NI 43-101 Technical Report

Second Independent Technical Report on the Tamarack North Project – Tamarack, Minnesota

Submitted to: Talon Metals Corp.

Effective Date of Report: March 26, 2018

Effective Date of Resource: February 15, 2018

Prepared by Qualified Persons:

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TOTAL SOLUTIONS OFFERING

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(i) Information made available to DRA at the time of preparation of this Technical Report;

(ii) Data, reports, and other information supplied by Talon;

(iii) Data supplied by outside sources;

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(with respect to the parts of the Technical Report prepared by Golder)

This report was assembled as a National Instrument 43-101 Technical Report for Talon Metals Corp. (Talon) by Golder (the "Authors") and executing this Technical Report. This document contains the expressions of professional opinions of the Authors based on (i) information available at the time of preparation, (ii) data supplied by Talon and others, and (iii) the assumptions, conditions, and qualifications set forth in this report. The quality of information, conclusions, and estimates contained herein are consistent with the stated levels of accuracy as well as the circumstances and constraints under which the mandate was performed. This report is intended to be used solely by Talon, subject to the terms and conditions of its contract with Golder. This contract permits Talon to file this report as a Technical Report with Canadian securities regulators pursuant to National Instrument 43-101 - *Standards of Disclosure for Mineral Projects*. Except for the purposes legislated under Canadian securities law, any use of this report by any third party is at that party's sole risk.

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1. SUMMARY

1.1 Scope of Work

Talon retained DRA Americas Inc. (DRA) to prepare this Independent Technical Report (Technical Report) in accordance with NI 43-101 guidelines.

Talon retained Golder Associates Ltd. (Golder) to provide a third updated independent mineral resource estimate for the Tamarack North Project, which is included in this Technical Report.

Talon retained Metpro Management Inc. (Metpro) to compile a summary of the metallurgical test work completed on the Tamarack North Project during 2016 and 2017. The summary is included in this Technical Report.

1.2 Location and Ownership

The Tamarack North Project is located in north-central Minnesota approximately 100 km W of Duluth and 200 km N of Minneapolis, in Aitkin County. The Tamarack North Project covers approximately 28,334 acres and is located near the town of Tamarack.

On June 25, 2014, Talon's wholly-owned, indirect subsidiary, Talon Nickel (USA) LLC (collectively, Talon), entered into an exploration and option agreement (the Tamarack Earn-in Agreement) with Kennecott (part of the Rio Tinto Group), pursuant to which Talon, subject to certain funding conditions, received the right to acquire a 30% interest in the Tamarack Project, which comprises both the Tamarack North Project and the Tamarack South Project.

On November 25, 2015, Kennecott and Talon amended the Tamarack Earn-in Agreement to provide that, subject to certain funding conditions, Talon would earn an 18.45% interest in the Tamarack Project.

As of December 31, 2017, Kennecott owned an 81.55% interest in the Tamarack Project, while Talon owned an 18.45% interest in the Tamarack Project. In January 2018, pursuant to the terms of the MVA entered into between Kennecott and Talon, Kennecott proposed a 2018 winter exploration program and budget totalling US$6.65M. Assuming Kennecott spends the full amount of this proposed budget, Talon's interest in the Tamarack Project is expected to be diluted by 1.48%, to 16.97%.

Sections 4.2.1 and 4.2.2 of this Technical Report contain further details regarding Talon's interest in the Tamarack Project.

1.3 Geology and Mineralization

The TIC is an ultramafic to mafic intrusive, hosting Ni-Cu sulphide mineralization with associated Co, Pt, Pd (PGEs) and Au. The TIC is a multi-magmatic phase intrusion, that consists of a minimum of 2 pulses: The FGO and the CGO intrusion of the TIC (dated at 1105 Ma+/-1.2 Ma, Goldner 2011). The FGO and CGO intrusions are related to the early evolution of the approximately 1.1 Ga MCR and have intruded into slates and greywackes of the Thomson Formation of the Animikie Group, which formed as a foreland basin during the Paleoproterozoic Penokean Orogen (approximately 1.85 Ga, Goldner 2011). The TIC is completely buried beneath approximately 35 m to 55 m of Quaternary age glacial and fluvial sediments. The TIC is consistent with other earlier intrusions associated with the MCR that are often characterized by more primitive melts.

The geometry of the TIC, as outlined by a well-defined aeromagnetic anomaly, consists of a curved, elongated intrusion striking N-S to S-E over 18 km. The configuration has been likened to a tadpole shape with its elongated, northern tail up to 1 km wide and large, 4 km wide, ovoid shaped body in the S (Figure 7-5). The northern portion of the TIC (the Tamarack North Project), which hosts the currently defined resource and identified exploration targets, is over 7 km long and is the focus of this Technical Report.

The Ni-Cu sulphide mineralization with associated Co, Pt, Pd (PGEs) and Au form as the result of segregation and concentration of liquid sulphide from mafic or ultramafic magma and the partitioning of chalcophile elements into the sulphide from the silica melt (Naldrett, 1999).

The various mineralized zones at the Tamarack North Project occur within different host lithologies, exhibit different types of mineralization styles, and display varying sulphide concentrations and tenors. These mineralized zones range from massive sulphides hosted by altered sediments in the MSU, to net textured and disseminated sulphide mineralization hosted by the CGO in the SMSU, to a more predominantly disseminated sulphide mineralization as well as layers of net textured sulphide mineralization, in the 138 Zone (see Table 1-1). Mineralization in the 138 Zone, where interlayered disseminated and net textured mineralization occurs is also referred to as MZ mineralization. All these mineralization types are typical of many sulphide ore bodies around the world. The current known mineral zones of the Tamarack North Project (SMSU, MSU and 138 Zone) that are the basis of the mineral resource estimate in this Technical Report are referred to collectively as the "Tamarack Zone". Also located within the Tamarack North Project are currently, two lesser defined mineral zones, namely the 480 and 164 Zones.

Table 1-1: Key Geological and Mineralization Relationships of the Tamarack North Project

Area	Mineral Zone	Host Lithology	Project Specific Lithology	Mineralization Type
Tamarack Zone	SMSU	Feldspathic Peridotite	CGO	Net textured and disseminated sulphides
	MSU	Meta-Sediments/ Peridotite (basal FGO mineralization)	Sediments	Massive sulphides
	138	Peridotite and Feldspathic Peridotite	MZ / FGO	Disseminated and net textured sulphides
	CGO Bend	Feldspathic Peridotite	CGO	Disseminated sulphides
		Peridotite footwall (basal FGO mineralization)	FGO	MMS and MSU
Other	221 Zone	Feldspathic Peridotite	CGO	Disseminated sulphides with ripped up clasts of massive sulphides
	480 Zone	Peridotite	FGO	Disseminated sulphides
	164 Zone	Peridotite	FGO	Blebby sulphides, sulphides veins

1.4 Exploration Programs

The TIC and associated mineralization were discovered as part of a regional program by Kennecott initiated in 1991. The focus on Ni and Cu sulphide mineralization was intensified in 1999 based on a model proposed by Dr. A. J. Naldrett of the potential for smaller feeder conduits associated with continental rift volcanism and mafic intrusions to host Ni sulphide deposits similar to Norilsk and Voisey's Bay.

Disseminated mineralization was first intersected at the Tamarack Project in 2002, and the first significant mineralization of massive and net-textured sulphides was intersected in 2008 at the Tamarack North Project.

To date, exploration by Kennecott has included a wide range of geophysical surveys including: airborne magnetic and electromagnetic (EM-MegaTEM and AeroTEM), ground magnetic, surface EM and MT, IP, gravity, seismic, MALM and DHEM. Kennecott has conducted extensive drilling at the Tamarack North Project since 2002. This drilling has comprised 242 diamond drill holes totalling 100,692 m with holes between 33.5 m and over 1,223 m depth for an average hole depth of 417 m.

1.5 Sample Preparation, QA/QC and Security

Golder reviewed Kennecott's sampling and QA/QC protocols along with the chain of custody of samples. Kennecott samples core continuously through the mineralization, and their sampling and logging procedures are consistent with industry standards and the assay methods are appropriate for the base metal sulphide mineralization found at the Tamarack North Project.

Their QA/QC program is based on insertion of certified reference materials, including a variety of standards, blanks and duplicate samples, used to monitor the precision and accuracy of their primary assay lab, and to prevent inaccurate data from being accepted into their assay database. The Kennecott QA/QC protocol is consistent with industry best practises.

Kennecott uses a system of metal seals to secure pails used to ship samples from the core shack to the assay lab ensuring that they have not been tampered with. Samples are prepared and stored in a secure facility and are monitored each step of the way to the lab. Golder is confident that the samples accurately reflect the mineralization and that there is little opportunity for samples to be tampered with. All procedures were found to meet or exceed industry standard practices.

1.6 Data Validation

Golder compared updated assay data (2017) from the Kennecott database to the original assay certificates from ALS Chemex for the entire sample population used for resource estimation. No errors were identified during this review.

During the QP site visit in 2014, Brian Thomas of Golder, surveyed four drill hole collars and then compared the coordinates to those provided by Kennecott. All collars were found to be consistent with the Kennecott collar coordinates, within the accuracy of the handheld GPS.

Golder, in 2014, conducted verification sampling of drill core from each of the three mineral domains. A total of nine samples were taken along with three additional CRM samples, including two standards and one blank. Assay values from the verification sample program were consistent with results obtained by Kennecott.

There have been no changes to the drilling, logging, sampling, or chain of custody procedures since the 2014 site visit; therefore, Golder has concluded that the Tamarack North Project drill hole database is of suitable quality to support the mineral resource estimate in this Technical Report.

1.7 Mineral Processing and Metallurgical Testing

Metallurgical testing of the Tamarack North Project was carried out in three main programs:

- The 2006 - 2010 program evaluated high-grade mineralization of SMSU hosted in CGO and low-grade mineralization from the CGO Zone.
- The 2012 - 2013 program focussed only on low grade CGO mineralization.

- In 2016/2017 a total of seven domain composites were subjected to a metallurgical test program. Samples were selected from:
  - The MSU.
  - High grade mineralization from the SMSU hosted in CGO.
  - Low grade mineralization from the Lower and Upper 138 Zone.
  - Low grade mineralization from the CGO.
  - Low grade mineralization from the Upper CGO
  - MMS mineralization and an FGO interval above the MMS mineralization in the CGO Bend.

Head assays from all three phases of test work indicated no problematic concentrations of deleterious material, such as talc and chlorite, in the MSU and SMSU composites.

All samples were submitted to SGS Minerals Services for mineralogical and/or metallurgical testing.

In all cases the goal was to develop a process flowsheet that ultimately produces separate saleable Cu and Ni concentrates.

Test program results prior to the 2016/2017 program are summarized in the First Independent Technical Report on the Tamarack North Project with an effective date of August 29, 2014.

The primary objectives of the 2016/2017 test program were to:

- Obtain a flowsheet and test conditions suitable to treat the full range of MSU, SMSU, and disseminated mineral domains.
- Define expected recoveries over a wide spectrum of feed grades.
- Understand if there will be any synergies by blending low-grade domains with high-grade domains.

A total of 77 open circuit tests and 7 LCT's were carried out. The LCT results were used to develop metallurgical regression curves that can be used to project metal recoveries into the Cu and Ni concentrates. The head grades of the seven composites ranged between 0.31% to 2.80% Cu and 0.45% to 6.39% Ni.

Bond ball mill grindability tests produced work indices between 11.3 kWh/t for the MSU composite and 21.1 kWh/t for the CGO composite.

The test program culminated in a flowsheet and conditions that improved the flotation response of the disseminated composites compared to previous metallurgical programs. Furthermore, preliminary testing suggested that blending of MSU/SMSU and disseminated material responded better in the Cu-Ni separation circuit than the sum of the individual responses.

The MSU and SMSU composites yielded high grade Ni and Cu concentrates as well as very high recoveries, but the concentrates of the disseminated composites required blending with the higher-grade products to render reasonable concentrate grades. The Cu concentrates of the MSU and SMSU composites yielded grades of 31.6% Cu and 29.3% Cu at Cu recoveries of 91.4% and 84.0%, respectively. The Ni concentrates of the two high-grade composites graded 14.1% Ni to 17.1% Ni at 87.9% to 91.9% Ni recoveries, respectively. An additional 6.6% and 11.7% of the payable Cu units were recovered into the Ni concentrates of the MSU and SMSU composites. The total payable Cu recoveries are therefore 98% and 95.7% for the MSU and SMSU composites respectively. For the Ni concentrate, the Cu:Ni ratio of 0.03 for the MSU composite and 0.06 for the SMSU composite were well below the typical smelter requirement of <0.2 Cu:Ni. For the Cu concentrate, the Ni grades in the Cu concentrate were 1.53% Ni for the MSU composite and 0.95% Ni for the SMSU composite. The goal is to produce a Cu concentrate with <0.7% Ni. Flotation conditions and grind size in the Cu/Ni separation circuit have not been optimized. It is anticipated that optimized conditions to be developed in the next phase of testing will lower the Ni concentration in the Cu concentrate to < 0.7% Ni.

Levels of deleterious elements in the MSU and SMSU composites were consistently low. Mg concentrations in Ni concentrate of MSU and SMSU composites were 0.22% MgO and 3.20% MgO, respectively. Ni smelters generally desire Mg contents below 5.0% MgO in Ni concentrates and, thus, these results are satisfactory. Fe:MgO ratios were 13.4:1 for the SMSU composite and 212:1 for the MSU composite.

Table 1-2 below summarizes the results of the 2016/2017 metallurgical testing program for the MSU and the SMSU composites.

Table 1-2: Summary of the 2016/2017 Metallurgical Testing Results for the MSU and SMSU Composites

Mineral Zone	Description	Assay (%)					Fe:MgO	Recovery (%)		
		Cu	Ni	Fe	MgO	S	Ratio	Cu %	Ni %	S %
MSU	Head (reconstituted)	2.75	6.31			25.8				
	Cu Concentrate	31.6	1.53	33.9		35.4		91.4	1.9	10.9
	Ni Concentrate	0.54	17.1	46.6	0.22	35.7	212	6.6	91.9	47.0
	Total Recovery							**98.0**	**93.9**	**57.9**
SMSU	Head (reconstituted)	1.51	3.11			13.6				
	Cu Concentrate	29.3	0.95	32.4		32.4		84.0	1.3	10.4
	Ni Concentrate	0.91	14.1	42.9	3.20	30.7	13.4	11.7	87.9	44.0
	Total Recovery							**95.7**	**89.3**	**54.3**

The Upper 138 Zone composite was the worst performer of the disseminated composites with only 51.7% Cu recovery into a Cu concentrate grading 14.5% Cu. The Ni concentrate of the LCT with the Upper 138 Zone composite graded 5.88% Ni at a low Ni recovery of 46.3%. The metallurgical performance of the other four disseminated composites fell between the results of the Upper 138 Zone and the SMSU composites. The Ni concentrates of the disseminated composites contained up to 14.6% MgO and alternative gangue depressants should be evaluated during the next phase of testing.

1.8 Mineral Resource Estimate

Caution to readers: *In this Item, all estimates and descriptions related to Mineral Resource Estimates are forward-looking information. There are many material factors that could cause actual results to differ materially from the conclusions, forecasts or projections set out in this item.*

Some of the material factors include differences from the assumptions regarding the following: estimates of cut-off grade and geological continuity at the selected cut-off, metallurgical recovery, commodity prices or product value, mining and processing methods and general and administrative costs. The material factors or assumptions that were applied in drawing the conclusions, forecasts and projections set forth in this Item are summarized in other Items of this report.

This Technical Report has been prepared by Mr. Brian Thomas (B.Sc, P.Geo), Senior Resource Geologist at Golder and is summarized in Table 1-3 below. The effective date of the resource estimate is February 15, 2018. Mr. Brian Thomas is an independent QP pursuant to NI 43-101.

Table 1-3: Tamarack North Project Mineral Resource Estimate (February 15, 2018)

Domain	Resource Classification	Tonnes (000)	Ni (%)	Cu (%)	Co (%)	Pt (g/t)	Pd (g/t)	Au (g/t)	*Calc NiEq (%)
SMSU	Indicated Resource	3,639	1.83	0.99	0.05	0.42	0.26	0.2	2.45
Total	**Indicated Resource**	**3,639**	**1.83**	**0.99**	**0.05**	**0.42**	**0.26**	**0.2**	**2.45**
SMSU	Inferred Resource	1,107	0.9	0.55	0.03	0.22	0.14	0.12	1.25
MSU	Inferred Resource	570	5.86	2.46	0.12	0.68	0.51	0.25	7.24
138 Zone	Inferred Resource	2,705	0.95	0.74	0.03	0.23	0.13	0.16	1.38
Total	**Inferred Resource**	**4,382**	**1.58**	**0.92**	**0.04**	**0.29**	**0.18**	**0.16**	**2.11**

All resources reported at a 0.83% NiEq cut-off.
No modifying factors have been applied to the estimates.
Tonnage estimates are rounded to the nearest 1,000 tonnes.
Metallurgical recovery factored in to the reporting cut-off.
*Where used in this mineral resource estimate, NiEq% = Ni%+ Cu% x $3.00/$8.00 + Co% x $12.00/$8.00 + Pt [g/t]/31.103 x $1,300/$8.00/22.04 + Pd [g/t]/31.103 x $700/$8.00/22.04 + Au [g/t]/31.103 x $1,200/$8.00/22.04

The mineral resources are derived from a Datamine constructed block model (block sizes = 7.5 m by 7.5 m by 7.5 m for the SMSU and the 138 Zone; 3 m x 3 m x 1.5 m for the MSU) of three mineral domains and are reported above a NiEq cut-off of 0.83%. All domains were "unfolded" and had top cuts applied to restrict outlier values (Pt, Pd and Au). The three domains (Figure 14-1) utilized either OK or ID^3 methodology to interpolate grades (Ni, Cu, Co, Pt, Pd and Au) from 1.5 m composited drill holes. Density values were based on specific gravity measurements taken from whole core and where absent, regression formulas. The resources reported are based on a "blocks above cut-off" basis and were then examined visually by Golder and found to have good continuity.

Golder is unaware of any known environmental, permitting, legal, title, taxation, socio-economic, marketing, political or any other potential factors that could materially impact the Tamarack North Project mineral resource estimate provided in this Technical Report. The resource is located in designated wetlands but this is not expected to affect future permitting.

1.9 Conclusions

The mineral resource estimate contained in this Technical Report has been prepared in accordance with CIM best practice guidelines and NI 43-101 regulations.

Mr. Brian Thomas, P.Geo., is the QP of the mineral resource estimate and has visited the site, collected samples for check assay, and reviewed the Tamarack North Project data, including geological and metallurgical reports, maps, technical papers, digital data including lab results, sample analyses and other miscellaneous information. The QP believes that the data presented is an accurate and reasonable representation of the Tamarack North Project and concludes that the database is of suitable quality to provide the basis of conclusions and recommendations reached in this Technical Report.

It is believed that the Tamarack North Project has the potential for increased resources through additional exploration.

Risks identified that may affect the mineral resource estimate include the following:

- Orientation of drilling is predominantly near vertical and is not necessarily ideal for accurately determining the true width of the mineralization.
- There is a possibility that the MSU domain is not as continuous as modelled.
- The Inferred Mineral Resources in the SMSU and 138 Zone domains are sensitive to higher cut-off grades which could affect the resource if mining costs increase significantly.

- Tonnage of the 138 Zone domain is based on bulk density that was calculated by polynomial regression.

Golder has taken many steps to mitigate the impact of these risks as further described in this report and the resource classifications reflects these risks.

Both DRA and Golder see opportunities for the Tamarack North Project which can result in an increase of resources and increased classification. These opportunities include the following:

- Inferred Mineral Resources in the MSU, SMSU and 138 Zone domains could be upgraded to Indicated Mineral Resources with additional infill drilling.
- The MSU could potentially be further extended:
  - On the western side of the SMSU;
  - On the eastern side of the SMSU;
  - To the S of the MSU intervals located in the footwall of the 138 Zone; and
  - To the N of the MSU intervals located in the footwall of the 138 Zone.
- Limited drilling as well as integrated magnetic and gravity modeling show potential for massive sulphide pooling at the base of the FGO in the 164 Zone. Surface EM and DHEM could be used to explore basins that may host massive sulphides.
- The SMSU Zone has potential to be extended up plunge to the N-E around the CGO Bend while surface EM and drilling indicate the potential for massive sulphides on either side of the CGO in the CGO Bend.
- No further exploration is recommended in the 221 and 480 Zones.

1.10 Recommendations

On the basis of work conducted to date and as described in this Technical Report, it is recommended that a PEA be completed based on the data available to date. The PEA should be restricted to the MSU and high-grade SMSU Zones. The following studies are recommended as a part of the PEA:

- A trade-off study between a shaft and a portal/decline;
- A study to determine if high sulphide tailings could be a viable option for use in cemented paste backfill;

- Trade-off studies to determine how development waste rock and low sulphide tailings will be stored at surface.

The total estimated cost to complete the recommended studies as well as the PEA is approximately $350,000.

If the PEA study results are positive:

- Further test work needs to be conducted to determine if blending of CGO disseminated sulphides with high-grade MSU and SMSU mineralization will increase recoveries and the quality of the Ni and Cu concentrates produced from disseminated sulphides;
- If a blending strategy of disseminated sulphides with MSU and SMSU net textured high-grade mineralization hosted in the CGO proves to be successful, further exploration is recommended to extend the SMSU Zone up plunge to the NE around the CGO Bend and to determine the possible extent of MSU mineralization on either side of the CGO in the CGO Bend;
- An exploration program needs to be conducted to extend the MSU Zone:
  - On the western side of the SMSU;
  - On the eastern side of the SMSU;
  - To the S of the MSU Zone located in the footwall of the 138 Zone; and
  - To the N of the MSU Zone located in the footwall of the 138 Zone.
- Consideration should be given to completing a prefeasibility study.

The total cost would be in the order of $5M to $10M as it would be dependent on the success of the planned exploration programs and metallurgical testing results

2. INTRODUCTION

DRA was retained by Talon to prepare this Technical Report in accordance with NI 43-101 guidelines.

Golder was retained by Talon to provide a third updated independent mineral resource estimate for the Tamarack North Project located in Aitkin County, Minnesota, USA.

The first independent NI 43-101 mineral resource estimate for the Tamarack North Project was prepared by Mr. Brian Thomas (B.Sc., P.Geo.), Senior Resource Geologist at Golder. The effective date of the mineral resource estimate is August 29, 2014.

The second updated independent mineral resource estimate for the Tamarack North Project was also prepared by Mr. Brian Thomas. The effective date of the mineral resource estimate is April 3, 2015.

This third updated independent mineral resource estimate for the Tamarack North Project was also prepared by Mr. Brian Thomas. The effective date of the mineral resource estimate is February 15, 2018.

All three independent NI 43-101 mineral resource estimates for the Tamarack North Project were reviewed by Mr. Paul Palmer (P.Geo., P.Eng.). Mr. Brian Thomas completed a site visit to the Tamarack North Project on July 16, 2014. Both Mr. Palmer and Mr. Thomas are QPs as defined by NI 43-101 guidelines.

A summary of the metallurgical test work completed on the Tamarack North Project has been compiled by Mr. Oliver Peters, P. Eng. Mr. Peters is the President and CEO of Metpro. This work is an update of a previous summary of the metallurgical work completed on the Tamarack North Project by Mr. Manochehr Oliazadeh Khorakchy, P.Eng. of Hatch Ltd.

Talon is a TSX-listed company focused on the exploration and development of the Tamarack Project in Minnesota USA (which comprises the Tamarack North Project and the Tamarack South Project). Talon has a well-qualified exploration and mine management team with extensive experience in project management.

The mineral resource estimate and supporting data summarized in this Technical Report are considered by DRA to meet the requirements of NI 43-101.

2.1 Source of Information

The sources of information utilized in the preparation of the mineral resource estimate and this Technical Report were provided by Talon under the direction of Mr. James McDonald (P.Geo.), and by Kennecott under the direction of Mr. Robert Rush. This Technical Report and the mineral resource estimate contained herein are based on the following data and pre-existing reports:

- The Earn-in Agreement (and all amendments thereto).
- The MVA.
- Tamarack Magmatic Nickel Copper Sulfide Due Diligence (Talon) report.
- Kennecott internal reports.
- Kennecott database of surface drill holes that included:
    - Ni, Cu, Co, Pt, Pd, Au, lithology sample / assay data;
    - Sample bulk density;
    - Drill hole collar survey data and down-hole survey data; and
    - QA/QC summary data and graphs.
- Assay certificates from ALS Chemex.
- Metal price assumptions based on an average of forecast long-term prices provided by major financial institutions located in North America and Europe.

Further sources of information utilized by the authors are listed in Section 27.

2.2 Qualified Persons (QPs)

This Technical Report was prepared by the QPs listed in Table 2-1. Certificates are contained herein. The following QPs completed property site visits:

- Brian Thomas, P. Geo., completed site visit on July 16, 2014.

Table 2–1: List of Contributors to this Technical Report

NAME	TITLE, COMPANY	RESPONSIBLE FOR SECTION
Tim Fletcher, P. Eng.	Project Manager, DRA Americas Inc.	2, and portions of 1, 3, 25, and 26, and overall report compilation
Oliver Peters, P. Eng.	Consulting Metallurgist, Metpro Management Inc.	13, and portions of 1, 3, 25, 26, and 27
Brian Thomas, P. Geo.	Senior Resource Geologist, Golder Associates Ltd.	4, 5, 6, 7, 8, 9, 10, 11, 12, 14, 23, and portions of 1, 3, 25, 26, and 27

2.3 Units of Measure and Abbreviations

All units of measure used in this Technical Report are in the metric system, unless stated otherwise. Currencies outlined in the report are in US dollars unless otherwise stated.

The following symbols and abbreviations are used in this Technical Report.

<	Less than
>	Greater than
#	number
%	Percent
°	Degree
°C	Degrees Celsius
3D	Three dimensional
µm	Micron
Ag	Silver
Al	Aluminium
AMT	Audio-frequency magneto-tellurics
As	Arsenic

Au	Gold
BH	Bore hole
Bi	Bismuth
BNSF	Burlington Northern Santa Fe (railway company)
BWi	Bond Work Index
CAPEX	Capital expenditure
Cd	Cadmium
CGO	Coarse grained ortho-cumulate olivine
CIM	Canadian Institute of Mining, Metallurgy, and Petroleum
cm	Centimetre
cm^3	Cubic centimetre
Co	Cobalt
Cpy	Chalcopyrite
CRM	Certified reference material
CSAMT	Controlled source audio-frequency magneto-tellurics
.csv	Comma-separate values file (electronic file format)
Cu	Copper
$CuSO_4$	Copper sulphate
DHEM	Drill hole electromagnetic
E	East
EM	Electromagnetic
EPA	Environmental Protection Agency
EV	Electric Vehicle
Fe	Iron
FGO	Fine grained ortho-cumulate olivine
Fo	Forsterite
ft	Feet
G&A	General and Administrative
g	Gram
g/t	Grams per tonne
GLTZ	Great Lakes Tectonic Zone
GPS	Global positioning system
ha	Hectare (10,000 m^2)
Hg	Mercury
ICP	Inductively coupled plasma
ICP-AES	Inductively coupled plasma atomic emission spectroscopy
ICP-MS	Inductively coupled plasma mass spectroscopy
ID	Inverse distance
ID^2	Inverse distance squared

ID^3	Inverse distance cubed
In	Indium
IP	Induced polarization
IPD	Inverse power distance
IRR	Internal rate of return
Kennecott	Kennecott Exploration Company
kg	Kilogram
kg/m^3	Kilograms per cubic metre
kg/m^2	Kilograms per square metre
km	Kilometre
km^2	Square kilometre
kWh/t	Kilowatt-hours per tonne
lb	Pound(s)
LCT	Locked cycle test
Li	Lithium
M	Million
m	Metre
m^2	Square metre
m^3	Cubic metre
MALM	Mise-à-la-masse (test method)
mASL	Metres above sea level
MCR	Mid Continent Rift
MDH	Minnesota Department of Health
MDNR	Minnesota Department of Natural Resources
Mg	Magnesium
MgO	Magnesium oxide, magnesia
MGS	Minnesota Geological Survey
mm	Millimetre
MMS	Mixed massive sulphide
Mo	Molybdenum
MPCA	Minnesota Pollution Control Agency
MRV	Minnesota River Valley
MSU	Massive sulphide unit
MT	Magneto-telluric
Mt	Million tonnes
Mtpa	Million tonnes per annum
MVA	Mining Venture Agreement
MVI	Magnetization Vector Inversion
MZ	Mixed zone

MZNO	Mixed zone olivine
n/a	Not applicable
N	North
NE	Northeast
NI 43-101	National Instrument 43-101
Ni	Nickel
NiEq	Equivalent nickel
NN	Nearest neighbour
NPDES	National Pollutant Discharge Elimination System
NS	North-South
NSR	Net smelter return
NW	Northwest
OB	Overburden
OK	Ordinary Kriging
OPEX	Operating expense
oz	Ounce (troy ounce - 31.1035 grams)
P. Eng.	Professional Engineer
P. Geo.	Professional Geologist
Pb	Lead
Pd	Palladium
PEA	Preliminary Economic Assessment
PEM	Privacy enhanced mail (electronic file format)
PGE	Platinum group element
pH	potential of hydrogen (measure of acidity)
Pn	Pentlandite
Po	Pyrrhotite
ppb	Parts per billion
ppm	Parts per million
Pt	Platinum
QA	Quality assurance
QC	Quality control
QCu	Density-weighted copper grade
QEMSCAN	Quantitative Evaluation of Materials by Scanning Electron Microscope
QNi	Density-weighted nickel grade
QP	Qualified Person
Re	Rhenium
ROFR	Right of first refusal
RPD	Relative percentage difference
Silver	Ag

S	South
S	Sulphur
Sb	Antimony
SDS	State Disposal System
SE	Southeast
Se	Selenium
SG	Specific gravity
SMSU	Semi-massive sulphide unit
STP	Step data
.stp	Step file (electronic file format)
SW	Southwest
TDEM	Time domain electromagnetic
Te	Tellurium
TEM	Transient electromagnetic
TIC	Tamarack Intrusive Complex
Tl	Thallium
U-Pb	Uranium-Lead
UCS	Uniaxial compressive strength
US	United States
US$	United States Dollars
UTM	Universal Transverse Mercator (coordinate system)
W	West
Zn	Zinc

3. RELIANCE ON OTHER EXPERTS

This Technical Report has been prepared by DRA, Golder, and Metpro for Talon. The information, conclusions, opinions, and estimates contained herein are based on:

- Information available to DRA, Golder, and Metpro at the time of report preparation,
- Assumptions, conditions, and qualifications as set forth in this Technical Report, and
- Data, reports, and other information supplied by Talon and other third-party sources.

In Sections 4.2 (Property Ownership), 4.3 (Permitting) and 4.4 (Environmental) of this Technical Report, the QPs have relied upon, and believe there is a reasonable basis for this reliance on, information provided by Talon regarding mineral tenure, surface rights, ownership details, the Earn-in Agreement, the MVA and other agreements relating to the Tamarack North Project, royalties, environmental obligations, permitting requirements and applicable legislation relevant to the Tamarack North Project. The QPs have not independently reviewed the information in these sections and have fully relied upon, and disclaim responsibility for, information provided by Talon in these sections.

4. PROPERTY DESCRIPTION AND LOCATION

4.1 Property Location

The Tamarack North Project located in north-central Minnesota is approximately 100 km W of Duluth and 200 km N of Minneapolis, in Aitkin County (Figure 4-1). The Tamarack North Project covers approximately 28,334 acres. The boundary between the Tamarack North Project and the Tamarack South Project is located approximately along the 5165000 N UTM line. More specifically, it occurs along the southern extremity of Mining Claims MM-10321, MM-10320, MM-10006-N, MM-9768-P, MM-9767-P, MLMN-200018, and MLMN-200017 (Figure 4-2). The current project mineralization is centred at approximately 490750 E / 5168700 N NAD 83 15 N. The town of Tamarack, which gives the project its name, lies in the southern portion of the Tamarack North Project area (though away from the known mineralization).

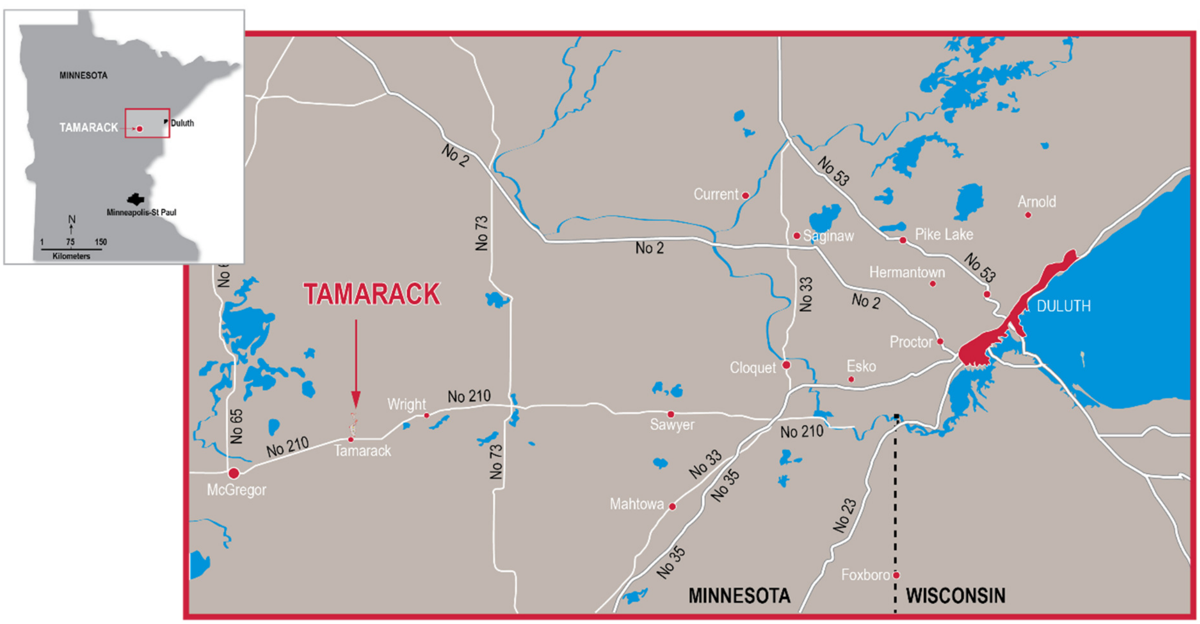


Figure 4-1: Location of the Tamarack North Project

4.2 Property Ownership

Both Kennecott and Talon hold interests in the Tamarack North Project. As of December 31, 2017, Kennecott owned an 81.55% interest in the Tamarack Project, while Talon owned an

18.45% interest in the Tamarack Project. In January 2018, pursuant to the terms of the MVA, Kennecott proposed a 2018 winter exploration program and budget totalling US$6.65M. Assuming Kennecott spends the full amount of this proposed budget, Talon's interest in the Tamarack Project is expected to be diluted by 1.48%, to 16.97%.

The relationship between Kennecott and Talon as it relates to the Tamarack North Project is currently governed by the terms of the MVA, which came into force on January 11, 2018. The MVA is described in further detail in Section 4.2.2 below. Prior to the MVA coming into force, the relationship between Kennecott and Talon as it relates to the Tamarack North Project was governed by the terms of the Tamarack Earn-in Agreement, which is described in further detail in Section 4.2.1 below.

4.2.1 Tamarack Earn-in Agreement

On June 25, 2014, Talon entered into the Tamarack Earn-in Agreement with Kennecott, part of the Rio Tinto Group, pursuant to which Talon received the right to acquire an interest in the Tamarack Project, which comprises both the Tamarack North Project and the Tamarack South Project.

Pursuant to the original terms of the Tamarack Earn-in Agreement, Talon had the right to acquire a 30% interest in the Tamarack Project over a three-year period (the Earn-in Period) by making US$7.5M in installment payments to Kennecott, and incurring US$30M in exploration expenditures (the Tamarack Earn-in Conditions). In addition, Talon agreed to make certain land option payments on behalf of Kennecott, which are payable over the Earn-in Period (and, when payable, are included as part of the Tamarack Earn-in Conditions).

On March 26, 2015, Kennecott and Talon amended the Tamarack Earn-in Agreement (the Tamarack Earn-in First Amending Agreement) to defer an option payment (the Deferred Option Payment) and delay further cash calls from being made by Kennecott.

On November 25, 2015, Kennecott and Talon entered into a further agreement to amend the Tamarack Earn-in Agreement (the Tamarack Earn-in Second Amending Agreement), to provide, among other things:

- that upon receipt by Kennecott from Talon of the sum of US$15M (which is in addition to previous amounts paid to Kennecott of US$10.52M), Talon would earn an 18.45% interest in the Tamarack Project and Talon would have no further funding requirements to earn its interest in the Tamarack Project;
- once Kennecott had spent the funds advanced by Talon on exploration activities in respect of the Tamarack Project, subject to certain self-funding rights by Kennecott during such period, Kennecott would have 180 days to elect whether to: (a) proceed with an 81.55/18.45 joint venture on the Tamarack Project in accordance with the terms of a MVA, with Kennecott owning an 81.55% participating interest, and Talon owning an 18.45% participating interest; or (b) grant Talon the right to purchase Kennecott's interest in the Tamarack Project for a total purchase price of US$114M (the Tamarack Purchase Option). In the event Kennecott granted Talon the Tamarack Purchase Option, and Talon elected to proceed with the Tamarack Purchase Option, Talon would have up to 18 months to close the transaction, provided it made an upfront non-refundable payment of US$14M; and
- until Kennecott would make its decision as to whether to grant Talon the Tamarack Purchase Option, Talon would be responsible for certain costs to keep the Tamarack Project in good standing based on its 18.45% interest. If Talon failed to make any of such payments, its interest in the Tamarack Project would be diluted in accordance with the terms of the Tamarack Earn-in Agreement.

On January 4, 2016, Talon made the US$15M payment to Kennecott (the Final Earn-in Payment) and earned an 18.45% interest in the Tamarack Project.

The total amount paid by Talon to Kennecott to earn its 18.45% interest in the Tamarack Project was US$25,520,800, broken down as follows:

Option payments	$ 1,000,000
Exploration	21,200,000
Land purchases	3,320,800
	$ 25,520,800

On December 16, 2016, Talon entered into a third amending agreement with Kennecott (the Tamarack Earn-in Third Amending Agreement) in respect of the Tamarack Earn-in Agreement.

Pursuant to the Tamarack Earn-in Third Amending Agreement, Talon and Kennecott agreed to co-fund a 2016/2017 winter exploration program at the Tamarack Project in the approximate amount of US$3.5M, with Talon funding its proportionate share of 18.45% thereof. The Tamarack Earn-in Third Amending Agreement also provided that Kennecott could elect at any time up to and including September 25, 2017 to grant Talon the Tamarack Purchase Option or proceed with the MVA (the Kennecott Decision Deadline).

On the Kennecott Decision Deadline, Talon received notification from Kennecott that it had decided to grant Talon the Tamarack Purchase Option on the terms of the Tamarack Earn-in Agreement. Pursuant to the Tamarack Earn-in Agreement, Talon had until November 6, 2017 to advise Kennecott as to whether or not it would exercise the Tamarack Purchase Option.

On November 1, 2017, Talon entered into a fourth amending agreement with Kennecott (the Tamarack Earn-in Fourth Amending Agreement) in respect of the Tamarack Earn-in Agreement. Pursuant to the Tamarack Earn-in Fourth Amending Agreement, Kennecott agreed to grant Talon an extension until December 31, 2017 to make its election as to whether it would exercise the Tamarack Purchase Option. In return for the granting of such extension by Kennecott, Talon agreed to grant Kennecott a 0.5% NSR in the event Talon elected to exercise the Tamarack Purchase Option.

On November 16, 2017, Talon advised Kennecott that it had elected not to exercise the Tamarack Purchase Option. Consequently, under the terms of the Tamarack Earn-in Agreement, the parties were required to proceed with the MVA in February 2018.

4.2.2 Mining Venture Agreement (MVA)

On January 11, 2018, Talon entered into a fifth amending agreement with Kennecott (the Tamarack Earn-in Fifth Amending Agreement) in respect of the Tamarack Earn-in Agreement. Pursuant to the Tamarack Earn-in Fifth Amending Agreement, Talon and Kennecott agreed to accelerate the timeframe for entering into the MVA, such that the parties would enter into the agreement with immediate effect (on January 11, 2018), rather than in February 2018.

Some notable characteristics of the MVA include the following:

- Kennecott is appointed Manager of the Tamarack Project, with a number of explicit duties and obligations articulated under the MVA.
- Talon and Kennecott agree to establish a management committee to determine overall policies, objectives, procedures, methods and actions under the MVA, and to provide general oversight and direction to the Manager who is vested with full power and authority to carry out the day-to-day management under the MVA. The management committee consists of two members appointed by Talon and two members appointed by Kennecott.
- Upon formation of the MVA, and beginning with the first program and budget under the MVA, each proposed program and budget must provide for an annual expenditure of at least US$6.15M until the completion of a Feasibility Study (as defined under the MVA). The failure of either party to fund its share of each proposed program and budget will result in dilution (and in certain circumstances accelerated dilution) in accordance with the terms of the MVA.
- In the event either party's participating interest in the Tamarack Project dilutes below 10%, such party's interest will be converted into a 1% NSR.
- In the event of a proposed transfer of either party's interest in the Tamarack Project to a third party, both parties have a ROFR. In the event the non-transferring party elects not to exercise its ROFR, the non-transferring party has a tag-along right, while the transferring party has a drag-along right.

4.2.3 Mineral Tenure

4.2.3.1 Introduction

Land in Minnesota is held by a combination of private, state and federal ownership. In addition, surface estate owner(s) may be the same or different to the mineral estate owner(s) (i.e., mineral interest may be severed from surface interest and form its own property ownership right).

The Tamarack North Project comprises:

- Minnesota State Leases (many of which also include the surface rights);
- Private Mineral Leases, Surface Use Agreements and Options to Purchase; and
- Fee Mineral and Surface Interests owned outright by Kennecott.

These various interests are summarized in Table 4-1. The mineral rights owned or controlled in accordance with the MVA are summarized in Figure 4-2, and the surface rights owned or controlled in accordance with the terms of the MVA are shown in Figure 4-3. All Tamarack North Project mineral and surface interests are held in Kennecott's own name, and are currently subject to the terms of the MVA.

Table 4-1: Summary of Project Interests

Type	Number	Acreage
Minnesota State Leases	56	26,783
Private Mineral Leases	5	287
Fee Minerals and Surface Interests	14	1,264
Total	**75**	**28,334**

It is noted that all locations for mineral leases and other property locations are described in the US Public Land Survey System in Township, Range, Section and Section subdivisions.

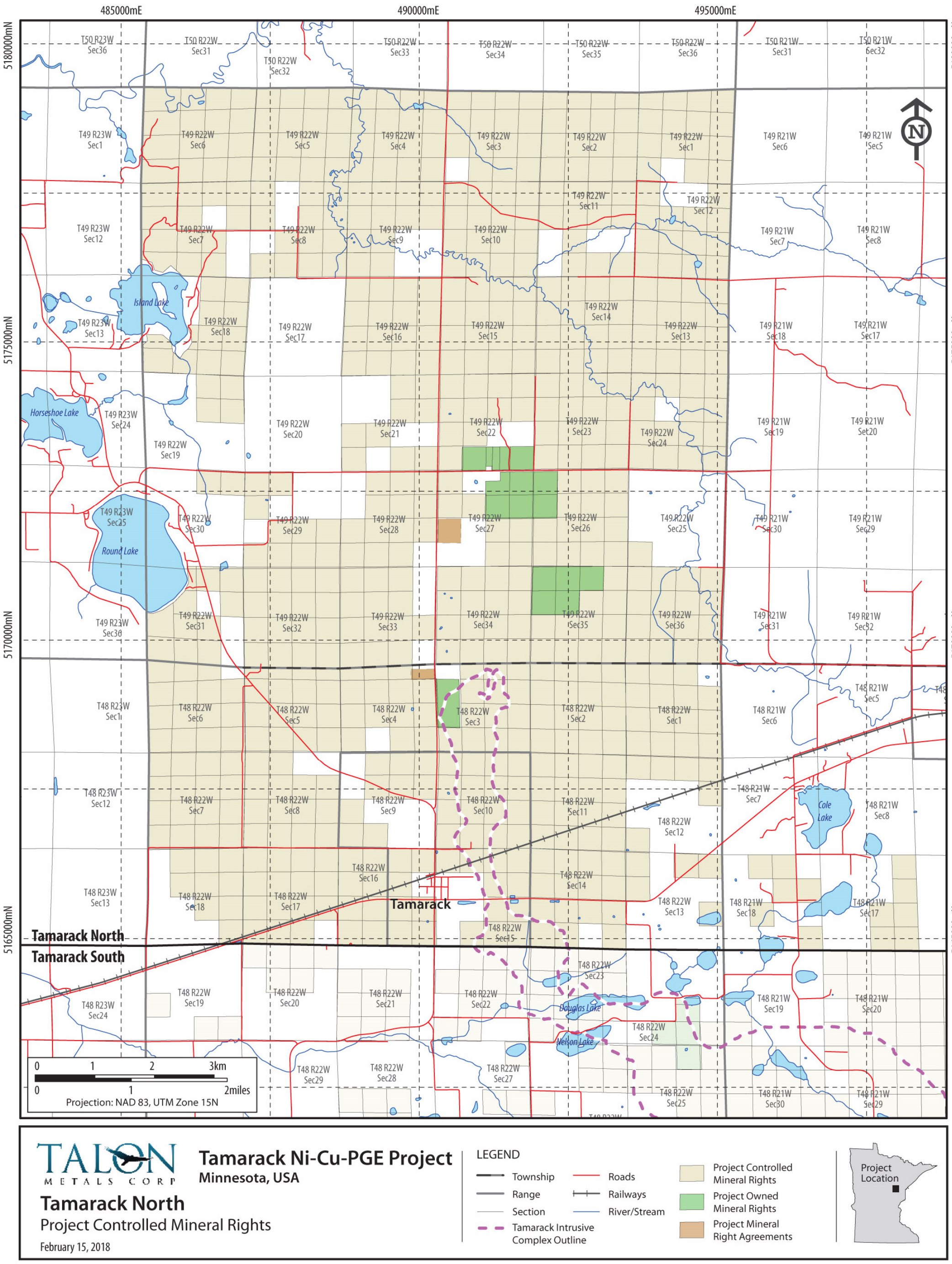


Figure 4-2: Tamarack North Project Mineral Rights

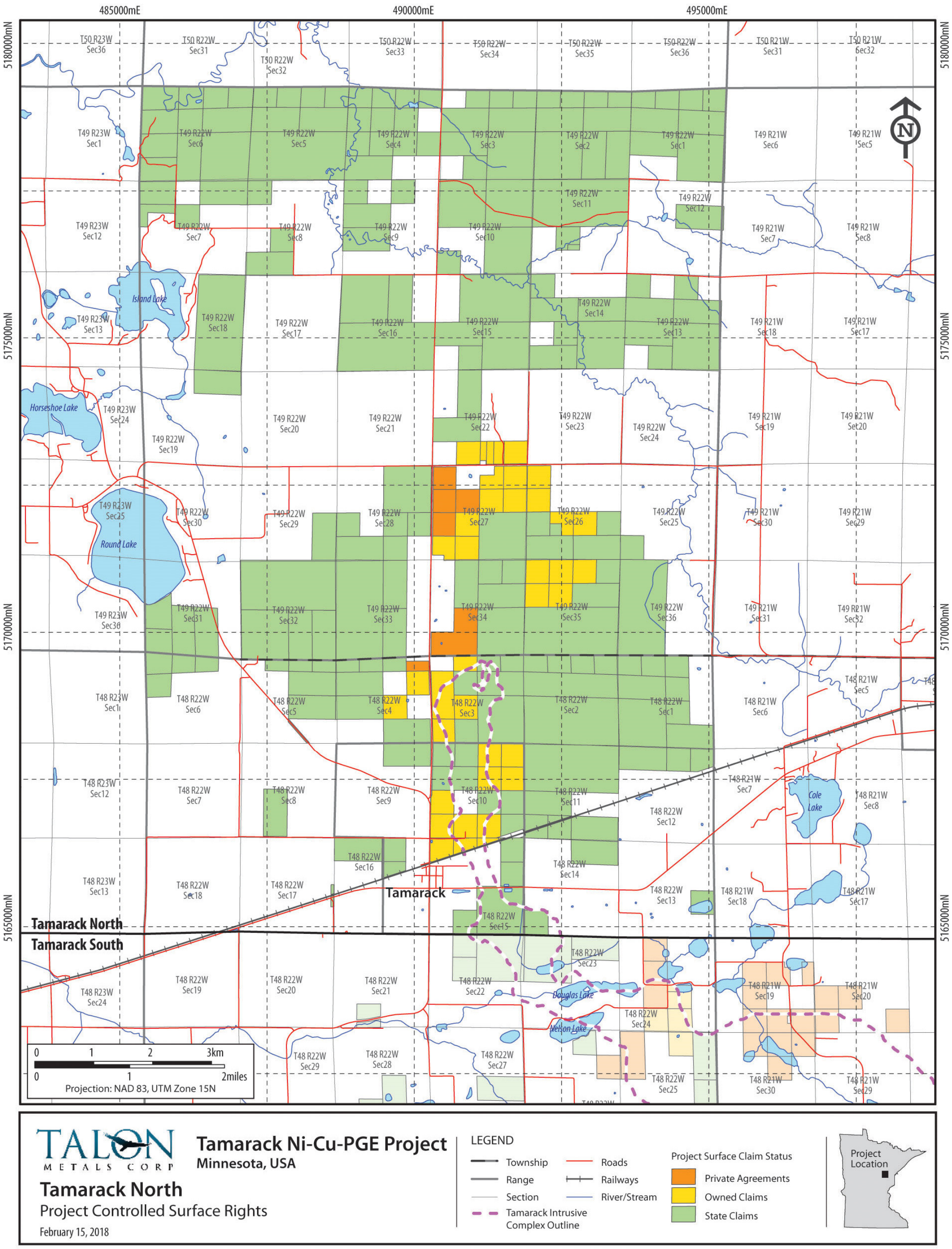


Figure 4-3: Tamarack North Project Surface Rights

4.2.3.2 Minnesota State Leases

State Leases to Explore, Mine and Remove Metallic Minerals (State Leases) are issued by the MDNR and may be held for up to 50 years. "Metallic Minerals" are defined in the State Leases as "any mineral substances of a metalliferous nature, except iron ores and taconite ores". State Leases allow a mining company to engage in mineral exploration and mineral development located on the State-owned property, subject to compliance with all laws and issued permits.

The Tamarack North Project comprises 56 State Leases, covering an area of approximately 26,783 acres (Table 4-2 contains further details of State Leases). The State Leases are issued on standard lease forms and generally contain uniform terms and conditions.

In order to keep the State Leases in good standing, certain quarterly and/or annual payments must be made to the State and/or County. Rental payments must be made to the State, and are paid quarterly in arrears on each February 20, May 20, August 20 and November 20 for the previous calendar quarter. The quantum of such rental payments are as follows:

- initially, US$1.50 per acre for the unexpired portion of the then current year and US$1.50 per acre for each of the two succeeding years;
- US$5 per acre for the next three calendar years;
- US$15 per acre for the next five calendar years; and
- US$30 per acre for the duration of the lease.

A county tax is also levied on the State Leases, with the current amount being US$0.40 per acre, payable on May 15 of each year.

An operating mining company must also pay a production royalty. The base royalty consists of a base rate (3.95%) and in some cases an additional royalty (applicable only to those leases acquired through state bids or negotiations with the State). Details are included in Table 4-2. State leases also contain a royalty escalation clause that increases the base royalty as the net return value per ton of raw ore increases. This escalation of the royalty rate begins at a net return value per ton of US$75.01. It rises to the maximum of 20% if such net return value exceeds US$444 per ton of raw ore.

The State of Minnesota has an option to cancel a mineral lease after the end of the 20th year if, by that time, a lessee is not actively engaged in mining ore under the lease from the mining unit, a mine within the same government township as the mining unit or an adjacent government township and has not paid at least US$100,000 to the State in earned royalty under a state lease in any one calendar year. The State must exercise that option within the 21st year of the lease. If the State does not cancel within the 21st year, the lessee has until the end of the 35th calendar year to meet the conditions. If the lessee has not met the conditions by the end of the 35th year, the State has another window to cancel the lease during the 36th calendar year of the lease.

Table 4-2: Tamarack North Project State Lease Details

State Lease Number	Start Date	Term	Base Royalty	Additional Royalty	Royalty Escalator Applies	Lands	Acreage
MM 9765-P	9/7/2000	50 years	3.95%	N/A	Yes	**Township 48 North, Range 22 West, Aitkin County, Minnesota** Sec. 3: Lot 3, NE/4SW/4, SW/4SW/4 Minerals and mineral rights Sec. 3: Lots 1-2, S/2NE/4, SE/4NW/4, SE/4SW/4, SE/4 Minerals and mineral rights, including the interest in the surface thereof owned by the State, if any	482.26
MM 9766-P	9/7/2000	50 years	3.95%	N/A	Yes	**Township 48 North, Range 22 West, Aitkin County, Minnesota** Sec. 10: NE/4NW/4, S/2NW/4, NW/4SE/4 Minerals, mineral rights and surface Sec. 10: SW/4, NE/4 Minerals and mineral rights Sec. 10: NW/4NW/4, NE/4SE/4, S/2SE/4 Minerals and mineral rights, including the interest in the surface thereof owned by the State, if any	640
MM 9767-P	9/7/2000	50 years	3.95%	N/A	Yes	**Township 48 North, Range 22 West, Aitkin County, Minnesota** Sec. 14: N/2NE/4 Minerals, mineral rights and surface Sec. 14: N/2SE/4, SE/4SE/4, S/2NE/4, NW/4, NE/4SW/4, NW/4SW/4 except 2.58 acres for highway right-of-way, E/2SE/4SW/4 Minerals and mineral rights Sec. 14: SW/4SW/4 Minerals and mineral rights, including the	577.42

State Lease Number	Start Date	Term	Base Royalty	Additional Royalty	Royalty Escalator Applies	Lands	Acreage
						interest in the surface thereof owned by the State, if any	
MM 9768-P	11/9/2005	50 years	3.95%	N/A	Yes	**Township 48 North, Range 22 West, Aitkin County, Minnesota** Sec. 15: SW/4NE/4, NE/4NW/4 except 3.17 acres for railroad right-of-way, NW/4NW/4 except 2.14 acres for railroad right-of-way Minerals and mineral rights Sec. 15: NE/4NE/4 except 0.80 acres for railroad right-of-way, NW/4NE/4 except 3.17 acres for railroad right-of-way, SE/4NE/4, SE/4SW/4, SE/4 Minerals and mineral rights, including the interest in the surface thereof owned by the State, if any	430.72
MM 9849-N	9/6/2001	50 years	3.95%	0.50%	Yes	**Township 49 North, Range 22 West, Aitkin County, Minnesota** Sec. 34: NE/4NE/4, E/2NW/4 Minerals, mineral rights and surface Sec. 34: W/2NW/4, NW/4NE/4, SW/4 Minerals and mineral rights Sec. 34: S/2NE/4, SE/4 Minerals and mineral rights, including the interest in the surface thereof owned by the State, if any	640.00
MM 10002-N	6/5/2003	50 years	3.95%	0.30%	Yes	**Township 48 North, Range 22 West, Aitkin County, Minnesota** Sec. 2: Lots 1-4, S/2NE/4, S/2NW/4, S/2 Minerals and mineral rights, including the interest in the surface thereof owned by the State, if any	605.04
MM 10003-N	6/5/2003	50 years	3.95%	0.30%	Yes	**Township 48 North, Range 22 West, Aitkin County, Minnesota** Sec. 4: SW/4NE/4, SE/4NE/4, SW/4SW/4, N/2SE/4 Minerals and mineral rights Sec. 4: Lots 2-4, S/2NW/4, N/2SW/4, S/2SE/4 Minerals and mineral rights, including the interest in the surface thereof owned by the State, if any	505.85
MM 10004-N	6/5/2003	50 years	3.95%	0.30%	Yes	**Township 48 North, Range 22 West, Aitkin County, Minnesota** Sec. 9: S/2NE/4, NE/4NW/4 Minerals and mineral rights Sec. 9: N/2NE/4; SE/4NW/4, that part commencing at NW corner, thence S along W line of SE/4NW/4 206 ft to Round Lake Road the point of beginning, thence S along same W line a distance of 427 ft, thence deflect left 73˚ a distance of 612.5 ft, thence deflect left 87˚ 10 minutes a distance of 400 ft to centre of Round Lake Road, thence deflect left 92˚ along said road a distance of 762 ft to point of beginning; W/2SW/4; SE/4SW/4 Minerals and mineral rights, including the	326.50

State Lease Number	Start Date	Term	Base Royalty	Additional Royalty	Royalty Escalator Applies	Lands	Acreage
						interest in the surface thereof owned by the State, if any	
MM 10005-N	6/5/2003	50 years	3.95%	0.30%	Yes	**Township 48 North, Range 22 West, Aitkin County, Minnesota** Sec. 11: All Minerals and mineral rights, including the interest in the surface thereof owned by the State, if any	640.00
MM 10006-N	6/5/2003	50 years	3.95%	0.30%	Yes	**Township 48 North, Range 22 West, Aitkin County, Minnesota** Sec. 16: N/2NE/4, SW/4NE/4, W/2, SE/4 Minerals and mineral rights	600.00
MM 10007-N	6/5/2003	50 years	3.95%	0.40%	Yes	**Township 49 North, Range 22 West, Aitkin County, Minnesota** Sec. 27: W/2NW/4, SE/4 Minerals and mineral rights Sec. 27: SE/4NW/4 Minerals and mineral rights, including the interest in the surface thereof owned by the State, if any	280.00
MM 10008-N	6/5/2003	50 years	3.95%	0.40%	Yes	**Township 49 North, Range 22 West, Aitkin County, Minnesota** Sec. 28: NE/4, NE/4SE/4, SW/4SE/4 Minerals, mineral rights and surface Sec. 28: E/2NW/4, NE/4SW/4 Minerals and mineral rights Sec. 28: W/2SW/4, SE/4SW/4, NW/4SE/4 Minerals and mineral rights, including the interest in the surface thereof owned by the State, if any	520.00
MM 10009-N	6/5/2003	50 years	3.95%	0.30%	Yes	**Township 49 North, Range 22 West, Aitkin County, Minnesota** Sec. 33: N/2NE/4SE/4 Minerals and mineral rights Sec. 33: W/2NE/4, W/2, W/2SE/4 Minerals and mineral rights, including the interest in the surface thereof owned by the State, if any	500.00
MM 10010-N	6/5/2003	50 years	3.95%	0.30%	Yes	**Township 49 North, Range 22 West, Aitkin County, Minnesota** Sec. 35: E/2NE/4, SW/4NE/4, SW/4, NE/4SE/4 except coal and iron, NW/4SE/4 except coal and iron, SW/4SE/4 except coal and iron, SE/4SE/4 except coal and iron Minerals and mineral rights, including the interest in the surface thereof owned by the State, if any	440.00
MM 10202-N	6/21/2008	50 years	3.95%	0.50%	Yes	**Township 49 North, Range 22 West, Aitkin County, Minnesota** Sec. 22: N/2SW/4 Minerals, mineral rights and surface Sec. 22: NW/4, SW/4SW/4, E/2NE/4 Minerals and mineral rights	360.00

State Lease Number	Start Date	Term	Base Royalty	Additional Royalty	Royalty Escalator Applies	Lands	Acreage
MM 10203-N	6/21/2008	50 years	3.95%	0.50%	Yes	**Township 49 North, Range 22 West, Aitkin County, Minnesota** Sec. 26: E/2NE/4, W/2NE/4, E/2NW/4, NE/4SW/4, NW/4SE/4 Minerals and mineral rights Sec. 26: W/2SW/4, SE/4SW/4, NE/4SE/4, S/2SE/4 Minerals and mineral rights, including the interest in the surface thereof owned by the State, if any	560
MM 10204-N	6/21/2008	50 years	3.95%	0.50%	Yes	**Township 49 North, Range 22 West, Aitkin County, Minnesota** Sec. 29: SW/4NW/4, E/2SW/4, SW/4SW/4, W/2SE/4, undivided ½ interest in N/2NW/4 Minerals and mineral rights Sec. 29: E/2SE/4 Minerals and mineral rights, including the interest in the surface thereof owned by the State, if any	400.00
MM 10205-N	6/21/2008	50 years	3.95%	0.50%	Yes	**Township 49 North, Range 22 West, Aitkin County, Minnesota** Sec. 32: E/2SE/4 Minerals, mineral rights and surface Sec. 32: N/2, SW/4, W/2SE/4 Minerals and mineral rights, including the interest in the surface thereof owned by the State, if any	640.00
MM 10252-N	9/30/2009	50 years	3.95%	0.50%	Yes	**Township 49 North, Range 22 West, Aitkin County, Minnesota** Sec. 22: W/2NE/4 Minerals and mineral rights, except coal and iron	80.00
MM 10253-N	9/30/2009	50 years	3.95%	0.50%	Yes	**Township 49 North, Range 22 West, Aitkin County, Minnesota** Sec. 23: All Minerals and mineral rights, except coal and iron	640.00
MM 10315	2/26/2010	50 years	3.95%	0.611%	Yes	**Township 48 North, Range 22 West, Aitkin County, Minnesota** Sec. 1: SE/4NE/4, NE/4SE/4 Minerals and mineral rights Sec. 1: Lots 2-4, SW/4NE/4, S/2NW/4, SW/4, W/2SE/4, SE/4SE/4 Minerals and mineral rights, including the interest in the surface thereof owned by the State, if any	588.30
MM 10316	2/26/2010	50 years	3.95%	0.611%	Yes	**Township 48 North, Range 22 West, Aitkin County, Minnesota** Sec. 7: Lots 1-4, E/2, E/2NW/4, E/2SW/4 Minerals and mineral rights	626.07
MM 10317	2/26/2010	50 years	3.95%	0.611%	Yes	**Township 48 North, Range 22 West, Aitkin County, Minnesota** Sec. 8: E/2SW/4 Minerals, mineral rights and surface Sec. 8: S/2NE/4, NW/4, W/2SW/4, SE/4 Minerals and mineral rights	560.00

State Lease Number	Start Date	Term	Base Royalty	Additional Royalty	Royalty Escalator Applies	Lands	Acreage
MM 10318	2/26/2010	50 years	3.95%	0.611%	Yes	**Township 48 North, Range 22 West, Aitkin County, Minnesota** Sec. 12: NW/4NE/4, N/2NW/4 Minerals, mineral rights and surface Sec. 12: SE/4NE/4, SW/4SW/4 Minerals and mineral rights Sec. 12: NE/4NE/4 Minerals and mineral rights, including the interest in the surface thereof owned by the State, if any	240.00
MM 10319	2/26/2010	50 years	3.95%	0.611%	Yes	**Township 48 North, Range 22 West, Aitkin County, Minnesota** Sec. 13: N/2NE/4, W/2NW/4 Minerals and mineral rights Sec. 13: NE/4SE/4 Minerals and mineral rights, including the interest in the surface thereof owned by the State, if any	200.00
MM 10320	2/26/2010	50 years	3.95%	0.611%	Yes	**Township 48 North, Range 22 West, Aitkin County, Minnesota** Sec. 17: N/2, N/2SW/4, SW/4SW/4 except 3.22 acres for railroad right-of-way, SE/4SW/4 except 3.22 acres for railroad right-of-way, N/2SE/4, SW/4SE/4 Minerals and mineral rights	593.56
MM 10321	2/26/2010	50 years	3.95%	0.611%	Yes	**Township 48 North, Range 22 West, Aitkin County, Minnesota** Sec. 18: NE/4SE/4, NE/4, E/2NW/4, NW/4SE/4, SE/4SE/4 except 2.42 acres for highway right-of-way Minerals and mineral rights	357.58
MM 10332	2/26/2010	50 years	3.95%	0.611%	Yes	**Township 49 North, Range 22 West, Aitkin County, Minnesota** Sec. 1: SW/4SW/4 Minerals and mineral rights Sec. 1: Lots 1-4, S/2NE/4, S/2NW/4, N/2SW/4, SE/4 Minerals and mineral rights, including the interest in the surface thereof owned by the State, if any	573.60
MM 10333	2/26/2010	50 years	3.95%	0.611%	Yes	**Township 49 North, Range 22 West, Aitkin County, Minnesota** Sec. 2: Lots 1 & 3, S/2NE/4, S/2NW/4, SW/4, W/2SE/4 Minerals, mineral rights and surface Sec. 2: E/2SE/4 Minerals and mineral rights Sec. 2: Lots 2 & 4 Minerals and mineral rights, including the interest in the surface thereof owned by the State, if any	591.84

State Lease Number	Start Date	Term	Base Royalty	Additional Royalty	Royalty Escalator Applies	Lands	Acreage
MM 10334	2/26/2010	50 years	3.95%	0.611%	Yes	**Township 49 North, Range 22 West, Aitkin County, Minnesota** Sec. 3: Lot 4 Minerals and mineral rights Sec. 3: Lots 1-3, S/2NE/4, S/2NW/4, N/2SW/4, SE/4SW/4, SE/4 Minerals and mineral rights, including the interest in the surface thereof owned by the State, if any	560.40
MM 10335	2/26/2010	50 years	3.95%	0.611%	Yes	**Township 49 North, Range 22 West, Aitkin County, Minnesota** Sec. 4: Lots 3-4, SW/4NW/4, NW/4SW/4, NE/4SE/4 Minerals, mineral rights and surface Sec. 4: SE/4NE/4, SE/4SE/4, SW/4SE/4 Minerals and mineral rights Sec. 4: Lots 1-2, SW/4NE/4, SE/4NW/4, NE/4SW/4, S/2SW/4, NW/4SE/4 Minerals and mineral rights, including the interest in the surface thereof owned by the State, if any	610.96
MM 10336	2/26/2010	50 years	3.95%	0.611%	Yes	**Township 49 North, Range 22 West, Aitkin County, Minnesota** Sec. 5: Lots 1-4, S/2NE/4, S/2NW/4, S/2 Minerals and mineral rights, including the interest in the surface thereof owned by the State, if any	615.42
MM 10337	2/26/2010	50 years	3.95%	0.611%	Yes	**Township 49 North, Range 22 West, Aitkin County, Minnesota** Sec. 6: Lots 1-2 & 7, S/2NE/4 Minerals, mineral rights and surface Sec. 6: SE/4SW/4 Minerals and mineral rights Sec. 6: Lots 3-6, SE/4NW/4, NE/4SW/4, SE/4 Minerals and mineral rights, including the interest in the surface thereof owned by the State, if any	709.34
MM 10338	2/26/2010	50 years	3.95%	0.611%	Yes	**Township 49 North, Range 22 West, Aitkin County, Minnesota** Sec. 7: Lots 2-5, SE/4NE/4, NE/4NW/4, NE/4SW/4, W/2SE/4 Minerals and mineral rights Sec. 7: Lot 1, N/2NE/4, SE/4NW/4 Minerals and mineral rights, including the interest in the surface thereof owned by the State, if any	572.56
MM 10339	2/26/2010	50 years	3.95%	0.611%	Yes	**Township 49 North, Range 22 West, Aitkin County, Minnesota** Sec. 8: NW/4NW/4, NE/4SW/4, S/2SW/4 Minerals, mineral rights and surface Sec. 8: SW/4NW/4, SW/4SE/4, NE/4, N/2SE/4, SE/4SE/4 Minerals and mineral rights	520.00

State Lease Number	Start Date	Term	Base Royalty	Additional Royalty	Royalty Escalator Applies	Lands	Acreage
MM 10340	2/26/2010	50 years	3.95%	0.611%	Yes	**Township 49 North, Range 22 West, Aitkin County, Minnesota** Sec. 9: NE/4NE/4, SW/4NE/4 except the north 100 feet, SE/4NE/4 except the north 100 feet, NE/4NW/4, S/2SW/4 Minerals and mineral rights Sec. 9: NW/4NE/4, SW/4NE/4 the north 100 feet, SE/4NE/4 the north 100 feet, W/2NW/4, SE/4NW/4, N/2SW/4 Minerals and mineral rights, including the interest in the surface thereof owned by the State, if any	480.00
MM 10341	2/26/2010	50 years	3.95%	0.611%	Yes	**Township 49 North, Range 22 West, Aitkin County, Minnesota** Sec. 10: E/2, SW/4SW/4 Minerals, mineral rights and surface Sec. 10: N/2SW/4, SE/4SW/4 Minerals and mineral rights Sec. 10: NW/4 Minerals and mineral rights, including the interest in the surface thereof owned by the State, if any	640.00
MM 10342	2/26/2010	50 years	3.95%	0.611%	Yes	**Township 49 North, Range 22 West, Aitkin County, Minnesota** Sec. 11: SE/4SW/4, SW/4SE/4, SE/4SE/4 except township road Minerals and mineral rights Sec. 11: N/2, NE/4SW/4 Minerals and mineral rights, including the interest in the surface thereof owned by the State, if any	478.00
MM 10343	2/26/2010	50 years	3.95%	0.611%	Yes	**Township 49 North, Range 22 West, Aitkin County, Minnesota** Sec. 12: S/2NE/4 Minerals, mineral rights and surface Sec. 12: W/2NW/4, S/2, NE/4NE/4, SE/4NW/4 Minerals and mineral rights	560.00
MM 10344	2/26/2010	50 years	3.95%	0.611%	Yes	**Township 49 North, Range 22 West, Aitkin County, Minnesota** Sec. 18: Lots 3-6, N/2NE/4, SE/4NE/4, E/2SE/4 Minerals and mineral rights Sec. 18: SW/4NE/4, W/2SE/4 Minerals and mineral rights, including the interest in the surface thereof owned by the State, if any	438.97
MM 10345	2/26/2010	50 years	3.95%	0.611%	Yes	**Township 49 North, Range 22 West, Aitkin County, Minnesota** Sec. 19: S/2NE/4 Minerals and mineral rights Sec. 19: N/2NE/4 Minerals and mineral rights, including the interest in the surface thereof owned by the State, if any	160.00

State Lease Number	Start Date	Term	Base Royalty	Additional Royalty	Royalty Escalator Applies	Lands	Acreage
MM 10346	2/26/2010	50 years	3.95%	0.611%	Yes	**Township 49 North, Range 22 West, Aitkin County, Minnesota** Sec. 25: SW/4SW/4 Minerals and mineral rights, including the interest in the surface thereof owned by the State, if any	40.00
MM 10347	2/26/2010	50 years	3.95%	0.611%	Yes	**Township 49 North, Range 22 West, Aitkin County, Minnesota** Sec. 30: N/2NE/4 Minerals and mineral rights, including the interest in the surface thereof owned by the State, if any	80.00
MM 10348	2/26/2010	50 years	3.95%	0.611%	Yes	**Township 49 North, Range 22 West, Aitkin County, Minnesota** Sec. 31: Lot 1, SE/4NE/4, undivided ½ interest in NE/4NE/4, undivided ½ interest in NW/4NE/4 Minerals and mineral rights Sec. 31: Lots 2-4, E/2SW/4, W/2SE/4 Minerals and mineral rights, including the interest in the surface thereof owned by the State, if any	430.36
MM 10349	2/26/2010	50 years	3.95%	0.611%	Yes	**Township 49 North, Range 22 West, Aitkin County, Minnesota** Sec. 36: W/2 Minerals, mineral rights and surface Sec. 36: E/2 Minerals and mineral rights	640.00
MM 10377-N	3/4/2011	50 years	3.95%	0.55%	Yes	**Township 49 North, Range 22 West, Aitkin County, Minnesota** Sec. 13: NE/4NE/4, NE/4NW/4, SW/4SW/4 except coal and iron, undivided ½ interest in SW/4SE/4, undivided ½ interest in SE/4SE/4 Minerals and mineral rights Sec. 13: W/2NE/4, SE/4NE/4, W/2NW/4, SE/4NW/4, NE/4SW/4 except coal and iron, NW/4SW/4 except coal and iron, SE/4SW/4 except coal and iron, N/2SE/4, undivided ½ interest in SW/4SE/4, undivided ½ interest in SE/4SE/4 Minerals and mineral rights, including the interest in the surface thereof owned by the State, if any	640.00
MM 10378-N	3/4/2011	50 years	3.95%	0.55%	Yes	**Township 49 North, Range 22 West, Aitkin County, Minnesota** Sec. 14: W/2NW/4, SE/4NW/4, NE/4SW/4, SW/4SW/4, SE/4SW/4 Minerals, mineral rights and surface Sec. 14: NW/4SW/4, NE/4NE/4 except the north 2 rods and the east 2 rods, NW/4NE/4, NE/4NW/4 Minerals and mineral rights Sec. 14: NE/4NE/4 the north 2 rods, NE/4NE/4 the east 2 rods except the north 2 rods, S/2NE/4, SE/4 Minerals and mineral rights, including the	640.00

State Lease Number	Start Date	Term	Base Royalty	Additional Royalty	Royalty Escalator Applies	Lands	Acreage
						interest in the surface thereof owned by the State, if any	
MM 10379-N	3/4/2011	50 years	3.95%	0.55%	Yes	**Township 49 North, Range 22 West, Aitkin County, Minnesota** Sec. 24: W/2NE/4, SE/4NE/4, S/2SW/4, E/2SE/4, W/2SE/4, NE/4NE/4, NE/4NW/4, undivided ¾ interest in NW/4NW/4, undivided ¾ interest in SW/4NW/4, undivided ¾ interest in NE/4SW/4, undivided ¾ interest in NW/4SW/4 Minerals and mineral rights	600.00
MLMB200001	3/3/2016	50	3.95%	0.75%	Yes	**Township 49 North, Range 22 West, Aitkin County, Minnesota** Sec. 15: undivided $^{1}/_{3}$ interest in NE1/4-NW1/4, undivided $^{2}/_{3}$ interest in NW1/4-NW1/4, undivided $^{1}/_{3}$ interest in NW1/4-NW1/4, undivided $^{2}/_{3}$ interest in SW1/4-NW1/4, undivided $^{1}/_{3}$ interest in SW1/4-NW1/4, undivided $^{1}/_{3}$ interest in SE1/4-NW1/4, undivided $^{1}/_{3}$ interest in NE1/4-SW1/4, undivided $^{1}/_{3}$ interest in NW1/4-SW1/4, undivided $^{2}/_{3}$ interest in SW1/4-SW1/4, undivided $^{1}/_{3}$ interest in SW1/4-SW1/4, undivided $^{1}/_{3}$ interest in SE1/4-SW1/4, undivided $^{1}/_{3}$ interest in NE1/4-SE1/4, undivided $^{1}/_{3}$ interest in NW1/4-SE1/4 SE1/4-SE1/4, undivided $^{1}/_{3}$ interest in SE1/4-SE1/4 Mineral and mineral rights Sec. 15: undivided $^{2}/_{3}$ interest in NE1/4-NW1/4, undivided $^{2}/_{3}$ interest in SE1/4-NW1/4, undivided $^{2}/_{3}$ interest in NE1/4-SW1/4, undivided $^{2}/_{3}$ interest in NW1/4-SW1/4, undivided $^{2}/_{3}$ interest in SE1/4-SW1/4, undivided $^{2}/_{3}$ interest in NE1/4-SE1/4, undivided $^{2}/_{3}$ interest in NW1/4-SE1/4, undivided $^{2}/_{3}$ interest in SW1/4-SE1/4, undivided $^{2}/_{3}$ interest in SE1/4-SE1/4 Mineral, mineral rights, and surface rights	640
MLMB200002	3/3/2016	50	3.95%	0.75%	Yes	**Township 49 North, Range 22 West, Aitkin County, Minnesota** Sec. 16: W1/2-NE1/4, NW1/4, S1/2, E1/2-NE1/4 Mineral and mineral rights	640
MLMB200003	3/3/2016	50	3.95%	0.75%	Yes	**Township 49 North, Range 22 West, Aitkin County, Minnesota** Sec. 21: NE1/4 Mineral and mineral rights	160
MLMN200001	2/24/2017	50	3.95%	0.50%	Yes	**Township 48 North, Range 22 West, Aitkin County, Minnesota** Sec. 5: Lot Four, SW1/4, S1/2-SE1/4 - Mineral and mineral rights Sec. 5: Lot One, Lot Two, S1/2-NE1/4, Lot Three, N1/2-SE1/4 Mineral, mineral rights and surface rights	556.31

State Lease Number	Start Date	Term	Base Royalty	Additional Royalty	Royalty Escalator Applies	Lands	Acreage
MLMN200017	2/24/2017	50	3.95%	0.50%	Yes	**Township 48 North, Range 21 West, Aitkin County, Minnesota** Sec. 17: NW1/4-SE1/4 Mineral and mineral rights Sec. 17: E1/2-NE1/4, E1/2-SE1/4, SW1/4-SE1/4 Mineral, mineral rights, and surface rights	240
MLMN200028	2/24/2017	50	3.95%	0.50%	Yes	**Township 48 North, Range 22 West, Aitkin County, Minnesota** Sec. 6: S1/2-NE1/4, SE1/4-NW1/4, E1/2-SW1/4, Lot Six, Lot Seven, SE1/4 Mineral and mineral rights Sec. 6: Lot Two, Lot Three, Lot Four, Lot Five Mineral, mineral rights, and surface rights	581.71
MLMN200029	2/24/2017	50	3.95%	0.50%	Yes	**Township 49 North, Range 22 West, Aitkin County, Minnesota** Sec. 21: undivided ½ interest NE1/4-SW1/4, undivided ½ interest NW1/4-SW1/4, undivided ½ interest SW1/4-SW1/4, undivided ½ interest SE1/4-SW1/4, undivided ¾ interest SE1/4-SE1/4 Mineral and mineral rights	110
MLMN200018	2/24/2017	50	3.95%	0.50%	Yes	**Township 48 North, Range 21 West, Aitkin County, Minnesota** Sec. 18: W1/2-NE1/4, SE1/4-NE1/4, NE1/4-NW1/4, NE1/4-SW1/4, SE1/4-SE1/4 Mineral and mineral rights	240

4.2.3.3 Private Mineral Leases, Surface Use Agreements and Options to Purchase

In addition to the State Leases, the joint venture parties hold mineral leases, surface use agreements and options to purchase, covering privately owned surface and mineral interests (Private Agreements). There are five Private Agreements, which cover approximately 287 acres of surface and/or mineral interests within the Tamarack North Project area. The provisions and terms of each Private Agreement are specific to each Private Agreement. Certain Private Agreements include royalties payable if and when the Tamarack North Project begins production on lands covered by such Private Agreement. The royalties range from a 2% to 3.9% NSR and include certain buy-back rights. Table 4-3 provides further information on the Private Agreements.

Kennecott has also entered into easement agreements with certain property owners which allow Kennecott (in its capacity of Manager under the MVA) to install and monitor groundwater monitoring wells for a nominal annual fee.

Table 4-3: Summary of Private Agreements

Type of Agreement	Term	Annual Fee (US$)	Lands	Acreage
Lease and Option Agreement*	Feb 1/13 to Feb 1/18	10,000	**Township 49 North, Range 22 West, Aitkin County, Minnesota** Sec. 34: NE/4SW/4, SE/4SW/4, SW/4SW/4 excepting certain lands *Surface Only*	118.01
Lease and Option Agreement	Sept 15/15 to Sept 15/18	5,000	**Township 48 North, Range 22 West, Aitkin County, Minnesota** Sec. 4: The South 561' of Lot 1 *Surface and Mineral*	16.51
Lease and Option Agreement	Aug 1/15 to Aug 1/18	5,000	**Township 49 North, Range 22 West, Aitkin County, Minnesota** Sec. 27: NWNW excepting certain lands *Surface Only*	36.49
Lease and Option Agreement	July 1/15 to July 1/19	5,000	**Township 49 North, Range 22 West, Aitkin County, Minnesota** Sec. 27: SWNW excepting certain lands *Surface Only*	37.96
Lease and Option Agreement	July 1/15 to July 1/19	5,000	**Township 49 North, Range 22 West, Aitkin County, Minnesota** Sec. 27: NWSW excepting certain lands *Surface and Mineral* Sec. 27: SENW excepting certain lands *Surface Only*	78.18

*Notice of Intent to Purchase has been issued.

4.2.3.4 Fee and Mineral Surface Interests

Pursuant to the MVA, the joint venture parties also own fee surface and/or mineral interests which cover approximately 1,264 acres of land within the Tamarack North Project area. Details of the fee surface and mineral interests are detailed in Table 4-4.

In certain instances, as part of the purchase price paid for the mineral rights, Kennecott agreed (in its capacity of Manager under the MVA) to pay a royalty to the previous mineral rights owner. The royalties range from a 2% NSR to a 3.9% NSR. There are also buy-back rights on certain of these royalties.

Table 4-4: Summary of Fee Mineral and Surface Interests

Township	Range	Section	Acreage
48 North	22 West	Sec. 3: NW/4 SW/4, SW/4 NW/4 except Parcel Nos. 8 and 9	80 (Surface and Mineral)
49 North	22 West	Sec. 22: SE/4SW/4	40 (Surface and Mineral)
48 North	22 West	Sec. 3: Government Lot 3	26.54 (Surface Only)
49 North	22 West	Sec 35: NW/4, NW/4 NE/4	200 (Surface and Mineral)
48 North	22 West	Sec. 3: SW/4 SW/4 except parcel no. 7	40 (Surface Only)
48 North	22 West	Sec. 3: NE/4 SW/4	40 (Surface Only)
49 North	22 West	Sec. 22: SE/4 SE/4 except Parcel No. 28	36 (Surface and Mineral)
49 North	22 West	Sec. 22: SW/4 SE/4 excepting certain lands	36 (Part Surface and Minerals, Part Surface Only)
48 North	22 West	Sec. 10: NW/4 SW/4 except Parcel No.6, Highway Plat No. 10; NE/4	198 (Surface Only)
48 North	22 West	Sec. 4: NW/4 SE/4	38.18 (Surface Only)
48 North	22 West	Sec. 4: NW/4 SE/4	40 (Surface Only)
48 North	22 West	Sec. 10: S/2 SW/4, SW/4 SE/4 Sec. 15: NE/4 NW/4 excepting certain lands	177.92 (Surface Only)
49 North	22 West	Sec. 26: W/2NW/4 Sec. 26: N/2 NE/4 SW/4, SE/4 NE/4 SW/4, NW/4 SE/4 Sec. 27: NE less 10 acres in the NW corner	300 (Surface and Minerals) (Surface) (Surface and Mineral)
49 North	22 West	Sec. 22: The East 400 feet of the West 750 feet of the SW/4 SE/4	11.57 (Surface Only)

4.2.4 Surface Rights

The State Leases also grant the joint venture parties the right to use surface lands owned by the State of Minnesota within the leased land.

From a legal standpoint, where surface rights are owned by third parties, the State Leases provide that written notice to the owner of the surface estate must be provided at least 20 days in advance of surface activities and contemplate compensation payable by lessees to surface owners for any disturbance of the surface estate. Many states also address the rights of surface owners in case law, and although the Minnesota Supreme Court has not specifically opined on the issue, the general rule is that mineral rights carry with them the right to use as much of the surface as reasonably necessary to reach and remove the minerals, unless otherwise restricted by the mineral severance deed. Guidance provided by the MDNR takes this approach.

Notwithstanding the above, to date, Kennecott's approach (initially as sole owner of the Tamarack North Project and now in its capacity as Manager under the MVA) for surface access over areas that it is interested in drilling has been to negotiate with the applicable surface land owner a surface use agreement. Also, in certain cases, Kennecott (initially as sole owner of the Tamarack North Project and now in its capacity as Manager under the MVA) has negotiated an option to purchase the surface lands.

In the case of Private Agreements where there has been no severance of the surface and mineral estates, surface use is provided as part of the mineral lease. Where the mineral and surface estates are severed and where surface rights are held privately, surface access has typically been negotiated with the surface owner.

The surface rights held under the MVA are detailed in Figure 4-3.

4.2.5 Tax Forfeiture and Leasing of Mineral Rights

The Minnesota Severed Mineral Interests Law (Forfeiture Law) requires owners of severed mineral interests (i.e., mineral rights that are owned separately from the surface interest) to register their interests with the office of the county recorder.

Severed mineral interests are taxed. If the mineral interest owner does not file the severed mineral interest statement within the deadline provided by the law, the mineral interest forfeits to the State after notice and an opportunity for a hearing.

The owner, to avoid forfeiture, must prove to the court that the taxes were timely paid and that the county records specified the true ownership, or, in the alternative, that procedures affecting the title of the interest had been timely initiated and pursued by the true owner during the time when the interest should have been registered. To the extent the owner fails to prove this, the forfeiture to the State is deemed to be absolute. Additionally, if the owner of record fails to show up to the hearing, the forfeiture to the State is also deemed to be absolute.

The State may lease mineral rights prior to the completion of the forfeiture procedures, provided that the leased rights are limited to exploration activities, exploratory boring, trenching, test pitting, test shafts and drifts, and related activities. A lessee under such a lease may not mine the leased mineral rights until the forfeiture procedures are completed.

The State obtained an interest in the mineral rights leased under several of the State Leases pursuant to the Forfeiture Law. The forfeiture procedures have only been completed for certain of the lands covered by these State Leases. The State is slow to complete the forfeiture procedures given the large number of these forfeitures the State contends with, the cost to do so, and the fact it is not required until a lessee is looking to mine a property.

Until the forfeiture procedures have been completed, there is a remote risk that the owner of a mineral interest that the State has leased for the Tamarack North Project will demonstrate at a required hearing that the owner was in compliance with the registration and taxation requirements as detailed above. In such a case, the mineral rights would revert to this original owner. However, the State Leases that compose the area where the mineral resources are contained are not at risk of reversion to an original owner under Forfeiture Law.

4.3 Permitting

The Tamarack North Project is currently in the exploration phase. It is understood that Kennecott (previously as Operator under the Earn-in Agreement, and currently in its capacity as Manager under the MVA) has been diligent and currently has all the required permits and approvals for current exploration operations. Federal, state, and local entities all have regulatory authority over various elements of the project. Key agencies involved with project permitting will include the US Army Corps of Engineers, US Fish and Wildlife Service, MDNR, State Historic Preservation Office, MDH, MPCA, Aitken County, Carlton County, and City of Tamarack. Information on permits and approvals required for pursuing exploration operations at the Tamarack North Project is provided in Table 4-5 below.

Table 4-5: Summary of Current and Potential Exploration Permits / Approvals

Federal	
Agency	**Permit/Approval**
US Army Corps of Engineers	Clean Water Act – Section 404 Permit
US Army Corps of Engineers	National Historic Preservation Act – Section 106
US Fish & Wildlife Service	Endangered Species Act Compliance – Section 7
State	
Agency	**Permit/Approval**
MDNR	Exploration Plan
MDH	Explorer's License and Designated Responsible Individual; Exploratory Boring Notification
MDH	Temporary and Permanent Sealing Reports
MPCA	NPDES/SDS Construction Storm Water Permit (General Permit)
MPCA	NPDES/SDS Industrial & Storm Water Discharge Permit (General Permit)
MPCA	Storm Water Pollution Prevention Plan
MDNR	Burning Permit
MDNR	Permit to Work in Public Waters, including Public Waters Wetlands
MDNR	Water Appropriation Permit
MDNR	Wetland Conservation Act approvals for activities impacting certain wetlands
MDNR	Threatened and Endangered Species Review
Local	
Agency	**Permit/Approval**
City of Tamarack	Zoning and Building Permits
County	Conditional Use Permit
County	Zoning Permits

If additional exploration becomes necessary to support project development, either amendments to current exploration permits or acquisition of new permits for exploration would be required.

4.4 Environmental

4.4.1 Baseline Work

Kennecott (initially as owner, and now in its capacity of Manager under the MVA) has initiated baseline studies to support future environmental review and permitting of a potential mine at the Tamarack North Project. Work to date has included surface water and groundwater monitoring; wetland delineation and evaluation surveys; and rare, threatened and endangered species and vegetative community surveys.

Initiated in 2007/2008, Kennecott monitored 23 surface water locations and 12 ground water wells. As of 2014, Kennecott operates the regular, quarterly, monitoring of 19 surface water monitoring locations (18 streams/ditches and 1 lake) and 12 groundwater monitoring wells. Kennecott has also completed a limited amount (14 samples from 6 rock units) of static short-term acid-base accounting and leaching tests on various rock types. Independent oversight and sign-off of the sampling and analysis is completed by Foth Infrastructure and Environment LLC, of De Pere, Wisconsin.

4.4.2 Environmental Liabilities

Talon has advised Golder that it is not aware of the property having any environmental liabilities. A review of the MPCA's "What's in my Neighbourhood" database was completed for the property by Talon, and no contaminated site records were identified.

4.5 Significant Risk Factors

Talon has advised Golder that it is not aware of any significant factors or risks which may affect access, title, or the right or ability to perform work on the Tamarack North Project.

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

5.1 Introduction

The Tamarack North Project is located in north-central Minnesota, approximately 100 km W of Duluth and 200 km N of Minneapolis, in Aitkin County (Figure 4-1). The area is characterized by farms, forested areas and abundant surface waters. The town of Tamarack (estimated population - 88, 2016 US Census Bureau), which gives the project its name, lies within the boundaries of the Tamarack North Project (though away from the known mineralization) at an elevation of 386 m above sea level. Kennecott's field office is located in Tamarack. Other small towns in the area are Wright (10 km E from Tamarack) and McGregor (15 km W from Tamarack).

5.2 Accessibility

Access to the Tamarack North Project is via paved state and county highways and roads. From the city of Duluth, the Tamarack North Project can be accessed by Interstate 35 S for 32 km and then onto State Highway 210 W for 61 km to the town of Tamarack. The Tamarack North Project is easily accessible from Tamarack by paved road, with the current known mineralization located approximately 500 m laterally from a paved all-weather road.

5.3 Physiography

The Tamarack North Project transitions between the Minnesota / Wisconsin Upland Till Plain and the Glacial Lakes Upham and Aitkin ecoregion as defined by the EPA (Level III and IV Ecoregions of Minnesota, June 2015). The topography is level to gently rolling as is typical of old glacial lake plains. The soils are dominated by clay-silt to silty-sand Culver associated moraine deposits or by silty sand to sandy silt with clay interpreted as reworked pre-existing lake and stream sediments. Peat bogs are also found overlying the glacial till in the area (Jennings and Kostka, 2014). Relief is minimal, and where found is generally a result of small till moraines. As a result of the flat to gentle relief, poor drainage has allowed the area to be dominated by lowland conifers surrounding sedge meadows and marshland. Areas of higher relief will support aspen-birch and upland conifers.

5.4 Climate

The climate of Minnesota is typical of a continental climate, with hot summers and cold winters. Minnesota's location in the Upper Midwest allows it to experience some of the widest variety of weather in the US, with each of the four seasons having its own distinct characteristics. The annual average temperature at the Tamarack North Project is 5°C. The temperature averages a high of -7°C and a low of -18°C in January and a high of 26°C and a low of 13°C in July. Annual rainfall averages approximately 764 mm. Annual snowfall averages 142 cm. (Tamarack Weather Averages, November 2017). Exploration operations at the Tamarack North Project can be conducted throughout the whole year (subject to any permitting restrictions) and future mining activities could be conducted on a year-round basis.

5.5 Local Resources

The mining support industries and industrial infrastructure in Minnesota are well developed and of a high standard, though most of the mining in the State occurs in the Duluth Iron Ore Complex approximately 150 km to the NE. There is a large pool of skilled and unskilled labour in the area that could be used for exploration and development activities at the Tamarack North Project.

5.6 Infrastructure

The local infrastructure for mining is excellent. An active railroad (BNSF Railway) runs E-W across the Tamarack North Project and connects into the extensive US and Canadian rail network, including direct access into the Port of Duluth, approximately 100 km to the E. This Lake Superior port provides worldwide shipping access via the Great Lakes and St. Lawrence Seaway. In addition, Kennecott (previously as Operator under the Earn-in Agreement, and currently in its capacity as Manager under the MVA) has secured surface rights on land that is adjacent to the railway line which would allow it to build a railroad siding directly from the Tamarack North Project.

The Great River Energy Transmission Line crosses through the Tamarack North Project. The line connects through substations close to the towns of Wright and Cromwell.

5.7 Sufficiency of Surface Rights

The Tamarack North Project has an extensive package of surface rights secured by Kennecott (previously as Operator under the Earn-in Agreement, and currently as Manager under the MVA) (Figure 4-3). The parties (pursuant to the MVA) have sufficient rights to allow for mining operations and supporting infrastructure in the area of mining interest.

6. HISTORY

The Tamarack area has until recently been subject to only very limited exploration efforts and there has been no prior mineral production from the Tamarack North Project. The relatively thick post mineral, glacial fluvial sediment cover and nearly complete lack of bedrock exposure severely hampered any early exploration (the nearest known bedrock exposure to the Tamarack North Project is located approximately 15 km to the SE of the deposit).

Starting in 1972, the Minnesota Geological Survey (MGS) oversaw a 12-year program to collect high-resolution airborne magnetic data over the entire State, including the Tamarack area. The program was paid for by a penny per pack tax on cigarettes sold in the State. This program ran concurrently to an MDNR-sponsored program of regional lake sediment sampling. As part of the follow up to the airborne surveys, the State carried out a program of scientific drilling to try to identify the bedrock source of selected magnetic anomalies. Information from MDNR staff involved with the program indicates that the magnetic anomalies were prioritized by the presence of anomalous lake sediment geochemistry. This is reported as being the case for the TIC, with two local lakes being anomalous in Ni, Cu and Cr.

In the summer of 2000, Kennecott leased mineral title in Aitkin County from the State of Minnesota covering areas of the Tamarack North Project. There were no apparent non-ferrous leases in this area previous to Kennecott's initial leasing (Historic State Nonferrous Metallic Mineral Leases, October 2017). Additional mineral title has been added to Kennecott's land position in the area since then as detailed in Section 4 of this Technical Report.

Kennecott began exploration on the Tamarack North Project in 2001 when Kennecott flew an airborne MEGATEM and magnetic survey covering most of the TIC. Ground EM and gravity surveys were also carried out to refine anomalies identified in the airborne survey.

In the winter of 2002, Kennecott began drilling at the Tamarack North Project (see Section 9 for further details of exploration work conducted by Kennecott). Drilling has occurred continuously on site since 2002 except for the years 2005 and 2006 (see Section 10 for further details of the drilling programs conducted by Kennecott).

On October 6, 2014 Talon published a maiden NI 43-101 compliant report and resource statement (effective date August 29, 2014) for the Tamarack North Project (see Table 6-1 for the 2014 resource statement).

Table 6-1: 2014 Tamarack North Project Maiden Resource Statement (Effective Date August 29, 2014)

Domain	Mineral Resource Classification	Tonnes (000)	Ni (%)	Cu (%)	Co (%)	Pt (g/t)	Pd (g/t)	Au (g/t)	NiEq (%)
SMSU	Indicated Mineral Resource	3,751	1.81	1.00	0.05	0.41	0.25	0.19	2.35
SMSU	Inferred Mineral Resource	949	1.12	0.62	0.03	0.25	0.16	0.14	1.47
MSU	Inferred Mineral Resource	158	5.25	2.47	0.11	0.66	0.44	0.22	6.42
138 Zone	Inferred Mineral Resource	2,012	0.95	0.78	0.03	0.23	0.14	0.17	1.33
TOTAL	**Indicated Mineral Resource**	**3,751**	**1.81**	**1.00**	**0.05**	**0.41**	**0.25**	**0.19**	**2.35**
TOTAL	**Inferred Mineral Resource**	**3,119**	**1.22**	**0.82**	**0.03**	**0.26**	**0.16**	**0.16**	**1.63**

Notes:
All resources reported above a 0.9% NiEq cut-off.
Mining recovery and dilution factors have not been applied to the estimates.
Tonnage estimates are rounded down to the nearest 1,000 tonnes.
Estimates do not include metallurgical recovery.
**Where used in this mineral resource estimate, NiEq% = Ni%+ Cu% x 2.91/9.20 + Co% x 14/9.20 + Pt [g/t]/31.103 x 1,400/9.2/22.04 + Pd [g/t]/31.103 x 600/9.2/22.04 + Au [g/t]/31.103 x 1,300/9.2/22.04*

An updated resource statement was published via a press release (effective date April 3, 2015) resulting from an increase in the MSU mineralization (see Table 6-2). No report was published, as the increase was deemed to be not material to the overall project tonnage.

Table 6-2: Tamarack North Project Updated Mineral Resource Estimate (Effective Date April 3, 2015)

Domain	Mineral Resource Classification	Tonnes (000)	Ni (%)	Cu (%)	Co (%)	Pt (g/t)	Pd (g/t)	Au (g/t)	NiEq (%)
SMSU	Indicated Mineral Resource	3,751	1.81	1.00	0.05	0.41	0.25	0.19	2.35
SMSU	Inferred Mineral Resource	949	1.12	0.62	0.03	0.25	0.16	0.14	1.47
MSU	Inferred Mineral Resource	422	6.00	2.48	.013	0.78	0.53	0.26	7.26
138 Zone	Inferred Mineral Resource	2,012	0.95	0.78	0.03	0.23	0.14	0.17	1.33
Total	**Indicated Mineral Resource**	**3,751**	**1.81**	**1.00**	**0.05**	**0.41**	**0.25**	**0.19**	**2.35**
Total	**Inferred Mineral Resource**	**3,383**	**1.63**	**0.94**	**0.04**	**0.31**	**0.19**	**0.17**	**2.11**

Notes:
All resources reported above a 0.9% NiEq cut-off.
Mining recovery and dilution factors have not been applied to the estimates.
Tonnage estimates are rounded down to the nearest 1,000 tonnes.
Estimates do not include metallurgical recovery.
**Where used in this mineral resource estimate, NiEq% = Ni%+ Cu% x 2.91/9.20 + Co% x 14/9.20 + Pt [g/t]/31.103 x 1,400/9.2/22.04 + Pd [g/t]/31.103 x 600/9.2/22.04 + Au [g/t]/31.103 x 1,300/9.2/22.04*

A detailed chronology of business agreements, decisions, and developments between Kennecott and Talon with respect to the Tamarack Project is contained in Section 4.

7. GEOLOGICAL SETTING AND MINERALIZATION

7.1 Regional Geological Setting; Introduction

The TIC is an ultramafic to mafic intrusive, hosting Ni-Cu sulphide mineralization with associated Co, PGEs and Au. The intrusion of the TIC (minimum age of 1105 Ma+/-1.2 Ma, Goldner 2011) is related to the early evolution of the approximately 1.1 Ga Mesoproterozoic MCR and has intruded into slates and greywackes of the Thomson Formation of the Animikie Group which formed as a foreland basin during the Paleoproterozoic Penokean Orogen (approximately 1.85 Ga, Goldner 2011). The TIC is completely buried beneath approximately 30 to 60 m of Quaternary age glacial and fluvial sediments.

The lack of outcrop has limited the understanding of the TIC in its regional geological context relative to its location in the deformed southern margin of the Animikie Basin. The TIC is intruding part of the Penokean accreted terrain, based on the age of the CGO intrusion (Goldner, 2011). The closest known portion of the accreted Penokean magmatic Arc terrane is located well to the S and E of the TIC. The TIC intrudes deformed sediments deposited in part in foreland basin in front of the accreted terrane, which likely was in turn dissected by subsequent rifting associated with the MCR and thus has contributed to a complex geological and structural setting. The regional geological setting is described below within the context of the major depositional periods and tectonic events (Figure 7-1 and Figure 7-2).

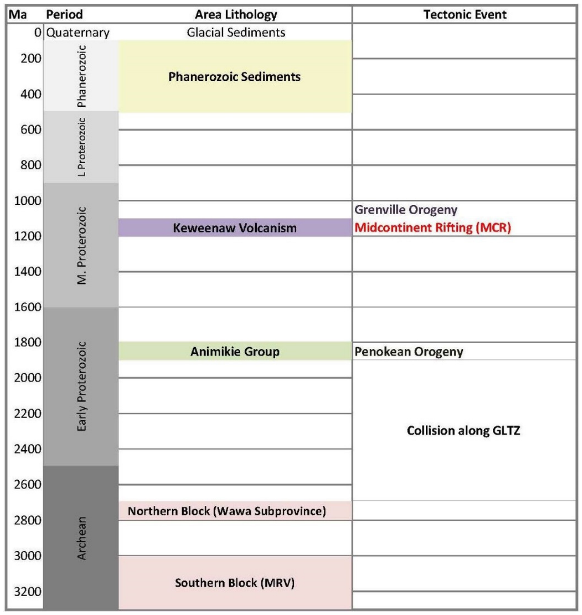


Figure 7-1: Major Depositional Periods and Structural Events Affecting Geological Emplacement and History of the TIC - Modified After Lundin Mining Corporation (2013)

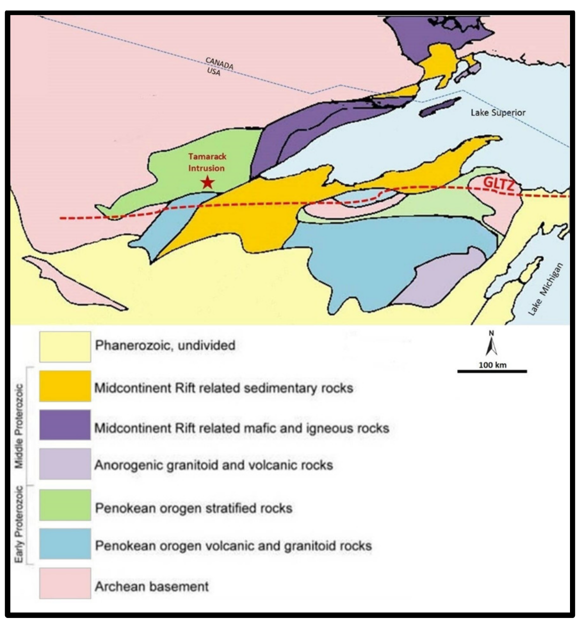


Figure 7-2: Regional Geological and Tectonic Setting for the TIC. The GLTZ Structure Represents an Inferred Position Due to Younger, Overlying Lithology - Modified from Khirkham (1995) and Lundin Mining Corporation (2013)

7.1.1 Archean Stratigraphy and the Great Lakes Tectonic Zone (GLTZ)

Archean basement and supra-crustal rocks underlie the Paleoproterozoic Animikie sedimentary Basin. The nearest outcrop of Archean basement rocks is located 35 km to the S of the TIC in the McGrath gneiss dome. In western Minnesota, the Archean is divided into an older, southern block referred to as the MRV Terrane and the northern Wawa Sub-province of the Archean Superior Craton (Figure 7-1).

The southern Paleoarchean MRV Terrane comprises 3.3 Ga gneiss, migmatite and amphibolite of predominantly Middle Archean age, intruded by Late Archean granitoids.

The northern Wawa sub-province comprises late Archean (2.6-2.7 Ga) supra-crustal rocks intruded by a variety of intrusions. Wawa Sub-province rocks are believed to form the basement beneath the southern part of the Animikie Basin at Tamarack.

A broad E-W striking regional structural zone marks the boundary between the MRV Terrane and the Wawa Sub-province and is referred to as the GLTZ (Figure 7-2). The GLTZ can be inferred eastward from western Minnesota into northern Michigan and perhaps into Ontario, Canada. Kinematic analysis in the only known outcrop of the GLTZ S of Marquette, Michigan suggests the GLTZ at this location dips steeply southward, and that vergence was to the NW, indicative of an oblique collision that brought the Paleoarchean rocks over the younger Archean rocks of the Wawa Sub-province (Sims et al., 1993). The collision along the GLTZ is believed to have occurred between 2692-2686 Ma (Schneider et al., 2002).

The GLTZ appears to have played a direct role in localizing later Paleoproterozoic sedimentation and volcanism. Possible structures related to the GLTZ, may have localized other Paleoproterozoic sedimentary basins and later MCR related intrusions in the region (Owen et al., 2013). Although the exact location of GLTZ beneath the Animikie Basin is uncertain, it has been interpreted by Holm et al. (2007) to occur just S of the TIC. Based on this interpretation it may be possible that it played a role in the localization of the Tamarack intrusion.

7.1.2 Paleoproterozoic; the Animikie Basin and the Penokean Orogen

The depositional and tectonic history of the Penokean Orogen is dated at around 1.85 Ga and in Minnesota consists of two main components. One is a fold and thrust belt representing an accreted terrain to the S while the other is a foreland basin (Animikie Basin) formed to the N as a result of a collision between the continental margin of the Archean Superior Province Craton and the Pembine-Wausau oceanic arc (Southwick et al., 1988, 1991; Schulz and Cannon, 2007) (Figure 7-3).

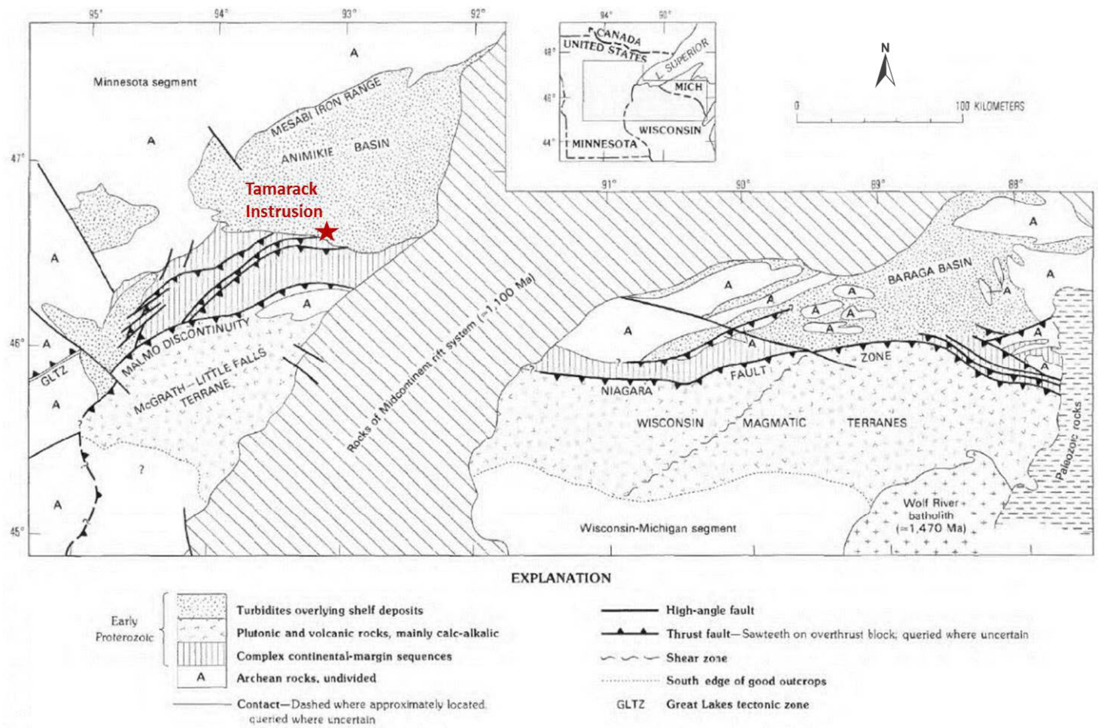


Figure 7-3: Location of TIC in Relation to MCR and Southern Boundary of the Animikie Basin with Tectonic Imbrication and Foredeep Development of the Penokean Orogen. Interpretation Based on Regional Geophysics and Results of Test-Drilling by Southwick et al., 1991

In east-central Minnesota, the Animikie Group sediments which are weakly to moderately folded and metamorphosed, unconformably overlie the more intensely deformed North Range Group and Mille Lacs Group and the Archean basement. The Animikie Group sediments include the basal quartzite and conglomerate of the Pokegama Formation; the Biwabik banded iron formation and inter-bedded argillite, siltstone and sandstone of the Virginia Formation which are exposed in the iron ore mines of the Mesaba Iron Range along the northern margin of the Animikie Basin. In the N of the basin these sediments are only weakly metamorphosed, but metamorphism and deformation increase towards the S where similar sediments have a well-developed axial planer foliation and are folded into N verging upright folds which become increasingly tighter and possibly overturned along the S margin of the basin. These more deformed and metamorphosed sediments are referred to as the Thomson Formation and have been interpreted to be the deformed equivalents of the Virginia Formation (Severson et al, 2003). Boerboom (2009) has subdivided the Thomson Formation into Upper and Lower sequences. The Lower sequence comprises carbonaceous siltstone and mudstone that is locally sulphide rich; and a proposed source for the sulphide in the TIC. The Upper Thomson consists of turbidite-like siltstone and sandstone.

At the Tamarack North Project, the host rocks to the TIC are the Upper Thomson Formation. The Lower Thomson Formation which sub-crops to the S of Tamarack North Project, dips towards the N (beneath the Upper Thomson Formation), and is interpreted to underlie the TIC at depth. A prominent seismic reflector under the TIC deposit at a depth of 4.6 to 4.8 km may represent the base of the Lower Thomson Formation in the TIC area (Goldner 2011).

7.1.3 Mesoproterozoic Mid-Continental Rift (MCR)

The Mesoproterozoic MCR is represented by a large igneous province that formed from intra-continental rifting at approximately 1.1 Ga (Hutchinson et al., 1990) resulting from a mantle plume. The MCR extends along a 2000 km arcuate path from the Lake Superior region to the SW as far as Kansas and to the SE beneath Lower Michigan (Hinze et al., 1997). Although only exposed in the Lake Superior area, the extent of the MCR beneath younger cover can be interpreted from its pronounced gravity and aeromagnetic signature.

In the Lake Superior region, the Keweenaw Flood Basalt province represents the exposed portion of the MCR system. Seismic data indicates the rift below Lake Superior is filled with more than 25 km of volcanic rocks buried beneath a total thickness of up to 8 km of rift sediments (Bornhorst et al., 1994).

The Keweenaw Flood Basalt province was formed over a period of approximately 23 Ma (Miller and Vervoort, 1996) and shows various magnetic polarity reversals. Volcanism occurred in distinct phases, with an earlier phase dominated by low alumina basalts (<15% Al_2O_3) that include both olivine and pyroxene phyric picrites. These may have been derived from primitive magmas tapping a deep mantle source. The later volcanic phases are dominated by high alumina basalts (>15% Al_2O_3) with Mid Ocean Ridge Basalt like chemistry. The evolution of the MCR closely resembles that of other large igneous provinces such as the North Atlantic Igneous Province and the Siberian Traps. In the North Atlantic Igneous Province, picritic volcanic rock, associated with an early phase of “plateau like” flood basalts, are spread out over an area of 2000 km (Larsen et al., 2000).

In addition to the extrusive rocks, a large volume of intrusive rocks was emplaced and include the Duluth Complex, the Mellen Complex, the Coldwell Complex, the Beaver Bay Complex and the Nipigon Sill Complex, in addition to numerous dyke swarms and sills that may have acted as feeders for lava flows along the flanks of the rift. The TIC is one of the numerous smaller satellite intrusions which also include Eagle; Echo Lake; Bovine Intrusive Complex intrusions in upper Michigan; the Coldwell Complex near Marathon, Ontario; the Seagull Lake; Kitto, and Disraeli Lake intrusions in the Lake Nipigon area; and the Crystal Lake Gabbro in the Thunder Bay area (Goldner 2011, Figure. 7-4). Many of these smaller intrusions, relative to the MCR volcanics, are older (3-15 Ma), occur distally, and have more primitive melt signatures. They are interpreted to represent the early evolution of the MCR.

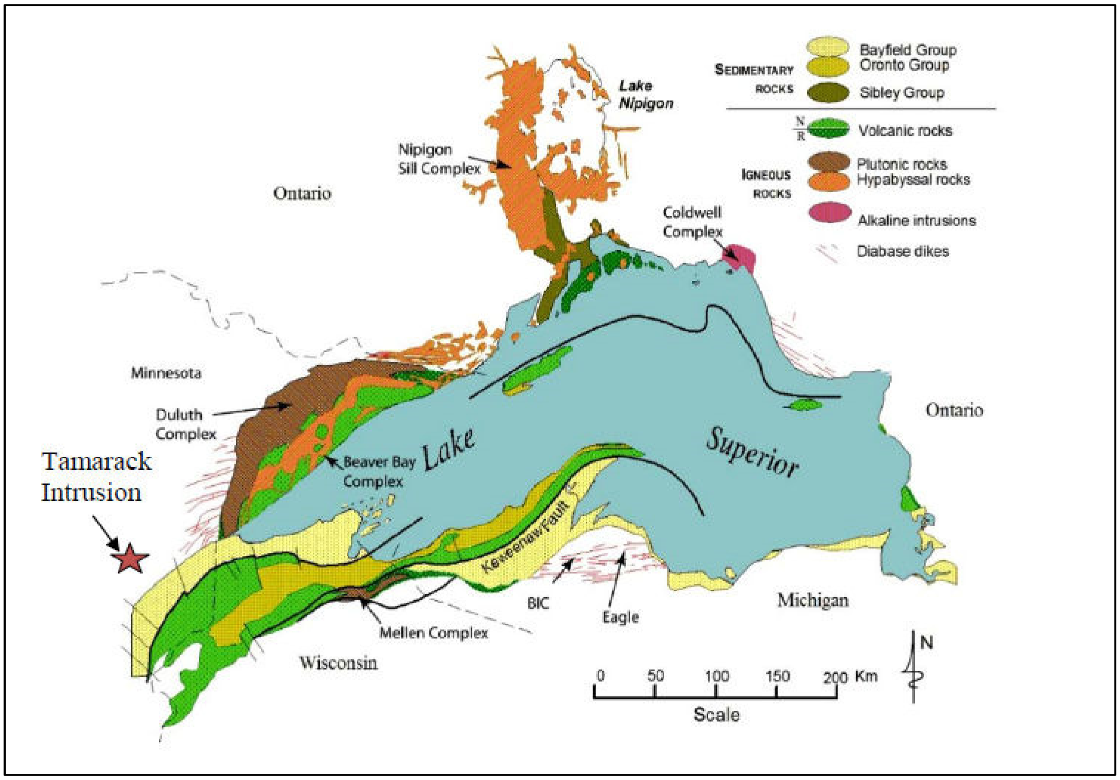


Figure 7-4: Map Showing Locality of TIC and Geology of Lake Superior Region with Location of Other Intrusive Components of the MCR (Goldner 2011, modified from Miller et al., 1995)

The MCR was terminated by a compressional tectonic phase resulting in the inversion of original, graben bounding, normal faults, into reverse faults. The compressional event has been interpreted to possibly be the result of the Grenville Orogeny which may have started as early as 1080 Ma and was probably completed by 1040 Ma (Bornhorst et al., 1994). The orogeny resulted in rotation of blocks towards the rift axis with local sediments derived from the erosion of uplifted horst blocks (eg: Hinckley Sandstone formation in Minnesota). There is currently no evidence to suggest that the TIC has been affected by this rotational event.

7.1.4 Cretaceous

Cretaceous sediments that include fluvial conglomerates and sandstones, overlain by transgressive tidal flats deposits (including lignite layers) and progressively deeper marine sediments representing a transgression, are preserved in western and central Minnesota. These sediments often overlie a well-developed paleo-lateritic weathering profile. At Tamarack, Cretaceous siltstone and sandstone unconformably overlie parts of the TIC in the N and a layer of up to 30 m thick of Kaolinitic mudstone occurs in the NE of the TIC and is similar to other deposits that have been mined in the MRV for manufacturing brick and tiles.

7.1.5 Quaternary

Thick glacial-lacustrine deposits cover most of the Tamarack area as they do other large areas of Minnesota. The deposits are a complex sequence of lobes representing multiple advances and retreats from the last Pleistocene glaciation which spanned a period from 10,000 to 100,000 years ago. Fluvial reworked glacial sediments and varved clay layers occur between various lobe layers. Varved clay layers underlie widespread peat bogs in the Tamarack area and are believed to have been deposited in Glacial Lake Upham which covered much of northeastern Aitkin County.

7.2 Property Geology

7.2.1 Introduction

The TIC consists of a multistage magmatic event composed of mafic to ultramafic body that is associated with the early evolution of the MCR (with the youngest intrusion dated at 1105 Ma +/- 1.2 Ma, Goldner, 2011). This age is significantly older than other Duluth Complex Intrusions which consistently date at 1099 Ma. The TIC is consistent with other earlier intrusions associated with the MCR that are often characterized by more primitive melts.

The TIC has intruded into Thomson Formation siltstones and sandstones of the Animikie Group and is preserved beneath remnant shallow Cretaceous fluvial and tidal sediments and Quaternary glacial sediments which unconformably overlie the intrusive. The geometry of the TIC, as outlined by the well-defined aeromagnetic anomaly (Figure 7-5), consists of a curved, elongated intrusion striking N-S to S–E over 18 km. The configuration has been likened to a tadpole shape with its elongated, northern tail up to 1 km wide and large, 4 km wide, ovoid shaped body in the S (Figure 7-5). The northern portion of the TIC (the Tamarack North Project), which hosts the currently defined resource and identified exploration targets, is over 7 km long and is the focus of this Technical Report.

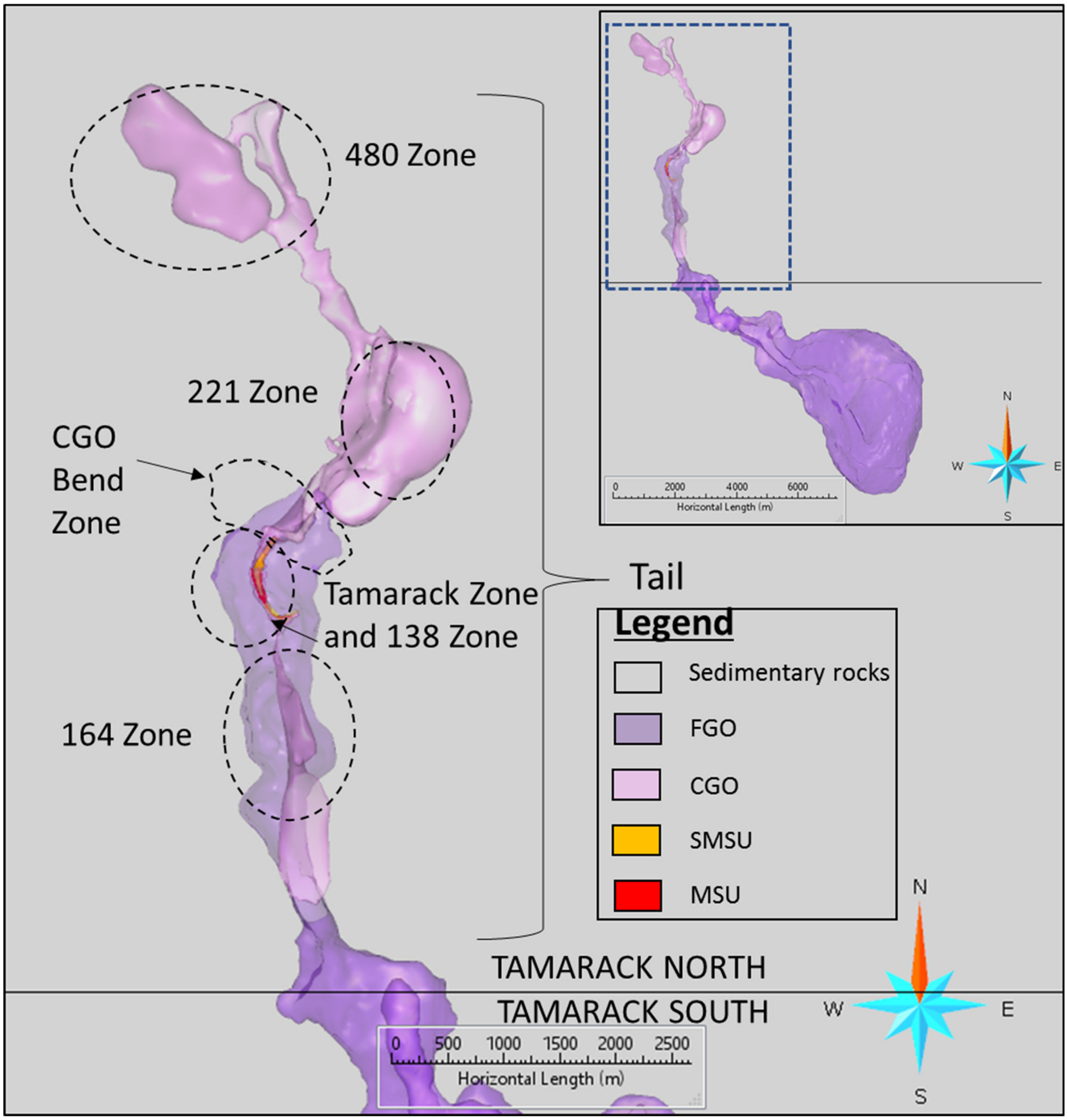


Figure 7-5: Interpreted Bedrock Geology Map Showing 18 km Long Strike of TIC with Long Narrow Intrusion that Hosts Currently Defined Mineralization Termed "Tail" forming Tamarack North Project (Kennecott Aeromagnetic Survey, Modified by Talon, 2017)

7.2.2 Paleoproterozoic (Thomson Formation)

The TIC is intruded into a folded and metamorphosed (greenschist facies) sequence of siltstone and sandstone turbiditic sediments of the Upper Thomson Formation that dip shallowly towards the N. Contact metamorphism peripheral to the TIC ranges from granoblastic to spotted hornfels. Observations from core at Tamarack North indicate that sedimentary and structural fabrics have largely been obliterated by the metamorphism.

7.2.3 Overview of the Tamarack North Project

The Tamarack Project has been interpreted to consist of at least two and possibly three separate phases of intrusions based on contact relationships, textural, and geochemical differences. The two main intrusive phases include an FGO that forms the wider, upper part of the intrusion in the mid and southern part of the tail; and a coarse grained, intrusive phase of CGO interpreted to have intruded dyke-like along structures and underplated the base of the FGO in the form of a keel that sub-crops as a result of pre-Cretaceous erosion in the N of the 'tail' area. N of the Tamarack Zone, the CGO intrusive extend in curvilinear shape with a N-S orientation. The intrusive nature of the CGO is variant from dyke to sills. The recent 3D inversion geological model using Magnetic and Gravity surveys best exemplifies the CGO intrusion nature (see Figure 7-5). In some areas (i.e. 221 Zone), the CGO appears to over-plate an FGO-like intrusive.

Associated with the contact between these two intrusions is also a hybrid phase, the MZ. The MZ geochemical signature resembles the FGO, however its mineralogy is slightly different with possible country rock contamination associated with possible sediment assimilation by FGO magma. It is interpreted that the MZ represents a contaminated FGO by thermal erosion of the country rock sediments, thus in the geological model both lithologies have been combined into single one, the FGO. (Figure 7-6).

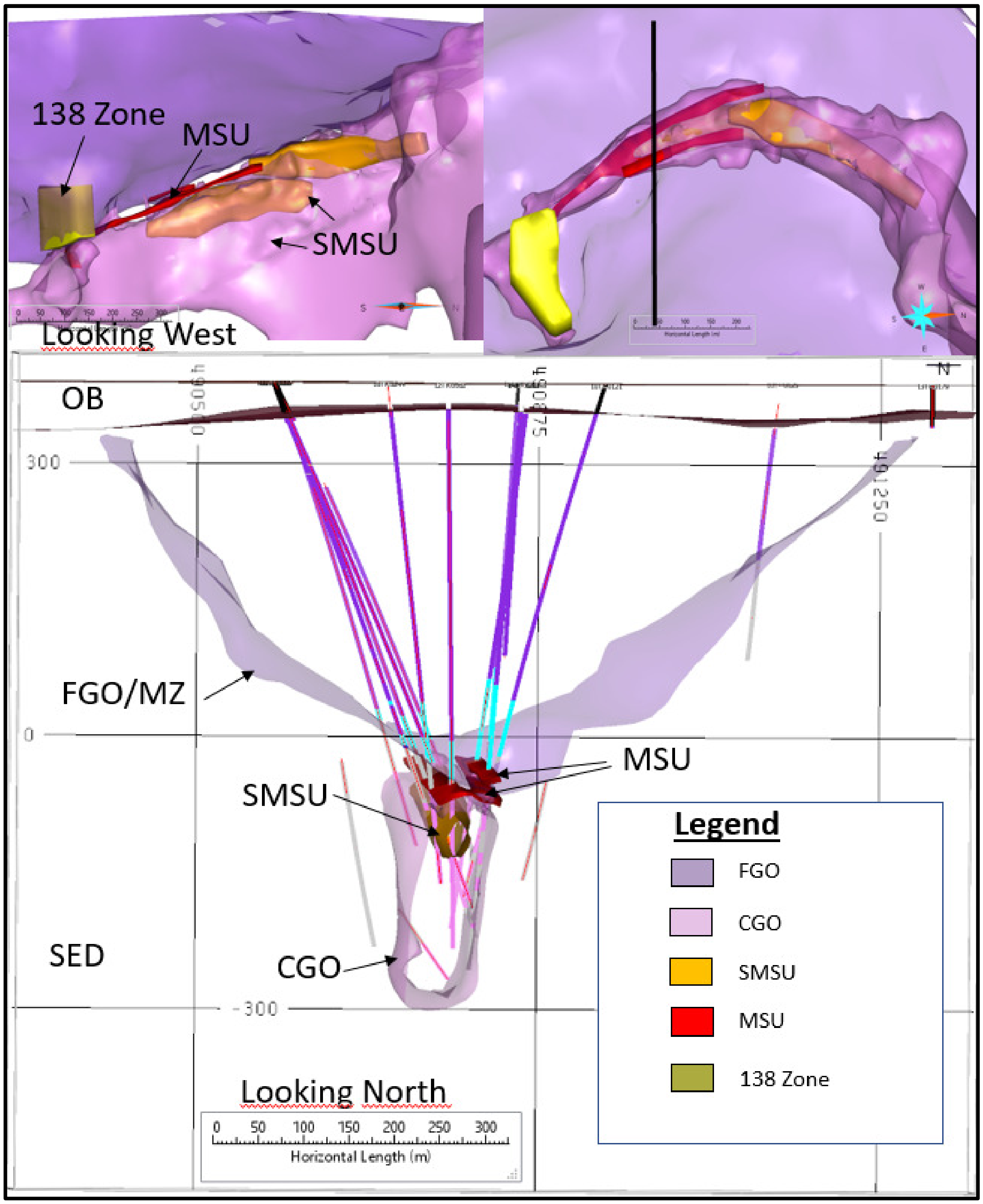


Figure 7-6: Plan, Long Section (S-N) and Cross Section Showing Main Components of Tamarack North Project including CGO at Base Intruding Dyke-Like Beneath FGO in Shape of a Keel. MZ intrusive occurs near interface of the two intrusions. Mineralization in SMSU occurs at top of the CGO, MSU occurs in what is interpreted as a wedge of remnant wall rock. In 138 Zone to the S of this section matrix and disseminated mineralization occurs in the MZ. Horizontal gridlines are mASL.

Sulphide mineralization occurs within various lithological settings but is primarily associated near the FGO/CGO contact, within the 138 Zone and along the CGO/Sediment contact (Figure 7-6). More specifically, these zones are the SMSU (occurring in the upper part of the CGO near the FGO contact); the MSU (hosted within sediment but proximal to the wall rock contact of the FGO and CGO); and the 138 Zone (occurs S of the SMSU and within a large zone of MZ).

Other less developed exploration targets with defined mineralization include the shallow mineralization within the 480 Zone towards the northern part of the 'tail', the 164 style mineralization in the 164 Zone towards the southern end of the 'tail', widespread disseminated to MMS mineralization developed at shallow depths in the FGO, N of the SMSU mineralization, and a disseminated sulphide mineralization hosted in the CGO extending N of the SMSU, both known as the CGO Bend Zone.

The TIC consists of a tilted intrusion with dip to the S and E based on the magmatic layering observed in the FGO. The FGO is eroded progressively towards the N exposing the CGO N of the Tamarack North Project (Figure 7-5). Evidence for this apparent dip being the result of tectonic block rotation however has not been conclusively proven.

7.2.4 Intrusion Types

The different intrusions of the Tamarack North Project include:

- **FGO**: The FGO forms an elongated, S plunging, gutter shaped intrusion primarily in the centre and S portions of the Tamarack North Project that is progressively eroded to the N (although it appears to be preserved in the 480 Zone). The FGO intrusion is approximately 1 km wide at its erosional surface and up to 475 m thick. The intrusion is composed primarily of dunite/peridotite with FGO. The olivine (forsterite (Fo) at 70-86%, Goldner, 2011) decreases in modal amount downward towards the basal contact. The FGO intrusion is magmatically layered and defined by specific geochemical markers. The Magmatic layering dips to the S at 8˚ to 12˚. The magmatic layering is observed in Geochemical profile which consists of, from base to top, a Basal FGO, Mid-Lower FGO, FGO cumulate, Intermediate FGO and upper FGO. In the northern part of the FGO intrusion, the contact zone with sediments (country rock) is marked by a FGO and MZ lithology (MZNO). The Ni content of olivine is relatively low as plotted on a Ni vs Fo plot (Figure 7-7). Mineralization can occur as disseminated, MMS or blebby sulphides near or at the base of the FGO. When comparing Ni content of olivine versus the Mg number, we can determine that the FGO was sulphur saturated and likely provided the metals to form the mineralization within the FGO-MZNO/CGO.

- **CGO**: The CGO intrusion (age dated at 1105 Ma +/- 1.2 Ma) is currently interpreted as a separate, younger intrusive. In the Tamarack Zone, the CGO underplates and eroded the base of the FGO complex (described as the Keel). In the Tamarack Zone, the CGO has a dyke like behavior. The SMSU defined mineralization in the Tamarack North Project is contained within and near the top of the CGO. The CGO underplates the FGO and observation of chilling against the FGO, coupled with xenolith of FGO-like within CGO, Magnetic field reversal corresponding to CGO magnetic polarity overprinting in part the Magnetic signature of the FGO, indicates that the CGO post-dates the FGO. N of the Tamarack Zone, the CGO intrusive sills out into the country rock. Within the 221 Zone and 480 Zone the CGO appears to over-plate the FGO intrusive. The CGO is, lithologically, a feldspathic peridotite (60-30 modal percent olivine) with olivine gabbro present at the contact with enclosing sediments. The olivine's are substantially coarser in grain than those of the FGO, reaching as much as 1 cm in diameter. They also define a higher Ni trend on a plot of Ni content versus Fo in olivine (Figure 7-7). Although the CGO is chilled against the FGO in the N, further S the contact between the CGO and FGO bodies is commonly marked by what has been logged as a MZ. In this unit, the two distinctive intrusive types (FGO-CGO) do not show any obvious chill zone, and FGO and CGO occur together with smaller olivines occurring in the interstices between coarser olivine. When comparing Ni content of olivine versus the Mg number, we can determine that the CGO was sulphur under-saturated, never reach saturation within the study area, and did not provide significant metals to sulphides.
- **MZ**: MZ lithology is the least understood of the TIC. Models suggested included:
    - the MZ represents the contaminated lower portion of the FGO by country rock (meta-sedimentary rocks) due to thermal erosion;

- separate intermediate phase intrusion between the FGO and CGO; and
- a zone of mixing between the CGO and FGO.

MZ is characterized by a bimodal population of CGO and FGO with Ni vs Fo plotting intermediate between CGO and FGO (Figure 7-7). MZ's often host varying amounts of disseminated sulphide mineralization that, within the 138 Zone, is significantly concentrated to form a mineral resource.

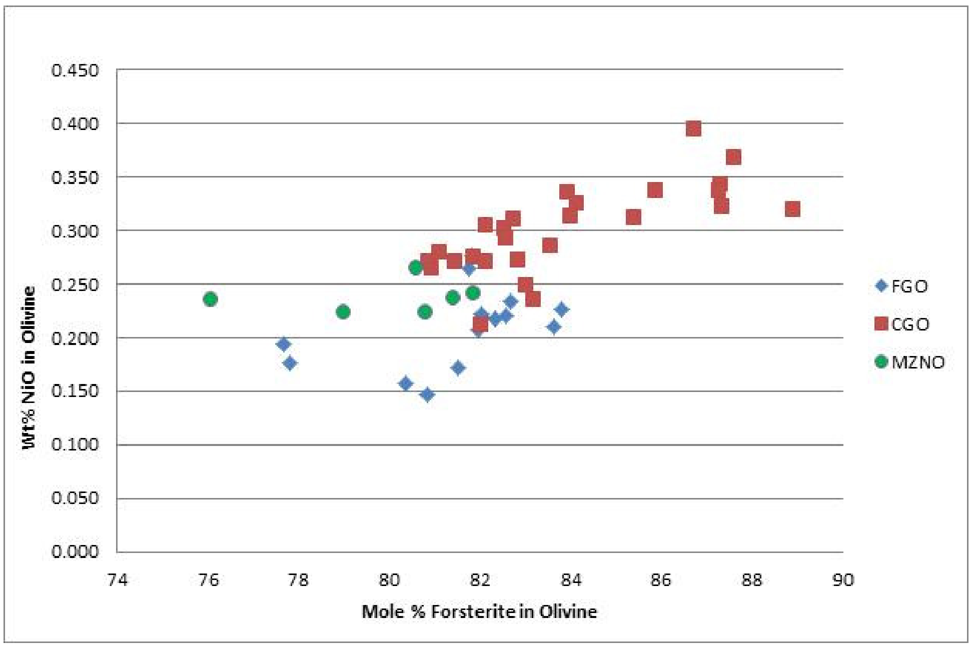


Figure 7-7: Plot of Ni in Olivine vs Fo Content of Olivine. FGO defines a Continuous Trend with Lower Ni Content than in CGO. FGO Olivine Defines a Narrow % Fo Range (82-84% Fo) Compared to CGO (81-89% Fo). Olivine from MZ falls between the two trends. (Data from Goldner, 2011).

7.2.5 Mineralization

The Ni-Cu (PGE) mineralization at the Tamarack North Project, occurs as various types ranging from disseminated to net textured to massive sulphides. Sulphide mineralogy is dominantly Po, Pn, Cpy, with minor cubanite. Pn occurs as coarse grains and as intergrowths with Po.

Although some of the mineralization names at the Tamarack North Project are used to describe mineralization lithologically in terms of sulphide concentration, they have been used by Kennecott to describe specific ore bodies. These ore bodies have different mineralization styles, with different metal tenors, genetic implications and different resource potential.

1) The 164 Zone

The mineralization type within the 164 Zone (Fig. 7-8), which is located around 1.5 km S of the 138 Zone typically occurs as variable massive sulphide veins and pods < 2 m thick with blebby disseminated mineralization occurring at the base of FGO intrusion on the wall-rock contact (500 m depth), and often within hornfelsed and partially melted sediments near the chilled contact with the FGO. Mineralization is generally low tenor and has been interpreted as early cumulate mineralization associated with the base of the FGO. In the 164 Zone, the base of the FGO is more complex. Thick intervals of variable textured gabbro, magmatic breccia, and thin sills or dykes occur within the partially melted meta-sediment where coarse blebby disseminated mineralization occurs in variable textured gabbro with granophyric patches.

Recent geophysical modeling, using magnetic and gravity surveys has enabled interpretation of the footwall contact between FGO and country rock sediments. The work was completed by Mira Geoscience and identified the possible location of the Keel of the FGO where it is the loci of sulphide mineralization in the Tamarack Zone. Along the Keel, potential basin, local depression in the FGO base has been identified. Historical and current drilling has only covered the flank of the FGO sediments identifying blebby sulphide (mentioned above). The area remains open with regard to the basin which has a local dimension of 100 m x 200 m x 100 m for the southern basin and 170 m x 270 m x100 m for the northern basin (Figure 7-8).

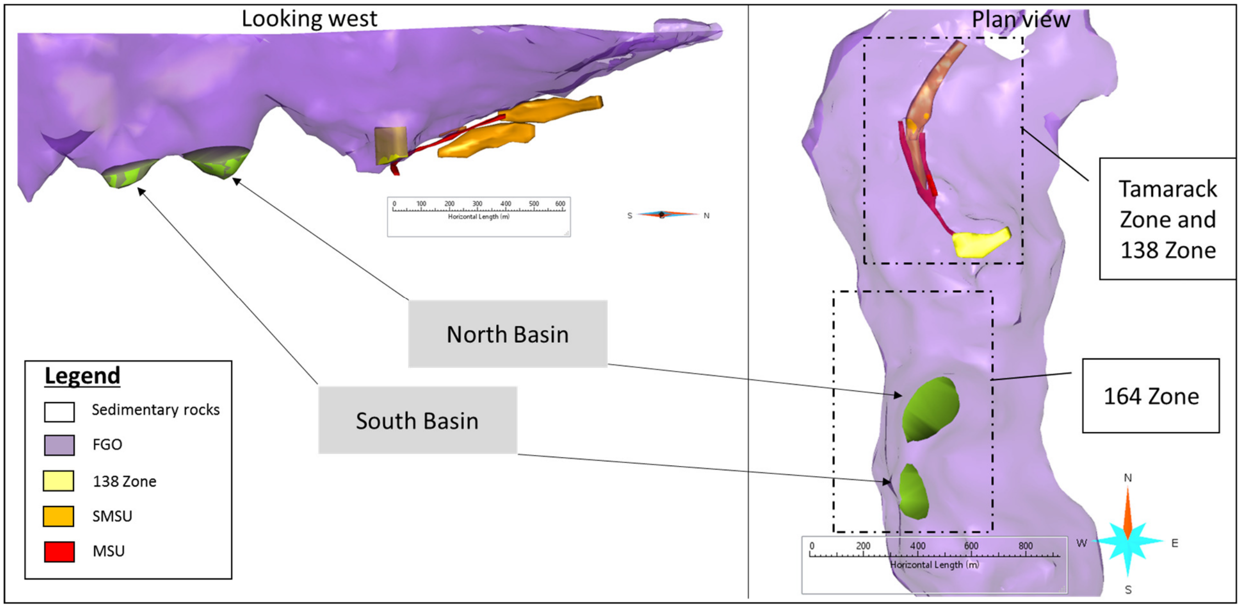


Figure 7-8: 164 Zone, Showing Emplacement of Interpreted Local Basin at Base of FGO. Results from 3D Interpolation of Integrated Magnetic and Gravity Modeling

2) The 138 Zone

A wide range of disseminated to net-textured and patchy net-textured sulphides typically occur in the 138 Zone. This type of mineralization is referred to as MZ mineralization. In the 138 Zone, MZ type sulphides appear to form a wedge-like zone of 200 m length, 120 m to 160 m height and a width of approximately 50 to 90 m, starting at ~350 m depth. The mineralization is hosted in FGO and contaminated FGO, i.e. in MZNO and FGO lithologies.

3) The SMSU Zone

The SMSU Zone forms the bulk of the defined mineral resource and occurs in the upper part of the CGO intrusion as an elongated boudin-aged tubular-shaped zone at the top of the CGO (Fig. 7-6). Two SMSUs (Upper and Lower) have been modelled. The Upper SMSU body dimensions are 400 m long, 40 m to 80 m wide and 40 to 70 m vertically at a depth of 300 m to 325 m. The Lower SMSU body dimensions are 350 m long, 40 m to 65 m wide and 40 to 70 m vertically at a depth of 445 m to 485 m. Within the SMSU Zone is a core of interstitial net textured sulphides (50% sulphides) (Figure 7-9). Surrounding the net textured sulphides are disseminated sulphides forming a peripheral halo decreasing towards the CGO margins. This halo has been shown to have elevated Cu and PGE tenors that could be used in targeting SMSU extensions. The SMSU appears spatially associated with the presence of the MSU, emplaced approximately 50 m below the MSU. SMSU has only been observed in the CGO when MSU is present at the base of the FGO-Country rock above.

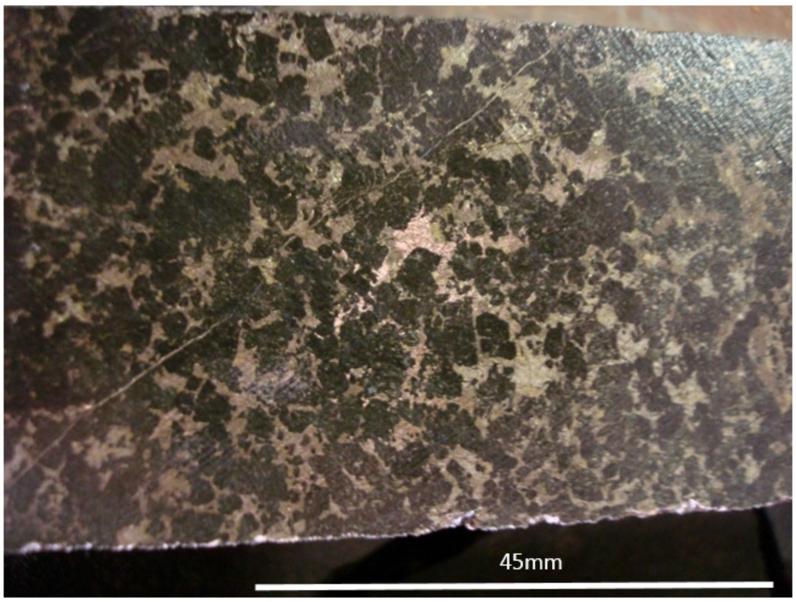


Figure 7-9: SMSU (net textured) Sulphide from Tamarack Drill Core

4) The MSU Zone

MSU-type mineralization is defined as containing 80-90% sulphide (Figure 7-10). The MSU also refers to a mineralized body hosted by intensely metamorphosed and partially melted meta-sediments occurring as fragments or wedges of country rock at the base of the FGO with typical dimensions of 10 to 30 m wide by 0.5 m to 18 m thick. The MSU has a strike length of 550 m at a depth of 275 m (N) to 550 m (S). Close to moderately spaced drilling (35 m to 100 m) to test these massive sulphides suggests that they form southward plunging, pipe-like zones. The zone has been drill intersected intermittently over 550 m from the SMSU to the 138 Zone. Texturally these massive sulphides occur in intensely metamorphosed sediments.

Figure 7-10: MSU from Tamarack Drill Hole 12TK0158

5) The CGO Bend

The CGO Bend Zone consists of basal FGO MSU-MMS mineralization, and signifies where CGO forms a dog leg bend immediately N of the Tamarack Zone. The CGO Bend sulphide mineralization is a footwall accumulation of primary sulphides in the FGO Keel and basin that vary in thickness from 0.2 m to 2.3 m, strike length of ~500 m, at an average depth of 150 m depth and a weak plunge to the S at 10˚. The sulphides are blebby to massive in texture. Historic drill hole 13TK0187, which graded 3.82% Ni and 1.62% Cu, 0.63 g/t PGE and 0.36 g/t Au over 2.33 m from a depth of 138.94 m was drilled in the northern section of the eastern CGO Bend (Figure 7-11).

The potential for the mineralization is also supported by prominent DHEM conductors (Figure 7-11) and a recent low-frequency TDEM survey over the eastern trend (Figure 7-11). A recent exploration program has demonstrated that the CGO Bend basal FGO MSU/MMS extends 115 m further N with hole 238 with 2.2 m (from depth 117.72 m) at 1.75%Ni, 0.89% Cu (Press release, December 13, 2016). The new results show an exploration potential along the FGO base of 600 m in strike and 200 m in width at shallow depth (115 m in the N to 225 m in the S) (Figure 7-11).

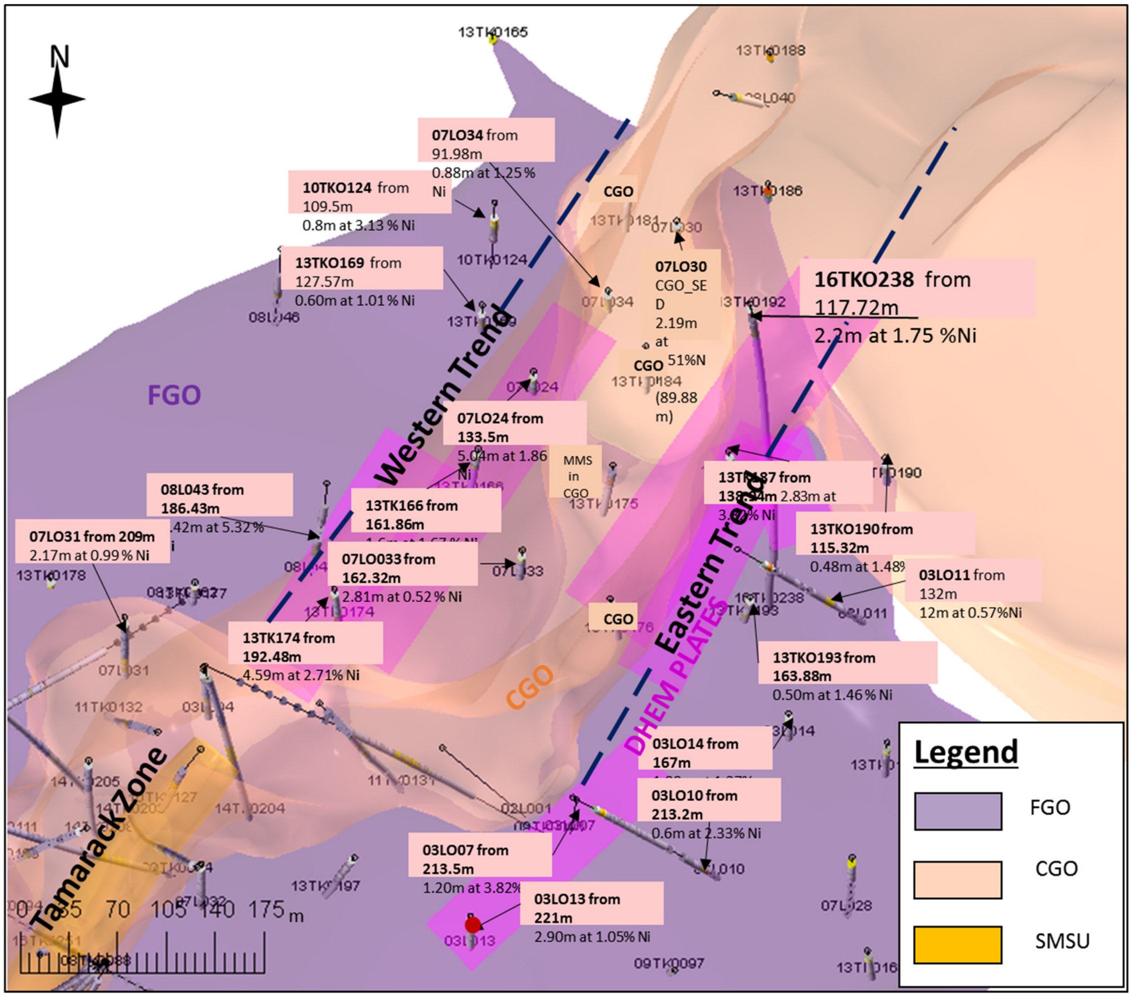


Figure 7-11: Plan View Showing CGO Bend up-Dip of the Tamarack Zone with Locality of Drill Hole 16TK0238 Towards N of CGO Bend Eastern Trend. Also shown are other historical drill hole intercepts and interpreted DHEM conductors which support potential for continuity of mineralization at FGO base both to E and W of CGO

6) The 480 Zone

Drilling in a narrow linear, E-W trending, positive magnetic anomaly at the northern portion of the Tamarack North Project, referred to as the 480 Zone, has intersected disseminated and net textured sulphide mineralization at a relatively shallow depth. The host olivine cumulates visually resemble olivine cumulates of the FGO intrusion to the S and include intervals of quartz xenolith rich magmatic breccia similar to those in the 164 Zone. The 2017 drilling program has tested the extent of the FGO and mineralization in the area. The interpretation of the results in the area has defined the relatively limited extent of mineralization, however the FGO-like intrusion that is extending E would require additional geophysical survey to define a suitable target.

7) Mineralization in the Weathered Laterite Zone

A weathered lateritic profile is irregularly preserved in the northeastern part of Tamarack North Project beneath Cretaceous and Quaternary cover and has concentrated Ni, Cu, Cr, and Fe. The weathered profile is up to 10 m thick, at 35 m depth and consists typically of a 0.5 m pisolithic, limontic hard cap, underlain by massive greenish saprolite, and saprock with remnant igneous textures. Native Cu up to 2% (visual estimation) can be observed as 1 to 3 mm nuggets and veinlets in the weathered profile and persists into the serpentinized upper part of the FGO (Goldner, 2011).

7.2.6 Quaternary and Cretaceous Cover and Weathering Profile

The Tamarack North Project does not outcrop at surface as it underlies 20 to 50 m of Quaternary glacial and fluvial sediments and in the N of the Tamarack North Project along the E part of the intrusion. Cretaceous siltstone and mudstone are preserved and unconformably overlie the preserved paleo-weathered lateritic profile of the FGO.

In the Tamarack North Project, the lateritic weathering profile is variably preserved. This is seen particularly in the E where up to 10 m thick saprock with remnant igneous textures and massive greenish saprolite covered with a pisolitic limonitic duri-crust can be found. Native Cu occurring as nuggets and veinlets can also be observed.

Serpentinization of olivine cumulates occurs over considerable thicknesses in the FGO below the weathered lateritic profile and is believed to be due to supergene alteration processes related to pre-Cretaceous weathering. Magnetite generated by the serpentinization process in the upper layers of the FGO is the main cause for the strong positive magnetic anomaly associated with parts of the Tamarack North Project.

Quaternary glacial-lacustrine deposits between 20 to 50 m cover the TIC with thicknesses increasing towards the S. The deposits are a complex arrangement of glacial and interglacial fluvial sands and silt and clay from lake sediments.

7.2.7 Current Models for Formation of the Ni-Cu-Co Sulphide Mineralization in the Tamarack North Project and Mineralization Area

The Tamarack North Project area contains two intrusions, the FGO rich intrusion and a CGO rich intrusion. Based on the geochemistry, both intrusions are derived from the same high-Mg olivine tholeiitic parental magma (Goldner, 2011).

Based on data available at the time Goldner (2011) proposed that the CGO was emplaced before the FGO intrusion. There are no U-Pb zircon age dates for the FGO intrusion, however contact relationships and paleomagnetic correlations with MCR volcanic rocks may indicate that the FGO is older than the CGO. The FGO is believed to be the primary source of the sulphide mineralization at Tamarack. The FGO intrusion is an open system magma conduit (termed a chonolith) that likely followed a zone of structural weakness in the meta-sedimentary Animikie basin. The FGO magma likely intruded along a rift associated structure to produce the dyke-like CGO and the FGO sill-like body.

The low Ni content of olivine in the FGO coupled with the Ni, Cu, and PGE-depleted geochemistry of the upper part of the intrusion indicate that the magma achieved sulphide saturation well-before the crystallization of large amounts of olivine. In the TIC area, the FGO intrusion has the geometry of an elongate lopolithic sill. The FGO magma either carried sulphide formed at a greater depth in the plumbing system or it formed in-situ from the overlying open system magma column as the FGO intruded the Animikie Group sedimentary rocks.

Sulphur Isotope studies indicate that the sulfur originates from Proterozoic and Archean crust as well as mantle contributions from the magma. As the flow rate of magma within the FGO intrusion decreased, the dense immiscible magmatic sulphide started to settle and coalesce towards the base of the intrusion. Sulphide that reached the basal contact, flowed toward topographic lows on the chamber floor and was able to accumulate in pools forming massive sulphide. Crystallization of olivine in the overlying FGO magma column resulted in trapping sulphides as disseminations and blebs. These sulphide textures occur in the ultramafic rocks above the keel of the intrusion and on the flanking sides of the N-S trending lopolithic sheet. The most important control on the loci of massive sulphide deposition is at the base of the FGO or along the keel of the FGO where, for example, the Tamarack Zone mineralization occurs.

The second phase of magmatic intrusion occurred at 1105 +-1.2 Ma (U-Pb age date on zircon) to form the CGO intrusion. The CGO intruded along a similar or perhaps, the same structure as the FGO, with a dyke-like configuration. The high Ni content of CGO and the normal Ni abundance levels in the un-mineralized CGO indicate that the magma did not reach sulphide saturation. The existing sulphide is in disequilibrium with the melts that formed the ultramafic rocks of the CGO, and so the CGO magma contributed negligible sulphide to the mineral zones at the Tamarack Project. As a result, the CGO did not form the mineral zones found within it.

The evidence suggests that the CGO intruded the country rock directly below the keel of the FGO in the Tamarack Zone. The CGO magma eroded the base of the FGO as well as portions of the basal accumulation of previously solidified magmatic sulphide mineralization at the base of the FGO, which represented a proto-ore for the CGO mineral zone. The eroded basal sulphide melted and digested by the CGO magma to form the SMSU. The remnant massive sulphides are preserved on the flanks of the FGO keel current as the MSU and the primary massive sulphide mineralization from the FGO keel was likely re-assimilated and re-concentrated by the CGO to form the SMSU which is hosted in the CGO directly below the FGO keel. The mineral zone in the CGO has a zoned composition grading from Ni-rich massive sulphides at the core to more Cu- and PGE-rich mineralization at the flanks. It appears that the nexus of CGO-related mineralization occurs where the CGO is proximal to the keel of the FGO. Whereas in areas where the CGO has not intruded at the Keel of the FGO, sulphide pool at the base of FGO may remain in their primary undisturbed location.

The MZ contact relationship with the FGO is gradual and likely shows a gradation textural change to the FGO. The MZ chemical composition resemble the FGO signature however it shows a more crustal sedimentary contamination. We interpret the MZ to represent the contamination of FGO with country rocks sediments by thermal erosion.

8. DEPOSIT TYPES

The Tamarack North Project hosts magmatic Ni-Cu-PGE sulphide mineralization. These deposits form as the result of segregation and concentration of liquid sulphide from mafic or ultramafic magma and the partitioning of chalcophile elements into the sulphide from the silica melt (Naldrett, 1999).

In order to sufficiently concentrate metals in a system, a number of basic factors are believed to be necessary including:

- A tectonic rift setting with upwelling mantle and deep-seated structures necessary to generate partial melting of primitive magmas.
- Large volumes of magma flowing through an open system to achieve a high R factor (ratio of melt to sulphide).
- Mid-level external sulphur source from crustal assimilation of sulphur rich rocks to maintain sulphur saturation and continued partitioning with a rising magma.
- Physical and chemical conditions for sulphide accumulation such as cumulate settling, changes in flow velocity, magma mixing etc.

Ni-Cu sulphide deposits are economically important because they present favourable economics compared to the mining and processing of Ni laterite deposits. This is due to their relatively high grade and comparatively low capital cost requirements.

The various mineralized zones at the Tamarack North Project occur within different host lithologies, exhibit different types of mineralization styles, and display varying sulphide concentrations and tenors. These mineralized zones range from massive sulphides hosted by altered sediments in the MSU, to net textured and disseminated sulphide mineralization hosted by the CGO in the SMSU; to a more predominantly disseminated sulphide mineralization as well as layers of net textured sulphide mineralization, in the 138 Zone (Table 8-1). Mineralization in the 138 Zone, where interlayered disseminated and net textured mineralization occurs is referred to as MZ mineralization. All these mineralization types are typical of many magmatic sulphide ore bodies around the world. The current known mineral zones of the Tamarack North Project (SMSU, MSU and 138 Zone) that are the basis of this resource statement are referred to as the Tamarack Zone. Also located within the Tamarack North Project are two currently lesser defined mineral zones, namely the 480 and the 164 Zone.

Table 8-1: Tamarack North Project - Key Geological and Mineralization Relationships

<table>
<tr><th>Area</th><th>Mineral Zone</th><th>Host Lithology</th><th>Project Specific Lithology</th><th>Mineralization Type</th></tr>
<tr><td rowspan="5">Tamarack Zone</td><td>SMSU</td><td>Feldspathic Peridotite</td><td>CGO</td><td>Net textured and disseminated sulphides</td></tr>
<tr><td>MSU</td><td>Meta-Sediments/ Peridotite (basal FGO mineralization)</td><td>Sediments</td><td>Massive sulphides</td></tr>
<tr><td>138</td><td>Peridotite and Feldspathic Peridotite</td><td>MZ/FGO</td><td>Disseminated and net textured sulphides</td></tr>
<tr><td rowspan="2">CGO Bend</td><td>Feldspathic Peridotite</td><td>CGO</td><td>Disseminated sulphides</td></tr>
<tr><td>Peridotite footwall (basal FGO mineralization)</td><td>FGO</td><td>MMS and MSU</td></tr>
<tr><td rowspan="3">Other</td><td>221 Zone</td><td>Feldspathic Peridotite</td><td>CGO</td><td>Disseminated sulphides with ripped up clasts of massive sulphides</td></tr>
<tr><td>480 Zone</td><td>Peridotite</td><td>FGO</td><td>Disseminated sulphides</td></tr>
<tr><td>164 Zone</td><td>Peridotite</td><td>FGO</td><td>Blebby sulphides, sulphides veins</td></tr>
</table>

9. EXPLORATION

9.1 Historical Investigations

The TIC was initially targeted from the Minnesota State airborne magnetic survey flown between 1972 and 1983 and the follow-up drill-testing by the MGS in 1984 of two holes, with peridotite intersected in AB-6 which was drilled on an anomaly N of the town of Tamarack.

9.2 Exploration by Current Owner

The TIC and associated mineralization was discovered as part of a regional program initiated by Kennecott in 2000. The focus on Ni and Cu sulphide mineralization was initiated in response to a 1999 model proposed by Dr. A.J. Naldrett of the potential for smaller feeder conduits associated with continental rift volcanism and mafic intrusions to host Ni sulphide deposits similar to Norilsk and Voisey's Bay. This model (Dynamic Conduit Model) challenged previously held models that Ni sulphide deposits were only associated with large layered complexes.

Exploration by Kennecott continued at the Tamarack Project concurrently with their testing of other targets since 2014. Disseminated mineralization was first intersected at the Tamarack Project in 2002, and the first significant mineralization of massive and semi massive sulphide was intersected in 2008.

To date, exploration by Kennecott has included a wide range of geophysical surveys including; airborne magnetic and EM (EM-MegaTEM and AeroTEM), ground magnetic and EM, IP, gravity, seismic, MALM and downhole EM. Recently (2015 and 2016) a number of new geophysical surveys were conducted. These included Gravity, MT and TDEM surveys. New inversions and 3D modeling were also conducted using current and pre-existing geophysical data. This new geophysical data and data products has enhanced the understanding of the Tamarack Project, improved focus on existing targets.

Drilling in the main target areas of the Tamarack North Project has included 242 diamond drill holes totalling 100,692 m.

9.2.1 Geophysics

The Tamarack North Project is covered by Minnesota government regional magnetic and gravity surveys. The magnetic data in particular is recent of good quality and has played a key role in the recognition of the TIC and the targeting of early drilling.

A wide variety of airborne, ground, and DHEM geophysical surveys have been conducted by Kennecott at the Tamarack Project since 2001 (Figure 9-1). Airborne EM and magnetic surveys have included airborne MegaTEM (2001) and AeroTEM (2007, 2008, 2009).

Ground geophysical surveys included EM 37 (2002), Crone TEM/TDEM (2003 and 2016), AMT (2003), Seismic Reflection (2006), CSAMT (2006), UTEM (2006), 3D RES/IP (2008), MALM (2008 and 2010), Gradient & Dipole IP/Resistivity (2010), gravity surveys (2001, 2002, 2011, 2015, and 2016), and MT (2016).

A test line to evaluate different surface TEM systems was surveyed with the UTEM system, the Crone system with SQUID sensor and with CRA95 coil sensor, the EMIT system with SQUID sensor, all in 2012. In addition, different borehole TEM systems were evaluated. These included Crone Geophysics with a fluxgate sensor and a coil sensor, Lamontagne Geophysics with the UTEM system and Discovery Geophysics with the EMIT system with fluxgate sensor. BHEM was first tested in 2003 and has been used since as an important tool for the detection and delineation of sulphide bodies in and near drill holes. Most holes since 2007 and all holes drilled since 2011 have been surveyed with Crone BHEM.

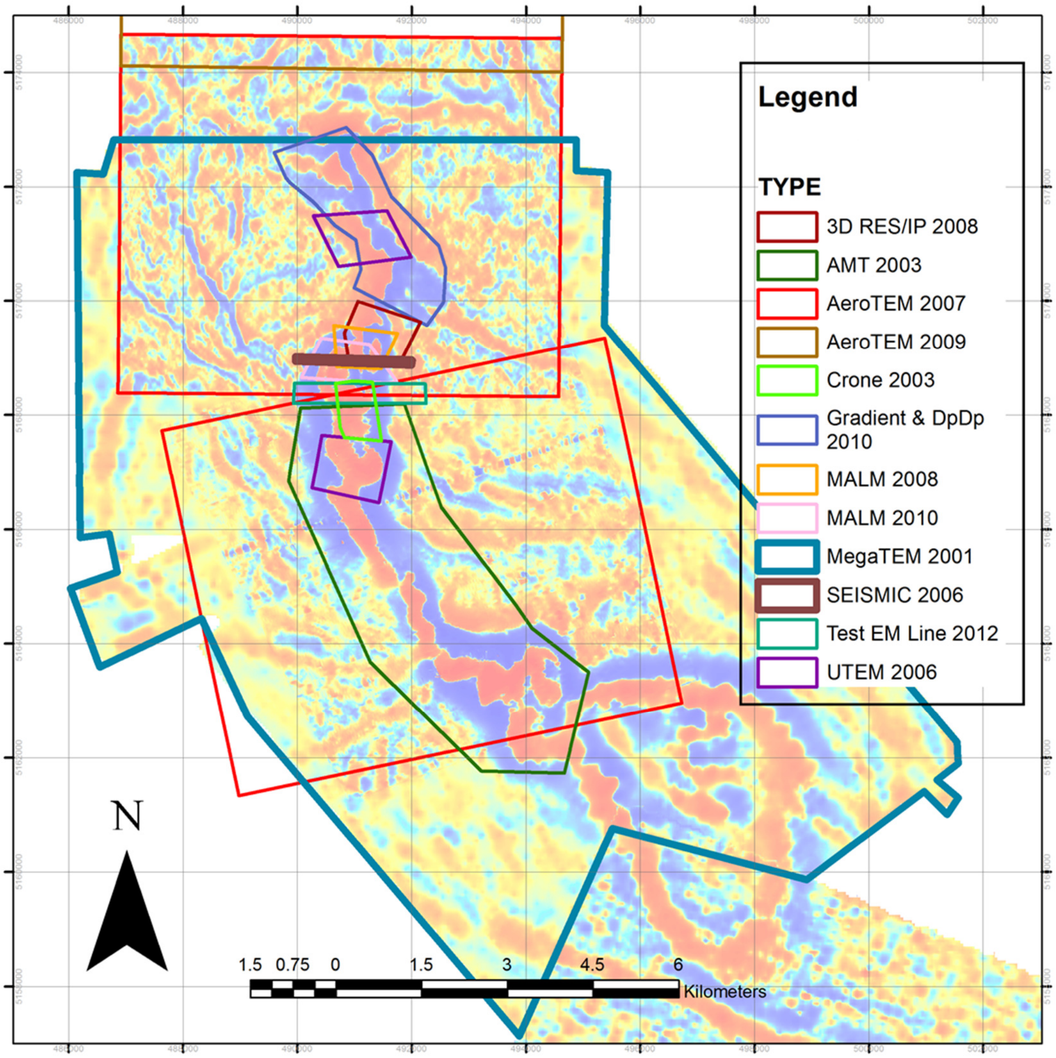


Figure 9-1: Map Showing Localities of Various Geophysical Surveys Conducted Over the entire TIC (composite magnetic TMI image background) Modified from Kennecott Internal Report and Survey Data, 2013.

Airborne Surveys (Magnetic and TEM)

The MegaTEM survey in 2001 identified a conductive anomaly that led to the drilling of the first hole of the program. The hole intersected disseminated mineralization hosted within a gabbro. The survey was strongly affected by the numerous power lines in the area. Subsequent airborne EM surveying was conducted using the AeroTEM system which has a smaller footprint than the more powerful but extended MegaTEM system and hence less sensitivity to nearby power lines (Figure 9-1).

The AeroTEM system operates at lower power and higher frequency than the MegaTEM system. As such there is potentially less penetration through conductive overburden however it does have the capability of measurements in the “on” time of the transmitted pulse which provides increased sensitivity to very conductive targets. As well, due its smaller footprint it can be less affected by powerlines. The higher resolution (50 m line spacing vs 200 m line spacing for MegaTEM) AeroTEM surveys mapped with increased detail the conductive shallow FGO unit which, at the time, was felt to be spatially related to potentially deeper mineralization. Based on Kennecott’s subsequent work it appears that the response from both AEM systems is mostly due to the near-surface (top 300 m) conductive FGO unit and that direct detection of mineralization from the air has not yet been achieved.

Magnetic 3D MVI Processing

In July 2015, a 3D MVI was performed over the 221 Zone on Tamarack magnetic data using VOXI, Geosoft’s cloud based inversion. This MVI-VOXI processing was extended in 2016 to include all the TIC. Due to model size required to produce a resolution of 25 m x 25 m x 12.5 m cells the data was divided into 7 separate blocks (Figure 9-2).

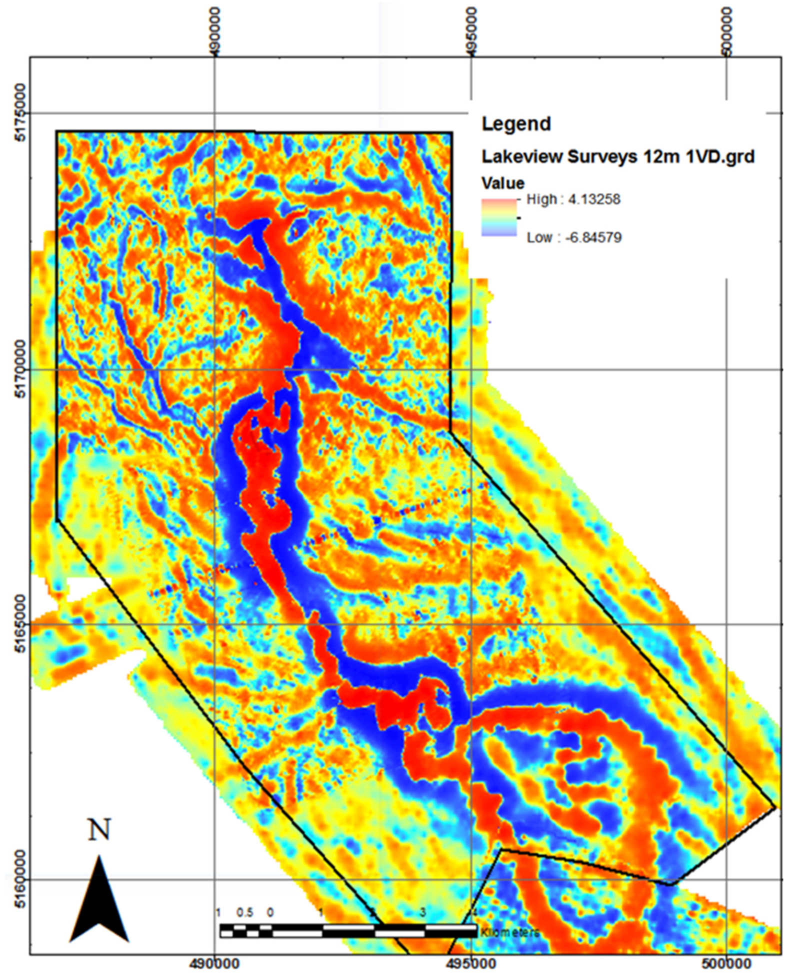


Figure 9-2: Merged First Derivative Magnetic Intensity with MVI Inversion Block. Airborne Magnetic survey (2001, 2007 and 2009). Scale bar is in km

Ground Surveys

Electrical and EM Surveys

A variety of ground electrical and EM have been conducted on the property. Surveys included EM 37 (2002), Crone TEM/TDEM (2003 and 2016), AMT (2003), CSAMT (2006), UTEM (2006), 3D RES/IP (2008), MALM (2008 and 2010), Gradient & Dipole-Dipole IP/Resistivity (2010), and MT (2016).

TDEM Survey, September 2016

A new high power low frequency TDEM was conducted along the eastern CGO Bend by Crone Geophysics in September 2016 (Figure 9-3). The fixed in-loop survey was testing potential thicker zones of base of FGO massive sulphide in the 40 m to 240 m depth range. The survey used two coincident 600 m x 600 m loops to increase the transmitted power. The survey successfully highlighted shallow conductors at the base of the FGO that are interpreted from drill intersections to be sulphides. These conductors also correspond with modelled DHEM plates.

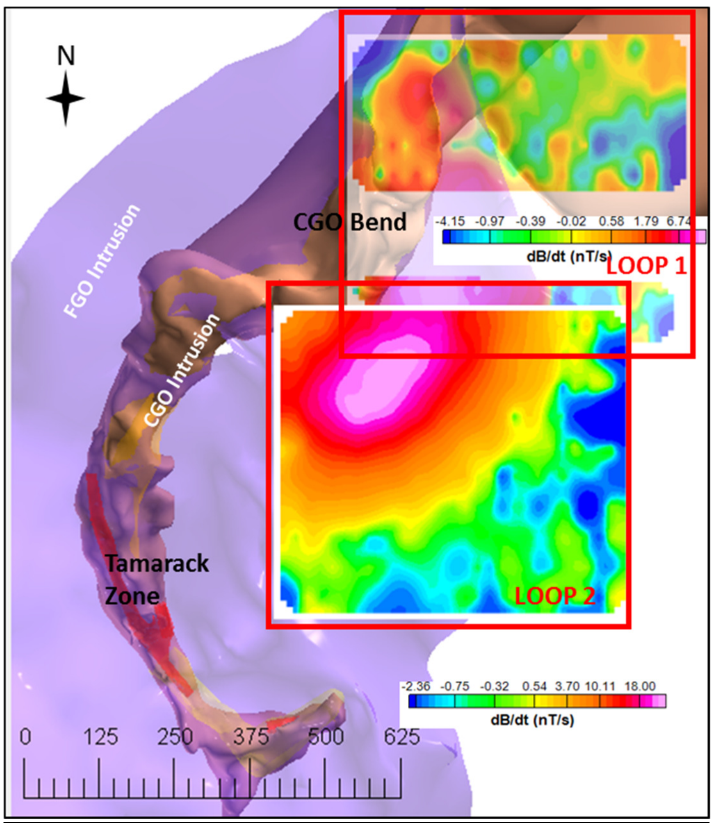


Figure 9-3: Colour Shaded Grids of Ch 20 Crone TEM Z Component for Loop 1 and 2 of TDEM Survey in CGO Bend Zone, Showing Anomalous Conductivity at Depth to the E of the CGO. Gravity surveys (2001, 2002, 2011, 2015 and 2016)

Kennecott completed detailed gravity surveying over both the Tamarack North and South properties in 2001, 2002 and 2011 to add to the available Minnesota State data. The new data did not change the larger picture much but provided more detail over the TIC.

Gravity Surveys

Gravity surveys conducted in 2015 and 2016 over the entire TIC have added considerable definition primarily to the Tamarack North Project area (Figure 9-4). These surveys were conducted in a number of phases and have been integrated with the older surveys. The 2015 ground survey consisted of 453 stations at a 200 m spacing and was conducted by Eastern Geophysics. The survey was initially targeted on the high density intrusive drilled in 15TK0221. The 2016 survey (Eastern Geophysics) with a total of 865 ground stations both expanded on and infilled gaps within the existing data. Survey data was integrated with previous data and unconstrained and constrained 3D VPmg inversions models were produced.

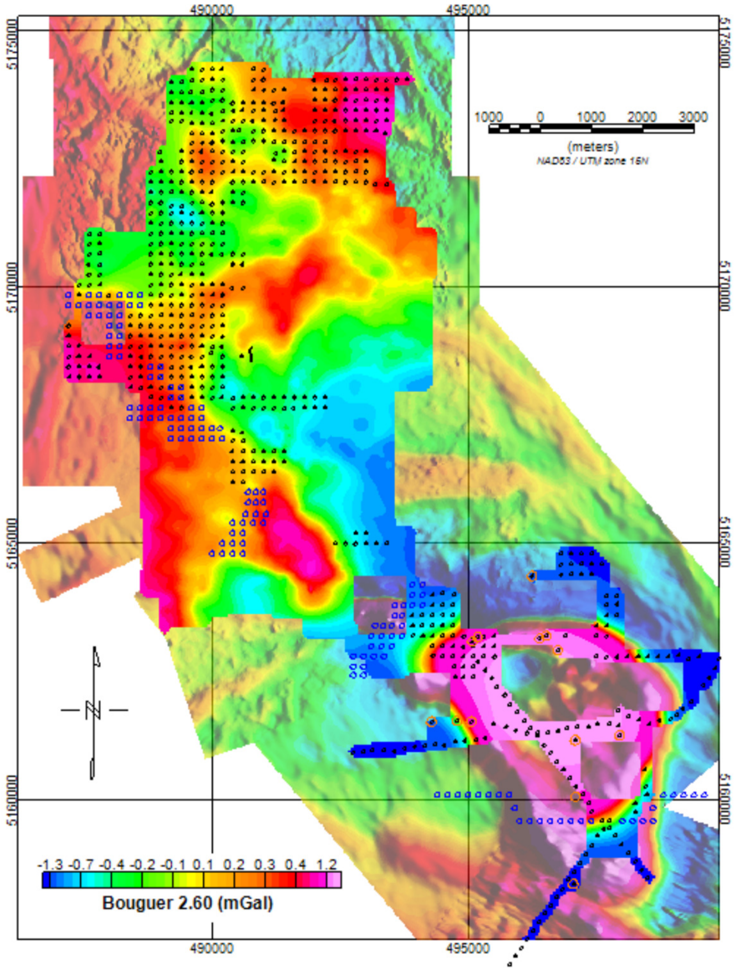


Figure 9-4: Bouguer (2.6 g/cc) Gravity Grid Combining 2011, 2015 and 2016 Surveys with Second Order Trend. Removed. Dots show locations of new data acquired in 2016 (KEX Gravity Survey, 2001, 2002, 2011, 2015 and 2016)

Figure 9-5 shows the dominant anomalies located in the 221 Zone S to the CGO Bend as well as the 480 Zone and W of the Tamarack Zone.

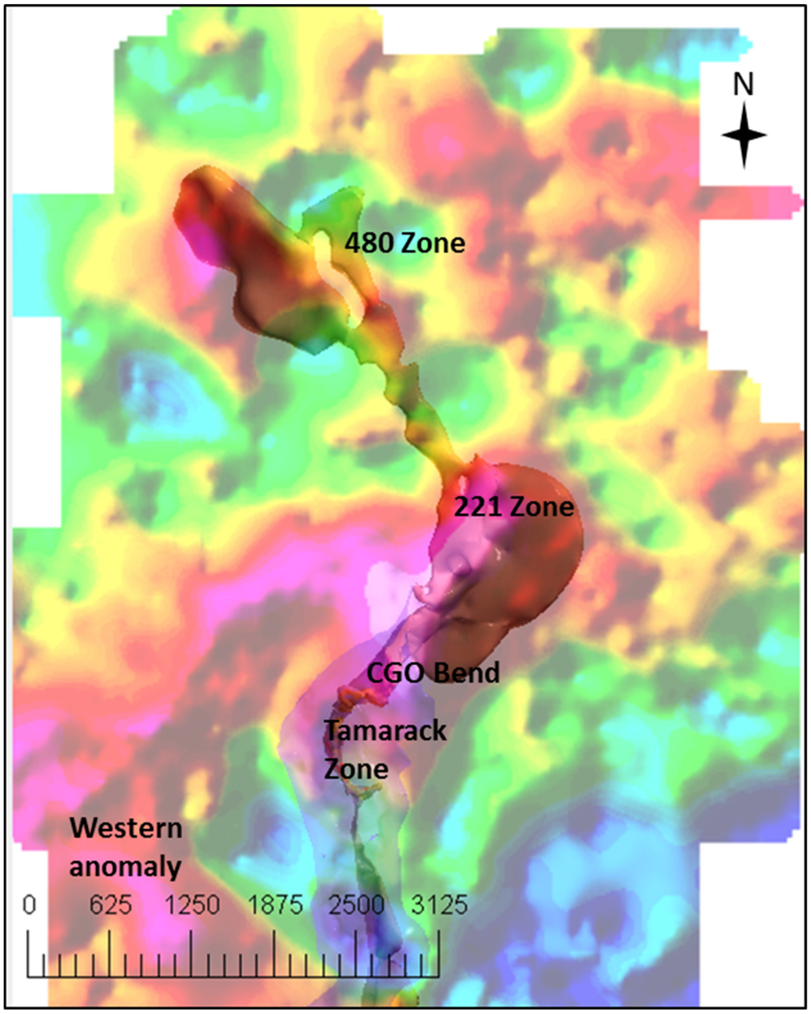


Figure 9-5: Unconstrained Bouguer (2.6 g/cc) Gravity Grid of Northern Tamarack with Modelled CGO Showing the 221 to CGO Bend Anomaly, the 480 Anomalies and the Western Anomaly (KEX Gravity survey 2016)

Seismic Reflection (2006)

Seismic reflection surveys were carried out on one test line and two survey lines.

DHEM Surveys

To date, approximately 155 of the 242 holes at Tamarack North have been surveyed with the Crone DHEM system.

Data for all holes was presented as PEM files (off-time data with one on-time channel) and for many holes the .stp's were provided as well. The response from the DHEM surveys is dominated by the conductive FGO response which decays at late time and the response from the MSU and SMSU units which persists generally until late time. The DHEM surveys are very successful in locating sulphides in and near the drill holes. The use of STP has proven to be very successful in expanding the MSU in the Tamarack Zone.

MT Survey

A deep penetrating MT survey was completed in August 2016 by Quantec Geophysics, with 456 ground stations (including 52 repeats) over the Tamarack North Project. Final 3D modeling was conducted by CGG in Milan, Italy. It was anticipated that the MT would provide an efficient way of extending known mineralization or identifying new large, deep conductive features. It was postulated that the lower frequency data should be able to separate the more conductive sulphides from the less conductive sulphide bearing FGO at depth. The unconstrained MT survey identified anomalies outside of the known mineralized zones. The effects of serpentization above the known mineralized zones (138 Zone, Tamarack Zone, and CGO Bend Zone) failed to provide sufficient resolution of the SMSU and MSU.

10. DRILLING

10.1 Historical Drilling

The historical drilling at the Tamarack Project is restricted to the two drill holes by the MGS that were targeted as follow-up on anomalies generated by the State Aeromagnetic Survey. These included AB-6 (1984) located N of the town of Tamarack which intersected peridotite and AB-5 (1984) which was drilled further S and intersected metamorphosed sediments. This drilling is not part of the current resource but contributes to the overall regional geological interpretation.

10.2 Kennecott Drilling Programs (2002-2013)

Kennecott has conducted extensive drilling at the Tamarack North Project since 2002. Prior to Talon's involvement, this drilling comprised 182 diamond drill holes (Table 10-1, Figures 10-1 and 10-2) totalling 67,387 m with holes between 33.5 m and over 956 m depth for an average hole depth of 534 m. Drilling had been conducted in both summer and winter programs.

Drilling at the Tamarack North Project was initiated in the winter of 2002, with L02-01 intersecting broad zones of low grade disseminated sulphide mineralization N of the Tamarack Zone.

Between 2003 and 2004 drilling was limited to a few holes (Table 10-1) with the first multi-hole programme of 14 holes carried out in the winter of 2007 when the first significant intersection of disseminated sulphide mineralization was made with drill hole 07L-031 N of the Tamarack Zone.

Drilling was stepped up in the summer and winter of 2008 with 32 drill holes after the first intersections of the SMSU in drill hole 08L-042. During the subsequent delineation of the SMSU Zone in the same year, the MSU was first intersected in drill hole 08TK-0049.

Drilling was reduced in 2009 to 13 holes following the economic downturn and mainly tested new targets while focusing on the 480 Zone to the N of the Tamarack North Project. Drilling in 2010 followed on from 2009 with 19 holes testing new targets with continued focus on the 480 Zone. Drilling in 2011 included 5 holes N of the Tamarack Zone.

In 2012, the programme was stepped up with 28 holes drilled to the S of the SMSU, with the first wide intersection of predominantly disseminated mineralization and interlayered net textured mineralization from drill hole 12TK-138 (in what was later to be called the 138 Zone).

38 holes were drilled during the 2013 campaign. The highlights included the defining of the 138 Zone, the first intercept of massive sulphide veins in meta-sediments in what is referred to as the 164 Zone (located approximately 1.5 km S of the 138 Zone), and further encountering of disseminated mineralization to the N of the Tamarack Zone.

Table 10-1: Breakdown of Drilling Conducted by Kennecott

Year	Number of Holes	Metres	Targets
2002	1	276	CGO Bend
2003	8	2,009	Tamarack, CGO Bend, 221 Zones
2004	3	915	Tamarack, 221 Zone, 164 Zones
2007	14	3,363	Tamarack, CGO Bend, 221 Zones
2008	53	19,965	Tamarack, CGO Bend, 221, 480 Zones
2009	13	5,044	Tamarack, 164, CGO Bend, 480 Zones
2010	19	6,556	Tamarack, 142,164, CGO Bend, 221, 480 Zones
2011	5	1,857	Tamarack, CGO Bend, 480 Zones
2012	28	14,280	Tamarack, 164, 142 Zones
2013	38	13,122	Tamarack, CGO Bend, 142,164 Zones
TOTAL	**182**	**67,387**	

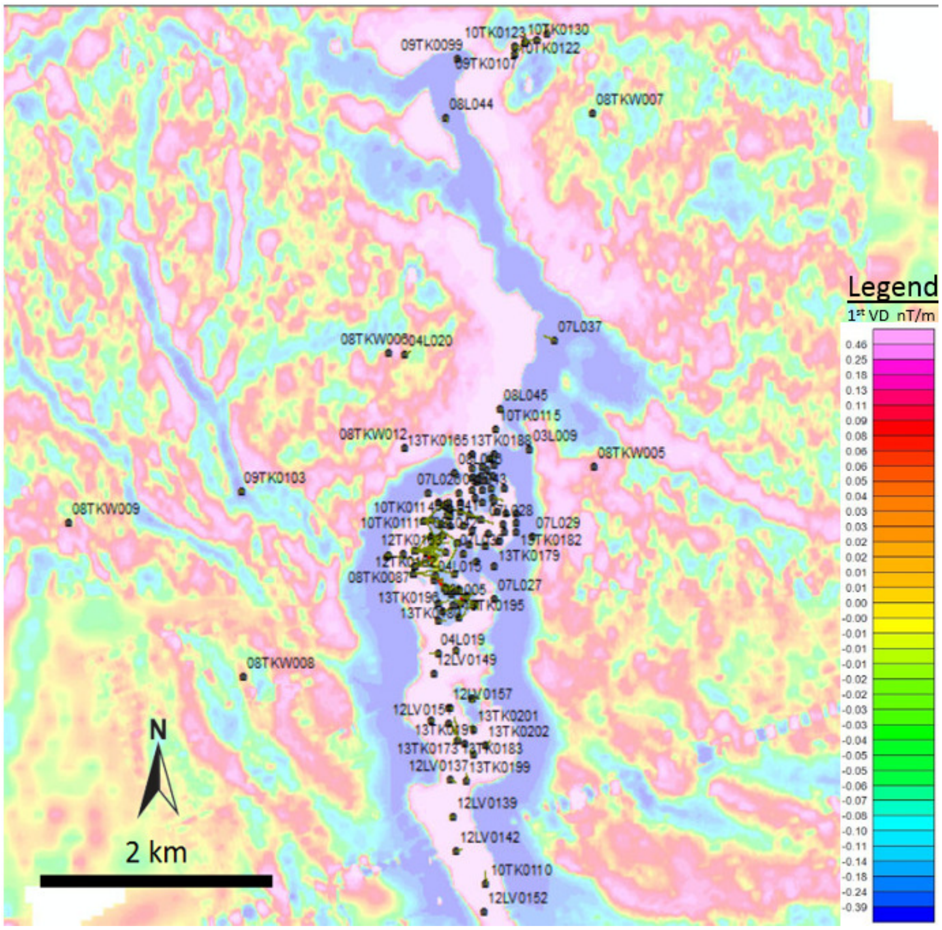


Figure 10-1: Map Showing Localities of Drill Holes, Prospects and Targets in the Tamarack North Project (background 1VD magnetic image). Modified from Kennecott Internal Report and Survey Data, 2013

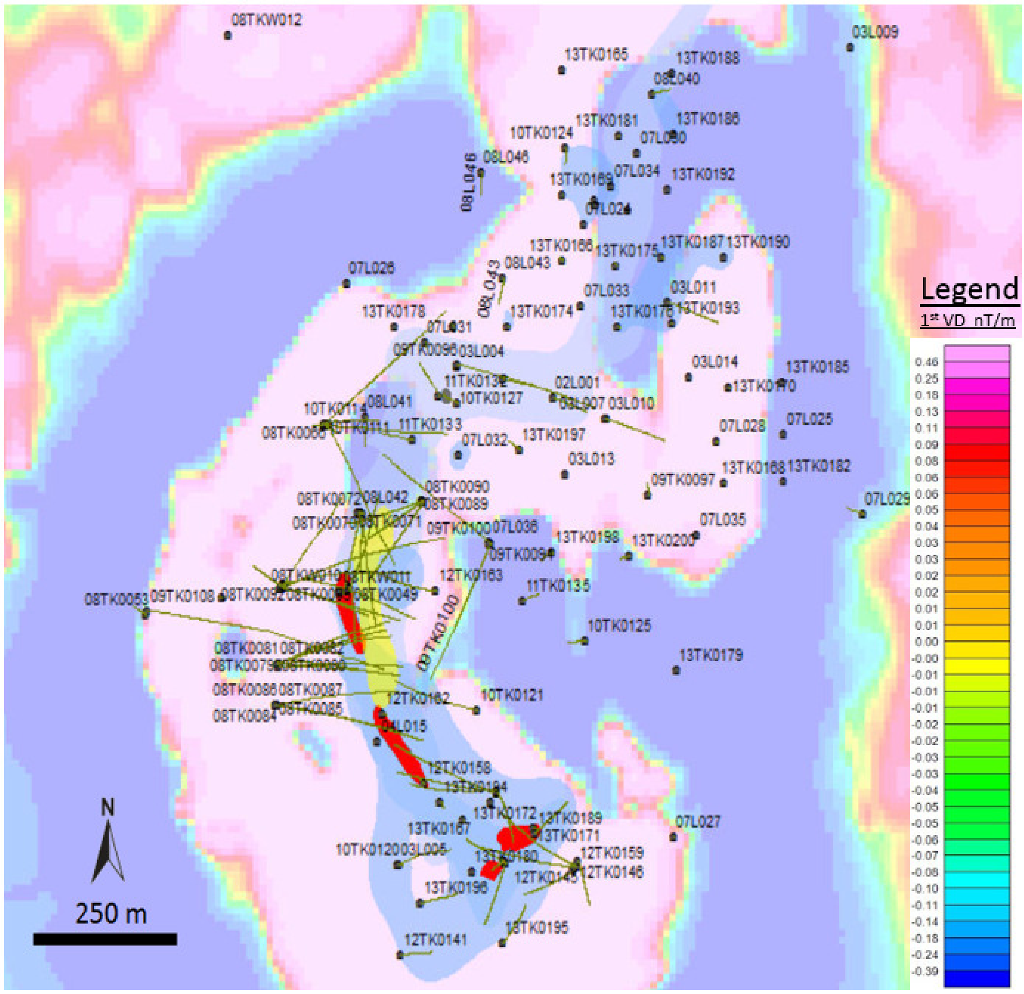


Figure 10-2: Enlarged Map Showing Localities of Drill Holes, in the Tamarack North Project (background 1VD magnetic image). Modified from Kennecott Internal Report and Survey Data, 2013

10.3 Kennecott-Talon Drilling Programs (2014-2017)

The drilling programs conducted by Kennecott (in its capacity as Operator under the Earn-in Agreement) were generally to be focused on the discovery of large tonnage economic Ni-Cu mineralization compliant with a Rio Tinto Tier One target (large, long-lived, low cost and upper quartile of worldwide commodity specific deposits). Subsequently however, the drilling targeted a wide range of purposes: 1) new targets based on current geologic models, 2) new targets based on geophysical characteristics but no lithologic knowledge, 3) extrapolation of existing mineralization, and 4) infill/delineation of existing mineralization.

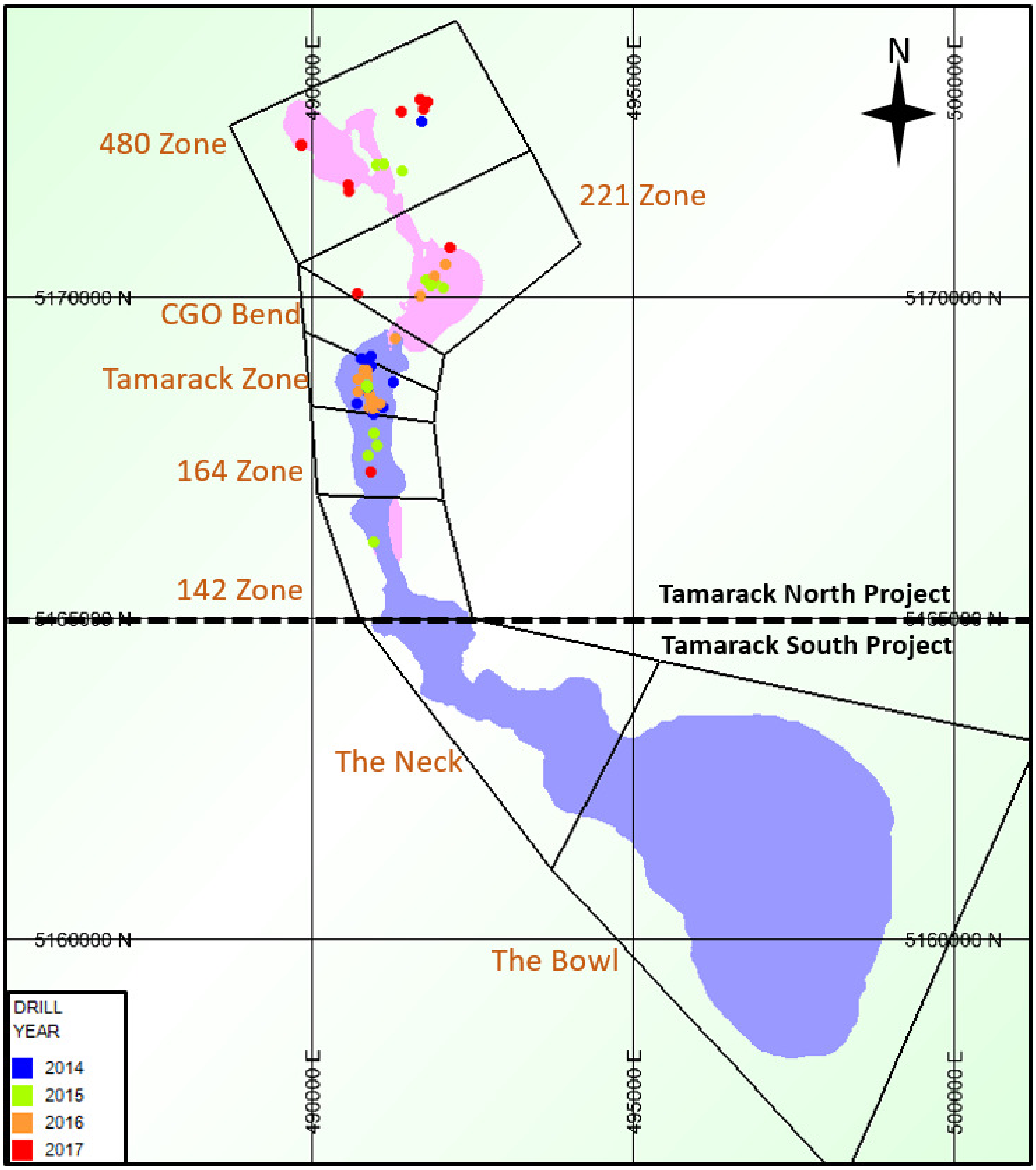


Figure 10-3: Plan View Showing the Locations of the Holes Drilled between 2014 and 2017 at Tamarack North

The 2014 drilling season saw 12 new holes drilled primarily concentrated in the Tamarack Zone. Extension of the MSU/SMSU was the primary focus. The continuation of the CGO intrusion between the Tamarack and 164 Zones was also tested. A single hole in the 480 Zone tested a magnetic low (Figure 10-3 above).

The 2015 drilling season saw 9 new holes drilled, one historic hole deepened, and three holes pre-collared through overburden (Table 10-2 notes). 12LV0143 was deepened due to a reinterpreted BHEM suggesting the possibility of a CGO intrusion at depth. The 480 Zone was tested targeting further magnetic lows. Several holes in the 221 Zone tested newly discovered mineralization within a thin “FGO-Like” Brecciated intrusion that occurred at the contact between a thick overlying CGO intrusive and the host sedimentary Thomson Formation. The remaining holes tested for a continuation of the CGO intrusion S of the Tamarack Zone within the 164 and 142 Zones. (Figure 10-3).

2016 drilling saw an aggressive campaign where 19 new holes were drilled, 4 new wedge (daughter) holes and the completion of one previously pre-collared hole (15TK0220). Further drilling testing the newly recognized, but thin mineralization at the base of the CGO intrusion continued in the 221 and CGO Bend Zones. Extending MSU and infilling both the existing MSU and SMSU mineralization completed the rest of the drilling.

The 2017 drilling program consisting of 11 holes was primarily focused to the N of the 221 Zone with the minor exception of one hole located to the far W of the 221 Zone and another in the 164 Zone (Figure 10-3 for locations). Four holes were focused on extending previously identified (2009-2010) shallow mineralization within the 480 Zone. Two holes were in the previously untested western 480 Zone targeted a negative magnetic and a high gravity anomaly. Two holes located in the SW of the 480 Zone targeted negative magnetic and a low gravity anomaly. One hole located to the extreme N of the 221 Zone was targeted as a significant step-out of the existing thin, deep basal mineralization characteristic of the 221 Zone. Drill hole 17TK0261 targeted a high gravity anomaly approximately 670 m W of the Talon-modelled CGO intrusion. The final hole within the 164 Zone targeted a potential basal depression in the Talon-modelled FGO intrusion interpreted from gravity and magnetic data.

Table 10-2: Breakdown of Drilling Conducted by Kennecott-Talon Joint Venture

Year	Number of Holes	Metres	Targets
2014	12	7,298	Tamarack and 480 Zones
2015*	14	7,609	480, 221, Tamarack, 164, and 142 Zones
2016	23	13,011	Tamarack, CGO Bend, and 221 Zones
2017	11	5,387	480, 221, and 164 Zones
TOTAL	**60**	**33,305**	

*Note - Hole 15TK0220 was pre-collared (30.18 m) in overburden during the 2015 season but restarted and completed during the 2016 season

10.4 Resource Drill Holes

The number of total drill holes in the Tamarack North Project (242) and the number of drill holes that were included in the mineral resource estimate are different. Drill holes that had mineralized intercepts that were sufficient to meet the domain modeling cut-off and had sufficient continuity or weakly- to non-mineralized that helped define the limits of mineralization were included in the mineral resource estimate (see Section 14 for further details). The drill holes and the mineral intercepts that were used in the mineral resource are provided in Table 10-3 and Figure 14-1. Some of the remaining drill holes, occurring outside of the current mineral resource estimate (as defined in Section 14), do include relevant mineralization that could be included in an updated mineral resource estimate depending on results of future exploration programs.

Provided in Table 10-3 are the drill hole composited, mineralized intersections for the SMSU, MSU and 138 Zones from the mineral resource estimate provided in Section 14. The SMSU and MSU Zones consist of plunging pipe-like mineralization domains which do not have a tabular type geometry. The orientation of the drilling is mainly in the vertical to sub-vertical dip component, therefore there is some uncertainty regarding the relationship between drill hole intersection length and the true width of the deposit in some areas. Each drill hole listed in Table 10-3 includes the entire composited length used in the mineral resource estimate and may also include a selection of significant mineralization intervals within the composited length. If a drill hole intersection was composed entirely of significant mineralization the entire composited length was provided.

Golder has estimated the true width to be perpendicular to the plunge based on an average plunge of -25˚ and an average plunge direction of 170˚ for the SMSU and MSU Zones. There is a distinct curving of the MSU orebody below the 138 Zone. A plunge of -25˚ and plunge direction of 130˚ was used in those holes (Table 10-3).

Due to the strictly vertical nature of the drill holes in the 138 Zone there is a weak understanding of the plunge and plunge direction. Mineralization appears to be horizontal to sub-horizontal and therefore a dip of 0˚ and 0˚ dip direction was used to estimate the true width of intersections (Table 10-3).

The estimated true width may be subject to change with additional drilling oriented across the deposit. Figures 14-15 and 14-16 show drill hole cross-sections of the respective orebodies.

Table 10-3: Drill Hole Composites Used in Mineral Resource for Each Mineralized Zone

Zone	Hole No.	Easting (m)	Northing (m)	Elev. (mASL)	Total Hole Length (m)	Azm	Dip	From (m)	To (m)	Sample Length (m)	Estimated True Width (m)	Ni (%)	Cu (%)	Co (%)	Pt (g/t)	Pd (g/t)	Au (g/t)	NiEq (%)
Upper SMSU	08L042	490735	5168848	389	515.7	180	-80	327.0	407.0	80.0	65.6	1.18	0.78	0.03	0.17	0.12	0.12	1.60
Upper SMSU	08TK0048	490715	5168730	391	908.0	33	-79	334.0	407.5	73.5	69.6	1.48	0.83	0.04	0.17	0.12	0.12	1.93
								392.5	*397.0*	*4.5*	*4.3*	*4.04*	*1.31*	*0.10*	*0.42*	*0.27*	*0.11*	*4.84*
Upper SMSU	08TK0061	490673	5168988	389	634.3	146	-66	395.5	397.0	1.5	1.0	0.12	0.01	0.01	0.01	0.00	0.00	0.14
Upper SMSU	08TK0064	490672	5168987	389	492.9	96	-63	367.5	409.5	42.0	32.5	0.68	0.44	0.02	0.18	0.10	0.10	0.95
Upper SMSU	08TK0067	490735	5168847	389	590.4	168	-70	372.0	415.5	43.5	32.0	0.43	0.29	0.01	0.10	0.07	0.06	0.60
Upper SMSU	08TK0073	490846	5168867	390	550.5	251	-74	327.5	386.0	58.5	50.9	0.40	0.26	0.01	0.07	0.05	0.05	0.56
Upper SMSU	08TK0074	490846	5168867	389	531.9	250	-77	323.5	398.5	75.0	65.7	1.44	0.86	0.04	0.15	0.10	0.12	1.90
								332.5	*335.5*	*3.0*	*2.6*	*2.86*	*1.32*	*0.07*	*0.20*	*0.11*	*0.09*	*3.55*
Upper SMSU	08TK0089	490846	5168866	389	603.7	237	-76	330.5	409.5	79.0	67.2	2.90	1.51	0.07	0.20	0.14	0.13	3.66
								360.5	*390.5*	*30.0*	*25.4*	*4.10*	*2.01*	*0.10*	*0.21*	*0.15*	*0.15*	*5.10*
Upper SMSU	08TK0090	490848	5168866	390	534.0	217	-71	355.3	415.0	59.7	47.0	0.75	0.58	0.02	0.14	0.08	0.11	1.06
Upper SMSU	08TK0091	490596	5168734	390	526.7	79	-65	391.1	411.5	20.5	15.8	0.73	0.43	0.02	0.12	0.08	0.07	0.98
Upper SMSU	08TK0093	490598	5168729	390	545.0	64	-57	393.5	411.5	18.0	13.7	0.62	0.50	0.02	0.36	0.20	0.15	0.98
Upper SMSU	09TK0094	490970	5168799	389	509.6	310	-61	352.5	429.0	76.5	72.5	0.56	0.35	0.02	0.08	0.05	0.06	0.76
Upper SMSU	10TK0127	490909	5169024	389	599.9	282	-86	304.0	353.5	49.5	45.6	0.73	0.46	0.02	0.23	0.13	0.12	1.03
Upper SMSU	14TK0203	490910	5168938	388	651.7	326	-80	326.5	352.0	25.5	24.4	0.44	0.22	0.02	0.28	0.16	0.10	0.65
Upper SMSU	14TK0204	490909	5169083	388	557.2	141	-83	304.5	335.0	30.5	26.2	0.66	0.49	0.02	0.29	0.17	0.18	1.00
Upper SMSU	16TK0237	490839	5168769	389	502.3	268	-82	342.4	381.5	39.1	35.0	0.83	0.69	0.02	0.14	0.09	0.14	1.20
Upper SMSU	16TK0237A	490839	5168769	389	456.6	268	-82	343.5	365.0	21.5	18.4	0.45	0.32	0.01	0.20	0.12	0.09	0.67
Upper SMSU	16TK0241	490840	5168865	389	480.4	269	-84	321.0	403.0	82.0	74.7	1.42	0.83	0.04	0.16	0.10	0.11	1.86
Upper SMSU	16TK0242	490707	5168733	391	551.1	74	-85	361.7	390.0	28.3	25.4	0.78	0.51	0.02	0.13	0.09	0.09	1.07
Upper SMSU	16TK0251	490799	5168870	389	450.3	354	-84	316.0	382.5	66.5	62.7	0.31	0.15	0.01	0.06	0.03	0.04	0.41

Zone	Hole No.	Easting (m)	Northing (m)	Elev. (mASL)	Total Hole Length (m)	Azm	Dip	From (m)	To (m)	Sample Length (m)	Estimated True Width (m)	Ni (%)	Cu (%)	Co (%)	Pt (g/t)	Pd (g/t)	Au (g/t)	NiEq (%)
Lower SMSU	08L042	490735	5168848	389	515.7	180	-80	**410.0**	**464.0**	**54.0**	**44.3**	**2.36**	**1.55**	**0.06**	**0.54**	**0.38**	**0.28**	**3.26**
								417.5	*428.0*	*10.5*	*8.6*	*4.53*	*2.48*	*0.10*	*0.48*	*0.41*	*0.14*	*5.80*
Lower SMSU	08TK0048	490715	5168730	391	908.0	33	-79	**407.5**	**479.5**	**72.0**	**68.7**	**2.35**	**1.48**	**0.05**	**0.63**	**0.39**	**0.32**	**3.25**
								418.0	*428.5*	*10.5*	*10.0*	*4.18*	*2.46*	*0.09*	*0.53*	*0.36*	*0.23*	*5.45*
Lower SMSU	08TK0049	490718	5168728	391	553.5	183	-80	**435.0**	**460.5**	**25.5**	**20.9**	**0.61**	**0.51**	**0.02**	**1.03**	**0.51**	**0.29**	**1.21**
Lower SMSU	08TK0058	490590	5168609	390	649.5	89	-71	**473.0**	**558.5**	**85.5**	**70.0**	**2.09**	**0.96**	**0.06**	**0.58**	**0.35**	**0.24**	**2.77**
								489.5	*513.5*	*24.0*	*19.6*	*3.44*	*1.34*	*0.09*	*0.42*	*0.28*	*0.13*	*4.24*
Lower SMSU	08TK0061	490673	5168988	389	634.3	146	-66	**445.0**	**493.0**	**48.0**	**31.9**	**0.88**	**0.67**	**0.02**	**0.67**	**0.39**	**0.31**	**1.44**
Lower SMSU	08TK0067	490735	5168847	389	590.4	168	-70	**423.0**	**506.5**	**83.5**	**62.0**	**2.43**	**1.20**	**0.06**	**0.56**	**0.33**	**0.24**	**3.20**
								448.5	*462.0*	*13.5*	*10.0*	*4.19*	*1.80*	*0.11*	*0.36*	*0.29*	*0.13*	*5.17*
Lower SMSU	08TK0075	490588	5168610	390	578.1	71	-68	**449.0**	**514.5**	**65.5**	**56.6**	**2.93**	**1.45**	**0.07**	**0.55**	**0.36**	**0.22**	**3.81**
								459.5	*485.0*	*25.5*	*21.9*	*3.97*	*1.78*	*0.10*	*0.35*	*0.30*	*0.17*	*4.95*
Lower SMSU	08TK0076	490593	5168728	390	553.8	101	-69	**448.5**	**493.5**	**45.0**	**34.1**	**0.96**	**0.72**	**0.03**	**0.76**	**0.40**	**0.32**	**1.57**
Lower SMSU	08TK0077	490592	5168729	390	558.1	100	-72	**449.0**	**482.0**	**33.0**	**26.9**	**0.46**	**0.29**	**0.01**	**0.46**	**0.27**	**0.17**	**0.77**
Lower SMSU	08TK0079	490589	5168605	390	582.8	90	-66	**458.7**	**525.5**	**66.8**	**54.2**	**2.24**	**1.13**	**0.06**	**0.39**	**0.27**	**0.18**	**2.92**
								476.0	*500.0*	*24.0*	*19.5*	*3.87*	*1.17*	*0.10*	*0.39*	*0.27*	*0.13*	*4.80*
Lower SMSU	08TK0081	490587	5168610	390	601.1	71	-69	**452.5**	**522.5**	**70.0**	**60.8**	**1.85**	**0.94**	**0.05**	**0.58**	**0.34**	**0.27**	**2.51**
								466.9	*487.5*	*20.7*	*17.9*	*3.39*	*1.34*	*0.09*	*0.33*	*0.30*	*0.13*	*4.17*
Lower SMSU	08TK0082[1]	490587	5168609	390	708.5	70	-73	**467.5**	**478.0**	**10.5**	**9.2**	**0.17**	**0.05**	**0.01**	**0.14**	**0.07**	**0.03**	**0.26**
Lower SMSU	08TK0083	490583	5168542	390	705.0	98	-67	**533.0**	**563.0**	**30.0**	**23.3**	**0.34**	**0.18**	**0.01**	**0.24**	**0.14**	**0.11**	**0.52**
Lower SMSU	08TK0086	490584	5168542	390	621.5	82	-68	**501.5**	**560.0**	**58.5**	**48.9**	**2.04**	**0.95**	**0.06**	**0.51**	**0.32**	**0.27**	**2.71**
Lower SMSU	08TK0089	490846	5168866	389	603.7	237	-76	**412.5**	**483.0**	**70.5**	**60.8**	**2.13**	**1.16**	**0.05**	**0.56**	**0.36**	**0.28**	**2.88**
								423.0	*430.5*	*7.5*	*6.5*	*4.28*	*2.17*	*0.10*	*0.41*	*0.39*	*0.13*	*5.42*
Lower SMSU	08TK0090	490848	5168866	390	534.0	217	-71	**419.5**	**461.5**	**42.0**	**33.4**	**1.20**	**0.80**	**0.03**	**0.51**	**0.29**	**0.27**	**1.77**

Zone	Hole No.	Easting (m)	Northing (m)	Elev. (mASL)	Total Hole Length (m)	Azm	Dip	From (m)	To (m)	Sample Length (m)	Estimated True Width (m)	Ni (%)	Cu (%)	Co (%)	Pt (g/t)	Pd (g/t)	Au (g/t)	NiEq (%)
Lower SMSU	12TK0162	490775	5168529	388	620.9	230	-90	**475.0**	**518.0**	**43.0**	**38.9**	**0.62**	**0.47**	**0.02**	**0.59**	**0.36**	**0.23**	**1.06**
Lower SMSU	15TK0220	490843	5168638	389	538.9	276	-84	**458.6**	**468.2**	**9.7**	**9.0**	**0.25**	**0.16**	**0.01**	**0.24**	**0.14**	**0.08**	**0.42**
Lower SMSU	15TK0220A	490843	5168638	389	545.0	276	-84	**438.0**	**506.5**	**68.5**	**62.4**	**2.15**	**1.06**	**0.06**	**0.65**	**0.40**	**0.30**	**2.90**
								457.5	*469.5*	*12.0*	*10.9*	*3.49*	*1.34*	*0.09*	*0.42*	*0.30*	*0.19*	*4.31*
Lower SMSU	16TK0235	490845	5168713	389	539.2	282	-81	**436.0**	**463.5**	**27.5**	**24.2**	**0.51**	**0.39**	**0.02**	**0.44**	**0.25**	**0.18**	**0.85**
Lower SMSU	16TK0235A	490845	5168713	389	538.9	282	-81	**418.5**	**497.5**	**79.0**	**69.3**	**1.36**	**0.87**	**0.04**	**0.75**	**0.45**	**0.32**	**2.05**
								435.5	*441.5*	*6.0*	*5.3*	*3.42*	*1.73*	*0.09*	*0.85*	*0.50*	*0.24*	*4.51*
Lower SMSU	16TK0237	490839	5168769	389	502.3	268	-82	**407.0**	**429.5**	**22.5**	**20.2**	**1.36**	**0.71**	**0.03**	**0.44**	**0.30**	**0.21**	**1.89**
Lower SMSU	16TK0237A	490839	5168769	389	456.6	268	-82	**404.5**	**412.0**	**7.5**	**6.5**	**0.50**	**0.32**	**0.02**	**0.54**	**0.31**	**0.19**	**0.85**
Lower SMSU	16TK0242	490707	5168733	391	551.1	74	-85	**404.5**	**466.5**	**62.0**	**55.8**	**2.10**	**1.22**	**0.05**	**0.73**	**0.37**	**0.30**	**2.93**
								412.5	*430.5*	*18.0*	*16.2*	*3.70*	*1.71*	*0.10*	*0.31*	*0.27*	*0.15*	*4.63*
Lower SMSU	16TK0243	490864	5168569	388	605.9	260	-83	**478.0**	**503.5**	**25.5**	**23.5**	**0.70**	**0.40**	**0.02**	**0.64**	**0.37**	**0.28**	**1.14**
Lower SMSU	16TK0244	490708	5168541	389	554.4	88	-84	**493.5**	**510.0**	**16.5**	**14.8**	**0.32**	**0.25**	**0.01**	**0.22**	**0.35**	**0.13**	**0.56**
Lower SMSU	16TK0247	490833	5168672	389	480.1	253	-86	**442.0**	**466.0**	**24.0**	**21.6**	**0.40**	**0.29**	**0.01**	**0.47**	**0.27**	**0.18**	**0.71**
MSU	08TK0049	490718	5168728	391	553.5	183	-80	**396.0**	**408.0**	**12.0**	**9.8**	**6.03**	**3.30**	**0.11**	**0.67**	**0.59**	**0.33**	**7.74**
MSU	08TK0058	490590	5168609	390	649.5	89	-71	**448.8**	**452.2**	**3.3**	**2.7**	**4.96**	**2.56**	**0.08**	**0.52**	**0.45**	**0.46**	**6.31**
MSU	08TK0068	490733	5168847	389	516.3	194	-75	**378.4**	**382.2**	**3.7**	**2.9**	**3.63**	**1.36**	**0.09**	**0.31**	**0.30**	**0.08**	**4.41**
MSU	08TK0075	490588	5168610	390	578.1	71	-68	**420.5**	**423.7**	**3.1**	**2.7**	**5.15**	**2.11**	**0.10**	**0.44**	**0.35**	**0.09**	**6.26**
MSU	08TK0077	490592	5168729	390	558.1	100	-72	**396.4**	**409.9**	**13.6**	**11.0**	**5.82**	**2.68**	**0.13**	**0.51**	**0.44**	**0.22**	**7.25**
MSU	08TK0081	490587	5168610	390	601.1	71	-69	**421.1**	**431.6**	**10.5**	**9.1**	**5.05**	**3.03**	**0.09**	**0.96**	**0.52**	**0.28**	**6.68**
MSU	08TK0083	490583	5168542	390	705.0	98	-67	**497.5**	**507.8**	**10.3**	**8.0**	**7.01**	**2.89**	**0.14**	**1.32**	**0.70**	**0.30**	**8.78**
MSU	08TK0086	490584	5168542	390	621.5	82	-68	**468.0**	**469.5**	**1.5**	**1.3**	**0.02**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.02**
MSU	09TK0095	490983	5168407	389	663.9	265	-74	**512.9**	**516.6**	**3.7**	**3.4**	**4.75**	**2.23**	**0.10**	**1.06**	**0.53**	**0.33**	**6.13**
MSU *	12TK0153	490982	5168405	388	683.7	161	-82	**554.5**	**575.3**	**20.8**	**17.9**	**4.96**	**2.11**	**0.10**	**0.41**	**0.37**	**0.12**	**6.07**

Zone	Hole No.	Easting (m)	Northing (m)	Elev. (mASL)	Total Hole Length (m)	Azm	Dip	From (m)	To (m)	Sample Length (m)	Estimated True Width (m)	Ni (%)	Cu (%)	Co (%)	Pt (g/t)	Pd (g/t)	Au (g/t)	NiEq (%)
								558.5	*568.1*	*9.5*	*8.2*	*7.18*	*3.38*	*0.14*	*0.52*	*0.53*	*0.11*	*8.86*
MSU	12TK0158	490850	5168418	388	594.7	58	-89	**482.9**	**495.7**	**12.8**	**11.6**	**5.86**	**2.28**	**0.13**	**1.28**	**0.58**	**0.40**	**7.37**
MSU	12TK0162	490775	5168529	388	620.9	230	-90	**439.1**	**443.0**	**3.9**	**3.5**	**2.64**	**1.15**	**0.06**	**0.13**	**0.23**	**0.13**	**3.26**
MSU *	13TK0171	491049	5168348	389	641.9	157	-90	**573.3**	**581.0**	**7.7**	**7.0**	**8.01**	**2.87**	**0.15**	**0.41**	**0.54**	**0.21**	**9.53**
MSU	14TK0211	490857	5168535	389	648.0	265	-85	**425.0**	**429.0**	**4.0**	**3.7**	**5.74**	**2.07**	**0.13**	**0.68**	**0.40**	**0.10**	**6.94**
								441.0	**456.9**	**15.9**	**14.7**	**7.14**	**2.43**	**0.17**	**0.81**	**0.68**	**0.37**	**8.67**
MSU	14TK0213	490857	5168535	389	618.0	216	-85	**435.7**	**443.4**	**7.7**	**6.9**	**5.09**	**2.22**	**0.10**	**0.91**	**0.47**	**0.31**	**6.42**
								455.1	**464.7**	**9.6**	**8.6**	**7.04**	**2.43**	**0.15**	**1.20**	**0.79**	**0.98**	**8.79**
MSU	15TK0220A	490843	5168638	389	545.0	276	-84	**411.0**	**415.1**	**4.1**	**3.7**	**2.01**	**1.24**	**0.05**	**0.50**	**0.53**	**1.16**	**2.99**
								414.0	*415.1*	*1.1*	*1.0*	*4.79*	*1.97*	*0.14*	*1.05*	*1.18*	*0.37*	*6.19*
MSU*	16TK0233A	490914	5168369	388	583.3	309	-84	**508.0**	**517.0**	**9.0**	**8.4**	**4.94**	**2.08**	**0.10**	**0.57**	**0.43**	**0.24**	**6.12**
								515.0	*516.0*	*1.0*	*0.9*	*9.06*	*3.37*	*0.19*	*0.23*	*0.76*	*0.14*	*10.79*
MSU*	16TK0234	490950	5168389	388	696.8	181	-85	**547.0**	**552.1**	**5.0**	**4.4**	**4.49**	**1.86**	**0.09**	**0.62**	**0.50**	**0.27**	**5.59**
MSU	16TK0235	490845	5168713	389	539.2	282	-81	**381.4**	**392.3**	**10.8**	**9.5**	**4.90**	**2.47**	**0.08**	**0.42**	**0.34**	**0.14**	**6.13**
MSU	16TK0235A	490845	5168713	389	538.9	281	-82	**379.5**	**390.7**	**11.2**	**9.8**	**4.73**	**2.38**	**0.09**	**0.32**	**0.28**	**0.10**	**5.89**
MSU	16TK0243	490864	5168569	388	605.9	260	-83	**418.0**	**428.5**	**10.5**	**9.7**	**5.88**	**2.32**	**0.14**	**0.51**	**0.42**	**0.09**	**7.16**
								435.3	**438.3**	**3.0**	**2.8**	**7.35**	**2.91**	**0.17**	**0.76**	**0.55**	**0.14**	**8.97**
MSU	16TK0244	490708	5168541	389	554.4	88	-84	**448.8**	**450.8**	**2.0**	**1.8**	**9.60**	**4.04**	**0.18**	**0.88**	**0.96**	**0.45**	**11.81**
MSU*	16TK0246	490881	5168290	388	611.4	10	-81	**529.0**	**533.4**	**4.4**	**4.0**	**5.13**	**2.12**	**0.12**	**0.69**	**0.48**	**0.29**	**6.39**
MSU	16TK0247	490833	5168672	389	480.1	253	-86	**398.0**	**403.0**	**5.0**	**4.5**	**3.26**	**2.59**	**0.04**	**0.16**	**0.30**	**0.28**	**4.43**
138	12TK0138	491125	5168286	389	731.5	274	-74	**431.5**	**564.0**	**132.5**	**128.8**	**1.06**	**0.99**	**0.03**	**0.71**	**0.18**	**0.21**	**1.71**
								510.1	*519.7*	*9.6*	*9.3*	*2.49*	*2.09*	*0.05*	*0.81*	*0.40*	*0.36*	*3.68*
138	12TK0146	491125	5168286	389	670.0	293	-75	**430.5**	**524.0**	**93.5**	**90.9**	**0.55**	**0.37**	**0.02**	**0.13**	**0.08**	**0.09**	**0.78**
								442.3	*455.5*	*13.2*	*12.8*	*1.03*	*0.85*	*0.03*	*0.19*	*0.12*	*0.24*	*1.51*

Zone	Hole No.	Easting (m)	Northing (m)	Elev. (mASL)	Total Hole Length (m)	Azm	Dip	From (m)	To (m)	Sample Length (m)	Estimated True Width (m)	Ni (%)	Cu (%)	Co (%)	Pt (g/t)	Pd (g/t)	Au (g/t)	NiEq (%)
138	12TK0153	490982	5168405	388	683.7	161	-82	**423.0**	**534.0**	**111.0**	**110.1**	**0.46**	**0.31**	**0.02**	**0.11**	**0.07**	**0.07**	**0.65**
138	12TK0156	490996	5168294	388	703.8	293	-83	**417.3**	**533.8**	**116.5**	**115.8**	**0.88**	**0.65**	**0.03**	**0.22**	**0.12**	**0.14**	**1.26**
								495.5	*505.6*	*10.1*	*10.1*	*1.50*	*0.86*	*0.04*	*0.23*	*0.17*	*0.11*	*1.98*
138	12TK0160	490997	5168293	388	634.0	240	-86	**416.0**	**548.0**	**132.0**	**131.9**	**1.07**	**0.84**	**0.03**	**0.27**	**0.16**	**0.18**	**1.55**
								490.8	*504.9*	*14.1*	*14.0*	*2.08*	*1.24*	*0.05*	*0.39*	*0.22*	*0.17*	*2.78*
138	13TK0167	490922	5168361	388	635.8	240	-89	**415.5**	**509.3**	**93.8**	**93.8**	**0.31**	**0.14**	**0.01**	**0.12**	**0.06**	**0.05**	**0.43**
138	13TK0171	491049	5168348	389	641.9	157	-90	**416.0**	**531.0**	**115.0**	**115.0**	**0.65**	**0.45**	**0.02**	**0.17**	**0.10**	**0.11**	**0.93**
138	13TK0189	491051	5168340	389	652.7	47	-85	**415.3**	**524.1**	**108.9**	**108.1**	**0.39**	**0.21**	**0.02**	**0.12**	**0.07**	**0.06**	**0.54**
138	14TK0206	491095	5168293	388	786.0	356	-86	**417.0**	**526.0**	**109.0**	**108.3**	**0.46**	**0.31**	**0.02**	**0.16**	**0.09**	**0.08**	**0.67**
138	16TK0234	490950	5168389	388	696.8	181	-85	**419.0**	**530.0**	**111.0**	**109.5**	**0.44**	**0.24**	**0.02**	**0.10**	**0.06**	**0.05**	**0.59**
								508.4	*529.0*	*20.6*	*20.3*	*0.95*	*0.51*	*0.03*	*0.16*	*0.12*	*0.06*	*1.25*
138	16TK0245	490937	5168279	388	585.0	289	-88	**414.0**	**531.0**	**117.0**	**116.8**	**0.63**	**0.46**	**0.02**	**0.24**	**0.13**	**0.12**	**0.93**
138	16TK0246	490881	5168290	388	611.4	10	-81	**419.0**	**504.5**	**85.5**	**84.8**	**0.43**	**0.29**	**0.02**	**0.12**	**0.07**	**0.08**	**0.62**
138	16TK0248	491049	5168348	389	680.3	142	-87	**417.5**	**538.5**	**121.0**	**120.8**	**0.88**	**0.61**	**0.03**	**0.21**	**0.13**	**0.15**	**1.25**
								482.7	*486.0*	*3.4*	*3.3*	*2.08*	*0.68*	*0.05*	*0.25*	*0.10*	*0.10*	*2.51*
								519.0	*534.0*	*15.0*	*15.0*	*1.41*	*0.93*	*0.03*	*0.37*	*0.26*	*0.27*	*1.99*
138	16TK0250	490999	5168293	388	648.9	169	-88	**419.0**	**547.5**	**128.5**	**128.5**	**0.50**	**0.33**	**0.02**	**0.14**	**0.07**	**0.08**	**0.71**
								428.0	*437.0*	*9.0*	*9.0*	*1.19*	*0.87*	*0.03*	*0.18*	*0.12*	*0.16*	*1.66*

Note: Bold text indicates total hole composite used for mineral resource calculation.
Note: Italicized text indicates a significant intersection within the larger composite.
Note: Upper SMSU, Lower SMSU, and MSU (unless otherwise noted) assumed a Dip and Dip Direction of 25/170 for the calculation of estimated true thickness.
Note: * Uses an assumed Dip and Dip Direction of 25/130 for the calculation of estimated true thickness.
Note: The 138 orebody assumed a Dip and Dip Direction of 0/0 for the calculation of estimated true thickness.
Note: Estimated true thickness calculated via Datamine® "TRUETHK" Process.

10.5 Drill Hole and Core Logging Procedures

10.5.1 Drill Site Management

Drilling at the Tamarack North Project is challenged by the extensive wetlands. Drilling initially was restricted to winter months with frozen ground to minimize impacts to swamps and wetlands in the project area. In 2008, drilling was also initiated in the summer months using swamp mats for both access roads and drill platforms which have been very successful in minimizing the impact on the environment.

Kennecott has implemented and maintained strict environmental and safety protocols with regard to drilling which include: drilling contracts that ensure safety standards are not compromised, the use of swamp mats for drill platforms and access, and photographing the site before and after drilling and rehabilitation.

Diamond drilling diameters utilized at the Tamarack North Project have been primarily NQ and HQ wireline. Sonic drilling has been used extensively to pre-collar holes through the overlying glacial sediments which are then completely cased off prior to commencing diamond core drilling. All casing depths and sizes are recorded in the KEX acQuire database.

Typical industry standard procedures are followed with all drilling and are outlined in the "Tamarack Core Processing Procedures Manual"' including:

- All statutory permits and approvals received by appropriate regulatory bodies prior to drilling. (see http://www.dnr.state.mn.us/lands_minerals/metallic_nf/regulations.html)
- Drill collars initially located in the field using handheld GPS. Following completion of drilling each collar is either professionally surveyed or by differential GPS reading and collar position permanently marked with marker on cement cap. If permanent marker cannot be established because of ground conditions a certificate is issued by surveyor. Collar positions are subsequently checked against high resolution satellite imagery.
- Closure of holes follow regulatory procedures as outlined by the MDH both for permanently abandoned holes, which are cemented from the base to surface with all casing removed, and temporarily abandoned holes, which are temporarily sealed

according to regulations if there is a possibility of the hole being deepened or the hole is awaiting a downhole EM survey.

10.5.2 Core Delivery and Logging

Kennecott has defined and adopted clear procedures for core processing. A split-tube coring system has been adopted for all holes. Exploration holes are designated as either *reconnaissance* or as *resource* with each being treated somewhat differently. Resource core is transferred to V-rails directly from the core tube. Core is then transported a short distance to the core storage site via a customized, secure, v-rail enabled trailer. Core is only transferred to core boxes by the geologist after transport to the core storage site and after being marked-up and processed. This procedure minimizes breakage and ensures the core-orientation (by the Reflex Ace Core Orientation Tool - ACT) that is used with each core-run is maintained. Reconnaissance designated core is primarily placed into boxes directly from the core tube although it can also be placed in the v-rail system at the discretion of the project manager.

10.5.3 Geological Logging Procedures

Geological summary logging is completed immediately on receiving the core while still in the V-rails and is intended to provide an overview of the key lithologies and features with accurate estimates of mineralization. The main unit lithologies are recorded with the codes; SED, FGO, CGO, MZ, SMSU, MSU, MMS etc. The logs are entered into the acQuire database and also prioritized for detailed logging.

Prioritization of core is determined during the summary logging. High priority core is processed, and logged as soon as possible. Lower priority core is retained and stored in V-rails until it can be processed and logged. Core processing and logging procedures include:

- Reference orientation line marking (based on Reflex Ace Core Orientation Tool - ACT)
- Measurement conversion and run depth marking (Imperial to Metric)
- Run recovery logging and marking (core loss record)
- Core photography both on rails and boxes
- Detailed geotechnical logging (logging interval based on geological domains and varied with detail required typically 3.05 m to 6 m). Standard logging and testing includes.

  - IRS Hardness (Rock strength estimation)
  - L10 (RQD)
  - Micro Defects
  - Alteration Intensity
  - Joint and fracture count and categorization
  - Open and cemented joint set number
  - Point load testing (every 20 m)
  - UCS (uniaxial compressive strength) Sampling
  - Geotechnical Major Structures (Interval structure logging)
- Detailed Geological Logging: Detailed geological logging is an important process for recording and understanding the geology and mineralization. Kennecott has adopted the system of logging into the acQuire database with specific custom fields and drop-down lists to ensure consistency. The logging includes a lithology log, an alteration log, a mineralization log, a point structure log, a linear structure log (where structure orientations and dips are measured); and a magnetic susceptibility log with a handheld magnetometer (discontinued temporarily in 2008 but subsequently resumed).

10.5.4 Surveying

All collars are professionally surveyed to sub-metre accuracy after completion of the drill hole. Down-hole deviation surveys are conducted on all holes at the Tamarack North Project and include two independent surveys conducted on the hole completion, which include:

- A multi-shot survey with a magnetic tool (Flexit) provided by the drill contractor (survey shots conducted at least 10 m intervals).
- A multi-shot gyroscopic survey conducted by a down-hole survey contractor (survey shots conducted at a minimum of 20 m intervals).

The Flexit tool is susceptible to poor azimuth accuracy in the presence of strongly magnetic lithologies, such as those found at the Tamarack North Project. However, the dip readings are not affected by in hole magnetics and provide a reliable source of dip measurements as the hole progresses. Multi-shot gyroscopic surveys are not affected by magnetics and provide accurate downhole deviation.

11. SAMPLE PREPARATION, ANALYSES, AND SECURITY

11.1 Core Sampling and Chain of Custody

Standardized core sampling procedures were introduced by Kennecott in January 2007 and have been incorporated for all the sampling at the Tamarack North Project with only minor modifications made subsequently. The Tamarack North Project has adopted the use of split-tube coring as a means of minimizing core breakage and facilitating the recording of geotechnical and oriented core data (KEX Internal Doc, 2016). It is standard practice to sample all core irrespective of lithology type or sulphide content, although sulphide intervals are prioritized. Core is sampled on a minimum of 0.5 m intervals to a maximum of 3 m, with 1.5 m being the most common sample length. The following procedures are adhered to:

- Core is picked up at the drill site by Kennecott staff and returned to the secure core logging facility in the town of Tamarack (Figure 11-1).

Figure 11-1: Photo of Kennecott Core Processing Facility Tamarack, Minnesota

- Once at the core processing facility, the core is "quick-logged" for major lithological units and sulphide mineralization, and entered directly into the acQuire system database.

Further detailed lithological logging will occur later in the process chain once geotechnical logging processes have occurred.

- Sample interval marking: Duplicate sample tags are inserted and displayed on the V-rails for photographing. Once photographed the core is transferred to cardboard core boxes where the tags are stapled to the inside wall of the appropriate rows.
- Core photography is conducted after the sample mark-up is completed on V-rails (definition and some reconnaissance holes).
- Boxed core (reconnaissance holes) is also photographed and was reintroduced in 2012 after being discontinued in 2008.
- In "*definition"* categorized holes, a 15 cm sample is cut from the core for the purposes of density and UCS measurements approximately every 20 m. Preference is given to core representative of the dominant lithology in the 20 m interval at the discretion of the geologist (i.e. at changes in lithology). A density measurement via the hydrostatic-gravimetric method is performed with the sample in the core shack. Dry and wet weights for 3 density standards are recorded every 20th primary density sample. The scale is also calibrated using calibration weights at this time. The UCS sample is labelled "UCS" with a unique sample tag associated with it, photographed (as part of the regular core photo process) and ultimately placed in a unique sample bag (with tag) until despatched to an appropriate testing laboratory.
- In "*reconnaissance"* holes, UCS sampling does not occur; however, density measurements on 10 cm lengths of core are carried out following the same parameters as identified above in "*definition"* categorized holes.
- Core sawing is conducted after core marking and sample tagging has occurred. Core is consistently cut 1 cm to the right of the orientation line. Both halves are returned to the box.
- Sample packaging: half-core samples (half without the orientation line) are packed, after air drying, in individual plastic bags with the sample ticket inserted inside the bag and the sample number written in permanent marker on the outside. The core is secured, and stored locally, out of the elements, until such time as it can be transported to the State core library in Hibbing, Minnesota.

- The quality control protocol is documented by Kennecott and was generally followed at the Tamarack North Project since the start of the program (reportedly modified to the present procedure in early 2008). Current quality control samples include:
  - Blanks: inserted at the beginning of every batch, at every 30th sample, at changes in lithology, and specifically, prior to and after highly mineralized samples. Blanks used have included LV Silica Sand; GABBRO-1 (unmineralized half core from hole 07L039); GABBRO-2 (unmineralized half core from 07L038 since July 2008); GABBRO-128 (unmineralized half core from hole 10TK0128); and GABBRO-18 (unmineralized half core from hole 04L018).
  - Standards: a matrix-matched standard (corresponding to the sulphide content of the flanking samples) is inserted into the sample stream every 30 samples to monitor sample accuracy. A corresponding standard is also inserted at the beginning of significant changes in mineralization. The standards were prepared from coarse rejects of the Eagle Deposit (Michigan) (EA type) and Tamarack North Project (TAM type) drill holes and are certified by an independent subject matter expert after Round Robin testing at accredited laboratories.
  - Duplicates: Field, Coarse Reject, ®and Pulp duplicates are routinely used to monitor sampling and assay precision according to the following protocols:
    - Field Duplicates include two quartered core lengths submitted consecutively every 30 samples and are offset from the standards by 10 samples.
    - Coarse Reject Duplicates are splits from the coarse reject material that are inserted every 20 samples by the lab at the request of Kennecott. See Figures 11-3 and 11-4.
    - Pulp Duplicates are randomly generated and assayed by ALS Minerals as an internal process at a rate of one every 30 samples. See Figures 11-5 and 11-6.
    - Check assays from a secondary laboratory were not utilized by Kennecott to confirm the quality of the ALS Minerals values. However, the quality of the ALS values is monitored using acQuire® protocols for evaluating standards and blanks.

- Sample batches are packed in collapsible plastic bins for shipping. Sample consignments are limited to 200 samples and are grouped in batches of the same rock types and using the same assay methods. A dispatch form is created, with one copy being sealed in the container and the other emailed to the lab. The container is sealed with randomly selected, security tags that are listed in the Chain of Custody Sheet. Access to the samples cannot occur without breaking a seal.
- Samples are shipped to the ALS Minerals lab in Thunder Bay, Ontario, Canada via Manitoulin Transport for sample preparation.
- The Chain of Custody Sheet will be signed upon receipt at the lab in Thunder Bay, confirming that they are not damaged or tampered with. These forms are scanned and emailed to Kennecott.

ALS Minerals is independent to Kennecott and Talon and is one of the world's largest and most diversified testing services providers, with over 120 labs and offices in the Minerals Division. ALS Thunder Bay and Vancouver laboratories are accredited by the Canadian Association for Laboratory Accreditation and Standards Council of Canada (http://www.alsglobal.com/).

11.2 Sample Preparation and Assay Protocols

Sample preparation at ALS Minerals in Thunder Bay includes the following procedure:

- Samples are logged into the ALS Minerals database (LOG-21).
- Samples are weighed upon receipt then dried overnight (DRY-21).
- Entire sample is crushed to 70% -2 mm or better (CRU-31).
- 1000 g is split off using a rotary splitter or a Boyd crusher/rotary splitter combination (SPL-22).
- Entire 1000 g is pulverized to better than 85% passing 75 µm (PUL-32).
- Assay aliquots are taken from each sample and packaged for shipment to ALS Vancouver where the samples are digested and analyzed.
- Vacuum seal master pulp and all master pulp material is returned to Kennecott and stored at the Tamarack Project site.
- Crushers, splitters and pulverizers are washed with barren material at the start of each batch and as necessary within batches. Between-sample washes (WSH-21 and WSH-22) are used at the request of Kennecott for high grade sample batches.

- Crushing quality control tests are conducted every 20th to 40th sample.
- Pulverizing quality control tests are conducted every 20th to 40th sample.

Sample analyses are conducted at the ALS Minerals Vancouver laboratory. The methodology for mineralized material at the Tamarack North Project is reported as follows:

- Ni, Cu, and Co grades are first analyzed by a 4-acid digestion and ICP-AES and ICP-MS (ME-MS61). Grades reporting greater than 0.25% Ni and/or 0.1% Cu, using ME-MS61, trigger a sodium peroxide fusion with ICP-AES finish (ICP81).
- Pt, Pd and Au are initially analyzed by a 50 g fire assay with an ICP-MS finish (PGM-MS24). Any samples reporting greater than 1 g/t Pt or Pd trigger an over-limit analysis by ICP-AES finish (PGM-ICP27) and any samples reporting greater than 1 g/t Au trigger an over-limit analysis by AAS (Au-AA26).
- Total sulphur is analyzed by Leco Furnace (S-IR08).

The methodology for non-mineralized samples is reported as follows:

- Ni, Cu, and Co grades are first analyzed by a 4-acid digestion and mixed ICP-AES and ICP-MS (ME-MS61). Grades reporting greater than 0.25% Ni and/or 0.1% Cu, using ME-MS61, trigger a sodium peroxide fusion with ICP-AES finish (ICP81).
- Pt, Pd and Au are initially analyzed by a 50 g fire assay with an ICP-MS finish (PGM-MS24).

The methodology for litho-geochemical characterization of samples is reported as follows:

- ALS Minerals Code ME-ICP06 - Whole rock package for 13 oxides plus loss on ignition (ALS Minerals Code OA-GRA05) and total (ALS Minerals TOT-ICP06) - Li metaborate or tetraborate fusion / ICP-AES finish.
- ALS Minerals Code ME-MS81 – Resistive trace 30 elements by Li meta-borate fusion and ICP-MS finish.
- ALS Minerals Code ME-4ACD81 – Eight (8) base metals plus Li and Sc by 4-acid digestion with an ICP-AES finish (Ag, Cd, Co, Cu, Mo, Ni, Pb, and Zn).
- ALS Minerals Code ME-MS42 – Nine (9) volatile trace elements by aqua regia digest with an ICP-MS finish (As, Bi, Hg, In, Re, Sb, Se, Te, Tl).
- ALS Minerals Code ME-IR08 - Total sulphur and total carbon analyzed by combustion furnace.

The methodology for density measurements is reported as follows:

- ALS Minerals Code OA-GRA08 – SG is determined by the weighing a sample in air and in water, and it is reported as a ratio between the density of the sample and the density of water.

11.3 Assay Data Handling

After receiving assay results for each despatch, QA/QC standards, blanks and duplicate data are immediately processed (GOMS acQuire) to confirm that results are consistent with expected ranges and values. The values reported for ALS Minerals internal standards are also monitored. Kennecott has adopted a number of rules of variance that are acceptable versus those of exceedance. An internal QA/QC analysis manual is available for all users of the data. If established quality thresholds are exceeded then the sample is logged as a “Fail” and an investigation is initiated. Re-analysis, sample switch checks, and other means of investigation are acted upon to resolve exceedances. All actions are tracked and logged (See Figure 11-2). Assay data is only considered final within the acQuire system once they have passed all QA/QC checks. Talon only received assay data from Kennecott once the samples were designated as final within the acQuire system. Talon received the data via a secured web based transfer site as a .csv file.

LEGEND

	= loaded
	= pending QC
	= pending revision

Tamarack - Lakeview Assay Batch Tracking Sheet

Despatch	Workorder	Date Samples received	Date Assays Finalized	Project	Hole ID	QC Status	QC Final	Date assays loaded to database	Failure Rule	Standard ID	Sample ID for Failed Sample(s)	Elements	Date ALS Chemex Advised of Failure	Date re-runs received	Comments
E40370	VA08019642	18/02/2008	10/03/2008	Tamarack	08L042	Failed	Passed	02/06/2008	1	EA-02	40013265	Au, Pt, Pd			assays imported by Peter T
E40371	VA08028862	12/03/2008	08/04/2008	Tamarack	08L040	Passed		08/07/2008							assays imported by Peter T
E40372	VA08028863	12/03/2008	05/04/2008	Tamarack	08L045	Passed		08/07/2008							assays imported by Peter T
E40373	VA08033273	18/03/2008	17/04/2008	Tamarack	08L042	Passed		08/07/2008							assays imported by Peter T
E40374	VA08015798	25/03/2008	23/04/2008	Lakeview	08L044	Passed		24/07/2008							assays imported by Peter T
E40375	VA08049561	17/04/2008	22/05/2008	Lakeview	07L038	Passed		27/05/2008							assays imported by Peter T
E40376	VA08042717	07/04/2008	21/05/2008	Tamarack	08L041	Failed	Passed	11/06/2008	1	EA-01	40013135, 40013235	Cu, Nu	22/05/2008	06/06/2008	Values for re-runs pass; initial failure due to c
E40377	VA08049299	17/04/2008	22/05/2008	Lakeview	07L039	Passed		23/05/2008							assays imported by Peter T
E40378	VA08049292	17/04/2008	22/05/2008	Tamarack	07L037	Passed		27/05/2008							assays imported by Peter T
E40379	VA08049560	17/04/2008	22/05/2008	Tamarack	04L015	Failed	Passed	11/06/2008	1	EA-01	40014395	Au, Pt, Pd	23/05/2008	03/06/2008	Values for re-runs pass; cause of initial failure
E40380	VA08036667	18/02/2008	21/06/2008	Tamarack	08L042	Failed									check samples(?) - unknown assay method, r
E40381	TB08077084	12/06/2008	04/07/2008	Tamarack	08TK0048	Passed		03/07/2008							assays imported by Peter T
E40382	TB08083297	25/06/2008	15/07/2008	Tamarack	08TK0048 & 49	Failed	Passed	20/08/2008	1	EA-01	40015030	Au	16/07/2008	8/13/08	assays imported by Peter T - sample number
E40383	TB08088647	02/07/2008	23/07/2008	Tamarack	08TK0050	Failed	Passed	03/03/2008					30/07/2008		assays imported by Peter T.

Figure 11-2: Table of Failures and Corrections

11.4 Quality Assurance and Quality Control (QA/QC)

QA/QC programs are intended to monitor the accuracy and precision of the sampling and analysis process in order to quantify the reliability and accuracy of assay data. Typical QA/QC programs consist of a routine insertion of QC materials to measure laboratory performance. QC materials generally consist of certified reference materials including standards and blanks (materials containing no economic minerals) as well as duplicate samples (duplicates).

The Tamarack North Project has shown QA programs consistent with industry standards. Written procedures, acceptable industry software, database organization, and data presentation all contribute to confidence in the current program. QC at the Tamarack North Project has evolved over the life of the project. The initial phase of the project saw duplicates, blanks and standards inserted at a rate of approximately 5% to 6%. With the maturity of the program and confidence in the laboratory the rate of insertion has been reduced to 3.5% to 4%. There is a consistent program of analyzing duplicates of pulps (lab), coarse rejects (lab) and core (field). Analysis of the coarse reject duplicate samples for Ni and Cu show a strong correlation and thus confirm proper sample splitting methodology carried out at the lab (see Figures 11-3 and 11-4). Analysis of the pulp duplicate samples for Ni and Cu also show a strong correlation and thus confirm the lab precision (see Figures 11-5 and 11-6).

The QA/QC standards, blanks and duplicate testing protocols applied by Kennecott are outlined in Section 11.1 above.

It is Golder's opinion that the sample preparation, security and analytical procedures used by Kennecott are consistent with industry standards and are appropriate for the Tamarack North Project. Golder has no material concerns with these processes.

Golder recommends that Kennecott prepare an annual report summarizing the QA/QC analysis of their CRM data and that they incorporate laboratory check assays, from a referee lab, into their protocol as a check against lab bias from their primary lab.

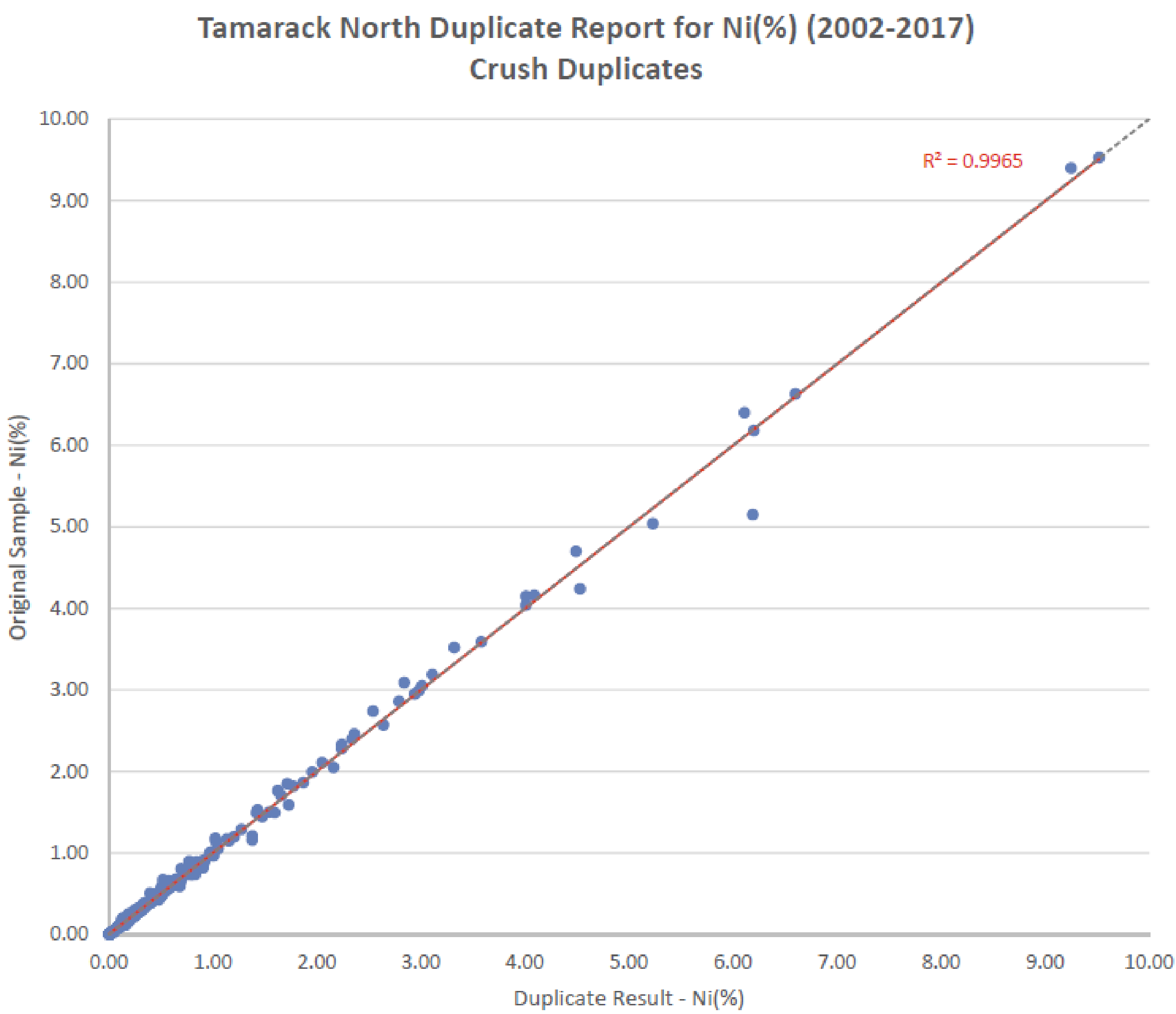


Figure 11-3: Comparison of Original vs Duplicate Coarse Reject Ni (%) values for Tamarack North Drill Hole Samples between 2002 and 2017

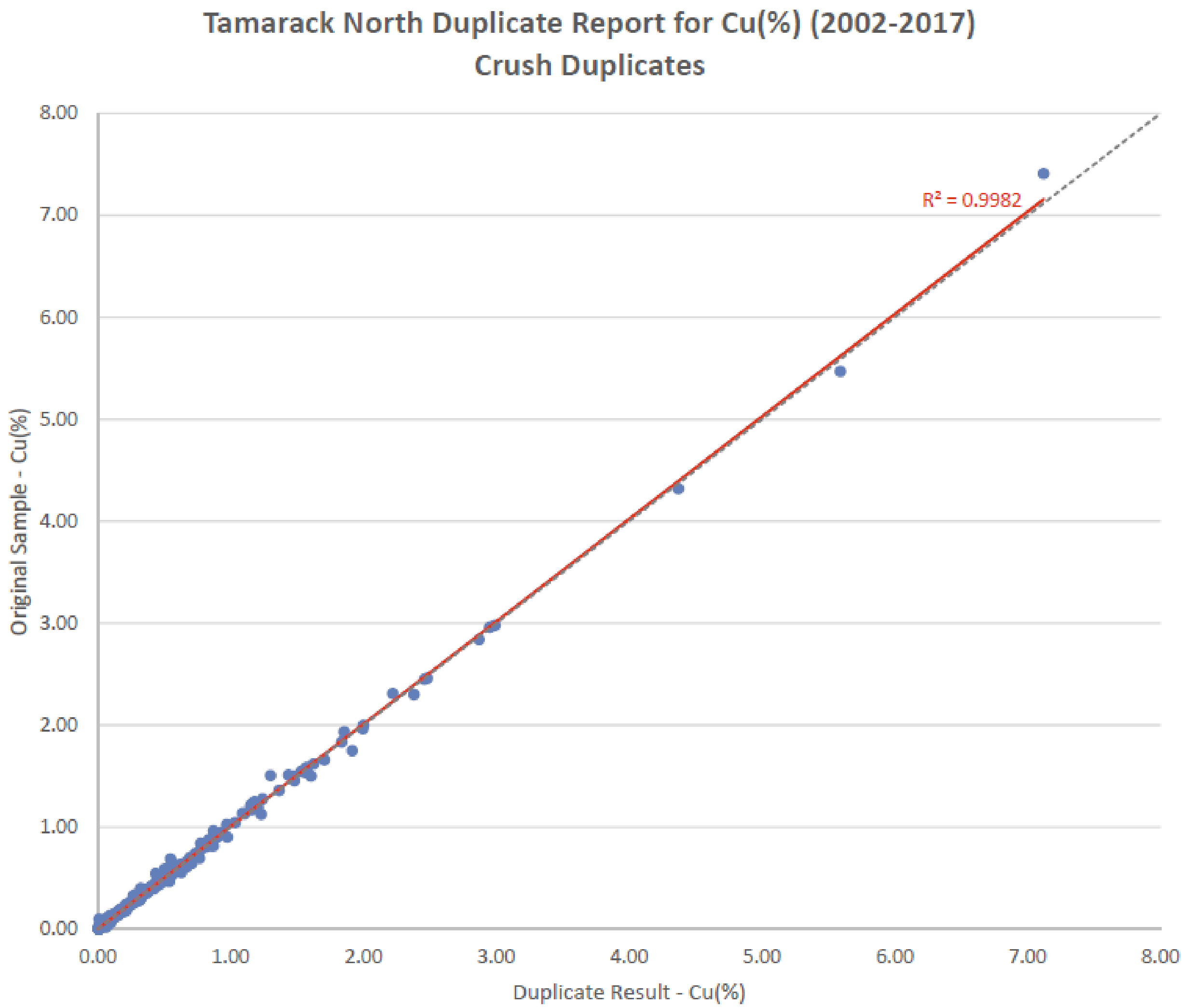


Figure 11-4: Comparison of Original vs Duplicate Coarse Reject Cu (%) values for Tamarack North Drill Hole Samples between 2002 and 2017

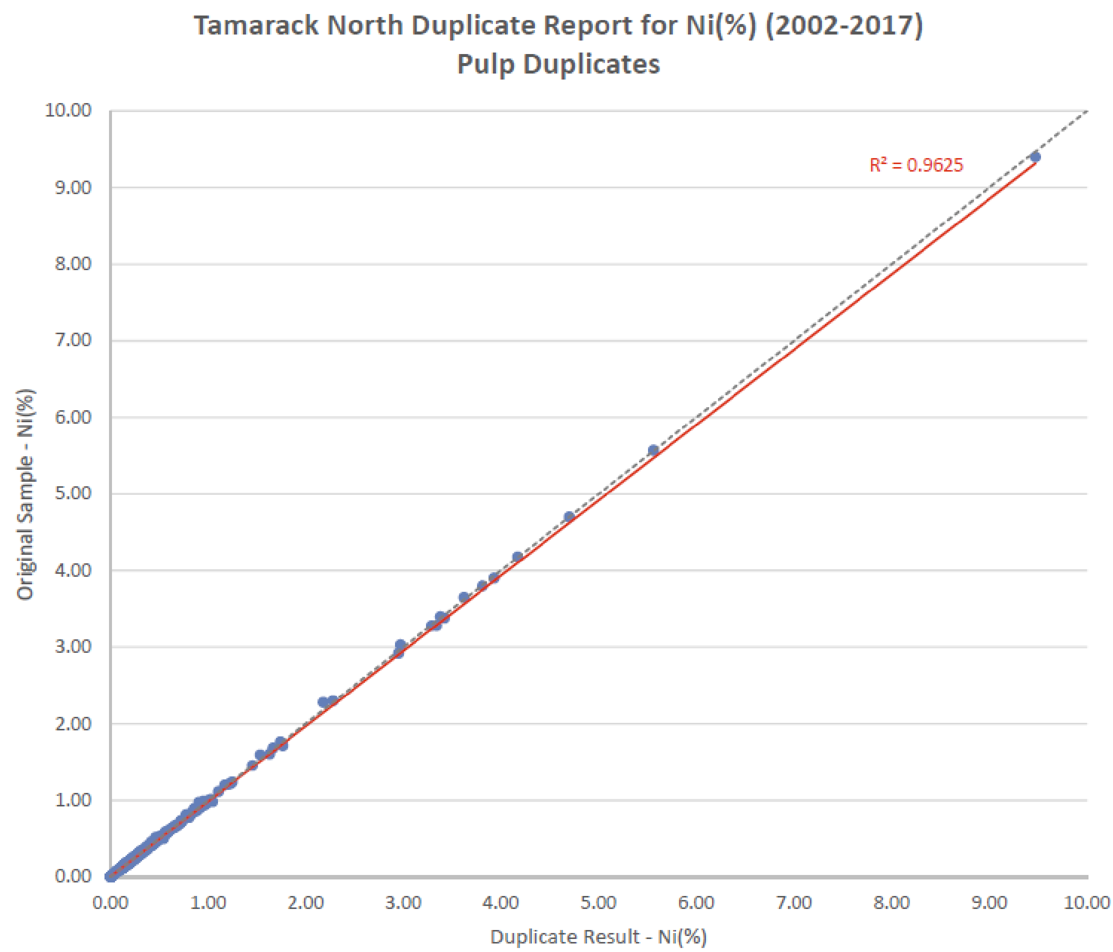


Figure 11-5: Comparison of Original vs Duplicate Pulps Ni (%) values for Tamarack North Drill Hole Samples between 2002 and 2017

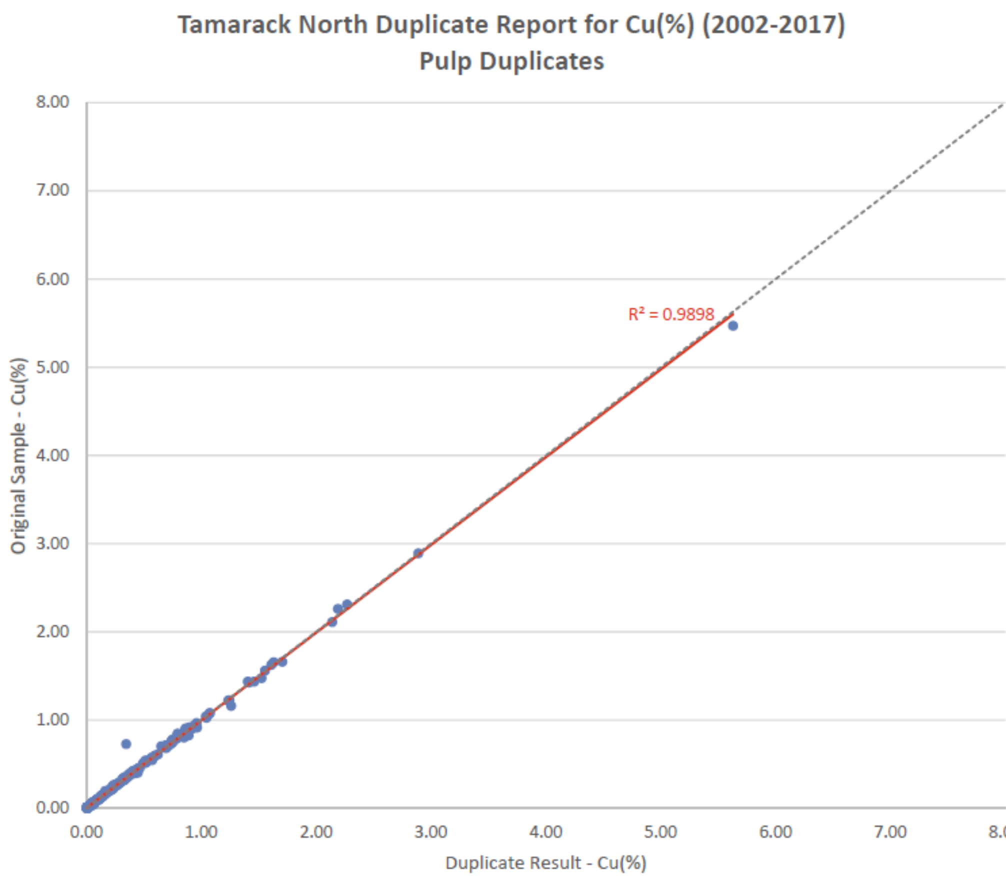


Figure 11-6: Comparison of Original vs Duplicate Pulps Cu (%) values for Tamarack North Drill Hole Samples between 2002 and 2017

12. DATA VERIFICATION

12.1 Golder 2014

Golder completed a number of data verification checks in 2014 and 2017 while completing the mineral resource estimate for the Tamarack North Project. The verification work included a check of the drill hole database provided against original assay records (2014 and 2017) and a site visit by the QP (2014) to check drill hole collars, logging procedures, sample of custody and collection of independent samples for metal verification. In addition, Golder has completed a number of verifications of the mineral resource estimate which is outlined in Section 14.

12.1.1 Database Verification

Golder compared 2,091 sample assays for %Ni, %Cu, %Co, Pt ppm, Pd ppm, Au ppm, from the supplied drill hole database to the original ALS Minerals certificates in the First Independent Technical Report on the Tamarack North Project with an effective date of August 29, 2014 (see Table 12-1). For the updated mineral resource estimate in this Technical Report, Golder reviewed a further 533 samples for %Ni, %Cu, %Co, Pt ppm, Pd ppm, Au ppm, from the supplied drill hole database (for holes drilled since the previous estimate) to the original ALS Minerals certificates. The database encompasses the entire set of drill holes at the Tamarack North Project. Samples found within the resource areas were preferentially chosen (2008 to 2016 drill programs – Tamarack North Project) as they are material to the validity of the mineral resource estimate. Assay certificates were available for all samples. A summary of the data validation is listed in Table 12-1.

Table 12-1: Drill Hole Sample Data Validation

Years of Drill Program	# of Holes	# of Samples	# of Assays	# of Errors	Check Year
2008-2013	37	2,091	25,983	0	2014
2014-2016	19	533	3,198	0	2017

Only a small selection of all the drill holes at Tamarack North Project were validated against the original data. A total of 48 unique drill holes (2,624 samples), representing 6.7% of the total available assay data, was reviewed. No errors were identified in any of the validated samples. No validation checks were completed on the remaining samples since most drill holes and samples were not included in the mineral resource estimate. It should be noted that certain assay values in ppm were expressed as percentages rounded to three decimal places in the database. Values below the detection limit were set to half of the detection limit instead of a zero value.

12.1.2 Site Visit

A site visit to the Tamarack North Project and Kennecott office, located in the town of Tamarack, Minnesota was carried out by Brian Thomas, P.Geo., QP for this mineral resource estimate and Technical Report, on July 16, 2014. No active drilling or core logging was ongoing at the time of the visit. The visit to the Tamarack North Project included:

- An overview tour of the exploration property;
- Inspection and GPS co-ordinate reading of drill collars 08TK0054, 08TK0058, 08TK0079 and 12TK0158 (Table 12-2);
- Visual inspection of physiography and general conditions.

Table 12-2: Validation Check of Drill Collars

Hole Number	Source	Easting	Northing	Elevation
08TK0054	Kennecott	490713	5168726	391
	Golder	490713	5168727	395
08TK0058	Kennecott	490590	5168609	390
	Golder	490588	5168610	391
08TK0079	Kennecott	490589	5168605	390
	Golder	490584	5168607	389
12TK0158	Kennecott	490850	5168418	388
	Golder	490850	5168419	390

All collar co-ordinates were found to closely match the Kennecott co-ordinates, generally within the accuracy of the GPS readings (±3 m).

The site visit to the Kennecott office and core logging facilities in Tamarack, Minnesota, included the following items:

- Review of logging and sampling procedures used on the drill holes;
- Review of core logs against the core available at time of visit;

- Review of Tamarack geological and mineralization characteristics with Kennecott staff;
- Collection of representative duplicate samples for analysis at an independent laboratory;
- Collection and review of all available data required for the mineral resource estimate;
- Review of QA/QC protocol; and
- Review of sampling and shipping protocol.

No significant issues were identified during the review of data collection procedures and sample chain of custody. The core logging matched the core well and all processes were found to meet or exceed industry standards.

A site visit was not completed for the updated mineral resource in this Technical Report, as there were no material changes to any of the procedures used by Kennecott for data collection.

12.1.3 Independent Sampling

As part of the 2014 sample verification program, nine core samples and three CRM samples were collected and transported back to Sudbury, Ontario, Canada where they were analyzed by Actlabs using sodium peroxide fusion with ICP finish for base metals including Ni, Cu, and Co and fire assay with ICP finish for precious metals including Pt, Pd, and Au. Two Kennecott standards and one blank sample were also submitted to Actlabs to confirm their precision and accuracy. Specific gravity was also measured on the pulps. The Actlabs laboratory in Sudbury is certified ISO 17025.

The objective of the samples collected was to represent the low, medium and high grade mineralized samples of the 3 mineralized domains, and to confirm specific gravity. Pictures of samples representing each mineral domain are displayed in Figures 12-1 to 12-3.

Figure 12-1: Example of Core from the 138 Zone

Figure 12-2: Example of Core from the SMSU

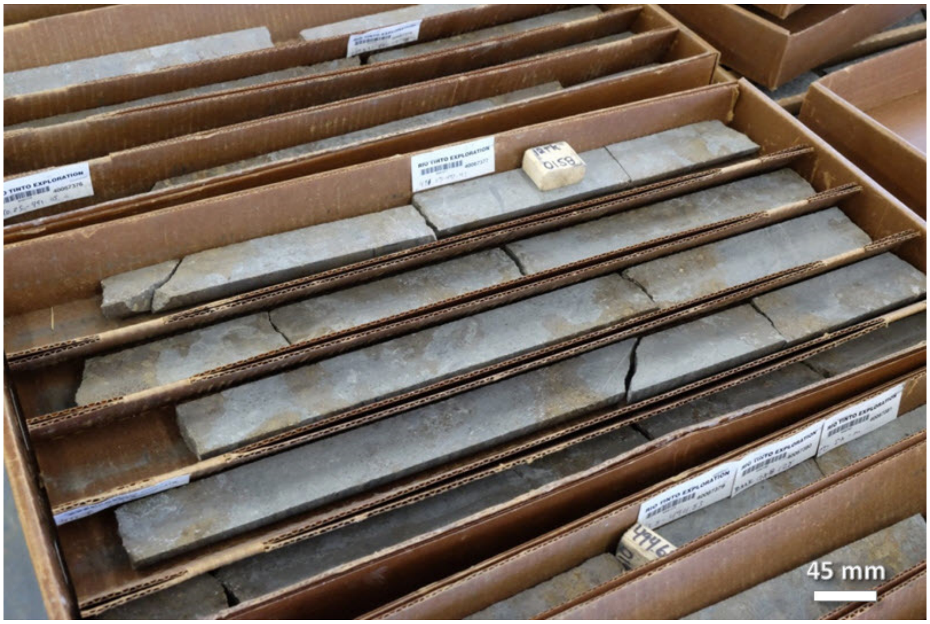


Figure 12-3: Example of Core from the MSU

Golder samples 1310101-1310104 were from hole 12TK0138 (138), samples 1310105-1310107 (SMSU) were from hole 08TK0079, while samples 1310108-1310109 were from 12TK0158 (MSU). Sample 1310110 was a typical blank, and samples 1310111-1310112 were medium and high-grade standards. Generally, low to medium grade samples compared favourably as seen in Table 12-3 and Figures 12-4 to 12-6. However, higher grade samples (Figure-12-5) incurred slightly more variation likely due to sample volume variance (Kennecott samples were ½ core while Golder used ¼ core) than due to analytical concerns. All assay results were found to fall within acceptable tolerances of the Kennecott results and no grade bias was evident.

The specific gravity measured from sample pulps (Actlabs) showed some variance to the measurements taken from whole core by ALS Minerals (GRA08). SG measurements from ALS Minerals were only used for the MSU and SMSU domains. Kennecott does collects field SG measurements from select sections of core from all domains including the 138 Zone (see Section 11-1 for a description of the process). These values (10-15 cm) were not used by Golder in the resource model because there was concern regarding how representative they would be with respect to the larger assay sample interval (Golder used a density weighted assay estimation methodology in their model as described in Section 14).

Table 12-3: Sample Validation Check

		Cu (%)		Ni (%)		Co (%)		Au ppm (g/t)		Pt ppm (g/t)		Pd ppm (g/t)		Specific Gravity	
Golder No.	**Kennecott No.**	**Golder**	**Kennecott**	**Golder**	**Kennecott**	**Golder**	**Kennecott**	**Golder**	**Kennecott**	**Golder**	**Kennecott**	**Golder**	**Kennecott**	**Golder**	**Kennecott**
1310101	40064017	1.8	1.71	2.23	2.08	0.045	0.042	0.242	0.427	0.287	0.316	0.251	0.258	2.87	0
1310102	40064027	0.967	0.892	1.03	0.924	0.027	0.025	0.114	0.313	0.202	0.186	0.114	0.117	2.89	0
1310103	40064076	1.75	1.645	1.64	1.67	0.039	0.039	0.215	0.246	0.395	0.4	0.273	0.286	2.78	0
1310104	40064087	0.704	0.671	0.835	0.769	0.025	0.024	0.096	0.108	0.214	0.1945	0.139	0.137	2.78	0
1310105	40031592	1.1	1.525	1.81	2.62	0.044	0.058	0.15	0.227	0.197	0.348	0.312	0.469	2.92	3.29
1310106	40031612	1.64	1.59	4.08	4.15	0.097	0.1	0.182	0.101	0.471	0.543	0.371	0.338	3.28	3.38
1310107	40031616	1.58	1.475	3.4	3.54	0.09	0.096	0.141	0.142	0.371	0.293	0.352	0.339	3.37	3.45
1310108	40067371	1.67	1.595	6.07	5.11	0.125	0.107	0.385	0.249	0.346	0.543	0.61	0.504	3.44	0
1310109	40067377	2.59	1.88	5.47	4.73	0.121	0.102	0.33	0.445	0.497	0.872	0.651	0.483	3.37	0
1310110	blank	0.006	0	0.008	0	0.008	0	< 2	0	< 5	0	< 5	0	2.78	0
1310111	standard	1.35	1.35	3.35	3.34	0.087	0.0087	0.149	0.134	0.386	0.364	0.26	0.272	3.28	0
1310112	standard	4.35	4.52	6.26	6.607	0.162	0.179	0.227	0.265	1.2	1.2	0.794	0.778	4.18	0

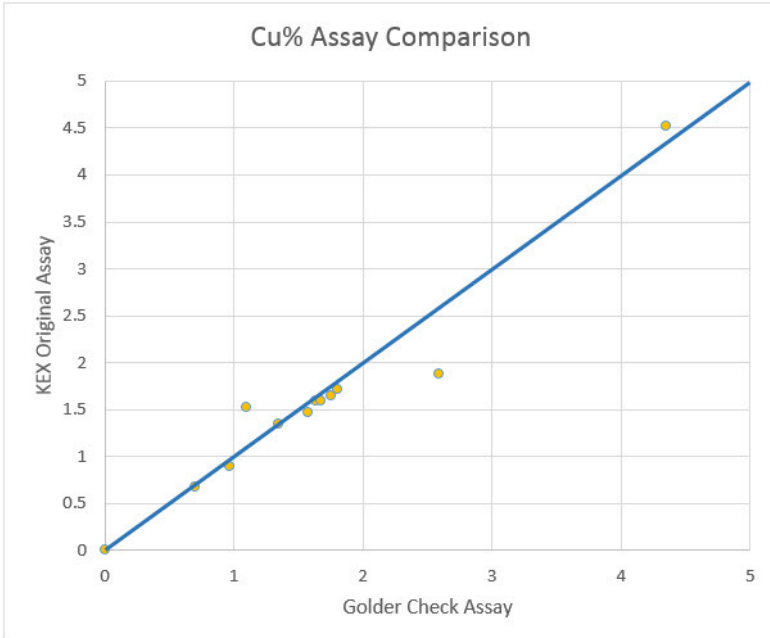


Figure 12-4: Validation Check of Cu Assays

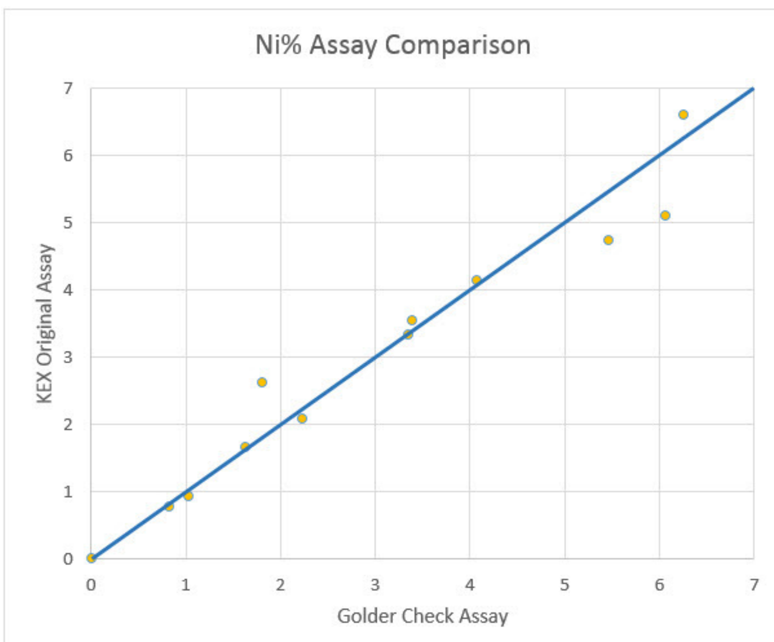


Figure 12-5: Validation Check of Ni Assays

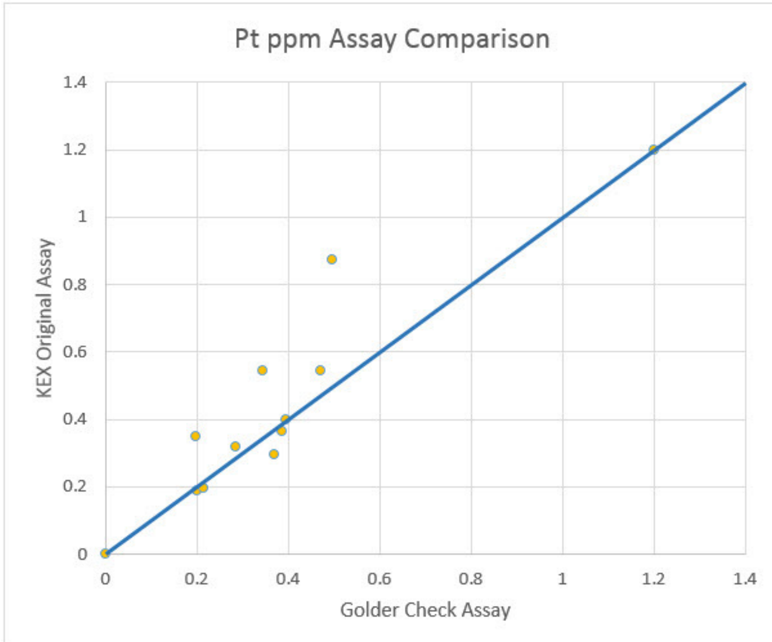


Figure 12-6: Validation Check of Pt Assays

On completion of the data validation, site visit and verification sampling, Golder concluded that the assay data is of suitable quality to support the mineral resource estimate. Golder recommends that specific gravity measurements are completed from sample pulps where data is currently only available from field measurements.

13. MINERAL PROCESSING AND METALLURGICAL TESTING

13.1 Historical Metallurgical Work

Results from metallurgical programs prior to the 2016/2017 test program are summarized in the First Independent Technical Report on the Tamarack North Project with an effective date of August 29, 2014. The QP for the metallurgical section of the report was Manochehr Oliazadeh Khorakchy, P.Eng. and the summary of the metallurgical section of the Technical Report is provided below.

Metallurgical testing of the Tamarack North Project was carried out in two programs: From 2006-2010, samples consisting of high grade mineralization from the SMSU hosted in CGO and low-grade CGO mineralization were submitted to SGS Minerals Services for mineralogical and metallurgical testing, while the 2012-2013 program focussed only on low grade mineralization in each of the intrusions.

Head assays from both phases of testwork indicated that there were no problematic concentrations of deleterious material, such as talc and chlorite.

Mineralogy conducted by QEMSCAN on two master composites indicated that the dominant Cu sulphide was Cpy, with minor amounts of cubanite present. Pn was the dominant Ni sulphide with minor amounts of mackinawite. The dominant sulphide mineral was Po, which needs to be rejected.

Bond BWi tests ranged from 13.0 to 19.0 kWh/t (metric), the work index was found to increase as the sulphide to rock ratio decreases.

Ni and Cu liberation analysis indicated the Ni and Cu were well liberated for a roughing stage, but a regrind would likely result in an increase of the concentrate grade of Ni and Cu rougher flotation tests were designed to investigate the effect of primary grind on rougher flotation recoveries. The optimum grade recovery relationships for both Ni and Cu were achieved at grinds having a P80 between 90 and 129 µm, the recovery of Ni was 89.2% to 90.7% while Cu was 93.9% to 95.5%. Initial rougher concentrate grades in excess of 20% Cu+Ni were readily achieved. The sulphur grade of the tails needs to be decreased further, which is likely possible with extended flotation time and increased collector dosage. The best selectivity was achieved with no pH modifier, however adjusting the pH with acid may further help reduce the sulphur in the tails.

Batch cleaner flotation tests were carried out on all composites to establish the recoveries and grade of a final bulk Cu-Ni concentrate.

An initial investigation into the potential for producing separate, high grade Cu and Ni concentrates from a bulk concentrate was also started; however, no optimization work has been commissioned to date. A regrind of the rougher concentrate was attempted. Specifically, the impact of adding more collector and CMC to minimize metal losses in separate, high grade Cu and Ni concentrates need to be tested. The results also suggest that an additional cleaning step would be beneficial to help reject the additional non-sulphide gangue.

Some cleaning tests employed a Cu-Ni separation stage following the cleaner flotation stage. The Ni concentrate graded 21.5% Ni with a Cu:Ni ratio of 0.09. Ni recovery to this concentrate was 78.5%. The best results from the Cu separation tests results resulted in Cu concentrate graded 32.4% Cu with 0.72% Ni with 71.4% Cu recovery.

The results for the Cu-Ni separation tests were satisfactory for the Ni concentrate as the target of a Cu:Ni ratio of < 0.2 in the Ni concentrate was met, therefore production of a high grade Ni concentrate with a Cu:Ni ratio of <0.2 looks readily achievable. Producing a Cu concentrate that meets the target of <0.7% Ni in the Cu concentrate was not met. The best result achieved a Ni grade in the Cu concentrate of 0.72%. The average %Ni in all the tests on samples from the SMSU was 1.2% when a regrind and one stage of Cu cleaning was used. The goal of the next set of testing is to produce a Cu concentrate that meets the target of <0.7% Ni in the Cu concentrate.

An ICP scan carried out on a blend of Cu and Ni concentrates indicated that there were no concentrations of impurity elements that would be of concern during smelting or refining of these concentrates.

13.2 Current Test Program

In 2016/2017 a total of seven domain composites were subjected to a metallurgical test program. Samples were selected from:

- The MSU.
- High grade mineralization from the SMSU hosted in the CGO.
- Low grade mineralization from the Lower and Upper 138 Zone.
- Low grade mineralization from the CGO.
- Low grade mineralization from the Upper CGO.
- MMS mineralization and a FGO interval above the MMS mineralization in the CGO Bend.

The primary objectives of the 2016/2017 test program were to:

- Obtain a flowsheet and test conditions suitable to treat the full range of MSU, SMSU, and disseminated mineral domains.
- Define expected recoveries over a wide spectrum of feed grades.
- Understand if there will be any synergies by blending the low-grade domains with high-grade domains.

13.3 Sample Characterization

13.3.1 Chemical Characterization

Representative sub-samples of the seven domains were extracted during sample preparation. The sub-samples were subjected to a chemical analysis to determine the head grades of the composites. Pertinent results of the chemical analysis are presented in Table 13-1.

Table 13-1: Head Analysis of Tamarack Domains

Domain	Assays (%)			Assays (g/t)			
	Cu	Ni	S	Au	Pd	Pt	Ag
MSU	2.80	6.39	25.8	0.10	0.50	0.46	3.4
SMSU	1.59	3.17	13.7	0.17	0.25	0.26	3.5
CGO	0.34	0.45	1.31	0.19	0.34	0.56	2.2
Upper CGO	0.44	0.61	2.38	0.06	0.07	0.09	1.8
Upper 138 Zone	0.37	0.52	1.57	0.14	0.07	0.10	1.9
CGO Bend Zone	0.33	0.50	1.73	0.07	0.06	0.09	1.3
Lower 138 Zone	0.31	0.46	1.30	0.09	0.08	0.15	1.8

A minor element scan identified Fe, Mg, and Al as the most abundant elements in the four composites. No elevated concentrations of deleterious elements were identified in the samples.

13.3.2 Mineralogical Characterization

The mineral abundance of the seven composites is depicted in Figure 13-1. Cpy, Pn, and Po represent almost 70% of the mass in the MSU composite and this value decreases to slightly over 30% in the SMSU composite. Olivine and pyroxenes were the most abundant non-sulphide gangue minerals in the SMSU and disseminated composites. Serpentine made up between 0.11% in the MSU composite and 12.7% in the Lower 138 Zone composite. The concentrations of talc were low in all seven composites and ranged between 0.14% in the SMSU and 0.91% in the CGO composite.

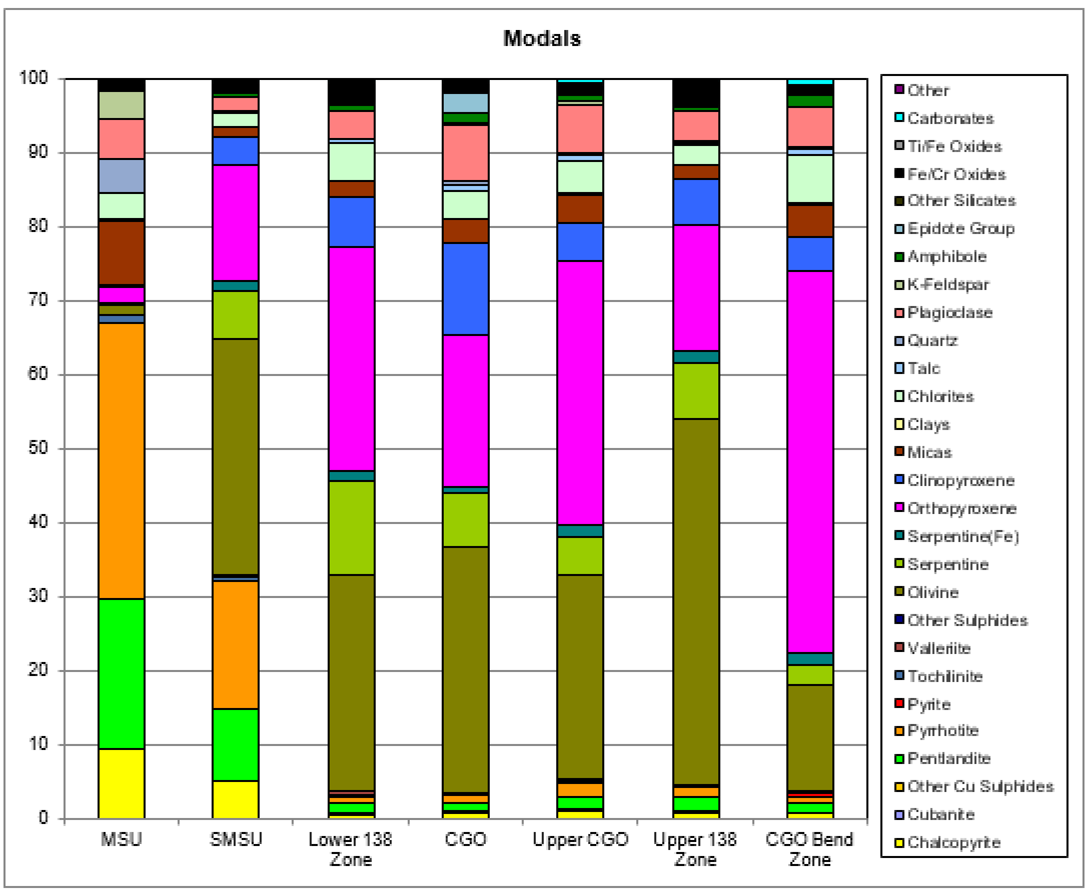
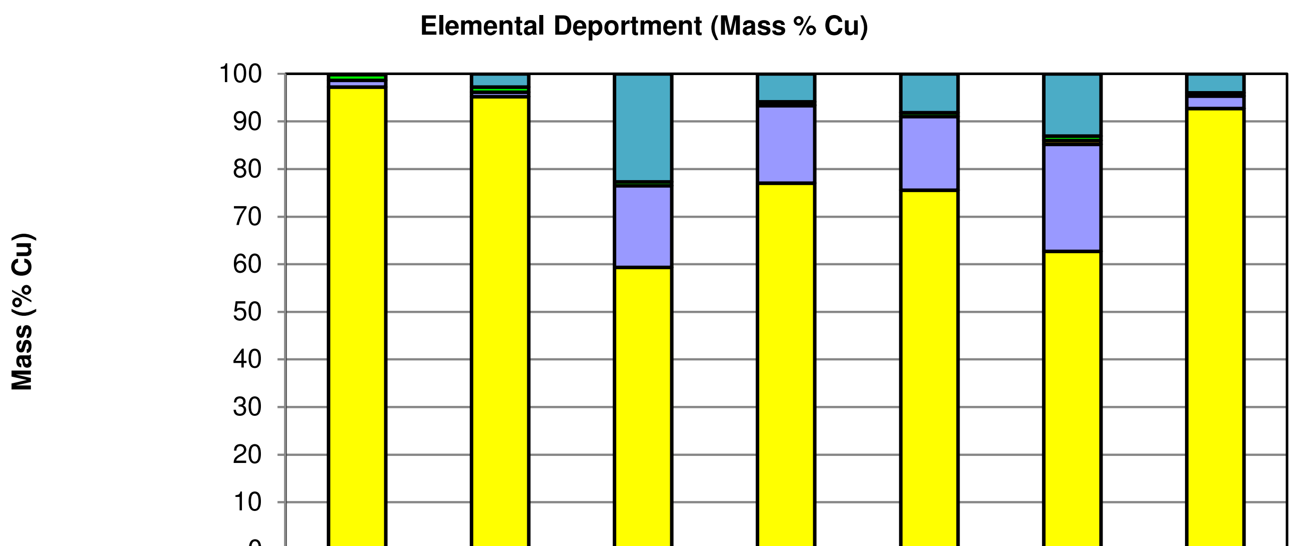


Figure 13-1: Modals of Tamarack Composites

The Cu deportment into the different Cu-bearing minerals is presented in Figure 13-2. In the MSU and SMSU composites almost all Cu units in the sample were associated with Cpy at 97.2% and 95.2%, respectively. Cubanite as the second most abundant Cu-Sulphide mineral contained between 1.4% and 1.0% of the Cu in the MSU and SMSU composites, respectively. Only 1.3% of the Cu reported to Pn and valleriite in the MSU composite, while this number increased to 3.8% in the SMSU composite.

In the five disseminated composites, the Cu deportment into Cpy was only 59.3% to 77.0%. Between 2.6% and 22.5% of the Cu was associated with cubanite and 4.0% to 22.7% with valleriite. Cubanite has a Cu content of only 23.4% compared to 34.6% in Cpy and, therefore, has negative implications on the Cu concentrate grade that can be achieved with this material. The deportment of Cu into valleriite will result in an overall lower recoverable percentage of Cu since the valleriite proves difficult to recover in the flotation process.



	MSU	SMSU	Lower 138 Zone	CGO	Upper CGO	Upper 138 Zone	CGO Bend Zone
Valleriite	0.1	2.8	22.7	5.9	8.2	13.0	4.0
Pentlandite	1.2	1.0	0.8	0.7	0.8	0.9	0.7
Other Cu Sulphides	0.0	0.0	0.0	0.2	0.0	0.8	0.0
Cubanite	1.4	1.0	17.2	16.3	15.5	22.5	2.6
Chalcopyrite	97.2	95.2	59.3	77.0	75.6	62.7	92.7

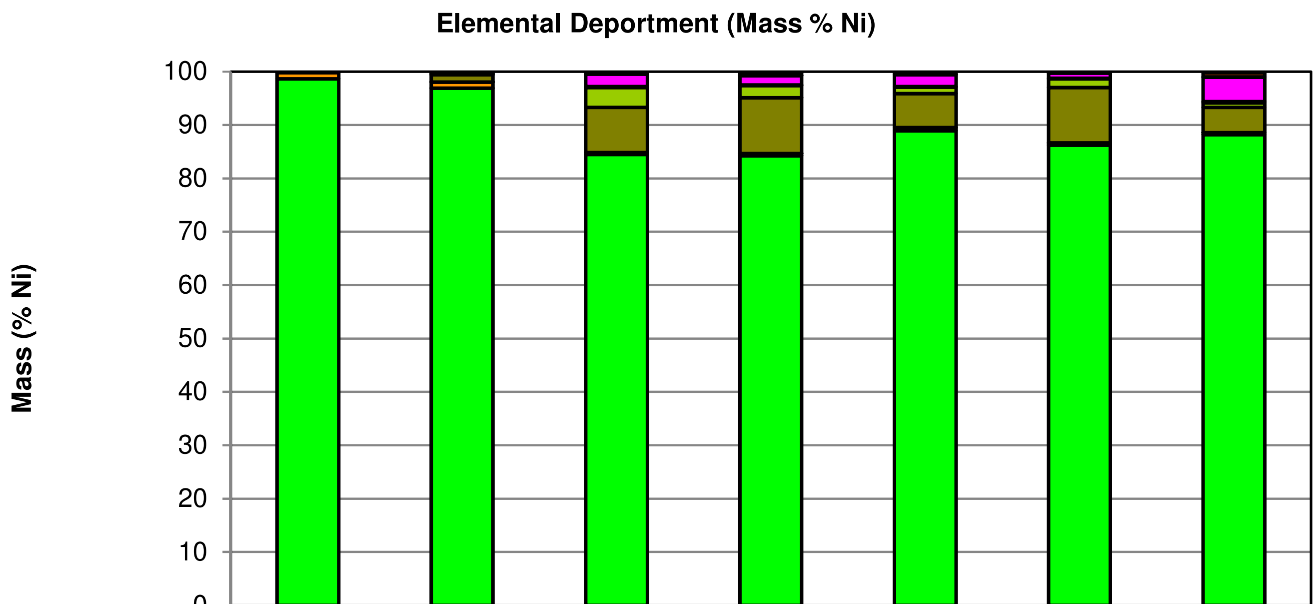
Figure 13-2: Elemental Deportment of Cu

Electron microprobe analysis was conducted on the seven composites to determine the chemical composition of specific minerals and to quantify the deportment of Ni into sulphide and non-sulphide gangue minerals. The concentrations of pertinent elements in Cpy, Pn, and Po are presented in Table 13-2. Further the elemental deportment of Ni as determined by microprobe and QEMSCAN analyses is presented in Figure 13-3. While 98.1% and 96.0% of the Ni was associated with Pn in the MSU and SMSU composites, respectively, the values decreased to as low as 79.7% in the disseminated composites. In those composites, up to 10.4% of the Ni units were associated with olivine.

Table 13-2: Concentrations of Pertinent Elements in Sulphide Minerals

Element	MSU	SMSU	Lower 138 Zone	CGO	Upper CGO	Upper 138 Zone	CGO Bend Zone
%Cu in Cpy	32.8	33.7	28.2	29.2	29.2	32.4	33.5
%Ni in Po	0.26	0.25	0.29	0.10	0.14	0.10	0.43
%Ni in Pn	33.9	34.8	32.3	31.3	31.8	25.9	32.9
%S in Cpy	34.7	34.9	35.0	34.5	34.8	34.5	34.7
%S in Po	39.2	39.2	38.5	39.1	39.0	38.7	38.6
%S in Pn	33.4	33.2	33.2	33.0	33.4	29.5	35.5

Note: Cpy = chalcopyrite, Pn = pentlandite, Po = pyrrhotite



	MSU	SMSU	Lower 138 Zone	CGO	Upper CGO	Upper 138 Zone	CGO Bend Zone
Amphibole	0.00	0.01	0.07	0.15	0.07	0.04	0.19
Amphibole	0.00	0.01	0.07	0.15	0.07	0.04	0.19
Micas	0.11	0.03	0.36	0.57	0.49	0.19	0.81
Clinopyroxene	0.00	0.00	0.02	0.05	0.02	0.02	0.03
Orthopyroxene	0.01	0.19	2.35	1.71	2.20	0.97	4.57
Serpentine(Fe)	0.00	0.02	0.17	0.12	0.14	0.14	0.23
Serpentine	0.00	0.30	3.70	2.28	1.20	1.59	0.86
Olivine	0.04	1.44	8.49	10.44	6.38	10.43	4.74
Pyrite	0.00	0.00	0.00	0.00	0.01	0.00	0.02
Pyrrhotite	1.21	1.13	0.38	0.40	0.58	0.40	0.37
Pentlandite	98.62	96.89	84.47	84.27	88.91	86.22	88.18

Figure 13-3: Elemental Deportment of Ni

At a primary grind size of P80 ~ 100 µm free and liberated Cu-sulphides accounted for 85.8% in the MSU composite and 78.3% in the SMSU composite. This value decreased to 51.0% to 72.7% in the five disseminated composites.

Free and liberated Pn accounted for 87.2% in the MSU composite and 83.9% in the SMSU composite. Again, the degree of liberation was reduced in the disseminated composites with values of 58.1% to 71.0%.

13.4 Comminution Tests

Bond BWi tests were carried out on the seven composites, to determine energy requirements for ball milling. The tests were performed at a screen size of 106 µm (150 mesh), which is representative of a mill discharge product of approximately P80 = 75 µm.

The results of the BWi tests are presented in Table 13-3 and are further depicted in Figure 13-4. The BWi values ranged from 11.3 kWh/t for the MSU composite to 21.1 kWh/t for the CGO composite. While the MSU composite is considered soft, all disseminated composites except for the Upper 138 Zone composite were very hard. Less than 10% of the 6,100 samples tested at SGS Minerals produced BWi values higher than the three hardest disseminated composites as evidenced in the histogram that displays the frequency of test results for various hardness values.

No other crushing or grinding tests were completed as part of the current or past metallurgical test programs. These tests will be included in the next phase of testing as the results are required for proper sizing of the crushing and grinding circuit.

Table 13-3: Bond Ball Mill Grindability Test Results

Composite	BWi (kWh/t)
MSU	11.3
SMSU	15.1
Lower 138 Zone	21.0
CGO	21.1
Upper CGO	20.2
Upper 138 Zone	15.0
CGO Bend Zone	18.7

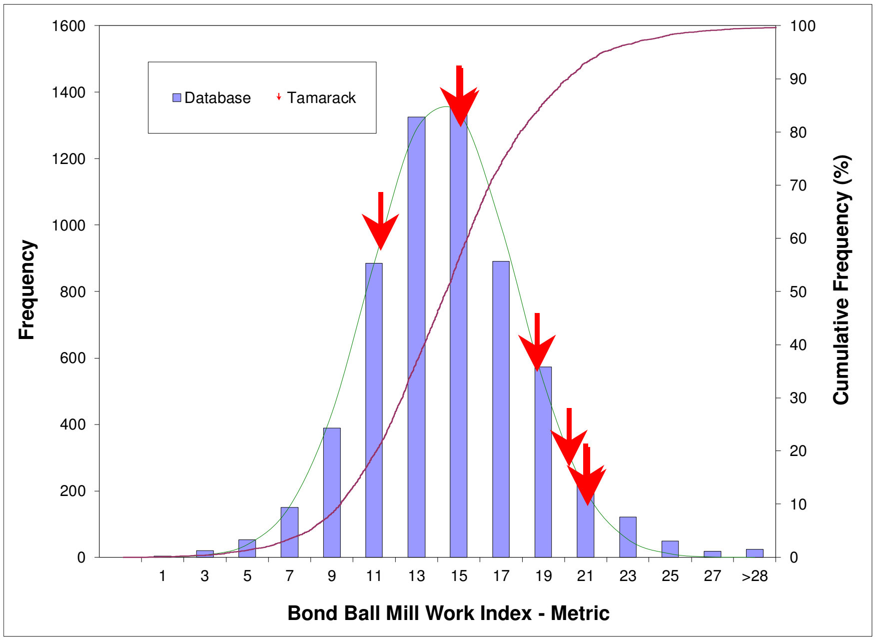


Figure 13-4: Bond Ball Mill Grindability Test Results Plot and SGS Database Histogram

13.5 Flotation Test Program

A total of 77 open circuit tests and 7 locked cycle tests were carried out in the latest metallurgical program to obtain a flowsheet and test conditions suitable to treat the MSU, SMSU, and disseminated mineral domains. The results of these tests are presented in the following sections.

13.5.1 Flowsheet Development Tests

A total of 67 rougher kinetic and open circuit cleaner tests were completed to develop the flowsheet starting with the rougher/scavenger stage through the various cleaning stages and finally Cu/Ni separation.

The first series of rougher kinetics tests evaluated the impact of primary grind sizes of P80=70 µm and P80=100 µm on the metallurgical performance of the seven composites. A comparison of the metallurgical results at the two primary grind sizes did not reveal a statistically significant difference between P80 ~ 70 µm and P80 ~ 100 µm. However, since the Cpy and Pn mineral grains were only moderately liberated in the disseminated composites, a decision was made to proceed with a primary grind size of P80=70 µm.

Additional rougher kinetics tests were carried out on the Upper 138 Zone composite to improve rougher and scavenger flotation performance. Of the four gangue depressants / dispersants tested (sodium silicate, guar gum, carboxyl methyl cellulose or CMC, and sodium hexametaphosphate or Calgon), CMC produced slightly better results. The addition of the sulphide activator $CuSO_4$ failed to improve bulk scavenger flotation performance.

A total of 20 cleaner flotation tests were carried out on MSU, SMSU, Lower 138 Zone, CGO, and Upper 138 Zone composites to develop suitable conditions for the bulk cleaner and scavenger cleaner flotation circuits. Process variables that were investigated included: regrind, re-cleaning, pH modification, and flotation times. The challenge was to address the significantly different flotation performance of the MSU and SMSU composites compared to disseminated composites. While reagent dosages for the MSU and SMSU had to be minimized in the bulk rougher and cleaning stages to prevent the activation of Po, reagent robbing behaviour was observed for the disseminated composites, thus requiring higher reagent dosages.

The remaining 27 cleaner flotation tests investigated the full flowsheet including Cu/Ni separation. Process variables that were evaluated in the Cu/Ni separation circuit included: regrind (no regrind, coarse regrind and fine regrind), flotation times, reagent dosages.

Suitable conditions for a desulphurization stage were established to split the bulk scavenger tailings stream into a low-mass, high-sulphide tailings stream and a high-mass, low-sulphide tailings stream. Preliminary environmental tests suggest that non-acid tailings can be generated, but more comprehensive testing of projected mill feed blends must be conducted to confirm that desulphurization can be achieved consistently.

The process development tests culminated in a given flowsheet and test conditions that were then evaluated under locked cycle flotation tests.

13.5.2 Locked Cycle Tests (LCTs)

At the end of the flowsheet development program, each of the seven composites was subjected to LCT. The LCT simulates closed circuit operation of a flowsheet by recycling the intermediate tailings into the following cycle to better simulate plant operating conditions. The flowsheet employed in the LCTs is presented in Figure 13-5.

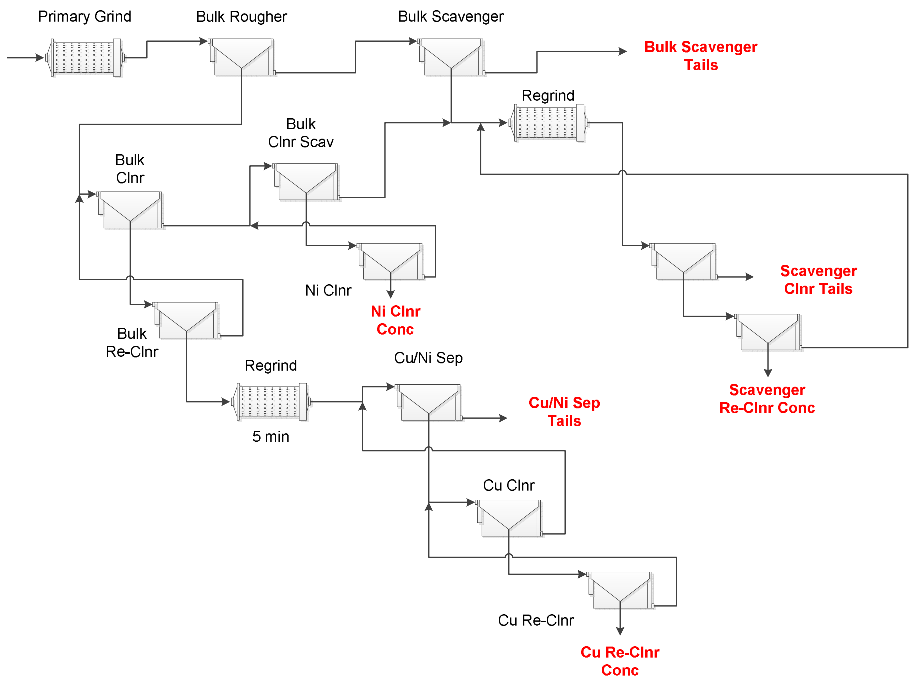


Figure 13-5: Locked Cycle Test Flowsheet

A summary of the mass balances for the seven LCTs is shown in Table 13-4. As expected, the MSU (LCT-1) and SMSU (LCT-2) produced good Ni and Cu concentrates with high metal recoveries. The remaining five composites proved more challenging, which was likely due to a combination of the low head grades in the samples and poor flotation selectivity in the final cleaning stages due to very low mass recoveries. With the exception of the CGO Bend Zone composite, all disseminated composites failed to produce a Cu concentrate grading at least 25% Cu. In addition to this, Ni recoveries into the Cu concentrates were high, resulting in Ni grades in the Cu concentrate of 1.30% to 6.72% Ni.

The highest Ni recoveries were achieved by including the scavenger recleaner concentrate in the Ni concentrate. However, since this product yields lower Ni concentrations, the resulting combined Ni concentrate graded lower. In the case of the MSU and SMSU composites, the combined Ni concentrates produced acceptable grades of 17.1% and 14.1% Ni respectively. The Ni concentrates of the disseminated composites graded unacceptably low grades between 5.88%

and 9.59% Ni. Excluding the scavenger recleaner concentrate raised Ni concentrate grades of the disseminated composites to between 7.7% and 13.5% Ni.

To further illustrate the differences of the various domains with regards to metallurgical performance, the grade-recovery points for the Cu concentrates are depicted in Figure 13-6. The Ni concentrate data including and excluding the scavenger recleaner concentrate are presented in Figure 13-7 and Figure 13-8, respectively.

Table 13-4: Summary of Locked Cycle Tests – LCT-1 to LCT-7

Test & Com	Sample ID	Weight %	Assay (%) Cu %	Ni %	S %	Distribution (%) Cu %	Ni %	S %
	Cu Re-Clnr Conc	8.0	31.6	1.53	35.4	91.4	1.9	10.9
	Cu/Ni Sep Tails	17.3	0.44	25.2	34.2	2.8	69.3	23.0
	Ni Clnr Conc	8.4	0.75	11.4	37.1	2.3	15.3	12.2
LCT-1	Scav Reclnr Con	8.2	0.52	5.59	37.2	1.5	7.3	11.9
	Scav Clnr Tails	17.0	0.10	1.02	35.1	0.6	2.8	23.2
#75	Bulk Scav Tails	41.0	0.09	0.52	11.9	1.4	3.4	18.9
	Head (calculated)	100.0	2.75	6.31	25.8	100.0	100.0	100.0
MSU	Head (direct)		2.80	6.39	25.8			
	Cu Concentrate	8.0	31.6	1.53	35.4	91.4	1.9	10.9
	Ni Concentrate	34.0	0.54	17.1	35.7	6.6	91.9	47.0
	Total Recovery					98.0	93.9	57.9
	Cu Re-Clnr Conc	4.3	29.3	0.95	32.4	84.0	1.3	10.4
	Cu/Ni Sep Tails	10.0	1.07	21.5	30.7	7.1	69.1	22.6
	Ni Clnr Conc	3.8	1.07	11.1	31.9	2.7	13.4	8.8
LCT-2	Scav Reclnr Con	5.6	0.53	2.99	30.2	2.0	5.4	12.5
	Scav Clnr Tails	10.6	0.29	1.31	26.7	2.1	4.5	20.8
#76	Bulk Scav Tails	65.7	0.05	0.30	5.13	2.2	6.3	24.9
	Head (calculated)	100.0	1.51	3.11	13.6	100.0	100.0	100.0
SMSU	Head (direct)		1.59	3.17	13.7			
	Cu Concentrate	4.3	29.3	0.95	32.4	84.0	1.3	10.4
	Ni Concentrate	19.4	0.91	14.1	30.7	11.7	87.9	44.0
	Total Recovery					95.7	89.3	54.3
	Cu Re-Clnr Conc	0.8	21.2	4.22	29.7	52.8	7.1	18.1
	Cu/Ni Sep Tails	1.4	2.33	13.9	23.3	10.2	40.8	24.8
LCT-3	Ni Clnr Conc	0.3	2.34	8.3	18.7	2.3	5.4	4.4
	Scav Reclnr Con	1.5	0.73	2.59	12.8	3.4	8.2	14.6
#77	Scav Clnr Tails	4.7	0.25	0.60	3.44	3.7	6.0	12.4
	Bulk Scav Tails	91.4	0.10	0.17	0.36	27.7	32.5	25.7
Lower 138	Head (calculated)	100.0	0.32	0.47	1.29	100.0	100.0	100.0
Zone	Head (direct)		0.31	0.46	1.30			
	Cu Concentrate	0.8	21.2	4.22	29.7	52.8	7.1	18.1
	Ni Concentrate	3.2	1.58	8.07	17.9	15.9	54.4	43.8
	Ni Conc without Scav ReClnr Conc	1.7	2.33	12.9	22.4	12.4	46.3	29.2
	Total Recovery					68.7	61.5	61.9
	Cu Re-Clnr Conc	1.0	22.4	4.64	30.4	66.8	10.1	22.7
	Cu/Ni Sep Tails	1.8	2.96	13.0	25.5	15.9	50.9	34.4
	Ni Clnr Conc	0.4	2.42	6.20	17.7	2.6	4.9	4.8
	Scav Reclnr Con	1.2	0.56	1.47	13.4	2.1	3.9	12.3
LCT-4	Scav Clnr Tails	2.8	0.18	0.50	4.08	1.5	3.1	8.6
#78	Bulk Scav Tails	92.7	0.04	0.13	0.25	11.1	27.1	17.1
	Head (calculated)	100.0	0.34	0.46	1.34	100.0	100.0	100.0
CGO	Head (direct)		0.34	0.45	1.31			
	Cu Concentrate	1.0	22.4	4.64	30.4	66.8	10.1	22.7
	Ni Concentrate	3.4	2.03	8.10	20.3	20.6	59.8	51.5
	Ni Conc without Scav ReClnr Conc	2.2	2.87	11.9	24.2	18.5	55.9	39.2
	Total Recovery					87.4	69.9	74.3
	Cu Re-Clnr Conc	1.4	23.8	2.91	31.5	76.1	6.9	19.9
	Cu/Ni Sep Tails	2.1	1.33	14.6	28.9	6.5	53.1	27.9
	Ni Clnr Conc	0.4	1.67	7.99	23.0	1.6	5.7	4.4
LCT-5	Scav Reclnr Con	1.4	0.45	2.50	22.7	1.5	6.0	14.6
	Scav Clnr Tails	5.3	0.14	0.49	5.49	1.7	4.5	13.4
#79	Bulk Scav Tails	89.4	0.06	0.15	0.48	12.7	23.7	19.8
	Head (calculated)	100.0	0.43	0.58	2.17	100.0	100.0	100.0
Upper CGO	Head (direct)		0.44	0.61	2.38			
	Cu Concentrate	1.4	23.8	2.91	31.5	76.1	6.9	19.9
	Ni Concentrate	3.9	1.05	9.59	26.1	9.6	64.8	46.9
	Ni Conc without Scav ReClnr Conc	2.5	1.39	13.5	27.9	8.1	58.8	32.3
	Total Recovery					85.6	71.8	66.8

Table 13-4: Summary of Locked Cycle Tests – LCT-1 to LCT-7 (Continued)

	Cu Re-Clnr Conc	1.3	14.5	6.72	28.1	51.7	16.9	23.8
	Cu/Ni Sep Tails	2.0	2.10	9.63	22.8	11.0	35.5	28.3
	Ni Clnr Conc	1.0	1.25	3.62	14.1	3.2	6.5	8.5
LCT-6	Scav Reclnr Con	1.3	0.79	1.81	11.5	2.7	4.3	9.3
	Scav Clnr Tails	3.7	0.49	0.88	4.52	4.9	6.1	10.7
#80	Bulk Scav Tails	90.8	0.11	0.18	0.34	26.6	30.7	19.4
	Head (calculated)	100.0	0.38	0.53	1.58	100.0	100.0	100.0
Upper 138	Head (direct)		0.37	0.52	1.57			
Zone	Cu Concentrate	1.3	14.5	6.72	28.1	51.7	16.9	23.8
	Ni Concentrate	4.2	1.51	5.88	17.4	16.8	46.3	46.1
	Ni Conc without Scav ReClnr Conc	2.9	1.82	7.66	19.9	14.1	41.9	36.8
	Total Recovery					68.5	63.1	69.9
	Cu Re-Clnr Conc	1.0	26.8	1.30	30.1	82.0	2.7	16.4
	Cu/Ni Sep Tails	2.5	0.79	10.3	33.0	6.0	52.2	44.6
	Ni Clnr Conc	0.3	2.52	8.19	17.0	2.2	4.9	2.7
LCT-7	Scav Reclnr Con	0.9	1.10	4.17	17.0	3.0	7.5	8.1
	Scav Clnr Tails	2.9	0.08	0.52	2.05	0.7	3.1	3.2
#81	Bulk Scav Tails	92.5	0.02	0.16	0.49	6.1	29.6	24.9
	Head (calculated)	100.0	0.33	0.49	1.83	100.0	100.0	100.0
CGO Bend	Head (direct)		0.33	0.50	1.73			
Zone	Cu Concentrate	1.0	26.8	1.30	30.1	82.0	2.7	16.4
	Ni Concentrate	3.6	1.00	8.62	27.9	11.2	64.7	55.5
	Ni Conc without Scav ReClnr Conc	2.8	0.97	10.0	31.3	8.2	57.1	47.3
	Total Recovery					93.2	67.3	71.9

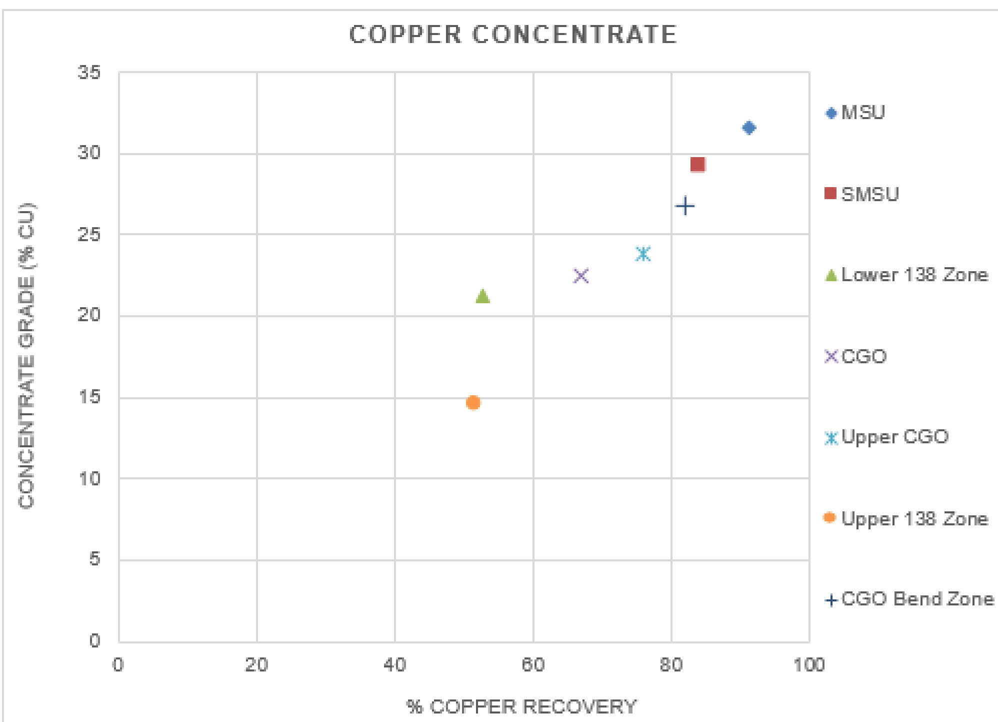


Figure 13-6: Cu Concentrate Grade-Recovery Points (LCT-1 to LCT-7)

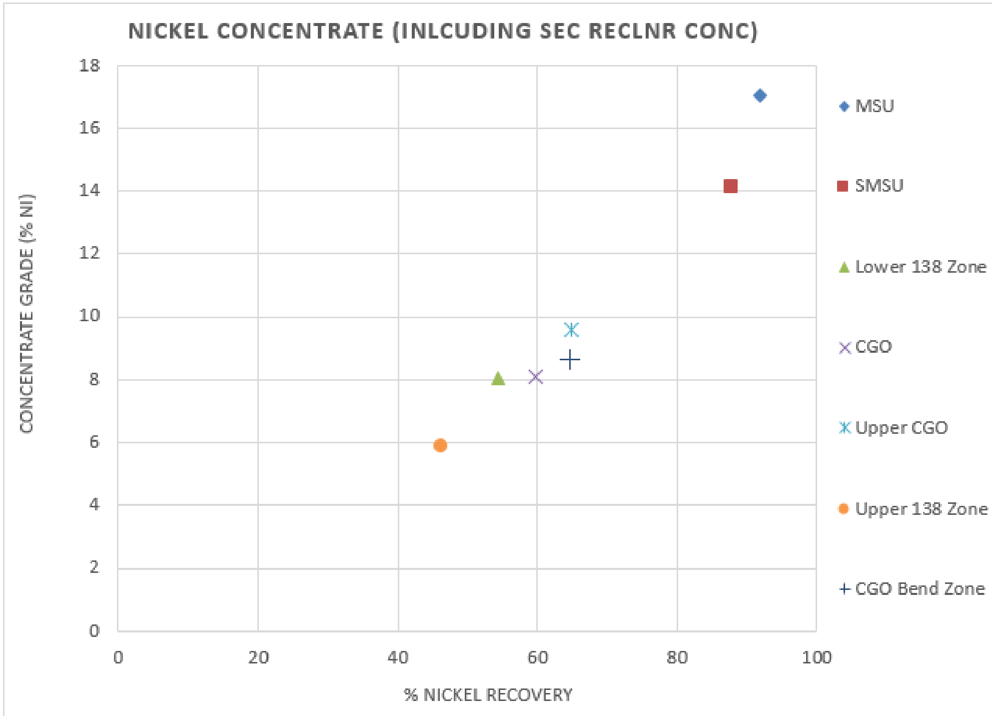


Figure 13-7: Ni Concentrate Grade-Recovery Points (LCT-1 to LCT-7) – Including Scavenger Recleaner Concentrate

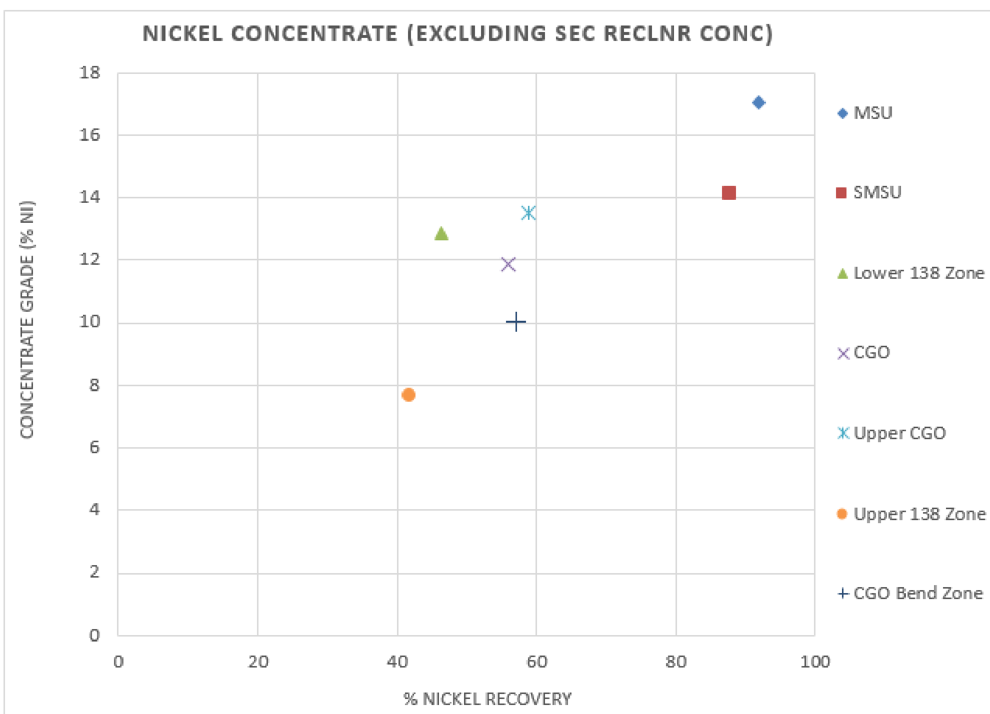


Figure 13-8: Ni Concentrate Grade-Recovery Points (LCT-1 to LCT-7) – Excluding Scavenger Recleaner Concentrate

13.5.3 Concentrate Characterization

The final Cu and Ni concentrates were submitted for chemical analysis to identify potential credit and penalty elements. A summary of pertinent elements is presented in Table 13-5.

Mg is an important deleterious element in Ni concentrates as it will lead to smelter penalties above a typical limit of 5.0% MgO. The Tamarack North Project mineralization hosts a range of Mg bearing minerals and recovery into the Ni concentrate must be minimized. The proposed process conditions include depressants for Mg minerals in the roughing and cleaning stages but carry over of Mg minerals into the Ni concentrate is still significant for the disseminated domains.

Credits for Au, Pt, and Pd would only be realized with the Lower 138 Zone and CGO composite for Pt and Pd and from Au in the Upper CGO Composite once deductibles are considered. Ag concentration in Ni concentrates were below the detection limit of 10 g/t.

Table 13-5: Ni Concentrate – Credit and Penalty Elements

Composite	Assays (%)		Assays (g/t)		
	Co	MgO	Au	Pt	Pd
MSU	0.35	0.22	0.14	1.34	1.19
SMSU	0.35	3.20	0.12	0.61	0.58
Lower 138 Zone	0.19	13.2	0.49	3.21	1.46
CGO	0.16	9.33	1.49	12.9	5.41
Upper CGO	0.24	7.30	4.35	1.47	0.96
Upper 138 Zone	0.13	14.6	0.42	1.15	0.76
CGO Bend Zone	0.25	7.90	0.34	1.43	0.89

Credit elements in the Cu concentrate are presented in Table 13-6. The Cu concentrate of the CGO composite contained significant concentrations of payable levels for Au, Pt, Pd, and Ag. Payable elements were lower for all other composites, but small by-product credits may be obtained for certain elements.

Table 13-6: Cu Concentrate – Credit Elements

Composite	Assays (g/t)			
	Au	Pt	Pd	Ag
MSU	2.24	1.42	0.25	< 10
SMSU	2.74	0.79	0.18	< 10
Lower 138 Zone	6.47	2.56	1.74	67
CGO	12.3	6.81	9.38	76
Upper CGO	5.07	1.56	0.79	51
Upper 138 Zone	3.82	2.36	0.96	57
CGO Bend Zone	3.68	1.37	0.90	<10

13.5.4 Blend Tests

The SMSU, MSU, and disseminated domains could be blended to provide steady mill feed to ensure stable operation. While it is quite common that the metallurgical performance of the blend is the sum of the performance of the individual domains, it is not applicable for all deposits.

To quantify the impact of blending on the metallurgical response of the Tamarack North Project mineralization, the MSU and SMSU composites were blended in a ratio of 1:1 with the five disseminated composites to form a total of 10 composite blends. These blends were then subjected to batch cleaner tests using the optimized flowsheet and conditions.

The Cu/Ni separation performance of the low-grade composites improved significantly when blended with the MSU and SMSU composites. The results of the Cu/Ni separation response of the low-grade, MSU, SMSU, and blend composites are presented in Figure 13-9. The Ni concentration in the Cu concentrate ranged from 1.5% to over 3% for the low-grade composites. Once the low-grade composite was blended with MSU or SMSU composite, the Cu/Ni separation performance was in line with data obtained for the MSU and SMSU material. It is postulated that the inferior Cu/Ni separation response of the low-grade composites was the result of insufficient Cu units in the Cu/Ni separation stages to crowd out Pn. These results suggest that the high Ni grades observed for the low-grade composites in the LCTs were due to limitation with the flotation equipment rather than underlying metallurgical challenges.

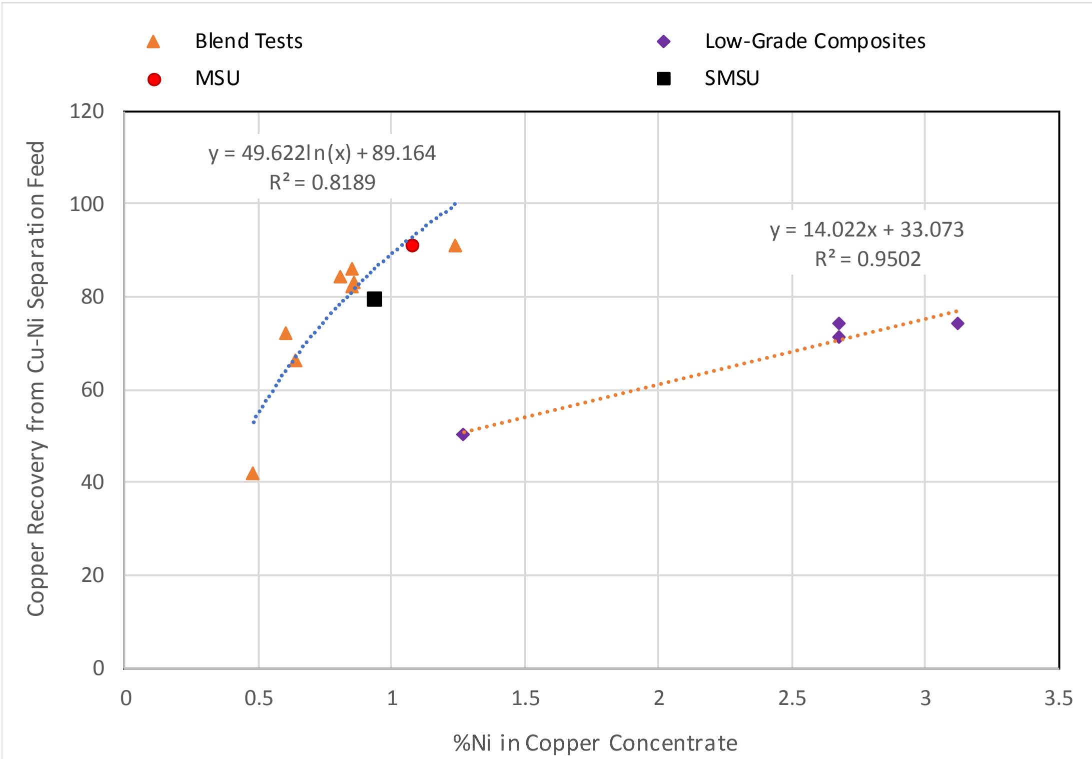


Figure 13-9: Impact of Blending Disseminated Composites with MSU and SMSU Composites on Cu/Ni Separation

13.6 Analysis and Recommendations

The primary objective of the 2016/2017 metallurgical test program at SGS Lakefield was to develop a flowsheet and test conditions suitable to treat all mineral domains encountered in the Tamarack North Project.

The concentrate grades produced from the disseminated domains were still too low to be considered marketable if not blended with concentrates obtained from the MSU and SMSU domains. Further, the Ni and Cu recoveries for the disseminated composites were significantly lower compared to the MSU and SMSU mineralization.

The Cu/Ni separation performance for the CGO, Lower 138 Zone, Upper 138 Zone composite remained poor until the end of the test program with high Ni grades in the Cu concentrate. However, their feed grades are low at 0.3% to 0.4% Cu, and therefore the weight contribution to the Cu concentrate will be relatively low if blending ratios are not too high in favour of these poorly performing composites. Another factor to consider for the disseminated zones is the contained metal value, which must cover mining, processing, smelting, refining, capital recovery, and indirect costs and still generate a profit per tonne of ore processed. A PEA is required to determine the economic cut-off grade for the Tamarack North Project mineralization.

Preliminary testing suggested that blending of MSU/SMSU and disseminated material responded better in the Cu/Ni separation circuit than the sum of the individual responses. Only blending ratios of 1:1 were explored and different blending ratios may impact upon the metallurgical performance.

The locked cycle test results were used to develop metallurgical regression curves that can be used to project metal recoveries into the Cu and Ni concentrates. The Ni recovery and concentrate grade projections are presented in Figure 13-10. The R^2 values of the regression curves including all test results were reasonably good for the projection of Ni recovery and Ni concentrate grade as a function of the Ni head grade. Eliminating the Upper 138 Zone composite as an outlier, the R^2 values of for Ni recovery and Ni concentrate grade improved significantly to 0.94 (from 0.85) and 0.99 (from 0.92), respectively, as evidenced in the lower section of the chart.

The Cu recovery and concentrate grade projections are presented in Figure 13-11. The Cu flotation performance of the disseminated composites was less consistent in terms of concentrate grades and Cu recovery into Cu concentrate, which is evidenced by the lower R^2 values of 0.54 and 0.50, respectively. Eliminating the Upper 138 Zone composite as an outlier had little impact on the Cu recovery trendline equation but improved the R^2 value of the Cu concentrate projection from 0.54 to 0.79.

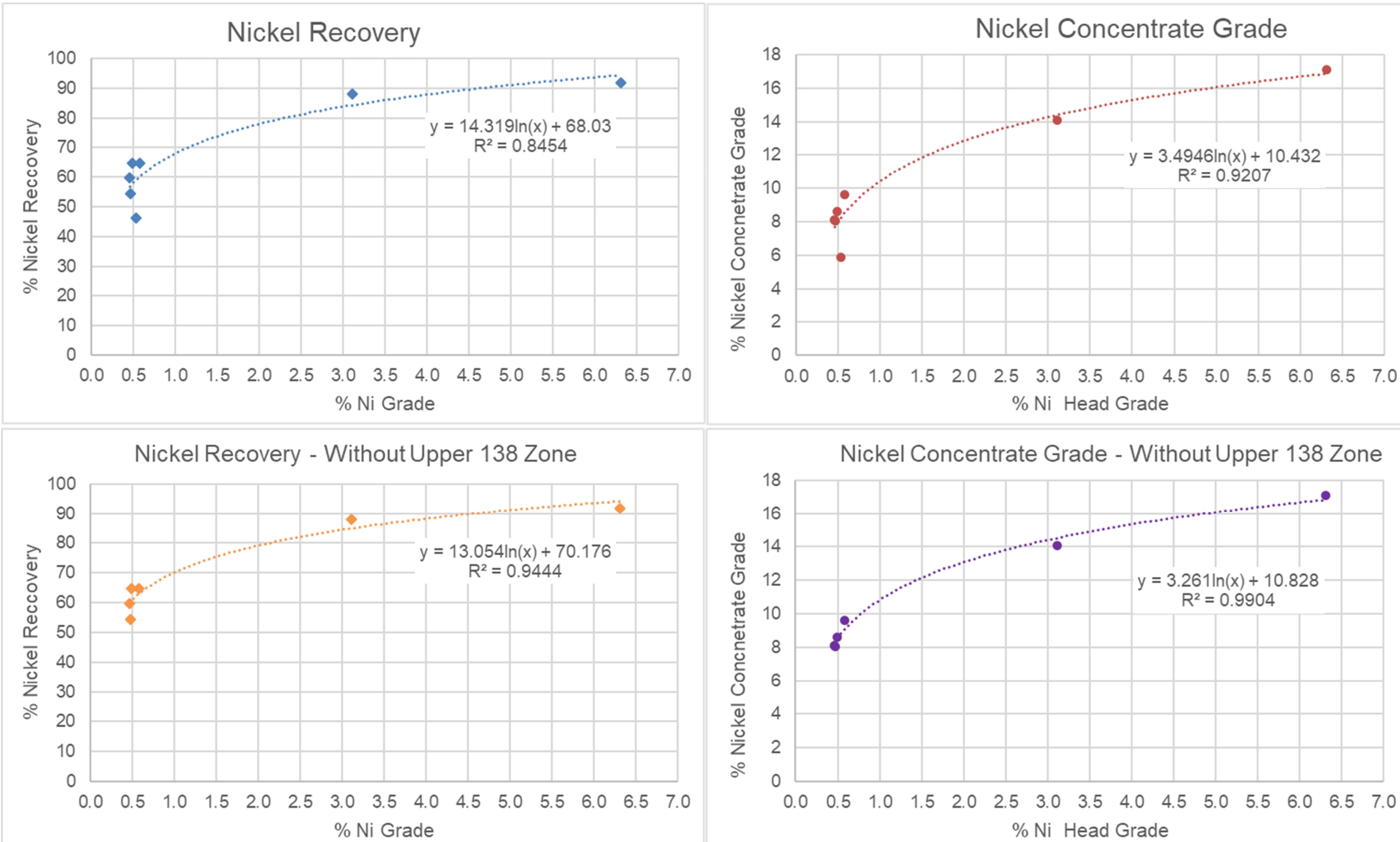


Figure 13-10: Metallurgical Projections for Ni Concentrates

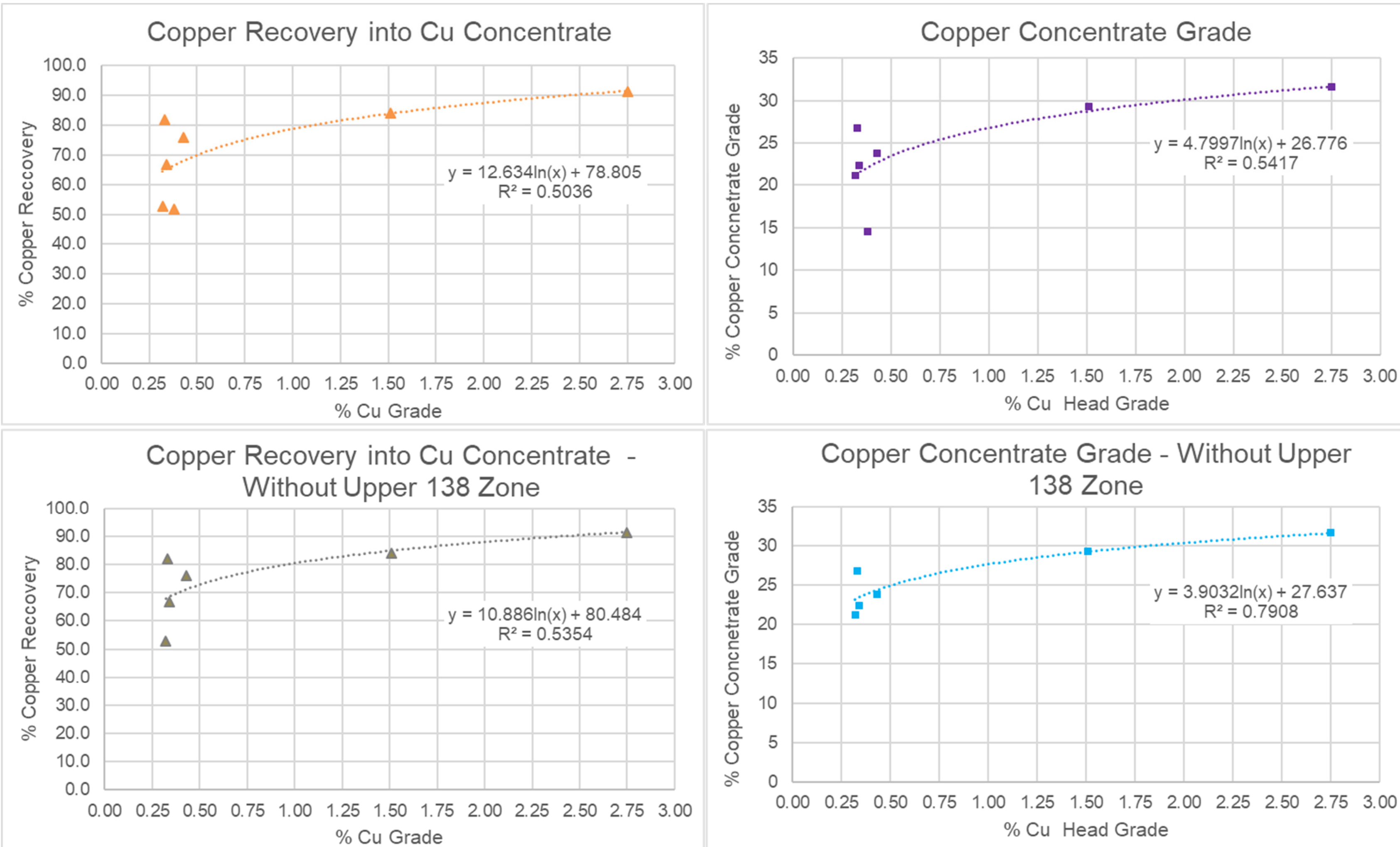


Figure 13-11: Metallurgical Projections for Cu Concentrates

The metallurgical projections of the Cu recovery into the Ni concentrate for low grade samples are poor as shown in Figure 13-12. Between 11.2% and 20.8% of the contained Cu reported to the Ni concentrate at a comparable head grade of 0.33-0.34% Cu. A mineralogical analysis of the Cu minerals in the Ni concentrate would be required to determine the nature of Cu losses and to develop a strategy to reduce these losses.

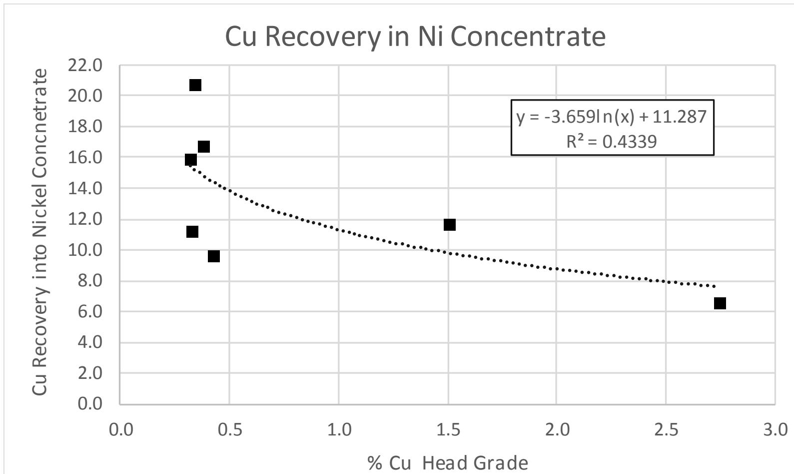


Figure 13-12: Metallurgical Projections for Cu Recovery into the Ni Concentrate

Levels of deleterious elements were generally low. Mg concentrations in the Ni concentrate of the MSU and SMSU composites were 0.22% MgO and 3.20% MgO, respectively. However, the Ni concentrates of the disseminated composites contained up to 14.6% MgO and alternative gangue depressants should be evaluated during the next phase of testing.

The MgO grades of the Ni concentrates of the seven domains are presented in Figure 13-13. The grades ranged from 0.22% MgO for the MSU composite to 14.6% MgO for the 138 Zone composite for very similar Ni head grades. The MgO grade of the Ni concentrate is driven primarily by the host rock mineralogy rather than the Ni head grade of the composite.

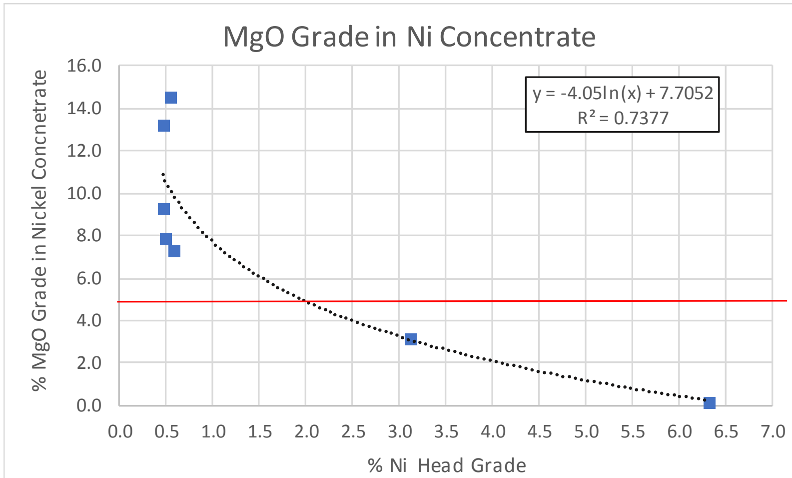


Figure 13-13: MgO Grade in Ni Concentrate

Ni smelters generally prefer a Ni concentrate with a minimum Fe:MgO ratio of 5:1. The Ni concentrates generated from the MSU and SMSU composites produced high Fe:MgO ratios of 212:1 and 13.4:1 respectively, and even the Upper CGO composite still yielded a ratio of 5.17:1. The remaining four disseminated composites produced Fe:MgO ratios between 2.11:1 for the Upper 138 zone composite and 4.06:1 for the CGO Bend Zone composite. Depending on the blending ratio of Ni concentrates from disseminated composites with Ni concentrate from the MSU and SMSU mineralization, an average Fe:MgO ratio of over 5:1 may be maintainable.

During the next phase of testing it will be paramount to refine the regression curves with additional locked cycle testing using composites that reflect the actual mill feed grades over the projected mine life. The production of a geo-metallurgical model to assess the suitability of the samples tested and a full variability test program throughout the deposit needs to be conducted during the prefeasibility phase.

The reagent regime developed for the Tamarack North Project mineralization is presented in Table 13-7. It is noted that the dosage of 675 g/t CMC is considered very high for the MSU and SMSU domains and could be reduced by at least 50%. Given the significant cost of the proposed reagent regime, a dosage optimization should be carried out during the next phase of testing.

Further, the collector dosage required for the disseminated composites was significantly higher than suggested by their sulphide head grades. This is a strong indication that collector "robbing" is taking place by some of the non-sulphide gangue minerals. Dosage levels vary for the different domains and must be established during the next phase of testing.

Table 13-7: Reagent Dosages

Reagent	Consumption of Mill Feed (g/t)
Sodium Isopropyl Xanthate (SIPX)	130
Potassium Amyl Xanthate (PAX)	330
Methyl Isobutyl Carbinol (MIBC)	125
Carboxyl Methyl Cellulose (CMC)	675
Lime	730
Sodium Metasilicate	400

14. MINERAL RESOURCE ESTIMATE

14.1 Introduction

Caution to readers: *In this Item, all estimates and descriptions related to Mineral Resource estimates are forward-looking information. There are many material factors that could cause actual results to differ materially from the conclusions, forecasts or projections set out in this item. Some of the material factors include differences from the assumptions regarding the following: estimates of cutoff grade and geological continuity at the selected cut-off, metallurgical recovery, commodity prices or product value, mining and processing methods and general and administrative costs. The material factors or assumptions that were applied in drawing the conclusions, forecasts and projections set forth in this Item are summarized in other Items of this report.*

The updated mineral resource estimate for the Tamarack North Project was completed by Mr. Brian Thomas, P.Geo., Senior Resource Geologist with Golder and senior peer review was provided by Mr. Paul Palmer, Principal, P.Geo., P.Eng. The estimate is based on assay data from drill programs completed by Kennecott between 2008 and 2016. The Tamarack North Project mineralization consists of three distinct geological domains as previously discussed in Section 7, including the SMSU hosted in CGO, the MSU hosted in meta-sediments, and the 138 Zone hosted in mixed FGO and CGO peridotites. Grade variables evaluated in this Technical Report include Ni, Cu, Co, Pt, Pd and Au as well as SG.

The software used for the updated mineral resource estimate in this Technical Report was Datamine Studio RM, release 1.2.47.0 (Datamine).

14.2 Drill Hole Data

A total of 242 diamond drill holes were provided by Talon (derived from Kennecott Database) regarding the Tamarack North Project, containing 37,265 assay intervals having a total core length of 100,692 m. All drill hole data was provided as of April 27, 2017.

The Tamarack North Project drill hole data was imported into Datamine from electronic .csv files and no interval errors were encountered during the process.

The drill hole file was reviewed in plan and section to validate the accuracy of the collar locations, hole orientations and down hole trace, and the assay data was analyzed for out of range values. The drill hole database was determined by Golder to be of suitable quality to support the updated mineral resource estimate in this Technical Report.

14.3 Geological Interpretation

14.3.1 Sample Selection

Four mineral envelopes were created to represent the MSU (green), SMSU (red) and 138 Zone (purple) occurring at the Tamarack North Project as illustrated in Figure 14-1. The SMSU was split into Upper and Lower segments based on observed grade distribution and domain analysis.

An approximate 0.83% NiEq cut-off was used to constrain the mineral envelopes in areas of continuous mineralization, however, some lower grade material was included where required to maintain geological continuity. NiEq is further explained in Section 14.9. Figure 14-1 illustrates the mineral domains and the samples within each. The Tamarack North Project resource estimate is based on the samples captured inside the domains as described in Table 14-1.

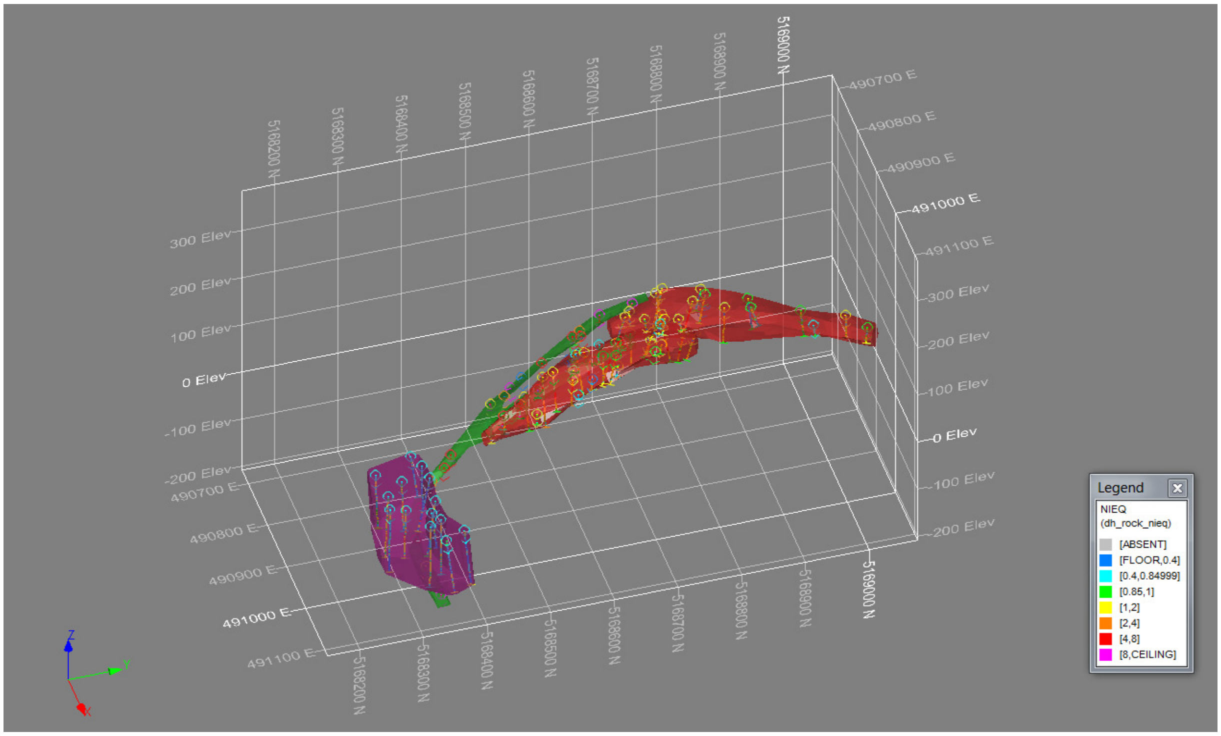


Figure 14-1: Oblique View of Mineral Domains Tamarack North Project (Facing N-W)

Raw sample intervals were captured inside each domain wireframe and verified visually to confirm the accuracy of the process. Table 14-1 provides the sample break down by domain. It is noted that some holes intersect multiple domains.

Table 14-1: Summary of Captured Samples Tamarack North Project

Domain	Number of Holes	Number of Samples	Total Sample Length (m)
Upper SMSU	20	643	971
Lower SMSU	27	828	1246
Total SMSU	**38 ***	**1471**	**2217**
MSU	24	189	209
138 Zone	14	1113	1575
Total	**76**	**2773**	**4001**

* 9 of the holes drilled for SMSU intersect both Upper and Lower SMSU.

14.4 Exploratory Data Analysis (EDA)

Descriptive statistics combined with a series of histograms and X-Y scatter plots were used to analyze the grade distribution of each sample population and to determine the presence of outliers and correlations between metals for each mineral domain.

14.4.1 Descriptive Statistics

Table 14-2 provides a summary of the descriptive statistics for the raw sample populations captured from within each mineral domain.

Table 14-2: Descriptive Statistics of the Tamarack North Project Sample Population

Domain	Field	Samples	Minimum	Maximum	Mean	Standard Deviation	Skewness	Coefficient of Variation
Upper SMSU	Ni (%)	643	0.11	4.49	1.02	0.91	1.85	0.89
Upper SMSU	Cu (%)	643	0.01	2.40	0.62	0.47	1.21	0.76
Upper SMSU	Co (%)	643	0.006	0.108	0.029	0.021	1.74	0.72
Upper SMSU	Pt (ppm)	643	0.003	0.863	0.155	0.13	2.08	0.82
Upper SMSU	Pd (ppm)	643	0.003	0.565	0.098	0.08	1.79	0.79
Upper SMSU	Au (ppm)	643	0.001	0.571	0.101	0.08	1.55	0.78
Lower SMSU	Ni (%)	828	0.12	5.06	1.68	1.28	0.68	0.76
Lower SMSU	Cu (%)	828	0.01	2.98	0.93	0.58	0.70	0.63
Lower SMSU	Co (%)	828	0.008	0.131	0.044	0.031	0.72	0.71
Lower SMSU	Pt (ppm)	828	0.006	5.410	0.575	0.41	2.94	0.72
Lower SMSU	Pd (ppm)	828	0.003	1.510	0.347	0.19	1.24	0.54
Lower SMSU	Au (ppm)	828	0.001	1.265	0.254	0.17	1.17	0.66
MSU	Ni (%)	189	0.017	10.15	5.53	2.30	-0.64	0.42
MSU	Cu (%)	189	0.005	5.75	2.41	0.99	-0.43	0.41
MSU	Co (%)	189	0.001	0.216	0.114	0.051	-0.42	0.44
MSU	Pt (ppm)	189	0.002	1.18	0.49	0.23	0.02	0.47
MSU	Pd (ppm)	189	0.0025	4.65	0.68	0.57	2.78	0.84
MSU	Au (ppm)	189	0.001	5.03	0.29	0.45	7.63	1.57
138 Zone	Ni (%)	1,113	0.115	9.89	0.64	0.62	6.65	0.96
138 Zone	Cu (%)	1,113	0.007	7.56	0.46	0.51	5.17	1.10
138 Zone	Co (%)	1,113	0.009	0.198	0.021	0.011	6.84	0.54

138 Zone	Pt (ppm)	1,113	0.00025	112	0.212	2.00	55.41	9.45
138 Zone	Pd (ppm)	1,113	0.0005	4.88	0.103	0.12	21.41	1.16
138 Zone	Au (ppm)	1,113	0.0005	1.48	0.109	0.10	4.44	0.96

Note: Sample statistics weighted by length for all domains.

Figures 14-2 to 14-5 provide examples of the frequency distribution of the Ni sample populations of each domain. The Ni population was found to be weakly bi-modal in the SMSU, normal in the MSU and positively skewed in the 138 Zone.

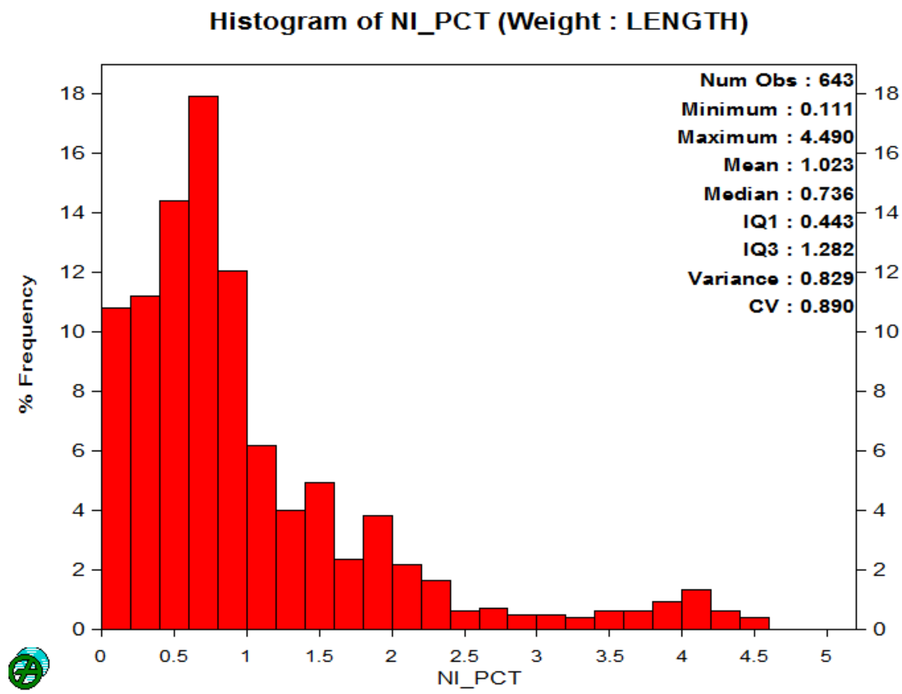


Figure 14-2: Histogram of %Ni for the Upper SMSU

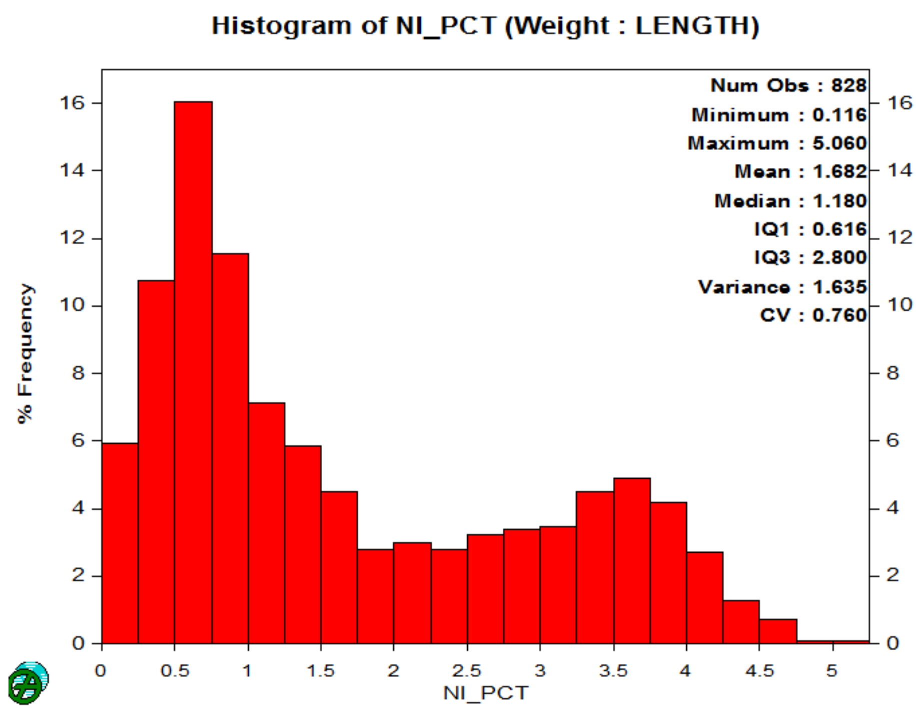


Figure 14-3: Histogram of %Ni for the Lower SMSU

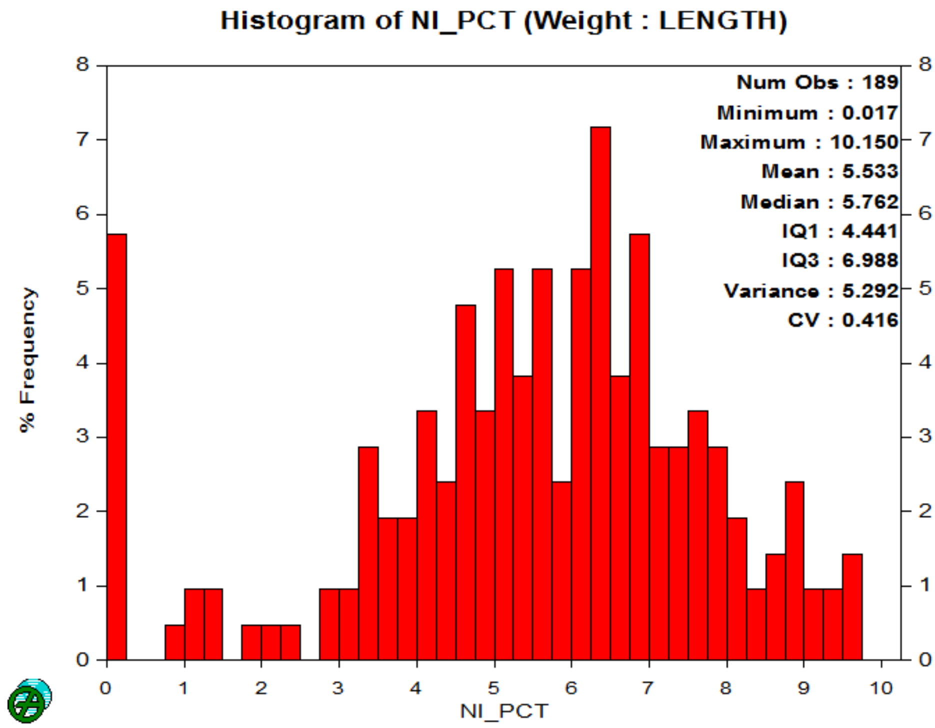


Figure 14-4: Histogram of %Ni for MSU

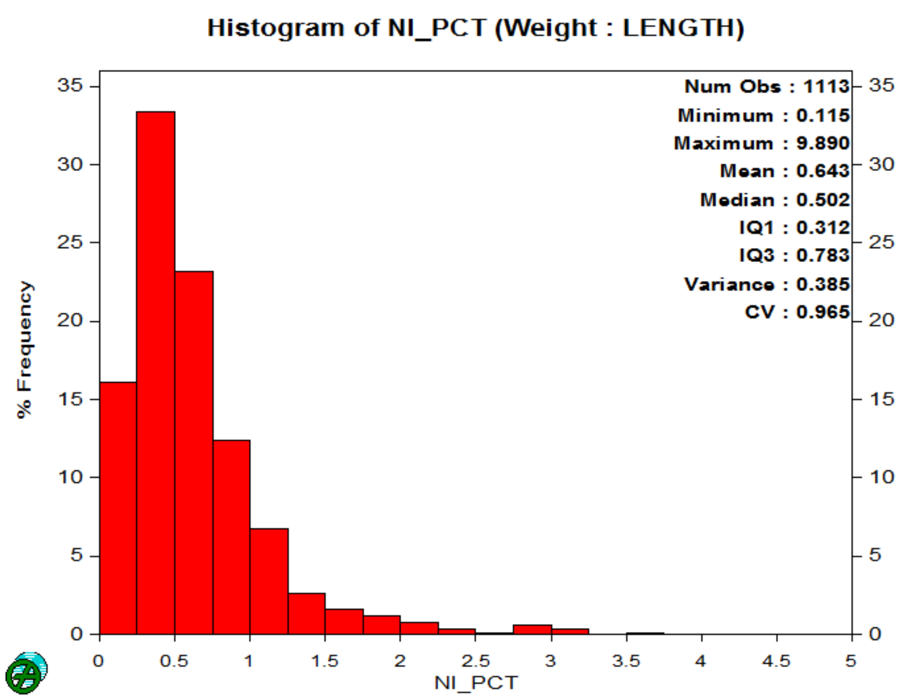


Figure 14-5: Histogram of %Ni for 138 Zone

Un-assayed intervals were assumed to be waste and assigned a metal value of one-half the detection limit for each metal as listed in Table 14-3. There was only one interval with absent metal assays for the entire captured sample population.

Table 14-3: Default Grades for Absent Data

Metal	Default Value
Ni	0.0025 %
Cu	0.0025 %
Co	0.001 %
Pt	0.0025 ppm
Pd	0.0025 ppm
Au	0.005 ppm

14.4.2 Correlations

A correlation matrix was generated for each domain, to determine the relationship between all metals and density values as illustrated for the Lower SMSU domain in Table 14-4.

Table 14-4: Correlation Matrix of the Lower SMSU

	Ni	Cu	Co	Pt	Pd	Au	S	Density
Ni	1							
Cu	0.8784	1						
Co	0.9865	0.8324	1					
Pt	-0.1219	0.0825	-0.1747	1				
Pd	0.0283	0.2011	-0.0378	0.7748	1			
Au	-0.0934	0.1673	-0.1688	0.7090	0.7049	1		
S	0.9877	0.8435	0.9970	-0.1648	-0.0278	-0.1605	1	
Density	0.8289	0.6797	0.8561	-0.2125	-0.0962	-0.2891	0.8600	1

In the Lower SMSU, Ni was found to have a strong correlation with Cu, Co, S, and a reasonably good correlation with measured density values. Cu was found to have a higher correlation with the PGMs than Ni. These are typical relationships generally associated with magmatic Ni sulphide deposits. The correlation between S and density was used as the basis to calculate density for absent intervals in the SMSU domain as described further in this section. These correlations were also used to make assumptions that Co and density have the similar spatially continuity as Ni as described in the variography section.

In the Upper SMSU, Ni was found to have the similar correlations with Cu, Co, S but was not very well correlated with density, so density values were not calculated. The raw lab measured density values were used to estimate density into the model as explained further in Section 14.6.4.

14.4.3 Bulk Density

Density data obtained from cut core (single piece taken from sample bag) lab measurements (ALS Minerals) was the main source of the data values in the supplied assay database. Field measurements were also taken on site from 10 cm core samples, taken approximately every 20 m, using the weight in air versus the weight in water method based on the following formula:

- Density = weight in air / (weight in air – weight in water)

Golder elected to only use the density measurements obtained from lab measurements and did not use the field measurements. Calculated density values were substituted, where no lab measured data was available, based on polynomial regression formulas defined for each mineral domain. Density was assigned to absent drill hole intervals by polynomial regression for the MSU and Lower SMSU domains based on moderate to good correlations with Ni and Sulphur. There was a poor correlation between density and Ni and % Sulphur in the Upper SMSU so no regression was used and density was estimated using OK with the available lab measured data. No lab measured density data was available for the 138 Zone. Density was later assigned to the 138 Zone model based on a regression formula derived from the Lower SMSU domain, limited to the same Ni and Cu grade range as observed in the 138 Zone. Density data from field measurements was later used to validate the model. The regression formulas used for each domain are listed below.

- Density (Lower SMSU) = 2.75988 + Sulphur (%) x 0.03808
- Density (MSU) = 2.79247 + Ni x 0.17519
- Density (138 Zone) = 2.76785 + Ni x 0.09198 (applied to block model, not estimated)

Based on reasonably good correlations with the density data, Golder decided that it would be appropriate to weight the base metal grades (Ni, Cu and Co) by density for estimation purposes for the Lower SMSU and MSU domains. New grade fields QNi, QCu, and QCo were calculated by multiplying the metal grade by measured density, where available, and calculated density in the absence of measured data. Grades in the Upper SMSU and 138 Zones were not weighted by density.

X-Y scatter plots were generated to illustrate the relationship between Sulphur and density, for the Lower SMSU domain, and Ni and density for the MSU domain as shown in Figures 14-6 and 14-7.

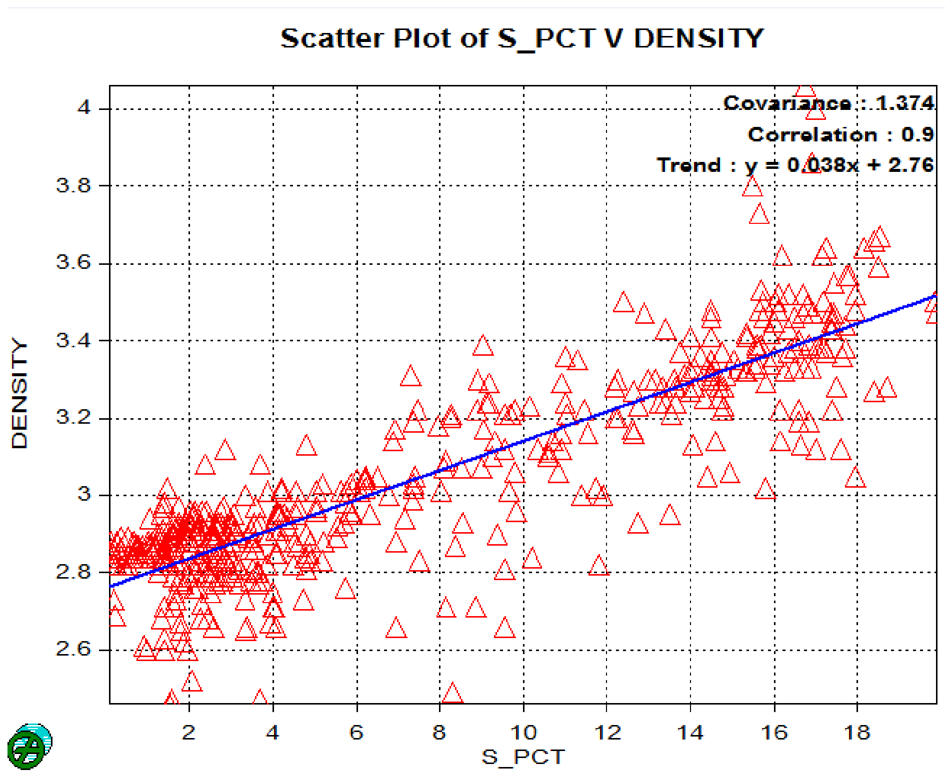


Figure 14-6: Scatter Plot of %S vs Density in the Lower SMSU

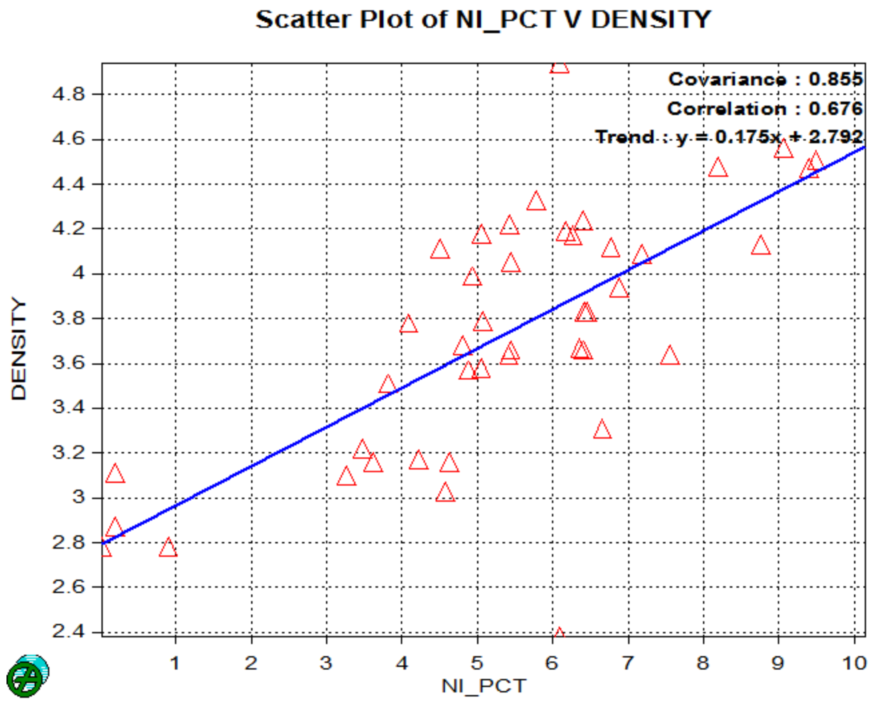


Figure 14-7: Scatter Plot of %Ni vs Density in MSU

14.4.4 Outliers

X-Y scatter plots were generated to assess the sample population for outlier values. High grade outlier data has the potential to bias the block model grades if they are not handled by top cutting or otherwise restricting their influence through other estimation criteria. A minor number of high grade outliers were identified in the Pt, Pd and Au populations of each domain and top-cut as indicated by the red lines shown in Figure 14-8, Figure14 9 and Table 14-5. Minor top cuts were performed on the Ni and Cu grades in the 138 Zone.

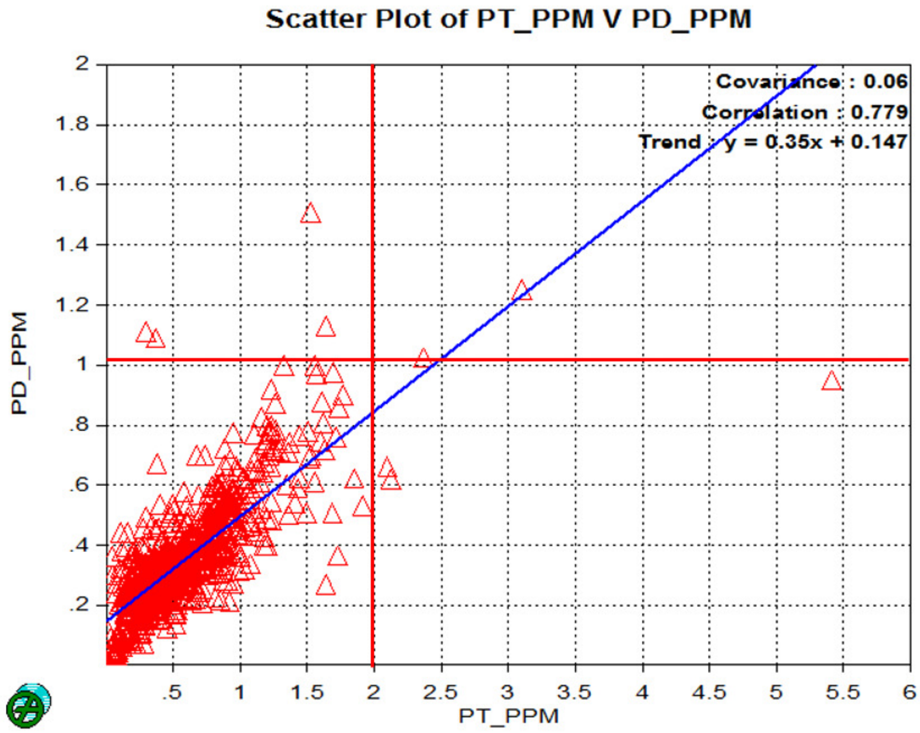


Figure 14-8: Scatter Plot of Pt vs Pd in the Lower SMSU

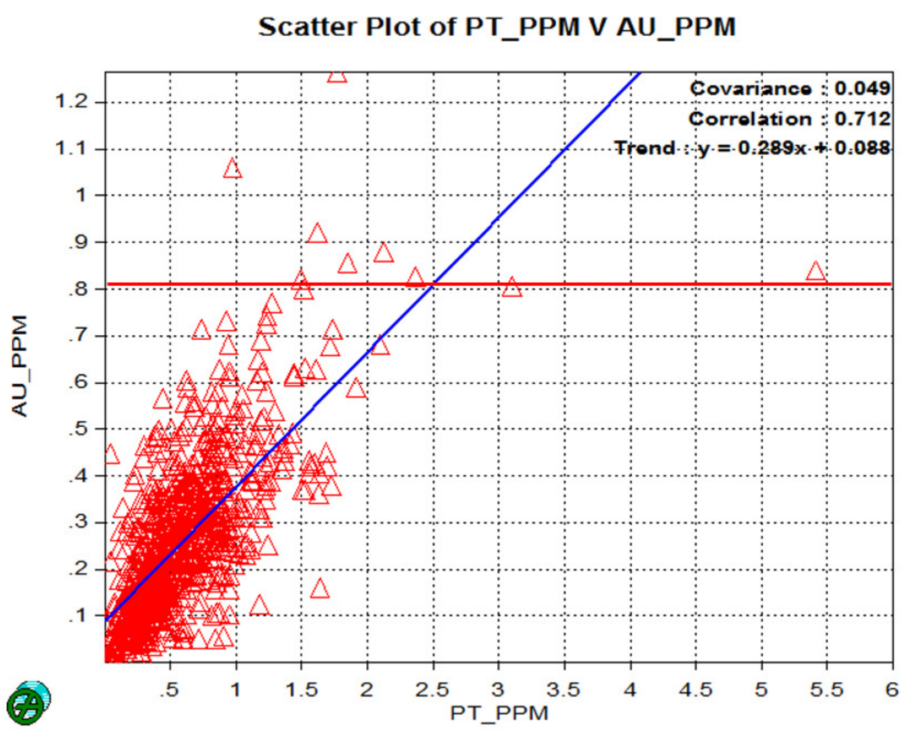


Figure 14-9: Scatter Plot of Au vs %Cu in the Lower SMSU

The identified PGM outliers were top-cut as listed in Table 14-5. Top cutting reduces the value of an outlier to a set maximum value, reducing the potential for bias in the block model.

Table 14-5: Summary of Top Cuts

Domain	Metal	Top Cut Value	# Samples Cut
Upper SMSU	Pt (ppm)	0.8	3
	Pd (ppm)	0.45	1
	Au (ppm)	0.4	4
Lower SMSU	Pt (ppm)	2	5
	Pd (ppm)	1	6
	Au (ppm)	0.8	8
MSU	Cu %	5.0	1
	Pt (ppm)	1.0	2
	Pd (ppm)	1.71	8
	Au (ppm)	0.76	3
138 Zone	Ni %	5	1
	Cu %	4	1
	Pt (ppm)	1	5
	Pd (ppm)	1	1
	Au (ppm)	0.8	5

14.5 Compositing

Compositing samples is a technique used to give each sample a relatively equal length weighting to reduce the potential for bias due to uneven sample lengths. A histogram of raw sample length was generated for each domain to determine the most common sample length used at the Tamarack North Project as illustrated in Figure 14-10 for the Lower SMSU.

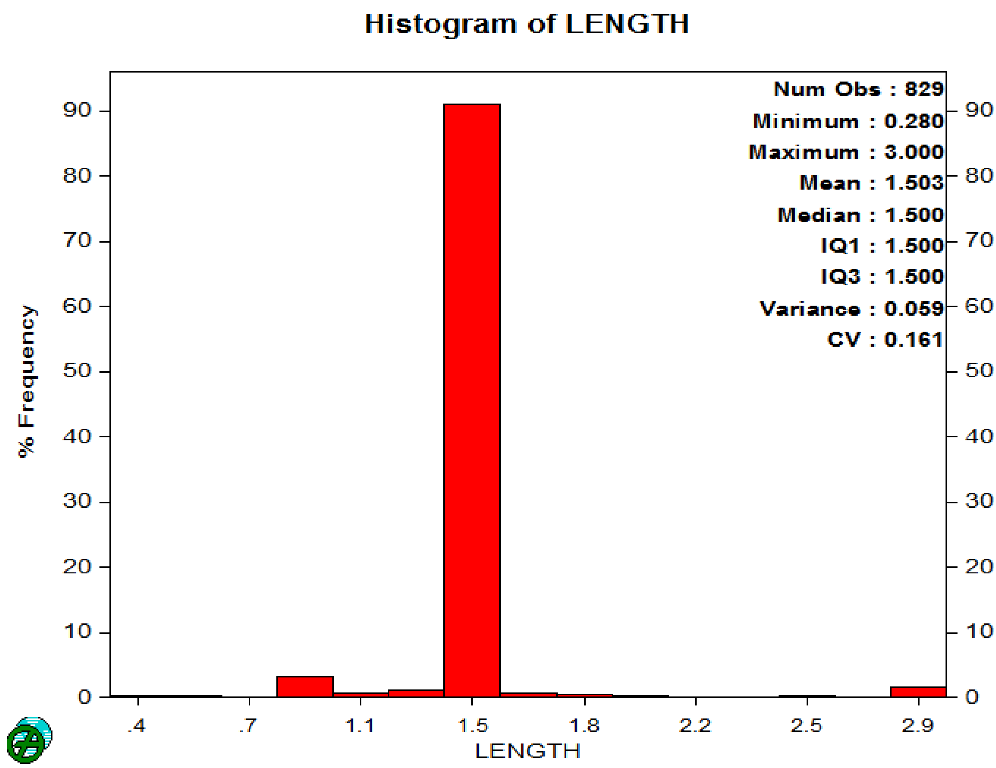


Figure 14-10: Histogram of Raw Sample Length (m) (Lower SMSU)

Samples captured within the Upper and Lower SMSU and 138 Zone domains were composited to an average length of 1.5 m and the samples in the MSU domain were composited to an average length of 1 m. These intervals were chosen because they were the most common sample lengths and provide a reasonable level of sample support. An option to use a variable composite length was chosen for all domains to prevent the loss of sample information and the creation of short composites that are generally formed along the contacts when using a fixed length.

Composite samples were validated visually in plan and section and a histogram of composite length was generated to confirm compositing was completed as expected. The histograms displayed a normal distribution around the chosen composite lengths and the total lengths of the composites, as well as the mean sample grades, which were found to match that of the raw captured samples.

14.6 Resource Estimation

14.6.1 Unfolding

The “Unfold” process within Studio 3 was used to transform the composite sample data from Cartesian coordinates into an UCS, as defined by the geometry of the footwall and hanging wall contacts of each mineral wireframe. This transformation essentially removes bends, pinches and swells in the mineral model, allowing for more robust variogram calculations and grade estimation. This was considered an appropriate process to employ given the variable orientations of each mineral wireframe.

Strings representing the footwall (white) and hanging wall (red) contacts of the deposit were constructed and tagged in cross-section view, as shown in Figure 14-11. These strings were then used to transform the composite samples into the UCS. The same unfold strings are used in the grade estimation process to unfold the blocks into the same transformed system as the composite samples. The process unfolds discretization points from the prototype model and estimates the grades for each in the UCS. The process then assigns the estimated grades back to the corresponding cell in the Cartesian model. In the UCS, the X-axis is assigned to UCSA which represents the across strike thickness of the zone, the Y-axis is assigned to UCSB representing the down-dip direction of the zone and the Z-axis is assigned to UCSC representing the along strike direction of the zone.

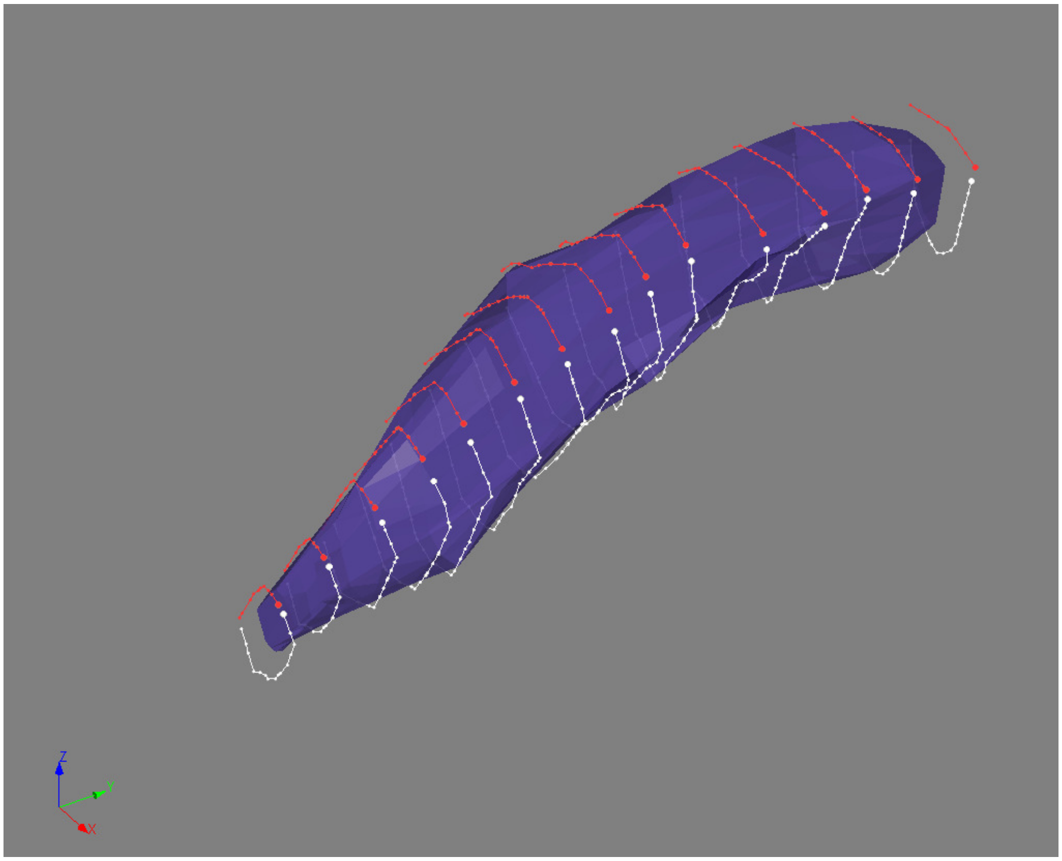


Figure 14-11: Lower SMSU Unfold Strings, Oblique View Facing NW

The unfolded samples were validated visually in unfold space for each zone. Quadrilateral strings created during the process were inspected to confirm that unfolding had performed as expected as shown in Figure 14-12 for the MSU domain.

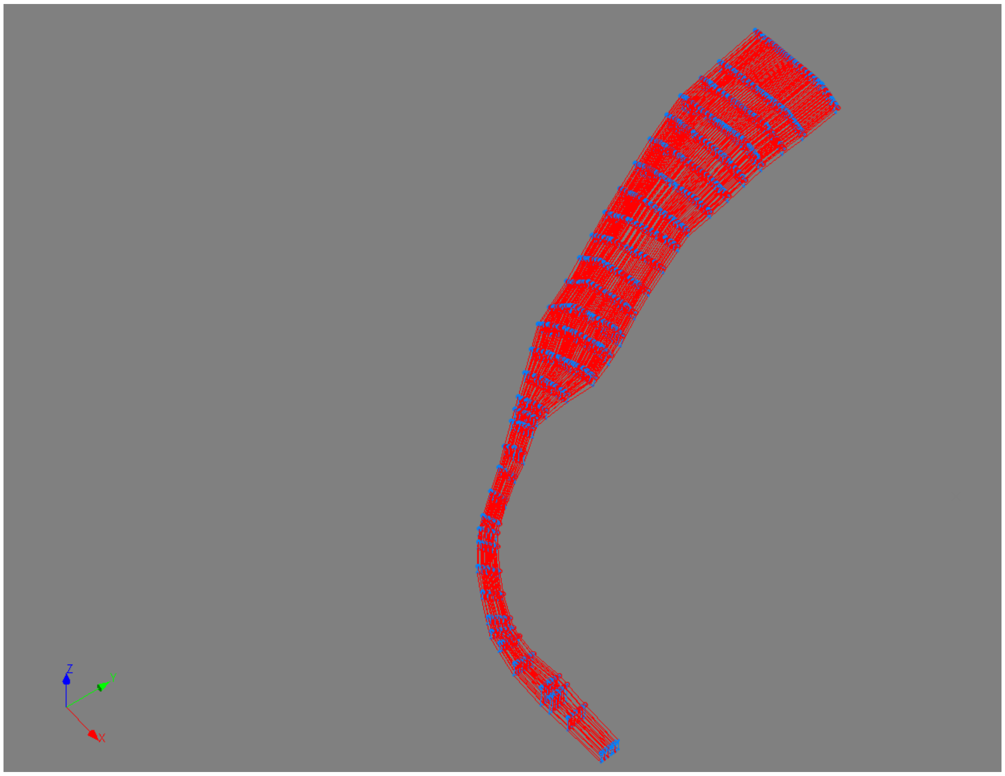


Figure 14-12: MSU Review of Quadrilateral Strings, Oblique View Facing NW

Visual inspection of the NN model (as described later in Section 14.8), confirmed that the unfolding process had worked as expected for all zones.

14.6.2 Grade Variography

Experimental grade variograms were generated from the unfolded composite data for all model variables to assess the spatial variability for the purpose of assigning Kriging weights to the composite samples. Samples situated in the directions of preferred geological continuity receive higher Kriging weights resulting in a greater influence on the block estimate.

Pairwise relative experimental grade variograms were generated based on the parameters outlined in Table 14-6. Variograms were not generated for the MSU domain due to insufficient data across the width of the deposit.

Table 14-6: Grade Variogram Parameters

Elements	SMSU (Upper and Lower)	138 Zone
Rotations	0	0
Lag Distance (m)	20	30
Number of Lags	15	15
Sub-Lag Distance (m)	5	15
Number Lags to be Sub-Lagged	5	4
Regularization Angle (degrees)	22	22
Number of Azimuths	2	2
Cylindrical Search Radius	30	30

A set of two structure spherical variogram models were fitted to the variogram data. An example of the variogram model for Ni in the Lower SMSU is provided in Figure 14-13. Summaries of all the variogram models are provided in Table 14-7.

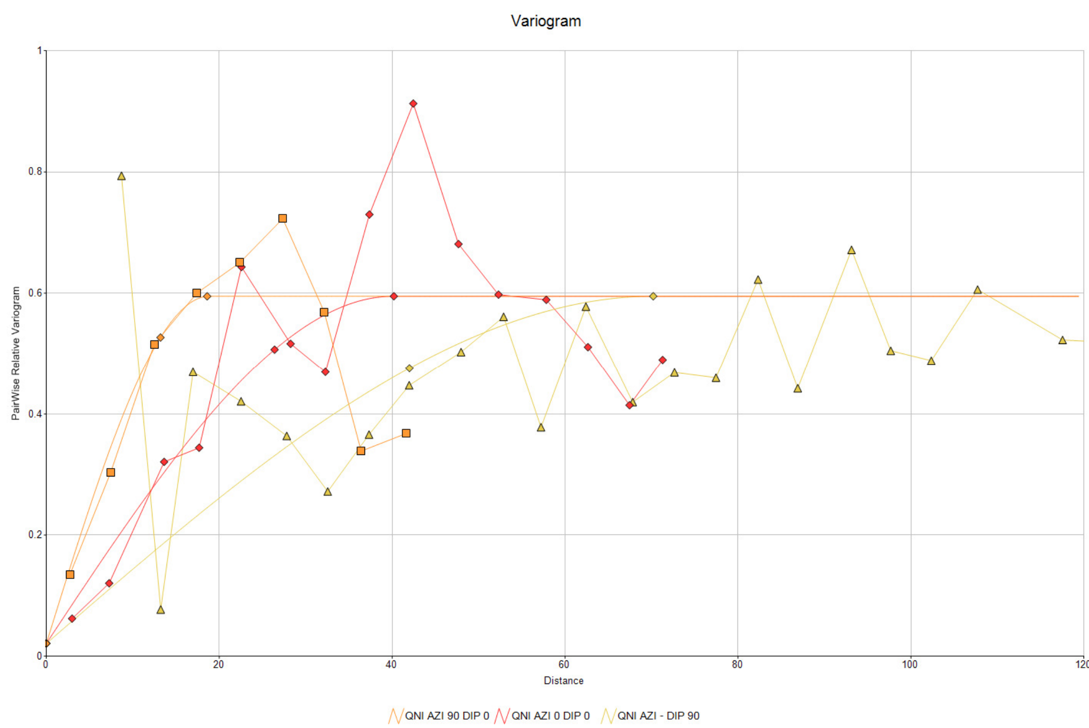


Figure 14-13: Lower SMSU %Ni Variogram Model

Table 14-7: Tamarack Grade Variography (Unfolded)

Mineral Domain	Element	Nugget	1st Structure				2nd Structure			
			X-Range	Y-Range	Z-Range	Variance	X-Range	Y-Range	Z-Range	Variance
Lower SMSU	QNi	0.021	12.9	26.3	42.2	0.006	18.8	40.1	70.2	0.568
	QCu	0.053	12.9	17.3	20.3	0.084	27.4	31.8	50.7	0.357
	Pt	0.073	2.4	18.3	44.6	0.135	26.3	50.9	79.7	0.211
	Pd	0.058	13.9	18.1	17.9	0.082	37	40.2	59.7	0.194
	Au	0.074	6.5	11.4	25.6	0.116	18.1	27.4	60.1	0.226
Upper SMSU	Ni	0.021	6.4	9.9	34.8	0.143	20.5	39.6	79.9	0.392
	Cu	0.053	12	11.3	45.1	0.227	20	59.7	80.1	0.296
	Pt	0.073	9	21.7	32.6	0.163	27.4	60.7	79.5	0.27
	Pd	0.075	10.9	17.5	27.4	0.173	25.9	59.7	79.7	0.259
	Au	0.074	5.4	18.5	38.8	0.303	20.1	60.3	79.9	0.129
138 Zone	Ni	0.056	9.7	23.5	16.8	0.003	20.2	45.8	50.1	0.317
	Cu	0.129	7.9	18.6	21.1	0.003	20	45.7	50.2	0.47
	Pt	0.088	7.5	21.1	12.1	0.001	20.6	46.4	49.6	0.266
	Pd	0.108	7.7	16.4	15.8	0.019	19.8	44.7	50.2	0.228
	Au	0.155	8.5	17	17.6	0.04	20.2	45.3	50	0.259

Notes:
In the UCS, X (vertical) is across the mineralization, Y is down-dip, and Z is along strike.

QNi and QCu are density weighted variables.

The down-dip (Y-Range) and along strike (Z-Range) directions of the mineralization were determined to be the directions of greatest grade continuity. The second structure range of each axis was used as the basis to define the search ellipse dimensions used for interpolating grades into the mineral resource block model.

14.6.3 Block Model Definition

The Tamarack North Project prototype model covers an area of UTM NAD 83 grid coordinates from 490,650 E to 491,200 E, 5,168,150 N to 5,169,100 N, and -250 to 150 m elevation. Block shape and size is typically a function of the geometry of the deposit, density of sample data, and expected potential SMU. On this basis, a parent block size of 7.5 m (E-W) by 7.5 m (NS) by 7.5 m elevation was chosen for the SMSU and 138 Zone. The block model definition parameters are summarized in Table 14-8.

Table 14-8: SMSU and 138 Zone Block Model Prototype Summary

Origin			Block Size (m)			Number of Blocks		
X	Y	Z	X	Y	Z	X	Y	Z
490,650.0	5,168,150.0	-250.0	7.5	7.5	7.5	75	125	55

All mineral domain solids were filled with blocks using the parameters described in Table 14-8 except for the MSU domain. Cell splitting (2X) was used for improved definition of boundaries. All domain volumes were then compared to the filled model volumes to confirm there were no errors during the process.

The MSU model prototype was defined as described in Table 14-9.

Table 14-9: MSU Block Model Prototype Summary

Origin			Block Size (m)			Number of Blocks		
X	Y	Z	X	Y	Z	X	Y	Z
490,650.0	5,168,150.0	-250.0	3	3	1.5	183	316	267

14.6.4 Estimation Methodology

OK was the interpolation method chosen to estimate grades in the Upper and Lower SMSU and 138 Zone. This method assigns weights to the samples based on the modelled spatial continuity (variography) of the sample data. The MSU domain did not have sufficient data for variogram modeling, so the ID^3 interpolation method was chosen. This method assigns weights to samples based on the distance from the block centroid, with closer samples having a higher weighting. ID^3 was chosen over ID^2 due to the high-grade nature of the domain in order to prevent high grades from spreading through areas of lower grade. ID^2 was also used in the SMSU and 138 Zone for comparative purposes, but not chosen for resource reporting.

Base metals (Ni, Cu) were density weighted for the Lower SMSU and MSU Zones based on observed correlations previously discussed. The 138 Zone and Upper SMSU were not density weighted due to insufficient density data. Density values in the 138 Zone were calculated from OK grade estimates based on a regression formula as discussed in Section 14.4.3. Density in the Upper SMSU was estimated from the raw lab determined values using OK, and missing values were assigned the NN value or a default of 2.89 t/m^3. All domains utilized a nested search strategy, along with unfolding and top-cutting as summarized in Table 14-10.

NN interpolation was also used to estimate each domain for model validation purposes. NN estimates use the sample grade closest to the centroid of the block and represent de-clustered sample grades for use in block model validation.

Table 14-10: Summary of Estimation Methodology

Geological Domain	Interpolation Methods	SG Weighting of Base Metals	Nested Search	Unfolding	Top Cutting
Lower SMSU	OK, ID^2, NN	Yes	Yes	Yes	Yes
Upper SMSU	OK, ID^2, NN	No	Yes	Yes	Yes
MSU	ID^3, NN	Yes	Yes	Yes	Yes
138 Zone	OK, ID^2, NN	No	Yes	Yes	Yes

Nested, anisotropic searches were performed for all domains using the modelled second structure variogram ranges for each element as a guide for each of the three axes, orthogonal to the unfolded plane of the deposit. The search parameters for all elements are summarized in Table 14-11. It is noted that as with the variogram ranges, these search parameters are used in unfolded space during the interpolation process, where X is across the deposit, Y is down-dip, and Z is in the strike direction. The search radius of the first search was restricted to one-half the variogram range with the second search being the full variogram range and the third search being twice the variogram range. For the MSU domain the search ellipse was based on the relative geometry of the mineralization. Search strategies for each domain used an elliptical search with a minimum of four samples and a maximum of 12 samples, utilizing an octant restriction of at least three octants with a maximum of four samples per octant, as well as a maximum of six samples per hole. Unestimated blocks were flagged in the model and then estimated without octant or hole restrictions, along with expanded search distances. Search parameters are further summarized in Table 14-11.

Table 14-11: Summary of Search Parameters (Unfolded)

Element	1st Search					2nd Search			3rd Search			All
	X-Range	Y-Range	Z-Range	Min. Samples	Max. Samples	SVOL Factor 2	Min. Samples	Max. Samples	SVOL Factor 3	Min. Samples	Max. Samples	Max. per hole
Lower SMSU	10	20	35	4	12	2	4	12	4	2	12	6
Upper SMSU	10	30	40	4	12	2	4	12	4	2	12	6
MSU	4	10	20	6	12	2	6	12	3	6	12	4
138 Zone	10	22	25	4	12	2	4	12	4	2	12	6

14.7 Mineral Resource Classification

Resource classifications were assigned to broad regions of the block model based on QP confidence related to geological understanding and continuity of mineralization relative to the style of mineralization, along with data quality and density. A combination of drill hole density and the search volume used to estimate the grade of the block was used as an addition guide for outlining classification regions. Areas where the drill hole spacing is on average 25 m or less and most of the blocks were estimated in the first or second search volume are classified as "Indicated Mineral Resource". Areas where the drill hole spacing is wider than 25 m and the majority of block was estimated in the second or third search volume are classified as "Inferred Mineral Resource". No Measured Mineral Resource was outlined from the block model as it is Golder's opinion that the drill spacing and orientation of drilling is insufficient to adequately define the volume and extent of mineralization to meet that classification. Figure 14-14 outlines the mineral resource classifications assigned to the SMSU, where green areas are Indicated Resources and blue areas are Inferred Resources. The MSU and 138 Zone were classified entirely as Inferred Resources due more complex geology / geometry and greater than 25 m drill spacing.

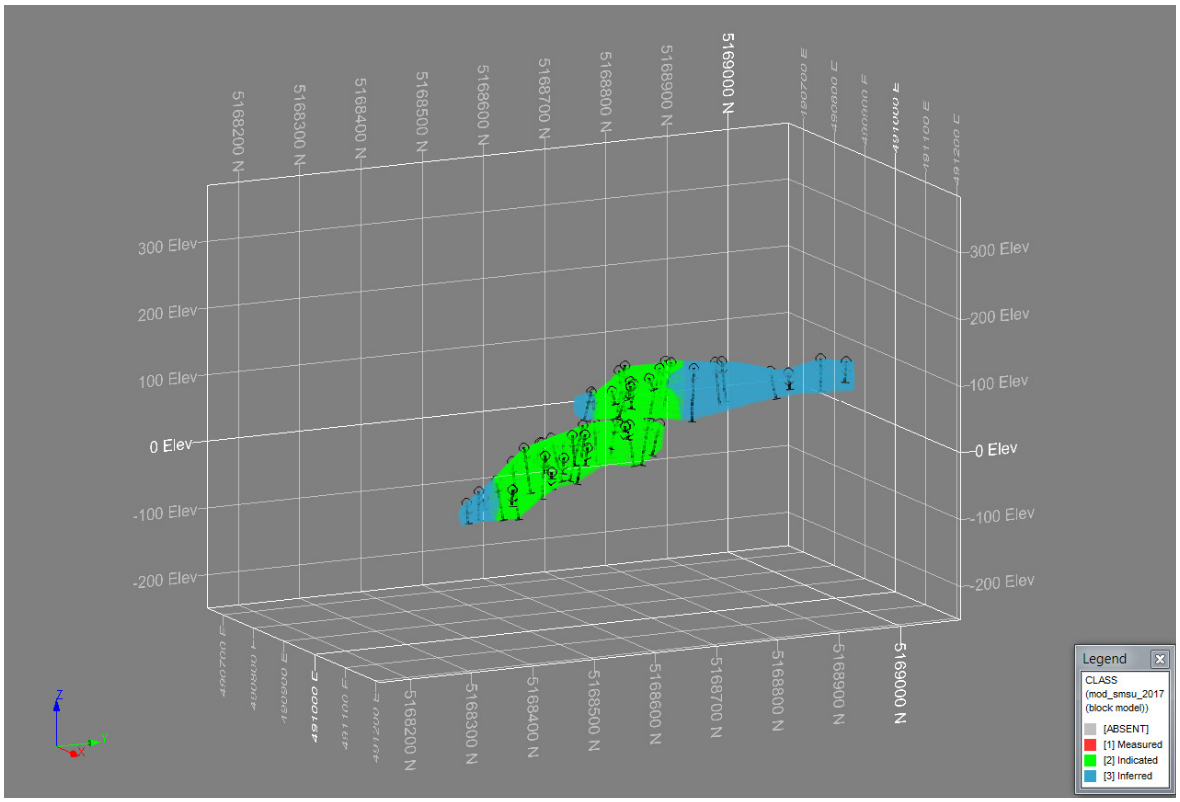


Figure 14-14: SMSU Resource Classification (Oblique View Facing North-West)

Table 14-12 summarizes the data density statistics by classification and domain.

Table 14-12: Data Density Statistics

Domain	Mineral Resource Classification	Global Model Tonnage (t)	# of Holes	# of Composite Samples	Tonnes per Hole	Tonnes per Composite Samples
Lower SMSU	Indicated	2,431,358	24	772	101,307	3,149
	Inferred	171,415	3	60	57,138	2,857
Upper SMSU	Indicated	1,354,654	12	370	112,888	3,661
	Inferred	1,627,067	8	277	203,383	5,874
MSU	Inferred	571,612	24	188	23,817	3,040
138 Zone	Inferred	4,936,837	14	1,052	352,631	4,693

The number of blocks estimated in each of the search volumes was reviewed to ensure that the proportion of cells estimated for each was relatively consistent with the spacing of the drill hole data and the classification assigned to the model. 75% of the blocks in the Lower SMSU and 71% in the Upper SMSU were estimated within the first search volume while the MSU and 138 Zone were 5% and 28% respectively as listed in Table 14-13. All the 138 Zone resources are classified as Inferred Resource due to average drill spacing being greater than 25 m and in the case of the MSU, even though tonnes per composite and tonnes per hole are similar to Indicated Resource in the SMSU, there is much greater geological complexity and uncertainty of geometry which will require more detailed drilling to account for.

Table 14-13: Summary of Tonnes per Search Volume

Domain	% 1st	% 2nd
Lower SMSU	75%	24%
Upper SMSU	71%	28%
MSU	5%	47%
138 Zone	28%	70%

14.8 Block Model Validation

The model validation process included a visual comparison of block and composite grades in plan and section, along with a global comparison of mean grades and swath plots. Block grades were visually compared to the drill hole composite data in all domains to ensure agreement. No material grade bias issues were identified and the block grades compared well to the composite data as demonstrated in Figures 14-15 and 14-16. The bimodal distribution observed in the SMSU domain was found to be well represented in the block model.

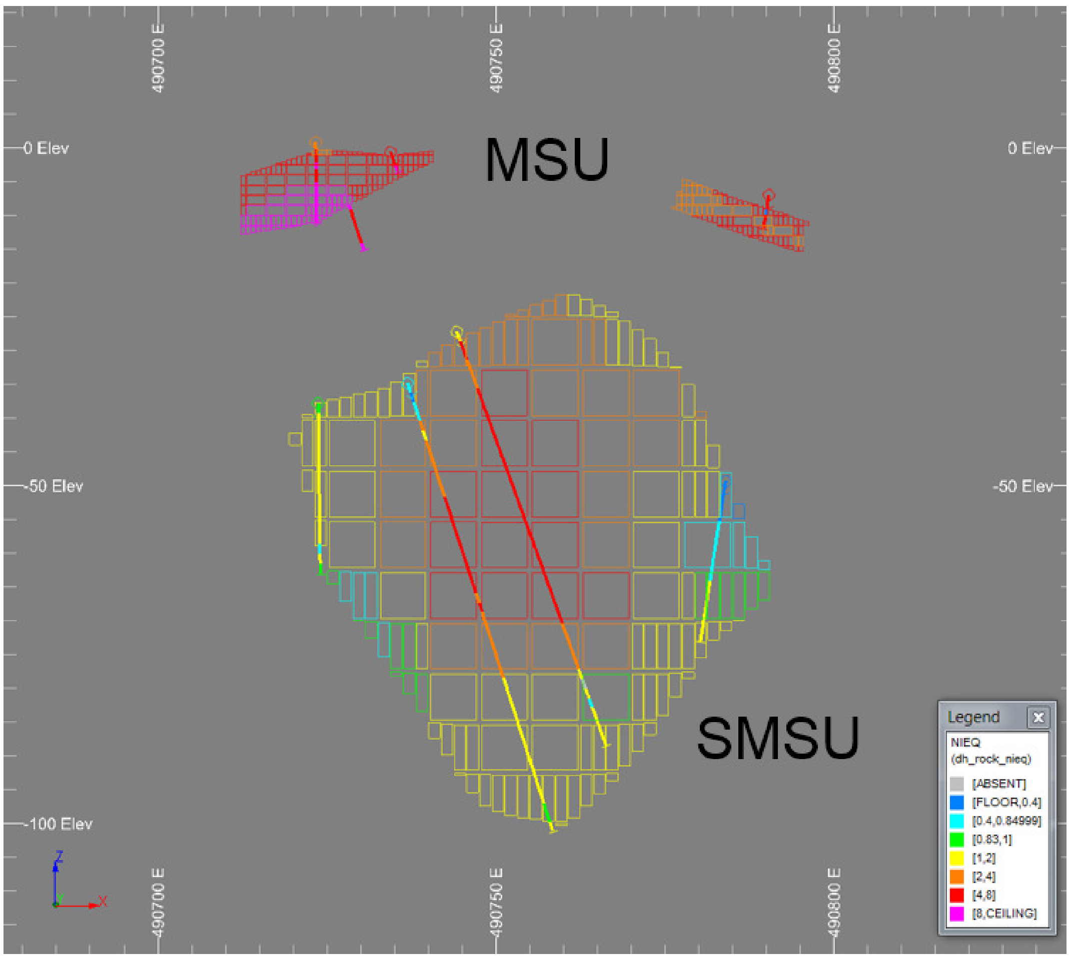


Figure 14-15: Lower SMSU and MSU Domains – E-W Section 5168660N (Facing N)

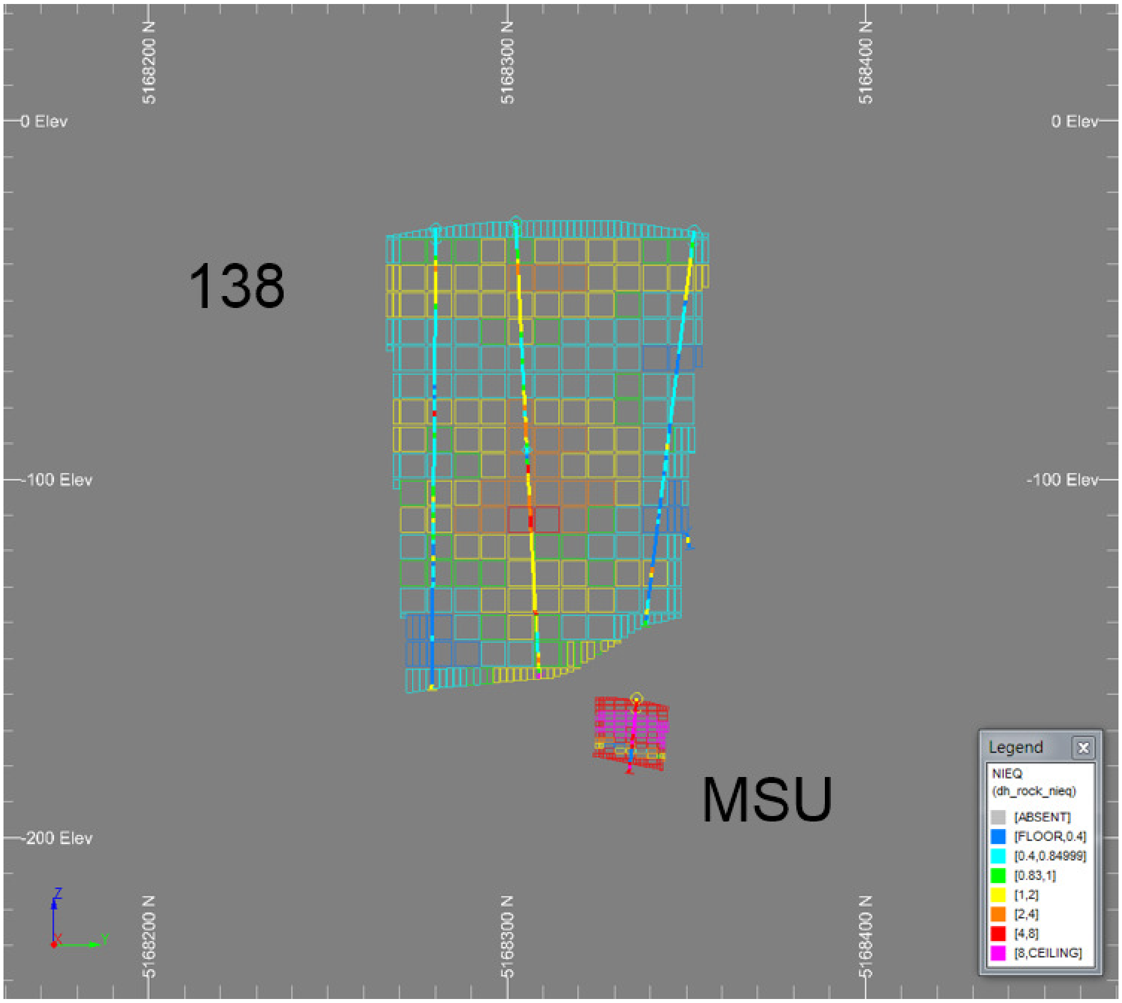


Figure 14-16: 138 Zone Domain NS Section 491000E (Facing W)

Global statistical comparisons between the composite samples, NN estimates and the final estimates (OK or ID) for each metal were compared to assess global bias, where the NN model estimates represent de-clustered composite data. Clustering of the drill hole data can result in differences between the global means of the composites and NN estimates. Similar global means of the NN and OK estimates would suggest that there is no global grade bias in the model. The results summarized in Table 14-14 indicate that no significant grade bias was found in the block model.

Table 14-14: Statistical Comparison of Global Mean Grades

Field	Source	Lower SMSU	Upper SMSU	MSU	138 Zone
		Mean	Mean	Mean	Mean
Ni	Composites	1.68	1.02	5.53	0.63
	NN Model	1.96	1.07	5.80	0.71
	Final Model	1.91	1.05	5.85	0.70
Cu	Composites	0.93	0.62	2.41	0.46
	NN Model	1.04	0.63	2.44	0.52
	Final Model	1.01	0.62	2.46	0.52
Co	Composites	0.04	0.03	0.11	0.021
	NN Model	0.05	0.03	0.12	0.022
	Final Model	0.05	0.03	0.12	0.022
Pt	Composites	0.57	0.16	0.49	0.17
	NN Model	0.55	0.16	0.53	0.19
	Final Model	0.54	0.16	0.51	0.18
Pd	Composites	0.35	0.10	0.68	0.10
	NN Model	0.34	0.10	0.68	0.12
	Final Model	0.33	0.10	0.67	0.12
Au	Composites	0.25	0.10	0.29	0.11
	NN Model	0.24	0.10	0.27	0.12
	Final Model	0.24	0.10	0.25	0.12

A series of swath plots of Ni grades was generated from slices throughout each domain model and are presented in Figures 14-17 to 14-19. The swath plots compare the model grades to the de-clustered composite grades to identify local grade bias in the model. Review of these swath plots did not identify any bias in the model that is material to the mineral resource estimate as there was general agreement between the de-clustered composites (NN model) and the final model grades.

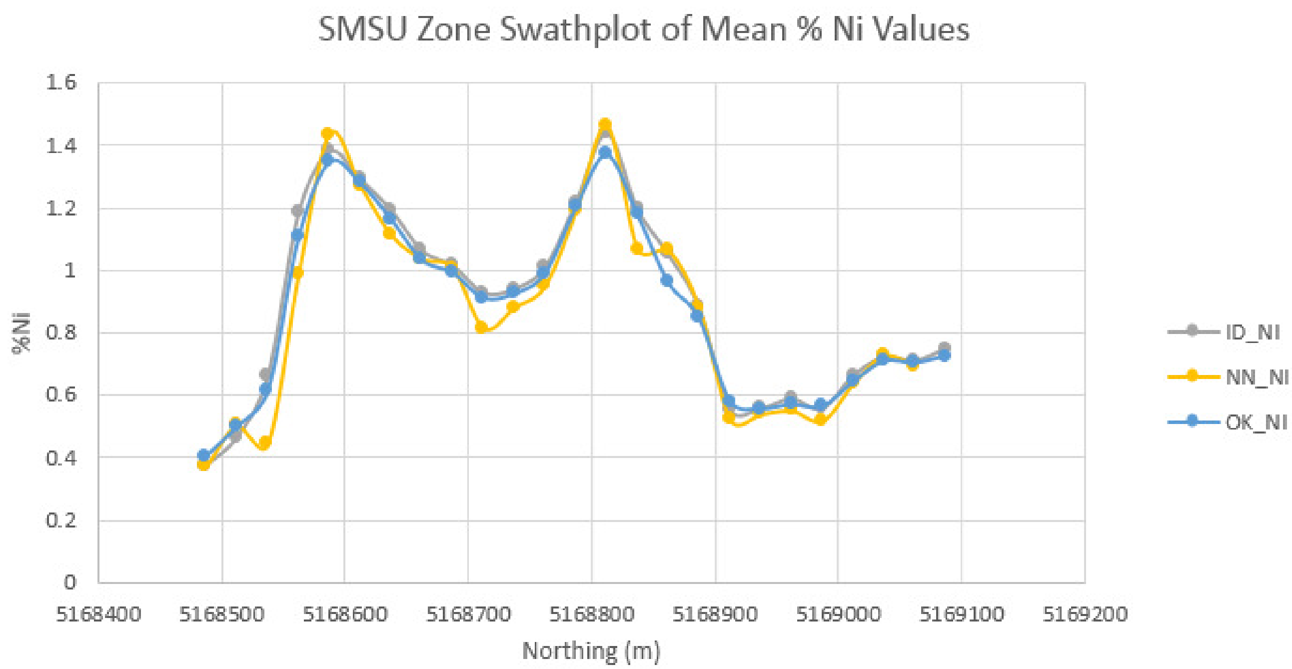


Figure 14-17: SMSU Zone Swath Plot of Mean % Ni Values for NN, IPD and OK

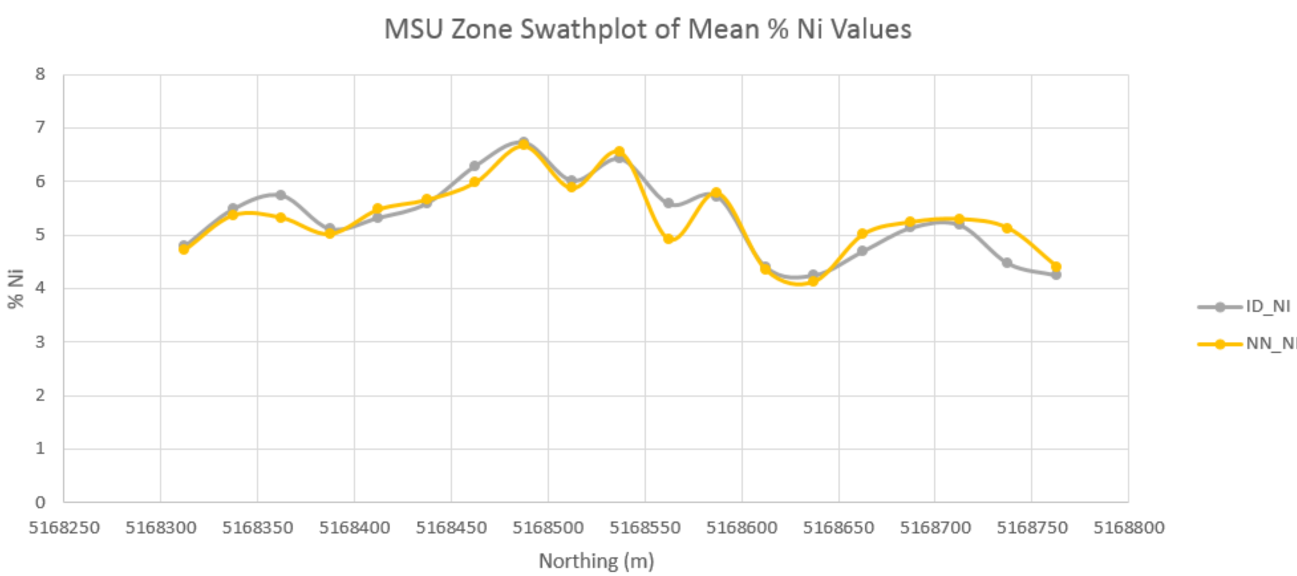


Figure 14-18: MSU Zone Swath Plot of Mean % Ni Values for NN and IPD

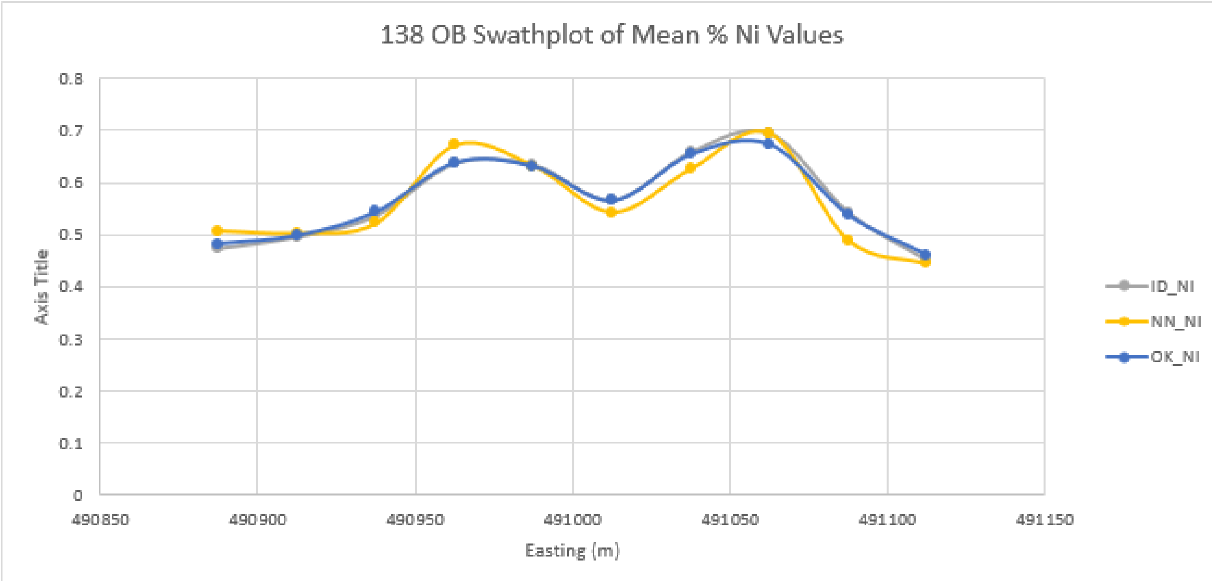


Figure 14-19: 138 Zone Swath Plot of Mean % Ni Values for NN, IPD and OK

14.8.1 Smoothing Assessment

Smoothing (ie. spreading, blending, averaging) of estimated grades can occur due to estimation processes such as compositing samples, linear interpolation methods such as OK and ID, along with various other estimation parameters such search distances and the number of samples used in the estimate. A certain degree of smoothing is expected due to the change of support size from core sized samples to large mining blocks ex. 7.5 m^3 (SMSU, 138 Zones). However, it is also common to see higher smoothing than expected which is an issue when reporting resources above a mining cut-off as the overly smoothed distribution could result in resource tonnages being overestimated and grades being underestimated.

Smoothing ratios were calculated for %Ni in the SMSU and 138 Zone, as stated in Table 14-15, based on the ratio between the theoretical model variance and actual model variance, where the theoretical variance is calculated based on the sum of the variance inside the block and variance between blocks using such parameters as the variogram model, block size and F Function. A smoothing ratio of 1 would represent the ideal scenario where the expected variance equals the model variance and ratios between 0.8 to 1.2 are within acceptable tolerances and would not require any corrective actions. Ratios less than 0.8 are considered "under-smoothed" (low tonnes and high grade) and over 1.2 are considered "over-smoothed" (high tonnes and low grade) and would require corrective actions as the proportion of tonnes and grade above the selective mining cut-off would not be representative. Corrective actions would include options such as adjusting various estimation parameters or conducting a variance correction. Smoothing ratios were not calculated for the MSU as variograms were not modelled.

Table 14-15: Summary of Smoothing Ratios

Domain	Smoothing Ratio
Upper SMSU	1.12
Lower SMSU	1.14
138 Zone	2.02

The smoothing ratio assessment indicates a low degree of smoothing in the Upper and Lower SMSU and a moderate amount of smoothing in the 138 Zone. Smoothing in the SMSU was within acceptable tolerances and was therefore not corrected. A log normal smoothing correction was applied to the 138 Zone to correct the over-smoothed grade distribution. The correction results in an increase or decrease of grades relative to the mean grade to achieve the expected variance (ie. grades below the mean are reduced, grades above the mean are increased).

14.9 Cut-off Grade

The cut-off grade, provided by Talon for this mineral resource estimate is a 0.83% NiEq. Table 14-16 lists the long-term metal prices and recovery assumptions used in the calculation of the NiEq cut-off that were provided by Talon.

Table 14-16: Talon Long Term Metal Price and Recovery Assumptions

Metal	Recovery	Price (US$)
Nickel (Ni)	66%	$8.00 / lb
Copper(Cu)	85%	$3.00 / lb
Cobalt (Co)	50%	$12.00 / lb
Platinum (Pt)	50%	$1,300 / oz
Palladium (Pd)	50%	$700 / oz
Gold (Au)	50%	$1,200 / oz

Based on the above metal price assumptions, the NiEq resource values were defined using the following formula:

- NiEq% = Ni%+ Cu% x $3.00/$8.00 + Co% x $12.00/$8.00 + Pt [g/t]/31.103 x $1,300/$8.00/22.04 + Pd [g/t]/31.103 x $700/$8.00/22.04 + Au [g/t]/31.103 x $1,200/$8.00/22.04

Talon's long-term metal price assumptions are based on the average metal price forecast from a number of recognized financial institutions from North America and Europe.

OPEX costs were estimated for bulk underground mining as summarized in Table 14-17 and appear to be within industry norms.

Table 14-17: Summary of Opex Assumptions

OPEX	US$/tonne
Mining	$64.00
Milling	$22.00
G&A	$16.00
TOTAL	**$102.00**

14.10 Mineral Resource Statements

The mineral resource estimate for the Tamarack North Project is reported in accordance with NI 43-101 and has been estimated in conformity with generally accepted CIM "Estimation of Mineral Resource and Mineral Reserves Best Practices" guidelines.

Mineral resources are not mineral reserves and do not necessarily demonstrate economic viability. There is no certainty that all or any part of this mineral resource will be converted into mineral reserve.

Inferred Mineral Resources are too speculative geologically to have economic considerations applied to them to enable them to be categorized as mineral reserves.

The mineral resource estimate was completed by Brian Thomas, P.Geo., an independent QP as defined in NI 43-101 with senior review provided by Paul Palmer, P.Geo., P.Eng. The effective date of this mineral resource estimate is February 15, 2018.

The mineral resources are reported at a NiEq cut-off of 0.83%, while other cut-offs are listed to demonstrate tonnage and grade sensitivities. The resources reported are based on a "blocks above cut-off" basis but were examined visually and found to have good continuity.

Table 14-18 reports the Indicated and Inferred Mineral Resources for the Tamarack North Project and Table 14-19 summarizes the sensitivities of other cut-offs.

Table 14-18: Tamarack North Project 2018 Mineral Resource Estimate

Domain	Classification	Tonnes (000)	Ni (%)	Cu (%)	Co (%)	Pt (g/t)	Pd (g/t)	Au (g/t)	Calc NiEq (%)
SMSU	Indicated	3,639	1.83	0.99	0.05	0.42	0.26	0.2	2.45
Total	**Indicated**	**3,639**	**1.83**	**0.99**	**0.05**	**0.42**	**0.26**	**0.2**	**2.45**
SMSU	Inferred	1,107	0.9	0.55	0.03	0.22	0.14	0.12	1.25
MSU	Inferred	570	5.86	2.46	0.12	0.68	0.51	0.25	7.24
138 Zone	Inferred	2,705	0.95	0.74	0.03	0.23	0.13	0.16	1.38
Total	**Inferred**	**4,382**	**1.58**	**0.92**	**0.04**	**0.29**	**0.18**	**0.16**	**2.11**

Notes:
All resources reported at a 0.83% NiEq cut-off.
No modifying factors been applied to the estimates.
Tonnage estimates are rounded to the nearest 1,000 tonnes.
Metallurgical recovery factored in to the reporting cut-off.

Table 14-19: Tamarack North Project 2018 Resource Sensitivities

NiEq Cut-Off (%)	Classification	Tonnes (000)	Ni (%)	Cu (%)	Co (%)	Pt (g/t)	Pd (g/t)	Au (g/t)	NiEq (%)
0.7	Indicated	3,711	1.81	0.98	0.05	0.42	0.26	0.20	2.43
0.7	Inferred	5,263	1.40	0.82	0.04	0.26	0.17	0.15	1.88
0.83	**Indicated**	**3,639**	**1.83**	**0.99**	**0.05**	**0.42**	**0.26**	**0.20**	**2.45**
0.83	**Inferred**	**4,382**	**1.58**	**0.92**	**0.04**	**0.29**	**0.18**	**0.16**	**2.11**
0.9	Indicated	3,588	1.85	1.00	0.05	0.42	0.26	0.20	2.48
0.9	Inferred	3,914	1.70	0.98	0.04	0.30	0.19	0.17	2.26
1	Indicated	3,470	1.89	1.02	0.05	0.43	0.27	0.21	2.53
1	Inferred	3,336	1.88	1.06	0.05	0.32	0.21	0.18	2.48

Notes:
No modifying factors been applied to the estimates.
Tonnage estimates are rounded to the nearest 1,000 tonnes.
Metallurgical recovery factored in to the reporting cut-off.
Bold represents the official resource.

Table 14-20 summarizes the changes from previously reported mineral resource estimates for tonnage and Ni and Cu.

Table 14-20: Summary of Resource Changes

Domain	Classification	2015			2018			Difference		
		Tonnes (000)	Ni (%)	Cu (%)	Tonnes (000)	Ni (%)	Cu (%)	Tonnes (000)	Ni (%)	Cu (%)
SMSU	Indicated	3,751	1.81	1.00	3,639	1.83	0.99	-112	0.02	-0.01
Total	**Indicated**	**3,751**	**1.81**	**1.00**	**3,639**	**1.83**	**0.99**	**-112**	**0.02**	**-0.01**
SMSU	Inferred	949	1.12	0.62	1,107	0.9	0.55	158	-0.22	-0.07
MSU	Inferred	422	6.00	2.48	570	5.86	2.46	148	-0.14	-0.02
138 Zone	Inferred	2,012	0.95	0.78	2,705	0.95	0.74	693	0	-0.04
Total	**Inferred**	**3,383**	**1.63**	**0.94**	**4,382**	**1.58**	**0.92**	**999**	**-0.05**	**-0.02**

The difference in the mineral resource estimate largely reflects the change in domain volumes resulting from new drill holes added to each mineral domain as well as a slightly lower reporting cut-off value. The MSU mineralization was infilled (by drilling) down plunge resulting in a large increase to reflect the additional continuity of the mineralization. New holes in the SMSU provided increased definition resulting in a slight reduction of tonnage and increased grade, whereas new drill holes in the 138 Zone expanded the footprint resulting in an increase of tonnage.

Golder is unaware of any known environmental, permitting, legal, title, taxation, socio-economic, marketing, political or any other potential factors that could materially impact the Tamarack North Project mineral resource estimate provided in this Technical Report. The resource is located in designated wetlands but this is not expected to affect future permitting.

15. MINERAL RESERVE ESTIMATE

Not applicable

16. MINING METHODS

Not applicable to this Technical Report.

17. RECOVERY METHODS

Not applicable to this Technical Report.

18. PROJECT INFRASTRUCTURE

Not applicable to this Technical Report.

19. MARKET STUDIES AND CONTRACTS

Not applicable to this Technical Report.

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

Not applicable to this Technical Report.

21. CAPITAL AND OPERATING COSTS

Not applicable to this Technical Report.

22. ECONOMIC ANALYSIS

Not applicable to this Technical Report.

23. ADJACENT PROPERTIES

There are no adjacent properties considered material to the Tamarack North Project resources.

24. OTHER RELEVANT DATA AND INFORMATION

There is no additional information or explanation necessary with respect to this Technical Report.

25. INTERPRETATION AND CONCLUSIONS

The mineral resource estimate in this Technical Report is the third (3rd) public disclosure for the Tamarack North Project. This mineral resource estimate has been prepared in accordance with CIM best practise guidelines and was prepared in compliance with NI 43-101 regulations.

Golder has outlined a mineral resource estimate consisting of 3.64Mt in the Indicated Mineral Resource category at average grades of 1.83% Ni, 0.99% Cu, 0.05% Co, 0.42 g/t Pt, 0.26 g/t Pd and 0.2 g/t Au at a 0.83% NiEq cut-off, with an additional 4.38 Mt in the Inferred Mineral Resource category at average grades of 1.58% Ni, 0.92% Cu, 0.04% Co, 0.29 g/t Pt, 0.18 g/t Pd and 0.16 g/t Au at a 0.83% NiEq cut-off.

Mr. Brian Thomas, P.Geo., is the QP of the resource, and has visited the site in 2014, collected samples for check assay, and reviewed the Tamarack North Project data, including geological and metallurgical reports, maps, technical papers, digital data including lab results, sample analyses and other miscellaneous information. The QP believes that the current data presented is an accurate and reasonable representation of the Tamarack North Project and concludes that the updated database (2017) is of suitable quality to provide the basis of the conclusions and recommendations reached in this Technical Report.

It is believed that the Tamarack North Project has the potential for increased resources through additional exploration.

25.1 Risks

Most holes within the outlined resource area were drilled at steeply dipping angles and did not consistently define the width of the deposit. This may affect the accuracy of the modelled volumes in the block model and resource tonnages for all domains. Although, drilling since the initial public disclosure has somewhat refined the eastern SMSU mineralized contact, Golder feels it was conservative with the overall projection of mineral contacts in order to mitigate the risk of overestimating the resource tonnage.

There is a risk in the MSU domain that high-grade mineralization could be less continuous than expected which could impact the accuracy of the mineral resource estimate. Golder analyzed the geology of this domain closely to ensure that only the most consistent massive sulphide intervals were included in the resource volume, but more infill drilling will be required to confirm width and continuity. This domain now represents 13% of the total tonnage of the Inferred Mineral Resource but is very high grade in % NiEq.

The Inferred Mineral Resource portions of the SMSU and 138 Zone domains are more sensitive than the Indicated Mineral Resource portion of the SMSU domain to increasing cut-off grades which could materially affect resource tonnage if mining costs were to unexpectedly increase.

The use of calculated bulk density data based on polynomial regression from the lower SMSU for the 138 Zone domain could affect the accuracy of the resource tonnage and grades. Grades can be affected because they are weight averaged by block tonnage. Golder assessed this risk in 2014 by comparing the mean model density to the mean field measurements taken by Kennecott. The difference between the model values and the field measurements was found to be less than 0.5%. The field measurements were not directly used for estimation because the Kennecott data consisted of partial samples from widely spaced intervals rather than full samples associated with each assayed interval.

Some of the PGE metals may be hosted in silicate minerals and may not be recoverable by flotation. Limited work has been completed to date to determine the recoveries of the PGE metals. This impact is not considered material to the current resource.

Golder accounted for the above risks by being conservative with projected contacts and by assigning appropriate resource classifications to each domain. The resource classification provides a reasonably accurate summary of the risks associated with each mineral domain.

25.2 Opportunities

Based on the information collected to date, there is an opportunity to increase the size and confidence (resource classification) of the resource with future infill and exploration drilling.

The MSU domain has now been extended 150 m down plunge confirming continuity high grade massive sulphide intervals located in the footwall of the 138 Zone. The MSU is also open up plunge along the western limb and has not been seriously tested in this direction.

Both DRA and Golder see opportunities for the Tamarack North Project which can result in an increase of resources and increased classification. These opportunities include the following:

- Inferred Mineral Resources in the MSU, SMSU and 138 Zones could be upgraded to Indicated Mineral Resources with additional infill drilling.
- The MSU could potentially be further extended:
  - On the western side of the SMSU;
  - On the eastern side of the SMSU;
  - To the S of the MSU intervals located in the footwall of the 138 Zone; and
  - To the N of the MSU intervals located in the footwall of the 138 Zone.
- Limited drilling as well as integrated magnetic and gravity modeling show the potential for massive sulphide pooling at the base of the FGO in the 164 Zone. Surface EM and DHEM could be used to explore basins that may host massive sulphides.
- The SMSU Zone has potential to be extended up plunge to the N-E around the CGO Bend while surface EM and drilling indicate the potential for massive sulphides on either side of the CGO in the CGO Bend.
- No further work exploration is recommended in the 221 and 480 Zones.

26. RECOMMENDATIONS

On the basis of work conducted to date and as described in this Technical Report, it is recommended that a PEA be completed based on the data available to date. The PEA should be restricted to the MSU and high-grade SMSU Zones. The following studies are recommended as a part of the PEA:

- A trade-off study between a shaft and a portal/decline;
- A study to determine if high sulphide tailings could be a viable option for use in cemented paste backfill;
- Trade-off studies to determine how development waste rock and low sulphide tailings will be stored at surface.

The total estimated cost to complete the recommended studies as well as the PEA is approximately $350,000.

If the PEA study results are positive:

- Further test work needs to be conducted to determine if blending of CGO disseminated sulphides with high-grade MSU and SMSU mineralization will increase recoveries and the quality of the Ni and Cu concentrates produced from disseminated sulphides;
- If a blending strategy of disseminated sulphides with MSU and SMSU net textured high-grade mineralization hosted in the CGO proves to be successful, further exploration is recommended to extend the SMSU Zone up plunge to the NE around the CGO Bend and to determine the possible extent of MSU mineralization on either side of the CGO in the CGO Bend;
- An exploration program needs to be conducted to extend the MSU Zone:
    - On the western side of the SMSU;
    - On the eastern side of the SMSU;
    - To the S of the MSU Zone located in the footwall of the 138 Zone; and
    - To the N of the MSU Zone located in the footwall of the 138 Zone.
- Consideration should be given to completing a prefeasibility study.

The total cost would be in the order of $5M to $10M as it would be dependent on the success of the planned exploration programs and metallurgical testing results.

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28. CERTIFICATES OF QUALIFIED PERSONS

CERTIFICATE OF AUTHOR

To Accompany the NI 43-101 Technical Report entitled **"Second Independent Technical Report on the Tamarack North Project – Tamarack, Minnesota",** (the "Technical Report") prepared for Talon Metals Corp. with an effective date of March 26, 2018, and an effective resource date of February 15, 2018.

I, Tim Fletcher, P. Eng., do hereby certify that:

1) I am a Project Manager with DRA Americas Inc., with an office at 300-44 Victoria Street, Toronto, Ontario, Canada;
2) I am a graduate from University of Toronto, with a B.A.Sc. in Mechanical Engineering in 1992 and an M.A.Sc. in Metallurgical Engineering in 1995;
3) I am a Professional Engineer licensed by Professional Engineers Ontario (Membership Number 90451964);
4) I have worked as an Engineer in the Mining & Metals industry continuously since my graduation from university;
5) I have read the definition of "qualified person" set out in National Instrument 43-101 (NI 43-101) and certify that by reason of my education, affiliation with a professional association (as defined by NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101;
6) I have participated in the preparation of the report entitled "**Second Independent Technical Report on the Tamarack North Project – Tamarack, Minnesota**" dated March 26, 2018 and am responsible for Section 2, portions of Sections 1, 3, 25, and 26, and compilation of report input from the other contributors;
7) I have not visited the site;
8) I have had no prior involvement with the property that is the subject of the Technical Report;
9) At the date of the Technical Report, to the best of my knowledge, information and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading;
10) I have no personal knowledge, as of the date of the Technical Report, of any material fact or material change which is not reflected in this Technical Report.;
11) I am independent of the issuer as defined in section 1.5 of NI 43-101;
12) I have read National Instrument 43-101 and Form 43-101F1, and the Technical Report has been prepared in compliance with that instrument and form;

This 26th day of March 2018.

(signed) Tim Fletcher

Tim Fletcher, P. Eng.
Project Manager
DRA Americas Inc.

Metpro Management Inc.

CERTIFICATE OF AUTHOR

To Accompany the NI 43-101 Technical Report entitled **"Second Independent Technical Report on the Tamarack North Project – Tamarack, Minnesota",** prepared for Talon Metals Corp with an effective date of March 26, 2018 (the "Technical Report").

I, Oliver Peters, M.Sc., P.Eng., MBA, do hereby certify that:

1) I am President and Principal Metallurgist with Metpro Management Inc. with an office at 102 Milroy Drive, Peterborough, Ontario, Canada;
2) I am a graduate from RWTH Aachen with a M.Sc. in Mineral Processing in 1998 and an MBA from Athabasca University in 2007;
3) I am a registered member the Professional Engineers of Ontario (100078050);
4) I have worked as a Mineral Processing Engineer and Project Manager continuously since my graduation from university;
5) I have read the definition of "qualified person" set out in the National Instrument 43-101 and certify that by reason of my education, affiliation with a professional association and past relevant work experience, I fulfil the requirements to be an independent qualified person for the purposes of NI 43-101;
6) I have participated in the preparation of the report titled "Second Independent Technical Report on the Tamarack North Project – Tamarack, Minnesota" dated February 15, 2018 and am responsible for section 13 and portions of sections 1, 3, 25, 26, and 27;
7) I have not visited the project site;
8) I have had no prior involvement with the property that is the subject of the Technical Report;
9) At the date of the Technical Report, to the best of my knowledge, information and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading;
10) I have no personal knowledge, as of the date of the Technical Report, of any material fact or material change which is not reflected in this Technical Report.;
11) I am independent of the issuer as defined in section 1.5 of NI 43-101;
12) I have read National Instrument 43-101 and Form 43-101F1, and the Technical Report has been prepared in compliance with that instrument and form;

Metpro Management Inc.

This 26th day of March 2018.

(signed) Oliver Peters

Oliver Peters, P.Eng., M.Sc., MBA
President & Principal Metallurgist
Metpro Management Inc.

CERTIFICATE OF QUALIFIED PERSON BRIAN THOMAS

I, Brian Thomas P.Geo., state that:

(a) I am a Geologist at :

Golder Associates Limited
33 Mackenzie Street, Suite 100
Sudbury, Ontario, P3C 4Y1

(b) This certificate applies to the technical report titled **"Second Independent Technical Report on the Tamarack North Project – Tamarack, Minnesota"** with an effective date of: March 26, 2018 (the "Technical Report").

(c) I am a "qualified person" for the purposes of National Instrument 43-101 (the "Instrument"). My qualifications as a qualified person are as follows. I am a graduate of Laurentian University with a B.Sc. in Geology from 1994, am a member in good standing of the Association of Professional Geoscientists of Ontario (#1366) and a member in good standing of the Engineers and Geoscientists of British Columbia (#38094). My relevant experience after graduation includes over twenty three years of experience in mine geology and mineral resource evaluation of mineral projects nationally and internationally in a variety of commodities including 9 years of experience with Vale Nickel in Sudbury (formerly INCO LTD.)

(d) My most recent personal inspection of the property described in the Technical Report occurred on July 16th, 2014 and was for a duration of 1 day.

(e) I am responsible for Items 4, 5, 6, 7, 8, 9, 10, 11, 12, 14, 23 and relevant portions of Items 1, 3, 25, 26, and 27 of the Technical Report.

(f) I am independent of the issuer as described in section 1.5 of the Instrument.

(g) My prior involvement with the property that is the subject of the Technical Report is as follows. I have previously participated in the Resource Estimate and First Independent Technical Report for the Tamarack North project with an Effective Date of August 29, 2014 and have completed an interim Resource Estimate of the MSU zone, with an Effective Date of April 3, 2015 publicly disclosed in the April 8, 2015 press release entitled "Talon Metals Announces 167% Increase in Tonnage for the Inferred Massive Sulphide Resource, and an Increase in Grade from 6.42% to 7.26% NiEQ in the Massive Sulphide Unit at Tamarack";

(h) I have read National Instrument 43-101. The part of the Technical Report for which I am responsible has been prepared in compliance with this Instrument; and

(i) At the effective date of the Technical Report, to the best of my knowledge, information, and belief, the part of Technical Report for which I am responsible, contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

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Dated at Sudbury, Ontario this 26th of March, 2018.

(signed) Brian Thomas

Brian Thomas, P. Geo.
Senior Resource Geologist
Golder Associates Ltd.

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