Holes 03-10, 03-11 and 03-12 each cut several interesting gold intersections. Based on the results, two areas of elevated gold values were interpreted, referred to as the “03-10” and “South” zones. The 2003 program was also carried out by Chibougamau Diamond Drilling Ltd.

In 2004, Moss Lake Gold Mines completed an 8-hole diamond drilling program for 1,601 metres. Holes ML-04-15 to ML-04-22 followed up on 2003 drilling results by testing the “03-10” and “South” zones and associated IP anomalies. Hole ML-04-23 was drilled into the projected N-S fault that was assumed to be the western boundary of the Main Zone, about 100 metres west of any previous holes. This hole cut two significant gold intersections, 1.11 g/t Au over 0.30 metre and 1.32 g/t Au over 12.95 metres, which also included 4.06 g/t Au over 2.20 metres. Holes ML-04-19 and ML-04-20 also followed-up on the results of ML-03-10, and the highest assay was 1.34 g/t Au over 1 metre in hole ML-04-20. Hole 19 was drilled below ML-04-20 and did not go deep enough to undercut the mineralized intersection. Holes ML-04-18, ML-04-21 and ML-04-22 tested the South Zone. Hole ML-04-18 was drilled below ML-04-17 and all assays were less than 1.0 g/t Au.

In 2006, Watts, Griffis and McOuat prepared a 43-101 compliant report for the Moss Lake property, including a Mineral Resource Estimate (Sullivan et al., 2006) (Table 6.4).

In autumn 2007, Moss Lake Gold Mines drilled hole ML-07-24 (500.2 m) to test the western extension of the Moss Lake Main Zone. The program was managed by Moss Lake Gold Mines Ltd, and drilling was performed by Benoit Diamond Drilling Inc. of Val-d'Or, Québec. Best assays from this hole were 1.15 g/t Au over 1metre, 2.08 g/t Au over 1metre, and 1.12 g/t Au over 1metre.

In 2008, Mike Archer of Edmonton, Alberta cut a 46.06-km GPS-controlled grid over the area to be drilled to provide hole location control.

In July of 2010, Watts, Griffis and McOuat prepared a 43-101 compliant report for Moss Lake Gold Mines (Risto and Breede, 2010). This technical report on the Moss Lake property provided an update to the 2006 Mineral Resource Estimate (Table 6.4).

Table 6.1 – Previous Mineral Resource Estimates (historical or 43-101 compliant)

Company (Geologist)	Year	43-101 Compliant	Cut-off (g/t)	Capping	Category	Tons	Grade (g/t Au)	Ounces Au
Martsan Explorers Ltd.	1988	No*	3.43	Unknown	Unclassified	338,722	5.35	58,262
Noranda (Jarvi)	1992	No*	0.47	31.10	Unclassified	60,433,584	1.03	2,087,000
Noranda (Bidwell)	1991	No*	None	None	Unclassified	60,637,758	1.06	2,064,000
Noranda (Reedman)	1991	No*	0.47	None	Unclassified	83,746,585	0.91	2,443,000
Central Canada Potash	1991	No*	0.47	None	Unclassified	77,994,332	0.93	2,341,000
WGM (Sullivan et al.)	2006	Yes	0.47	9.33	Inferred	50,920,000	0.93	1,515,000
WGM (Breede)	2010	Yes	0.03	9.33	Indicated	36,569,769	0.93	1,107,000
					Inferred	18,783,976	0.86	525,000

* Historical mineral “resources” and/or “reserves” are should not be relied upon. It is unlikely they conform to current Regulation 43-101 criteria or to CIM Standards and Definitions, and they have not been verified to determine their relevance or reliability. They are included in this section for illustrative purposes only and should not be disclosed out of context.

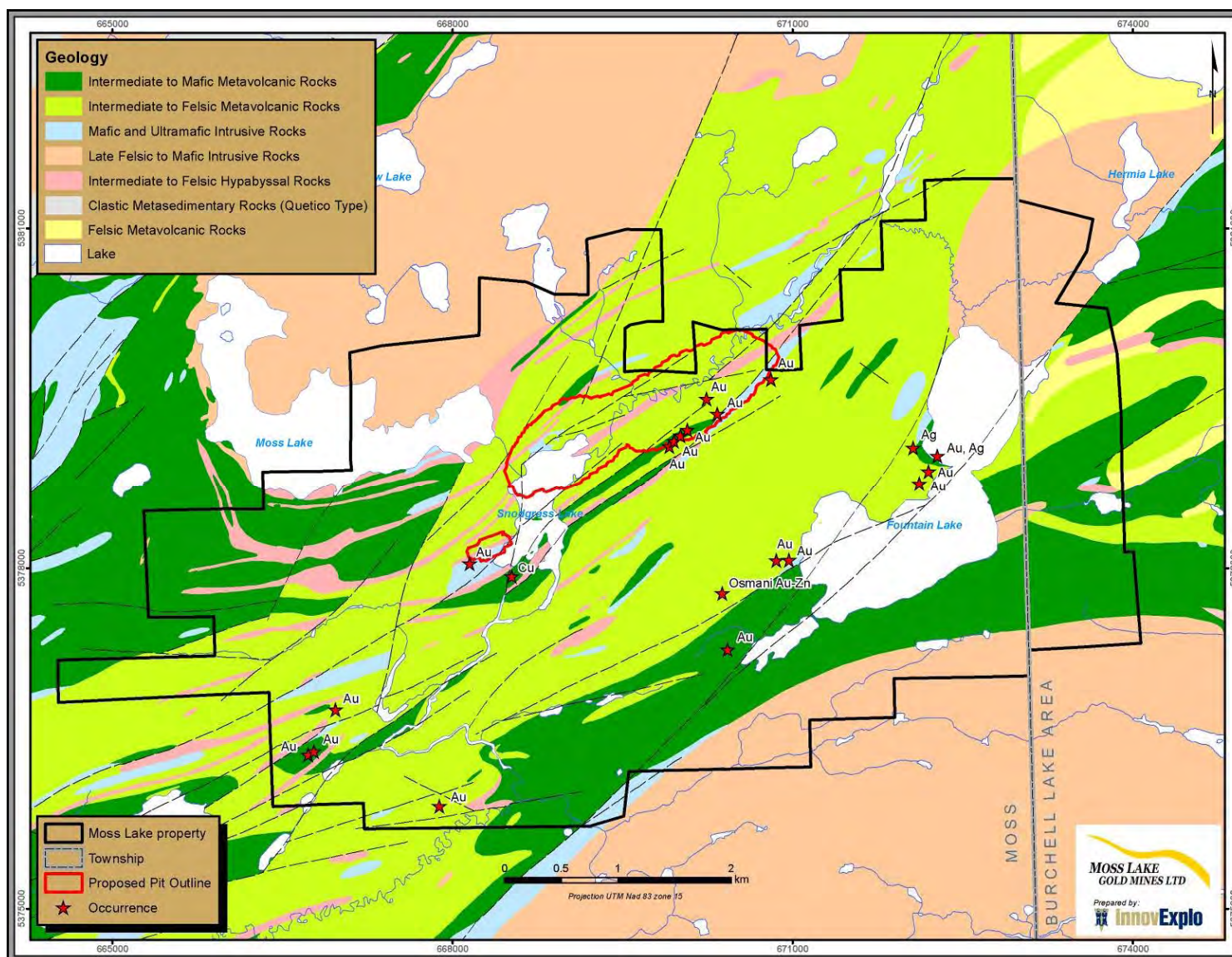


Figure 6.1 – Areas of interest and mineral occurrences identified on the Moss Lake property

The pit shell used for the resource estimate extends slightly beyond the property limits in its northeastern portion. Although the entire resource lies within the property limits, some waste material outside the property limits will need to be removed to access some of the resource.

Table 6.2 – Summary of historical work executed on the Moss Lake property

Year	MNDM Reference	Company	Work	Summary
1936	?	Mining Corporation	Trenching	Snodgrass Lake original discovery
1945-1950	?	Lobanor Gold Mines	Trenching, DDH	Snodgrass Lake discovery area; 12 holes, 4595 ft (1400.6 m); trenching and sampling
1947	52B10SE0237	Airways Exploration Ltd	DDH	Document contains letter written by Chas L. Emery, Nov. 1947, describing hole No. 1 (3.12 oz/t over 3 ft) on the showing at the point on Fountain Lake.
1953-1957	52B10SE0156 (resistivity)	Great Lakes Copper Mines Ltd / Newkirk Mining Corp	Ground geophysics and DDH	Resistivity survey, Fountain Lake property. 15 DDH for 5374 ft
1956-1957	52B10NE0007	McLoed-Cockshutt Gold Mines Ltd and Kenogamisis Gold Mines Ltd	Geology, geophysics and 2 DDH	2 DDH (870 ft) outside current property; geophysics overlaps southern part of current property; ref for DDH not found
1957	52B10SE0126	The Mining Corporation of Canada Ltd	DDH	Trudev option, NE of Fountain Lake (Hemiral Lake), just outside Moss Lake property; DDH T2-1 to 4 and T2-6 to 8; only T2-6 and T2-8 with logs and Cu/Au grades, otherwise abandoned in overburden (total of 2141 ft, 652.6 m). 5 holes outside current property limits (Hermia Lake showing area).
	52B10SE0262	The Mining Corporation of Canada Ltd	DDH	Trudev option, DDH logs T1-2 and T1-3, abandoned in OB, unknown location; 277 ft (84.4 m)
	52B10SE0256	Martin-McNeely Mines Ltd	Geophysics and geology	VEM, Mag and geological surveys, eastern part of claim block.
1963	52B10SE0166	Consolidated Mining and Smelting Co. Ltd (Inco)	Airborne geophysics	Airborne EM survey, regional over most of Moss Twp
1964	52B10SE0245	The Mining Corporation of Canada Ltd	Ground geophysics	Ground EM (type?) and mag surveys, covers part of Wawig River area on the NE end of current claim block
1964	?	Rexdale Mines Ltd	Prospectus, promotional material	Snodgrass Lake discovery area.
1965	52B10SE8567	Consolidated Mining and Smelting Co. Ltd (Inco)	Airborne geophysics	Airborne regional Mag survey; covers all the current claim block
1966	52B10SE0247	Consolidated Mining and Smelting Co. Ltd (Inco)	DDH	DDH logs FL-1 and FL-2 (total 595ft) with locations of DDHs FL-1 to FL-4, west of Fountain Lake.
	52B10SE0248	Consolidated Mining and Smelting Co. Ltd (Inco)	DDH	DDH log FL-3 (270ft), west of Fountain Lake
	52B10SE0251	Consolidated Mining and Smelting Co. Ltd (Inco)	DDH	DDH log GR-1 (537ft), southern tip of Snodgrass Lake
	52B10SE0252	Consolidated Mining and Smelting Co. Ltd (Inco)	DDH	DDH log MO-2 (231ft), SW of Snodgrass Lake, location map of MO-1 and MO-2.
	52B10SE0253	Consolidated Mining and Smelting Co. Ltd (Inco)	DDH	DDH log MO-1 (310ft), SW of Snodgrass Lake, location map of MO-1 and MO-2.
1972	52B10SE0241	Conwest Exploration Corp. Ltd	Ground geophysics	Ground VLF and mag surveys, SW of Snodgrass Lake, in the middle of current claim block
1974	52B10SE0260	Falconbridge	DDH	DDH 1-676-74, 2A-676-74, 3-676-74 and 4-676-75, 1535 ft total, no assay (cut sheets...); resources area
	52B10SE0261	Falconbridge	Geology	Geological mapping, surveying and 5 trenches (believed to be the trenches still visible on the northern side of stripping area north of Snodgrass Lake and 150 m ESE of decline portal).
1976	52B10SE0242	Falconbridge	DDH	DDH 11-676-76 to 15-676-76, 3365 ft total, no assay; resources area
1979	52B10SE0240	Camflo Mines Limited	DDH	DDH SG-79-1 to 4 (1905 ft, 581.0m), resources area.
1979	52B10SE0237	Mountainview Exploration Ltd	Geophysics and geology	Geological reports, EM ground survey, historical letters from Chas L. Emery dated 1947 describing mineralization from DDH No. 1 under Fountain Lake showing (point on the western shore of the lake) as 3.12 oz/t over 3 ft; DDH program of about 500', no precise location nor DDH logs.
1980	52B10SE0238	Mountainview Exploration Ltd	DDH	DDH FL-80-1 (42ft); useless assays, drilled westward on the northern portion of Fountain Lake

Table 6.2 – Summary of historical work executed on the Moss Lake property (cont'd)

Year	MNDM Reference	Company	Work	Summary
1982	52B10SE0239	Mountainview Exploration	DDH	DDH FL-82-1, 800ft (AQ, drilled on the ice, Fountain Lake), no assay, no map
	52B10SE0117	Inco	Airborne geophysics	Airborne EM-Mag-Radiometric survey; north of Fountain Lake along Wawia River and up to Burchell Lake.
1983	52B10SE0234	Tandem Resources	DDH	DDH logs and position 83-1 to 83-5 (2170 ft or 661.4m); map with historical location of Falconbridge 1974 and Camflo 1979; Lobanor 1945 DDHs not shown.
	52B10SE0232	Inco	Geophysics and geology	Burchell Lake Project; geological mapping, Mag/VLF surveys; eastern part of resources area.
1986	52B10SE0228	Tandem / Storimin	Ground geophysics	Ground mag and VLF, resource area
	52B10SE0226	Jet Mining Exploration inc.	Airborne geophysics	Airborne Mag and VLF survey; south half part of current claim block.
1987	52B10SE0223	Tandem / Storimin	DDH	DDH logs S-87-12, -15, -18 and -20 (5148 ft); assay in logs but no certificates
	52B10SE0207 (20007378)	Tamavack Ressources inc / International Maple Leaf Resource Corp (Belisle / Ternowesky)	DDH	DDH TML-87-01 to 21, total 12008 ft; between Snodgrass and Fountain Lake.
	52B07SE0220	Belisle / Ternowesky	DDH	DDH 4680-87-1 to 9 (4422.7 ft); west shores of Fountain Lake to test gold occurrence on the point.
	52B10SE0049	Tamavack Ressources inc / International Maple Leaf Resource Corp (Belisle / Ternowesky)	Ground geophysics	Ground Mag, VLF and IP surveys, south half of current claim block
	52B10SE0218	Matt Berry Mines Ltd	Ground geophysics	Mag and VLF ground surveys, SW portion of claim group
	52B10SE0091	E.L.E. Energy Inc	Airborne geophysics	Airborne Mag-VLF-EM survey, touches part of the claim block just east of Fountain Lake
	52B10SE0225	Tandem / Storimin	Geology	Assay certificates from trenching.
	52B10SE0219	Belisle / Ternowesky (Orequest Consolidated Ltd)	DDH	DDH 4680-87-01 to 5, -7 and -8, no logs, poor localisation (same holes as 52B07SE0220)
1988	52B10SE0203	Tandem / Storimin	DDH	DDH logs S-87-30 to 105 and S-88-106 to 133; map with surface projection of underground workings and reference points delta-A to delta-F for the showing.
	52B10SE0047	Tamavack Ressources inc / International Maple Leaf Resource Corp (Belisle / Ternowesky)	DDH	1 of 4; 123 claims optioned, bordering Storimin on three sides (south); OreQuest Consultants Ltd contracted by Prime Explorations Ltd to carry ground exploration program (line cutting, mapping and prospecting as well as mag, VLF and IP surveys) on 87 of the 123 claims; total of 30 DDH in 1987-1988; (highlights: TML-88-19, 0.986 oz/t Au over 15.0 ft; TML-87-04, 1.60 oz/t Au over 4.9 ft); Phase I (1987): DB 87-1 to 9 on Road Zone (4972.7 ft); Phase II: 87-88 drill holes: TML 87-1 to 14 and TML 88-15 to 21 = 12008 ft for 21 holes (TML); humus NW of grid with areas of interest, biogeochemistry alder/spruce on Snodgrass grid, about 1550 rock samples; 7.2 miles IP (dipole-dipole, a=100ft, n=1-4); tables, logs and location maps in report. Good description of local geology.
	52B10SE0054	Jet Mining Exploration Inc	Airborne geophysics	Airplane Mag-VLF survey; small part just north of Fountain Lake
	20007677	E.L.E. Energy Corp.	Geology	Burchell Lake property; line cutting, geological mapping-prospecting, rock-humus and biogeochemistry.
1989	52B10SE0198	Tandem / Storimin	DDH	DDH 89-175
	52B10SE0190	Noranda	Airborne geophysics	Airborne Dighem III Mag-EM-VLF survey, regional, Shebandowan area
	52B10SE0176	Belisle claims / Noranda	Airborne geophysics	Airborne Dighem III Mag-EM-VLF survey, over small portion of claims just south of Moss Lake.

Table 6.2 – Summary of historical work executed on the Moss Lake property (cont'd)

Year	MNDM Reference	Company	Work	Summary
1990	52B10SE0174	Central Crude Ltd (Noranda Exploration)	DDH	DDH NS90-246
	52B10SE0183	Central Crude Ltd (Noranda Exploration)	DDH	DDH NS90-185
	52B10SE0170	Central Crude Ltd (Noranda Exploration)	DDH	DDH campaign, 17 holes for 6053 m, from Jan to March 1990; July to Sept 1990, 31 holes for a total of 9,935.2 m were completed tracing the QES Zone to the northeast in 400 ft step-outs and infill testing of the main and QES Zones. Drilling continued during October and November with 21 holes completed totalling 8,517.5 m.
	52B10SE0195	Noranda	Airborne geophysics	Grande Portage property, Dighe III airborne Mag-EM-VLF, small SW part of current claim block
	52B10SE0038	Noranda	Airborne geophysics	Dighe III survey (heli EM-Mag-VLF) over Broad horizon project, north part of current claim block.
	52B10SE0186	Noranda	Geology	Waverly claims; mapping and geochemical rock sampling; on western end of claim block
	52B10SE0187	Noranda	Geology	Broad Horizon property; mapping and prospecting; central and west blocks partly inside ML property.
	52B10SE0196	Noranda	Geology	Moss Lake claims; geological mapping and sampling; north central shores of Moss Lake.
	52B10SE0189	Noranda	Geology	Broad Horizon property; see 52B10SE187, same report
1991	52B10SE8114	Noranda	Geology	Broad Horizon property; geological mapping and prospecting, same report as 52B10SE0189 and 0187.
	52B10SE0424	Noranda	Ground geophysics	Broad horizon property; IP/Resistivity survey; central block of survey just north of Fountain Lake on current claim block
1992	52B10SE8112	Belisle / Ternowesky	Geology	Geological mapping and sampling.
	52B10SE0175	Inco	DDH	1987: 4DDH / 822.9m, BH74865 to 74868; 1988: 3407.2 / 18 DDH, BH74859-74860 and 78450 to 78465; 1989: 2132.5m / 13 DDH, BH 78479 to 78491; northeast of resources (Span Lake occurrence). All DDH located outside property limits
1993	52B10SE8605	Akiko Gold Resources Ltd	DDH	DDH logs and assays; AG-93-1, -2, -3B, -4 and -5
	52B10SE8600	Akiko Gold Resources Ltd	DDH	Line cutting, soil and rock sampling, geological mapping, DDH (2818 ft, 859m) / 6 holes (AG93-1, -2, -3, -3B, -4 and -5)
1994	52B10SE0006	Tamavack Ressources inc / International Maple Leaf Resource Corp	Geology	South half of property; 15 km of lines mapped, very little sampling; report includes good chapter on history.
1995		Moss Lake Resources	Evaluation report	Prepared by Géologica de Val-d'Or
1996		Moss Lake Resources	DDH	17 DDH for a total of 15 863 ft / 4835.0 m
1998	52B10SE2005	Fountain Lake Gold Ltd/ Landis Mining Corp. Ltd (Belisle / Ternowesky)	Geology	Geological summary report
1999		Moss Lake Resources	Compilation report	SDA Geological Services
	52B10SE2008	Moss Lake Resources	Ground geophysics	Line cutting with MAG and VLF surveys by Val-d'Or Geosciences Services inc.
1999	52B10SE2004	Landis Mining Corp (Belisle / Ternowesky)	DDH	DDH FL-1A (480ft), FL-2 (480ft) and FL-3 (500ft)
	52B10SE2006	Landis Mining Corp (Belisle / Ternowesky)	DDH	DDH FL-1 (600ft) on northern part of Fountain Lake property named boundary zone. DDH FL-1: 2.7 g/t Au / 30ft.
	52B10SE2007	Landis Mining Corp (Belisle / Ternowesky)	Geology	Prospecting and sampling, Fountain Lake property

Table 6.2 – Summary of historical work executed on the Moss Lake property (cont'd)

Year	MNDM Reference	Company	Work	Summary
2000	52B10SE2009	Moss Lake Resources	Ground geophysics	IP survey by Geosig.
	52B10SE2013	Moss Lake Resources	Geology	Geological mapping, summer 2001. North and South grids.
	52B10SE2010	Moss Lake Resources	Geology	Geological mapping, summer 2000. Fountain Lake claims.
2001	52B10SE2012	Moss Lake Resources	Ground geophysics	MAG and VLF surveys (extensions of previous survey) by Val d'Or Geosciences Services inc.
2002	52B10SE2016	Moss Lake Resources	DDH	DDH ML-02-001 to ML-02-007 (7 holes, 6400 ft / 1950.7m); 001 to 005 are SW of Snodgrass Lake, 006 and 007 are in resources area, by Sharpstone Geoservices Ltd
	52B10SE2014	Moss Lake Resources	Ground geophysics	IP survey by Geosig, on SW end of property
2003	52B10SE2019	Airborne geophysics	Airborne Mag and EM	Survey over East-West Resources' Deety Creek property, covers a very small portion of SW end of current claim block
2003	52B10SE2020	Moss Lake Resources	DDH	DDH ML-03-08 to ML-03-14 (7 DDH / 4941 ft) , between Snodgrass and Fountain Lake; gold resources potential area, by Sharpstone Geoservices Ltd
2004	20002005(2.31459)	Moss Lake Resources	DDH	DDH ML-04-15 to 23; 9 holes 5253 ft / 1601.0 m.
2006		Moss Lake Resources	Technical Report	WGM 43-101: technical review and mineral resource estimate
2007	20000782 (2.36627)	Moss Lake Resources	DDH	DDH report on ML-07-24 (500.2 m)
2010		Moss Lake Resources	Technical Report	WGM 43-101: technical review and mineral resource estimate

Table 6.3 – Summary of historical drill holes on the Moss Lake property

Year	Company	Areas of interest	DDH	Total Length (m)
1945-50	Lobanor Gold Mines Ltd	Resources area	12	1,400.56
1947	Airways Exploration Ltd	Fountain Lake	6	152.40
1954	Great Lake Copper Mines	Fountain Lake	15	1,638.00
1957	The Mining Corporation of Canada Ltd	Fountain Lake	8	737.01
1966	Cons. Mining and Smelting Co. Ltd	Fountain/Snodgrass Lake	6	592.23
1974	Falconbridge	Resources area	4	467.87
1976	Falconbridge	Resources area	5	1,056.13
1979	Camflo Mines Ltd	Resources area	4	581.00
1980	Mountainview Exploration Ltd	Fountain Lake	1	12.80
1982	Mountainview Exploration Ltd	Fountain Lake	1	243.84
1983	Tandem Resources	Resources area	5	661.42
1986	Tandem / Storimin	Resources area	30	4,572.30
1987	Tandem / Storimin	Resources area	105	24,183.14
1987-88	Tamavack/Maple Leaf	Boundary zone/Fountain Lake	30	5,175.50
1988	Tandem / Storimin	Resources area	63	19,399.00
1988	Tandem / Storimin	Resource area-underground	32	1,513.94
1989	Tandem / Storimin	Resources area	6	2,059.23
1990	Noranda / CCL	Resources area	69	24,505.62
1992	Noranda / CCL	Resources area	7	4,383.02
1993	Akiko Gold Resources Ltd	South Snodgrass Lake	5	859.00
1996	Moss Lake Resources Inc	Resources area	17	4,835.00
1999	Landis Mining Corp.	Boundary zone/Fountain Lake	4	627.89
2002	Moss Lake Resources Inc	Resource area/Fountain Lake	7	1,950.70
2003	Moss Lake Resources Inc	Snodgrass/Fountain Lake	7	1,506.02
2004	Moss Lake Resources Inc	Resources area	9	1,601.00
2007	Moss Lake Resources Inc	Resources area	1	500.20
Total			459	105,214.80

Table 6.4 – Summary of historical work executed by the issuer

Year	MNDM Reference	Work	Company	Summary
1995		Assessment report	Moss Lake Gold Mines	Prepared by Géologica of Val-d'Or
1996		DDH	Moss Lake Gold Mines	17 DDH for a total of 15 863 ft / 4835.0 m
1999		Compilation report	Moss Lake Gold Mines	SDA Geological services
	52B10SE2008	Ground geophysics	Moss Lake Gold Mines	Line cutting with MAG and VLF surveys by Val-d'Or Geosciences Services Inc.
2000	52B10SE2009	Ground geophysics	Moss Lake Gold Mines	IP survey by Geosig.
	52B10SE2013	Geology	Moss Lake Gold Mines	Geological mapping, summer 2001: North and South grids.
	52B10SE2010	Geology	Moss Lake Gold Mines	Geological mapping, summer 2000: Fountain Lake claims.
2001	52B10SE2012	Ground geophysics	Moss Lake Gold Mines	MAG and VLF surveys (extensions of previous survey) by Val-d'Or Geosciences Services Inc.
2002	52B10SE2016	DDH	Moss Lake Gold Mines	DDH ML-02-001 to ML-02-007 (7 holes, 6400 ft / 1950.7 m; 001 to 005 are SW of Snodgrass Lake, 006 and 007 are in resources area), by Sharpstone Geoservices Ltd
	52B10SE2014	Ground geophysics	Moss Lake Gold Mines	IP survey by Geosig, on SW end of property
2003	52B10SE2020	DDH	Moss Lake Gold Mines	DDH ML-03-08 to ML-03-14 (7 DDH / 4941 ft), between Snodgrass and Fountain Lake; gold resources potential area, by Sharpstone Geoservices Ltd
2004	20002005(2.31459)	DDH	Moss Lake Gold Mines	DDH ML-04-15 to 23; 9 holes 5253 ft / 1601.0 m.
2007	20000782 (2.36627)	DDH	Moss Lake Gold Mines	DDH report on ML-07-24 (500.2 m)

7. GEOLOGICAL SETTING AND MINERALIZATION

The property lies about 2 to 3 km southeast of the boundary between the Quetico and Wawa subprovinces, in the westernmost Ontarian part of the Wawa Subprovince. A considerable portion of the Moss Lake property is underlain by intermediate to felsic volcanoclastic rocks of the northeast-trending, fault-bounded Central Felsic to Intermediate Metavolcanic Belt (Osmani, 1997), a subunit of the Shebandowan Greenstone Belt, itself part of the Wawa Subprovince of the Superior Province.

7.1 REGIONAL GEOLOGICAL SETTING

The Superior Province, the Wawa Subprovince and the Shebandowan Greenstone Belt are well described in Card and Poulsen (1998) as well as Percival and Easton (2007), and part of the following description is taken from these publications.

7.1.1 Superior Province

The Superior Province (Figs. 7.1 and 7.2) makes up approximately 70 percent of the Canadian Shield in Ontario. It forms the core of the North American continent and is surrounded by provinces of Paleoproterozoic age to the west, north and east, and Mesoproterozoic age (Grenville Province) to the southeast. Tectonic stability has prevailed since circa 2.5 Ga in large parts of the Superior Province. Proterozoic and younger activity is limited to rifting of the margins, emplacement of several mafic dyke swarms, compressional reactivation and large-scale rotation at circa 1.9 Ga, as well as failed rifting at circa 1.1 Ga. With the exception of the northwestern Superior margin that was pervasively deformed and metamorphosed at approximately 1.8 Ga, the craton has otherwise escaped late ductile deformation.

Current views on the Superior Province regard it as a collage made up of small continental and oceanic plates (Card, 1990; Williams et al., 1992; Stott, 1997; Percival et al., 2004, 2006), with a complex history of aggregation between 2.72 and 2.68 Ga, followed by post-orogenic effects. Sedimentary rocks as old as 2.48 Ga uncomfortably overlie Superior Province granites, indicating that most erosion had occurred prior to circa 2.5 Ga.

The southern Superior Province (to latitude 52°N) is a major source of mineral wealth, hosting active gold and base metal mining camps in the Timmins–Kirkland Lake and Red Lake areas. Owing to its potential for these and other commodities, the Superior Province attracts mineral exploration in both established and frontier regions.

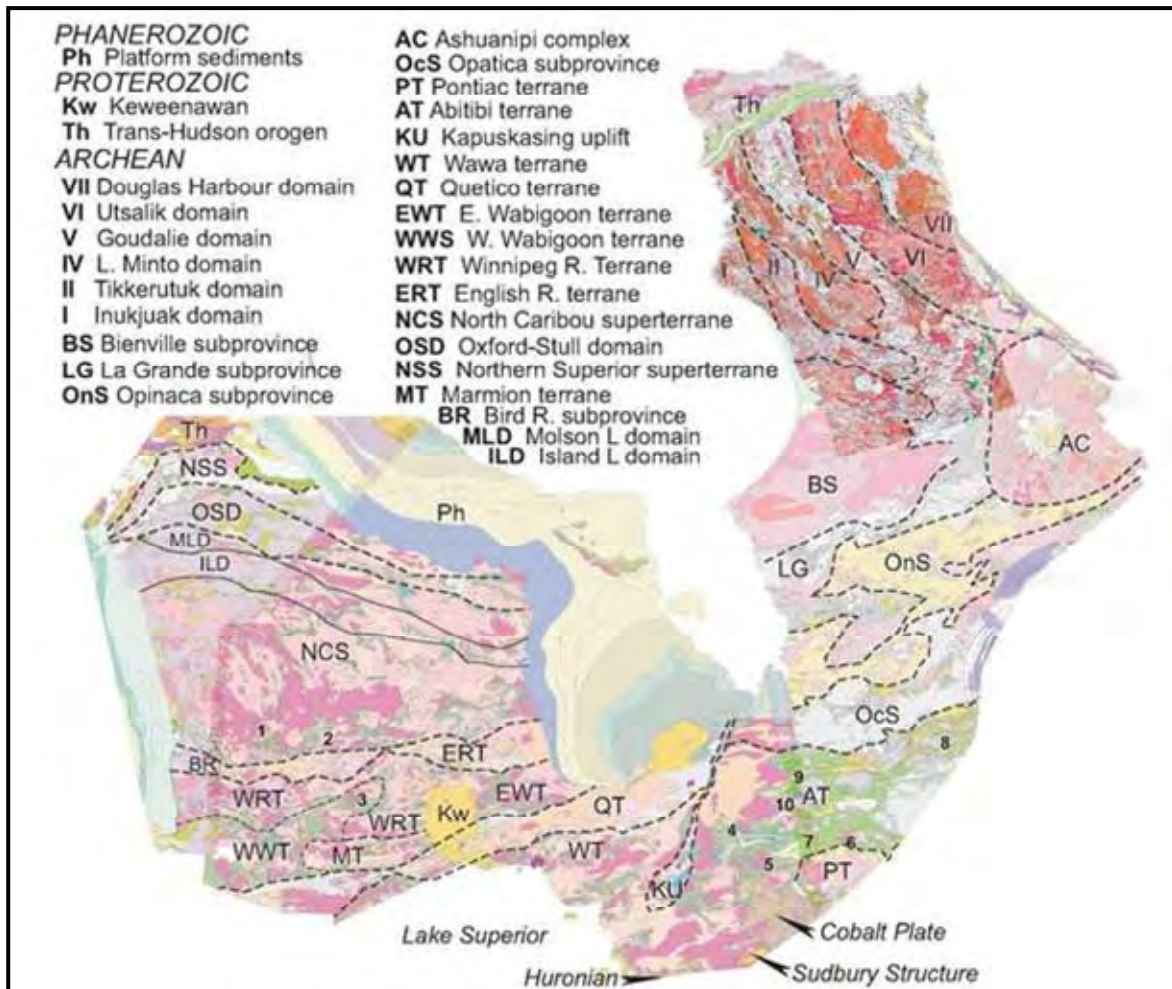


Figure 7.1 – Map of the Superior Province showing major tectonic elements (from Percival, 2007)

Data sources: Manitoba (1965), Ontario (1992), Thériault (2002), Leclair (2005). Major mineral districts: 1 = Red Lake; 2 = Confederation Lake; 3 = Sturgeon Lake; 4 = Timmins; 5 = Kirkland Lake; 6 = Cadillac; 7 = Noranda; 8 = Chibougamau; 9 = Casa Berardi; 10 = Normétal.

7.1.2 Quetico terrane

The Quetico terrane consists dominantly of greywacke, derived migmatite and granite. No stratigraphic sequence has been established within the steeply dipping, polydeformed and variably metamorphosed sedimentary succession; however, younging directions are dominantly to the north (Percival, 1989). Depositional age constraints indicate slightly older ages for the northern Quetico (<2.698 to >2.696 Ga; Davis et al., 1990) than for the south (<2.692 Ga; Zaleski et al., 1999). A prominent, linear, easterly aeromagnetic grain is given by alternating sedimentary units and granitic sheets. Irregular patterns in the belt interior correspond to dominant plutonic and migmatitic units. Incomplete seismic reflection images indicate overall gently north-dipping reflectivity and crustal thickness on the order of 35 km.

Several plutonic suites cut metasedimentary units, including early (2.696 Ga) tonalite (Davis 1996). An early deformation event (D1) predated emplacement of a chain of

Alaskan type mafic-ultramafic intrusions in the northern Quetico (e.g., Pettigrew, 2004; Pettigrew and Hattori, 2006), which are associated with alkaline plutons including nepheline syenite and carbonatite. These rocks, derived from metasomatized mantle, have ages in the range 2.69 to 2.68 Ga (Lassen, 2004) and geochemical affinities with the Archean sanukitoid suite (cf. Stern et al., 1989; Stevenson et al., 1999; Lassen, 2004). Two subsequent deformation events (D2, D3) were followed by low-pressure, high-temperature metamorphism that reached upper amphibolite and local granulite facies at circa 2.67 to 2.65 Ga (Pan et al., 1994, 1998) in the central region and greenschist facies at the margins (Percival, 1989). Coeval crust-derived granitic plutons and pegmatites include circa 2.67 Ga peraluminous granite and circa 2.65 Ga biotite granite (e.g., Southwick, 1991).

Tectonic models for the Quetico terrane have favoured forearc settings (e.g., Langford and Morin, 1976; Percival and Williams, 1989; Williams, 1991; Fralick et al., 2006). Depositional ages of circa 2.698 to 2.690 Ga overlap those of late arc magmatism in the Wabigoon. The dominantly sanukitoid plutons of this age may have been triggered by slab breakoff, following collision between the Wawa–Abitibi terrane and the amalgamated superterrane to the north.

7.1.3 Wawa terrane

The Wawa Subprovince is a granite-greenstone terrane exposed in the region that extends 900 km westward from the Kapuskasing Structural Zone to the Vermilion district of Minnesota and varies in width from approximately 50 to 200 km (Figs. 7.1 and 7.2).

Most workers accept a correlation between the Wawa and Abitibi terranes across the transverse Kapuskasing uplift structure (Percival and West, 1994), although Jackson and Sutcliffe (1990) have argued that the Kapuskasing Structural Zone coincides with an Archean boundary between the ensimatic Abitibi Subprovince and ensialic Wawa Subprovince. Within the Wawa terrane, small remnants of Mesoarchean crust occur in the form of sporadic, circa 2.92 Ga tonalitic gneiss (Moser 1994) and 2.89 to 2.88 Ga volcanic rocks of the Hawk assemblage (Turek et al., 1992). An oceanic setting is indicated by the Hemlo–Black River (2.775 Ga), Wawa (2.745 Ga) and Greenwater and Manitouwadge assemblages (2.72 Ga), the latter with significant massive sulphide mineralization (Sage et al., 1996a, 1996b; Williams et al., 1991). Polat et al. (1998, 1999) reported a variety of oceanic magma types from the Schreiber belt, and interpreted the belt as a tectonic mélange (Polat and Kerrich, 1999, 2001).

Relatively late-stage volcanism at circa 2.695 Ga took place during D1 thrusting. Subsequent calc-alkaline to alkaline magmatism (ca. 2.689 Ga Shebandowan assemblage; Corfu and Stott, 1996) and associated coarse clastic sedimentation (Timiskaming type; <2.689 Ga) was followed by emplacement of sanukitoid plutons (2.65–2.68 Ga) and dextral transpressive D2 deformation. These circa 2.685 to 2.68 Ga tectonic events were termed the Shebandowan phase of the Kenoran Orogeny (Stott and Corfu, 1991).

To the south, Archean rocks of the Wawa Subprovince are in unconformable, intrusive, and tectonic contact with Paleoproterozoic and Mesoproterozoic

supracrustal and intrusive rocks of the Southern Province and the Midcontinent Rift System. To the north, they are bounded by metasedimentary rocks of the Quetico Subprovince. (Card and Poulsen, 1998)

7.2 LOCAL GEOLOGICAL SETTING

The following description of the local geological setting is modified from Osmani (1993), Hunt (2000) and Risto and Breede (2010).

7.2.1 Moss Township area

The Moss Township area is underlain by Archean rocks of the Wawa and Quetico subprovinces (Fig. 7.2). The supracrustal rocks forming part of the Shebandowan Greenstone Belt (SGB) of the Wawa Subprovince occur in the southeast half of the township. The SGB is composed of three mafic to intermediate metavolcanic belts (northern, central and southern belts) and a central intermediate to felsic metavolcanic belt (CFB). The three mafic to intermediate belts mainly consist of massive and pillowed flows and fragmental rocks (pillow breccia, tuff, lapilli tuff and tuff breccia). The CFB consists of massive (fine-grained to aphanitic), porphyritic and autobrecciated flows, and other fragmental rocks (tuff, lapilli tuff, tuff and pyroclastic breccia). Ironstone units form a relatively minor but widely distributed component in the mafic to intermediate metavolcanic successions and, in some cases, they occur at the interface between the mafic and felsic metavolcanic units. The CFB is approximately 13 km long. The thickest part (2.9 km) is centered between the Snodgrass and Fountain lakes. In the south-central part of the township, the CFB is split by the central mafic metavolcanic belt (CMB). The contacts between the CFB and the mafic to intermediate metavolcanic belts are both sheared and conformable.

The region encompassing the four main lakes (Burchell, Moss Lake, Snodgrass and Fountain) is exceptionally well endowed with late tectonic hydrothermal alteration, shearing and faulting. Hunt (2000) and studies referenced therein (e.g., Osmani, 1997; Stott and Corfu, 1996) provide interpretations of the geochronologic data and the regional timing correlation between gold mineralization and the sequence of tectonic events in the SGB.

Metavolcanic rocks occurring along the southern portion of Moss Lake Township are interpreted by Osmani (1997) to be part of the southern mafic metavolcanic belt (SMB).

The Quetico Metasedimentary Belt (QSB), consisting of massive to thinly bedded metawacke and minor thinly bedded to finely laminated metasiltstone, occupies the northwest corner of the township. Intruding the SGB and QSB are large and small sills, dykes and stock-like bodies of gabbro, diorite and feldspar or quartz-feldspar porphyries, as well as four relatively late, composite granitoid stocks (Moss Lake, Hood Lake, Hermia Lake and Obadinaw stocks). The width of the CFB in the Snodgrass Lake area is approximately 2.5 to 3.0 km.

The regional metamorphic grade is lower greenschist facies, except near the large granitoid stocks where it reaches upper greenschist to amphibolite facies.

Stratigraphic younging directions obtained from graded bedding and rare cross-bedding in the QSB and from pillowed flows, interflow metasedimentary units, and pyroclastic units within the SGB suggest stratigraphic younging is predominantly to the northwest. However, southeast-facing younging directions, relatively common in the QSB and less common in the SGB, suggest the presence of small- and large-scale folds in both series of rocks. Numerous isoclinal S, Z and M folds occur in both the SGB and QSB.

Several large-scale, steeply dipping, ductile to brittle shear zones striking NE to ENE and NW cut all major rock types in the area. Movement on the NE- to ENE-trending shear zones are predominantly sinistral, whereas dextral movement is generally recorded for the NW-trending faults and shear zones.

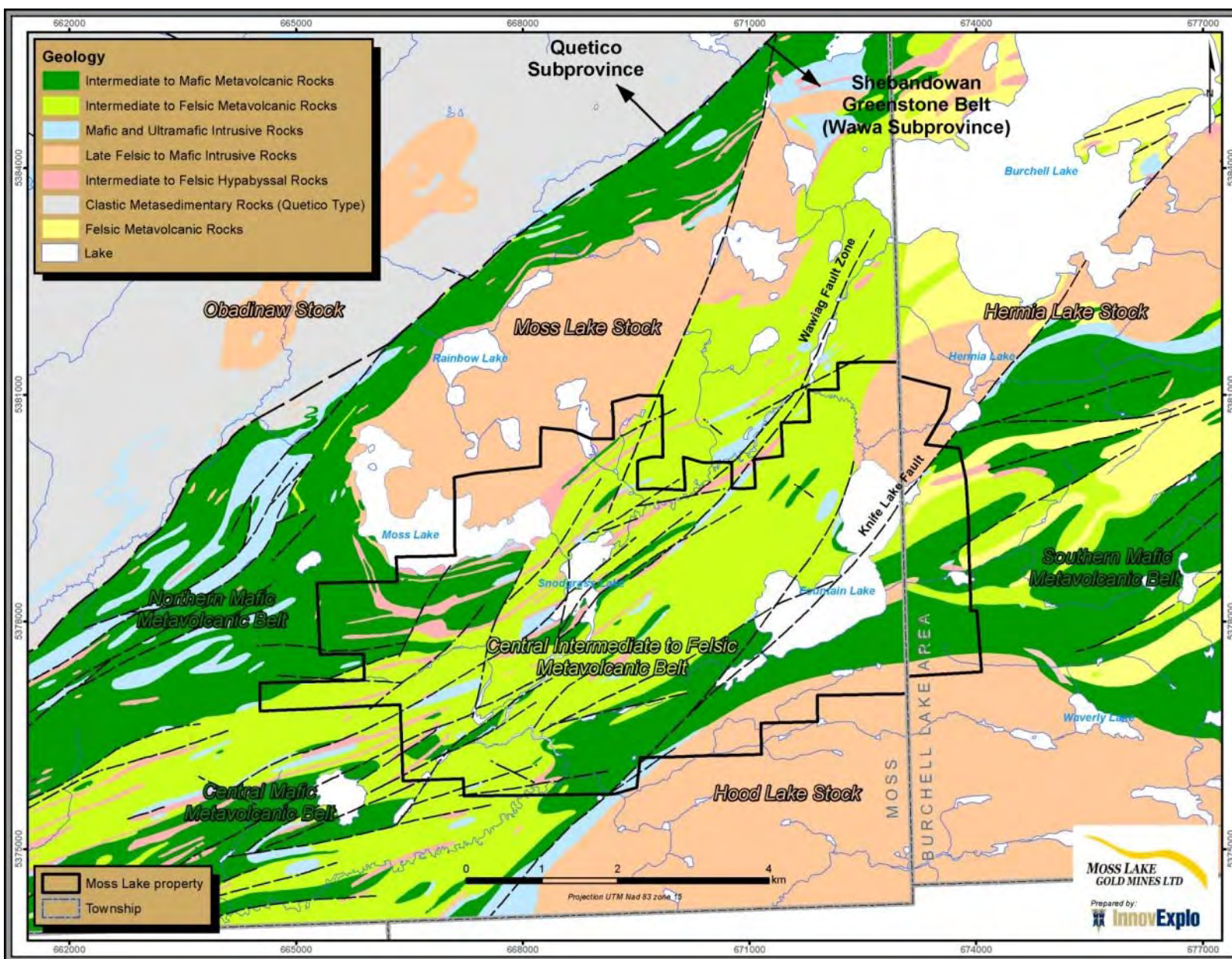


Figure 7.2 – Regional geological map

7.2.2 Moss Lake property

A considerable portion of the Moss Lake property is underlain by intermediate to felsic volcanoclastic rocks of the northeast-trending, fault-bounded central intermediate to felsic metavolcanic belt (CFB; Osmani, 1997). The CFB is buttressed by two large syenitic intrusions, the Moss Lake Stock and Hood Lake Stock respectively to the northwest and southeast. The width of the CFB in the Snodgrass Lake area is approximately 2.5 to 3.0 km.

The CFB consists mainly of aphanitic to fine-grained massive or porphyritic (plagioclase $\pm$ quartz) flows and associated autoclastic breccias ranging from 60.2% to 69.9% SiO_2 (intermediate to felsic composition). The pyroclastic rocks, including tuff and pyroclastic breccias, tuff and lapilli tuff, are abundant to the east-southeast of Pearce Lake, to the west-southwest of Fountain Lake and in the Snodgrass Lake area. The entire package of rocks is bounded by the Burchell Lake Fault along the south contact and the Snodgrass Lake Fault along the north contact, and is dissected by numerous sub-parallel splay faults and crosscutting transcurrent faults.

Thin interbeds of mafic volcanics occur locally throughout the CFB sequence, as noted in outcrop and drill logs. A continuous unit of mafic volcanics, the southern mafic metavolcanic belt (SMB), occurs on the southern contact of the CFB to the south and southwest of Fountain Lake, between the intermediate volcanoclastic package and the Hood Lake Stock to the south. A thicker sequence of mafic metavolcanics, the northern mafic metavolcanic belt (NMB), contains abundant banded iron formations and cherty interflow sediments, which host the Aberdeen mine horizon, is in fault-bounded contact to the north of the CFB. Stratigraphic top indicators from pillowed mafic flows indicate a northward younging direction for the sequence.

Projections from drill logs in the Boundary Zone and Moss Lake deposit areas demonstrate that the CFB stratigraphy is vertical to steeply SE dipping and possibly overturned. Most volcanic rocks on the property are strongly foliated, sheared and faulted in a northeasterly direction. The foliation is steep, varying from vertical to steeply dipping to the N or S. Foliation strike directions are generally subparallel to stratigraphy but also appear to delineate small-scale folds and other such features near the boundaries of the Moss Lake Stock. Hunt (2000) has noted evidences of subhorizontal SW-plunging lineations (10-30° on the flanks of outcrop).

Minor mafic to intermediate intrusions are common throughout the property, but especially in a swarm-like zone extending from west of Snodgrass Lake in a northeast direction to Span Lake. These sheet- or sill-like intrusions vary in composition from diorite to syenite to quartz-feldspar porphyry. The intrusions appear as late features cutting across stratigraphic and fault boundaries and are probably related to the emplacement of the Moss Lake Stock (Osmani, 1997). Significant gold mineralization in the area is almost always closely spatially related to, or hosted by, these predominantly mafic to intermediate intrusions. Alteration within the CFB is moderately strong and pervasive. Silicification, carbonatization (calcite and ankerite), chloritization, hematization, sericitization, albitization, sulphidation (pyrite) and potassic alteration are commonly noted in outcrop and drill core. The intensity of alteration combined with the degree of foliation and local-scale

shearing on the property has made protolith recognition difficult, as demonstrated by contrasting drill core and outcrop descriptions noted in the historical records.

Two NE-trending regional fault structures cross the property from northeast to southwest: the Wawiag Fault Zone, which hosts the Moss Lake deposit, and the Boundary Fault Zone, approximately 125 metres southeast of the deposit. Much of the bedrock in these fault zones is covered by swamp of the Wawiag River valley. This package may in fact be a deformation zone up to 450 metres wide containing numerous minor faults and shear zones. Strong gold mineralization has been identified within individual shear structures in or closely associated with these fault zones.

The second regional structure is the Knife Lake Fault, 2.5 km to the southeast, which has been traced over a strike length of at least 60 km. It crosses the property through Fountain Lake. The Knife Lake Fault defines the boundary between felsic metavolcanics to the northwest and intermediate to mafic metavolcanics to the southeast. The past-producing North Coldstream base metal mine lies on this fault, 5 km northeast of the property.

Between the two major fault structures, numerous schistose zones and minor faults parallel to the regional trend were observed. Both brittle and ductile deformation has been recognized in areas of strong shearing and alteration. No evidence of folding was observed on the property, although the entire metavolcanic sequence has previously been interpreted as a large scale regional antiform (Giblin, 1964).

Gold mineralization in the Moss Lake deposit, between Snodgrass Lake and Span Lake, occurs in sheared intermediate to felsic metavolcanic rocks and in sheared and fractured diorite to gabbro or feldspar and quartz-feldspar porphyry bodies emplaced within intermediate to felsic metavolcanic rocks of the CFB. Gold mineralization in the Snodgrass Lake area has been described in detail by Chorlton (1987) and Harris (1970). At the Moss Lake deposit, the diorite to gabbro bodies, the quartz-feldspar and feldspar porphyries, and the felsic metavolcanics are all cut by the Snodgrass Shear Zone, a steeply dipping ductile shear zone up to 4.5 metres wide and striking NE (N040) to ENE (N060-N075).

InnovExplo's authors observed a narrow fault zone trending N038 on an outcrop in front of the Moss Lake deposit portal. Other authors have documented this for crosscutting sinistral faults that may offset mineralized zones. Late brittle faults and fracture sets of variable orientation cut earlier shear zones. All rocks within or adjacent to shear zones are schistose and have been variably sericitized, silicified, albitized, epidotized, hematized and sulphidized. Seams and disseminations of pyrite and chalcopyrite occur in shear planes and associated fractures.

Other anomalous gold values were also obtained from fractured diorite, sheared feldspar porphyry, and a moderately deformed, pink-weathering quartz-amphibole-phyric intrusion. This relatively late porphyry dyke or sill intrudes the diorite and felsic schist. In hand specimen, the quartz-amphibole-phyric intrusion is said to show a strong resemblance to the syenogranitic rocks of the Moss Lake Stock, suggesting both may be related to the same magmatic event.

Similar lithologic packages, structures, and alteration also occur with gold mineralization in the northeast extensions of Moss Lake deposit (Span Lake area). Gold also occurs in similar lithologic packages along the NE-striking Boundary Fault Zone southeast of Snodgrass Lake. This shear zone, which marked the approximate boundary between the former Tandem/Storimin and Tamavack/Maple Leaf properties, extends northeastward from the eastern shore of Snodgrass Lake and passes through Span Lake up to Burchell Lake.

In the Pearce Lake area, several NE- to ENE-trending shear zones appear to play an important role in localizing gold mineralization.

Shear zones within the contact zone between Quetico Subprovince metasedimentary rocks and Shebandowan Greenstone Belt metavolcanic rocks has also yielded anomalous gold values.

8. DEPOSIT TYPES

Previous reports agreed that a model for the Moss Lake gold deposit most certainly implies an “intrusion-related gold deposit”. Although some authors have favoured a porphyry-style deposit, others have thought of it as a hybrid model between porphyry and more classical orogenic models.

As pointed out by Sillitoe (1998), a variety of mineralization styles characterize gold deposits related to intrusive rocks. The deposits occur both within and at varied distances around individual intrusions, and include porphyry, breccia, skarn, replacement and vein types (e.g., Sillitoe, 1991). Of these, the gold-rich vein deposits are the most contentious in terms of genetic models due to their apparent convergence with so-called mesothermal lode gold deposits (Groves et al., 1989; Kerrich, 1991; Hodgson, 1993). These were named “orogenic gold deposits” by Groves et al. (1998), and this term is used herein.

Orogenic gold deposits are widely considered to have been generated during or immediately after compressive deformation and regional metamorphism from fluids lacking any direct connection to intrusive rocks (e.g., Phillips and Powell, 1993; Goldfarb et al., 1998; Groves et al., 1998). A broad spectrum of intrusion-related vein gold deposits is recognizable and may be subdivided on the basis of vein mineralogy and the resultant metal association.

The deposits are believed to possess reasonable evidence for a direct relationship to their host or nearby intrusions although some of the relationships are ambiguous and other workers have assigned some examples to the orogenic category.

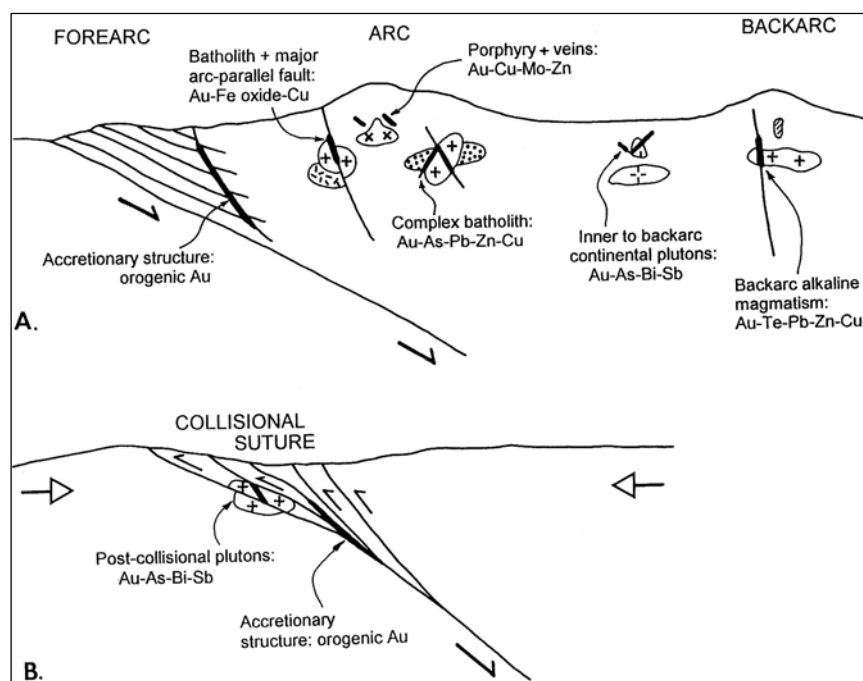


Figure 8.1 – Schematic tectonic settings of intrusion-related and orogenic vein gold deposits: A. Deposits from arc and back-arc terranes; B. Reduced I-type plutons and related vein gold deposits in continental collision setting (Sillitoe, 1998).

Indeed, the geological setting in the Moss Lake area seems to lead towards a hybrid model as supported by both regional and local observations pointed out by the different maps and references used in this report.

Regionally, the Moss Lake gold deposit lies approximately 3 km southeast from the Quetico/Wawa Subprovince boundary (i.e., on the arc side of the boundary). The area shows numerous late felsic porphyritic intrusive stocks of alkaline affinity (Osmani, 1997). The most important of these are, from northwest to southeast:

- Obadinaw Stock (just northwest of Moss Lake).
 - o Composition ranging from a feldspar porphyritic syenite to a hornblende porphyritic syenite.
- Moss Lake Stock (extending 8 km in a northeasterly direction from the southwest shore of Moss Lake).
 - o Composition ranging from granite, syenite, monzodiorite to diorite, often containing xenoliths of country rocks.
- Hermia Lake Stock (just north of Fountain Lake).
 - o Feldspar porphyritic syenite.
- Hood Lake Stock (south of Fountain Lake).
 - o Hornblende and/or pyroxene porphyritic syenite.

All of these porphyritic intrusives contain magnetite as an accessory mineral (Osmani, 1997) and could be classified as oxidized, magnetite-series plutons (Sinclair, 2004). According to Sinclair (2004), the oxidation state of granitic rocks, reflected by accessory opaque minerals such as magnetite, ilmenite, pyrite and pyrrhotite, also influences metal contents of related deposits (Ishihara, 1981). For example, porphyry deposits of Cu, Cu-Mo, Cu-Au, Au, Mo and W are generally associated with more oxidized, magnetite-series plutons in contrast to porphyry Sn deposits, which are typically related to reduced, ilmenite-series plutons.

Copper-molybdenum occurrences in the Hermia Lake area also point towards a late porphyritic plutonic event closely related to the Hermia Lake Stock. Some historic diamond drill holes intersecting sulphide mineralization with assay values up to 1.1% Cu, 0.07% Mo, 0.26 oz/t Ag and 0.08 oz/t Au have been reported by Gulf Minerals Canada Limited (Osmani, 1997).

Of these late intrusives, the Moss Lake Stock shows numerous related ring dykes of tens to hundred metre scale thickness that wrap around its southern end and that extend in a northeast direction to the Moss Lake deposit dyke swarm and shear zones. These sheet- or sill-like intrusions vary in composition from diorite to syenite to quartz-feldspar porphyry. The intrusions appear as late features apparently transgressing stratigraphic and fault boundaries and could be related to the Moss Lake Stock (Osmani, 1997). Gold mineralization in this area is almost always closely spatially related to, or hosted by, these predominantly mafic to intermediate intrusions.

Most gold occurrences of importance in the immediate area are closely related to porphyritic intrusive, dykes or sills: the Moss Lake deposit and its northeast extension (the Span Lake gold showing), the Huronian mine, and the Minoletti gold showing; the latter two examples are spatially related to porphyry dykes of felsic composition.

In the Moss Lake–Fountain Lake area, the volcanic assemblage of the Shebandowan Greenstone Belt (SGB), more precisely the central intermediate to felsic belt (CFB), is at its maximum thickness (4 km thick). This may suggest a certain contact heterogeneity in the Quetico/Wawa terrane collision that could have led to increased felsic volcanism within the belt. The presence of the numerous felsic porphyritic intrusives may also be related to a late event of similar origin.

Further to the northeast, the Shebandowan Greenstone Belt contains ultramafic intrusions as well as ultramafic flows as described by Osmani (1993). Timiskaming-type conglomerates bearing felsic porphyry fragments are also present. These conglomeratic units have been interpreted (Rogers and Berger, 1994) as part of a younger (2689 Ma; Corfu and Stott, 1986) volcano-sedimentary sequence of the Shebandowan assemblage (Shegelski, 1980; Williams et al., 1991b). Timiskaming-type conglomeratic units tend to represent evidence of late orogenic structures related to alkaline plutonism that played an important role in gold mineralization. Ultramafic assemblages are also well known for their deep crustal association. They are often related to gold mining camps with regards to their fault/shear zone association.

Near the Moss Lake property, a few small exposures of conglomerate (polymictic and oligomictic units) have been documented approximately 5 km southwest of Moss Lake (Chorlton, 1987 in Osmani, 1997), one of which occupies the most northeastern trench of the Minoletti showing. The conglomerate is composed of subangular to subrounded, cobble- to coarse-grained clasts of felsic and mafic metavolcanic rocks and feldspar porphyry. The polymictic conglomerates are both clast and matrix supported. The relationship between these conglomeratic units and other rock types in the area is not understood, largely due to the limited exposure of the unit. These conglomerate units may be temporally equivalent to the Timiskaming-type conglomerate unit of the Shebandowan Lake region. Altered and fractured metavolcanic and porphyry clasts in the conglomerate suggest local derivation from similar rock types exposed in the area. On the basis of this relationship, Chorlton (1987 in Osmani, 1997) suggested that the conglomerate unit unconformably overlies the metavolcanic and porphyry units and was deposited after at least some deformation had taken place in the underlying units. However, the conglomerate is also deformed by the E-NE-striking shear zone, and both the clasts and matrix of the conglomerate are metamorphosed to greenschist facies. Thus, it appears that at least two deformation episodes have taken place, one prior to and one after deposition of these sedimentary units.

Although Timiskaming-type conglomeratic units and ultramafic assemblages have only been observed beyond the Moss Lake property boundaries, their presence supports the hypothesis of an intimate relationship between gold mineralization and deep crustal structures, late porphyritic intrusions, and local and regional faulting in the Moss Lake area, and thus a possible transcurrent faulting system origin of similar age for the Moss Lake deposit shears.

During their site visit, authors examined numerous mineralized intersections that collectively suggest gold grades may occur within sheared rocks, although not exclusively. Mineralization appears as disseminated sulphides, quartz-albite veining and flooding, as well as late faulting. Alteration minerals related to mineralization consist mainly of silica, albite, sericite, carbonates, and sulphides (pyrite and minor chalcopyrite). Other alteration minerals not necessarily associated with mineralization are chlorite, hematite and epidote.

9. EXPLORATION

The most recent work on the property was carried out in 2008 and consisted exclusively of diamond drilling (refer to Section 10). The reader is referred to Item 6 for historical exploration work.

10. DRILLING

The last exploration program was conducted in 2008 and consisted exclusively of diamond drilling. It was contracted to Clark Exploration Contracting Inc. of Thunder Bay. The program was designed by Watts, Griffis and McOuat to enhance the mineral resource model and evaluate gaps in the model. The following text is borrowed from the ensuing report by Risto and Breede (2010).

The drill program was completed from March 2008 to June 2008. It consisted of fifteen (15) drill holes of BQ-size core (36.5 mm diameter) for a total of 1,723 ft. The purpose of the program was to twin a selection of historical drill holes to improve the confidence level of the historical data and to fill in some of the gaps in the deposit model.

Radius Drilling of Prince George, British Columbia, provided two drills and ancillary equipment. Two representatives of Clark Exploration Contracting Inc. (Des Cullen and Doug Parker) resided on site and supervised the drilling, core logging and sampling. All assaying was completed at Accurassay Laboratories in Thunder Bay. The drill holes were spotted from the grid lines using a hand-held GPS and drill hole azimuth was set by aligning the drill with the grid line. When the 2008 drill holes were twins of historical drill holes, it was often possible to locate historical casings at the drill sites, although their identities could not always be determined because not all historical casings bear labels. Drill hole collars were not surveyed at program termination, but casings were left in place. Downhole surveying was performed on only four holes from the program due to instrument breakdown. A Reflex EZ-Shot instrument was used and survey stations were at 200-ft (61-m) intervals down the hole and at the hole bottom.

11. SAMPLE PREPARATION, ANALYSES, AND SECURITY

This section provides a description of sample preparation, analyses, and security procedures for the latest drilling program (2008) on the Moss Lake Project. The information is based on previous reports, discussions with Moss Lake Gold Mines representatives during the on-site visit, and a review of the drill hole database received from Moss Lake Gold Mines.

11.1 SAMPLE PREPARATION

The drill core was boxed, covered and sealed at the drill rigs, and transported by drilling employees to the logging facility where Clark Exploration Contracting Inc. ("Clark") personnel would take over the core handling. The core was logged and sampled by or under the supervision of Moss Lake Gold Mines geologists. Each sample was tagged with a unique number.

Drill core samples were cut by technicians and then bagged and sealed before being grouped in batches. The sample batches were shipped to Accurassay Laboratories ("Accurassay") in Thunder Bay where they were prepared according to the laboratory's sample preparation protocol for the given analytical procedure.

The sampling and assay QA/QC protocol consisted of an in-field component managed by Clark's logging and sampling personnel and an in-laboratory component managed by Accurassay. The in-field QA/QC consisted of inserting blanks, certified reference standards, and field duplicates consisting of the second half of core samples.

At Accurassay, each sample is dried, if necessary, and then jaw crushed to approximately 8 mesh before taking a 250 to 500 gram sub-sample. The sub-sample is pulverized to 90% 150 mesh and then matted to ensure homogeneity. Silica sand is used to clean out the pulverizing dishes between each sample to prevent cross contamination. The homogeneous sample is then sent to the fire assay laboratory.

No check assays were performed by a second laboratory.

11.2 GOLD ANALYSIS

Gold was analyzed by lead fire assay with AAS (atomic absorption spectroscopy) finish using a 30-gram nominal sample weight. For grades over 5.0 g/t Au, samples were re-assayed with a gravimetric finish. A total of 2,428 routine samples plus an additional 102 field-inserted QA/QC materials (blanks, standards and duplicates) were sent for assay.

11.3 QUALITY CONTROL

Few QA/QC materials were inserted in the early part of the program. Most instances involved drill holes ML-08-06 to ML-08-15. Out of 2,428 routine samples, only 33 blanks, 35 standards, and 34 field duplicates were inserted for a total of 102 total in-field QA/QC materials.

Accurassay's internal QA/QC system includes tracking certified reference materials and in-house quality assurance standards. Accurassay uses a combination of reference materials, including reference materials purchased from CANMET, standards created in-house by Accurassay and certified through round robin testing at laboratories across Canada, and ISO certified calibration standards purchased from suppliers. Accurassay states that should any of the standards fall outside the warning limits ($\pm 2SD$), re-assays will be performed on 10% of the samples analyzed in the same batch and the re-assay values will be compared with the original values. If the values from the re-assays match the original assays, the data will be certified; if they do not match, the entire batch will be re-assayed. Should any of the standards fall outside the control limit ($\pm 3SD$), all assay values will be rejected and all samples in that batch will be re-assayed.

Results for in-lab standards are not reported on the certificates of analysis and consequently were not available for review. It is unknown whether Accurassay performed any re-assays based on the performance of its QA/QC program. Accurassay also completed 1 analytical duplicate (an assay on a second 30 g duplicate charge from the same pulp) every 10 routine samples. It also prepared a second pulp ("preparation duplicate" or "replicate") every 60 routine samples assayed (every 65 run-of-lab samples).

11.3.1 Blanks

The field blank used for the 2008 drilling programs was from unmineralized segments of drill core from earlier programs. One (1) field blank was inserted for every 20 field samples.

A total of 33 blanks were inserted into the sample stream during the program. Each was placed into a plastic sample bag and given a routine sample identification number. Blanks were inserted at a frequency of 1 per every 60 routine samples.

InnovExplo's recommended quality control protocol stipulates that if any blank yields a gold value above 0.1 g/t Au, the entire batch should be re-analyzed. For the 2008 drilling program, no blank exceeded this recommended threshold.

The 33 blanks all returned low values with an average result of 0.011 g/t Au. One sample (562293) returned an anomalous value of 0.04 g/t Au that may represent either minor carry-over contamination or inherent mineralization. One other sample (740140) reported an average grade of 0.03 g/t Au from two anomalous assays (original and check) that remains unexplained.

11.3.2 Certified Reference Materials (standards)

The standards consisted of Certified Reference Materials (CRMs) provided by Accurassay Laboratories. Three standards were used: AUG1, AUG2 and AUQ1. A total of 35 instances of field standards were inserted during the 2008 program.

Table 11.1 summarizes the results for the in-field standards, including the recommended values provided by Accurassay's certification process and assay averages achieved by the Moss Lake Gold Mines program.

Table 11.1 – Results for the in-field standards for the 2008 Moss Lake Gold Mines drilling program

Sample	Standard	Obtained Value	Sample	Standard	Obtained Value	Sample	Standard	Obtained Value
316026	AUG1	0.961	316275	AUG2	0.927	562462	AUQ1	1.261
316100	AUG1	1.056	316350	AUG2	0.914	562800	AUQ1	1.224
316200	AUG1	1.035	562385	AUG2	1.123	562980	AUQ1	1.255
562253	AUG1	0.994	562523	AUG2	1.131	740160	AUQ1	1.308
562582	AUG1	1.073	562740	AUG2	1.101	740340	AUQ1	1.199
562680	AUG1	0.104	562920	AUG2	1.046	740520	AUQ1	1.155
562860	AUG1	0.974	740100	AUG2	1.077	740700	AUQ1	1.240
740040	AUG1	1.016	740280	AUG2	0.917	740940	AUQ1	1.108
740220	AUG1	1.085	740460	AUG2	1.035	<i>Count</i>		8
740400	AUG1	1.040	740640	AUG2	0.982	<i>Average</i>		1.219
740580	AUG1	0.931	740820	AUG2	1.066	<i>Standard</i>		1.330
740760	AUG1	1.130	740848	AUG2	1.032			
741089	AUG1	1.114	741021	AUG2	1.005			
<i>Count</i>		13	<i>Count</i>		13			
<i>Average</i>		0.963	<i>Average</i>		1.027			
<i>Standard</i>		1.125	<i>Standard</i>		1.013			

One instance of Standard AUG1 (562582) returned a low value. One instance of AUG2 in drill hole ML-08-08 appears to be out of place by one sample interval. The drill log identifies sample 562522 as the standard, but assay results suggest the standard is instead sample 562523. Sample mix-up is the likely cause of this error.

InnovExplo's recommended quality control protocol stipulates that if any standard with less than 25 samples yields a gold value above or below 10% of the standard grade (i.e., an outlier), then the entire batch should be re-analyzed. According to such criteria, several batches should have been re-analyzed. Also, the choice of standards should have provided a greater range of gold content instead of all three being so close to 1 g/t Au.

11.3.3 Duplicates

A series of duplicate samples taken at each stage of the sampling and sample preparation process enables the precision to be monitored incrementally through the stages. The number of duplicate types depends on the number of process steps, but typically includes three: a field duplicate, a coarse crush duplicate, and a pulp duplicate. Duplicates are used to check the representativeness of the results obtained for a given population. Although coarse crush duplicates and pulp duplicates were performed by the laboratory, only field duplicates were made available to InnovExplo and the authors were therefore unable to completely assess in-lab duplicates.

A field duplicate was prepared for one (1) sample selected from every 60 field samples. The samples to be analyzed were provided from half of the half-split core; that is, from a quarter-split of the original whole core. In the sample numbering sequence, a duplicate sample follows directly after its corresponding original.

The results for field duplicates can be used to determine random error (i.e., reproducibility) of the sample analysis process, from sampling through to sample preparation. When used in conjunction with other sample preparation duplicates, the incremental loss of precision can be determined for each of the various stages of the sampling, preparation and assaying process. For the field duplicate increment, this can indicate whether loss of precision can be attributed to initial sample size or to the homogeneity of mineralization using the original-duplicate pair.

Thirty-four (34) original–duplicate field sample pairs were identified in the database. Figure 11.1 plots the pairs and shows a correlation coefficient of 83.82%. The correlation coefficient (%) is given by the square root of R^2 and represents the degree scatter of data around the linear regression slope. Results are correlated but not as well as might be expected. Poor correlation is likely due to inhomogeneity (the "nugget" effect). However, InnovExplo is of the opinion that the results obtained for the field duplicates from the 2008 Moss Lake Gold Mines drilling programs are reliable and valid.

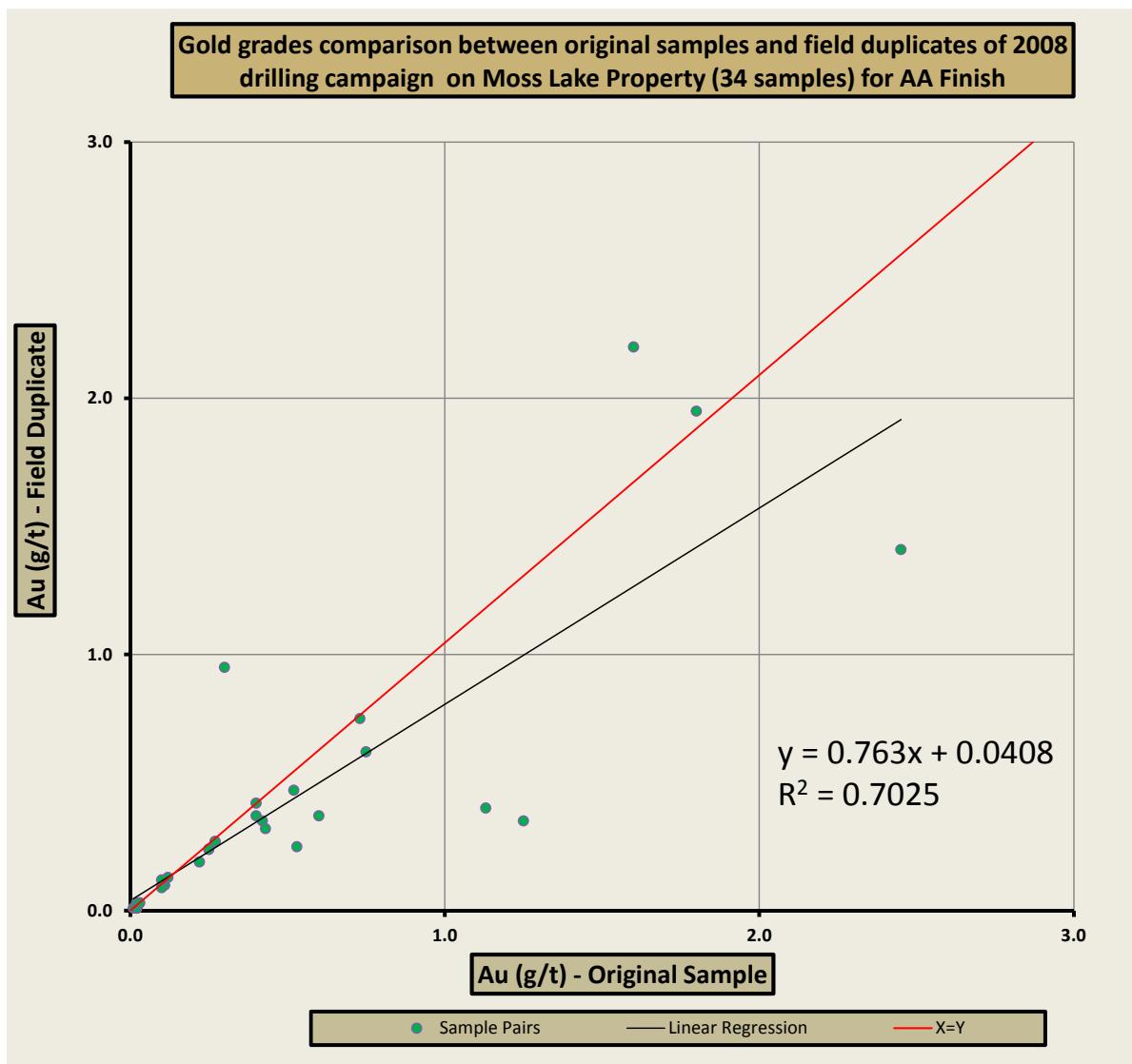


Figure 11.1 – Linear graph comparing original field samples versus field duplicates (quarter-split core) from the 2008 Moss Lake Gold Mines drilling program

11.4 CONCLUSIONS

A statistical analysis of the QA/QC data provided by Moss Lake Gold Mines did not highlight any significant analytical issues, although it is recommended that some samples be re-assayed at a different laboratory in order to upgrade the confidence in the assay results. Overall, InnovExplo is in the opinion that the sample preparation, analysis, QA/QC and security protocols used by Moss Lake Gold Mines for the Moss Lake Project follow generally accepted industry standards and that the data is valid and of sufficient quality to be used for mineral resource estimation.

12. DATA VERIFICATION

The diamond drill hole database used for the resource estimate presented herein was provided by Moss Lake Gold Mines and is referred to as the Moss Lake database in this item. Because the last drilling program was undertaken in 2008, InnovExplo did not need to establish a cut-off date for the database for the purpose of the current resource estimate.

InnovExplo's data verification included field visits as well as reviews of the core, drill hole collar locations, downhole surveys, the assays, and the descriptions of lithologies, alteration and structures.

12.1 HISTORICAL WORK

The historical information used in this report was taken mainly from reports produced before the implementation of Regulation 43-101. In some cases, little information was provided about sample preparation, security, and analytical procedures for the historical work. InnovExplo nonetheless assumes that historical exploration activities conducted by previous companies were in accordance with prevailing industry standards at the time.

12.2 MOSS LAKE DATABASE

The authors were granted access to the certificates of assays for most of the holes discussed in this report. Errors were noted in the original database, but these were considered minor and of the type normally encountered in a project database. None of the observed errors in the original database are present in the database used for the resource estimate. The final database is considered to be of good overall quality. InnovExplo considers the Moss Lake database to be valid and reliable.

12.3 MOSS LAKE DIAMOND DRILLING

Every drill hole collar on the Moss Lake deposit was georeferenced using its grid location and/or a hand held GPS. The surveys conducted on the Moss Lake deposit are considered adequate for the purpose of a resource estimate, although a professional survey program is recommended. The great majority of the holes were also surveyed by a downhole instrument. During the site visit, the authors witnessed numerous casings and/or drill sites in the field (Fig. 12.1). The coordinates of several survey stations were also recorded using a handheld GPS during the site visit (Fig. 12.2) and these coordinates were later used to re-establish the positions of some of the historical drill hole collars.



Figure 12.1 – Some of the historical drill sites observed during the site visit



Figure 12.2 – Some of the survey stations found by the authors during the site visit; the GPS coordinates were used to relocate some of the historical drill hole collars.

12.4 MOSS LAKE SAMPLING AND ASSAYING PROCEDURES

InnovExplo reviewed several sections of mineralized core while visiting the core storage facility on site (Fig. 12.3). All recent core boxes were labelled and properly stored either inside or outside. Sample tags were still present in the boxes. It was possible to validate sample numbers and confirm the presence of mineralization for each of the samples in the mineralized zones.

There was no drilling at the time of the visit and the last drilling program took place in 2008. The authors were therefore unable to judge whether the entire path taken by the drill core, from the drill rig to the logging and sampling facility, was adequate. The logging and sampling facility is now used as a storage building (Fig. 12.4). Although most of the older core boxes have been well maintained, some racks collapsed while others are about to collapse (Fig. 12.5).

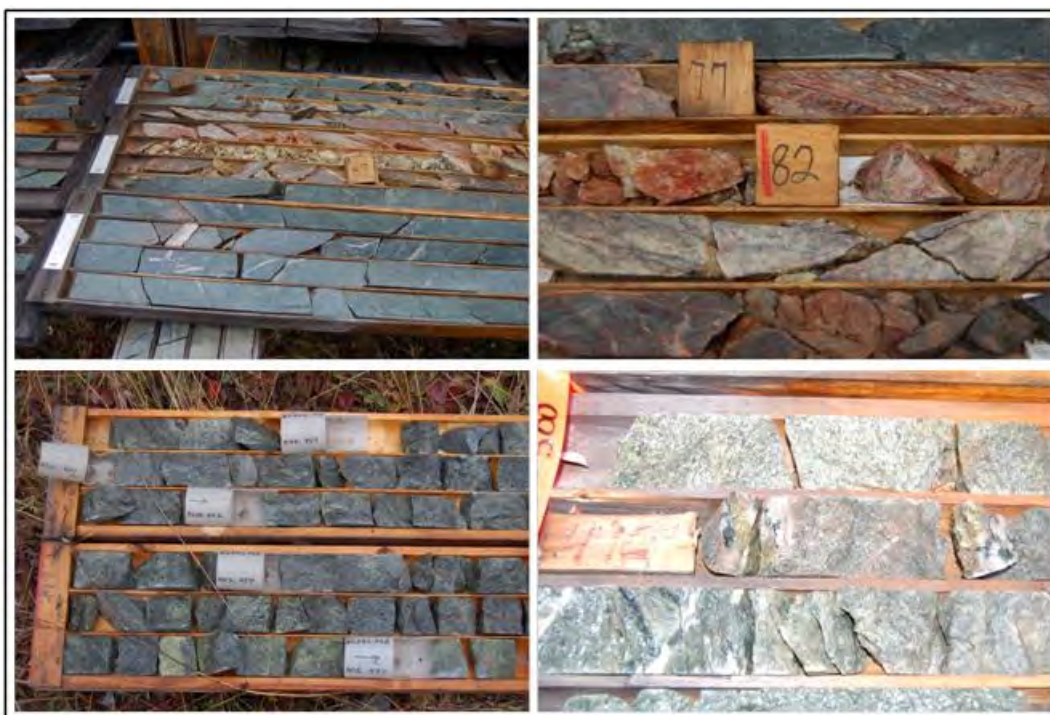


Figure 12.3 – General views of selected core examined during the site visit



Figure 12.4 – Photos of the logging and sampling facility: A) General outside view of the area dedicated for logging and sampling during the 2008 drilling program; B) Recent pulps stored inside the facility; C) and D) General view of inside the facility showing boxes of rejects and bags of samples never sent to the lab.



Figure 12.5 – Outdoor core storage next to the core shed: A) Recent core; B) and C) Historical core; and D) Photo showing some of the collapsed core racks.

12.5 SITE VISIT SAMPLING

InnovExplo identified two shear zones during the site visit. Both displayed strong alteration facies and were sampled for gold (Fig. 12.6). The N038 shear zone returned 0.22 g/t Au and the N072 shear zone returned 2.16 g/t Au.

The authors also collected six (6) rejects from the core shed for re-assaying. Reject bags were sent to ALS Chemex in Val-d'Or. Table 12.1 presents the results.

Table 12.1 – Results for rejects sent to the laboratory by InnovExplo

Original Reject		InnovExplo Sample	
Sample	Grade (Au g/t)	Sample	Grade (Au g/t)
17005	0.37	P086905	0.55
17008	0.19	P086906	0.37
21432	1.65	P086907	1.83
21433	1.46	P086908	1.82
17156	0.03	P086909	0.10
16394	0.96	P086910	1.97

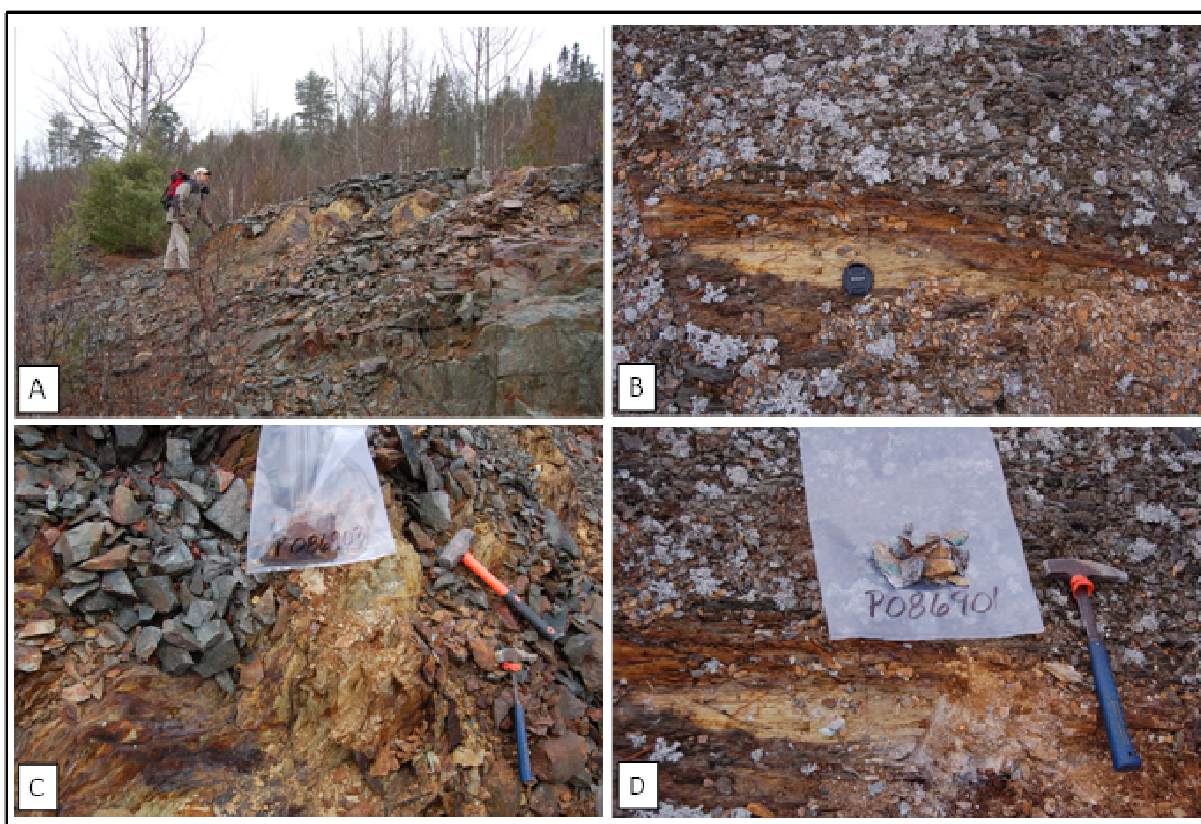


Figure 12.6 – Outcrop observations and grab sampling in the Moss Lake deposit area during the InnovExplo site visit: A) Shear zone oriented N038; B) Shear zone oriented N072; C) Grab sample from the N038 shear zone that returned 0.33 g/t Au; and D) Grab sample from the N072 shear zone that returned 2.16 g/t Au.

12.6 UNDERGROUND WORKINGS

The underground workings were never taken into account in earlier 3D models. Moss Lake Gold Mines made underground plans available to InnovExplo in the form of oversize paper documents which InnovExplo subsequently digitized (Fig. 12.7).

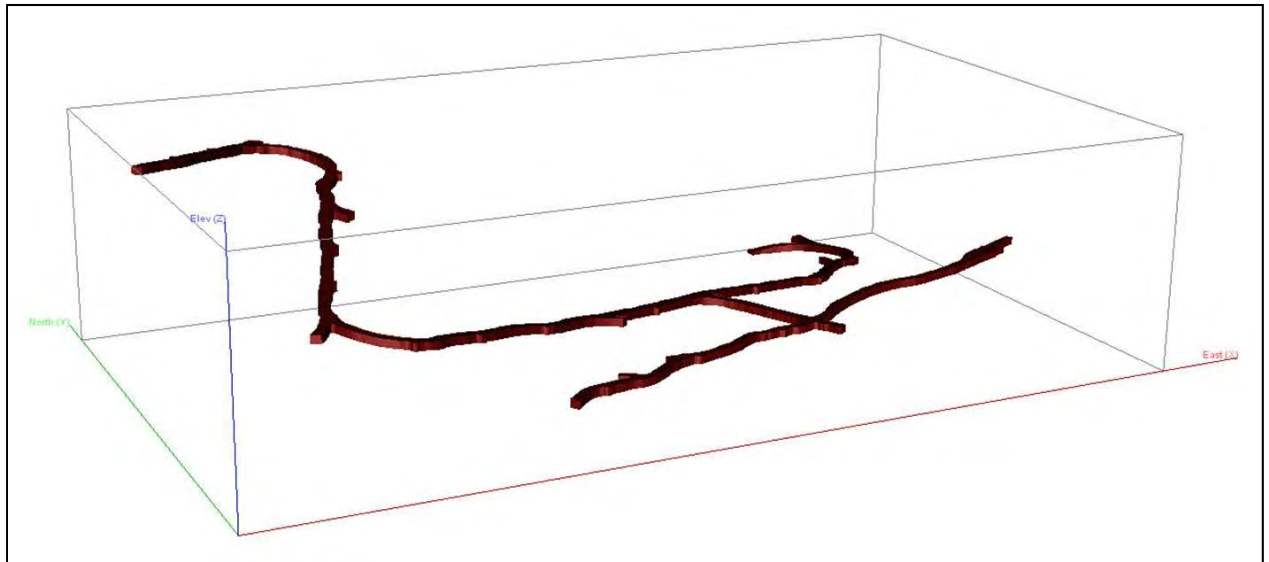


Figure 12.7 – 3D View of the excavations (looking northeast), digitized by InnovExplo for modelling and resource estimation purposes

13. MINERAL PROCESSING AND METALLURGICAL TESTING

13.1 INTRODUCTION

The metallurgical test work review and flowsheet development for the Moss Lake Gold Project has been conducted by independent consultants Metallurg Pty Ltd (“Metallurg”). Metallurg was engaged by Caracle Creek International Inc (Caracle) to review the metallurgical test work completed by SGS Lakefield (SGS) on representative samples from the Moss Lake project.

Based on the metallurgical test work Metallurg has selected the optimal process flowsheet option for the processing ores from the Main Zone and QES Zone³, and has generated the basic design criteria and process flow sheets for the basic engineering part of the study.

The primary objectives of the scoping metallurgical test work were to:

- I. Carry out mineralogical assessment to provide simple bulk mineralogy information;
- II. Carry out mineralized material characterisation test work to determine rock hardness and suitability to different grinding technologies; and
- III. Conduct whole mineralized material cyanidation bottle roll leach tests to establish amenability of processing the mineralized material types by gravity, or conventional CIL technologies.

The scoping laboratory test work was carried out by SGS and will subsequently be used to develop the process flowsheet for the Moss Lake processing facility as part of the Preliminary Economic Assessment (PEA).

13.2 METALLURGICAL SAMPLES

13.2.1 Sample receipt and characterization

The Main and QES zone samples were received in a shipment consisting of eight, five gallon pails on October 21st, 2011 (SGS receipt number 0079-OCT11). The Bulk Surface sample arrived on October 18th, 2011 on a wooden skid with 5 rice bags (SGS receipt number 0301-OCT11).

13.2.2 Sample inventory

In the Main and QES zone shipment, each sample was received in its own five gallon pail which contained fifteen individually plastic bagged samples. The weights for the Main zone samples were 26.4 kg for M2, 25.0 kg for M4, 28.0 kg for M6 and 25.0 kg for M8. The weights for the QES zone samples were 23.7 kg for Q2, 24.5 kg for Q4, 21.6 kg for Q6 and 24.9 kg for Q8.

The Bulk Surface sample shipment was received in five rice bags. The total weight for the Bulk Surface sample was 116.1 kg.

³ The 101 and 102 zones more or less contain what was previously known as the Main and QES zones.

13.2.3 Sample preparation

For the Main and QES zone composite samples, each was received in a container and comprised of fifteen individually plastic bagged samples as shown in the sample inventory section. It was understood that each bagged sample would be received at a size of minus one quarter inch.

Each of the fifteen bags for each Main and QES sample were crushed to minus 10 mesh and representative one kilogram charges of material were split out from each. The fifteen one kilogram charges for each sample were combined and well blended making fifteen kilograms of composite sample for testing.

Representative portions were removed from each composite and submitted for head analyses using the screen metallics protocol for Au, in addition to analyses for C speciation, S speciation and an ICP scan. Test charges were also prepared and forwarded to mineralogical and metallurgical testing to fulfill those test work requirements.

For the Bulk Surface composite sample, it was understood that sample would be received as minus four inch plus two and a half inch rock. The sample was staged crushed and material was split out at the appropriate sizes to fulfil the comminution testing requirements. A representative portion was removed and crushed to minus 10 mesh and submitted for head analyses using the screen metallics protocol for Au, in addition to analyses for C speciation, S speciation and an ICP scan.

13.3 HEAD ANALYSIS

The gold head grades of the composite samples were determined by applying a screened metallic protocol at +/- 150 mesh. The screened undersize product was sampled by riffing and assayed in duplicate. The screened oversize product was assayed to extinction. From the assaying protocol applied it was determined that the gold head grades for the Main Zone composites ranged from a low of 0.5 g/t Au for M2 composite to 1.9 g/t Au for M8 composite. It was determined that the gold head grades for the QES Zone composites ranged from a low of 0.6 g/t Au for Q2 composite to 1.8 g/t Au for Q8 composite.

The Bulk Surface composite sample reported a gold grade of 0.5 g/t.

The sulphide sulphur grade for all the samples submitted ranged from 0.4% to 1.3%. The full head analyses details can be viewed in Table 13.1.

Table 13.1 – Metallurgical Composite Head Analyses

Element	Units	Bulk Surface	Composite							
			M2	M4	M6	M8	Q2	Q4	Q6	Q8
Au	g/t	0.46	0.50	0.93	1.19	1.89	0.60	0.84	0.99	1.77
C _t	%	0.66	0.86	0.67	0.83	0.91	0.68	0.65	0.75	0.64
C _g	%	0.01	0.03	0.03	0.03	0.04	0.04	0.03	0.02	0.04
TOC	%	0.08	<0.05	<0.05	<0.05	<0.05	<0.06	<0.07	<0.08	<0.09
CO ₃ ²⁻	%	2.96	3.75	3.08	3.84	4.34	3.10	2.55	3.19	2.57
S	%	0.50	0.53	0.78	0.92	1.18	1.38	1.13	1.30	1.44
S ²⁻	%	0.37	0.48	0.75	0.84	1.14	1.24	0.96	1.02	1.26
SO ₄ ²⁻	%	0.60	0.10	0.1	0.1	0.1	0.2	1.0	0.7	1.1
S ⁰	%	<0.05	<0.05	<0.05	<0.05	<0.06	<0.07	<0.08	<0.09	<0.10

Note: M = Main Zone; Q = QES Zone

13.4 MINERALOGY

Mineralogy was conducted on one composite mineralized material sample from each of the Main and QES zones by QEM-ARMS (automated rapid mineral scan), which is a method designed to provide simple bulk mineralogy information. It included a semi-quantitative description of mineral assemblage with manual grain counting or a QEMSCAN BMA scan. An x-ray diffraction analyses was included for the identification of the major minerals. Results reported include mineral identification, grain size range and general liberation.

Results showed that the major mineral assemblage for both the M6 and Q6 composite samples was quartz. The moderate mineral assemblages for the composite samples were plagioclase with chlorite also included in the M6 sample. Table 13.2 shows the summary of the qualitative x-ray diffraction analyses.

Table 13.2 – Summary of the Qualitative X-Ray Diffraction Results

Sample	Major	Moderate	Minor	Trace
Main Zone 6	Quartz	Plagioclase, Chlorite	Mica, calcite	Pyrite, pyroxene, potassium-feldspar
QES Zone 6	Quartz	Plagioclase	Mica, chlorite, calcite, pyroxene	Pyrite, potassium-feldspar

13.5 ORE CHARACTERIZATION

Several comminution tests were conducted on the Bulk Surface composite sample including:

- Bond Ball Mill Index Testing (BWI);
- Bond Rod Mill Index Testing (RWI);
- Bond Abrasion Testing (Ai);
- SAG Mill Comminution Testing (SMC);
- MinnovEX SAG Power Index Testing (SPI).

13.5.1 Bond Ball Mill Work Index testing (BBMWi)

The Bond ball mill index test was performed at 100 mesh of grind (150 µm) on the sample tested.

The test results are summarized in Table 13.3.

Table 13.3 – Bond Ball Mill Index Summary

Sample Name	Mesh of Grind	F80 (µm)	P80 (µm)	Grams per Rev	Work Index (kWh/t)
Bulk Surface	100	2,568	114	1.18	18.3

The sample was categorized as medium hard to hard in terms of hardness as compared with the SGS database, with Bond ball mill Work Index (BBMWi) of 18.3kWh/t (metric).

13.5.2 Bond Rod Mill Work Index testing (BRMWi)

The Bond rod mill index test was performed at 14 mesh of grind on the sample tested.

The test results are summarized in Table 13.4.

Table 13.4 – Bond Rod Mill Index Summary

Sample Name	Mesh of Grind	F80 (µm)	P80 (µm)	Grams per Rev	Work Index (kWh/t)
Bulk Surface	14	10,876	944	6.03	19.0

The sample was categorized as medium hard to hard in terms of hardness as compared with the SGS database, with Bond rod mill Work Index (BRMWi) of 19.0kWh/t (metric).

13.5.3 Bond Abrasion testing

The Bond abrasion test results are summarized in Table 13.5.

Table 13-5 – Bond Abrasion Test Summary

Sample Name	Ai (g)	Percentile of Abrasivity
Bulk Surface	0.356	34

The sample fell in the hard range of abrasiveness, with an Abrasion Index (Ai) of 0.356 g.

13.5.4 SAG Mill Comminution testing (SMC)

The SMC test is an abbreviated version of the standard JKTech drop-weight test performed on rocks from a single size fraction (-31.5/+26.5 mm). The SMC test was performed on the Bulk Surface composite.

The sample was characterized as falling in the medium to medium hard range with respect to impact (A x b) breakage. The average relative density was 2.7.

13.5.5 MinnovEX SAG Power Index testing (SPI®)

The Bulk Surface composite was tested for SAG Power Index (SPI®), and Crusher Index measurements. The SPI® is a measure of the hardness of the mineralized material from the perspective of semi-autogenous milling. The SAG Power Index (SPI®) test is a test developed to predict how well the material grinds in a SAG or FAG environment. Values of the SPI are expressed in minutes, or the time that a sample originally with F80 of ½" grinds to P80 of -10 mesh or 1.7 mm. The value for the Bulk Surface composite is relatively high at 184.9 minutes, which reflects a material that is relatively hard and will pass through a SAG mill more slowly.

The Crusher Index (Ci) is a proprietary test where a lower value denotes a material that is more difficult to be crushed. Based upon the value of 12 for the composite tested, the value is on the low end of the distribution, thus indicating that this sample is more difficult to crush well. The Crusher Index (Ci) is used to predict the SAG feed size distribution of the ore, and is measured during the SPI® feed preparation procedure.

The summary of the test results are presented in Table 13.6.

Table 13.6 – MinnovEX SAG Power Index Summary

Sample Name	SPI Test #	Crusher Index	SPI (minutes)
Bulk Surface	1-8865	12	184.9

13.6 METALLURGICAL TEST WORK

The metallurgical test program examined the response of the composite samples to whole mineralized material cyanidation leaching. One selected cyanidation residue from each of the zones was subjected to a three stage diagnostic leach.

13.6.1 Whole mineralized material cyanidation leaching

Bottle roll cyanidation tests were completed on 1 kilogram charges of whole mineralized material for each composite at three P80 grind sizes, ~150 µm, ~106 µm and ~53 µm. The conditions applied were 40% solids for 48 hours with the pH maintained between 10.5 and 11.0 with lime added as calcium hydroxide. The cyanide concentration was maintained at 0.5 g/L NaCN throughout the 48 hours as well. Solution sub-samples were taken at 7 and 24, and 48 hours to monitor the gold extraction rates. Upon completion of the tests, the final residues and final pregnant leach solutions were submitted for assay. A summary of all the whole mineralized material cyanidation tests performed are detailed in Table 13.7.

Table 13.7 – Summary of Whole mineralized material Cyanidation Leach Tests

Zone	Sample	Test No.	Target Size (µm)	Reagent Addition kg/t CN Feed		Reagent Cons. kg/t CN Feed		%Au Extraction			Residue Grade Au g/t	Calc. Head Au g/t
				NaCN	CaO	NaCN	CaO	7h	24h	48h		
Main	2	CN 1	150	1.04	0.40	0.36	0.39	69	81	83	0.09	0.53
Main	2	CN 2	106	1.20	0.38	0.50	0.35	66	78	83	0.09	0.53
Main	2	CN 3	53	1.49	0.36	0.78	0.32	64	81	83	0.09	0.54
Main	4	CN 4	150	0.85	0.40	0.18	0.37	69	77	81	0.19	0.98
Main	4	CN 5	106	1.01	0.39	0.33	0.36	71	81	82	0.17	0.94
Main	4	CN 6	53	1.43	0.29	0.76	0.26	67	82	84	0.16	0.97
Main	6	CN 7	150	0.75	0.42	0.07	0.39	72	78	79	0.23	1.08
Main	6	CN 8	106	0.94	0.42	0.27	0.38	74	79	80	0.23	1.13
Main	6	CN 9	53	1.39	0.32	0.72	0.29	71	81	83	0.20	1.14
Main	8	CN 10	150	0.92	0.37	0.22	0.33	71	75	79	0.40	1.88
Main	8	CN 11	106	1.23	0.32	0.56	0.29	72	77	80	0.37	1.81
Main	8	CN 12	53	1.47	0.37	0.80	0.34	72	80	83	0.33	1.95
QES	2	CN 13	150	0.93	0.37	0.22	0.36	73	74	79	0.12	0.56
QES	2	CN 14	106	1.26	0.32	0.58	0.29	77	81	81	0.10	0.53
QES	2	CN 15	53	1.69	0.33	1.04	0.30	70	84	83	0.10	0.57
QES	4	CN 16	150	1.35	0.25	0.70	0.22	42	62	91	0.14	1.49
QES	4	CN 17	106	1.46	0.28	0.81	0.23	43	62	91	0.14	1.59
QES	4	CN 18	53	1.67	0.23	1.03	0.20	44	63	93	0.12	1.58
QES	6	CN 19	150	1.06	0.35	0.40	0.33	39	58	90	0.17	1.58
QES	6	CN 20	106	1.21	0.39	0.55	0.35	43	59	92	0.14	1.68
QES	6	CN 21	53	1.39	0.37	0.73	0.33	44	60	93	0.12	1.67
QES	8	CN 22	150	0.88	0.35	0.18	0.33	38	63	85	0.25	1.63
QES	8	CN 23	106	0.93	0.36	0.24	0.34	43	64	87	0.22	1.75
QES	8	CN 24	53	1.40	0.29	0.74	0.26	43	66	90	0.18	1.73
QES Comp	2/4 Blend	CN 25	53	1.50	0.14	0.75	0.13	72	80	84	0.11	0.72
QES Comp	2/4 Blend	CN 26	53	1.48	0.17	0.76	0.17	71	79	84	0.12	0.72

For the Main zone samples, the 48 hour gold extractions ranged from 79% to 84% for all the grind sizes tested. The gold extractions and leach kinetics were observed to be slightly improved with the finer grind size tests. The final reagent consumptions from the tests performed at a P80 of ~53 μm ranged from 0.72 kg/t to 0.80 kg/t for NaCN and consumed 0.26 kg/t to 0.34 kg/t of lime for the tests. The gold leach curves for the Main Zone are shown in Figures 13.1 and 13.2.

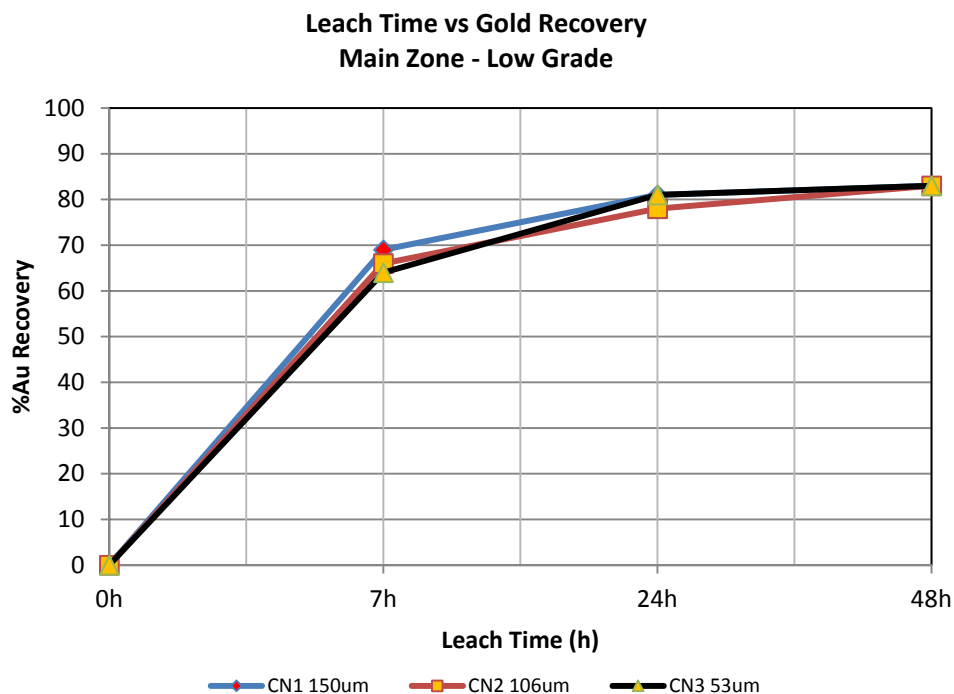


Figure 13.1 – Gold Leach Curves (LG Main Zone)

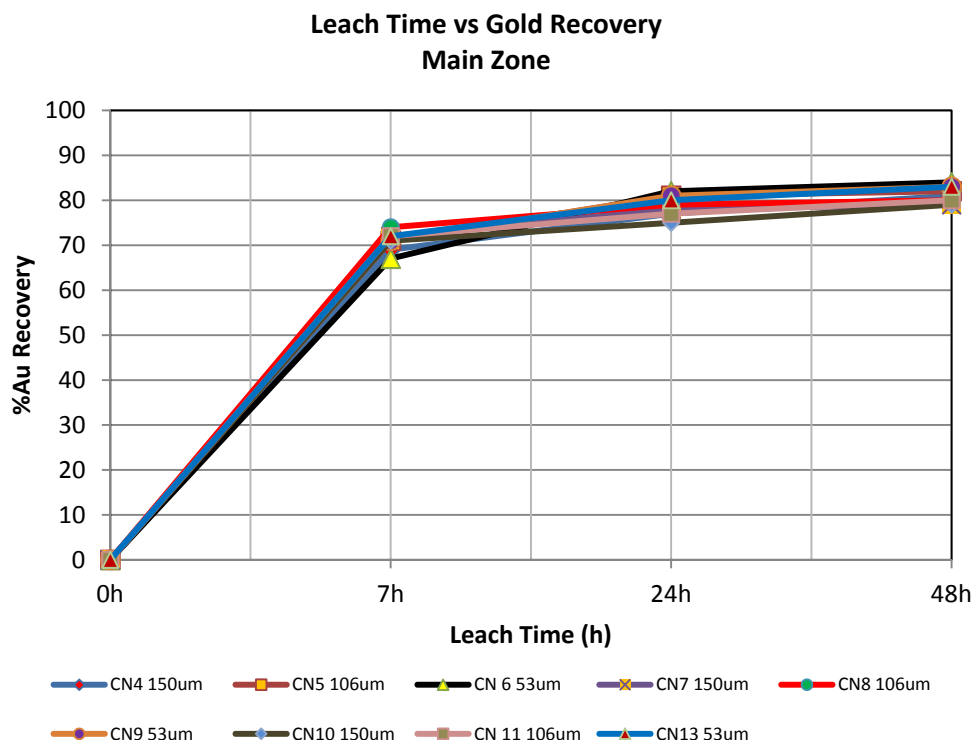


Figure 13.2 – Gold Leach Curves (Main Zone)

For the QES zone samples, the 48 hour gold extractions ranged from 79% to 93% for all the grind sizes tested. The gold extractions and leach kinetics were observed to be slightly improved with the finer grind size tests. The final reagent consumptions from the tests performed at a P80 of ~53 μm ranged from 0.73 kg/t to 1.04 kg/t for NaCN and consumed 0.20 kg/t to 0.33 kg/t of lime for the tests.

Two additional cyanidation tests were performed on material from the QES zone (CN-25 & CN-26). A one kilogram charge of QES 2 was well blended with a one kilogram charge from QES 4. The sample was riffled into 2, one kilogram charges. The two charges were ground to a P80 grind size target of ~53 μm . Each sample was subjected to a cyanidation test under the same conditions as all the previous tests.

For the Q2 and Q4 blended samples, the 48 hour gold extraction was 84%. The final reagent consumptions from the tests averaged 0.76 kg/t for NaCN and consumed 0.15 kg/t of lime.

The gold leach curves for the QES Main Zone are shown in Figures 13.3 and 13.4.

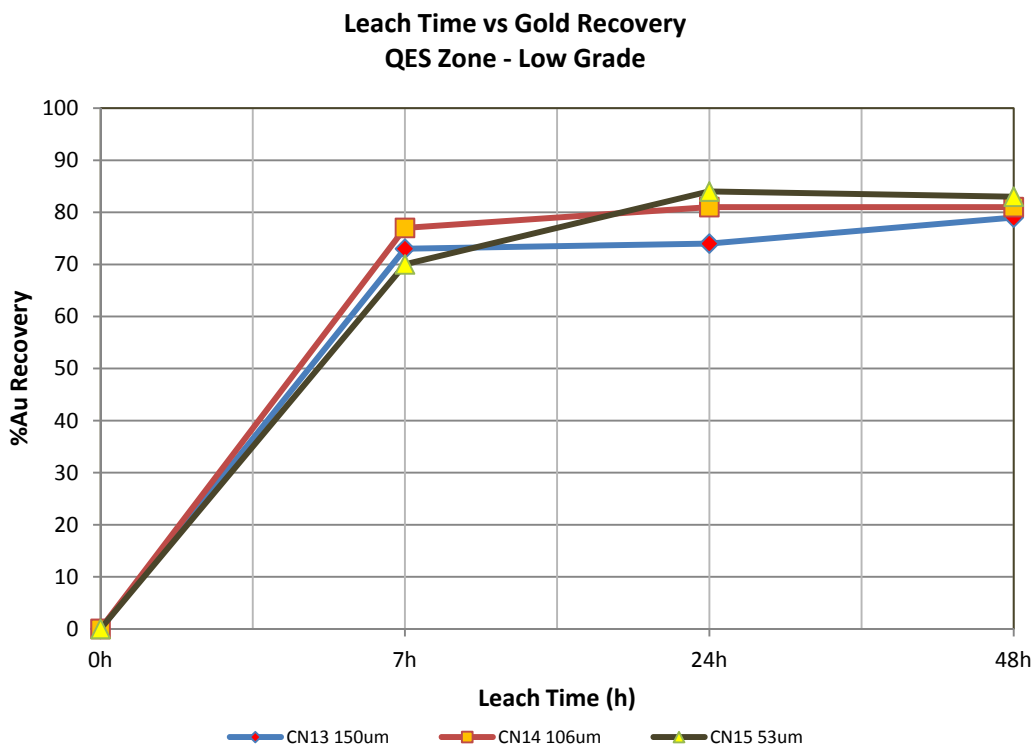


Figure 13.3 – Gold Leach Curves (LG QES Zone)

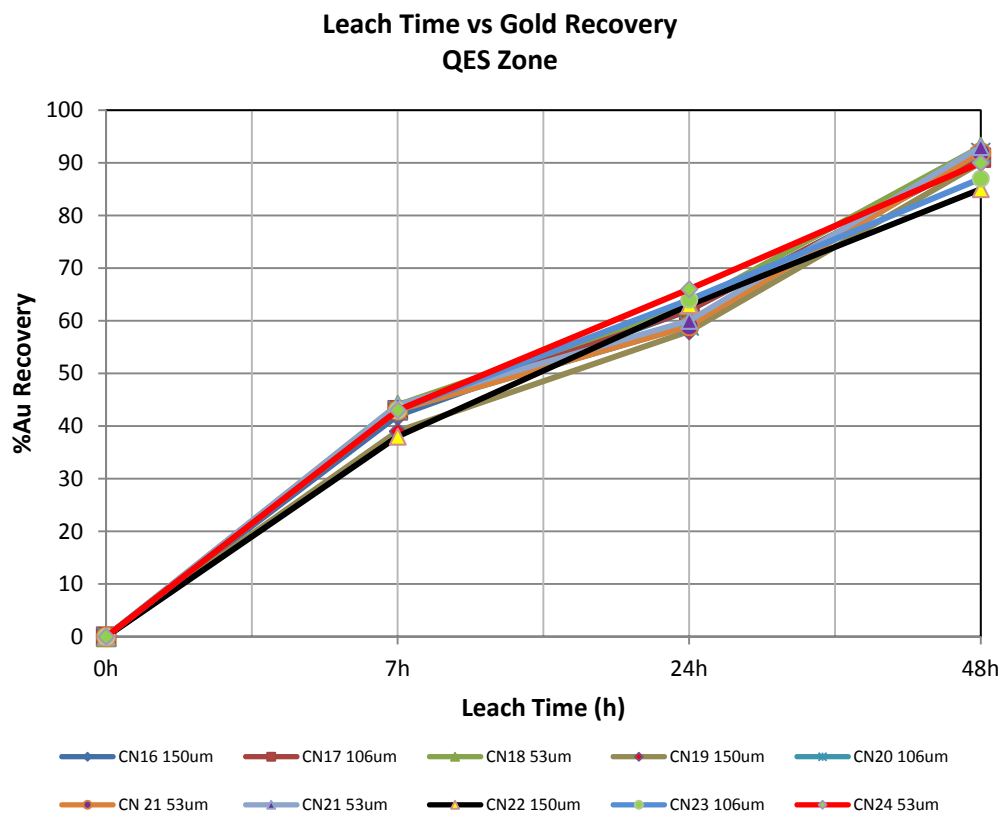


Figure 13.4 – Gold Leach Curves (QES Zone)

13.6.2 Diagnostic leach test

Included in the metallurgical test program was the testing of one selected leach tailing residue sample from each of the Main and QES zones to a diagnostic leach program. The tailing residues from the whole mineralized material cyanidation tests on composites M8 and Q8 performed on the finest grind sizes, tests CN-12 and CN-24, were subjected to three stage diagnostic leach programs to determine the residual gold deportment of the samples.

The diagnostic leach procedure was developed mainly to characterise certain aspects of the deportment of gold. The first stage involved leaching the residue in a hot sodium hydroxide solution in an attempt to dissolve minerals such as iron-arsenic compounds. A cyanidation test was then performed to leach any gold which may have been liberated during the first stage. The residue was then forwarded to a second stage of hot hydrochloric acid leaching, where acid soluble minerals such as calcite and dolomite among others may be dissolved. Another cyanidation test was performed on the hydrochloric acid leach residue to recover any liberated gold. The final stage applied consisted of taking the residue and leaching it in a hot aqua regia solution. The aqua regia leach was done to determine any gold locked in sulphides such as pyrite and arsenopyrite. Any remaining gold in the residue is assumed to be gold mainly associated with silicates or fine sulphides locked in silicates.

The metallurgical overall balance and distribution summaries of the diagnostic leach test are shown in Tables 13.8 and 13.9.

Table 13.8 – Metallurgical Balance Summary (M8 Composite)

Product	Amount g, mL	Au Assays mg/l, g/t, %	%Au Distribution	% Cum Au Extraction
CN-12-1 PLS	425.0	1.13	79.7	79.7
CL-12 PLS	635.7	<0.01	1.1	80.7
CN-12-2 PLS	454.2	0.10	7.5	88.3
HCl-12 PLS	1078.7	0.02	3.6	91.8
CN-12-3 PLS	372.9	0.03	1.9	93.7
AR-12 PLS	904.3	0.03	4.5	98.2
Final Residue	218.2	0.05	1.8	100.0
Calc. Head	300	2.01	100.0	
Assay Head	300	1.89		

Table 13.9 – Gold Distribution Summary (M8 Composite)

Leach Stage	% Au Distribution
Cyanide Leach: Extraction of Readily Cyanideable Gold	79.7
Sodium Hydroxide & Cyanide Leach: Extraction of gold associated with iron arsenate, arsenic oxides	8.6
Hydrochloric Acid & Cyanide Leach: Extraction of gold associated with acid soluble compounds	5.4
Aqua Regia Leach: Extraction of gold associated with, or occluded by sulphide minerals e.g. pyrite, arsenopyrite	4.5
Remaining Material: Gold and silver locked in silicates, or associated with fine sulphides locked in silicates	1.8
Total	100.0

The Q8 zone composite residue selected for the diagnostic leach program was the leach tailing residue from the whole mineralized material leach test, CN-24, which was the cyanidation performed at the finer target grind size of a P80 of 53 microns. The test CN-24 leach showed 85% to 90% gold recovery of readily leachable gold. During the first stage hot sodium hydroxide leach and subsequent cyanidation it was observed that 4% to 5% of the gold was further extracted from possible gold associations with iron-arsenic compounds or bismuth minerals. In the second stage hot hydrochloric acid leach and subsequent cyanidation it was observed that 5% to 6% of the gold was further extracted from possible gold associations with the weak acid soluble compounds (i.e. calcite and dolomite among others such as pyrrhotite and ferrites. In the final third stage hot aqua regia leach it was observed that 3% to 4% of the gold was further extracted from possible gold associations with or occluded by sulphide minerals, pyrite and arsenopyrite. The remaining 1% to 2% of the gold left in the final diagnostic leach residue was deemed to be the gold mainly associated with silicates or fine sulphides locked in silicates.

The metallurgical overall balance and distribution summaries of the diagnostic leach test are shown in Tables 13.10 and 13.11.

Table 13.10 – Metallurgical Balance Summary (Q8 Composite)

Product	Amount g, mL	Au Assays mg/l, g/t, %	%Au Distribution	% Cum Au Extraction
CN-12-1 PLS	428.3	1.09	85.2	85.2
CL-12 PLS	650.3	0.01	1.2	86.4
CN-12-2 PLS	451.7	0.04	3.3	89.7
HCl-12 PLS	1070.1	0.02	3.9	93.6
CN-12-3 PLS	400.3	0.02	1.5	95.1
AR-12 PLS	985.6	0.02	3.6	98.7
Final Residue	245.1	0.03	1.3	100.0
Calc. Head	300	1.83	100.0	
Assay Head	300	1.76		

Table 13.11 – Gold Distribution Summary (Q8 Composite)

Leach Stage	% Au Distribution
Cyanide Leach: Extraction of Readily Cyanideable Gold	85.2
Sodium Hydroxide & Cyanide Leach: Extraction of gold associated with iron arsenate, arsenic oxides	4.5
Hydrochloric Acid & Cyanide Leach: Extraction of gold associated with acid soluble compounds	5.4
Aqua Regia Leach: Extraction of gold associated with, or occluded by sulphide minerals e.g. pyrite, arsenopyrite	3.6
Remaining Material: Gold and silver locked in silicates, or associated with fine sulphides locked in silicates	1.3
Total	100.0

13.7 ACID BASE ACCOUNTING TEST WORK

The modified acid base accounting (ABA) test quantifies the total sulphur, sulphide sulphur and sulphate concentrations, as well as the potential acid generation (AP) related to the oxidation of sulphide sulphur. The test method determines the neutralization potential (NP) of the sample by facilitating a reaction with excess acid, then titrating to pH 8.3 with NaOH. The balance between AP and NP assists in defining the potential of the sample to generate acid drainage.

Based on the resultant NP/AP ratio values ranging from 1.83 to 9.31, the results show a somewhat lower potential for acid generation. The total net NP values ranging from 22.2 t $\text{CaCO}_3/1000 \text{ t}$ to 71.2 t $\text{CaCO}_3/1000 \text{ t}$ combined with the determination of the carbonate (CO_3^{2-}) contents ranging from 2.37% to 3.84% for the samples also indicated that a portion of this total NP is from this reactive source. Since carbonate minerals are typically the only minerals that can react at fast enough rates to counteract acidities released by sulphide mineral oxidation; the resultant NP/AP ratio values suggest some certainty, combined with the low sulphide contents ranging from 0.27% to 1.09%, that acid generation is unlikely to occur from these samples as they sit in their untreated state.

Results of the ABA tests are provided in Table 13.12.

Table 13.12 – Summary of ABA Test Results

Analysis	Units	Main Composite				QES Composite			
		2	4	6	8	2	4	6	8
Paste pH		9.43	9.52	9.41	9.35	8.82	8.88	9.27	9.01
Fizz Rate		4	4	4	4	4	4	4	4
Sample Weight	g	2.05	2.01	1.97	2.00	1.98	2.03	1.96	2.00
HCl Added	mL	54.50	40.00	53.10	54.00	40.00	40.00	40.00	40.00
HCl	Normality	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
NaOH	Normality	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
NaOH to pH 8.3	mL	21.79	15.50	21.91	22.00	16.07	16.70	13.55	17.46
Final pH		1.64	1.78	1.64	1.66	1.75	1.60	1.82	1.57
NP	tCaCO ₃ /1000t	79.8	61.0	79.2	80.0	60.4	57.4	67.5	56.4
AP	tCaCO ₃ /1000t	8.6	20.00	21.50	24.40	33.00	25.30	32.30	34.20
Net AP	tCaCO ₃ /1000t	71.2	41.0	57.7	55.6	27.4	32.1	35.2	22.2
NP/AP	Ratio	9.31	3.05	3.68	3.28	1.83	2.27	2.09	1.65
Total Sulphur (S)	%	0.404	0.68	0.808	1.01	1.27	1.03	1.15	1.26
Acid Leachable (SO ₄ ²⁻)	%	0.13	0.04	0.12	0.23	0.21	0.22	0.12	0.17
Sulphide (S ²⁻)	%	0.27	0.64	0.69	0.78	1.06	0.81	1.03	1.09
Total Carbon (C)	%	0.874	0.644	0.828	0.883	0.671	0.651	0.775	0.629
Carbonate (CO ₃ ²⁻)	%	3.52	2.51	3.45	3.84	2.44	2.37	3.04	2.37

13.8 SELECTION OF PROCESSING METHODS

13.8.1 Process flowsheet

Based on the performed test work the preferred flowsheet for processing all types of mineralized material from the Moss Lake gold project is conventional CIL. The process flowsheet includes single-stage crushing, SAG milling (c/w pebble crusher), and a ball mill in closed circuit with cyclones. Cyclone overflow is sent to conventional CIL, followed by elution, electro-winning to produce gold-silver bullion.

It may be warranted to include a gravity processing stage to recover any gravity recoverable gold. The gravity concentrate would be treated using intensive cyanidation leaching, followed by direct electrowinning to produce doré.

The process flowsheet is described in more detail in Section 17 – Recovery Process.

13.8.2 Throughput design basis

Ore comminution testing has been carried out on a composite sample. The sample was categorised as medium hard to hard in terms of hardness as compared with the SGS database, with Bond ball mill Work Index (BBMWi) of 18.3kWh/t (metric). The mineralized material is considered hard enough to be amenable to processing using SAG mill technology.

The nominal throughput for the processing facility is 40,000tpd. The process plant will be constructed in two phases; Phase 1 – 20,000tpd; ramping up to 40,000tpd.

13.9 OVERALL FINAL RECOVERY PREDICTIONS

The assigned leach recovery for the Main Zone and QES Zone, at a P80 of 106 μ m, is 80% and 85% respectively. In order to take into account gold losses attributable to CIL solution and goldroom slag losses these leach recoveries are then multiplied by 99%. The predicted gold recovery to doré is 79.2% and 84.2% for the MZ and QESZ respectively.

14. MINERAL RESOURCE ESTIMATE

The 2013 Mineral Resource Estimate herein was performed by Pierre-Luc Richard, M.Sc., P.Geo., under the supervision of Carl Pelletier, B.Sc., P.Geo., using all available results. The main objectives of InnovExplo's work were to: 1) compile all historical work conducted on the Moss Lake Project; 2) update the interpretation; and 3) publish the results of an updated Mineral Resource Estimate for the Moss Lake Project. The mineral resources presented herein are not mineral reserves since they have no demonstrable economic viability. The result of the study is a single Mineral Resource Estimate for eighteen (18) mineralized zones and one (1) envelope zone containing the remaining isolated gold intercepts (see below for details), with Indicated and Inferred Resources, for both a Whittle-optimized in-pit volume and a complementary underground volume. The effective date of this Mineral Resource Estimate is February 8, 2013.

14.1 METHODOLOGY

The Mineral Resource Estimate detailed in this report was made using 3D block modelling and the inverse distance square interpolation (ID2) method for a corridor of the Moss Lake Project with a strike-length of 3.2 km and a width of approximately 1.2 km, down to a vertical depth of 750 metres below surface. Eighteen (18) mineralized zones have been interpreted in transverse sections spaced 50 ft (≈15 m) apart and confirmed/adjusted in plan views spaced 100 ft (≈30 m) apart.

14.1.1 Drill hole database

InnovExplo received a Gems / MS Access diamond drill hole database for the Moss Lake Project. Following adequate verifications and updates, the database used for the resource estimate contains 320 surface diamond drill holes and 32 underground diamond drill holes with conventional analytical gold assay results, as well as coded lithologies from the drill core logs descriptions. The 352 drill holes cover the strike-length of the project at a drill spacing varying from 15 metres to 50 metres.

In addition to the basic tables of raw data, the updated Gemcom database contains several tables with the various drill hole and wireframe solid intersection composite calculations required for statistical evaluation and resource block modeling. The database contains a total of 62,787 analyses taken from 90,978 metres of drilled core.

14.1.2 Interpretation of mineralized zones

In order to conduct accurate resource modeling of the Moss Lake Project, InnovExplo constructed a mineralized-zone solid model delimiting the geologically defined extent of the mineralized zones using a 3,200-m strike-length corridor measuring 1,200 metres wide and extending down to 750 metres below surface.

The mineralized-zone model was constructed to outline zones of continuous mineralization. Interpretation of the mineralized zones was also constrained by the presence of historical mine workings (ramp and drifts). Overall, eighteen (18)

mineralized zones have been interpreted along a steep, roughly northeast trend (Fig. 14.1).

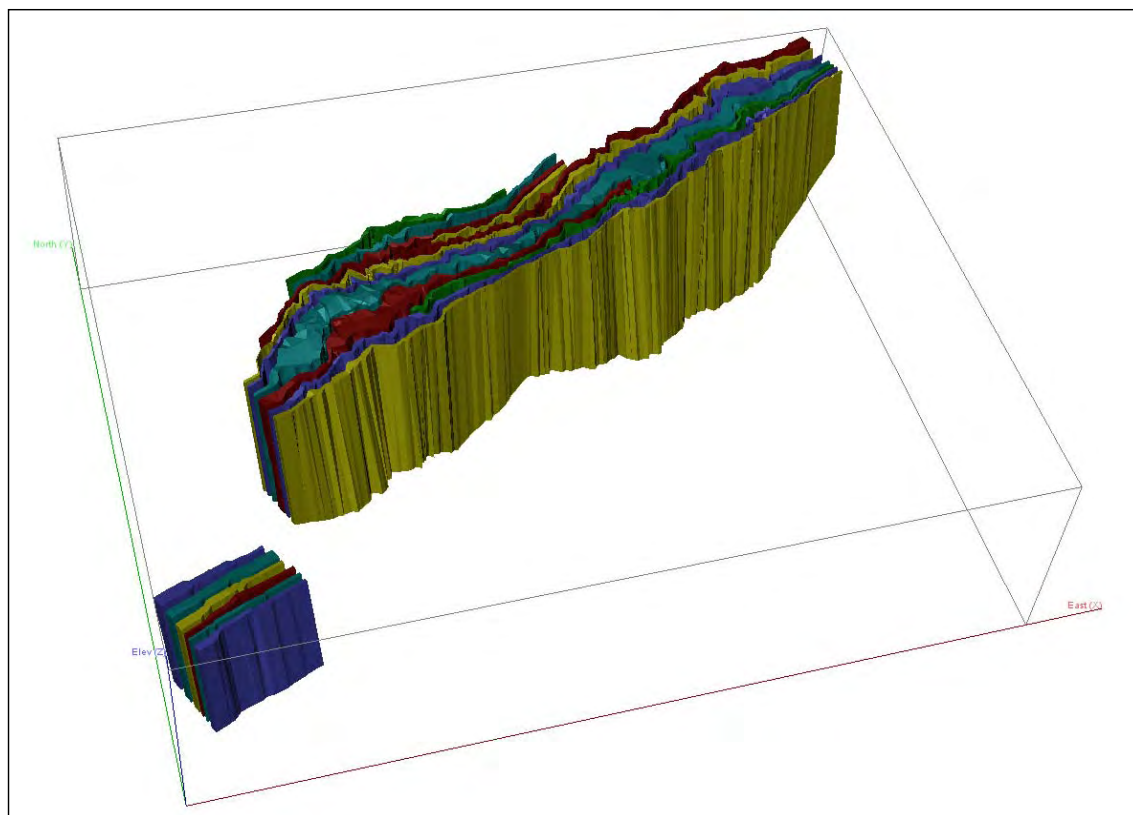


Figure 14.1 – General view showing the eighteen (18) interpreted mineralized zones looking northeast

The two main zones (101 and 102) are by far the most extensive as they both extend for about 1,500 metres and 2,500 metres respectively along strike, are up to 140 metres wide, and could be interpreted down to 750 metres below surface. Both the 101 and 102 zones more or less contain what was previously known as the Main and the QES zones. This is especially true for the 102 zone that encloses the bulk of the former Main and QES zones while also filling the gap that originally existed between the two (Fig. 14.2).

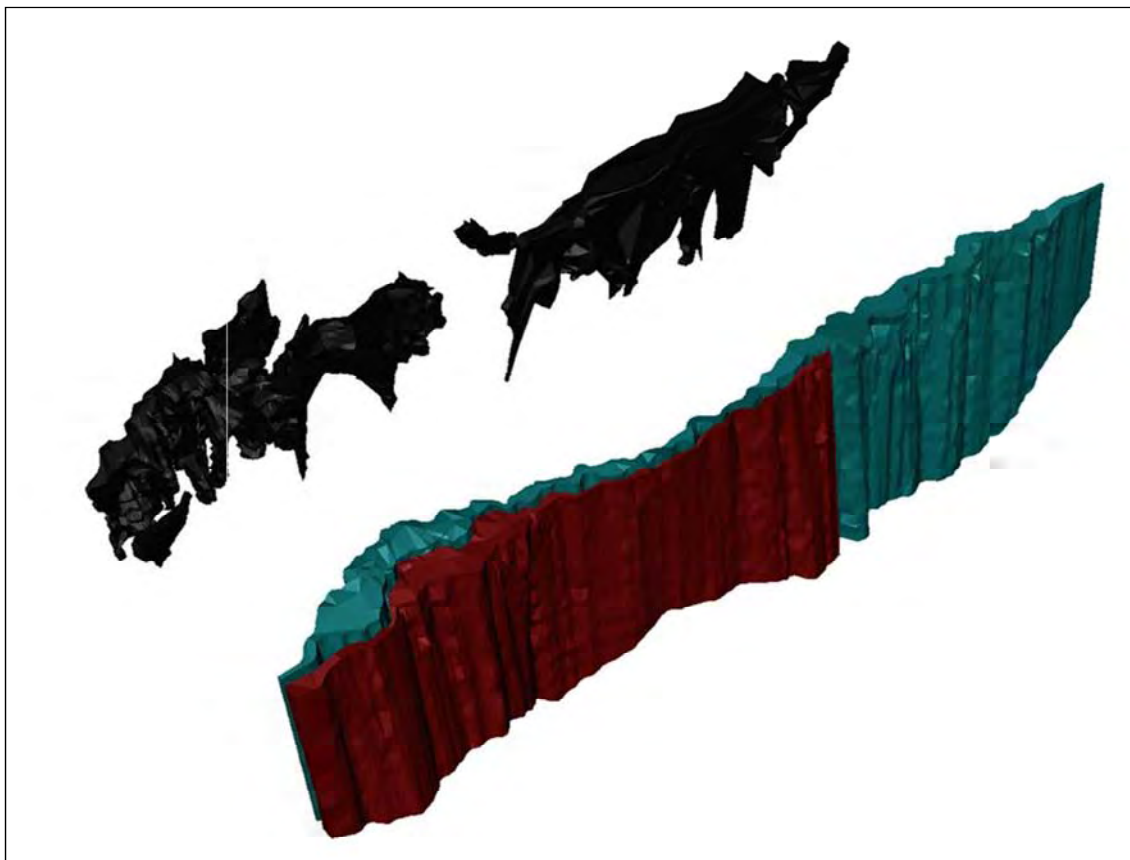


Figure 14.2 – General view showing the new zones 101 and 102 (lower right) compared to the formerly interpreted Main and QES zones (upper left)

A total of ten (10) zones (103 to 105, 109 to 113, and 120 to 121) have been interpreted subparallel to zones 101 and 102 and show similarities in strike, geology, and grades to these main zones. Although similarly continuous, the thickness of these additional zones is significantly less than the two main zones.

A group of six (6) zones (122, 124 to 127, and 129) were interpreted southwest of the bulk of the deposit. Although not extensively drilled, knowledge is sufficient to allow adequate geological confidence as they show similarities to all other zones.

The wireframe solids of the mineralized zone model were created by digitizing an interpretation onto sections spaced 50 ft (≈15 m) apart, and then using tie-lines between sections to complete the wireframes for each solid. The mineralized zones were interpreted down to a levelled distance of approximately 100 metres away from the last drill hole intercept.

The envelope zone was defined as the remaining part of the rectangular volume delimiting the block model once the mineralized zone solids were removed. The envelope zone therefore contains “floating” gold intercepts for which continuity has not yet been demonstrated or interpreted.

14.1.3 High grade capping

Drill hole assay intersecting interpreted mineralized zones were automatically coded in the database from 3D solids, and were used to determine high grade capping.

Basic univariate statistics on the overall assay data and on datasets grouped by zones were performed using raw analytical assay data for a total of 62,787 diamond drill hole samples. High grade capping was established at 35 g/t Au for all zones (Fig. 14.3).

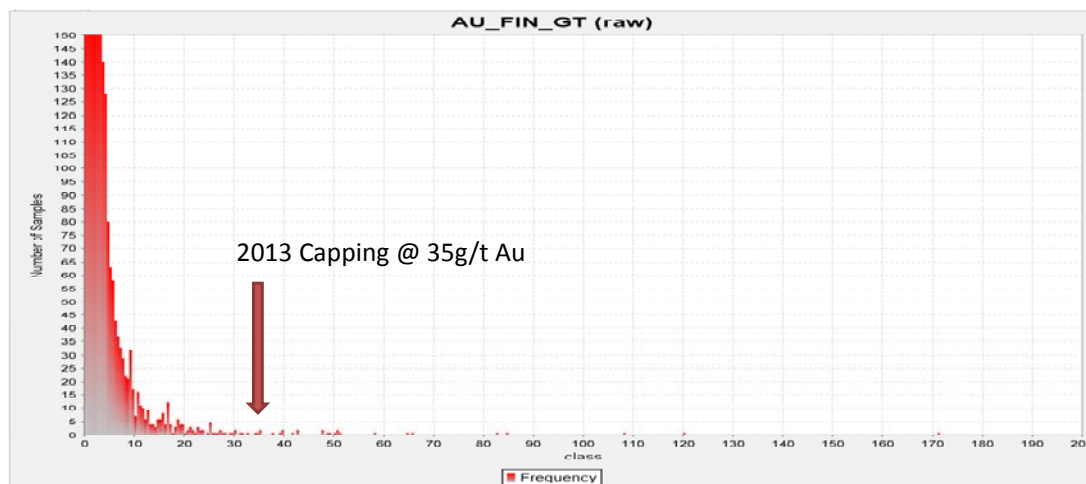


Figure 14.3 – Normal histogram of gold grades distribution for all DDH samples

Within the DDH database, a total of 26 samples were capped at the 35 g/t Au capping limit (Table 14.1). The capping of high assays affected 0.04% of all samples for the DDH population (Table 14.2).

Table 14.1 – List of capped samples within the DDH database

Zone	Hole	From	To	Length (ft)	Au (g/t)	Au (g/t Capped)
Zone 101	87-47	822.00	825.00	3.00	120.37	35.00
	87-59	572.00	575.00	3.00	64.70	35.00
	87-7	144.00	145.00	1.00	50.54	35.00
	88-120	608.00	609.00	1.00	39.50	35.00
	88-151	631.00	636.00	5.00	49.45	35.00
	89-175	1117.00	1119.00	2.00	84.94	35.00
Zone 102	86-10	263.00	265.00	2.00	171.38	35.00
	86-17	375.00	377.00	2.00	51.32	35.00
	86-7	395.00	396.00	1.00	82.74	35.00
	87-100	267.00	272.00	5.00	50.70	35.00
	88-111	1208.00	1209.50	1.50	39.81	35.00
	88-112	491.00	494.00	3.00	42.61	35.00
	88-169	893.00	894.00	1.00	35.27	35.00
	89-176	793.80	794.80	1.00	513.89	35.00
	89-176	801.70	803.60	1.90	65.50	35.00
	90-217	964.57	967.85	3.28	39.00	35.00
Zone 109	86-16	590.00	592.00	2.00	50.08	35.00
	87-1	552.00	554.00	2.00	35.15	35.00
	87-14	758.00	759.00	1.00	58.47	35.00
	88-111	1504.50	1506.50	2.00	108.24	35.00
	88-156	763.00	766.00	3.00	47.90	35.00
	90-214	718.51	721.79	3.28	37.76	35.00
Zone 111	87-22	952.00	956.00	4.00	42.92	35.00
	88-149	622.50	626.00	3.50	48.52	35.00
Zone 121	87-62	316.00	319.00	3.00	47.59	35.00

Table 14.2 – Summary statistics for the raw assays per zone for the DDH population

ZONES	Block code	Number of samples	Max (g/t)	Uncut mean (g/t)	High grade capping	Cut mean	# Samples cut	% Samples capped
101	101	4,377	120.37	0.78	35.00	0.73	6	0.14
102	102	13,776	513.89	0.83	35.00	0.78	11	0.08
103	103	1030	16.92	0.58	35.00	0.58	0	0.00
104	104	813	25.47	0.48	35.00	0.48	0	0.00
105	105	554	34.53	0.39	35.00	0.39	0	0.00
109	109	3519	108.24	0.70	35.00	0.67	6	0.17
110	110	2010	27.37	0.58	35.00	0.58	0	0.00
111	111	587	48.52	1.07	35.00	1.03	2	0.34
112	112	411	14.93	0.61	35.00	0.61	0	0.00
113	113	159	5.44	0.39	35.00	0.39	0	0.00
120	120	345	7.71	0.32	35.00	0.32	0	0.00
121	121	797	47.59	0.83	35.00	0.81	1	0.13
122	122	187	5.07	0.40	35.00	0.40	0	0.00
124	124	131	4.67	0.43	35.00	0.43	0	0.00
125	125	93	4.04	0.28	35.00	0.28	0	0.00
126	126	40	3.92	0.57	35.00	0.57	0	0.00
127	127	34	1.71	0.27	35.00	0.27	0	0.00
129	129	55	2.64	0.31	35.00	0.31	0	0.00
ENVELOPE	150	31,710	17.48	0.12	35.00	0.12	0	0.00

14.1.4 Compositing

Drill hole assay intersecting interpreted mineralized zones were used to generate composites.

In order to minimize any bias introduced by the variable sample lengths, the capped gold assays were composited to 1-metre equal lengths (“1m composites”) within all intervals that define each of the mineralized zones. Of all the composites generated within the assayed interval of the DDH population (79,292 composites), 1,198 (1.51%) were less than 0.25 metre long and therefore removed from the block model interpolation and variography. A grade of 0.00 g/t Au was assigned to missing sample intervals. Table 14.3 summarizes the basics statistics for the 1m DDH composites.

Table 14.3 – Summary statistics for DDH composites

ZONES	Block code	Number of composites	Min (g/t)	Max (g/t)	Mean (g/t)	Standard deviation	Coefficient of variation
101	101	5,640	0.00	35.00	0.60	1.52	2.53
102	102	17,339	0.00	35.00	0.72	1.51	2.10
103	103	1298	0.00	11.22	0.54	1.06	1.96
104	104	1,092	0.00	25.45	0.44	1.07	2.40
105	105	716	0.00	23.16	0.33	1.06	3.24
109	109	4305	0.00	32.83	0.61	1.33	2.17
110	110	2577	0.00	17.76	0.53	0.93	1.75
111	111	760	0.00	31.49	0.77	2.41	3.15
112	112	537	0.00	10.23	0.56	1.01	1.80
113	113	204	0.03	5.44	0.37	0.60	1.63
120	120	474	0.00	6.37	0.27	0.63	2.29
121	121	1045	0.00	19.81	0.70	1.40	2.00
122	122	190	0.00	4.81	0.40	0.59	1.47
124	124	139	0.00	4.66	0.42	0.60	1.41
125	125	98	0.00	4.01	0.32	0.61	1.90
126	126	41	0.00	3.92	0.65	1.09	1.67
127	127	35	0.00	1.29	0.29	0.31	1.09
129	129	58	0.00	2.64	0.31	0.39	1.26
ENVELOPE	150	47429	0.00	18.69	0.10	0.27	2.53

14.1.5 Variography and ellipsoids

Composites within interpreted mineralized zones were used to generate variography and ultimately determine ellipsoids.

A 3D directional-specific variography was completed using the 1m DDH composites of the capped gold assay data for the main mineralized zones (101 and 102). The investigation involved 10° incremental searches in the horizontal plane, followed by 10° incremental searches in the vertical planes of the indicated preferred azimuths, as well as planes normal to the preferred azimuth. The best-fit major variogram is shown as Figure 14.4.

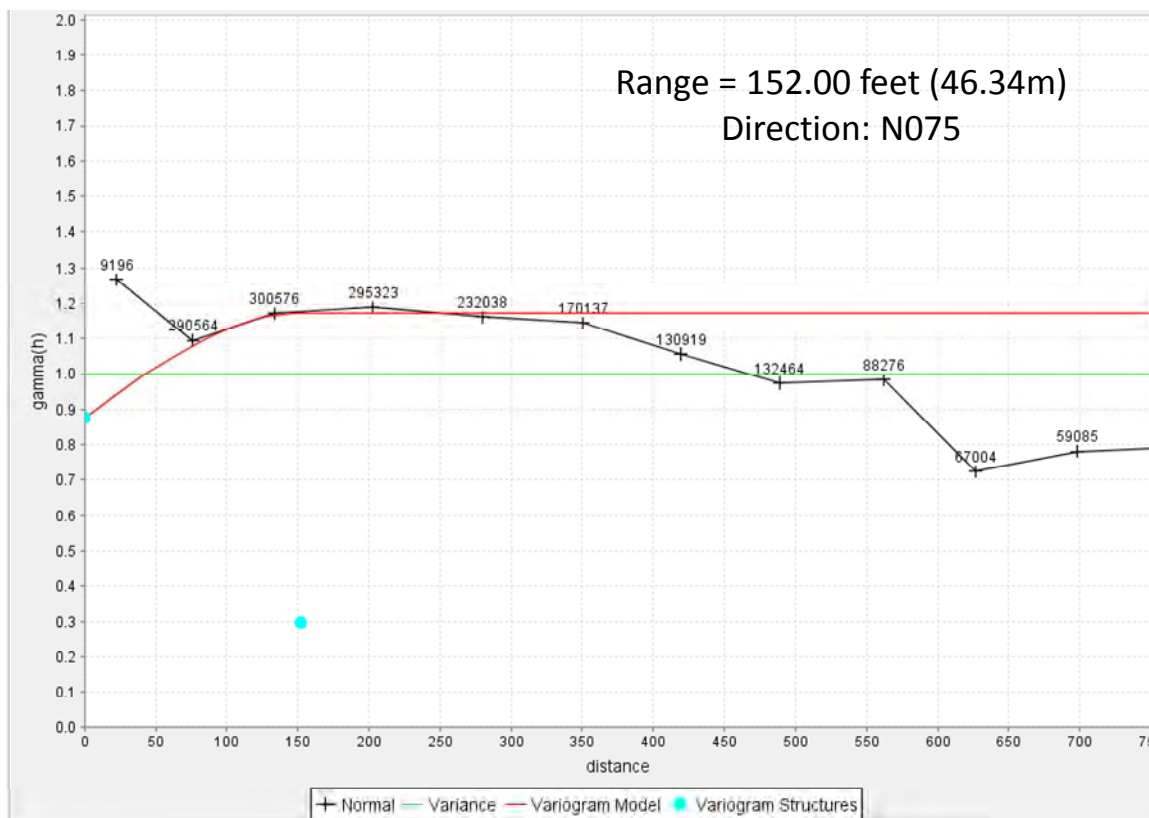


Figure 14.4 – 3D variogram along the major axis

The results of the linear and 3D variographic investigations for the DDH composites are consistent with the geological features of the deposit. The 3D directional-specific investigations yielded the best-fit model along an orientation that roughly corresponds to the strike and dip of the mineralized zones.

Some changes were introduced to the best-fit model in accordance with the geological model. The 3D variography combined with the modified best-fit model produced an ellipsoid oriented N075/90 and was used for all mineralized zones. Ellipsoid radiuses were established at 75m x 67.5m x 40m using a combination of the ranges determined from the 3D variography, the drill hole distribution, and the current understanding of the geological model.

14.1.6 Bulk density

For the current 2013 Mineral Resource Estimate, a bulk density value of 2.78 g/cm³ was used. The value was established based on historical measurements carried out at Lakefield Research Ltd laboratories (now SGS Minerals Services Ltd) by Noranda/Central Crude Limited. This bulk density was used to calculate tonnages from the volume estimates in the resource-grade block model. The homogeneity of the host rock allowed an average of all density measures to be applied.

The density value of 2.78 g/cm³ was therefore used to characterize all mineralized zones as well as the envelope zone. A density of 2.00 g/cm³ was assigned to the overburden (OB), and a density of 1.00 g/cm³ was assigned to excavated solids (ramps and drifts) believed to be filled with water.

14.1.7 Block model

A block model was established extending sufficiently far from the mineralized zones to cover an area of adequate size to host an open-pit. The model has been pushed down to a depth of 780 m below surface. The limits of the block model are as follows (project local grid; in feet):

Easting:	7,504 to 20,296	(780 columns x 16.4 ft each)
Northing:	4,623 to 10,855	(380 rows x 16.4 ft each)
Elevation:	10,200 to 7,330	(175 levels x 16.4 ft each)

The block model has parallel orientation, with the Y-axis oriented along a N068 azimuth. The individual block cells have dimensions of 5 metres long (X-axis) by 5 metres wide (Y) by 5 metres vertical (Z). Block dimensions reflect the size of the mineralized zones and the plausible mining methods. In order to avoid overlaps in rock code identification, several folders were generated within the block model. Table 14.4 shows the Moss Lake block model with its associated folders. The table also provides details about the corresponding GEMS solids naming convention, rock codes, and block codes assigned to each individual solid.

All blocks with at least 0.001% of their volume falling within a selected solid were assigned the corresponding solid block code (Table 14.4) in their respective folder. A percent block attribute in each of the folders was generated reflecting the proportion of the different respective solids in each block.

The multi-folder percent block model thus generated was used in the mineral resource estimation.

Table 14.4 – Moss Lake block model

FOLDER	GEMS SOLID NAME			ROCK CODE	BLOCK CODE	PRECEDENCE
	NAME1	NAME2	NAME3			
Overburden	Bedrock		F130128	OB	6	-
Openings	Openings		F130128	25	25	-
Zones	101	Clip	F130128	101	101	1
	102	Clip	F130128	102	102	2
	103	Clip	F130128	103	103	3
	104	Clip	F130128	104	104	4
	105	Clip	F130128	105	105	5
	109	Clip	F130128	109	109	6
	110	Clip	F130128	110	110	7
	111	Clip	F130128	111	111	8
	112	Clip	F130128	112	112	9
	113	Clip	F130128	113	113	10
	120	Clip	F130128	120	120	11
	121	Clip	F130128	121	121	12
	122	Clip	F130128	122	122	13
	124	Clip	F130128	124	124	14
	125	Clip	F130128	125	125	15
	126	Clip	F130128	126	126	16
	127	Clip	F130128	127	127	17
	129	Clip	F130128	129	129	18
Envelope	150	Clip	F130128	150	150	-

14.1.8 Grade block model

As per the geostatistical results summarized in this report, a grade model was interpolated using the 1m composite derivatives from the conventional capped assay grade data to produce the best possible grade estimate for the defined resources in the Moss Lake Project. The interpolation has been done on a point area extracted from the DDH dataset.

The interpolation profiles were customized to estimate grades separately within the Zones and Envelope folders for the DDH composite population. The method retained for the final resource estimation was inverse distance square (ID2).

The composite points were assigned rock codes and block codes corresponding to the mineralized zone in which they occur. The interpolation profiles specify a single target and sample rock code for each mineralized-zone solid, thus establishing hard boundaries between the mineralized zones and preventing block grades from being estimated using sample points with different block codes than the block being estimated. The search/interpolation ellipse orientations and ranges defined in the two (2) interpolation profiles used for grade estimation correspond to those developed in the geostatistics studies for this report.

Other specifications to control grade estimation are as follows:

- inverse distance square interpolation method for data points;
- minimum of two (2) and maximum of twelve (12) sample points in the search ellipse for interpolation;
- no limit on sample points from any one DDH;
- high grade values capped.

14.2 MINERAL RESOURCE CLASSIFICATION, CATEGORY AND DEFINITION

The resource classification definitions used for this report are those published by the Canadian Institute of Mining, Metallurgy and Petroleum in their document “CIM Definition Standards for Mineral Resources and Reserves”.

Measured Mineral Resource: that part of a Mineral Resource for which quantity, grade or quality, densities, shape, physical characteristics are so well established that they can be estimated with confidence sufficient to allow the appropriate application of technical and economic parameters, to support production planning and evaluation of the economic viability of the deposit. The estimate is based on detailed and reliable exploration, sampling and testing information gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes that are spaced closely enough to confirm both geological and grade continuity.

Indicated Mineral Resource: that part of a Mineral Resource for which quantity, grade or quality, densities, shape and physical characteristics can be estimated with a level of confidence sufficient to allow the appropriate application of technical and economic parameters, to support mine planning and evaluation of the economic viability of the deposit. The estimate is based on detailed and reliable exploration and testing information gathered through appropriate techniques from locations such

as outcrops, trenches, pits, workings and drill holes that are spaced closely enough for geological and grade continuity to be reasonably assumed.

Inferred Mineral Resource: that part of a Mineral Resource for which quantity and grade or quality can be estimated on the basis of geological evidence and limited sampling and reasonably assumed, but not verified, geological and grade continuity. The estimate is based on limited information and sampling gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes.

By default, interpolated blocks have been assigned to the Inferred category during the creation of the grade block model. The reclassification to an Indicated category was done for blocks meeting all of the conditions below:

- blocks within zones 101 or 102;
- blocks for which the average distance to composites is less than 30 m;
- a minimum of two (2) drill holes within the range of the ellipse;
- blocks within the range of half the ellipse.

Only blocks within the main zones (101 and 102) were allowed recoding to the Indicated category. A clipping polygon was generated for each of the 101 and 102 zones using the criteria described above and the blocks were recoded accordingly. Within this clipping boundary, some inferred blocks have been upgraded to the Indicated category, whereas outside the boundary, some indicated blocks have been downgraded to the Inferred category. InnovExplo is of the opinion that this was a necessary step to homogenize (smooth out) the resource volumes in each category. Figures 14.5 to 14.12 show the resource category classification process for each of the 101 and 102 zones.

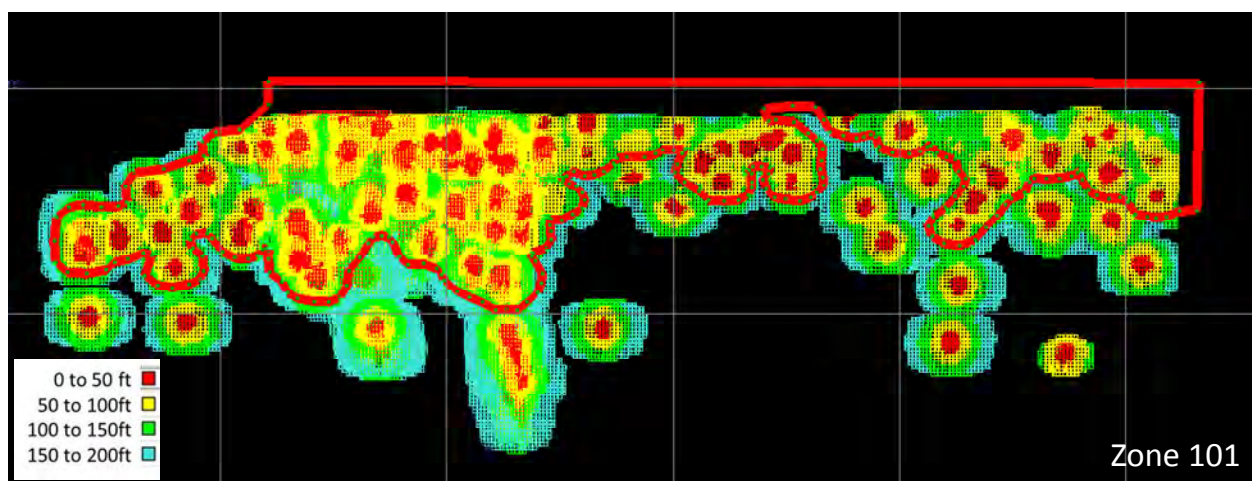


Figure 14.5 – Vertical longitudinal section along Zone 101 showing the average distance to composites. The red polygon represents the final clipping polygon separating Indicated from Inferred Resources.

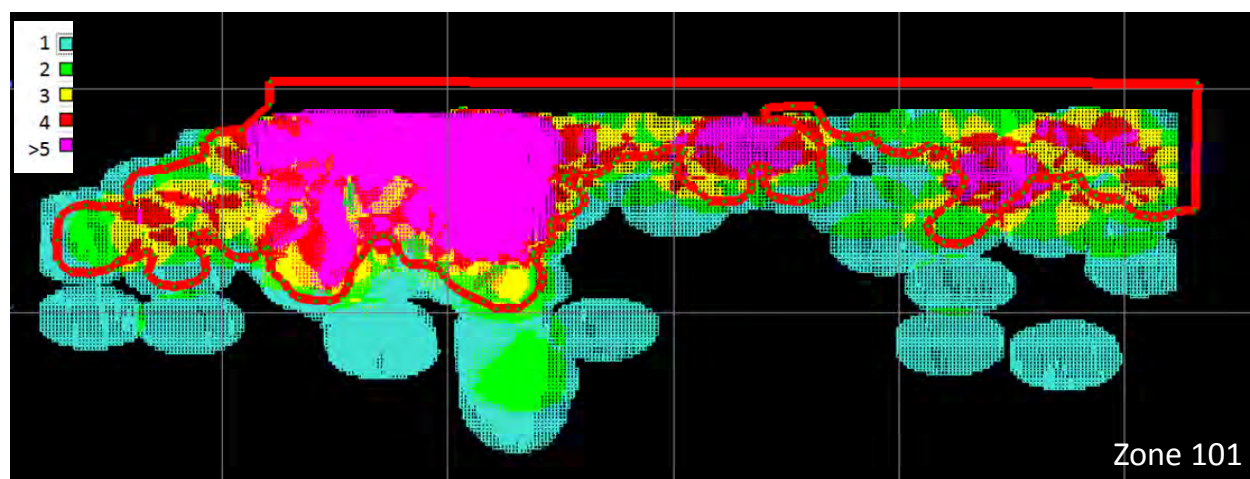


Figure 14.6 – Vertical longitudinal section along Zone 101 showing the number of drill holes within the range of the ellipse. The red polygon represents the final clipping polygon separating Indicated from Inferred Resources.

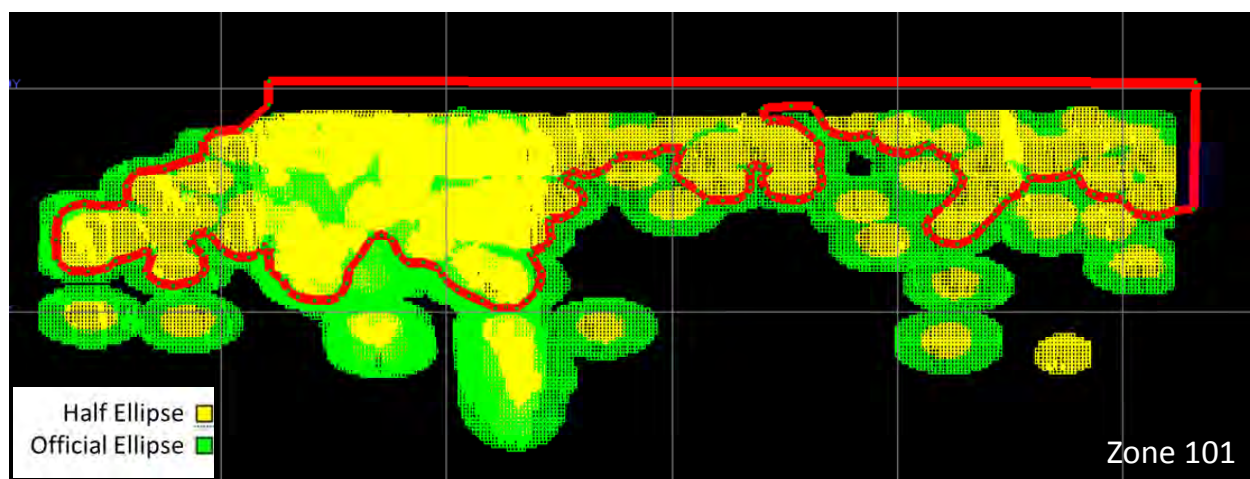


Figure 14.7 – Vertical longitudinal section along Zone 101 showing blocks within the range of half the ellipse. The red polygon represents the final clipping polygon separating Indicated from Inferred Resources.

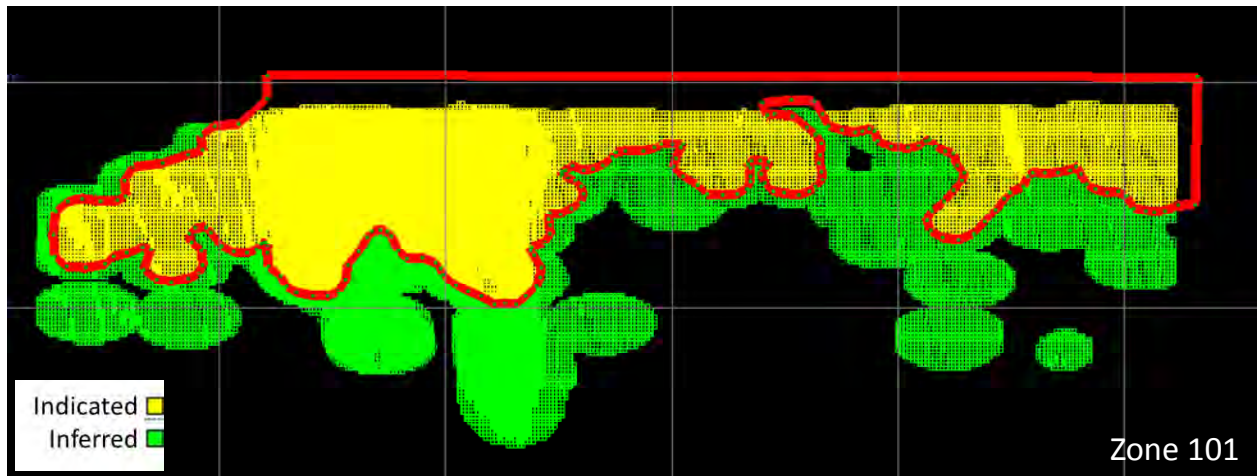


Figure 14.8 – Vertical longitudinal section along Zone 101 showing the final categorization of indicated and inferred blocks. Note that some categorized blocks might not represent resources since not all blocks are higher than the cut-off grade.

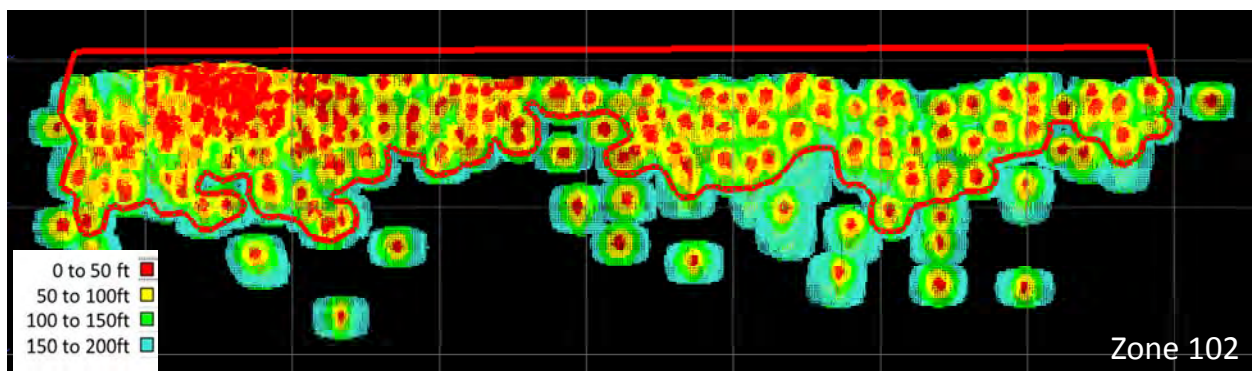


Figure 14.9 – Vertical longitudinal section along Zone 102 showing the average distance to composites. The red polygon represents the final clipping polygon separating Indicated from Inferred Resources.

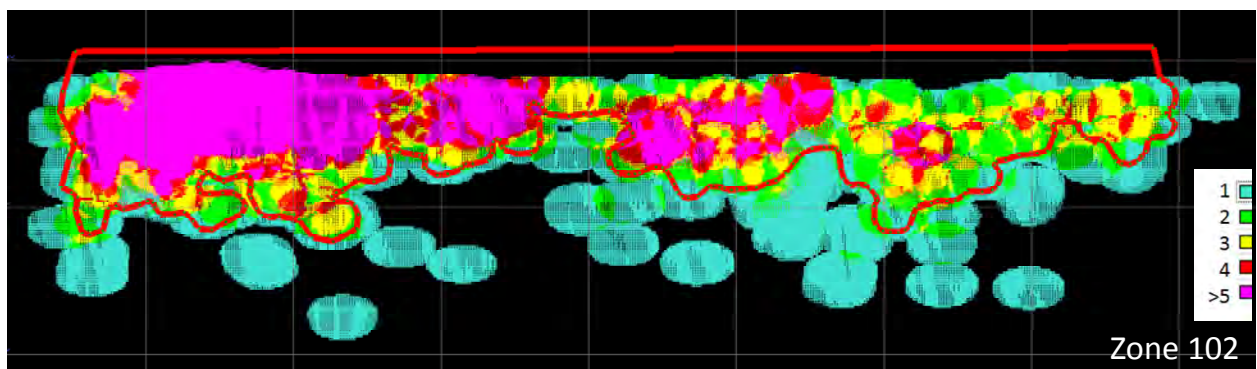


Figure 14.10 – Vertical longitudinal section along Zone 102 showing the number of drill holes within the range of the ellipse. The red polygon represents the final clipping polygon separating Indicated from Inferred Resources.

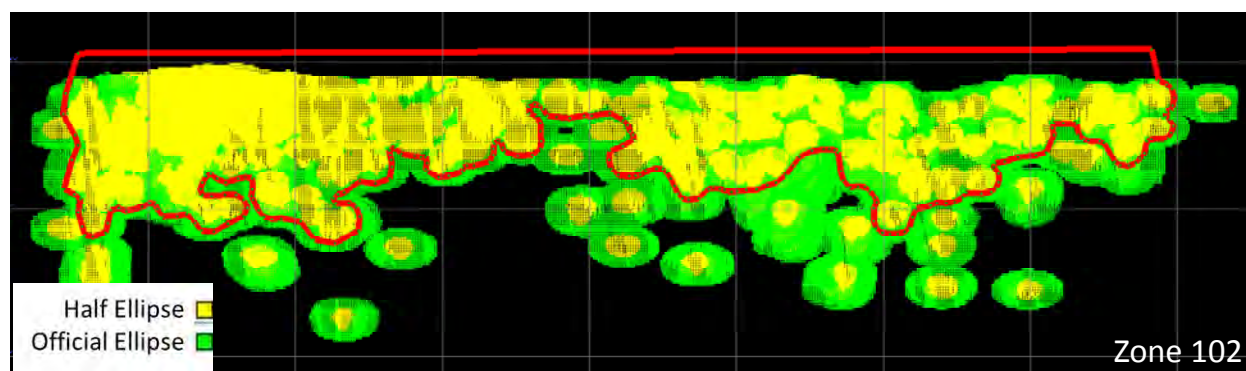


Figure 14.11 – Vertical longitudinal section along Zone 102 showing blocks within the range of half the ellipse. The red polygon represents the final clipping polygon separating Indicated from Inferred Resources.

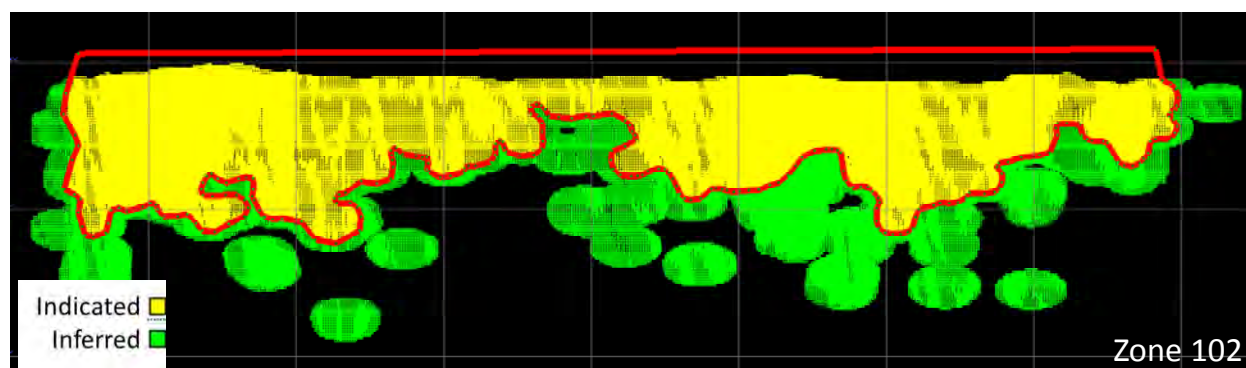


Figure 14.12 – Vertical longitudinal section along Zone 102 showing the final categorization of indicated and inferred blocks. Note that some categorized blocks might not represent resources since not all blocks are higher than the cut-off grade.

14.3 MINERAL RESOURCE ESTIMATION

InnovExplo produced a mineral resource estimate for the Moss Lake Project. The Mineral Resource Estimate presented herein includes:

- an in-pit resource estimate, within a Whittle-optimized pit shell;
- an underground resource estimate, outside the Whittle-optimized pit-shell.

Table 14.5 presents the combined resources by category for the overall Moss Lake Project.

Table 14.5 – Mineral resource estimate results for the Moss Lake Project

Moss Lake - 2013 MINERAL RESOURCE ESTIMATE						
Open Pit Potential - Mineral Resource > 0.5 g/t Au (within Pit Shell)						
Zone	Indicated Resource			Inferred Resource		
	Tonnes	g/t Au	Ounces	Tonnes	g/t Au	Ounces
101	7 655 000	1.1	268 800	2 684 000	1.4	120 100
102	32 140 000	1.1	1 108 500	9 984 000	1.1	360 000
Other				36 235 000	1.0	1 136 200
Sub-Total	39 795 000	1.1	1 377 300	48 904 000	1.0	1 616 300
Underground Potential - Mineral Resource > 2.0 g/t Au (outside Pit Shell)						
Zone	Indicated Resource			Inferred Resource		
	Tonnes	g/t Au	Ounces	Tonnes	g/t Au	Ounces
101				223 000	3.2	22 700
102				290 000	2.4	22 600
Other				949 000	3.0	90 100
Sub-Total				1 461 000	2.9	135 400
Mineral Resource Total (Open Pit and Underground Potential combined)						
Zone	Indicated Resource			Inferred Resource		
	Tonnes	g/t Au	Ounces	Tonnes	g/t Au	Ounces
101	7 655 000	1.1	268 800	2 907 000	1.5	142 800
102	32 140 000	1.1	1 108 500	10 274 000	1.2	382 600
Other				37 184 000	1.0	1 226 300
Total	39 795 000	1.1	1 377 300	50 364 000	1.1	1 751 600

- The Independent and Qualified Persons for the Mineral Resource Estimate, as defined by Regulation 43-101, are Pierre-Luc Richard, M.Sc, P.Geo (InnovExplo Inc), and Carl Pelletier, B.Sc, P.Geo (InnovExplo Inc), and the effective date of the estimate is February 8, 2013.
- These Mineral Resources are not Mineral Reserves as they do not have demonstrated economic viability.
- In-Pit results are presented undiluted and in situ, within Whittle-optimized pit shells. Underground results are presented undiluted and in situ, outside Whittle-optimized pit shells. The estimate includes 18 gold-bearing zones and 1 envelope containing isolated gold intercepts.
- In-Pit and Underground resources were compiled at cut-off grades from 0.3 to 5.0 g/t Au (for sensitivity characterization). A cut-off grade of 0.5 g/t Au was selected as the official in-pit cut-off grade and a cut-off grade of 2.0 g/t Au was selected as the official underground cut-off grade.
- Whittle parameters: mining cost = C\$2.28; pit slope angle = 50.0 degrees; production cost = C\$9.55; mining Dilution = 5%; mining recovery = 95%; processing recovery = 80% to 85%; gold price = C\$1,500.
- Cut-off grades must be re-evaluated in light of prevailing market conditions (gold price, exchange rate and mining cost).
- The estimate is based on 352 diamond drill holes (90,978 m) drilled from 1983 and 2008.
- A fixed density of 2.78 g/cm³ was used.
- A minimum true thickness of 5.0 m was applied, using the grade of the adjacent material when assayed or a value of zero when not assayed.
- Capping was established at 35 g/t Au, supported by statistical analysis and the high grade distribution within the deposit.
- Compositing was done on drill hole sections falling within the mineralized zone solids (composite = 1 m).
- Resources were evaluated from drill hole samples using the ID2 interpolation method in a multi-folder percent block model using Gems version 6.4. Based on geostatistics, the ellipse range for interpolation was 75m x 67.5m x 40m.
- The Indicated category is defined by combining the blocks within the two main zones (101 and 102) and various statistical criteria, such as average distance to composites, distance to closest composite, quantity of drill holes within the search area.
- Ounce (troy) = metric tons x grade / 31.10348. Calculations used metric units (metres, tonnes and g/t).
- The number of metric tons was rounded to the nearest thousand. Any discrepancies in the totals are due to rounding effects; rounding followed the recommendations in Regulation 43-101.
- The pit shell used for the resource estimate extends slightly beyond the property limits in its northeastern portion. Although the entire resource lies within the property limits, some waste material outside the property limits will need to be removed to access some of the resource. Consequently, this portion of the pit may need to be re-considered in a future economic study.
- InnovExplo is not aware of any known environmental, permitting, legal, title-related, taxation, socio-political or marketing issues or any other relevant issue that could materially affect the Mineral Resource Estimate.

14.3.1 In-pit resource estimation parameters

Given the density of the processed data, the search ellipse criteria, and the specific interpolation parameters, InnovExplo is of the opinion that the current in-pit Mineral Resource Estimate can be classified as Indicated and Inferred Resources. The estimate is compliant with CIM standards and guidelines for reporting mineral resources and reserves. The in-pit mineral resources were estimated using different gold cut-off grades and a minimum width of 5.0 metres (true width). The selected cut-off of 0.50 g/t Au allowed the mineral potential of the deposit to be outlined for the in-pit mining option.

The final selected Whittle input parameters and the cut-off grade parameters used for the in-pit mineral resource estimation are defined in Table 14.6.

The pit shell used for the resource estimate extends slightly beyond the property limits in its northeastern portion. Although the entire resource lies within the property limits, some waste material outside the property limits will need to be removed to access some of the resource. Consequently, this portion of the pit was constrained to the property boundary in the final Whittle pit optimization for mine planning in the PEA.

Table 14.6 – Whittle input parameters – Moss Lake Project

Input parameter	Value	Provided by
Gold Price	US\$1,500/oz	InnovExplo (approx. 3-year trading price)
Exchange Rate	1.00 USD : 1.00 CAD	InnovExplo (approx. 3-year trading price)
Overall Slope Angle	50.0°	InnovExplo
Mining Cost (rock)	C\$2.28/t.moved	InnovExplo
Mining Recovery	95.0%	InnovExplo
Mining Dilution	5.0%	InnovExplo
Processing Cost	C\$9.55/t.milled	InnovExplo
Mill Recovery	80 to 85%	Moss Lake Metallurgical tests

The gold price and exchange rate represent the 3-year trading averages. No selling cost was considered for the Whittle run. The overall slope angle was set at an average of 50.0°, which reflects the best approximation since no geotechnical information has been provided. The mining costs and processing costs were based on InnovExplo's recent experiences. The dilution and the mining recovery used by InnovExplo were estimated using a visual evaluation on section and plan views. No general and administration (G&A) costs were considered in the Whittle resource parameters.

A "mill" (or "marginal") cut-off grade was used in Whittle. Using the parameters shown above in Table 14.7, a mill cut-off grade (MCoG) of 0.50 g/t Au was calculated for the Whittle pit shell optimization using the following formula:

$$\text{MCoG} = \frac{(\text{processing cost } \$\text{CAN} \times \text{dilution} \times 31.1035 \text{ g/oz})}{(\text{mill recovery} \times \text{gold price } \$\text{CAN/oz})}$$

The In-Pit Resource Estimate presented herein used a value of 0.50 g/t Au as the mill cut-off grade.

Volumetrics for the In-Pit Mineral Resource Estimate have been performed on blocks falling at least 50% within the Whittle-optimized pit-shell and capped by the bedrock surface.

14.4 UNDERGROUND RESOURCE ESTIMATION PARAMETERS

Given the density of the processed data, the search ellipse criteria, and the specific interpolation parameters, InnovExplo is of the opinion that the current underground Mineral Resource Estimate can be classified as Inferred Resources. The estimate is compliant with CIM standards and guidelines for reporting mineral resources and reserves. The underground mineral resources were estimated using different gold cut-off grades and a minimum width of 5.0 metres (true width). The selected underground cut-off of 2.0 g/t Au allowed the mineral potential of the deposit to be outlined for the underground mining option, outside the Whittle-optimized pit-shell.

The Underground Resource Estimate presented herein uses a rounded value of 2.00 g/t Au for the underground cut-off grade.

A volumetric analysis of the Underground Mineral Resource Estimate was carried out using all interpolated blocks falling at least 50% outside the Whittle-optimized pit-shell.

15. MINERAL RESERVE ESTIMATES

No mineral reserve estimate has been prepared for this report.

16. MINING METHODS

16.1 CAUTION TO THE READER

The reader is cautioned that this Preliminary Economic Assessment (PEA) is preliminary in nature as it includes Inferred Mineral Resources that are too speculative geologically to have the economic considerations applied to them that would enable them to be categorized as mineral reserves, and there is no certainty that the PEA will be realized.

16.2 INTRODUCTION

This section describes the results of the technical work undertaken by InnovExplo to produce a Preliminary Economic Assessment Study (PEA) for the Moss Lake open pit project. The PEA is based on a Mineral Resource Estimate produced by InnovExplo in an earlier report prepared for the issuer titled “Technical Report and Mineral Resource Estimate for the Moss Lake Project (compliant with Regulation 43-101/NI 43-101 and Form 43-101F1)”, dated April 4, 2013. The PEA is compliant with Regulation 43-101 and presented in section 14 of this report.

Mining of the Moss Lake deposit has been designed as an open pit with a planned production of 13,400,000 tonnes per year (13.4M tpy), or 40,000 tpd of mineralized material processed at the mill for an average of 335 days per year of mill operation and 350 days per year of mine operation.

16.3 PRELIMINARY GEOTECHNICAL ASSESSMENT

At this stage, no geotechnical study has been prepared. A geotechnical study would have to be carried out to establish the pit slope design and recommendations. The assumptions associated with the preliminary design presented in this study are discussed below.

Moss Lake Project pit slope assumptions

At this time there is not enough geotechnical data to allow for zoning and the determination of zone-specific pit slope configurations. Pit slope configurations are therefore based on the assumptions summarized in Table 16.1 and Figure 16.1. InnovExplo believes these assumptions are neither overly optimistic nor overly conservative.

Table 16.1 – Summary of pit slope assumptions for the Moss Lake Project

	Bench Face Angle (BFA)	Bench Height (Hv)	Berm Width (W)	Overall Angle
2 x 10 m benches	70°	20 m	8.0 m	50°

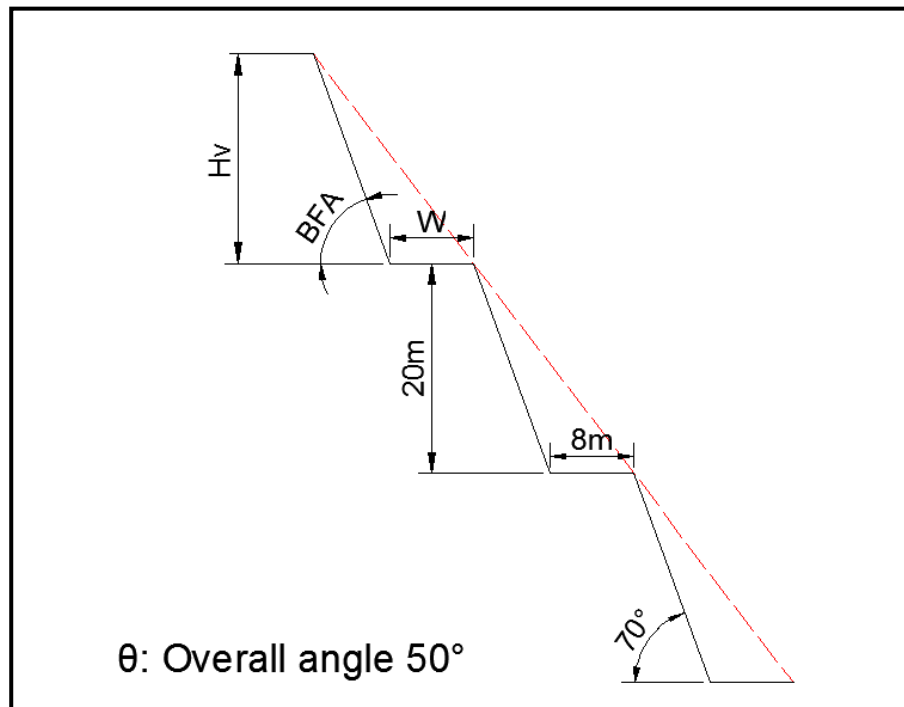


Figure 16.1 – Slope configuration for the Moss Lake Project

In order to advance to a prefeasibility study, it is recommended that the proposed slope configurations be validated. This involves confirming the structural data over the proposed open pit footprint. Ideally, this would involve a geotechnical drilling program with a minimum of one (1) hole drilled perpendicularly to each of the four (4) pit walls (i.e., North, South, East and West).

16.4 OPEN PIT OPTIMIZATION

The objective of pit optimization and mine design is to evaluate the resource amenable to mining and use it as a basis for preliminary mine scheduling and economic analysis.

The mineral resource block model developed by InnovExplo has been imported into Whittle™ software from Dassault Systèmes GEOVIA (formerly Gemcom Software International). Design parameters such as operating costs, mine recovery, dilution and gold price were used to generate an optimal pit shell.

The original resource block model has a block size (in metres) of 5 x 5 x 5. Reblocking was done at 10 x 10 x 10. Reblocking is used to smooth pit walls and bottoms, to make room to use mining equipment, to make room for ramps, and for blast design optimization.

For the PEA, the open pit overall angle has been estimated at 50°. Also a 30° slope in the overburden has been assumed. It was necessary to apply a claim constraint in Whittle because the generated pit outline generated exceeded the claim limit.

It was also decided that a temporary low-grade stockpile would be built for any mineralized material that could not be treated due to mill capacity. The stockpile contains low-grade material that will mostly be processed during the last year of production.

InnovExplo evaluated dilution and mine recovery by performing an analysis of mineable blocks on typical cross-sections at the mill cut-off grade. After a cross-sectional evaluation, the dilution was estimated at an average of 5% pure waste, mine recovery at 95% assuming that good blasting practice and good dilution control practice will be applied. Both dilution and mining recovery were applied to all mineralized material blocks.

The Whittle analysis was carried out using periods of 1 year each. In a future study, shorter periods should be examined. The Whittle optimization process made use of the parameters shown in Table 16.2.

Table 16.2 – Whittle parameters

Description		
Working days (mill)	335	days
Gold price	1510	\$/oz
Selling cost	3	\$/oz
Mining limit	58 800 000	t/year
Milling limit	13 400 000	t/year
Dilution	5	%
Mining recovery	95	%
Milling recovery	southern part of deposit	79.2 %
	northern part of deposit	84.2 %
Mining overburden cost	2	\$/t
Mining mineralized material cost	2.63	\$/t
Mining waste cost	2.63	\$/t
General & administration	1.96	\$/t
Cost of processing	7.64	\$/t
Transportation cost (from stockpile to mill)	0.30	\$/t
Pit slope	50	°

The cost of processing as defined herein includes the processing cost, the cost of transporting the mineralized material to the mill, and the G&A cost. The mining limit in Table 16.2 includes mining of the mineralized material, waste and overburden.

The estimated mill cut-off grade is 0.38 g/t Au in the northern portion of the deposit (formerly known as the Main Zone) and 0.32 g/t Au in the southern portion of the deposit (formerly known as the QES zone). The mill cut-off grade was calculated by Whittle and is based on the parameters presented in Table 16.2.

16.4.1 Optimization results

The Whittle pit shell used for this PEA generates 128,154,777 tonnes of mineralized material, 314,662,647 tonnes of waste, and 64,056,410 tonnes of overburden. The calculated life-of-mine (LOM) average grade is 0.73 g/t. The mine would produce a total of 2,463,683 ounces of gold with a waste to ore stripping ratio of 2.46:1.

16.4.2 Open pit design specifications

The selected Whittle optimized pit shell was used to design a ramp into the pit and the design was smoothed to remove irregularities that are inconsistent with operating practices.

The ramp was designed for double-lane traffic in general, except for the last two (2) benches on the east side of the pit where the design calls for a single-lane ramp (Fig. 16.2). The double-lane in-pit ramps will be 30 metres wide to accommodate a 225-tonne off-road class of rear-dump trucks and the single-lane in-pit ramps will be 20 metres wide.

The ramp gradient is 10%, and two ramp exits are planned: one on the west side of the pit to minimize the haulage distance to the waste dump, and the other on the north side of the pit to minimize the haulage distance to the mineralized material stockpile and the mill, which are presently located on the north side of the proposed pit.

In summary, the mine design parameters are:

- Maximum capacity of 225 metric tonnes for off-road haul trucks;
- 10 metre high mining bench;
- Double bench at final walls;
- Ramp gradient of 10%;
- 30 metre wide ramp – double-lane traffic;
- 20 metre wide ramp – single-lane traffic ;
- One-way ramp for the last two (2) permanent benches on the east side of the pit;
- Temporary ramp for the last two (2) benches.

The detailed pit design was carried out using the GEMS™ package software from Dassault Systèmes GEOVIA (formerly Gemcom Software International). The pit design includes a haulage ramp access to all benches except the last two (2) benches on the east side of the bottom pit.

The designed pit is approximately 2545 metres long by 780 metres wide and 385 metres deep. The detailed open pit design is shown in Figure 16.2.

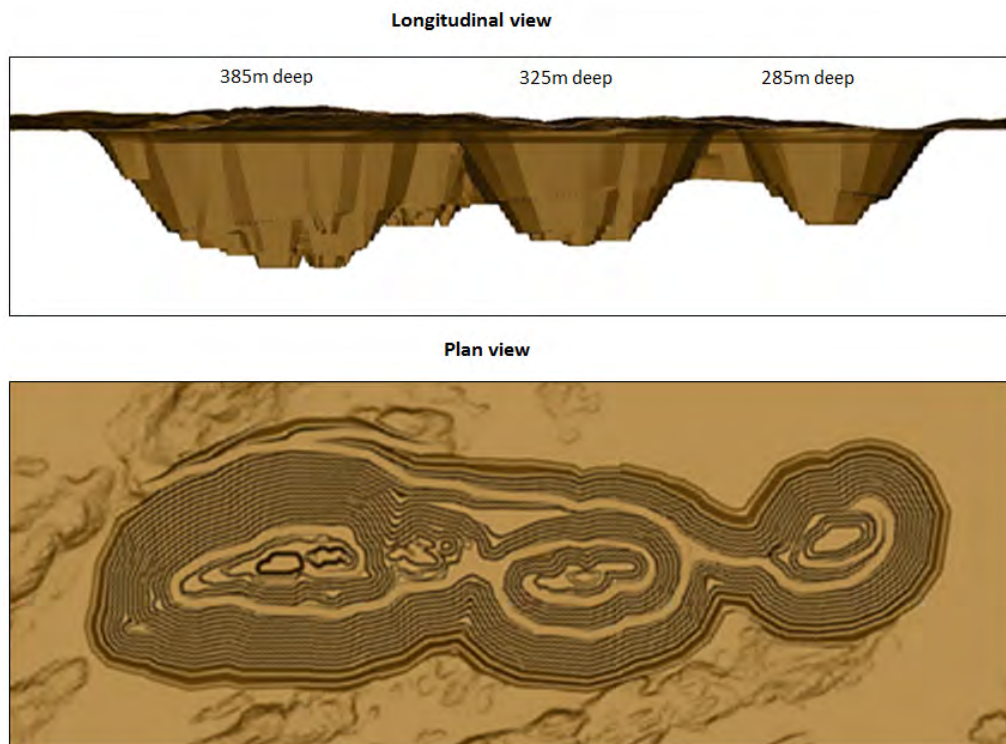


Figure 16.2 – Longitudinal and plan view of the Moss Lake Pit

16.4.3 Mine pre-production schedule

The estimated pre-production period for the Moss Lake Project is four (4) years. During the four-year (4-yr) pre-production period, enough waste will be mined to start the construction of the dyke, tailings, roads and parking area.

Snodgrass Lake, which currently occupies the proposed pit site, contains approximately 5.7 Mm³ of water. Before project start-up, an alternate replacement fish habitat should be constructed and a portion of Snodgrass Lake should be redirected away from the open pit, which will require the construction of a dam. It is estimated that 2 Mm³ of water will need to be removed to drain a part of Snodgrass Lake, and it will take approximately six (6) months. This estimate is based on the pumping rate and takes into account additional water from runoff and infiltration.

The following assumptions were made to establish the pre-production schedule:

- Deforestation will start during the first pre-production year;
- Access and on-site road construction will start during the first pre-production year;
- Electric line and power installation will start during the first pre-production year;
- Camp construction will start during the second pre-production year;
- Mill construction will start during the second pre-production year;
- Installation of other surface facilities (office, garage, warehouse, etc.) will start during the second pre-production year;
- Dewatering of Snodgrass Lake will begin in the second pre-production year.

16.4.4 Mine production schedule

The mine production schedule was determined using Whittle pit shell values without a ramp, which was considered appropriate given the nature and purpose of the PEA. The amount of rock and overburden related to ramp construction has not been taken into account at this early stage of the project.

The life-of-mine (LOM) for the Moss Lake Pit was established based on supplying the mill with 75% of its capacity during the first 6 months of production, and 40,000 tonnes per day (tpd) of mineralized material for the rest of the mine life.

The values used in this PEA were derived from the Whittle pit shell and do not take into account the amount of waste and overburden to be removed during the ramp construction in the open pit.

The stripping ratio (waste / mineralized material) varies from year 1 to 10, as presented in Table 16.3. The overall stripping ratio is 2.46. Table 16.3 also provides the yearly totals for the mineralized material, waste and overburden to be extracted over the course of the project.

Table 16.3 – Production by year and stripping ratio

Year (350 dpy)	Stripping		Mineralized Material (tpy)	Total production		Stripping Ratio
	Overburden (tpy)	Waste (tpy)		Without Overburden (tpy)	With overburden (tpy)	
0	3 230 000	6 000 000		6 000 000	9 230 000	
1	19 420 865	12 000 035	14 683 078	26 683 113	46 103 978	1.23
2	8 031 460	26 007 592	21 301 092	47 308 684	55 340 144	1.22
3	9 154 412	33 453 592	15 865 831	49 319 423	58 473 835	2.11
4	5 759 294	35 650 622	13 400 000	49 050 622	54 809 916	2.66
5	2 995 705	30 136 638	13 400 000	43 536 638	46 532 343	2.25
6	5 449 681	44 929 132	8 421 187	53 350 319	58 800 000	5.34
7	3 839 278	39 893 450	15 067 272	54 960 722	58 800 000	2.65
8	2 790 080	39 572 779	13 460 960	53 033 739	55 823 819	2.94
9	3 374 296	45 221 166	10 204 539	55 425 705	58 800 001	4.43
10	11 339	1 797 641	2 350 818	4 148 459	4 159 798	0.76
	64 056 410	314 662 647	128 154 777	442 817 424	506 873 834	2.46

Note (1): Waste and overburden for year 0 is compile in year 1 for stripping ratio

Based on the assumptions presented above, the LOM for the Moss Lake Pit will be ten (10) years. This schedule will yield a total of 128,154,777 tonnes of mineralized material at an average grade of 0.73 g/t. Table 16.4 provides a breakdown of the grade, quantity and source (open pit or stockpile) of the mineralized material to be processed each year.

Table 16.4 – Mineralized material processing

Year (350 dpy)	TO THE MILL FROM					
	ROM		Stockpile		Total	
	Tonnage (t)	Grade (g/t)	Tonnage (t)	Grade (g/t)	Tonnage (t)	Grade (g/t)
1	10 050 000	1.27			10 050 000	1.27
2	13 400 000	1.09			13 400 000	1.09
3	13 400 000	0.73			13 400 000	0.73
4	13 400 000	0.70			13 400 000	0.70
5	13 400 000	0.77			13 400 000	0.77
6	8 421 187	0.61	4 978 813	0.38	13 400 000	0.52
7	12 288 575	0.81	1 111 425	0.36	13 400 000	0.77
8	13 400 000	0.58			13 400 000	0.58
9	9 985 781	0.59	3 414 219	0.35	13 400 000	0.53
10	2 350 817	0.65	8 553 957	0.34	10 904 775	0.41
	110 096 361	0.79	18 058 416	0.35	128 154 777	0.73

Production during the first six (6) months of the first year will be lower, at 75% of mill capacity or 30,000 tpd, and the last six (6) months will be at full capacity or 40,000 tpd. The total amount of mineralized material to be processed during this first year will be 10,050,000 tonnes, for a total of 339,191 ounces of gold.

Year 2 represents the first year of full production (40,000 tpd) for the Moss Lake Pit. Most of the mineralized material will be mined from Year 2 to Year 9; in this period, 107,200,000 tonnes of mineralized material will be milled for a total of 1,989,635 ounces of gold. Also during that period, more than 294.8 Mt of waste will be removed. It was determined that 168,000 tonnes of material (mineralized material, waste and overburden) is the maximum amount that could be mined in one day.

Mining operations, drilling and blasting will cease in Year 10. In that year, the mineralized material stockpile will be the primary supply for the mill and account for most of the production. Of the total of 10,904,775 tonnes of processed mineralized material, 8,553,957 tonnes will be from the mineralized material stockpile. A total of 115,273 ounces will be produced in Year 10, a reduction from previous years due primarily to the lower average grade during this period (0.41 g/t).

Table 16.5 provides the daily production rates for mineralized material, waste and overburden per year of production.

Table 16.5 – Daily production rates

Year (350 dpy)	Stripping		Mineralized Material (tpd)	Total production	
	Overburden (tpd)	Waste (tpd)		Without Overburden (tpd)	With overburden (tpd)
0	9 229	17 143	-	17 143	26 371
1	55 488	34 286	41 952	76 237	131 726
2	22 947	74 307	60 860	135 168	158 115
3	26 155	95 582	45 331	140 913	167 068
4	16 455	101 859	38 286	140 145	156 600
5	8 559	86 105	38 286	124 390	132 950
6	15 571	128 369	24 061	152 429	168 000
7	10 969	113 981	43 049	157 031	168 000
8	7 972	113 065	38 460	151 525	159 497
9	9 641	129 203	29 156	158 359	168 000
10	125	19 754	25 833	45 587	45 712
Average	17 388	83 059	35 025	118 084	134 731

16.4.5 Mining

Using parameters provided by InnovExplo, Toromont CAT recommended the principal mining equipment required for this PEA as detailed in Table 16.6. For this preliminary evaluation, InnovExplo supplied the following parameters: an average distance from the open pit to the waste stockpile of 1,500 metres; an average distance from the open pit to the mill/mineralized material stockpile of 1,500 metres; open pit depth per production year; a daily tonnage of mineralized material, waste and overburden of 172,000 tpd; and the average stripping ratio per year. As the PEA study progressed, InnovExplo adjusted Toromont's recommended equipment fleet accordingly.

Electric shovels have not been considered at this stage; this option should be evaluated in a future study. Two (2) 6060FS shovels have been selected for the project, as well as one (1) 994H front-end loader.

Table 16.6 – Mining equipment

Mining equipment	Pre-production				Operational period (year)									
	-3	-2	-1	0	1	2	3	4	5	6	7	8	9	10
Hydraulic shovel 6060FS (34m ³)				1	2	2	2	2	2	2	2	2	2	2
Loader 994H				1	1	1	1	1	1	1	1	1	1	1
Rear-dump Truck 793F (250 tonnes)				3	11	12	13	14	16	20	20	20	20	6
Rotary drill (12.25")					3	4	5	5	5	5	5	5	5	5
Rotary drill (8.5")				2	3	3	3	3	3	3	3	3	3	3
Bulldozer D10T				1	3	3	4	4	4	4	4	4	4	4
Bulldozer D9T					1	1	1	1	1	1	1	1	1	1
Grader 16M					2	2	2	2	2	2	2	2	2	2
Water truck (76,000 liters)					1	2	2	2	2	2	2	2	2	2
Utility Equipment					15	20	20	20	20	20	20	20	20	17
Pick up					20	20	20	20	20	20	20	20	20	20
Total				8	63	72	76	78	81	86	87	88	89	73

16.4.6 Manpower requirements

The mine will operate seven (7) days a week for 350 days per year, and shifts will be twelve (12) hours. Technical services and administration will be on a 7-7 schedule, representing seven (7) days of work followed by seven (7) days off. Also, most of the operations personnel will be on a 5-4-4-5 schedule, representing five (5) days of work followed by four (4) days off followed by four (4) days of work followed by five (5) days off.

Manpower will increase from Year 1 to Year 6, and remain steady from Year 6 to Year 9; manpower will start to decrease in Year 10.

Table 16.7 presents the manpower requirements during the LOM, excluding process plant manpower. A staff of eleven (11) and an additional fifty-nine (59) hourly workers will be required for the process plant work.

Table 16.7 – Manpower requirements per year and division

Manpower	Pre-production (year)				Operational period (year)									
	-3	-2	-1	0	1	2	3	4	5	6	7	8	9	10
General and Administrative														
Manager	0	0	1	1	1	1	1	1	1	1	1	1	1	1
Executive secretary	0	0	1	1	1	1	1	1	1	1	1	1	1	1
Chief Accountant	0	0	1	1	1	1	1	1	1	1	1	1	1	1
Accounting clerk	0	0	0	1	2	3	3	3	3	3	3	3	3	3
Health & Safety superintendant	0	0	1	1	1	1	1	1	1	1	1	1	1	1
Health & Safety preventionist	0	0	1	2	2	3	3	3	3	3	3	3	3	3
Human Resources superintendant	0	0	1	1	1	1	1	1	1	1	1	1	1	1
HR coordinator	0	0	1	3	4	6	6	6	6	6	6	6	6	6
Purchasing agent	0	0	0	2	4	6	6	6	6	6	6	6	6	6
Warehouse supervisor	0	0	0	1	2	2	2	2	2	2	2	2	2	2
Warehouseman	0	0	0	0	4	6	8	8	8	8	8	8	8	8
Paramedic	0	0	0	1	2	2	2	2	2	2	2	2	2	2
Telecommunication superintendant	0	0	0	1	1	1	1	1	1	1	1	1	1	1
Telecommunication coordinator	0	0	0	1	3	5	5	5	5	5	5	5	5	5
Camp maintenance	0	0	6	10	20	20	20	20	20	20	20	20	20	20
Technical Personnel														
Geology & Engineering superintendant	0	0	1	1	1	1	1	1	1	1	1	1	1	1
Chief geologist	0	0	0	1	1	1	1	1	1	1	1	1	1	1
Geologists	0	0	1	2	3	4	4	4	4	4	4	4	4	4
Geological technician	0	0	0	1	4	6	6	6	6	6	6	6	6	6
Chief Engineer	0	0	1	1	1	1	1	1	1	1	1	1	1	1
Engineers	0	0	1	2	3	4	4	4	4	4	4	4	4	4
Mine technical	0	0	1	3	6	8	8	8	8	8	8	8	8	8
Environmental coordinator	0	0	1	2	2	4	4	4	4	4	4	4	4	4
Mechanical and Electrical														
Superintendent	0	0	1	1	1	1	1	1	1	1	1	1	1	1
Chief mechanic	0	0	1	1	1	1	1	1	1	1	1	1	1	1
Mechanics	0	0	2	11	33	38	40	41	42	46	46	46	46	44
Chief electrician	0	0	1	1	1	1	1	1	1	1	1	1	1	1
Electricians	0	0	1	4	8	10	12	12	12	12	12	12	12	12
Welders	0	0	0	0	4	4	4	4	4	4	4	4	4	4
Surface Services														
Gate keeper	0	0	4	4	4	4	4	4	4	4	4	4	4	4
Surface support superintendant	0	0	0	1	1	1	1	1	1	1	1	1	1	1
Foreman	0	0	0	2	2	4	4	4	4	4	4	4	4	4
Hoisting equipment operator	0	0	0	2	2	2	2	2	2	2	2	2	2	2
Lineman	0	0	0	2	2	4	4	4	4	4	4	4	4	4
Pump man	0	0	0	2	4	4	4	4	4	4	4	4	4	4
Carpenter	0	0	2	2	4	4	4	4	4	4	4	4	4	4
Surface support mechanic/welder	0	0	0	2	2	4	4	4	4	4	4	4	4	4
Instrumentation technician/electrician	0	0	0	2	2	4	4	4	4	4	4	4	4	4
Labourer	0	0	0	0	6	8	8	8	8	8	8	8	8	8
Operation supervision														
Superintendent	0	0	1	1	1	1	1	1	1	1	1	1	1	1
Mine captain	0	0	0	1	1	1	1	1	1	1	1	1	1	1
Shiftboss	0	0	0	4	8	8	8	8	8	8	8	8	8	8
Dispatch	0	0	0	4	4	4	4	4	4	4	4	4	4	4
Operation personnel														
Shovel operators	0	0	0	2	4	8	8	8	8	8	8	8	8	8
Truck drivers	0	0	0	12	44	48	52	56	64	80	80	80	80	24
Bulldozer operators	0	0	0	2	24	24	28	28	28	28	28	28	28	28
Grader operators	0	0	0	0	12	12	12	12	12	12	12	12	12	12
Utility operators	0	0	0	4	32	38	38	38	38	38	38	38	38	38
Total Hourly & Staff	0	0	32	107	277	326	340	345	354	374	374	374	374	316
Staff	0	0	32	87	161	196	202	203	204	208	208	208	208	206

17. RECOVERY METHODS

17.1 PROCESS SUMMARY

The proposed Moss Lake Process Plant design is based on well known and established Gravity/CIL technology, which consists of single stage crushing, SAG milling, ball milling, gravity recovery of free gold followed by leaching/adsorption of gravity tailings, detoxification of tailings, elution & gold smelting and tailings disposal. Services to the process plant will include reagent mixing, storage and distribution, water, and compressed air services.

The plant will treat 14.0 million tonnes per annum of mineralized material. The plant design accommodates the sequential and combined processing of the different mineralized material types while keeping the design as simple as possible.

Milling will consist of a primary SAG mill, secondary ball mill and a pebble crusher. The SAG mill will be operated in open circuit while the ball mill will be in closed circuit with a hydrocyclone cluster. Pebbles generated from the SAG mill will be conveyed to a pebble crusher where they will be further reduced in size and re-circulated to the SAG mill especially when treating competent ore. The discharge from both mills will be combined in a cyclone feed sump and will be pumped to the cyclone cluster for classification.

A proportion of the cyclone underflow will be bled to the gravity circuit for recovery of gravity gold with the balance gravitating to the ball mill for further size reduction. Gold will be recovered from the concentrates through a combination of intensive cyanidation and electrowinning facilities.

The overflow from the cyclone cluster will be pumped to the Leach/CIL circuit where gold will be dissolved in cyanide solution and adsorbed onto carbon. The resultant CIL tailings slurry will be subjected to a cyanide destruction process prior to being pumped to the tailings disposal and storage facilities.

Loaded carbon from CIL will be acid washed prior to elution, followed by re-activation of the eluted carbon. The solution from the elution circuit will be subjected to electrowinning; where gold will be deposited onto cathodes as sludge. Periodically, the sludge will be washed off the cathodes and dried. The dried gold “sludge” will then be smelted to produce gold bullion which will be shipped to the refinery.

A block diagram and a simplified flow sheet of the proposed Moss Lake Process Plant are shown in Figure 17.1 and Figure 17.2 respectively.

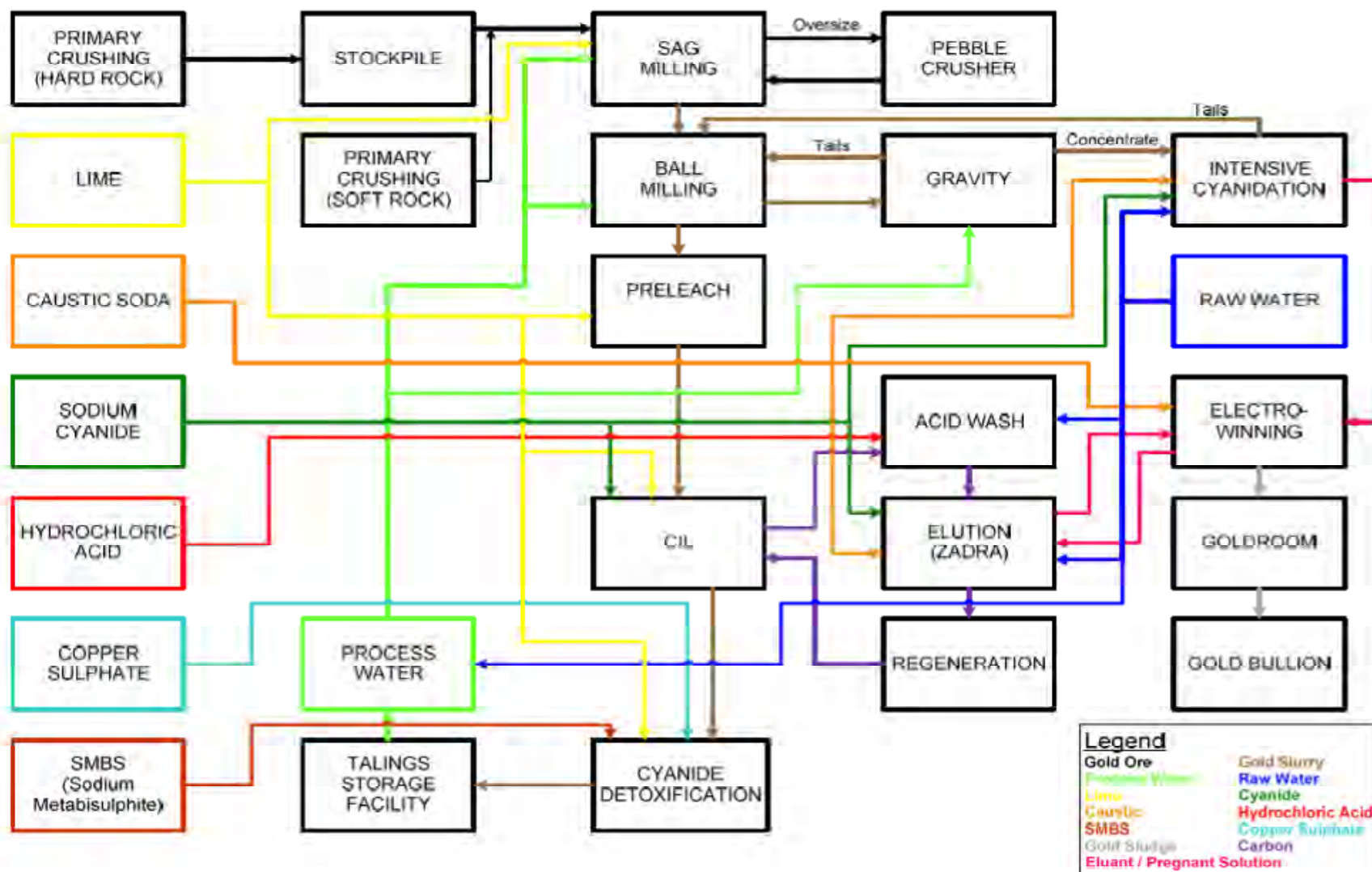


Figure 17.1 – Overall process Plant Block Flow Diagram

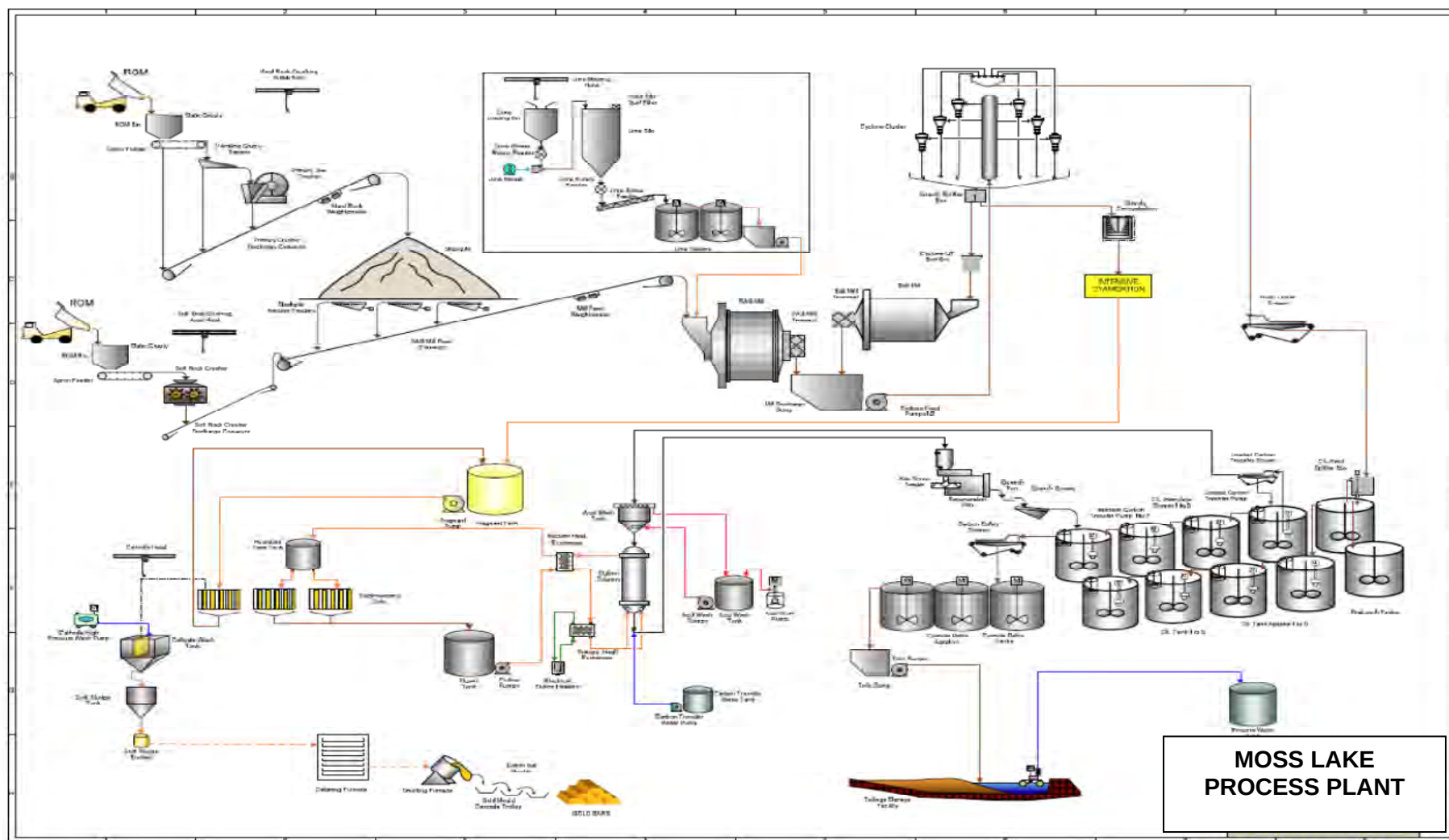


Figure 17.2 – Overall Process Flowsheet

17.2 PROCESS DESCRIPTION

17.2.1 Crushing

The primary hard rock crushing plant will be designed to treat mineralized material at a rate of 2,131 tonnes per hour to a product size of 100% passing 150 mm through a single stage gyratory cone crusher for a period of 18 hours a day.

The ROM bin, with a capacity of 200 m³, giving at least one and half times the truck size, will be equipped with an 700 x 700 mm static grizzly, which will ensure that oversize material will not report to the primary crusher. Static oversize material will be broken by a mechanical rock breaker or equivalent.

An apron feeder located under the ROM bin will be used to withdraw mineralized material from the bin at a controlled rate and will discharge onto a vibrating grizzly feeder to scalp off the fines (-150 mm material) while the oversize from the feeder reports to the crusher. The feeder undersize; -150 mm; will discharge onto the primary crusher discharge conveyor.

The gyratory cone crusher, at a closed side setting of 150 mm, will reduce the oversize material to a product of 80% passing 150 mm. The product from the gyratory cone crusher will be discharged onto the primary crusher discharge conveyor.

A 5 tonne electric hoist will be located above the jaw crusher and will be used to remove any boulders from the crusher in the event of a choke and will also be useful for minor maintenance.

Containment of dust in the hard rock crushing area will be achieved through use of conveyor skirting on discharge points and dust suppression systems utilizing atomized water sprays at points identified as potentially high in dust generation.

The scalped vibrating grizzly undersize and primary jaw crusher product will combine and be transferred from the primary crusher discharge conveyor to the stockpile feed conveyor where it will be conveyed to a 15,000 tonne live conical stockpile.

Ore will be reclaimed from the stockpile onto the SAG Mill Feed Conveyor by long variable speed pan feeders. Each pan feeder will be sized to reclaim 550 tph, and a single feeder or a combination of feeders running at reduced speeds will be used to supply mineralized material to the SAG mill.

Containment of dust will be achieved through use of conveyor skirting on discharge points and dust suppression systems at points identified as potentially high in dust generation. The system will utilize atomized water sprays. A dust extraction fan, located in the stockpile tunnel will also assist in the removal of dust from the stockpile tunnel. Control of spillage in this stockpile area will be by means of a spillage pump.

The milling circuit will consist of SAG and ball mills, capable of treating 1,700 tph of hard rock. In addition, a pebble crusher will be installed to reduce the size of the pebbles generated by the SAG mill.

The grate discharge SAG mill will be operated at a ball load of 8% by volume up to a maximum 15%. This mill will be equipped with a variable speed drive to maximize capacity under varying mineralized material competency and liner conditions.

A SAG mill feed by-pass conveyor will be installed to allow for material to be fed directly to the ball mill in the event where a SAG mill is on maintenance.

Discharge product from the SAG mill at P80 of 750 μm and 65% solids by weight, will be passed over a trommel screen with 12 mm slotted apertures to scalp off pebbles which would otherwise damage the mill discharge pumps.

Pebbles will be conveyed to the pebble crusher via an over-band electro-magnet, which will remove any escaped grinding media and or steel. The pebble crusher feed conveyor will be equipped with a weightometer, for mass measurement which together with the SAG mill feed weightometer, will be used to determine amount of feed dilution water to the SAG mill. In addition, a metal detector will be installed which will enable bypass of the pebble crusher in the event where metal is detected in the feed to the pebble crusher, which would otherwise damage the crusher's lining. During periods when the crusher is being maintained, the same bypass facility will be utilised to ensure continued production.

The recycle crusher will be operated at closed side setting of 12 mm and product from this crusher will be discharged onto the SAG mill feed conveyor.

The SAG mill trommel screen undersize will be combined with ball mill discharge in the cyclone feed sump where it will be diluted to the correct density (58-60% solids by weight) prior to pumping to a hydrocyclone cluster.

Cyclone overflow at P80 of 106 μm at circa 40% solids by weight will gravitate to a linear screen as milled product for trash removal while the underflow will gravitate to the ball mill for further size reduction. A facility to bleed part of the cyclone underflow to the SAG mill for grind optimization will be installed.

The ball mill will be an overflow discharge type mill fitted with a fixed motor.

Lime will be pumped through a ring-main and will be dosed into the SAG mill with an option to bypass to the ball mill. Addition of lime to the mill inlet will be rationed to mill fresh feed and in the event where pH measure in the pre-leach tank is lower than set-point then additional lime will be added to the pre-leach tank until required pH levels are achieved.

Milling and cyclone spillage will be contained in a concrete bund area with an inclined floor to direct spillage to two sumps. One sump will be allocated for the mill feed spillage and the other will allow for the mill discharge and cyclone spillage. Each sump will have a vertical spindle spillage pump which will discharge into the mill discharge sump.

17.2.2 Gravity/Intensive cyanidation leach

Due to the presence of 'free gold' in the ore, the removal of coarse gold prior to CIL reduces the possibility of gold lock-up and improves the leach kinetics of the ore.

A portion of the cyclone underflow will be bled off to a scalping screen to remove the +2 mm material and screen underflow will be diluted to a density of about 47% by weight and fed to a centrifugal concentrator to recover the free gold. The scalping screen oversize will gravitate to the ball mill feed hopper and the tailings from the concentrator will gravitate to the cyclone feed sump.

The concentrates from the gravity recovery unit will periodically be discharged into a Gekko ILR feed cone until the leach cycle is ready and will be leached for 14-16 hours, batch wise using an In-line Leach Reactor.

The pregnant solution stored in the gravity electrowinning tanks will be pumped to a dedicated electrowinning circuit for the recovery of gold.

Due to the use of strong caustic and sodium cyanide solution in the ILR, a foot activated safety shower with eye bath will be provided in this area.

17.2.3 Trash removal

Trash removal from the cyclone overflow slurry will be effected using a linear screen. Underflow from the linear screen will gravitate to the leach/CIL train via a splitter box and slurry sampler. Oversize from each trash screen will be collected in a trash basket.

17.2.4 Pre-leach & CIL

The pre-leach/CIL circuit will have ten tanks in total, with two (2) tanks for the pre-leach and six (6) tanks for the CIL section. The total effective residence time will be forty-eight (48) hours to ensure efficient dissolution of gold and its subsequent adsorption onto activated carbon.

Flow of slurry from one CIL tank to the other will be through an interconnecting launder system.

Each CIL tank will be equipped with an inter-stage wedge wire cylindrical pumping screen mechanism, which will prevent migration of carbon from one tank to another.

A tower crane, located in the CIL area, will be used for lifting of inter-stage screens to a washing bay, and back again after clean up. In addition this crane will be used for general maintenance purposes in the CIL area.

Cyanide solution will be pumped through a ring main from which it can be dosed into the second pre-leach tank. An automatic cyanide analyzer will be used to ensure efficient use of cyanide as some of the samples mineralized material bodies displayed high cyanide consumptions during laboratory tests.

Loaded carbon in CIL Tank 1 will be pumped using a recessed impeller vertical spindle pump, onto a 12 m² loaded carbon screen. If CIL Tank 1 is on by-pass, carbon from CIL Tank 2 will be pumped to the loaded carbon screen. The underflow slurry from the loaded carbon screen will gravitate to CIL Tank 1 or CIL Tank 2.

Recessed impeller vertical spindle pumps will be installed in CIL Tanks 2 to 6 to transfer carbon upstream at intermittent intervals. Regenerated or eluted carbon will be added to the last CIL tank or if last tank is on bypass to the second last tank.

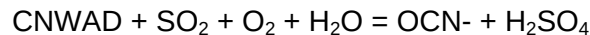
Spillage in the CIL area will be contained in a bund and two vertical spindle spillage pumps will be used to pump any spillage to the CIL tanks. In the event of the CIL bund failing to contain all the spillage, an event pond will be provided to cater for those unusual occasions. Spillage contained in this pond will be pumped to the CIL bund area using a submersible pump.

Due to the use of strong sodium cyanide solution in the CIL, a foot activated safety shower with eye bath will be provided in this area.

17.2.5 Detoxification

Tailings slurry from CIL will gravitate to a carbon safety screen for the recovery of any escaped carbon from CIL due to damaged interstage screen wedge wire. The oversize from this screen will gravitate to a carbon basket which will periodically be lifted using the CIL tower crane and contents contained in this basket emptied into the last CIL tank by opening the trap door.

The screen underflow will gravitate to either detoxification Tank 1 or Tank 2 if Tank 1 is offline. The detoxification train consists of three (3) tanks. The free cyanide and/or weakly bound metal cyanide complexes present in the tailings slurry will be oxidized to cyanide by addition of sulphur dioxide and oxygen according to the reaction:



Sulphur dioxide will be supplied in liquid form as sodium metabisulphite. The detoxification reaction using this method requires the presence of a copper catalyst at concentrations of approximately 50 mg/l, which will be added to the circuit as copper sulphate solution. In addition lime slurry will be added to neutralize the acid formed during the reaction.

17.2.6 Tailing dam storage and return

Slurry exiting the third detoxification tank will gravitate to the final tails sump, from where it will be pumped to the tailings disposal and storage facilities.

Process water from the tailings dam will gravitate to a return water pond from where it will be pumped by pontoon pumps to a return water tank. Process water will be returned to the plant process water tank from the return water tank.

17.2.7 Acid wash

Loaded carbon from the first or second CIL tank will be pumped to a linear trash screen from where the clean, washed loaded carbon will gravitate to the acid wash cone. The acid wash cone will be sized to accommodate a 2 tonne batch of loaded carbon and acid washing will be achieved by pumping dilute acid solution (~3% HCl)

from the acid tank through the acid wash cone at a rate of 2 bed volumes per hour for a period of 1 hour.

The carbon in the acid wash cone will be rinsed with a volume equivalent to 2 bed volumes of raw water to neutralize residual acid and will be transferred via gravity to the elution column.

Due to the use of acid solution in this area, a foot activated safety shower with eye bath will be provided in this area.

17.2.8 Elution

Pressurized Zadra will be used as the elution method. A cyanide-caustic solution will be pumped at a flow rate of 2 bed volumes per hour through the elution column in closed circuit with the eluant tank whilst being heated up via the secondary and primary heat exchangers. The pregnant solution will be directed to the electrowinning cells flash cell feed tank only when the temperature exiting the column outlet reaches 120 °C. The spent electrolyte from electrowinning will flow back to the eluant tank from where it will be pumped back to the elution column.

The column will be operated under a pressure of typically 300 to 350 kPa. At the end of the elution cycle the stripped carbon will be hydraulically transferred to the regeneration section and the system will be readied to treat the next batch of loaded carbon.

The eluant exiting the reclaim heat exchanger will be heated to the required temperature of 120°C by thermic oil in the primary heat exchangers prior to entering the column. The electric fired elution heaters will heat up the thermic oil and then the thermic oil will be pumped to the primary heat exchanger which will transfer the heat to the eluant.

The elution cycle will run for approximately 14 hours, which could be shorter or longer depending on the loaded carbon gold value.

Due to the use of caustic and cyanide in this area, two foot activated safety showers with eye bath will be provided in this area.

17.2.9 Electro-winning

The pregnant solution from the ILR will be pumped to a single sludging electrowinning type cell where gold sludge will load onto stainless steel wire mesh cathodes.

The pregnant eluate solution from the elution circuit will be directed to double sludging electrowinning cells and the gold sludge generated will load onto stainless steel wire mesh cathodes.

The pregnant solution from the elution will be fed just above the floor level of the electrowinning cell and will overflow on the opposite end of the cell. This is intended to reduce chances of solution short-circuiting which would reduce the electrowinning efficiency.

The spent electrolyte will combine in a common header and will gravitate to the eluant tank to complete the closed circuit. Operation of electrowinning in closed circuit with elution will take place in a period of approximately 14 hours.

After a number of elution cycles the cathodes will be lifted into the cathode wash tank with the aid of a cathode hoist. High pressure wash pump will be used to remove the gold sludge from the loaded cathodes into the wash tank. The gold sludge will be drained into the gold sludge tank and thereafter loaded into calcining trays.

A fume extraction system will be installed to collect potential poisonous and explosive gases evolved during electrowinning from the cells and discharge outside the gold room.

Due to the use of caustic and cyanide in this area, two foot activated safety showers with eye bath will be provided in this area.

17.2.10 Regeneration

Carbon will be hydraulically transferred from the elution column into the eluted carbon holding vessel at the end of elution cycle.

Provision will be made to bypass the regeneration facility so that eluted carbon can be directly transferred to the last CIL tank.

Carbon will be withdrawn from the eluted carbon tank into the electric fired inclined regeneration kiln at 600 kg/hr by the kiln screw feeder. On entering the kiln, the wet carbon, which still contains about 50% moisture; will be dried and heated to the required temperatures that promote regeneration.

The regenerated carbon will be quenched immediately at the kiln discharge by adding water to the carbon quench pan before reaction with atmospheric oxygen. The carbon will then be screened using a vibrating screen and the oversize will gravitate to the last or the second last CIL tank.

A virgin carbon conditioning facility will be installed to remove fines prior to addition of carbon in the CIL circuit.

17.2.11 Gold room

Gold sludge will be drained and placed in stainless steel calcining trays that will be loaded into one of two electric fired calcining ovens operated at 800°C for drying. The dried sludge, once cooled, will be mixed with fluxes in a determined ratio and will then be transferred to a smelting crucible, which in turn is placed in the induction smelting furnace operated at 1,200 to 1,400°C.

At the completion of a smelt the molten furnace charge will be poured into cascading bullion moulds, mounted on a cascading trolley. The bullion will collect in the first mould with any excess collected in the second mould while slag will flow and collect

in a slag collection crucible. The gold bars once cooled, will be cleaned, stamped and stored in the safe prior to dispatch.

The gold room will be equipped with a self contained ventilation system.

17.2.12 Consumables

➤ Mill balls

Grinding media sizes of 100 mm and 65 mm will be used in the SAG and ball mills respectively. Grinding media balls will be charged to the mills using a 1 tonne bottom discharge skip, using a mill tower crane.

➤ Cyanide and caustic soda

i) Cyanide

Sodium cyanide will be delivered to site in 1 tonne bulk bags and will be transported using a gantry crane from the cyanide storage area to the cyanide mixing area, for cyanide make up where cyanide briquettes will be dissolved batch wise to a concentration of 25% cyanide by weight.

Prior to addition of cyanide briquettes in the cyanide tank, the pH of the water in this tank will be adjusted to about 10 using caustic soda solution to prevent formation of hydrogen cyanide at low pH values. Cyanide solution will be transferred from make-up tank to the dosing and storage tank using a pump. Duty and standby cyanide dosing pumps will be used to pump cyanide solution into the cyanide ring main from which cyanide is tapped off into CIL tanks for the leach train, intense leach reactor and eluant make up tank.

A safety shower will be installed in the cyanide make-up area and another in the cyanide dosing area. The safety showers will be activated by a foot pedal and will be equipped with an eye bath.

ii) Caustic soda

Caustic Soda will be delivered to site in 25 kg bags and will be transported using a fork lift from the caustic storage area to the caustic tank for make-up where caustic pearls are dissolved batch wise to strength of 20% caustic by weight.

The caustic dosing pumps will only be run for the time required to deliver the various quantities of the reagent to various distribution points including cyanide make-up, acid wash, elution, pregnant tanks and intense leach reactor.

Safety shower will be installed in the caustic make up area and will be activated by a foot pedal and is equipped with an eye bath.

➤ Lime

Un-slaked lime (quick lime) will be delivered to the mine in 1 tonne bags and will be kept in a lime store. The bags from the lime store will be handled by mechanical means and placed on a 10m inclined roller conveyor and will be suitable for placement of 8 lime bulk bags at any given time. The de-bagging system will be fitted with a vibrating filter unit and extraction fan to render the operation dust free.

The de-bagged lime powder will then be transferred pneumatically into either of the two storage silos. An electric vibrator will be fitted at the bottom of the transfer hopper to improve discharge of lime from the hopper.

The lime silos will be fitted with reverse jet filters to render the top of the silo dust free during periods when lime is being transferred. A mechanical transfer arrangement will be fitted to each silo, consisting of a variable speed rotary feeder and an inclined screw conveyor. The screw conveyors will be installed to feed the lime into the twin compartment detention lime slaker.

The lime slaker will continuously convert calcium oxide (quicklime) into calcium hydroxide or slaked lime in the form of a slurry of controlled consistency, and will then dilute it to the required density. Water and lime will be added to the first compartment of the slaker in measured proportions and vigorously agitated by a propeller type mixer. The temperature in the slaker will be between 70° and 75°C. After slaking the lime slurry will be pumped to storage and dosing tanks, where it will be kept in suspension by mixers.

Lime slurry will be pumped to the ring main by the lime dosing pump to feed the mills and leach feed splitter boxes. The lime ring main will also supply lime to the detoxification lime dosing tank if required. The detoxification lime dosing pumps will then dose lime to the detoxification feed splitter. Unused lime slurry will be returned to the dosing tank from the ring main.

Due to the presence of hot lime slurry in the make-up and dosing areas, safety shower will be provided in the make-up area and will be provided in the dosing area. The safety showers will be activated by a foot pedal and is equipped with an eye bath.

➤ **Sodium Metabisulphite & Copper Sulphate**

i) Sodium Metabisulphite

Sodium metabisulphite will be delivered to site in 1 tonne bulk bags. The bulk bags will be transported using a fork lift from the storage area to the sodium metabisulphite mixing & dosing area for make up where sodium metabisulphite powder will be dissolved batch wise to a concentration of 25% by weight.

A hoist will be used to lift the bags to a bag breaking system, from where it will be discharged into a covered sodium metabisulphite tank, equipped with a mixer.

Duty and standby variable speed hose pumps will be used to pump sodium metabisulphite solution to detoxification circuit at a controlled rate.

ii) Copper Sulphate

Copper sulphate will be delivered to site in 25 kg bags on 1 tonne pallets. The bulk bags will be transported using a fork lift from the storage area to the copper sulphate mixing & dosing area for make up where copper sulphate crystals will be dissolved batch wise to a concentration of 15% by weight.

A hoist will be used to lift the bags to a bag breaking system, from where it will be discharged into a 20 m³ covered copper sulphate tank, equipped with a mixer.

Duty and standby variable speed hose pumps will be used to pump copper sulphate solution to detoxification circuit at a controlled rate.

Safety shower will be installed in the sodium metabisulphite and copper sulphate make up area. The safety shower will be activated by a foot pedal and is equipped with an eye bath.

➤ **Carbon**

Carbon will be delivered to site in 500 kg bulk bags. The bulk bags will be transported using a fork lift from the storage area to the carbon attritioning area located in the regeneration facility.

➤ **Hydrochloric acid**

Hydrochloric acid will be delivered in 290 kg (210 litres) plastic drums at 33% hydrochloric acid concentration. When required the palletized hydrochloric acid drums will be transported using a forklift from the storage area to the acid wash area. Acid will be pumped from the drum using a drum pump.

17.2.13 Air services

Two air compressors, one working and one on standby, will provide 2000 Nm³/hr at a pressure of 750 kPa compressed air requirements to the detoxification, lime area, plant workshops and general plant. The compressor will deliver air to an air receiver, which will distribute air to the various areas of use listed above.

High pressure air requirements for all instruments will be supplied by a dedicated compressor. A refrigerant air drier and filters will be supplied in order to ensure that instrument air will be of good quality prior to storage in an air receiver.

17.2.14 Water services

➤ **Water abstraction & storage dam**

A pontoon equipped with two centrifugal pumps with vertical spindles, one working and one standby will be installed on the raw water supply storage facility to enable pumping of water to the raw water supply tank. From the raw water supply tank, the water is pumped with four centrifugal pumps (two in series - duty & two in series - standby) to the raw water tank with take-offs to both the process water tank and the fire water tank.

➤ **Process water**

A process water tank, located close to the raw water tank, will be used to store water required for the process water to the plant. Return water pumped from the tailings facility and raw water top-up pumped from the raw water supply tank will constitute process water.

Duty and standby low pressure high volume process water pumps will be provided for supplying water to the mills and the gravity scalping screen dilution water and a duty and standby set of high pressure pumps will be installed for spray water

requirements throughout the plant. A duty high pressure water pump will be allowed for to supply hosing water to the plant.

➤ **Raw water**

A raw water tank located close to the processing plant will be used to supply raw water to the plant. Water pumped from the raw water supply tank will be used to feed the plant raw water tank.

Dedicated duty and standby mill cooling water pumps will provide water to the SAG and ball mills heat exchanging systems. Gravity concentrator fluidising water requirements will be provided through the use of dedicated pumps.

Raw water pumps will be used to distribute water to the crusher and milling area for dust suppression, reagent make-up, potable water plant supply, carbon transfer water make-up, gland water tank top-up, final tails sump flushing water and high pressure wash pumps.

The plant will have a dedicated fire water tank supplied with water from the raw water supply tank. The fire water system will consist of electric and diesel driven pumps, respectively. A high pressure low flow jockey pump will maintain the required pressure in the fire water system under no-flow conditions.

➤ **Potable water**

Raw water will be supplied from the raw water tank via pumps, to the raw water break tank. The raw water will undergo water purification in the water treatment plant, which will thereafter be pumped to a potable water storage tank. The backwash/rinse water from the water treatment plant will be directed to the detoxification splitter & dilution box.

Two potable water distribution pumps, one working and one standby will supply water to the safety shower header tank and the potable water header via a hydrosphere, which will be used to maintain pressure in the potable water system.

➤ **Gland water & safety showers**

Gland water pumps, one running and one standby will provide gland water from a gland water storage tank to all the pumps that require gland water.

Potable water from the hydrosphere will be supplied to a safety shower hydrosphere and will be distributed to various sections of the plant.

18. PROJECT INFRASTRUCTURE

18.1 PLANT AND SITE LAYOUT

Figure 18.1 presents the general surface layout, including the proposed location of the required infrastructure.

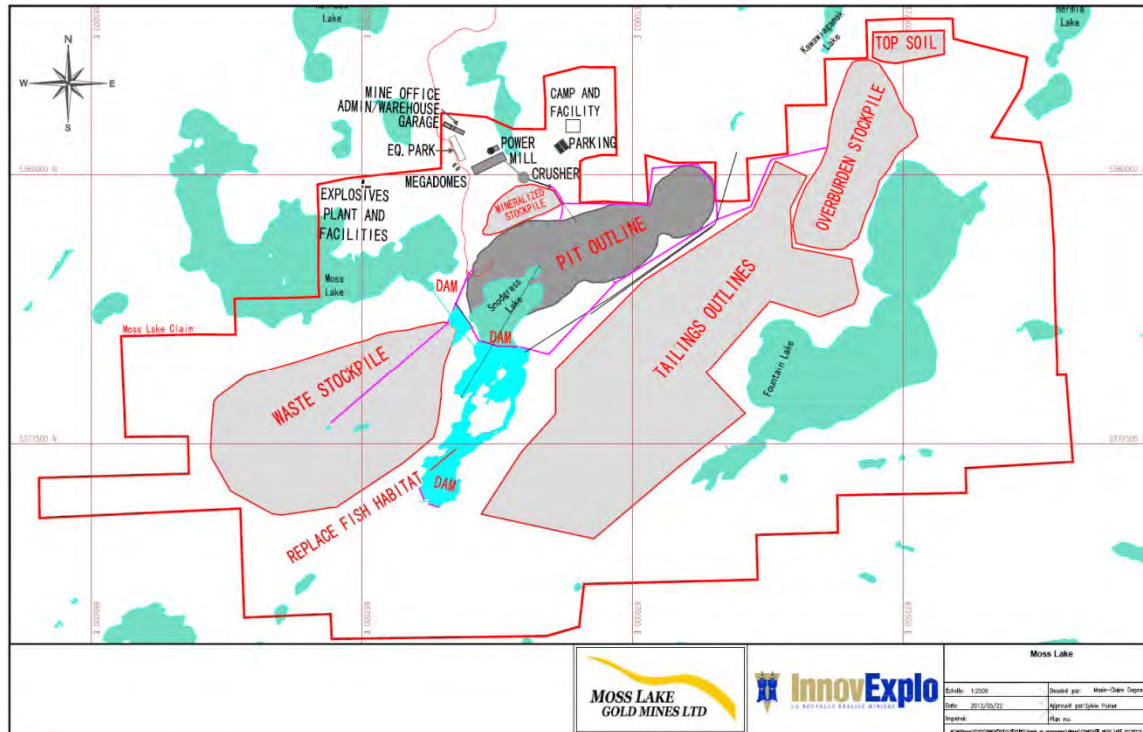


Figure 18.1 – Moss Lake general surface layout

18.2 SURFACE INSTALLATIONS

18.2.1 Site access road and on-site road

The Moss Lake property is located in Moss Township, approximately 100 km west of the city of Thunder Bay, in the province of Ontario, Canada. The nearest settlement is Kashabowie, located 24 km to the northeast on provincial Highway 11 (part of the TransCanada highway system). The property can be accessed from Highway 11. The present 21-km access road to the site needs to be rehabilitated to allow heavy vehicle traffic. The road needs to be enlarged to 9 metres wide, and it also needs a better road foundation and the construction of two (2) culverts.

Site roads will need to be built to provide access to various parts of the property. The planned roads are 12 metres wide to accommodate the 226-tonne capacity trucks.

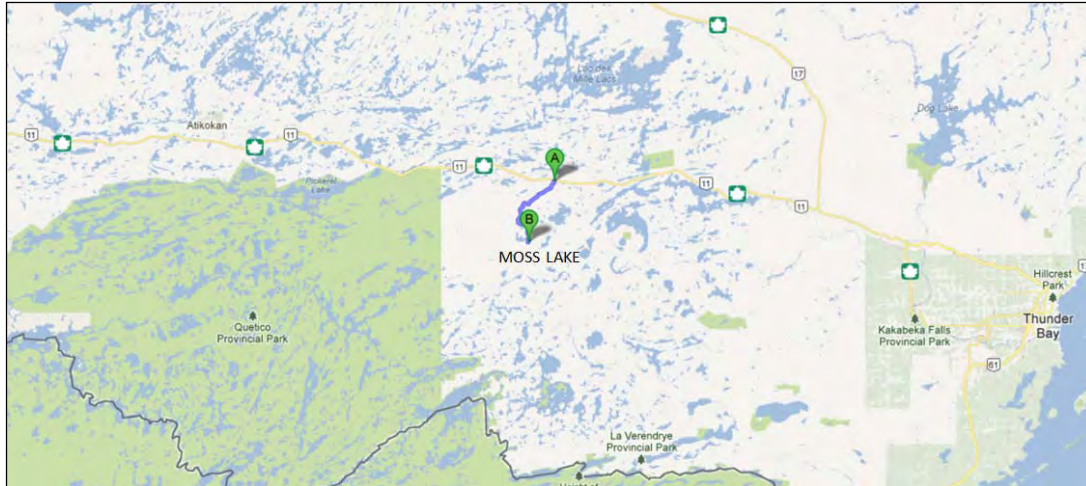


Figure 18.2 – Moss Lake access road from Highway 11

18.2.2 Mine site entrance/guardhouse and parking

All visitors, contractors, delivery personnel and mine personnel will go through the main entrance at the north of the site. The guardhouse will be adjacent to the office building at this location and anyone entering the site will do so only after being authorized by security personnel. A car parking lot for the employees will be located on the site.

18.2.3 Site fencing

Due to the remote location of the mine site, only 500 metres of fences will be installed at the entrance of the mine.

18.2.4 Sewage system

Two sewage treatment systems will be installed to treat wastewater coming from the buildings. The system has not yet been designed and some soil testing is required before proceeding with the design. The system will most likely be composed of a septic tank and bed.

18.2.5 Camp

A modular camp with a capacity of 339 people will be built near the employee parking. All Moss Lake Gold Mines staff and contractors will be housed in the camp. A kitchen and diner complex with a capacity of 228 people will be erected. The camp will also include space for recreational activities, such as a games room and a gymnasium. A total surface area of 5,975m² will be required for the camp installation.

18.2.6 Office and warehouse buildings

A two-storey building will be built. The first floor will be split, with one part serving as a warehouse and the other part housing the dry and locker installation. The second

floor will serve as offices for administration, engineering and geology. In addition, two (2) MegaDome structures measuring 12.2m x 24.4m (40' x 80') will be installed and will serve as an extension to the warehouse for oversize material. The MegaDome structures will be erected on concrete slabs.

18.2.7 Garage

The mine garage and truck wash station need a surface area of approximately 4,000m². The garage will need to have six (6) doors to accommodate fleet maintenance.

18.2.8 Mill

The project will require a mill with a 40,000-tonne capacity. The mill will be built near the north entrance of the open pit to minimize the haulage distance.

18.2.9 Fuel and gasoline storage

Diesel fuel for the mine equipment and vehicles will be stored in tanks. Six (6) 50,000 liter fuel tanks will be necessary to provide 4 to 5 days worth of fuel for the equipment. The diesel tank will be installed according to prevailing environmental laws and regulations. A smaller 12,000 liter gasoline tank will be installed to provide fuel for pickup trucks.

18.2.10 Explosives plant and depot

An explosives plant will be built and managed by contractors. The plant size will be sufficient to produce the required amount of explosives for the project. Two (2) separate magazines will be installed to store powder, explosives and detonators. The size of the magazine which will store explosives will be determined by the explosives contractor. The facilities will be constructed in accordance with federal and provincial regulations.

18.2.11 Water supply

Fresh water for the mine site will consist of pumped water from two (2) wells that will be drilled and tested for water quality. One well will supply fresh water for the camp and the other will supply fresh water for the offices and mill. The water quality will comply with Ontario's drinking water regulations. Regular monitoring will be carried out as required by such regulations. Industrial water requirements will be met by nearby water sources.

18.2.12 Mine dewatering

Two types of pump will be used during the mine life: 100 hp and 140 hp. The size and number of pumps will increase as the mine gets deeper. The water will be pumped to the settling pond.

18.2.13 Communication system

Surface communication will be via cellular phones; internet connectivity will be provided by satellite.

18.2.14 Electrical power supply

The Moss Lake property is currently not serviced by an electric power line. The availability of power has not been studied given the early stage of project assessment. A new 120kV electrical power line will need to be built and connected to the main substation adjacent to the mill. A 25kV electrical distribution network will be connected to various areas on the site. Also, three (3) backup gensets of 1,250kW, 800kW and 250kW will be installed in case of a blackout.

18.2.15 Settling pond

A settling pond of 1.5M m³ will be necessary to collect water from the open pit operation. The water will be pumped from the pit to the settling pond. Also, to stop water from flowing into the open pit, a drainage ditch will be dug around the pit to direct water to the settling pond. In addition, the water in the pit will be also evacuated into the settling pond. The retention time in the pond will provide further polishing of the water. Excess water will be allowed to flow out of the settling pond, and monitoring of this effluent will be carried out according to prevailing regulations.

18.2.16 Mineralized material stockpile

A mineralized material stockpile will be erected near the crusher. Low-grade mineralized material will be transported to the stockpile to eventually be milled. The proposed stockpile will have a capacity of 15M tonnes.

The mineralized material stockpile is a non-permanent infrastructure. At the end of mine life, it should be completely depleted so that the land may be returned to its initial appearance as part of the mine closure plan.

18.2.17 Waste stockpile

A waste stockpile will be erected on the southwest side of the open pit. It will serve as a permanent storage infrastructure for the waste rock extracted from the open pit mine. It will be located as close as possible to the open pit exit in order to benefit from the following advantages:

- Shortened haulage distance, which will reduce operational costs.
- Decreased environmental impact by reducing on-site haul road construction.

It will be a large infrastructure, covering a surface area of approximately 2.68M m². The main design parameters will be:

- Bench height: 15 metres
- Bench width: 10 metres
- Slop angle: 25°
- Batter angle: 35°
- Ramp width: 25 metres
- Ramp gradient: 10%

18.2.18 Overburden stockpile

The overburden dump has been designed based on the amount of overburden to be excavated as determined by the pit design. The dump has been situated as close to the mine as possible to minimize the haulage distance and to reduce costs.

The design parameters are as follows:

- Bench height: 15 metres
- Bench width: 10 metres
- Slope angle: 25°
- Batter angle: 35°
- Ramp width: 25 metres
- Ramp gradient: 10%

The overburden stockpile will be a smaller infrastructure than the waste stockpile. Its surface area will be approximately 1.07M m².

18.2.19 Top soil stockpile

A space near the overburden stockpile has been considered for the top soil stockpile.

18.2.20 Tailings pond

The tailings pond will be located on the southeast side of the pit. The surface area will be of approximately 4.4M m². Much of the tailings will need to be contained by dykes 20 metres high.

18.2.21 Water management

The main challenge in terms of water management for the Moss Lake mine site is the location of the proposed pit over the Wawia River. Stavibel assessed different surface water management options consistent with the provincial and federal laws and developed a conservative scenario in which the river bed is diverted and the runoff from all industrial and piling areas is collected and treated. This scenario and the modified base case scenario for the present PEA are described below.

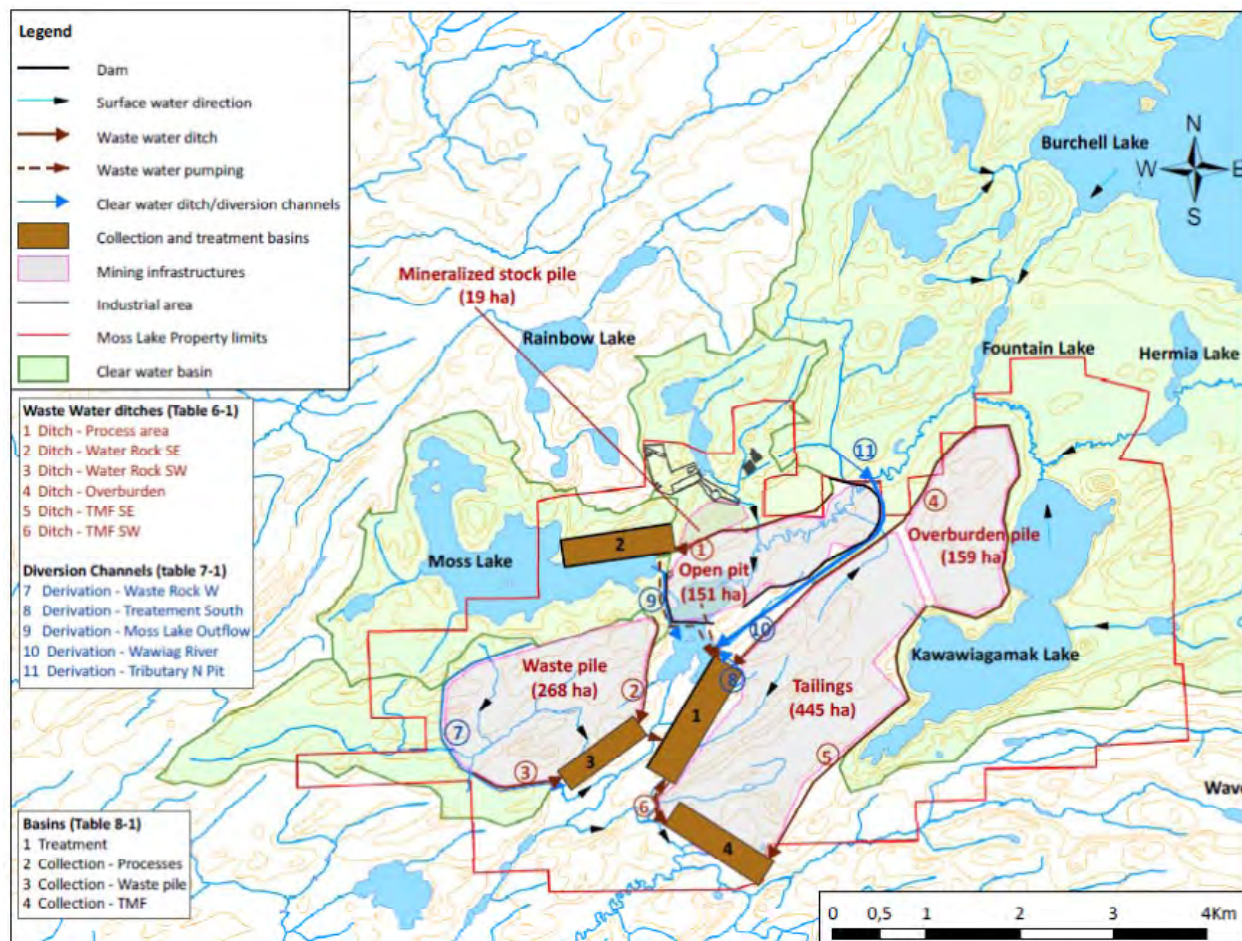
The prospective mine site will consist of an open pit, a process area, a tailings management facility (TMF), an overburden pile, a waste rock pile, and a mineralized

material pile. The proposed open pit is located right on the flow path and flood plain of the Wawiag River, draining an upstream watershed of 143 km². The open pit is also located over the outflow of Moss Lake. The waste rock pile and tailings management facilities are located on the sides of the Wawiag River flood plain over smaller streams, and the mineralized material pile and process area are located north of the open pit between smaller streams and lakes.

The main water management strategy should consist of:

1. Minimizing environmental impacts;
2. Separating clear water from waste water;
3. Providing processes with the right amount of fresh water;
4. Recycling waste water as much as possible for process water;
5. Using gravity flow rather than pumping whenever possible.

In order to minimize the impacts of mining activities on the existing hydrography and the need for dikes and diversion channels, Stavibel proposes that the bed of the Wawiag River be diverted to run between the open pit and the tailings management facilities (TMF).



The waste water drainage has also been evaluated and the dimensions of the waste water basins and ditches have been appraised. Figure 18.3 illustrates the proposed infrastructure elements. The various infrastructure proposals for water management at the Moss Lake prospective mine site are:

- Dikes to protect mine infrastructure, such as the open pit, and to keep clear water and waste water separated. At least three dikes are necessary to seal the open pit from surrounding rivers and lakes. At least one dike is needed near the outlet of Moss Lake for the construction of a collecting basin and at least one dike is needed south of the open pit for the construction of the waste water treatment basin and for separating clear and waste water.
- Diversion channels to divert clear water from existing rivers and basins around mine infrastructures such as the open pit and the waste rock pile. These channels convey water to an existing water body. The main diversion channel is located between the open pit and the TMF and is used to divert the Wawiag River flow. Another important diversion channel is used to divert the outflow of Moss Lake around the open pit. One diversion channel is necessary to divert a tributary of the Wawiag River just north of the open pit. One diversion channel is necessary on the west side of the waste rock pile to divert runoff water from the upstream basin.
- Waste water ditches to collect water percolating through the TMF, the overburden pile and the waste rock pile, or to collect runoff water from the process area. These ditches convey waste water to a collection or treatment basin. A total of six (6) main ditches are required. They are located on the south side of the process and mineralized material pile area, on the south side of the waste rock pile, and around the TMF and overburden piles.
- Collection basins to collect water from the waste water ditches. This water is then pumped towards a waste water treatment basin. Two collection basins are needed at the downstream side of the waste rock pile and process area. A third basin may be required at the downstream end of the TMF if the contact water cannot be stored inside the TMF itself.
- A waste water treatment basin to collect and treat waste water coming from the two (or three) collection basins and the open pit. This basin is located south from the open pit, between the TMF and the Wawiag River.

It should be pointed out that the most conservative waste water management requirements were applied in Stavibel's proposed scenario, and consequently the runoff from all industrial and piling areas would be collected and treated. However, the characteristics and risks related to the runoff quality from the industrial area and from the overburden, mineralized rock and waste rock piles have not been studied and this information would be necessary to confirm whether the runoff from these areas will need to be collected and treated. If no treatment is necessary for certain areas, then some of the collection ditches and basins might not be required.

Moreover, since there is no evidence of acid mine drainage based on historical underground exploration and the acid base accounting test work, the base case for this PEA considers that acid generation is unlikely to occur.

As a result, InnovExplo reduced the water management scenario proposed by Stavibel to a less conservative base case scenario for the current PEA in which not

all runoff will require collection and treatment. This leaves the possibility of having to collect and treat all the runoff water as a potential risk for the project.

The infrastructure elements from the proposal that were retained for this PEA are presented in Table 18.1.

Table 18.1 – Water management infrastructure included in the PEA mine plan

Drainage Structure	Length (m)	Width (m)	Depth (m)
Diversion Channels			
Waste Rock West	2850	2	2
Treatment South	350	1	2
Moss Lake Outflow	850	7	2
Wawiag River	2950	40;80;160	4;2;1
Tributary North Pit	865	4	2
Ditches			
TMF SE	3500	3	2
TMF SW	200	3	2
Berms			
Open Pit North	2100	4	2
Open Pit South	1000	4	2

19. MARKET STUDIES AND CONTRACTS

19.1 MARKET STUDIES

Markets for doré are readily available and the doré bars produced from Moss Lake could be sold on the Spot Market. Gold markets are considered mature, despite a current gold price that is lower than the 3-year trailing average; in recent years, the demand has been high and the gold price has risen significantly. The 3-year trailing average, as at May 31, was US\$1546/oz at an exchange rate of 1.003.

19.2 CONTRACTS

No contracts have yet been assigned for the Moss Lake Project considering the early stage of the project.

20. ENVIRONMENTAL STUDIES, PERMITTING, AND SOCIAL OR COMMUNITY IMPACT

20.1 ENVIRONMENTAL BASELINE STUDIES AND SENSITIVITIES

Environmental baseline studies (EBS) have predominantly not been undertaken by Moss Lake Gold Mines or past operators. Baseline studies will need to be initiated prior to, or concurrent with, the start of the prefeasibility study to identify existing site conditions and environmental sensitivities associated with the Moss Lake Project (the “Project”). In accordance with regulatory expectations, environmental baseline studies will need to address potentially sensitive physical, biological and human components including, but not necessarily limited to: physiography and climate, hydrology and surface water quality, hydrogeology and groundwater quality, acid rock drainage and metal leaching, soils, fisheries and aquatic environments, terrestrial wildlife, vegetation and wetlands, air quality, noise, archaeology and heritage, socio-economic and land use, traditional use/traditional knowledge. The comprehensive EBS study will be designed in consultation with regulatory authorities and First Nations/community stakeholders.

There are no Protected Areas within the Project area; the nearest Protected Area is the Quetico Provincial Park located 20 km west of the Property. According to regional land cover mapping, the Property is predominantly covered by wooded areas and lakes. Several low-lying areas have been mapped as wetlands around Snodgrass and Kawawagamak Lakes and may require special consideration in any permitting and planning activities. Towards the southern property boundary the ground cover trends more predominantly to wetlands and “herbs”.

The Property comprises three named lake systems: Moss Lake, Snodgrass Lake, and Kawawagamak Lake and several smaller open water bodies. Drainage is south into Quetico Provincial Park through a series of stream/creek and lake systems. Development of the open pit will necessitate diverting Wawag River, which drains an upstream watershed of 143 km², and drainage of Snodgrass Lake, which is only 2-4 m deep. A fish habitat replacement area, comprising 51 ha, has been incorporated into the initial Project design immediately downstream of the open pit. Detailed evaluation of the hydrology, fish habitat and aquatic environment in this area will be necessary to facilitate permitting of these activities.

Although there is no evidence of acid mine drainage associated with the historic underground exploration program undertaken by Tandem/Storimin in 1987 and 1988 (WGM, 2010), the occurrence of pyrite is reported to be common through most rock types at the Property in amounts ranging from trace to 3%, which suggests the possibility for ARD/ML generation in association with the Project. Preliminary acid-base-accounting (ABA) test work was undertaken by SGS Minerals Services on the head samples taken from each of the four Main and QES zone samples for metallurgical testing (SGS 2012). Results of the ABA test work reported low sulfide contents ranging from 0.27% to 1.09% S and carbonate concentrations ranging from 2.37% to 3.84% for the samples. The potential for acid generation is commonly characterized by the ratio of neutralization potential (NP) to potential acid generation (AP) whereby acid generation is likely if $NPR < 1$, possible for $1 < NPR < 2$, and low if $NPR > 2$; the NP/AP of the eight samples ranged from 1.83 to 9.31 suggesting a possible to unlikely acid generating potential. Despite these preliminary test work results, additional ARD/ML test work will be necessary as the Project progresses

both to characterize the heterogeneity of ARD potential associated with key waste and mineralised material lithologies and to evaluate the metal leaching potential that may be present even in the absence of acid generation.

Based on the information available to date, there are no environmental aspects that are considered to be limiting to the Project development.

20.2 SITE MANAGEMENT

The Moss Lake open pit mine will be supported by offices, a garage, power generator, crusher and mill. Materials excavated from the open pit will be segregated into overburden, waste, and ore. Due to topographic constraints, use of the eastern portion of the Property beyond Lake Kawawiagamak for project infrastructure or waste management does not appear to be feasible. Use of the site west of Lake Kawawiagamak for project components will necessitate diversion of the Wawiag River between the open pit and the tailings storage facility (TSF) and development of a habitat replacement area, likely between the waste pile and the TSF.

Based on anticipated strip ratios, overburden will be stockpiled over an area of 126 ha to the north of the TSF. A 268 ha waste stockpile, with capacity to store the 341.5 Mt of waste rock material, is proposed to the southwest of the open pit, south of Moss Lake.

Tailings generated from the mill are proposed to be stored between the open pit and Kawawiagamak Lake. The preliminary TSF has been designed to cover an area of 445 ha. The resultant tailing slurry will undergo a cyanide destruction process prior to disposal in the TSF. Any seepage emanating from the TSF will report to a downstream collection pond for sediment deposition and possible water quality treatment prior to discharge back into the environment.

Several hazardous materials, including caustic soda, sodium cyanide, hydrochloric acid and copper sulphate will be transported to site for use in the processing stream. These chemicals will be detoxified from the tailings prior to disposal and recycled into the process stream. Collection and treatment of sewage will be required at the camp and offices.

Based on the results of future hydrological and hydrogeological studies, a water management strategy will be developed that defines the most appropriate process water and potable water supply sources and addresses how the project will control surface water in order to prevent pollution of clean or non-impacted water resources, divert excess runoff and groundwater ingress that may interfere with mine operations, control exfiltration from the tailings management facility to minimize potential pollution of surface water and groundwater resources, and control erosion of the site to limit sediment runoff that may impact receiving waters. It is expected that diversion channels and collection and treatment basins will be required as part of the engineering design to protect mine infrastructure and keep clean water and waste water separated.

20.3 ENVIRONMENTAL ASSESSMENT AND PERMITTING REQUIREMENTS

Moss Lake Gold Mines has not yet commenced formal discussion with regulatory authorities regarding the environmental assessment and permitting requirements in Ontario. Major mining projects in Canada must undergo an Environmental Assessment (EA) prior to obtaining the required operating permits. The EA process can take place under the *Canadian Environmental Assessment Act* (2012) and/or the Ontario *Environmental Assessment Act* or as part of the *Mines Act* permitting process and will encompass significant stakeholder engagement. The key features of the EA include:

- identifying and assessing potential environmental, social, economic, heritage and health impacts;
- identifying means through which to mitigate adverse effects and enhance positive effects;
- predicting whether there will be significant adverse effects after mitigation;
- providing opportunities for First Nations, federal, provincial and local governments, stakeholders, special interest groups and members of the public to learn about the Project, identify potential issues, and provide input to potential avoidance and/or mitigation measures;
- incorporating social and environmental factors into proponent and government decision-making processes.

Private mineral sector projects in Ontario are subject to the Environmental Assessment Act if the project triggers the environmental assessment requirements of another ministry or agency, or is designated by regulation or through a voluntary agreement with the Minister of the Environment. It is anticipated that two Provincial class EAs will need to be completed based on the current project design. These include a Ministry of Natural Resources (MNR) Class EA for MNR Resource Stewardship and Facility Development Projects for works in watercourses/waterbodies, and a Ministry of the Environment (MOE) Class EA for Electricity Projects for construction of a transmission line (greater than 2 km and less than 50 km length).

The Federal EA process for Canadian mines is detailed in the *Canadian Environmental Assessment Act 2012* (CEAA). Under the new legislation, a proposed project may require a federal environmental assessment before it is allowed to proceed if it is a “designated project” as listed in the *Regulations Designating Physical Activities* (SOR/2012-147). Specifically it is expected that the Project will require a Federal EA, because the Project meets the requirements of “a gold mine, other than a placer mine, with an ore production capacity of 600 tpd or more”.

The level of detail required for the Federal EA will be assessed following submission of the Project Description. As a minimum the project will need to undergo a standard environmental assessment, which takes into account a number of factors, including (but not limited to) the purpose of the designated project, its environmental effects and their significance, measures that would mitigate any significant adverse environmental effects, alternative means of carrying out the designated project, and consultation with the public.

The CEAA (2012) replaced the former harmonized assessment scheme with a new EA process intended to streamline and reduce duplication between the provincial and federal assessments; federal EA applications now will have a legislated timeframe of 24 months. In addition, projects will be assessed by a single agency—either federal or provincial but not both.

Once a project receives approval following the EA, the proponent must still obtain any other required permits or authorizations (e.g., water licences, timber cutting licences, mine permits or waste management permits). In general, the provincial and federal EA processes must be completed before the respective jurisdictions can issue permits, licences, or other authorizations required in order to allow project development to proceed.

Table 20.1 and 20.2 describe the provincial and federal authorizations and permits anticipated to be required or likely to be required for the construction and operation of the Moss Lake Project. This list is preliminary based on the permitting and authorization requirements for other similar projects.

Table 20.1 – Provincial authorizations and permits

Provincial Government Permits/Authorizations	Enabling Legislation
Closure Plan	<i>Mining Act</i>
Environmental Compliance Approval – Air and Noise Emissions	<i>Environmental Protection Act</i>
Environmental Compliance Approval – Waste Disposal Site	<i>Environmental Protection Act</i>
Environmental Compliance Approval – Industrial Sewage Works	<i>Ontario Water Resources Act</i>
Permit to Take Water	<i>Ontario Water Resources Act</i>
Plans and Specifications Approval (tailings and water storage facilities)	<i>Lakes and Rivers Improvement Act</i>
Leave to Construct	<i>Ontario Energy Board Act</i>

Table 20.2 – Federal authorizations and permits

Federal Government Permits/Authorizations	Enabling Legislation
Section 35(2) Authorization for any harmful alteration, disruption or destruction of fish habitat (HADD)	<i>Fisheries Act</i>
Fish Habitat Compensation Agreement	<i>Fisheries Act</i>
Schedule 4/5 Metal Mining Effluent Regulations	<i>Fisheries Act/Environment Canada</i>
Stream Crossings Authorization	<i>Navigable Waters Protection Act</i>
Transportation of Dangerous Goods Permit	<i>Transportation of Dangerous Goods Act, Transportation of Dangerous Goods Regulations</i>
Explosives Factory Licence	<i>Explosives Act</i>
Explosives Use Magazine Licence	<i>Explosives Act</i>

20.4 COMMUNITY

Mine development proponents in Ontario are required to consult with local communities and First Nations to help identify and consider the potential concerns and issues of all interested persons in the project decision-making project. This process involves gathering local and traditional knowledge as part of the project evaluation and providing communities with opportunities to receive information and provide valued input.

The nearest local communities are the village of Kashabowie, located 22 km northeast of the property and the village of Shebandowan, which has residences around Shebandowan Lakes between 20 km and 50 km northeast and east-northeast of the Property. The nearest First Nations community is at Lac des Milles Lac, approximately 50 km northeast of the Property. The Property lies within the boundaries of the Robinson-Superior Treaty of 1850 area, near its western boundary with Treaty 3 of 1873. The Ontario Ministry of Northern Development, Mines and Forestry (MNDMF) has identified five Aboriginal communities with traditional land use areas in the Moss Township and adjacent Burchell Lake area: Grand Council Treaty 3, Métis Nation of Ontario, Fort William First Nations, Whitewater Lake First Nation, and Lac La Croix First Nation.

While Moss Lake Gold Mines has not initiated formal consultation with these parties at this point, establishing an appropriate working relationship and consultation program will be commenced as a priority as part of the future work program in accordance with Ontario legislation and regulations (*Draft Guidelines for Ministries on Consultation with Aboriginal Peoples Related to Aboriginal Rights and Treaty Rights*, 2006).

20.5 MINE CLOSURE AND RECLAMATION

The Moss Lake Project mine closure and reclamation plan will be developed to meet the regulatory requirements under the Ontario *Mining Act*. As a condition of receiving an Ontario *Mining Act* permit, Moss Lake Gold Mines will be required to file a closure plan and post financial security in an amount and form acceptable to the Chief Inspector of Mines.

Moss Lake Gold Mines' yet-to-be developed mine closure and reclamation plan will aim to reclaim and rehabilitate the Project footprint to ensure that upon termination of mining the land, watercourses and cultural heritage resources will be returned to a safe and environmentally sound condition and to an acceptable end land use that considers previous and potential uses.

General reclamation and closure activities are expected to include:

- decommissioning of site infrastructure;
- resloping/contouring of waste disposal areas;
- establishment of habitat compensation areas and post-mine watercourses, including re-establishing diverted watercourses to their original water flow where possible;
- establishing long-term physical and chemical stability for all discharges (which may include post-closure water management);
- general site preparation for and revegetation of disturbed areas; and
- development of a monitoring plan to address geotechnical, re-vegetation, sedimentation and other long-term project risks.

Progressive reclamation works would be carried out as appropriate during the operating life of the Project, and the Project would be closed out at completion. An initial closure cost allowance of \$28.43M, based on the preliminary project design and benchmarked against closure costs for other similar mining projects, has been included in the project financial evaluation.

21. CAPITAL AND OPERATING COSTS

21.1 CAPITAL COSTS

The capital cost was estimated using the following five sources of information:

- Mining Cost Service published by Cost Mine, a division of InfoMine USA Inc;
- Preliminary quotes from equipment suppliers;
- Comparable installations at other mining projects;
- Contractor costs;
- InnovExplo internal database.

The pre-production costs are estimated at \$542,503,252, including \$35,997,057 of capitalized operating costs. Sustaining capital is estimated at \$315,216,116, excluding \$28.4M for final closure costs. The cost breakdown is presented in Table 21.1.

Table 21.1 – Capital expenditure breakdown

Description	Pre-production	Sustaining	Total cost
<i>Capitalized operating cost</i>	\$ 35 997 057		\$ 35 997 057
Overburden removal cost	\$ 4 484 987	\$ 106 695 767	\$ 111 180 754
Owners cost	\$ 14 636 420		\$ 14 636 420
Site development & preparation	\$ 7 014 184		\$ 7 014 184
Surface installation & equipment	\$ 424 876 684	\$ 183 597 549	\$ 608 474 233
Electricity and communication	\$ 25 889 000		\$ 25 889 000
Water management	\$ 11 737 600		\$ 11 737 600
Environmental	\$ 17 867 320	\$ 24 922 800	\$ 42 790 120
Total capital expenditures	\$ 542 503 251	\$ 315 216 116	\$ 857 719 367

21.1.1 Capital operating cost

The estimated operating cost for the pre-production period is \$35,997,057. This cost was capitalized.

21.1.2 Overburden removal cost

The cost for overburden removal is estimated at \$1.74/tonne. A total of \$111.2M should be allocated for overburden removal, including \$ 4.5M in the pre-production period.

21.1.3 Owners cost

Owner's costs include the staff and material required for pre-production in Year -1 and Year 0, for a total of \$14.6M.

21.1.4 Site preparation

The site preparation costs were estimated using budget quotes provided by suppliers and based on existing comparable projects. A total of \$7,014,184 was estimated; this amount includes the deforestation cost, the access road cost from Highway 11, the on-site road cost and the cost for the drainage ditch around the pit.

21.1.5 Surface installation and equipment

Table 21.2 presents the cost of surface installations and systems based on budget quotes provided by suppliers and existing comparable installations at other projects.

Table 21.2 – Surface installation and equipment capital cost

Description	Total cost
Offices, dry and warehouse	\$ 3 641 097
Garage	\$ 27 116 413
Camp	\$ 12 768 600
Site fencing	\$ 139 400
Parking	\$ 225 000
Fuel system	\$ 2 575 000
Pumping Equipment	\$ 660 747
Contingency (15%)	\$ 11 781 564
Mill	\$ 332 551 177
Equipment	\$ 217 015 234
TOTAL	\$ 608 474 233

21.1.6 Equipment capital costs

The capital expenditure for principal equipment will be financed by partnership with the supplier with a 20% down payment upon receipt of the equipment and the remaining amount financed at 6%. The capital cost during pre-production is estimated at \$34.2M and is estimated at \$182.7M for the sustaining capital.

21.1.7 Electrical distribution

The cost of the electrical distribution is based on budget quotes provided by suppliers and existing comparable projects. The capital cost during pre-production is estimated at \$25.9M. It includes the cost for the power installation and the cost for emergency generators.

21.1.8 Environment and surface water management

The pre-production environmental capital cost is estimated at \$42.79M. It includes the cost of constructing a settling pond and a tailings management facility, providing a fish habitat replacement, installing a sewage system, and monitoring costs. The cost also includes a contingency of 15%. The monitoring costs were provided by

Caracle Creek and the other costs are based on budget quotes provided by suppliers and on existing comparable projects.

Stavibel estimated the costs for the surface water management at \$11.74M. This amount includes the costs for the various diversion channels, the tailings ditches and the pit berms.

21.1.9 Closure costs

The closure costs have been estimated at \$28.4M by Caracle Creek as part of their mandate.

21.2 OPERATING COSTS

Operating costs for the open pit option are estimated in 2013 Canadian dollars with no allowance for escalation. The total life-of-mine (LOM) operating cost and average unit operating costs are summarized in Table 21.3. The overall unit operating cost is \$17.56 per tonne milled. InnovExplo estimated mine operating costs using data from similar operations and from budget quotes supplied by contractors and suppliers.

Table 21.3 – Operating costs summary

Description	Total cost	Unit cost	
General & Administration	\$ 162,357,221	1.27 \$/t milled	67 US\$/oz
Milling and transportation	\$ 993,072,544	7.75 \$/t milled	407 US\$/oz
Mining costs	\$ 1,089,302,935	8.50 \$/t milled	446 US\$/oz
Environmental monitoring	\$ 5,557,500	0.04 \$/t milled	2 US\$/oz
Total	\$ 2,250,290,200	17.56 \$/t milled	922 US\$/oz

The operating cost for the Moss Lake Project covers mining operating cost, mineralized rock processing and general and administration fees.

21.2.1 General and administration costs

21.2.1.1 Administration salaries

Administration salaries for the project production period are estimated at \$81M. This cost represents \$0.63/tonne milled. The costs were evaluated using data from other similar projects and from budget quotes provided by suppliers. Another 38% was added to account for benefits, and depending on the job, bonuses were also included.

21.2.1.2 Material and other

The material and other item represents the cost of insurance, the taxes, the office supply, the professional fees, etc. This cost is estimated at \$11.9M over the mine production life.

21.2.1.3 Camp operating cost

The camp operating cost has been estimated at \$69.5M over the mine life production period. This cost represents \$0.54/tonne milled. This value was estimated based on a fixed cost of \$75 per day per person working on the mine site.

21.2.1.4 Electricity

A total of \$12.8M was estimated for the electricity for the project duration. This cost excludes the electricity needed for the mill which is included in the processing operating cost.

21.2.2 Mining operating cost**21.2.2.1 Equipment operating cost**

The equipment operating costs were estimated based on preliminary quotes from equipment suppliers and from similar projects. A total of \$619,137,319 is estimated for the project duration. This cost includes the fuel for the equipment and the maintenance costs, which includes the cost of spare parts, consumables, etc. It is important to note that the equipment maintenance costs do not include the cost of maintenance personnel.

21.2.2.2 Salaries operating cost

The operating cost for the Moss Lake staff includes the salaries for the technical services, maintenance, supervision and operation personnel and the materiel needed for each department. The unit cost for the salaries operating cost is estimated at \$0.66/tonne mined, for a total of \$293.7M. The costs were evaluated using data from other similar projects and from budget quotes provided by suppliers. Another 38% was added to account for benefits, and depending on the job, bonuses were also included.

21.2.2.3 Explosives operating costs

The explosives operating cost was based on preliminary quotes from Orica. It was determined that an emulsion manufacturing and support facility would be constructed on-site and will be operated by Orica personnel. A total of \$196,112,283 is estimated for the explosives operating cost, representing a unit cost of \$0.44/t mined.

21.2.2.4 Processing and transportation costs

The processing and transportation costs have been estimated at \$7.75/tonne milled during the mine life. This cost includes a transportation cost of \$0.30/t for transporting the mineralized material from the stockpile to the mill. The total cost for the processing and transportation cost is \$993.1M.

21.2.2.5 Environmental monitoring costs

The environmental cost was estimated using values from Caracle Creek and from similar projects. The annual estimated cost during production is estimated at \$540,000, which includes the costs for assays, personnel, maintenance and other miscellaneous fees. The total environmental monitoring cost is estimated at \$9.1M.

22. ECONOMIC ANALYSIS

22.1 FINANCIAL ANALYSIS

An after-tax model was developed for the Moss Lake Project. All costs are in 2013 Canadian dollars with no allowance for inflation or escalation.

The Moss Lake Project is subject to the following taxes:

- Ontario mining tax rate of 10% (2013 rate);
- Income tax rate of 26.5% (15% federal and 11.5% provincial).

The Moss Lake property is subject to a royalty equal to 8.75% of the net profit.

The economic evaluation of both project scenarios was performed using the Internal Rate of Return (IRR) and the Net Present Value (NPV) methods. The IRR on an investment is defined as the rate of interest earned on the unrecovered balance of an investment. The discount rate makes the NPV of all cash flows equal to zero. The NPV method converts all cash flows for investments and revenues occurring throughout the planning horizon of a project to an equivalent single sum at present time at a specific discount rate. The discount rate used in the analysis is 5%. According to the NPV method, a positive NPV represents a profitable investment where the initial investment plus any financing interest are recovered.

This Preliminary Economic Assessment (PEA) is preliminary in nature as it includes Inferred Mineral Resources that are too speculative geologically to have the economic considerations applied to them that would enable them to be categorized as mineral reserves, and there is no certainty that the PEA will be realized.

The following parameters were considered in the financial analyses:

- An average gold price of US\$1546/oz and an exchange rate of 1.0033CAD/1USD (3-yr trailing average as at May 31, 2013).
- Milling recovery of 79.2% in the southern portion of the deposit and 84.2% in the northern portion of the deposit.
- Royal Mint Fees of \$3/oz.
- Royalty of 8.75% of Net Profit.
- Resources as presented in section 14.
- Future annual cash flow estimates based on grade, gold recoveries and cost estimates as previously discussed in this report.

The resulting main parameters and cash flow analysis are presented in Tables 22.1 and 22.2.

Table 22.1 – Cash flow analysis summary

Parameters	Results
Potentially Mineable resources	128,154,775 tonnes @ 0.73 g/t
Total contained gold input	3,000,684 ounces
Total contained gold output	2,439,678 ounces
Total waste	314,662,647 tonnes
Total OVB	64,056,410 tonnes
Total moved	506,873,832 tonnes
Mine life (excluding 4 years of pre-production)	10 years
Daily mine production	40,000 tpd
Metal recovery	79.2% and 84.2%
Average operating cash cost	17.56 CAN\$/t. milled
	922 CAN\$/oz
Pre-production capital	\$542,503,252
Sustaining capital	\$315,216,115
Total gross revenue	\$3,784,428,468
Total operating cost	\$2,250,290,200
Total project cost	\$3,108,009,568
Closure cost estimate	\$28,430,000
Selling cost (3\$/oz)	\$7,319,034
Royalty (8.75% net profits after-tax)	\$43,959,565
Net cash flow (including closure cost)	\$705,457,624
Pre-tax NPV (5%) excluding royalty	\$353,451,548
Pre-tax IRR excluding royalty	17%
After-tax NPV (5%)	\$196,176,417
After-tax IRR	12%
Payback period	1.75 years

Table 22.2 – Economic analysis for the Moss Lake project

	Pre-production				Production										Total
	PP 1	PP 2	PP 3	PP 4	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	
PRODUCTION															
Tonnes ore 1 milled					4 341 091	10 254 112	5 780 749	8 106 900	8 205 644	2 382 513	8 784 787	3 432 054	11 314 834	9 259 755	71 862 439
Grade Ore 1(g/t)					1.32	1.07	0.87	0.79	0.79	0.71	0.66	0.63	0.52	0.41	0.75
Mill recovery (%)					79%	79%	79%	79%	79%	79%	79%	79%	79%	79%	79%
Gold Produce with Ore 1 (oz)					146 022	279 617	127 650	162 976	166 047	42 891	148 329	55 433	150 770	96 719	1 376 453
Tonnes of Ore 2 milled					5 708 909	3 145 888	7 619 251	5 293 100	5 194 356	11 017 487	4 615 213	9 967 946	2 085 166	1 645 020	56 292 336
Grade Ore 1 (g/t)					1.23	1.15	0.62	0.55	0.72	0.48	0.99	0.56	0.55	0.39	0.70
Mill recovery (%)					84%	84%	84%	84%	84%	84%	84%	84%	84%	84%	84%
Gold Produced with Ore 2 (oz)					189 890	97 894	128 686	79 368	100 976	144 265	123 126	150 652	30 956	17 412	1 063 225
TOTAL Gold Produced (oz)					335 912	377 510	256 335	242 343	267 024	187 157	271 455	206 085	181 726	114 131	2 439 678
Grade (g/t)															
Gold Price (\$US/oz)	\$1 546	\$1 546	\$1 546	\$1 546	\$1 546	\$1 546	\$1 546	\$1 546	\$1 546	\$1 546	\$1 546	\$1 546	\$1 546	\$1 546	\$1 546
Exchange rate (\$CAN/\$US)	1.003	1.003	1.003	1.003	1.003	1.003	1.003	1.003	1.003	1.003	1.003	1.003	1.003	1.003	1.003
Gold Price (\$CAN/oz)	\$1 551	\$1 551	\$1 551	\$1 551	\$1 551	\$1 551	\$1 551	\$1 551	\$1 551	\$1 551	\$1 551	\$1 551	\$1 551	\$1 551	\$1 551
Gross Revenue					\$521 066 169	\$585 594 051	\$397 627 169	\$375 923 243	\$414 207 017	\$290 317 325	\$421 081 701	\$319 679 004	\$281 892 895	\$177 039 893	\$3 784 428 468
Mint (cost 3.00\$ per oz)					\$1 007 735	\$1 132 531	\$769 006	\$727 030	\$801 071	\$561 470	\$814 366	\$618 255	\$545 177	\$342 393	\$7 319 034
Net Revenue					\$520 058 434	\$584 461 520	\$396 858 163	\$375 196 213	\$413 405 947	\$289 755 856	\$420 267 335	\$319 060 749	\$281 347 718	\$176 697 500	\$3 777 109 434
OPERATING EXPENDITURES															
General and Administration	\$0	\$0	\$1 652 800	\$11 146 175	\$13 576 301	\$16 765 743	\$16 931 343	\$16 931 343	\$16 931 343	\$16 931 343	\$16 931 343	\$16 931 343	\$16 931 343	\$13 495 780	\$175 156 197
Milling and transportation costs	\$0	\$0	\$0	\$0	\$84 911 525	\$102 423 994	\$102 423 994	\$102 423 994	\$103 917 638	\$102 757 422	\$102 423 994	\$103 448 260	\$85 917 726	\$993 072 544	
Mining cost	\$0	\$0	\$0	\$19 653 082	\$67 402 089	\$98 423 965	\$106 721 030	\$116 447 491	\$123 018 181	\$135 376 946	\$138 891 007	\$140 506 083	\$139 925 793	\$22 590 350	\$1 108 956 017
Environmental monitoring	\$0	\$940 000	\$1 855 000	\$750 000	\$540 000	\$540 000	\$592 500	\$540 000	\$540 000	\$592 500	\$540 000	\$540 000	\$592 500	\$540 000	\$9 102 500
Capitalized operating costs	\$0	-\$940 000	-\$3 507 800	-\$31 549 257											-\$35 997 057
Total Operating Costs	\$0	\$0	\$0	\$0	\$166 429 915	\$218 153 703	\$226 668 867	\$236 342 829	\$242 913 518	\$256 818 427	\$259 119 772	\$260 401 420	\$260 897 895	\$122 543 856	\$2 250 290 200
Op. cost/tonne \$CAN					\$16.56	\$16.28	\$16.92	\$17.64	\$18.13	\$19.17	\$19.34	\$19.43	\$19.47	\$11.24	\$17.56
Op. cost/oz \$CAN					\$495	\$578	\$884	\$975	\$910	\$1 372	\$955	\$1 264	\$1 436	\$1 074	\$922.37
Op. cost/tonne \$US					\$16.50	\$16.23	\$16.86	\$17.58	\$18.07	\$19.10	\$19.27	\$19.37	\$19.40	\$11.20	\$17.50
Op. cost/oz \$US					\$494	\$576	\$881	\$972	\$907	\$1 368	\$951	\$1 259	\$1 431	\$1 070	\$919.25
Operating Cash Flow	\$0	\$0	\$0	\$0	\$353 628 519	\$366 307 817	\$170 189 296	\$138 853 384	\$170 492 429	\$32 937 429	\$161 147 563	\$58 659 329	\$20 449 823	\$54 153 644	\$1 526 819 234
CAPITAL EXPENDITURES															
Capitalized operating cost	\$0	\$940 000	\$3 507 800	\$31 549 257											\$35 997 057
Overburden removal cost	\$0	\$0	\$0	\$4 484 987	\$33 245 003	\$12 533 272	\$14 366 583	\$9 964 349	\$6 495 937	\$10 491 548	\$7 394 567	\$5 660 276	\$6 498 997	\$45 234	\$111 180 754
Owners cost	\$0	\$0	\$2 450 695	\$12 185 725	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$14 636 420
Site development and preparation	\$7 014 184	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$7 014 184
Surface installation and equipment	\$3 674 250	\$387 038 815	\$8 060 000	\$26 103 619	\$27 355 824	\$29 438 910	\$30 232 945	\$32 135 748	\$28 421 720	\$11 034 899	\$9 099 502	\$6 499 967	\$5 606 328	\$3 771 706	\$608 474 233
Electricity and Communication	\$25 889 000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$25 889 000
Water management & diversion cost	\$5 868 800	\$5 868 800	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$11 737 600
Environmental	\$8 697 680	\$393 875	\$468 165	\$8 307 600	\$0	\$0	\$8 307 600	\$0	\$0	\$8 307 600	\$0	\$0	\$8 307 600	\$0	\$42 790 120
Total Capital Expenditures	\$51 143 914	\$394 241 490	\$14 486 660	\$82 631 189	\$60 600 827	\$41 972 182	\$52 907 128	\$42 100 097	\$34 917 657	\$29 834 047	\$16 494 069	\$12 160 243	\$20 412 925	\$3 816 940	\$857 719 367
Total Cost cost/oz \$CAN					\$676	\$689	\$1 091	\$1 149	\$1 040	\$1 532	\$1 015	\$1 323	\$1 548	\$1 107	\$1 274
Total Cost cost/oz \$US					\$674	\$687	\$1 087	\$1 145	\$1 037	\$1 526	\$1 012	\$1 318	\$1 543	\$1 103	\$1 270
Financial Guarantee			\$28 430 000												-\$28 430 000
Salvage Value															\$37 891 015
Closure Costs															\$28 430 000
Net Cash flow	-\$51 143 914	-\$394 241 490	-\$42 916 660	-\$82 631 189	\$293 027 692	\$324 335 635	\$117 282 169	\$96 753 287	\$135 574 772	\$3 103 382	\$144 653 494	\$46 499 086	\$36 897	\$88 227 719	\$678 560 882
Cumulative Cashflow	-\$51 143 914	-\$445 385 403	-\$488 302 063	-\$570 933 252	-\$277 905 560	\$46 430 075	\$163 712 244	\$260 465 531	\$396 040 303	\$399 143 685	\$543 797 179	\$590 296 265	\$590 333 163	\$678 560 882	
Estimated Mining and income taxes	\$0	\$0	\$0	\$0	\$4 828 055	\$45 726 129	\$32 086 459	\$27 396 033	\$37 892 268	\$0	\$34 272 521	\$8 788 390	\$0	\$5 106 604	\$196 096 459
Cash Surplus After Taxes	-\$51 143 914	-\$394 241 490	-\$42 916 660	-\$82 631 189	\$288 199 637	\$278 609 506	\$85 195 710	\$69 357 255	\$97 682 504	\$3 103 382	\$110 380 973	\$37 710 696	\$36 897	\$83 121 115	\$482 464 423
Royalties (8.75% of net profit)	\$21 875	\$21 875	\$21 875	\$21 875	\$21 875	\$21 875	\$7 082 281	\$6 068 760	\$8 547 219	\$271 546	\$9 658 335	\$3 299 686	\$3 229	\$7 273 098	\$42 335 403
Cash surplus After taxes ans royalties	-\$51 165 789	-\$394 263 365	-\$42 938 535	-\$82 653 064	\$288 177 762	\$278 587 631	\$78 113 429	\$63 288 495	\$89 135 285	\$2 831 836	\$100 722 638	\$34 411 010	\$33 669	\$75 848 017	\$440 129 020
Cumulative Cashflow	-\$51 165 789	-\$445 429 153	-\$488 367 688	-\$571 020 752	-\$282 842 990	-\$4 255 358	\$73 858 070	\$137 146 565	\$226 281 850	\$229 113 687	\$329 836 324	\$364 247 334	\$364 281 003	\$440 129 020	

Pre-Tax NPV (5%)	\$353 451 548
Pre-tax IRR	17%

After-Tax NPV (5%)	\$196 176 417
After-tax IRR	12%

22.2 SENSITIVITY ANALYSIS

Sensitivity analyses were performed on parameters for their potential impact on the outcome of the economic evaluation. The following parameters were analyzed:

Production parameters:

- Gold price (\$).

Economic parameters:

- Operating expenditure (OPEX);
- Capital expenditure (CAPEX).

Sensitivity calculations were performed on the project's NPV and IRR, applying a range of variation ($\pm 20\%$) to the parameter values.

22.2.1 Sensitivity analysis results

As illustrated in the figures below, the Moss Lake Project is highly sensitive to changes in gold price. It is moderately sensitive to changes in OPEX and CAPEX.

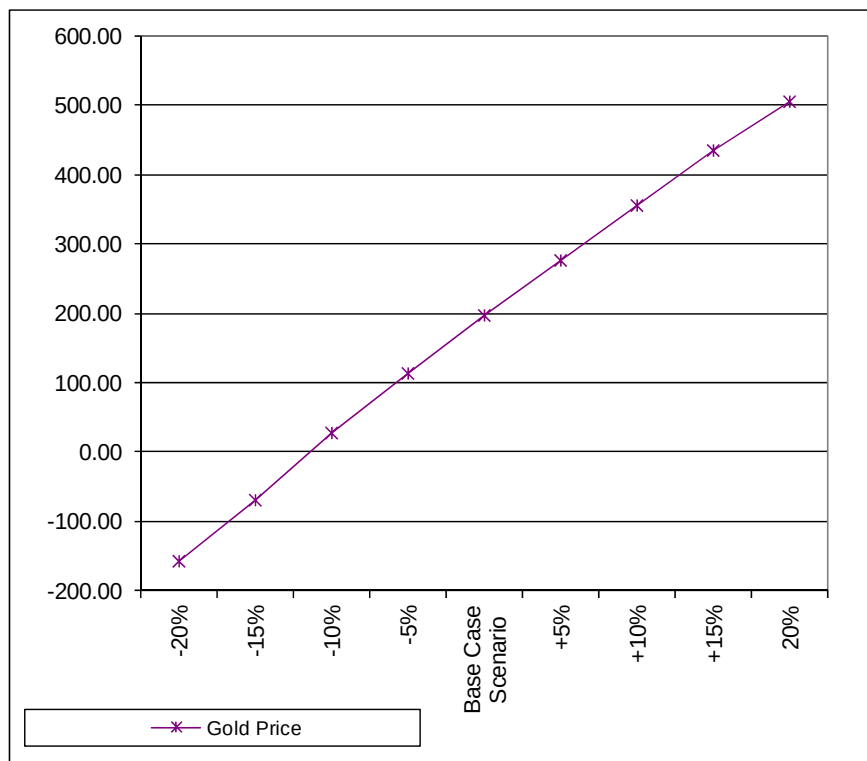
Results from the sensitivity on the NPV at 5% are presented in Table 22.3 and illustrated in Figure 22.1. A 10% reduction in gold price, which corresponds to C\$1396/oz, reduces the NPV to \$27.9M and drops the IRR from 12% to 6%.

To generate an IRR of 15% after taxes and royalties requires a gold price of CAN\$1629/oz over the life of mine.

Table 22.3 – After-taxes - Sensitivity Analysis, NPV at 5% (M\$)

	-20%	-15%	-10%	-5%	Base Case Scenario	+5%	+10%	+15%	20%
PRODUCTION PARAMETERS									
Gold price (CAN\$/oz)	1 241	1 318	1 396	1 473	1 551	1 629	1 706	1 784	1 861
Gold Price	-158.18	-69.03	27.90	113.53	196.18	276.07	356.01	434.90	505.38
<i>Change (%)</i>	-181%	-135%	-86%	-42%		41%	81%	122%	158%
ECONOMIC PARAMETERS									
OPEX	382.57	336.22	289.63	243.04	196.18	148.13	97.59	46.44	-6.36
<i>Change (%)</i>	95%	71%	48%	24%		-24%	-50%	-76%	-103%
CAPEX	288.69	265.59	242.50	219.37	196.18	171.93	147.53	122.75	97.74
<i>Change (%)</i>	47%	35%	24%	12%		-12%	-25%	-37%	-50%

A – Sensitivity Diagram of Production Parameters, NPV at 5%



B – Sensitivity Diagram of Economic Parameters, NPV at 5%

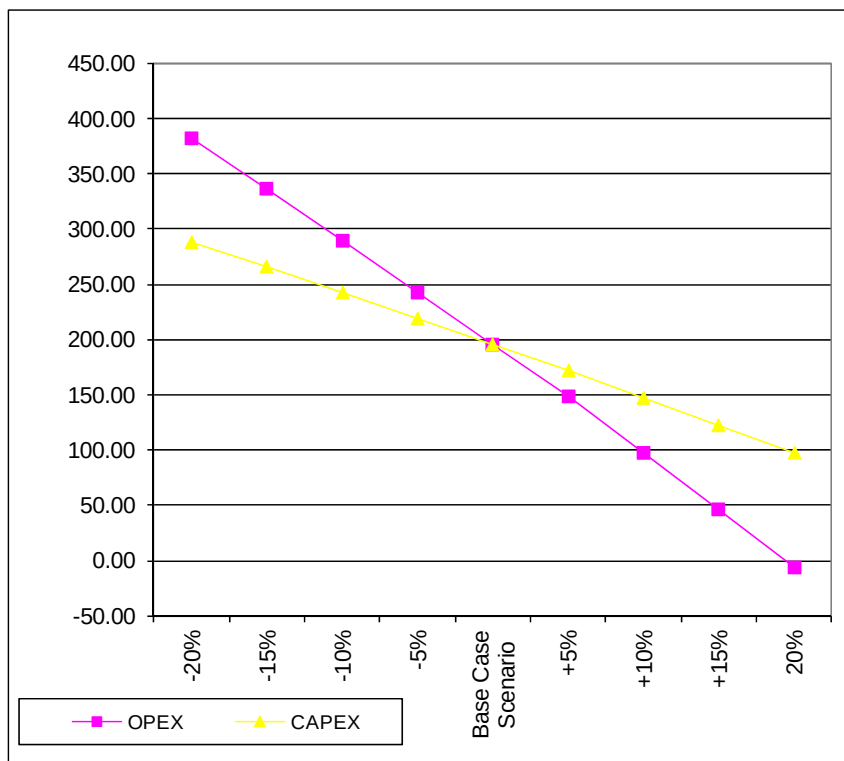


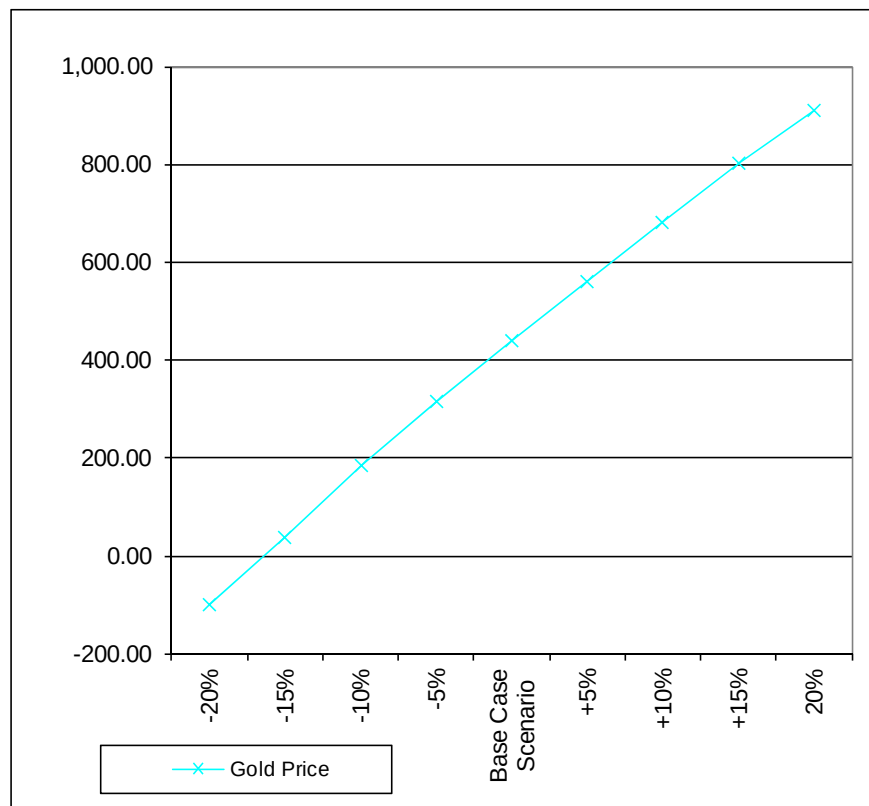
Figure 22.1 – Sensitivity diagrams of production and economic parameters, NPV at 5%

Results from the sensitivity on the after-tax and royalty cash flow are presented in Tables 22.4 and illustrated in Figure 22.2.

Table 22.4 – After-taxes - Sensitivity analysis, total cash flow (\$M)

	-20%	-15%	-10%	-5%	Base Case Scenario	+5%	+10%	+15%	20%
PRODUCTION PARAMETERS									
Gold price (CAN\$/oz)	1 241	1 318	1 396	1 473	1 551	1 629	1 706	1 784	1 861
Gold Price	-98.17	39.49	185.40	315.42	440.13	561.07	681.81	802.21	910.00
<i>Change (%)</i>	-122%	-91%	-58%	-28%		27%	55%	82%	107%
ECONOMIC PARAMETERS									
OPEX	732.30	659.63	586.53	513.43	440.13	365.02	285.24	204.46	120.78
<i>Change (%)</i>	66%	50%	33%	17%		-17%	-35%	-54%	-73%
CAPEX	546.14	519.67	493.21	466.67	440.13	412.42	384.51	356.14	327.48
<i>Change (%)</i>	24%	18%	12%	6%		-6%	-13%	-19%	-26%

A – Sensitivity Analysis of Production Parameters, Total Cash Flow



B – Sensitivity Analysis of Economic Parameters, Total Cash Flow

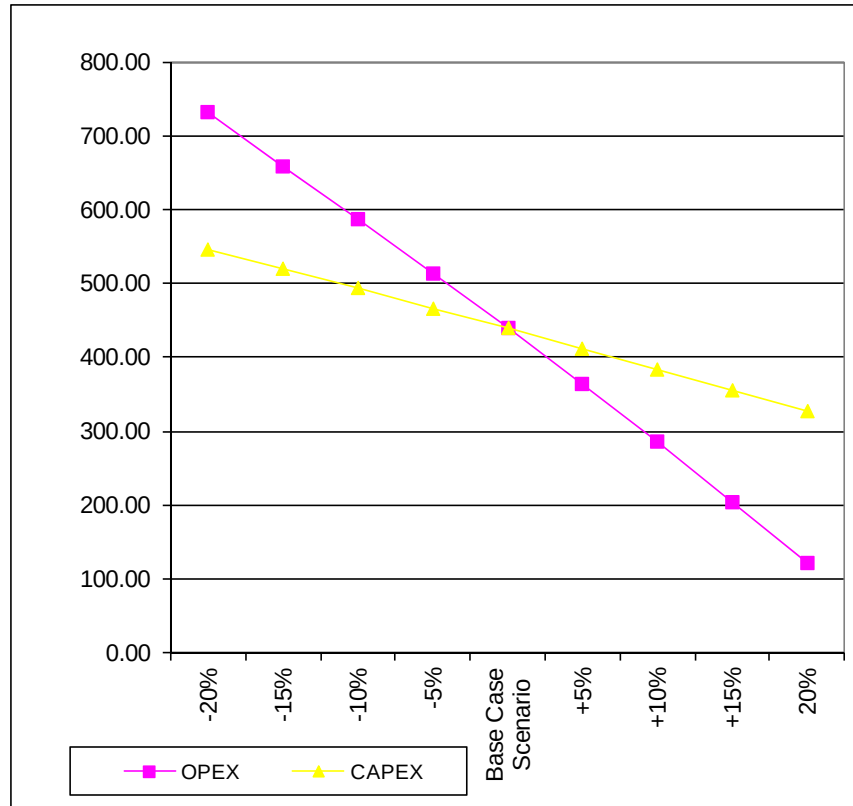


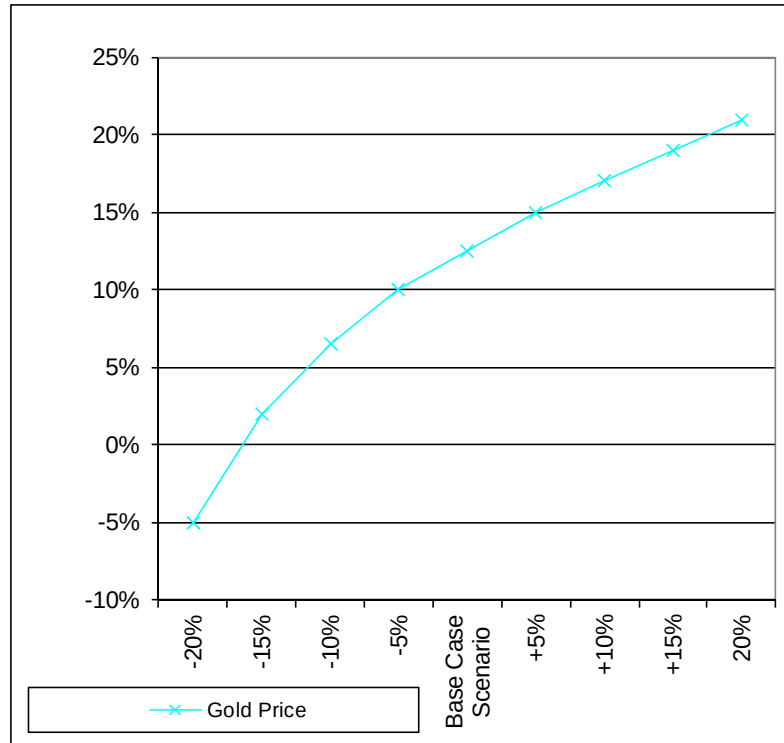
Figure 22.2 – Sensitivity analysis of production and economic parameters, total cash flow

Results from the sensitivity on the after-tax and royalty IRR are presented in Table 22.5 and illustrated in Figure 22.3.

Table 22.5 – After-taxes - Sensitivity Analysis, IRR

	-20%	-15%	-10%	-5%	Base Case Scenario	+5%	+10%	+15%	20%
PRODUCTION PARAMETERS									
Gold price (CAN\$/oz)	1 241	1 318	1 396	1 473	1 551	1 629	1 706	1 784	1 861
Gold Price	-5%	2%	6%	10%	12%	15%	17%	19%	21%
<i>Change (%)</i>	-140%	-84%	-48%	-20%		20%	36%	52%	68%
ECONOMIC PARAMETERS									
OPEX	18%	16%	15%	14%	12%	11%	9%	7%	5%
<i>Change (%)</i>	41%	31%	22%	11%		-12%	-27%	-43%	-63%
CAPEX	18%	16%	15%	14%	12%	11%	10%	9%	8%
<i>Change (%)</i>	41%	29%	19%	9%		-9%	-17%	-26%	-33%

A – Sensitivity Diagram of Production Parameters, IRR



B – Sensitivity Diagram of Economic Parameters, IRR

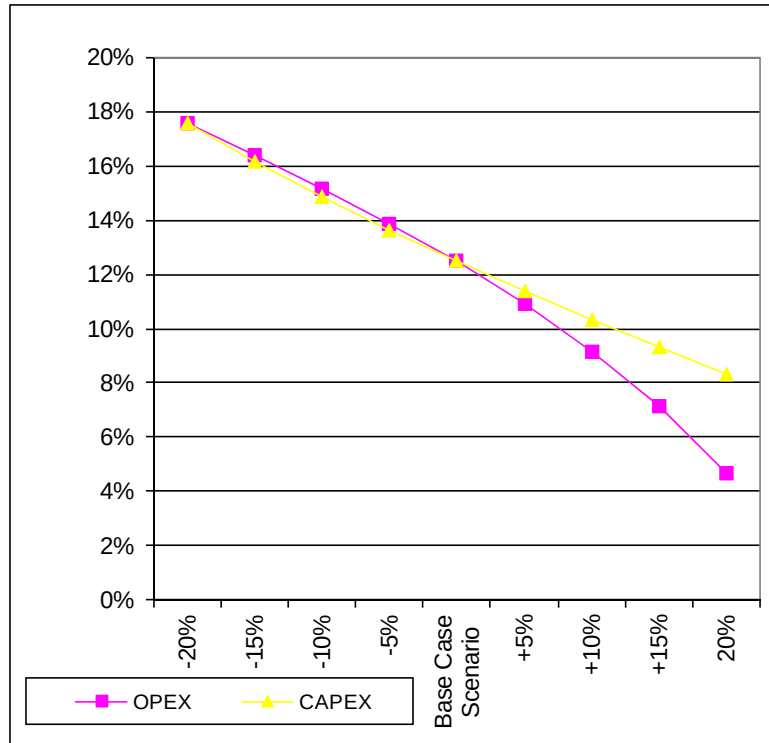


Figure 22.3 – Sensitivity diagrams of production and economic parameters, IRR

23. ADJACENT PROPERTIES

The Huronian mine, also known as the Ardeen mine, is located about 1.5 km west from the south end of Moss Lake. This deposit was discovered in 1871 and sporadic mining operations finally ceased in 1937. It produced 29,948 oz of gold and 172,376 oz silver from 143,724 short tons of ore, for an average grade of 0.208 oz/t Au and 1.2 oz/t Ag (Harris, 1970). Recent exploration work by Pele Mountain Resources Inc and Coventry Resources Inc along the immediate eastern extension of the Huronian mine encountered encouraging gold intercepts. According to a Pele Mountain press release of April 6, 2005, the best intersection during drilling on the Fisher Zone was 27.0 g/t Au and 41.1 g/t Ag over 11.6 metres. Furthermore, the immediate southwestern extension, known as the McKellar Zone, also returned high gold grades, with best results of 11.0 g/t Au over 0.7 m in hole 09CADD055 and 4.01 g/t Au over 2.7 metres in hole 09CADD065.

Just east of the property, on the east shores of Hermia Lake (1.5 km NE of Fountain Lake), MGold Resources Inc. is working the Hermia Lake polymetallic occurrence (Cu-Au-Ag-Mo-Ni). Recent diamond drilling returned gold intercepts up to 7.09 g/t Au over 0.4 metre (DDH BU08-7) and 1.81 g/t Au over 3.0 metres (BU08-9). Older diamond drill holes returned up to 1.00% Cu over 5.6 metres (DDH M7) in the same area.

Foundation Resources Inc. owns the rights to the Span Lake gold occurrence, which represents the immediate northeast extension of the Moss Lake deposit. It lies just outside the Moss Lake property. Among the numerous gold intercepts supporting the interpretation as an extension of the known Moss Lake deposit are 3.01 g/t Au over 7.45 metres in historical Inco diamond drill hole 78464 and 2.39 g/t Au over 6.05 metres in historical hole 78466.

InnovExplo has not verified the above information for these properties.

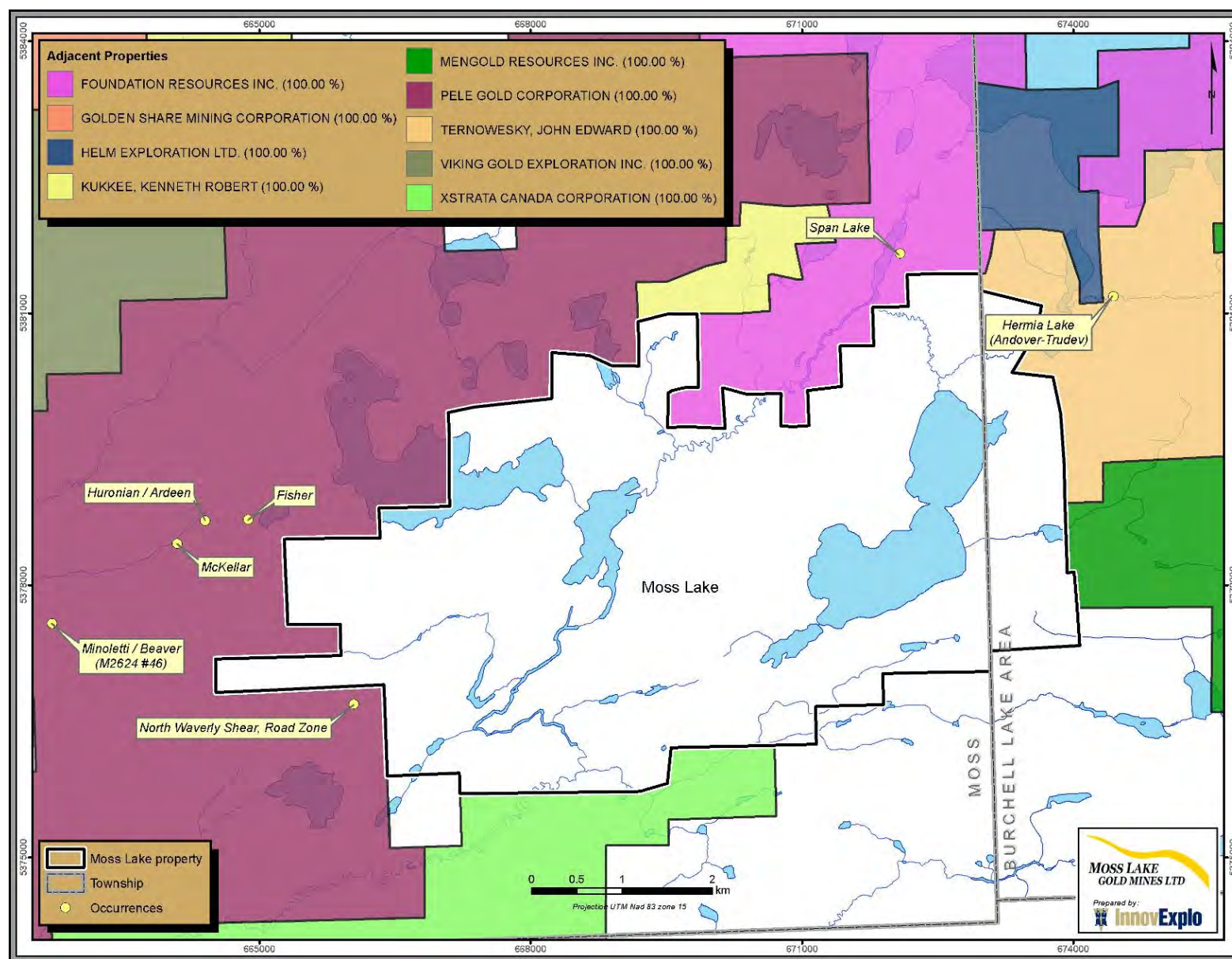


Figure 23.1 – Adjacent properties to the Moss Lake Project

24. OTHER RELEVANT DATA AND INFORMATION

To the authors' best knowledge and that of InnovExplo, there are no other relevant data or information for the Moss Lake Project.

25. INTERPRETATION AND CONCLUSIONS

The Moss Lake deposit is located in Moss Township, approximately 100 km west of the city of Thunder Bay, in the province of Ontario, Canada (Fig. 4.1). The deposit is at an advanced stage of exploration and hosts significant gold mineralization.

The objective of InnovExplo's assignment was to:

- Prepare a preliminary economic assessment to examine the potential economic viability of exploiting the Moss Lake deposit; and
- Propose a strategy and preliminary timetable to further develop the project.

The PEA was prepared as an open pit mining project relating to the mineral resources presented in an earlier technical report prepared for the issuer, entitled "Technical Report and Mineral Resource Estimate for the Moss Lake Project (compliant with Regulation 43-101 / NI 43-101 and Form 43-101F1)" dated April 4, 2013.

The PEA is preliminary in nature; it includes Inferred Mineral Resources that are too speculative geologically to have economic considerations applied to them that would enable them to be characterized as mineral reserves, and there is no certainty that the PEA will be realized.

Geology

Based on the density of the processed data, the search ellipse criteria, and the specific interpolation parameters, the authors are of the opinion that the current Mineral Resource Estimate can be classified as Indicated and Inferred Resources. The estimate follows CIM standards and guidelines for reporting mineral resources and reserves. A minimum mining width of 5 metres (true width) and a cut-off grade of 0.5 g/t (open pit potential) and 2.0 g/t Au (underground potential) were used for the Mineral Resource Estimate. InnovExplo estimates that the Moss Lake deposit has Indicated Resources of 39,797,000 tonnes grading 1.1 g/t Au (1,377,300 ounces of gold) and Inferred Resources of 50,364,000 tonnes grading 1.1 g/t Au (1,751,600 ounces of gold).

InnovExplo developed a new interpretation for the Moss Lake deposit using section and plan views. Eighteen (18) mineralized zones enclosed within a gold-mineralized envelope characterize the Moss Lake deposit. InnovExplo is of the opinion that a structural study and surface mapping would greatly improve the understanding of key geological parameters controlling gold mineralization within the project area. Re-logging is also recommended before commencing any new drilling program.

After conducting a detailed review of all pertinent information and completing the present Mineral Resource Estimate, InnovExplo concludes the following:

- The geological and grade continuities of the gold-mineralized zones on the Moss Lake Project were demonstrated;
- The Moss Lake Project contains at least eighteen (18) continuous mineralized zones;
- The lenses have strike lengths ranging up to 2,500 metres;

- In spite of the current drill spacing, geological continuity seems steady throughout the mineralized zones;
- The zones encountered at the Moss Lake deposit have significant possibility for expansion, as all the extensions remain open. The only limitation is the property boundary to the NE, which is close to the deposit;
- The potential is high for upgrading Inferred Resources to the Indicated category with additional diamond drilling in all zones;
- The potential is high for adding new resources along the extensions of known zones with additional diamond drilling;
- The potential is high for identifying new parallel zones with additional diamond drilling.

The reader should know that the pit shell used for the resource estimate extends slightly beyond the property limits at its northeast end. Although the entire resource lies within the property limits, some waste material outside the property limits will need to be removed to access some of the resource. Consequently, this portion of the pit was constrained to the property boundary in the final whittle pit optimization for mine planning in the PEA.

The property is strategically positioned in an area known to be associated with gold mineralization. InnovExplo considers the present Mineral Resource Estimate to be reliable, thorough, based on quality data, reasonable hypotheses, and parameters compliant with Regulation 43-101 (NI 43-101) and CIM standards regarding mineral resource estimations.

Mining plan

The open-pit mining plan resulted in 2.44 million ounces of gold. The mine plan was designed for a nominal 40,000 tonne-per-day operation, with an average stripping ratio of 2.96:1 when including overburden, and 2.46:1 without overburden. The life of mine (LOM) is estimated at ten (10) years. Average yearly gold production for the first five (5) years is 295,825 ounces, and the average for the last five (5) years is 192,111 ounces. A yearly average of 243,968 gold ounces is predicted over the LOM.

The estimated mill cut-off grade is 0.38 g/t Au in the northern portion of the deposit (formerly known as the Main Zone) and 0.32 g/t Au in the southern portion (formerly known as the QES Zone). The mill cut-off grade was calculated by WHITTLE™ and is based on the input parameters.

All mineral resources classified as Indicated (45%) and Inferred (55%) was considered in the optimization and mine plan. There is no measured resources.

Metallurgy and Processing

Based on the performed test work, the preferred flowsheet for processing all types of mineralized material from the Moss Lake gold project is conventional CIL. The proposed Moss Lake Process Plant design is based on well-known and established Gravity/CIL technology, which consists of single stage crushing, SAG milling, ball milling, gravity recovery of free gold followed by leaching/adsorption of gravity

tailings, detoxification of tailings, elution & gold smelting and tailings disposal. Services to the process plant will include reagent mixing, storage and distribution, water, and compressed air services.

The plant will treat 14.0 million tonnes per annum of mineralized material. The plant design accommodates the sequential and combined processing of the different mineralized material types while keeping the design as simple as possible.

According to the test work, the assigned leach recovery for the Main Zone and QES Zone, at a P80 of 106µm, is 80% and 85% respectively. In order to take into account gold losses attributable to CIL solution and gold room slag losses these leach recoveries are then multiplied by 99%. The predicted gold recovery to doré is 79.2% and 84.2% for the MZ and QESZ respectively.

Acid base accounting (ABA) tests were also carried out to quantify total sulphur, sulphide sulphur and sulphate concentrations, as well as the potential acid generation (AP) related to the oxidation of sulphide sulphur. The test method determines the neutralization potential (NP) of the sample by facilitating a reaction with excess acid, then titrating to pH 8.3 with NaOH. The balance between AP and NP assists in defining the potential of the sample to generate acid drainage.

Based on the resultant NP/AP, acid generation is unlikely to occur from these samples as they sit in their untreated state.

Proposed Surface Infrastructure

New infrastructure for the Moss Lake Project operations will be required. The main site infrastructure will consist of a CIP mill, an office and warehouse building, a modular camp to be built with a kitchen and diner complex, and a 25-km electrical line. The tailing pond and the waste, overburden and topsoil stockpiles will occupy a significant surface area.

Water Management Infrastructure

In order to minimize the impacts of mining activities on the existing hydrography and the need for dikes and diversion channels, the preferred option is to divert the bed of the Wawiag River to run between the open pit and the tailings management facilities (TMF).

Since there is no evidence of acid mine drainage associated with the historical underground exploration program and from the acid base accounting test work, the base case for this PEA considers that acid generation is unlikely to occur.

As a result, the water management base case scenario considers that runoff water from all industrial and piling areas will not need to be collected and treated. Only water from the pit will be pumped into a settling pond and the runoff water from the TMF will be collected in ditches and sent to the settling pond. However, the characteristics and risks related to the runoff quality from the industrial area and from the overburden, mineralized rock and waste rock piles have not been studied. This information will be necessary to determine whether or not the runoff from these different areas will need to be collected and treated.

If no treatment is required for certain areas, then some collection ditches and basins may not be required, thereby decreasing capital and operating costs related to water management.

Environment and closure costs

Based on the information available to date, there are no environmental aspects that are considered to be limiting to the development of the Moss Lake Project. The process of environmental permitting is relatively well understood for Ontario and will require a staged program of environmental baseline studies, environmental impact assessment and approval applications, and provincial and federal permitting. These activities are on the project's critical path and it is recognized that no construction activities can commence until the required permits and authorizations are obtained.

Caracle Creek estimated the mine closure costs to be \$28.43 million based on project design and benchmarked against closure costs for other similar mining projects.

Capital and Sustaining Capital Cost Estimates

The pre-production costs are estimated at \$542,503,252, including \$35,997,057 of capitalized operating costs. Sustaining capital is estimated at \$315,216,116, excluding \$28.4M for final closure costs. The cost breakdown is presented in the table below.

Capital expenditure breakdown (Table 21.1)

Description	Pre-production	Sustaining	Total cost
<i>Capitalized operating cost</i>	\$ 35 997 057		\$ 35 997 057
Overburden removal cost	\$ 4 484 987	\$ 106 695 767	\$ 111 180 754
Owners cost	\$ 14 636 420		\$ 14 636 420
Site development & preparation	\$ 7 014 184		\$ 7 014 184
Surface installation & equipment	\$ 424 876 684	\$ 183 597 549	\$ 608 474 233
Electricity and communication	\$ 25 889 000		\$ 25 889 000
Water management	\$ 11 737 600		\$ 11 737 600
Environmental	\$ 17 867 320	\$ 24 922 800	\$ 42 790 120
Total capital expenditures	\$ 542 503 251	\$ 315 216 116	\$ 857 719 367

Operating Costs

Operating costs for the open pit option are estimated in 2013 Canadian dollars with no allowance for escalation. The total life-of-mine operating cost and average unit operating costs are summarized in the following table. The overall unit operating cost is \$17.56 per tonne milled. InnovExplo estimated mine operating costs using data from similar operations and from budget quotes supplied by contractors and suppliers.

Operating costs summary (Table 21.3)

Description	Total cost	Unit cost	
General & Administration	\$ 162,357,221	1.27 \$/t milled	67 US\$/oz
Milling and transportation	\$ 993,072,544	7.75 \$/t milled	407 US\$/oz
Mining costs	\$ 1,089,302,935	8.50 \$/t milled	446 US\$/oz
Environmental monitoring	\$ 5,557,500	0.04 \$/t milled	2 US\$/oz
Total	\$ 2,250,290,200	17.56 \$/t milled	922 US\$/oz

Financial Analysis + Sensitivity

The financial analysis for the Base Case (gold at US\$1546) indicates an after-tax NPV at a 5% discount rate of \$196.2 million, with an IRR of 12% and a payback period of 2 years.

This Preliminary Economic Assessment (PEA) is preliminary in nature as it includes Inferred Mineral Resources that are too speculative geologically to have economic considerations applied to them that would enable them to be categorized as mineral reserves, and there is no certainty that the PEA will be realized.

The resulting main parameters and cash flow analysis are presented in the following table.

Cash flow analysis summary (Table 22.1)

Parameters	Results
Potentially Mineable resources	128,154,775 tonnes @ 0.73 g/t
Total contained gold input	3,000,684 ounces
Total contained gold output	2,439,678 ounces
Total waste	314,662,647 tonnes
Total OVB	64,056,410 tonnes
Total moved	506,873,832 tonnes
Mine life (excluding 4 years of pre-production)	10 years
Daily mine production	40,000 tpd
Metal recovery	79.2% and 84.2%
Average operating cash cost	17.56 CAN\$/t. milled
	922 CAN\$/oz
Pre-production capital	\$542,503,252
Sustaining capital	\$315,216,115
Total gross revenue	\$3,784,428,468
Total operating cost	\$2,250,290,200
Total project cost	\$3,108,009,568
Closure cost estimate	\$28,430,000
Selling cost (3\$/oz)	\$7,319,034
Royalty (8.75% net profits after-tax)	\$43,959,565
Net cash flow (including closure cost)	\$705,457,624
Pre-tax NPV (5%) excluding royalty	\$353,451,548
Pre-tax IRR excluding royalty	17%
After-tax NPV (5%)	\$196,176,417
After-tax IRR	12%
Payback period	1.75 years

Sensitivity calculations were performed on the project's NPV and IRR, applying a range of variation ($\pm 20\%$) to the price of gold, the OPEX and the CAPEX. The results of the sensitivity analysis demonstrated that the Moss Lake preliminary economic assessment is highly sensitive to changes in gold price. It is moderately sensitive to changes in OPEX and CAPEX.

A 10% reduction in gold price, which corresponds to C\$1396/oz, reduces the NPV to \$27.9M and drops the IRR from 12% to 6%.

InnovExplo concludes that this PEA demonstrates the potential viability of the Moss Lake Project and has upside that could improve the economics of the project such as:

- The possibility of increasing the potentially mineable resource by eliminating the property constraint on the northeast side of the property.
- Increasing the resource within the pit shell through additional drilling in areas identified by geologists.
- Defining pit slopes based on a geotechnical study.

Water management represents a potential risk to the viability of the project and will have to be studied fully in order to develop a safe and feasible option.

The PEA presents a base case scenario that recovers only runoff from the pit and the TMF. In the case that all water would need to be collected and treated, this would significantly affect the required infrastructure elements and increase the treatment costs, thereby representing a potential risk to the viability of the project.

InnovExplo believes that definition drilling and more advanced engineering work are mandatory for the Moss Lake Project to eventually advance to the pre-feasibility study stage.

InnovExplo considers the present PEA to be reliable, thorough, based on quality data, reasonable hypotheses, and parameters compliant with Regulation 43-101 (NI 43-101) and CIM standards regarding mineral resource estimations.

26. RECOMMENDATIONS

InnovExplo recommends additional work to confirm the economic potential of the Moss Lake deposit and the rest of Moss Lake property.

A comprehensive compilation of all historical work should be undertaken in order to potentially provide new insights on the deposit area and new targets at the property-scale. Based on the results of such a compilation study, property-scale exploration programs, such as geophysical surveys, may be warranted. InnovExplo also recommends re-logging all available historical drill core. The understanding of the deposit has significantly evolved during the past couple of decades and the advent of more modern core logging methods now make it difficult to synthesize the historical data. Such a re-logging program should be coordinated with a concurrent surface mapping program and structural study for the deposit area. Overall, this work should allow for a better understanding of the relationship between faults, shear zones, alterations and gold mineralization. The main objectives of such a study should be to: 1) better understand the gold distribution of already known showings; and 2) establish new targets on the property.

The high potential in all zones for upgrading Inferred Resources to Indicated through additional diamond drilling leads to the general recommendation of performing more in-fill drilling. Further definition drilling could upgrade Inferred Resources to the Indicated category, particularly in the area formerly constituting the gap between the former Main and the QES zones. Based on the recent interpretation, this former gap was likely a product of insufficient drilling rather than a lack of mineralization.

There is significant potential for expansion of the zones encountered at the Moss Lake deposit since all extensions remain open. The only limitation is the property boundary to the NE, which is very close to the deposit. Drilling along the extensions of the zones is warranted, with the aim of increasing the Inferred Resources.

InnovExplo recommends further exploration drilling on the Moss Lake Project to increase the Inferred Resources. More specifically, drilling is recommended along the southwest extensions of the deposit, as well as the northwest and southeast areas where parallel zones could be intercepted. Although multiple intersects have been found near the currently identified zones, the low drilling density prevented InnovExplo from developing a rigorous interpretation while investigating the possibility of defining mineralized zones.

Based on the current interpretation of the Moss Lake deposit, the authors believe that, based on the geological setting of the property, there is reasonable potential for identifying new zones parallel to the known zones. Further drilling on the Moss Lake property is recommended to properly assess its economic potential. A property-scale exploration program should also be considered.

If the compilation of historical work generates drilling targets, InnovExplo recommends further exploration drilling on the Moss Lake Project. A provision for this has been included in the budget herein but will need to be adjusted based on the results from the compilation.

Despite the fact that the PEA demonstrates a marginally economic result for the project, InnovExplo recommends additional study to further advance the project. The project has sufficient potential to increase its value by eliminating the current boundary constraint on the northeast side, by increasing resources within the current pit limit, and by better defining the water management scenario. A geotechnical study would be required to better define the pit wall slope configuration.

Caracle Creek recommends that environmental and socio-economic studies and public consultation proceed with the objective of gaining provincial and federal environmental approvals for the project in line with the feasibility timing.

The information gained from the environmental studies should be integrated into all infrastructure layout and design options under study for the next phase of development.

Estimated reclamation costs and bonding requirements should be reassessed in the next phase of development.

It is recommended that further grind size optimisation test work be carried out to determine the potential increase in gold leach recoveries arising from increased particle liberation ahead of cyanidation leaching. Additionally further ore characterisation test work including SAG mill amenability tests needs to be carried out on the different ore zones.

The peak discharge for the Wawiag diversion channel between the open pit and the TMF should be better estimated by constructing a complete hydrological model for the Wawiag River upstream from the mine site. This hydrological model should be calibrated using data from surrounding gaged watersheds with similar characteristics, like the Whitefish River watershed for Water Survey Canada gage number 01AB017.

InnovExplo recommends additional test work on rock samples to define the characteristics and risks related to the water runoff from all the industrial and piling areas on the property. At this time, there is no evidence of acid mine drainage associated with the historical underground exploration program and from the acid base accounting test work. However, additional test work should evaluate whether other deleterious elements would suggest the need to collect and treat these waters.

The pit considered in the PEA is limited to the northeast by the property boundary. Even though the current resources are within the property, this limit is a restriction on the pit size if deeper resources are defined and need to be reached. It is recommended that the issuer examine the possibility of acquiring additional mining titles and surface rights to the north.

If the exploration work outcome is positive, InnovExplo recommends an engineering study, a resource update, and a prefeasibility study in order to further advance the project.

InnovExplo is of the opinion that the character of the Moss Lake property is of sufficient merit to warrant the recommended exploration program and the work described below. The program is divided into two (2) phases. Expenditures for Phase I of the work program are estimated at C\$ 6,325,000 (including 15% for

contingencies). Expenditures for Phase II of the work program are estimated at C\$ 7,164,500 (including 15% for contingencies). The grand total is C\$ 13,489,500 (including 15% for contingencies). Phase II of the program is contingent upon the success of Phase I.

Table 26.1 presents the estimated costs for the various phases of the recommended work program.

Table 26.1 – Estimated costs for the recommended work program (in Canadian dollars)

Budget for Phase 1 – Exploration work		Cost Estimate
Compilation, re-logging, surface mapping and structural study		\$ 250,000
In-fill drilling		\$ 3,000,000
Drilling extensions of mineralized zones		\$ 1,500,000
Drilling targets generated from compilation work, re-logging, surface mapping and structural study.		\$ 750,000
Contingency (15%)		\$ 825,000
Total phase 1		\$ 6,325,000
Budget for Phase 2 – Resources estimate, engineering and environmental study		
Geotechnical study		\$ 1,500,000
Hydrogeological and water management study		\$ 500,000
Metallurgical test work and process engineering		\$ 1,100,000
Resources update & pre-feasibility report		\$ 450,000
Environmental baseline study		\$ 1,480,000
Community consultation		\$ 200,000
Environmental assessment application		\$ 600,000
Permitting application		\$ 400,000
Contingency (15%)		\$ 934,500
Total Phase 2		\$ 7,164,500
TOTAL Phase 1 and Phase 2		\$ 13,489,500

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APPENDIX I

UNITS, CONVERSION FACTORS, ABBREVIATIONS

Units

Units in this report are metric unless otherwise specified. Precious metal content is reported in gram of metal per metric ton (g/t Au or Ag) except otherwise stated. Tonnage figures are dry metric tons unless otherwise stated. The ounces are in Troy ounces.

Abbreviations used

°C	degrees Celsius	oz	troy ounces
ha	hectares	avdp	avoirdupois pound
g	grams	st	short ton
kg	kilograms	oz/t	ounces per short ton
mm	millimetres	t	metric ton (tonne)
cm	centimetres	Mt	millions of tonnes
m	metres	t.milled	tonnes milled
km	kilometres	t.moved	tonnes moved
masl	metres above sea level	tpd / tpy / tph	metric tons per day / year / hour
' or ft	feet	g/t	grams per metric ton
cfm	cubic feet per minute	ppb	parts per billion
m ³ /min	cubic metres per minute	ppm	parts per million
Mbs	megabytes per second	cps	counts per second
LOM	life-of-mine	hp	horsepower
\$M	millions of dollars	kWh/t	kilowatt-hours per tonne
\$ or C\$ or CAD	Canadian dollars	kV/kVA	kilovolts/kilovolt-amps
US\$ or USD	American dollars	kPa/MPa	kilo/mega pascals

Conversion factors for measurements

Imperial Unit	Multiplied by	Metric Unit
1 inch	25.4	mm
1 foot	0.305	m
1 acre	0.405	ha
1 ounce (troy)	31.103	g
1 pound (avdp)	0.454	kg
1 ton (short)	0.907	t
1 ounce (troy) / t (short)	34.286	g/t