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NI43-101 UPDATED PREFEASIBILITY STUDY FOR THE CROINOR GOLD PROPERTY

Prepared for:

Monarques Gold Corporation
68, avenue de la Gare, Bureau 205
Saint-Sauveur, QC J0R 1R0

Project Location:
Latitude 48°06'35" North and Longitude 77°01'20" West
Province of Québec, Canada

Prepared by:

Carl Pelletier, P.Geo.
Karine Brousseau, Eng.
Laurent Roy, Eng.
Denis Gourde, Eng.
Guillaume Noël, Eng.

InnovExplo Inc.
Val-d'Or (Québec)

Éric Poirier, Eng.

WSP Canada Inc.
Val-d'Or (Québec)

Stephan Bergeron, P.Geo., CEA.,

Amec Foster Wheeler
Environment & Infrastructure
Dorval (Québec)

Effective Date: January 19, 2018
Signature Date: March 22, 2018

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Saint-Sauveur, QC J0R 1R0

Original signed and sealed ("Carl Pelletier") — Signed at Val-d'Or on March 22, 2018

Carl Pelletier, P.Geo.
InnovExplo Inc.

Original signed and sealed ("Denis Gourde") — Signed at Val-d'Or on March 22, 2018

Denis Gourde, Eng.
InnovExplo Inc.

SIGNATURE PAGE – INNOVEXPLO INC

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Saint-Sauveur, QC J0R 1R0

Original signed and sealed ("Karine Brousseau")
Karine Brousseau, Eng.
InnovExplo Inc.

Signed at Val-d'Or on March 22, 2018

Original signed and sealed ("Laurent Roy")
Laurent Roy, Eng.
InnovExplo Inc.

Signed at Val-d'Or on March 22, 2018

Original signed and sealed ("Guillaume Noël")
Guillaume Noël, Eng.
InnovExplo Inc.

Signed at Rouyn-Noranda on March 22, 2018

SIGNATURE PAGE – WSP Canada Inc.

NI43-101 UPDATED PREFEASIBILITY STUDY FOR THE CROINOR GOLD PROPERTY

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Prepared for:
Monarques Gold Corporation
68, avenue de la Gare, Bureau 205
Saint-Sauveur, QC J0R 1R0

Original signed and sealed ("Éric Poirier")
Éric Poirier, Eng.
WSP Canada Inc.

Signed at Val-d'Or on March 22, 2018

SIGNATURE PAGE – AMEC FOSTER WHEELER ENVIRONMENT & INFRASTRUCTURE

NI43-101 UPDATED PREFEASIBILITY STUDY FOR THE CROINOR GOLD PROPERTY

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Province of Québec, Canada

Prepared for:
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Saint-Sauveur, QC J0R 1R0

Original signed and sealed ("Stephan Bergeron")
Stephan Bergeron, P.Geo.,CEA.,
Amec Foster Wheeler Environment & Infrastructure

Signed at Dorval on March 22, 2018

CERTIFICATE OF AUTHOR – CARL PELLETIER, P. GEO.

I, Carl Pelletier, P. Geo, B.Sc (OGQ No. 384, APGO No. 1713, EGBC, no. 43167) do hereby certify that:

1. At the issuance of the report titled "NI43-101 Updated prefeasibility study for the Croinor Gold Property", portions of which have been reproduced in this Technical Report, I am a Consulting Geologist of InnovExplo Inc., 560 3e Avenue, Val-d'Or, Québec, Canada, J9P 1S4.
2. I graduated with a Bachelor's degree in Geology (B.Sc.) from Université du Québec à Montréal (Montréal, Québec) in 1992, and I initiated a Master's degree at the same university for which I completed the course program but not the thesis.
3. I am a member of the Ordre des Géologues du Québec (OGQ, no. 384), the Association of Professional Geoscientists of Ontario (APGO, no. 1713), the Association of Professional Engineers and Geoscientists of British Columbia (EGBC, no. 43167) and of the Canadian Institute of Mines (CIM).
4. My relevant experience includes a total of 26 years since my graduation from university. My mining expertise has been acquired in the Silidor, Sleeping Giant, Bousquet II, Sigma-Lamaque and Beaufor mines, whereas my exploration experience has been acquired with Cambior Inc. and McWatters Mining Inc. I have been a consulting geologist for InnovExplo Inc. since February 2004.
5. I have read the definition of a qualified person ("QP") set out in Regulation 43-101/National Instrument 43-101 ("NI 43-101") and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a QP for the purposes of NI 43-101.
6. I share responsibility for section 1, 2, 3, 14, 25, 26 and 27 of the technical report entitled "NI43-101 Updated prefeasibility study for the Croinor Gold Property" (the "Technical Report"), effective date of January 19th, 2018 and signature date of March 22, 2018 prepared for Monarques Gold Corporation.
7. I have conducted several field visits on the Croinor Project between September 2004 and May 2005 and again in 2010.
8. I have contributed in multiple reports on the property that is the subject of the Technical Report on behalf of South Malartic in 2005, of Blue Note and X-Ore in 2011 and 2012 and on Behalf of Monarques Gold Corporation in 2014.
9. I am not aware of any material fact or material change with respect to the subject matter of the Report that is not reflected in the Report, the omission to disclose which would make the Report misleading.
10. I am independent of the issuer applying all of the tests in section 1.5 of NI 43-101.
11. I have read NI 43-101 respecting standards of disclosure for mineral projects and Form 43-101F1, and the items of the Report, for which I was responsible, have been prepared in accordance with that instrument and form.

Signed this 22nd day of March 2018 in Val-d'Or, Québec.

Carl Pelletier (Original signed and sealed)

Carl Pelletier, P.Geo. (OGQ No. 384, APGO No. 1713, EGBC, no. 43167)
InnovExplo Inc.

CERTIFICATE OF AUTHOR – DENIS GOURDE, ENG.

I, Denis Gourde, Eng. (OIQ No. 43860) do hereby certify that:

1. At the issuance of the report titled "NI43-101 Updated prefeasibility study for the Croinor Gold Property", portions of which have been reproduced in this Technical Report, I am employed as a Consulting Engineer with InnovExplo Inc., 560 3e 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 1987.
3. I am a member of the Ordre des ingénieurs du Québec (OIQ No. 43860).
4. I have worked as an engineer for a total of thirty (30) years since graduating from university. My mining expertise was acquired while working for Agnico Eagle, Iamgold, Cambior, MSV Ressources and Ross Finlay. I have been a consulting engineer for InnovExplo Inc. since November 2013.
5. I have read the definition of a qualified person ("QP") set out in Regulation 43-101/National Instrument 43-101 ("NI 43-101") and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a QP for the purposes of NI 43-101.
6. I share responsibility for section 1, 2, 3, 15, 16, 18.15, 18.16, 19, 21, 22, 24, 25, 26 and 27 of the technical report entitled "NI43-101 Updated prefeasibility study for the Croinor Gold Property" (the "Technical Report"), effective date of January 19th, 2018 and signature date of March 22, 2018 prepared for Monarques Gold Corporation.
7. I have not visited the property for the purpose of the Technical Report.
8. I had prior involvement with the property that is the subject of the Technical Report as a supervisor for the 2014 Technical Report on behalf of Monarques Gold Corporation.
9. I am not aware of any material fact or material change with respect to the subject matter of the Report that is not reflected in the Report, the omission to disclose which would make the Report misleading.
10. I am independent of the issuer applying all of the tests in section 1.5 of NI 43-101.
11. I have read NI 43-101 respecting standards of disclosure for mineral projects and Form 43-101F1, and the items of the Report, for which I was responsible, have been prepared in accordance with that instrument and form.

Signed this 22nd day of March 2018 in Val-d'Or, Québec.

Denis Gourde (Original signed and sealed)

Denis Gourde, Eng. (OIQ No. 43860)
InnovExplo Inc.

CERTIFICATE OF AUTHOR – KARINE BROUSSEAU, ENG.

I, Karine Brousseau, Eng. (OIQ No. 121871, EGBC No. 44157), do hereby certify that:

1. At the issuance of the report titled "NI43-101 Updated prefeasibility study for the Croinor Gold Property", portions of which have been reproduced in this Technical Report, I am employed as a Consulting Engineer with InnovExplo Inc., 560 3e Avenue, Val-d'Or, Québec, Canada, J9P 1S4.
2. I graduated with a Bachelor's degree Geological Engineering (Bsc) from Université Laval (Sainte-Foy, Québec) in 1998.
3. I am a member of the Ordre des ingénieurs du Québec (OIQ No. 121871) and of the Engineers & Geoscientists British Columbia (EGBC No. 44157).
4. I have worked as geologist in the exploration and mining industry for over eighteen (18) years since graduating from university. My exploration expertise has been acquired with SOQUEM, the Ministry of Natural Resources of Québec (Geology Branch), and Cambior. I have been a consulting geologist for InnovExplo Inc. since September 2005.
5. I have read the definition of a qualified person ("QP") set out in Regulation 43-101/National Instrument 43-101 ("NI 43-101") and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a QP for the purposes of NI 43-101.
6. I am author and responsible for section 4, 5, 6 to 12 and 23; and share responsibility for section 1, 2, 3, 14, 25, 26 and 27 of the technical report entitled "NI43-101 Updated prefeasibility study for the Croinor Gold Property" (the "Technical Report"), effective date of January 19th, 2018 and signature date of March 22, 2018 prepared for Monarques Gold Corporation.
7. I have not visited the property for the purpose of the Technical Report.
8. I have contributed in multiple reports on the property that is the subject of the Technical Report on behalf of Blue Note and X-Ore in 2011 and 2012, on behalf of Monarques Resources Inc. in 2014 and on behalf of Monarques Gold Corporation Inc. in 2016
9. I am not aware of any material fact or material change with respect to the subject matter of the Report that is not reflected in the Report, the omission to disclose which would make the Report misleading.
10. I am independent of the issuer applying all of the tests in section 1.5 of NI 43-101.
11. I have read NI 43-101 respecting standards of disclosure for mineral projects and Form 43-101F1, and the items of the Report, for which I was responsible, have been prepared in accordance with that instrument and form.

Signed this 22nd day of March 2018 in Val-d'or, Québec.

Karine Brousseau (Original signed and sealed)

Karine Brousseau, Eng. (OIQ No. 121871, EGBC No. 44157)
InnovExplo Inc.

CERTIFICATE OF AUTHOR – LAURENT ROY, ENG.

I, Laurent Roy, Eng. (OIQ No. 109779) do hereby certify that:

1. At the issuance of the report titled "NI43-101 Updated prefeasibility study for the Croinor Gold Property", portions of which have been reproduced in this Technical Report, I am employed as a Consulting Engineer with InnovExplo Inc., 560 3e 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 1992.
3. I am a member of the Ordre des ingénieurs du Québec (OIQ No. 109779).
4. I have worked as an engineer for a total of twenty-four (24) years since graduating from university. My mining expertise was acquired while working for Talpa Mining Contractor, Richmont Mines at the Francoeur and Beaufor mines, and the Doyon-Westwood and Casa Berardi mines. I have been a consulting engineer for InnovExplo Inc. since September 2012.
5. I have read the definition of a qualified person ("QP") set out in Regulation 43-101/National Instrument 43-101 ("NI 43-101") and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a QP for the purposes of NI 43-101.
6. I am author and share responsibility for section 1, 2, 3, 15, 16, 18.15, 18.16, 19, 21, 22, 24, 25, 26 and 27 of the technical report entitled "NI43-101 Updated prefeasibility study for the Croinor Gold Property" (the "Technical Report"), effective date of January 19th, 2018 and signature date of March 22, 2018 prepared for Monarques Gold Corporation.
7. I have not visited the property for the purpose of the Technical Report.
8. I have not had prior involvement with the property that is the subject of the Technical Report.
9. I am not aware of any material fact or material change with respect to the subject matter of the Report that is not reflected in the Report, the omission to disclose which would make the Report misleading.
10. I am independent of the issuer applying all of the tests in section 1.5 of NI 43-101.
11. I have read NI 43-101 respecting standards of disclosure for mineral projects and Form 43-101F1, and the items of the Report, for which I was responsible, have been prepared in accordance with that instrument and form.

Signed this 22nd day of March 2018 in Val-d'Or, Québec.

Laurent Roy (Original signed and sealed)

Laurent Roy, Eng. (OIQ No. 109779)
InnovExplo Inc.

CERTIFICATE OF AUTHOR – GUILLAUME NOËL, ENG.

I, Guillaume Noël, Eng. (OIQ No. 131725) do hereby certify that:

1. At the issuance of the report titled "NI43-101 Updated prefeasibility study for the Croinor Gold Property", portions of which have been reproduced in this Technical Report, I am employed as a Consulting Engineer with InnovExplo Inc., 560 3^{e} Avenue, Val-d'Or, Québec, Canada, J9P 1S4.
2. I graduated with a Bachelor's degree in Metallurgical Engineering from Laval University (Quebec City, Québec) in 2002.
3. I am a member of the Ordre des ingénieurs du Québec (OIQ No. 131725).
4. I have worked as a metallurgical engineer for a total of fifteen (15) years since graduating from university. My expertise was acquired while working in metallurgical operations for IAMGOLD Corporation, Detour Gold Corporation and as a consulting engineer with InnovExplo Inc.
5. I have read the definition of a qualified person ("QP") set out in Regulation 43-101/National Instrument 43-101 ("NI 43-101") and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a QP for the purposes of NI 43-101.
6. I am author and responsible for section 13 and 17 and share responsibility for section 1, 2, 3, 25, 26 and 27 of the technical report entitled "NI43-101 Updated prefeasibility study for the Croinor Gold Property" (the "Technical Report"), effective date of January 19th, 2018 and signature date of March 22, 2018 prepared for Monarques Gold Corporation.
7. I visited the Croinor Gold Property on June 13, 2017 and the Beacon Mill site on April 26, 2017.
8. have not had prior involvement with the property that is the subject of the Technical Report.
9. I am not aware of any material fact or material change with respect to the subject matter of the Report that is not reflected in the Report, the omission to disclose which would make the Report misleading.
10. I am independent of the issuer applying all of the tests in section 1.5 of NI 43-101.
11. I have read NI 43-101 respecting standards of disclosure for mineral projects and Form 43-101F1, and the items of the Report, for which I was responsible, have been prepared in accordance with that instrument and form.

Signed this this 22nd day of March 2018 in Rouyn-Noranda, Québec.

Guillaume Noël (Original signed and sealed)

Guillaume Noël, Eng. (OIQ No. 131725)
InnovExplo Inc.

CERTIFICATE OF AUTHOR – ÉRIC POIRIER, ENG.

I, Éric Poirier, Eng. (OIQ No. 120063, PEO No. 100112909, NAPEG No. L2229) do hereby certify that:

1. At the issuance of the report titled "NI43-101 Updated prefeasibility study for the Croinor Gold Property", portions of which have been reproduced in this Technical Report, I am employed as a Consulting Engineer with WSP Canada Inc., 1075, 3rd Avenue East, Val-d'Or, Quebec, Canada, J9P 0J7.
2. I graduated with a Bachelor's degree in Electrical Engineering from University of Quebec in Chicoutimi (Chicoutimi, Quebec) in 1996.
3. I am a member of the Ordre des Ingénieurs du Quebec (OIQ No. 120063), Professional Engineers Ontario (PEO No. 100112909) and Northwest Territories and Nunavut Association of Professional Engineers and Geoscientists (NAPEG No. L2229).
4. I have worked as project manager and electrical engineer for a total of twenty (20) years since graduating from university. My expertise was acquired while working as multi-disciplinary project manager, mining infrastructure design and operations lead, including surface infrastructure design, electrical distribution and communications.
5. I have read the definition of a qualified person ("QP") set out in Regulation 43-101/National Instrument 43-101 ("NI 43-101") and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a QP for the purposes of NI 43-101.
6. I am author and responsible for section 18 (except 18.15 & 18.16); and share responsibility for section 1, 2, 3, 21, 25, 26 and 27 of the technical report entitled "NI43-101 Updated prefeasibility study for the Croinor Gold Property" (the "Technical Report"), effective date of January 19th, 2018 and signature date of March 22, 2018 prepared for Monarques Gold Corporation.
7. I visited the Croinor site on June 19, 2017.
8. I had prior involvement with the property that is the subject of the Technical Report as project manager for the Croinor site power line detailed engineering.
9. I am not aware of any material fact or material change with respect to the subject matter of the Report that is not reflected in the Report, the omission to disclose which would make the Report misleading.
10. I am independent of the issuer applying all of the tests in section 1.5 of NI 43-101.
11. I have read NI 43-101 respecting standards of disclosure for mineral projects and Form 43-101F1, and the items of the Report, for which I was responsible, have been prepared in accordance with that instrument and form.

Signed this 22nd day of March 2018 in Val-d'Or, Québec.

Éric Poirier (Original signed and sealed)

Éric Poirier, Eng. (OIQ No. 120063, PEO No. 100112909, NAPEG No. L2229)
WSP Canada Inc.

CERTIFICATE OF AUTHOR – STEPHAN BERGERON, P.GEO.

I, Stephan Bergeron, P.Geo., CEA., (OGQ No. 787, QAEA No. 902) do hereby certify that:

1. At the issuance of the report titled "NI43-101 Updated prefeasibility study for the Croinor Gold Property", portions of which have been reproduced in this Technical Report, I am employed as a Amec Foster Wheeler Environment & Infrastructure, a division of Amec Foster Wheeler Americas Limited. 1425, Transcanadienne, suite 400, Dorval, Ville, Québec, Canada, H9P 2W9.
2. I am a graduate of University du Québec à Montréal in 1997 with a degree in Physical Geography, with a geomorphology specialization, and a Masters degree in Mineral Engineering, with an hydrogeological specialization from the École Polytechnique de Montréal in 1999. In addition, I have taken specialist training in environmental site assessment and auditing from University of Sherbrooke in 2001.
3. I am a member of the Ordre des Géologues du Québec (OGQ No. 787). I am also a Certified Environmental Auditor (CEA No. 902) from the Québec Association of Environmental Auditors (QAEA)
4. I have worked as an environmental geologist for a total of twenty (20) years since graduating from university. My expertise was acquired while working as in Environmental Regulations (permitting); Environmental management and monitoring programs; Environmental auditing; Management of multi-disciplinary environmental investigations.
5. I have read the definition of a qualified person ("QP") set out in Regulation 43-101/National Instrument 43-101 ("NI 43-101") and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a QP for the purposes of NI 43-101.
6. I am author and responsible for sections 20 and share responsibility for section 1, 2, 3, 21, 25, 26 and 27 of the technical report entitled "NI43-101 Updated prefeasibility study for the Croinor Gold Property" (the "Technical Report"), effective date of January 19th, 2018 and signature date of March 22, 2018 prepared for Monarques Gold Corporation.
7. I have not visited the property for the purpose of the Technical Report.
8. I have not had prior involvement with the property that is the subject of the Technical Report.
9. I am not aware of any material fact or material change with respect to the subject matter of the Report that is not reflected in the Report, the omission to disclose which would make the Report misleading.
10. I am independent of the issuer applying all of the tests in section 1.5 of NI 43-101.
11. I have read NI 43-101 respecting standards of disclosure for mineral projects and Form 43-101F1, and the items of the Report, for which I was responsible, have been prepared in accordance with that instrument and form.

Signed this 22nd day of March 2018 in Dorval, Québec.

Stephan Bergeron (Original signed and sealed)

Stephan Bergeron, P.Geo.,CEA., (OGQ No. 787, CEA No. 902)
Amec Foster Wheeler Environment & Infrastructure

1 SUMMARY

1.1 Introduction

Jean-Marc Lacoste, President and Chief Executive Officer of Monarques Gold Corporation ("Monarques" or the "issuer"), mandated InnovExplo Inc. ("InnovExplo"), in collaboration with WSP Canada Inc. ("WSP") and Amec Foster Wheeler Environment & Infrastructure, a division of Amec Foster Wheeler Americas Limited ("Amec Foster Wheeler"), to update the preliminary feasibility study (the "2018 PFS") on the mineral resource and mineral reserve estimates for the Croinor Gold Mine Project (the "Project" or the "Croinor Gold Project") and to prepare a supporting technical report (the "Technical Report").

The Technical Report has been prepared in accordance with Canadian Securities Administrators' National Instrument 43-101 Respecting Standards of Disclosure for Mineral Projects ("NI 43 101" or "43 101") and its related Form 43 101F1.

The mineral reserve estimate has an effective date of January 19, 2018. The mineral resource estimate is unmodified from Poirier et al. (2016). InnovExplo is an independent mining and exploration consulting firm based in Val-d'Or (Québec).

1.2 Property Description and Ownership

The Croinor Gold Property is located in the Abitibi region, approximately 57 km east of the city of Val-d'Or (about 75 km by road), in the province of Québec, Canada. The approximate coordinates of the geographic centre of the Property are 77°01'20"W and 48°06'35"N (UTM coordinates: 349530E and 5330425N, NAD 83, Zone 18). The nearest community is Louvicourt, 27 km west of the Property.

The current Property consists of one contiguous block of 334 claims staked by electronic map designation ("map-designated cells") and one mining lease covering an aggregate area of 15,060.75 ha.

On February 23, 2017, X-Ore, a wholly owned subsidiary of the issuer, entered into a royalty purchase agreement and a royalty agreement with Osisko Gold Royalties Ltd ("Osisko"). X-Ore entered into a purchase and sale agreement with the estate of F.D Corcoran and David E. Agar (the "beneficiaries") to purchase back the 0.75% NSR royalty on 45 claims and the one (1) mining lease, corresponding to 50% of the existing royalty to the beneficiaries pursuant to the agreement of February 28, 2014. X-Ore also agreed to grant Osisko a royalty of 0.75% NSR on the entire Croinor Gold Property in consideration of an aggregate cash payment of $250,000. Additionally, Osisko would subscribe for 1,111,111 units of the issuer (the "units") at a price of $0.45 per unit for a total consideration of $500,000. Each unit consisted of one common share in the capital of the issuer and one common share purchase warrant, with each warrant entitling the holder to purchase one (1) common share at a price of $0.60 within 36 months from the closing date.

As a result of the foregoing, an aggregate of 1.5% NSR royalty still applies to 45 mining claims and the one (1) mining lease on the Croinor Gold Property.

1.3 Geology and Mineralization

The Croinor Gold Property is located in Pershing Township, 15 kilometres west of the Grenville Front and about 57 km east of the city of Val-d'Or, in the eastern portion of the Abitibi Greenstone Belt.

The Croinor Sill is located in the central part of the Property. It has a general attitude of N295° and dips north at 50°–65°. It ranges from 60 m to 120 m in thickness over a strike length of approximately 3 km. The sill, which hosts the gold mineralization in the Croinor deposit, can be observed on several outcrops and is intersected by numerous drill holes. Near the Croinor deposit, the sill is in direct contact with pyroclastic units. Elsewhere, the sill is in contact with fragmental volcanic rocks, and sometimes with massive volcanic rocks. Generally, the northern and southern contacts of the sill with the enclosing volcanic rocks are clearly observed by the sudden appearance or disappearance of pyroclastic fragments. The northern and southern contacts are generally foliated parallel to the regional S2 schistosity. They are strongly foliated to sheared in places, but practically undeformed in others.

Croinor deposit gold-rich lenses is made of quartz-carbonate-tourmaline-pyrite veins, altered pyritic host rock material, and/or tectonic breccia (pyritic host fragments within a quartz-carbonate-tourmaline-pyrite vein). These mineralized lenses are spatially controlled by reverse-oblique shear zones that crosscut and displaces both the lenses and its dioritic host. A hydrothermal alteration halo surrounds these structures. Zoning begins with an epidote-chlorite envelope that gradually changes into a chlorite-carbonate zone closer to the shear. Within the shear structure itself, the host rock has undergone extensive alteration characterized by a sericite-ankerite-pyrite assemblage. Several types of veins have been identified by previous authors including shear veins, brecciated quartz-tourmaline veins, quartz-tourmaline-carbonate veins, quartz-tourmaline veinlets, tourmaline veins, tension veins, and tectonic breccia.

1.4 Mineral Processing and Metallurgical Testing

In 2017, COREM carried out a new series of laboratory test work campaigns on samples from the Croinor deposit and the results were published in a report titled “Evaluation of gravimetric concentration for a gold ore by the GRG method and evaluation of gold recovery by cyanidation tests”, dated May 15, 2017 (Olsen and Mahieu, 2017). The samples were prepared by Monarques. InnovExplo cannot determine if they were representative of the deposit. Gold recovery from the feed cyanidation was 96.1% on average and increased by about 1.9% when gravity was added to an average value of 97.9%. The use of gravity reduced cyanidation time while increasing overall gold recovery, which could be advantageous in cases where the retention time of the cyanidation circuit in the plant is limited or to increase the tonnage without having loss of gold recovery.

1.5 Mineral Resource Estimate

Before this study, the geological interpretation had not been reviewed since 2015, even though exploration and diamond drilling campaigns were conducted on the Property in 2016 and 2017. A total of 25,645 m (110 DDH) has been drilled on the Property since November 2015. Of that total, 43 holes were drilled in the resource area but excluded from the MRE as they were completed after the database close-out date. The impact of each drill hole located inside the resource estimate area was evaluated carefully. Overall, InnovExplo is of the opinion that the new information collected from the 2016–2017 drilling program does not have a material impact on the 2015 MRE or the present PFS update based on that estimate. The majority of the new DDH confirm the geological model, including the location, grade and thickness of the mineralized zones.

The 2015 Mineral Resource Estimate (the “2015 MRE”) presented herein was published in a report titled “*Technical Report and 2015 Mineral Resource Estimate update for the Croinor Gold Property*”, dated January 8, 2016 (Poirier et al., 2016). It was prepared by Karine Brousseau, Eng., under the supervision of Carl Pelletier, P.Geo., both of InnovExplo, using all available information. The main objective of the mandate in 2015 was to update the 2014 MRE, which was published in a report titled “*Technical Report and Updated Prefeasibility Study for the Croinor Gold Property (Amended)*”, dated October 30, 2014 (Poirier et al., 2014).

The mineral resources presented herein are not mineral reserves since they have no demonstrated economic viability. The result of the 2015 study was a single mineral resource estimate for 51 gold-bearing zones. The 2015 MRE includes measured, indicated, and inferred resources for an underground volume. The effective date is November 6, 2015.

The 2015 MRE was prepared using 3D block modelling and the inverse distance power six (ID6) interpolation method for a corridor 1,570 m long, from 910 mW to 640 mE (local grid oriented at 21.9167°Az), and down to a vertical depth of 545 m below surface.

All existing drill hole databases for the Property were compiled and merged for the 2015 MRE. The estimate also includes six holes drilled in 2011 (CR-11-414 to CR-11-419) that were not included in the previous 2014 estimate because assays were pending, as well as 36 holes drilled in 2015. In all, the estimate considered 1,257 surface and underground DDH with conventional analytical gold assay results and coded lithologies.

InnovExplo believes the 2015 MRE can be classified as Measured, Indicated and Inferred resources based on the density of the processed data, the search ellipse criteria, and the specific interpolation parameters. The estimate is compliant with CIM Definition Standards. The resources were estimated using different gold cut-off grades and a minimum width of 1.8 m (true width). The selected cut-off of 4 g/t was used to determine the mineral potential of the deposit.

The following tables display the results of the In Situ Mineral Resource Estimate for the Croinor deposit (51 lenses). InnovExplo is of the opinion that the 2015 MRE can be used for a PFS.

Results of the In Situ Mineral Resource Estimate (Measured, Indicated, and Measured+Indicated Resources) at different cut-off grades (inclusive of Mineral Reserves) (Table 14.8)

Cut-off	Measured Resources			Indicated Resources			Measured + Indicated Resources		
g/t	Tonnes	Au g/t	Oz Au	Tonnes	Au g/t	Oz Au	Tonnes	Au g/t	Oz Au
> 5.00	59,000	9.86	18,700	538,000	10.85	187,600	597,000	10.75	206,300
> 4.00	80,100	8.44	21,700	724,500	9.20	214,300	804,600	9.12	236,000
> 3.00	111,900	7.02	25,300	997,500	7.64	244,900	1,109,400	7.57	270,200

- The independent and qualified persons for the mineral resource estimate, as defined by NI 43-101, are Karine Brousseau, Eng and Carl Pelletier, P.Geo., both of InnovExplo Inc. The effective date of the estimate is November 6, 2015.
- Mineral resources are not mineral reserves and do not have demonstrated economic viability.
- The mineral resources are presented inclusive of mineral reserves, meaning that mineral reserves were not subtracted from the resources presented herein.
- The results are presented undiluted and in situ. The estimate includes 51 gold-bearing lenses, some of which contain resources below the cut-off grade.
- The mineral resources were compiled using cut-off grades of 3.0 g/t, 4.0 g/t and 5.0 g/t Au; however, the official resource is at a cut-off grade of 4.0 g/t Au.
- The cut-off grade should be reviewed in light of prevailing market conditions (gold price, exchange rate and mining cost).
- A density of 2.8 g/cm^3 was used for the mineralized zones and the waste rock.
- A minimum true thickness of 1.8 m was applied, using the grade of the adjacent material when assayed, or a value of zero when not assayed.
- High-grade capping was done on raw data and established at 70.0 g/t Au for diamond drill hole assays and 55.0 g/t Au for underground channel sample assays.
- Compositing was done on drill hole sections and underground channel sample sections falling within the mineralized zones (composite = 1 metre).
- Resources were estimated using GEOVIA GEMS 6.7 software from diamond drill holes and underground channel samples using the ID6 interpolation method in a block model (block size 5 m x 2.5 m x 2.5 m).
- The Measured, Indicated and Inferred categories were defined using the parameters for the various passes.
- Isolated blocks in the Indicated category showing no spatial continuity in terms of grade and/or information density were reclassified from Indicated to Inferred.
- Blocks in the Inferred category showing good spatial continuity in terms of grade and/or information density were reclassified from Inferred to Indicated.
- Ounce (troy) = metric tonnes x grade / 31.10348. Calculations used metric units (metres, tonnes, grams per tonne).
- The tonnage estimate was rounded to the nearest hundred tonnes. Any discrepancies in the totals are due to rounding effect; rounding followed the recommendations in Form 43-101F1.
- InnovExplo is not aware of any known environmental, permitting, legal, title-related, taxation, socio-political, marketing or other relevant issue that could materially affect the mineral resource estimate.

Results of the In Situ Mineral Resource Estimate (Inferred Resources) at different cut-off grades (Table 14.9)

Inferred Resources			
Cut-off g/t	**Tonnes**	**Au g/t**	**Oz Au**
> 5.00	1,010	9.22	30,100
> 4.00	160,800	7.42	38,400
> 3.00	263,800	5.86	49,700

- The independent and qualified persons for the Mineral Resource Estimate, as defined by NI 43-101, are Karine Brousseau, Eng and Carl Pelletier, P.Geo., both of InnovExplo. The effective date of the estimate is November 6, 2015.
- Mineral resources are not mineral reserves and do not have demonstrated economic viability.
- The mineral resources are presented inclusive of mineral reserves, meaning that mineral reserves were not subtracted from the resources presented herein.
- The results are presented undiluted and in situ. The estimate includes 51 gold-bearing lenses, some of which contain resources below the cut-off grade.
- The mineral resources were compiled using cut-off grades of 3.0 g/t, 4.0 g/t and 5.0 g/t Au; however, the official resource is at a cut-off grade of 4.0 g/t Au.
- The cut-off grade should be reviewed in light of prevailing market conditions (gold price, exchange rate and mining cost).
- A density of 2.8 g/cm^3 was used for the mineralized zones and the waste rock.
- A minimum true thickness of 1.8 m was applied, using the grade of the adjacent material when assayed, or a value of zero when not assayed.
- High-grade capping was done on raw data and established at 70.0 g/t Au for diamond drill hole assays and 55.0 g/t Au for underground channel sample assays.
- Compositing was done on drill hole sections and underground channel sample sections falling within the mineralized zones (composite = 1 metre).
- Resources were estimated using GEOVIA GEMS 6.7 software from diamond drill holes and underground channel samples using the ID6 interpolation method in a block model (block size 5 m x 2.5 m x 2.5 m).
- The Measured, Indicated and Inferred categories were defined using the parameters for the various passes.
- Isolated blocks in the Indicated category showing no spatial continuity in terms of grade and/or information density were reclassified from Indicated to Inferred.
- Blocks in the Inferred category showing good spatial continuity in terms of grade and/or information density were reclassified from Inferred to Indicated.
- Ounce (troy) = metric tonnes x grade / 31.10348. Calculations used metric units (metres, tonnes, grams per tonne).
- The tonnage estimate was rounded to the nearest hundred tonnes. Any discrepancies in the totals are due to rounding effect; rounding followed the recommendations in Form 43-101F1.
- InnovExplo is not aware of any known environmental, permitting, legal, title-related, taxation, socio-political, marketing or other relevant issue that could materially affect the mineral resource estimate.

1.6 Mineral Reserve Estimate

This mineral reserve estimate is based on the 2015 Mineral Resource Estimate presented in Item 14 and originally published in a report titled "Technical Report and 2015 Mineral Resource Estimate Update for the Croinor Gold Property", dated January 8, 2016 (Poirier et al., 2016).

The previous mineral reserve estimate for the Croinor deposit was in 2014, published in a report titled "*Technical Report and Updated Prefeasibility Study for the Croinor Gold Property (Amended)*", dated October 30, 2014 (Poirier et al., 2014). The 2014 mineral reserve statement (table below) was not updated in Poirier et al. (2016).

The 2018 mineral reserve estimate is based on a gold price of C$1,657/oz, compared to a price of C$1,430/oz used in 2014.

2014 Statement of Mineral Reserves (Table 15.1)

Category	2014		
	Tonnes (t)	Grade (g/t Au)	Ounces (oz)
Proven	68,625	6.25	13,789
Probable	472 ,909	6.85	104,081
Total reserve	541,534	6.77	117,870

The main highlights of the 2018 analysis, compared to the preceding report, are as follows:

- 10% increase in proven and probable reserves;
- 16% reduction on the average operating cost (USD 639/oz);
- 13% reduction on all-in cost (USD 902/oz);
- Average annual production of 31,472 oz;
- 2.6 years of mine life production;
- After tax IRR of 30%;
- The project still has excellent exploration potential.

For the 2018 PFS, a new cut-off grade was calculated to better reflect the current change in gold price and mining cost. The reserve was then reviewed in order to take out the tonnage that is no longer economic.

1.7 Cut-off Grade Parameters

For the calculation of this cut-off grade, a metal price of USD 1,252 at an exchange rate of 1.323 was used. Each stope that was close to the cut-off grade was evaluated individually to determine whether it would be included in the study or discarded. The remaining parameters used in the cut-off grade estimation are presented in the table below.

Cut-off Grade Parameters (Table 15.2)

Parameters	Units	Mining Method	
		Long-hole	Room and pillar
Operating Cost	$/t	175.96	225.54
Mint cost	$/oz	5.00	5.00
Mill recovery	%	97.5	97.5
Mining dilution	%	30	5
Cut-off grade	g/t	4.42	4.57

The next table presents the estimated proven and probable 2018 reserves, which total 129,292 oz after applying the appropriate mining recovery and dilution factors for the selected method.

2018 Mineral Reserve Statement for the Croinor Gold Property (Table 15.3)

Category	2018		
	Tonnes (t)	Grade (g/t Au)	Ounces (oz)
Proven	166,540	5.33	28,543
Probable	436,454	7.18	100,759
Total reserve	**602,994**	**6.66**	**129,292**

- The independent and qualified persons for the mineral reserve estimate, as defined by NI 43-101 are Laurent Roy, Eng., and Denis Gourde, Eng., of InnovExplo. The effective date of the estimate is January 19, 2018.
- The economic viability of the mineral reserve has been demonstrated.
- Results include 30% dilution for the long-hole stopes, based on a minimum mining width of 1.8 m, and 5% dilution for the room-and-pillar stopes, based on a minimum mining working height of 1.8 m.
- Results reflect an ore recovery of 95% for the long-hole stopes (pillars left in place are not included in the estimate) and 85% for the room-and-pillar stopes.
- Gold recovery at the Beacon Mill is 97.5%.
- The mineral reserves were compiled using cut-off grades of 4.42 g/t Au (long-hole) and 4.57 g/t Au (room and pillar). The appropriate cut-off grade will vary depending on the economic context and the operating parameters determined.
- A density of 2.80 t/m^3 was used.
- Ounce (troy) = tonnes x grade / 31.1035. Calculations used metric units (metres, tonnes, grams per tonne).
- The mineral reserves were estimated using a long-term gold price of CAD 1,656.68 per ounce (gold price of USD 1,252.21 per ounce and an exchange rate of 1.323 CAD/1 USD).
- Estimated tonnage and ounces were rounded to the nearest hundred. Any discrepancies in the totals are due to the effect of rounding; rounding followed the recommendations in Form 43-101F1.
- CIM guidance and definitions were followed in the preparation of this mineral reserve estimate.
- InnovExplo is not aware of any known environmental, permitting, legal, title-related, taxation, socio-political, marketing or other relevant issue that could materially affect the mineral resource estimate.

Based on the information presented in sections 16 to 22 of this report, InnovExplo can demonstrate the economic viability of the proposed extraction and processing of the proven and probable reserves found within the mine plan. Overall, InnovExplo considers that its basic engineering project meets the requirements of a PFS.

InnovExplo and the QPs are not aware of any environmental, permitting, legal, title, taxation, socio-economic, marketing, political or other relevant issue that would materially affect the mineral reserve estimate. InnovExplo considers the present PFS to be reliable and thorough, based on quality data, reasonable hypotheses and parameters compliant with NI 43-101 requirements and CIM Definition Standards.

1.8 Mining Method

This section of the report describes the results of the proposed mine plan developed by InnovExplo for the present PFS update on the Croinor Gold Property. The mine plan was based on the 2015 Mineral Resource Estimate produced by InnovExplo (Poirier et al., 2016).

The 2015 measured and indicated resources were converted to proven and probable reserves, based on the parameters described in Section 15, for the underground mining of narrow subvertical veins. A large portion of the identified resources dip at less than 45°. This dip is unfavourable to long-hole mining since the broken ore does not flow easily on the footwall. It is also unfavourable for the room-and-pillar method as the dip makes it hard for workers to travel in the stope with the equipment and material.

The mine plan combines conventional and mechanized mining. The approach in this study has been to force the application of long-hole mining by adding dilution to ensure a minimum footwall angle of 43°. When this approach was not convenient, room and pillar mining was selected. In a first step, the use of MSO software made these stope analyses possible by calculating optimized stope shapes according to specified mining parameters. The final stopes were manually designed to optimize ore recovery.

The ore will be transported to surface using a combination of 3.5 yd^3 and 6 yd^3 LHDs and 30 t trucks. Waste material will either be brought to surface and be stored on the existing waste pad or used to backfill mined out stopes when possible.

The deposit will be accessed via a ramp. The existing ramp will be restored to level 40 and a new section will be excavated to access all resources. The production drifts will be accessed via crosscuts connecting to the ramp. A small portion of the resources will be mined using captive methods, however the haulage will always be mechanized.

1.9 Dewatering

Prior to any underground rehabilitation or development work, the existing mine infrastructure will have to be dewatered. The total estimated volume of water present in the mine and the two open pits is 504,082 m^3.

Water will be pumped from the East and West pits. Initial dewatering is expected to be carried out at a rate of 4,800 m^3/day, resulting in an approximate dewatering period of 92 days. Mine water will be pumped and processed through dewatering bags to clarify the water and collect the mine sludge. Discharge from the dewatering bags will be directed to the existing settling pond. The pond effluent will be monitored and managed in accordance with MMER and Directive 019 requirements.

1.10 Mining Rate

The production rate will start at an average of 446 tpd during the first month following the start of the preproduction, and will slowly ramp up to an average of 575 tpd. The overall project mine life is expected to be four years, including:

- Year 1: 12 months of pre-production;
- Year 2: 12 months of full production;
- Year 3: 12 months of full production;
- Year 4: Seven months of full production and one additional month of ore processing (total of 8 months).

The mine plan should be achievable given the flexibility and number of available work faces. Table below summarizes the yearly tonnage distribution according to the mine plan.

Mine Plan Tonnage Distribution (Table 16.11)

Mine production (Ore)	Units	Year 1	Year 2	Year 3	Year 4	Total
Development	t mined	35,907	57,502	30,026	9,731	**133,165**
Grade	g/t	4.44	5.34	4.32	2.89	**4.69**
Long Hole	t mined	22,132	107,484	128,904	116,488	**375,007**
Grade	g/t	6.30	7.26	6.84	6.81	**6.92**
Room & pillar	t mined	4,362	36,657	50,984	2,818	**94,821**
Grade	g/t	6.18	8.90	8.36	6.42	**8.41**
Total mined	t mined	62,401	201,642	209,914	129,036	**602,994**
Grade	g/t	5.22	7.01	6.85	6.50	**6.66**
Total milled	t milled	62,401	201,642	209,914	129,036	**602,994**
Grade	g/t	5.22	7.01	6.85	6.50	**6.66**
Recovery	**%**	**97.50%**	**97.50%**	**97.50%**	**97.50%**	**97.50%**
Gold Produced	**oz**	**10,211**	**44,291**	**45,079**	**26,308**	**125,889**

1.11 Recovery Methods

Since the last PFS was issued Monarques Gold has acquired the Beacon Mill facility. This new updated version of the PFS is thus therefore based on the use of the processing ore at the Beacon Mill at an average production rate of around 575 tpd. The Beacon gold mill is situated 15 km east of Val-d'Or. The plant started operating in 1987. The flowsheet uses gravity concentration, cyanide leaching and the Merrill-Crowe process to recover the gold.

1.12 Project Infrastructures

A new access road is planned to optimize ore hauling and to facilitate main access to the Croinor site. The new path consists of upgrading a 10-km segment of the existing ice road off Highway 113, building 8 km of new forestry road with a 25 m bridge/culvert system to cross over a river, then connecting to the existing 21 km Senneterre-Croinor forestry road which already leads to the Croinor site. The existing St-Felix–Croinor Road would require too many upgrades, including a new bridge over Blanchin Lake.

Since this access road is the shortest path to Hydro-Québec's grid connection, a private 25kV three-phase overhead power line will be built along the road. The power demand for the mine site is estimated to be 1,925 kW, including a 4.16kV feeder for underground mine equipment.

Modular buildings will be installed at the site entrance for the following:

- Gatehouse;
- Dry;
- Offices;
- Conference room;
- Mine rescue room;
- Infirmary;
- Restrooms;
- Lunch room;
- Core shack.

For underground and surface mobile equipment maintenance, a new insulated arch-type fabric garage building will be built, and will be equipped with a 10 t crane, appropriate ventilation, and an oil recovery system. The new garage will be adjacent to the existing single arch-type steel building that will be used as a warehouse. Other infrastructures on site will include the following:

- Truck scale;
- Fuel storage;
- Compressors;
- Fresh water well and treatment system;
- Microwave telecommunication tower;
- Sewage system.

1.13 Environment and Permitting

The issuer has a certificate of authorization for mine operation at the Croinor Property, issued in September 2010, and a certificate of authorization for mill operation at the Beacon property, issued in February 2017. Other studies and permits relating to the environment, site restoration and the crown pillar, which are required for mine operation, have also been carried out or obtained. An authorization for mine dewatering and other accessory permits will be obtained prior to project start-up. Various permits and authorizations will also be obtained for the new transportation infrastructure, and compliance of plans and specifications with the fisheries protection provisions will be verified with the regulatory authorities if required.

Based on the geochemical characterization results, waste rock and sludge are non-acid-generating. Ore will be stored temporarily and acid generation is not anticipated in the short term considering high neutralization potentials. Some metals could be leachable. The waste rock and ore samples as a whole are not, however, expected to leach under acid rain and neutral pH conditions.

At the end of the Project, the Croinor and Beacon sites must be closed and rehabilitated pursuant to the applicable regulations. An updated closure plan for the Croinor Gold site was approved in January 2015. A further updated version must be tabled by 2019.

An Environmental Site Assessment (ESA) is required for the Croinor site at final mine closure and for the Beacon site also at final closure. Should contamination exceed the applicable limits, a rehabilitation plan must be submitted to the MDDELCC for approval, following which the site must be rehabilitated in compliance with the plan and in a manner compatible with future site utilization.

1.14 Capital and Operating Costs

The Prefeasibility Study (PFS) is based on capital pricing as of the mid year of 2017. The PFS assumes that the development and mining of the mine will be done by contractors. Contractors will supply the mobile equipment, and will provide and manage most of the consumable materials. Monarques will manage the project with a small team of employees. The capital cost estimates are accurate within ±20%.

The pre-production costs are estimated at $33.5M, including $22.6M of capitalized operating costs and capitalized revenues of $16.4 during the pre-production period. Sustaining capital is estimated at $17.2M, excluding $3.2M for final closure costs. The capital expenditure cost breakdown is presented in the next table.

Capital expenditure breakdown (Table 21.1)

Description	Preproduction ($M)	Sustaining ($M)	Total cost ($M)
Capitalized revenues	(16.43)	-	**(16.43)**
Capitalized operating cost	22.61	-	**22.61**
Mine dewatering and rehabilitation	1.59	0.13	**1.72**
Surface infrastructure - Temporary	0.69	0.36	**1.06**
Mine infrastructure	8.08	0.30	**8.38**
Electrical distribution - Surface	1.69	0.51	**2.19**
Underground pumping system	0.20	0.42	**0.62**
Underground ventilation system	0.63	0.07	**0.70**
Lateral development	9.47	13.90	**23.37**

Description	Preproduction ($M)	Sustaining ($M)	Total cost ($M)
Beacon Mill refurbishing	2.17	1.28	**3.46**
Tailings impoundment refurbishing	0.39	-	**0.39**
Owner's mobile equipment	0.22	0.23	**0.45**
Environmental	2.20	-	**2.20**
Total	**33.53**	**17.20**	**50.73**

Operating costs are estimated in 2017 Canadian dollars (CAD) with no allowance for escalation. The total operating cost and average unit operating costs are summarized in the table below. The overall unit operating cost is 175.02 $/t of milled ore.

Summary of total LOM operating costs (Table 21.14)

Description	Total cost ($M)	Unit cost ($/t milled)	Unit cost ($/oz)
Definition drilling	1.10	2.04	9.55
Stope development	23.16	42.84	200.20
Production	22.57	41.75	195.10
Owner's staff	9.77	18.08	84.50
Contractor's daily fees	14.90	27.56	128.80
Energy cost	4.81	8.90	41.61
Milling	11.02	20.39	95.29
Ore transportation	4.26	7.88	36.81
Environmental	3.02	5.58	26.07
Total	**94.61**	**175.02**	**817.91**

1.15 Economic Analysis

An after-tax model was developed for the Croinor Gold Property. All costs are in 2017 Canadian dollars with no allowance for inflation or escalation. The Property is subject to federal and provincial taxes and taxes related to Québec mining rights.

As described in Section 4.3.1, an agreement was signed in February 2014 and modified in February 2017 consolidating the former royalties by leaving a 1.5% NSR royalty. The 1.5% NSR royalty has been considered in the actual mine plan.

The economic valuation of the project was performed using the Internal Rate of Return ("IRR") and Net Present Value ("NPV") methods. The discount rate used in the analysis is 5%.

The following parameters were considered in the financial analysis and the details of the cash flow analysis are presented in following table:

- To reflect Monarques' preferred scenario, the study uses a gold price of USD 1,280 per ounce for the end of the first year of the Project with no increase over the mine life. This approach results in a weighted average gold price of USD 1,280 per ounce and an exchange rate of 1.28 CAD/1 USD.
- Reserves parameters as described in Item 15.
- Gold recovery of 97.5%. This value was based on the recovery obtained at the time the mine was operating.
- Royal Mint fees of $5/oz.
- Estimated average annual tonnage of 129,036 tonnes to 209,214 tonnes.
- Estimated average annual output of 26,308 oz to 45,079 oz of gold.
- Royalty payment of 1.5%.
- Estimated future annual cash flow based on grade, gold recoveries and cost estimates as previously discussed in this report.
- 62,401 tonnes of ore to be processed during the preproduction period, considered as capital production and not included in either production or the revenue derived from it.

Cash flow analysis summary (Table 22.2)

Parameters	Value	Units
Proven and probable reserves	602,994	t milled
Proven and probable reserves grade (1)	6.66	g/t milled
Total gold reserves	129,292	oz
Gold recovery	97.5	%
Minimum daily production	446	tpd
Maximum daily production	583	tpd
Average annual gold production	31,472	oz
Total amount of gold produced	125,889	oz
Average production cost	175.02	$/t
Average operating cost	817.91	$/oz
Total cost per ounce	1,154.54	$/oz
Average operating cost	639.00	USD/oz
Total cost per ounce	901.99	USD/oz
Total gross revenue	206.3	$M
Capital cost (2)	50.7	$M
Total operating cost	94.6	$M
Total project cost	145.3	$M
Net cash flow (before tax and royalties)	40.9	$M
Estimated taxes	15.7	$M
Net cash flow	25.2	$M
Pre-tax NPV (5% discount rate)	31.9	$M
Pre-tax IRR	47.5	%
After-tax NPV (5% discount rate)	18.3	$M
After-tax IRR	30.0	%
Payback period	2.2	years
Preproduction period	12	months
Mine life (production period)	2.6	years

(1) Volume and grade account for dilution and ore recovery.

(2) Includes approximately $17.2 million in sustaining capital.

1.16 Sensitivity

Sensitivity calculations were performed on the project's after-tax NPV (5%) by applying a range of variation to the parameter values: -30%, -20%, -10%, +10%, +20% and +30%.

Sensitivity analysis, after-tax NPV 5% ($M) (Table 22.3)

	-30%	-20%	-10%	Base Case scenario	10%	20%	30%
Gold Price (US$/oz)	-22.60	-4.95	7.20	**18.33**	29.38	40.15	50.64
Revenue	-22.97	-5.20	7.21	**18.33**	29.34	39.61	49.40
OPEX	33.35	28.57	23.43	**18.33**	13.19	8.04	2.88
CAPEX	31.76	27.27	22.79	**18.33**	13.85	9.37	4.97

Sensitivity analysis of grade, after-tax NPV at 5% ($M) (Table 22.4

	-30%	-20%	-10%	Base Case scenario	10%	20%	30%
Grade (g/t)	-22.43	-4.83	7.24	**18.33**	29.34	40.05	50.54

1.17 Risks and Opportunities

The following table identifies the significant internal risks, potential impacts and possible risk mitigation measures that could affect the future economic outcome of the Croinor Project and Beacon site. The list does not include the external risks that apply to all mining projects (e.g., changes in metal prices, exchange rates, availability of investment capital, change in government regulations, etc.).

Risks for the Croinor Project (Table 25.2)

RISK	Potential impact	Possible risk mitigation
Geological continuity resulting in many small stopes spread far apart.	Uncertainties on the location and grade of mineralized zones could result in inadequate stope designs	Additional drilling to improve the correlation and continuity of mineralized zones. Bulk sample program to validate continuity.
Delay in obtaining dewatering permit	Cascading delays in several project components	Start permitting application as early as possible
Non-compliant effluent	Notice of non-compliance or fine from MDDELCC / Environment Canada (EC) regulatory authorities. Poor image of the Croinor Mine proponent. Increase in fine amounts if repetition of non-compliant effluent.	Refine water treatment process to ensure compliance of the effluent
Non-compliant emissions	Notice of non-compliance or fine from regulatory authorities. Poor image of proponent	Refine processes and equipment to ensure compliance of emissions
Spill of hydrocarbons or chemicals	Notice of non-compliance or fine from regulatory authorities. Poor	Ensure comprehensive emergency intervention plan and associated

RISK	Potential impact	Possible risk mitigation
	image of Croinor Mine proponent if repeated spills. Notice/fine from the MDDELCC	training are in place. Assess extent of contamination and carry out remediation of spills.
Failure of mine water basin and release of non-compliant water	Notice of non-compliance or fine from MDDELCC/EC regulatory authorities. Loss of production and poor image	Carry out regular inspections and ensure timely maintenance. Assess environmental impact in the event of a breach, carry out remediation if needed and repair fix basin.
Waste rock piles start releasing metal contaminants	Notice and of non-compliance or fine from the MDDELCC regulatory authorities, resulting in poor image and greater cost for waste rock management	Ensure geochemical characterization remains up-to-date as project progresses. Adapt waste rock management plan and closure plan
Possible issue of discontent with potentially affected First Nation communities and non-Aboriginal communities	Poor image portrayed by the media and possible project blockages. Communications and negotiations required.	Remain proactive with stakeholder communications, consultation, accommodation and engagement involving First Nations.
Going into production without a feasibility study	Possibility that estimates provided by the PFS lack precision and that important issues are not raised	The operation of the Croinor Project is low capital. Modular buildings are planned and no mill will be built: Beacon mill and site only need refurbishing.
Problems / delays in upgrading the Beacon Mill	Delay to mill at Beacon site. Increase cost of milling and transportation at start.	Milling at Camflo site.
Problems / delays in building and upgrading transportation infrastructure	Increase cost transportation by using longer alternative road.	Possibility of ore transportation by an alternative route.
Operating risks related to recruitment and performance of the underground workforce, specifically room-and-pillar miners	Difficulty in achieving scheduled targets and increased capital requirements and operating costs	Special care should be taken to hire highly qualified key personnel and during contractor selection
Property not serviced by an electric power line	Time required to service the site	Discussion with Hydro-Québec to advance the design of the electric power line extension and initiate related permitting requests
Ore development control	Addition of slash to optimize drilling or create undercut development and increase higher dilution of long hole production.	Assure proper ore and grade control in development.

Significant opportunities that could improve the economics, timing and permitting are identified in the next table. Further information, evaluation and study is required before these opportunities can be included in the project economics.

Opportunities for the Croinor Project (Table 25.3)

OPPORTUNITIES	Explanation	Potential benefit
Infill and down-plunge exploration drilling	Potential to expand inferred resources and upgrade inferred resources to the indicated category	Adding indicated resources increases the economic value of the mining project
Eastern and western limits of the host diorite and mineralized zones are still open	Potential to expand the eastern and western limits of the deposit	Adding resources increases the economic value of the mining project
Use of inert waste rock to upgrade the road to the mine site	Waste rock is a good material for road foundation and for riprap in ditches crossing the access road to the mine; must assess whether waste rock is appropriate for construction	Savings on the cost of materials required for upgrading the mine access road
Potential to sell waste rock if proven suitable for construction work (needs to be near Senneterre)	Inert waste rock may be used for various construction needs; economic activity near Senneterre is mostly from the struggling lumber industry; potential is limited but should be evaluated	Increased revenue; less waste pile reclamation work; potential savings on reclamation work
Potential for Monarques to hire its own manpower to operate the mine	Depending on the situation of other operations in the area, qualified manpower may be available at the time of operations start-up	Potential for improved project economics
Synergy with Beaufor	Potential to share knowledge, manpower and equipment between Beaufor and Croinor	Higher efficiency and lower cost
Custom milling at Beacon	Potential to mill ore from other projects.	Increase revenue sources

1.18 Conclusion

InnovExplo concludes that the 2018 Prefeasibility Study presented herein allows the Croinor Gold Property to advance to the production stage for which economic viability has been demonstrated. The bulk sample program will significantly help minimize the risk associated with the geological and grade continuity of the deposit, and it will also confirm the assumption for the mining method (dilution, stope and pillar dimension, rock quality, etc), confirm the processing recovery, and shorten the production period start up.

1.19 Recommendation

The results of the study presented herein demonstrate that the Croinor Gold Mine Project is technically and economically viable. In light of these results, InnovExplo recommends a preparatory work program for Monarques to advance the development and mining operation of the Croinor Project towards production. A cost estimate was prepared for the recommended work program to serve as a guideline. A breakdown is summarized in the next table. The total work program expenditures are estimated at $9.4M.

Estimated costs for the recommended work program (Table 26.1)

Work Program	Budget Cost
General permitting for the project (Croinor and Beacon sites; new transportation infrastructure)	$40,000
Update closure plans for Croinor and Beacon sites	$30,000
Completion of additional engineering work to optimize mine design and production schedule	$120,000
Detailed Beacon Mill refurbishing assessment	$50,000
Surface infrastructure assessment	$50,000
Preparation of tender documents for work to be contracted out	$15,000
Definition drilling (approx. 8,000 m at $110/m)	$880,000
Exploration drilling (approx. 10,000 m at $110/m)	$1,100,000
Update resource estimates	$75,000
Perform a compilation and structural study in the Trench No.2 and Bug Lake showings area, including the Rocheleau-3 (Trench No. 3) area	$25,000
Underground bulk sample	$16,758,296
Rock mechanics testing and studies	$40,000
Infrastructure geotechnical investigation	$75,000
SUB TOTAL:	**$19,258,296**
Bulk revenue	**($9,841,766)**
TOTAL:	**$9,416,530**

The recommended program is described below. All activities presented in the program could be executed in parallel.

- Pursue discussions with Hydro-Québec to negotiate an agreement for the connection of the private power line extension to the Hydro-Québec network.
- Continue to work on general permitting for the project, including the dewatering permit application.
- Prepare the updated closure plans for the Croinor and Beacon sites. The closure plan for the former is due in fall 2019, while that for the latter is due by 2019.
- Pursue relationship-building with the concerned Aboriginal and non-Aboriginal communities.

- Complete additional engineering work to optimize the mine design and production schedule.
- Complete a detailed assessment of the Beacon Mill to precisely estimate and schedule the refurbishing.
- Prepare tender documents for the activities to be contracted out.
- Pursue negotiations to finalize agreements for the road upgrade and ore transportation to the Beacon Mill.
- Carry out infill and down-plunge exploration drilling aimed at expanding the current resources.
- Pursue an exploration drilling program based on the 2015 geological reinterpretation of zones in the lower part of the deposit.
- Gain as much information as possible on the indicated resources before mining begins.
- Convert inferred resources to indicated resources with additional drilling.
- Follow-up on the east, west and depth extensions in order to increase the extent of the inferred resources.
- Update the mineral resource estimate through further drilling.
- Perform a geological compilation and structural study in the Trench No. 2 and Bug Lake showings area, including the Rocheleau-3 (Trench No. 3) area. Consider the possibility of performing a mineral resource estimate in these areas.
- Generate a bulk sample using the existing decline ramp on the site (see Item 24 for more details).
- Conduct a geotechnical investigation to confirm bedrock depth and bearing capacity for buildings, facilities, waste stockpiles and hauling road construction. Existing waste stockpile capacity shall be studied and calculated.

2 INTRODUCTION

Jean-Marc Lacoste, President and Chief Executive Officer of Monarques Gold Corporation (“Monarques” or the “issuer”), mandated InnovExplo Inc. (“InnovExplo”), in collaboration with WSP Canada Inc. (“WSP”) and Amec Foster Wheeler Environment & Infrastructure, a division of Amec Foster Wheeler Americas Limited (“Amec Foster Wheeler”), to update the preliminary feasibility study (the “2018 PFS”) on the mineral resource and mineral reserve estimates for the Croinor Gold Mine Project (the “Project” or the “Croinor Gold Project”) and to prepare a supporting technical report (the “Technical Report”).

The Technical Report has been prepared in accordance with Canadian Securities Administrators’ National Instrument 43-101 Respecting Standards of Disclosure for Mineral Projects (“NI 43-101” or “43-101”) and its related Form 43-101F1.

The mineral reserve estimate has an effective date of January 19, 2018. The mineral resource estimate is unmodified from Poirier et al. (2016). InnovExplo is an independent mining and exploration consulting firm based in Val-d’Or (Québec).

2.1 Issuer

Monarques Gold Corporation is a Canadian mining company trading publicly on the TSX Venture Exchange in Canada (TSXV: MQR.V). Monarques was incorporated on February 16, 2011. The head office is located at 68, avenue de la Gare, Bureau 205, Saint-Sauveur, Québec, J0R 1R0.

The Project comprises the wholly owned Croinor Gold Property (the “Property”), which consists of one (1) mining lease and two (2) non-contiguous claim blocks totalling 334 claims, for a total surface area of about 15 100 ha. A 1.5% NSR royalty is applicable on the mining lease and 45 of the claims, and a 0.75% NSR royalty is applicable on the rest of the property.

2.2 Terms of Reference

The Property is situated in the Haig, Pershing, Tavernier, Tiblemont and Vauquelin townships, approximately 57 km east of Val-d’Or (75 km by road) and 27 km east of Louvicourt, the nearest town. It lies within the municipality of Senneterre. Pershing Township has been explored since the early 1930s. The gold deposit on the Property, known as the Croinor deposit, was discovered in 1940. Many companies have since conducted exploration on the Property.

The Technical Report presents and supports an updated mineral reserve estimate for the Project. Most of the supporting information was generated by underground drilling and ore development programs at the mine, supplemented by data obtained from previous companies that conducted historical drilling on the area constituting the current Property. Historical details, geological information (local and regional) and general information relevant to the mine are also described.

The mineral resource estimate presented herein (the "2015 MRE") was taken from the previous 43-101 technical report prepared by InnovExplo for the issuer (Poirier et al., 2016). The information and conclusions pertaining to the 2015 MRE were not modified for the current mandate.

2.3 Principal Sources of Information

As part of the mandate, the QPs have reviewed the following with respect to the Croinor Gold Project: the mining titles and their status on the GESTIM website (the Government of Québec's online claim management system); agreements and technical data supplied by the issuer (or its agents); and the issuer's filings on SEDAR (press releases and MD&A reports).

InnovExplo has no known reason to believe that any of the information used to prepare this Technical Report is invalid or contains misrepresentations. The authors have sourced the information for the Technical Report from the collection of reports listed in Item 27.

InnovExplo conducted a review and appraisal of the information used to prepare the Technical Report, including the conclusions and recommendations. InnovExplo believes this information is valid and appropriate considering the status of the project and the purpose for which the Technical Report is prepared. By virtue of their technical review of the Project, the independent consulting firms involved in the Technical Report affirm that the work program and recommendations presented herein are in accordance with NI 43-101 criteria and CIM Standards on Mineral Resources and Reserves – Definition and Guidelines ("CIM Definition Standards").

None of the QPs involved in the Technical Report have, or have previously had, any material interest in the issuer or its related entities. The relationship with the issuer is solely a professional association between the issuer and the independent consultants. This Technical Report was prepared in return for fees based upon agreed commercial rates, and the payment of these fees is in no way contingent on the results of the Technical Report.

2.4 Qualified Persons

The Technical Report was prepared by InnovExplo, WSP and Amec Foster Wheeler. The mineral reserve estimate for the PFS update was prepared by author Laurent Roy, Eng. in collaboration with Denis Gourde, Eng. The 2015 MRE was prepared by author Karine Brousseau, Eng., under the supervision of Carl Pelletier, P.Geo. The list below presents the QPs for the Technical Report and the sections for which each QP is responsible for:

- Karine Brousseau, Eng. (OIQ No. 121871), InnovExplo:
    - author of items: 4 to 12 and 23;
    - co-author of items: 1, 2, 3, 14, 25, 26 and 27.

- Carl Pelletier, P.Geo. (OGQ No. 384), InnovExplo:
    - co-author of items: 1, 2, 3, 14, 25, 26 and 27.

- Laurent Roy, Eng. (OIQ No. 109779), InnovExplo:
  - co-author of items: 1, 2, 3, 15, 16, 18.15, 18.16, 19, 21, 22, 24, 25, 26 and 27.

- Denis Gourde, Eng. (OIQ No. 43860), InnovExplo:
  - co-author of items: 1, 2, 3, 15, 16, 18.15, 18.16, 19, 21, 22, 24, 25, 26 and 27.

- Guillaume Noël, Eng. (OIQ No. 131725), InnovExplo:
  - author of items: 13 and 17;
  - co-author of items: 1, 2, 3, 25, 26 and 27.

- Éric Poirier, Eng. (OIQ No. 120063), WSP:
  - author of item: 18 (except 18.15 and 18.16);
  - co-author of items: 1, 2, 3, 21, 25, 26 and 27.

- Stephan Bergeron, P.Geo. (OGQ., No. 787), Amec Foster Wheeler:
  - author of item: 20;
  - co-author of items: 1, 2, 3, 21, 25, 26 and 27.

In addition to the principal authors and QPs, the following people from InnovExplo, WSP or Amec Foster Wheeler were also involved in the preparation of the Technical Report:

- Bruno Turcotte, P.Geo., Geologist, InnovExplo;
- Geneviève Auger, Eng., Senior Mining Engineer, InnovExplo;
- Patrick Frenette, Eng., Senior Mining Engineer, InnovExplo;
- Fabienne Racine, Eng., Mining Engineer, InnovExplo;
- Katy Lafontaine, Technician, InnovExplo;
- Daniel Turgeon, Technician, InnovExplo;
- Benoit Huard, Technician, InnovExplo;
- Louis Bonheur Nzussin Sop, Jr. Eng., Junior Mining Engineer, InnovExplo;
- Sébastien Tremblay, Jr. Eng., Junior Mining Engineer, InnovExplo;
- David Yergeau, Eng., Electrical Engineer, WSP
- Stéphan Dupuis, Eng., Civil Engineer, WSP
- Vu Tran, Eng., Tailings Management Specialist, Amec Foster Wheeler;
- Deng Desheng, Eng. Geotechnical Specialist, Amec Foster Wheeler;
- Stéphan Lonesang, Eng., Water Treatment Specialist, Amec Foster Wheeler;
- Brigitte Masella, MES, Impact Assessment and Permitting Specialist, Amec Foster Wheeler;
- Marc L'Écuyer, Eng., Senior Project Manager of Environmental Study Sites and Mines, Amec Foster Wheeler.

2.5 Site Visits

Guillaume Noël of InnovExplo visited the Croinor Gold Property on June 13, 2017, and the Beacon Mill site on April 26, 2017 as part of the current mandate.

Éric Poirier of WSP visited the Croinor Gold Property (access road, waste pad, portal, garage, sedimentation bassin, ventilation raise and the Senneterre triangle land) with David Yergeau (electrical engineer) and Stéphan Dupuis (civil engineer), both from WSP on June 19, 2017. Mr. Poirier also visited the Beacon Mill site on November 12, 2014.

Marc L'Écuyer of Amec Foster Wheeler and Benoit Huard of InnovExplo visited the Beacon Mill site on August 30, 2017. They used the existing roads to assess the overall tailings site and access routes, and to examine the following components in particular: the tailings ponds, one of the two settling towers (B-8), the breach between the tailings pond and the polishing pond, the tailings pipes (intake/discharge), and the tailings discharge ramp.

2.6 Effective Date

The effective date of the Technical Report is January 19, 2018.

2.7 Abbreviations, Units, and Currencies

A list of abbreviations used in this report is provided in Table 2.1. All currency amounts are stated in Canadian Dollars ($, C$, CAD), unless otherwise specified. Quantities are stated in metric units, as per standard Canadian and international practice, including tonnes (t) and kilograms (kg) for weight, kilometres (km) or metres (m) for distance, hectares (ha) for area, and gram per tonne (g/t) for gold grades.

Table 2.1 – List of abbreviations

Abbreviation or Symbol	Unit or Term
%	Percent
% solids	Percent solids by weight
$	Canadian dollar
$/t	Dollars per metric ton (tonne)
°	Angular degree
°C	Degree Celsius
µm	Micron (micrometre)
43-101	National Instrument 43-101 (Regulation 43-101)
A	Ampere
a	Annum
AA	Atomic absorption
Ag	Silver

Abbreviation or Symbol	Unit or Term
Ai	Abrasion index
AMIS	Abandoned Mines Information System
ASTM	American Society for Testing and Materials
As	Arsenic
Au	Gold
Btu	British thermal unit
C$	Canadian dollar
CAD	Canadian dollar
CA	Certificate of authorization
CA	Core angle
Ca	Calcium
CAD:USD	Canadian-American exchange rate
CAPEX	Capital expenditure
cb, CB	Carbonate
CDPNQ	Centre de données sur le patrimoine naturel du Québec
CEAA	Canadian Environmental Assessment Agency
cfm	Cubic feet per minute
CIM	Canadian Institute of Mining, Metallurgy and Petroleum
CIM Definition Standards	CIM Definition Standards for Mineral Resources and Mineral Reserves
CIP	Carbon-in-pulp
CL	Core length
cm	Centimetre
cm^2	Square centimetre
cm^3	Cubic centimetre
CN	Cyanide
CND	Cyanide detoxification
CN_T	Cyanide (total)
CN_{WAD}	Cyanide (weak acid dissociable)
Co	Cobalt
CSA	Canadian Securities Administrators
Cu	Copper
d	Day (24 hours)
DDH	Diamond drill hole
Directive 019	Directive 019 sur l'industrie minière
EA	Environmental assessment
EBITDA	Earnings before interest, taxes, depreciation and amortization
ECCC	Environment and Climate Change Canada
EM	Electromagnetic

Abbreviation or Symbol	Unit or Term
EQA	Environment Quality Act
ESA	Environmental site assessment
Fe	Iron
ft, '	Foot (12 inches)
FS	Feasibility study
g	Gram
G	Billion
G&A	General and administration
Ga	Billion years
g/cm^3	Gram per cubic centimetre
GESTIM	Gestion des titres miniers (the MERN’s online claim management system)
GRG	Gravity recoverable gold
h	Hour (60 minutes)
ha	Hectare
hp	Horsepower
ICP-OES	Inductively coupled plasma optical emission spectroscopy
ICP-MS	Inductively coupled plasma mass spectroscopy
ID6	Inverse distance power six
IEC	International Electrotechnical Commission
in, "	Inch
IOS	International Organization for Standardization
IP	Induced polarization
IRR	Internal rate of return
ISRM	International Society for Rock Mechanics
IT	Information technology
k	Thousand (000)
kg	Kilogram
kg/t	Kilogram per metric ton (tonne)
km	Kilometre
kW	Kilowatt
kWh	Kilowatt-hour
kVA	Kilo-volt-ampere
L	Litre
M	Million
m	Metre
m^2	Square metre
m^3	Cubic metre
m/d	Metre per day

Abbreviation or Symbol	Unit or Term
m^3/h	Cubic metres per hour
m^3/min	Cubic metres per minute
m/s	Metre per second
m/s^2	Metre per second squared
m^3/s	Cubic metres per second
Ma	Million years
Mag, MAG	Magnetometer, magnetometric
masl	Metres above mean sea level
Mbps	Megabits per second
MBtu	Million British thermal units
MCC	Ministère de la Culture et des Communications du Québec (Québec's Ministry of Culture and Communications)
MCCCF	Former name of the MCC
MDDELCC	Ministère du Développement durable, de l'Environnement et de la Lutte contre les changements climatiques du Québec (Québec's Ministry of Sustainable Energy, Environment and the Fight Against Climate Change)
MERN	Ministère de l'Énergie et des Ressources Naturelles du Québec (Québec's Ministry of Energy and Natural Resources)
mesh	US mesh
MFFP	Ministère des Forêts, de la Faune et des Parcs (Québec's Ministry of Forests, Wildlife and Parks)
min	Minute (60 seconds)
mm	Millimetre
MMER	Metal mining effluent regulations
MNDM	Ontario Ministry of Northern Development and Mines
MNR	Ontario Ministry of Natural Resources
MRC	Municipalité régional de comté (RCM in English)
MRE	Mineral resource estimate
MRN	Former name of MERN
MS	Mass spectrometry
Mt	Million metric tons (tonnes)
MW	Megawatt
n/a	Not available, Not applicable
NaCN	Sodium cyanide
NAD	North American Datum
NAD 27	North American Datum of 1927
NAD 83	North American Datum of 1983
Nb	Niobium
nd	Not determined
NI 43-101	National Instrument 43-101 (Regulation 43-101)

Abbreviation or Symbol	Unit or Term
Ni	Nickel
NPI	Net profits interest
NPV	Net present value
NSR	Net smelter return
NTS	National Topographic System
OER	Objectifs environnementaux de rejet (Quebec)
OPEX	Operational expenditure
oz	Troy ounce
oz/st, oz/t	Ounce (troy) per short ton
PFS	Prefeasibility study
ppb	Parts per billion
ppm	Parts per million
psi	Pounds per square inch
Q	Value expressing quality of rock mass (Q-system for rock mass classification)
QA/QC, QAQC	Quality assurance/quality control
QBBA	Québec Breeding Bird Atlas
QFP	Quartz-feldspar porphyry
QP	Qualified person (as defined in National Instrument 43-101)
qz, QZ	Quartz
RBQ	Régie du Bâtiment du Québec
Regulation 43-101	National Instrument 43-101
RMR	Rock mass rating
rpm	Revolutions per minute
RQD	Rock quality designation
RQI	Rock quality index
s	Second
s^2	Second squared
SARA	Species at Risk Public Registry
Sb	Antimony
SCC	Standards Council of Canada
SIGÉOM, SIGEOM	Système d'information géominière (the MERN’s online spatial reference geomining information system)
Sb	Antimony
SCC	Standards Council of Canada
SPLP	Synthetic Precipitation Leaching Procedure
t	Metric ton (tonne) (1,000 kg)
t/h	Metric tons (tonnes) per hour
TCLP	Toxicity characteristic leaching procedure

Abbreviation or Symbol	Unit or Term
Ti	Titanium
tl, TL	Tourmaline
tpd	Metric tons (tonnes) per day
TSF	Tailings storage facility
U/G, UG	Underground
USD, US$	American dollars
UTM	Universal Transverse Mercator coordinate system
V	Volt
VG	Visible gold
VLF	Very low frequency
W	Watt
y	Year (365 days)
yd^3	Cubic yard
Zn	Zinc

Wherever applicable, imperial units have been converted to the International System of Units (SI units) for consistency (Table 2.2).

Table 2.2 – Conversion factors for measurements

Imperial Unit	Multiplied by	Metric Unit
1 inch	25.4	mm
1 foot	0.3048	m
1 acre	0.405	ha
1 ounce (troy)	31.1035	g
1 pound (avdp)	0.4535	kg
1 ton (short)	0.9072	t
1 ounce (troy) / ton (short)	34.2857	g/t

3 RELIANCE ON OTHER EXPERTS

In preparing this report, InnovExplo has relied on input from the issuer and a number of well-qualified, independent consulting firms, including WSP and Amec Foster Wheeler.

InnovExplo is not an expert in legal, land tenure or environmental matters. InnovExplo and the other contributing consulting firms have relied on data and information provided by the issuer, and on previously completed technical reports (refer to Item 27). Although InnovExplo and the other consulting firms have reviewed the available data, they have only validated the pertinent portions of the full data set. Therefore, InnovExplo and the other consulting firms have made judgments about the general reliability of the underlying data, and where deemed inadequate or unreliable, the data were not used, or the procedures modified to account for the lack of confidence in that specific information.

The authors relied on the following sources for information that is not within the QPs fields of expertise:

- The issuer supplied information about mining titles, option agreements, royalty agreements, environmental liabilities and permits. Neither the QPs nor InnovExplo are qualified to express any legal opinion with respect to property titles or current ownership and possible litigation.
- The issuer supplied technical information through internal technical reports and various communications. While exercising all reasonable diligence in checking, confirming and testing the data, and in formulating opinions and conclusions, InnovExplo relied on the issuer for project data and any available information generated by previous operators.
- Lucie Chouinard (CPA, CA) of Deloitte provided the after-tax analyses for the Project.
- Venetia Bodycomb (M.Sc.) of Vee Geoservices provided a critical review and linguistic editing of a draft of the Technical Report.
- Geneviève Auger, Eng. (OIQ 121367), of InnovExplo, supervised the assemblage of the report.

The various agreements under which the issuer holds title to the project’s mineral claims have been reviewed by InnovExplo, however InnovExplo offers no legal opinion as to their validity. A description of the properties and mineral titles, and ownership thereof, is provided for general information purposes only. Comments on the state of environmental conditions, liability, and estimated costs of closure and remediation have been made where required by NI 43-101. For this, InnovExplo has relied on the work of other experts they understand to be appropriately qualified, and InnovExplo offers no opinion on the state of the environment on the Project. Statements are provided for information purposes only.

4 PROPERTY DESCRIPTION AND LOCATION

4.1 Location

The Croinor Gold Property is located in the Abitibi region, approximately 57 km east of the city of Val-d'Or (about 75 km by road), in the province of Québec, Canada (Figure 4.1). The approximate coordinates of the geographic centre of the Property are 77°01'20"W and 48°06'35"N (UTM coordinates: 349530E and 5330425N, NAD 83, Zone 18). The nearest community is Louvicourt, 27 km west of the Property.

The Property lies in the townships of Haig, Pershing, Tavernier, Tiblemont and Vauquelin, within NTS maps sheets 32C/02 and 32C/03. The land has an altitude of about 325 masl to 365 masl. The overall Croinor Gold Property covers an area of 15,060.75 ha.

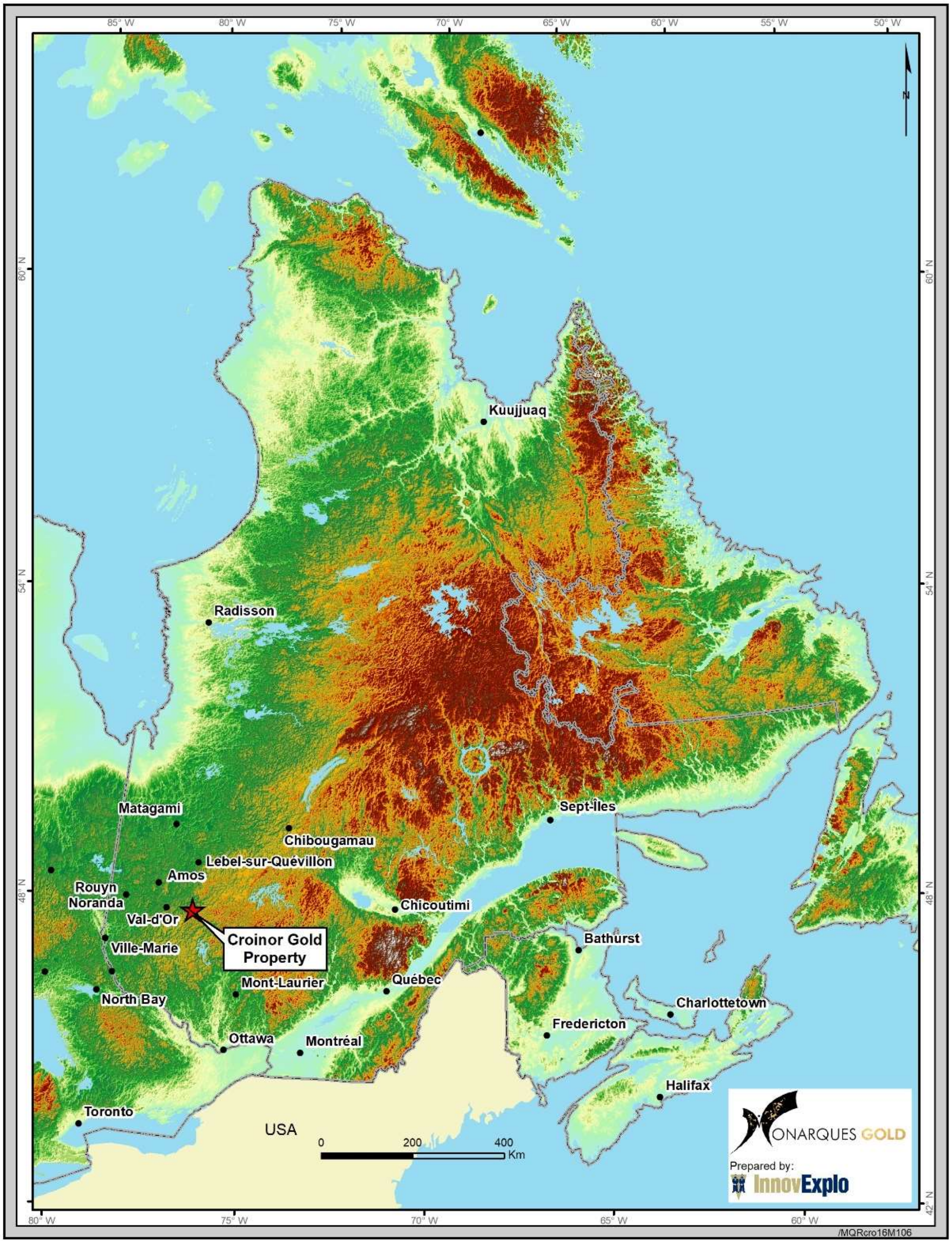


Figure 4.1 – Location of the Croinor Gold Property in the Province of Québec

4.2 Mining Rights in the Province of Québec

The following discussion on the mining rights in the province of Québec was mostly taken from Guzun (2012), Gagné and Masson (2013), and from the *Act to amend the Mining Act* (Bill 70; the "*Amending Act*") assented on December 10, 2013 (National Assembly, 2013).

In the Province of Québec, mining is principally regulated by the provincial government. The Ministère de l'Énergie et des Ressources Naturelles ("MERN") is the provincial agency entrusted with the management of mineral substances in Québec. The ownership and granting of mining titles for mineral substances are primarily governed by the *Mining Act* and related regulations. In Québec, land surface rights are distinct property from mining rights. Rights in or over mineral substances in Québec form part of the domain of the State (the public domain), subject to limited exceptions for privately owned mineral substances. Mining titles for mineral substances within the public domain are granted and managed by the MERN. The granting of mining rights for privately owned mineral substances is a matter of private negotiations, although certain aspects of the exploration for and mining of such mineral substances are governed by the *Mining Act*.

4.2.1 The claim

A claim is the only exploration title for mineral substances (other than surface mineral substances, petroleum, natural gas and brine) currently issued in Québec. A claim gives its holder the exclusive right to explore for such mineral substances on the land subject to the claim but does not entitle its holder to extract mineral substances, except for sampling and in limited quantities. In order to mine mineral substances, the holder of a claim must obtain a mining lease. Electronic map designation is the most common method of acquiring new claims from the MERN whereby an applicant makes an online selection of available pre-mapped claims. In a few areas defined by the government, claims can be obtained by staking.

A claim has a term of two years, which is renewable for additional two-year periods, subject to performance of minimum exploration work on the claim and compliance with other requirements set forth by the *Mining Act*. In certain circumstances, if the work carried out in respect of a claim is insufficient or if no work has been carried out at all, it is possible for the claimholder to comply with the minimum work obligations by using work credits for exploration work conducted on adjacent parcels or by making a payment in lieu of the required work.

Additionally, it requires a claim holder to submit to the Minister, on each anniversary date of the claim registration, a report of the work performed on the claim in the previous year. Moreover, the amount to be paid in order to renew a claim at the end of its term when the minimum prescribed work has not been carried out now corresponds to twice the amount of the work required. Any excess amount spent on work during the term of a claim can only be applied to the six (6) subsequent renewal periods (12 years in total). Holders of a mining lease or a mining concession will no longer be able to apply any work that is carried out in respect of a mining lease or a mining concession to claim renewals.

The *Mining Act* (as amended) now requires a claim holder to notify the owner, the lessee, the holder of an exclusive lease to mine surface mineral substances and the local municipality where the claim is located within 60 days after registering its claim. A claim holder must also notify the municipality and landowner of work to be carried out on its claim at least 30 days before performing the work.

4.2.2 The mining lease

Mining leases and mining concessions are extraction (production) mining titles which give their holder the exclusive right to mine mineral substances (other than surface mineral substances, petroleum, natural gas and brine). A mining lease is granted to the holder of one or several claims upon proof of the existence of indicators of the presence of a workable deposit on the area covered by such claims and compliance with other requirements prescribed by the *Mining Act*. A mining lease has an initial term of 20 years but may be renewed for three additional periods of 10 years each. Under certain conditions, a mining lease may be renewed beyond the three statutory renewal periods.

The *Mining Act* (as amended) states that an application for a mining lease must be accompanied by a project feasibility study and by a scoping and market study as regards to processing in Québec. Holders of mining leases must produce such a scoping and market study every 20 years thenceforth. The *Mining Act* adds, as an additional condition for granting a mining lease, the issuance of the certificate of authorization under the Environment Quality Act. The Minister may nevertheless grant a mining lease if the time required to obtain the certificate of authorization is unreasonable. A rehabilitation and restoration plan must be approved by the Minister before any mining lease can be granted. In the case of an open-pit mine, the plan must contain a backfill feasibility study. This last requirement does not apply to mines in operation as of December 10, 2013. The *Mining Act* stipulates that the financial guarantee to be provided by a holder of a mining lease shall be for an amount corresponding to the anticipated total cost of completing the work required under the rehabilitation and restoration plan.

4.2.3 The mining concession

Mining concessions were issued prior to January 1, 1966. After that date, grants of mining concessions were replaced by grants of mining leases. Although similar in certain respects to mining leases, mining concessions granted broader surface and mining rights and are not limited in time.

A grantee must commence mining operations within five years from December 10, 2013. As is the case for a holder of a mining lease, a grantee may be required by the government, on reasonable grounds, to maximize the economic spinoffs within Québec of mining the mineral resources authorized under the concession. It must also, within three (3) years of commencing mining operations and every 20 years thereafter, send the Minister a scoping and market study as regards to processing in Québec.

4.2.4 Other information

Claims, mining leases and concessions, exclusive leases for surface mineral substances and the licences and leases for petroleum, natural gas and underground reservoirs obtained from the MERN may be sold, transferred, hypothecated or otherwise encumbered without the MERN's consent. However, a release from the MERN is required for a vendor or a transferee to be released from its obligations and liabilities owing to the MERN related to the mine rehabilitation and restoration plan associated with the alienated lease or mining concession. Such release can be obtained when a third-party purchaser assumes those obligations as part of a property transfer. The transfers of mining titles and grants of hypothecs and other encumbrances in mining rights must be recorded in the register of real and immovable mining rights maintained by the MERN and other applicable registers.

Under the *Mining Act*, a lessee or grantee of a mining lease or a mining concession, on each anniversary date of such lease or concession, must send the Minister a report showing the quantity and value of ore extracted during the previous year, the duties paid under the Mining Tax Act and the overall contributions paid during same period, as well as any other information as determined by regulation.

4.3 Mining Titles and Claim Status

Claim status for the Property was supplied by Jean-Marc Lacoste, president and CEO for Monarques. InnovExplo verified the status for all claims using GESTIM, the Québec government's online claim management system. All mining titles are in good standing according to the GESTIM database.

The current Property consists of one contiguous block of 334 claims staked by electronic map designation ("map-designated cells") and one mining lease covering an aggregate area of 15,060.75 ha (Figure 4.2). The claims and mining lease are registered 100% in the name of X-Ore Resources Inc. ("X-Ore"). Monarques owns 99.99% of X-Ore's shares. A detailed list of mining titles is provided in Appendix I.

The Croinor Gold Property was formed by the amalgamation of four former properties acquired by the issuer: Croinor, Bel-Rive, Lac Tavernier and Croinor-Pershing. Some claims belonging to the latter three properties were abandoned following the amalgamation to form the current Property.

4.3.1 Acquisition of the Croinor Gold Property

On September 5, 2013, Monarques completed the acquisition of four (4) X-Ore properties in the Val-d'Or area: Tex-Sol, Belcourt, Lac Tavernier and Bel-Rive. These properties collectively comprised 101 mining claims for a total surface area of 43 km^2. The purchase price was $25,000 in cash for the four (4) properties.

On May 12, 2014, the issuer acquired 9,999 or 99.99% of all issued and outstanding common shares of X-Ore pursuant to the proposal of X-Ore under the Bankruptcy and Insolvency Act. The agreed subscription price for such shares consisted of $110,000 in cash and 1,455,000 common shares of the issuer having a fair value of $145,500.

The common shares issued by the issuer upon the completion of the transaction were escrowed for a period of six (6) months following the closing of the transaction and, in accordance with the applicable securities regulations, were subject to a hold period of four (4) months and one (1) day, which expired on September 13, 2014. As at May 12, 2014, X-Ore owned 50% of the Croinor Property and 100% of the Croinor-Pershing Property.

On May 12, 2014, in parallel with the X-Ore transaction, the issuer completed the acquisition of the other undivided 50% interest in the Croinor Property from Critical Elements Corporation ("CEC"), which was initially announced on December 17, 2013. In consideration of this acquisition, the issuer issued 500,000 common shares of its share capital to CEC having a fair value of $0.11 per common share, and transferred its interest in 10 mineral properties in the James Bay area to CEC: Amiral, Arques, Bourier, Caumont, Dumulon, Duval, Lemare, Nisk, Rosebay and Valiquette. The common shares held by CEC were subject to voluntary hold periods as follows: 250,000 common shares to be released six (6) months after the closing of the CEC transaction and 250,000 common shares to be released 12 months after the closing of the CEC transaction.

A royalty agreement was entered into on February 28, 2014 (amended on April 9, 2014) between the issuer and X-Ore, CEC, David E. Agar and the estate of F.D. Corcoran, with the latter two as the beneficiaries. This royalty agreement consolidated the former royalties by leaving a 1.5% NSR royalty (0.75% to each beneficiary) on 45 claims and one (1) mining lease. Half the royalty (0.75% NSR) can be bought back for $500,000 ($250,000 to each beneficiary). A detailed list of the mining titles subject to the 1.5% NSR royalty is provided in Appendix I.

On February 23, 2017, X-Ore, a wholly owned subsidiary of the issuer, entered into a royalty purchase agreement and a royalty agreement with Osisko Gold Royalties Ltd ("Osisko"). X-Ore entered into a purchase and sale agreement with the estate of F.D Corcoran and David E. Agar (the "beneficiaries") to purchase back the 0.75% NSR royalty on 45 claims and the one (1) mining lease, corresponding to 50% of the existing royalty to the beneficiaries pursuant to the agreement of February 28, 2014. The aggregate price of the transaction was a payment of $300,000 and the issuance of 444,444 common shares of the issuer at a deemed price of $0.45 per share. X-Ore also agreed to grant Osisko a royalty of 0.75% NSR on the entire Croinor Gold Property in consideration of an aggregate cash payment of $250,000. Additionally, Osisko would subscribe for 1,111,111 units of the issuer (the "units") at a price of $0.45 per unit for a total consideration of $500,000. Each unit consisted of one common share in the capital of the issuer and one common share purchase warrant, with each warrant entitling the holder to purchase one (1) common share at a price of $0.60 within 36 months from the closing date.

As a result of the foregoing, an aggregate of 1.5% NSR royalty still applies to 45 mining claims and the one (1) mining lease on the Croinor Gold Property.

There are no underlying agreements or encumbrances related to the current Croinor Gold Property other than the above-mentioned royalties.

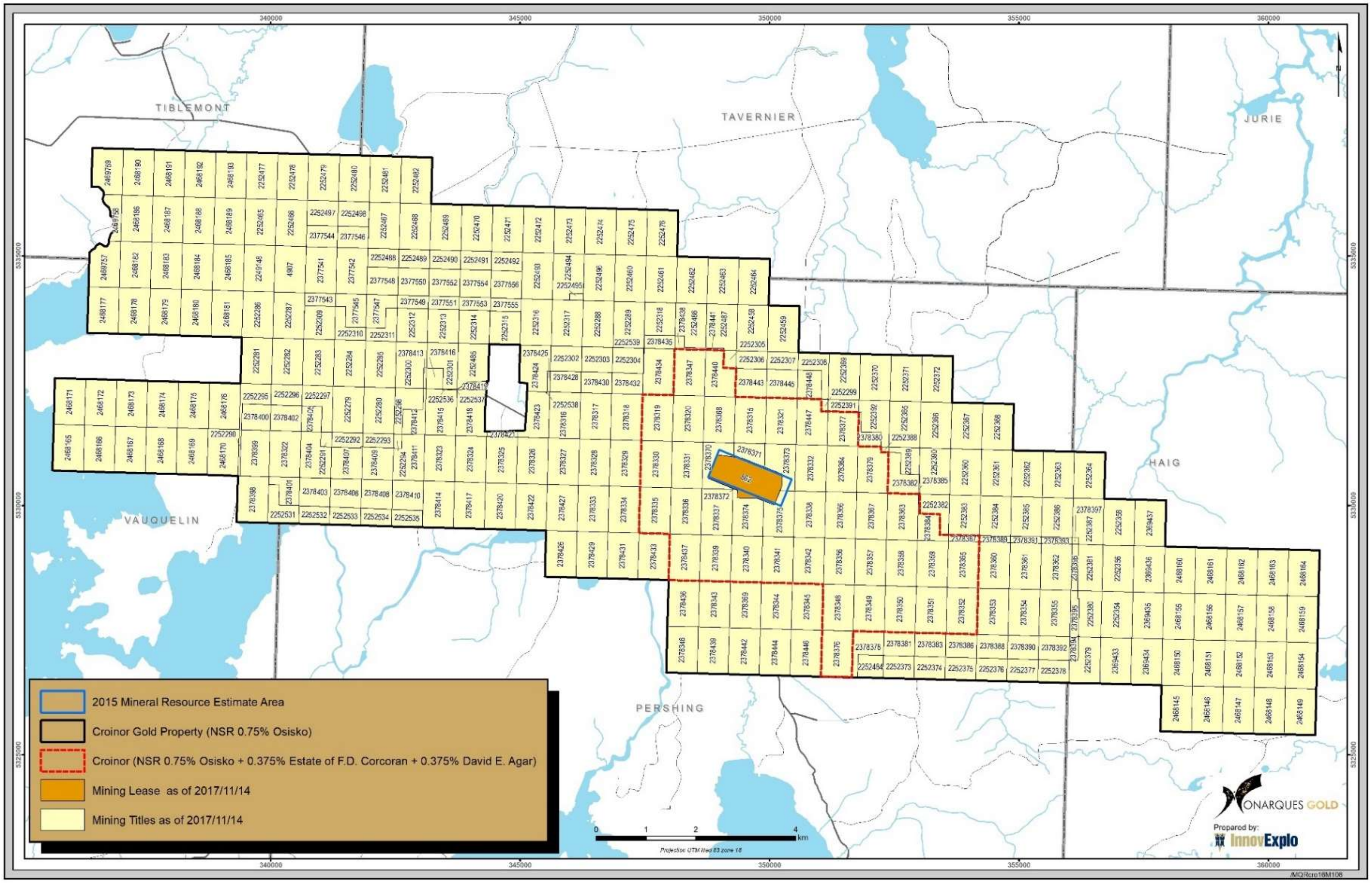


Figure 4.2 – Claim map of the Croinor Gold Property

5 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY

5.1 Accessibility

The Croinor Gold Property is situated at the junction of the Pershing, Vauquelin, Tiblemont, Tavernier and Haig townships, roughly 55 km east of Val-d'Or (75 km by road), and is within the limits of the municipality of Senneterre.

From Val-d'Or, access is afforded by the paved Trans-Canada Highway (Route 117) from the village of Louvicourt. Then, at the intersection of St-Felix River and highway 117, approximately 8 km south of Louvicourt, the St-Felix – Croinor gravel road leads north over a distance of 25 km to Lake Blanchin where it crosses the southern property limit (Figure 5.1). The Property can also be accessed from the north (town of Senneterre) by heading south on either of two gravel forestry roads (C-100 road or Senneterre-Croinor road).

Former mine roads can be used by light vehicles to access various parts of the site, but need upgrading to support typical vehicle travel to and from a mine site, including offsite transportation of ore for processing. In particular, a 13 km segment of the gravel road requires major maintenance.

Numerous trails (snowmobile, ATV) and roads that lead to hunting camps and cottages on Lake Blanchin run through the Property. Lake Blanchin and Lake Guégen are the most important waterways. The nearest power line is linked to the former Chimo mine, 20 km south of the Property.

5.2 Climate

The region is under the influence of a continental climate marked by dry, cold winters and hot, damp summers. The average temperature for July is 16.6°C, whereas January temperatures hover around -19.5°C. The registered record temperatures were -48°C and 36.7°C. Historical records of annual precipitation rates indicate an average annual precipitation of 972.6 mm. Most of the rain falls in September, and snow accumulates from October to May, with a peak between October and March.

5.3 Local Resources

The city of Val-d'Or (population 33,000) is the closest major service community. Suppliers, contractors, consulting firms, skilled labour and general labour are readily available. Several operations and mills are currently active in the area. An outfitter is located about 10 km south of the Property.

The Beacon Mill, acquired by the issuer in July 2016, is approximately 60 km from the Property. The mill has a 750 tpd capacity and is located on highway 117 at the entrance to Val-d'Or, near Chemin du Lac Sabourin (Figure 5.1).

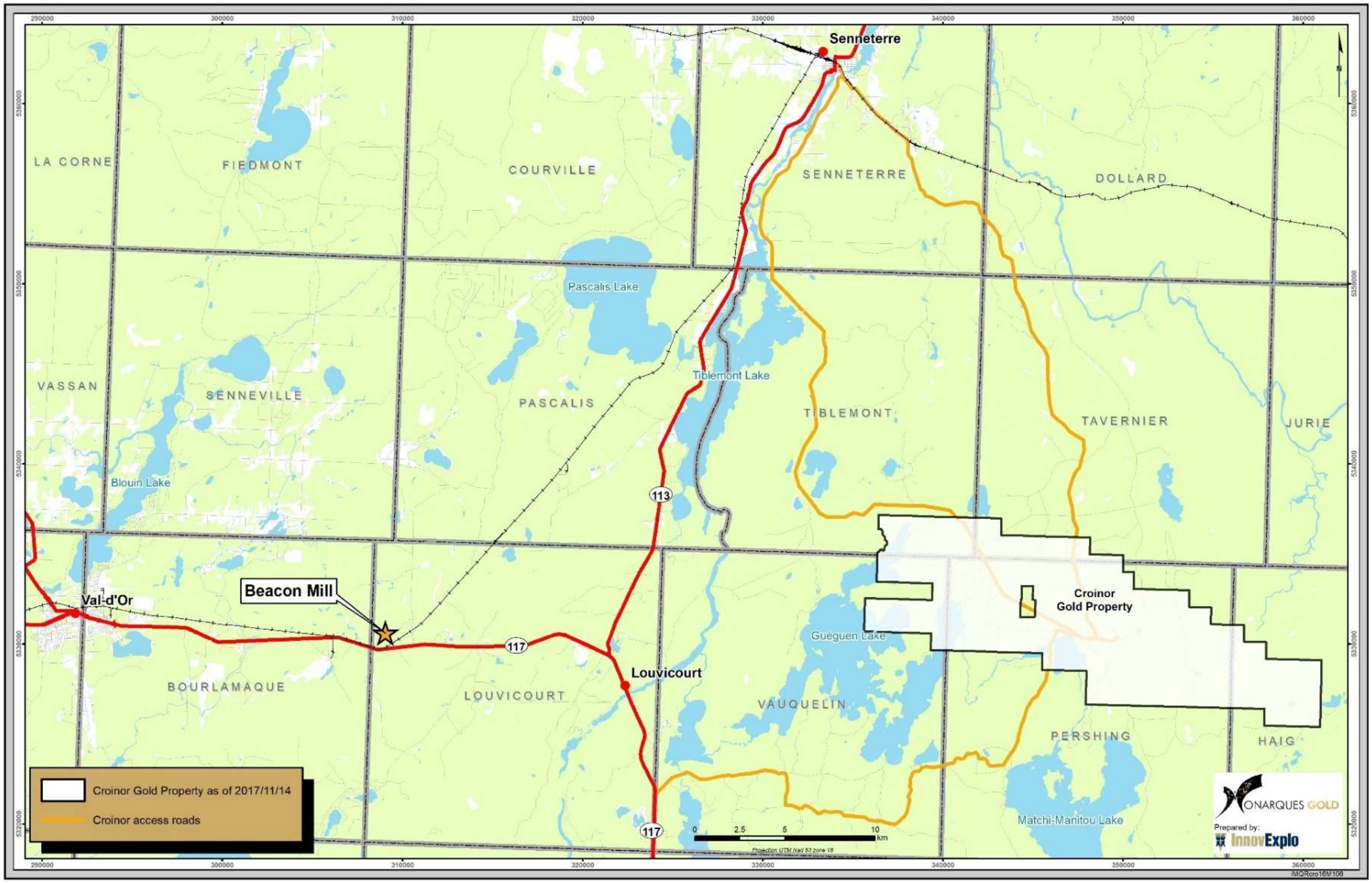


Figure 5.1 – Topography and accessibility of the Croinor Gold Property

5.4 Infrastructure

The deposit on the Property is serviced by a ramp approximately 225 m long by 4 m high by 4.5 m wide extending down 38 vertical metres to level 125[1] and by a three-compartment shaft reaching a depth of 195 m. Development was completed on four levels: 495 m on level 125; 575 m on level 250; 235 m on level 375; and 675 m on level 500. Approximately 300 m of raise development was also completed. The former Croinor mine is currently flooded to the portal entrance. There are also two small pits on the Project (Centre and West).

A photograph of the portal is presented on Figure 5.2 and a schematic of existing underground infrastructure on Figure 5.3. The West pit is shown on Figure 5.4 and the Centre pit on Figure 5.5.

Figure 5.2 – Portal entrance

[1] Mine level names are in feet.

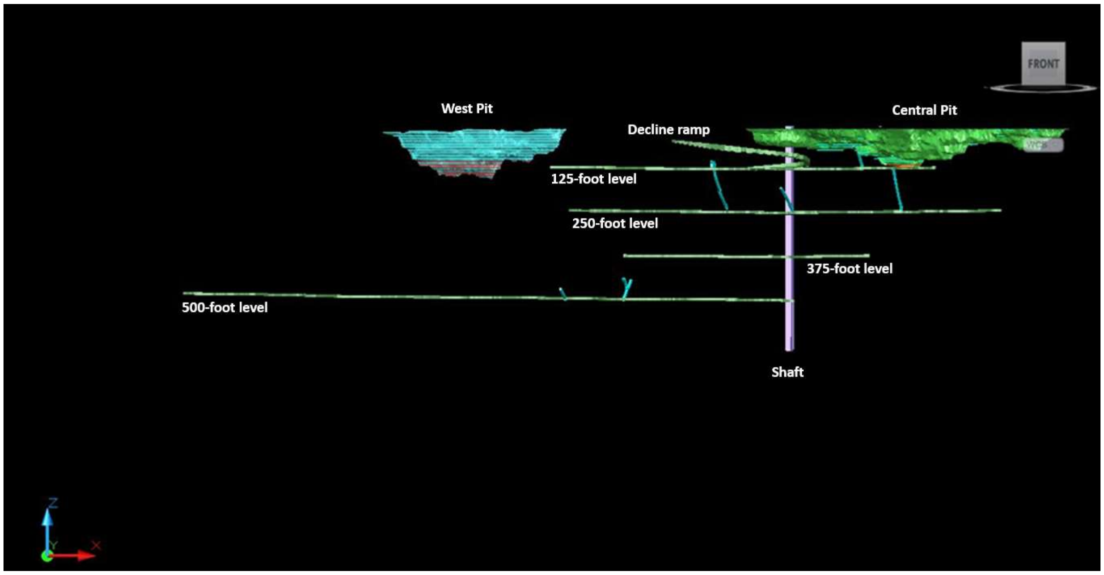


Figure 5.3 – Existing Croinor mine infrastructure

Figure 5.4 – West pit

Figure 5.5 – Centre pit

A single arch-type garage (Figure 5.6) was erected on a concrete slab and is still standing. The structure is in good condition and would need to be refurbished to be used for equipment maintenance. A concrete pad is also present next to the garage.

Figure 5.6 – Garage

A settling pond (60 m by 60 m) is present on the site (Figure 5.7) but would require cleaning and stabilization work before it could be used again.

Figure 5.7 – Settling pond

5.5 Physiography

The land is marked by low relief, poplar and evergreen forests, swamps and glacial drift. Several outcropping areas are found on the Property. Swamps cover the western and northeastern parts. Water near the mine site generally drains into a creek flowing into Lake Blanchin. The latter drains into Marquis River and then into Vauquelin Bay of Guégen Lake, and from there into Simon Lake. Waters from Simon Lake flow north by Villebon Creek, pass through Sleepy Lake and Tiblemont Lake, and finally flow into Bell River.

6 HISTORY

In order to facilitate the description of historical exploration, mining activities and gold showings on or near the current Croinor Gold Property, this section is presented in three parts: the first focuses on the Croinor deposit area, the second on the rest of the Property, and the third on abandoned portions of the annexed former properties (i.e., gold occurrences that are no longer part of the current Croinor Gold Property). A detailed chronological summary of historical work is provided in Appendix II.

6.1 Croinor Deposit

Pershing Township has been explored since the early 1930s. The Croinor deposit (Table 6.1) was discovered around 1944, probably by a prospector named Fred Thompson. Several companies subsequently conducted exploration on and around the Croinor deposit. This work can be subdivided into four main periods, as follows:

- 1944-1948: Surface and underground drilling, sinking of a three-compartment shaft), and the development of 2,019 m of drift on four levels by Croinor Pershing Mines Ltd;
- 1979-1989: Rehabilitation of the shaft, driving of a decline ramp, and both surface and underground drilling by Harbinson Group followed by Sullivan Mines Inc. and then Cambior Inc.;
- 1996-1997: Open pit mining and custom milling of more than 55,000 t by Goldust Ltd;
- 1998-2011: Trenching, surface drilling, and completion of a 20,000 t bulk sample by Exploration Malartic-Sud Inc., followed by X-Ore and then Blue Note Mining Inc.

Table 6.1 – Summary of previous work on Croinor deposit area

Year	Company	Work	Results	References
1944-48	Midd Pershing Mines Ltd; Croinor Pershing Mines Ltd	11,215 m of U/G drilling 5,587 m of surface drilling Sinking of 195 m shaft 2,019 m of drifting and cross-cutting 189 m of raising Preliminary metallurgical test	Historical reserve estimate[1] (mine staff): 438,178 t @ 6.86 g/t Au (U/G) Historical reserve estimate[1] (James and Buffam, 1948): 107,050 t @ 7.54 g/t Au (U/G)	Ingham, 1948a; James and Buffam, 1948; Gaudreau et al., 1988

Year	Company	Work	Results	References
1949-69	Croinor Pershing Mines Ltd Midd-Pershing Mines Ltd Camflo Mattagami Mines Ltd Anaconda American Brass Ltd F. Corcoran and D. Agar Abigold Mines Inc.	Diamond drilling Geophysical surveys Trenching Sampling	No significant result	Schaaf and Brown, 1974; Gaudreau et al., 1988
1971-72	F. Corcoran and D. Agar	Geophysical surveys	9,979 t @ 3.7 g/t Au from ore dump (1944-1948) were milled with a recovery of 95% Historical potential ore estimate[1] (Middleton, 1973): 680,400 t @ 8.91 g/t Au (U/G)	Middleton, 1973; Schaaf and Brown, 1974; Gaudreau et al., 1988
1973-1976	Abigold Mines Inc.	Geophysical surveys Geological mapping Trenching Sampling	Historical indicated mineral inventory[1] (Schaaf and Brown, 1974): 259,650 t @ 8.01 g/t Au (U/G) Historical “indicated mineral inventory” (Brown, 1976): 308,729 t @ 7.89 g/t Au (U/G)	Schaaf and Brown, 1974; Brown, 1975; 1976; Gaudreau et al., 1988
1979-82	Harbinson Group	17,511 m of surface drilling Rehabilitation of the shaft Decline ramp to level 125 (395 m) U/G sampling	Historical reserve estimate[1] (Latulippe, 1982): 830,000 t @ 8.22 g/t Au (U/G)	Hill, Goettler, Delaporte Ltd, 1982; Latulippe, 1982; Gaudreau et al., 1988
1983-86	Sullivan Mines Inc. Dominion Explorers Ltd	5,196.5 m of U/G drilling 11,775.2 m of surface drilling Dewatering of shaft 128.3 m of raising Mapping and sampling Stripping	U/G bulk sample of 1,562 t @ 6.17 g/t Au Historical reserve estimate[1] (Dominion): 856,205 t @ 7.85 g/t Au (U/G) Historical resource estimate[1] (Sullivan): 386,600 t @ 7.85 g/t Au (U/G)	Duhaime, 1986; Depatie, 1983; Veilleux (1984); Gaudreau et al., 1988

Year	Company	Work	Results	References
1987-89	Cambior Inc. Dominion Explorers Ltd	10,472 m of surface drilling Trenching, mapping and channelling Metallurgical tests	Extended depth of mineralized zone Historical reserve estimate[1] (Bérubé, 1988): 479,422 t @ 6.51 g/t Au (U/G)	Bérubé, 1988; Gobeil, 1989b
1996-97	Goldust Mines Ltd	Bulk sampling (OP) of 55,000 t	Bulk sample of 55,150 t @ 2.94 g/t Au (5,332 oz) with a recovery of 97%	Annual Reports
1998-99	Explorations Malartic-Sud Inc. Huntington Exploration	Line cutting: 34 km 28.2 km of ground geophysics: Mag/VLF, 200 m spacing (east part of the deposit) 2,607 m of surface drilling	No significant result	Annual Reports; Imbeau, 1999;
2000	Explorations Malartic-Sud Inc. Huntington Exploration	Trenching between sections 500W and 900W Sampling Channelling 6,256 m of surface drilling	Geological 3D modelling	Annual Reports; Bourgoin and Gauthier, 2000
2001	Explorations Malartic-Sud Inc. Huntington Exploration	Trenching 5,341 m of surface drilling	Historical measured and indicated resources estimate[1] (Geostat, 2001): 2,471,000 t @ 3.18 g/t Au (OP)	Annual Reports; Press release of Jan. 16, 2001; Carrier, 2002.
2002	Explorations Malartic-Sud Inc. Huntington Exploration	Line cutting (176.3 km) Ground geophysics (IP) over 154.7 km 14,137 m of surface drilling	Historical measured and indicated resources estimate[1] (Geostat, 2002): 4,586,000 t @ 2.16 g/t Au (OP)	Annual Reports; Press release of Feb. 11, 2002; Chénard and Turcotte, 2003b; Bérubé, 2002

Year	Company	Work	Results	References
2003	Explorations Malartic-Sud Inc.Huntington Exploration	Trenching (11 sites = 5,720 m^2) 18,315 m of surface drilling Dewatering and surveying of Goldust pit Metallurgical tests on drill core Line cutting (56 km), IP survey (51.6 km), Mag survey (195 km) Geological prospecting Re-interpretation of metallogenic model and new geological model	Historical mineral resource inventory[1]: 2.5 Mt @ 3.46 g/t Au (OP) Bulk sample of 20,400 t @ 3.10 g/t Au (1,981 oz) with a recovery of 97.4%	Annual Reports; Saucier, 2003 Chénard and Turcotte, 2004
2004	Explorations Malartic-Sud Inc.Huntington Exploration	Geophysical surveys (IP and Mag) over western portion of property 7358 m of surface drilling Mining of the Centre pit	Milled ore from Centre pit: 30,760 t @ 2.2 g/t Au for 2,044 oz	Annual Reports; Marchand, 2004a; 2004b; Pelletier and Boudrias, 2005
2005-2006	Explorations Malartic-Sud Inc.	Mining of the West pit No work in 2006	Milled ore from West pit: 24,363 t @ 5.0 g/t Au for 3,834 oz Historical mineral resource estimate[2]: 620,218 t @ 10.37 g/t Au for 206,792 oz	Annual Reports; Pelletier and Boudrias, 2005
2007-2008	First Gold Inc. X-Ore Resources Inc.	16,482 m of surface drilling	Numerous significant gold grade intercepts	Annual Reports; O'Dowd, 2009
2009	First Gold Inc. X-Ore Resources Inc.	PEA on the Croinor deposit	Historical mineral resource estimate[2]: 814,228 t @ 9.11 g/t Au @ 238,414 oz PEA using 2005 mineral resource estimate	Annual Reports; Chabot, 2009; O'Dowd, 2009
2010	Blue Note Mining Inc. First Gold Inc.	2,344 m of surface drilling Geophysical survey (3D hole-to-hole Resistivity/IP) PFS on the Croinor deposit	PFS using 2009 mineral resource estimate Targets generated based on results of 3D IP survey	Annual Reports; Poirier et al. 2010; Perkins and Bérubé, 2010
2011	Blue Note Mining Inc. Critical Elements Corporation	13,046 m of surface drilling Revised PFS on the Croinor deposit	Revised PFS using 2009 mineral resource estimate	Annual Reports; Poirier et al. 2011;

Year	Company	Work	Results	References
2012	Blue Note Mining Inc. Critical Elements Corporation	Updated PFS on the Croinor deposit PEA that includes inferred resources potentially viable to mining was published in a second study	Historical mineral resource estimate[2]: 680,100 tonnes @ 9.08 g/t Au for 198,700 oz (U/G) Updated PFS using new 2012 mineral resource estimate PEA using new 2012 mineral resource estimate	Annual Reports; Poirier et al. 2012a; 2012b
2014	Monarques Resources Inc.	Updated PFS on the Croinor Gold Property	Updated PFS using 2012 mineral resource estimate and including changes in royalties, capital costs, operating costs and gold price	Poirier et al. 2014

(1): Prior to 2005, any “resources”, “reserves”, “mineral resource inventory” “potential ore” or “indicated mineral inventory” or “measured and indicated resources” are historical in nature and should not be relied upon, and it is unlikely they would be compliant with current NI 43-101 criteria and CIM Definition Standards. They are included in this section for illustrative purposes only and should not be disclosed out of context.

(2): From 2005 to 2012, “mineral resources” are historical in nature and should not be relied upon. Although they are compliant with current NI 43-101 criteria and CIM Definition Standards, additonal drilling results and geological information have become available, and assumptions used to determine cut-off grades are likely to have changed since the time of the estimate. Consequently, these “resources” cannot be considered as current. They are included in this section for illustrative purposes only and should not be disclosed out of context.

Table 6.2 – Past production from the Croinor deposit

Production	Tonnage (t)	Recovery grade (g/t)	Recovered ounces (oz)
Surface production			
Goldust Ltd (1996-1997)	55,150	2.9	5,332
Bulk sampling (2003-2004)	20,400	3.1	1,981
Centre pit (2004)	30,760	2.2	2,044
West pit (2004-2005)	24,363	5.0	3,834
Subtotal	**130,673**	**3.2**	**13,391**
Underground production			
Croinor (1944-48) (milled in 1973)	9,979	3.7	1,187
Sullivan Mines Inc. (1983-86)	1,562	6.2	310
Subtotal	**11,541**	**4.0**	**1,497**
Total	**142,214**	**3.3**	**14,888**

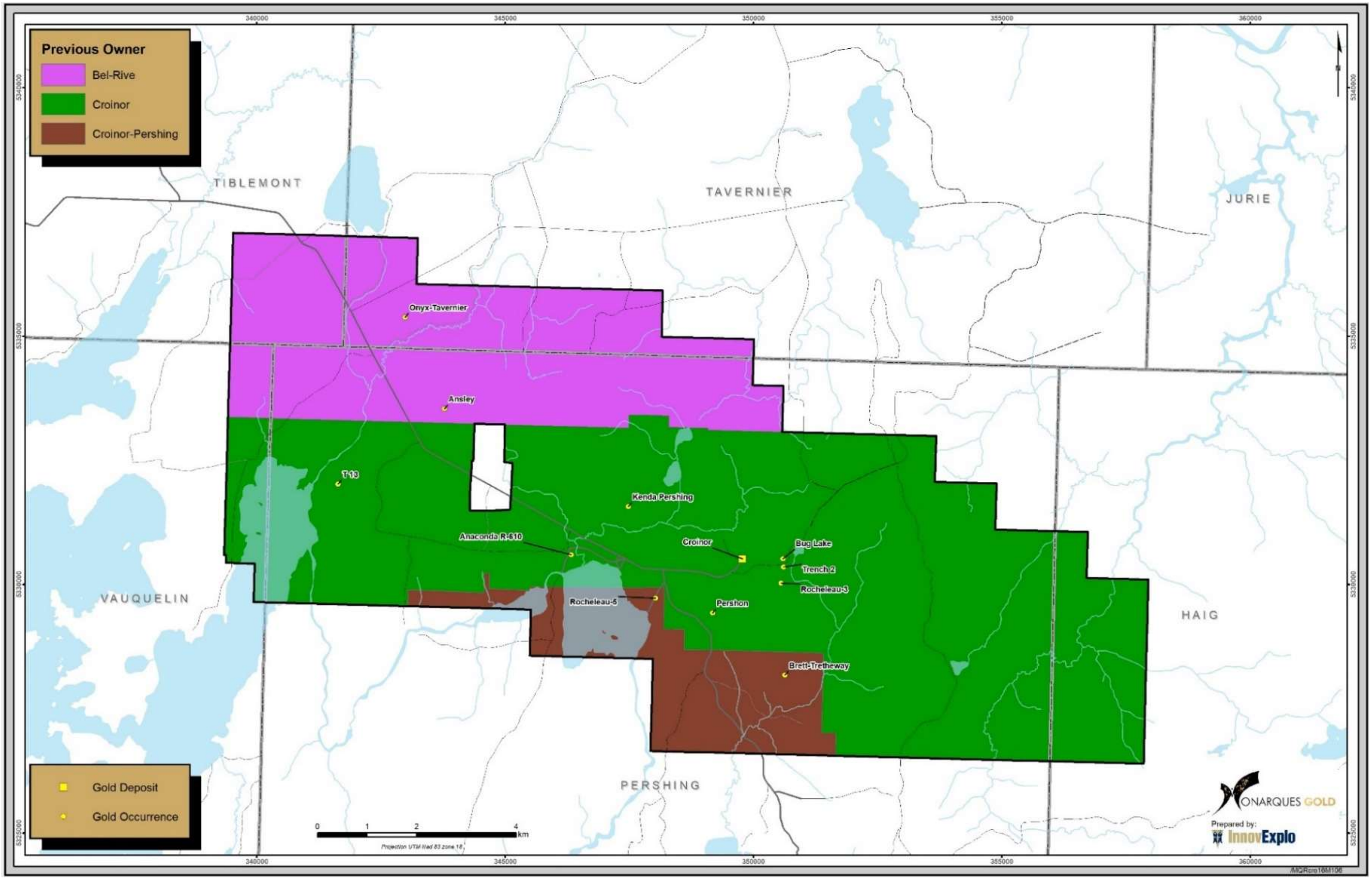


Figure 6.1 – Locations of the Croinor gold deposit and other gold occurrences on the former properties constituting the current Croinor Gold Property

6.2 Other Gold Showings and Exploration Work on the Croinor Gold Property

Several showings have been discovered over the years in the area around the Croinor deposit that now belongs to the Croinor Gold Property (Figure 6.1). These mineral occurrences are listed and described in the SIGEOM database. Summaries are provided below according to the former properties on which they occur.

6.2.1 Former Croinor Property

6.2.1.1 Trench No. 2 showing

This mineral occurrence was discovered by diamond drilling and trenching in 2001. The gold mineralization lies 600 m east-northeast of the Croinor deposit and about 250 m north of the hosting diorite. The gold values are located in intensely sheared (N290, dipping moderately north) mafic volcanics that are intruded by QFPs and injected by quartz-tourmaline veins. Brecciated and pyritized areas contain the highest gold values. As reported by Carrier (2002b), Chénard and Turcotte (2004) and Marchand (2004a; 2004b), the best assay results were: 5.6 g/t Au over 1.2 m (hole CR-01-46), 6.2 g/t Au over 1.5 m (hole CR-02-04), 13.0 g/t Au over 0.5 m (hole CR-02-06) and 5.0 g/t Au over 1.1 m (hole CR-2-07).

6.2.1.2 Bug Lake showing

This showing was discovered in 2003, 700 m northeast of the Croinor deposit and 150 m north of Trench No. 2. Gold mineralization is hosted in mafic mylonitic rocks where disseminated pyrite is associated with quartz-tourmaline veining. A grab sample collected from an old trench returned 1.13 g/t Au. Channel sampling from a new stripping assayed 2.72 g/t Au over 1.0 m and 1.15 g/t Au over 0.7 m. Later drill holes confirmed the underground extensions of the mineralization (Carrier, 2002b; Chénard and Turcotte, 2004; Marchand, 2004a; 2004b):

- g/t Au over 23.5 m including 4.60 g/t Au over 3.5 m and 3.44 g/t Au over 3.0 m (CR-03-276);
- 1.76 g/t Au over 24.2 m including 2.87 g/t Au over 12.0 m (CR-04-288);
- 2.76 g/t Au over 22.9 m including 11.34 g/t Au over 4.0 m (CR-04-289);
- 2.31 g/t Au over 11.9 m including 3.81 g/t Au over 4.3 m (CR-04-304);
- 1.93 g/t Au over 30.1 m including 2.94 g/t Au over 15.6 m (CR-04-307).

6.2.1.3 Pershon showing

This mineralized occurrence was found in 1939 and is located 1,200 m southwest of the Croinor deposit. The mafic volcanics hosting the gold are intensely sheared, carbonated and locally contain up to 40% graphite. The disseminated mineralization consists of pyrite, pyrrhotite and arsenopyrite. The best drill intersections as reported by Duhaime (1986) are as follows:

- 6.51 g/t Au over 2.28 m (hole 14, Pershon M.L., 1945);
- 3.05 g/t Au over 0.91 m (hole SC-86-02);
- 4.07 g/t Au over 0.76 m (hole SC-86-06);
- 2.37 g/t Au over 1.61 m (hole SC-86-07).

6.2.1.4 Rocheleau-3 showing (Trench No. 3)

The Rocheleau-3 mineralized occurrence was discovered by trenching in 1986 (Trench No. 3). It is located about 1 km southeast of the Croinor deposit. Basaltic volcanics are intruded by numerous porphyry dykes and by the Croinor diorite. The gold mineralization is found mainly along the southern margin of the Croinor diorite, but also in surrounding lithologies when quartz veining is present. The best results as reported by Carrier (2002b) are as follows:

- 8.6 g/t Au, 2.9 g/t Au and 2.7 g/t Au: grab samples from MB-87-52 (Rocheleau et al., 1987);
- 15.4 g/t Au, 15.6 g/t Au, 16.1 g/t Au and 21.7 g/t Au; grab samples (Carrier, 2002b);
- 2.6 g/t Au over 3.4 m (hole CR-02-09) and 2.2 g/t Au over 7.0 m (hole CR-02-14);
- 1.3 g/t Au over 4.6 m (hole CR-02-20) and 1.3 g/t Au over 6.8 m (hole CR-02-21).

6.2.1.5 T 13 showing

The T 13 occurrence was found by trenching in 1999. It is located 500 m east of the mouth of Rivière St-Vincent in Lac Guéguen. A grab sample taken from a quartz-tourmaline lens cutting across locally graphitic garnet schist returned a value of 1.933 g/t Au (Lapointe, 1999).

6.2.1.6 Kenda Pershing showing

This mineral occurrence, found in 1945, is located about 2.5 km northwest of the Croinor deposit and 1.2 km north-northeast of Blanchin Lake. Like most gold occurrences along strike with the Croinor deposit, it is hosted by mafic volcanics cut by diorite dykes and feldspar porphyries and injected by quartz-tourmaline-carbonates and pyrite veins. The best reported assays are as follows (Ingham and Ross, 1947; Brethour, 1974):

- 10.90 g/t Au over 0.61 m (hole 6);
- 4.11 g/t Au over 0.30 m (hole 5);
- 3.42 g/t Au over 1.13 m (hole 46);
- 24.69 g/t Au over 0.43 m (hole 60);
- 3.43 g/t Au over 0.73 m (hole 58);
- 4.11 g/t Au over 1.52 m (hole CP-74-1).

6.2.2 Former Bel-Rive Property

Table 6.3 summarizes previous work on the Bel-Rive Property. Two gold showings are reported in the SIGEOM database.

6.2.2.1 Ansley occurrence

The Ansley gold occurrence was found by drilling in 1945. The holes returned assays up to 3.77 g/t Au over 0.48 m (hole 5); 2.57 g/t Au over 0.34 m (hole 1); 6.50 g/t Au over 0.43 m (hole 16); and 2.00 g/t Au over 1.04 m (hole 13) (Ingham, 1944 and 1948b). Diorite and gabbro sills intruding intermediate to mafic volcanics host gold-bearing quartz-carbonate-tourmaline veining with pyrite and small amounts of chalcopyrite.

6.2.2.2 Onyx-Tavernier occurrence

The Onyx-Tavernier occurrence was discovered by Onyx Resources Inc. in 1985, about 500 m north of Rivière St-Vincent and 1 km east of the Senneterre-Croinor dirt road. Hole TAV-85-02 cut a sheared and altered andesite where a section injected by quartz and calcite returned 1.0 g/t Au over 1.5 m (Khobzi et al., 1986).

Table 6.3 – Historical work on the former Bel-Rive Property

COMPANY	WORK	RESULTS	REFERENCES[1]
Scout Pershing Mines Ltd	7 holes for 1338 m: DDH Nos. 1 to 7	0.30 g/t Au over 0.60 m 1.72 g/t Au over 0.75 m	Ingham, 1944; 1945;1948b
Jacob Gold Co. Goldsearch Inc.	Compilation & assessment Mag + VLF + PP	Several conductors identified	Descarreaux, 1981 Coda, 1982; 1983 Pineault, 1984
Sphinx Exploration Inc.	Trenching + sampling Mag + VLF + PP Geochem survey (humus) Drilling (19 holes for 3,514 m, incl. 12 on the property): DDH PER-87-07 to 17, PER-89-01 to -08	Sphinx showing Veins of qz-cb-tl in a shear zone 4.18 g/t Au over 2.28 m 1.99 g/t Au over 1.40 m 5.21 g/t Au over 1.30 m	Deschambault and Legault, 1986 Boileau, 1987 Yeomans, 1987d; 1988 Auclair, 1987 Côté, 1989
Exploration Or-Bert Inc.	Compilation Drilling (1 hole for 100 m) OR-02-01	Jourdan Property Ansley showing Diorite + quartz veins	Fournier, 2003b
Ressources Frenchie Inc.	Drilling (2 holes for 400 m): DDH AU-02-01 and AU-02-02	Jourdan Property Diorite + quartz veins	Fournier, 2003a

6.2.3 Former Croinor-Pershing Property

6.2.3.1 Brett-Tretheway showing

The Brett-Tretheway showing was found by trenching in 1931. Subsequent drilling cut quartz veins and veinlets containing pyrite, pyrrhotite and tourmaline that returned gold values up to 3.94 g/t Au over 0.46 m (P-63-1: Meikle, 1963); 5.83 g/t Au over 1.16 m (P-64-1: Meikle, 1964); 5.08 g/t Au over 15 cm (CRP-81-2: Tremblay, 1981); 2.37 g/t Au over 1.13 m (CRP-81-7: Tremblay, 1981); and 1.36 g/t Au over 1.07 m (CRP-81-1: Tremblay, 1981).

6.2.3.2 Rocheleau-5 showing

Rocheleau et al. (1987) documents an intercept grading 13.72 g/t Au over 0.34 m in a historical drill hole from the mid-1940s (see showing 1 in Fig. 28a and Table 4a in that publication). Holes PE-01-01 and -02 cut 1.4 g/t Au over 0.4 m and 1.0 g/t Au over 3.4 m, including 3.5 g/t Au over 0.3 m (Carrier, 2002a and 2002b). More recently and about 400 m to the northwest, hole V-88-57 cut 5.09 g/t Au over 1.5 m (Gagnon and St-Onge, 1988).

6.3 Gold Showings and Exploration Work outside the Croinor Gold Property

6.3.1 Former Lac Tavernier Property

The Jolin showing is a polymetallic occurrence discovered by Raoul Dubé, a prospector from Senneterre, in the early 1950s (see Figure 23.1). Mineralization occurs as massive sulphide lenses hosted in mafic volcanics and gabbro with minor quartz veining (Yeomans, 1987b).

Sullivan Consolidated Mines Ltd optioned the property in 1958. Exploration, stripping, MAG and EM surveys were conducted and one shallow hole was drilled (log not available; Yeomans, 1987b). The property was abandoned for 12 years.

In 1970, the property was optioned to Noranda Exploration Corp Ltd. Geological, geochemical and geophysical surveys were completed (Yeomans, 1987b). The results of the program led them to abandon the property.

In 1972, SOQUEM drilled hole 10-821-01 with an intersection of 1.1% Zn over 0.9 m (Lacasse, 1972).

The ground was again staked in 1986 by Pierre Jolin from Senneterre. It was optioned to Exploration Sphinx Inc. as reported in Yeomans (1987a and 1987b), and grab samples collected by Sphinx in 1987 returned values of 4.90 g/t Au, 2.80 g/t Ag, 0.168% Cu and 1.04% Zn (quartz vein); 10.66% Zn, 1.70% Cu, 13.55 g/t Ag and 470 ppb Au (massive sulphides); 4.84% Zn, 0.189% Cu, 3.10 g/t Ag and 1.80 g/t Au (massive sulphides). During the fall of 1987, seven (7) holes were drilled for a total of 1,350.6 m (Yeomans, 1987c).

7 GEOLOGICAL SETTING AND MINERALIZATION

7.1 The Abitibi Terrane (Abitibi Subprovince)

The Abitibi Greenstone Belt has been historically subdivided into northern and southern volcanic zones defined using stratigraphic and structural criteria (Dimroth et al., 1982; Ludden et al., 1986; Chown et al., 1992) and mainly based on an allochthonous greenstone belt model development; i.e., interpreting the belt as a collage of unrelated fragments. The first geochronologically constrained stratigraphic and/or lithotectonic map (Fig. 7.1), interpreted by Thurston et al. (2008), includes the entire Abitibi Greenstone Belt known coverage span; i.e., from the western Kapuskasing Structural Zone to the eastern Grenville Province. Thurston et al. (2008) described the Abitibi Greenstone Belt to be mainly composed of volcanic units which were unconformably overlain by large sedimentary Timiskaming-style assemblages. Similarly, both new mapping surveys and new geochronological data indicate an autochthonous origin for the Abitibi Greenstone Belt.

Generally, the Abitibi Greenstone Belt comprises east-trending synclines containing volcanic rocks and intervening domes cored by synvolcanic and/or syntectonic plutonic rocks (gabbro-diorite, tonalite, and granite) alternating with east-trending turbiditic wacke bands (MERQ-OGS, 1984; Ayer et al., 2002a; Daigneault et al., 2004; Goutier and Melançon, 2007). Normally, the volcanic and sedimentary strata dip vertically and are usually separated by abrupt, variably dipping east-trending faults. Some of these faults, such as the Porcupine-Destor Fault, display evidence of overprinting deformation events including early thrusting, later strike-slip and extension events (Goutier, 1997; Benn and Peschler, 2005; Bateman et al., 2008). Two ages of unconformable successor basins are observed: a) widely distributed fine-grained clastic rocks in early Porcupine-style basins, followed by b) Timiskaming-style basins composed of coarser clastic sediments and minor volcanic rocks, largely proximal to major strike-slip faults, such as the Porcupine-Destor and Larder Lake-Cadillac faults and other similar regional faults in the northern Abitibi Greenstone Belt (Ayer et al., 2002a; Goutier and Melançon, 2007). The Abitibi Greenstone Belt is intruded by numerous late-tectonic plutons composed mainly of syenite, gabbro and granite with fewer lamprophyre and carbonatite dykes. Commonly, the metamorphic grade in the Abitibi Greenstone Belt varies from the greenschist to subgreenschist facies (Jolly, 1978; Powell et al., 1993; Dimroth et al., 1983b; Benn et al., 1994) except in the vicinity of most plutons where the metamorphic grade corresponds mainly to the amphibolite facies (Jolly, 1978).

7.2 The New Abitibi Greenstone Belt Subdivisions

As mentioned in Section 7.1, the most recent data from the newest mapping surveys and new geochronological information by the Ontario Geological Survey and Géologie Québec, were used to define the new Abitibi Greenstone Belt subdivisions. The following section presents a more detailed description of these new subdivisions mostly abridged from Thurston et al. (2008) and references therein.

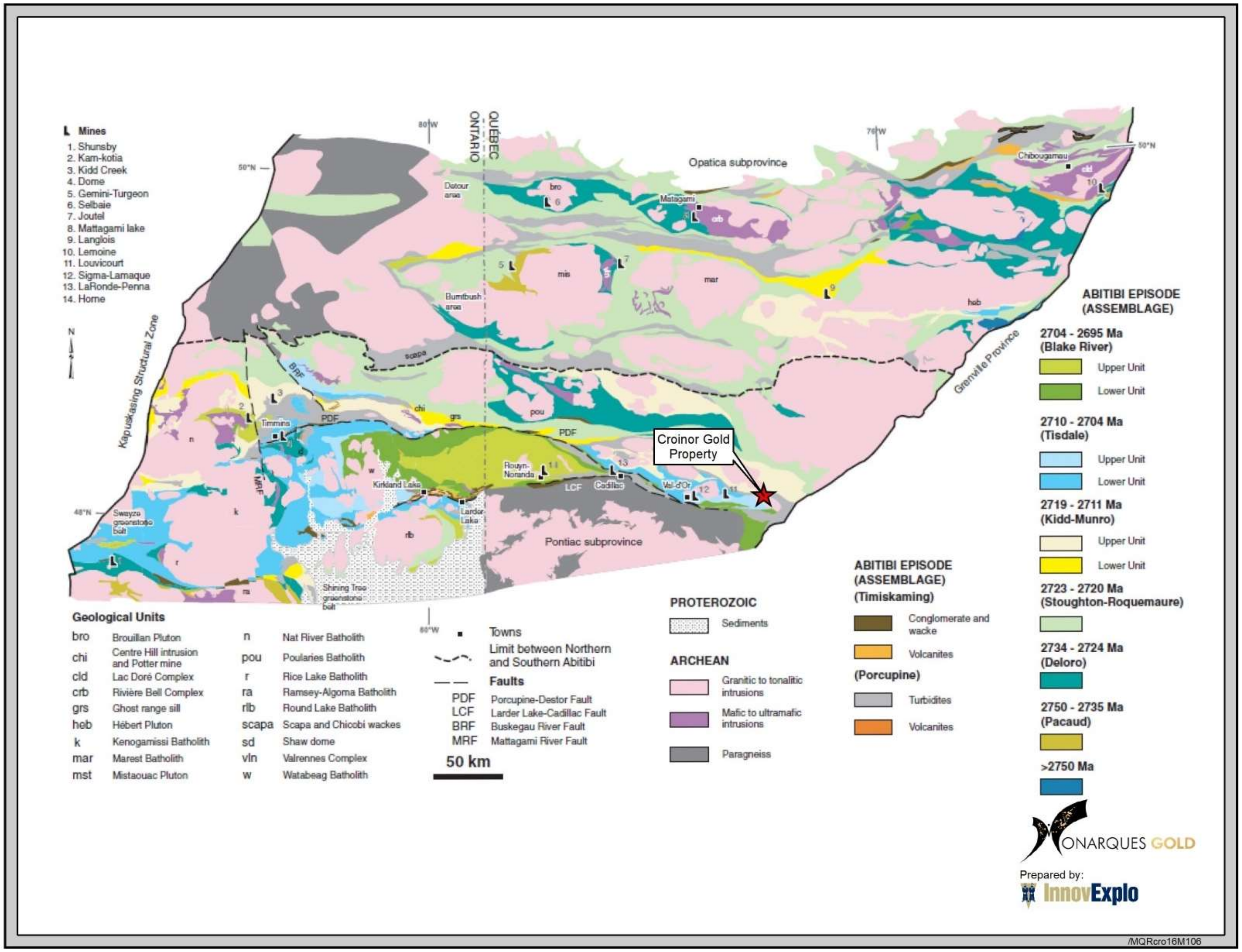
Seven discrete volcanic stratigraphic episodes define the new Abitibi Greenstone Belt subdivisions based on numerous U-Pb zircon age groupings. The new U-Pb zircon ages clearly show timing similarities for volcanic episodes and plutonic activity ages between the northern and southern portions of the Abitibi Greenstone Belt, as indicated in Figure 7.1. These seven volcanic episodes (Figure 7.1) are listed below, chronologically from the oldest to the youngest:

- Volcanic episode 1 (pre-2750 Ma);
- Pacaud Assemblage (2750–2735 Ma);
- Deloro Assemblage (2734–2724 Ma);
- Stoughton-Roquemaure Assemblage (2723–2720 Ma);
- Kidd-Munro Assemblage (2719–2711 Ma);
- Tisdale Assemblage (2710–2704 Ma);
- Blake River Assemblage (2704–2695 Ma).

The Abitibi Greenstone Belt successor basins are of two types: laterally extensive basins corresponding to the Porcupine Assemblage with early turbidite-dominated units (Ayer et al., 2002a), followed by the aerially more restricted alluvial-fluvial or Timiskaming-style basins (Thurston and Chivers, 1990).

The geographic limit (Figure 7.1) between the northern and southern parts of the Abitibi Greenstone Belt has no tectonic significance but is similar to the limits between the internal and external zones of Dimroth et al. (1982) and those between the Central Granite-Gneiss and the Southern Volcanic zones of Ludden et al. (1986). The boundary between the northern and southern parts passes south of the wackes of the Chicobi and Scapa groups with a maximum depositional age of 2698.8 ± 2.4 Ma (Ayer et al., 1998, 2002b).

The Abitibi Subprovince is bounded to the south by the Larder Lake-Cadillac Fault Zone, a major crustal structure that separates the Abitibi and Pontiac subprovinces (Chown et al., 1992; Mueller et al., 1996; Daigneault et al., 2002, Thurston et al., 2008).



(Figure based on Ayer et al. (2005) and Goutier and Melançon (2007) and modified from Thurston et al. (2008).)

Figure 7.1 – Abitibi Greenstone Belt

7.3 Regional Geological Stratigraphy

The regional stratigraphy contains three major intrusions (Figure 7.2): a) the synvolcanic Bourlamaque Batholith composed of quartz diorite and granodiorite, located west of the region, b) the syn- to late-tectonic Tiblemont-Pascalis Batholith composed of monzonite and granodiorite, present in the northwest sector, and c) the syn- to late-tectonic Pershing Batholith, which occupies the southeastern part of the sector and which contains granitic to granodioritic and a few monzonitic facies (Rocheleau et al., 1997). The Pershing Batholith is characterized by an amphibolite-grade metamorphic halo.

Several smaller intrusions are also present in the area: a) the Bevcon Pluton composed of granodiorite and/or quartz diorite (Rocheleau et al., 1997), b) the differentiated Vicour Sill composed of, from bottom to top (north to south), gabbro, gabbro to amphibolite, quartz-rich diorite to tonalite granophyre (Perrier, 1986; Hébert et al., 1988). The differentiated Croinor Sill is also of varying composition, with gabbro, diorite and quartz-rich diorite. However, it does not present a clearly defined stratigraphic sequence.

The Croinor Gold Property is located in Pershing Township, 15 km west of the Grenville Front and about 55 km east of the city of Val-d'Or (75 km by road), in the eastern portion of the Abitibi Greenstone Belt. It is divided into five distinct lithotectonic areas, bounded by regional faults, located 3 km northeast of the Pershing Batholith and 2 km northeast of the Garden Island Deformation Zone (GIDZ). On either side of the GIDZ, three other distinct lithotectonic domains are recognized (Figure 7.2): a) the Val-d'Or Domain, consisting of mafic to felsic volcano-sedimentary rocks, in the centre; b) the volcano-sedimentary Villebon Domain to the south; and c) the Assup Domain. The Property is underlain by two major lithological packages: a) dominantly intermediate to mafic volcanic rocks forming the Assup Domain in the north; and b) the dominantly sedimentary Garden Island Domain in the south (Figure 7.2). Lithological units in both domains are generally oriented N295° with steep dips to the north. The Assup Domain is further subdivided into the mafic volcanic Aurora Group in the south and the mafic to intermediate volcanic Assup Group in the north (dominantly mafic on the Property). The Property is located 3 km northeast of the Pershing Pluton which overlaps the southwest end of the property. The property is transected by the GIDZ in a NW-SE direction, which overprints and partially follows the contact between the Assup and Garden Island domains.

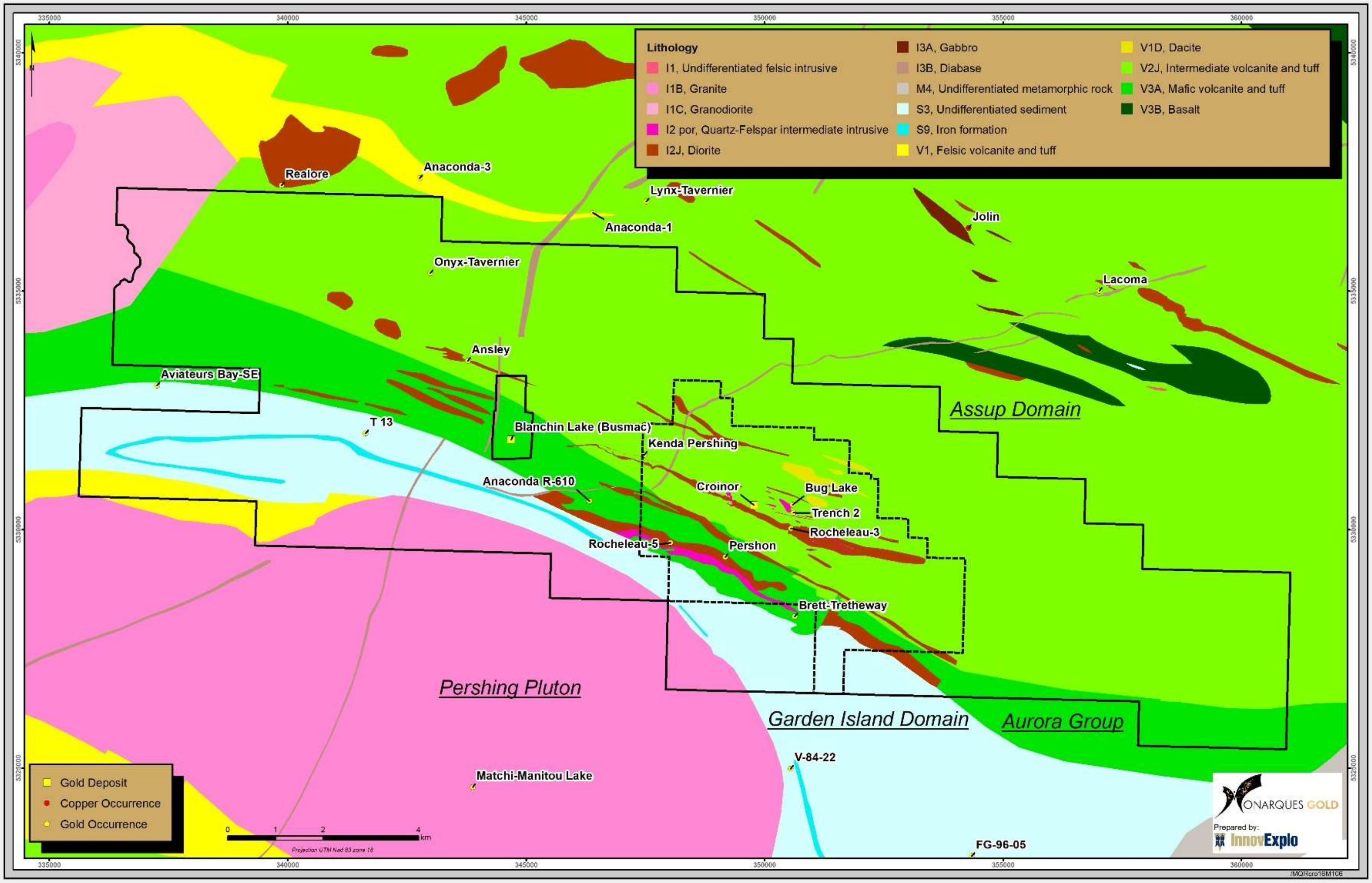


Figure 7.2 – Lithotectonic domains and deformation corridors on the Croinor Gold Property

7.4 Regional Structural Fabrics

The Property is transected by two major deformation zones: the southern corridor intersects the volcano-sedimentary Trivio Domain and is interpreted as the eastward extension of the Cadillac Fault Zone (CFZ), and the second corridor is the Garden Island Deformation Zone (GIDZ), formerly known as the Pershing Deformation Corridor (Couture, 1990). The GIDZ merges with the highly deformed sedimentary units of the Garden Island Domain whose north and south contacts are sheared.

Four major phases of deformation were interpreted based on mapping observations in the study area.

The primary stratification S0 shows a general WNW-ESE direction with a steep dip to the north.

The phase that predates regional deformation (D1) is characterized by early and local isoclinal folds observed within the CFZ (Rocheleau et al., 1997) and the GIDZ. The S1 cleavage is easily recognizable due to the predominant nature of the regional D2 deformation (Rocheleau et al., 1997). This cleavage is locally identified in sedimentary rocks of the GIDZ.

The main regional deformation phase (D2) is responsible for the E-W tectonic grain, major F2 folds and the dominant S2 foliation (Rocheleau et al., 1997) interpreted as a flow cleavage; it represents a structural event definitely more important than the other two phases of deformation (Rocheleau et al., 1997). The S2 schistosity is substantially oriented in the same direction as S0 at N275-N290° with a steep dip to the north.

The phase that postdates regional deformation (D3) corresponds mainly to networks of NE dextral kinks and NNW sinistral kinks (Rocheleau et al., 1997). Also associated with this D3 phase, NE-SW open folds plunging NE (approximately 45°) can be observed in the most deformed areas. The S3 cleavage, which affects the Pershing Pluton, is mainly characterized in the entire region by a spaced crenulation cleavage often associated with quartz injections.

These first three phases are Archean (Rocheleau et al., 1997). The fourth phase (D4) is associated with the Grenvillian orogeny and is characterized by a NE-SW S4 foliation with a steep SE dip (60°-70°).

7.5 Property Geology

This section provides a summary of the property geology. A detailed description is also provided in Appendix III.

7.5.1 Assup Group (AS)

7.5.1.1 Volcanic units

Effusive facies are clearly dominant in these volcanic rocks. Andesitic lava flows are commonly pillowed with local breccia at the top and interbedded with massive flows (Gaudreau et al. 1988). In the northern part of the property, Gobeil (1989a) identified a wide dacitic band composed mainly of pillowed and massive flows a few centimetres to several metres thick. Intermediate primarily calc-alkaline lava to the south is in contact with the dacitic band and outcrops in the northwest corner, just north of the Croinor shaft (Gobeil, 1989a). It is mainly composed of pillowed andesite which, on occasion, alternates with massive layers. These lavas are usually amygdaloidal and/or vesicular.

Andesitic pyroclastic rocks form lenticular horizons interbedded with lavas. A horizon of pyroclastic rocks almost 600 m thick is present in the central part of the Property (Hodges 1987). The pyroclastic rocks are generally composed of ash tuff, lapilli tuff and agglomerate (Hodges, 1987, Gaudreau et al., 1988, Gobeil 1989a).

7.5.1.2 Croinor Sill

The Croinor Sill is located in the central part of the Property (Figure 7.2). It has a general attitude of N295° and dips north at 50°–65°. It ranges from 60 m to 120 m in thickness over a strike length of approximately 3 km. The sill, which hosts the gold mineralization in the Croinor deposit, can be observed on several outcrops and is intersected by numerous drill holes. Chénard and Turcotte (2004) mentioned that its western (> Section 800W) and eastern (> Section 300E) extensions need better definition. Near the Croinor deposit, the sill is in direct contact with pyroclastic units (Hodges, 1987). Elsewhere, the sill is in contact with fragmental volcanic rocks, and sometimes with massive volcanic rocks. Generally, the northern and southern contacts of the sill with the enclosing volcanic rocks are clearly observed by the sudden appearance or disappearance of pyroclastic fragments. However, sometimes mapping of the sill contacts can be difficult, mainly where fragments are absent near the contacts or where the contacts are strongly sheared. The northern and southern contacts are generally foliated parallel to the regional S2 schistosity. They are strongly foliated to sheared in places, but practically undeformed in others.

Chénard and Turcotte (2004) used the term “diorite” to describe a greenish medium to fine-grained diorite facies in their report and drill logs. They also noted that the diorite's primary mineral composition was frequently obliterated by hydrothermal alteration and deformation. During the drilling program, the mineral composition was described based on the following megascopic observations: a) hydrothermal alteration intensity and type (i.e., epidotization, chloritization, ankeritization, sericitization and silicification); b) accessory minerals (magnetite, hematite and leucoxene); c) mineralized zones (veins and breccia with pyrite); and d) deformation affecting the facies (foliation, shearing, folding).

7.5.1.3 Diorite dykes

Chénard and Turcotte (2004) reported dioritic dykes cutting the Croinor Sill. The dykes are very small and measure a few centimetres to less than 2 m. The rock is very fine-grained to aphanitic. Chill margins are observed in places. These dykes are typically magnetic and contain traces of fine pyrite. Rarely, these dykes have a more mafic composition. They are always observed in the less deformed and altered zones of the sill and are spatially associated with mainly epidotized rocks. Elsewhere, they were probably obliterated by shear zones and related alteration. The dioritic dykes were also affected by the same alteration and deformation as the Croinor Sill. Chénard and Turcotte (2004) noticed that none of these dykes intersect the gold-bearing shear zones, which suggests they predate the gold mineralization.

7.5.1.4 Quartz-feldspar porphyry

Chénard and Turcotte (2004) described a quartz-feldspar porphyry body cutting the Croinor Sill and volcanic country rocks at a distance of 400 m to the west of the Croinor shaft. These facies contain up to 50% quartz and plagioclase phenocrysts, is massive to foliated, and is usually gray or salmon pink. Its matrix is typically composed of 50%-60% quartz, 15% chlorite, 10%–25% carbonates and 10% muscovite (Gaudreau et al., 1988). Economic gold grades are associated with this porphyry body, more precisely where it is in close contact with the sill.

Similar dykes were encountered elsewhere on the Property, with dimensions ranging from 0.3 m to 10 m, especially in the north, where several holes intersected dykes (Gobeil, 1989a) with similar compositions.

7.5.2 Aurora Group (AU)

A mafic tholeiitic formation runs along the southern edge of the Property (Figure 7.2). It forms a layer 600 m to 1 km thick. It is associated with a strong continuous magnetic anomaly trending N110°, whereas the northern half is characterized by a magnetic low (Gobeil, 1989a).

This unit was defined by Chénard and Turcotte (2004) based on a drilling program in the south-central part of the property and a few outcrops encountered in the same area by Gobeil (1989a). Drill holes demonstrated that the magnetic lineament is created by magnetic pillow lavas showing massive and brecciated facies. These lavas are also associated with fine to medium-grained amphibolites containing up to 15% amphibole porphyroblasts. Biotitization and carbonatization are the typical types of alteration observed in these rocks. Immediately north of the magnetic horizon, Gobeil (1989a) mapped a tholeiitic lava on some outcrops. This layer corresponds to a magnetic low some 300 m to 600 m wide. On outcrops, lavas are pillowed, massive and brecciated.

Drilling programs helped delineate a quartz-feldspar porphyry approximately 150 m thick which extends over 3 km along the strike of the formation. This porphyry is not exposed (Gobeil, 1989a) and was only observed in drill holes, which revealed that it becomes a decimetre- to metre-thick porphyry alternating with more or less magnetic basalts in the eastern extension of the porphyry (Carrier, 2002b).

7.5.3 Garden Island Group (GI)

The Garden Island Group mainly occurs byond property limits. Two outcrops, approximately 100 m south of the property limits, were visited by Gobeil (1989a) who described them as centimetre-thick beds of argillite, greywacke and polymictic conglomerate. Recrystallized biotite and garnet porphyroblasts were clearly apparent in places.

The sandstones and argillite show centimetre-scale bedding, which is interrupted only by the presence of conglomerate beds some 10 cm to 30 cm thick. The conglomerate consists of 5% rounded granitic or quartz pebbles of 3 cm or less (Gobeil, 1989a), surrounded by a sandstone matrix consisting mainly of quartz.

7.6 Local Structural Fabrics

The primary stratification (S0) was mainly measured at the contacts between massive flows, pillowed flows and pyroclastic units (Gobeil, 1989a) observed on the property. A north polarity was also measured everywhere on the Property, except at two outcrops where the polarity was south.

The S2 schistosity is subparallel to the axial planes of most mesoscopic F_2 folds, the E-W shears and also to the elongating/flattening plane of most geological objects (i.e., pillows, vesicle fragments, crystals). Near the contact with the Croinor Sill, it becomes parallel to the contact (N290°) and dips from 40° north in the sill to 70° north in the volcanics (Gaborit, 1988). In the epidotized diorite (known as the fresh diorite in historical logs), the schistosity is weak to often absent. Where the diorite becomes altered, schistosity is defined by an alignment of carbonate minerals, chlorite and sericite (Hodges, 1987). In the QFP intrusions, the schistosity becomes realigned with the QFPs, especially when the matrix is chlorite-dominant.

Two major folds, an anticline and a syncline, overfolded to the south, were mapped by Lacoste et al. (1987) in volcanic rocks northeast of the Croinor shaft. These kilometre-scale F2 folds were followed, in an east-west direction, for more than 10 km. They have N100° axial planes dipping 30°–60° east (Lacoste et al., 1987). On the Property, decametric to metric parasitic folds were observed, associated with the D2 deformation phase. These “M”-shaped folds have axial planes oriented N075°-100° with dips ranging between 50°-70° to the east (Lacoste et al., 1987). Lacoste et al. (1987) also observed some “M”-shaped folds near the Croinor deposit with axial planes oriented N250°-280° and dipping 15°-70° west.

Gobeil (1989a) noted the presence of the S3 cleavage in highly sheared lithologies on the Property. Its strike varies from N335°-N028° with shallow dips to the east.

7.7 Property Mineralization

Several types of veins have been identified by previous authors, including Chénard and Turcotte (2004). Gaborit (1988), who mapped the Croinor deposit outcrop in detail, observed two types: veins parallel to the main shear ("shear veins") and subhorizontal tension veins. The veins are generally composed of quartz, tourmaline and carbonates with minor amounts of pyrite, chalcopyrite and native gold. The veins vary from a few centimetres to several metres in thickness and plunge weakly toward the east. Based on a structural analysis, Gaborit (1988) showed that the shear zones and both types of veins are related to the same phase of deformation. Moreover, Chénard and Turcotte (2004) also encountered mineralized tectonic breccias.

7.7.1 Shear veins

Chénard and Turcotte (2004) noted that the shear veins are oriented parallel to shears and range from a few centimetres to several metres in thickness. These veins consist of quartz, tourmaline and carbonate with very little sulphides. The percentage of pyrite does not exceed 3% and it seems to be closely associated with tourmaline. Tourmaline occurs in the form of fine millimetre-scale veinlets and/or needles. Gaborit (1988) claims to have locally observed native gold in quartz, generally near contacts with host rocks or with tourmaline and chalcopyrite (<1%) associated with the quartz. These veins show variable degrees of deformation. They are boudinaged, folded and brecciated. The wall rocks to the veins are regularly bleached and, occasionally, brecciated.

7.7.2 Brecciated quartz-tourmaline veins

Chénard and Turcotte (2004) described these veins to be metric to decimetric in thickness and composed of grey or milky white quartz with varying quantities of tourmaline veinlets and/or needles. They contain less than 20% altered and mineralized diorite fragments. These fragments are subangular and range from 1 cm to 1 m in size. The fragments are leached, silicified, pyritized and carbonatized (calcite, ankerite). They contain 1% to 15% fine- to coarse-grained auriferous pyrite (0.3 cm - 2 cm). Fuchsite is occasionally present in the fragments with pyrite. In veins containing only quartz, pyrite is generally absent, and few carbonates are present, while quartz-tourmaline veins contain small amounts of pyrite (<2%). Pyrite borders and/or is present inside tourmaline veinlets. There seems to be a close relationship between tourmaline, fuchsite and pyrite. The host rocks are usually leached and pyritized (<15% pyrite).

7.7.3 Quartz-tourmaline-carbonate veins

Chénard and Turcotte (2004) described these veins as ranging from 10 cm to 1 m in width. They are composed of white quartz, massive tourmaline and/or tourmaline veinlets and carbonates (calcite, ankerite). Tourmaline and carbonates are generally more abundant along vein wall rocks. The percentage of tourmaline is usually less than 35%. In most cases, these veins contain traces to 3% fine pyrite, often associated with tourmaline.

7.7.4 Quartz-tourmaline veinlets

Chénard and Turcotte (2004) described the quartz veins to be millimetric to centimetric, whereas the tourmaline veinlets are usually millimetric. The density of these veins varies from 1% to 10%. Milky white quartz veinlets contain less than 1% tourmaline. Pyrite is generally absent in these veins, but their wall rocks contain auriferous pyrite (1%–15%), especially in silicified zones. Elsewhere in the diorite, trace to 3% disseminated pyrite is observed. Quartz-tourmaline veinlets are often folded, boudinaged and discontinuous.

7.7.5 Tourmaline veins

Chénard and Turcotte (2004) noted that tourmaline veins are rarely observed. These veins are generally 1 m to 10 m thick. They consist of more than 80% massive tourmaline with less than 20% quartz. Tourmaline is massive but may occur in the form of veins and needles in the presence of quartz. In some cases, these veins may be brecciated and contain 5%–25% leached and pyritized diorite fragments. Fragments contain up to 15% fine- to coarse-grained pyrite, sometimes cubic. Associated with tourmaline, trace to 10% medium- to fine-grained pyrite is regularly present. In drill hole CR-02-78, Chénard and Turcotte (2004) saw an example of a metre-scale tourmaline vein. This vein returned gold grades up to 9.7 g/t Au.

7.7.6 Tension veins

Chénard and Turcotte (2004) noted that even though tension veins have been well documented around shear zones, their identification in drill core remains difficult. The only clue that can confirm the presence of tension veins is the fact that tourmaline and/or quartz grow perpendicular to the vein contacts. The tension veins were injected into subhorizontal low-angle tension fractures (Gaudreau et al., 1988). According to Gaudreau et al. (1988), these veins dip to the southeast, but Gaborit (1988) observed north-northeast dips. The veins are generally arranged *en echelon* (Gaborit 1988). The subhorizontal tension veins contain milky white quartz with very little carbonates and rare tourmaline. The veins are thin (less than 15 cm) and have a very short extension. The wall rocks are pyritized and contain 1% to 5% auriferous pyrite (Gaborit, 1988). Gaborit (1988) reports the presence of visible gold in these veins.

7.7.6.1 Tectonic breccia

Gaudreau et al. (1988) observed an association between the tectonic breccias and faults and/or reverse shear zones. These tectonic breccias contain angular, leached and pyritized diorite fragments, similar to host rocks and ranging in size from 1 cm to 50 cm. The quartz-tourmaline matrix represents up to 80% of the breccia volume. Diorite fragments are strongly silicified, sericitized and ankeritized. Fuchsite is visible in some fragments. The fragments contain 1% to 15% fine- to coarse-grained auriferous pyrite crystals or aggregates. Chénard and Turcotte (2004) characterized these breccias as the main gold-bearing structures within the Croinor Sill, where gold grades are the most consistent and may exceed 30 g/t Au in some cases.

7.8 Metamorphism and Hydrothermal Alteration

The regional metamorphism in the area of interest is generally low-grade. This type of metamorphism is characterized by the following paragenesis in volcanic rocks: chlorite-actinolite-epidote-albite-quartz (Winkler, 1979). In his study, Hodges (1987) concluded that all rock units on the Property were metamorphosed to the greenschist facies.

Often various types of alteration are combined to form alteration halos around gold deposits (Roberts, 1987). Usually, this alteration progression is linked to the gradual carbonatization of host rocks accompanied with alkaline metasomatism. In the Croinor deposit area, Pages (1982) was the first to highlight this kind of hydrothermal alteration zoning (Figure 7.3) within the mineralized zones that obliquely cut the diorite sill. These mineralized zones, parallel to shear zones, are present in the altered diorite unit and are separated by unaltered diorite horizons.

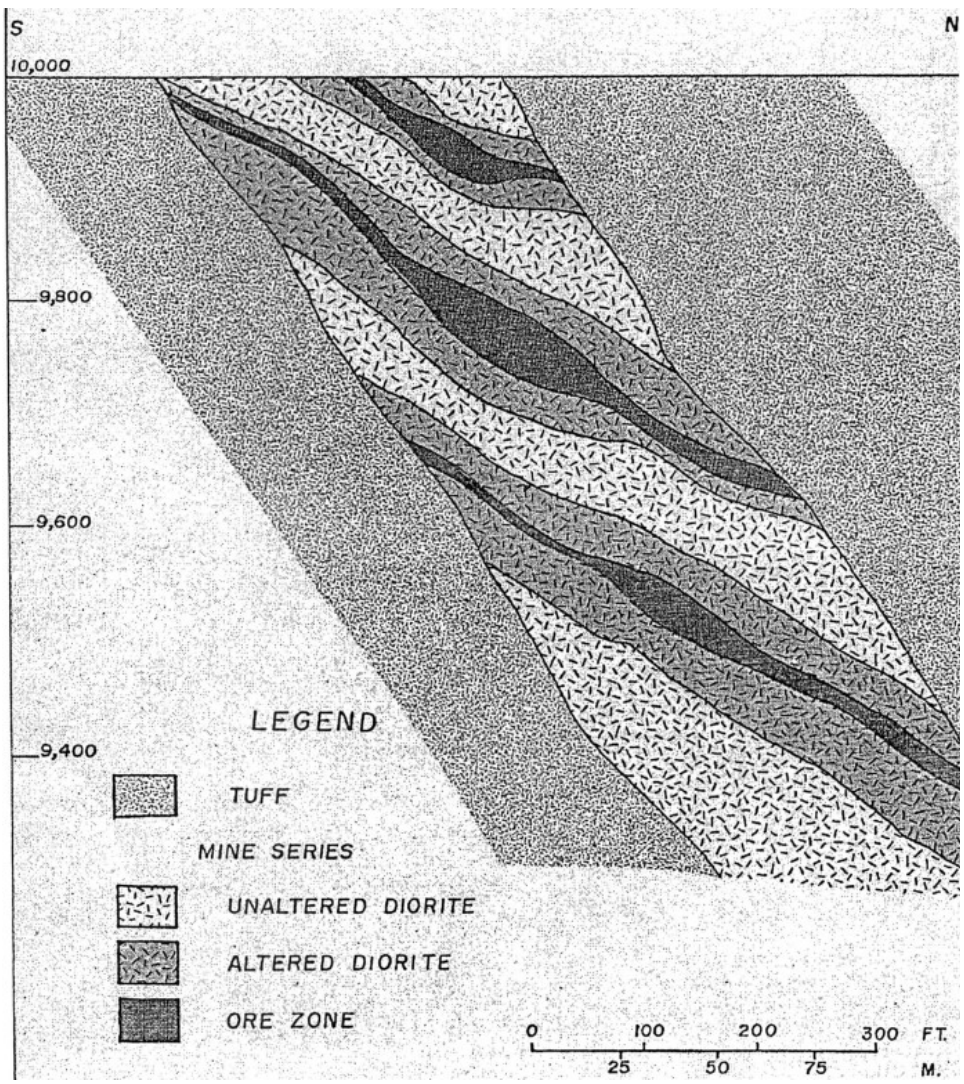
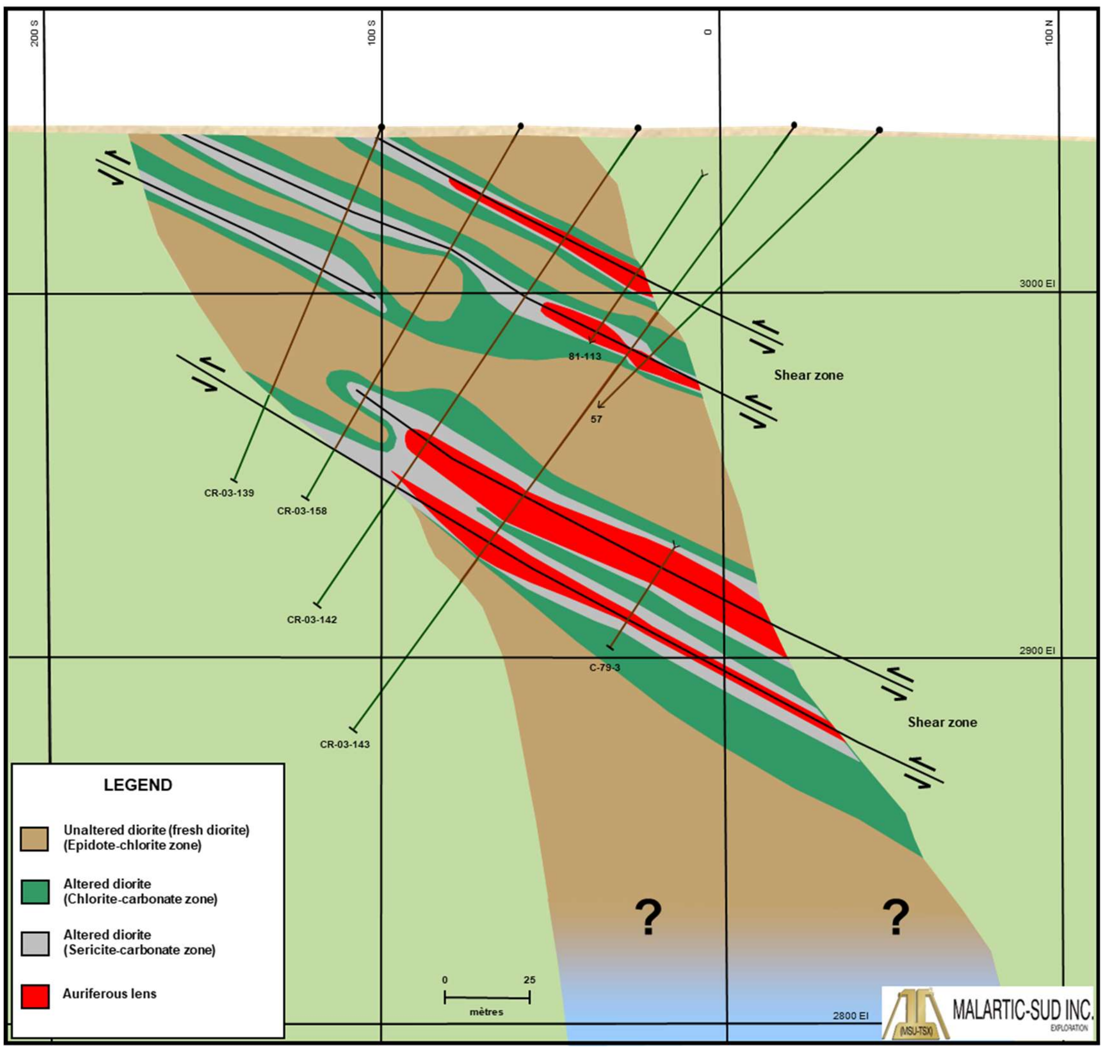


Figure 7.3 – Typical cross-section showing hydrothermal alteration zoning (Pages, 1982)

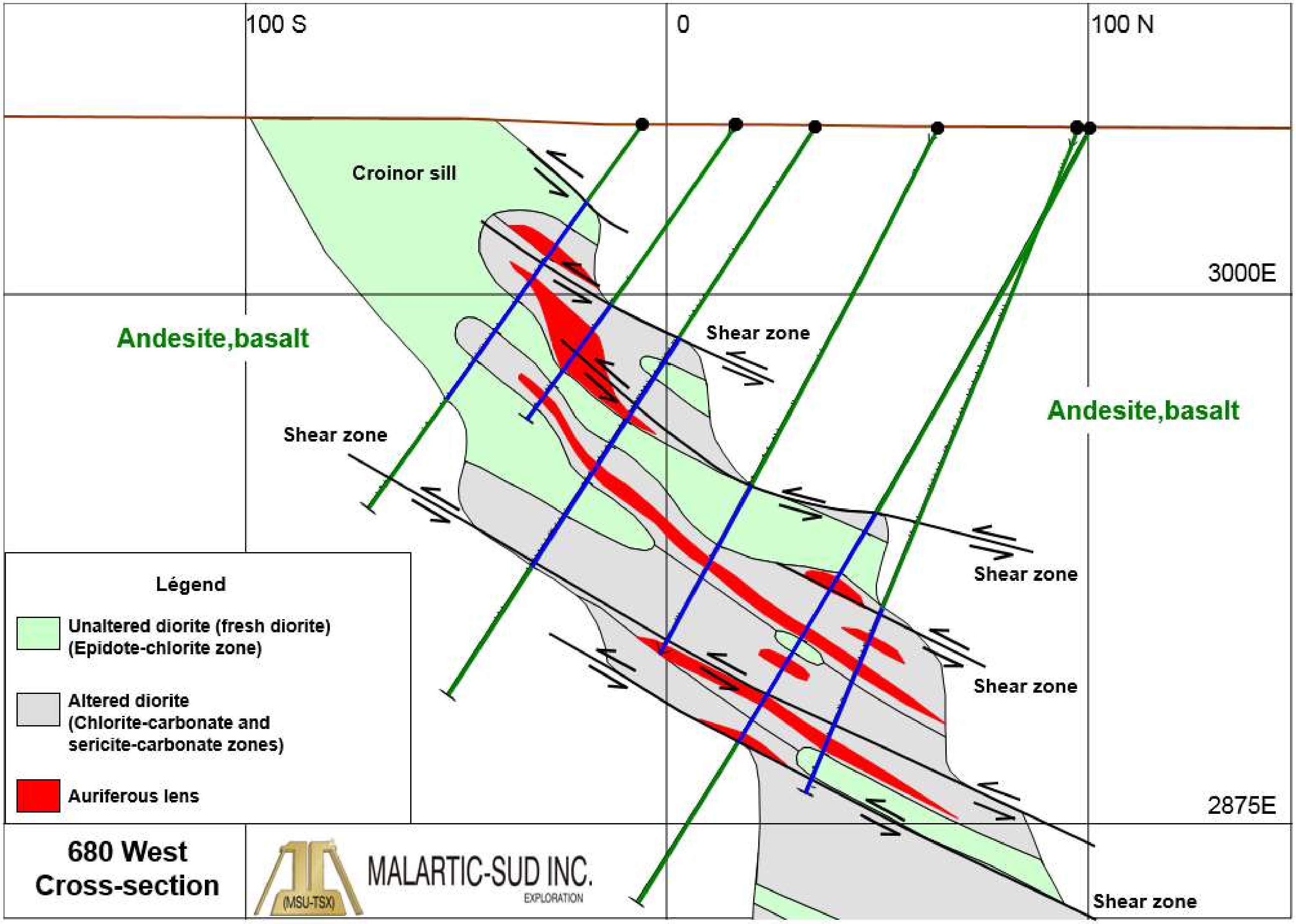
Carrier (2002b) and Chénard and Turcotte (2004) subdivided the hydrothermal alteration halo, established on a qualitative visual basis, in three distinct zones as follows: 1) epidote-chlorite; 2) chlorite-carbonate; and 3) sericite-carbonate (Figure 7.4). The chlorite-carbonate and sericite-carbonate zones are closely linked to the main gold-bearing structures. These alteration zones completely enclose the shear zones and contain a high density of veins and tectonic breccias which can be observed over several metres. Isolated veins, in the area, can expand to the centimetre to decimetre-scale. Figure 7.5 illustrates the various mineral phases that define the hydrothermal zoning pattern in the Croinor deposit.

The presence of a hydrothermal alteration zoning pattern has also been documented elsewhere in the Val-d'Or area, at the Sigma mine for example (Robert and Brown, 1984; Robert and Brown, 1986a). According to Robert and Brown (1986a), the hydrothermal alteration zones represent advancing fronts and result from a progressive interaction between host rocks and circulating hydrothermal fluids.



(Modified from Chénard and Turcotte, 2004)

Figure 7.4 – Hydrothermal alteration halo



(Modified from Chénard and Turcotte, 2004)

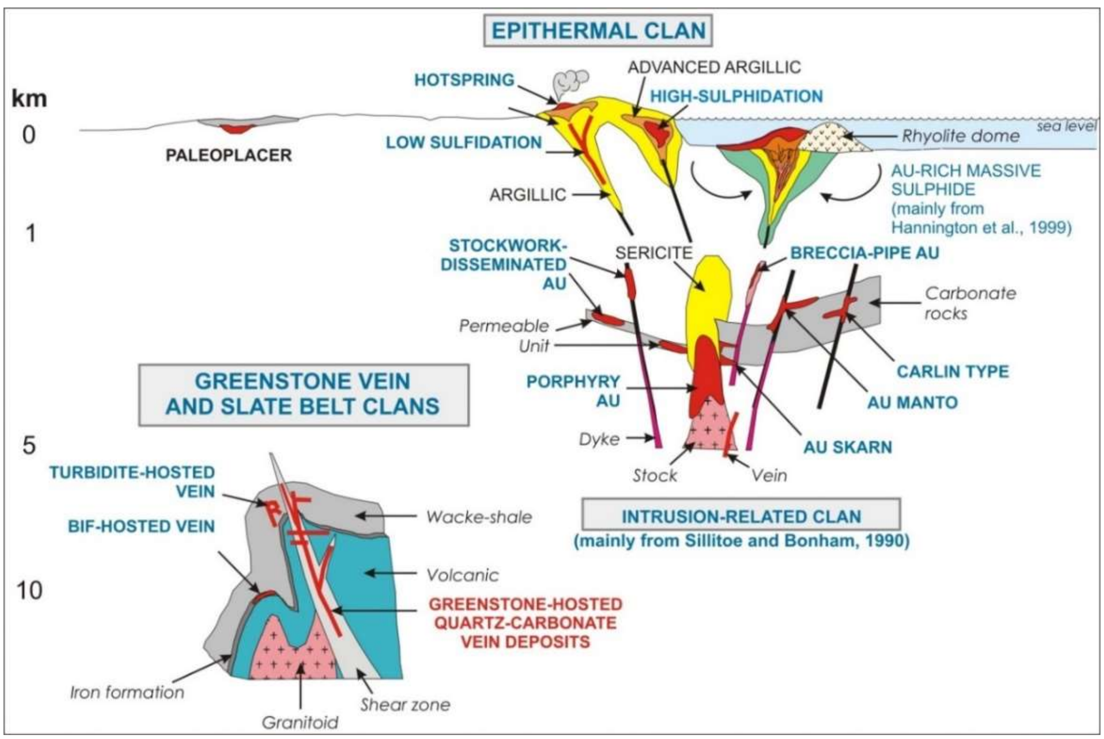
Figure 7.5 – Structural model and hydrothermal alteration zoning

8 DEPOSIT TYPES

8.1 Lode Gold Deposits

The Croinor Gold Property is characterized by the presence of epigenetic gold mineralization. Epigenetic gold deposits exhibit a number of common parameters: a) they are mainly controlled by structural elements; and b) host rocks are physically and chemically altered by metasomatism (Rocheleau et al., 1997). According to Rocheleau et al. (1997), even if all stratigraphic units in the region carry gold mineralization, a direct association is frequently observed with synvolcanic and pre-orogenic intrusions (QFPs, diorite sills and dykes, Bevcon granodiorite pluton). The structural parameters seem common to all these gold deposits. Mineralized zones are associated with shear zones, faults, stress fractures and/or tectonic breccias (Rocheleau et al., 1997). Ductile-brittle and brittle deformation appear to be dominant factors controlling gold mineralization, as is the case for many other deposits in the Abitibi Greenstone Belt (Colvine et al., 1988).

Lode gold deposits (Figure 8.1) occur dominantly in terranes with an abundance of volcanic and clastic sedimentary rocks of low to medium metamorphic grade (Poulsen, 1996). Greenstone-hosted quartz-carbonate vein deposits are a subtype of lode gold deposits (Poulsen et al., 2000). They correspond to structurally controlled, complex epigenetic deposits hosted in deformed metamorphosed terranes (Dubé and Gosselin, 2007).



(from Dubé et al., 2001; Poulsen et al., 2000)

Figure 8.1 – Inferred crustal levels of gold deposition showing the different types of lode gold deposits and the inferred deposit clan

Greenstone-hosted quartz-carbonate vein deposits consist of simple to complex networks of gold-bearing, laminated quartz-carbonate fault-fill veins occurring in moderately to steeply dipping, compressional brittle-ductile shear zones and faults with locally associated shallowly dipping extensional veins and hydrothermal breccias. They are hosted in greenschist to locally amphibolite-grade metamorphic rocks of dominantly mafic composition and formed at intermediate depth in the crust (5 km–10 km). They are distributed along major compressional to transtensional crustal-scale fault zones (Figure 8.2) in deformed greenstone terranes of all ages, but are more abundant and significant, in terms of total gold content, in Archean terranes. Greenstone-hosted quartz-carbonate veins are thought to represent a major component of the greenstone deposit clan (Figure 8.1) (Dubé and Gosselin, 2007). They can coexist regionally with iron formation-hosted vein and disseminated deposits, as well as with turbidite-hosted quartz-carbonate vein deposits.

The main gangue minerals are quartz and carbonates with variable amounts of white micas, chlorite, scheelite and tourmaline. Sulphide minerals typically constitute less than 10% of the ore. The main ore minerals are native gold with pyrite, pyrrhotite and chalcopyrite without significant vertical zoning (Dubé and Gosselin, 2007).

8.2 Croinor Gold Deposit

Using compiled previous data as well as new data from drilling program, Chénard and Turcotte (2004) presented an interpretation model highlighting the main controls on gold mineralization in the Croinor Sill. The main elements characterizing their metallogenic model are lithological, structural, mineralogical and metasomatic.

8.2.1 Lithological control

As mentioned in Item 7, the Croinor Sill was formed by tholeiitic magma and consists of three main facies: gabbro, diorite and quartz-rich diorite. There are no restrictions in terms of facies versus the presence of gold mineralization. Thus, all three facies are potential carriers of gold mineralization, unlike the Sigma-2 (Hébert et al., 1988, 1991) and Bevcon (Sauvé, 1985b) deposits where gold mineralization is restricted to granophyric areas in their respective sills. There is generally no gold mineralization associated with volcanic rocks on either side of the sill; however, in rare cases, gold zones associated with volcanic rocks develop immediately at the diorite-volcanic contact and generally represent the extensions of mineralized zones found in the sill.

8.2.2 Structural control

The dominant structures within the Croinor Sill consist of sinistral faults and/or reverse *en echelon* shear zones with varying dips to the north at 25°–60°. These structures are responsible for the emplacement and development of shear veins, tectonic breccias and tension veins, all of which host gold mineralization at the Croinor deposit. Hydrothermal fluids responsible for the precipitation of gold in the deposit circulated through these structures that developed in the Croinor Sill. The sill seemed to possess the proper rheological characteristics for ductile deformation (i.e., shear zone development) and brittle deformation (i.e., fractures consisting of veins, breccias and faults), which was sufficiently effective to channel mineralizing fluids. Therefore, these structures played a major role in the genesis of the Croinor mineralized lenses.

8.2.3 Mineralogical control

At the Croinor deposit, Chénard and Turcotte (2004) observed a direct link between the presence of tourmaline, fuchsite and pyrite and gold precipitation. At the Croinor deposit, gold is mainly associated with pyrite, but also with pyrrhotite and chalcopyrite. Finally, there is a positive association between pyrite and gold mineralization; i.e., as the pyrite proportion increases within the ore zones, gold grades tend to rise.

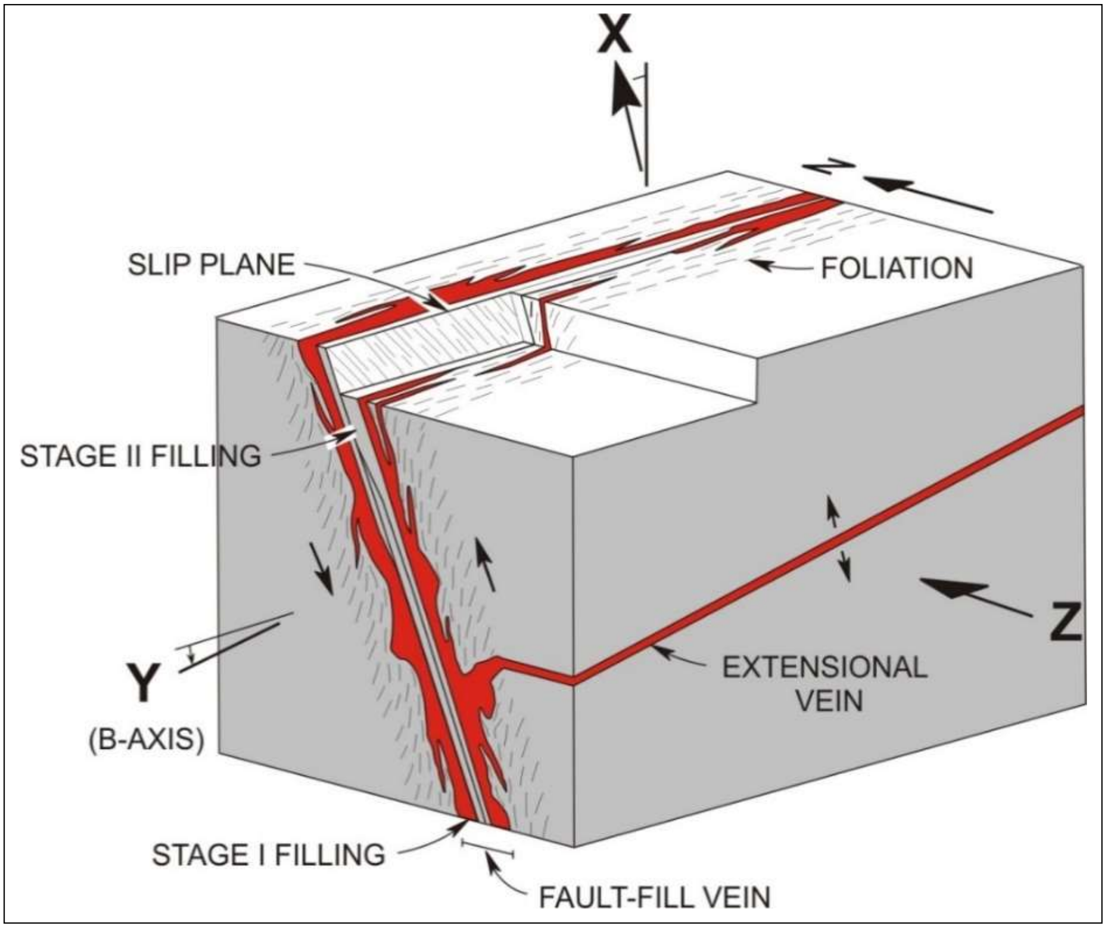
8.2.4 Metasomatic control

As discussed in Item 7, it is clear that gold mineralization is primarily associated with the sericite-carbonate alteration zone, particularly with silicified zones (Chénard and Turcotte, 2004). The metasomatized wall rocks bordering quartz-tourmaline veins are strongly mineralized with auriferous pyrite. Gold mineralization is also present in the chlorite-carbonate zone, although in smaller amounts than within the sericite-carbonate zone. Gold is inversely associated with epidote; i.e., gold mineralization is totally absent in the presence of epidote. Until recently, the epidote-chlorite zone was considered barren.

8.3 Gold-Bearing Veins

Two types of veins were observed by Gaborit (1998): shear-parallel veins ("shear veins") and subhorizontal tension veins (Figure 8.2). The veins consist of quartz, tourmaline and carbonates with minor amounts of pyrite, chalcopyrite and native gold.

Tension veins are generally several centimetres thick and dip gently toward the east. Gold is restricted to rocks affected by pyritic metasomatism; that is, it mainly occurs in pyritic vein selvages, breccia fragments in tectonic breccias, and fragments in brecciated veins. Pyrite is locally associated with minor amounts of chalcopyrite and pyrrhotite. Gold occurs as inclusions within pyrite grains or along its boundaries, or within fractures cutting pyrite. Although pyrite is a good indicator of gold, not all pyritic zones are mineralized with gold, and not all gold occurs with pyrite. Isolated flecks of native gold were also observed in veins and veinlets of smoky quartz associated with shearing, and in the highly altered selvedges of such veins.



(from Robert, 1990)

Figure 8.2 – Schematic diagram illustrating the geometric relationships between the deposit-scale strain axes and the vein and shear zone structural elements

Pyrite occurs in two distinct forms that may correspond to distinct crystallization phases. The earlier phase is present as amorphous clusters and threads that frequently show evidence of deformation and a preferential orientation subparallel to the main foliation. The later phase appears as disseminated cubes with individual grains reaching 0.5 cm, locally to 1 cm.

Other than pyrite content, the intensity of deformation and the type of alteration constitute the essential criteria for the presence of economic gold grades. Sericite-ankerite alteration combined with tourmaline and silicification appear to be directly associated with the highest grades in brecciated zones containing pyritic quartz-tourmaline-ankerite material.

9 EXPLORATION

This section was modified and updated from Poirier et al., 2016.

In 2015, exploration work carried out by the issuer on the Croinor Gold Property consisted of geophysical surveys planned through the SIDEX "Field Action 2015" program and carried out by Abitibi Geophysics.

In 2016, a soil sampling survey was conducted on a limited area that had been targeted by the JAPOSAT satellite mapping interpretation of 2015, which covered the entire Property. Stripping and channel sampling was also conducted in 2016 in the vicinity of the Bug Lake showing.

Figure 9.1 shows the locations of the 2015 and 2016 exploration activities on the Property.

9.1 Geophysical Surveys

Between May and July 2015, two IP surveys were conducted by Abitibi Geophysics on the Property (Bérubé, 2105a and 2015b). Based on the results of both surveys, nine (9) exploration targets were generated to improve the exploration potential of the Property. While traditional IP allows for a penetration depth of roughly 70 m, the two techniques used in this case allowed for much deeper penetration, up to 700 m.

The two techniques—IPower 3D® and OreVision® IP—were developed by Abitibi Geophysics. The IPower 3D® survey was developed to improve traditional surface IP survey readings. The IPower 3D® readings maximize sensitivities and increase responses through thick conductive overburden. The OreVision® survey extends the conventional 2D dipole-dipole array and increases the depth of exploration by a factor of four (4) in moderate environments without losing near-surface resolution. Hence, these new types of surveys use an innovative array that maximizes the vertical and horizontal subsurface resolution scans used to facilitate accurate target geometry interpretations and helps reveal new possible drill targets at depth.

9.1.1 IPower 3D® survey

The IPower 3D® survey was carried out over a 2 km section along the mineralized axis of the Croinor deposit and its extensions. The advantage of this method is that it detects anomalies up to 700 m deep. The survey covered the full extent of the known deposit and the area further north; i.e., the western extension of the Bug Lake showing.

Figure 9.2 illustrates the 15.4 km survey coverage of eleven (11) IPower 3D® lines (lines L8+00W to L2+00E and stations 4+00S to 9+50N) using 100 m spacing between lines and 25 m spacing between stations along a grid oriented N022° (Bérubé, 2015a).

The primary objective of the IPower 3D® survey was to investigate the depth extensions (i.e., below 300 m) of the Croinor Sill to detect other possible gold lenses. Before executing the survey, Abitibi Geophysics measured the physical properties of the main lithological units using 13 rock samples provided by the issuer. Given the very high resistivity values obtained for several samples, electrical logging was carried out in hole CR-15-421 to obtain reliable chargeability values.

Note that no new drilling targets were identified within the Croinor Sill, but six (6) targets were identified outside the Croinor deposit, with the same profile characteristics as the main gold deposit. These six new targets generated sufficient interest to warrant follow-up drill testing.

9.1.2 OreVision® IP survey

The OreVision® study followed up on the IPower 3D® survey results in an effort to locate any possible polarizable sources, ideally within a resistive environment and adjacent to a weak conductor; i.e., a shear zone and/or another relevant metallotect that could indicate the presence of a brittle fault near these anomalies.

This technique allows readings to a depth of 300 m, and targeted the Bug Lake and Trench No. 2 showings, both near the main Croinor deposit. The Bug Lake showing is situated about 700 m east-northeast of the deposit and the Trench No. 2 showing is roughly 100 m farther along the same strike. The survey covered an area of 800 m by 1,000 m and was aimed at establishing a possible continuity between the showings as well as a depth extension below 150 m (i.e., both to the east and west of the known showings).

Figure 9.3 illustrates the survey coverage of 10 OreVision® IP lines (lines L3+00E to 12+00E and stations 2+00S to 6+00N) using 100 m spacing between lines and 25 m spacing between stations along a grid oriented N022° (Bérubé, 2015b).

Four of the five identified anomalies generated enough interest to warrant follow-up diamond drilling spot checks. Abitibi Geophysics noted in their report that the source of the fifth anomaly had already been surveyed.

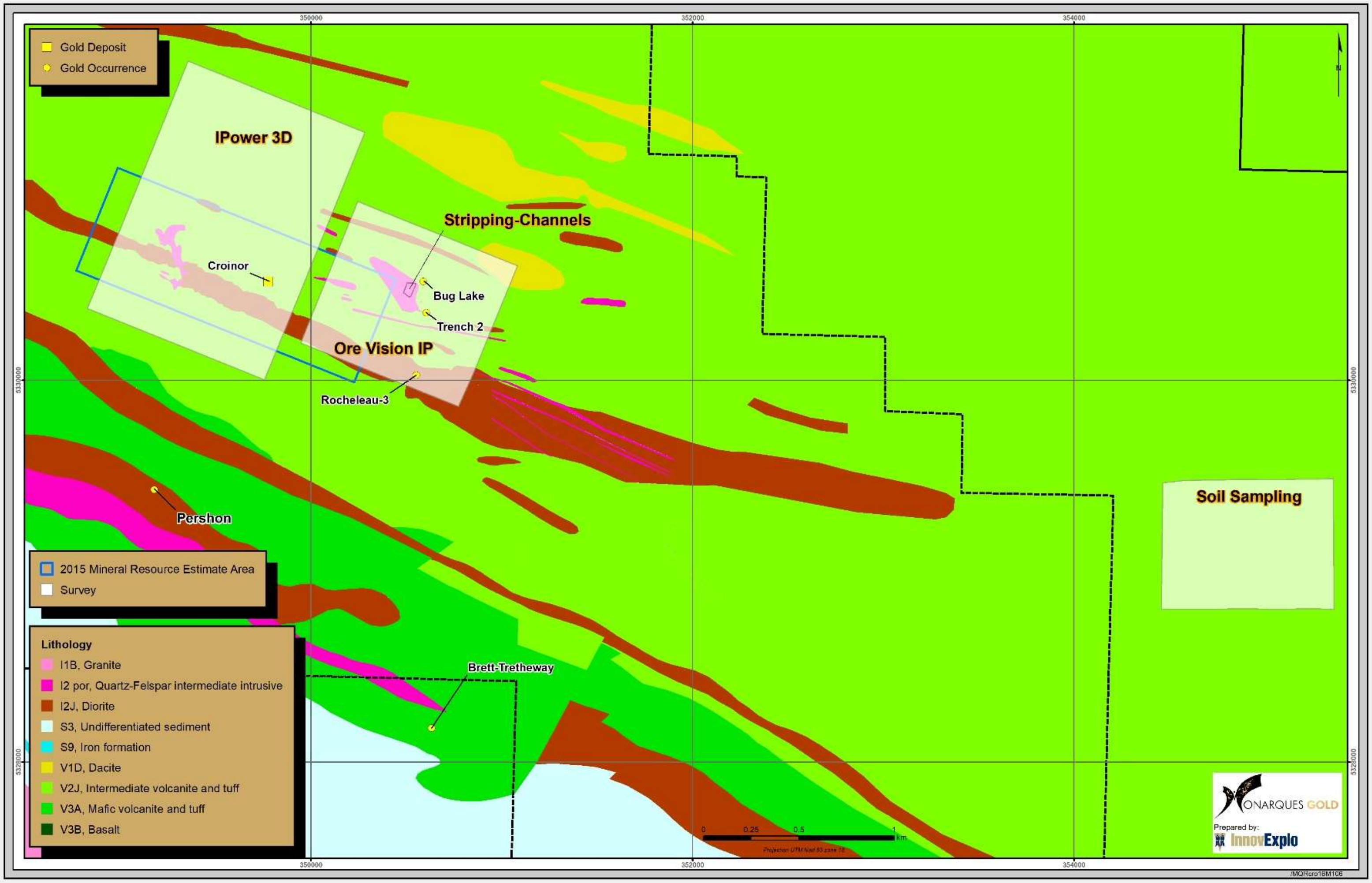
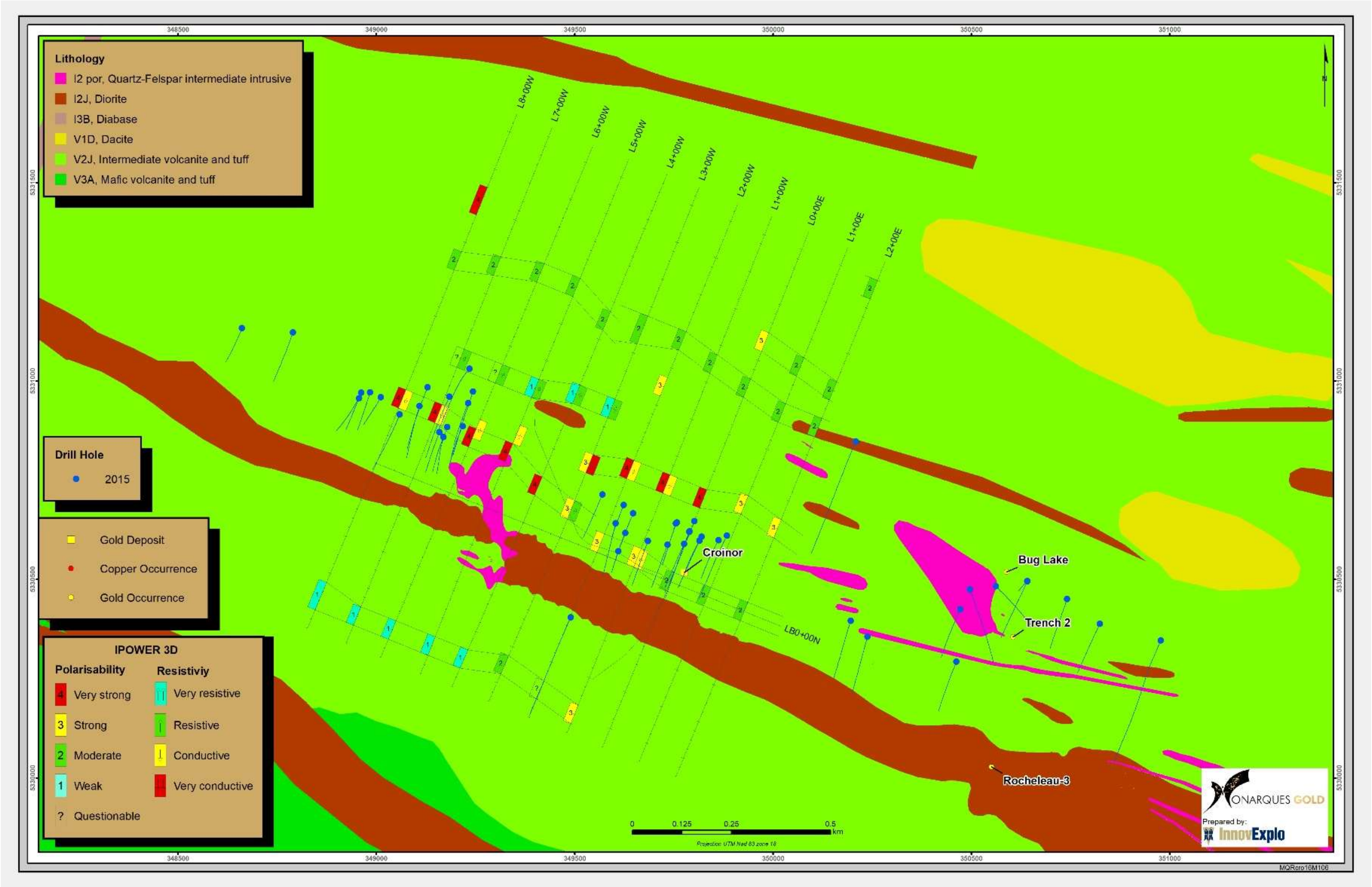
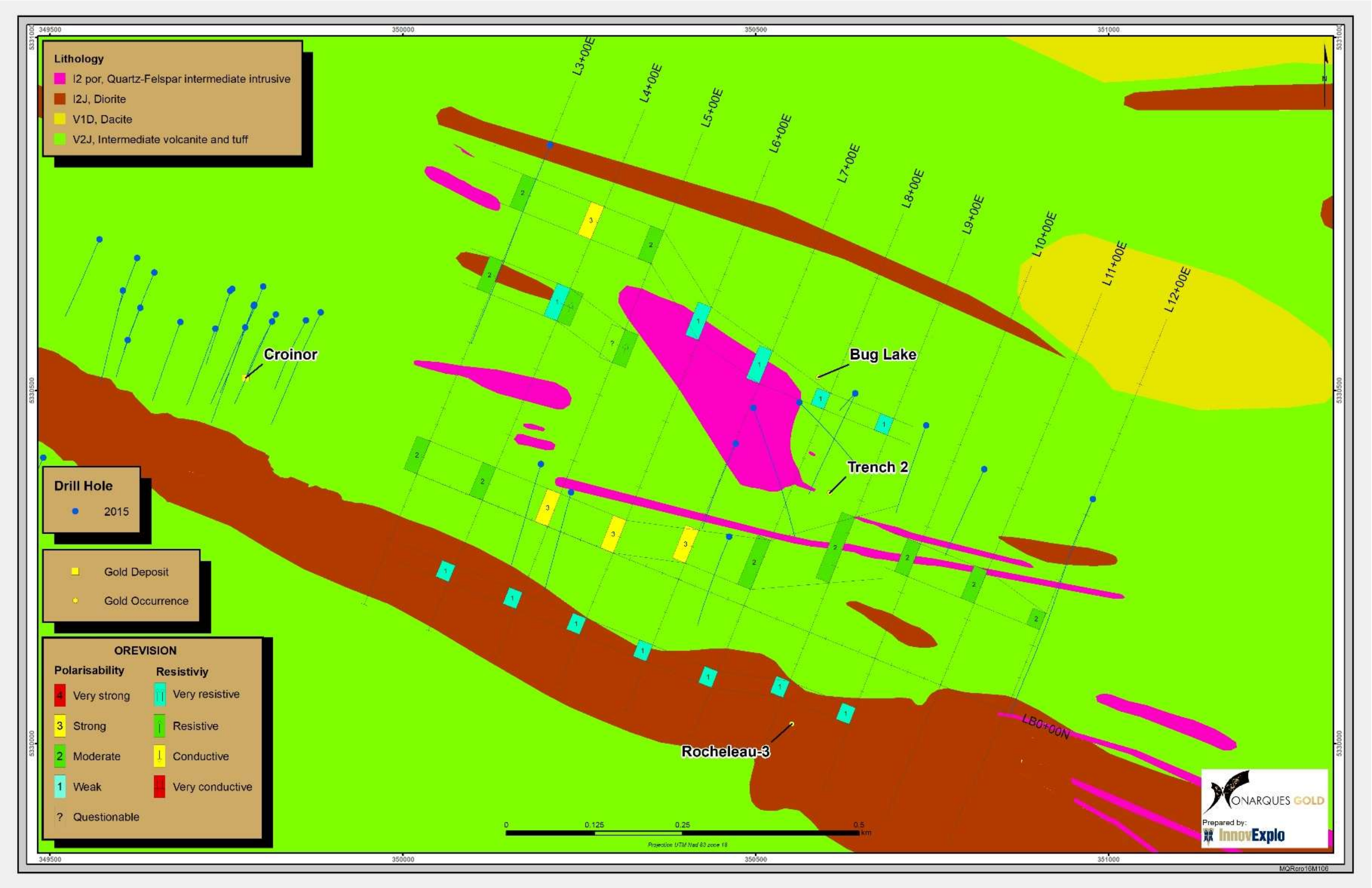


Figure 9.1 – Location of the 2015 and 2016 exploration work



(Modified from Bérubé, 2015a)

Figure 9.2 – 2015 IPower 3D® survey on the Croinor Gold Property



(Modified from Bérubé, 2015b)

Figure 9.3 – 2015 OreVision® IP survey on the Croinor Gold Property

9.2 Soil Sampling Survey (MMI)

During the summer of 2016, a soil sampling survey was conducted in the southeastern part of the Property (Figure 9.4). The objective of the survey was to test a gold target measuring 0.7 km x 1 km, highlighted by the JAPOSAT satellite mapping interpretation. A total of 290 samples were collected with a spacing of 30 m along 10 N-S traverses established at 100 m spacing, perpendicular to the lithological trend. Samples were submitted to extraction by weak solutions of organic and inorganic compounds (MMI technology) and analyzed by conventional ICP-MS at the SGS laboratory in Vancouver. No gold anomalies were detected, but the results show anomalies in various metals associated with hydrothermal affinity. An abnormal contour combining Nb-Ti was identified in the northeast corner of the grid, where the highest hydrothermal associations were observed, possibly warranting follow-up drilling to confirm the potential for gold mineralization.

9.3 Stripping and Channel Sampling

In 2016, based on an OreVision® IP anomaly (Figure 9.5), stripping in the Bug Lake showing area exposed the bedrock of the Gold Bug showing and providing a better understanding of the geometry of the gold-bearing structures and how they relate to the surrounding structures in order to allow subsequent drill holes to be properly oriented along lateral extensions and at depth. An area of about 9,800 m^2 was stripped to bedrock and a series of 18 channels were cut using a 2-bladed rock saw. A total of 110 samples were collected, with lengths varying from 0.5 m to 1.8 m. Sample lengths were determined by lithological boundaries. The samples were removed with a geologist hammer and placed in sample bags. Cuts were made perpendicular to the channel to mark where samples started and ended, and aluminium tags were fixed at the beginning of each sample. Samples were sent to the Techni-Lab facility in Ste-Germaine-Boulé (Québec).

The best result was a gold anomaly of 3.03 g/t Au over 0.8 m.

9.4 Magnetic Helicopter-Borne Survey

In July 2017, a magnetic helicopter-borne survey was conducted on the Property for a total of 2,262 linear km. The survey was completed between July 21 and July 25, 2017, by Geo Data Solutions GDS Inc. of Laval, Quebec. The overall property was covered by N293° control lines with 1,000-m spacing and N023° traverses with 100 m spacing at an average elevation of 35 m above the ground (D’Amours, 2017).

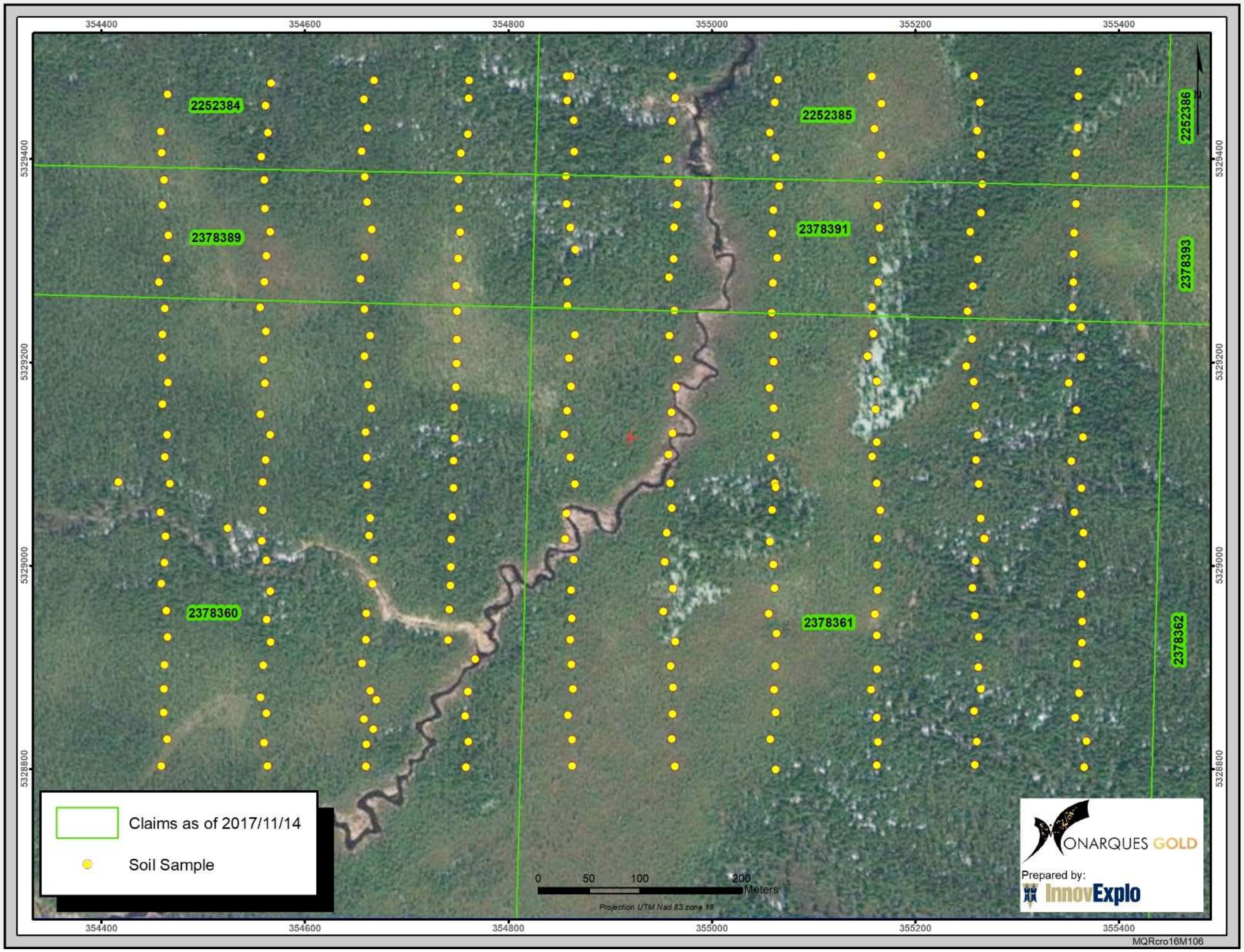


Figure 9.4 – Location of the 2016 soil samples

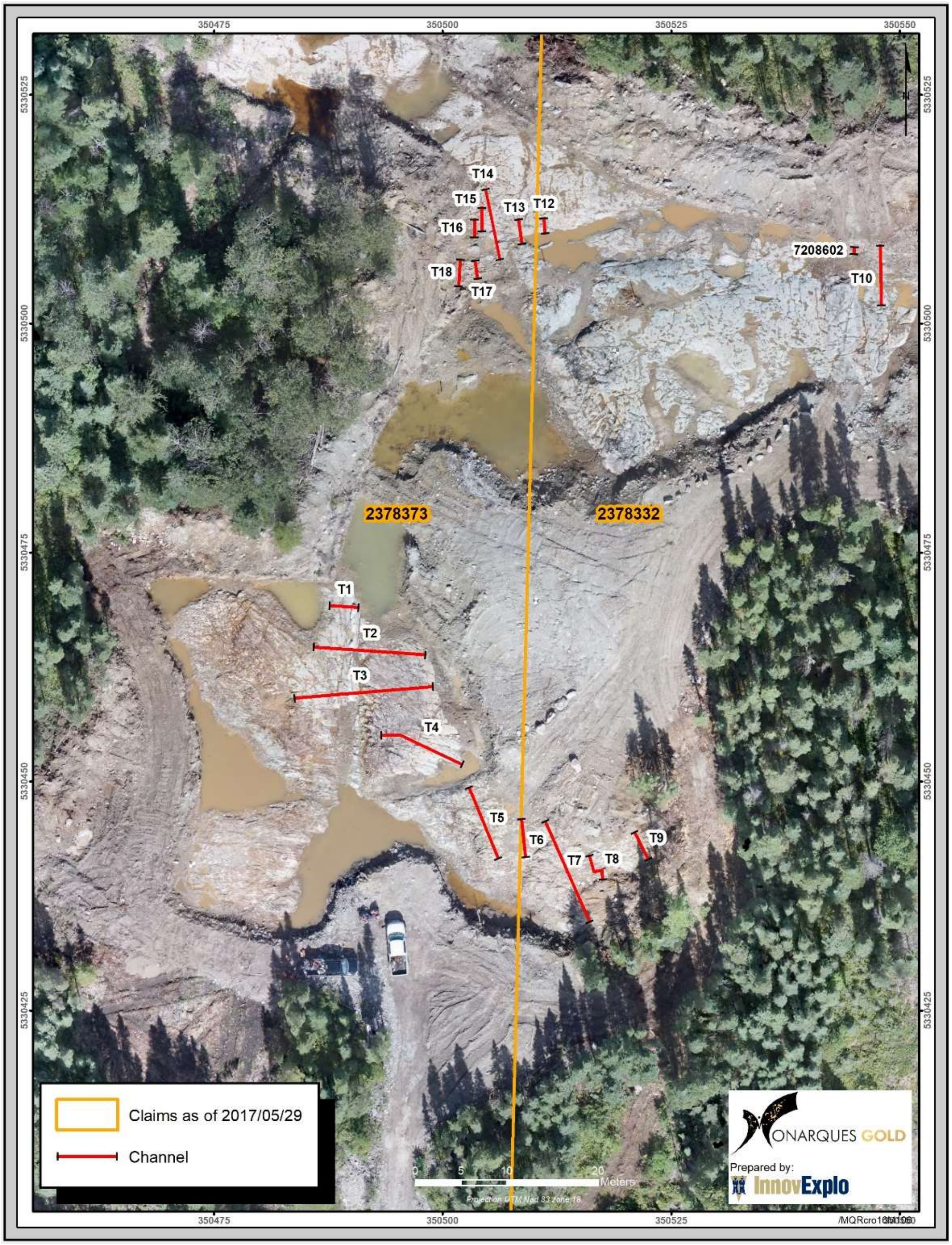


Figure 9.5 – Location of the channel samples shown on a drone aerial photograph of the 2016 stripping

10 DRILLING

This section was modified and updated from Poirier et al. (2016).

10.1 Drill Hole Surveys

Diamond drill hole collars were surveyed and marked with foresights and backsights by surveying personnel from Jean-Luc Corriveau & Associés Inc. A base installed GPS (GNSS), model Leica GX1200GG (precision ±2 cm), recorded the position data surveys using UTM 1983 North American Datum (NAD83) Zone 18 with the Leica Geomatic Office software. The same technique was used to locate foresight and backsight pickets. Jean-Luc Corriveau J & Associés returned to the sites and surveyed the casing locations and elevations using the same GPS.

Once the drill rig was positioned at the planned location, the azimuth and inclination of the hole were confirmed at a downhole depth of 15 m of casing. Subsequently, once a drill hole was completed and the rig moved off the drill site, the casing was covered with a steel cap and a wooden marker was placed next to the respective casing with its hole collar identification.

Downhole survey data (azimuths and inclinations) were recorded by the drill contracting company using a Reflex EZ-Shot at 50 m intervals from 0 m to 200 m, then at 100 m intervals, which recorded. Although some sections of the Croinor Sill were weakly to moderately magnetic, the Reflex instrument was for the most part adequate in determining the deviation of drill holes because, before experiencing too much deviation, all holes were drilled using a combination of an 18" shell with a hexagonal core barrel.

10.2 Downhole Core Orientation Survey

The downhole core orientation procedure consisted of core orientation and marking during drilling using a Reflex ACT III digital orientation tool. Core samples are matched with orientation data using a level jig indicator; i.e., bottom or top orientations can be accurately transferred to any core samples.

The general technique is to attach the Reflex ACT III tool to the core tube, and when the latter is filled, or the drill is blocked, the ACT III measurement is taken to determine the bottom of the hole. The driller then breaks the diamond drill core and pulls its tube back up. The drillers use the ACT III tool to trace a mark (short line) on the underside of the core oriented with the tool before the core is removed from the core tube. This line corresponds to the underside of the core as it was in the hole before breaking off with the core tube. Thereafter, the geologist marks the bottom on the entire remaining core; i.e., when receiving oriented core from the drill, the core is assembled with each piece fitted together in its original position. The driller's core mark is aligned so that a continuous line can be drawn with a grease pencil along the whole run. Arrows pointing down the hole are marked on each piece of core.

The measured angles are known as the alpha and beta angles. The alpha angle is directly measured by rotating the core until the measured surface appears to make a maximum angle with the core axis (CA). The beta angle is accurately measured by using either specially constructed circular protractors or, more simply, a flexible wrap-around protractor printed on paper or heavy transparent film.

Both angles (alpha and beta) are then entered into a Geotic software spreadsheet database, along with the hole orientation survey data to calculate the true structure orientation angles. The structure orientation azimuths can then be established using a stereographic plotting software.

10.3 Core Recovery

Core recovery is calculated by measuring the percentage of lost drill core in lengths of 10 cm or more in each run (3 m). The percent core recovery for each run is recorded in the log spreadsheet in Geotic software. Core recovery on the Property is generally very good.

10.4 2015 Diamond Drilling Program

In 2015, Monarques completed a three-phase exploration drilling program on the Property for a total of 16,404.5 m in 49 holes (Figure 10.1). The main goal of the 2015 program was to increase resources in the known zones, but also test a number of geophysical and geological anomalies, including some that had never been tested either at depth or on strike.

10.4.1 Phase 1

Phase 1 consisted of 3,987 m in 13 holes (CR-15-420, CR-15-420B, CR15-421 to CR-15-431), reaching vertical depths of 250 to 350 m. Drilling began on February 9 and was completed on March 17, 2015. All Phase 1 holes were drilled inside the mineral resource area and were included in the 2015 Mineral Resource Estimate that forms the basis for this updated PFS (see Item 14 for details).

Eight (8) holes were drilled at the western end of the known deposit to test the continuity of new veins discovered during the last drilling program in 2011. Four of these were collared near historical hole CR-11-405, which had intersected three veins, the best of which returned 7.28 g/t over a core length of 2.6 m. The five other Phase 1 holes were drilled in the centre of the deposit, including one near historical hole CN-89-135, which had intersected 23.98 g/t over a core length of 2.76 m. All holes were designed to intersect three or four different veins.

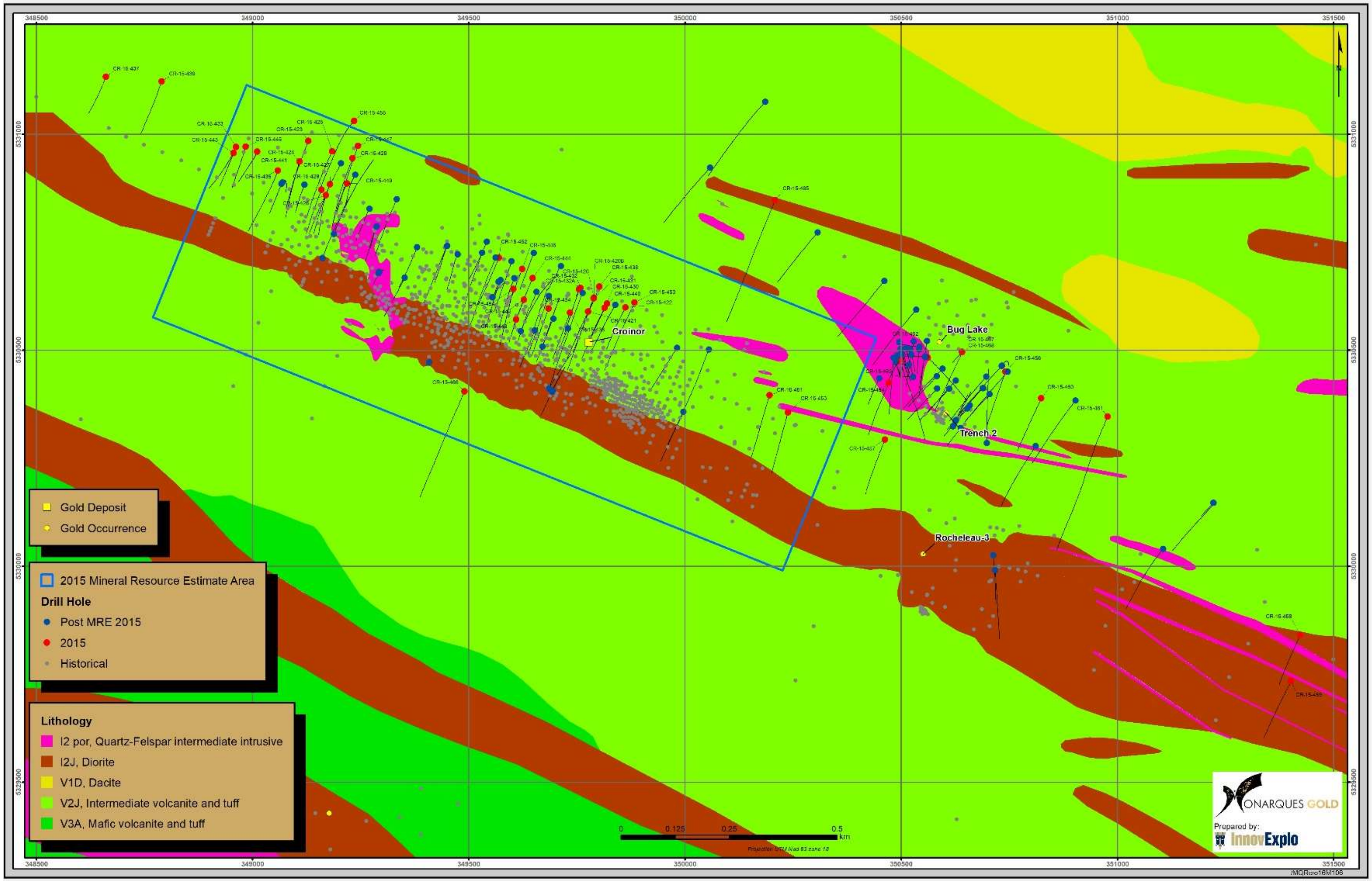


Figure 10.1 – Location map of surface DDH drilled by Monarques in 2015 and post-MRE (2016–2017)

Hole CR-15-421 was drilled in the centre of the deposit to test the results of historical hole CN-89-135, which intersected 23.98 g/t over 2.76 m core length ("CL"). The new hole reached the zone as planned, about 13 m from its intersection in CN-89-135. Two of the quartz veins in the intersection contained visible gold (“VG”): six grains between 272.15 m and 273.00 m, and 10 grains between 274.22 m and 275.00 m. The average grade was 16.01 g/t over 3 m CL, including 34.64 g/t over 1 m. The hole was drilled to intersect the veins as close to perpendicular as possible to approximate their true width.

On Section 0, a gold zone was traced over a distance of more than 96 m by five drill holes. This gold zone is below current measured and indicated resources. Hole CR-15-420B, grading an average of 6.73 g/t over 4.0 m CL, and hole CR-15-431, grading 15.12 g/t over 4.0 m CL, were drilled on either side of hole CR-15-421 (16.01 g/t over 3.0 m CL) and historical hole CN-89-135 (23.98 g/t over 2.76 m CL). Like the earlier holes, both contained visible gold. Finally, historical hole CR-07-336 (1.32 g/t over 3.0 m CL) marks the bottom of the 96-m-long zone, which remains open along strike in both directions.

Many significant values were intersected at distances of 670 m and 680 m west of the centre of the deposit, especially in hole CR-15-426 where three separate gold zones were identified (from 203 m to 207 m, 214 m to 217 m and 231 m to 233 m). Hole CR-15-427 was drilled about 18 m from CR-15-426 and also intersected the three zones (from 222.3 m to 225.3 m, 228.3 m to 229.5 m and 246.8 m to 247.8 m).

Phase 1 succeeded in demonstrating the extension of the Croinor deposit along strike and at depth. The identification of a 96-m-long gold-rich zone demonstrated the deposit’s continuity at depth.

10.4.2 Phase 2

Phase 2 consisted of 8,971 m in 25 holes (CR-15-432, CR-15-432A, CR-15-433 to CR-15-455) drilled between May 11 and July 7, 2015. All Phase 2 holes were drilled inside the mineral resource area and were included in the mineral resource estimate (the “2015 MRE”) that forms the basis for this updated PFS (see Item 14 for details).

Phase 2 covered a larger portion of the deposit than Phase 1. It continued the definition of resources between the 250 and 350 levels. The main goals were to: a) test the East and West extensions of the deposit and increase the indicated and inferred resources; b) test the continuity of the deposit at depth and along strike by targeting downhole IP geophysical targets 1.2 km west of the deposit that had never or only partially been tested to date; and c) drill one hole at depth (480 vertical metres) to confirm the continuity of a vein intersected in 2011.

On Section 0, 150 m west of the first section, a vein cluster characteristic of this zone and corresponding to the projection of the target zone, was intersected over 9.7 m, and returned 7.09 g/t over 9.7 m CL. Visible gold was also identified in one part of the zone. Earlier holes drilled on this section returned grades of 3.92 g/t over 2.0 m CL and 3.75 g/t over 3.2 m CL.

Results were also received for hole CR-15-436 (Section 40W), drilled 40 m west of Section 0, where the zone graded 6.22 g/t over 4.0 m CL and contained visible gold in two separate areas. Fifty metres to the west of hole 436, hole CR-15-434 (Section 90W) was drilled on the same zone. It intersected the vein cluster typical of the zone over a length of 3.85 m, confirming the presence of the zone, but did not return any significant grades.

Along the West extension of the deposit, six holes were drilled, some of which, particularly those near earlier holes, returned good results. Hole CR-15-433 (Section 900W) tested the western extension of two veins identified by drilling on Section 880W. It led to the discovery of two new veins, including one grading 4.24 g/t over 4 m CL and another at 3.43 g/t over 3 m CL. Two of the six holes were drilled to test two targets 1.2 km to the west (Section 1240 W). These two targets had been identified through JAPOSAT Satellite Mapping interpretation. The two holes intersected the favourable horizon (diorite sill) and some quartz veinlets, but no gold values.

In the West Sector, three holes were drilled in the western part of the deposit (Sections 640W and 670W). Hole CR-15-447 is particularly interesting as it demonstrates the continuity of two zones in a historical hole, with better grades than previously encountered. Assaying returned 7.09 g/t over 3.0 m CL at a depth of 320 m and 5.83 g/t over 3.4 m CL at 355 m. Meanwhile, hole CR-15-449 delineated the upper boundary of the two zones and intersected another known zone grading 4.64 g/t over 4.0 m.

At depth, in the same sector (Section 670W), the last hole of Phase II (CR-15-455) was drilled to test the continuity of the vein sequence at an even greater depth, and more specifically to follow up on hole historical CR-11-408, which was drilled in the axis of the diorite to a vertical depth of 650 m and intersected a zone of interest at 482 m (7.48 g/t over 0.6 m CL). Hole CR-15-455 intersected the same zone 27 m east of the historical hole at a depth of 467 m, returning 4.37 g/t over 1.0 m CL and containing VG.

As for the Central Sector, a total of 12 holes were drilled to continue delineating Zone 70, which had been identified during Phase 1 when a vein was traced over 96 m on a single section (Section 0). Three of the holes established the boundaries of the zone and facilitated its interpretation (CR-15-432A, CR-15-438 and CR-15-446). The best results for the other holes were 17.78 g/t over 0.7 m CL (CR-15-440), 5.27 g/t over 0.7 m CL (CR-15-444) (VG), 3.99 g/t over 1.0 m CL (CR-15-448), 5.94 g/t over 1.4 m CL (CR-15-450), 3.10 g/t over 1.9 m CL (CR-15-452) and 4.79 g/t over 3.0 m CL (CR-15-454).

Following the drilling of hole CR-15-433 (4.24 g/t over 4.0 m CL) on the West extension (Section 900W), two holes were added to confirm the continuity of this new zone as well as previously known zones. The best hole (CR-15-441) intersected four zones that returned a best result of 4.87 g/t over 2.5 m CL.

Two holes (CR-15-451 and CR-15-453) were drilled on the East extension of the deposit to test the continuity of zones identified by previous drilling. The target zones were intersected but did not return significant grades.

10.4.3 Phase 3

Phase 3 began in September 2015 and ended on October 13, 2015. Initially planned for 3,000 m, Phase 3 ended with 13 holes totalling 3,439.5 m. It was designed to test some promising historical exploration showings on the Property, outside the mining lease and the diorite sill of the Croinor deposit. As the Phase 3 holes were drilled outside the mineral resource area, they were not included in the 2015 MRE or this PFS update.

Target definition was based on the compilation of historical data results, outcrop stripping in 2014, the outcome of a study on spectral signatures using satellite imagery (carried out by JAPOSAT Satellite Mapping of Montréal), newly reinterpreted geophysical data, and newly added geophysical interpretations from the 2015 IPower-3D® survey in the Croinor deposit area. Phase 3 also included an Ore-Vision® geophysical survey along the Bug Lake–Trench No. 2 trend, as well as drill-testing of the showings.

Hole CR-15-463 intersected a 6-m zone (core length) near the surface (vertical depth of approximately 13 m) containing 40% slightly mineralized quartz-carbonate-tourmaline veins in an altered QFP. Several grains of VG were seen within the zone, which yielded an average grade of 236.47 g/t Au (227.9 g/t and 245.05 g/t) over 1 m CL (from 17 m to 18 m). The sample was assayed a second time using a gravimetric finish. Farther down the same hole (vertical depth of approximately 35 m), another intersection returned 4.56 g/t Au over 1 m CL (from 45 m to 46 m) in a similar quartz zone. True width could not be determined from the available information. These intersections lie between the Bug Lake and Trench No.2 showings, in an area where no other information is available within a radius of 60 m or at depth.

Hole CR-15-468 targeted a quartz zone intersected in historical hole LB-07-05 (6.14 g/t Au over 6 m CL) at a depth of approximately 88 m below surface, to test its continuity 30 m below the original intersection. The targeted zone was intersected as expected and returned 1.80 g/t Au over 4.23 m CL. This zone remains open at depth.

Holes CR-15-465 and CR-15-466 tested two geophysical targets defined during the 2015 geophysical surveys (see Item 9 for details). They intersected some weakly mineralized zones without significant results.

10.5 2016–2017 Diamond Drilling Program (post mineral resource estimate)

In 2016–2017, Monarques completed an exploration drilling program on the Property. By the end of November 2017, a total of 25,322.6 m had been drilled in 107 holes (Figure 10.1). The main objectives were to increase resources in the known zones of the Croinor deposit, including some that had never been tested at depth or on strike, and to test geophysical anomalies in the Bug Lake showing area.

As the 2016–2017 holes were only completed after the database close-out date for the 2015 MRE, they could not be included in the estimation. However, the impact of each hole drilled within the resource estimate area was evaluated as part of this updated PFS. Of the 40 DDH drilled inside the resource estimate area (approx. 100 intersections to review), 21 would have had a positive impact on the resource estimate and 24 would have had a negative impact. This means the majority had a neutral impact as they cut similar grades and confirmed the location and thickness of the mineralized model. InnovExplo believes the information collected during the course of 2016–2017 drilling program would not have a material impact on the 2015 MRE or this PFS update.

11 SAMPLE PREPARATION, ANALYSES AND SECURITY

This section describes the issuer's sample preparation, analysis and security procedures for the 2015 diamond drilling program, as described in Poirier et al. (2016). The 2016–2017 drilling programs are not discussed below as they were completed after the database close-out date and are not considered to have a material impact on the 2015 MRE or this PFS update (see Item 10).

11.1 Laboratories Accreditation and Certification

The International Organization for Standardization (IOS) and the International Electrotechnical Commission (IEC) form the specialized system for worldwide standardization. ISO/IEC 17025 General Requirements for the Competence of Testing and Calibration Laboratories sets out the criteria for laboratories wishing to demonstrate that they are technically competent, operating an effective quality system, and able to generate technically valid calibration and test results. The standard forms the basis for the accreditation of competence of laboratories by accreditation bodies. ISO 9001 applies to management support, procedures, internal audits and corrective actions. It provides a framework for existing quality functions and procedures.

In 2015, the sample preparation facility in Val-d'Or (Québec) belonging to Actlabs Laboratory Ltd was used for subsequent drilling programs. The prepared samples were then sent to the facility in Sainte-Germaine-Boulé (Québec) for assaying. The Ste-Germaine-Boulé facility received ISO/IEC 17025 accreditation through the Standards Council of Canada (SCC). Actlabs is a commercial laboratory independent of the issuer and has no interest in the Project.

11.2 Sample Preparation

The drill core is boxed, covered and sealed at the drill rigs, and transported by Monarques employees to the logging facility in Val-d'Or where the core is logged and sampled by Monarques geologists. Core sample length varies from 0.5 m to 1.5 m. Within mineralized zones, core samples generally do not exceed 1 m. Each core sample is tagged with a unique number.

All quality control samples are prepared and bagged ahead of time by Monarques personnel at the logging facility. An employee in the core shack places one half of the ticket from the core box into a bag with the sample and staples the other half in the box. One half of each quality control sample ticket is placed in the appropriate type of control sample bag, which were prepared beforehand. Five (5) to seven (7) samples are placed in a rice bag and the contents identified on the outside of the bag. The samples are generally shipped to the Actlabs sample preparation facility in Val-d'Or in batches of 20, 40 or 60 samples. Regardless of the number of samples per shipment to the laboratory, the sample preparation facility prepares a 20-sample batch composed of 18 regular samples plus one (1) analytical blank and one (1) certified material reference (CRM) standard provided by Monarques.

At the request of the issuer, Actlabs assays one (1) pulp replicate for every 20 samples. No field or coarse duplicates are assayed.

For the laboratory's internal QA/QC during the fusion process, four (4) additional QA/QC samples are added to every batch of 20 samples (1 blank, 2 standards and 1 pulp duplicate), bringing the fusible batch to a total of 24. Using the maximum furnace charge of 24 samples ensures that the issuer's samples are not mixed with samples from other clients.

11.3 Fire Assay Sample Preparation and Analysis

Once the samples are received at the Actlabs facility, they are sorted, bar-coded and logged into the Actlabs LIMS program. They are then placed in the sample drying room and dried at 60°C. Any samples received in a damaged state (i.e., punctured sample bag, loose core) are documented, including photographs, and the issuer is informed.

Samples are crushed to +80% passing 10 mesh and split using a Jones riffle splitter. A 250 g to 300 g split is pulverized to +80% passing 200 mesh. A pulp replicate is collected for every 20 samples of each work order during sample preparation. These are reported on the QA/QC portion of the report. Sieve tests are performed on the crusher at the beginning of each day and on the pulp of the selected sample. If there is a failure, the samples are re-milled to ensure that they pass. Pulp samples are then sent for fire assay.

The basic procedure for fire assay involves mixing an aliquot of a 30 g powdered sample with soda ash (sodium carbonate), borax (sodium borate), litharge (PbO), flour (baking flour used to add carbon as a reductant), silica, and possible nitre (potassium nitrate). To this mixture, Ag as a collector can be added in solution or as a foil. The well mixed material is fired at temperatures ranging from 1100°C to 1200°C. As the lead and silver in the melt settle to the bottom of the crucible, they scavenge the gold from the melt. The lead button is cupelled at 950°C in a magnesia cupel. A tiny silver bead containing gold can be dissolved and analyzed by atomic absorption.

At the request of the issuer, any sample assaying >3 g/t Au was rerun with gravimetric finish, and any sample assaying >10 g/t Au was rerun with the metallic sieve method.

11.4 Gravimetric Finish

The lead buttons from the fusion process contain all the gold from the samples as well as the silver that was added. The buttons are placed in a cupelling furnace at 950°C where all the lead is either volatilized or absorbed by the cupels. This generates a prill or doré bead for each sample consisting of the silver plus any gold present.

Once the cupels have cooled sufficiently, the bead from each is placed in a porcelain crucible and the silver is dissolved with dilute nitric acid at around 70°C. The remaining gold is washed, removing the silver solution from the crucible. The residual wash material is aspirated using a vacuum pump, then dried on a hot plate. The resulting gold flakes are annealed into a gold bead and weighed using a microbalance. A simple weight comparison is used to mathematically calculate the amount of gold in the sample.

11.5 Metallic Sieve

A 250 g to 300 g split of crushed material (+80% passing 10 mesh) is pulverized using a ring and puck mill to ensure approximately 80%–85% passing 140 mesh. The material on top of the screen is referred to as the “plus” (+) fraction, and the material passing through the screen is the “minus” (-) fraction. The weights of both fractions are recorded.

The entire “plus” fraction is sent for fire assay determination, whereas two 30 g replicates of the “minus” fraction are taken for fire assay determination. The finish is gravimetric, AA or ICP-OES.

“Plus” and “minus” gold assay fractions, their weights, and the calculated “total gold” of the sample are included in every report. Upon request, individual gold assays may be reported for every fraction.

The calculation for “total gold” is as follows:

$$\text{Total gold (g/t)} = \frac{(\text{Au (“average minus”) g/t x Wt. “Minus” x } 10^{-6}\text{ t/g}) + (\text{Au (“plus”) g/t x Wt. “Plus” x } 10^{-6}\text{t/g}))}{(\text{Wt. (“minus”)g + Wt. (“plus”)g x } 10^{-6}\text{ t/g}}$$

According to the issuer’s protocol, any sample containing visible gold was assayed by the metallic sieve method.

11.6 Quality Control Results from the First and Second Drilling Programs

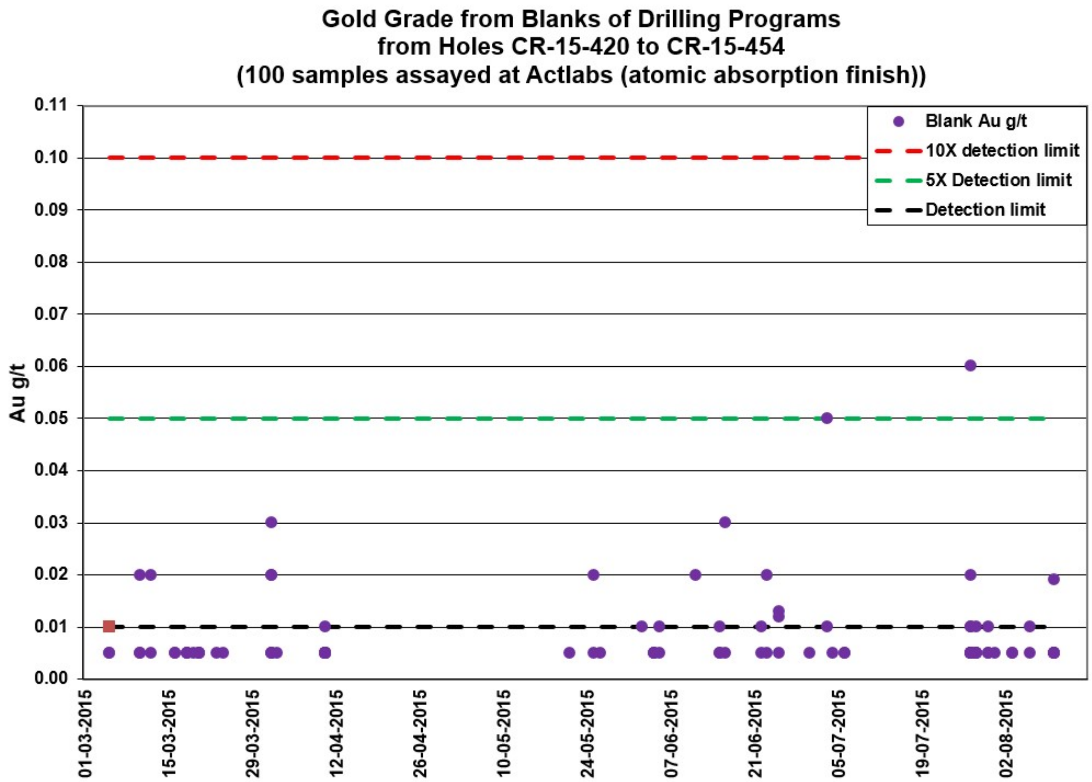
11.6.1 Blanks

The field blank used for diamond drilling programs in 2015 was a crushed sample of gold-barren marble. One (1) field blank was inserted for every 20 field samples.

The issuer’s quality control protocol stipulates that if any blank yields a gold value above 0.1 g/t Au (10x detection limit), all samples from the batch of 20 samples should be re-analyzed. To express “<0.01 g/t Au” numerically, a value of 0.005 g/t Au (half of the detection limit) was assigned.

A total of 100 blanks (Figure 11.1) were assayed by Actlabs during the first and second drilling campaigns for holes CR-15-420 to CR-15-455. No blank failed the issuer’s quality control procedure.

InnovExplo believes the results obtained for blanks during the first and second campaigns of the 2015 drilling program are reliable and valid.



Detection Limit = 0.01 g/t Au for AA Finish. Assay Results Under the Detection Limit are Plotted as 0.005 g/t Au

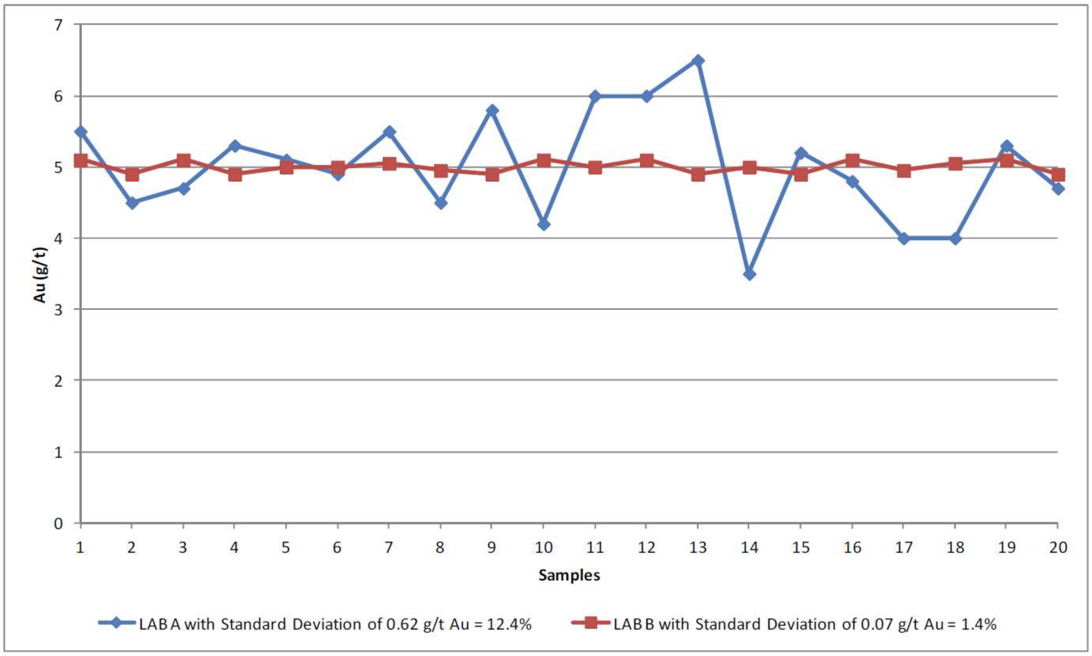
Figure 11.1 – Results of blank samples used for quality control during the first and second drilling campaigns on the Croinor deposit in 2015

11.6.2 Certified reference materials (standards)

For the 2015 drilling campaigns, one (1) CRM standard was inserted for every 20 samples. Four (4) different standards were used, with certified values ranging from 1.086 g/t Au to 8.595 g/t Au.

Table 11.1 presents the details for holes CR-15-420 to CR-15-455.

The accuracy of each result (as a percentage) is measured as the difference between the average of assays for the standard and the value assigned for the standard (excluding gross outlier values). For a laboratory, good accuracy constitutes the ability to give results as near as possible to the expected value (as a percentage near to 0%). The precision of the result (as a percentage) is represented by the dispersion of the standard's assay results versus their average. For a laboratory, good precision constitutes the ability to repeat results with the smallest standard deviation possible (as a percentage near to 0%). The difference between accuracy and precision is illustrated in Figure 11.2.



Lab A and Lab B have analyzed the same standard grading 5.0 g/t Au using the same number of samples (n=20) to produce the same final average (5.0 g/t Au). Accuracy is perfect (0%) for both, but the precision of lab B is better (1.4%).

Figure 11.2 – Hypothetical example comparing accuracy and precision at two laboratories

The issuer's quality control protocol stipulates that any standard that yields a gold value below or above three standard deviations (Table 11.1) is considered a fail. Only standards included with mineralized zone material should be re-analyzed. If there is no significant gold result within the batch of 20 samples, no re-assay is ordered.

A total of 109 standards were assayed by Actlabs during the first and second drilling campaigns. Only two (2) standards did not pass the issuer's quality control procedure, which represents about 2%.

InnovExplo believes the results obtained for standards during the first and second drilling campaigns are reliable and valid.

Table 11.1 – Results from standards used by Monarques during the first and second drilling campaigns during the 2015 drilling program

Standard (CRM)	Standard Supplier	Certified Gold Value (g/t)	Standard Deviation (SD)	Laboratory	Analytical Method	Amount of Results	Accuracy (%)	Precision (%)	Lower Process Limit (-3SD%)	Upper Process Limit (+3SD%)	Lower Process Limit (-10%)	Upper Process Limit (+10%)	Outliers	(%) Passing Quality Control
OREAS207	Ore Research & Exploration	3.472	0.130	Actlabs Laboratory	FA/AA	33	2.6%	3.1%	3.082	3.862	3.125	3.819	1	96.97
SG66	Rocklabs Ltd	1.086	0.032	Actlabs Laboratory	FA/AA	40	2.3%	3.8%	0.990	1.182	0.977	1.195	0	100.00
SL61	Rocklabs Ltd	5.931	0.177	Actlabs Laboratory	FA/AA	33	-0.2%	5.2%	5.400	6.462	5.338	6.524	1	96.97
SN60	Rocklabs Ltd	8.595	0.223	Actlabs Laboratory	FA/AA	3	NA	NA	7.926	9.264	7.736	9.455	0	100.00
TOTAL						**109**							**2**	98.17

11.6.3 Pulp duplicates

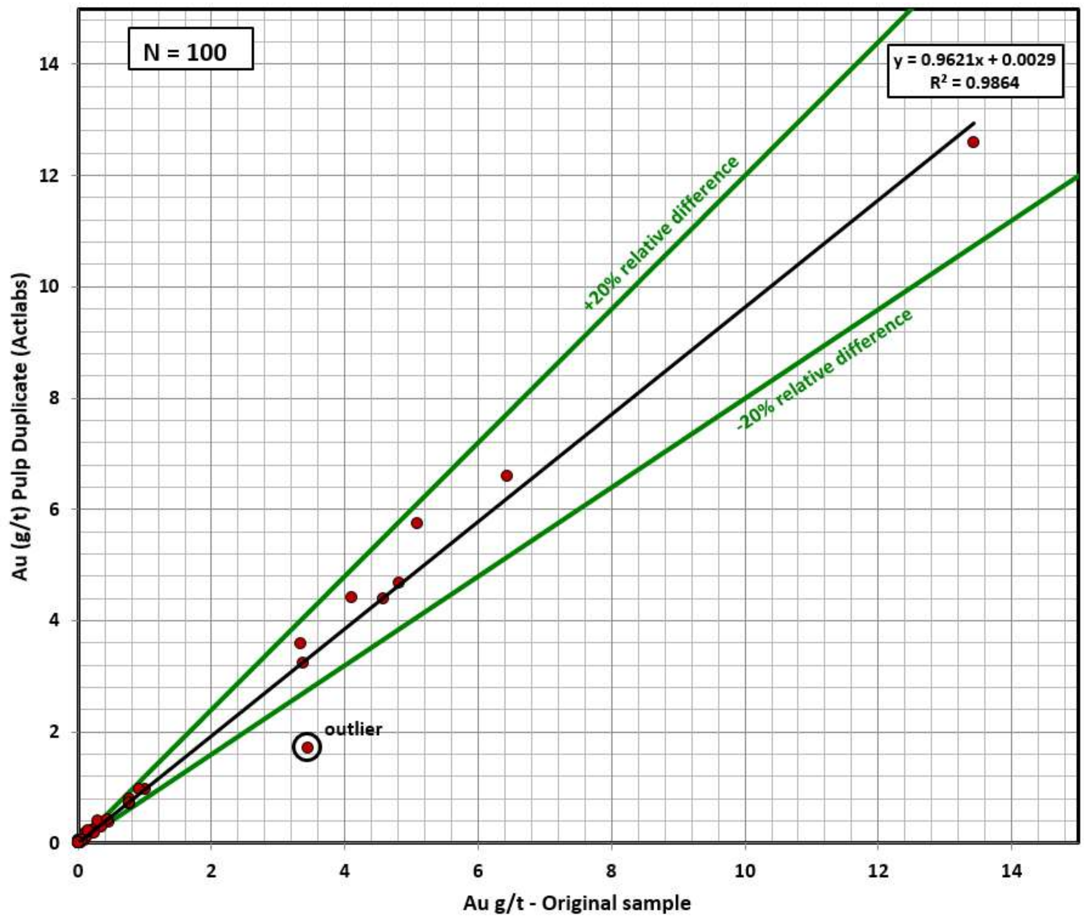
At the request of Monarques, the laboratory assayed one (1) pulp duplicate for every twenty (20) samples. The precision of pulp duplicates can be used to determine the incremental loss of precision for the pulp pulverizing stage of the process, thereby establishing whether a given pulp size taken after pulverization is adequate enough to ensure representative fusing and analysis.

None of the 100 pulp duplicates during the first and second drilling campaigns of 2015 were considered a gross outlier. Figure 11.3 plots the duplicate gold analyses for these samples. The green lines represent a field of relative difference of about ±20%. On the graph (Figure 11.3), only one result is identified as an outlier. Actlabs produced generally similar gold results with relatively small scatter (low random error), as indicated by the abundance (majority) of points falling between the two green lines. The linear regression slope corresponds to 0.9621, with a correlation coefficient of 99.32%. The correlation coefficient (%) is given by the square root of R^2 and represents the degree of scatter of data points around the linear regression slope. The results indicate an excellent reproducibility of gold values.

InnovExplo believes the results obtained for pulp duplicates during the first and second drilling campaigns are reliable and valid.

11.6.4 Conclusions

A statistical analysis of the QA/QC data provided by the issuers did not identify any significant analytical issues. InnovExplo is of the opinion that the sample preparation, analysis, QA/QC and security protocols for the Project follow generally accepted industry standards, and that the data is valid and of sufficient quality for mineral resource estimation.



Green lines represent a field of relative difference of about ±20%

Figure 11.3 – Plot of pulp duplicate analyses from Actlabs

11.7 Quality Control Results for Holes CR-11 414 to CR-11-419

When the 2011 resource estimation was initiated, some results were still pending from the 2010–2011 drilling program carried out by former owner Blue Note Mining. The six holes in question (CR-11-414 to CR-11-419) were excluded from the 2011 resource database, which had a close-out date of November 1st, 2011.

InnovExplo was responsible for establishing the sample preparation, analysis and security protocols for the 2010-2011 drilling program conducted by Blue Note Mining. The QA/QC program followed the same protocols that had been implemented at the beginning of the 2010 drilling campaign with some revisions. This section presents the quality control results for the six excluded holes drilled in 2011.

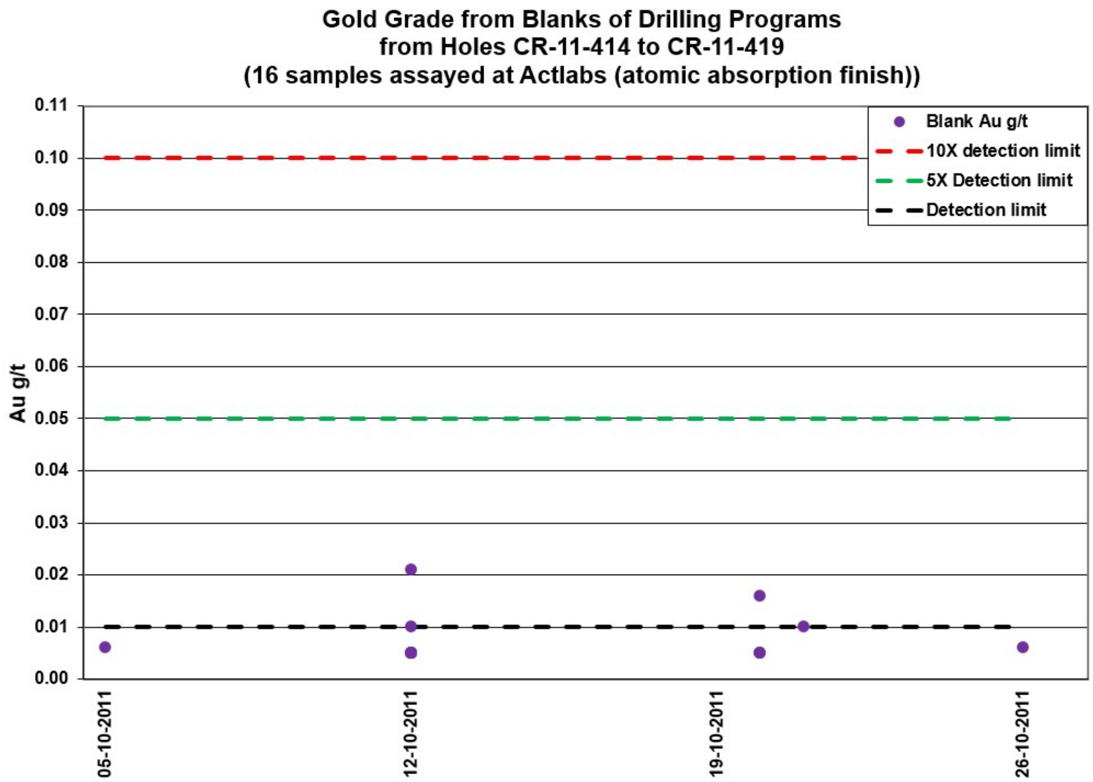
11.7.1 Blanks

The field blank used for the 2011 campaign was a crushed sample of gold-barren marble. One (1) field blank was inserted for every 25 field samples.

Blue Note Mining's quality control protocol stipulates that if any blank yields a gold value above 0.1 g/t Au (10x detection limit), all samples from the batch of 20 samples should be re-analyzed.

A total of 16 blanks (Figure 11.4) were assayed by Actlabs for holes CR-11-414 to CR-11-419. No blank failed Blue Note Mining's quality control procedure.

InnovExplo believes results obtained for blanks for holes CR-11-414 to CR-11-419 are reliable and valid.



Detection limit = 0.01 g/t Au for AA Finish. Assay results under the limit detection are plotted as 0.005 g/t Au.

Figure 11.4 – Results of blank samples used for quality control during the last drilling campaign in 2011 (holes CR-11-414 to CR-11-419)

11.7.2 Certified reference materials (standards)

For the 2011 drilling campaign, one (1) certified reference material (CRM) standard was inserted for every twenty-five (25) samples. The assigned grades for the three (3) different CRM standards used for the drilling campaign ranged from 0.976 g/t Au to 30.04 g/t Au.

Table 11.2 presents details on the CRMs used by Blue Note Mining for holes CR-11-414 to CR-11-419.

A total of 17 standards were assayed by Actlabs during this drilling program. All standards passed Blue Note Mining's quality control procedure, which represents results between ±3 standard deviations or ±10% (Table 11.2).

InnovExplo is of the opinion that the results obtained for standards from holes CR-11-414 to CR-11-419 are reliable and valid.

11.7.3 Conclusions

A statistical analysis of the Blue Note Mining QA/QC data did not identify any significant analytical issues. InnovExplo believes the sample preparation, analysis, QA/QC and security protocols used for the Project follow generally accepted industry standards, and that the data is valid and of sufficient quality to be used for mineral resource estimation.

Table 11.2 – Results for standards used by Blue Note Mining for the 2011 drilling program (holes CR-11-414 to CR-11-419)

Standard (CRM)	Standard Supplier	Certified Gold Value (g/t)	Standard Deviation (SD)	Laboratory	Analytical Method	Amount of Results	Accuracy (%)	Precision (%)	Lower Process Limit (-3SD%)	Upper Process Limit (+3SD%)	Lower Process Limit (-10%)	Upper Process Limit (+10%)	Outliers	(%) Passing Quality Control
SG40	Rocklabs Ltd	0.976	0.022	Actlabs Laboratory	FA/AA	5	NA	NA	0.910	1.042	0.878	1.074	0	100.00
SL51	Rocklabs Ltd	5.909	0.136	Actlabs Laboratory	FA/AA	5	NA	NA	5.501	6.317	5.318	6.500	0	100.00
SQ36	Rocklabs Ltd	30.040	0.600	Actlabs Laboratory	FA/AA	7	NA	NA	28.240	31.840	27.036	33.044	0	100.00
TOTAL						**17**							**0**	**100.00**

12 DATA VERIFICATION

This section was taken from Poirier et al. (2016) and refers only to the 2015 and previous drilling programs. No data verification was conducted on the 2016 and 2017 drilling programs.

InnovExplo's data verification included field visits to the Croinor Gold Property (drill collars, see Figure 12.1) as well as the logging and core storage facilities. It also included a review of drill hole collar locations, selected core intervals, gold assays, the QA/QC program, downhole surveys, and the descriptions of lithologies, alteration and structures.

Bruno Turcotte visited the Val-d'Or logging and core storage facilities several times during the 2015 drilling program. On October 14, 2015, Mr. Turcotte also visited the Property with Francine Fallara, a geologist with InnovExplo, and Antoine Fournier, a geologist with Monarques.

Figure 12.1 – Field visit to the Croinor Gold Project (review of collar locations)

12.1 Historical Work

The historical information used in this report was taken mainly from reports produced before the implementation of NI 43-101. In some cases, little information is available about sample preparation, analytical or security procedures. InnovExplo assumes that exploration activities conducted by previous companies were in accordance with prevailing industry standards.

12.2 Monarques Database

The Gemcom database was verified for consistency between the Geotic logs and the information contained in the database. Some errors were identified and corrected accordingly.

12.3 Diamond Drilling Survey

Downhole surveys were conducted on most holes. The Reflex survey data were verified for all drill holes from the 2015 drilling programs on the Project. Some errors were identified and corrected accordingly. A total of seven (7) casings were reviewed by InnovExplo during the site visit. No errors were noted.

12.4 Monarques Logging, Sampling and Assaying Procedures

InnovExplo reviewed some sections of mineralized core while visiting the on-site core logging and core storage facilities (see Figure 12.2). All core boxes were labelled and properly stored outside. Sample tags were still present in the boxes and it was possible to validate sample numbers and confirm the presence of mineralization in reference half-core samples from the mineralized zones. Monarques has established a QA/QC protocol, including the insertion of standards, blanks and duplicates. InnovExplo is of the opinion that the protocols in place are adequate.

Figure 12.2 – Diamond drill core logging by Monarques geologist

12.5 Conclusion

InnovExplo considers the 2015 Monarques drill hole database to be valid and of sufficient quality for the mineral resource estimate presented in Item 14.

13 MINERAL PROCESSING AND METALLURGICAL TESTING

The sections below on the results of earlier mineral processing and metallurgical testing and milling operations are taken from the report titled “Technical report and updated prefeasibility study for the Croinor Gold Property (Amended)”, dated October 30, 2014 (Poirier et al., 2014). The test work was conducted on samples from the former Croinor Property.

In 2017, COREM carried out a new series of laboratory test work campaigns on samples from the Croinor deposit and the results were published in a report titled “Evaluation of gravimetric concentration for a gold ore by the GRG method and evaluation of gold recovery by cyanidation tests”, dated May 15, 2017 (Olsen and Mahieu, 2017). The samples were prepared by Monarques. InnovExplo cannot determine if they were representative of the deposit.

13.1 Earlier Milling Operations

13.1.1 Cambior’s 1988 metallurgical tests

Cambior requested the services of Lakefield Research Laboratory (“Lakefield”) to perform metallurgical test work (Salter and Furey, 1988; Chénard and Turcotte, 2003). Flotation and direct cyanidation tests were run on a 76.8 kg sample composed of mineralized intersections from 16 drill holes. The direct cyanidation tests reported gold recoveries close to 98% whereas flotation tests gave recoveries better than 96%. During this test work, the specific gravity of the treated mineralized material was 2.82 g/cm^3. Note that the calculated grades obtained during Lakefield’s tests were comparable to Cambior’s original core assays but the values for both were higher than Lakefield’s assays on the same core samples.

13.1.2 South Malartic’s 2001 and 2003 metallurgical tests

South Malartic Explorations Inc. (“South Malartic” or “Malartic-Sud”) performed two metallurgical tests (Table 13.1). The mandate for these tests was assigned to Laboratoire LTM Inc. (“LTM”; St-Jean, 2001; 2003). The first test verified the behaviour of the Croinor mineralized material in the Chimo Mill. Gravity tests run with a Knelson concentrator gave a recovery of 47.3%, flotation tests recovered from 83.0% to 98.0% of the gold, and with cyanidation, recoveries of 96.3% were obtained with grinding. Note that the assays of the core samples were higher than the grades calculated for the feed during the test work.

South Malartic’s second test was performed on two samples from two different zones. Flotation gave recoveries of 94.9% and 97.0%, while cyanidation yielded corresponding recoveries of 95.1% and 99.1%. Note that the grades obtained during these tests were higher than the ones obtained with the assayed core. The core of the first sample assayed 4.45 g/t Au, whereas the average calculated feed grade during the cyanidation tests for the same sample was 6.35 g/t Au. The core of the second sample yielded 6.68 g/t Au when assayed, whereas the average calculated feed grade during cyanidation and flotation tests was 7.45 g/t Au.

The results obtained over these two periods show that there is no difference in the processing characteristics of the mineralized material with different grades.

Table 13.1 – Results from metallurgical testing

Company	Year	Type of test	Grinding	R(1) (%)	CG(2) (g/t)	MG(3) (g/t)	GD(4) (g/t)	GD(5) (%)
Cambior	1988	Cyanide	76.8%-200 MESH	97.8	5.99	5.88	-0.11	1.8
		Cyanide	82.8%-200 MESH	97.9	5.99	5.58	-0.41	6.8
		Cyanide	88.8%-200 MESH	97.8	5.99	5.87	-0.12	2.0
		Cyanide	80.0%-200 MESH	96.7	5.99	5.98	-0.01	0.2
		Flotation	70.0%-200 MESH	96.4	5.99	6.01	0.02	0.3
		Flotation	80.0%-200 MESH	96.3	5.99	5.46	-0.53	8.8
		Flotation	90.0%-200 MESH	96.6	5.99	6.41	0.42	6.6
Malartic-Sud	2001	Knelson	100.0%-10 MESH	47.3	3.24	2.06	-1.18	36.4
		Flotation	94.1%-200 MESH	83.3	3.24	2.24	-1.00	30.9
		Flotation	94.1%-200 MESH	69.9	3.24	2.97	-0.27	8.3
		Flotation	94.1%-200 MESH	97.7	3.24	2.94	-0.30	9.3
		Cyanide	94.1%-200 MESH	96.3	3.24	2.01	-1.23	38.0
		Cyanide	97.3%-200 MESH	97.3	3.24	2.01	-1.23	38.0
Malartic-Sud	2003	Flotation	77.8%-200 MESH	97.0	4.45	4.12	-0.33	7.4
		Cyanide	68.0%-200 MESH	94.3	4.45	5.04	0.59	11.7
		Cyanide	79.9%-200 MESH	95.8	4.45	6.42	1.97	30.7
		Cyanide	82.6%-200 MESH	93.8	4.45	5.97	1.52	25.5
		Cyanide	84.9%-200 MESH	94.2	4.45	9.00	4.55	50.6
		Cyanide	87.6%-200 MESH	95.7	4.45	6.74	2.29	34.0
		Cyanide	94.8%-200 MESH	93.9	4.45	6.44	1.99	30.9
		Cyanide	97.4%-200 MESH	96.1	4.45	4.87	0.42	8.6
		Flotation	80.5%-200 MESH	94.9	6.68	7.33	0.65	8.9
		Cyanide	93.0%-200 MESH	99.1	6.68	7.56	0.88	11.6

R = Recovery (%)
CG = Calculated Grade (g/t)
MG = Measured grade (g/t)
GD = Grade difference (g/t)
GD = Grade difference (%)

13.1.3 Bulk sampling

Before South Malartic began working on the former Croinor Property, three bulk samples had been extracted according to the summary presented in Table 13.2.

Table 13.2 – Bulk samples taken from 1972 to 1997

Year	Location	Mill	Tonnage (t)	Grade (g/t Au)	Recovery Au (%)
1972	Underground	Goldfields	9,979	3.70	95.0
1983	Underground	Belmoral	1,700	1.47	86.0
1996-1997	Goldust pit	Aur-Bel/Chimo	51,010	3.40	97.0

South Malartic has milled mineralized material from Croinor five times since 2003:

- Once for a bulk sample in 2003,
- Four times for material from the Centre and West open pit operations;
- All material was processed through the Camflo Mill in Malartic, owned by Richmont Mines Inc.

13.2 Milling and Metallurgy

The following sections are excerpts from the report by Moryoussef, 2004, which documents the milling and metallurgical results for a bulk sample of mineralized material that was processed at the Camflo Mill from February 3 to February 25, 2004, as described by Oscar Lafrance, a consultant hired by Malartic-Sud to supervise the milling operations. WSP did not verify the data but assumes they are valid and pertinent. No report exists for the milling of mineralized material from the Centre open pit, but the process was the same and supervised by Mr. Lafrance. The Camflo Mill customizes the milling of ores from many different sources, and a circuit inventory is therefore done before and after each program to obtain a representative metallurgical balance. Table 13.3 presents the summary of South Malartic's milling performance of the Camflo Mill.

13.2.1 Milling method

The Camflo Mill uses a direct cyanidation circuit for the mineralized material. All the mineralized material is crushed and grinded until 70% to 85% of the material pass through a 200 mm mesh sieve. It should be noted that grinding could be adjusted to be finer or coarser if needed. All crushed mineralized material in a cyanide and lime solution is agitated in retention tanks in presence of cyanide which, combined with oxygen, dissolves the gold. The solution is recovered through decant and filtration. Gold precipitation occurs by creating a vacuum to removed oxygen and by adding zinc powder to the solution. Gold is recovered in press filters. The precipitate is then recovered and mixed to a flux to cast an impure gold bar which is carried to the Royal Canadian Mint or any other refiner to be purified and marketed. The balance of the mineralized material is taken to the tailing pond, constituting the final waste (O. Lafrance, 2004, as reported in Moryoussef, 2004).

13.2.2 Summary of the mineralized material metallurgy

The Croinor mineralized material reacts to the direct cyanidation process practically perfectly. It is difficult to calculate the bond index. In comparison, it would assume that the bond index is between 13 kWh and 16 kWh. The tonnage processed to the mills was always thin and the feeding to the cyclone very unstable, this being due to the blocking of feeding chutes by frozen mineralized material. A coarse grinding was obtained, varying between 74% and 79% passing a 200 mm mesh sieve. The filtration was easy with average liquid waste of 0.0003 oz/t, which is excellent. The average solid rejects were of 0.002 oz/t. This being the assaying detection limit, thus the recovery can be considered almost perfect. Cyanide consumption was of 0.2 kg/ton, which is very low. Putting apart the physical mineralized material handling due to freezing, all other aspects seem perfect (O. Lafrance, 2004, as reported in Moryoussef, 2004).

In summary, milling performed on the Croinor mineralized material at the Camflo Mill confirmed the excellent response of the mineralized material to direct cyanidation, with a satisfactory gold recovery. The 75,752 t milled to date, coming from various veins with different grades, is sufficiently representative of the Croinor mineralized material and no problem is expected for any future operation involving the same type of mineralized material.

Table 13.3 – Milling results for the Croinor ore at the Camflo Mill

Date	Tonnes (t)	Grade (g/t)	Total Ounces (oz)	Recovery (%)	Recovered Ounces (oz)
February 3 to 25, 2004	20,629	3.10	2,033	97.4	1,981
August 6 to 13, 2004	7,883	1.80	456	95.3	435
August 18 to 31, 2004	9,750	1.97	619	95.5	591
October 7 to 18, 2004	13,127	2.50	1,055	96.6	1,019
July 2005	24,363	5.38	3,920	97.9	3,834
Total	**75,752**	**3.33**	**8,081**	**97.0**	**7,860**

13.3 COREM's 2017 Metallurgical Tests

13.3.1 Test work program

InnovExplo mandated COREM to conduct GRG tests and nine 48 h cyanidation tests in a two-litre reactor on gold ore. Three cyanidation tests were performed on the feed while six tests were performed on the gravimetric rejection.

13.3.2 Sample preparation

The material received included 85 subsamples for a total of 133 kg. The 85 samples were combined to produce a single feed. The material was then sieved over 850 µm to avoid over-grinding. The coarse portion was crushed, ground and sifted successively to obtain 100% passing 850 µm.

A total of 10 kg of the material was taken (several samples during the preparation of the 133 kg batch) in order to obtain a composite of the feed. The 10 kg were crushed to 80% passing 75 µm. They were then homogenized at the divider three times, then bagged in a 1 kg batch. This material was then analyzed for its particle size distribution, gold, silver, sulfur and a metallic scan. It was then used to make three direct cyanidations (without gravity).

Approximately 25 kg of final tail of GRG (80% passing, 75 µm) was dried at room temperature for several days to avoid sulphide alteration. The material was then homogenized at the divider three times and bagged in 2-kg batches. This material was analyzed for gold, silver, sulfur and a metallic scan and then used to make six cyanidations.

The composite sample consisted of 85 subsamples with a calculated grade of 7.03 g/t Au (Table 13.4). The sample contained 1.44% S, 6.43% Fe and some transition metals in small amounts (<70 ppm each), such as copper, zinc and cobalt, which could be cyanide consumers.

Table 13.4 – Composite feed assays

Assays	S (%)	Fe (%)	Au (g/t)	Ag (g/t)	Cu (ppm)	Zn (ppm)	As (ppm)	Co (ppm)	Sb (ppm)
Feed (composite sample)	1.44	6.43	7.03	<0.50	69.0	65.0	10.0	68.0	0.4

13.3.3 Gravity separation tests

The combined gold sample was treated with a Knelson 3" diameter laboratory (Knelson MD3) to perform a three-step GRG test. The GRG test was originally developed in 2001 by Professor Laplante from McGill University. The three GRG steps were performed successively on material of different fineness:

- Step 1: 100% passing -850 µm;
- Step 2: 1.50% passing -75 µm;
- Step 3: 80% passing -75 µm.

The Knelson concentrates and releases generated during the GRG test were sieved and then each fraction was analyzed by pyro-analysis and AA to know the concentration of gold

The proportion of GRG gold in the sample was 75.4% (Figure 13.1):

- Step 1: 27.8%;
- Step 2: 14.7%;
- Step 3: 32.9%.

It also appeared that gold particles smaller than 106 µm were not completely released during the first stage of the GRG. Approximately 40.2% of GRG gold was recovered by cumulating the three Knelson concentrates from the coarse fractions (>106 µm). Recovery is excellent, and the use of gravity is recommended.

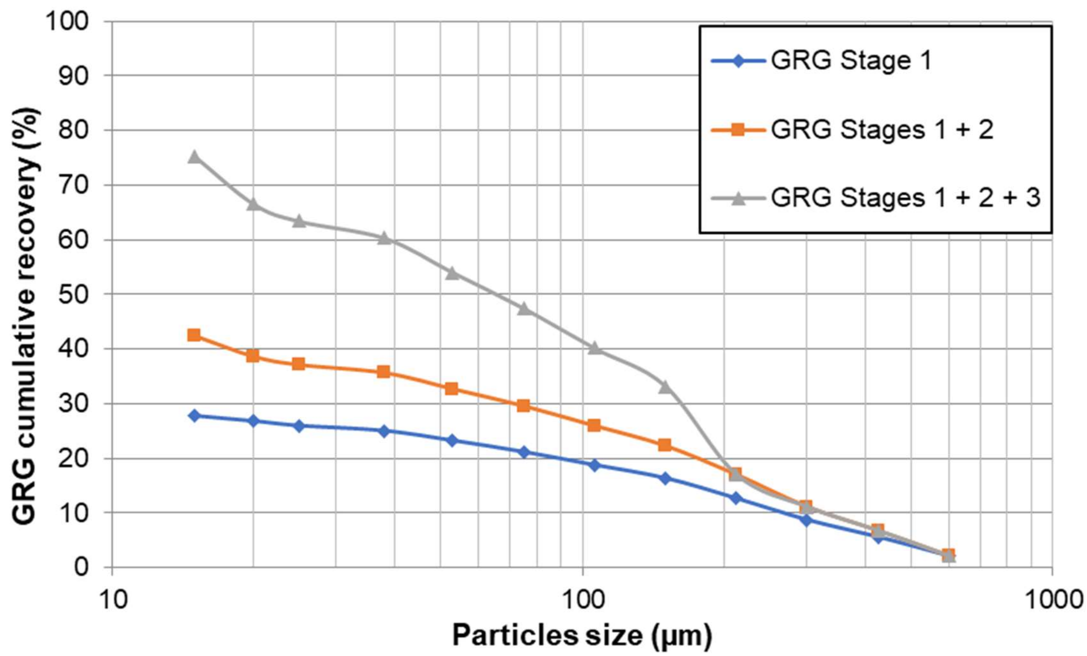


Figure 13.1 – GRG cumulative metallurgical results

13.3.4 Cyanidation tests

Nine 48 h cyanidation tests (Table 13.5) were carried out in a two-litre beaker with a flat agitator. All tests were carried out at ambient temperature, between 19°C and 21°C with agitation at 300 rpm.

Table 13.5 – Cyanidation tests conditions

Parameters	Feed			Gravity Tails					
Tests	1	2	3	4	5	6	7	8	9
% solids	50	50	50	50	50	50	50	50	50
pH adjusted with lime	11	11	11	11	11	11	11	11	11
Temperature	20	20	20	20	20	20	20	20	20
NaCN (ppm)	800	800	800	600	600	600	400	400	400
Aeration	Agit. (1)	O_2	Air	Agit. (1)	O_2	Air	Agit. (1)	O_2	Air

1- Agit. = Aeration by Agitation

The gold recoveries (and kinetics) for all nine cyanidation tests are shown in Table 13.6, three of which were done on the feed and six on the gravity tails. The 48 h recoveries for the direct cyanidation tests ranged between 95.8% to 96.5%. The 48 h recoveries for the two series of three trials (gravity tail) gave values of 90.5% to 92.2%.

Table 13.6 – Cyanidation test recoveries (kinetics)

Tests	1 h	3 h	6 h	24 h	48 h
T-1 Feed (%)	22.7	57.5	76.2	95.9	96.5
T-2 Feed (%)	59.7	83.8	90.2	88.4	96.1
T-3 Feed (%)	42.7	70.0	80.8	94.9	95.8
T-4 Gravity Tail (%)	51.7	78.4	82.0	89.1	92.2
T-5 Gravity Tail (%)	75.0	90.3	94.0	93.5	91.9
T-6 Gravity Tail (%)	57.9	86.3	90.8	91.9	90.8
T-7 Gravity Tail (%)	45.5	72.7	81.4	88.5	91.6
T-8 Gravity Tail (%)	69.3	83.4	86.4	86.4	92.0
T-9 Gravity Tail (%)	52.3	78.1	87.3	90.5	90.5

Lime consumption for all cyanide tests ranged from 1.7 kg/t to 5 kg/t. The increase of dissolved oxygen during cyanidation is recommended to increase the kinetics of dissolution of gold and to reduce the consumption of NaCN and lime, especially if no gravimetric recovery is envisaged. Pre-oxidation of the ore before cyanidation should also be tested. The consumption of NaCN obtained varied between 153 g/t and 608 g/t, depending on the initial NaCN dosage. Given that gold recoveries remained the same at low or high cyanide levels, it was suggested that cyanide should not be overdosed at the beginning of the circuit to achieve a consumption below 200 g/t.

13.3.5 Overall recovery

As shown in Table 13.7, gold recovery from the feed cyanidation was 96.1% on average and increased by about 1.9% when gravity was added to an average value of 97.9%. The use of gravity reduced cyanidation time while increasing overall gold recovery, which could be advantageous in cases where the retention time of the cyanidation circuit in the plant is limited or to increase the tonnage without having loss of gold recovery.

Table 13.7 – Overall Recovery

Tests	Leach	Overall with gravity
T-1 Feed (%)	96.5	-
T-2 Feed (%)	96.1	-
T-3 Feed (%)	95.8	-
T-4 Gravity Tail (%)	92.2	98.1
T-5 Gravity Tail (%)	91.9	98.0
T-6 Gravity Tail (%)	90.8	97.7
T-7 Gravity Tail (%)	91.6	97.9
T-8 Gravity Tail (%)	92.0	98.0
T-9 Gravity Tail (%)	90.5	97.7

Optimization of the circuit during operation must be made to determine the critical dosage of NaCN, without affecting the recovery and kinetics of dissolution of the gold.

14 MINERAL RESOURCE ESTIMATES

The 2015 Mineral Resource Estimate (the “2015 MRE”) presented herein was published in a report titled “*Technical Report and 2015 Mineral Resource Estimate update for the Croinor Gold Property*”, dated January 8, 2016 (Poirier et al., 2016). It was prepared by Karine Brousseau, Eng., under the supervision of Carl Pelletier, P.Geo., both of InnovExplo, using all available information. It has been reproduced below with only minor modifications to ensure consistency with the rest of this report.

The main objective of the mandate in 2015 was to update the 2014 MRE, which was published in a report titled “*Technical Report and Updated Prefeasibility Study for the Croinor Gold Property (Amended)*”, dated October 30, 2014 (Poirier et al., 2014).

The mineral resources presented herein are not mineral reserves since they have not demonstrated economic viability. The result of the 2015 study was a single mineral resource estimate for 51 gold-bearing zones. The 2015 MRE includes measured, indicated, and inferred resources for an underground volume. The effective date is November 6, 2015.

14.1 Methodology

The 2015 MRE was prepared using 3D block modelling and the inverse distance power six (ID6) interpolation method for a corridor 1,570 m long, from 910 mW to 640 mE (local grid oriented at 21.9167°Az), and down to a vertical depth of 545 m below surface.

14.1.1 Drill hole and channel sample database

All existing drill hole databases for the Property were compiled and merged for the 2015 MRE. The estimate also includes six holes drilled in 2011 (CR-11-414 to CR-11-419) that were not included in the previous 2014 estimate because assays were pending, as well as 36 holes drilled in 2015. In all, the estimate considered 1,257 surface and underground DDH with conventional analytical gold assay results and coded lithologies. The 1,257 holes cover the Croinor deposit over an east-west distance of 1,530 m (local grid), within the limits of the resource estimate area (see Figure 10.1 in Section 10).

All header data (collar coordinates), down-hole survey data, lithological information and assay results were integrated into a GEMS database. In addition to the basic tables of raw data, the GEMS database contains several tables with the calculated drill hole composites and wireframe solid intersections required for the statistical evaluation and resource block modelling. The DDH database contains a total of 29,701 assays taken from the 1,257 drill holes (136,305 m of core).

A channel sample database compiled by InnovExplo in 2005 (Pelletier and Boudrias, 2005) was integrated into the GEMS project. This database incorporated chip samples from development headings collected between 1983 and 1986. The header Table includes the channel sample number, collar location and length of each channel sample. Conventional assay grades were compiled. The channel database contains a total of 4,309 assays taken from 1,927 channel samples.

14.1.2 Interpretation of mineralized zones

To facilitate resource modelling of the Croinor deposit, InnovExplo constructed a mineralized-zone wireframe model delimiting the geologically defined extent of all mineralized zones found within the resource area measuring 1,570-m along strike, 230 m wide and up to a vertical depth of 545 m below surface.

The geological interpretation was performed and correlated on lenses on vertical sections spaced 10 m apart. The mineralized-zone model was constructed to outline zones of continuous mineralization along an average trend of 290°Az and an average dip of 35°. A minimum width of 1.8 m (true width) was respected for the interpretation model. The model contains a total of 51 mineralized-zone solids (lenses). The names were inspired by the nomenclature of Pelletier and Boudrias (2005).

The wireframe solids of the mineralized-zone model were created by digitizing the data and performing an interpretation on sections spaced 10 m apart, and then using tie-lines between the 3D rings to complete the wireframes for each solid.

Figure 14.1 presents a 3D isometric view of the mineralized-zone model, the existing open pits, and the drift network of the Croinor deposit.

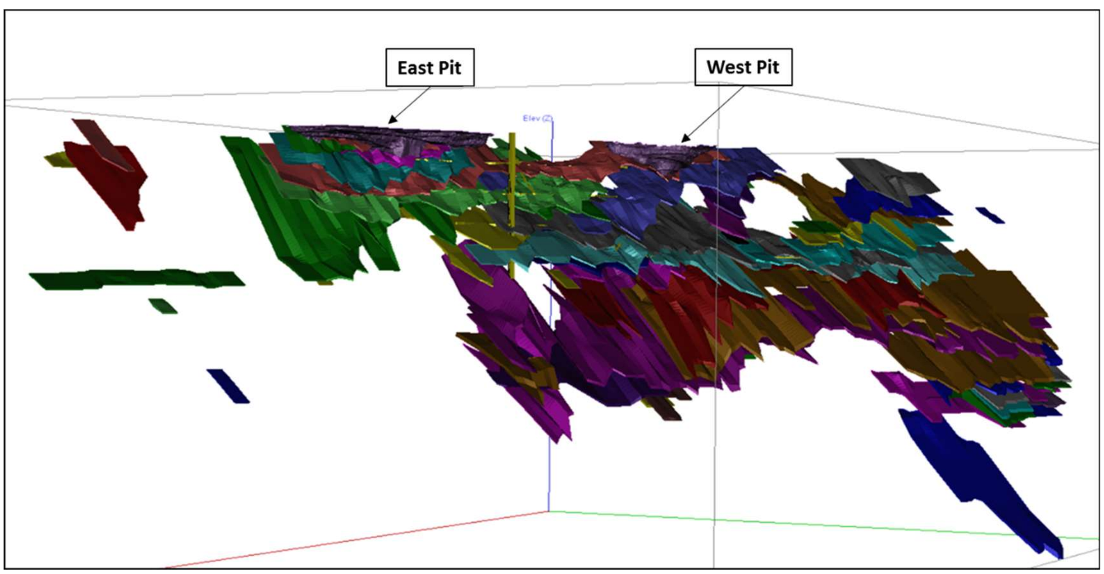


Figure 14.1 – 3D isometric view of the Croinor deposit looking southwest

In 2015, a new geological interpretation of the mineralized zones between vertical depths of 200 m and 350 m was performed by geologists from Monarques and InnovExplo. The lower part of the deposit had to be reinterpreted after new geological information was obtained during the 2015 drilling campaign. Most of the drill holes were at depth, and the new geological information changed the geometry and dip of the zones by extending them vertically and laterally relative to the previous interpretation. The re-interpretation indicated better zone continuity as well as consolidation of some of the zones of the previous estimate. As a result, the number of zones went from 54 in 2014 to 51 in 2015, with changes made to 24 of these zones. Figure 14.2 shows an example of how the mineralized-zone model was modified from 2014 to 2015.

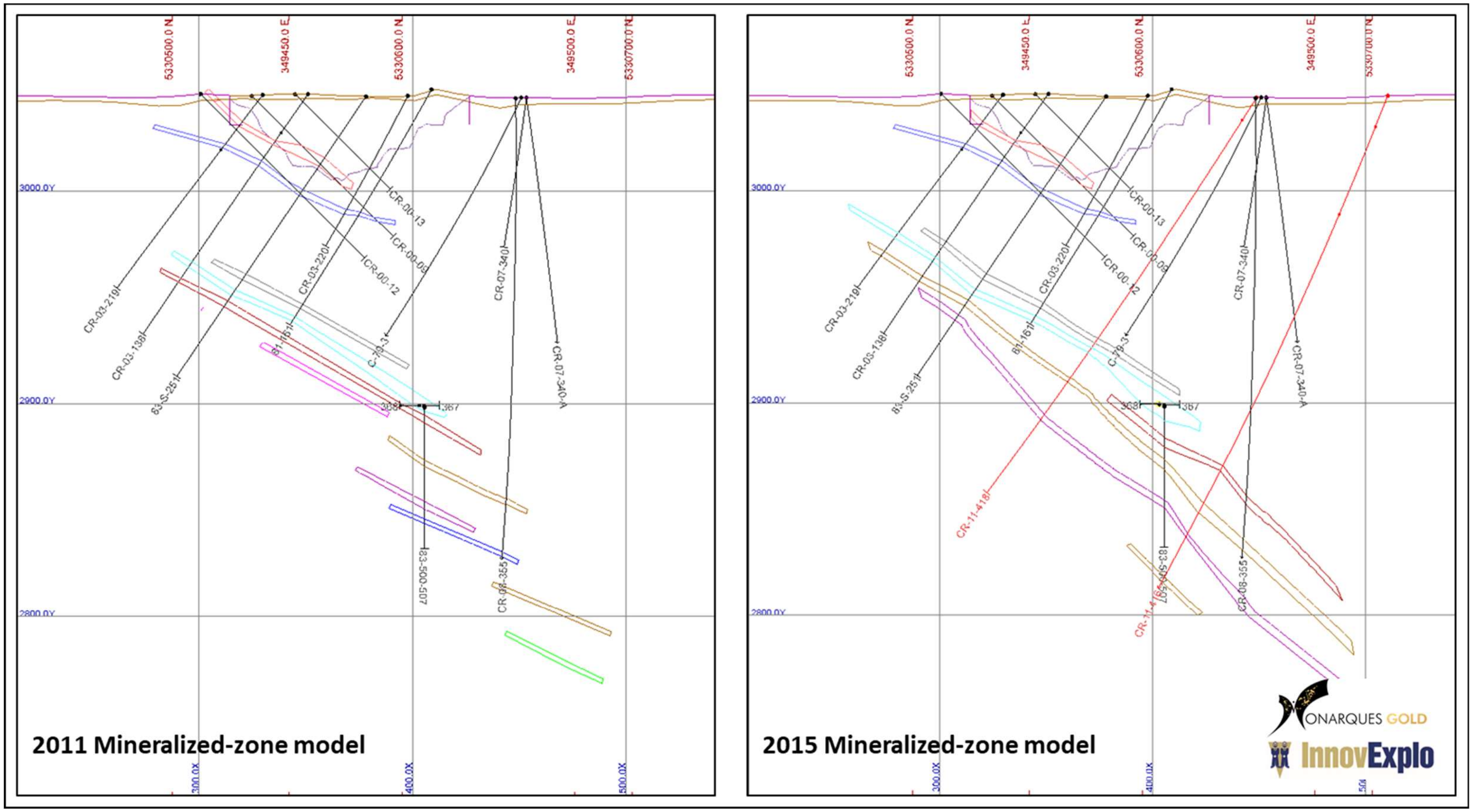


Figure 14.2 – Cross-section 290W (±5 m) of the 2014 mineralized-zone model vs the 2015 mineralized-zone model (red DDH were not used in the 2014 MRE)

14.1.3 Statistics on raw assays

Drill hole assay intervals that intersect interpreted mineralized zones were automatically coded in the database. This database was used to analyze sample lengths and generate statistics, composites and variography.

Basic univariate statistics were performed on datasets grouped by zone using point area files containing raw analytical assay data for a total of 9,331 DDH samples. The capping level was based on a study of the effect of high-grade values on the mean and standard deviations, as well as on log-normal histograms and probability plots. A total of 34 samples were capped at a 70 g/t Au value. The capping of high assays affected 0.36% of all DDH samples within the block model. Table 14.1 presents a summary of the statistical analysis for each mineralized zone.

Basic univariate statistics on channel sample datasets were also performed using point area files containing raw analytical assay data for a total of 4,018 chip samples. A high-grade capping value of 55 g/t Au was applied to the channel sample population, based on a study of the effect of high-grade values on the mean and standard deviations, as well as on log-normal histograms and probability plots. A total of 22 samples were capped affecting 0.55% of all the channel samples within the block model. Table 14.2 presents a summary of the statistical analysis for each mineralized zone.

Table 14.1 – Summary statistics for raw DDH assays by zone

Zone	Block Code	Number of samples	Max (Au g/t)	Uncut Mean (Au g/t)	Uncut CV	High Grade Capping	Cut Mean (Au g/t)	Cut CV	# Samples Cut	% Samples Capped	% Loss Metal Factor
ZONE01	201	680	161.82	3.63	2.34	70	3.49	1.84	1	0.15%	2.78%
ZONE02	202	1016	344.63	4.55	3.13	70	4.17	2.05	4	0.39%	11.67%
ZONE03	103	315	58.21	3.67	1.80	70	3.67	1.80	0	0.00%	0.00%
ZONE04	204	547	57.50	2.25	2.35	70	2.25	2.35	0	0.00%	0.00%
ZONE05	205	613	78.15	3.48	2.38	70	3.47	2.35	2	0.33%	0.60%
ZONE06	106	780	256.13	3.51	3.49	70	3.17	2.37	4	0.51%	6.19%
ZONE07	207	189	74.74	5.65	2.09	70	5.63	2.07	1	0.53%	0.35%
ZONE08	208	110	48.82	2.28	2.42	70	2.28	2.42	0	0.00%	0.00%
ZONE09	109	317	54.51	1.64	2.57	70	1.64	2.57	0	0.00%	0.00%
ZONE10	210	181	136.45	3.56	3.27	70	3.20	2.47	1	0.55%	12.33%
ZONE11	111	27	14.05	2.48	1.48	70	2.48	1.48	0	0.00%	0.00%
ZONE12	312	26	5.40	0.55	1.96	70	0.55	1.96	0	0.00%	0.00%
ZONE13	313	471	99.08	2.79	2.93	70	2.72	2.75	2	0.42%	1.21%
ZONE14	114	465	82.96	2.62	2.69	70	2.58	2.57	2	0.43%	0.68%
ZONE15	215	138	21.05	1.94	1.78	70	1.94	1.78	0	0.00%	0.00%
ZONE16	116	1095	306.62	4.10	3.57	70	3.63	2.63	10	0.91%	7.13%
ZONE17	317	45	8.50	1.48	1.44	70	1.48	1.44	0	0.00%	0.00%
ZONE18	418	540	169.30	3.30	3.49	70	3.03	2.87	2	0.37%	8.05%
ZONE19	219	7	7.03	1.97	1.25	70	1.97	1.25	0	0.00%	0.00%
ZONE20	320	126	82.97	4.42	2.24	70	4.31	2.11	1	0.79%	2.74%
ZONE21	121	11	11.45	2.11	2.06	70	2.11	2.06	0	0.00%	0.00%
ZONE22	122	5	6.97	2.06	1.34	70	2.06	1.34	0	0.00%	0.00%
ZONE23	323	8	6.55	1.62	1.22	70	1.62	1.22	0	0.00%	0.00%
ZONE24	124	385	53.98	2.55	2.23	70	2.55	2.23	0	0.00%	0.00%
ZONE25	225	37	20.03	1.40	2.51	70	1.40	2.51	0	0.00%	0.00%
ZONE26	126	117	53.14	2.17	2.84	70	2.17	2.84	0	0.00%	0.00%
ZONE27	327	6	5.69	2.19	1.05	70	2.19	1.05	0	0.00%	0.00%
ZONE28	128	222	35.43	3.02	1.70	70	3.02	1.70	0	0.00%	0.00%
ZONE29	229	32	56.57	3.54	2.87	70	3.54	2.87	0	0.00%	0.00%
ZONE30	230	197	148.04	2.61	4.35	70	2.21	3.02	1	0.51%	7.55%
ZONE31	331	92	74.05	6.20	2.16	70	6.12	2.12	2	2.17%	0.97%
ZONE32	432	10	7.69	2.00	1.29	70	2.00	1.29	0	0.00%	0.00%
ZONE33	233	68	66.13	2.66	3.06	70	2.66	3.06	0	0.00%	0.00%
ZONE34	134	31	17.72	2.11	1.74	70	2.11	1.74	0	0.00%	0.00%
ZONE35	335	29	38.39	2.22	3.12	70	2.22	3.12	0	0.00%	0.00%
ZONE36	236	19	11.03	1.80	1.77	70	1.80	1.77	0	0.00%	0.00%
ZONE37	337	12	8.07	1.22	1.84	70	1.22	1.84	0	0.00%	0.00%
ZONE38	238	13	16.05	1.42	2.98	70	1.42	2.98	0	0.00%	0.00%
ZONE39	339	21	4.46	1.23	1.07	70	1.23	1.07	0	0.00%	0.00%
ZONE41	141	34	28.15	2.66	2.04	70	2.66	2.04	0	0.00%	0.00%
ZONE42	142	41	4.97	0.85	1.40	70	0.85	1.40	0	0.00%	0.00%
ZONE44	244	9	35.72	6.18	1.91	70	6.18	1.91	0	0.00%	0.00%
ZONE45	245	9	6.51	1.28	1.60	70	1.28	1.60	0	0.00%	0.00%
ZONE48	248	24	14.75	1.24	2.50	70	1.24	2.50	0	0.00%	0.00%
ZONE50	350	9	4.58	1.00	1.50	70	1.00	1.50	0	0.00%	0.00%
ZONE70	170	92	112.97	3.89	3.39	70	3.42	2.80	1	1.09%	30.42%
ZONE75	175	52	50.05	1.88	3.67	70	1.88	3.67	0	0.00%	0.00%
ZONE80	280	24	11.54	1.89	1.75	70	1.89	1.75	0	0.00%	0.00%
ZONE85	185	8	5.89	1.88	1.17	70	1.88	1.17	0	0.00%	0.00%
ZONE90	190	17	11.31	3.22	1.08	70	3.22	1.08	0	0.00%	0.00%
ZONE95	195	9	0.85	0.16	1.62	70	0.16	1.62	0	0.00%	0.00%

Table 14.2 – Summary statistics for raw channel sample assays by zone

Zone	Block Code	Number of samples	Max (Au g/t)	Uncut Mean (Au g/t)	Uncut CV	High Grade Capping	Cut Mean (Au g/t)	Cut CV	# Samples Cut	% Samples Capped	% Loss Metal Factor
ZONE01	201	452	86.39	3.77	2.20	55	3.62	1.93	3	0.66%	4.16%
ZONE02	202	835	102.85	5.87	1.84	55	5.66	1.67	9	1.08%	3.08%
ZONE03	103	5	2.39	1.23	0.49	55	1.23	0.49	0	0.00%	0.00%
ZONE04	204	527	68.22	2.78	2.21	55	2.73	2.10	2	0.38%	1.35%
ZONE05	205	179	17.14	1.35	1.82	55	1.35	1.82	0	0.00%	0.00%
ZONE06	106	503	101.48	3.53	2.06	55	3.43	1.81	1	0.20%	1.70%
ZONE09	109	38	25.37	2.56	1.84	55	2.56	1.84	0	0.00%	0.00%
ZONE10	210	358	23.99	1.04	2.00	55	1.04	2.00	0	0.00%	0.00%
ZONE13	313	114	10.28	1.04	1.70	55	1.04	1.70	0	0.00%	0.00%
ZONE16	116	986	308.56	4.32	3.59	55	3.69	1.95	7	0.71%	12.68%
ZONE28	128	17	13.02	2.02	1.51	55	2.02	1.51	0	0.00%	0.00%
ZONE35	335	4	3.77	1.54	0.91	55	1.54	0.91	0	0.00%	0.00%

14.1.4 Compositing

In order to minimize any bias introduced by variable sample lengths, the capped gold assays were composited to equal lengths of 1.0 m (“1m composites”) within all DDH intervals defining each of the mineralized zones. The same composite length was used for the DDH and channel sample assays. The total number of composites used in the DDH dataset is 11,900 and 3,194 composites for the channel dataset. Each mineralized-zone solid (lens) was estimated separately using its own set of composites. All DDH or channel sample composites less than 15 cm long were removed from each population before performing the block model interpolation and variography. No grades were assigned to missing sample intervals.

Table 14.3 and Table 14.4 present the distribution statistics by zone for the 1m composites generated for the DDH and channel sample populations respectively.

Table 14.3 – Summary statistics for the 1m DDH composites by zone

Zone	Block Code	Number of samples	Max (Au g/t)	Mean (Au g/t)	Standard Deviation	CV
ZONE01	201	786	48.97	2.71	4.50	1.66
ZONE02	202	1273	70.00	3.24	6.99	2.16
ZONE03	103	469	26.86	2.29	4.13	1.81
ZONE04	204	769	40.80	1.30	3.40	2.62
ZONE05	205	696	69.99	2.54	6.38	2.51
ZONE06	106	942	69.93	2.04	5.15	2.52
ZONE07	207	310	55.95	3.12	6.97	2.23
ZONE08	208	135	48.82	1.69	4.69	2.77
ZONE09	109	564	36.92	0.88	2.56	2.91
ZONE10	210	238	56.88	2.07	5.71	2.77
ZONE11	111	29	7.88	1.93	2.36	1.22
ZONE12	312	28	3.50	0.35	0.70	2.00
ZONE13	313	530	64.71	1.74	4.82	2.76
ZONE14	114	546	31.06	1.92	4.13	2.15
ZONE15	215	147	13.83	1.63	2.61	1.61
ZONE16	116	1502	70.00	2.22	6.47	2.92
ZONE17	317	65	6.72	0.93	1.51	1.62
ZONE18	418	654	69.90	2.00	6.31	3.16
ZONE19	219	5	5.28	2.41	1.67	0.70
ZONE20	320	147	69.32	3.18	7.87	2.47
ZONE21	121	17	3.69	0.42	1.15	2.71
ZONE22	122	10	6.97	1.21	2.16	1.79
ZONE23	323	7	6.55	1.68	2.07	1.23
ZONE24	124	443	49.92	1.98	4.30	2.18
ZONE25	225	34	9.91	1.14	2.37	2.08
ZONE26	126	126	35.72	1.32	3.68	2.78
ZONE27	327	5	3.60	1.50	1.38	0.92
ZONE28	128	257	29.51	1.96	3.63	1.86
ZONE29	229	47	56.57	2.16	8.27	3.83
ZONE30	230	245	29.55	1.19	3.23	2.72
ZONE31	331	152	57.78	3.03	7.82	2.58
ZONE32	432	21	7.69	1.06	1.98	1.86
ZONE33	233	83	48.16	1.74	5.49	3.16
ZONE34	134	39	17.72	1.74	3.35	1.93
ZONE35	335	104	35.00	0.55	3.43	6.28
ZONE36	236	28	9.13	1.05	2.05	1.95
ZONE37	337	19	3.32	0.68	1.09	1.61
ZONE38	238	17	8.02	0.58	1.87	3.20
ZONE39	339	32	4.13	0.72	1.10	1.52
ZONE41	141	36	28.14	2.59	5.44	2.10
ZONE42	142	80	4.02	0.41	0.83	2.03
ZONE44	244	9	10.95	2.09	3.51	1.68
ZONE45	245	16	6.51	0.76	1.67	2.21
ZONE48	248	23	14.74	1.24	3.11	2.52
ZONE50	350	9	4.58	0.90	1.48	1.64
ZONE70	170	92	58.33	3.29	8.72	2.65
ZONE75	175	62	50.05	1.62	6.39	3.95
ZONE80	280	21	11.39	2.12	3.08	1.45
ZONE85	185	7	5.89	2.15	2.23	1.04
ZONE90	190	16	7.16	2.63	2.40	0.91
ZONE95	195	8	0.68	0.16	0.22	1.42

Table 14.4 – Summary statistics for the 1m channel sample composites by zone

Zone	Block Code	Number of samples	Max (Au g/t)	Mean (Au g/t)	Standard Deviation	CV
ZONE01	201	371	46.17	3.54	5.96	1.68
ZONE02	202	689	55.00	5.60	8.61	1.54
ZONE03	103	4	1.90	1.15	0.45	0.39
ZONE04	204	444	45.97	2.43	4.73	1.95
ZONE05	205	128	14.47	1.36	2.09	1.53
ZONE06	106	365	30.54	3.25	5.10	1.57
ZONE09	109	43	25.37	2.35	4.66	1.98
ZONE10	210	289	20.70	0.94	1.76	1.87
ZONE13	313	85	7.56	0.88	1.29	1.46
ZONE16	116	756	55.00	3.43	6.04	1.76
ZONE28	128	15	9.76	1.66	2.39	1.44
ZONE35	335	5	3.77	1.26	1.38	1.09

14.1.5 Variography

The same search ellipsoids used for the 2014 MRE were applied to the 2015 MRE since only a small amount of new information had been added.

The influence of the search ellipse for the Indicated category was fixed at two-thirds (2/3) of the influence of the search ellipse for the Inferred category. No 3D variographic study was done for the channel sample population. Instead, a sphere with a radius of 9 m was used for the channel samples to interpolate the grade of the Measured category; the size of the sphere was based on the dimensions of the mine drift at the Croinor deposit. Table 14.5 summarizes the orientations and ranges for the search and interpolation ellipses for the 1m DDH composites, as derived from the variography and the modified best-fit model of the previous variographic study.

Table 14.5 – Ellipsoid ranges derived from variography and the modified best-fit model for DDH samples

	Rotation			Range (m)		
Category	Z	Y	Z	X	Y	Z
Inferred	90	35	90	35	25	15
Indicated	90	35	90	20	15	9

14.1.6 Bulk density

A mean density value of 2.80 g/cm^3 was used in the mineralized zones and waste, based on a compilation performed in 2005. Bulk densities were used to calculate tonnages from the volume estimates in the resource-grade block model.

14.1.7 Block model geometry

A block model was established over a 1,570-m segment of the Croinor deposit to a depth of 545 m below surface. The limits of the block model are as follows:

- From 930 mW to 640 mE (314 columns x 5 m each)
- From 112 mN to 692 mN (232 rows x 2.5 m each)
- From level 3070 to level 2500 (228 levels x 2.5 m each)

The block model has parallel orientation with the Y-axis oriented along a north local grid azimuth of 21.9167°. The individual block cells have dimensions of 5 m long (X-axis) by 2.5 m wide (Y) by 2.5 m vertical (Z). The block size is adapted to the typical shape of the mineralized zones. In order to avoid overlaps in rock code identification, four (4) folders were generated within the same block model. Table 14.6 presents the interpolated zones and associated folders of the Croinor block model.

Table 14.6 – Croinor block model and associated mineralized zones

FOLDER	ROCK CODE	BLOCK CODE
Group A	Zone 3	103
	Zone 6	106
	Zone 9	109
	Zone 11	111
	Zone 14	114
	Zone 16	116
	Zone 21	121
	Zone 22	122
	Zone 24	124
	Zone 26	126
	Zone 28	128
	Zone 34	134
	Zone 41	141
	Zone 42	142
	Zone 70	170
	Zone 75	175
	Zone 85	185
	Zone 90	190
	Zone 95	195
Group B	Zone 1	201
	Zone 2	202
	Zone 4	204
	Zone 5	205
	Zone 7	207

FOLDER	ROCK CODE	BLOCK CODE
	Zone 8	208
	Zone 10	210
	Zone 15	215
	Zone 19	219
	Zone 25	225
	Zone 29	229
	Zone 30	230
	Zone 33	233
	Zone 36	236
	Zone 38	238
	Zone 44	244
	Zone 45	245
	Zone 48	248
	Zone 80	280
Group C	Zone 12	312
	Zone 13	313
	Zone 17	317
	Zone 20	320
	Zone 23	323
	Zone 27	327
	Zone 31	331
	Zone 35	335
	Zone 37	337
	Zone 39	339
	Zone 50	350
Group D	Zone 18	418
	Zone 32	432

14.1.8 Mineralized-zone block model

All blocks with more than 0.01% falling within the selected mineralized-zone solid were assigned the corresponding mineralized-zone rock code. A percent block model was generated reflecting the proportion of each block inside the mineralized solids. The percent block model was used in the resource estimation process. All remaining blocks were assigned code “999” for waste rock, “8” for underground development, “7” for open pit, or “10” for overburden.

14.1.9 Grade block model

A grade model was interpolated using the 1m composites from the conventional assay grade data capped to produce the best possible grade estimate for the defined resources in the Croinor deposit. Eleven (11) interpolation profiles were established for grade estimation. The interpolation profiles were customized to estimate grades separately within the Group A, Group B, Group C and Group D folders for the DDH population and the channel sample population. The method retained for the final resource estimation was inverse distance power six (ID6) with capping of high-grade values.

A point area workspace providing the X, Y, Z and gold data points was used for block interpolation in the grade model. The composite points in each of the point area files 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 for the 12 interpolation profiles used for grade estimation are those presented in Section 14.1.5 and Table 14.5 of this report.

Other specifications for the control grade estimation are as follows for all four folders:

- Inverse distance power six (ID6) interpolation method for data points;
- Minimum of one (1) and maximum of three (3) DDH sample points in the search ellipse for interpolation of the Indicated and Inferred categories and minimum of two (2) and maximum of twelve (12) channel sample points for interpolation of the Measured category;
- No limit of samples from any one DDH or channel sample;
- High-grade values capped.

These interpolation parameters were specifically selected for the purpose of comparing the 2015 MRE to the 2014 MRE.

14.1.10 Resource category block model

The Measured, Indicated and Inferred categories were identified by the interpolation process using the search ellipse criteria and specific interpolation parameters defined above. In order to generate the final resource grades for the block model, the Measured category interpolation profile for the Group A, B, C and D folders was executed first. In the second step, the Indicated interpolation profiles were executed for all four folders, but excluded all previously identified Measured blocks. The third step calculated the Inferred interpolation profiles excluding the already identified Measured and Indicated blocks. Subsequently, isolated blocks or series of blocks showing no spatial continuity in terms of grade and/or density of information were reclassified as Inferred. Inversely, isolated blocks or series of blocks showing good spatial continuity in terms of grade and/or density of information were reclassified as Indicated. Only blocks having an assigned rock code were interpolated for grade and resource categories. Figure 14.3 displays an isometric 3D view of resource categories defined for the Group A folder.

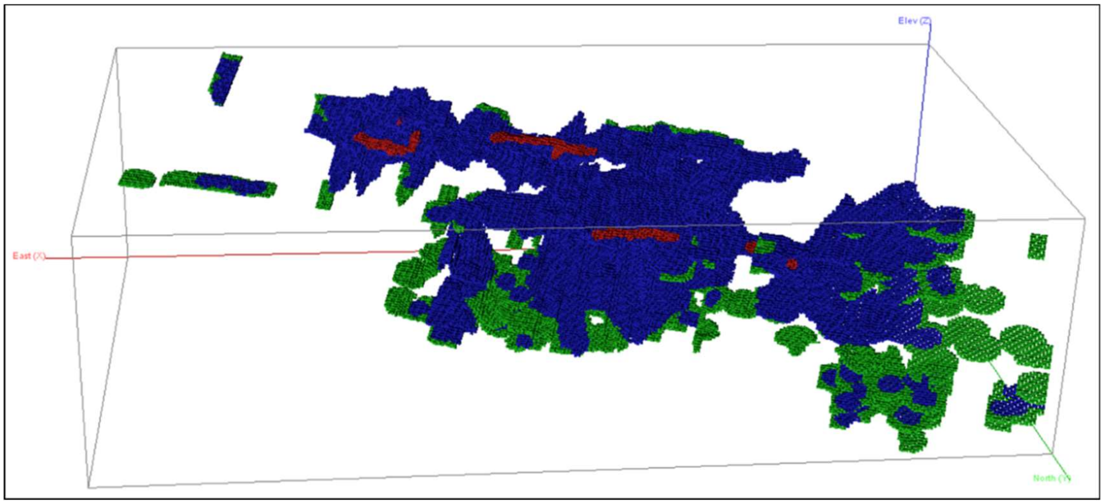


Figure 14.3 – Pseudo-longitudinal view, looking south – Group A resource categories (red = measured; blue = indicated; green = inferred)

14.2 Mineral Resource Classification, Category or 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 Standards on Mineral Resources and Reserves – Definitions and Guidelines*" ("CIM Definition Standards").

Measured Mineral Resource

That part of a Mineral Resource for which quantity, grade or quality, densities, shape, and 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.

14.3 Global Resource Estimation

InnovExplo believes the 2015 MRE can be classified as Measured, Indicated and Inferred resources based on the density of the processed data, the search ellipse criteria, and the specific interpolation parameters. The estimate is compliant with CIM Definition Standards. The resources were estimated using different gold cut-off grades and a minimum width of 1.8 m (true width). The selected cut-off of 4 g/t was used to determine the mineral potential of the deposit. Determination of the cut-off grade was based on the parameters presented in Table 14.7.

Table 14.7 - Parameters used to estimate the cut-off grade for the 2015 Mineral Resource Estimate

	Parameters	Unit	Value
	Exchange rate 1 USD = X CAD		1.30
	Gold price (American dollars)	USD/oz	1,100.00
GP	Gold price (Canadian dollars)	CAD/oz	1,430.00
Pc	Processing cost	$/t	25.00
r	Metallurgical recovery	%	97.5%
GMc	Global mining cost	$/t	155.00
	Total cost per metric tonne	$/t	180.00
	Resources cut-off grade	g/t	4.0

*Resource cut-off grade formula = 31.103487 * (Pc + GMc) / (r * GP)*

Table 14.8 and Table 14.9 display the results of the In Situ Mineral Resource Estimate for the Croinor deposit (51 lenses). The detailed results are presented by zone in Appendix IV. InnovExplo is of the opinion that the 2015 MRE can be used for a PFS.

Figure 14.4, Figure 14.5, Figure 14.6, and Figure 14.7 display the grade model for the different resource categories on cross-sections.

Table 14.8 – Results of the In Situ Mineral Resource Estimate (Measured, Indicated, and Measured+Indicated Resources) at different cut-off grades (inclusive of Mineral Reserves)

Cut-off	Measured Resources			Indicated Resources			Measured + Indicated Resources		
g/t	Tonnes	Au g/t	Oz Au	Tonnes	Au g/t	Oz Au	Tonnes	Au g/t	Oz Au
> 5.00	59,000	9.86	18,700	538,000	10.85	187,600	597,000	10.75	206,300
> 4.00	80,100	8.44	21,700	724,500	9.20	214,300	804,600	9.12	236,000
> 3.00	111,900	7.02	25,300	997,500	7.64	244,900	1,109,400	7.57	270,200

- *The independent and qualified persons for the mineral resource estimate, as defined by NI 43-101, are Karine Brousseau, Eng and Carl Pelletier, P.Geo., both of InnovExplo Inc. The effective date of the estimate is November 6, 2015.*
- *Mineral resources are not mineral reserves and do not have demonstrated economic viability.*
- *The mineral resources are presented inclusive of mineral reserves, meaning that mineral reserves were not subtracted from the resources presented herein.*
- *The results are presented undiluted and in situ. The estimate includes 51 gold-bearing lenses, some of which contain resources below the cut-off grade.*
- *The mineral resources were compiled using cut-off grades of 3.0 g/t, 4.0 g/t and 5.0 g/t Au; however, the official resource is at a cut-off grade of 4.0 g/t Au.*
- *The cut-off grade should be reviewed in light of prevailing market conditions (gold price, exchange rate and mining cost).*
- *A density of 2.8 g/cm^3 was used for the mineralized zones and the waste rock.*
- *A minimum true thickness of 1.8 m was applied, using the grade of the adjacent material when assayed, or a value of zero when not assayed.*
- *High-grade capping was done on raw data and established at 70.0 g/t Au for diamond drill hole assays and 55.0 g/t Au for underground channel sample assays.*
- *Compositing was done on drill hole sections and underground channel sample sections falling within the mineralized zones (composite = 1 metre).*
- *Resources were estimated using GEOVIA GEMS 6.7 software from diamond drill holes and underground channel samples using the ID6 interpolation method in a block model (block size 5 m x 2.5 m x 2.5 m).*
- *The Measured, Indicated and Inferred categories were defined using the parameters for the various passes.*
- *Isolated blocks in the Indicated category showing no spatial continuity in terms of grade and/or information density were reclassified from Indicated to Inferred.*
- *Blocks in the Inferred category showing good spatial continuity in terms of grade and/or information density were reclassified from Inferred to Indicated.*
- *Ounce (troy) = metric tonnes x grade / 31.10348. Calculations used metric units (metres, tonnes, grams per tonne).*
- *The tonnage estimate was rounded to the nearest hundred tonnes. Any discrepancies in the totals are due to rounding effect; rounding followed the recommendations in Form 43-101F1.*
- *InnovExplo is not aware of any known environmental, permitting, legal, title-related, taxation, socio-political, marketing or other relevant issue that could materially affect the mineral resource estimate.*

Table 14.9 - Results of the In Situ Mineral Resource Estimate (Inferred Resources) at different cut-off grades

Inferred Resources			
Cut-off g/t	**Tonnes**	**Au g/t**	**Oz Au**
> 5.00	1,010	9.22	30,100
> 4.00	160,800	7.42	38,400
> 3.00	263,800	5.86	49,700

- *The independent and qualified persons for the Mineral Resource Estimate, as defined by NI 43-101, are Karine Brousseau, Eng and Carl Pelletier, P.Geo., both of InnovExplo. The effective date of the estimate is November 6, 2015.*
- *Mineral resources are not mineral reserves and do not have demonstrated economic viability.*
- *The mineral resources are presented inclusive of mineral reserves, meaning that mineral reserves were not subtracted from the resources presented herein.*
- *The results are presented undiluted and in situ. The estimate includes 51 gold-bearing lenses, some of which contain resources below the cut-off grade.*
- *The mineral resources were compiled using cut-off grades of 3.0 g/t, 4.0 g/t and 5.0 g/t Au; however, the official resource is at a cut-off grade of 4.0 g/t Au.*
- *The cut-off grade should be reviewed in light of prevailing market conditions (gold price, exchange rate and mining cost).*
- *A density of 2.8 g/cm^3 was used for the mineralized zones and the waste rock.*
- *A minimum true thickness of 1.8 m was applied, using the grade of the adjacent material when assayed, or a value of zero when not assayed.*
- *High-grade capping was done on raw data and established at 70.0 g/t Au for diamond drill hole assays and 55.0 g/t Au for underground channel sample assays.*
- *Compositing was done on drill hole sections and underground channel sample sections falling within the mineralized zones (composite = 1 metre).*
- *Resources were estimated using GEOVIA GEMS 6.7 software from diamond drill holes and underground channel samples using the ID6 interpolation method in a block model (block size 5 m x 2.5 m x 2.5 m).*
- *The Measured, Indicated and Inferred categories were defined using the parameters for the various passes.*
- *Isolated blocks in the Indicated category showing no spatial continuity in terms of grade and/or information density were reclassified from Indicated to Inferred.*
- *Blocks in the Inferred category showing good spatial continuity in terms of grade and/or information density were reclassified from Inferred to Indicated.*
- *Ounce (troy) = metric tonnes x grade / 31.10348. Calculations used metric units (metres, tonnes, grams per tonne).*
- *The tonnage estimate was rounded to the nearest hundred tonnes. Any discrepancies in the totals are due to rounding effect; rounding followed the recommendations in Form 43-101F1.*
- *InnovExplo is not aware of any known environmental, permitting, legal, title-related, taxation, socio-political, marketing or other relevant issue that could materially affect the mineral resource estimate.*

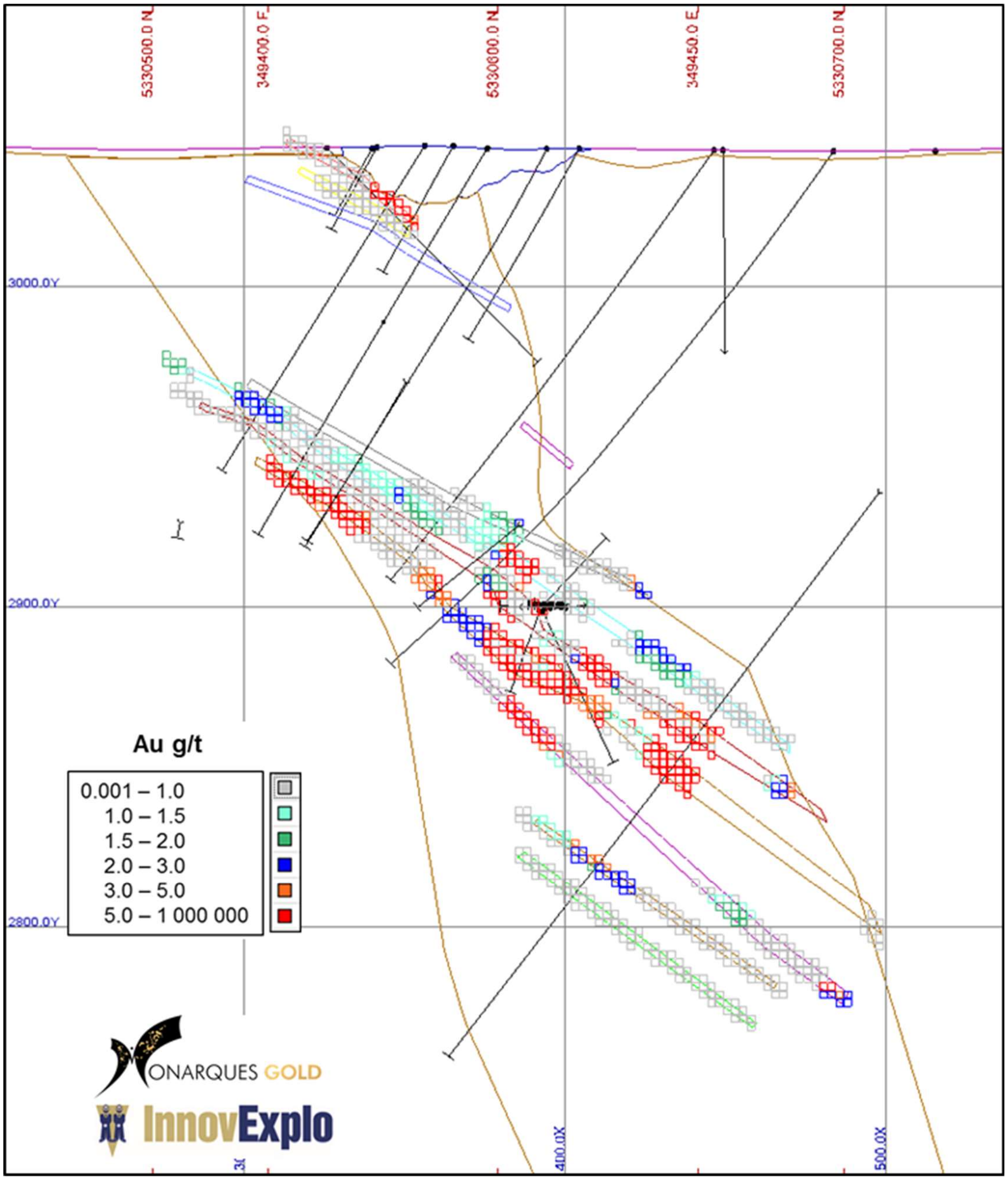


Figure 14.4 – All resource categories in the Croinor deposit showing the block model's gold grade attributes (Section 330W)

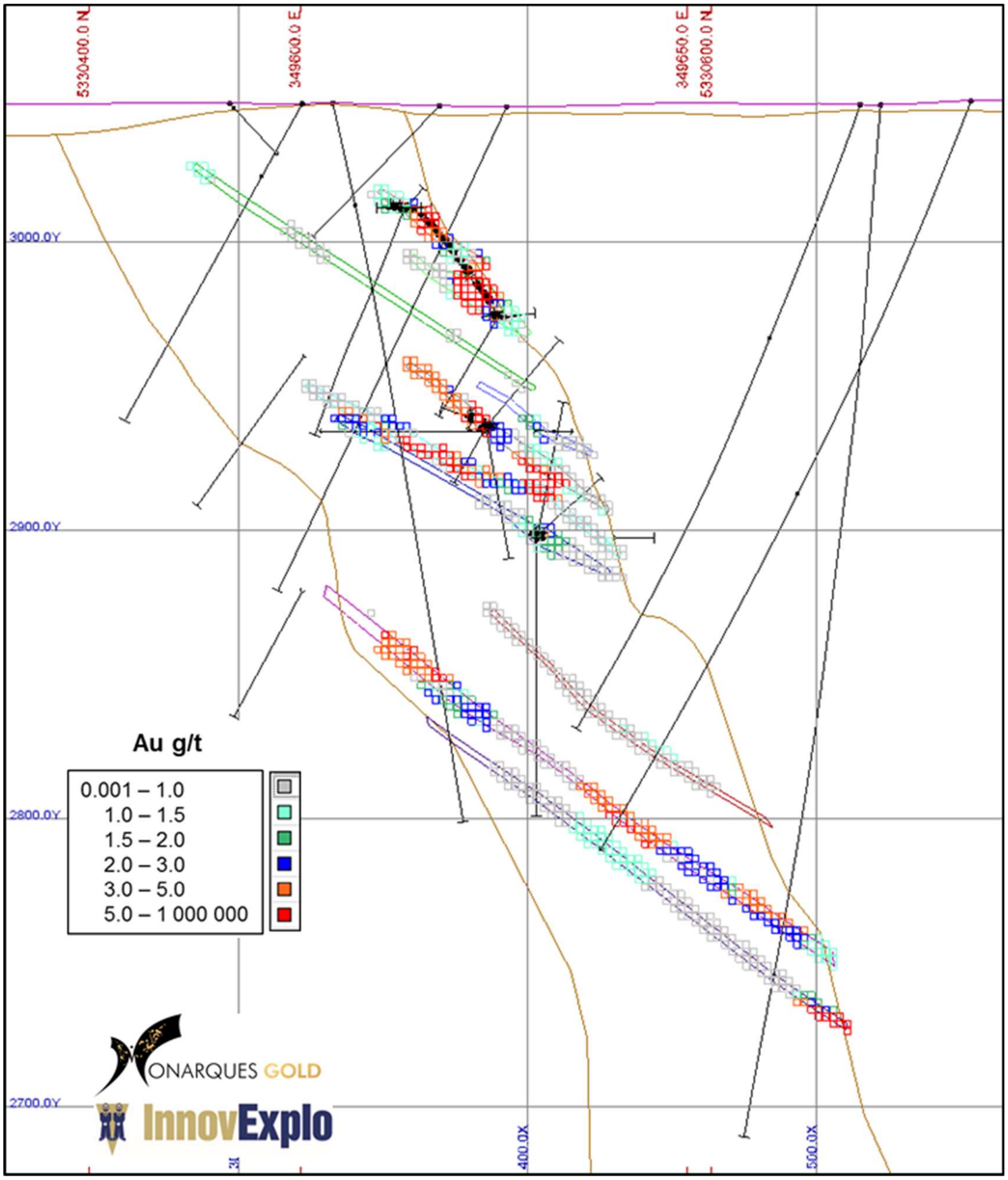


Figure 14.5 – All category resources of the Croinor deposit showing the block model's gold grade attributes (Section 120W)

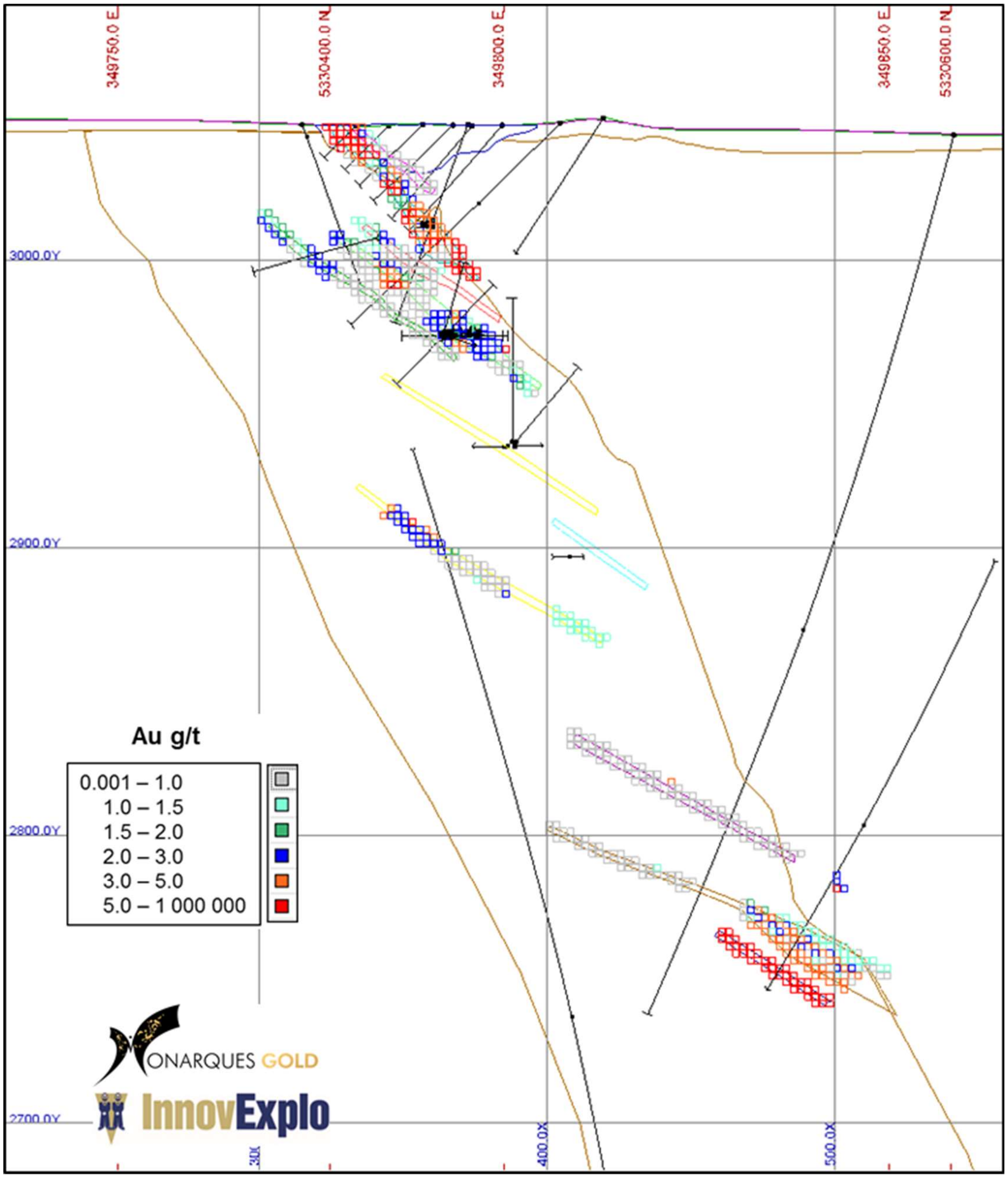


Figure 14.6 – All category resources of the Croinor deposit showing the block model's gold grade attributes (Section 70E)

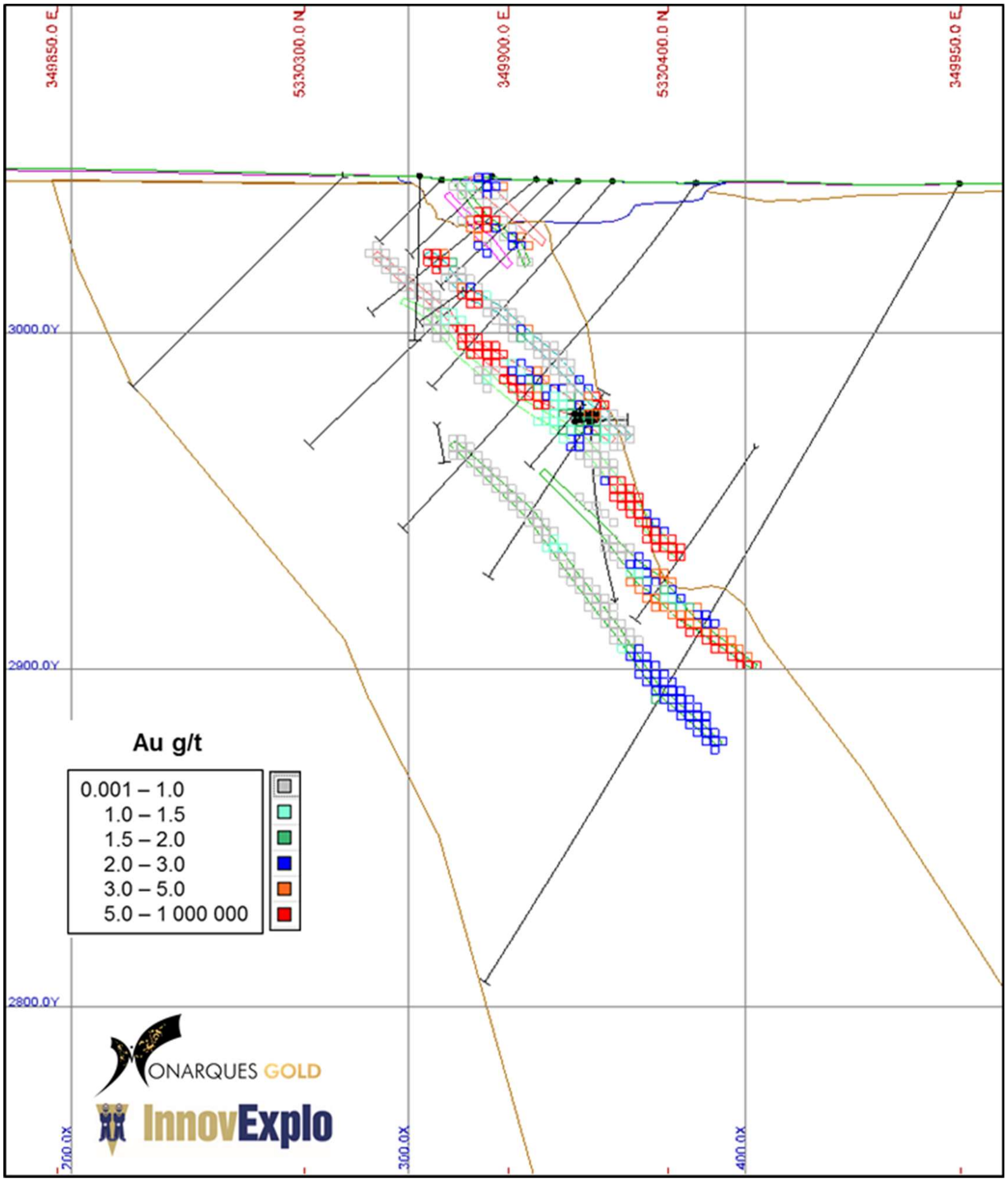


Figure 14.7 – All category resources of the Croinor deposit showing the block model's gold grade attributes (Section 200E)

15 MINERAL RESERVE ESTIMATES

This item presents the 2018 Mineral Reserve Estimate for the Croinor Gold Property. This mineral reserve estimate is based on the 2015 Mineral Resource Estimate presented in Item 14 and originally published in a report titled "Technical Report and 2015 Mineral Resource Estimate Update for the Croinor Gold Property", dated January 8, 2016 (Poirier et al., 2016).

The previous mineral reserve estimate for the Croinor deposit was in 2014, published in a report titled "*Technical Report and Updated Prefeasibility Study for the Croinor Gold Property (Amended)*", dated October 30, 2014 (Poirier et al., 2014). The 2014 mineral reserve statement (Table 15.1) was not updated in Poirier et al. (2016).

The 2018 mineral reserve estimate is based on a gold price of $1,657/oz, compared to a price of $1,430/oz used in 2014.

Table 15.1 – 2014 Statement of Mineral Reserves

Category	2014		
	Tonnes (t)	Grade (g/t Au)	Ounces (oz)
Proven	68,625	6.25	13,789
Probable	472 ,909	6.85	104,081
Total reserve	541,534	6.77	117,870

The main highlights of the 2018 analysis, compared to the preceding report, are as follows:

- 10% increase in proven and probable reserves;
- 16% reduction on the average operating cost (USD 639/oz);
- 13% reduction on all-in cost (USD 902/oz);
- Average annual production of 31,472 oz;
- 4 years of mine life;
- After tax IRR of 30%;
- The project still has excellent exploration potential.

15.1 Underground Estimate and Factors that may Affect Mineral Reserves

Mineable Shape Optimizer ("MSO"), a CAE Studio 5D software application, was used as a first step to determine the resources to be converted to reserves. According to specified stope parameters, MSO generates individual stope shapes from the block model. The final stopes were optimized manually, which was not the case in the preceding report.

Two mining methods appear to be the most suitable for the Croinor deposit:

- Sublevel long-hole retreat method;
- Room and pillar method.

The following parameters were applied for each method:

- Long-hole mining method:
  - Cut-off grade value: 4.42 g/t;
  - Minimum mining width of 1.8 m (stope thickness);
  - Mining dilution of 30% on hanging wall at a grade of 0 g/t;
  - Minimum slope wall angle of 43°;
  - Sublevel interval of 15 m.

- Room and pillar mining method:
  - Cut-off grade value: 4.57 g/t;
  - Minimum mining width of 1.8 m;
  - Mining dilution of 5% on hanging wall at a grade of 0 g/t;
  - Maximum mining width of 3 m (stope thickness);
  - Maximum slope wall angle of 45°.

Based on this mine plan, 62% of the reserves would be mined using the sublevel long-hole method, and 16% using the room and pillar method. The rest of the ore will come from the development activities (22%). The long-hole method was applied whenever possible given the lower mining cost and higher productivity.

15.2 Ore Recovery and Dilution

The ore recovery and dilution factor applied in the mine plan and reserve calculations were based on a rock geomechanics study and on common factors applied to the selected method.

In the long-hole method, smaller stopes were grouped into larger stopes. Pillar locations were determined manually according to guidelines provided by the geomechanical evaluation. A 95% recovery factor was then applied to the remaining tonnage. A dilution factor of 30% was applied on the hanging wall for the long-hole stopes. The dilution grade was set at 0.0 g/t.

The room and pillar stopes were evaluated using a recovery factor of 85%. In cases where stope size was smaller or equal to the stable dimensions determined by the geomechanical study, a 100% recovery factor was applied. A dilution factor of 5% was applied and grade was set at 0.0 g/t.

15.3 Cut-Off Grade Calculation

For the 2018 PFS, a new cut-off grade was calculated to better reflect the current change in gold price and mining cost. The reserve was then reviewed in order to take out the tonnage that is no longer economic.

For the calculation of this cut-off grade, a metal price of USD 1,252 at an exchange rate of 1.323 was used. Each stope that was close to the cut-off grade was evaluated individually to determine whether it would be included in the study or discarded. The remaining parameters used in the cut-off grade estimation are presented in Table 15.2.

Table 15.2 – Cut-off grade parameters

Parameters	Units	Mining Method	
		Long-hole	Room and pillar
Operating Cost	$/t	175.96	225.54
Mint cost	$/oz	5.00	5.00
Mill recovery	%	97.5	97.5
Mining dilution	%	30	5
Cut-off grade	g/t	4.42	4.57

15.4 Definitions

Mineral reserves were classified in accordance with the CIM Definition Standards for Mineral Resources and Mineral Reserves. Mineral reserves for the Croinor Gold Property incorporate appropriate mining dilution and mining recovery allowances for the selected mining method.

The CIM Definition Standards presented herein provide definitions and guidance on those definitions for Mineral Resource and Mineral Reserve and their confidence categories. The category to which a mineral resource or mineral reserve estimate is assigned depends on the level of confidence in the geological information available on the mineral deposit; the quality and quantity of data available on the deposit; the level of detail of the technical and economic information which has been generated about the deposit, and the interpretation of the data and information.

The *Mineral Resource, Mineral Reserve*, and *Mining Study* definitions are incorporated, by reference, into NI 43-101.

15.4.1 Modifying factors

Modifying factors are considerations used to convert mineral resources to mineral reserves. These include, but are not restricted to, mining, processing, metallurgical, infrastructure, economic, marketing, legal, environmental, social and governmental factors.

15.4.2 Mineral reserves

Mineral Reserves are subdivided in order of increasing confidence into Probable Mineral Reserves and Proven Mineral Reserves. A Probable Mineral Reserve has a lower level of confidence than a Proven Mineral Reserve.

A Mineral Reserve is the economically mineable part of a Measured and/or Indicated Mineral Resource. It includes diluting materials and allowances for losses, which may occur when the material is mined or extracted and is defined by studies at the PFS or FS levels as appropriate that include application of Modifying Factors. Such studies demonstrate that, at the time of reporting, extraction could reasonably be justified.

The reference point at which Mineral Reserves are defined, usually the point where the ore is delivered to the processing plant, must be stated. It is important that, in all situations where the reference point is different, such as for a saleable product, a clarifying statement is included to ensure that the reader is fully informed as to what is being reported.

The public disclosure of a Mineral Reserve must be demonstrated by a PFS or FS. Mineral Reserves are those parts of Mineral Resources which, after the application of all mining factors, result in an estimated tonnage and grade.

15.4.3 Probable mineral reserves

A Probable Mineral Reserve is the economically mineable part of an Indicated, and in some circumstances, a Measured Mineral Resource. The confidence in the Modifying Factors applying to a Probable Mineral Reserve is lower than that applying to a Proven Mineral Reserve.

Measured Mineral Resources can be converted to Probable Mineral Reserves if the confidence in the Modifying Factors is lower than that applied to a Proven Mineral Reserve.

15.4.4 Proven mineral reserves

A Proven Mineral Reserve is the economically mineable part of a Measured Mineral Resource. A Proven Mineral Reserve implies a high degree of confidence in the Modifying Factors.

Application of the Proven Mineral Reserve category implies the highest degree of confidence in the estimate. The term should be restricted to that part of the deposit where production planning is taking place and for which any variation in the estimate would not significantly affect the potential economic viability of the deposit.

15.5 Statement of Mineral Reserves

Table 15.3 presents the estimated proven and probable 2018 reserves, which total 129,292 oz after applying the appropriate mining recovery and dilution factors for the selected method.

Table 15.3 – 2018 Mineral Reserve Statement for the Croinor Gold Property

Category	2018		
	Tonnes (t)	**Grade (g/t Au)**	**Ounces (oz)**
Proven	166,540	5.33	28,543
Probable	436,454	7.18	100,759
Total reserve	**602,994**	**6.66**	**129,292**

- *The independent and qualified persons for the mineral reserve estimate, as defined by NI 43-101 are Laurent Roy, Eng., and Denis Gourde, Eng., of InnovExplo. The effective date of the estimate is January 19, 2018.*
- *The economic viability of the mineral reserve has been demonstrated.*
- *Results include 30% dilution for the long-hole stopes, based on a minimum mining width of 1.8 m, and 5% dilution for the room-and-pillar stopes, based on a minimum mining working height of 1.8 m.*
- *Results reflect an ore recovery of 95% for the long-hole stopes (pillars left in place are not included in the estimate) and 85% for the room-and-pillar stopes.*
- *Gold recovery at the Beacon Mill is 97.5%.*
- *The mineral reserves were compiled using cut-off grades of 4.42 g/t Au (long-hole) and 4.57 g/t Au (room and pillar). The appropriate cut-off grade will vary depending on the economic context and the operating parameters determined.*
- *A density of 2.80 t/m^3 was used.*
- *Ounce (troy) = tonnes x grade / 31.1035. Calculations used metric units (metres, tonnes, grams per tonne).*
- *The mineral reserves were estimated using a long-term gold price of CAD 1,656.68 per ounce (gold price of USD 1,252.21 per ounce and an exchange rate of 1.323 CAD/1 USD).*
- *Estimated tonnage and ounces were rounded to the nearest hundred. Any discrepancies in the totals are due to the effect of rounding; rounding followed the recommendations in Form 43-101F1.*
- *CIM guidance and definitions were followed in the preparation of this mineral reserve estimate.*
- *InnovExplo is not aware of any known environmental, permitting, legal, title-related, taxation, socio-political, marketing or other relevant issue that could materially affect the mineral resource estimate.*

Based on the information presented in sections 16 to 22 of this report, InnovExplo can demonstrate the economic viability of the proposed extraction and processing of the proven and probable reserves found within the mine plan. Overall, InnovExplo considers that its basic engineering project meets the requirements of a PFS.

InnovExplo and the QPs are not aware of any environmental, permitting, legal, title, taxation, socio-economic, marketing, political or other relevant issue that would materially affect the mineral reserve estimate. InnovExplo considers the present PFS to be reliable and thorough, based on quality data, reasonable hypotheses and parameters compliant with NI 43-101 requirements and CIM Definition Standards.

16 MINING METHODS

This section of the report describes the results of the proposed mine plan developed by InnovExplo for the present PFS update on the Croinor Gold Property. The mine plan is based on the 2015 Mineral Resource Estimate produced by InnovExplo (Poirier et al., 2016).

The 2015 measured and indicated resources were converted to proven and probable reserves, based on the parameters described in Section 15, for the underground mining of narrow subvertical veins. A large portion of the identified resources dip at less than 45°. This dip is unfavourable to long-hole mining since the broken ore does not flow easily on the footwall. It is also unfavourable for the room-and-pillar method as the dip makes it hard for workers to travel in the stope with the equipment and material.

The mine plan combines conventional and mechanized mining. The approach in this study has been to force the application of long-hole mining by adding dilution to ensure a minimum footwall angle of 43°. When this approach was not convenient, room and pillar mining was selected. In a first step, the use of MSO software made these stope analyses possible by calculating optimized stope shapes according to specified mining parameters. The final stopes were manually designed to optimize ore recovery.

The ore will be transported to surface using a combination of 3.5 yd^3 and 6 yd^3 LHDs and 30 t trucks. Waste material will either be brought to surface and be stored on the existing waste pad or used to backfill mined out stopes when possible.

The deposit will be accessed via a ramp. The existing ramp will be restored to level 40 and a new section will be excavated to access all resources. The production drifts will be accessed via crosscuts connecting to the ramp. A small portion of the resources will be mined using captive methods, however the haulage will always be mechanized.

16.1 Geotechnical Evaluation

The following geomechanical assessment and design recommendations are based entirely on the author's review of documents provided by Golder Associates Limited (Golder, 2004; Golder, 2009; Golder, 2011). Most of the information was taken from the crown pillar stability assessment (Golder, 2011). The data in this report pertains to a depth range of 0 m to 100 m below surface. The values reported by Golder (2004; 2009; 2011) have not been verified.

16.1.1 Rock mass strength parameters

All laboratory tests conducted on the various geotechnical domains were part of Golders's 2011 Crown Pillar Stability. This study comprised 6 Brazilian indirect tensile strength tests, 24 unconfined compressive strength tests with deformation measurements, and 16 triaxial tests. Only the tests for which failure occurred completely within intact rock have been conserved. Their results were used to estimate the Hoek-Brown strength criteria for the geological domains. The estimated properties for the Croinor gold mine are presented in the following tables. Diametric point load index tests were also performed on core specimens collected from geotechnical drill holes. The trends observed in the point load index values are consistent with the laboratory testing results.

Table 16.1 – Summary of the main intact rock properties for each geotechnical domain after Golder (2011)

Rock Unit	P (kg/m³)	σ_{ci} (MPa) (1)	T_0 (MPa)	m_i	E (GPa)	v
Quartz-veined zone	2,610	72	8.1	15	22.2	0.19
Diorites	2,850	86	13.4	15	24.8	0.16
Tuff	2,810	84	14.8	9	19.0	0.19

The value proposed for use in the Hoek-Brown strength criteria

Table 16.2 – Details of unconfined compressive strength for each geotechnical domain after Golder (2011)

Rock Unit	Average (MPa)	Minimum (MPa)	Maximum (MPa)	Std-Deviation (MPa)	Coefficient of Variation (%)	Number of Data
Quartz-veined zone	72	63	85	11	16	3
Diorites	86	51	135	32	37	6
Tuff	68	38	117	35	51	4

Table 16.3 – Details of tensile strength for each geotechnical domain after Golder (2011)

Rock Unit	Average (MPa)	Minimum (MPa)	Maximum (MPa)	Std-Deviation (MPa)	Coefficient of Variation (%)	Number of Data
Quartz-veined zone	-8	-8	-8	NA	NA	1
Diorites	-13	-15	-10	3	20	3
Tuff	-15	-16	-14	1	8	2

Additional tests for each rock type should be carried out to conform to IRSM minimal tests quantity standards at the feasibility level. These tests should include unconfined compressive strength with deformation measurements, triaxial tests and direct tensile strength or indirect tensile strength tests all conform to ASTM standards.

16.1.2 Structural data

The orientation of structures for the Croinor deposit are available from Golder's oriented core logging and mapping of the benches exposed in the Main and West pits in 2004. The five geotechnical oriented holes were drilled in 2010. The following tables presented the main joint sets orientation and the joints' properties for each geotechnical domain. All joint sets are both localized in the diorite and tuff lithologies. The quartz-vein zones, the diorite as well as the tuff have very similar properties. As expected, the shear zones have much more discontinuities and a much lower spacing. The fracture zone domain identified in Golder (2011) does not correspond to the stopping areas or to the adjacent hanging and foot walls. Accordingly, the fracture zones have not been considered for the stope dimensioning analysis

Table 16.4 – Summary of the main joint sets orientation after Golder (2011)

Joint set	Dip (°)	Dip Direction (°)	Description
Foliation	67	10	Major joint set
Joint 1	43	14	Major joint set
Joint 2	40	339	Major joint set
Joint 3	74	44	Minor joint set
Joint 4	9	121	Minor joint set

Table 16.5 – Summary of the joint properties for the main geotechnical domain after Golder (2011)

Geotechnical Domain	Spacing (m)		RQD		Jcon	
	Average	STD	Average	STD	Mode	Median
Quartz-veined zone	0.25	0.25	92	13	20	16
Diorites	0.33	0.33	95	8	16	16
Tuff	0.20	0.20	90	13	20	16
Shear zone	0.08	0.20	62	14	16	16

Table 16.6 – Summary of the joints condition for the main geotechnical domain after Golder (2011)

Geotechnical Domain	Jn		Jr		Ja	
	Min	Max	Mode	Median	Mode	Median
Quartz-veined zone	6.0	9.0	2.0	2.0	1.0	1.0
Diorites	6.0	9.0	1.0	1.5	1.0	1.0
Tuff	6.0	9.0	2.0	2.0	1.0	1.0
Shear zone	9.0	12.0	2.0	2.0	1.0	2.0

16.1.3 Geomechanical classification

The typical and lower bound values of Q' and RMR1976, as determined by Golder (2011), are summarized in Table 16.7.

Among the geomechanical classifications commonly used to describe the rock masses quality, both the Rock Mass Rating (RMR) (Bieniawski, 1989) and the Rock Quality Index (Q) (Barton, Loset, & Lunde, 1974) have been estimated for the Croinor deposit. Moreover, some RQD (Deere & Deere, 1988) have been measured from specific exploration drill holes. The software Leapfrog was used to create boundaries of various RQD intervals in the rock mass to determine whether low RQD areas could be problematic in the mining area. It appears that RQD in the footwall of the diorite domain is greater than the RQD of its hanging wall. Near the lenses, rocks are almost entirely of very good to excellent quality.

The Q and RMR classifications presented below are estimated from the data obtained from the Golder (2011). The Q classification is calculated using the Q' value and Jw of 1.0 and a SRF of 1.0 for the typical case (associated with the stress at 175 m depth) and an SRF of 2.5 for lower bound (associated with the stress at 300 m depth). The GSI values are estimated from the average of the two relationships presented by Hoek, Carter and Diederichs (2013).

$$GSI = Jcond_{89} + {RQD}/{2} \qquad (16.1)$$

$$GSI = \frac{52 \times {J_r}/{J_a}}{1 + {J_r}/{J_a}} + {RQD}/{2} \qquad (16.2)$$

Table 16.7 – Summary of the rock mass classification for the main geotechnical domain

Geotechnical Domain	Q'		Q		RMR 1976		GSI estimation
	Typical	Low. bound	Typical	Low. bound	Typical	Low. bound	
Quartz-veined zone	20	12	20	5	68	58	71
Diorites	16	9	16	4	67	63	74
Tuff	20	10	20	4	66	60	70
Shear zone	5	5	5	2	52	52	56

16.1.4 Stress

No stress measurements have been conducted in the Croinor deposit. For this reason, Golder (2011) adopted in-situ stresses for the Croinor mine. The minor principal stress has been assumed to be vertical and the major principal stress is assumed to trend approximately perpendicular to the deposit (NNE-SSW).

Major Principal Stress:	$\sigma_1 = 2.6\ \sigma_v$	(16.3)
Intermediate Principal Stress:	$\sigma_2 = 1.8\ \sigma_v$	(16.4)
Minor Principal Stress ($\sigma_3 = \sigma_v$):	$\sigma_3 = 0.0275 \times \text{depth (m)}$	(16.5)

At the maximum mining depth of 305 m and with a rock mass strength of 72 MPa to 84 MPa, induced stresses are likely to cause some spalling around excavations. The ratio of induced stress to strength for development excavations at 305 m of depth is anticipated to vary from 0.47 to 0.55. These values exceed the threshold of the induced stress to strength ratio corresponding to the onset of stress-driven cracking (0.33 to 0.4; Martin, 1993).

16.1.5 Crown pillar

Based on the available geotechnical information, Golder (2011) performed a series of empirical and numerical analyses to assess the minimum crown pillar thickness over the projected stopes for the Croinor mine, including:

- Critical Scaled Span Analysis
- PHASE² Numerical Analyses

The purpose of the crown pillar assessment was to evaluate the minimum thickness of crown pillar that should be left in place over a parametric stope. Due to the great number of planned stopes of various geometries, thus generating an even greater number of proposed crown pillars. Golder (2011) recommended the crown pillar thicknesses presented in Table 16.8. This study considers that all excavations are in the diorite units, quartz-veined zone units and tuff units.

Table 16.8 – Recommended crown pillar thicknesses for the Croinor gold mine (Golder, 2011)

Stope Dip	Method	Crown Pillar Thickness (M)
< 40° - 45°	Room and Pillar	20
43° - 55°	Long-hole	20
≥ 55°	Long-hole	20-25

16.1.5.1 Long-hole stopes

Veins dipping ≥43° are assumed to be mined by long-hole methods. The long-hole stopes will be mined from 3 m high levels, spaced at 15 m intervals, along dip. It is assumed that a part of stopes will be backfilled, the other ones will be left open. Some pillars will be left between panels and mining horizons.

Long-hole stope dimensions were analyzed using the Mathews-Potvin stability graph method. The analysis assumes:

- Stopes are in the diorite, quartz-veined zone or tuff geotechnical domains;
- Stopes dip at >43°;
- Lower bound Q' values are:
  - 9 for the diorite;
  - 10 for the Tuff;
  - 12 for the quartz-veined.

- Hanging wall almost parallel joint set:
  - 43° for J1;
  - 67° for Foliation.

The worst-case scenario is selected to make the final design of the long-hole stope panel dimensions. They are based on:

- Lower bound value of Q'=9;
- Stable-without-support criterion.

The stope/vein dip has a significant impact on the hanging wall stability. As the dip becomes steeper, the stable panel dimensions increase (i.e., larger hydraulic radius, HR). the following design criteria yield hydraulic radius of 5.9 m for 43° stopes and 6.8 m for 60° stopes. The level interval was assumed to be fixed at 15 m (along dip). All stopes with a greater hydraulic radius should be, at least, partily backfilled. In that way, the open stopes will respect the maximum design hydraulic radius. The following elements are not considered in the Mathews-Potvin stability graph analysis:

- Undulations which is the variations in geometry due to changes in vein orientation and/or dip. Stopes are assumed to have a regular rectangular geometry and any variations in geometry will negatively impact stability.
- Undercutting of stope hanging walls and footwalls due to oversized development. Undercutting may create an additional release surface for slabbing. Cabling may be required for wall control in these situations.

This study has not considered the dimensioning and stability of the pillars between long-hole panels.

16.1.6 Room and pillar stopes

The proposed room and pillar stope configuration is based on typical industry practices for currently operating mines in deposits with similar vein geometry.

The typical mining height will vary from 1.8 m (minimum) to 3.0 m (maximum). The 3.0 m maximum reflects safety and operational constraints. For mineralized zones of more than 3.0 m, either selective mining or backfilling and multiple cut methods should be considered. The proposed room and pillar dimensions are summarized in Table 16.9 and Figure 16.1.

Table 16.9 – Proposed room and pillar stope configuration

Items	Configuration
Rooms	6.5 m wide
Pillars	3 m wide x 5 m long x 1.8 – 3.0 m high
Maximum Span	8.85 m (intersection)
Mining Height	1.8 – 3.0 m

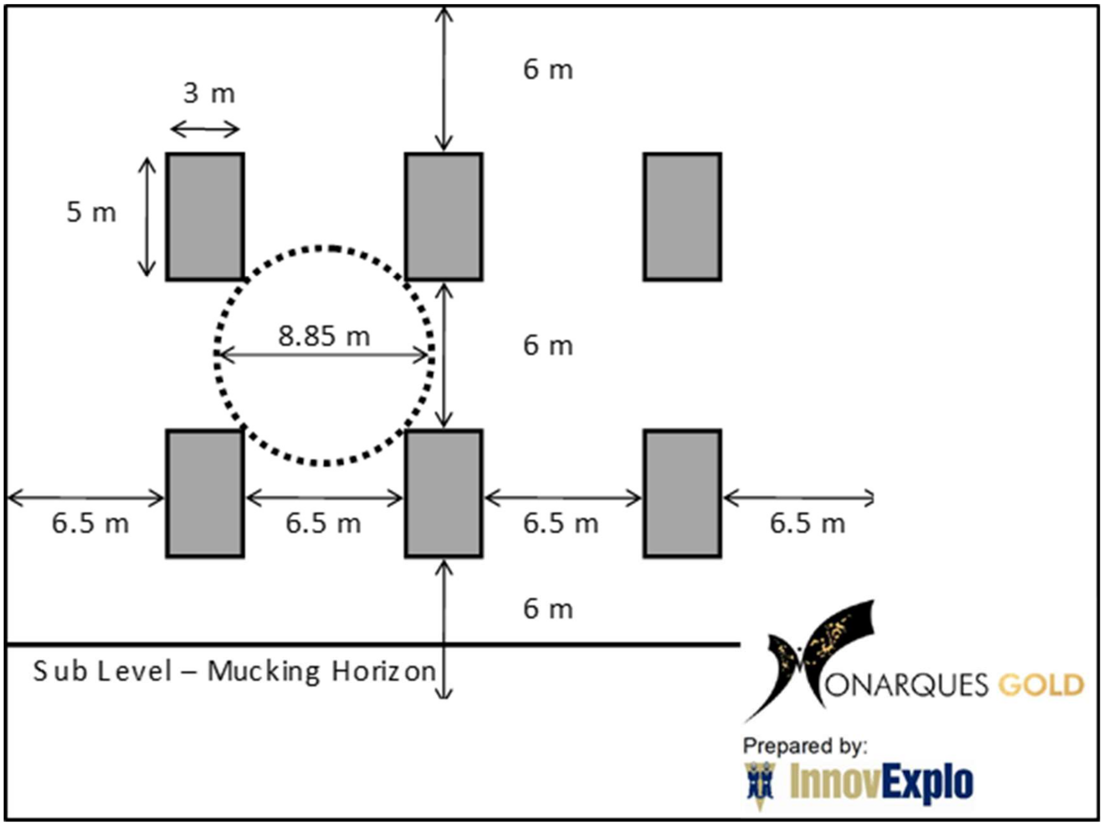


Figure 16.1 – Proposed room and pillar stope configuration (plan view)

The stability of the excavations was analyzed using the underground entry-type excavation span design method (Lang, 1994; Wang et al., 2000). This method empirically determines the stable span for an excavation supported by primary support. The stability of a given excavation span is assessed based on rock mass classification (RMR), to which corrections are applied for the presence of unfavourable structures (flat-lying joints and dykes) and the induced stress conditions.

Pillar stability was then verified using the methodology proposed by Esterhuizen, Dolinar and Ellenberger, (2008) for stone mines. For this project, we assumed no large discontinuities per pillar. The LDF factor is therefore equal to 1.0. This factor should be reviewed at the feasibility study stage.

This methodology is based on empirical approaches and estimates unstable pillars in the long term. This is mainly due to the largely unfavorable inclination of the deposit that creates major shear stresses and increases the axial stress compared to a case with a vertical pillar. The second issue is the low unconfined compressive strength of the intact rock.

The equation used provides an upper limit of the pillar stress and does not consider the presence of barrier pillars or solid abutments that can reduce the average pillar stress. Also, the data in this report pertains to a depth range of 0 m to 100 m below the surface. It is estimated that the rock quality will improved with depth. Moreover, the hold time is a difficult factor to estimate and has not yet been analyzed. To obtain a recovery factor of 85% with stable room and pillar, a modified mining sequence is proposed.

The proposed room and pillar mining sequence would create pillars of 8.6 m by 5.0 m as illustrated on Figure 16.2. This pillar geometry will be stable in the long term. When all the lens is mined this way, the pillars are slashed in a retreat mining sequence from the top to the mucking horizon. The size of the stable pillars is then reduced to get a final pillar of 3.0 m by 5.0 m and a recovery factor of 85%. It is estimated that this pillar configuration will be sufficient to provide stable pillar in short term.

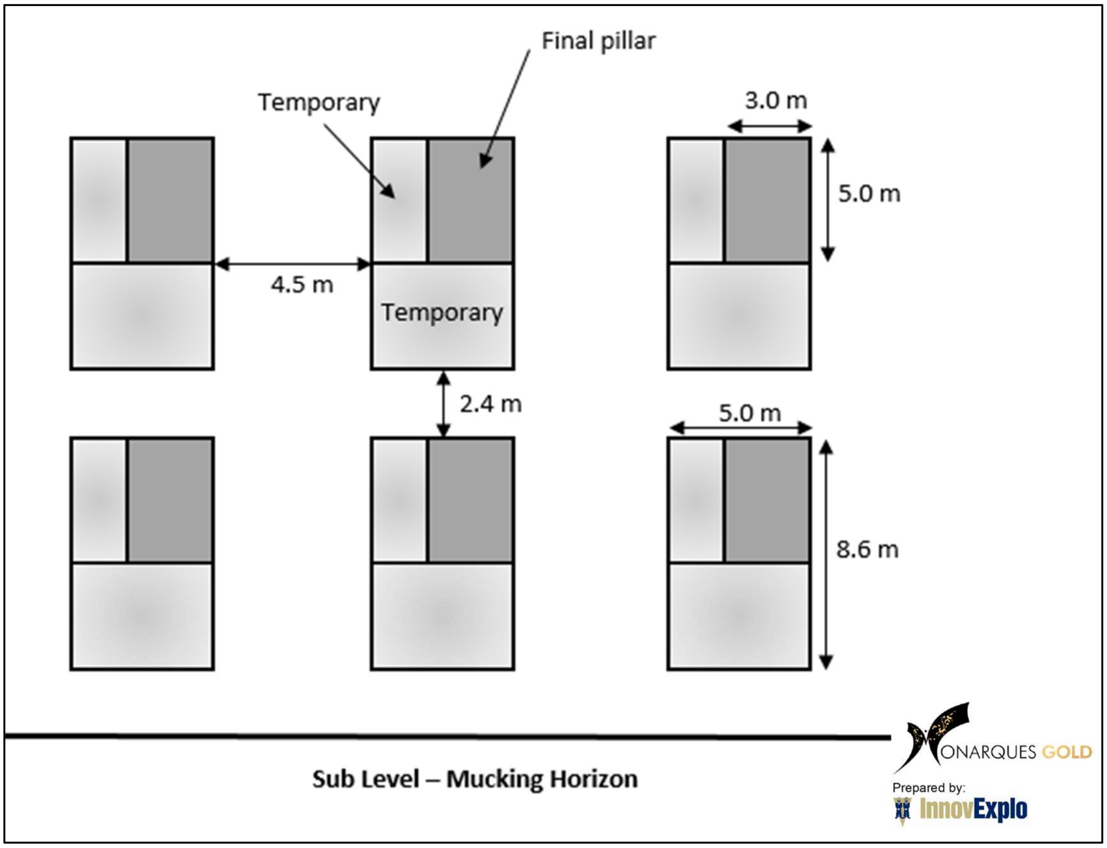


Figure 16.2 – Proposed room and pillar stope mining sequence (plan view)

16.1.7 Dilution

The revised dilution graph made by Capes (2009) was used to estimate the dilution for the long-hole stopes. For the two cases analyzed, a dilution of about 0.5 m was estimated for the hanging wall and none or almost none for the footwall. This dilution, for the narrowest stopes, is related to an overall dilution factor of 30%.

For the room and pillar stopes, the development in the mineralized zone is assumed to stop before reaching the hanging wall and footwall contacts. Therefore, the dilution caused by blasting will be in mineralized material with the same NSR value of the mineralized zone. With these assumptions, it is assumed that the overall dilution should be about 5%. However, it is possible that this approach reduces the recovery factor. Thus, it is recommended that these assumptions be revised at the feasibility level to use the most suitable method for both minimizing dilution and maximizing recovery while maintaining a reliable approach.

16.1.8 Typical ground support patterns

These preliminary ground support recommendations are based on standard industry practices. More detailed recommendations will require additional information regarding joint spacing and continuity.

Based on Farmer and Shelton (1983), the following proposed bolt lengths for the back are based on the excavation span (Table 16.10). The bolt length is calculated from the formula (16.6).

$$\text{Bolt Length:} \quad 0.3 \times \text{Span} \tag{16.6}$$

Table 16.10 – Bolt length as a function of span

Bolt length*		Maximum Span	
ft	m	ft	m
4.0	1.2	13.1	4.0
5.0	1.5	16.5	5.0
6.0	1.8	19.7	6.0
7.0	2.1	23.0	7.0
8.0	2.4	26.2	8.0

** Bolt length indicates the length installed within the rock and excludes any threads or bar outside of the drill hole.*

The standard support (Figure 16.3 and Figure 16.4) consists of:

- Back:
  - Rock bolts with length based on excavation span;
  - Bolting pattern of 1.2 m by 1.2 m (4’ by 4’);
  - Screen based on excavation height. Screening of the back to 1.5 m above base-of-rail (BOR) is recommended for all excavations 3.5 m or higher.

- Wall:
  - Number of rows of rock bolts based on excavation height.
  - Rock bolts length of 1.2 m to 1.5 m);
  - Bolting pattern of 1.2 m by 1.2 m (4’ by 4’).

The screen applied on the back is intended as a safety measure where back height will make routine inspections and scaling more difficult.

Once additional structural and rock quality information are available, it will be possible to optimize the ground support standards (e.g., possibly eliminate wall bolts for excavations less than 3 m high).

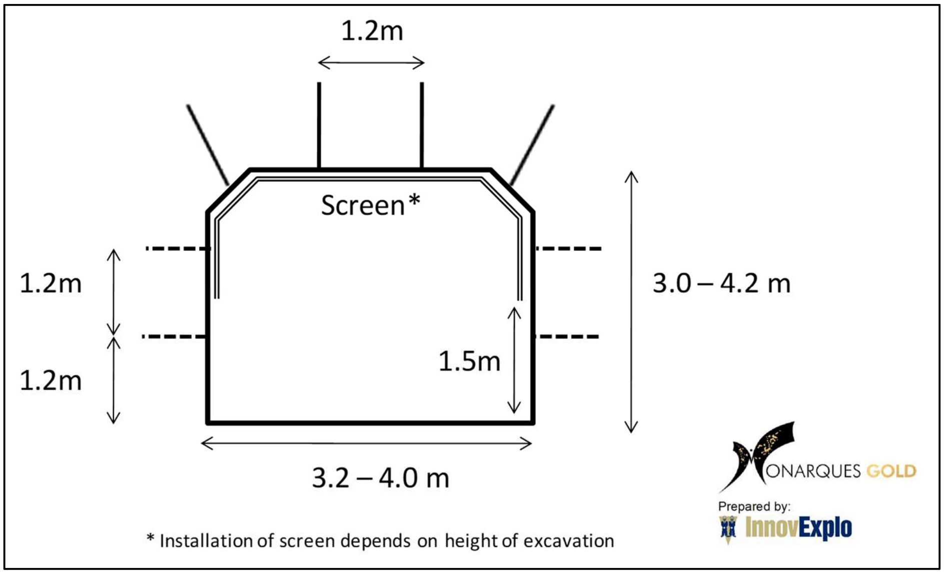
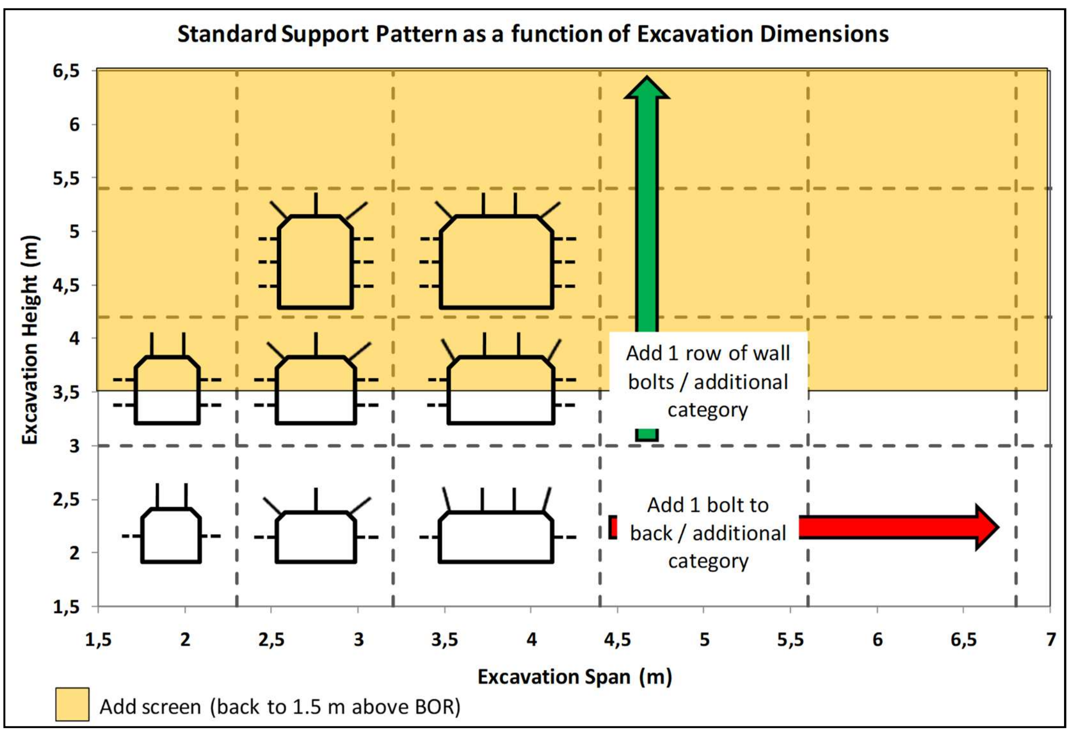


Figure 16.3 – Standard support pattern



(Note: The transitions between bolting patterns are suggested guidelines and will vary slightly depending on the degree of arching of the excavation back.)

Figure 16.4 – Ground support guidelines as a function of excavation span and height

16.1.9 Recommendation for future work

Values taken from the crown pillar study (Golder, 2011) have been assumed to be valid from surface to a depth of 100 m. In general, one would expect rock mass conditions to improve with depth. New laboratory tests should be done at depths greater than 100 m to confirm this assumption. These tests will be key to estimating the strength of the pillars and the recovery factor of these stopes. Also, it is recommended that all assumptions (rock mass strength, classification and structure) be verified once access to underground becomes available. Detailed analysis (3D numerical modelling) of the proposed stope configuration is recommended to proceed to a feasibility study. Such an analysis would examine the stability of the pillars between the long-hole panels and within room and pillar stopes, as well as examining sequencing and stope interactions. The numerical analysis will also provide a better estimation of the room and pillars stability and the short-term stability associated with the proposed retreat mining sequence.

16.2 Mining Method

As mentioned earlier, two mining methods are proposed to accommodate the geometry of the mineralization: long-hole and conventional room and pillar.

16.2.1 Long-hole method

The long-hole stopes will be mined from 3-m-high levels at 15 m vertical intervals. For stope heights exceeding 13 m, the maximum stope panel was defined as 15 m long. It is assumed that only a small number of stopes will be backfilled and that some pillars will be left between panels and mining horizons. For stope heights of 13 m or less, longer stope panels were considered on a case by case basis.

The method consists of drilling and blasting 64 mm diameter holes in a pattern parallel to the walls. Holes are drilled upward or downward depending on the context.

The development sequence consists of accessing the mineralized zone and excavating a level cut in the mineralized zone. The mining sequence will require the excavation of a raise opening, which is either developed as a conventional raise or as a drop raise when a top access is available. Once development is completed, the mineralized zone is surveyed with precision for the preparation of the drilling and blasting pattern.

16.2.2 Room and pillar

In some areas, room and pillar was a technically better choice than long-hole due to the ore body angle lower than 43°. The proposed room and pillar stope configuration is based on typical industry practices for currently operating mines in deposits with similar vein geometry. The typical mining height will vary from a minimum of 1.8 m to a maximum of 3.0 m.

The room and pillar mining method entails the excavation of a series of rooms following the vein, leaving pillars or columns of rock in place to help support the mine roof. In conventional room and pillar mining, drilling is achieved using hand-held drill equipment and holes are loaded with explosives. Bolts and cables are then installed in the mine roof to ensure the roof is properly supported. The broken rock is scraped to either a raise or a draw point where it is taken with a LHD to be hauled to surface.

16.2.3 Dewatering

Prior to any underground rehabilitation or development work, the existing mine infrastructure will have to be dewatered. The total estimated volume of water present in the mine and the two open pits is 504,082 m^3.

- East pit: 270,700 m^3;
- West pit: 211,900 m^3;
- Underground opening: 21,482 m^3.

Water will be pumped from the East and West pits. Initial dewatering is expected to be carried out at a rate of 4,800 m3/day, resulting in an approximate dewatering period of 92 days. Mine water will be pumped and processed through dewatering bags to clarify the water and collect the mine sludge. Discharge from the dewatering bags will be directed to the existing settling pond. The pond effluent will be monitored and managed in accordance with MMER and Directive 019 requirements.

16.3 Underground Mine Design

The Croinor Gold Mine Project has been split in three main zones for the planning: West, Central and East. The central zone is limited approximatively at the coordinates 349450E (West zone limit) and 34900E (East zone limit) and include the shaft also. The Figure 16.5 below shows the delimitations for each zone.

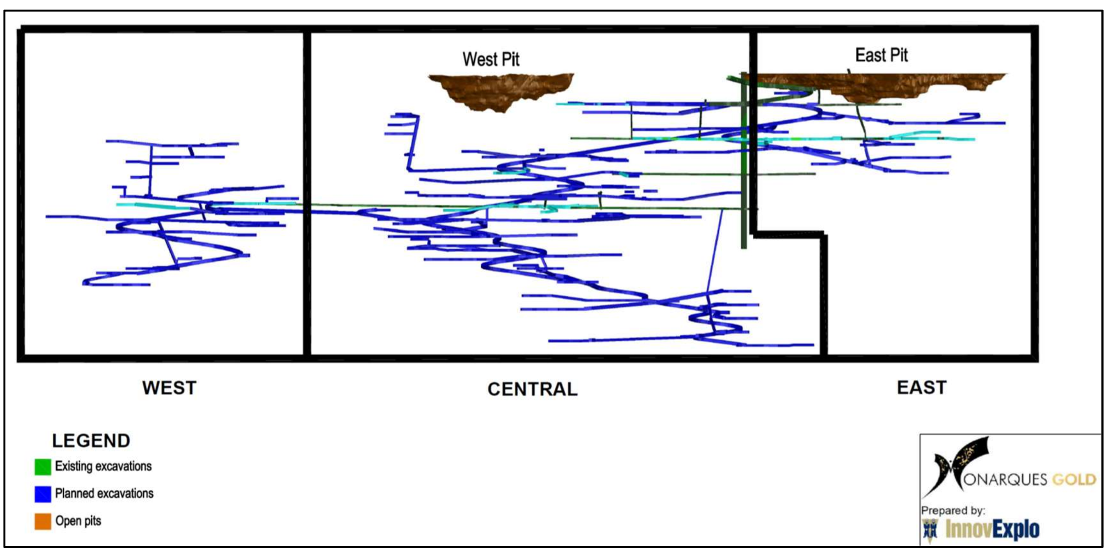


Figure 16.5 – Longitudinal view, looking north

In the following paragraphs, the West (W), Central (C) and East (E) zones will be designated by their first letters. That convention will follow the name of the level for specifications purposes as for example: L095-E standing for the level 095 in the East zone.

16.3.1 Primary development

The mine design incorporated in this study takes advantage of existing infrastructure when possible and appropriate. Underground access will use a single ramp developed from the existing ramp at level 040. The existing ramp will be extended to a final depth of 305 m (L305-C), connecting to the existing levels and to the new sublevels. The Project's reference elevation (0) is set at the surface of the shaft, which corresponds to 3,047.95 m.

The levels are developed at 15 m vertical intervals along dip. The mine plan requires that portions of the existing levels be enlarged. Each level or sublevel is accessed using 4 m high by 4 m wide crosscuts from the main ramp or secondary ramp. The opening dimensions are planned as follows:

- Ramp: 4.5 m high by 4.5 m wide;
- Production drift: 3.0 m high by 4.0 to 6.0 m wide;
- Crosscut: 4.0 m high by 4.0 m wide.

The ore and waste will be hauled by LHDs from the production area to either a remuck bay or to a truck loading points that will be excavated close to the ramp. The material will then be loaded in 30 t trucks to be hauled directly to surface.

The shaft will be rehabilitated to level 150 and will serve as the main emergency exit as well as for the ventilation intake. Short ventilation raises will be required as development progresses to accommodate the various production areas.

16.3.2 Secondary development

Three permanent refuge are planned on levels L095-C, L170-W and L200-C. Refuge dimensions are of 3.5 m high by 5.0 m wide by 9.0 m long.

Water travels by gravity through drain holes from the production levels where sumps are not planned to the levels where there are. There will be three pumping stations to collect water inflow on levels L120-C, L160-W, L260-C. Pumping stations dimensions are of 3.5 m high by 4.5 m wide by 16 m long. From the pumping stations, the water will flow by stages to the surface.

The underground electrical distribution will be assumed by four mobile electric station. Electric stations could be located on levels L040C, L065C, L120C, L150C, L160W and L260C, some of them will move to follow mining operation. Electrical station dimensions are of 3.35 m high by 6.0 m wide by 5.0 m long.

One powder magazine of dimensions of 4 m high by 4 m wide by 50 m long will also be located at L140C, which will contain the explosives required to meet the needs of operations. Figure 16.6 shows the position of the abovementioned infrastructures.

16.3.3 Stope development

In general, the long-hole stope level or sublevel will be excavated directly in the mineralized zones. In some cases, to allow for a better mine sequencing, bypass drifts and drawpoints have been considered to preserve access to future resources. The long-hole stopes will be mined by retreating and the broken material will be collected in the lower level or sublevel. The room and pillar stopes are accessed with crosscuts that normally serve as a drawpoint for the ore. When the stopes are located at an elevation higher than the level, short raises will be developed and separated into two compartments by a timber wall, one side to serve as a manway and the other to be used as a chute.

16.4 Mine Sequence

Mine development will be accelerated in the first two years of the project to provide a degree of flexibility in terms of access, which should facilitate scheduling during the production period. The development sequence will ensure that many stopes are available for mining at many different locations at any given time. However, some of the stopes can only be mined at the end of the mine life since they are located directly over or under the level.

16.5 Mining Rate

The production rate will start at an average of 446 tpd during the first month following the start of the preproduction, and will slowly ramp up to an average of 575 tpd. The overall project mine life is expected to be four years, including:

- Year 1: 12 months of pre-production;
- Year 2: 12 months of full production;
- Year 3: 12 months of full production;
- Year 4: Seven months of full production and one additional month of ore processing (total of 8 months).

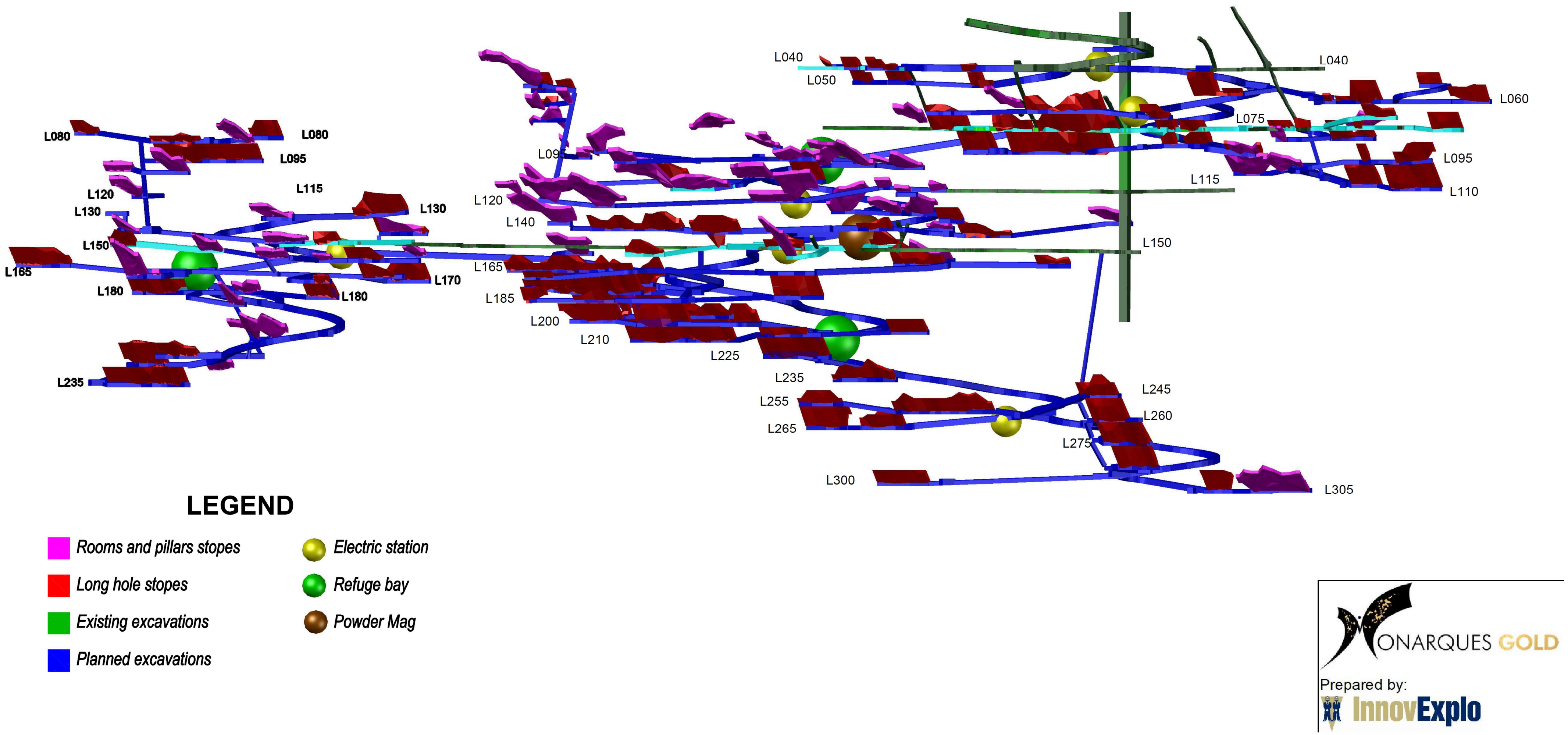


Figure 16.6 – Longitudinal view, looking north

The mine plan should be achievable given the flexibility and number of available work faces. Table 16.11 summarizes the yearly tonnage distribution according to the mine plan.

Table 16.11 – Mine plan tonnage distribution

Mine production (Ore)	Units	Year 1	Year 2	Year 3	Year 4	Total
Development	t mined	35,907	57,502	30,026	9,731	**133,165**
Grade	g/t	4.44	5.34	4.32	2.89	**4.69**
Long Hole	t mined	22,132	107,484	128,904	116,488	**375,007**
Grade	g/t	6.30	7.26	6.84	6.81	**6.92**
Room & pillar	t mined	4,362	36,657	50,984	2,818	**94,821**
Grade	g/t	6.18	8.90	8.36	6.42	**8.41**
Total mined	t mined	62,401	201,642	209,914	129,036	**602,994**
Grade	g/t	5.22	7.01	6.85	6.50	**6.66**
Total milled	t milled	62,401	201,642	209,914	129,036	**602,994**
Grade	g/t	5.22	7.01	6.85	6.50	**6.66**
Recovery	**%**	**97.50%**	**97.50%**	**97.50%**	**97.50%**	**97.50%**
Gold Produced	**oz**	**10,211**	**44,291**	**45,079**	**26,308**	**125,889**

16.6 Mine Plan Schedule Criteria

Contractors will execute the following work:

- mine development;
- mine production;
- ore haulage activities.

A small office crew will be hired to provide the contractors with supervision, technical and administrative support.

The performance criteria for developing the mine plan are as follows:

- Ramp development (single face): 5 m/d;
- Drift development (multiple face): 8.3 m/d;
- Sublevel development: 2.4 m/d;
- Vertical development (raises): 2.4 m/d;
- Alimak raise: 2.5 m/d.

16.7 Development and Production Schedule

A preliminary development and production schedule was developed based on the existing underground development and mineral resources discussed in Item 14. Development and production activities are based on a schedule of:

- Two 10-hour shifts per day;
- Seven days per week, for a total of 14 shifts per week;
- Average of 30 days per month, for a total of 360 days per year.

The underground mine design provides a mine plan producing 602,994 t of ore grading 6.66 g/t. Using a mill recovery of 97.5%, this translates to a production of 125,889 oz of gold over the mine life.

According to the mine plan, 62% of the tonnage will be from long-hole, 22% will be from sublevel development and 16% will be mined by room and pillar.

The mine plan includes all development required to access and mine the mineralized zones. Estimated development quantities are presented in Table 16.12 and the production schedule is presented in Table 16.13. Figure 16.7 provides a general overview of the development and illustrates the mineable zones.

The reserves included in the mine plan were obtained by applying the mining recovery and dilution factor presented in Item 15.

Table 16.12 – Croinor mine development quantities

Mine development (waste)	Pre-production	Production			Total
	Year 1 (m)	Year 2 (m)	Year 3 (m)	Year 4 (m)	
Development CAPEX					
Main ramp (4.5 m by 4.5 m)	1,582	1,796	-	-	**3,378**
Drift (4 m by 4 m)	881	1,461	115	-	**2,457**
Drift enlargement (4 m by 4 m)	52	-	-	-	**52**
Raise	26	229	87	-	**342**
Development OPEX					
Drift (3 m by 3 m)	1,531	3,634	2,121	52	**7,338**
Sub level drift (3 m by 3 m)	-	183	336	-	**519**
Drift enlargement (3 m by 3 m)	567	85	-	-	**652**

Table 16.13 – Croinor mine production rates

Mine production	Units	Preproduction	Production			Total
		Year 1	Year 2	Year 3	Year 4	
Total ore	t	62,401	201,642	209,914	129,036	**602,994**
Total waste	t	134,264	216,240	48,858	513	**399,875**
Total ore and waste	t	196,665	417,882	258,772	129,549	**1,002,869**
Total ore	tpd	513	553	575	575	
Total waste	tpd	402	593	230	17	
Total ore and waste	tpd	915	1,146	805	592	

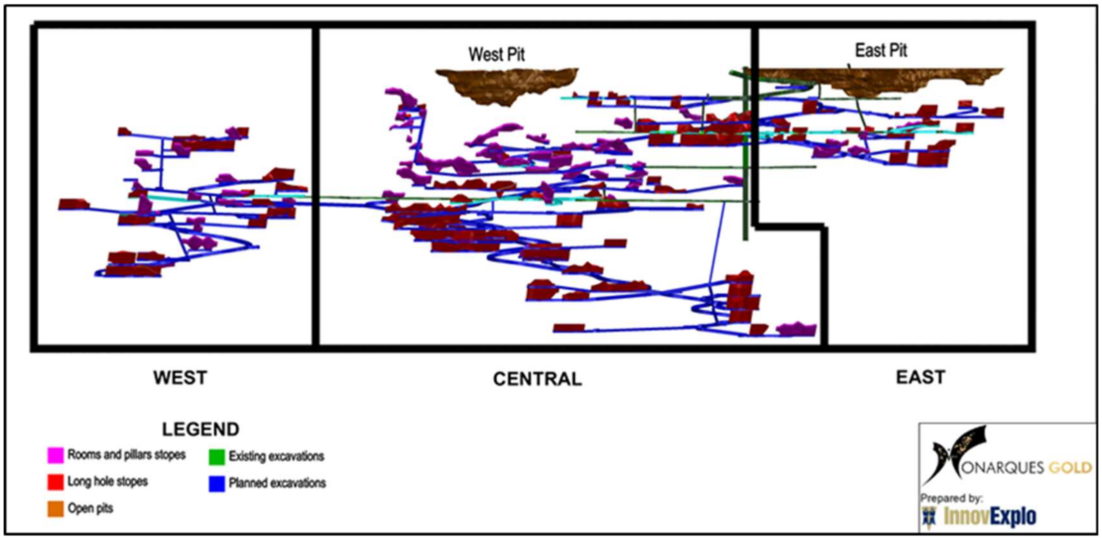


Figure 16.7 – Croinor mine development and reserves

16.8 Equipment Selection and Requirements

This study is based on new equipment that would be acquired by Monarques through rental agreements. The contractor will provide the Jackleg drills and the slushers required for room and pillar mining as well as the stopper drills required for ground support work. The list of Monarques equipment is presented in Table 16.14.

Table 16.14 – Equipment list

Mining Equipment	Quantity
Production and development equipment	
Mine truck (30 t)	3
Scooptram (6 yd)	2
Scooptram (3.5 yd)	2
Jumbo 2 booms	2
Jumbo 1 boom	1
Scissor lift	3
Electric slusher	5
Long hole drill	2
Services and support equipment	
Tractors (maintenance)	2
Tractors (development)	2
Tractors (spare)	1
Mine mule	4
Grader	1
Land cruiser (staff transport)	2
Boom truck	1
Surface truck (material)	1
Surface pick-up	4
Surface loader	1
Owner's mobile equipment	
Owner's tractor (basket)	1
Owner's tractor	1
Owner's pick-up	4
Total:	**45**

16.9 Manpower Requirements

Monarques will hire its own staff for the project's administrative, technical and surface services. Some positions will be partially staffed at the beginning of preproduction, and will progressively reach the final fully-staffed scenario presented in Table 16.15.

Since the Monarques mining staff will work 7 months during the last year of production, the amount of staff needed in this year has been adjusted accordingly.

Table 16.15 – Monarques mining staff list

Manpower	Preproduction	Production		
	Year 1	Year 2	Year 3	Year 4
Administration				
Manager	1.0	1.0	1.0	0.6
Accountant	0.4	0.8	1.0	0.6
Purchaser	0.5	1.0	1.0	0.6
Clerk	0.5	1.0	1.0	0.6
Nurse	-	1.0	1.0	0.6
Secretary	-	1.0	1.0	0.6
Subtotal	2.4	5.8	6.0	3.5
Surface services				
Labourer	1.0	1.0	1.0	0.6
Dryman	1.0	1.0	1.0	0.6
Gate Keeper	1.0	2.0	2.0	1.2
Subtotal	3.0	4.0	4.0	2.3
Technical Services				
Geology				
Chief Geologist	0.9	1.0	1.0	0.6
Geologist	-	1.0	1.0	0.6
Geology Technician	0.3	1.5	2.0	1.2
Engineering				
Chief Engineer	1.0	1.0	1.0	0.6
Engineer	0.4	1.0	2.0	1.2
Mining Technician	0.5	2.0	2.0	1.2
Subtotal	3.0	7.5	9.0	5.3
Operations				
Mine Superintendent	0.9	1.0	1.0	0.6
Mine Shifter	0.4	1.0	2.0	1.2
Q&A Production Engineer	0.1	0.8	1.0	0.6
Subtotal	1.4	2.8	4.0	2.3
Total	**9.8**	**20.1**	**23.0**	**13.4**

The contractor will provide all manpower related to mine operation supervision, maintenance and production. The manpower resource needed on each working shift to achieve the mine schedule is summarized in the Table 16.16.

Table 16.16 – Contractor manpower

Manpower	Team / shift	Worker / shift	Shifts	Schedule	Total
Mechanical department					
Mechanical supervisor	1	1	D	5/2	**1**
Mobile senior mechanic	1	1	D&N	7/7	**4**
Stationary surface mechanic	1	1	D	5/2	**1**
Loader operator	1	1	D	5/2	**1**
Electrical department					
Electrician	1	3	D	5/2	**3**
Underground Supervision					
Mine superintendent	1	1	D	5/2	**1**
Mine captain	1	1	D	5/2	**1**
Supervisors	2	2	D&N	7/7	**8**
Mine trainer	1	1	D	5/2	**1**
Underground Services					
Grader operator	1	1	D	7/7	**2**
Construction					
Construction miner (Capex)	1	2	D	5/2	**2**
Development					
Jumbo operator	3	3	D&N	7/7	**12**
Bolter operator	3	6	D&N	7/7	**24**
Development service	1	2	D	7/7	**4**
Production					
Production drill operator	2	2	D&N	7/7	**4**
Blaster	1	2	D	7/7	**4**
Room & pillar team	5	5	D&N	7/7	**20**
Scoop operator (prod. + dev.)	4	4	D&N	7/7	**16**
Truck operator	3	3	D&N	7/7	**12**
Total:		**42**			**121**

Note: D stand for day shift and N stand night shift.

16.10 Mining Services

16.10.1 Ventilation

The existing shaft will be rehabilitated and used for mine ventilation as well as an emergency escape way. For the current study, a preliminary simulation using Ventsim software established the main ventilation network from which secondary fans will bring air to the working area. The required ventilation was established at 95 m^3/s (200,000 cfm) and will be provided by one 224 kW (300 hp) main air fan. Fresh air will be heated by two 3,224 kW (11 MBtu/hr) capacity propane burner systems and will exhaust via the ramp. Figure 16.8 shows the ventilation network for the mine.

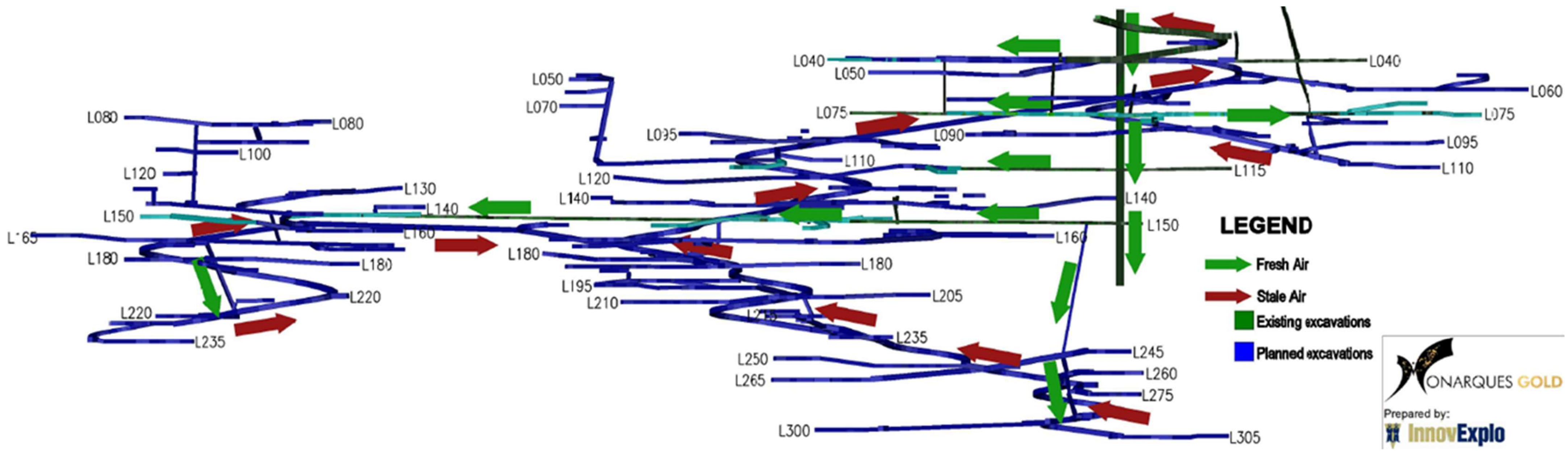


Figure 16.8 – Main ventilation network

16.10.2 Dewatering

A dewatering system is proposed for the Croinor mine. On surface, an environmentally safe polymer will be added to the mine water, which will then be clarified in dewatering bags. This type of installation captures 99% of solids, and the clear filtrate can be collected and used for production water or discarded into the environment. The solids remain in the dewatering bag. When full, the dewatering bag container and contents can be disposed of in a landfill, or the solids removed and used as a surface cover when appropriate. This type of system allows for smaller sumps and eliminates underground mud management.

Ongoing dewatering during mining operations is estimated at 963 m^3/d based on previous operating data. The dewatering network consists of four main pumping stations as follows:

- One modular pumping station on level 120-C including:
  - Two pumps capable of pumping suspended abrasive solids, assembled in series (one operating and one spare);
  - Electric motor of 100 hp;
  - One V-belt adjusted for a flow of 2,725 m^3/d at 55 m;
  - One feed tank of 14,400 L capacity.

- One principal pumping station on level 160-W including:
  - Two pumps capable of pumping suspended abrasive solids, assembled in series (one operating and one spare);
  - Electric motor of 100 hp;
  - One V-belt adjusted for a flow of 2,725 m^3/d at 240 m;
  - One feed tank of 14,400 L capacity.

- One modular pumping station on level 260-C that is capable of pumping dirty water to level 120-C including:
  - Two pumps assembled in series (one pair operating and one pair for spare) for a total of four pumps;
  - Electric motor of 100 hp;
  - One V-belt adjusted for a flow of 2,725 m^3/d at 110 m;
  - One feed tank of 14,400 L capacity.

- Three smaller modular pumping stations located at the lower levels of the mine to bring water to the level 260-C modular pumping station.

16.10.3 Compressed air

Two 41.8 m^3/min (1,476 cfm), self-enclosed electric compressors will be installed at surface. A network of pipelines will be installed down the shaft and along the ramp and drifts throughout the mine. Compressed air will be provided to various handheld drills and production long-hole rigs and will also provide emergency air supply to the refuge station. A parallel network complete with pressure-reducing valves will supply water to the underground operations.

16.10.4 Underground power distribution

Underground, four mobile substations (1,500 KVA) are planned to provide power to the underground loads, such as pumps, fans, lunchroom, etc. They will be installed at different levels into dedicated bays to follow production requirements. These substations will be skid-mounted, thereby ensuring all the flexibility required by the mining operations. Each substation will include a main disconnect switch, a 4160/600V transformer, and breakers to feed loads.

17 RECOVERY METHODS

Toll milling was considered in the previous PFS (Poirier et al., 2014). Since then the issuer has acquired the Beacon Mill facility. This updated PFS is therefore based on processing ore at the Beacon Mill at an average production rate of 575 tpd.

This section describes the process equipment at the Beacon Mill, taking into account the metallurgical test work results thus far and the findings of preliminary economic trade-off studies. It also presents the modifications that are planned and discusses the gold recovery that could be obtained in this processing facility.

17.1 Description of the Beacon Mill Processing Facility

The Beacon gold mill is situated 15 km east of Val-d'Or. The plant started operating in 1987. The flowsheet uses gravity concentration, cyanide leaching and the Merrill-Crowe process to recover the gold. The Beacon Mill simplified flowsheet, including modifications planned as part of this PFS update, is provided in Figure 17.1.

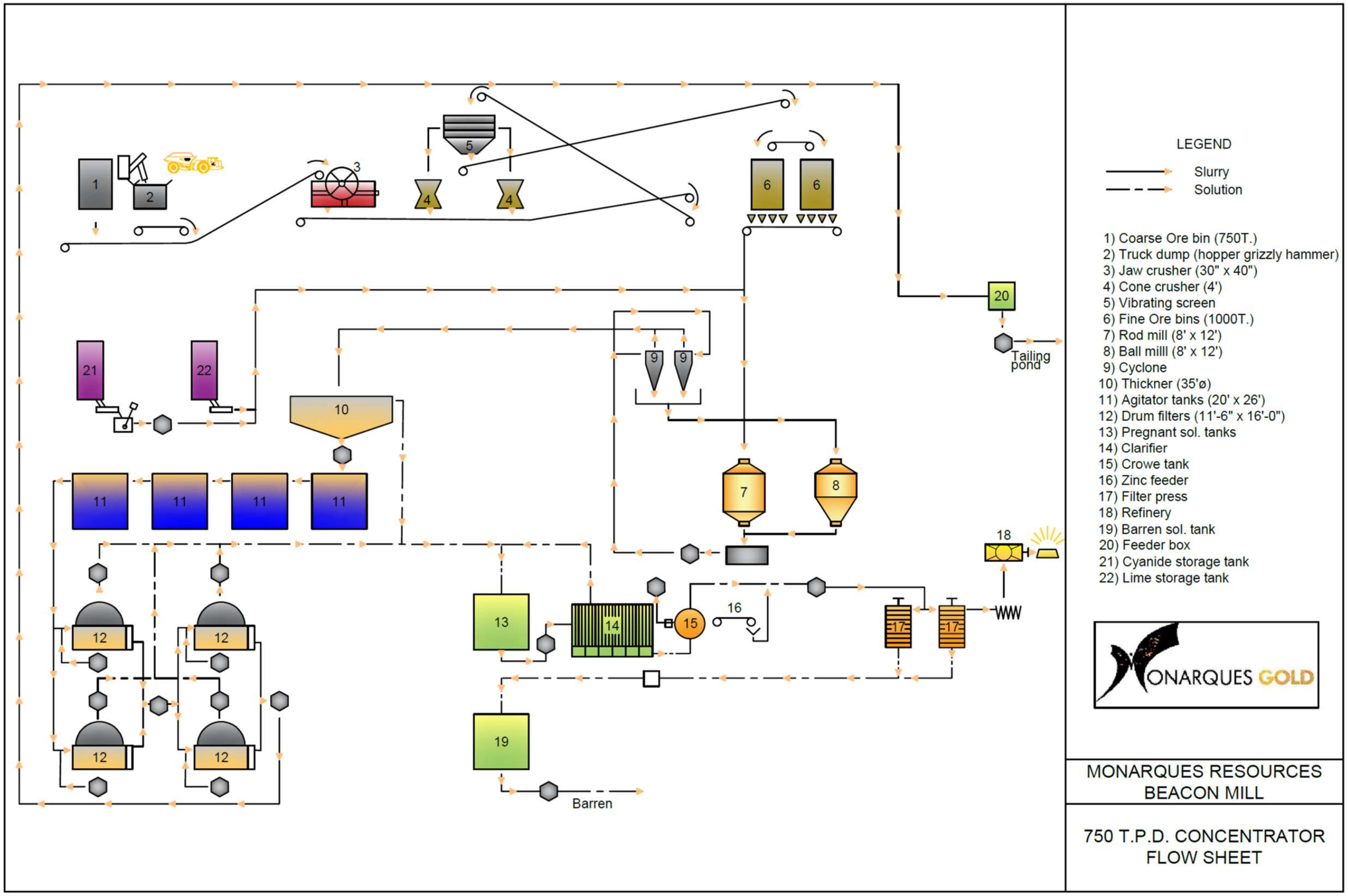


Figure 17.1 – Beacon Mill simplified flowsheet

17.1.1 Crushing circuit

The plant feed is first dumped on a heavy-duty grizzly. An impact hammer breaks the oversize rock directly on it.

The crushing circuit consists of a 32" by 42" jaw crusher that can be fed with ore of about 20" at a rate of 175 m^3/h to 200 m^3/h. The ore crushed to about 4" is sent to the screen that sends the -¾ fraction to the fine ore silos. The +¾ fraction is sent to the conical crushers. A standard 4 ft crusher and a 4 ft short head crusher are used.

The plant has two fine ores silos with capacity of about 1,000 t each. The silos feed the grinding circuit with a conveyor at a rate of 32 t/h.

17.1.2 Grinding and gravity circuits

The grinding circuit is composed of a primary rod mill of 8 ft by 12 ft and one ball mill of 8 ft by 12 ft. The rod mill runs in open circuit. The ball mill is currently set up to run with both mill discharges going to the same common cyclone.

The first ball mill will operate in closed circuit with the existing cyclone cluster which is composed of two cyclones, one unit of which would be in operation and one in standby. A portion of the underflow is sent to the gravity recovery circuit and the remainder is returned to the first ball mill. The cyclone cluster overflow is sent to thickener.

The gravity circuit is composed of one Knelson concentrator operating to recover free gold. One unit is considered sufficient for operation at 750 tpd. The Knelson concentrate is treated on a shaking table. The gold concentrate is then further treated in the refinery.

The supply of water to the grinding circuit will come from the reservoir with barren solution or mill solution.

17.1.3 Thickener, leach and Merrill-Crowe circuits

The 35 ft diameter thickener overflow is fed into a buffer tank before the Merrill-Crowe precipitation circuit. The thickener underflow is fed into the first leaching stage.

The thickened pulp remains about 15 h in the first leaching stage before being filtered. There are two drum filters of 11'6" diameter per 16 ft long. During filtration, the cake is washed with sterile solution. After filtration, the cake is re-pulped to 50% solid and more with barren solution. This slurry is pumped into the second leaching stage.

The pulp stays about 15 h in retention in the second leaching stage before being filtered using two drum filters identical to those of the first stage. The cake is washed with barren solution.

The clarifier, is fed from the buffer tank, which purpose is to filter the solution of all these particles. The clarifier consists of large panels covered with a filter cloth on which is added a layer of diatomaceous earth which allows a total filtration of the solution.

The clarified solution is pumped through a deaeration tower, which remove the air dissolved in the solution, to precipitate the gold. To enable a better precipitation of the gold, a solution of zinc powder and a little of lead nitrate is added in the outlet pipe of the deaeration tower.

17.1.4 Gold recovery and refinery

The gold precipitate passes through a filter press where it remains trapped while the sterile solution will be stored in the reservoir of sterile solution.

When the filter press is full, it is air dried and emptied to collect the precipitate which will be put in a drying oven and further melted at the refinery to obtain a gold doré.

The drying oven and furnace are also used to treat the shaking table concentrate. The doré ingots are stored in a safety vault.

17.1.5 Tailings and cyanide degradation

After filtration, the 35% solid pulp cake is returned with water to the polishing pond before being pumped on to the tailings pump box. The cyanide remaining in the slurry will be naturally degraded in the tailing pond.

18 PROJECT INFRASTRUCTURE

18.1 Croinor Mine Site Layout

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

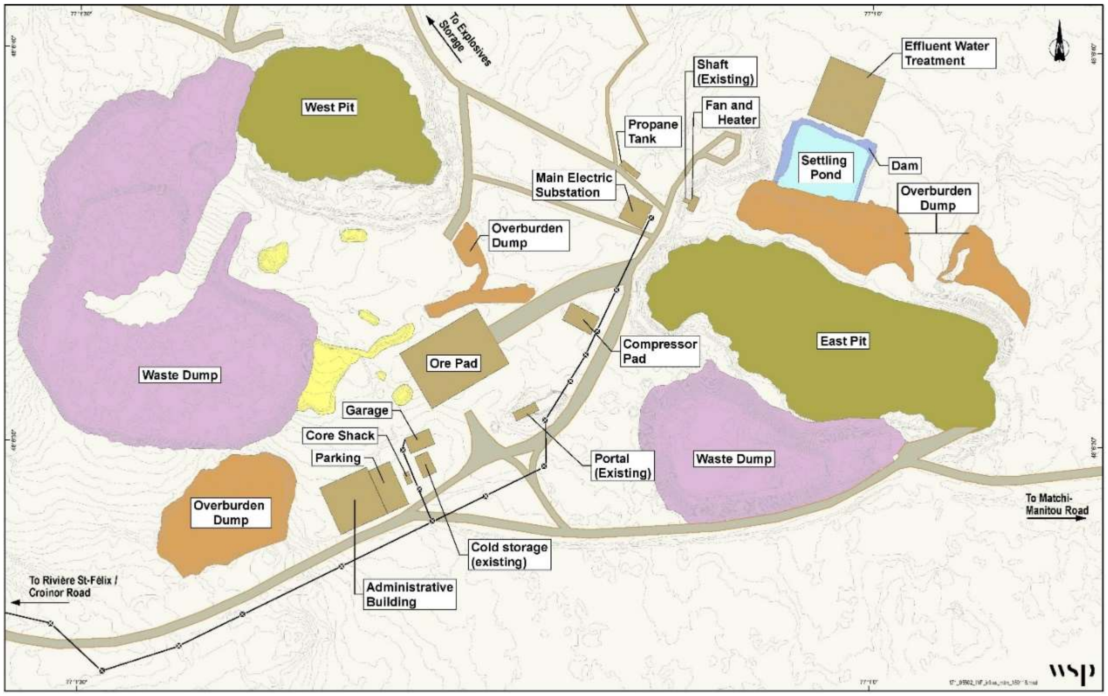


Figure 18.1 – Surface plan, general layout

18.2 Electrical Power Supply and Distribution

The Property is not currently serviced by an electric power line. The closest power line is located 26.5 km west of the Croinor site, at the former Chimo mine.

The power demand for the mine site is estimated at 1,925 kW. The mining project requirements include the following electrical installations:

- New 25 kV three-phase overhead power line between the former Chimo mine and the Croinor mine site;
- New onsite 25 kV three-phase overhead power line to supply the surface installations, such as the dry, offices, garage, etc. and the new 25 kV / 4.16 kV / 600 V substation for underground mining and ventilation distribution;
- Underground main distribution (details provided in 16.10.4).

18.2.1 Main overhead power line (off site)

To supply electric power to the site, a new 26.5 km 25 kV three-phase overhead power line is planned. For the purpose of this PFS update, this new power line is assumed already built, maintained and owned by the issuer. Further discussions with Hydro-Québec will be required to define the project. The mine could benefit from a $2.7M subsidy to build the distribution line and the 25kV station from the EcoPerformance program managed by Transition Énergétique Québec (TEQ) in order to reduce greenhouse gases.

18.2.2 Electric power distribution at surface

A voltage level of 25 kV was selected to optimize voltage regulation and use lower-cost standard equipment installed over wooden poles. As previously stated, the underground main distribution feeders will be operating at 4.16 kV to ensure proper cable sizing and adequate voltage regulation.

The site's surface buildings will be supplied by one 25 kV three-phase overhead ACSR line mounted on wooden poles. Since all service buildings require less than 500 kVA, all buildings will be supplied by one transformer bank on wooden poles with AC lightning arresters, fuse disconnect switches, and grounding.

The site exterior lighting will also be supplied by one 25 kV line through a single-phase transformer. Dusk-to-dawn lights will be mounted on poles to maintain minimum lighting in the building areas (offices, dry, warehouse, garage and ramp access). Some exterior lighting will also be installed on the outside walls of buildings for safety purposes. In addition, mobile diesel lighting towers will be installed near the ramp and ore/waste stockpiles when necessary for operations.

18.2.3 Main electrical substation

The substation equipment will be installed in a prefabricated building. It will be located near the existing shaft to limit the length of the power cables feeding the largest loads. Two exterior transformers will be installed. A 3 MVA, 25 kV to 4.16 kV transformer will be dedicated to the underground distribution and a 2 MVA, 25 kV to 600 V transformer will be used to feed the 600 V surface loads as the compressor and the main ventilation fan. The substation will be fenced and grounded as required by applicable regulations.

18.3 Access to the Croinor Mine Site

The Croinor site is currently accessible by way of a 37 km gravel road branching off highway 117 (Trans-Canada Highway), mostly via Chemin Rivière St-Félix, approximately 40 km east of Val-d'Or. A 13 km segment of this gravel road would require major maintenance and the implementation of a bridge/culvert system to pass over the current structure crossing Blanchin Lake due to its potential instability and erosion. It was initially proposed that this particular road be upgraded to support heavy vehicle traffic, including the offsite transportation of ore for processing, but replacement of the current culverts, which are in a critical state, is not possible because the design does not comply with applicable environmental laws. Therefore, a new bridge will be required.

The refurbishment work in 2016 to the Rivière St-Félix road will allow it to remain in use for electrical overhead line construction and maintenance. This route is shown as Option 1 on Table 18.1.

The proposed access road (Option 3, Table 18.1), which would reduce the cost of access road rehabilitation while optimizing ore hauling costs, consists of upgrading a 10-km segment of the existing ice road off highway 113 into a grade 3 forestry road, then building 8 km of new layout (same grade) with a bridge/culvert system to pass over a river with a 25 m span, then connecting to an existing grade 3 forestry road of 21 km which leads to the Croinor site. Option 3 is the most economical presented option, assuming no hindrance with applicable environmental laws. Further discussions with lumbering companies could lead to cost sharing for access road construction and maintenance.

Table 18.1 – Summary of access road options

	Description	Repair (km)	New layout (km)	Full trip (km)	Details
1	Croinor/Rivière St-Félix road rehabilitation	20.0	-	56.0	One-way bridge of approximately 50 m to overpass Blanchin Lake
2	Matchi-Manitou road, via Croinor/Rivière St-Félix	15.5	5.0	57.5	Major work for culvertcrossing the river between lakes Blanchin and Matchi-Manitou. Major Croinor/Rivière St-Félix road rehabilitation
3	Construction of a new road to highway 113	-	18.0	55.5	Major work for culvert crossing the river south of Lac Tiblemont. No environmental study performed yet.
4	Road C-100 to Senneterre	-	-	100.5	Existing forestry road

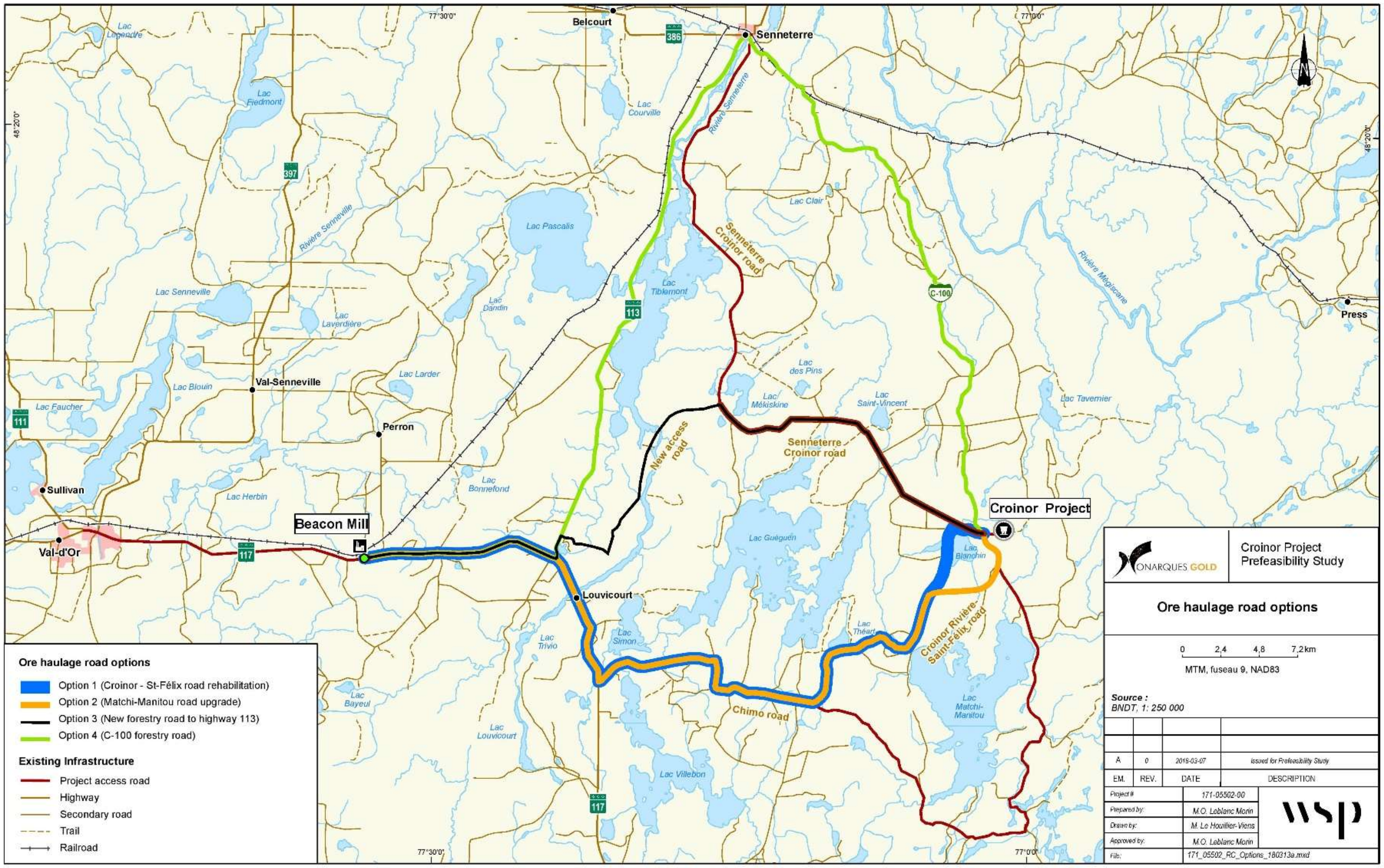


Figure 18.2 – Access road options

18.4 Camp

No permanent or temporary camp is included in the Project. Given the proximity to Senneterre and Val-d'Or, transportation will be organized by Monarques for its staff and by the Contractor for its workers.

18.5 Mine Site Entrance/Guardhouse

All visitors, contractors, delivery personnel and mine personnel will go through a main entrance at the west side of the site. The guardhouse will be a dedicated module of the administrative building. Anyone entering the site will do so only after being authorized by security personnel who will control access to both vehicles and pedestrians. Access to the existing Rivière St-Félix road to the south of the property will still be possible for residents or vacationers.

A fenced-in car park will be located next to the gate and will have electric outlets to plug in the vehicles motor heating unit during cold weather.

A 100-t truck scale is planned near the site entrance. Remote communication with the guardhouse will allow monitoring of the ore trucks loads.

18.6 Office Building and Dry Complex

A mobile unit will provide the office, lunch room and infirmary from the start of the project until Month 7 when the larger modular installations are set up.

The permanent modular installation will serve for offices and dry for administration, engineering, geology, and contractors. This will be an 19-module two-storey building including guardhouse, lunchroom, conference room, mine rescue room, infirmary, restrooms, 18 closed offices, 12 open space cubicles and the dry. The dry modules will include 118 baskets, 120 lockers, 20 showers for men and 20 baskets, 20 lockers and 3 showers for women. Each module will be 60' x 12', constructed in a specialized shop and mounted on wood boxes with only minimal services tie-in on site, but the crawlspace will be heated and insulated.

18.7 Service Buildings

The existing garage, consisting of a single arch-type steel building (21 m x 11 m) on a concrete slab, is in good condition. The barn-type door and insulation will need to be repaired. In order to reduce the new garage footprint, a section will be heated and reserved for mechanical parts, the rest of the shed being cold storage.

For underground and surface mobile equipment maintenance, an insulated arch-type fabric garage building will be built adjacent to the existing one, facing the ramp. The 50' x 80' garage supplied by Megadome, or an equivalent vendor, will have a concrete slab with oil recuperation system and will be mounted on concrete blocks. The garage will include heating unit, ventilation, lighting and services, one repair bay, one wash bay, one welding bay and a dedicated warehouse area. Each area will have all equipment and tools required for proper operation. Also, a 10 t overhead crane, two man doors, two 20' x 20' garage doors will be installed and a 5,000 litre used oil tank is included.

A 53.5 m^2 trailer-type temporary building will be installed near the existing shed to be used as a core shack.

18.8 Site Roads

A site road providing access to various parts of the property already exists and will require minor restoration work to be fully operational.

18.9 Compressors

Two 41.8 m^3/min (1,476 cfm at 125 psi) self-enclosed compressors will be located mid-distance between the portal and the main electrical substation. The enclosures will include the soft-starter, instrumentation and control panels for the 300 hp compressor.

18.10 Fuel Storage

Diesel fuel for the mine equipment and vehicles will be stored in an above-ground, double wall, skid mounted 10,000 litre tank. The tank will be installed according to prevailing environmental laws and regulations and will include delivery system, ladders, platforms, vents, level gauge, and piping. A concrete slab will be installed at the delivery point to facilitate spill collection. There is no gas station since only the surface pick-up trucks are gas-operated and will be fuelled off site.

18.11 Site Fencing

Fencing will only be provided for the main electrical substation, the propane tanks, and for a short distance on each side of the main entrance gate.

18.12 Water Systems

Fresh water for the mine site will consist of pumped water from a well that will be drilled and tested for its water quality. A self-enclosed skid treatment will be installed for potable water, including if necessary, softener, UV disinfection and chlorination, 10,000 litre tanks and two distribution pumps.

The water quality must meet the requirements of Quebec’s drinking water regulations. Regular monitoring will be carried out as required by such regulations.

If the well water does not meet the provincial standards and its treatment is not possible, bottled water will be available for human consumption.

An effluent treatment system will be installed near the existing settling pond and is described in section 20.6.2.

18.13 Communication System

The Croinor site will be connected to the public telephone service using a microwave link. Two communication towers will be installed to link the Croinor site with the Beacon mill site. The towers will be equipped with microwave radio transmitters capable of transmitting at 80 mbps. The final location of the towers will be determined later with further topology studies.

Internet could be included in the point-to-point telephone network. Further discussions with the telephone provider (Télébec) or other third-party providers should be held to evaluate all installation and operation options before completing the final design.

The surface radio system consists primarily of channels with local short-distance coverage or extended coverage. At this stage, one radio signal repeater is planned and will be installed inside the dry building where emergency power will be available.

The following channels are planned for the site:

- Security and emergency;
- Surface operations;
- General and maintenance (mechanical/electrical/housekeeping/etc.);
- Underground operations (underground link with surface).

A leaky feeder system will be installed for underground communication. The system consists of a leaky feeder cable, amplifier, repeaters and a base to link the system to the surface system.

IP technology is recommended for site communication systems for both voice and data communications. This technology is widespread, versatile and reliable. It allows similar equipment to be used for both purposes, thereby reducing the different types of equipment to install and maintain on such a large site.

IP technology allows easy integration of the following services:

- Telephony;
- Camera systems;
- Computer data (Internet/Intranet).

A voice-over IP (VoIP) telephone system with server will be installed. High-range IP phones are planned for the offices while basic IP phones will be sufficient for other services.

18.14 Sewage

A treatment system is planned for sewage water from the buildings. The system consists of three 20,000 litre buried tanks, allowing four days of capacity. A specialized contractor will empty the tanks. Depending on the soil testing results, a trade-off study should be performed to compare septic tank and bed options.

18.15 Beacon Plant Site Layout

The Beacon Mill, recently acquired by Monarques, is located between the Property and Val-d'Or (approx. 70 km west of the Property and 15 km east of Val-d'Or). In addition to the mill, there is a mobile guardhouse, the historical Dorval mine headframe and a truck dumping area with a grizzly. Figure 18.3 presents the general surface layout of the Beacon mill property.

The Beacon mill site is accessed by Chemin Peter-Ferderber from highway 117. The road passes through the CANMET property before reaching the mill.

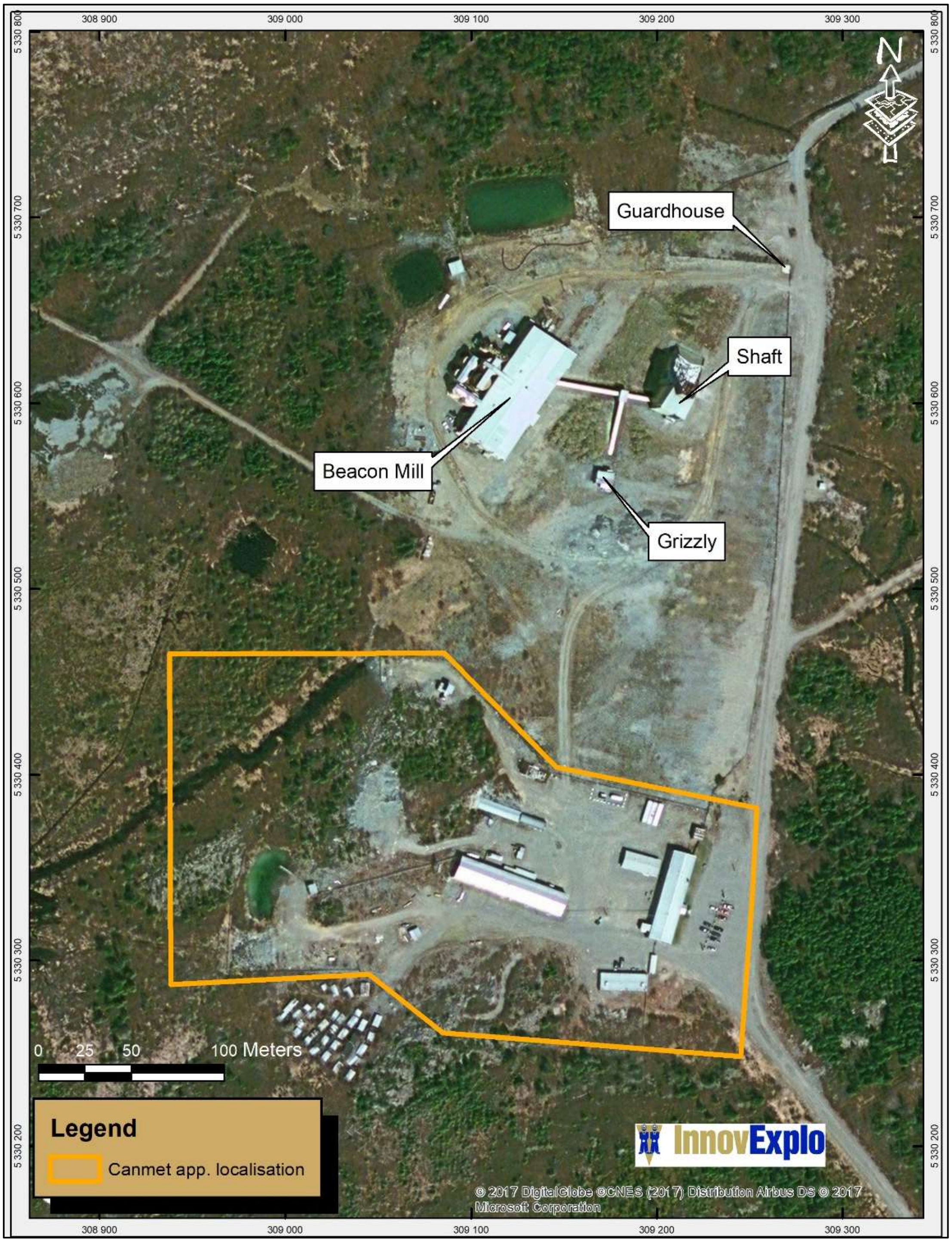


Figure 18.3 – Beacon Mill surface plan and general layout

The CANMET property is adjacent to the Beacon Mill property on the south side. Various offices and old mine facilities and structures are present on this adjacent property.

Figure Figure 18.4 shows the location of the tailings and polishing ponds located to the northeast of the mill.

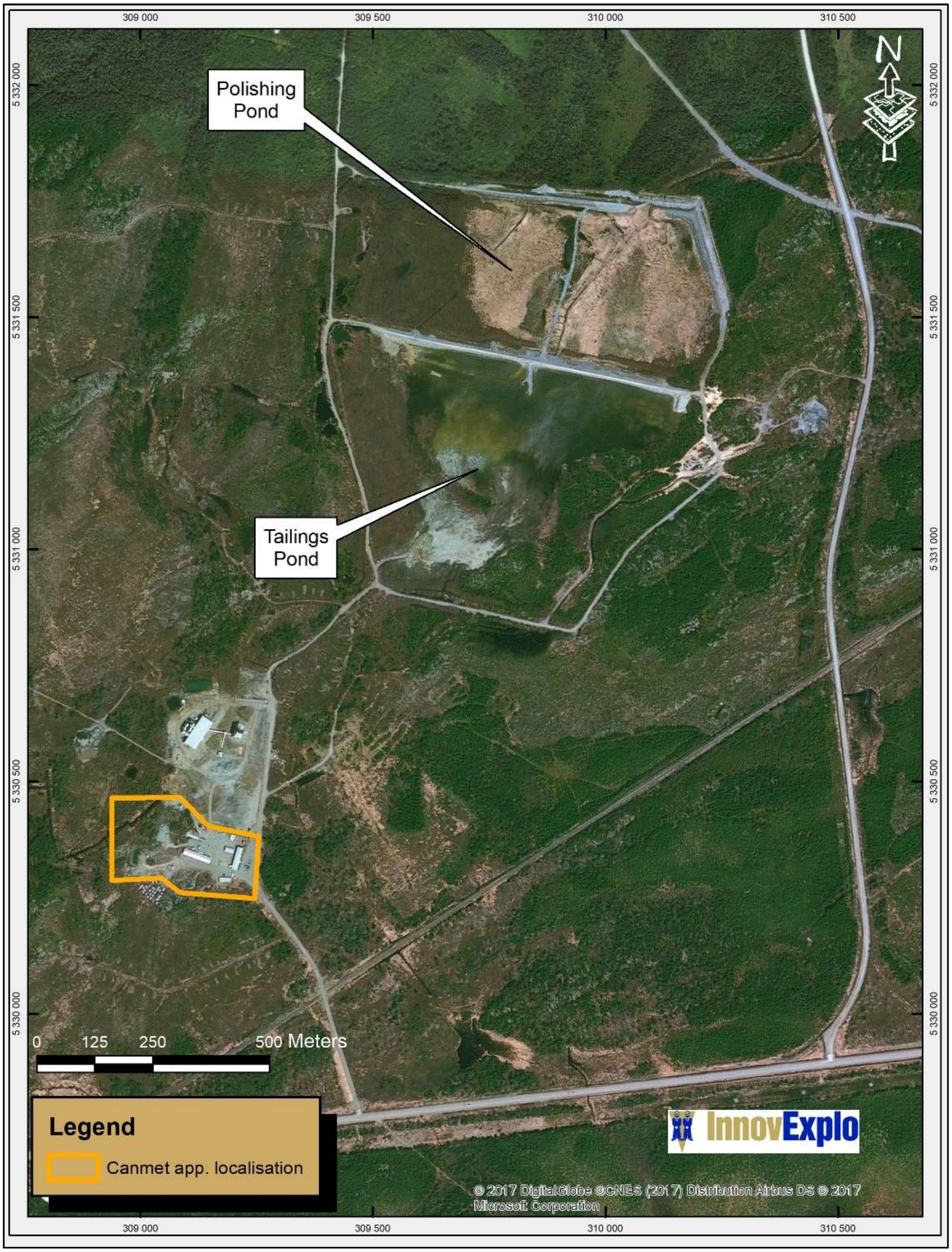


Figure 18.4 – Tailings and polishing ponds

18.16 Beacon Mill Site Infrastructure

The Beacon Mill's equipment and site infrastructure were presented in Figure 17.1 and Figure 18.3 respectively.

The mill building houses the crushing, grinding and metallurgical circuits. The grizzly, conveyor belts and leaching tanks are outside the mill building.

The crushing and grinding circuits consist of:

- a 30" x 42" jaw crusher with a production rate of 175 t/h to 200 t/h;
- two 30' x 30' fine ore silos with a capacity of 1,000 t each;
- an 8' x 12' Harding rod mill;
- an 8' x 12' Allis-Chalmers ball mill;
- a 4' crusher or a 4 ¼' short head crusher for re-crushing oversize ore.

The milling circuit making up the Merrill-Crowe process comprises several pieces of equipment, such as agitators, drum filters, and tanks.

The mill building also has offices, changing rooms, workshops and the refinery.

The tailings and polishing ponds are located to the northeast of the mill and are contained by several dykes. The tailings pond covers 37 hectares while the polishing pond covers 28 hectares. The total capacity of these ponds is 1.6 Mt of solids.

The headframe of the historical Dorval mine is still on the Beacon mill site, but is not in use. There are also settling ponds, a mobile guardhouse and a pumping station to provide water to the mill building.

A guardhouse at the Beacon mill site access point, just northeast of the mill. It is a mobile unit. There is room to the north of the mill for a parking lot.

19 MARKET STUDIES AND CONTRACTS

Markets for doré are readily available and the doré bars produced from Project could be sold on the spot market.

No contracts have yet been assigned given the early stage of the Project.

20 ENVIRONMENTAL STUDIES, PERMITTING, AND SOCIAL OR COMMUNITY IMPACT

20.1 Introduction

Amec Foster Wheeler prepared this section of the Technical Report.

For the purposes of this section, the term “Project” refers collectively to the Croinor site, the Beacon site and the transportation corridor that links both sites.

The Project is located in the Abitibi-Témiscamingue (08) administrative region in the MRC (regional county municipality) of La Vallée-de-l’Or.

20.1.1 Croinor site

The term “Croinor site” refers to the currently inactive mine site on the Croinor property. It is on Crown land that is part of the Municipality of Senneterre. Situated 57 km east of Val-d’Or, it is accessible via a 37 km gravel road (Croinor–Rivière Saint-Félix road) that starts south of Louvicourt Township and connects to highway 117. It can also be reached from Senneterre via the Senneterre-Croinor or C-100 forestry gravel roads.

The Croinor site involved open-pit and underground mining that was suspended in May 2005. Overburden, waste rock and ore stockpiles, a sedimentation basin, a garage, a ramp and a well remain on the site.

It is anticipated that there will be between 24 and 40 on-site workers and about 20 administrative and supervisory staff. There will be no mining camp, as it is assumed that Monarques will arrange for commuting from the surrounding communities.

The Croinor site is currently not serviced by an electric power line. The closest power line is located 26.5 km west of the site, at the former Chimo mine. A new 26.5 km-long, 25 kV three-phase overhead power line is planned to supply electric power to the Croinor site. It is assumed that this new power line will be built, operated and owned by Monarques. Prior to the construction of the power line, a portion of the St-Felix road must be upgraded.

The pits and underground openings will be dewatered. The existing 300-m-long ramp will be extended to reach mineralized zones at an approximate depth of 310 m. The existing shaft will be rehabilitated for ventilation purposes.

The planned production rate at the Croinor site is approximately up to 575 tpd over four years. The extracted ore will be stockpiled temporarily on the former ore pile, from where it will be loaded into trucks for daily transportation to the Beacon site.

20.1.2 Transportation corridor

The corridor to transport the ore from the Croinor site to the Beacon site will follow the Senneterre-Croinor road over 21 km, at which point it will turn towards the southwest and follow some 8 km of a new road (grade 3) that must be built to reach highway 113. A bridge/culvert must be built in the section of the new road in order to cross a 20-m-wide section of the river that flows south of Tiblemont Lake.

The trucks will then continue towards highway 113; some 10 km of an existing ice road will be upgraded as a grade 3 road. Once on highway 113, the trucks will then turn on highway 117 to reach the Beacon site (Figure 18.2).

20.1.3 Beacon site

The term “Beacon site” refers to the concentrator and the tailings storage facility (“TSF”). The Dorval mine adjacent to the Beacon site has not been operated for some 20 years, and it does not form part of the Project.

The Beacon site is located approximately 16 km east of Val-d’Or, north of highway 117, in Louvicourt Township. It connects to highway 117 via a 1-km gravel road.

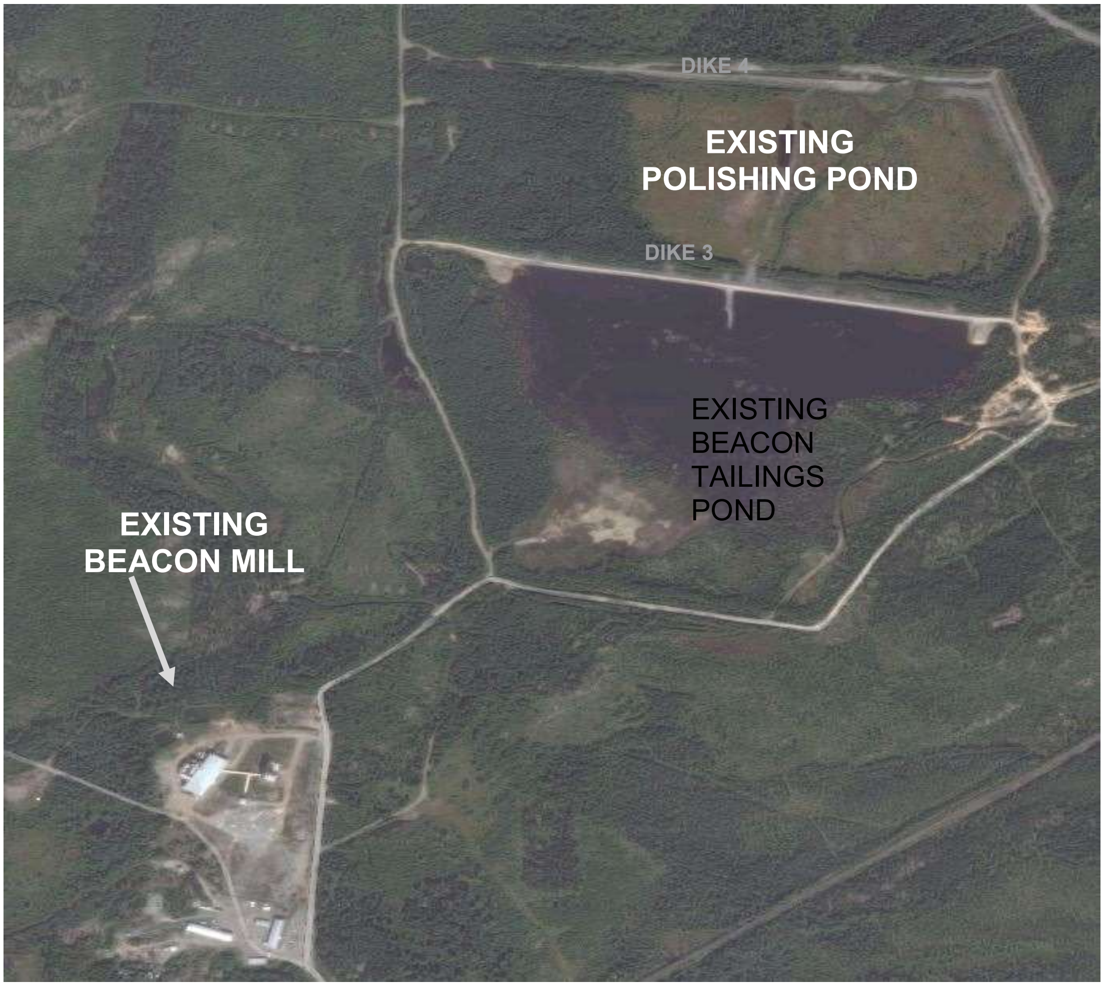
The on-site roads were built with waste rock. There are no onsite overburden or waste rock stockpiles on the site. There is an empty 9,375 m^2 area for the temporary stockpiling of ore before milling.

The concentrator has a maximum capacity of 900 tpd. A 4-km conduit on Crown land leads to a water intake along Colombière River.

The TSF has a capacity of 1,600,000 t of solids over 10 years and is currently roughly 16% full. It consists of two basins: one for tailings storage, and another for polishing. Two decant towers serve to transfer water from the tailings pond to the polishing pond, and then to the receiving environment of Colombière River via the transfer towers. Dikes of both basins were breached in 1994 to prevent the accumulation of water. A location plan for the TSF is presented in Figure 20.1.

The TSF will be reactivated to store an estimated 0.6 Mt of tailings over the projected life of the Croinor mine.

The Beacon site is powered by an electric station with a 4,000 kVA transformer.



(Satellite image from Google Earth 2013)

Figure 20.1 – Location of the Beacon TSF

20.2 Environmental Assessment Regimes

20.2.1 Government of Québec

The Project is located in the area of jurisdiction of the regime of environmental assessment ("EA") of general application pursuant to Chapter I, Division IV.1 of the *Environment Quality Act* ("EQA").

On December 13, 2017, the Government of Québec published in the *Gazette officielle du Québec* the draft regulation replacing the *Regulation respecting the environmental impact assessment and review of certain projects*, which includes a new list of projects that would be subject to the EA regime of general application as of March 22, 2018, subject to any amendments that may be made thereto following the consultation period ending on February 11, 2018.

The Project is not subject to the EA regime pursuant to the Regulation currently in force for the following reasons: the planned production is less than the provincial threshold of 2,000 tpd (section 2.(p)); the voltage of the 25 kV transmission line that will be built from the former Chimo mine is less than 315 kV (section 2.(k)); and the new road segment would be for the purposes of a project lasting less than 15 years (section 2.(f)). The construction of the bridge is not subject to the EA regime under the Regulation currently in force, unless it involves the dredging, digging, filling, levelling off or backfilling of a lake, within the 2-year flood line, over a distance of 300 m or more or an area of 5,000 m^2 or more (section 2.(b) of the Regulation).

Pursuant to the draft Regulation in the *Gazette officielle du Québec*, the Project is also not subject to the EA regime of general application for the following principal reasons: the planned production is less than the provincial threshold of 2,000 tpd; neither the Croinor site nor the Beacon site is located in an urbanization perimeter (or within 1 km of one); the voltage of the transmission line is less than 315 kV; and the right-of-way of the new road segment (grade 3) will be less than 40 m. The construction of the bridge is not subject to the EA regime under the draft Regulation, unless it involves: the dredging, clearing, filling or levelling off within the 2-year flood line, over a cumulative distance of 500 m or more or an area of 5,000 m^2 or more; or clearing, filling or drainage of any wetland or body of water within the meaning of EQA section 46.0.2 over a cumulative area equal to or greater than 1,000,000 m^2.

20.2.2 Government of Canada

Pursuant to the Canadian Environmental Assessment Act 2012 ("CEA Act 2012"), the *Regulations Designating Physical Activities* list the construction and operation of a new gold mine with a production capacity of 600 tpd or more as a designated project for which a description must be submitted to the Canadian Environmental Assessment Agency ("CEAA") (section 16(c) of the Regulations). The same applies to the expansion of an existing gold mine that would increase the area of the mine operations by 50% or more and result in a total production capacity of 600 tpd or more (section 17(c)).

Given that the planned production capacity of the Croinor site is less than 600 tpd, the re-starting of its operation should not be subject to federal EA. A project description will be sent to CEAA to obtain official confirmation from the federal government that the project is not subject to a federal EA.

The same Regulations list the construction and operation of a new metal mill with an ore input capacity of 4,000 tpd or more as a designated project (section 16(b)). The same applies to the expansion of an existing metal mill that would increase the area of mine operations of 50% or more and result in a total ore input capacity of 4,000 tpd or more (section 17(b)).

Given that the planned milling capacity of the Beacon site is less than 4,000 tpd, the re-starting of its operation will not be subject to federal EA. A project description will also be submitted to CEAA to obtain the official confirmation from the federal.

The new transmission line and new road section are not subject to federal EA.

In February 2018, an Act to enact the Impact Assessment Act and the Canadian Energy Regulator Act, to amend the Navigation Protection Act and to make consequential amendments to other Acts was introduced in Parliament for review. The potential implications of this bill are not discussed in this chapter.

20.3 Permitting and Authorizations

Table 20.1 lists the authorizations obtained to date and Table 20.2 lists potentially required authorizations.

20.3.1 Government of Québec

20.3.1.1 Environment Quality Act

On March 23, 2017, the Government of Québec adopted Bill 102, the Act to amend the Environment Quality Act to modernize the environmental authorization scheme and to amend other legislative provisions, in particular to reform the governance of the Green Fund. The majority of the amendments will be in force in March 22, 2018. Those in force as of now do not apply to the Project. The following section is based on the EQA currently in force.

Croinor site

The Croinor site is subject to section 22 of the EQA, pursuant to which a certificate of authorization (“CA”) is required for activities that may result in a change in the quality of the environment.

The latest CA to operate the Croinor mine was issued in September 2010 to X-Ore Resources Inc. and First Gold Exploration Inc. It authorizes the extraction of 688,000 Mt of ore underground. A modification of this CA was obtained in August 2014 to change the name of the holder to X-Ore Resources Inc. (“X-Ore”), a subsidiary of Monarques. The CA to build the electric transmission line was obtained in April 2017.

Permit applications pursuant to the EQA and the potentially relevant regulations are listed in Table 20.2.

Beacon site

Following a series of CAs concerning the Beacon site starting in April 1987, a CA was issued in March 2005 to operate a direct cyanidation concentrator (Merrill-Crowe process) with a maximum capacity of 900 tpd, to create a 9,375 m^2 ore stockpile with a maximum capacity of 49,500 m^3, to operate the 37 ha TSF and the 28 ha sedimentation basin, and to recirculate the wastewater from the TSF to the concentrator via a 800-m-long, double-walled conduit.

The CA authorizing the cession of the March 2005 CA (modified in December 2007 to raise the TSF) from Ressources Jake Inc. to the company 9265-9911 Québec Inc. was issued in December 2015. The transfer of that cession to Moulin Aurifère Beacon Inc., of which Monarques is a majority shareholder, was authorized in February 2017.

The mill will require a de-pollution attestation from the Ministère du Développement durable, de l'Environnement et de la Lutte contre les changements climatiques du Québec ("MDDELCC"). This certificate is renewable every five years and identifies the environmental conditions that must be met by the industrial facilities when carrying out its activities. The certificate compiles all the environmental requirements related to the operation of an industrial facility. The operator must apply for a de-pollution attestation within 30 days following the issuance of the CA under EQA section 22 for the operation of its project.

Transportation corridor

A CA under EQA section 22 is required to carry out any work in a constant or intermittent watercourse, lake, pond, marsh, swamp or bog.

According to section 1 of the *Regulation respecting the application of the Environment Quality Act*, the construction of the new road segment is also subject to a CA under section 22 of the EQA if at least 300 m of the road is located within 60 m of a constant watercourse, lake or river.

Pursuant to the *Act respecting the conservation of wetlands and bodies of water*, the issuance of a CA is subject to the payment of a financial contribution to compensate for adverse effects on the wetlands and bodies of water concerned.

20.3.1.2 Mining Act

The *Mining Act* stipulates that a mining lease cannot be granted until a rehabilitation and restoration plan (also known as a "closure plan"), for which the CA required under the EQA has been issued, has been submitted to the *Ministère de l'Énergie des ressources naturelles* ("MERN"). It must be accompanied by a security deposit of 100% of the estimated cost of implementation. Rehabilitation and restoration work must begin within three years after operations cease. The MERN may, exceptionally, require work to commence before this deadline, and it can authorize an extension. An initial extension may be granted for a period not exceeding three years, and for additional periods not exceeding one year.

The rehabilitation and restoration plan must be updated every five years.

Under the *Mining Act*, an MRC has the ability to designate portions of their lands as "incompatible" with mining activity, or subject to specified conditions, in their land use and development plans. That amendment came into force in December 2016 via *Décret 1075-2016 concernant l'entrée en vigueur de l'article 108 de la Loi modifiant la Loi sur les mines*. This new discretionary power is not absolute, as it must be exercised in good faith and in the public interest, in addition to respecting legal criteria. In August 2017, the MRC of La Vallée-de-l'Or initiated a public consultation process in this regard. The latest version (2015) of the land-use planning and development plan of the MRC specifies that mining activities are prohibited in provincial protected areas, but the Project does not fall within any such areas.

Croinor site

The Croinor site is the object of an active mining lease issued in 2004. A rehabilitation and restoration plan for the site was submitted in 2004. It was revised in 2010 as part of the acquisition of X-Ore by Monarques and tabled with the MERN in May 2014. The MERN approved the revised plan in January 2015. An updated plan must be tabled by 2019 in accordance with the MERN's "*Guide de préparation du plan de réaménagement et de restauration des sites miniers au Québec*" published in 2016 and updated in November 2017.

The *Mining Act* also requires that a crown pillar stability study be filed with the MERN at project initiation. Drilling for the crown pillar study, field measurements and laboratory testing were carried out in 2010 and the report was filed in 2011. This study was requested by the MERN in November 2014 prior to the approval of the restoration plan.

Under the *Mining Act*, the proponent of a gold mine project producing 2,000 tpd or less must hold a public consultation in the region where the project is located before applying for a mining lease. That will not be required for the Croinor mine, since the mining lease is already in place.

Pursuant to section 101.0.3 of the *Mining Act*, a monitoring committee to promote the involvement of the local community in mining projects must be established within 30 days of the issuing of a mining lease. Because the mining lease is in place, that provision would not apply.

Beacon site

The rehabilitation and restoration plan for the Beacon site was tabled in 2014 and approved in May 2015. A revised plan must be tabled by September 2019. Given that the approved plan refers to a closed mining site, the MERN noted in its letter of approval that, in the event of a change in the foreseen activities that entails the use of the TSF for the deposition of mine tailings, a revised rehabilitation and restoration plan and financial guarantee covering the entire Beacon site will be required prior to 2019 and before the start of such activities.

A mining lease issued in 1988 for the Beacon TSF expired in 2008. A mining lease will not be required to operate the Beacon plant and TSF.

20.3.1.3 Other

Croinor and Beacon sites

Other permits, authorizations, approvals and leases from both the MERN and the MDDELCC, and potentially the *Ministère des Forêts, de la Faune et des Parcs* ("MFFP"), for various components of the Croinor and Beacon sites development are required. These applications will be submitted as part of the ongoing process of developing the site, and should therefore not impact the Project's critical path schedule. They may include the following:

- Explosives;
- Borrow pit or quarry;
- Construction;
- Hazardous substances;
- High-risk petroleum equipment;
- Oil-water separator;
- Tree-cutting;
- Beaver dam dismantling.

Table 20.2 provides more detailed information.

Transportation corridor

The new road section that is required for the transportation of the ore is located on provincial Crown land. It will be subject to permits from the MDDELCC, MERN and the MFFP for such activities as road construction, tree-cutting and a public land lease (see Table 20.2).

20.3.2 Government of Canada

20.3.2.1 Fisheries Act

Under the *Fisheries Act*, work that may result in serious harm to fish that are part of a commercial, recreational or Aboriginal fishery, or to fish that support such a fishery, requires an authorization pursuant to section 35(2) of the Act. Based on the planned infrastructure and activities at the Croinor and Beacon sites, that should not be required.

The Department of Fisheries and Oceans ("DFO") issues advice on specific measures to implement for projects near water, in order to avoid causing serious harm to fish. The measures involve project planning, erosion and sediment control, shoreline/bank revegetation and stabilization, fish protection and operation of machinery. In addition, DFO puts forth criteria for bridge projects and guidelines for the design of watercourse crossings. The construction of the new bridge/culvert system should abide by the above. Finally, a "*Request for Review under the Fish Habitat Protection Provisions of the Fisheries Act*" can be submitted to DFO for it to determine whether the foreseen mitigation measures are sufficient to avoid or mitigate negative impacts to fish and fish habitat.

The Metal Mining Effluent Regulations ("MMER") pursuant to section 36 of the Fisheries Act and administered by Environment and Climate Change Canada ("ECCC") will apply in some form. The MMER are currently under review. All aspects are being considered, including the lowering of regulated effluent limits of specified substances, the addition of new substances and their limits, the Environmental Effects Monitoring Studies ("EEMS") requirements, the acute lethality tests and consideration of selenium. The schedule for the amended regulations coming into effect is uncertain; initial multi-stakeholder consultations have been completed, and it can be anticipated that the Canada Gazette 1 and 2 postings, and the intervening process, could extend well into 2018.

The initial EEMS plan for the Croinor site was submitted to Environment Canada in 2005. The EEMS process was aborted following the cessation of mining operations in May 2005. It will be re-initiated when the Project receives the go-ahead. The EEMS process should also apply to the Beacon site.

Given that neither waste rock nor tailings will be deposited in a disposal area that is part of a natural water body that is frequented by fish, an amendment to Schedule 2 of the MMER should not be required.

In February 2018, proposed changes to the *Fisheries Act* were introduced in Parliament for review. The potential implications of the bill are not discussed in this chapter.

20.3.2.2 Other

Pursuant to the *Explosives Act* (section 7(1)a)) administered by Natural Resources Canada, a licence is required to operate an explosives plant and magazine.

20.3.3 Status of permitting

The authorizations and permits obtained to date are listed in Table 20.1.

Table 20.1 – Authorizations and permits obtained

Authorization/Permit	Agency	Site	Comments
CA issued to Corporation Aurifères Monarques for construction of a private electrical transmission line	MDDELCC	Croinor	CA delivered in April 2017 under EQA, section 22.
Cession of CA for contract milling to Moulin Aurifère Beacon Inc.	MDDELCC	Beacon	CA delivered in February 2017 under EQA, section 24.
CA issued to X-Ore Resources Inc. and First Gold Exploration Inc. for start-up and mine operation	MDDELCC	Croinor	CA delivered in September 2010 (EQA, section 22) and modified in August 2014 (EQA, section 122.2).
Environmental Objectives for Rejects (OER - *Objectifs environnementaux de rejet*)	MDDELCC	Croinor	OER delivered to South Malartic Exploration Inc. in August 2010. OER might require updating.
Rehabilitation and Restoration Plan	MERN	Croinor Beacon	Submitted to the MERN in 2014; approved in 2015 (Mining Act, section 232.2).
Authorization for location of TSF	MERN	Beacon	Authorization issued under Mining Act, section 241.

Other authorizations and permits that might be required are listed in Table 20.2. Documentation for these applications will be prepared and submitted to the regulators when a positive decision is made to implement the Project. The application preparation time and the permitting process are variable, but they generally require roughly three to five months each.

Table 20.2 – Potentially required permits and authorizations

Activity/Component	Agency	Site	Comments
FEDERAL			
Environmental Effects Monitoring Studies	Environment Canada	Croinor Beacon	Process to be initiated under MMER once Project starts. First cycle extends over 24 months.
Explosives (factory and magazine)	Natural Resources Canada	Croinor	Licence under the Explosives Act, section 7.
Bridge or Culvert in Fish Habitat	DFO	Transportation corridor	Submit a Request for Review (Fisheries Act, section 35) if required.
PROVINCIAL			
Dewatering	MDDELCC	Croinor	CA under EQA, section 22. Authorization under EQA, section 31.75.
Septic Installations	MDDELCC	Croinor Beacon	Soil testing, design and application for authorization under EQA section 32 to install and operate sewage installations. Waterless toilets may be used before sewage system is available.
De-pollution Attestation	MDDELCC	Beacon	Apply within 30 days following issuance of CA (EQA Chapter I, Division IV.2).
Authorization for location of processing plant	MERN	Beacon	Authorization issued under *the Mining Act*, section 240.
Environmental Objectives for Rejects (OER)	MDDELCC	Beacon	See *Guide d'information sur l'utilisation des objectifs environnementaux de rejet relatifs aux rejets industriels dans le milieu aquatique*.
Drinking water well	MDDELCC	Croinor Beacon	Drilling of well and application for authorization under EQA, section 31.75. Bottled water may be used before water well is functional.
Explosives (possession, magazine and transportation)	Ministère de la Sécurité publique	Croinor	Permit under the Act respecting Explosives, section 2 ().
Work in certain watercourses, waterbodies or wetlands	MDDELCC	Transportation corridor	CA under EQA, section 22.
Gravel Pit	MDDELCC	Croinor Beacon Transportation corridor	CA under EQA, section 22, if required; requirements are described under the Regulation respecting Pits and Quarries.
Tree-cutting and Road Construction	MFFP	Croinor Beacon Transportation corridor	Permit under the Sustainable Forest Development Act, section 73.
Public Land Lease	MERN	Beacon Transportation corridor	Lease under the Act respecting the Lands in the Domain of the State, section 47.
Atmospheric Emissions Purification Devices	MDDELCC	Croinor Beacon	Authorization under EQA, section 48.

Activity/Component	Agency	Site	Comments
Fuel Storage	RBQ	Croinor Beacon	Permit under the Safety Code, section 120 (Building Act).
Dismantling of Beaver Dams	MFFP	Croinor Beacon	Permit under Québec Fisheries Regulations, section 19.
Hazardous Materials	MDDELCC	Croinor Beacon	Permits under EQA section 70.9 and the Regulation respecting Hazardous Materials.
Buildings/Infrastructure	Municipality	Croinor Beacon	Construction plans to be prepared before Project starts; detailed plans required for construction permit.

20.4 General Socio-Economic Setting

The Croinor and Beacon sites form part of the municipalities of Senneterre and Val-d'Or respectively. Both municipalities belong to the MRC of La Vallée-de-l'Or. According to the national census, the MRC's population exceeded 43,000 people in 2016, whereas the population in the municipalities of Senneterre and Val-d'Or reached approximately 3,000 and 32,000, respectively.

The territory has a forestry and mining vocation and there are no agricultural lands in the Project footprint.

Hunting, fishing, trapping and recreational activities occur in the Project area. A cycling path (the "Route Verte") and trails for snowmobiles and all-terrain vehicles pass through the area.

The Project is located on Category III lands of the James Bay and Northern Québec Agreement, the Aboriginal signatories of which are the Crees and the Inuit of Québec. Generally speaking, Category III lands are Québec public lands for use by Aboriginal and non-Aboriginal peoples. The Aboriginal signatories exercise, however, exclusive rights to the harvesting of certain aquatic species and fur-bearing animals on these lands. Section 20.7 provides information on the Aboriginal groups potentially concerned by the Project.

According to the Government of Québec, no archaeological site or heritage resource is protected by law in the area of the Croinor site (J.-J. Adjizian, MCCCF, comm. pers. August 14, 2009). The northern shore of Matchi-Manitou Lake represents a zone of archaeological potential; it would not, however, be affected by the Project. No information could be found on the archaeological potential of the Beacon site and the transportation corridor.

Some cottages and public boat ramps are located around Blanchin Lake, roughly 2 km west of the Croinor site. The outfitter on Matchi-Manitou Lake is situated roughly 6 km south of the Croinor site. No recreational infrastructure (e.g., pier, boat ramp, cottage) is found along the final effluent receiving stream. There is no water intake within 1 km of the Croinor site.

The residences (some 10 houses) that are closest to the Beacon site are located more than one kilometre away, along Route 117.

The current land-use planning and development plan of the MRC de La Vallée-de-l'Or does not identify any territory of historical and ecological interest, nor any protected areas on or adjacent to the Croinor and Beacon sites. Moreover, there is no protected wildlife habitat within one kilometre of each site (MFFP, June 20 2017). There is, however, a protected wildlife habitat at Lac Mékiskine, located immediately east of the junction of the proposed new road section with the Senneterre-Croinor road. This lake has been identified as habitat for Bald eagle (*Haliaeetus leucocephalus*), designated as vulnerable by the Government of Québec. The protection afforded to this habitat flows from section 128.6 of the *Act Respecting the Conservation and Development of Wildlife* and also the *Regulation Respecting Wildlife Habitats*.

A trapline (No. 714) is located within 1 km of the Croinor site. Three traplines (Nos. 722, 516 and 700) are located within 1 km of the Beacon site (MFFP, June 20, 2017).

20.5 General Environmental Setting

The description of the environmental setting of both sites is based on documents made available by Monarques, mainly the CA request for the raising of tailings dam No. 3 at the Beacon site (Enviréo Conseil Inc., 2007) and the rehabilitation and restoration plan for the Croinor Site (Golder Associates Ltd, 2010). The following public databases were also consulted:

- Centre de données sur le patrimoine naturel du Québec ("CDPNQ");
- MDDELCC and MFFP websites for protected areas;
- Various avian associations;
- Aerial photographs, satellites images and maps.

More research and field surveys may be required to complete or update the environmental baseline for the Project, in particular for the new road section and bridge.

20.5.1 Geomorphology

Croinor site

The relief in the area of the Croinor site is generally flat and its average altitude is approximately 335 m. The terrain is in large part located in a vast plain containing organic deposits that rest on clayey sediments that were deposited in the Ojibway-Barlow glacial lake.

The surficial deposits adjacent to the mine site consist of lacustrine deposits (silt, clay, sand and gravel) and glacial deposits (undifferentiated till between 25 cm and over 1 m thick).

Beacon site

The topography surrounding the Beacon site is relatively flat with some hills. The elevation varies from 300 m to 365 m above sea level. The bedrock is near surface over much of the area. In some sectors, clayey silt covers a layer of till that can be up to 10 m thick.

20.5.2 Climate

The Croinor and Beacon sites are located in a cold continental climatic zone, which is moderately humid with frequent rainfalls. This is a typical boreal climate where snow cover is generally present from mid-November to mid-May.

Croinor site

According to the Senneterre meteorological station, operated by ECCC and located some 30 km north of the Croinor site, the average annual temperature is 0.5°C, while the average monthly temperature ranges from -19.5°C in January to 16.6°C in July. Over the 1971–2000 period, the lowest temperature registered was -48°C, while the highest temperature was 36.7°C. Based on Environment Canada 2009 data, the average annual precipitation is 972.6 mm, of which 742.8 mm consists of rain and 229.7 mm consists of snow. Total precipitation exceeds measured evaporation (413 mm) and evapotranspiration (465 mm).

Beacon site

Historical meteorological data have been collected from the Val-d'Or station (federal climate ID: 7,098,600) operated by ECCC. Located at the Val-d'Or airport, it is the station closest to the Beacon site. The description of the Val-d'Or weather station is presented in Table 20.3.

Table 20.3 – Val-d'Or airport weather station information

Name	Federal Climate ID	Latitude	Longitude	Altitude (m)	Rainfall Intensity-Duration-Frequency Data*	Monthly Precipitation Historical Data Period*
Val-d'Or A	7,098,600	48°40'00" N	77°47'00" O	337.00	1961-1995	1951 - 2005

** Period with available data*

For the purposes of the TSF study, the 24-hour rainfall accumulations with a 1,000-year and 2,000-year return period, as well as the Probable Maximum Precipitation ("PMP"), have been estimated by Amec Foster Wheeler using Short-Duration Rainfall Intensity-Duration-Frequency data from ECCC (Val-d'Or station). The 100-year-return period, 30-day-snowmelt event has been estimated using monthly precipitation historical data from ECCC, assuming all precipitation as snow for the period between November and April based on historical average monthly temperatures. This accumulation is released during the snowmelt event, which is assumed to occur between April and May based on historical average monthly temperatures. A summary of the precipitation data used for this project is presented in Table 20.4.

Table 20.4 – Estimated project precipitations

Precipitation	Recurrence	Value	Units
24h Rainfall	1: 1,000 years	93.70	mm
24h Rainfall	1: 2,000 years	99.30	mm
24h PMP	-	221.05	mm
30-day Snowmelt	1: 100 years	521.0	mm

The raw 30-day snowmelt, based on estimated data, is 521 mm. It is assumed that the snow volume is reduced by 20% due to sublimation, and the runoff coefficient has been estimated at 90%. At least 5% of the water losses are expected to occur in the pumping system.

Also, it is assumed that 1 cm of snow will melt to 1 mm of equivalent rainfall. The TSF study does not account for climate change and should be reviewed every five years. All of these assumptions are significant, and therefore should be confirmed in a future phase of the Project.

20.5.3 Hydrology

Croinor site

Surface water from the Croinor site is part of the Bell River watershed. The water flows towards an unnamed stream that is a tributary of Blanchin Lake. The outlet of Blanchin Lake flows into Marquis River to Lac Guéguen Lake, then to Lac Simon Lake, Lac Tiblemont Lake and Bell River.

The mine effluent will be directed through an existing drainage ditch to the unnamed stream over approximately 1 km.

The substrate of the receiving stream, located roughly 300 m downstream of the effluent ditch, is unconsolidated and consists mostly of mud (silt and clay) and organic debris with sand.

The ditch crosses forested habitat. Ponds created by beaver dams are also found in the vicinity. It is planned to dismantle the dams before re-starting operations.

Beacon site

The water from the Beacon site flows north in an unnamed stream towards Rivière Colombière. The drainage basin that encompasses the Beacon site measures 9.9 km^2. The drainage area of Colombière River is estimated at 65.9 km^2.

20.5.4 Hydrogeology

Croinor site

Based on information gathered from a geotechnical program carried out on the Croinor site in 2003, the soils are mainly composed of sand and silt. The overburden is thin and water-saturated soils were encountered in three of the 13 trenches completed. The likelihood of having a class I or II aquifer on the Croinor site is low.

Based on a hydrogeological study conducted in 2003–2004, it was estimated that the water infiltration rate in the pit was 734 m^3/day, excluding precipitation and runoff. Considering an average precipitation of 902 mm/year, the dewatering pumping requirement is estimated at 963 m^3/day.

Beacon site

No information has been found on hydrogeological studies at the Beacon site.

20.5.5 Waste rock, ore and tailings characterization

A geochemical characterization was conducted on the Croinor site in 2009 to characterize the ore and waste rock. Selected composite samples were collected from drill core samples. The core represented typical ore and geological units that will be extracted during the mine operation. Ten (10) ore samples, eight (8) waste rock samples and three (3) sludge samples (from the settling pond) were collected.

No tailings currently accumulated at the Beacon site were characterized. Assuming that only gold and silver will be removed from the ore (the plant has been used for the purposes of extracting only precious metals), the ore samples from Croinor are representative of the future Beacon tailings.

All 21 samples were tested using the modified Sobek ABA method (acid-base accounting) to determine the acid-generating potential. Based on the test results, waste rock and sludge are non-acid-generating, since all total sulphur concentrations are below 0.3%. Total sulphur concentrations for the ore samples are above 0.3% (0.61–3.93%). However, neutralization potentials (produced through carbonates dissolution) is high (134.7–274.9 kg $CaCO_3$/t) and should control the acid generation. Ore will be stored temporarily and acid generation is not anticipated in the short term.

Ten (10) ore samples, eight (8) waste rock samples and one (1) composite sludge sample were assayed for trace elements, in order to estimate whether their metals content was above Criteria A of Québec's *Politique de protection des sols et de réhabilitation des terrains contaminés* (Soil Protection and Contaminated Site Rehabilitation Policy). For waste rock and ore samples, some metal values were found to be above Criteria A. Leach tests were required to evaluate whether metal leaching is possible. For the leach tests, the 10 ore samples were combined into five (5) composite samples and the eight (8) waste rock samples were combined into four (4) composite samples. Leach tests on these nine (9) composite samples were carried out using the TCLP (Toxicity Characteristic Leaching Procedure, EPA Method 1311), SPLP (Synthetic Precipitation Leaching Procedure, EPA Method 1312) and CTEU-9 protocols (which represent leaching under conditions of acetic acid, acid rain and neutral pH respectively). The results from the leach tests were compared to the groundwater criteria of the “Politique de protection des sols et de réhabilitation des terrains contaminés”.

Based on the results of metals content and TCLP leach tests, as required by the Directive 019, some metals could be leachable. Manganese exceeded the criteria for each waste rock and ore sample. Other metals exceeded the criteria for a few samples: barium (1 waste rock sample), cadmium (2 ore samples and 1 waste rock sample), chromium (1 ore sample) and copper (2 ore samples).

The above-criteria results in the TCLP leach tests under acetic acid conditions are not expected to be replicated in the field, since the waste rock and the ore are not expected to generate acid. Under acid rain (SPLP) and neutral pH (CTEU-9) conditions, only silver exceeded the Criteria of Groundwater for some samples. Silver values were, however, found to be above Criteria A for only one ore sample, which is an isolated occurrence. Based on the results of metals content, SPLP and CTEU-9 leach tests, the waste rock and ore samples as a whole are not expected to leach under acid rain and neutral pH conditions.

Leach tests were not required for the sludge sample, since no value was above Criteria A. Based on these results, the sludge of the settling pond is classified as a low-risk residue.

20.5.6 Vegetation

The Project is located in the coniferous or boreal zone of the bioclimatic domain of balsam fir-white birch. The type of vegetation present on the Croinor and Beacon sites is relatively frequent in this region of Québec.

No species at risk is recorded on either site in the CDPNQ database.

Croinor site

Most of the Croinor site is characterized by the presence of Black spruce-moss stands or ericaceous species. In the immediate vicinity of the site, Balsam fir (*Abies balsamea*) and Black spruce (*Picea mariana*) stands are more present. Other forest stands are birch (*Betula sp.*), aspen (*Populus sp.*) and larch (*Larix sp.*). There are also several fens and bogs around the rivers and wetlands in the area. A riparian marsh consisting of grasses and other herbaceous plants is located on each side of the receiving stream where the final effluent will be discharged. There is also a shrubby area between the riparian marsh and the forest environment in which the receiving stream flows.

Beacon site

The TSF at the Beacon site was restored and vegetation is well-established in the polishing pond. Several species of shrubs and hardwood trees, dominated by birch and Trembling aspen (*Populus tremuloides*), are present.

Based on the map produced in 2013 by the *Groupe de recherche sur l'eau souterraine* of Université de l'Abitibi-Témiscamingue, wetlands are found east of the processing plant near the railway (marsh), as well as north of the sedimentation basin where a marsh and a bog are present. Marshes are also found along the stream located west of the plant (GRES, 2013).

20.5.7 Wildlife

20.5.7.1 Mammals

Many species of mammals typical to the Canadian boreal forest may be present in the Project area: American Black bear (*Ursus americanus*), moose (*Alces americanus*), White-tailed deer (*Odocoileus virginianus*), Canadian lynx (*Lynx canadensis*), Red fox (*Vulpes vulpes*), North American porcupine (*Erethizon dorsatum*), Snowshoe hare (*Lepus americanus*), beaver (*Castor canadensis*), Common muskrat (*Ondatra zibethicus*), North American River otter (*Lontra canadensis*), raccoon (*Procyon lotor*), American mink (*Neovison vison*), American marten (*Martes americana*), Red squirrel (*Tamiasciurus hudsonicus*) and Eastern chipmunk (*Tamias striatus*).

The *Plan d'aménagement du site faunique du caribou au sud de Val-d'Or* (MRN, 2013) was consulted to determine whether Woodland caribou (*Rangifer tarandus caribou*) may be found in the Project area. Woodland caribou is a vulnerable species in Québec and designated as threatened under the federal *Species at Risk Act* ("SARA"). Special protection zones exist at the periphery of the Caribou-de-Val-d'Or Biodiversity Reserve. One of these, known as Buffer zone 1A, extends to highway 117, just south of the Beacon site.

The Project is in Hunting Area 13, which is popular for hunting moose, bear and small game. No species at risk is recorded on either site in the CDPNQ database.

20.5.7.2 Ichthyofauna

Croinor site

The watercourses in the area of the Croinor site flow mainly in the clayey deposits, drain several peatlands and present acidic and turbid water. These conditions are favourable to "tolerant" fish species, such as walleye and pike. The species seen in Blanchin Lake and likely to be found in the final effluent-receiving stream upstream of Blanchin Lake include the following:

- Walleye (Sander vitreus);
- Northern pike (*Esox lucius*);
- Burbot (*Lota lota*);
- Yellow perch (*Perca flavescens*);
- Spottail shiner (*Notropis hudsonius*);
- Lake trout (Salvelinus namaycush);
- Brown bullhead (*Ameiurus nebulosus*).

Beacon site

The fish species usually observed in the lakes and streams of the Abitibi region can be expected in the surrounding waters of the Beacon site. In addition to the aforementioned species, Trout-perch (*Percopsis omiscomaycus*) and Brook stickleback (*Culaea inconstans*) are present in Rougias Lake and Bonnefond Lake.

20.5.7.3 Avifauna

A review of existing data sources was undertaken in order to inform on the presence of migratory birds on or near the Croinor and Beacon sites, including avian species of conservation concern. Data sources included the Québec Breeding Bird Atlas (“QBBA”) (Regroupement QuébecOiseaux et al., 2017) for species potentially nesting in or near the Project area, the Audubon Christmas Bird Count (“CBC”) website for overwintering species (National Audubon Society, 2017), the Important Bird Areas (“IBAs”) of Canada database (IBA, 2017) for areas of particular importance for birds and the CDPNQ for avian species at risk.

Québec breeding bird atlas

The Croinor site is located near the southeastern corner of the Atlas Square 18UU43. Very little survey effort was undertaken in this 10 km by 10 km square, with a total of just 3.5 hours, well below the QBBA’s target survey effort of 20 hours per square, and so additional data from the surrounding Squares 18UU42 (survey effort: 22.2 hours) and 18UU52 (survey effort: 0.33 hours) were obtained. There was no survey effort reported for Square 18UU53. Breeding evidence was recorded for a total of 70 species in these three survey squares; of these, five species were confirmed to be breeding in at least one square based on observed evidence, a further 23 species were considered to be probable breeders, and the remaining 42 were considered to be possibly breeding. Breeding evidence was reported for one avian species of conservation concern in Square 18UU43, the Bald eagle (Québec: vulnerable). A list of species observed within Squares 18UU42, 18UU43 and 18UU52 during the QBBA is available.

The Beacon site is located in Atlas Square 18UU03, in which a total of 72.3 hours of survey effort was undertaken. Breeding evidence was recorded for a total of 96 species in this survey square; of these, 36 were confirmed to be breeding in at least one square based on observed evidence, a further 25 species were considered to be probable breeders, and the remaining 35 were considered to be possibly breeding. Breeding evidence was reported for six species of conservation concern: Bald eagle (Québec: vulnerable), Bank swallow (*Riparia riparia*) (“COSEWIC”: threatened), Barn swallow (*Hirundo rustica*) (COSEWIC: threatened), Canada warbler (*Wilsonia* *canadensis*) (SARA and COSEWIC: threatened, Québec: likely to be designated as threatened or vulnerable), bobolink (*Dolichonyx oryzivorus*) (COSEWIC: threatened) and Rusty blackbird (*Euphagus carolinus*) (SARA and COSEWIC: special concern; Québec: likely to be designated as threatened or vulnerable). A list of species observed within Square 18UU03 during the QBBA is available.

Christmas bird count

The Audubon CBC website was consulted to obtain historical records from the closest CBC circle to the Project area, which is the Parc Aiguebelle count located near Rouyn-Noranda. A total of 12 counts have been conducted in this circle since 1966. A list of species observed during the Parc Aiguebelle CBC is available; in total, 40 species, as well as three types of birds that could not be identified to species level, have been observed in at least one count year. No species of conservation concern has been reported in the Parc Aiguebelle CBC.

Important bird areas of Canada

The Project area is not located near any IBAs. The closest, Lac Deschênes-Ottawa River, is located more than 300 km to the southeast (IBA 2017).

CDPNQ

No sighting of avian species at risk was reported in the CDPNQ database.

20.6 Environmental Management

20.6.1 Tailings management

The following geomatics information was provided by InnovExplo for the tailings study:

- Beacon impoundment bathymetry dated July 2017 (Corriveau J.L. & Assoc. Inc., CAD File: C-13749-BATY.dwg);
- Beacon impoundment topography dated November 2004 (Corriveau J.L. & Assoc. Inc., CAD File: C-8733.dwg);

The following geotechnical information was used for the tailings study:

- Geotechnical Study S-07-1984 (Journeaux, Bédard & Associates Inc., 2007) "*Étude géotechnique parc à résidus site minier D'Or Val, Val-d'Or, Québec*";
- Geotechnical Study 04-1227-021-3000 (Golder Associates Ltd, 2004) "Étude géotechnique des haldes à minerai – Usine Dorval, Val-d'Or, Québec".

20.6.1.1 Projected tailings characteristics

Based on the description of the TSF and the current projected tonnages of the Croinor mine, a conventional slurry-tailings storage strategy has been selected as the most viable solution for the Project at this time. This study uses the following assumptions as a baseline for the tailings characteristics to be stored at the Beacon TSF:

- The historical tailings deposition slope has been measured to be 0.8% subaerial and 2.3% subaqueous, based on the geomatics information available. These values will be used in the current study;
- The selected average in-place tailings dry density will be 1,400 kg/m^3, as observed in some gold mines in the Abitibi region;
- The solid content of the tailings slurry has been estimated to be 50% by weight;
- The porosity of the in-place tailings has been estimated at 30%. It is assumed that this volume will be permanently occupied by the slurry water.

20.6.1.2 Projected tailings production

The projected tailings production was provided by InnovExplo for a four-year operation schedule (Table 20.5). The in-place tailings dry density has been used to estimate the volume of tailings to be deposited and stored in the TSF. The total tonnage of tailings to be stored is about 0.53 Mt, which is equivalent to 0.38 Mm³.

Table 20.5 – Projected tailings production

Year	Tailings Production (t/year)	Cumulative Tailings Production (t)	Tailings Production Volume (m³/year at 1.4 t/m³)	Cumulative Tailings Volume (m³ at 1.4 t/m³)
1	0.00	0.00	0.00	0.00
2	193,069.00	193,069.00	137,906.43	137,906.43
3	209,759.00	402,828.00	149,827.86	287,734.29
4	122,506.00	525,334.00	87,504.29	375,238.57

20.6.1.3 Tailings management strategy for life-of-mine

The proposed tailings management strategy for the Beacon TSF is similar to past operations: tailings will be deposited from south to north in the tailings basin, while maintaining a supernatant water pond inside the tailings pond. That water serves as a hydraulic barrier to prevent tailings inside the tailings pond from migrating to the polishing pond. The decant towers will serve to transfer water from the tailings pond to the polishing pond, and then to the environment. In addition of the decant towers, an emergency spillway must be constructed on Dike 3 (tailings pond) and Dike 4 (polishing pond) in order to safely evacuate all flood events that exceed the Directive 019 design flood.

The total storage capacity of the tailings pond, as is without further raising, is approximately 450,677 m^3. Figure 20.2 shows the deposition plan, including the proposed location of the discharged points and elevation. A shallower deposition angle will have a major direct impact on available volume. This assumption must be confirmed as the Project progresses; any modification to the mill affecting particle size, discharge rate or percentage of solids must be considered.

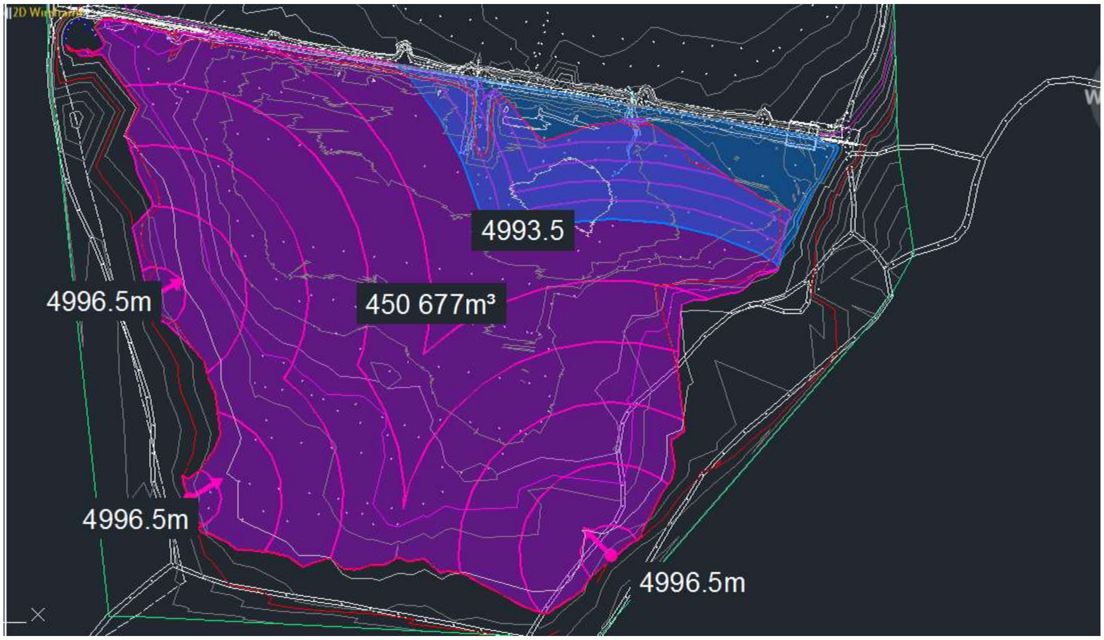


Figure 20.2 – Tailings deposition plan for Beacon TSF

The total available volume estimated for the tailings pond (0.45 Mm³) is higher than the projected LOM volume (0.38 Mm³). Based on this, it will not be necessary to raise the tailings pond.

However, before the TSF can be operated, some maintenance, repairs and inspections of the existing infrastructure will be necessary:

- Inspection of existing TSF, including decant towers, tailings pond, polishing pond and dikes;
- Removal of vegetation, and optional collection of organic matter in both ponds;
- Repair of the existing breach in Dike 3 and Dike 4, and profiling of the crest of each dike;
- Construction of several platforms required for the tailings discharge points;
- Construction of an emergency spillway on Dike 3 and Dike 4;
- Final effluent monitoring station as required by Directive 019, including electricity;
- Geotechnical investigation;
- Verification of existing dike stability;
- Electricity, pumping and pipelines;
- Confirmation of assumptions;
- Plans and specifications for construction of the spillways.

20.6.2 Water management

20.6.2.1 Croinor site

Initial development

For the purposes of re-starting operations, the open pits and existing underground openings will need to be dewatered (the underground workings are connected to the main pit). Initial dewatering is expected to be carried out at a rate of 5,500 m^3/day for an approximate period of 92 days.

Mine water will be pumped and filtered to clarify the water using dewatering bags. Particulates and solids from the mine water will be collected in the dewatering bags. No other contaminants are expected to be present in the dewatering water based on available previous data. In such applications, a coagulant, a flocculant and possibly an alkali are used to promote the flocculation of the particles and improve the filtration efficiency. The sludge collected by the dewatering bags will be characterized for final disposal.

Discharge from the dewatering bags will be directed to the existing settling pond (5,400 m3 capacity) located in the northeast portion of the site. It will take approximately one day hydraulic retention time for final polishing prior to discharge to the environment. The settling pond spillway will include a weir and a monitoring station (for pH and flowrate continuous measurement) before discharging to a collector ditch that will direct the mine effluent to Blanchin Lake. The collector ditch will have a rip-rap cover over the first 50 m to prevent particles re-suspension.

The pond effluent will be monitored according to the MMER and Directive 019 requirements. Based on data compiled in Alliance Environnement (2005), the water from pit dewatering from September 2003 to January 2004 met the Directive 019 requirements. Similar water quality could be expected during operations. Pit lake water and mine water quality should be confirmed prior the dewatering activities.

Operations

During operations, the mine water will be collected, pumped and treated on surface using the same treatment pattern: mine water will be pumped in the dewatering bags for removal of suspended solids and filtered water will be collected and directed to the settling pond. Water collected in the settling pond will be re-used for the site water demand, while excess water will be discharged to the environment through the weir and monitoring station. The sludge trapped in the dewatering bags will be characterized and disposed of in conformity with the regulations in force.

Ongoing dewatering during mine operation is estimated at a maximum of 963 m^3/day. This value is based on a hydrogeological study performed by Golder in 2003–2004 that estimated a water seepage of 734 m^3/day during previous pit dewatering and an average precipitation of 902 mm/year in the pit for an additional equivalent pumping flowrate of 229 m^3/day. This is a conservative value, since previous mine dewatering operations were 605 m^3/day on average (Alliance Environnement, 2005).

Based on a dewatering pumping rate of 963 m^3/day, the estimated retention time in the pond is five days, which will provide further polishing.

Considering that operations will also include the development of new underground workings (levels 625' and 750'), the dewatering pumping rate could change and be re-evaluated based on field water seepage.

Runoff

The Croinor site is not prone to runoff or water accumulation. Exploration trenches dug in 2003 revealed that the nature of unconsolidated deposits is mainly sandy and silty.

No runoff collection system is planned due to the high infiltration rates in the soils, waste rock piles and backfilled areas of the site, as well as the relatively flat topography.

Should there be any evidence of accumulation of runoff around the piles, the water will be sampled and analyzed to check its quality. If needed, the construction of drainage ditches will be considered.

20.6.2.2 Beacon site

The Croinor ore will be processed at the Beacon Mill by gravity, cyanidation leaching using the Merrill-Crowe process.

The water at the Beacon site will be treated for two main contaminants: total suspended solids (TSS) and cyanide.

The treatment for TSS will be achieved in two stages. The first is sedimentation of the tailings slurry in the tailings basin, where most of the solids in the tailings slurry will decant. It is assumed that this first decantation will allow the tailings slurry water to be reclaimed to the mill from the polishing pond as process water with minimal cyanide destruction. The second stage of TSS treatment will occur in the polishing pond. Depending on flow rates, particle sizes and climate conditions, chemical additives may be required to increase the rate of decantation in order to meet Directive 019 TSS effluent limits.

Cyanide can be treated by natural degradation (exposure to the open-air, evaporation, ultraviolet rays, etc.). Normally, cyanide treatment can be done in a “batch” process, which requires at least two basins. The basins are used alternatively: one basin receives contaminated water with cyanide to be reclaimed to the mill, while the other one is closed off for a variable amount of time (2 to 3 months) to allow for natural degradation to occur. According to InnovExplo, the treatment of cyanide water by batching is not required as the cyanide concentration in the water is expected to be very low at the exit of the mill. The option of constructing a second basin, or splitting the polishing pond into two basins, was not considered at this stage for this study.

The pond effluent will be monitored according to the MMER and Directive 019 requirements prior to its discharge into the environment.

Design flood water management

As the tailings produced would contain cyanide, in order to be compliant with Directive 019, the polishing pond must be able to handle a design flood event, which is a 24-hour rainfall event with a 2,000-year recurrence, combined with a 30-day spring melt event with a 100-year recurrence.

The proposed Beacon hydrologic system is presented in Figure 20.3.

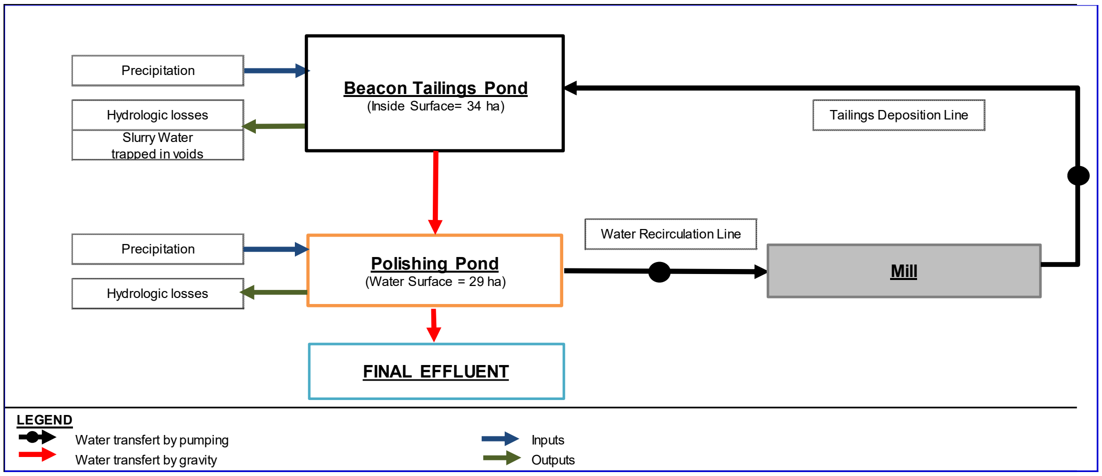


Figure 20.3 – Water management schematic of Beacon TSF

For a given hydrologic system, water balances are developed by evaluating and quantifying the inflows and outflows of the system. The Beacon TSF hydrologic system has a surface area of 63 ha. For the given climate, impoundment configuration and baseline assumptions presented earlier, the snowmelt period has been selected as the critical design water balance period. Table 20.6 summarizes the calculation of the critical water balance during the snowmelt one-month period.

Table 20.6 – Preliminary design water balance of the Beacon TSF

	Water Volume	Unit	Value
Inflow	Net runoff (24-h rainfall) – 1: 2000 years	m^3	59,072
	Net Spring melt (30 days) – 1:100 years	m^3	309,904
	Slurry water*	m^3	27,000
	Total input	m^3	**395,976**
Outflow	Process water (recirculation, including losses in the pumping system)	m^3	28,350
	Water trapped in voids	m^3	5,786
	Total output	m^3	**34,136**
	Water volume to be stored (Directive 019, 2012)	m^3	**361,841**

** Slurry-water volumes were estimated by considering a 6-month period with a maximum annual tailings production rate of 900 tpd.*

Based on the bathymetric survey provided by InnovExplo, the total available volume of the existing polishing pond is approximately 0.48 Mm^3 (considering a 1-m freeboard according to Directive 019, MDDELCC, 2012). The polishing pond, as is without further raising, will be able to handle the design flood of Directive 019. This assumes that the decant tower has the capacity to transfer the upstream portion of this volume to the polishing pond within the required 30-day period. This must be confirmed in future studies. This may provide ample retention time for second-phase sedimentation treatment for TSS and an adequate water supply for the mill during the winter (or drought) if fresh flowing water is scarce. Both of these assumptions must be verified.

The water level of the polishing pond will be operated under the 24-h rainfall maximum from May to October. In November the water level will be adjusted to the minimum required for retention time and mill operating requirements. From December to March the pond level will slowly be depleted in order receive the design flood volume in April.

An emergency spillway must be constructed for the polishing pond in order to safely evacuate all flood events that exceed the Directive's design flood.

20.6.3 Overburden, waste rock and ore management

Given that the ore and the waste rock are not anticipated to generate acid or to leach metals, the temporary ore stockpile and the waste rock piles at the Croinor site will not contain impermeable foundations.

20.6.4 Emergency response plan

An emergency response plan will be developed to ensure the health and safety of workers and the protection of the environment during each phase of the Project. It will include appropriate emergency measures to address potential situations, such as accidental spills, to ensure a rapid and effective response and describe the responsibilities of each intervenor. It will also contain a telephone list of relevant resources. An updated version of the document will be used during restoration and post-closure follow-up.

20.7 Aboriginal Groups and Public Participation

The Project area is part of the area for which the Algonquin Anishinabeg Nation Tribal Council ("CTNAA") asserts land claims. A fundamental priority of the CTNAA is to protect and promote the ancestral rights of the Algonquin nation. It has seven member communities.

On April 21, 2010, the CTNAA addressed Members of the House of Commons to assert rights over its ancestral territory—Nitakinan—the heart of which is the Ottawa River watershed, including Abitibi and Témiscamingue. The declaration criticized the federal government's comprehensive claims policy, which the CTNAA refused to support, and contained a map of the claimed lands, in addition to other material. It does not seem that a formal, exhaustive claim has been submitted as part of the federal government's process, and a claim has yet to be accepted for review or negotiation.

More specifically, the Project is located on land traditionally used by the Algonquin communities of Kitcisakik and Lac-Simon, both of which form part of the CTNAA. Members of both communities historically belonged to the Grand-Lac-Victoria band. In the 1920s, some of the members decided to move closer to their hunting areas situated near what is today the Lac-Simon reserve.

The Kitcisakik community (approximately 500 members) is situated in the northern part of the Réserve Faunique La Vérendrye. It lives in a settlement on provincial Crown land that covers 12 ha. It continues to await official designation as a reserve by the federal government. The Anicinapek de Kiticisakik community inhabits the Village du Dozois, accessible via a junction of Route 117, roughly 70 km south of Val-d’Or, and to a lesser extent the Grand Lac Victoria ancestral site. The Village du Dozois, located in the unorganized territory Réservoir-Dozois, near the Bourque dam, was built in the 1940s. It is where the community infrastructure and equipment are located.

The Société Économique de Kitcisakik strives to develop economic activities and businesses and to develop entrepreneurship amongst community members. Its goal is to develop projects that promote the hiring of community members and to turn profits for re-investment in the community.

The Lac-Simon reserve is located on the western shore of Lac Simon, 32 km south-east of Val-d’Or, and is accessible via Route 117. The reserve covers 326 ha. The Nation Anishnabe de Lac-Simon has approximately 2,100 members, of whom roughly 350 live off-reserve.

An economic development corporation—Corporation de développement économique Wabak Pimadizi—is mandated to promote the socio-economic development and entrepreneurship of the Nation Anishnabe de Lac-Simon. There is also an active Aboriginal majority-owned forestry company, Ressources Menitik.

In March 2012, the Nation Anishnabe de Lac-Simon, the Première Nation Abitibiwinni and the Government of Québec signed an agreement-in-principle defining the framework for the negotiation of a formal agreement setting out a consultation and accommodation process for mining projects. The Première Nation Abitibiwinni and the Government of Québec signed a formal agreement in that respect in December 2016. That last agreement does not apply to the Project area.

Monarques met the Council of the Nation Anishnabe de Lac-Simon in January 2016 to present the Project and to answer questions. It also awarded to Ressources Menitik the contract to upgrade the road from the former Chimo mine to the Croinor site for the construction of the electric transmission line.

20.8 Environmental Monitoring

It is planned to contract out the environmental monitoring and control activities, since the scope of the Project does not support the need for a full-time coordinator.

20.8.1 Water quality

The effluent at the Croinor and Beacon sites will be monitored as per Directive 019 and the MMER.

20.8.2 Waste rock and tailings acid-base accounting

Waste rock and tailings permanently brought to surface, either for surface disposal or use as construction materials, will be tested for acid-generation potential and metal leachability in accordance with Directive 019.

20.8.3 Air quality

Québec's *Clean Air Regulation* contains standards for nearly 90 contaminants that may be emitted by anthropogenic activities. Certain criteria must be respected at source, while others must be respected at a certain distance from the point of emission. The dispersion of atmospheric emissions must be modelled numerically. If the criteria are not met, mitigation measures should be proposed; e.g., addition of dust collectors, use of dust suppressants.

20.9 Rehabilitation and Restoration

At the end of the Project, the Croinor and Beacon sites must be closed and rehabilitated in accordance with the *Mining Act* and the rehabilitation and restoration plans approved for each site. Waste rock piles, areas backfilled with waste rock and the former industrial site must be reclaimed by re-establishing vegetation. Self-sustaining vegetation must be in place five years following final site reclamation. Agronomical and geotechnical inspections will be carried out to ensure the site's integrity.

The soil surrounding the infrastructure will be levelled. The settling pond will be emptied after ensuring that the water quality is in conformity with Directive 019, failing which it will be treated prior to its release. The sludge will be characterized. Once the pond is emptied, a breach will be opened in one of the dikes and the pond will be leveled to facilitate runoff and avoid water accumulation. Finally, the pond will be seeded. Buildings will be dismantled and foundations backfilled and vegetated. Where possible, scrap resulting from the dismantling of buildings will be sent for recycling.

At the Croinor site, any water overflowing from the open pits will be covered under the environmental monitoring program. The soil of the overburden stockpile site will be scarified and seeded. The mine workings (ramp and shaft) will be blocked and capped.

At final mine closure, an Environmental Site Assessment ("ESA") is required under section 31.51 of the EQA. The ESA must be performed within six months following the cessation of activities and according to the MDDELCC's guides and specifications. Should contamination exceed the applicable limits, a rehabilitation plan must be submitted to the MDDELCC for approval, following which the site must be rehabilitated in compliance with the plan and in a manner compatible with future site utilization.

21 CAPITAL AND OPERATING COSTS

The Prefeasibility Study (PFS) is based on capital pricing as of the mid year of 2017. The PFS assumes that the development and mining of the mine will be done by contractors. Contractors will supply the mobile equipment, and will provide and manage most of the consumable materials. Monarques will manage the project with a small team of employees.

21.1 Capital Costs

Capital costs are estimated in 2017 Canadian dollars (CAD) with no allowance for escalation. The capitals costs were estimated using the following sources of information:

- Quotes from equipment suppliers;
- Comparable installations at other mining projects;
- Contractor costs;
- InnovExplo's internal database.

The capital cost estimates are accurate within ±20%.

The pre-production costs are estimated at $33.5M, including $22.6M of capitalized operating costs and capitalized revenues of $16.4M during the pre-production period. Sustaining capital is estimated at $17.2M, excluding $3.2M for final closure costs. The capital expenditure cost breakdown is presented in Table 21.1.

Table 21.1 – Capital expenditure breakdown

Description	Preproduction ($M)	Sustaining ($M)	Total cost ($M)
Capitalized revenues	(16.43)	-	**(16.43)**
Capitalized operating cost	22.61	-	**22.61**
Mine dewatering and rehabilitation	1.59	0.13	**1.72**
Surface infrastructure - Temporary	0.69	0.36	**1.06**
Mine infrastructure	8.08	0.30	**8.38**
Electrical distribution - Surface	1.69	0.51	**2.19**
Underground pumping system	0.20	0.42	**0.62**
Underground ventilation system	0.63	0.07	**0.70**
Lateral development	9.47	13.90	**23.37**
Beacon Mill refurbishing	2.17	1.28	**3.46**
Tailings impoundment refurbishing	0.39	-	**0.39**
Owner's mobile equipment	0.22	0.23	**0.45**
Environmental	2.20	-	**2.20**
Total	**33.53**	**17.20**	**50.73**

21.1.1 Capitalized revenue

During the 12 months of the pre-production period, the Croinor mine is expected to produce a total of 10,211 oz Au, providing revenue of $16.4M. The pre-production revenue is capitalized.

21.1.2 Capitalized operating costs

The capitalized operating costs include all operating costs that occur during the pre-production period which last for Year 1. The operating costs include the costs presented in Table 21.2.

Table 21.2 – Capitalized operating costs

Description	Preproduction ($)
Definition drilling	127,494
Development	7,969,481
Production	1,610,597
Owner's staff	2,023,745
Contractor's daily fees	5,767,632
Energy cost	1,494,406
Milling	1,723,573
Ore transportation	491,555
Environmental	1,399,347
Total	**22,607,829**

21.1.3 Royalties

As described in Section 4.3.1, an agreement was signed in February 2014 and modified in February 2017 consolidating the former royalties by leaving a 1.5% NSR royalty.

21.1.4 Mine dewatering and rehabilitation costs

The rehabilitation costs include shaft rehabilitation, portal preparation work, ramp rehabilitation to level 125, genset and temporary electrical distribution. A 10% contingency is included. Table 21.3 presents the different costs related to the mine dewatering and rehabilitation.

Table 21.3 – Mine dewatering and rehabilitation costs

Description	Preproduction ($)	Sustaining ($)	Total cost ($)
Portal preparation work	66,500	-	**66,500**
Open pit dewatering	370,500	-	**370,500**
U/G mine dewatering	171,000	-	**171,000**
Ramp rehabilitation	320,760	-	**320,760**
Level rehabilitation	24,552	117,414	**141,966**
Shaft rehabilitation	496,000	-	**496,000**
Contingency (10%)	144,931	11,741	**156,673**
Total	**1,594,243**	**129,155**	**1,723,399**

21.1.5 Temporary surface infrastructure

Site preparation and installation includes the cost for the main access road to the mine site, parking lot preparation, the propane farm pad, compressors, site fencing, the diesel tank, surface parking for equipment, contractor equipment preparation and mobilization, and contractor demobilization. See Table 21.4 for surface infrastructure costs.

Table 21.4 – Surface infrastructures

Description	Preproduction ($)	Sustaining ($)	Total cost ($)
Contractor mobilization and setup	631,000	-	631,000
Contractor demobilization	-	330,000	330,000
Contingency (10%)	63,100	33,000	96,100
Total	**694,100**	**363,000**	**1,057,100**

21.1.6 Mine infrastructure

The buildings will be made of modular and portable buildings. The buildings will be purchased at the beginning of the project and installed on site by the supplier. The buildings item includes transportation and installation on site. A residual value of the buildings was considered at the end of mining operation.

Table 21.5 presents the cost breakdown based on budget quotes provided by suppliers and existing comparable facilities at other projects.

Table 21.5 – Mining infrastructure cost estimate

Description	Preproduction ($)	Production ($)	Total ($)
Surface			
Service building	2,612,392	-	**2,612,392**
Potable water	273,000	-	**273,000**
Sewage treatment	129,400	-	**129,400**
Compressed air station	353,733	-	**353,733**
Workshop	830,193	-	**830,193**
Cold storage	83,855	-	**83,855**
Fuel storage facility	174,925	-	**174,925**
Cap magazines	20,233	-	**20,233**
Explosive magazines	20,233	-	**20,233**
Communication tower	271,380	-	**271,380**
Communications/IT	139,008	-	**139,008**
U/G mine	102,153	-	**102,153**
Main access road refurbishes	1,317,877	-	**1,317,877**
Secondary road refurbishes	25,708	-	**25,708**
Contingency (23%)	1,486,431	-	**1,486,431**
Subtotal surface	**7,840,523**	**-**	**7,840,523**
Underground construction – Rock work			
Refuge – rock work	85,000	170,000	**255,000**
Powder and cap magazine – Rock work	-	80,000	**80,000**
Surveying equipment	115,000	-	**115,000**
Contingency (20%)	40,000	50,000	**90,000**
Subtotal underground	**240,000**	**300,000**	**540,000**
Total	**8,080,523**	**300,000**	**8,380,523**

21.1.7 Mine service infrastructure

The electrical infrastructure and communications system include all costs related to the mine electrical infrastructure.

Water system and distribution includes the permanent pumping stations and the sumps.

Ventilation and air heating includes the main fan and the underground ventilation construction work.

Table 21.6 presents a summary of these costs with various contingencies applied to the infrastructure costs, depending on the estimates.

Table 21.6 – Mine service infrastructure costs

Description	Preproduction ($)	Sustaining ($)	Total cost ($)
Electrical infrastructure and communications system			
Powerline distribution	1,968,294	-	**1,968,294**
Electrical station	1,227,184	-	**1,227,184**
Back-up genset	165,467	-	**165,467**
U/G electrical substation	371,421	371,421	**742,842**
Contingency (14%)	522,347	51,981	**574,328**
Electrical substation – rock work	140,000	70,000	**210,000**
Contingency (20%)	28,000	14,000	**42,000**
Powerline distribution subvention	(2,737,500)	-	**(2,737,500)**
Subtotal electrical	**1,685,214**	**507,402**	**2,192,615**
U/G pumping system			
Level 120 C – Pumping station	152,250	-	**152,250**
Level 160 W – Pumping station, main	-	160,550	**160,550**
Level 260 C – Pumping station	-	152,250	**152,250**
Main Sump – Rock work	25,000	50,000	**75,000**
Contingency (15%)	26,588	54,420	**81,008**
Subtotal pumping	**203,838**	**417,220**	**621,058**
U/G ventilation system			
U/G ventilation	91,277	-	**91,277**
U/G heating	260,000	-	**260,000**
Main fan	55,700	-	**55,700**
Ventilation wall – Rock work	120,000	60,000	**180,000**
Contingency (20%)	103,918	11,832	**115,750**
Subtotal ventilation	**630,895**	**71,832**	**702,726**
Total	**2,519,946**	**996,453**	**3,516,399**

21.1.8 Development

A considerable amount of development and rehabilitation work is planned for the preproduction year to provide some flexibility in terms of access, which should facilitate scheduling during the production period.

The estimated capital development cost is $9.5M for the preproduction period and the estimated sustaining capital is $13.9M. It includes all ramp development, the excavation required to access the production drift, and the excavation of all required ventilation raises. Primary development, such as the electrical station, refuge station and sump, are part of the development capital cost and were included by adding 15% to all development required in the mine plan. No further contingency was added to the development cost.

Table 21.7 – Lateral development costs

Description	Unit	Unit cost	Pre-production ($)	Sustaining ($)	Total cost ($)
Main ramp (4m x 4.5m)	$/m	3,350	5,300,370	6,016,600	**11,316,970**
Development drift (4m x 4m)	$/m	3,050	2,687,050	4,806,800	**7,493,850**
Drift enlargement (4m x 4m)	$/m	2,200	114,400	-	**114,400**
Raises	$/m	3,635	94,506	1,148,616	**1,243,122**
Safety bays	$/unit	1,950	25,350	111,150	**136,500**
Electrical substation	$/unit	3,050	12,200	6,100	**18,300**
Contingency (15%)		-	1,235,081	1,813,390	**3,048,471**
		Total	**9,468,958**	**13,902,656**	**23,371,614**

21.1.9 Beacon Mill refurbishing costs

Preproduction Beacon Mill refurbishing costs is $2.2M and sustaining costs is $1.3M. A 15% contingency has been applied, see Table 21.8 for cost details.

Table 21.8 – Beacon Mill refurbishing costs

Description	Preproduction ($)	Sustaining ($)	Total cost ($)
Refurbishing work	1,755,608	-	**1,755,608**
Management fee	134,200	-	**134,200**
Spare parts	-	1,116,311	**1,116,311**
Contingency (15%)	283,471	167,447	**450,918**
Total	**2,173,279**	**1,283,758**	**3,457,037**

21.1.10 Tailings impoundment refurbishing costs

Tailings impoundment refurbishing costs includes inspection, removal of vegetation, geotechnical investigation, repairs and some constructions for a total preproduction costs of $0.4M. A 30% contingency has been applied, see Table 21.9 for costs details.

Table 21.9 – Tailings impoundment refurbishing costs

Description	Preproduction ($)	Total cost ($)
All Costs	303,000	**303,000**
Contingency (30%)	90,900	**90,900**
Total	**393,900**	**393,900**

21.1.11 Mobile equipment

The study assumes that all the production equipment will be provided by the contractor. Monarques will only own some of the onsite travel equipment and some equipment for underground staff work. The costs in Table 21.10 were estimated using quotes from suppliers with a 25% down payment upon receipt of the equipment and the remaining amounts financed by the supplier at 5%.

Table 21.10 – Breakdown of mining equipment capital cost

Mining Equipment	Number	Preproduction ($)	Sustaining ($)	Total cost ($)
Owner's mobile equipment				
Owner's tractor (basket)	1	49,375	51,250	**100,625**
Owner's tractor	1	40,020	41,540	**81,559**
Owner's pick-up	4	93,553	97,106	**190,659**
Contingency (20%)	-	36,590	37,979	**74,569**
Total	**45**	**219,537**	**227,875**	**447,412**

21.1.12 Environment

Total environmental capital cost is $2.2M. Estimates were provided by Amec Foster Wheeler and are summarized in Table 21.11. There is no sustaining capital.

Table 21.11 – Environmental capitalized cost

Description	Preproduction ($)
Croinor Gold Mine Project CAPEX	
Pit and mine dewatering treatment plant	1,199,738
Effluent monitoring station	124,210
Ditch upgrade downstream of effluent monitoring station	5,000
Permitting, monitoring and environmental protection/management plan	197,420
Contingency (20%)	305,774
Beacon CAPEX	
Effluent monitoring station	124,210
Ditch upgrade downstream of effluent monitoring station	5,000
Permitting, monitoring and environmental protection/management plan	177,300
Contingency (25%)	61,802
Total	**2,200,453**

21.1.13 Project closure costs

As part of their mandate, AEMC estimated the project closure costs to be $3.1M. Table 21.12 presents a breakdown of the closure costs. A financial guarantee of $2.2M has already been deposited by the previous operator: $416,155 for the Croinor Gold Mine Project and $1,805,380 for the Beacon site. This amount will be applied to the closure cost at the end of the project.

Table 21.12 – Closure cost

Description	Cost ($)
Croinor Gold Mine Project – Rehabilitation/restoration at closure	537,804
Beacon – Rehabilitation/restoration at closure	2,197,383
Contingency (15%)	410,278
Total closure cost	**3,145,465**
Financial guarantee reimbursement	(2,221,535)
Total	**923,930**

In addition to the final closure cost, a yearly cost is necessary to update the rehabilitation and restoration plan. The breakdown of this cost is presented in Table 21.13.

Table 21.13 – Yearly closure cost

Description	Yearly cost	Total cost	Unit cost	
	($)	($)	($/t milled)	($/oz)
Croinor Gold Mine Project – Rehabilitation/restoration plan update	6,000	21,500	0.04	0.19
Beacon – Rehabilitation/restoration plan update	6,000	21,500	0.04	0.19
Contingency (20%)	2,400	8,600	0.02	0.07
Total	**14,400**	**51,600**	**0.10**	**0.45**

21.1.14 Equipment residual value

A residual value of $1.2M has been considered, mostly for mobile, building, electrical, ventilation and air heating equipment.

21.2 Operating Costs

Operating costs are estimated in 2017 Canadian dollars (CAD) with no allowance for escalation. The total operating cost and average unit operating costs are summarized in Table 21.14. The overall unit operating cost is 175.02 $/t of milled ore.

Table 21.14 – Summary of total LOM operating costs

Description	Total cost ($M)	Unit cost ($/t milled)	Unit cost ($/oz)
Definition drilling	1.10	2.04	9.55
Stope development	23.16	42.84	200.20
Production	22.57	41.75	195.10
Owner's staff	9.77	18.08	84.50
Contractor's daily fees	14.90	27.56	128.80
Energy cost	4.81	8.90	41.61
Milling	11.02	20.39	95.29
Ore transportation	4.26	7.88	36.81
Environmental	3.02	5.58	26.07
Total	**94.61**	**175.02**	**817.91**

21.2.1 Definition drilling

InnovExplo estimates that 15,400 m of definition drilling will be required until early in Year 4 when most of the definition drilling will have been completed. This estimate is based on similar mine operating practices. According to the mine-life conceptual mine plan, access for drill set-up should generally be relatively simple. A cost of 80 $/m was used, and the resulting total estimate for definition drilling is 2.04 $/t milled.

21.2.2 Stope development

The unit cost for stope development stands at 42.84 $/t milled (based on milled tonnage assigned to production) and consists of 3.0 m by 3.7 m drift excavation or enlargement work, and 100% of the raises and sublevels for long-hole mining. A 15% contingency was added to the development lengths for drifts and raises and is included in the development sequence.

The development unit cost was estimated using quotes from contractors for direct and support labour, as well as for the supply of consumable materials, steel, bits and small tools.

The unit costs were estimated based on the quantities needed according to the dimensions of each type of excavation. The consumable cost includes explosives, ground control, ventilation water and compressed air piping. A contingency of 15% was added to account for the various losses.

21.2.3 Production

InnovExplo estimated mine operating costs using budget quotes from contractors and suppliers.

Mining costs are estimated at 78 $/t milled for the room and pillar method and 21 $/t milled for the long-hole method. The unit mining cost for long-hole and room and pillar does not include the haulage cost. This cost is 9.54 $/t. An average cost of 21.14 $/t milled and 7.88 $/t for the ore transportation to Beacon Mill.

21.2.4 Monarques mining staff and employees

Staff and employee salaries and associated expenses include those for the administrative, technical and surface services. The salaries and the departmental general operating costs are based on costs at other mining operations. To account for benefits, 38% was added; depending on the job, bonuses were also included. The yearly cost during production is about $3.5M, averaging 18.08 $/t milled. The total cost for Monarques' staff and departmental cost is estimated at $9.8M. The annual cost is detailed in Table 21.15.

Table 21.15 – Monarques mining staff salaries

Manpower	Pre-production	Production		
	Year 1	Year 2	Year 3	Year 4
Administration				
Labour	433,274	768,290	791,378	461,637
Material and other	287,397	408,099	479,537	89,564
Sub-Total Administation	**720,672**	**1,176,388**	**1,270,915**	**551,201**
Surface services				
Labour	188,490	240,157	240,157	140,091
Sub-Total Surface services	**188,490**	**240,157**	**240,157**	**140,091**
Technical Services				
Geology Labour	201,198	504,941	557,274	325,076
Engineering Labour	324,220	591,656	760,968	443,898
Material and other	43,570	70,200	73,440	5,445
Sub-Total Technical services	**568,988**	**1,166,797**	**1,391,682**	**774,419**
Operations				
Mine Operation Labour	263,115	466,981	650,146	379,252
Material and other	18,514	22,762	26,744	1,786
Sub-Total Operations	**281,628**	**489,742**	**676,890**	**381,038**
Contingency (15%)	263,967	460,963	536,946	277,012
Total Annual Manpower	**2,023,745**	**3,534,047**	**4,116,589**	**2,123,761**

21.2.5 Contractor indirect costs

All the salaries for the manpower required to operate the mine, including supervision, maintenance and underground workers, are included in contractor indirect costs, which amount is estimated to $14.9M for the entire Project, averaging 27.56 $/t milled.

21.2.6 Energy cost

The energy cost includes all electrical consumption, the propane needed to heat the underground air, and the rental of a propane tank. The estimated total energy cost is $4.8M, or an average of 8.90 $/t milled. As shown in Table 21.16, the annual energy cost is estimated to $1.9M.

Table 21.16 – Yearly energy cost

Description	Yearly cost ($)
Electricity	898,606
Propane	715,457
Propane tank rental (WSP)	6,000
Contingency (15%)	243,009
Total	**1,863,073**

21.2.7 Milling and ore transportation

Ore from the Croinor Property will be processed at the Beacon mill site in the Val-d'Or area for the duration of the mining operations. Transportation and milling is estimated at 28.27 $/t. Transportation costs are based on transporters' quotes.

Total milling cost is estimated to $11.0M or 20.39 $/t milled, and the total transportation cost is estimated to $4.3M or 7.88 $/t milled.

21.2.8 Environment

Amec Foster Wheeler estimated the total environmental costs to be $3.0M for an average of 5.58 $/t milled. Costs include water treatment, tailings and effluent for the Croinor Gold Mine Project and the Beacon site.

22 ECONOMIC ANALYSIS

An after-tax model was developed for the Croinor Gold Property. All costs are in 2017 Canadian dollars with no allowance for inflation or escalation. The Property is subject to federal and provincial taxes and taxes related to Québec mining rights. Income taxes are calculated in accordance with the federal and provincial tax legislations relating to mining companies. The calculations were made by Lucie Chouinard of Deloitte. The federal income tax rate is 15% and the combined provincial income tax rate is:

- 11.8% from 01-01-2017;
- 11.7% from 01-01-2018;
- 11.6% from 01-01-2019 to 01-01-2020.

Québec mining duties are calculated in accordance with Bill 55, which contains amendments to Québec's *Mining Tax Act* and received its first reading in the Québec legislature on November 12, 2013. Under the new regime in the *Mining Tax Act*, mining operators in Québec will be required to pay the higher of a new minimum mining tax applied to the value of the ore at the mine shaft head and a progressive tax on excess profits. The new mining tax is introducing progressive mining tax rates ranging from 16% to 28% (replacing the single tax rate of 16%), and the minimum mining tax is based on the mine-mouth output value.

The effective rate of this tax on mining profits will start at the existing 16.0% rate for mining companies with a profit margin of 35% or less, but rising to 22.0% for mining companies with a profit margin from 35% to 50%, reaching as high as 28.0% for mining companies with a profit margin of more than 50%. The profit margin will be calculated on the operator's mining profit divided by the total of the gross value of annual output for all the mines it operates. Therefore, the higher a mining corporation's profit margin, the higher the mining tax.

As described in Section 4.3.1, an agreement was signed in February 2014 and modified in February 2017 consolidating the former royalties by leaving a 1.5% NSR royalty. The 1.5% NSR royalty has been considered in the actual mine plan.

The economic valuation of the project was performed using the Internal Rate of Return ("IRR") and 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 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 interests are recovered.

The following parameters were considered in the financial analysis:

- To reflect Monarques' preferred scenario, the study uses a gold price of USD 1,280 per ounce for the end of the first year of the Project with no increase over the mine life. This approach results in a weighted average gold price of USD 1,280 per ounce and an exchange rate of 1.28 CAD/1 USD.

- Reserves parameters as described in Item 15.
- Gold recovery of 97.5%. This value was based on the recovery obtained at the time the mine was operating.
- Royal Mint fees of $5/oz.
- Estimated average annual tonnage of 129,036 tonnes to 209,214 tonnes.
- Estimated average annual output of 26,308 oz to 45,079 oz of gold.
- Royalty payment of 1.5%.
- Estimated future annual cash flow based on grade, gold recoveries and cost estimates as previously discussed in this report.
- 62,401 tonnes of ore to be processed during the preproduction period, considered as capital production and not included in either production or the revenue derived from it.

The main parameters and cash flow analysis results for the entire project are presented in Table 22.1. Details of the cash flow analysis are presented in Table 22.2.

Table 22.1 – Cash flow analysis summary

Parameters	Value	Units
Proven and probable reserves	602,994	t milled
Proven and probable reserves grade (1)	6.66	g/t milled
Total gold reserves	129,292	oz
Gold recovery	97.5	%
Minimum daily production	446	tpd
Maximum daily production	583	tpd
Average annual gold production	31,472	oz
Total amount of gold produced	125,889	oz
Average production cost	175.02	$/t
Average operating cost	817.91	$/oz
Total cost per ounce	1,154.54	$/oz
Average operating cost	639.00	USD/oz
Total cost per ounce	901.99	USD/oz
Total gross revenue	206.3	$M
Capital cost (2)	50.7	$M
Total operating cost	94.6	$M
Total project cost	145.3	$M
Net cash flow (before tax and royalties)	40.9	$M
Estimated taxes	15.7	$M
Net cash flow	25.2	$M
Pre-tax NPV (5% discount rate)	31.9	$M
Pre-tax IRR	47.5	%
After-tax NPV (5% discount rate)	18.3	$M
After-tax IRR	30.0	%
Payback period	2.2	years
Preproduction period	12	months
Mine life (production period)	2.6	years

(1) Volume and grade account for dilution and ore recovery.

(2) Includes approximately $17.2 million in sustaining capital.

Table 22.2 – Economic analysis for the Croinor Gold Mine Project (CAD, unless otherwise noted)

	Units	Preproduction	Production			Total
		Year 1	Year 2	Year 3	Year 4	
PRODUCTION						
Development	tonnes	35,907	57,502	30,026	9,731	**133,165**
Grade	g/t	4.44	5.34	4.32	2.89	**4.69**
Long hole	tonnes	22,132	107,484	128,904	116,488	**375,007**
Grade	g/t	6.30	7.26	6.84	6.81	**6.92**
Room and pillar	tonnes	4,362	36,657	50,984	2,818	**94,821**
Grade	g/t	6.18	8.90	8.36	6.42	**8.41**
Total production (mined)	tonnes mined	62,401	201,642	209,914	129,036	**602,994**
Grade	g/t	5.22	7.01	6.85	6.50	**6.66**
Total production (milled)	tonnes milled	62,401	201,642	209,914	129,036	**602,994**
Grade	g/t	5.22	7.01	6.85	6.50	**6.66**
Recovery	%	97.50	97.50	97.50	97.50	**97.50**
Total gold production	oz	10,211	44,291	45,079	26,308	**125,889**
Capitalized production	tonnes milled	62,401	-	-	-	**62,401**
Capitalized gold production	oz	10,211	-	-	-	**10,211**
Production	**tonnes milled**	**-**	**201,642**	**209,914**	**129,036**	**540,593**
Grade	g/t	5.22	7.01	6.85	6.50	**6.83**
Gold production	**oz**	**-**	**44,291**	**45,079**	**26,308**	**115,678**
REVENUES						
Gold price	USD/oz	1,280	1,280	1,280	1,280	**1,280**
Exchange rate	CAD/USD	1.28	1.28	1.28	1.28	**1.28**
Gold price	$/oz	1,638	1,638	1,638	1,638	**1,638**
Gross revenue	$M	16.73	72.57	73.86	43.10	**206.26**
Royal mint (cost @ 5.00 $/oz)	$M	(0.05)	(0.22)	(0.23)	(0.13)	**(0.63)**
Royalty (1.5% preproduction)	$M	0.25	1.09	1.11	0.65	**3.10**
Capitalized revenue	$M	16.43	-	-	-	**16.43**
Net revenue (EBITDA)	**$M**	**-**	**71.25**	**72.52**	**42.32**	**186.10**
CAPITAL EXPENDITURES						
Capitalized revenues	$M	(16.43)	-	-	-	**(16.43)**
Capitalized operating cost	$M	22.61	-	-	-	**22.61**
Mine dewatering and rehabilitation	$M	1.59	0.13	-	-	**1.72**
Surface infrastructure – Temporary	$M	0.69	-	-	0.36	**1.06**
Mine infrastructure	$M	8.08	0.30	-	-	**8.38**
Electrical distribution – Surface	$M	1.69	0.51	-	-	**2.19**
U/G pumping system	$M	0.20	0.21	0.20	-	**0.62**
U/G ventilation system	$M	0.63	0.07	-	-	**0.70**
Lateral development	$M	9.47	13.09	0.81	-	**23.37**
Beacon Mill refurbishing	$M	2.17	0.64	0.64	-	**3.46**
Tailings impoundment refurbishing	$M	0.39	-	-	-	**0.39**
Owner's mobile equipment	$M	0.22	0.11	0.11	-	**0.45**
Environmental	$M	2.20	-	-	-	**2.20**
Total capital expenditures	**$M**	**33.53**	**15.07**	**1.77**	**0.36**	**50.73**
OPERATING EXPENDITURES						
Definition drilling	$M	0.13	0.41	0.43	0.26	**1.23**
Development	$M	7.97	14.77	8.22	0.17	**31.13**
Production	$M	1.61	8.10	9.99	4.48	**24.18**
Owner's staff	$M	2.02	3.53	4.12	2.12	**11.80**
Contractor's daily fees	$M	5.77	5.77	5.77	3.36	**20.67**
Energy cost	$M	1.49	1.86	1.86	1.09	**6.31**
Milling	$M	1.72	4.19	4.23	2.60	**12.75**
Ore transportation	$M	0.49	1.59	1.65	1.02	**4.75**
Environmental	$M	1.40	1.17	1.17	0.68	**4.41**
Capitalised operating cost	$M	(22.61)	-	-	-	**(22.61)**
Total operating costs	**$M**	**-**	**41.39**	**37.44**	**15.79**	**94.61**
Operating cost	$/t	-	205.24	178.34	122.39	**175.02**
Operating cost	$/oz	-	934	830	600	**818**
Operating cost (USD)	USD/t	-	160.35	139.33	95.62	**136.73**
Operating cost (USD)	USD/oz	-	730	649	469	**639**
Operating cash flow	**$M**	**-**	**29.87**	**35.09**	**26.53**	**91.48**
TOTAL COSTS						
Total costs	$/oz	3,283	1,275	870	614	**1,155**
Total costs (USD)	USD/oz	2,565	996	679	480	**902**
Salvage value of remaining asset	$M	-	-	-	1.16	**1.16**
Financial guarantee reimbursement	$M	-	-	-	(2.22)	**(2.22)**
Mine closure costs	$M	0.01	0.01	0.01	3.15	**3.20**
Net cash flow	**$M**	**(33.54)**	**14.78**	**33.30**	**26.39**	**40.94**

Estimated mining and income taxes (38%)	$M	0.15	3.80	8.22	3.57	**15.73**
Cash surplus after taxes	$M	(33.69)	10.98	25.08	22.83	**25.21**
Cumulative cash flow	**$M**	**(33.69)**	**(22.71)**	**2.38**	**25.21**	**25.21**

Pre-tax NPV (5%)	**$M**	**31.95**
Pre-tax IRR	**%**	**47.53**

After-tax NPV (5%)	**$M**	**18.33**
After-tax IRR	**%**	**29.99**

22.1 Sensitivity

The parameters in the sensitivity analysis were chosen based on their potential impact on the outcome of the economic evaluation. Key economics were examined by running cash flow sensitivities against:

- Gold price (USD/oz);
- Revenue;
- Operating cost (OPEX);
- Capital cost (CAPEX);
- Grade (g/t).

Sensitivity calculations were performed on the project's after-tax NPV (5%) by applying a range of variation to the parameter values: -30%, -20%, -10%, +10%, +20% and +30%.

Results are presented in Table 22.3 to Table 22.6. The effects on NPV and IRR are shown graphically in Figure 22.1 to Figure 22.4.

As illustrated in the figures, the Property is highly sensitive to changes in grade, gold price and revenue. It is moderately sensitive to changes in OPEX and CAPEX.

As illustrated in the figures, for any variation more than about -15% for the gold price, revenue or grade, the Project becomes non-profitable.

Table 22.3 – Sensitivity analysis, after-tax NPV 5% ($M)

	-30%	-20%	-10%	Base Case scenario	10%	20%	30%
Gold Price (US$/oz)	-22.60	-4.95	7.20	**18.33**	29.38	40.15	50.64
Revenue	-22.97	-5.20	7.21	**18.33**	29.34	39.61	49.40
OPEX	33.35	28.57	23.43	**18.33**	13.19	8.04	2.88
CAPEX	31.76	27.27	22.79	**18.33**	13.85	9.37	4.97

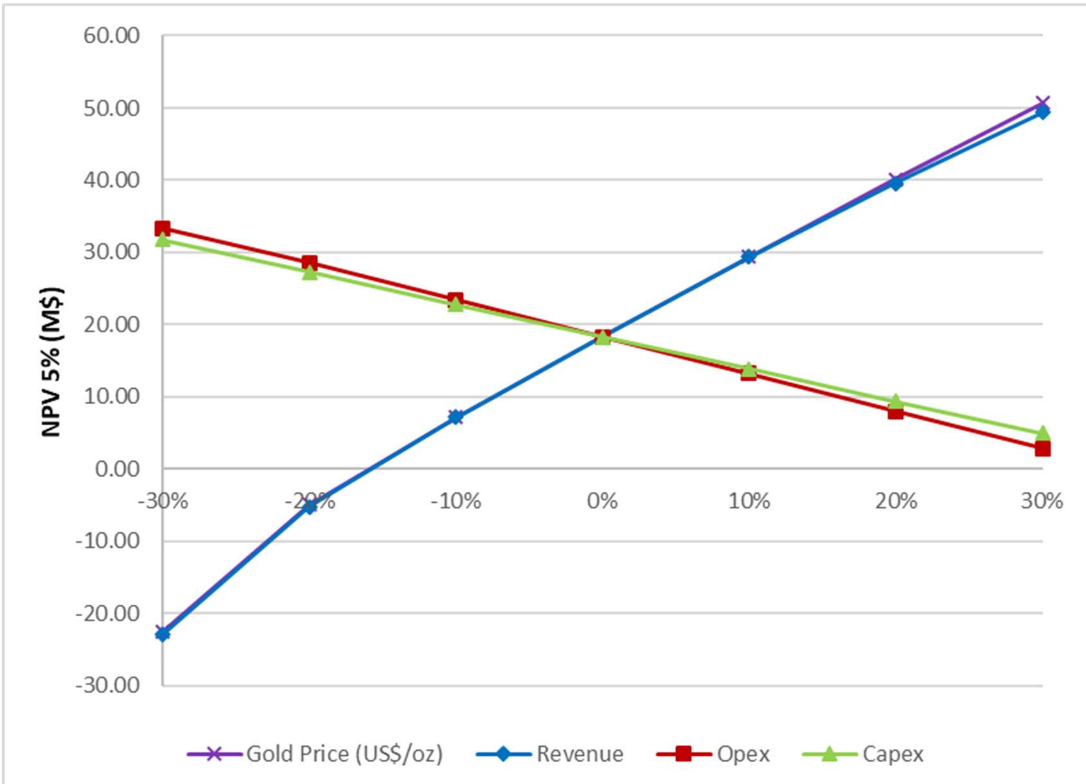


Figure 22.1 – Sensitivity analysis, after-tax NPV at 5% ($M)

Table 22.4 – Sensitivity analysis of grade, after-tax NPV at 5% ($M)

	-30%	-20%	-10%	Base Case scenario	10%	20%	30%
Grade (g/t)	-22.43	-4.83	7.24	**18.33**	29.34	40.05	50.54

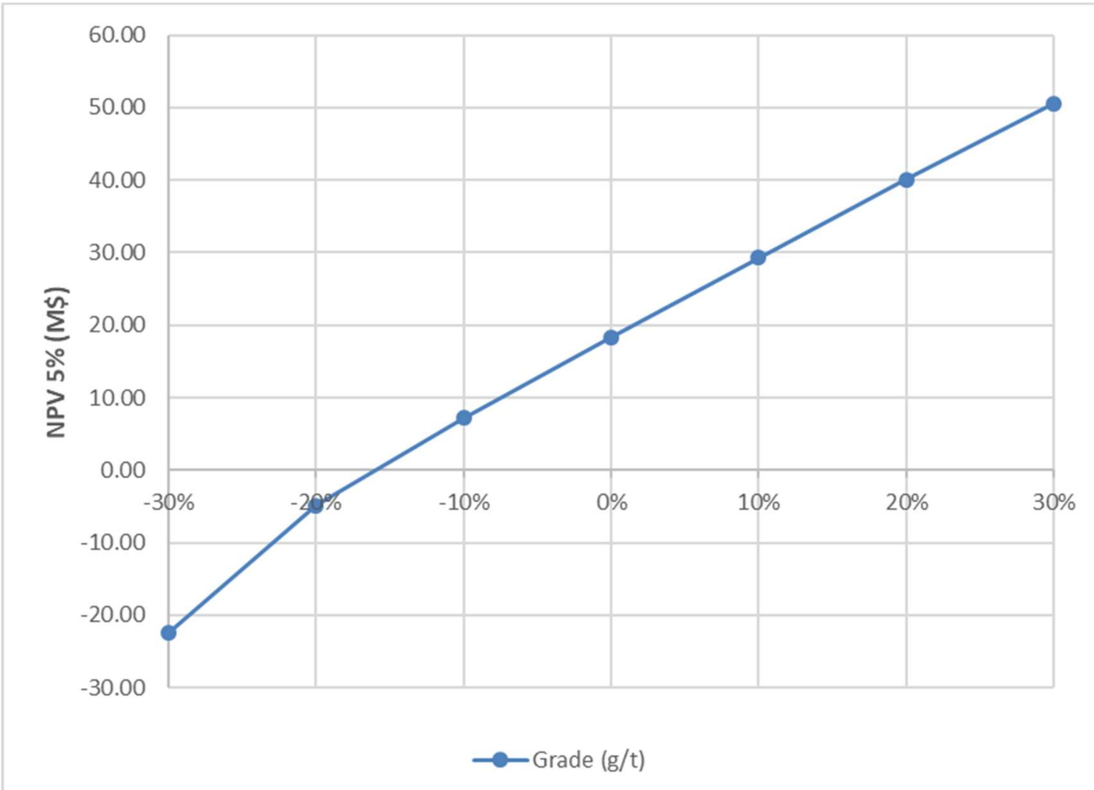


Figure 22.2 – Sensitivity analysis of grade, after-tax NPV at 5% ($M)

Table 22.5 – Sensitivity analysis, after-tax IRR (%)

	-30%	-20%	-10%	Base Case scenario	10%	20%	30%
Gold price(US$/oz)	-23%	-1%	14%	**30%**	46%	65%	83%
Revenue	-23%	-2%	14%	**30%**	47%	63%	81%
OPEX	52%	44%	37%	**30%**	23%	16%	9%
CAPEX	79%	56%	41%	**30%**	22%	15%	10%

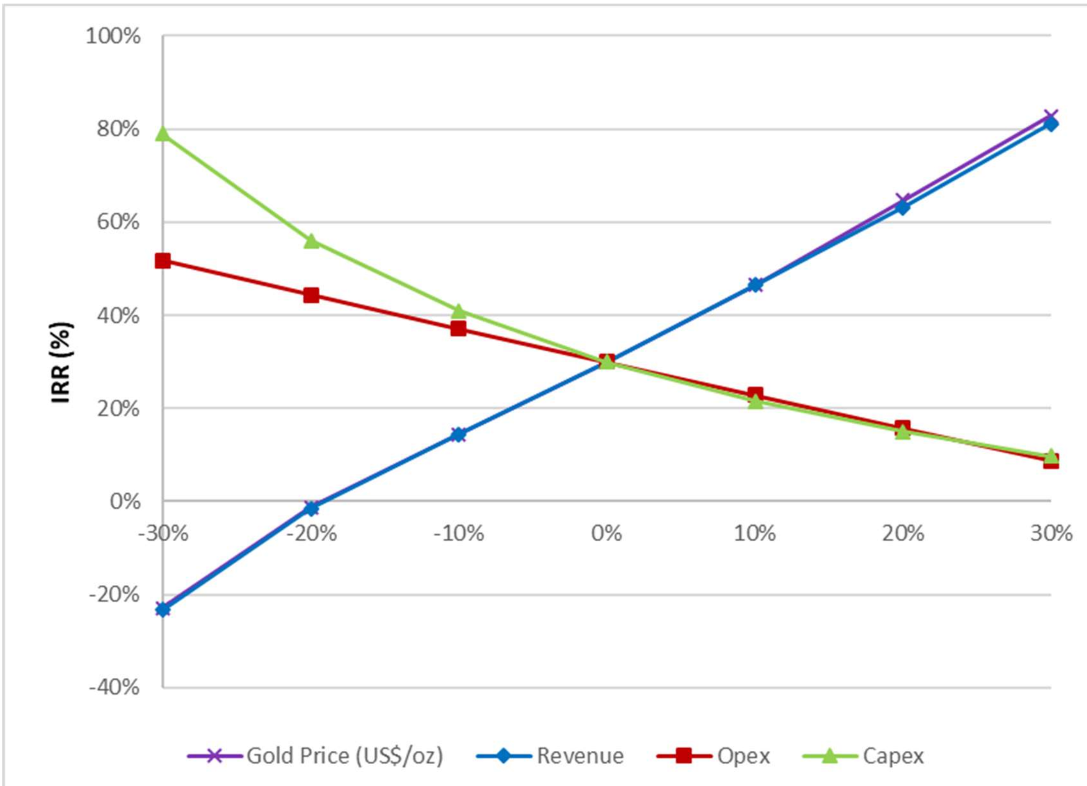


Figure 22.3 – Sensitivity analysis, after-tax IRR (%)

Table 22.6 – Sensitivity analysis of grade, after-tax IRR (%)

	-30%	-20%	-10%	Base Case scenario	10%	20%	30%
Grade (g/t)	-23%	-1%	14%	**30%**	46%	64%	83%

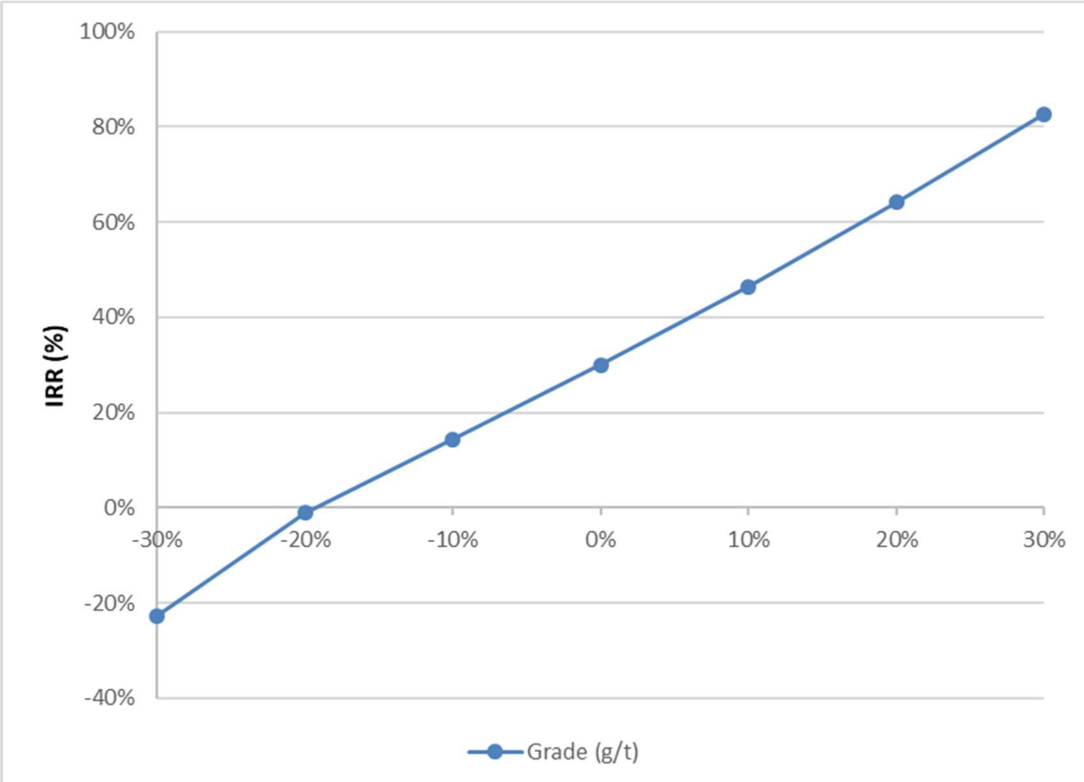


Figure 22.4 – Sensitivity analysis of grade, after-tax IRR (%)

22.2 Discount Rate Sensitivity

The cash flow has been discounted to 5% and is considered reasonable; however, depending on the financing option, further analysis should be undertaken to establish the true discount rate based on the real cost of capital. Table 22.7 presents sensitivity to discount rate.

Table 22.7 – Sensitivity analysis at various discount rates

Discount rate	0%	3%	5%	7%	10%
NPV	25.21	20.88	18.33	16.00	12.89
Change (%)	38%	14%	Base Case	-13%	-30%

23 ADJACENT PROPERTIES

This section was modified and updated from Poirier et al. (2016). The spatial distribution of adjacent properties is shown on Figure 23.1, including those held by junior companies and prospectors (listed as "Other" in the legend), in addition to all major gold and copper showings or deposits in the area around the Croinor Gold Property.

23.1 Enclave Claims

A small enclave of six (6) claims sits within the Property. The claims are located in Pershing Township, 2.3 km northwest of Lake Blanchin and 5.25 km west-northwest of the Croinor deposit, and are registered to Yves Lemieux. They contain the Blanchin Lake (a.k.a. Busmac) gold showing, a gold-bearing quartz vein system discovered by prospecting in 1938. At the time, a 150 m by 150 m trench was cleared and then deepened to 8 m as a prospecting pit. In 1938–39, a 41.4-m inclined shaft (70° north) was sunk to the 120-ft level (36.6 m), along with 37.5 m of cross-cutting and 178.3 m of drifting. In 1940, Canadian Mining and Smelting Corporation evaluated the tonnage, estimating 10,000 t @ 15.0 g/t Au for the No. 1 Vein, and 8,000 t @ 6.8 g/t Au for the No. 3 Vein (Ingham, 1973).

These "resources" are historical in nature and should not be relied upon. It is unlikely they comply with current NI 43-101 criteria or CIM Definition Standards, 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. InnovExplo did not review the database, key assumptions, parameters or methods used for the mineral resource estimation at the Blanchin Lake occurrence.

Recent work has consisted mainly of ground geophysics, geological mapping and geological assessment.

23.2 Tavernier and Tiblemont Townships

Most of the mineralized occurrences in the Tavernier and Tiblemont townships were found by drilling targets generated by airborne EM surveys flown by major companies and the MRN's regional airborne Input surveys flown in the early 1970s.

Globex Mining

Four of the showings—Realore, Anaconda-1, Anaconda-3 and Lynx-Tavernier—are part of the Tiblemont-Tavernier property owned by Globex Mining Enterprises Inc. ("Globex"), immediately north of the Croinor Gold Property.

The Realore showing was discovered in 1946. In 1984, exploration work by Exploration Omega Inc. and Exploration Oz Inc. yielded grab samples with values up to 21.03 g/t Au and up to 0.76% Cu (Kobzi et al., 1986).

The Anaconda-1 showing was drilled by Anaconda American Brass Ltd (“Anaconda”) in 1969. The showing consists of a massive sulphide lens with a best intersection of 0.3 m grading 26.55 g/t Au, 589.7 g/t Ag, 9.9% Zn and 4.0% Cu (Burk et al., 1990).

The Anaconda-3 showing (hole 614; Kobzi et al., 1986), on the eastern shore of Lac St-Vincent, is also characterized by a massive sulphide intercept, with a best interval of 26.55 g/t Au over 0.30 m.

The Lynx-Tavernier polymetallic occurrence was discovered by Lynx Canada Exploration Ltd. Hole LT-84-10 (Perron, 1984) intersected 2.59 g/t Au, 48.65 g/t Ag and 0.72% Zn over 7.3 m; 32.65 g/t Ag over 14.6 m; 129 g/t Ag over 0.46 m; and 110.0 g/t Ag over 0.9 m.

The claims for the Lacoma gold deposit are held by Exploration Aurtois Inc. The first gold anomalies were discovered by trenching in 1925. Between 1931 and 1938, a shaft was sunk to 260 feet (79.2 m). Limited drifting was realized at the 125-ft level (64.3 m of cross-cutting and 50.3 m of drifting) and at the 240-ft level (64.6 m of cross-cutting and 21.9 m of drifting; Lavery, 1984). According to the SIGEOM database, tonnages were also estimated, with results as follows:

- East Zone: 76,175 t @ 6.8 g/t Au;
- West Zone: 103,194 t @ 6.8 g/t Au.

These “resources” are historical in nature and should not be relied upon. It is unlikely they comply with current NI 43-101 criteria or CIM Definition Standards, 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. InnovExplo did not review the database, key assumptions, parameters or methods used for the mineral resource estimation at the Lacoma deposit.

23.3 Vauquelin Township

The Aviators Bay-SE gold occurrence in Vauquelin Township lies on claims now owned by Geneviève Gauthier. In 1990–1991, Tandem Resources Ltd and North American Rare Metals Ltd conducted a diamond drilling campaign. Hole 91-2 returned an intercept of 1.06 g/t Au over 0.45 m (Tandem Resources Ltd and North American Rare Metals, 1991). Ownership of the other claims in this area is distributed among Steven Lauzier, Glenn Griesbach & Junita Tedy Asihto, and Simon Drolet.

23.4 Pershing Township

In Pershing Township, about 1.6 km south of the Property, drill hole V-84-22 yielded an interval grading 8.16 g/t Au over 1.5 m. In 1988, holes V-88-48, 49 and 52 followed up on this result and the best intervals were 0.48 g/t Au over 7.0 m, 0.23 g/t Au over 3.5 m, 0.39 g/t Au over 4.5 m and 0.49 g/t Au over 3.0 m. The gold-bearing intervals were obtained in sediments, biotite schists and a monzonitic intrusive (Gagnon and St-Onge, 1988). Ownership of the claims in this area is distributed among Michel Roby, 3457265 Canada Inc. and Reza Mohammed.

Finally, approximately 3.3 km south-southeast of drill hole V-84-22 lies the Matchi–Manitou Lake Fe (± As ± Au) deposit (a.k.a. Pershing Syndicate deposit). The occurrence consists of a major fold in an Algoma-type (chemical sedimentary) iron formation, reaching just over 137 m thick. The general trend of the mineralized segment is NW with a general dip of 40-70° to the east. There are at least two magnetic BIF horizons with widths of at least 30 m each. Magnetite is massive, disseminated, and fine-grained. The average value of the magnetic iron has not been established, but analyzed sections yielded soluble Fe grades ranging between 20% and 25% (DDH P1, P2, P3; Leclerc, 1964 and Dumont, 1966). Drill hole FG11-03 (Ciesielski, 2011) yielded the following intervals: 5.15 m @ 30.02% Fe, 4.6 m @ 30.32% Fe, 0.8 m @ 30.9% Fe, 0.5 m @ 32.2% Fe, 1.3 m @ 30.35% Fe, 1.0 m @ 33.6% Fe, 2.9 m @ 31.2% Fe, 1 m @ 30% Fe, 2 m @ 31.3 % Fe. The Matchi–Manitou Lake deposit is a magnetic iron formation interbedded with metasedimentary rocks (greywacke and argillites) of the Garden Island Domain. Some of the mineralization are in metamorphosed biotite schists and staurolite shales.

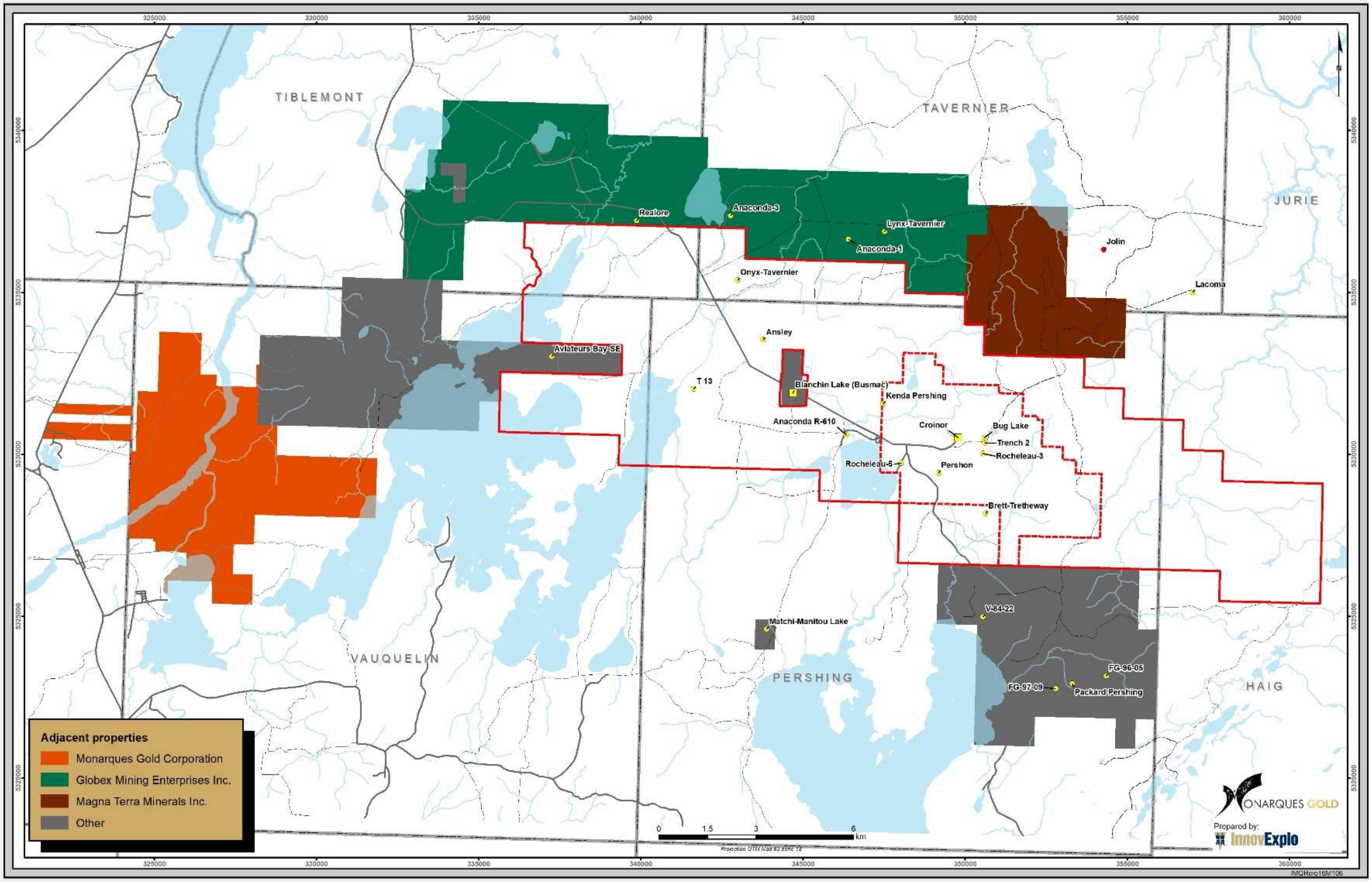


Figure 23.1 – Adjacent properties and mineral occurrences in the vicinity of the Croinor Gold Property

24 OTHER RELEVANT DATA AND INFORMATION

A bulk sample is highly recommended before the preproduction phase to better position the mine for preproduction and to confirm the following aspects:

- vein continuity;
- grades;
- ore development consistency;
- long hole stope dimensions;
- mining dilution;
- shaft conditions (to better evaluate the rehabilitation work and cost).

The proposed bulk sample area is shown on Figure 24.1.

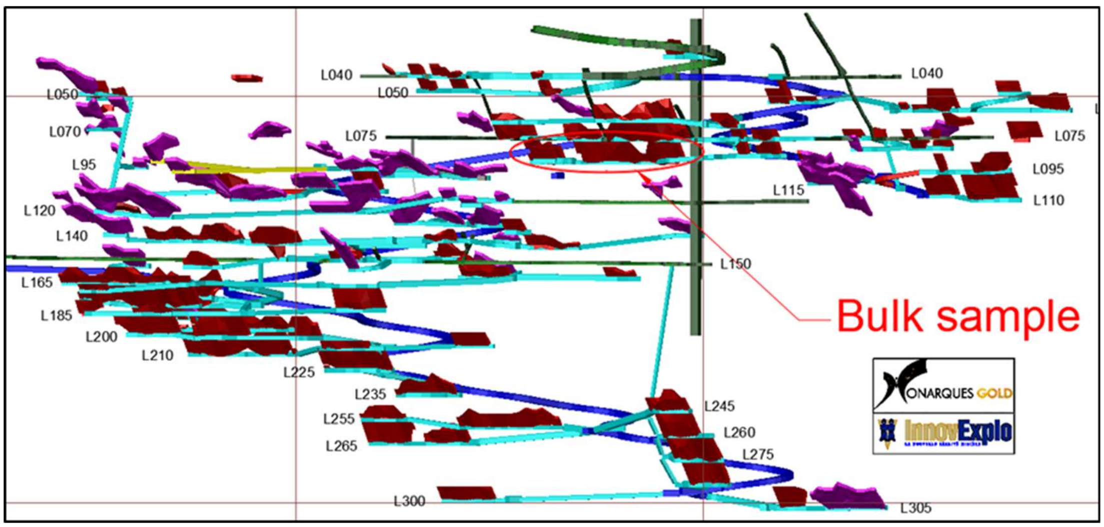


Figure 24.1 – Overall bulk sample location

During the bulk sampling work, neither the access road or the shaft will have been rehabilitated (refurbished). The ore will therefore be transported via Senneterre to Camflo Mill. The milling cost has been estimated at $39/t. A genset will supply power for the duration of the program. Temporary surface infrastructure will be provided by the contractor.

Digging an access ramp and managing more than 1,000 m^3 of waste rock requires a CA under section 22 of the EQA. For this reason, it is recommended that the work related to the bulk sampling program be included in the dewatering CA application (see Table 20.2).

24.1 Mine Development and Production Plan for the Bulk Sample

The necessary development and rehabilitation to reach the bulk sample production zone is shown in Figure 24.2.

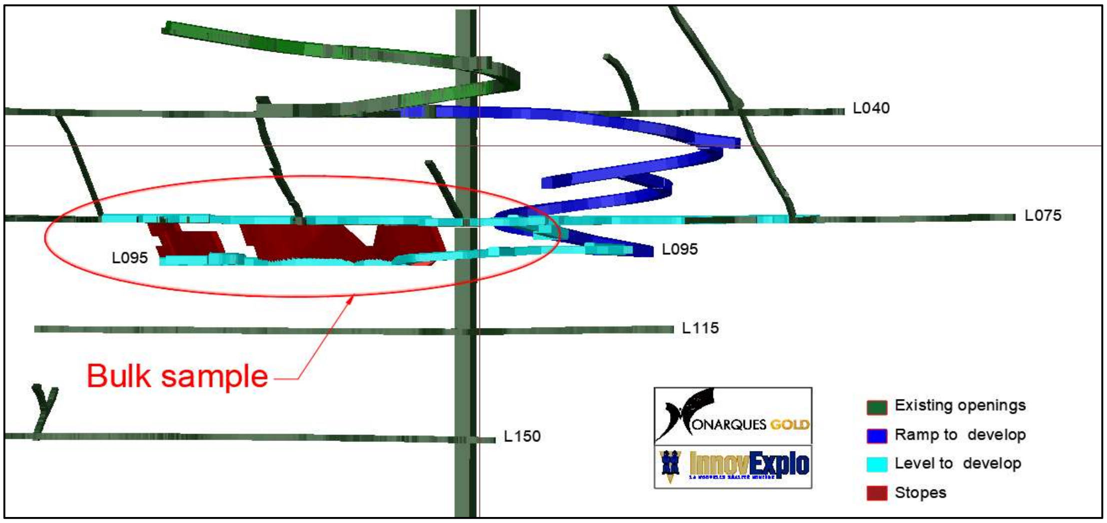


Figure 24.2 – Bulk sample development and production

Table 24.1 presents the expected breakdown of development and production quantities for the bulk sample. The program should last about 10 months.

Table 24.1 – Bulk sample development and production quantities

Waste	Activity	Development (m)	Tonnage (t)
Ramp	Rehabilitation	324	-
	Development	380	19,504
	Slash	40	257
Drift	Development	228	10,379
		Total waste:	**30,139**

Ore	Activity	Tonnages (t)	Grade (g/t)
Drift	Development	6,695	5.51
Production	Long-hole	17,878	8.85
	Total ore:	**24,573**	**7.94**

Estimated time:	**10 months**

24.2 Overall Cost

Table 24.2 presents the breakdown of the cost (OPEX and CAPEX) of the bulk sampling program that takes into account revenue.

Table 24.2 – Bulk sample costs

BULK SAMPLE CASH FLOW	Value	Unit
REVENUE		
Total production (milled)	24,573	tonnes milled
Grade	7.94	g/t
Recovery	97.5	%
Total gold production	6,118	oz
Gold price	1,280	USD/oz
Exchange rate	1.28	CAD/USD
Gold price	1,638	CAD/oz
GROSS REVENUE	**10,023,161**	**$**
Royal mint (cost @ $5.00/oz)	-30,588	$
Royalty (1.5% preproduction)	150,806	$
CAPITALIZED REVENUE	**9,841,766**	**$**
CAPITAL EXPENDITURES		
Mine dewatering and rehabilitation	1,021,636	$
Contractor mobilization and setup	1,292,060	$
Contractor demobilization	492,206	$
Mine infrastructure	317,443	$
U/G ventilation system	64,055	$
Lateral development	1,565,921	$
Environmental	1,832,141	$
TOTAL CAPEX	**6,585,462**	**$**
OPERATING COSTS		
Contractor daily fees	4,805,833	$
Development (ore and waste)	1,591,302	$
Mining and haulage to surface (ore)	655,005	$
Monarques staff	605,794	$
Energy cost	67,103	$
Transportation (surface to Camflo Mill)	323,459	$
Milling (Camflo)[1]	958,354	$
Environmental	1,165,984	$
TOTAL OPEX	**10,172,834**	**$**
TOTAL CAPEX AND OPEX	**16,758,296**	**$**
NET CASH FLOW	**-6,916,530**	**$**

1- *The milling cost at the Camflo mill has been estimated at $39/t.*

25 INTERPRETATION AND CONCLUSIONS

The objective of InnovExplo's mandate was to update the prefeasibility study and mineral reserve estimate for the Croinor Gold Property and provide a supporting Technical Report in compliance with NI 43-101 and Form 43-101F1.

The issuer requested an update of the previous prefeasibility study and mineral reserve estimate dated October 30, 2014 to include changes in the royalties, capital costs, operating costs and gold price, and to incorporate the Beacon Mill and tailings impoundment. The previous mineral resource estimate (the 2015 MRE) remained unchanged and served as the basis for the update.

InnovExplo considers the present 2018 PFS (and Mineral Resource Estimate herein) to be reliable and thorough, based on quality data, reasonable hypotheses, and parameters compliant with NI 43-101 criteria and CIM Definition Standards.

25.1 Geology

Before this study, the geological interpretation had not been reviewed since 2015, even though exploration and diamond drilling campaigns were conducted on the Property in 2016 and 2017. A total of 25,645 m (110 DDH) has been drilled on the Property since November 2015. Of that total, 43 holes were drilled in the resource area but excluded from the MRE as they were completed after the database close-out date. The impact of each drill hole located inside the resource estimate area was evaluated carefully. Overall, InnovExplo is of the opinion that the new information collected from the 2016–2017 drilling program does not have a material impact on the 2015 MRE or the present PFS update based on that estimate. The majority of the new DDH confirm the geological model, including the location, grade and thickness of the mineralized zones.

25.2 Mineral Resource Estimate

The mineral resource estimate presented in this report (the "2015 MRE") was published in an earlier report titled "*Technical Report and 2015 Mineral Resource Estimate update for the Croinor Gold Property*", dated January 8, 2016 (Poirier et al., 2016). The 2015 MRE was performed by Karine Brousseau, Eng., under the supervision of Carl Pelletier, P.Geo., using all available results. The effective date of the 2015 MRE is November 6, 2015. The 2015 surface diamond drill holes used in the mineral resource estimate, up to and including CR-15-455, were complete in terms of assay results at the database close-out date of November 1st, 2015.

InnovExplo remains of the opinion that the 2015 MRE can be classified as Measured, Indicated and Inferred resources based on the density of the processed data, the search ellipse criteria, and the specific interpolation parameters. The estimate is compliant with CIM Definition Standards. The resources were estimated using different gold cut-off grades and a minimum width of 1.8 m (true width). The selected cut-off of 4 g/t was used to determine the mineral potential of the deposit for the underground mining option. The following tables display the results of the In Situ

Mineral Resource Estimate for the Croinor deposit (51 lenses). The detailed results are presented by zone in Appendix IV. InnovExplo remains of the opinion that the 2015 MRE can be used as the basis for a PFS.

Results of the In Situ Mineral Resource Estimate (Measured, Indicated, and Measured+Indicated Resources) at different cut-off grades (inclusive of Mineral Reserves) (Table 14.8)

Cut-off	Measured Resources			Indicated Resources			Measured + Indicated Resources		
g/t	Tonnes	Au g/t	Oz Au	Tonnes	Au g/t	Oz Au	Tonnes	Au g/t	Oz Au
> 5.00	59,000	9.86	18,700	538,000	10.85	187,600	597,000	10.75	206,300
> 4.00	80,100	8.44	21,700	724,500	9.20	214,300	804,600	9.12	236,000
> 3.00	111,900	7.02	25,300	997,500	7.64	244,900	1,109,400	7.57	270,200

- *The independent and qualified persons for the mineral resource estimate, as defined by NI 43-101, are Karine Brousseau, Eng. and Carl Pelletier, P.Geo., of InnovExplo. The effective date of the estimate is November 6, 2015.*
- *Mineral resources are not mineral reserves and do not have demonstrated economic viability.*
- *The mineral resources are presented inclusive of mineral reserves, meaning that mineral reserves were not subtracted from the resources presented herein.*
- *The results are presented undiluted and in situ. The estimate includes 51 gold-bearing lenses, some of which contain resources below the cut-off grade.*
- *The mineral resources were compiled using cut-off grades of 3.0 g/t, 4.0 g/t and 5.0 g/t Au; however, the official resource is at a cut-off grade of 4.0 g/t Au.*
- *The cut-off grade should be reviewed in light of prevailing market conditions (gold price, exchange rate and mining cost).*
- *A density of 2.8 g/cm3 was used for the mineralized zones and the waste rock.*
- *A minimum true thickness of 1.8 m was applied, using the grade of the adjacent material when assayed, or a value of zero when not assayed.*
- *High-grade capping was done on raw data and established at 70.0 g/t Au for diamond drill hole assays and 55.0 g/t Au for underground channel sample assays.*
- *Compositing was done on diamond drill hole sections and underground channel sample sections falling within the mineralized zones (composite = 1 metre).*
- *Resources were estimated using GEOVIA GEMS 6.7 software from drill holes and underground channel samples using the ID6 interpolation method in a block model (block size 5 m x 2.5 m x 2.5 m).*
- *The Measured, Indicated and Inferred categories were defined using the parameters for the various passes.*
- *Isolated blocks in the Indicated category showing no spatial continuity in terms of grade and/or information density were reclassified from Indicated to Inferred.*
- *Blocks in the Inferred category showing good spatial continuity in terms of grade and/or information density were reclassified from Inferred to Indicated.*
- *Ounce (troy) = metric tonnes x grade / 31.10348. Calculations used metric units (metres, tonnes, grams per tonne).*
- *The tonnage estimate was rounded to the nearest hundred tonnes. Any discrepancies in the totals are due to rounding effect; rounding followed the recommendations in Form 43-101F1.*
- *InnovExplo is not aware of any known environmental, permitting, legal, title-related, taxation, socio-political, marketing or other relevant issue that could materially affect the mineral resource estimate.*

Results of the In Situ Mineral Resource Estimate (Inferred Resources) at different cut-off grades (Table 14.9)

Inferred Resources			
Cut-off g/t	**Tonnes**	**Au g/t**	**Oz Au**
> 5.00	1,010	9.22	30,100
> 4.00	160,800	7.42	38,400
> 3.00	263,800	5.86	49,700

- *The independent and qualified persons for the mineral resource estimate, as defined by NI 43-101, are Karine Brousseau, Eng. and Carl Pelletier, P.Geo., of InnovExplo. The effective date of the estimate is November 6, 2015.*
- *Mineral resources are not mineral reserves and do not have demonstrated economic viability.*
- *The mineral resources are presented inclusive of mineral reserves, meaning that mineral reserves were not subtracted from the resources presented herein.*
- *The results are presented undiluted and in situ. The estimate includes 51 gold-bearing lenses, some of which contain resources below the cut-off grade.*
- *The mineral resources were compiled using cut-off grades of 3.0 g/t, 4.0 g/t and 5.0 g/t Au; however, the official resource is at a cut-off grade of 4.0 g/t Au.*
- *The cut-off grade should be reviewed in light of prevailing market conditions (gold price, exchange rate and mining cost).*
- *A density of 2.8 g/cm3 was used for the mineralized zones and the waste rock.*
- *A minimum true thickness of 1.8 m was applied, using the grade of the adjacent material when assayed, or a value of zero when not assayed.*
- *High-grade capping was done on raw data and established at 70.0 g/t Au for diamond drill hole assays and 55.0 g/t Au for underground channel sample assays.*
- *Compositing was done on diamond drill hole sections and underground channel sample sections falling within the mineralized zones (composite = 1 metre).*
- *Resources were estimated using GEOVIA GEMS 6.7 software from drill holes and underground channel samples using the ID6 interpolation method in a block model (block size 5 m x 2.5 m x 2.5 m).*
- *The Measured, Indicated and Inferred categories were defined using the parameters for the various passes.*
- *Isolated blocks in the Indicated category showing no spatial continuity in terms of grade and/or information density were reclassified from Indicated to Inferred.*
- *Blocks in the Inferred category showing good spatial continuity in terms of grade and/or information density were reclassified from Inferred to Indicated.*
- *Ounce (troy) = metric tonnes x grade / 31.10348. Calculations used metric units (metres, tonnes, grams per tonne).*
- *The tonnage estimate was rounded to the nearest hundred tonnes. Any discrepancies in the totals are due to rounding effect; rounding followed the recommendations in Form 43-101F1.*
- *InnovExplo is not aware of any known environmental, permitting, legal, title-related, taxation, socio-political, marketing or other relevant issue that could materially affect the mineral resource estimate.*

25.3 Mineral Reserve Estimate

The following table presents the estimated proven and probable 2018 mineral reserves, which amount to 129,292 oz after applying the appropriate mining recovery and dilution factor for the selected method.

2018 Mineral Reserve Statement for the Croinor Gold Property (Table 15.3)

Category	2018		
	Tonnes (t)	Grade (g/t Au)	Ounces (oz)
Proven	166,540	5.33	28,543
Probable	436,454	7.18	100,759
Total reserve	**602,994**	**6.66**	**129,292**

- *The independent and qualified persons for the mineral reserve estimate, as defined by NI 43-101 are Laurent Roy, Eng. , and Denis Gourde, Eng. , of InnovExplo. The effective date of the estimate is January 19, 2018.*
- *The economic viability of the mineral reserve has been demonstrated.*
- *Results include 30% dilution for the long-hole stopes, based on a minimum mining width of 1.8 m, and 5% dilution for the room-and-pillar stopes, based on a minimum mining working height of 1.8 m.*
- *Results reflect an ore recovery of 95% for the long-hole stopes (pillars left in place are not included in the estimate) and 85% for the room-and-pillar stopes.*
- *Gold recovery at the Beacon Mill is 97.5%.*
- *The mineral reserves were compiled using cut-off grades of 4.42 g/t Au (long-hole) and 4.57 g/t Au (room and pillar). The appropriate cut-off grade will vary depending on the economic context and the operating parameters determined.*
- *A density of 2.80 t/m^3 was used.*
- *Ounce (troy) = tonnes x grade / 31.1035. Calculations used metric units (metres, tonnes, grams per tonne).*
- *The mineral reserves were estimated using a long-term gold price of CAD 1,656.68 per ounce (gold price of USD 1,252.21 per ounce and an exchange rate of 1.323 CAD/1 USD).*
- *Estimated tonnage and ounces were rounded to the nearest hundred. Any discrepancies in the totals are due to the effect of rounding; rounding followed the recommendations in Form 43-101F1.*
- *CIM guidance and definitions were followed in the preparation of this mineral reserve estimate.*
- *InnovExplo is not aware of any known environmental, permitting, legal, title-related, taxation, socio-political, marketing or other relevant issue that could materially affect the mineral resource estimate.*

Table 25.1 compares the 2018 Mineral Reserve Statement to the 2014 Mineral Reserve Statement published in the document titled "*Technical Report and 2015 Mineral Resource Estimate Update for the Croinor Gold Property*", dated January 8, 2016 (Poirier et al., 2016) (originally published in Poirier et al., 2015).

Table 25.1 – Comparison of 2014 and 2018 statements of Proven and Probable Reserves

Effective date	Tonnage	Grade (g/t)	Gold Ounces
January 19, 2018	602,994	6.66	129,292
Amended October 30, 2014	541,534	6.77	117,870

Proven and Probable Reserves increased to 129,292 oz of gold as at January 19, 2018, a 10% increase over the 117,870 oz as at in 2015.

Two mining methods appear to be the best suited to the Croinor deposit: long hole, and room and pillar. Two MSO runs were done on the block model to select the most appropriate method, using the parameters shown below for the two methods. The manual stope design takes into account a minimum mining width of 1.8 m for the long hole stopes and a mining height of 1.8 m for the room and pillar stopes.

Design parameters:

- Long-hole mining method:
    - Cut-off grade value: 4.42 g/t;
    - Minimum mining width of 1.8 m (stope thickness);
    - Mining dilution of 30% on hanging wall at a grade of 0 g/t;
    - Minimum slope wall angle of 43 degrees;
    - Sublevel interval of 15 m;
    - 95% mining recovery.

- Room and pillar mining method:
    - Cut-off grade value: 4.57 g/t;
    - Minimum mining width of 1.8 m;
    - Mining dilution of 5% on hanging wall at a grade of 0 g/t;
    - Maximum mining width of 3 m (stope thickness);
    - Maximum slope wall angle of 45 degrees;
    - 85% to 100% mining recovery.

Based on this mine plan, 62% of the reserves would be mined using the long hole method, and 16% using room and pillar method. The rest of the ore will come from the development activities (22%). The long hole method was applied whenever possible given the lower mining cost and higher productivity.

The calculation of this cut-off grade used a metal price of USD 1,252 at an exchange rate of 1.32. The parameters for the cut-off grade estimation are presented in the following table.

Cut-off grade parameters (Table 15.2)

Parameters	Units	Mining Method	
		Long-hole	Room and pillar
Operating Cost	$/t	175.96	225.54
Mint cost	$/oz	5.00	5.00
Mill recovery	%	97.5	97.5
Mining dilution	%	30	5
Cut-off grade	g/t	4.42	4.57

On the basis of the information presented in Items 16 to 22 of this report, InnovExplo was able to demonstrate the economic viability of the proposed extraction and processing of the measured and indicated resources within the mine plan. Overall, InnovExplo considers that its basic engineering project meets the requirements of a PFS.

InnovExplo is not aware of any environmental, permitting, legal, title, taxation, socio-economic, marketing, political or other relevant issue that would materially affect the 2018 Mineral Reserve Estimate.

25.4 Infrastructure

Mine site infrastructure will use an already impacted footprint, thus reducing costs and the environmental impact. The proposed ore haulage road connecting to highway 113, using a mix of new, upgraded and existing forestry roads, will reduce operating costs.

To supply electric power to the site, a new 26.5 km long 25 kV three-phase overhead power line is planned. In this study, this new power line is assumed to be built, held and owned by Monarques. The mine could benefit from a $2.7M subsidy to build the distribution line and the 25kV station from the EcoPerformance program managed by Transition Énergétique Québec (TEQ) in order to reduce greenhouse gases.

25.5 Metallurgy

The previous PFS concluded that four gold concentrators located within a 120 km radius could potentially process the Croinor ore: Beacon Gold, Aurbel Gold, Sigma-Lamaque Complex and Camflo. Since then, Monarques has acquired the Beacon Mill facility. This new updated version of the PFS is therefore based on the use of the Beacon Mill at an average production rate of around 575 tpd. Considering the metallurgical test work results obtained so far and the findings of some preliminary economic trade-off studies, the excpected gold recovery at this processing facility is 97.5%.

25.6 Environment

The issuer has a certificate of authorization for mine operation at the Croinor Property, issued in September 2010, and a certificate of authorization for mill operation at the Beacon property, issued in February 2017. Other studies and permits relating to the environment, site restoration and the crown pillar, which are required for mine operation, have also been carried out or obtained. An authorization for mine dewatering and other accessory permits will be obtained prior to project start-up. Various permits and authorizations will also be obtained for the new transportation infrastructure, and compliance of plans and specifications with the fisheries protection provisions will be verified with the regulatory authorities if required.

Based on the geochemical characterization results, waste rock and sludge are non-acid-generating. Ore will be stored temporarily and acid generation is not anticipated in the short term considering high neutralization potentials. Some metals could be leachable. The waste rock and ore samples as a whole are not, however, expected to leach under acid rain and neutral pH conditions.

The proposed tailings management strategy for the Beacon tailings storage facility is similar to past operations: tailings will be deposited from south to north in the tailings basin, while maintaining a supernatant water pond inside the tailings pond. The total available volume estimated for the tailings pond is higher than the projected volume from the LOM. The raising of the tailings pond will therefore not be required. Before the tailings storage facility can be operated, several maintenance and repairs, as well as some verifications of the existing infrastructure will be necessary. An emergency spillway must be constructed to safely evacuate all flood events that exceed the Directive 019 design flood.

The effluent at the Croinor and Beacon sites will be monitored as per Directive 019 and the MMER.

At the end of the Project, the Croinor and Beacon sites must be closed and rehabilitated pursuant to the applicable regulations. An updated closure plan for the Croinor Gold site was approved in January 2015. A further updated version must be tabled by 2019.

The closure plan for the Beacon site was approved in May 2015. A revised plan must be tabled by September 2019. Given that the approved plan refers to a closed mining site, the MERN noted in its letter of approval that, in the event of a change in the foreseen activities that entails the use of the tailings storage facility for the deposition of mine tailings, a revised closure plan and financial guarantee covering the entire Beacon site will be required prior to 2019 and before the start of such activities.

An Environmental Site Assessment (ESA) is required for the Croinor site at final mine closure and for the Beacon site also at final closure. Should contamination exceed the applicable limits, a rehabilitation plan must be submitted to the MDDELCC for approval, following which the site must be rehabilitated in compliance with the plan and in a manner compatible with future site utilization.

25.7 Mining

The Croinor deposit is serviced by a ramp measuring approximately 300 m long and 4 m high by 4.5 m wide, extending to level 125 (vertical depth of 38 m), and by a 195-m-deep, three-compartment shaft.

Development was driven on four levels:

- 496 m on level 125;
- 560 m on level 250;
- 233 m on level 375;
- 730 m on level 500.

Approximately 320 m of raise development was also done.

The Croinor mine is currently flooded to the portal elevation. As an initial step, an estimated 504,080 m^3 of mine water will need to be pumped from the existing pit and mine infrastructure. Initial dewatering is expected to be carried out at a rate of 5,500 m^3/day for an approximate period of 92 days. Mine water will be pumped and processed through Envirotubes to collect mine sludge. The existing 195-m-deep shaft will be reconditioned to the level 150 (500 ft) and will be used as a ventilation raise and emergency escapeway. Ore and waste haulage to surface will be via ramp.

The mine plan comprises a combination of conventional and mechanized mining. The approach in this study has been to force the application of long-hole mining by adding dilution to ensure a minimum footwall angle of 43°. When this approach was not convenient, room and pillar mining was selected. The mineralized zones were defined using MSO software and stope design was then done manually to optimize recovery.

The ore will be transported to surface using a combination of 3.5 yd^3 and 6 yd^3 scooptrams and 30 t trucks. Waste material will either be brought to surface and stored on the existing waste pad or used to backfill mined out stopes when possible.

The deposit will be accessed via a ramp. The existing ramp will be restored to level 40 and a new section will be excavated to access all resources. Production drifts will be accessed via crosscuts connecting to the ramp. A small portion of the resources will be mined with captive methods, however haulage will always be mechanized.

Development and production activities are based on a schedule of two ten-hour shifts per day, seven days per week. To minimize capital requirements, contractors will be used for all mine development, mine production and ore haulage activities. A small in-house staff workforce will be hired to provide technical support and direction to the contractors.

The production rate will start at an average of 446 tpd during the first month following the start of the preproduction, and will slowly ramp up to an average of 575 tpd. The overall project mine life is expected to be four years, including:

- Year 1: 12 months of preproduction;
- Years 2-3: 12 months of full production;
- Year 4: Seven months of full production and one additional month of ore processing (total of 8 months).

After mining and milling recoveries, the total production is estimated to 125,889 ounces of gold over a 4-year period. This represents 602,994 t of ore at a diluted grade of 6.66 g/t. A summary of the yearly mine plan is presented in the following table.

Mine plan tonnage distribution (Table 16.11)

Mine production (Ore)	Units	Year 1	Year 2	Year 3	Year 4	Total
Development	t mined	35,907	57,502	30,026	9,731	**133,165**
Grade	g/t	4.44	5.34	4.32	2.89	**4.69**
Long Hole	t mined	22,132	107,484	128,904	116,488	**375,007**
Grade	g/t	6.30	7.26	6.84	6.81	**6.92**
Room & pillar	t mined	4,362	36,657	50,984	2,818	**94,821**
Grade	g/t	6.18	8.90	8.36	6.42	**8.41**
Total mined	t mined	62,401	201,642	209,914	129,036	**602,994**
Grade	g/t	5.22	7.01	6.85	6.50	**6.66**
Total milled	t milled	62,401	201,642	209,914	129,036	**602,994**
Grade	g/t	5.22	7.01	6.85	6.50	**6.66**
Recovery	**%**	**97.50%**	**97.50%**	**97.50%**	**97.50%**	**97.50%**
Gold Produced	**oz**	**10,211**	**44,291**	**45,079**	**26,308**	**125,889**

25.8 Capital and Operating Costs

The capital costs were estimated using the following sources of information:

- Quotes from equipment suppliers;
- Comparable installations at other mining projects;
- Contractor costs;
- InnovExplo's internal database.

The capital cost estimates are accurate within ±20%.

The preproduction costs are estimated at $33.5M, including $22.6M of capitalized operating costs and capitalized revenue of $16.4M during the preproduction period. Sustaining capital is estimated at $17.2M, excluding $3.2M for final closure costs. The capital expenditure cost breakdown is presented in the next table.

Capital expenditure breakdown (Table 21.1)

Description	Preproduction ($M)	Sustaining ($M)	Total cost ($M)
Capitalized revenues	(16.43)	-	**(16.43)**
Capitalized operating cost	22.61	-	**22.61**
Mine dewatering and rehabilitation	1.59	0.13	**1.72**
Surface infrastructure - Temporary	0.69	0.36	**1.06**
Mine infrastructure	8.08	0.30	**8.38**

Description	Preproduction ($M)	Sustaining ($M)	Total cost ($M)
Electrical distribution - Surface	1.69	0.51	**2.19**
Underground pumping system	0.20	0.42	**0.62**
Underground ventilation system	0.63	0.07	**0.70**
Lateral development	9.47	13.90	**23.37**
Beacon Mill refurbishing	2.17	1.28	**3.46**
Tailings impoundment refurbishing	0.39	-	**0.39**
Owner's mobile equipment	0.22	0.23	**0.45**
Environmental	2.20	-	**2.20**
Total	**33.53**	**17.20**	**50.73**

Operating costs are estimated in 2017 Canadian dollars (CAD) with no allowance for escalation. The total operating cost and average unit operating costs are summarized in the following table. The overall unit operating cost is 175.02 $/t of milled ore.

Summary of total life-of-mine operating costs (Table 21.14)

Description	Total cost ($M)	Unit cost	
		($/t milled)	($/oz)
Definition drilling	1.10	2.04	9.55
Stope development	23.16	42.84	200.20
Production	22.57	41.75	195.10
Owner's staff	9.77	18.08	84.50
Contractor's daily fees	14.90	27.56	128.80
Energy cost	4.81	8.90	41.61
Milling	11.02	20.39	95.29
Ore transportation	4.26	7.88	36.81
Environmental	3.02	5.58	26.07
Total	**94.61**	**175.02**	**817.91**

25.9 Financial Analysis

An after-tax model was developed for the Property. All costs are in 2017 Canadian dollars with no allowance for inflation or escalation. The Croinor Gold Property is subject to federal and provincial taxes and taxes related to Québec mining rights. The economic valuation of the project was performed using the Internal Rate of Return (IRR) and Net Present Value (NPV) methods. The discount rate used in the analysis is 5%.

Compared to the financial analysis presented in Poirier et al. (2016), operating cost decreased 16% on average to US $639 per ounce of gold, and total costs decreased 13% to US $902 per ounce of gold.

The following parameters were considered in the financial analysis:

- Gold price of USD 1,280/oz and an exchange rate of 1.28 CAD/1 USD.
- Reserves parameters as described in Item 15.
- Gold recovery of 97.5%.
- Royal Mint fees of $5/oz.
- Estimated annual tonnage of 129,036 t to 209,214 t.
- Estimated annual output of 26,308 oz to 45,079 oz of gold.
- Royalty payment of 1.5%.
- Estimated future annual cash flow based on grade, gold recoveries and cost estimates as previously discussed in this report.
- 62,401 t of ore to be processed during the pre-production period, deemed as capital production and not included in production nor the revenue derived from it.

The main parameters and cash flow analysis results for the entire project are presented in the next table.

Cash flow analysis summary (Table 22.1)

Parameters	Value	Units
Proven and probable reserves	602,994	t milled
Proven and probable reserves grade (1)	6.66	g/t milled
Total gold reserves	129,292	oz
Gold recovery	97.5	%
Minimum daily production	446	tpd
Maximum daily production	583	tpd
Average annual gold production	31,472	oz
Total amount of gold produced	125,889	oz
Average production cost	175.02	$/t
Average operating cost	817.91	$/oz
Total cost per ounce	1,154.54	$/oz
Average operating cost	639.00	USD/oz
Total cost per ounce	901.99	USD/oz
Total gross revenue	206.3	$M
Capital cost (2)	50.7	$M
Total operating cost	94.6	$M
Total project cost	145.3	$M
Net cash flow (before tax and royalties)	40.9	$M
Estimated taxes	15.7	$M
Net cash flow	25.2	$M
Pre-tax NPV (5% discount rate)	31.9	$M
Pre-tax IRR	47.5	%
After-tax NPV (5% discount rate)	18.3	$M
After-tax IRR	30.0	%
Payback period	2.2	years
Preproduction period	12	months
Mine life (production period)	2.6	years

(1) Volume and grade account for dilution and ore recovery.

(2) Includes approximately $17.2 million in sustaining capital.

25.10 Risks and Opportunities

Table 25.2 identifies the significant internal risks, potential impacts and possible risk mitigation measures that could affect the future economic outcome of the Croinor Project and Beacon site. The list does not include the external risks that apply to all mining projects (e.g., changes in metal prices, exchange rates, availability of investment capital, change in government regulations, etc.).

Table 25.2 – Risks for the Croinor Project

RISK	Potential impact	Possible risk mitigation
Geological continuity resulting in many small stopes spread far apart.	Uncertainties on the location and grade of mineralized zones could result in inadequate stope designs	Additional drilling to improve the correlation and continuity of mineralized zones. Bulk sample program to validate continuity.
Delay in obtaining dewatering permit	Cascading delays in several project components	Start permitting application as early as possible
Non-compliant effluent	Notice of non-compliance or fine from MDDELCC / Environment Canada (EC) regulatory authorities. Poor image of the Croinor Mine proponent. Increase in fine amounts if repetition of non-compliant effluent.	Refine water treatment process to ensure compliance of the effluent
Non-compliant emissions	Notice of non-compliance or fine from regulatory authorities. Poor image of proponent	Refine processes and equipment to ensure compliance of emissions
Spill of hydrocarbons or chemicals	Notice of non-compliance or fine from regulatory authorities. Poor image of Croinor Mine proponent if repeated spills. Notice/fine from the MDDELCC	Ensure comprehensive emergency intervention plan and associated training are in place. Assess extent of contamination and carry out remediation of spills.
Failure of mine water basin and release of non-compliant water	Notice of non-compliance or fine from MDDELCC/EC regulatory authorities. Loss of production and poor image	Carry out regular inspections and ensure timely maintenance. Assess environmental impact in the event of a breach, carry out remediation if needed and repair fix basin.
Waste rock piles start releasing metal contaminants	Notice and of non-compliance or fine from the MDDELCC regulatory authorities, resulting in poor image and greater cost for waste rock management	Ensure geochemical characterization remains up-to-date as project progresses. Adapt waste rock management plan and closure plan
Possible issue of discontent with potentially affected First Nation communities and non-Aboriginal communities	Poor image portrayed by the media and possible project blockages. Communications and negotiations required.	Remain proactive with stakeholder communications, consultation, accommodation and engagement involving First Nations.
Going into production without a feasibility study	Possibility that estimates provided by the PFS lack precision and that important issues are not raised	The operation of the Croinor Project is low capital. Modular buildings are planned and no mill will be built: Beacon mill and site only need refurbishing.

RISK	Potential impact	Possible risk mitigation
Problems / delays in upgrading the Beacon Mill	Delay to mill at Beacon site. Increase cost of milling and transportation at start.	Milling at Camflo site.
Problems / delays in building and upgrading transportation infrastructure	Increase cost transportation by using longer alternative road.	Possibility of ore transportation by an alternative route.
Operating risks related to recruitment and performance of the underground workforce, specifically room-and-pillar miners	Difficulty in achieving scheduled targets and increased capital requirements and operating costs	Special care should be taken to hire highly qualified key personnel and during contractor selection
Property not serviced by an electric power line	Time required to service the site	Discussion with Hydro-Québec to advance the design of the electric power line extension and initiate related permitting requests
Ore development control	Addition of slash to optimize drilling or create undercut development and increase higher dilution of long hole production.	Assure proper ore and grade control in development.

Significant opportunities that could improve the economics, timing and permitting are identified in Table 25.3. Further information, evaluation and study is required before these opportunities can be included in the project economics.

Table 25.3 – Opportunities for the Croinor Project

OPPORTUNITIES	Explanation	Potential benefit
Infill and down-plunge exploration drilling	Potential to expand inferred resources and upgrade inferred resources to the indicated category	Adding indicated resources increases the economic value of the mining project
Eastern and western limits of the host diorite and mineralized zones are still open	Potential to expand the eastern and western limits of the deposit	Adding resources increases the economic value of the mining project
Use of inert waste rock to upgrade the road to the mine site	Waste rock is a good material for road foundation and for riprap in ditches crossing the access road to the mine; must assess whether waste rock is appropriate for construction	Savings on the cost of materials required for upgrading the mine access road
Potential to sell waste rock if proven suitable for construction work (needs to be near Senneterre)	Inert waste rock may be used for various construction needs; economic activity near Senneterre is mostly from the struggling lumber industry; potential is limited but should be evaluated	Increased revenue; less waste pile reclamation work; potential savings on reclamation work
Potential for Monarques to hire its own manpower to operate the mine	Depending on the situation of other operations in the area, qualified manpower may be available at the time of operations start-up	Potential for improved project economics

OPPORTUNITIES	Explanation	Potential benefit
Synergy with Beaufor	Potential to share knowledge, manpower and equipment between Beaufor and Croinor	Higher efficiency and lower cost
Custom milling at Beacon	Potential to mill ore from other projects.	Increase revenue sources

25.11 Conclusion

InnovExplo concludes that the 2018 Prefeasibility Study presented herein allows the Croinor Gold Property to advance to the production stage for which economic viability has been demonstrated. The bulk sample program will significantly help minimize the risk associated with the geological and grade continuity of the deposit, and it will also confirm the assumption for the mining method (dilution, stope and pillar dimension, rock quality, etc), confirm the processing recovery, and shorten the production period start up.

26 RECOMMENDATIONS

The results of the study presented herein demonstrate that the Croinor Gold Mine Project is technically and economically viable. In light of these results, InnovExplo recommends a preparatory work program for Monarques to advance the development and mining operation of the Croinor Project towards production. A cost estimate was prepared for the recommended work program to serve as a guideline. A breakdown is summarized in Table 26.1. The total work program expenditures are estimated at $9.4M.

Table 26.1 – Estimated costs for the recommended work program

Work Program	Budget Cost
General permitting for the project (Croinor and Beacon sites; new transportation infrastructure)	$40,000
Update closure plans for Croinor and Beacon sites	$30,000
Completion of additional engineering work to optimize mine design and production schedule	$120,000
Detailed Beacon Mill refurbishing assessment	$50,000
Surface infrastructure assessment	$50,000
Preparation of tender documents for work to be contracted out	$15,000
Definition drilling (approx. 8,000 m at $110/m)	$880,000
Exploration drilling (approx. 10,000 m at $110/m)	$1,100,000
Update resource estimates	$75,000
Perform a compilation and structural study in the Trench No.2 and Bug Lake showings area, including the Rocheleau-3 (Trench No. 3) area	$25,000
Underground bulk sample	$16,758,296
Rock mechanics testing and studies	$40,000
Infrastructure geotechnical investigation	$75,000
SUB TOTAL:	**$19,258,296**
Bulk revenue	**($9,841,766)**
TOTAL:	**$9,416,530**

The recommended program is described below. All activities presented in the program could be executed in parallel.

- Pursue discussions with Hydro-Québec to negotiate an agreement for the connection of the private power line extension to the Hydro-Québec network.
- Continue to work on general permitting for the project, including the dewatering permit application.
- Prepare the updated closure plans for the Croinor and Beacon sites. The closure plan for the former is due in fall 2019, while that for the latter is due by 2019.
- Pursue relationship-building with the concerned Aboriginal and non-Aboriginal communities.

- Complete additional engineering work to optimize the mine design and production schedule.
- Complete a detailed assessment of the Beacon Mill to precisely estimate and schedule the refurbishing.
- Prepare tender documents for the activities to be contracted out.
- Pursue negotiations to finalize agreements for the road upgrade and ore transportation to the Beacon Mill.
- Carry out infill and down-plunge exploration drilling aimed at expanding the current resources.
- Pursue an exploration drilling program based on the 2015 geological reinterpretation of zones in the lower part of the deposit.
- Gain as much information as possible on the indicated resources before mining begins.
- Convert inferred resources to indicated resources with additional drilling.
- Follow-up on the east, west and depth extensions in order to increase the extent of the inferred resources.
- Update the mineral resource estimate through further drilling.
- Perform a geological compilation and structural study in the Trench No. 2 and Bug Lake showings area, including the Rocheleau-3 (Trench No. 3) area. Consider the possibility of performing a mineral resource estimate in these areas.
- Generate a bulk sample using the existing decline ramp on the site (see Item 24 for more details).
- Conduct a geotechnical investigation to confirm bedrock depth and bearing capacity for buildings, facilities, waste stockpiles and hauling road construction. Existing waste stockpile capacity shall be studied and calculated.

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APPENDIX I

LIST OF MINING TITLES

Title Number	SNRC	Area (ha)	Type	Status	Registered Date	Expiration Date	Owner	NSR
4907	32C03	57,45	CDC	Active	2003-10-14	2019-10-13	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252531	32C03	31,21	CDC	Active	2010-10-04	2018-10-03	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252532	32C03	22,22	CDC	Active	2010-10-04	2018-10-03	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252533	32C03	21,77	CDC	Active	2010-10-04	2018-10-03	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252534	32C03	21,32	CDC	Active	2010-10-04	2018-10-03	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252535	32C03	20,86	CDC	Active	2010-10-04	2018-10-03	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252536	32C03	0,35	CDC	Active	2010-10-04	2018-10-03	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252537	32C03	0,01	CDC	Active	2010-10-04	2018-10-03	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252538	32C03	0,06	CDC	Active	2010-10-04	2018-10-03	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252539	32C03	0,37	CDC	Active	2010-10-04	2018-10-03	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252458	32C03	57,46	CDC	Active	2010-10-04	2018-10-03	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252459	32C03	57,46	CDC	Active	2010-10-04	2018-10-03	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252460	32C03	57,45	CDC	Active	2010-10-04	2018-10-03	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252461	32C03	57,45	CDC	Active	2010-10-04	2018-10-03	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252462	32C03	57,45	CDC	Active	2010-10-04	2018-10-03	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252463	32C03	57,45	CDC	Active	2010-10-04	2018-10-03	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252464	32C03	57,45	CDC	Active	2010-10-04	2018-10-03	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252465	32C03	57,44	CDC	Active	2010-10-04	2018-10-03	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252466	32C03	57,44	CDC	Active	2010-10-04	2018-10-03	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252467	32C03	57,44	CDC	Active	2010-10-04	2018-10-03	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252468	32C03	57,44	CDC	Active	2010-10-04	2018-10-03	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252469	32C03	57,44	CDC	Active	2010-10-04	2018-10-03	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252470	32C03	57,44	CDC	Active	2010-10-04	2018-10-03	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252471	32C03	57,44	CDC	Active	2010-10-04	2018-10-03	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252472	32C03	57,44	CDC	Active	2010-10-04	2018-10-03	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252473	32C03	57,44	CDC	Active	2010-10-04	2018-10-03	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252474	32C03	57,44	CDC	Active	2010-10-04	2018-10-03	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252475	32C03	57,44	CDC	Active	2010-10-04	2018-10-03	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252476	32C03	57,44	CDC	Active	2010-10-04	2018-10-03	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252477	32C03	57,43	CDC	Active	2010-10-04	2018-10-03	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252478	32C03	57,43	CDC	Active	2010-10-04	2018-10-03	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252479	32C03	57,43	CDC	Active	2010-10-04	2018-10-03	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252480	32C03	57,43	CDC	Active	2010-10-04	2018-10-03	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252481	32C03	57,43	CDC	Active	2010-10-04	2018-10-03	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252482	32C03	57,43	CDC	Active	2010-10-04	2018-10-03	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252484	32C02	23,24	CDC	Active	2010-10-04	2018-10-03	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252485	32C03	49,13	CDC	Active	2010-10-04	2018-10-03	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252486	32C03	50,72	CDC	Active	2010-10-04	2018-10-03	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252487	32C03	56,00	CDC	Active	2010-10-04	2018-10-03	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252488	32C03	23,11	CDC	Active	2010-10-04	2018-10-03	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties

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2252489	32C03	23,15	CDC	Active	2010-10-04	2018-10-03	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252490	32C03	23,20	CDC	Active	2010-10-04	2018-10-03	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252491	32C03	23,25	CDC	Active	2010-10-04	2018-10-03	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252492	32C03	23,31	CDC	Active	2010-10-04	2018-10-03	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252493	32C03	57,45	CDC	Active	2010-10-04	2018-10-03	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252494	32C03	53,84	CDC	Active	2010-10-04	2018-10-03	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252495	32C03	3,61	CDC	Active	2010-10-04	2018-10-03	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252496	32C03	57,45	CDC	Active	2010-10-04	2018-10-03	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252497	32C03	31,08	CDC	Active	2010-10-04	2018-10-03	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252498	32C03	30,98	CDC	Active	2010-10-04	2018-10-03	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252354	32C02	57,51	CDC	Active	2010-10-04	2018-10-03	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252356	32C02	57,50	CDC	Active	2010-10-04	2018-10-03	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252358	32C02	57,49	CDC	Active	2010-10-04	2018-10-03	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252360	32C02	57,48	CDC	Active	2010-10-04	2018-10-03	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252361	32C02	57,48	CDC	Active	2010-10-04	2018-10-03	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252362	32C02	57,48	CDC	Active	2010-10-04	2018-10-03	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252363	32C02	57,48	CDC	Active	2010-10-04	2018-10-03	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252364	32C02	57,48	CDC	Active	2010-10-04	2018-10-03	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252365	32C02	57,47	CDC	Active	2010-10-04	2018-10-03	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252366	32C02	57,47	CDC	Active	2010-10-04	2018-10-03	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252367	32C02	57,47	CDC	Active	2010-10-04	2018-10-03	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252368	32C02	57,47	CDC	Active	2010-10-04	2018-10-03	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252369	32C02	57,46	CDC	Active	2010-10-04	2018-10-03	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252370	32C02	57,46	CDC	Active	2010-10-04	2018-10-03	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252371	32C02	57,46	CDC	Active	2010-10-04	2018-10-03	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252372	32C02	57,46	CDC	Active	2010-10-04	2018-10-03	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252373	32C02	28,19	CDC	Active	2010-10-04	2018-10-03	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252374	32C02	28,11	CDC	Active	2010-10-04	2018-10-03	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252375	32C02	28,03	CDC	Active	2010-10-04	2018-10-03	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252376	32C02	27,95	CDC	Active	2010-10-04	2018-10-03	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252377	32C02	27,93	CDC	Active	2010-10-04	2018-10-03	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252378	32C02	27,95	CDC	Active	2010-10-04	2018-10-03	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252379	32C02	49,10	CDC	Active	2010-10-04	2018-10-03	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252380	32C02	42,12	CDC	Active	2010-10-04	2018-10-03	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252381	32C02	45,52	CDC	Active	2010-10-04	2018-10-03	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252382	32C02	30,46	CDC	Active	2010-10-04	2018-10-03	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252383	32C02	49,77	CDC	Active	2010-10-04	2018-10-03	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252384	32C02	49,52	CDC	Active	2010-10-04	2018-10-03	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252385	32C02	49,27	CDC	Active	2010-10-04	2018-10-03	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252386	32C02	49,03	CDC	Active	2010-10-04	2018-10-03	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties

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2252387	32C02	55,78	CDC	Active	2010-10-04	2018-10-03	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252388	32C02	1,66	CDC	Active	2010-10-04	2018-10-03	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252389	32C02	22,69	CDC	Active	2010-10-04	2018-10-03	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252390	32C02	56,54	CDC	Active	2010-10-04	2018-10-03	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252391	32C02	15,07	CDC	Active	2010-10-04	2018-10-03	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252392	32C02	42,03	CDC	Active	2010-10-04	2018-10-03	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252279	32C03	57,48	CDC	Active	2010-10-01	2018-09-30	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252280	32C03	57,48	CDC	Active	2010-10-01	2018-09-30	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252281	32C03	57,47	CDC	Active	2010-10-01	2018-09-30	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252282	32C03	57,47	CDC	Active	2010-10-01	2018-09-30	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252283	32C03	57,47	CDC	Active	2010-10-01	2018-09-30	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252284	32C03	57,47	CDC	Active	2010-10-01	2018-09-30	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252285	32C03	57,47	CDC	Active	2010-10-01	2018-09-30	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252286	32C03	57,46	CDC	Active	2010-10-01	2018-09-30	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252287	32C03	57,46	CDC	Active	2010-10-01	2018-09-30	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252288	32C03	57,46	CDC	Active	2010-10-01	2018-09-30	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252289	32C03	57,46	CDC	Active	2010-10-01	2018-09-30	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252290	32C03	3,78	CDC	Active	2010-10-01	2018-09-30	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252291	32C03	6,48	CDC	Active	2010-10-01	2018-09-30	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252292	32C03	18,65	CDC	Active	2010-10-01	2018-09-30	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252293	32C03	17,45	CDC	Active	2010-10-01	2018-09-30	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252294	32C03	4,64	CDC	Active	2010-10-01	2018-09-30	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252295	32C03	27,71	CDC	Active	2010-10-01	2018-09-30	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252296	32C03	25,71	CDC	Active	2010-10-01	2018-09-30	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252297	32C03	36,93	CDC	Active	2010-10-01	2018-09-30	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252298	32C03	32,24	CDC	Active	2010-10-01	2018-09-30	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252299	32C03	3,23	CDC	Active	2010-10-01	2018-09-30	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252300	32C03	55,11	CDC	Active	2010-10-01	2018-09-30	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252301	32C03	43,63	CDC	Active	2010-10-01	2018-09-30	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252302	32C03	31,37	CDC	Active	2010-10-01	2018-09-30	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252303	32C03	31,31	CDC	Active	2010-10-01	2018-09-30	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252304	32C03	31,53	CDC	Active	2010-10-01	2018-09-30	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252305	32C03	8,92	CDC	Active	2010-10-01	2018-09-30	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252306	32C03	21,89	CDC	Active	2010-10-01	2018-09-30	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252307	32C03	22,04	CDC	Active	2010-10-01	2018-09-30	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252308	32C03	30,22	CDC	Active	2010-10-01	2018-09-30	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252309	32C03	41,34	CDC	Active	2010-10-01	2018-09-30	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252310	32C03	24,58	CDC	Active	2010-10-01	2018-09-30	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252311	32C03	25,62	CDC	Active	2010-10-01	2018-09-30	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252312	32C03	41,51	CDC	Active	2010-10-01	2018-09-30	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties

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2252313	32C03	41,40	CDC	Active	2010-10-01	2018-09-30	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252314	32C03	41,40	CDC	Active	2010-10-01	2018-09-30	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252315	32C03	41,10	CDC	Active	2010-10-01	2018-09-30	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252316	32C03	57,46	CDC	Active	2010-10-01	2018-09-30	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252317	32C03	57,46	CDC	Active	2010-10-01	2018-09-30	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2252318	32C03	41,05	CDC	Active	2010-10-01	2018-09-30	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2249148	32C03	57,45	CDC	Active	2010-09-10	2018-09-09	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2369433	32C02	57,52	CDC	Active	2012-11-06	2018-11-05	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2369434	32C02	57,52	CDC	Active	2012-11-06	2018-11-05	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2369435	32C02	57,51	CDC	Active	2012-11-06	2018-11-05	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2369436	32C02	57,50	CDC	Active	2012-11-06	2018-11-05	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2369437	32C02	57,49	CDC	Active	2012-11-06	2018-11-05	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2377541	32C03	57,45	CDC	Active	2013-03-11	2018-07-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2377542	32C03	57,45	CDC	Active	2013-03-11	2018-07-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2377543	32C03	16,12	CDC	Active	2013-03-11	2018-07-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2377544	32C03	26,36	CDC	Active	2013-03-11	2018-07-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2377545	32C03	32,88	CDC	Active	2013-03-11	2018-07-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2377546	32C03	26,46	CDC	Active	2013-03-11	2018-07-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2377547	32C03	31,84	CDC	Active	2013-03-11	2018-07-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2377548	32C03	34,34	CDC	Active	2013-03-11	2018-07-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2377549	32C03	15,95	CDC	Active	2013-03-11	2018-07-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2377550	32C03	34,30	CDC	Active	2013-03-11	2018-07-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2377551	32C03	16,06	CDC	Active	2013-03-11	2018-07-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2377552	32C03	34,25	CDC	Active	2013-03-11	2018-07-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2377553	32C03	16,06	CDC	Active	2013-03-11	2018-07-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2377554	32C03	34,20	CDC	Active	2013-03-11	2018-07-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2377555	32C03	16,36	CDC	Active	2013-03-11	2018-07-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2377556	32C03	34,14	CDC	Active	2013-03-11	2018-07-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2378315	32C03	57,47	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties; 0.375% Estate of F.D. Corcoran; 0.375% David E. Agar
2378316	32C03	57,48	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2378317	32C03	57,48	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2378318	32C03	57,48	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2378319	32C03	57,48	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties; 0.375% Estate of F.D. Corcoran; 0.375% David E. Agar
2378320	32C03	57,48	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties; 0.375% Estate of F.D. Corcoran; 0.375% David E. Agar
2378321	32C03	57,47	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties; 0.375% Estate of F.D. Corcoran; 0.375% David E. Agar
2378322	32C03	57,49	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2378323	32C03	57,49	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties

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2378324	32C03	57,49	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2378325	32C03	57,49	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2378326	32C03	57,49	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2378327	32C03	57,49	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2378328	32C03	57,49	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2378329	32C03	57,49	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2378330	32C03	57,48	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties; 0.375% Estate of F.D. Corcoran; 0.375% David E. Agar
2378331	32C03	57,48	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties; 0.375% Estate of F.D. Corcoran; 0.375% David E. Agar
2378332	32C03	57,48	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties; 0.375% Estate of F.D. Corcoran; 0.375% David E. Agar
2378333	32C03	57,49	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2378334	32C03	57,49	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2378335	32C03	57,49	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties; 0.375% Estate of F.D. Corcoran; 0.375% David E. Agar
2378336	32C03	57,49	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties; 0.375% Estate of F.D. Corcoran; 0.375% David E. Agar
2378337	32C03	57,49	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties; 0.375% Estate of F.D. Corcoran; 0.375% David E. Agar
2378338	32C03	57,49	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties; 0.375% Estate of F.D. Corcoran; 0.375% David E. Agar
2378339	32C03	57,50	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties; 0.375% Estate of F.D. Corcoran; 0.375% David E. Agar
2378340	32C03	57,50	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties; 0.375% Estate of F.D. Corcoran; 0.375% David E. Agar
2378341	32C03	57,50	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties; 0.375% Estate of F.D. Corcoran; 0.375% David E. Agar
2378342	32C03	57,50	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties; 0.375% Estate of F.D. Corcoran; 0.375% David E. Agar
2378343	32C03	57,51	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2378344	32C03	57,51	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2378345	32C03	57,51	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2378346	32C03	57,52	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2378347	32C03	57,47	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties; 0.375% Estate of F.D. Corcoran; 0.375% David E. Agar
2378348	32C02	57,51	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties; 0.375% Estate of F.D. Corcoran; 0.375% David E. Agar
2378349	32C02	57,51	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties; 0.375% Estate of F.D. Corcoran; 0.375% David E. Agar
2378350	32C02	57,51	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties; 0.375% Estate of F.D. Corcoran; 0.375% David E. Agar

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2378351	32C02	57,51	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties; 0.375% Estate of F.D. Corcoran; 0.375% David E. Agar
2378352	32C02	57,51	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties; 0.375% Estate of F.D. Corcoran; 0.375% David E. Agar
2378353	32C02	57,51	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2378354	32C02	57,51	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2378355	32C02	57,51	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2378356	32C02	57,50	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties; 0.375% Estate of F.D. Corcoran; 0.375% David E. Agar
2378357	32C02	57,50	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties; 0.375% Estate of F.D. Corcoran; 0.375% David E. Agar
2378358	32C02	57,50	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties; 0.375% Estate of F.D. Corcoran; 0.375% David E. Agar
2378359	32C02	57,50	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties; 0.375% Estate of F.D. Corcoran; 0.375% David E. Agar
2378360	32C02	57,50	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2378361	32C02	57,50	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2378362	32C02	57,50	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2378363	32C02	57,49	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties; 0.375% Estate of F.D. Corcoran; 0.375% David E. Agar
2378364	32C02	57,48	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties; 0.375% Estate of F.D. Corcoran; 0.375% David E. Agar
2378365	32C02	57,50	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties; 0.375% Estate of F.D. Corcoran; 0.375% David E. Agar
2378366	32C02	57,49	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties; 0.375% Estate of F.D. Corcoran; 0.375% David E. Agar
2378367	32C02	57,49	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties; 0.375% Estate of F.D. Corcoran; 0.375% David E. Agar
2378368	32C03	57,48	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties; 0.375% Estate of F.D. Corcoran; 0.375% David E. Agar
2378369	32C03	57,51	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2378370	32C03	33,43	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties; 0.375% Estate of F.D. Corcoran; 0.375% David E. Agar
2378371	32C03	22,17	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties; 0.375% Estate of F.D. Corcoran; 0.375% David E. Agar
2378372	32C03	0,04	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties; 0.375% Estate of F.D. Corcoran; 0.375% David E. Agar
2378373	32C03	43,43	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties; 0.375% Estate of F.D. Corcoran; 0.375% David E. Agar
2378374	32C03	48,28	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties; 0.375% Estate of F.D. Corcoran; 0.375% David E. Agar
2378375	32C03	50,39	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties; 0.375% Estate of F.D. Corcoran; 0.375% David E. Agar

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2378376	32C02	57,52	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties; 0.375% Estate of F.D. Corcoran; 0.375% David E. Agar
2378377	32C02	42,41	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties; 0.375% Estate of F.D. Corcoran; 0.375% David E. Agar
2378378	32C02	34,28	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2378379	32C02	55,83	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties; 0.375% Estate of F.D. Corcoran; 0.375% David E. Agar
2378380	32C02	15,45	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2378381	32C02	29,33	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2378382	32C02	34,80	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2378383	32C02	29,41	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2378384	32C02	27,04	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties; 0.375% Estate of F.D. Corcoran; 0.375% David E. Agar
2378385	32C02	0,95	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2378386	32C02	29,49	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2378387	32C02	7,72	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties; 0.375% Estate of F.D. Corcoran; 0.375% David E. Agar
2378388	32C02	29,57	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2378389	32C02	7,97	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2378390	32C02	29,59	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2378391	32C02	8,22	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2378392	32C02	29,57	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2378393	32C02	8,46	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2378394	32C02	8,41	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2378395	32C02	15,39	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2378396	32C02	11,98	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2378397	32C02	1,71	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2378398	32C03	57,50	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2378399	32C03	53,70	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2378400	32C03	29,77	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2378401	32C03	26,29	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2378402	32C03	31,77	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2378403	32C03	35,28	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2378404	32C03	51,01	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2378405	32C03	20,55	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2378406	32C03	35,72	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2378407	32C03	38,83	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2378408	32C03	36,18	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2378409	32C03	40,04	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2378410	32C03	36,63	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2378411	32C03	52,85	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties

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2378412	32C03	25,24	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2378413	32C03	2,36	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2378414	32C03	57,50	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2378415	32C03	57,13	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2378416	32C03	13,84	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2378417	32C03	57,50	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2378418	32C03	54,00	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2378419	32C03	7,78	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2378420	32C03	57,50	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2378421	32C03	6,99	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2378422	32C03	57,50	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2378423	32C03	45,07	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2378424	32C03	52,34	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2378425	32C03	2,38	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2378426	32C03	57,50	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2378427	32C03	57,49	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2378428	32C03	26,10	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2378429	32C03	57,50	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2378430	32C03	26,15	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2378431	32C03	57,50	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2378432	32C03	25,93	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2378433	32C03	57,50	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2378434	32C03	57,10	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2378435	32C03	16,40	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2378436	32C03	57,51	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2378437	32C03	57,50	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties; 0.375% Estate of F.D. Corcoran; 0.375% David E. Agar
2378438	32C03	6,73	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2378439	32C03	57,52	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2378440	32C03	48,55	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties; 0.375% Estate of F.D. Corcoran; 0.375% David E. Agar
2378441	32C03	1,45	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2378442	32C03	57,52	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2378443	32C03	35,58	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2378444	32C03	57,52	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2378445	32C03	35,42	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2378446	32C03	57,52	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2378447	32C03	54,24	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties; 0.375% Estate of F.D. Corcoran; 0.375% David E. Agar
2378448	32C03	27,25	CDC	Active	2013-03-14	2019-01-01	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties

Title Number	SNRC	Area (ha)	Type	Status	Registered Date	Expiration Date	Owner	NSR
2469757	32C03	52,96	CDC	Active	2016-11-18	2018-11-17	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2469758	32C03	20,82	CDC	Active	2016-11-18	2018-11-17	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2469759	32C03	54,19	CDC	Active	2016-11-18	2018-11-17	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2468145	32C02	57,53	CDC	Active	2016-11-07	2018-11-06	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2468146	32C02	57,53	CDC	Active	2016-11-07	2018-11-06	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2468147	32C02	57,53	CDC	Active	2016-11-07	2018-11-06	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2468148	32C02	57,53	CDC	Active	2016-11-07	2018-11-06	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2468149	32C02	57,53	CDC	Active	2016-11-07	2018-11-06	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2468150	32C02	57,52	CDC	Active	2016-11-07	2018-11-06	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2468151	32C02	57,52	CDC	Active	2016-11-07	2018-11-06	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2468152	32C02	57,52	CDC	Active	2016-11-07	2018-11-06	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2468153	32C02	57,52	CDC	Active	2016-11-07	2018-11-06	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2468154	32C02	57,52	CDC	Active	2016-11-07	2018-11-06	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2468155	32C02	57,51	CDC	Active	2016-11-07	2018-11-06	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2468156	32C02	57,51	CDC	Active	2016-11-07	2018-11-06	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2468157	32C02	57,51	CDC	Active	2016-11-07	2018-11-06	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2468158	32C02	57,51	CDC	Active	2016-11-07	2018-11-06	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2468159	32C02	57,51	CDC	Active	2016-11-07	2018-11-06	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2468160	32C02	57,50	CDC	Active	2016-11-07	2018-11-06	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2468161	32C02	57,50	CDC	Active	2016-11-07	2018-11-06	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2468162	32C02	57,50	CDC	Active	2016-11-07	2018-11-06	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2468163	32C02	57,50	CDC	Active	2016-11-07	2018-11-06	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2468164	32C02	57,50	CDC	Active	2016-11-07	2018-11-06	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2468165	32C03	57,49	CDC	Active	2016-11-07	2018-11-06	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2468166	32C03	57,49	CDC	Active	2016-11-07	2018-11-06	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2468167	32C03	57,49	CDC	Active	2016-11-07	2018-11-06	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2468168	32C03	57,49	CDC	Active	2016-11-07	2018-11-06	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2468169	32C03	57,49	CDC	Active	2016-11-07	2018-11-06	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2468170	32C03	57,49	CDC	Active	2016-11-07	2018-11-06	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2468171	32C03	57,48	CDC	Active	2016-11-07	2018-11-06	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2468172	32C03	57,48	CDC	Active	2016-11-07	2018-11-06	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2468173	32C03	57,48	CDC	Active	2016-11-07	2018-11-06	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2468174	32C03	57,48	CDC	Active	2016-11-07	2018-11-06	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2468175	32C03	57,48	CDC	Active	2016-11-07	2018-11-06	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2468176	32C03	57,48	CDC	Active	2016-11-07	2018-11-06	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2468177	32C03	57,46	CDC	Active	2016-11-07	2018-11-06	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2468178	32C03	57,46	CDC	Active	2016-11-07	2018-11-06	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2468179	32C03	57,46	CDC	Active	2016-11-07	2018-11-06	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2468180	32C03	57,46	CDC	Active	2016-11-07	2018-11-06	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2468181	32C03	57,46	CDC	Active	2016-11-07	2018-11-06	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties

Title Number	SNRC	Area (ha)	Type	Status	Registered Date	Expiration Date	Owner	NSR
2468182	32C03	57,45	CDC	Active	2016-11-07	2018-11-06	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2468183	32C03	57,45	CDC	Active	2016-11-07	2018-11-06	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2468184	32C03	57,45	CDC	Active	2016-11-07	2018-11-06	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2468185	32C03	57,45	CDC	Active	2016-11-07	2018-11-06	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2468186	32C03	57,44	CDC	Active	2016-11-07	2018-11-06	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2468187	32C03	57,44	CDC	Active	2016-11-07	2018-11-06	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2468188	32C03	57,44	CDC	Active	2016-11-07	2018-11-06	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2468189	32C03	57,44	CDC	Active	2016-11-07	2018-11-06	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2468190	32C03	57,43	CDC	Active	2016-11-07	2018-11-06	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2468191	32C03	57,43	CDC	Active	2016-11-07	2018-11-06	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2468192	32C03	57,43	CDC	Active	2016-11-07	2018-11-06	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
2468193	32C03	57,43	CDC	Active	2016-11-07	2018-11-06	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties
862	32C03	89,70	BM	Active	2004-07-06	2024-07-05	Ressources X-Ore inc. (80225) 100 %	0.75% Osisko Gold Royalties; 0.375% Estate of F.D. Corcoran; 0.375% David E. Agar

APPENDIX II

CHRONOLOGICAL SUMMARY OF HISTORICAL WORK ON THE CROINOR GOLD PROJECT

HISTORY

Pershing Township has been explored since the early 1930s. The Croinor deposit was discovered around 1944, probably by a prospector named Fred Thompson. Several companies subsequently conducted exploration on the property.

Croinor-Pershing Gold Mines Ltd (1944-1948)

The Croinor showing was discovered around 1944 probably by prospector Fred Thompson. It then became the property of Croinor Pershing Mines Ltd ("Croinor"). Twelve drill holes were put down by the operators prior to the formation of the company. Croinor drilled about seventy surface holes all distributed over some 9,000 feet (2,743.2 metres) of the main diorite sill. Early in 1946, a shaft was sunk to a depth of 250 feet, with levels at 125 (38.1 metres) and 250 feet (76.2 metres).

In 1947, the shaft was deepened to 639 feet (194.8 metres) with levels at 375 (114.3 metres) and 500 feet (152.4 metres). Underground development of the Croinor deposit continued until November 1948, when, according to Croinor, operations were suspended pending a decision on the construction of a power transmission line to the project. Before operations ceased, about 1,200 feet (356.8 metres) of drifting were carried out on the 1st level, 1,100 feet (335.3 metres) on the 2nd, 500 feet on the 3rd, and 1,500 feet on the 4th level. A total of 2,325 feet (708.7 metres) and 620 feet (189 metres) of crosscutting and raising were respectively performed during this time. At the end of 1948, surface drilling amounted to 18,330 feet (5,587 metres), whereas a total of 36,795 feet (11,215.1 metres) of underground drilling were carried out.

Preliminary metallurgical tests, during the mine's operation, on a sample containing 5.59 g/t Au and 1.89 g/t Ag, indicated 96% recovery by standard cyanide solution methods (Schaaf and Brown, 1974).

All ore from the development of underground workings was stockpiled at the surface in an "ore dump". At the end of operations, the mine staff estimated undiluted reserves at 438,178 metric tonnes grading 6.86 g/t Au (James and Buffam, 1948). This estimate included only ore above the 500 level and only a small portion of the Porphyry ore zone.

These "reserves" are historical in nature and should not be relied upon. It is unlikely they comply with current NI 43-101 criteria or 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. InnovExplo did not review the database, key assumptions, parameters or methods used for this mineral reserve estimation at the Croinor deposit.

James and Buffam (1948) prepared a report for the Quebec Hydro-Electric Commission to determine if a branch power line to the Croinor property could be justified at the time. They estimated total classified reserves at 107,050 metric tonnes grading 7.54 g/t Au after 15% dilution with material grading 1.03 g/t Au and high values cut to 34.29 g/t Au. This estimate apparently included only ore that had been confirmed by underground development in the Shaft area deposit.

These "reserves" are historical in nature and should not be relied upon. It is unlikely they comply with current NI 43-101 criteria or 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. InnovExplo did not review the database, key assumptions, parameters or methods used for this mineral reserve estimation at the Croinor deposit.

1949-1969

In 1945 and 1946, Midd-Pershing Mines Ltd explored the volcanic/porphyry zone at the south edge of the Croinor property by trenching and drilling. Pershon Gold Mines Ltd drilled and trenched the volcanic/porphyry zone to the southeast of Midd-Pershing Mines Ltd.

In 1953 and 1954, Croinor conducted a ground magnetometer survey to trace the Croinor diorite sill toward the southeast and identify drill targets. A drilling campaign, totalling 4,400 feet (1,341.1 metres), was subsequently carried out.

In 1960, Croinor drilled one hole totalling 600 feet (182.9 metres) near the previous drilling campaign.

Between 1961 and 1963, Camflo Mattagami Mines Ltd completed a ground magnetometer survey and six drill holes in the south and southeast corner of the Croinor property.

Lauran Holdings assumed control of the property in 1963 and allowed the claims to lapse.

The former property owned by Croinor became available and was staked by F. Corcoran, D. Agar and other prospectors in 1967.

In 1968 and 1969, Anaconda America Brass Ltd carried out reconnaissance base metal sulfide exploration in the northeast corner of the former Croinor property. Geology, geophysics, and limited drilling followed an airborne electromagnetic survey. The anomalies investigated were due to barren pyrite-pyrrhotite.

F. Corcoran and D. Agar (1967-1972)

In 1971, Agar and Corcoran completed magnetometer and electromagnetic surveys around the Croinor gold deposit. Results of all surveys were inconclusive.

There was considerable litigation regarding ownership of the former Croinor property which was in the meantime staked by the Crown. Eventually, the most significant claim, containing the shaft, the ore dump and most of the development area, was granted to Corcoran and Agar. According to Middleton (1973), during the litigation period, the Crown sold the Croinor ore dump (ore excavated between 1944 and 1948) to a third party and when the price of gold increased to around $65 in 1972 and 1973, about 9,979 metric tonnes of ore were trucked to the Malartic Gold Fields mill for treatment. Bullion reports from Malartic Gold Fields indicated a 95% recovery by standard cyanide solution methods from about 9,979 metric tonnes of ore from the ore dump, grading 3.70 g/t Au. According to Middleton (1973), the Croinor dump, in which about 2,722 metric tonnes remained, is assumed to have included much waste since it can be shown to have a greater volume than the ore which was intersected by shaft sinking, drifting, and raising.

Middleton (1973) provided an estimate of 680,400 metric tonnes grading 8.91 g/t Au of unclassified and undiluted “potential ore” for all zones identified at the Croinor deposit after 15% dilution with material grading 0 g/t Au and all gold values uncut.

These “potential ores” are historical in nature and should not be relied upon. It is unlikely they comply with current NI 43-101 criteria or 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. InnovExplo did not review the database, key assumptions, parameters or methods used for this “potential ore” estimation at the Croinor deposit.

Abigold Mines Inc. (1973-1976)

In 1973, with rising gold prices, Abigold Mines Inc. (“Abigold”) acquired control of the Croinor property. In 1974, Abigold completed magnetometer and electromagnetic surveys on the Croinor project. During the summer of 1975, Abigold investigated six (6) electrical conductors and geological mapping was performed in selected areas. Trenching and sampling were carried out on known gold mineralization to confirm previous results. Eight (8) holes totalling 2,293 feet (698.9 metres) were drilled to test conductor zones and structures controlling gold mineralization.

Schaaf and Brown (1974) carried out a combined indicated and potential mineral inventory from the surface to the 500 level on the Croinor deposit. The indicated mineral inventory was estimated at 259,650 metric tonnes grading 8.01 g/t Au before dilution. The potential mineral inventory was estimated at 408,240 metric tonnes grading 7.81 g/t Au before dilution. All high values were cut to 34.29 g/t Au.

These “mineral inventories” are historical in nature and should not be relied upon. It is unlikely they comply with current NI 43-101 criteria or 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. InnovExplo did not review the database, key assumptions, parameters or methods used for this mineral inventory estimation at the Croinor deposit.

Brown (1976) revised the 1974 mineral inventory. Mineral inventories were revised and re-measured, resulting in a modest increase in the 1974 figures. Above the 500 level, the revised indicated mineral inventory was 308,729 metric tonnes grading 7.89 g/t Au, representing an increase of 49,079 metric tonnes. The grade passed from 8.01 g/t Au to 7.89 g/t Au. The potential mineral inventory remained the same as in 1974.

These “mineral inventories” are historical in nature and should not be relied upon. It is unlikely they comply with current NI 43-101 criteria or 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. InnovExplo did not review the database, key assumptions, parameters or methods used for this mineral inventory estimation at the Croinor deposit.

Harbinson Group (1979-1982)

In 1979, the Croinor Project was jointly acquired by the Harbinson Group (50% Onaping Resources Limited and 50% Dominion Explorers Ltd). Onaping Resources was the manager until development work was suspended in 1983. Between 1979 and 1983, a total of 145 surface drill holes were drilled totalling 17,511 metres. The historical shaft was rehabilitated and a decline ramp was developed over a distance of 395 metres from surface to the level 125. Underground sampling was carried out over four (4) levels. This work was suspended at the end of August 1981.

Based on their underground results, the Harbinson Group estimated total reserves at 830,000 metric tonnes grading 8.2 g/t Au after 25% dilution (Latulippe, 1982).

These "reserves" are historical in nature and should not be relied upon. It is unlikely they comply with current NI 43-101 criteria or 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. InnovExplo did not review the database, key assumptions, parameters or methods used for this mineral reserve estimation at the Croinor deposit.

Sullivan Mines Ltd (1983-1986)

In 1983, Sullivan Mines Ltd ("Sullivan") optioned the property to acquire a 50% interest by spending C$1.4 million. Onaping Resources and Dominion Explorers shared the remaining interest with a 25% interest each. The reorganization of Onaping Resources saw Dominion Explorers acquire 50% of the property.

In 1983, Sullivan completed a surface drilling program consisting of 49 holes totalling 9,528.6 metres and an underground drilling program consisting of 99 holes totalling 4,872.1 metres. Sullivan proceeded to the dewatering of the shaft. A bulk sample was taken near the end of year. A total of 1,562 tonnes were processed at the Belmoral mill with a recovery grade of 6.17 g/t Au (Gaudreau *et al.*, 1988). In 1983, Dominion Explorers Ltd reported a reserve estimate of 856,205 metric tonnes at 7.89 g/t Au (Canadian Mines Handbook, 1983).

These "reserves" are historical in nature and should not be relied upon. It is unlikely they comply with current NI 43-101 criteria or 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. InnovExplo did not review the database, key assumptions, parameters or methods used for this mineral reserve estimation at the Croinor deposit.

In 1984, Sullivan completed a surface drilling program consisting of 9 holes totalling 687.6 metres and an underground drilling program consisting of 22 holes totalling 324.4 metres. A large stripping (6,000 m^2) was done on the mineralized zone located 150 metres southeast of the shaft. Sampling and mapping were carried out on this stripping. Veilleux (1984) provided a reserve estimate of 386,600 metric tonnes grading 4.94 g/t Au, including 66,607 metric tonnes at 5.66 g/t Au of proven reserves, after 20% dilution.

These "reserves" are historical in nature and should not be relied upon. It is unlikely they comply with current NI 43-101 criteria or 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. InnovExplo did not review the database, key assumptions, parameters or methods used for this mineral reserve estimation at the Croinor deposit.

In 1986, Sullivan conducted magnetic and electromagnetic surveys on the project. A total of 11 surface holes were drilled on the project for a total of 1,559 metres.

During this period, Sullivan carried out 421 feet (128.3 metres) of raising and underground geological mapping.

Cambior Inc. (1987-1989)

At the end of 1987, Cambior Inc. took over from Sullivan and became operator of the Croinor Project. Cambior held 50% interest in the Project, the remaining 50% interest belonging to Dominion Explorers Inc.

During the year 1988, Cambior drilled 125 holes totalling 8,005 metres. Helicopter-borne magnetic and electromagnetic surveys were also carried out on the Project.

In 1988, reserves were estimated at 479,422 metric tonnes grading 6.51 g/t Au from surface to the 500 level (Bérubé, 1988).

These "reserves" are historical in nature and should not be relied upon. It is unlikely they comply with current NI 43-101 criteria or 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. InnovExplo did not review the database, key assumptions, parameters or methods used for this mineral reserve estimation at the Croinor deposit.

In 1989, a geological survey was conducted on the Project. Cambior also drilled 8 holes totalling 2,467 metres.

The property remained dormant until 1996.

Goldust Mines Ltd (1994-1997)

Amalgamation of Dominion Explorers Inc. and Gobi Oil & Gas Ltd received all required shareholder, court and regulatory approvals and became effective December 31, 1994. Dominion Explorers Inc. became a Canadian natural resource company focused on the exploration and production of crude oil and natural gas interests in central Alberta.

Goldust Mines Ltd ("Goldust") was incorporated as 676182 Alberta Ltd under the laws of Alberta by Articles of Incorporation dated November 28, 1995. On February 1, 1996 the Company changed its name to Goldust Mines Ltd. Pursuant to a purchase agreement dated December 29, 1995 between Goldust and Dominion Explorers, Goldust agreed to purchase a portfolio of 12 mineral properties in Canada. The acquisition included a 50% interest in the Croinor gold property. On April 14, 1996 the Company acquired the remaining 50% interest in the Croinor Property from Cambior Inc.

Goldust received approval from the Ministère des Ressources Naturelles, in the Province of Quebec, for the extraction of a 50,000 tonne bulk sample on the property in the spring of 1996. Active open pit mining was undertaken in mid-1996 to extract the bulk sample. The goal of the program was to determine gold recovery levels and feasibility of larger-scale open pit and underground gold mining operations on the property.

The bulk sampling was completed by the end of April 1997, yielding 5,332 ounces of gold from 55,150 metric tonnes. The majority of the ore was processed at the AurBel mill near Val-d'Or which yielded a 97% gold recovery. The overall grade of the bulk sample was 2.94 g/t Au. Mining for the bulk sample was conducted near the 125-foot level. In mid-1997, with the gold price under US$350/oz, it was not feasible to continue with open pit operations beyond the bulk sample program or to initiate an underground mining operation on the Croinor property.

An independent evaluation of the underground potential for the Croinor Project was prepared by Bharti Engineering Associates Inc. in a report dated August 1996, which determined an underground mineable reserve of 335,386 ounces at 5.49 g/t Au from 1,901,638 metric tonnes.

These "reserves" are historical in nature and should not be relied upon. It is unlikely they comply with current NI 43-101 criteria or 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. InnovExplo did not review the database, key assumptions, parameters or methods used for this mineral reserve estimation at the Croinor deposit.

On July 18, 1997, Goldust changed its name to Huntington Exploration Inc. ("Huntington").

In August 1997, the Company entered into an option and joint venture agreement with South-Malartic Explorations Inc. ("South-Malartic"). South-Malartic had the right to earn a 70% interest in the Croinor property, by incurring exploration expenditures of C$1,500,000 over a six-year period and became operator of the Croinor Project.

South-Malartic Explorations Inc. (1998-2001)

During 1998, South-Malartic completed 28.2 kilometres of V.L.F. and magnetic geophysical surveys on the property, followed by a 2,607-metre diamond drilling program in eleven (11) surface drill holes.

In 1999 and early 2000, considerable data were compiled and a project to mine part of the historical "reserves" from surface, below the present open-pit, was planned.

During the summer of 2000, a total of 6,255.6 metres from fifty-four (54) surface drill holes was carried out on the property. This drilling campaign targeted essentially the North contact between the Croinor sill and volcanic rocks. During the fall of 2000, trenching was undertaken by South-Malartic consisting in four (4) trenches. Sampling, channelling, and geological mapping were performed on these trenches.

On January 16, 2001 South-Malartic announced the results of a resource evaluation study carried out by consulting firm Geostat International Inc. In its report, Geostat indicated that the present resources, based on diamond drilling data, were: 1,331,000 metric tonnes of Measured Resources averaging 3.04 g/t Au (140,100 ounces), 1,140,000 metric tonnes of Indicated Resources averaging 2.56 g/t Au (93,800 ounces) and 610,000 metric tonnes of Inferred Resources averaging 2.47 g/t Au (48,400 ounces).

These "resources" are historical in nature and should not be relied upon. It is unlikely they comply with current NI 43-101 criteria or 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. InnovExplo did not review the database, key assumptions, parameters or methods used for this mineral resource estimation at the Croinor deposit.

In 2001, South-Malartic completed a diamond drilling program totalling 5,341.4 metres in seventy-three (73) surface drill holes. During the year a new gold showing (Trench No.2) was discovered during the exploration program. This new zone is located about 600 metres northeast of the Croinor deposit. Trenching, sampling, geological mapping, and drilling were performed on this new showing. Trenching, sampling, geological mapping and drilling were also performed on Trench No.3. This work confirmed that it was also possible to find auriferous zones along the South contact between the Croinor sill and volcanic rocks.

South-Malartic Explorations Inc. (2002-2005)

Pursuant to the 1997 agreement, South-Malartic earned a 70% interest in the property, effective January 31, 2002. Huntington retained a 30% interest.

Significant progress was made in defining the gold resource established on the Croinor property, which led to an updated resource evaluation study compiled by consulting firm Geostat International Inc. This study confirmed the following resource figures released by South-Malartic in February 2002. Geostat indicated that the present resources, based on diamond drilling data, were: 3,326,000 metric tonnes of measured resources averaging 2.25 g/t Au (240,600 ounces), 1,260,100 metric tonnes of indicated resources averaging 1.93 g/t Au (78,200 ounces) and 2,524,400 metric tonnes of inferred resources averaging 2.46 g/t Au (199,700 ounces).

These "resources" are historical in nature and should not be relied upon. It is unlikely they comply with current NI 43-101 criteria or 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. InnovExplo did not review the database, key assumptions, parameters or methods used for this mineral resource estimation at the Croinor deposit.

In 2002, South-Malartic completed a diamond drilling program totalling 14,136.6 metres in one hundred twenty-one (121) surface drill holes (Chénard and Turcotte, 2003b). South-Malartic has also completed 154.7 kilometres of IP surveys (N = 6; a = 25 m) on the property.

In 2003, South-Malartic completed a diamond drilling program totalling 18,314.6 metres in one hundred sixty-two (162) surface drill holes (Chénard and Turcotte, 2004). The IP survey was extended to the south of the Croinor deposit with an additional 51.6 kilometres. A magnetic survey was also carried out on the property. During the summer of 2003, geological reconnaissance was performed on the property targeting some IP anomalies and geological settings favorable to the discovery of new mineralized zones. Following this reconnaissance, a trenching program was undertaken on the property consisting of eleven (11) trenches totalling 5,720 m^2 with channel sampling.

During this exploration campaign, a new auriferous shear zone, the Bug Lake showing, was discovered 700 metres northeast of the Croinor deposit and approximately 150 metres north of the Trench No.2 showing. The structure was first identified by prospecting and later by mechanical stripping (up to 3.38 g/t Au, grab sample). The shear zone is formed by two more intense and pyritized deformation zones. These metre-thick zones are located 10 to 12 metres apart. The host rock seems to be composed of strongly ankeritized mafic lavas with the presence of quartz-tourmaline±pyrite veins (pinch and swell) within more intense deformation zones.

During the fall of 2003, the metallogenic model was reinterpreted and a new geological model was developed by South-Malartic personnel. This work was necessary for the new resource estimate.

In September 2003, South-Malartic received all the necessary authorizations to proceed with the first phase of mining operations at its Croinor deposit which consisted in extracting a bulk sample of 20,000 tonnes of ore. Dewatering and surveying of the historical Goldust pit was carried out. At the same time, metallurgical tests on drill core were performed by LTM Laboratory in Val-d'Or.

A new mineral resource inventory assembling about 50 mineralized lenses for a total of 2.5 Mt at 3.46 g/t Au (open-pit measured and indicated resources only) using a cut-off grade of 1.0 g/t was evaluated by South-Malartic personnel (Chénard and Turcotte, 2003a) and validated by Met-Chem Canada Inc. (Saucier, 2003). In December 2003, Met-Chem evaluated underground measured and indicated resources at 415,000 metric tonnes at an average grade of 9.03 g/t Au using a 5.0 g/t Au cut-off grade.

These "resources" are historical in nature and should not be relied upon. It is unlikely they comply with current NI 43-101 criteria or 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. InnovExplo did not review the database, key assumptions, parameters or methods used for this mineral resource estimation at the Croinor deposit.

Bulk sampling occurred between November 2003 and March 2004 on the Croinor property. Ore extracted during this time was derived from four different mineralized zones accessible from the surface, providing an accurate representation of mineralized lenses at the Croinor project. The preliminary geological evaluation of these zone had defined 20,400 metric tonnes grading 2.46 g/t. The average head assay value obtained at the plant was 3.10 g/t, 26% higher than the geological model. Milling of the ore yielded 1,981 net ounces of gold out of a total of 2,033 ounces, for a 97.4% rate of recovery, an outstanding response to the cyanidation process used at the Camflo mill, a Richmont Mines subsidiary, to extract gold from the deposit.

Huntington's interest in all the claims of the Croinor Property was diluted in 2003 by 8.6% from 30% to 21.4% as a result of non-participation in two exploration cash calls. Huntington completed a transaction whereby it sold its entire ownership in the Croinor property to South-Malartic at the end of 2004.

South-Malartic conducted geophysical surveys (IP and Mag) over the western portion of the property in 2004. During the same year, South-Malartic completed a diamond drilling program totalling 7,358.1 metres in forty-seven (47) surface drill holes. The lateral extensions as well as the eastward plunge of the Bug Lake showing were confirmed by drilling (Marchand, 2004a; 2004b).

The drilling campaigns essentially targeted the Trench No.2 and Bug Lake showing areas. Moreover, in order to better define the near-surface gold potential of the Bug Lake and Trench No.2 showings, these areas were systematically tested using an air track drill that completed 10-metre deep vertical holes on a 2.5-metre × 2.5-metre drilling pattern. Gold assays were done on all pulverized rock samples recovered from drilling. Results from the Trench No.2 showing outlined the presence of a mineralized zone, 25 metres long and 15 metres wide, contained within the first 10 metres below surface.

In the spring of 2004, South-Malartic commissioned an engineering study of mine planning scenarios from Met-Chem Canada Inc. as well as geotechnical studies from Golder and Associates. Requests were also made for all applicable permits in relation with the projected pre-production. The study prepared by Met-Chem Canada Inc. concluded to the technical and economic viability of a surface operation done by open-pit mining.

Based on the planning study, South-Malartic started up pre-production activities at Croinor with mine production established at 65,000 tonnes of ore material at a grade of 5.74 g/t Au (20% dilution factor). To that effect, a custom milling agreement was signed with Camflo Mill Inc. as well as an agreement with mining contractor Construction Norascon.

For the time period from July 5 to October 7, 2004 inclusively, 30,760 metric tonnes of ore were extracted from the central pit area. The ore was processed in three phases at the Camflo mill and the results are as follows:

Details of three phases of processing of ore from the Central Pit

Date	Metric tonnage	Au (g/t)	Raw ounces	recovery rate	Net ounces
August 6-13, 2004	7,882.53	1.80	456.41	95.34%	435.00
August 18-31, 2004	9,750.42	1.97	618.64	95.46%	590.51
October 7-18, 2004	13,127.05	2.5	1,055.02	96.58%	1,018.99
TOTAL	**30,760.00**	**2.15**	**2,130.07**	**95.98%**	**2,044.50**

The results fell short of expectations in the first two milling periods, which led to the hiring of InnovExplo Inc., who were mandated to conduct a complete review of planning and work methods, and also ore grade and dilution control procedures, in order to pinpoint the causes for this underperformance and quickly rectify them. InnovExplo's analysis prompted an overall tightening of work procedures at the mine site, producing a noticeable improvement during the third milling period. Also noteworthy, ore grades obtained from the central pit during the last mining period validated, zone for zone, the grades from the original geological model.

On the basis of the newly implemented framework, South-Malartic successfully renewed its custom milling agreement with Camflo Mill Inc. to process, up until July 2005, 36,000 metric tonnes of ore at an expected average grade of 5.74 g/t Au including a 30% dilution factor. Concurrently, the contract with Construction Norascon was also renegotiated in order to share the risks with South-Malartic. In return for Norascon assuming the entire costs of drilling, blasting, excavating, crushing and transporting, the latter gained a 50% stake in the potential profits accrued from milling of ore extracted from the West Pit.

Extraction work in the West Pit was conducted during the period from December 2004 to July 2005. During this period, a total of 633,118 metric tonnes of material was moved comprising overburden, waste, and mineralized material. Drilling, blasting, excavating and trucking were conducted by Construction Norascon under the supervision of InnovExplo Inc. A total of 24,363 metric tonnes of mineralized material were extracted and processed at the Camflo mill. The average head grade at the mill was 5.38 g/t Au and the recovered grade 5.00 g/t Au, for a total output of 3,834 net ounces corresponding to a recovery rate of 91%. The maximum pit depth reached 43 metres.

A new underground resource estimation for the Croinor deposit by InnovExplo (Pelletier and Boudrias, 2005) evaluated measured and indicated resources at 620,218 metric tonnes grading 10.37 g/t Au for a total of 206,792 ounces of gold at a 5 g/t cut-off.

These "resources" are historical in nature and should not be relied upon. In 2005, they were compliant with NI 43-101 criteria and CIM Standards and Definitions applicable at the time. Since 2005, more drilling has been added and more geological information has become available. Additionally, assumptions used to determine cut-off grades are likely to have changed since 2005. Consequently, these "resources" cannot be considered as current. They are included in this section for illustrative purposes only and should not be disclosed out of context.

X-Ore Ressources Inc. and First Gold Exploration Inc. (2007-2009)

On May 1, 2007, South-Malartic granted First Gold Exploration Inc. ("First Gold") options to earn up to 50% interest in the Croinor Project. On May 4, 2007, South-Malartic changed its name to X-Ore Resources Inc.

In 2007, First Gold carried out a 10,030-metre drilling campaign. The objectives of the program were to expand resources at depth and laterally on the Croinor deposit and to investigate the Bug Lake showing. A total of 19 holes were drilled in the Croinor deposit area for 8,409 metres and 8 holes for 1,621 metres in the Bug Lake area.

In 2008, First Gold completed 4,240.3 metres of drilling (17 holes) on the Croinor deposit. During the same period First Gold completed 2,212 metres of drilling (11 holes) in the Bug Lake area.

In May 2009, First Gold announced the results of a preliminary economic assessment (“PEA”) on the Croinor deposit. The study was performed by Golder Associates Ltd. The PEA is based on the 2005 InnovExplo measured and indicated resource estimate of 504,878 tonnes grading 10.21 g/t Au for 165,633 ounces at 5 g/t cut-off grade. Golder estimated the preliminary operating costs per metric tonne for mining of the Croinor deposit. These estimated costs were C$62.53 (Mining), C$50.36 (Surface, Mine Services, Administration), and C$41.56 (Transportation and Processing). Production of approximately 35,000 ounces per year at a cash cost of US$492 per ounce was estimated. A preliminary base case cash flow schedule was prepared, using a gold price of US$850 per ounce and an exchange rate of 1.15 CAD/1 USD. On the basis of estimates and assumptions, the Croinor Project was expected to yield a pre-tax undiscounted cash flow of C$19,100,000 over an operating life of less than 3 years. The Internal Rate of Return (IRR) was estimated to be 174% and the net present value (NPV) at a discount rate of 7% was C$15,244,458.

This “PEA” is historical in nature and should not be relied upon. In 2009, it was compliant with NI 43-101 criteria. Since 2009, more drilling has been added and more geological information has become available. Additionally, assumptions used to determine cut-off grades as well as estimated capital and operating costs are likely to have changed since 2009. Consequently, this “PEA” cannot be considered as current. It is included in this section for illustrative purposes only and should not be disclosed out of context.

In August 2009, First Gold announced the results of a new mineral resource estimate. The Croinor deposit was estimated to contain 238,414 ounces of gold in 814,228 tonnes (measured and indicated) grading 9.11 g/t gold at a cut-off grade of 5 g/t Au.

These “resources” are historical in nature and should not be relied upon. In 2009, they were compliant with NI 43-101 criteria and CIM Standards and Definitions applicable at the time. Since 2009, more drilling has been added and more geological information has become available. Additionally, assumptions used to determine cut-off grades are likely to have changed since 2009. Consequently, these “resources” cannot be considered as current. They are included in this section for illustrative purposes only and should not be disclosed out of context.

No drilling was carried out in 2009.

Blue Note Mining Inc. and First Gold Exploration Inc. (2010-2012)

On January 19, 2010, Blue Note Mining Inc. (“Blue Note”) proceeded with the acquisition of X-Ore through its amalgamation of two companies, X-Ore Resources and 9216-4706 Québec Inc., a wholly-owned subsidiary of Blue Note Mining.

The initial 2010 phase of drilling at Croinor had two objectives: first, to test the ground stability of the crown pillar in the Croinor gold deposit. This provided key information for the mine engineering plan for future mining operations. The full report was completed by Golder Associates Ltd. InnovExplo carried out core descriptions and selected samples for assays of mineralized zones. The second objective was to test near-surface mineralization located west of the previously mined West Pit for possible open pit potential. Phase 2 of the Croinor drill program consisted of follow-up drilling to delineate potential resources below and lateral to the current resources and to further test the mineralized diorite sill at depth. A total of eleven (11) diamond drill holes totalling 304.5 metres were logged and sampled for Phase 1. A total of seven (7) diamond drill holes totalling 2,039.4 metres were logged and sampled for Phase 2.

In 2010, Blue Note commissioned Abitibi Geophysics to carry out a 3D hole-to-hole resistivity/induced polarization survey over the Croinor property. The objective of the study was to assess the potential for gold mineralization at depth and along the extensions of known mineralization. This information would be used for planning a follow-up program in 2011 over the most promising anomalies. A total of 26 independent pairs of receiver holes were surveyed over the property. Overall, the 3D inversion allowed the identification of a potential structural corridor in the northwestern area surveyed. This corridor is represented by a sharp contact between a resistivity high and a resistivity low that corresponds to a decrease in chargeability. Multiple small IP anomalies were identified adjacent to the structural feature, as well as larger IP anomalies at depth that were intersected by hole CR-07-332A. In the southeast part of the survey, multiple smaller shallow IP anomalies were identified, as well as a large anomaly at depth which was intersected by hole CN-88-127 and hole CN-88-128.

On July 15, 2010, Blue Note and First Gold announced the results of a Prefeasibility Study (“PFS”) for their jointly owned Croinor Project (Poirier *et al.*, 2010). Resources considered in the PFS amount to 814,228 tonnes at 9.11 g/t Au for the measured and indicated categories. The underground mine reserves were determined using an undiluted cut-off grade of 5.0 g/t and a minimum mining width of 1.8 metres. The estimated proven and probable reserves totalled 689,829 metric tonnes at 8.35 g/t Au for 185,260 ounces after applying a mining recovery of 85% for room-and-pillar mining and 95% for long-hole mining, with a dilution factor of 5% for room-and-pillar stopes and 20% for long-hole stopes. Operating costs over the life of mine (five years) were projected to average US$572 per ounce. The overall unit operating cost was $160/tonne of ore milled. The financial analysis for the base case (Bloomberg consensus gold (US$1016) and exchange rate forecast (1.06 CAD/1 USD) provided for a pre-tax undiscounted NPV of $47.4M with an IRR of 97%. Discounted at 7%, the NPV was $35.9M.

This “PFS” is historical in nature and should not be relied upon. In 2010, it was compliant with NI 43-101 criteria. Since 2010, more drilling has been added and more geological information has become available. Additionally, assumptions used to determine cut-off grades as well as estimated capital and operating costs are likely to have changed since 2010. Consequently, this “PFS” cannot be considered as current. It is included in this section for illustrative purposes only and should not be disclosed out of context.

On July 19, 2010, Blue Note Mining and First Gold Exploration Inc. announced that they had entered into a binding agreement regarding the acquisition by Blue Note Mining of First Gold Exploration’s 50% interest in the Croinor property. The agreement included the Croinor mining lease and the claims forming the former Croinor property.

On September 1, 2010, the Certificate of Authorization was received from the Quebec Department of Sustainable Development, Environment and Parks (MDDEP) for the Croinor gold project allowing for mine development and underground production.

One of the objectives of the 2011 program was to perform step-out testing of the gold mineralization within and to the east of the planned development, identified by earlier drilling. The program was split into three phases: Phase 1 ran from January to March and included holes CR-11-379 to CR-11-401; Phase 2 ran through the month of May and included holes CR-11-402 to CR-11-408; Phase 3 ran through the month of August and included holes CR-11-409 to CR-11-419. Other drilling objectives included investigating the targets generated by the previous program (including those identified by the 3D hole-to-hole IP survey to the east of the planned development), and testing the host diorite sill to the west of the reserve area where an IP target had been identified at the edge of the survey and beyond the limit of previous drilling. An IP signal in the east was targeted by holes CR-11-384 to -388. An IP signal in the west was targeted by holes CR-11-395 and CR-11-397 to -401. One (1) hole was drilled to test mineralized veins down dip within the diorite dyke (CR-11-408). To do this, the hole was drilled through the diorite, nearly parallel to it, to a depth of 750 m. Twenty-four (24) diamond drill holes for a total of 7,198 metres were logged and sampled during Phase 1. Seven (7) diamond drill holes for a total of 2,764 metres were logged and sampled during Phase 2. Eleven (11) holes for a total of 3,084 metres were logged and sampled during Phase 3.

In February 2011, First Gold amended its name from First Gold Exploration Inc. to Critical Elements Corporation ("CEC").

On June 22, 2011, Blue Note and CEC filed a technical report copy from the revised Prefeasibility study for their jointly owned Croinor Project based on the 2009 mineral resource estimate (Poirier *et al.*, 2011). The resources considered in the PFS amounted to 814,228 tonnes at 9.11 g/t Au in the measured and indicated categories. The underground mine reserves were determined using an undiluted cut-off grade of 5.0 g/t and a minimum mining width of 1.8 metres. The estimated proven and probable reserves totaled 689,829 metric tonnes at 8.35 g/t Au for 185,260 ounces after applying a mining recovery of 85% for room-and-pillar mining and 95% for long-hole mining, with a dilution factor of 5% for room-and-pillar stopes and 20% for long-hole stopes. Operating costs over the life of mine (five years) were projected to average US$628 per ounce. The overall unit operating cost was $171/tonne of ore milled. The financial analysis for the base case (Bloomberg consensus gold (US$1250) and exchange rate forecast (1.03 CAD/1USD)) provided for a pre-tax undiscounted NPV of $46.9 million with an IRR of 124%.

This "PFS" is historical in nature and should not be relied upon. In 2011, it was compliant with NI 43-101 criteria. Since 2011, more drilling has been added and more geological information has become available. Additionally, assumptions used to determine cut-off grades as well as estimated capital and operating costs are likely to have changed since 2011. Consequently, this "PFS" cannot be considered as current. It is included in this section for illustrative purposes only and should not be disclosed out of context.

On January 16, 2012, Blue Note and CEC reported they had agreed to extend the term of the binding agreement announced on July 19, 2010, providing for the acquisition by Blue Note of all of CEC's interests in the Croinor property. Under the terms of this agreement, Blue Note had until March 31, 2012, or such other later date as mutually agreed by Blue Note and CEC, to make a final payment of $2.25 million to complete the transaction. In addition, Blue Note had to issue 17.5 million common shares to be held in escrow, to be released at a rate of 500,000 shares per month over 35 months from the date of closing. The transaction included CEC's 71% ownership in the Matchi-Manitou property. The 50/50 Croinor joint operatorship remained in effect until the date of closing. In the meantime, CEC was exempted from participating in any cash calls until such date.

On February 22, 2012, Blue Note and CEC announced results from the updated Prefeasibility Study and Mineral Resource Estimate for their jointly owned Croinor Project (Poirier *et al.*, 2012a). The resources considered in the PFS amounted to 680,100 tonnes at 9.08 g/t Au in the measured and indicated categories using a cut-off grade of 4 g/t Au. The underground proven and probable reserves totalled 120,883 ounces from 566,872 tonnes after recovery of 85% for room-and-pillar mining and 95% for long-hole mining, with a dilution factor of 5% for room-and-pillar stopes and 30% for long-hole stopes. The estimated cut-off grade retained was 3.7 g/t Au for the long-hole mining method and 5.4 g/t Au for the room-and-pillar mining method. These cut-off grades were calculated using a metal price of US$1205.52 at an exchange rate of 1.07 CAD/1 USD. Operating costs over the life of mine (five years) were projected to average US$762 per ounce. The overall unit operating cost was $164/tonne of ore milled. The financial analysis for the base case (Bloomberg consensus gold (US$1495) and exchange rate forecast (1.03 CAD/1 USD)) provided for a pre-tax undiscounted NPV of $31.0 million with an IRR of 57%.

This "PFS" is historical in nature and should not be relied upon. In 2012, it was compliant with NI 43-101 criteria. Since 2012, assumptions used to determine cut-off grades as well as estimated capital and operating costs are likely to have changed since 2012. Consequently, this "PFS" cannot be considered as current. It is included in this section for illustrative purposes only and should not be disclosed out of context.

In order to evaluate the impact of the inferred resources on the project economics with the assumption that the inferred resources would be converted into indicated resources, a second study was completed (Poirier *et al.*, 2012b). A preliminary economic assessment ("PEA") that included inferred resources potentially viable to mining was published at the same time as the updated Prefeasibility Study. The inferred resources were all in the immediate vicinity of the indicated resources. The bulk of the inferred resources represented a fringe around the indicated resources and extended to a maximum of 70 metres, but did not have enough drill hole intercepts to be categorized as indicated although it would be relatively easy to convert all or parts of the inferred resources tothe indicated category by definition drilling. Operating costs over the life of mine (five years) were projected to average US$731 per ounce. The overall unit operating cost was $160/tonne of ore milled. The financial analysis for the base case (Bloomberg consensus gold (US$1464) and exchange rate forecast (1.03 CAD/1 USD)) provided for a pre-tax undiscounted NPV of $42.1 million with an IRR of 70%.

This "PEA" is historical in nature and should not be relied upon. In 2012, it was compliant with NI 43-101 criteria. Since 2012, assumptions used to determine cut-off grades as well as estimated capital and operating costs are likely to have changed since 2012. Consequently, this "PEA" cannot be considered as current. It is included in this section for illustrative purposes only and should not be disclosed out of context.

On May 16, 2013, Blue Note and its wholly-owned subsidiary X-Ore, announced the filing of a notice of intention to file a proposal under the Bankruptcy and Insolvency Act (Canada). Pursuant to the notice, PricewaterhouseCoopers Inc. ("PWC") was appointed as the trustee in the companies' proposal proceedings to assist the companies in their restructuring efforts. Consequently, Blue Note was not able to complete the acquisition of CEC's 50% interest in the Croinor property.

APPENDIX III

DETAILED GEOLOGY OBSERVED ON THE CROINOR PROPERTY

III. Property geology

The Croinor Gold Property is located in Pershing Township, 15 kilometres west of the Grenville Front in the eastern portion of the Abitibi Greenstone Belt. The Croinor Gold Property is underlain by two major lithological packages: a) dominantly intermediate to mafic volcanic rocks forming the Assup Domain in the north, and b) the dominantly sedimentary Garden Island Domain in the south.

III.1 Assup Group (AS)

III.1.1 Volcanic units

The effusive facies is clearly dominant in these volcanic rocks. These andesitic lava flows are commonly pillowed with local breccia at the top and interbedded with massive flows (Gaudreau *et al.* 1988). Gobeil (1989a) identified, in the northern part of the property, a wide dacitic band composed mainly of pillowed and massive flows a few centimetres to several metres thick. The pillowed facies contains elliptically shaped lobes measuring 20-50 cm by 50 cm-1 m, elongated parallel to the cleavage (N280°). The massive flows form horizons measuring 50 cm to over 3 metres thick when in contact with pillowed lavas. Their colour in weathered surface (light gray) and fresh surface (light green) helps to easily distinguish them from the southern more mafic lavas. Some breccia may be observed in outcrop. Two parallel horizons spaced 100 metres apart and containing 2 to 15% pyrrhotite, trace to 5% fine disseminated pyrite and 5 to 20% local graphite, were identified by Gobeil (1989a) during mapping work, and an EM conductor corresponds to these two horizons.

An intermediate primarily calc-alkaline lava horizon, to the south, is in contact with this previous unit and outcrops in the northwest corner, just north of the Croinor shaft (Gobeil, 1989a). It is mainly composed of pillowed andesite which, on occasion, alternates with massive levels. These lavas are usually amygdaloidal and/or vesicular.

Andesitic pyroclastic rocks form lenticular horizons interbedded with lavas. A horizon of pyroclastic rocks almost 600 metres thick is present in the central part of the Croinor property (Hodges 1987). The pyroclastic rocks are generally composed of ash tuff, lapilli tuff and block tuff (Hodges, 1987, Gaudreau *et al*., 1988, Gobeil 1989a).

Ash tuff horizons have a thickness ranging from 10 cm to 3 metres. They are generally gray to greenish dark gray. The typical Croinor ash tuff contains 25-40% fine-grained angular lithic fragments ranging from 0.5 to 4 mm (Hodges 1987). Lithic fragments are composed, in decreasing order of abundance, of quartz, feldspar, chlorite, epidote and biotite. The matrix generally contains plagioclase, chlorite, epidote, biotite and quartz. Accessory minerals are apatite, iron oxides, tourmaline, sphene, calcite and muscovite.

Lapilli tuff horizons vary between 10 cm and 20 metres thick, but the overall thickness remains between 0.5 and 5 metres. Hodges (1987) observed a gradual change in the size of fragments from ash tuffs to lapilli-ash tuffs to lapilli tuffs. In his study, he stated that lapilli tuffs and lapilli-ash tuffs represented 45% of pyroclastic units around the

Croinor gold deposit. Fragments range from several millimetres to a few centimetres in size and are angular to rounded. Their composition is generally intermediate, but mafic to felsic clasts are also present making these polygenic tuffs. Some blocks are occasionally present in the lapilli tuffs.

Block tuffs are much less abundant than the two previous types. They form decametric horizons interbedded with ash and lapilli tuffs. Blocks vary from a few centimetres to 30 centimetres in size. Felsic compositions are predominant with lower amounts of andesitic clasts.

Hodges (1987) concluded that the Croinor volcaniclastic rocks are composed entirely of fragments and volcanic crystals suggesting a source near a volcanic structure. In addition, Hodges (1987) observed the presence of devitrified glass fragments in ash tuffs indicating a pyroclastic origin; *i.e.* the volcaniclastic rocks are a mixture of epiclastic debris flows and pyroclastic ash tuffs.

III.1.2 Croinor Sill

The Croinor Sill is located in the central part of the Croinor property (Fig. 7.3). It has a general attitude of N295° and dips north at 50-65°. It ranges from 60 to 120 metres in thickness over a strike length of approximately 3 km. The sill, which hosts the gold mineralization in the Croinor deposit, can be observed on several outcrops and is intersected by numerous drill holes. Chénard and Turcotte (2004) mentioned that its west (> Section 800W) and east (> Section 300E) extensions needed to be better defined. Near the Croinor deposit, the sill is in direct contact with pyroclastic units (Hodges, 1987).

Elsewhere, the sill is in contact with fragmental volcanic rocks, and sometimes with massive volcanic rocks. Generally, the northern and southern contacts of the sill with the enclosing volcanic rocks are clearly observed by the sudden appearance or disappearance of pyroclastic fragments. However, sometimes mapping of the sill contacts can be difficult, mainly where fragments are absent near the contacts or where the contacts are strongly sheared. The northern and southern contacts are generally foliated parallel to the regional S_2 schistosity. Sometimes they are strongly foliated to sheared, but in other cases they are practically undeformed.

According to previous observations from various authors, the composition of the Croinor Sill varies from dioritic to gabbroic. From the very first study on the Croinor deposit until the mid-1980s, all authors agreed on the diorite term to define the composition of the sill. In his study, Hodges (1987) was one of the first to identify the sill as a gabbro rather than a diorite. According to his microscopic thin section examinations of the sill, he believed that the quartz facies was the result of chloritization of primary mafic minerals creating a silica surplus. Gaudreau *et al.* (1988) interpreted the sill as a differentiated unit, with a central portion composed of gabbro or melanodiorite, with more felsic northern and southern borders consisting of quartz-rich diorite which acted as the Croinor gold mineralization host rock. However, according to Gaborit (1988), due to the presence of hydrothermal alteration related to shear zones, sill differentiation cannot be clearly interpreted and further studies within the sill's least-altered areas are needed to confirm or refute the differentiation hypothesis. Gaborit (1988), in both the Croinor property and over the entire length of the sill, identified two facies; *i.e.* a diorite and a quartz-rich diorite. The diorite represents the main sill facies and, contrary to what suggests Gaudreau *et al.* (1988), the quartz-rich diorite is not the only gold-bearing facies (Gaborit, 1988). The quartz-rich diorite has the same characteristics in hand sample as the diorite except it contains up to 15% small bluish quartz eyes less than 5 mm in size. According to Gaborit (1988), this facies forms irregular and discontinuous lenses present both inside and outside the mineralized zones. Gobeil (1989a; 1989b) kept the prior classification established by Gaborit (1988) during his exploration work. Bourgoin and Gauthier (2000) defined the sill to be mainly mafic and composed of diorite and quartz-rich diorite near the northern contact. Carrier (2002b) indicated that the composition of the sill was dioritic to gabbroic.

Following their drilling program, Chénard and Turcotte (2004) also realized that it was difficult to clearly identify the sill facies. They noted that the main difficulty resulted from the various hydrothermal alteration patterns changing the primary compositions, structures and textures of the rock. Nevertheless, Chénard and Turcotte (2004) identified three facies in the sill: a gabbro, a diorite, and a quartz-rich diorite having up to 15% small bluish quartz eyes. For now, these three facies do not form specific stratigraphic levels within the sill and each may contain gold mineralization. The quartz-rich diorite facies is much less abundant than the other two facies. As Gaborit (1988), Chénard and Turcotte (2004) also noted that the quartz-rich diorite facies was not extensively present along the northern and southern edges of the sill, contrary to Gaudreau *et al.* (1988)'s observations.

Chénard and Turcotte (2004) kept the term diorite to define the Croinor sill facies in their report and in drill logs to better report their facies observations as: a greenish medium to fine-grained diorite. They also noted that the diorite's primary mineral composition was frequently obliterated by hydrothermal alteration and deformation. During their drilling program, the diorite mineral composition was described based on megascopic observations such as: a) hydrothermal alteration intensity and type (*i.e.* epidotization, chloritization, ankeritization, sericitization and silicification), b) accessory minerals (magnetite, hematite and leucoxene), c) mineralized zones (veins and breccia with pyrite) and finally d) deformation affecting the facies (foliation, shearing, folding).

III.1.3 Diorite dykes

Chénard and Turcotte (2004) reported dioritic dykes cross-cutting the Croinor Sill. The dykes are very small and measure a few centimetres to less than 2 metres. The rock is very fine-grained to aphanitic. Occasionally chill margins are observed. These dykes are typically magnetic and contain traces of fine pyrite. Rarely, these dykes have a more mafic composition. They are always observed in the less deformed and altered zones of the sill and are mainly spatially associated with epidotized rocks. Elsewhere, they were probably obliterated by shear zones and related alterations. The dioritic dykes were also affected by the same alteration and deformation as the Croinor Sill. Chénard and Turcotte (2004) noticed that none of these dykes intersect the gold-bearing shear zones, which suggests they predate the gold mineralization.

III.1.4 Quartz-feldspar porphyry

Chénard and Turcotte (2004) described, 400 metres west of the Croinor shaft, a quartz-feldspar porphyry body cross-cutting the Croinor Sill and volcanic country rocks. This facies contains up to 50% quartz and plagioclase phenocrysts, is massive to foliated, and its colour is usually gray or salmon pink. Its matrix is usually composed of 50-60% quartz, 15% chlorite, 10-25% carbonates and 10% muscovite (Gaudreau *et al.*, 1988). Economic gold grades are associated with this porphyry body, more precisely where it is in close contact with the sill.

Similar dykes were encountered elsewhere on the Croinor property, with dimensions ranging from 0.3 to 10 metres, especially in the north, where several holes intersected dykes (Gobeil, 1989a) with similar compositions.

III.2 Aurora Group (AU)

A mafic tholeiitic formation runs along the southern edge of the Croinor property (Fig. 7.2). It forms a 600-metre to 1-km-thick horizon. It is associated with a strong continuous magnetic anomaly trending N110° while the northern half is characterized by a magnetic low (Gobeil, 1989a).

This unit was defined by Chénard and Turcotte (2004) based on a drilling program in the south-central part of the property and a few outcrops encountered in the same area by Gobeil (1989a). Drill holes helped illustrate that the magnetic axis is created by the presence of magnetic pillow lavas showing massive and brecciated facies. These lavas are also associated with fine to medium-grained amphibolites containing up to 15% amphibole porphyroblasts. Biotitization and carbonatization are the typical alterations observed in these rocks. Immediately north of the magnetic horizon, Gobeil (1989a) mapped a tholeiitic lava on some outcrops. This horizon corresponds to a magnetic low some 300 to 600 metres thick. On outcrops, lavas are pillowed, massive and brecciated.

Drilling programs helped delineate a quartz-feldspar porphyry approximately 150 metres thick which extends over three kilometres along the formation direction. This porphyry is not exposed (Gobeil, 1989a) and was only observed in drill holes, which have shown that this porphyry becomes a decimeter to metre-thick porphyry alternating with more or less magnetic basalts in the eastern extension of the porphyry (Carrier, 2002b).

III.3 Garden Island Group (GI)

The Garden Island Group mainly occurs outside of the Croinor property limits. Only two outcrops visited by Gobeil (1989a) are located approximately 100 metres south of the property limits; they consist of centimetre-thick beds of argillite, greywacke and polymictic conglomerate. Recrystallized biotite and garnet porphyroblasts are sometimes clearly apparent.

Sandstones and argillite show centimetre-scale bedding which is interrupted only by the presence of conglomerate beds some 10 to 30 cm thick. This conglomerate consists of 5% rounded granitic or quartz pebbles of 3 cm or less (Gobeil, 1989a), surrounded by a sandstone matrix consisting mainly of quartz.

III.4 Local structural fabrics

The primary stratification (S_0) was mainly measured at the contacts between massive flows, pillowed flows and pyroclastic units (Gobeil, 1989a) observed on the property. A north polarity was also measured everywhere on the Croinor property except on two outcrops where the polarity was south.

The S_2 schistosity is subparallel to the axial planes of most mesoscopic F_2 folds, the east-west shears and also to the elongating/flattening plane of most geological objects (*i.e.* pillows, vesicle fragments, crystals). Near the contact with the Croinor Sill, it becomes parallel to the contact (N290°) and dips from 40° north in the sill to 70° north in the volcanics (Gaborit, 1988). In the epidotized diorite (known as the fresh diorite in historical logs), the schistosity is weak to often absent. When the diorite becomes altered, the schistosity is defined by an alignment of carbonate minerals, chlorite and sericite (Hodges, 1987). In the quartz-feldspar porphyry intrusions, the schistosity becomes realigned with the quartz-feldspar porphyries, especially when the matrix is chlorite-dominant.

Two major folds, an anticline and a syncline, overfolded to the south, were mapped by Lacoste *et al.* (1987) in volcanic rocks northeast of the Croinor shaft. These kilometre-scale F_2 folds were followed, in an east-west direction, for more than 10 km. They have N100° axial planes dipping 30-60° east (Lacoste *et al.*, 1987). On the Croinor property, decametric to metric parasitic folds were observed, associated with the D_2 deformation phase. These “M”-shaped folds have axial planes oriented N075-100° with dips ranging between 50-70° to the east (Lacoste *et al.*, 1987). Lacoste *et al.* (1987) also observed some “M”-shaped folds near the Croinor gold deposit with axial planes oriented N250-280° and dipping 15-70° west.

Gobeil (1989a) noted the presence of the S_3 cleavage in highly sheared lithologies on the Croinor property. Its direction varies from N335-N028° with shallow dips to the east.

III.5 Shear zones

Among all the observed shear zones in the vicinity of the Croinor property, Chénard and Turcotte (2004) identified a shear zone located 500 metres south of the Croinor deposit visible on outcrops. Gobeil (1989a) had reported sheared tuffs oriented N290° dipping north at 50°. This shear zone is very important since the volcanic facies, on either side of the access road to the Croinor deposit, are also sheared (Chénard and Turcotte, 2004).

Another shear zone or mylonitized band, nearly 15 m thick and oriented N280°, intersects the northern contact of the sill to the east of the Croinor deposit and merges in the gabbro. According to Gaudreau *et al.* (1988), this mylonitized zone corresponds to the axial plane of a faulted anticline. But Gaborit (1988) doubts this last assumption since she noticed, in drill holes, that the facies described by Gaudreau *et al.* (1988) do not always present themselves in the order that has been proposed.

Other shears observed on the property have an east-west orientation with a steep dip of 70-90° (Gaborit, 1988). Chénard and Turcotte (2004) noted that observed lineations in the shear planes indicate a major vertical movement with a weak dextral vertical component. Other shears intersecting these series are observed. They are oriented northeast and northwest with subvertical dips and apparent sinistral and dextral movements respectively (Gaborit, 1988). According to Dimroth *et al.* (1983) and Hubert *et al.* (1984), these shear series are associated with the D_3 phase of deformation and are the result of north-south shortening (Lacoste *et al.*, 1987).

A northwesterly oriented fault, located 365 m west of the Croinor shaft, at the contact between the quartz-feldspar porphyry and the Croinor Sill, displaces the contact with a dextral movement of about 45 m to the north (Gaborit, 1988). Chénard and Turcotte (2004) confirmed the presence of this fault during their reinterpretation of the geological contacts between the Croinor Sill and the enclosing volcanic rocks.

III.6 Faults and/or inverse shear zones related to gold mineralization

The dominant structures within the sill consist of a series of faults and/or inverse shear zones which dips north between 25-60°. These faults and/or shear zones are arranged in inverse echelons. According to Gaudreau et al. (1988), the orientation of the faults and/or the Croinor deposit shear is N265-280°, while Gaborit (1988) measured the orientations to be N290-N330°. The faults and/or shear zones often begin in the diorite and intersects the northern contact and ends in the volcanics of the Assup Group. But regularly, faults and/or shear zones start in the volcanics to the south, cross-cutting the diorite and finishes in the volcanics to the north.

During the 2002 fall drilling program, Chénard and Turcotte (2004) noticed that the faults and/or inverse Croinor shear zone displaces diorite blocs from few centimeters up to several meters. These faults and/or shear zones have metric to decametric dimensions. The shear veins occupy the central part of the faults and/or the sill cross-cutting shears. Associated with these faults and/or shear zones are roughly subhorizontal tension veins injected into the fractures.

Chénard and Turcotte (2004) presented the mineral lenses complexities by forming tabular bodies comprised within inclined shear veins, tectonic breccias and sub-horizontal tension veins. Generally, these mineralized are continuous from one section to another (using ± 10 m sections spacing) over several tens of meters to several hundred meters distances. According to previous authors' observations, these mineralized zones are sub-horizontal or dip 20°slightly toward the northeast. These observations were not confirmed or refuted by Chénard and Turcotte (2004). Volcanics in contact with the Croinor sill, generally, do not contain gold mineralization. Otherwise, the volcanics in contact with the sill are only mineralized on a few meters.

III.7 Gold-bearing veins

Several types of veins have been identified by previous authors including Chénard and Turcotte (2004). Gaborit (1988), who mapped in detail the Croinor gold deposit outcrop, observed two types of veins parallel to the main shear (shear veins) and subhorizontal tension veins. These veins are generally composed of quartz, tourmaline and carbonates with minor amounts of pyrite, chalcopyrite and native gold (Fig. III.1). These veins vary from a few centimetres to several metres in thickness and plunge weakly toward the east. Based on a structural analysis, Gaborit (1988) showed that the shear zones and the two types of veins are related to the same phase of deformation. Moreover, Chénard and Turcotte (2004) also encountered mineralized tectonic breccias.

III.7.1 Shear veins

Chénard and Turcotte (2004) noted these veins to be oriented parallel to shears and ranging from a few centimetres to several metres in thickness. These veins consist of quartz, tourmaline and carbonate with very little sulphides (Fig. III.1). The percentage of pyrite does not exceed 3% and it seems to be closely associated with tourmaline. Tourmaline occurs in the form of fine millimetre-scale veinlets and/or needles. Gaborit (1988) claims to have locally observed native gold in quartz, generally near contacts with host rocks or with tourmaline and chalcopyrite (<1%) associated with the quartz. These veins show variable degrees of deformation. They are boudinaged, folded and brecciated. The vein wall rocks are regularly bleached and, occasionally, brecciated. Several types of shear veins were observed.

Figure III.1 ─ Shear vein observed within the hole CR-15-420B

III.7.2 Brecciated quartz-tourmaline veins

Chénard and Turcotte (2004) described these veins to be metric to decimetric in thickness and composed of gray or milky white quartz with varying quantities of tourmaline veinlets and/or needles (Fig. III.2). They contain less than 20% altered and mineralized diorite fragments. These fragments are subangular and range from 1 cm to 1 m in size. The fragments are leached, silicified, pyritized and carbonatized (calcite, ankerite). They contain 1 to 15% fine to coarse-grained auriferous pyrite (0.3-2 cm). Fuchsite is occasionally present in the fragments with pyrite. In veins containing only quartz, pyrite is generally absent and few carbonates are present, while quartz-tourmaline veins contain small amounts of pyrite (<2%). Pyrite borders and/or is present inside tourmaline veinlets. There seems to be a close relationship between tourmaline, fuchsite and pyrite. The host rocks are usually leached and pyritized (<15% pyrite).

Figure III.2 ─ Brecciated quartz-tourmaline vein observed within the hole CR-15-431

III.7.3 Quartz-tourmaline-carbonate veins

Chénard and Turcotte (2004) described these veins as ranging from 10 centimetres to 1 metre in width. They are composed of white quartz, massive tourmaline and/or tourmaline veinlets and carbonates (calcite, ankerite). Tourmaline and carbonates are generally more abundant along vein wall rocks. The percentage of tourmaline is usually less than 35%. In most cases, these veins contain traces to 3% fine pyrite, often associated with tourmaline.

III.7.4 Quartz-tourmaline veinlets

Chénard and Turcotte (2004) described the quartz veins to be millimetric to centimetric while the tourmaline veinlets are usually millimetric. The density of these veins varies from 1 to 10%. Milky white quartz veinlets contain less than 1% tourmaline. Pyrite is generally absent in these veins, but their wall rocks contain auriferous pyrite (1-15%), especially in silicified zones. Elsewhere in the diorite, traces to 3% disseminated pyrite is observed. Quartz-tourmaline veinlets are often folded, boudinaged and discontinuous.

III.7.5 Tourmaline veins

Chénard and Turcotte (2004) noted that tourmaline veins are rarely observed. These veins are generally 1 to 10 metres thick. They consist of more than 80% massive tourmaline with less than 20% quartz. Tourmaline is massive, but may occur in the form of veins and needles in the presence of quartz. In some cases, these veins may be brecciated and contain 5-25% leached and pyritized diorite fragments. Fragments contain up to 15% fine to coarse-grained pyrite, sometimes cubic. Associated with tourmaline, traces to 10% medium to fine-grained pyrite is regularly present. In drill hole CR-02-78, Chénard and Turcotte (2004) saw an example of a metre-scale tourmaline vein. This vein returned gold grades under 9.7 g/t Au.

III.7.6 Tension veins

Chénard and Turcotte (2004) indicated that even if the presence of tension veins is well known around shear zones, their identification in drill core remains difficult. The only clue that can confirm the presence of tension veins is the fact that tourmaline and/or quartz are observed to grow perpendicular to the vein contacts. The tension veins were injected into subhorizontal low-angle tension fractures (Gaudreau *et al.*, 1988). According to Gaudreau *et al.* (1988), these veins dip to the southeast, but Gaborit (1988) observed north-northeast dips. These veins are generally arranged *en echelon* (Gaborit 1988). The subhorizontal tension veins contain milky white quartz with very little carbonates and rare tourmaline. These veins are thin (less than 15 cm) and have a very short extension. Their wall rocks are pyritized and contain 1 to 5% auriferous pyrite (Gaborit, 1988). Gaborit (1988) reports the presence of visible gold in these veins.

III.7.7 Tectonic breccia

Gaudreau *et al.* (1988) observed an association between the tectonic breccias and faults and/or reverse shear zones. These tectonic breccias contain angular, leached and pyritized diorite fragments, similar to host rocks and ranging from 1 to 50 cm in size. The matrix, consisting of quartz and tourmaline, represents up to 80% of the breccia volume. Diorite fragments are strongly silicified, sericitized and ankeritized. Fuchsite is sometimes visible in fragments. The fragments contain 1 to 15% fine to coarse-grained auriferous pyrite crystals or aggregates. Chénard and Turcotte (2004) characterized these breccias as the main gold-bearing structures, where gold grades were the most consistent, exceeding 30 g/t Au in some cases, within the Croinor Sill.

III.8 Gold mineralization

Gold is mainly associated to the metasomatic pyrite. This pyrite is mainly observed in the veins host rocks, in tectonic breccia fragments and in brecciated veins. On occasion, pyrite is accompanied with very minor chalcopyrite and pyrrhotite. Gold is found in inclusion along pyrite grains and fractures (Hodges, 1987). Although pyrite is an excellent gold mineralization metallotect, in the Croinor deposit not all pyritized zones are auriferous. Pyrite occurs as millimetric to centimetric porphyroblastic cubic grains (<1.5 cm). Sometimes, visible gold is found in smoky quartz veins (Fig. III.3) and veinlets within shear zones and strongly metasomatized host rocks (Gaudreau *et al.*, 1988).

Figure III.3 ─ Native gold observed within a smoky quartz-tourmaline vein (Hole CR-15-420B)

Gaudreau *et al*. (1988) noted the presence of two types of pyrite. The first generation type corresponding to a tectonized auriferous pyrite observed as subhedral crystals. This tectonized pyrite, located in foliated areas, hydraulic breccias and micro-fractured veins, is slightly deformed. Stretched and recrystallized pyrite was observed in shear zones as lenticular agglomerates. Gaudreau *et al.* (1988) concluded that this auriferous pyrite is pre- to syn-tectonic based on the brittle deformation (reverse fault and hydraulic breccia) and pre-tectonic compared to ductile deformation (shear). The second type corresponds to anhedral pyrite crystals or undeformed veinlets containing numerous inclusions of chalcopyrite and small quantities of gold. This pyrite is interpreted as syn- to post-tectonic based on ductile and brittle deformation.

In drill holes intersecting the volcanic units in contact with the Croinor Sill, Chénard and Turcotte (2004) noted the presence of pyrite and pyrrhotite occurring either disseminated or in fine veinlets, locally reaching 15% of the modal rock fraction. In general, there is less than 5% pyrite-pyrrhotite in lavas. More rarely, less than 1% fine chalcopyrite associated with pyrite and pyrrhotite was observed by Chénard and Turcotte (2004). Anomalous copper grades up to 0.1% Cu were returned in drill core samples. Although sphalerite was not visible to the naked eye, anomalous zinc grades (<0.5% Zn) also associated with pyrite and pyrrhotite were obtained in drill core samples. The sulphide mineralization is consistently associated with silicification and sericitization although the intensity is widely variable. This type of mineralization is rarely associated with low gold grades.

III.7 Metamorphism and hydrothermal alteration

Any circulation of fluid, in particular H_2O and CO_2, carrying chemicals along faults, shears or fracture networks and which modifies the overall chemical composition of the original rocks is considered as hydrothermal alteration. Hydrothermal alteration of rocks which enclose mineralized zones varies in scale, intensity and mineralogy depending on the initial composition of the affected rocks. In most cases, alteration mineral associations are superimposed on previously metamorphosed rocks (Robert, 1996). The main types of hydrothermal alterations around gold lenses are: carbonatization, sulphidation, alkaline metasomatism, chloritization and silicification (Boyle, 1979). At the Croinor deposit, the most important are chloritization, carbonatization (calcite-ankerite), pyritization, sericitization and silicification, and their intensity is spatially associated with shear zones; *i.e.* increases very rapidly near shear zones. Hydrothermal alteration develops as large decametric halos limiting mineralized blocks and along major gold structures. It remains an excellent pathfinder to identify mineralized zones.

Often various types of alteration are combined to form alteration halos around gold deposits (Roberts, 1987). Usually, this alteration progression is linked to the gradual carbonatization of host rocks accompanied with alkaline metasomatism. In the Croinor deposit area, Pages (1982) was the first to highlight this kind of hydrothermal alteration zoning (Fig. III.4) within the mineralized zones that obliquely cross-cut the diorite sill. These mineralized zones, parallel to shear zones, are present in the altered diorite unit and are separated by unaltered diorite horizons.

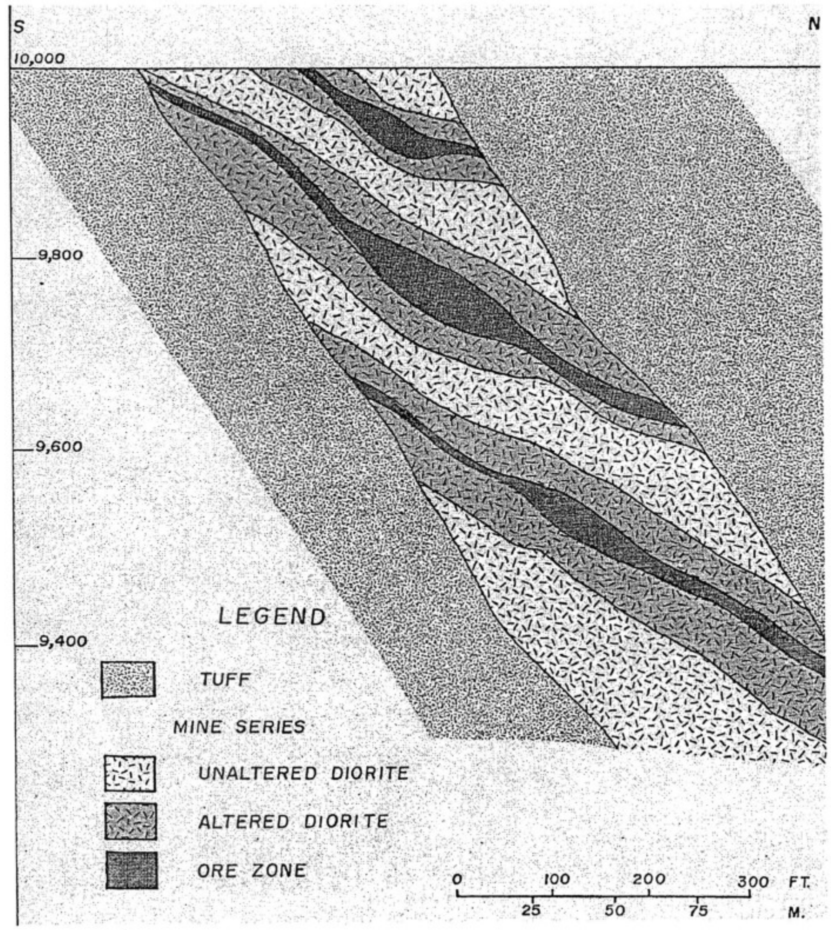

Figure III.4 – Typical cross-section showing hydrothermal alteration zoning (Pages, 1982)

Chénard and Turcotte (2004) characterized the Croinor deposit gold-rich lenses, hosted by the synvolcanic Croinor Sill, to be made of quartz-carbonate-tourmaline-pyrite veins, altered pyritic host rock material, and/or tectonic breccia (pyritic host fragments within a quartz-carbonate-tourmaline-pyrite vein). These mineralized lenses are spatially controlled by reverse-oblique shear zones that crosscut and displaces both the lenses and its dioritic host. A hydrothermal alteration halo surrounds these structures (Fig. III.5 and III.6). Zoning begins with an epidote-chlorite envelope that gradually changes into a chlorite-carbonate zone closer to the shear. Within the shear structure itself, the host rock has undergone extensive alteration characterized by a sericite-ankerite-pyrite assemblage.

Figure III.5 – Hydrothermal alteration halo surrounds the mineralized zone (Hole CR-15-426)

The presence of a hydrothermal alteration zoning pattern was also documented elsewhere in the Val-d'Or area, at the Sigma mine for example (Robert and Brown, 1984; Robert and Brown, 1986a). According to Robert and Brown (1986a), the hydrothermal alteration zones represent advancing fronts and result from a progressive interaction between host rocks and circulating hydrothermal fluids.

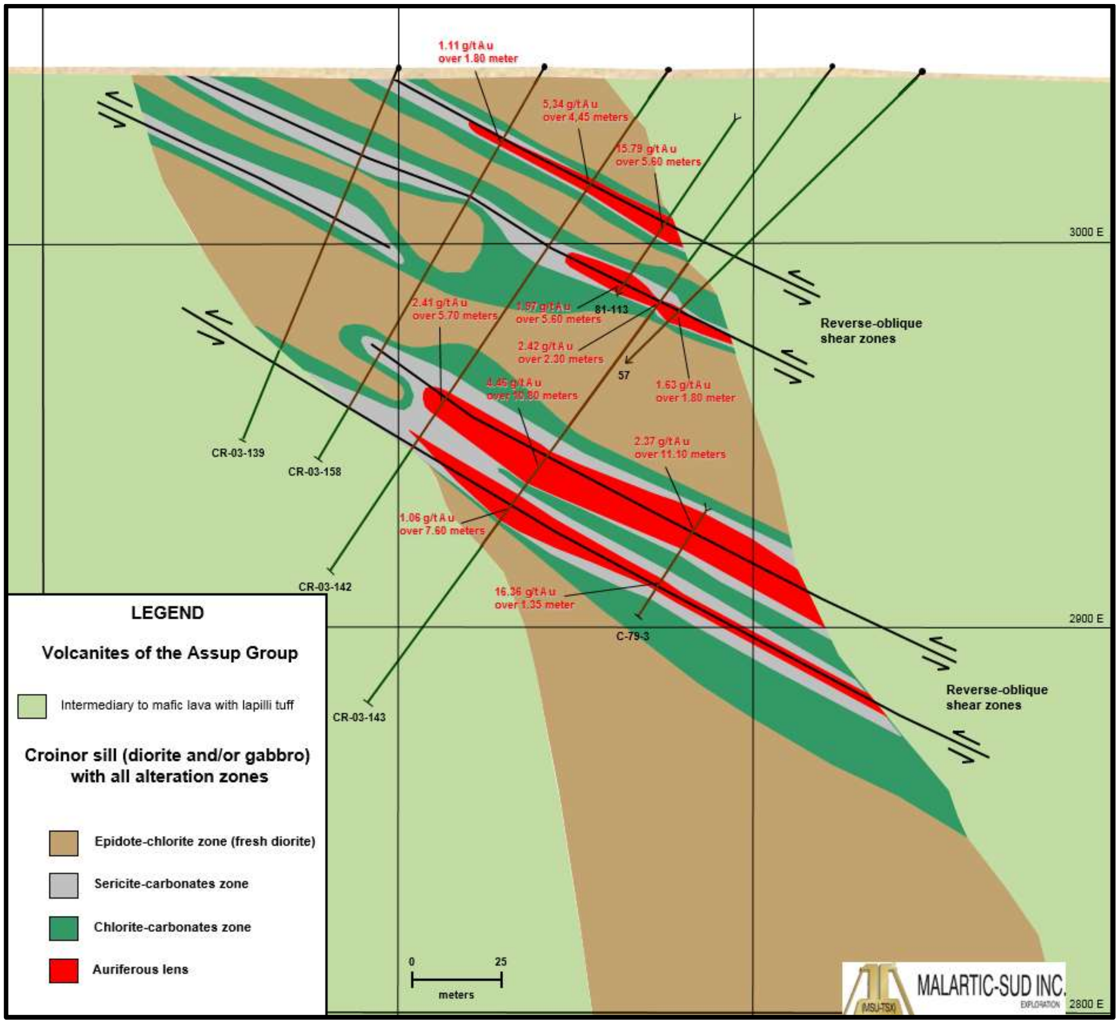

Figure III.6 – Typical Croinor deposit gold-rich lenses, hosted by the synvolcanic Croinor Sill, to be made of quartz-carbonate-tourmaline-pyrite veins, altered pyritic host rock material, and/or tectonic breccia (pyritic host fragments within a quartz-carbonate-tourmaline-pyrite vein). These mineralized lenses (red color) are spatially controlled by reverse-oblique shear zones that crosscut and displaces both the lenses and its dioritic host. A hydrothermal alteration halo surrounds these structures. Zoning begins with an epidote-chlorite envelope that gradually changes into a chlorite-carbonate zone closer to the shear. Within the shear structure itself, the host rock has undergone extensive alteration characterized by a sericite-ankerite-pyrite assemblage. Section 280W. (Modified from Chénard and Turcotte, 2004).

III.7.1 Epidote-chlorite hydrothermal zone

The epidote-chlorite hydrothermal zone corresponds to the "fresh or unaltered" diorite appointed as a logging term by the first geologists who worked on the Croinor gold deposit (Fig. III.5). Within this alteration zone, the dioritic and gabbroic primary facies can still be identified. The diorite (Fig. III.7) is fine to medium-grained and is generally massive to slightly foliated. In some places, alteration is very weak to moderate, sometimes making it difficult to distinguish with the naked eye.

Figure III.7 – Example of epidote-chlorite hydrothermal zone corresponds to the "fresh or unaltered" diorite (Hole CR-15-420B)

The epidote-chlorite zone is characterized by a partial or total replacement of mafic minerals and plagioclase in the diorite by metamorphic epidote and chlorite. The epidote replacing plagioclase is commonly associated with saussuritization processes. The intensity of epidotization is weak to high, while chloritization is usually moderate to high. In cases where rock epidotization-chloritization are very intense, primary textures are virtually absent (Chénard and Turcotte, 2004). Sometimes, chloritized porphyroblasts less than 0.5 centimetre may be present (<15%). Less than 1% millimetre-scale veinlets of quartz±carbonate-albite±epidote and 1 to 10% millimetre-scale epidote veinlets are observed. These veinlets randomly intersect the diorite. Carbonates are generally absent or are present in small amounts.

Chénard and Turcotte (2004) observed that magnetite, titaniferous magnetite and hematite are often present. The intensity of the rock magnetism is relatively high and in strongly magnetic areas, up to 15% fine magnetite can be observed. Occasionally, the rock is not magnetic. Hematite is present mainly in fine fractures. Rarely, pyrite or pyrrhotite are present in trace amounts. Occasionally, Chénard and Turcotte (2004) encountered veins or breccias containing quartz and/or tourmaline in the presence of green chlorite and epidote with sometimes small traces of pyrite. So far, no gold mineralization appears to be associated with this alteration zone. Therefore, it becomes highly useful for eliminating areas to investigate in drilling programs (Chénard and Turcotte, 2004). Generally, epidote dominates chlorite. Close to chlorite-carbonate zones, the amount of epidote gradually decreases and becomes very low. As long as epidote is observed, the zone designation remains epidote-chlorite. At the Louvicourt Goldfields mine, sterile epidotized zones were observed within the sill (Sauvé, 1985a; Sauvé *et al.* 1993).

III.7.2 Chlorite-carbonate hydrothermal zone

The chlorite zone is characterized by the complete disappearance of epidote, pyroxene and amphibole and by the appearance of carbonates (Figs. III.5 and III.8). This zone is characterized by the circulation of fluids containing H_2O and CO_2. The chloritization of amphiboles and pyroxenes frequently accompanies the start of the initial carbonatization (Robert, 1996). In the already altered rocks, a distinction must be drawn between the original hydrothermal chlorite discussed here and the chlorite produced by metamorphism (chlorite-epidote associated with chlorite zone). Usually, albite accompanies calcite and chlorite.

Figure III.8 – Example of chlorite-carbonates hydrothermal zone characterized by the complete disappearance of epidote (Hole CR-15-426)

At the Sigma mine, Robert and Brown (1984) observed that calcite replaces epidote, a phenomenon also observed in the diorite hosting the Croinor deposit (Hodges, 1987). Epidote is destabilized by CO_2 and then calcite incorporates the calcium from the epidote. The intensity of the carbonatization (calcite) is described based on the degree of acid effervescence as acid is applied on the drill core. In the Croinor deposit, carbonatization is usually mild to strong (Chénard and Turcotte, 2004).

The transition from the epidote-chlorite zone to the chlorite-carbonate zone is visually gradual and progressive. Primary textures completely disappear. Massive rocks become increasingly foliated as the intensity of alteration and proximity to shear zones increases. The rock shows a gray-green, dark green to greenish black colour. Chénard and Turcotte (2004) noted that previously, this alteration zone was mistakenly named basalts and andesites by geologists.

The chlorite-carbonate zone is sometimes magnetic. Occasionally, very small amounts of ankerite and sericite are observed. In addition, there may be up to 15% chloritized porphyroblasts less than 0.5 cm. This zone may correspond roughly to the carbonate alteration zone defined by Hodges (1987) where he observed the typical mineral assemblage in this area to contain plagioclase, chlorite, epidote, carbonates, quartz, titanomagnetite and sometimes sericite. Unlike Hodges (1987), Chénard and Turcotte (2004) excluded all epidote areas despite the presence of carbonates.

Chénard and Turcotte (2004) observed at the Croinor deposit that the chlorite-carbonate zone can contain gold grades associated with disseminated pyrite (<5%) and less frequently in quartz-tourmaline-pyrite veins. Tourmaline, pyrite and pyrrhotite may be present as accessory alteration minerals. They are concentrated mainly in the sericite-carbonate zone but may also be present, in more or less significant amounts, in the chlorite-carbonate zone, usually near the boundary between the sericite-carbonate and chlorite-carbonate zones.

At the Sigma mine, Robert and Brown (1984) defined an alteration zone similar to the chlorite-carbonate zone which they identified as the “chlorite-carbonate-white mica zone”; *i.e.* cryptic alteration. But unlike the Croinor gold deposit, no gold grades are associated with this zone. However, at the Louvicourt Goldfields mine, disseminated auriferous pyrite (1-5%) was observed in a chloritized and carbonatized gabbroic sill (Sauvé, 1985a; Sauvé *et al.* 1993). This chloritized gabbro is characterized by the absence of epidote. In addition, the veins unbleached wall rocks (chloritized) may contain gold.

III.7.3 Sericite-carbonate hydrothermal zone

Chénard and Turcotte (2004) noticed that the sericite-carbonate zone forms an envelope within the chlorite-carbonate zone and is characterized by the gradual and usually complete disappearance of chlorite (Figs. III.5 and III.9). Potassic metasomatism is most common in lode gold deposits and usually results in chlorite and plagioclase sericitization (Robert, 1996). The disappearance of chlorite then gives the rock a leached appearance. The rock becomes light gray to beige-gray. This type of leaching has been observed elsewhere in the Val-d’Or area, including at the Sigma mine (Robert and Brown, 1988; 1986a), the Lamaque mine (Daigneault *et al.* 1983), the Sigma-2 mine (Hebert *et al.* 1988; 1991), the Louvicourt Goldfields mine (Sauvé, 1985a) and the Lucien C. Béliveau mine (Gaumond, 1986). According to Gaumond (1986), discolouration of the rock results from the destabilization of chlorite while there is a significant fluid input with chemical components such as CO_2, K, S, Au, and sometimes Ca.

Figure III.9 – Example of sericite-carbonates hydrothermal zone characterized by the gradual and usually complete disappearance of chlorite (Hole CR-15-426)

Chénard and Turcotte (2004) observed that the sericite-carbonate zone is often associated with strongly foliated and sheared zones. It includes both the hydraulic and/or tectonic breccias and characterizes a large majority of the rocks that host quartz-tourmaline veins forming the gold lenses. The mineral assemblage distinguishing this zone contains carbonates (mainly ankerite and minor calcite), sericite, plagioclase, quartz and very small amounts of chlorite and leucoxene (Hodges, 1987). Magnetite is absent, while fuchsite is occasionally present in small quantities in the surrounding host rocks, veins and breccias (Chénard and Turcotte, 2004). The presence of fuchsite indicates that the rock was primarily a gabbro, since the latter is generally associated with metasomatic mafic to ultramafic units (Robert, 1996). Tourmalinization of the diorite is regularly observed in this zone. Tourmaline is present in the form of fine, sometimes tightly folded, millimetre-scale veinlets. According to Gaborit (1988), sericitization and tourmalinization are much more common in the southern parts of the mineralized zones; *i.e.* within the strongly sheared diorite. Based on their observations, Chénard and Turcotte (2004) could not confirm or refute this hypothesis.

Chénard and Turcotte (2004) described the most strongly metasomatized sectors as mainly sericitized with low to moderate silicification, more or less intense tourmalinization, pyritization of host rocks, veins and hydraulic and tectonic breccia fragments. Carbonatization (calcite) is very weak or absent, while ankeritization is weak to moderate. According to Hodgson (1993), silicification involving decarbonization is most common within internal zones; *i.e.* where the alteration is most intense. Silicification of the mafic-ultramafic host rocks is related to the release of silica in carbonatization reactions (Robert, 1996). This local increase in silica content is either displayed by an intense and widespread flooding of the rock matrix or by the presence of abundant quartz veinlets. Chénard and Turcotte (2004) correlated, at the Croinor deposit, highly silicified zones previously identified by logging geologists as dacite units with the sericite-carbonate alteration zone; *i.e.* demonstrating the intensity of silicification of the rock.

Chénard and Turcotte (2004) remarked that silicification was always accompanied by pyritization. Euhedral to hypidiomorphic pyrite is much more abundant (<20%) in the lode vein wall rocks and tectonic breccia fragments. This pyrite is sometimes accompanied by small amounts of pyrrhotite and chalcopyrite. Fractures and veins are essentially filled with quartz and tourmaline and small amounts of pyrite. Generally, the best gold grades are obtained within these silicified and pyritized areas.

APPENDIX IV

CROINOR MINERAL RESOURCE ESTIMATE DETAILED BY ZONE

Table IV.1 – Measured and Indicated Resources by zone at a cut-off grade of 4.0 g/t Au

Measured			
Zone	Tonnes	Au g/t	Oz Au
Zone 1	8,058	5.59	1,449
Zone 2	31,735	10.18	10,384
Zone 3	0	0.00	0
Zone 4	6,742	6.60	1,430
Zone 5	548	4.79	84
Zone 6	11,258	7.66	2,772
Zone 7	0	0.00	0
Zone 8	0	0.00	0
Zone 9	1,066	8.30	285
Zone 10	735	6.16	146
Zone 11	0	0.00	0
Zone 12	0	0.00	0
Zone 13	232	4.94	37
Zone 14	0	0.00	0
Zone 15	0	0.00	0
Zone 16	19,647	8.12	5,127
Zone 17	0	0.00	0
Zone 18	0	0.00	0
Zone 19	0	0.00	0
Zone 20	0	0.00	0
Zone 21	0	0.00	0
Zone 22	0	0.00	0
Zone 23	0	0.00	0
Zone 24	0	0.00	0
Zone 25	0	0.00	0
Zone 26	0	0.00	0
Zone 27	0	0.00	0
Zone 28	54	8.06	14
Zone 29	0	0.00	0
Zone 30	0	0.00	0
Zone 31	0	0.00	0
Zone 32	0	0.00	0
Zone 33	0	0.00	0
Zone 34	0	0.00	0
Zone 35	0	0.00	0
Zone 36	0	0.00	0
Zone 37	0	0.00	0
Zone 38	0	0.00	0
Zone 39	0	0.00	0
Zone 41	0	0.00	0
Zone 42	0	0.00	0
Zone 44	0	0.00	0
Zone 45	0	0.00	0
Zone 48	0	0.00	0
Zone 50	0	0.00	0
Zone 70	0	0.00	0
Zone 75	0	0.00	0
Zone 80	0	0.00	0
Zone 85	0	0.00	0
Zone 90	0	0.00	0
Zone 95	0	0.00	0
TOTAL	80,074	8.44	21,726

**** Not rounded***

Indicated			
Zone	Tonnes	Au g/t	Oz Au
Zone 1	14,654	7.44	3,505
Zone 2	58,954	10.29	19,508
Zone 3	1,606	7.04	363
Zone 4	41,871	7.48	10,066
Zone 5	104,219	11.18	37,462
Zone 6	76,465	9.05	22,248
Zone 7	1,623	8.02	419
Zone 8	8,304	6.47	1,727
Zone 9	13,087	7.15	3,009
Zone 10	16,988	9.21	5,030
Zone 11	3,233	4.24	441
Zone 12	0	0.00	0
Zone 13	45,977	8.03	11,875
Zone 14	102,409	8.20	27,013
Zone 15	25,823	5.43	4,505
Zone 16	23,581	9.07	6,879
Zone 17	98	4.71	15
Zone 18	33,863	10.27	11,180
Zone 19	0	0.00	0
Zone 20	21,561	12.06	8,358
Zone 21	0	0.00	0
Zone 22	95	5.72	17
Zone 23	0	0.00	0
Zone 24	12,653	7.84	3,188
Zone 25	705	5.44	123
Zone 26	1,342	9.21	397
Zone 27	0	0.00	0
Zone 28	24,960	6.70	5,380
Zone 29	2,396	20.83	1,605
Zone 30	11,131	6.35	2,271
Zone 31	2,112	10.84	736
Zone 32	2,712	5.05	440
Zone 33	2,707	9.60	836
Zone 34	9,306	6.06	1,814
Zone 35	1,669	16.32	876
Zone 36	338	4.91	53
Zone 37	0	0.00	0
Zone 38	0	0.00	0
Zone 39	0	0.00	0
Zone 41	8,117	9.66	2,520
Zone 42	0	0.00	0
Zone 44	0	0.00	0
Zone 45	133	4.45	19
Zone 48	2,264	5.52	402
Zone 50	0	0.00	0
Zone 70	38,250	11.52	14,172
Zone 75	9,234	19.63	5,826
Zone 80	0	0.00	0
Zone 85	0	0.00	0
Zone 90	0	0.00	0
Zone 95	0	0.00	0
TOTAL	724,441	9.20	214,280

**** Not rounded***

Table IV.2 – Inferred Resources by zone at a cut-off grade of 4.0 g/t Au

Inferred			
Zone	Tonnes	Au g/t	Oz Au
Zone 1	0	0.00	0
Zone 2	0	0.00	0
Zone 3	0	0.00	0
Zone 4	17	4.25	2
Zone 5	17,474	7.91	4,444
Zone 6	8,211	7.36	1,943
Zone 7	0	0.00	0
Zone 8	1,282	6.23	257
Zone 9	3,657	5.36	630
Zone 10	0	0.00	0
Zone 11	1,252	4.79	193
Zone 12	0	0.00	0
Zone 13	1,815	9.32	544
Zone 14	21,018	8.40	5,673
Zone 15	21,223	4.94	3,367
Zone 16	0	0.00	0
Zone 17	0	0.00	0
Zone 18	0	0.00	0
Zone 19	0	0.00	0
Zone 20	360	5.63	65
Zone 21	0	0.00	0
Zone 22	0	0.00	0
Zone 23	255	4.51	37
Zone 24	0	0.00	0
Zone 25	58	5.64	11
Zone 26	0	0.00	0
Zone 27	0	0.00	0
Zone 28	343	4.78	53
Zone 29	0	0.00	0
Zone 30	1	4.75	0
Zone 31	0	0.00	0
Zone 32	3,105	4.85	484
Zone 33	4	5.46	1
Zone 34	15,424	5.00	2,480
Zone 35	0	0.00	0
Zone 36	21	5.31	4
Zone 37	0	0.00	0
Zone 38	0	0.00	0
Zone 39	0	0.00	0
Zone 41	9,347	8.53	2,564
Zone 42	0	0.00	0
Zone 44	2,339	6.32	475
Zone 45	0	0.00	0
Zone 48	172	5.52	30
Zone 50	66	4.58	10
Zone 70	22,968	8.90	6,572
Zone 75	9,669	15.99	4,972
Zone 80	11,773	6.01	2,274
Zone 85	3,121	4.94	496
Zone 90	5,903	4.26	809
Zone 95	0	0.00	0
TOTAL	**160,879**	**7.42**	**38,389**

**** Not rounded***