

**TECHNICAL REPORT**

**ENDAKO MOLYBDENUM MINE**

Located near Fraser Lake, British Columbia, Canada

Prepared for:



Prepared by:

**John M. Marek, P.E.**

**INDEPENDENT**  
MINING CONSULTANTS, INC.

**September 12, 2011**

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## 1.0 SUMMARY

This Technical Report summarizes the current operations, mineral reserves, and mineral resources for the Endako Mine located near Fraser Lake, British Columbia, Canada. This report was assembled by Independent Mining Consultants, Inc. (IMC) on behalf of Thompson Creek Metals Company Inc. (TCM or Thompson Creek). This report conforms to National Instrument 43-101 *Standards of Disclosure for Mineral Projects* (NI 43-101) and follows the format set out in Form 43-101F1 for Technical Reports.

The Endako Mine is located in central British Columbia, Canada roughly 190km west of Prince George. The mine started production in 1965. The ore is extracted by conventional hard rock open pit methods and delivered to a flotation mill at the rate of about 28,000 tonnes per day (tpd). A new mill is under construction which is expected to expand the ore processing capacity to 50,000 tpd. Start up of the new mill is expected to occur during the 1<sup>st</sup> quarter of 2012.

The Endako Mine is operated as a joint venture (the "Endako Joint Venture") between Thompson Creek Mining Ltd. ("TCML"), a subsidiary of TCM, which holds a 75% interest, and Sojitz Moly Resources, Inc. ("Sojitz"), which holds the remaining 25% interest.

The molybdenum mineralization is hosted in the Endako Quartz Monzonite which appears to be a phase of the larger Francois Lake Batholith that is middle to Late Jurassic in age. The strike length of the mineralization is roughly 4.8km from northwest to southeast and it is roughly 0.75 km wide. The deposit dips to the west and south west at about 45 degrees.

### Block Model

IMC assembled a computer based block model of the Endako deposits during June of 2011. All available diamond drilling data through October 2010 and selected blast hole data through 31 May 2011 were used in the development of the block model.

Block grade estimation within the model applied an indicator kriging procedure to establish a boundary between material with grade above 0.035% Molybdenum disulfide or molybdenite (MoS<sub>2</sub>) and less than 0.035% MoS<sub>2</sub>. Grades within each of those two grade zones were estimated with ordinary linear kriging respecting the grade boundary. Statistical and structural domain boundaries were incorporated into the model to adjust the orientation of the search ellipse for kriging.

The model was assembled in two formats: 1) using pre-mine topography so that production history could be tabulated from the model for the purpose of validating the model against historic mill production, and 2) end of 2010 topography with mining progress and in-pit waste dumps incorporated at zero grade.

## Mine Plan

The mine plan was developed by the mine planning staff at Endako. That plan was reviewed by IMC for inclusion within this technical report. The resulting mine plan and schedule is summarized on Table 1-1.

The total of all proven and probable category ore that is planned for mill treatment plus the existing mill ore stockpile that exists on site were combined to estimate the mineral reserves as summarized on Table 1-2.

The final pit that results in the mineral reserve was developed with guidance from a computer generated floating cone applied to proven and probable category mineralization only. Multiple floating cone computer runs were completed at a range of metal prices from \$10.00 to \$16.50 CDN/lb as applied to an earlier block model (January 2011). The final pit geometry that was designed by the Endako team was checked against floating cones developed on the June block model at a range of metal prices from \$12.00 to \$15.00 CDN/lb. A floating cone at \$13.50 CDN moly price is a reliable check on the Endako final pit design. The reserve pit design is shown on Figure 1-1.

In addition to the mineral reserves, mineral resources that are reported are outside of the reserves at Endako. Table 1-3 summarizes the mineral resources in addition to mineral reserves at the Endako operation. A floating cone computer generated pit that incorporated measured, indicated, and inferred mineralization at \$16.50 CDN/lb Moly was used as the basis to define the mineral resource on Table 1-3.

Mineral reserves and mineral resources on Tables 1-2 and 1-3 are presented in metric units, reflecting the practice at the mine operation. An additional tabulation of the same information is provided in Section 15 in English units.

There is an additional exploration target within the Endako claim block called Casey Lake that is about 1.5 miles northeast of the Endako mill. The mineral reserves and mineral resources on Tables 1-2 and 1-3 do not include Casey Lake.

The qualified person for the development of the mineral reserves and mineral resources was John M. Marek P.E. of IMC. Mr. Marek is independent of Thompson Creek as defined within NI 43-101.

### Mine Equipment Requirements

The requirements for mine equipment to meet the production schedule on Table 1-1 were also developed by the Endako Mine staff. Those equipment requirements are summarized in Section 16.0.

### Process Facility

A new flotation mill is under construction at Endako which is expected to increase the ore processing capacity to 50,000 tpd. The current mill processes roughly 28,000 tpd of ore. Start up of the new mill is expected to occur during the 1<sup>st</sup> quarter of 2012.

The new grinding mill configuration utilizes one SAG mill and two ball mills to produce a target flotation feed (P80) of 200 microns. The new flotation circuit will consist of rougher-scavenger flotation and five stages of column cleaners to generate the final molybdenum concentrate.

Molybdenum concentrates are currently roasted on site. The operating roaster is a conventional gas-fired, rotary, multiple hearth type that produces between 30,000 and 35,000 lbs of molybdenum per day in the form of molybdenum tri-oxide (MoO<sub>3</sub>) however the capacity of the roaster is 45,000 lbs of molybdenum per day.



**Table 1-1**  
**Endako Mine Plan**  
**Ore is Proven and Probable Category Material**

Year	Mill Cutoff MoS2%	Mined Ore		HG Feed From Stkp		LG Feed From Stkp		Total Mill Feed		To High Grd Stkp				To Low Grade Stkp		Waste KTonnes	Total KTonnes	Saleable Metal Mo Lbsx1000
		KTonnes	MoS2%	KTonnes	MoS2%	KTonnes	MoS2%	KTonnes	MoS2%	From Pit + 0.042	From Cause Way		0.030% MoS2 Cutoff					
										KTonnes	MoS2%	KTonnes	Grade	KTonnes	MoS2%			
Jun -																		
1 Dec11	0.048	6,935	0.090	275	0.082			7,210	0.090					1,527	0.041	9,596	18,333	6330
2 2012	0.050	15,002	0.087	1,933	0.079			16,935	0.086	2,598	0.046	2,330	0.065	2,531	0.035	14,846	39,240	15075
3 2013	0.050	15,290	0.082	2,960	0.079			18,250	0.082	2,060	0.046	1,175	0.065	1,190	0.036	18,865	41,540	15480
4 2014	0.038	18,250	0.093					18,250	0.093					1,055	0.032	22,695	42,000	17588
5 2015	0.038	18,250	0.092					18,250	0.092			3,401	0.065	745	0.033	20,104	42,500	17417
6 2016	0.035	18,250	0.088					18,250	0.088			2,977	0.065	566	0.036	20,708	42,501	16695
7 2017	0.035	18,250	0.072					18,250	0.072			2,977	0.065	911	0.032	20,362	42,500	13713
8 2018	0.035	18,250	0.070					18,250	0.070			660	0.065	214	0.032	23,126	42,250	13352
9 2019	0.030	18,250	0.067					18,250	0.067			660	0.065			23,340	42,250	12688
10 2020	0.030	18,250	0.083					18,250	0.083			660	0.065			23,340	42,250	15708
11 2021	0.030	18,250	0.081					18,250	0.081			660	0.065			18,340	37,250	15442
12 2022	0.030	18,250	0.080					18,250	0.080							14,000	32,250	15138
13 2023	0.030	18,250	0.079					18,250	0.079							13,000	31,250	14910
14 2024	0.030	18,250	0.072					18,250	0.072			1,247	0.065			8,753	28,250	13770
15 2025	0.030	9,607	0.075	8,643	0.078			18,250	0.076							3,530	21,780	14473
16 2026				18,250	0.068			18,250	0.068								18,250	12298
17 2027				11,205	0.060	7,045	0.062	18,250	0.061								18,250	10404
18 2028						10,784	0.036	10,784	0.036								10,784	2949
		247,584	0.080	43,266	0.069	17,829	0.046	308,679	0.077	4,658	0.046	16,747	0.065	8,739	0.035	254,605	593,428	243,430

MineSched\_22Aug11.xls

Average Mill Recovery = 77.8%  
 Roaster Recovery = 99.7%

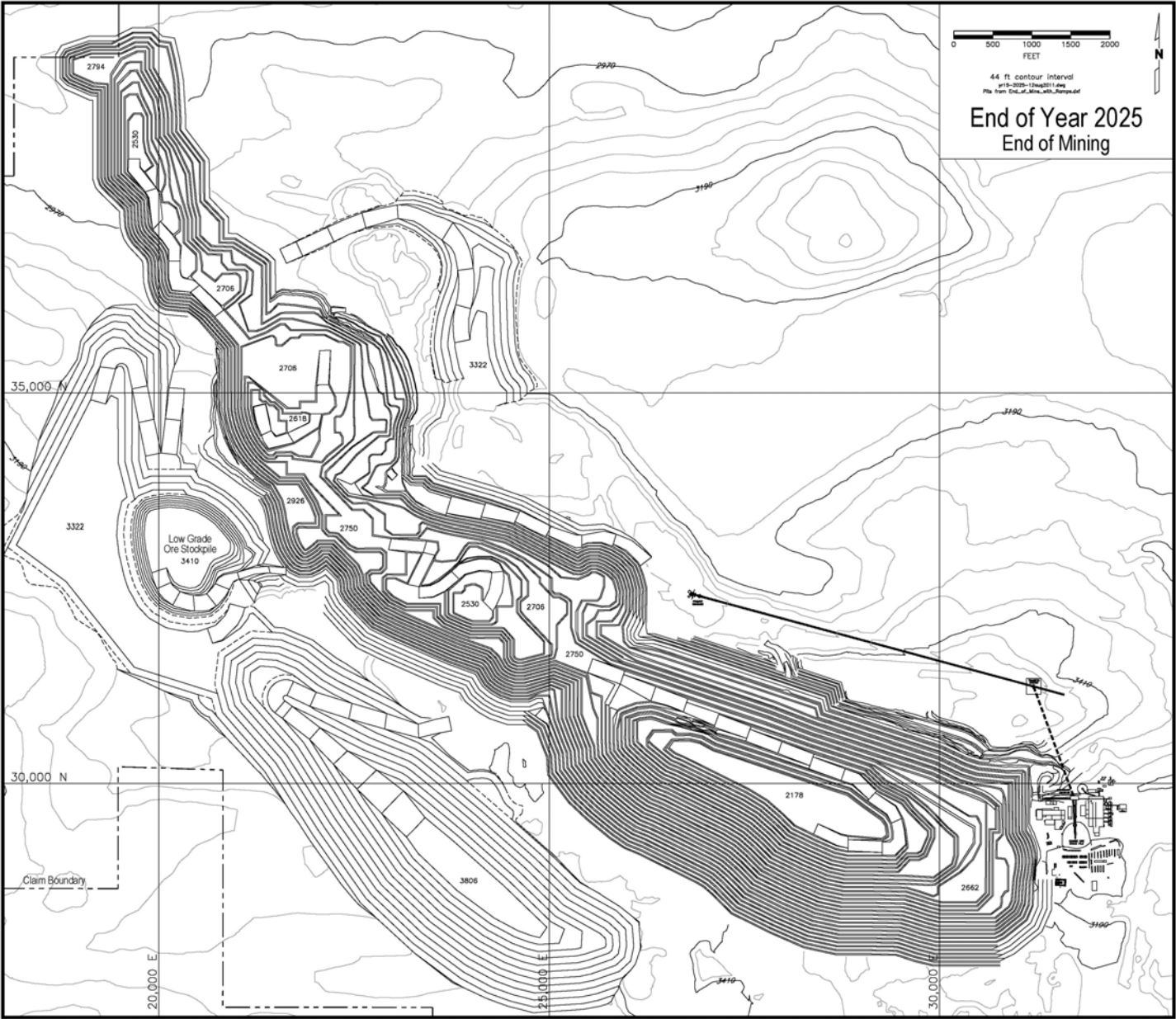


Figure 1-1  
Final Pit Design  
And Mineral Reserve Pit

Table 1-2

**Endako Mineral Reserve  
As of June 1, 2011**

<b>Mineral Reserves</b>						
Material Type	Category	Cutoff MoS2%	Ktonnes	Grade MoS2%	Grade Mo%	Contained Metal Million Lbs
Mill Ore + Planned Stockpiles	Proven	0.030	96,881	0.081	0.049	103.7
	Probable	0.030	164,099	0.076	0.046	164.8
Existing Stockpiles	Proven	High Grade	21,861	0.078	0.047	22.5
	Proven	Low Grade	9,091	0.057	0.034	6.8
In-Pit Dump Stkp	Probable		16,747	0.065	0.039	14.4
Total Proven			127,833	0.079	0.047	133.0
Total Probable			180,846	0.075	0.045	179.2
Total Proven and Probable			<b>308,679</b>	<b>0.077</b>	0.046	312.2

## Notes:

Existing Stockpile Reported on 1 Jun 2011 as Proven.

Mill Feed Cutoff Grades vary by year from 0.045 to 0.030% MoS2.

Numbers may not add due to rounding.

Table 1-3

**Endako Mineral Resource in Addition to Mineral Reserves  
As of June 1, 2011**

<b>Mineral Resources, IN ADDITION TO RESERVE</b>					
Category	Cutoff MoS2%	Ktonnes	MoS2%	Grade Mo%	Contained Metal Million Lbs
Measured	0.025	17,212	0.048	0.029	10.9
Indicated	0.025	40,156	0.051	0.031	27.1
Total Measured + Indicated		57,368	0.050	0.030	38.0
Total Inferred	0.025	49,342	0.058	0.035	37.8

## Notes:

Stated Mineral Resources are in addition to reserves and do not include reserves.

Measured+Indicated Resources qualify as Additional Mineralized Material in Accordance with the disclosure standards established under U.S SEC Industry Guide 7.

Numbers may not add due to rounding.

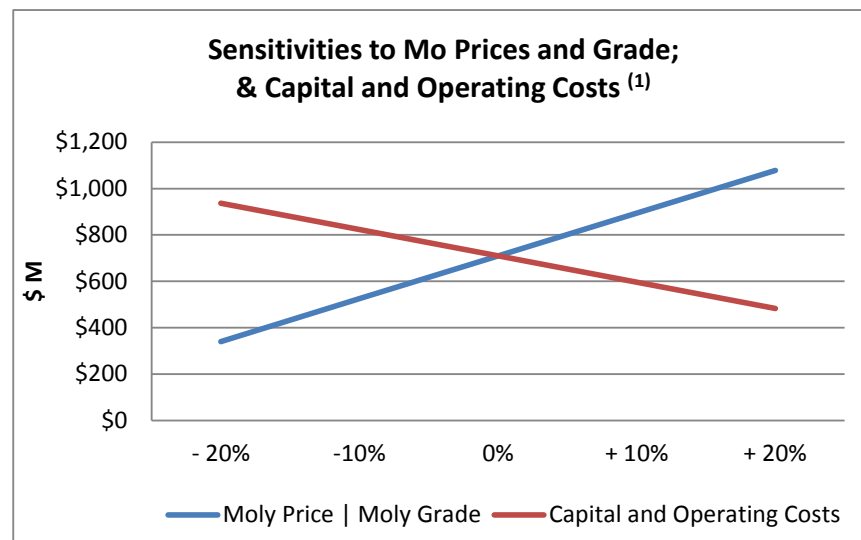
Casey Lake is not include in the mineral resource.

## Financial Analysis

The economics of the Endako project are positive over a wide range moly prices and project operating costs. Section 22 presents the results of financial analysis.

Figure 1-2 summarizes the project sensitivity to changes in metal prices and costs. The mine life average molybdenum sales price for the base case on Figure 1-2 was \$16.21 USD/lb Mo. The impact on project net present value (NPV10%) due to variations of 20% in metal price and 20% in capital and operating costs are illustrated on the figure.

Figure 1-2  
Sensitivity of Net Present Value at 10%  
Relative to Metal Price and Cost Variations



## Interpretation and Conclusions

After review of the mine plan data provided by Endako, IMC has formed the opinion that there is a reasonable probability that as much as 5.8 million tonnes of additional waste may have to be moved between now and the end of 2016. Additional detailed mine planning will need to be completed beyond 2015 to prove if acceleration of waste beyond that currently planned by Endako will be required.

Additional diamond drilling has been completed during the first half of 2011 that was not available for input to the model and mine plan. Some of that drilling was intended to confirm the deposit boundaries within the Endako zone of the pit as well as expansions to

the deposit in the Northwest Extension. The results of the Endako drilling will have an impact on the waste mining requirements noted in the previous paragraph.

The Endako Mine holds all necessary permits for the current operation. There are no compliance issues at the mine with permits or environmental regulations.

The Endako Mine is currently applying for an amendment to its mine permit and an additional water license for withdrawal of water from Francois Lake. Those permits are expected to be issued in due course pursuant to typical governmental processes; however, no assurance can be made regarding the timing of the receipt of such permits. The Endako Mine is required to apply for an amendment to its mine permit in order to update its reclamation and closure plan every 5 years. The Endako Mine is applying for the additional water license to ensure that it has access to sufficient water to operate the expanded mill in future periods. No major amendments are required to the air emissions and effluent permits for the expansion as air quality and water quality are expected to remain under applicable limits following the increase in production.

The Endako Mine and plant have been operated intermittently since 1965. The periods where the mine was not operated were caused by prolonged periods of weak Molybdenum prices. Future outlook for the molybdenum market is currently strong. However, all mines are subject to price fluctuations of the commodity markets.

John Marek of IMC holds the opinion that the risks at Endako are no different than any other operating mine in North America, and on that basis there are no particular risk issues that would be unique to Endako.

## 2.0 INTRODUCTION

This Technical Report summarizes the status of the mineral reserves and mine plan for the Endako Mine located in central British Columbia, Canada. This report was completed by IMC at the request of Thompson Creek. This report conforms to NI 43-101 and follows the format set out in Form 43-101F1 for Technical Reports.

Endako is currently in the process of constructing a new mill that is expected to increase the ore processing capacity at the Endako Mine from approximately 28,000 tpd of ore to 50,000 tpd of ore with associated waste movement to release the ore. The purpose of this Technical Report is to document the mine plan and corresponding mineral reserves that incorporate the most recent drill hole data and mine plan analysis that is associated with the expansion.

The primary data source for the update of mineral reserves and mineral resources is the drill hole data that has been collected by Endako up through and including October 2010. IMC has verified the drill hole and assay data and has applied that information to the development of a block model of the deposit. Selected blast hole data through 31 May 2011 was also incorporated into the updated block model.

The mine plan that is presented in this report was developed by Endako with review by IMC.

John M. Marek P.E. acted as the Qualified Person for this report. Mr. Marek visited the property on March 15 – 18, 2011. Information regarding the process plant, environmental considerations, and financial analysis were provided by Endako staff or Thompson Creek staff. John Marek has reviewed this information and accepts responsibility for publication of the information as the Qualified Person.

The units that are used at Endako are mixture of imperial units for maps and distance and metric units for tonnage reporting. IMC has utilized the identical units that are utilized at Endako throughout this report for consistency with internal Endako reporting. Grades are reported on site as percent of MoS<sub>2</sub> by weight. IMC has adhered to this custom for the sake of consistency.

Tonnages are reported within this document as tonnes (metric tonnes) and ktonnes (thousands of metric tonnes). Linear distances are in feet. Ore grade is reported in molybdenum sulfide by weight percent (% MoS<sub>2</sub>). The grade of molybdenum metal can be obtained by multiplying %MoS<sub>2</sub> x 0.5994. Any deviation from these units will be noted in text. [Mineral reserves and mineral resources will be stated in both metric tons and short tons (English) units in Section 15 for user convenience.]

Mine planning economic input parameters are presented in Canadian dollars.

### **3.0 RELIANCE ON OTHER EXPERTS**

John M. Marek, P.E, of IMC has acted as the primary author for this Technical Report. Additional support has been provided by Endako engineering and geology staff and the Denver based staff of Thompson Creek.

IMC has not verified or audited the property ownership as outlined in Section 4.0. The author has relied on the information provided by Thompson Creek personnel regarding property ownership. IMC has been informed that production commenced at the Endako Mine during 1965 and sees no reason to question the ownership status at Endako.

IMC has not audited the environmental situation at the property. IMC has assumed that any operating permit and reclamation requirements are properly accounted for in the information provided by Thompson Creek and that any potential future operations will not be prejudiced by environmental, permitting, or related constraints.

Input to this report was provided by members of the Endako and Thompson Creek staff regarding the following topics: 1) Mineral Processing, 2) Environmental Items, 3) Capital and Operating Costs, and 4) Financial Analysis. John M. Marek, the qualified person for this report, has reviewed this information and finds it logically consistent and within the range of expectation.

Slope angles for open pit slope design were provided by Golder Associates and reported in their report titled "Geotechnical Pit Wall Stability Assessment of the Denak Pit", November 3, 2009.

## 4.0 PROPERTY DESCRIPTION AND LOCATION

The Endako Mine is an open pit molybdenum mine, concentrator, and roaster located approximately 190 km west of Prince George, British Columbia, Canada. The latitude and longitude of the project site are: 54° 02' North latitude and 125° 07' West longitude. Figure 4-1 summarizes the general location in British Columbia.

The Endako Mine is operated as a joint venture between TCML, which holds a 75% interest, and Sojitz, which holds the remaining 25% interest.

The property is currently comprised of a contiguous group of 67 mineral tenures containing 42 claims and 25 leases covering approximately 9,500 hectares (ha). The Endako Joint Venture holds a 100% interest in the claims and mineral leases and the property is not subject to royalties. In addition, the Endako Joint Venture holds surface rights to a portion of the mine site area. The mine property boundaries have been surveyed.

Table 4-1 summarizes the Endako mineral claims and mineral leases in the district. The Endako staff has informed IMC that all claims and leases are current as indicated on Table 4-1.

Figure 4-2 summarizes the land position at Endako. The shading indicates the location and status of each property type. Figure 4-3 presents the same information overlaid on an aerial photograph to illustrate the location of the mine and facilities relative to the lease and property boundaries.

The mineral leases are subject to annual fees and the mineral claims are subject to exploration expenditure obligations. The Endako Joint Venture may choose to pay annual fees in lieu of exploration expenditures.

The Endako Mine holds all necessary permits for the current operation. There are no compliance issues at the mine with permits or environmental regulations.

The Endako Mine is currently applying for an amendment to its mine permit and an additional water license for withdrawal of water from Francois Lake. Those permits are expected to be issued in due course pursuant to typical governmental processes; however, no assurance can be made regarding the timing of the receipt of such permits. The Endako Mine is required to apply for an amendment to its mine permit in order to update its reclamation and closure plan every five years. The Endako Mine is applying for the additional water license to ensure that it has access to sufficient water to operate the expanded mill in future periods. No major amendments are required to the air emissions and effluent permits for the expansion as air quality and water quality are expected to remain under applicable limits following the increase in production.



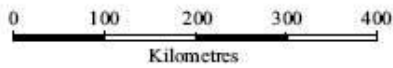


Figure 4-1

- Legend:**
- ⊙ Capital city
  - Town, city
  - Road
  - Trans Canada Highway

***Endako Mine***  
*Omineca Mining Division*  
*British Columbia, Canada*  
**General Location Map**

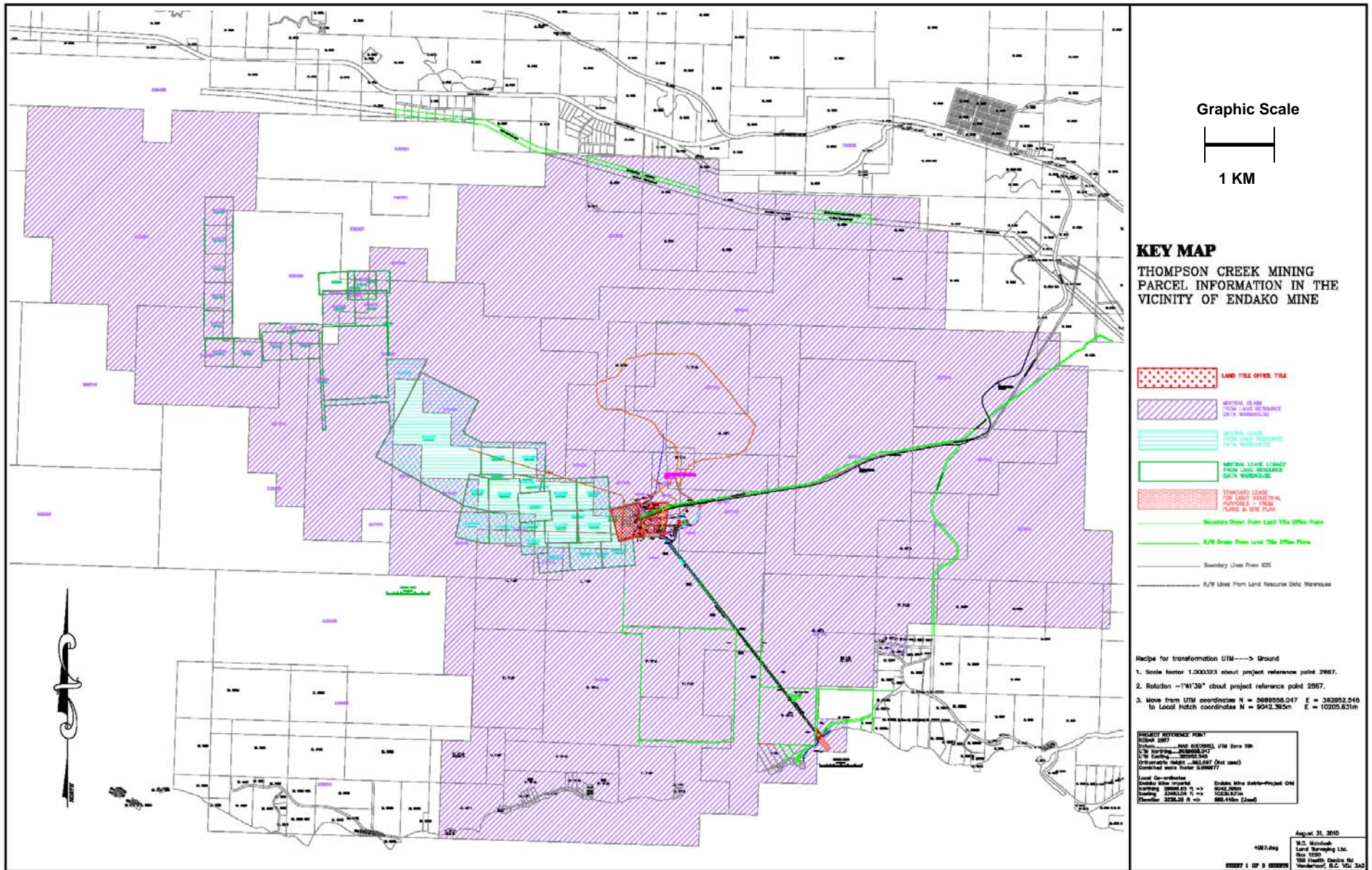


Figure 4-2  
Leases, Claims and Property Boundaries

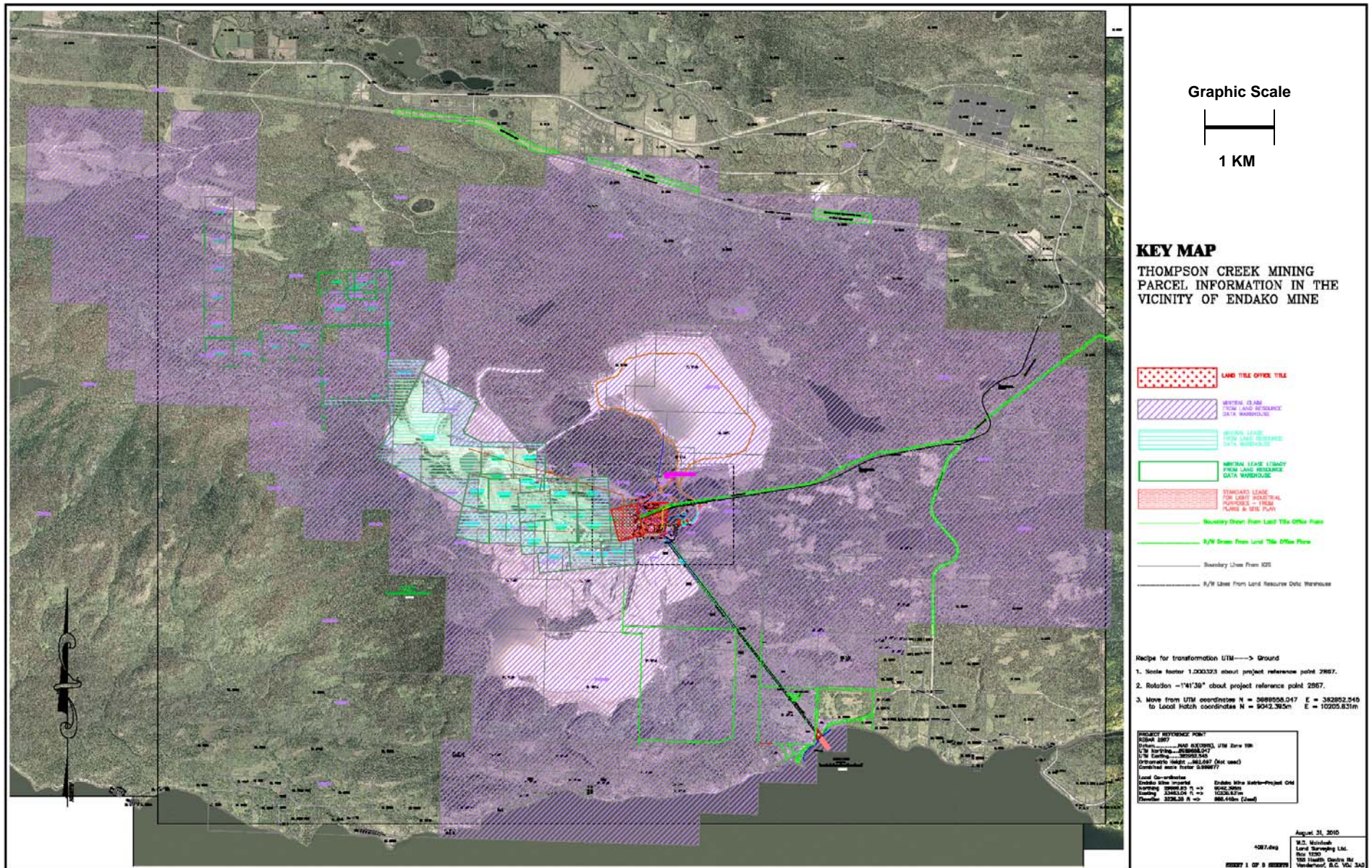


Figure 4-3  
Leases, Claims and Property Boundaries  
Showing Operations

**Table 4-1**  
**Endako Mineral Claims and Mineral Leases**

Tenure Number	Claim Name	Owner	Tenure Type	Tenure Sub Type	Map Number	Issue Date	Good To Date	Status	Area (ha)
243448		140102 (100%)	Mineral	Lease	093K005	1977/may/06	2012/may/06	GOOD	164.53
243450		140102 (100%)	Mineral	Lease	093K005	1979/sep/06	2011/sep/06	GOOD	36.92
243457		140102 (100%)	Mineral	Lease	093K005	1964/sep/23	2011/sep/23	GOOD	19.55
243458		140102 (100%)	Mineral	Lease	093K005	1964/sep/23	2011/sep/23	GOOD	18.52
243459		140102 (100%)	Mineral	Lease	093K005	1964/sep/23	2011/sep/23	GOOD	19.75
243460		140102 (100%)	Mineral	Lease	093K005	1964/sep/23	2011/sep/23	GOOD	20.9
243461		140102 (100%)	Mineral	Lease	093K005	1964/sep/23	2011/sep/23	GOOD	20.81
243462		140102 (100%)	Mineral	Lease	093K005	1964/sep/23	2011/sep/23	GOOD	0.73
243463		140102 (100%)	Mineral	Lease	093K005	1964/sep/23	2011/sep/23	GOOD	18.19
243464		140102 (100%)	Mineral	Lease	093K005	1964/sep/23	2011/sep/23	GOOD	18.84
243465		140102 (100%)	Mineral	Lease	093K005	1964/sep/23	2011/sep/23	GOOD	2.05
243466		140102 (100%)	Mineral	Lease	093K005	1964/sep/23	2011/sep/23	GOOD	7.12
243467		140102 (100%)	Mineral	Lease	093K005	1964/sep/23	2011/sep/23	GOOD	16.78
243468		140102 (100%)	Mineral	Lease	093K005	1964/sep/23	2011/sep/23	GOOD	17.26
243469		140102 (100%)	Mineral	Lease	093K005	1964/sep/23	2011/sep/23	GOOD	0.2
243470		140102 (100%)	Mineral	Lease	093K005	1967/jan/05	2012/jan/05	GOOD	20.19
243471		140102 (100%)	Mineral	Lease	093K005	1967/jan/05	2012/jan/05	GOOD	16.25
243472		140102 (100%)	Mineral	Lease	093K005	1967/jan/05	2012/jan/05	GOOD	0.09
243473		140102 (100%)	Mineral	Lease	093K005	1967/jan/05	2012/jan/05	GOOD	16.3
243474		140102 (100%)	Mineral	Lease	093K005	1967/jan/05	2012/jan/05	GOOD	2.06
243482		140102 (100%)	Mineral	Lease	093K005	1971/jan/29	2012/jan/29	GOOD	2.72
243483		140102 (100%)	Mineral	Lease	093K005	1971/jan/29	2012/jan/29	GOOD	15.08
243484		140102 (100%)	Mineral	Lease	093K005	1971/jan/29	2012/jan/29	GOOD	19.96
243485		140102 (100%)	Mineral	Lease	093K005	1971/jan/29	2012/jan/29	GOOD	20.85
243486		140102 (100%)	Mineral	Lease	093K005	1971/jan/29	2012/jan/29	GOOD	20.7
243774	DIS #35	140102 (100%)	Mineral	Claim	093K005	1962/jun/29	2016/feb/15	GOOD	25.0
243775	DIS #36	140102 (100%)	Mineral	Claim	093K005	1962/jun/29	2016/feb/15	GOOD	25.0
243832	DAT #410	140102 (100%)	Mineral	Claim	093K005	1962/nov/19	2016/feb/15	GOOD	25.0
244772	SAM 18	140102 (100%)	Mineral	Claim	093K005	1969/apr/17	2016/feb/15	GOOD	25.0
244774	SAM 20	140102 (100%)	Mineral	Claim	093K005	1969/apr/17	2016/feb/15	GOOD	25.0
244776	SAM 22	140102 (100%)	Mineral	Claim	093K005	1969/apr/17	2016/feb/15	GOOD	25.0
244778	SAM 24	140102 (100%)	Mineral	Claim	093K005	1969/apr/17	2016/feb/15	GOOD	25.0
244780	SAM 26	140102 (100%)	Mineral	Claim	093K005	1969/apr/17	2016/feb/15	GOOD	25.0
244913	SAM 80	140102 (100%)	Mineral	Claim	093K005	1969/sep/12	2016/feb/15	GOOD	25.0
244915	SAM 82	140102 (100%)	Mineral	Claim	093K005	1969/sep/12	2016/feb/15	GOOD	25.0
244930	DAT 5 FR.	140102 (100%)	Mineral	Claim	093K005	1969/oct/31	2016/feb/15	GOOD	25.0
244931	DAT 6 FR.	140102 (100%)	Mineral	Claim	093K005	1969/oct/31	2016/feb/15	GOOD	25.0
245329	CORA #5	140102 (100%)	Mineral	Claim	093K005	1971/may/03	2016/feb/15	GOOD	25.0
245394	DAT 1	140102 (100%)	Mineral	Claim	093K005	1971/jun/23	2016/feb/15	GOOD	25.0
245395	DAT 2	140102 (100%)	Mineral	Claim	093K005	1971/jun/23	2016/feb/15	GOOD	25.0
245396	DAT 9 FR.	140102 (100%)	Mineral	Claim	093K005	1971/jul/19	2016/feb/15	GOOD	25.0
307068	DIS 2 FRAC.	140102 (100%)	Mineral	Claim	093K005	1969/jul/25	2016/feb/15	GOOD	25.0
307089	DAT #409	140102 (100%)	Mineral	Claim	093K005	1962/nov/19	2016/feb/15	GOOD	25.0
507163		140102 (100%)	Mineral	Claim	093K	2005/feb/15	2016/feb/15	GOOD	417.668
507164		140102 (100%)	Mineral	Claim	093K	2005/feb/15	2016/feb/15	GOOD	455.721
507165		140102 (100%)	Mineral	Claim	093K	2005/feb/15	2016/feb/15	GOOD	151.905
507167		140102 (100%)	Mineral	Claim	093K	2005/feb/15	2016/feb/15	GOOD	170.921
507168		140102 (100%)	Mineral	Claim	093K	2005/feb/15	2016/feb/15	GOOD	75.962
507169		140102 (100%)	Mineral	Claim	093K	2005/feb/15	2016/feb/15	GOOD	170.949
507170		140102 (100%)	Mineral	Claim	093K	2005/feb/15	2016/feb/15	GOOD	18.995
507182		140102 (100%)	Mineral	Claim	093F	2005/feb/15	2016/feb/15	GOOD	1615.209
507188		140102 (100%)	Mineral	Claim	093K	2005/feb/15	2016/feb/15	GOOD	740.978
507191		140102 (100%)	Mineral	Claim	093K	2005/feb/15	2016/feb/15	GOOD	75.968
507222		140102 (100%)	Mineral	Claim	093K	2005/feb/15	2016/feb/15	GOOD	854.345
507227		140102 (100%)	Mineral	Claim	093K	2005/feb/15	2016/feb/15	GOOD	37.981
507228		140102 (100%)	Mineral	Claim	093K	2005/feb/15	2016/feb/15	GOOD	246.781
507230		140102 (100%)	Mineral	Claim	093K	2005/feb/15	2016/feb/15	GOOD	37.983
507232		140102 (100%)	Mineral	Claim	093K	2005/feb/15	2016/feb/15	GOOD	18.99
507245		140102 (100%)	Mineral	Claim	093K	2005/feb/15	2016/feb/15	GOOD	474.835
507246		140102 (100%)	Mineral	Claim	093K	2005/feb/15	2016/feb/15	GOOD	398.653
507249		140102 (100%)	Mineral	Claim	093K	2005/feb/15	2016/feb/15	GOOD	740.202
507250		140102 (100%)	Mineral	Claim	093K	2005/feb/15	2016/feb/15	GOOD	834.877
507252		140102 (100%)	Mineral	Claim	093K	2005/feb/15	2016/feb/15	GOOD	37.981
507253		140102 (100%)	Mineral	Claim	093K	2005/feb/15	2016/feb/15	GOOD	132.91
507254		140102 (100%)	Mineral	Claim	093K	2005/feb/15	2016/feb/15	GOOD	37.956
507269		140102 (100%)	Mineral	Claim	093K	2005/feb/15	2016/feb/15	GOOD	815.973
532729		140102 (100%)	Mineral	Claim	093K	2006/apr/20	2016/feb/15	GOOD	18.993

## **5.0 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE, AND PHYSIOGRAPHY**

The Endako Mine is located approximately 190 km west of Prince George and about 400 km east of Prince Rupert, British Columbia. The nearest town is Fraser Lake, about 15 km east of the mine. The mine is located about 10 km south of Highway 16 (the Yellowhead Highway) on a paved road. The village of Endako is on Highway 16 at the junction with the mine road. The highways to Fraser Lake and Prince George are paved, high quality roads that are part of the Trans-Canada highway system.

The Endako Mine is located on the Nechako Plateau, an area of moderate hills at elevations ranging from 670m to about 1,070m above sea level. The mine area is generally forested with pine and spruce with areas of open grassland. The uplands are well drained with a few marshes and lakes, while the valleys are bottomed by narrow lakes such as Fraser Lake and Francois Lake.

The average summer temperature is 15°C and the average winter temperature is -12°C. Annual precipitation is about 60 centimeters. The mine operates year around.

A railway line parallels the Yellowhead Highway.

Electrical power is provided by an 8.5 km long 69 KV power line from the village of Endako. The power line is owned by B.C. Hydro.

Fresh water for operations is pumped from nearby Francois Lake.

The infrastructure at the mine site includes:

- 1) a 28,000 to 31,000 tpd concentrator and construction in progress on a new 50,000 tpd concentrator;
- 2) An operating roaster with up to 45,000 lbs per day of capacity
- 3) A non-operating roaster;
- 4) Tailing and reclaim water ponds;
- 5) A crushing plant; and
- 6) Buildings for administration, warehouse, change house, laboratory, mine shops, and first aid station.

## 6.0 HISTORY

The Endako deposit was originally discovered in 1927. Minor underground exploration work took place in the subsequent years. Exploration continued on and off through 1959, after which time the original claims were allowed to lapse.

In 1962, R&P Metals Corporation Ltd. began a diamond drilling program to evaluate the discovery and based on the exploration results, incorporated a company named Endako Mines Ltd. Canadian Exploration Limited, a wholly-owned subsidiary of Placer Developed Ltd. (Placer) entered into an option agreement with Endako Mines Ltd. in August 1962 and continued exploration on the property.

In March 1964, Placer decided to place the property into production. Production commenced in June of 1965 at a plant capacity of approximately 10,000 tpd. Endako Mines Ltd. merged with Placer in 1971. Expansions during 1967 and improvements during 1980 increased the concentrator to the current capacity of 28,000 to 30,000 tpd.

The mine and concentrator were closed from 1982 to 1986 due to poor demand for molybdenum. The roaster continued to operate processing molybdenum concentrates from other operations on a toll basis. Mine and concentrator production resumed in 1986 at a reduced rate. Production returned to 28,000 tpd by 1989.

TCML (75%) and Nissho Iwai Moly Resources, Inc. (25%) formed the Endako Joint Venture and acquired the property from Placer in 1997. Nissho Iwai Moly Resources Inc. later changed its name to Sojitz.

Blue Pearl Mining Ltd. acquired Thompson Creek Metals Company in October 2006 and, on May 14, 2007, Blue Pearl Mining Ltd. changed its name to Thompson Creek Metals Company Inc. herein referred to as TCM or Thompson Creek.

The Endako Mine is currently operated by the joint venture of TCML (75%) and Sojitz Moly Resources, Inc. (25%)

## 7.0 GEOLOGIC SETTING AND MINERALIZATION

### Regional Geology

The Endako deposit is located within the Intermontane Morphology / Tectonic belt of British Columbia. That terrain is comprised of the Cache Creek, Nisling and Stikine transported terrains.

The Cache Creek and Nisling terrains were formed in the western Pacific during Permian to Middle Triassic time (280 – 230 Million years ago). The Stikine terrain is a Carboniferous to Early Jurassic island arc (320-190 Ma) that was formed in the eastern Pacific. Between 190 and 178 Ma (early to mid Jurassic) the two terrains jointed to form the Intermontane Belt. Magmatic activity related to the island arc continued into Tertiary time.

The Endako Quartz Monzonite hosts the Endako deposit. The Endako Quartz Monzonite appears to be a phase of the larger Francois Lake Batholith that is middle to late Jurassic in age. The Francois Lake Batholith was intruded long the northwest-trending boundary between the Cache Creek and Stikine terrains.

### Property Geology and Mineralization

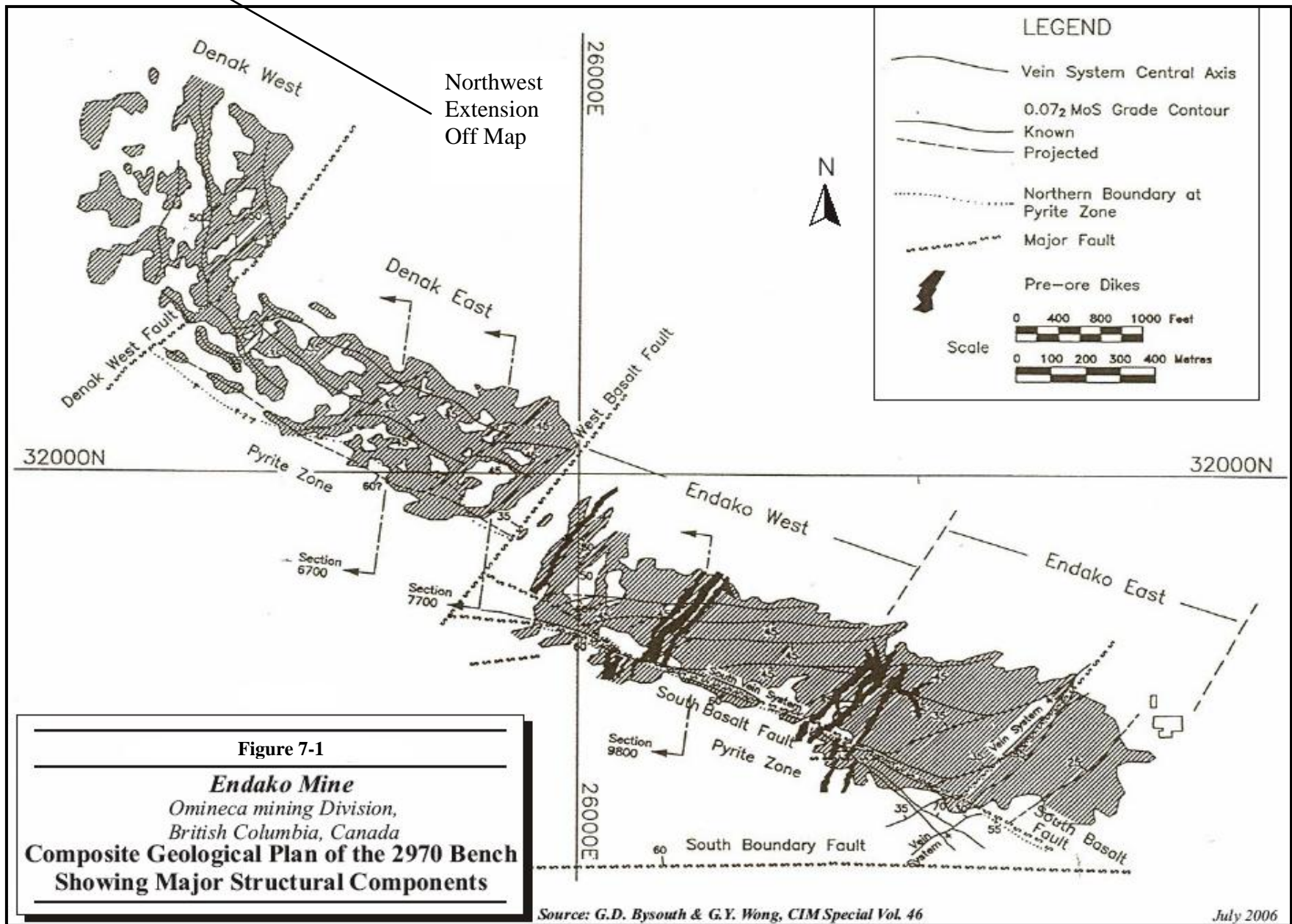
The Endako deposit consists of an elongated stockwork of quartz-molybdenite veins within the Endako quartz monzonite phase of the Francois Lake Batholith. The orebody is a series of major en-echelon moly-sulfide veins that strike from north through east across the deposit and dip west to south.

The deposit has been divided into four named areas as shown on Figure 7-1. Those zones are:

Northwest	Northwest extension, NS strike, and westerly dip
Denak West	North portion of the deposit NS strike and westerly dip
Denak East	Central portion of the deposit, NW strike, and SW dip
Endako	Eastern portion of the deposit, WNW strike, and SSW dip

The combined strike length of ore grade mineralization is about 3 miles (4.8 km) with a width of roughly 0.5 mile (0.75 km). Mining is in progress or has occurred in the Endako, and both Denak areas. The Northwest zone is yet to be produced. Ore grade moly nearly outcrops in the Northwest zone and is exposed in all of the other pit areas.

Figure 7-2 is a grade-thickness map of the mine area from the block model. Figures 7-3 and 7-4 are cross sections through Denak West, and Endako to illustrate the general geometry of the mineralization.



**Figure 7-1**  
**Endako Mine**  
 Omineca mining Division,  
 British Columbia, Canada  
**Composite Geological Plan of the 2970 Bench**  
**Showing Major Structural Components**

Source: G.D. Bysouth & G.Y. Wong, CIM Special Vol. 46

July 2006





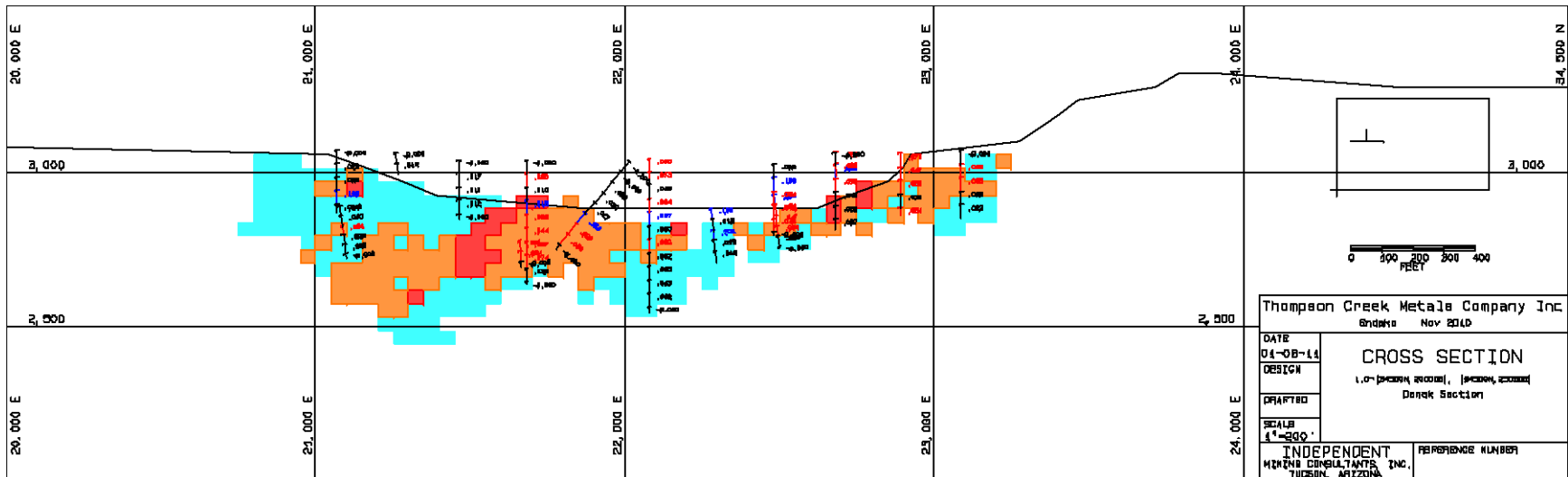


Figure 7-3  
 East West Section through Denak West  
 Looking North  
 Showing Measured and Indicated Block Grades and Drilling  
 Block Orange > 0.042 % MoS2  
 Block Red > 0.100 % MoS2  
 Topography Reflects 31 Dec 2009

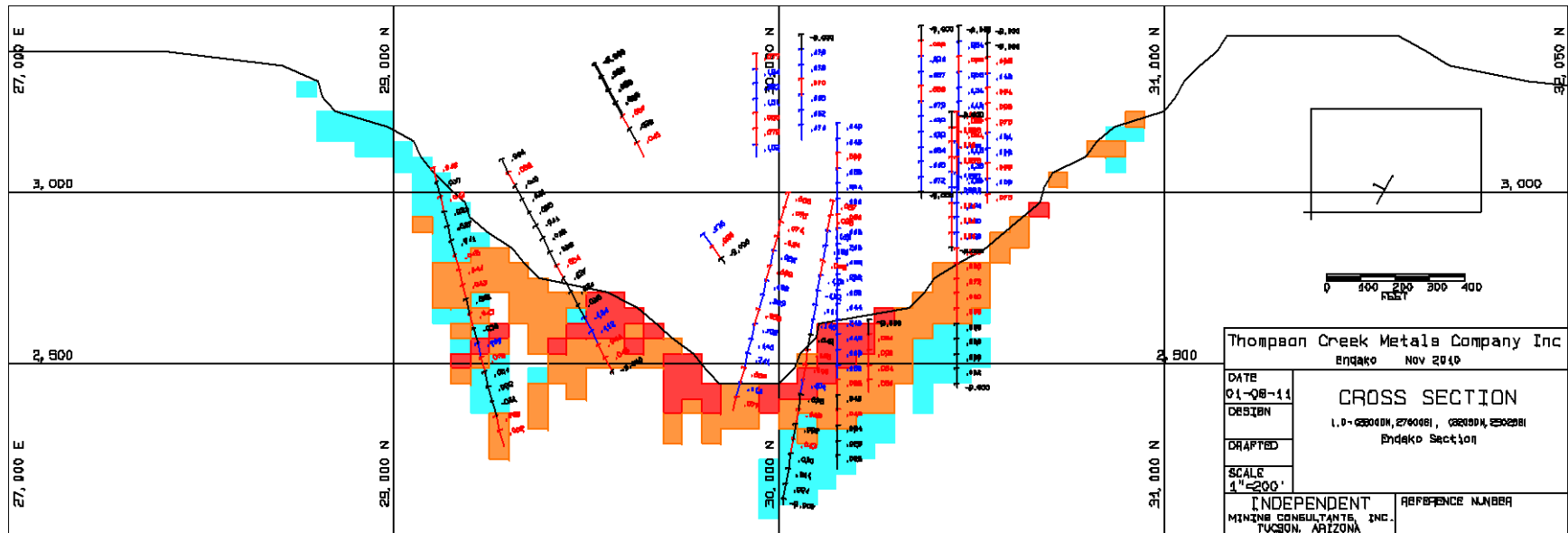


Figure 7-4  
 Southwest Northeast Section through Endako  
 Looking Northwest  
 Showing Measured and Indicated Block Grades and Drilling  
 Block Orange > 0.042 % MoS2  
 Block Red > 0.100 % MoS2  
 Topography Reflects 31 Dec 2009

## 8.0 DEPOSIT TYPES

The Endako deposit is a porphyry Molybdenum deposit. The geometry and geologic occurrence are such that it is sometimes used as an example to define a style of mineralization known as a Endako Style mineralization.

Endako is lower in silica content than the Climax style deposits and is hosted by a monzonite or monzogranite host rather than the more rhyolitic host rocks of the Climax style deposits.

Endako is a magmatic – hydrothermal deposit associated with sub-duction around island arc formation or continental collision. The deposit is predominately structurally controlled, mainly as stockworks and en-echelon veinlets that establish the overall orientation of the deposit.

The primary ore is molybdenite ( $\text{MoS}_2$ ) with minor associated chalcopyrite, scheelite, and galena. Gangue minerals are quartz, pyrite, K-feldspar, biotite, sericite, clays, calcite, and anhydrite.

## 9.0 EXPLORATION

The original exploration at Endako was completed by Endako Mines Ltd. and Placer in the 1960's as outlined in the history section. Since that time, the majority of the exploration effort has been by drilling. The drill history since 1997 will be summarized in Section 10. This section will briefly note the other exploration methods that have been completed by the Endako Joint Venture.

1997: An IP survey was completed.

2002: Fourteen holes were drilled totaling 5,166 ft of drilling. Seven of which were in the south wall of the Endako Pit. The core was used for metallurgical testing as well as confirmation of a then planned pushback at Endako. Down hole IP geophysics was also applied with these holes.

2004: Three more holes were drilled for IP geophysics as well as assay. These were located in the north wall of the Denak East Pit.

2007: The exploration program in 2007 began with an airborne geophysical survey (magnetic gradiometer and gamma ray spectrometer) covering the area immediately within and surrounding the Endako Mine Joint Venture's claims. This was followed by a soil sampling program which built on historic soil data in the areas immediately east and northwest of the mine.

## 10.0 DRILLING

The drill hole data base consists of historic exploration drilling and recent drilling by Endako. The historic drilling will be summarized followed by a discussion of the drill hole data used in the estimation of the mineral reserves and mineral resources.

### Historic Drilling

1997: Minor diamond drilling and an IP survey were completed.

2001: Five holes totaling 2,535 ft were drilled east of the Endako Mine in the Water Tank area. Ore grade intercepts were found during that program.

2002: Fourteen holes were drilled totaling 5,166 ft of drilling. Seven of which were in the south wall of the Endako Pit. The core was used for metallurgical testing as well as confirmation of a then planned pushback at Endako.

2004: Three more holes were drilled for IP geophysics as well as assay. These were located in the north wall of the Denak East Pit.

2006: Historic reports indicate that 35 NQ drill holes were completed during early 2006 amounting to 19,488 ft of drilling. The drill program identified and delimited mineralization northwest of the Denak West Pit, east of the Denak East Pit, and at the Casey Lake area (1.75 Km east as outside exploration).

2007: The diamond drilling program consisted of 35,853 feet of drilling in 66 holes. The Casey Lake Zone, a promising target tested extensively in 2006, was the main focus of the 2007 program; 33 holes totaling 20,441 feet were drilled to further test the extent and continuity of Casey Lake mineralization. Wide-spaced exploratory drilling northwest of the Denak West Pit (7,824 feet in 17 holes) was also done to test continuity of mineralization in this area (Northwest Extension).

2008: Drilling continued in 2008 with a total of 27,418 feet in 52 holes. An exploration drilling phase continued at the Denak West Pit and at Casey Lake with 6,996 feet in 11 holes and 2,846 feet in 5 holes respectively. An in-fill phase of drilling adjacent to the Endako, Denak East, and Denak West Pits comprised the bulk of the 2008 program, drilling 17,139 feet in 34 holes.

2009: No new drill holes were added to the data base.

2010: Drilling amounting to 91 holes totaling 45,145 feet of drilling with 4,540 assay intervals was completed during 2010. The majority of the new drill information (82 holes) was targeted in the Northwest Extension with the intent of adding confidence and tonnage to the reserve base. Nine of the 2010 drill holes were targeted at the Denak East deposit in order to confirm boundary of the south to southwest side of the deposit.

In 2011, two drill programs are planned. Additional step-out exploration drilling is planned for the Northwest Extension to further extend the known open mineralization.

Additional targets farther to the northwest have also been identified using surface geochemistry and geophysical methods. Approximately 41,000 ft of drilling in 67 holes are planned, including 9,000 ft (18 holes) on adjoining ground to the Endako tenure. The Georgia West Option covers 322.63 hectares northwest of current drilling on the Northwest Extension.

In the Endako Pit, a 29,000 ft program is planned for the south and northwest pit walls. This drill program is expected to add measured reserves from current inferred blocks.

### Data Used for Mineral Resources and Mineral Reserves

Two types of data were utilized in the assembly of the block model:

- 1) Diamond drilling data
- 2) Selected blast hole data

The diamond drilling information utilized all of the available diamond drill hole data within the Endako area. This included both historic information from as early as 1967 and recent drilling from as late as October 2010. Diamond drill data that has been “mined out” was still utilized to assemble the block model. The model was assembled on a pre-mining basis using all data followed by removal of mining progress from the block model for determination of future mine plans.

Blast holes are sampled and assayed by Endako mines for short term ore control purposes. The blast holes are vertical holes with spacing and hole depth established for blasting requirements. Within Denak, the bench height is currently 33 ft and blast holes average 37 ft in length. Within Endako, the bench height is 44 ft and blast holes average 47 ft long. One sample of cuttings for assays is collected from each blast hole.

Blast hole data is available in digital form back to 1986. IMC selected a component of that information for incorporation into the block model estimation.

The blast hole selection procedure was as follows:

- 1) All blast holes that were within 2 benches (88 ft) of the end of May 2011 mining progress surface were selected.
- 2) That set was further sorted so that the nearest blast hole to the center of each 50 ft reserve block was selected.

The final blast hole data set represents a bowl that paralleled the pit surface with data located every 50 ft on plan. The purpose of this selection was to decluster the blast hole data so that it did not “swamp” or over power the diamond drill data in the pit area. This

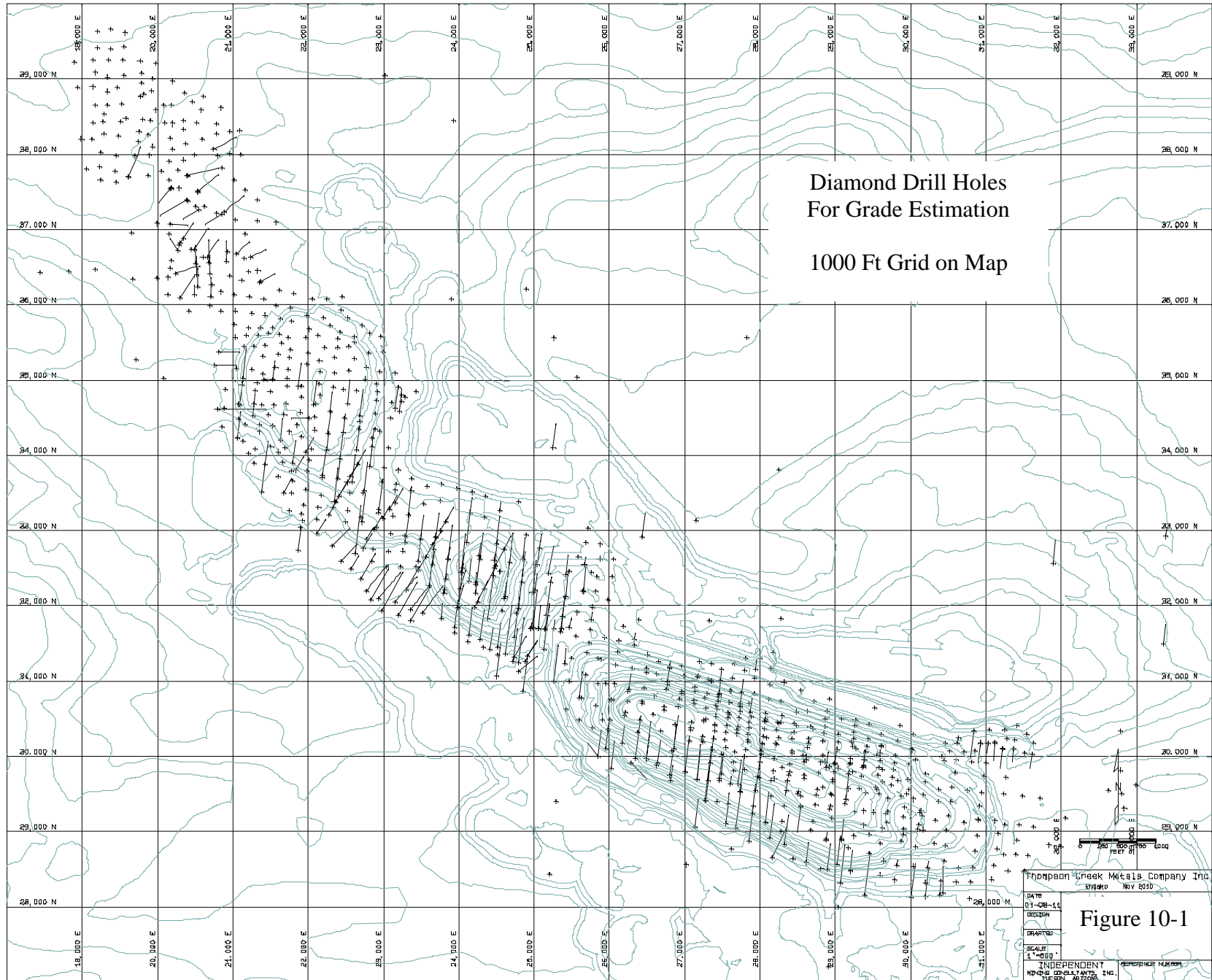
process also provides a similar data density looking forward in time from May 2011 and backward in time from May 2011 so that historic measures of the block model against production history were not unduly influenced by blast holes relative to diamond holes.

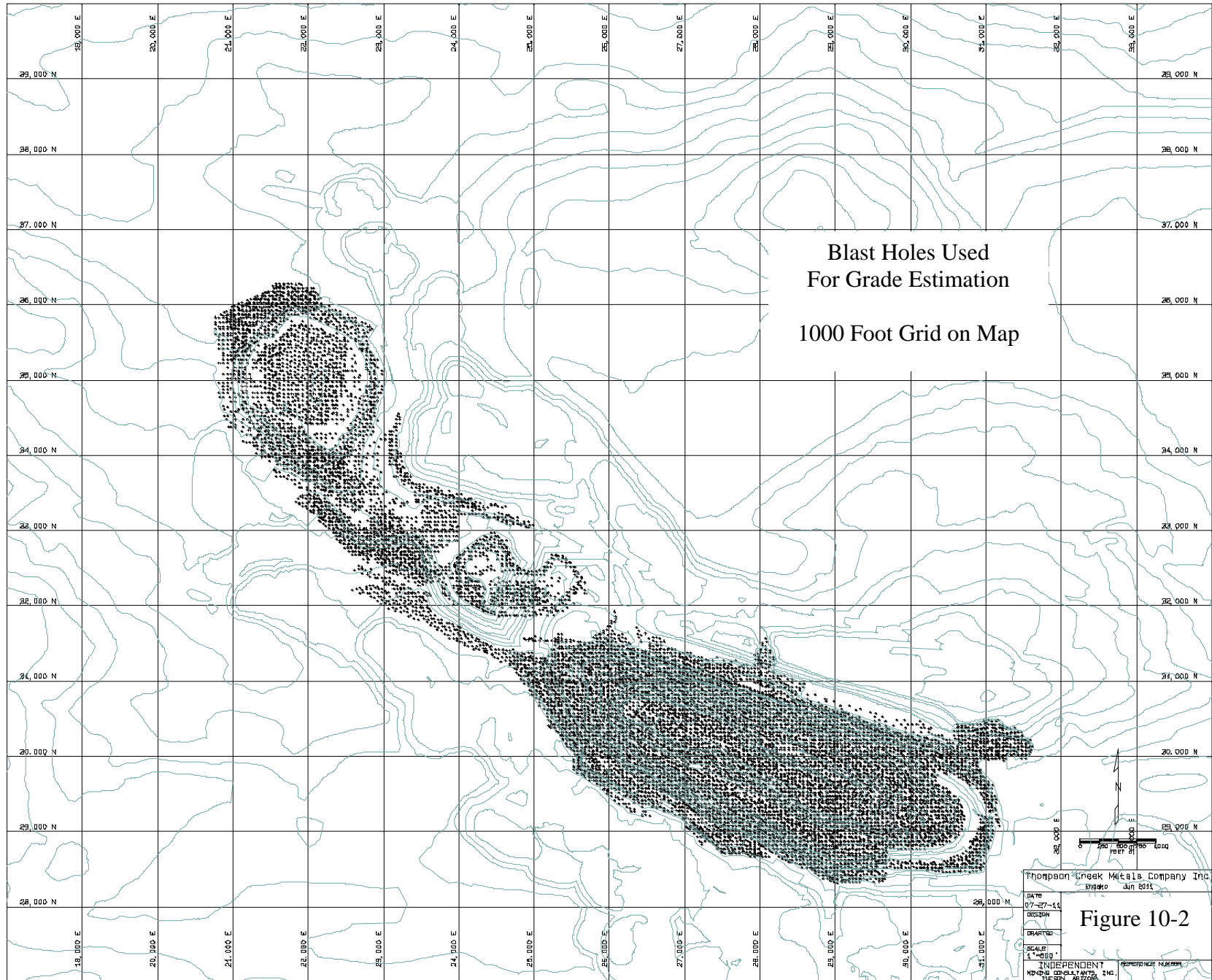
The amount of diamond drill hole data and blast hole data that was used in the assembly of the block model is summarized below. The following counts are contained within the area of: 26,000 to 40,000 North, and 18,000 to 34,000 East

Diamond Drill Data	1,046 Holes 47,957 Intervals Assayed for MoS2 516,305 ft of drilling (157,370 meters)
Selected Blast Hole Data	13,748 Holes 13,748 Assays for MoS2

Figures 10-1 and 10-2 illustrate the drill hole data density that was applied to the assembly of the block model.







## 11.0 SAMPLE PREPARATION, ANALYSIS AND SECURITY

Sampling for development of the block model consists of assays from diamond drill core and samples of blast hole cuttings. Details of historic diamond core procedures before 2006 are not known.

The 2006 through 2008 diamond drill programs consisted primarily of NQ diameter core. Sample intervals are generally 10 ft long for both historic and post 2006 drilling. The core is logged for geologic and geotechnical information prior to splitting.

The core is split for assay. Remaining split core since 2006 is available, however, split core prior to that date has been lost. Drill logs and certificates of assay do exist for the historic drill data as well as the post 2006 information.

Blast hole cuttings for the 33 ft and 44 ft bench heights are collected with a tube sampler pushed through the cuttings pile in four locations. The resulting blast hole cuttings amount to between 5 and 10 kg per blast hole.

The Endako Mine laboratory was used for exploration assays during 2007, 2008, and 2010 as well as for blast hole assays. No exploration diamond drilling was completed in 2009. The Endako Mine laboratory is on site and operated by Endako employees. The lab utilizes ISO 9002 protocols but the laboratory is not an ISO/IEC Guide 43-1 or ISO/IEC Guide 25 accredited laboratory.

The Endako Mine laboratory maintains an internal QAQC (quality assurance and control) program as part of its standard procedures. This section will focus on the QAQC procedures that have been applied to exploration data during 2007, 2008, and 2010.

The following procedures have been applied to the 2007-2010 exploration data.

- 1) Insertion of standards into the sample stream.
- 2) Insertion of blank values into the sample stream.
- 3) Duplicate assays from split core.
- 4) Check assays at outside third party laboratories of sample pulps.
- 5) Check assays at outside third party laboratories of duplicate coarse rejects.

John Marek, acting as the qualified person for the mineral resources, holds the opinion that the sample preparation and quality control procedures at Endako are adequate for the calculation of mineral resources and mineral reserves.

The use of a company owned analytical laboratory could be questioned, particularly if this were a green field project. However, the third party QAQC procedures and the production history at Endako provide substantial support for the use of the company laboratory. Sales of product over time compared with the predictions from company data is reliable (Section 14) and provides a high level of confidence in the data.

## 12.0 DATA VERIFICATION

IMC has applied the following procedures to verify the Endako laboratory data.

- 1) The QAQC procedures that are reported in Section 11 have been analyzed statistically by IMC. The result of this work is intended to provide confidence in the diamond drill hole data acquired during 2007 – 2010.
- 2) Diamond drill holes from 2007 – 2010 are then compared with nearest neighbor diamond holes that were drilled before 2007 to provide a check on historic diamond drill data.
- 3) All diamond drill data was compared on a nearest neighbor basis to near by blast holes. The overall intent is to understand the blast hole results versus diamond drill results.

The final check on the data and model is a comparison of the diamond drilling data, blast hole data, and block model results within the 2008, 2009, and first 3 quarters of 2010 mine production geometries against the actual mill head grades reported in the same period.

The comparison of the mill to the model predicted result will be discussed as part of the model verification in Section 14.0.

Each of the check procedures discussed above will be addressed in the following sub-sections.

## 12.1 Standards

Standards have been obtained by two methods:

- 1) During 2007, certified standards were purchased from WCM Minerals, a provider of certified materials.
- 2) During 2008 and 2010, standards were prepared from Endako materials with round robin assays at four laboratories to establish the accepted values of the standards. The four laboratories were Acme, ALS Chemex, Loring, and the Endako internal lab. Each sample was run 10 times at each laboratory (eight times at Endako) to establish the accepted laboratory value.

During 2007, the outside source standards were inserted into the sample stream as pulps on a 3 out of 100 basis. During 2008, they were inserted on a 2.5 out of 100 basis. During 2010 they were inserted on a 3.5 out 100 basis.

Figure 12-1 illustrates the results of standards insertion for 2007 2008, and 2010.

All of the standards results shown on Figure 12-1 are acceptable. Any indication of bias is generally explained by a sample swap situation as with the 0.080% MoS<sub>2</sub> standard in 2007. There are indications that during 2007, there were sample swaps in the standards, meaning that either the wrong standard was inserted or the value was reported for a different standard.

The swap issues of 2007 appear to have been resolved during 2008 with tighter results in 2008 and 2010.

## 12.2 Blanks

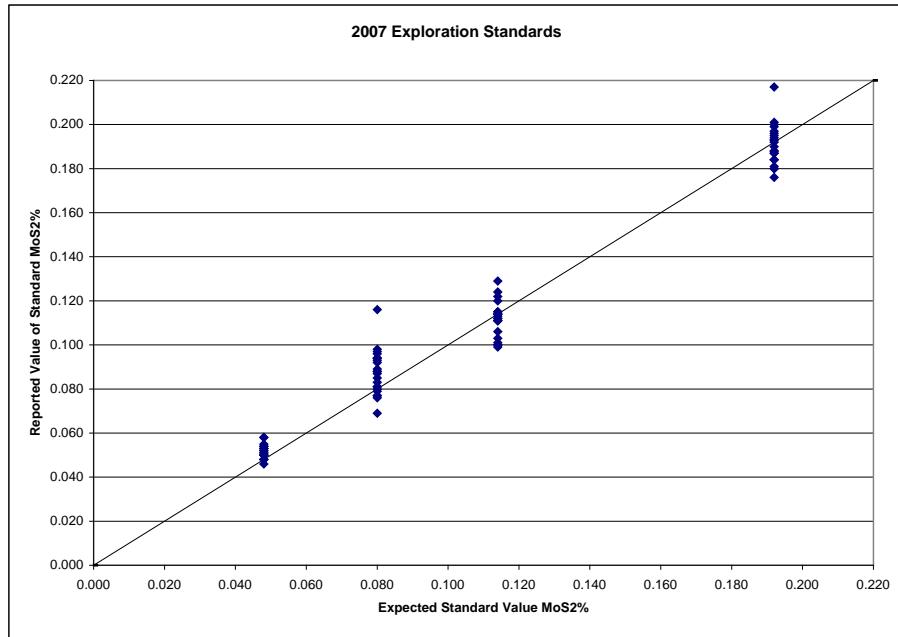
Blank samples during 2007 were sourced from WCM Minerals. The material is a siliceous pulp in pre-packaged 20 gram packets. During 2007, roughly 80 blanks were submitted and 2 reported values that were higher than acceptable. One of those batches was rerun and the new results reported with the correction.

The highest blank result during 2007 was 0.019% MoS<sub>2</sub>. Although out of tolerance, the value is less than half of the current mine cutoff grade.

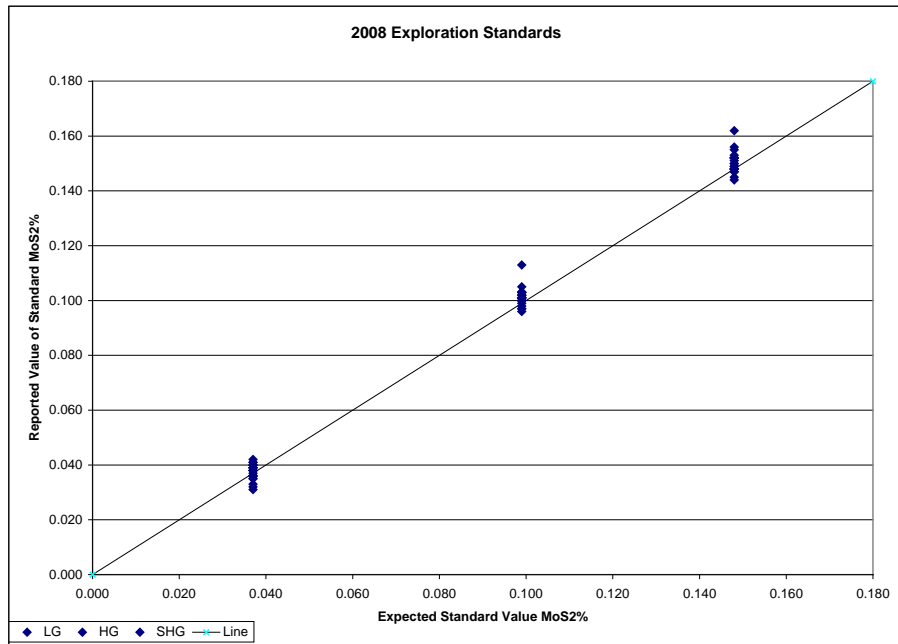
During 2008, there were two types of blanks used: the first 24 submissions were obtained as pulps from WCM Minerals. The remaining 49 submissions were course blanks from a composite of barren split core from the Casey Granite located north of Endako. Within the first 24 blanks, all were acceptable low results. Within the 2<sup>nd</sup> group of 49 blanks, two were out of tolerance at 0.012% MoS<sub>2</sub>, and 0.025% MoS<sub>2</sub>.

There were 251 blanks inserted in 2010. The highest reported value was 0.007% MoS<sub>2</sub>. Only three were above 0.005% MoS<sub>2</sub>, indicating improvement over the 2007 and 2008 results.

Figure 12-1  
Standards Results for 2007 and 2008 Exploration Drilling



Std Value	0.048 %MoS2	Std Value	0.080 %MoS2	Std Value	0.114 %MoS2	Std Value	0.192 %MoS2
Number	21	Number	23	Number	22	Number	22
Mean	0.052 %MoS2	Mean	0.088 %MoS2	Mean	0.112 %MoS2	Mean	0.191 %MoS2
Stdev	0.0031	Stdev	0.0100	Stdev	0.0080	Stdev	0.0091
Max	0.058 %MoS2	Max	0.116 %MoS2	Max	0.129 %MoS2	Max	0.217 %MoS2



Std Value	0.037 %MoS2
Number	24
Mean	0.037 %MoS2
Stdev	0.0029
Max	0.042 %MoS2

Std Name	0.099 %MoS2
Number	25
Mean	0.101 %MoS2
Stdev	0.0033
Max	0.113 %MoS2

Std Name	0.148 %MoS2
Number	24
Mean	0.150 %MoS2
Stdev	0.0038
Max	0.162 %MoS2



### 12.3 Duplicates

Duplicate samples at Endako are developed from additional split core. The initial sample is based on the standard  $\frac{1}{2}$  split of drill core. The duplicates are then generated by further splitting the remaining core in half and submitting the  $\frac{1}{4}$  core for preparation and assay. The test is intended to measure the repeatability of the entire sample preparation and assay procedure. The assays are run at the Endako lab.

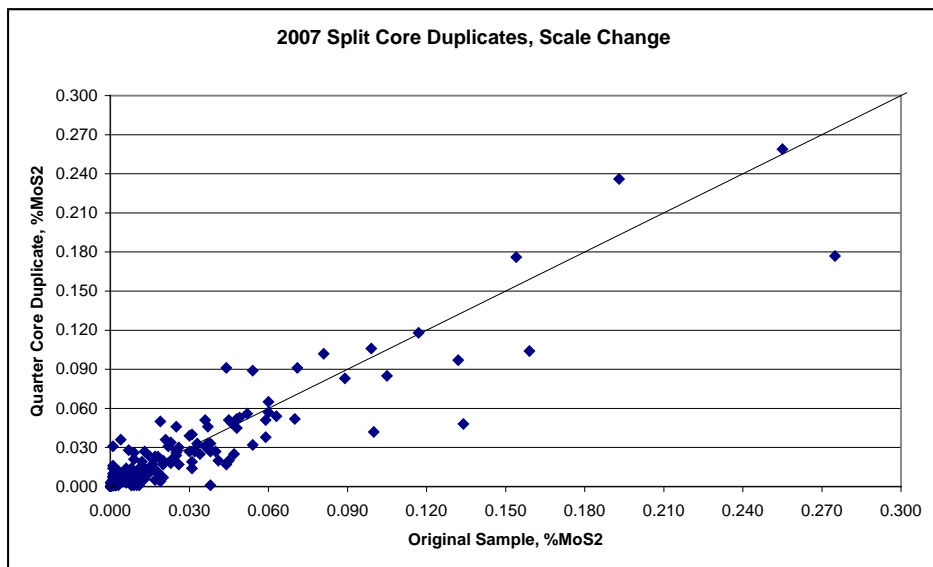
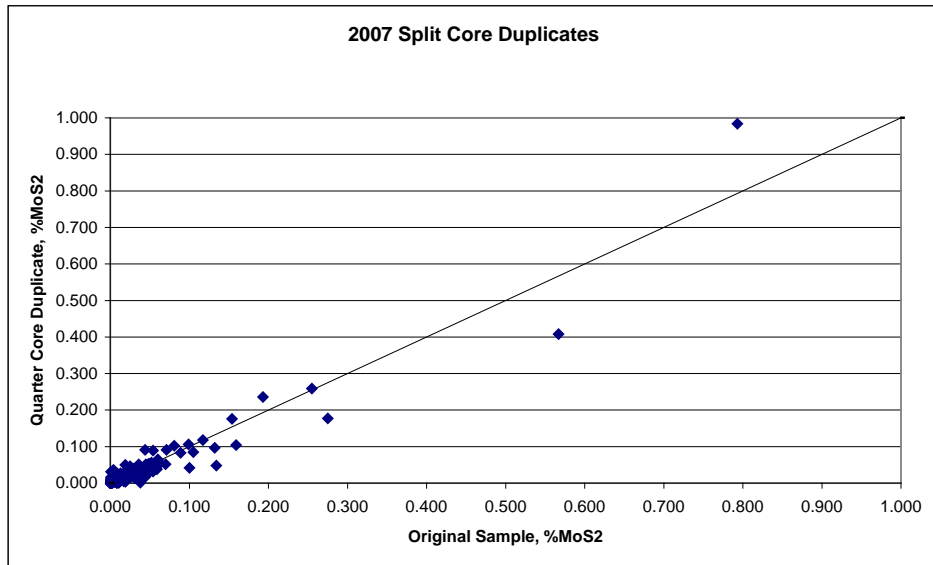
Duplicates were split and sent for analysis for 5% of the sampled intervals in both 2007 and 2008. Figures 12-2, 12-3, and 12-4 summarize the results of the duplicate analysis for 2007, 2008 and 2010 respectively. Two graphs are presented for 2007 and 2008: the first shows all of the data, and the second illustrates the data in the ore grade range in order to illustrate the variability that occurs with ore grade samples. Figure 12-4 summarizes the results for 2010. The form of the graph is different in 2010 because the analysis was done at a later date with different software than was applied to 2007 and 2008.

The results in all years indicate that the duplicates are not biased relative to the initial samples. The T-Statistics (2 tail) indicate that the original and duplicate sets can be assumed to be from the same populations with more than 95% confidence.

There is indeed a reasonable amount of variation in the sample results. This indicates the normal variability in sample preparation and assay procedures. In summary, the duplicates checks are acceptable.



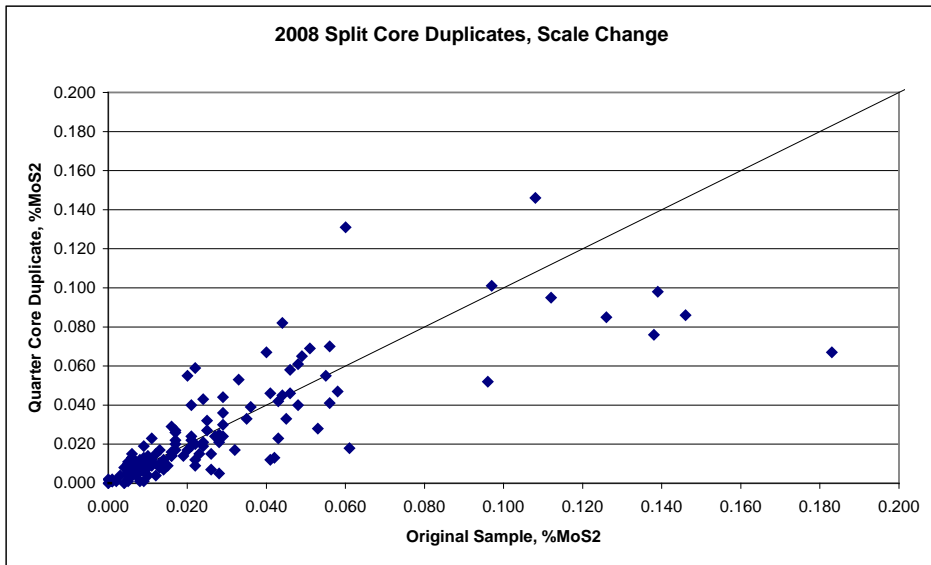
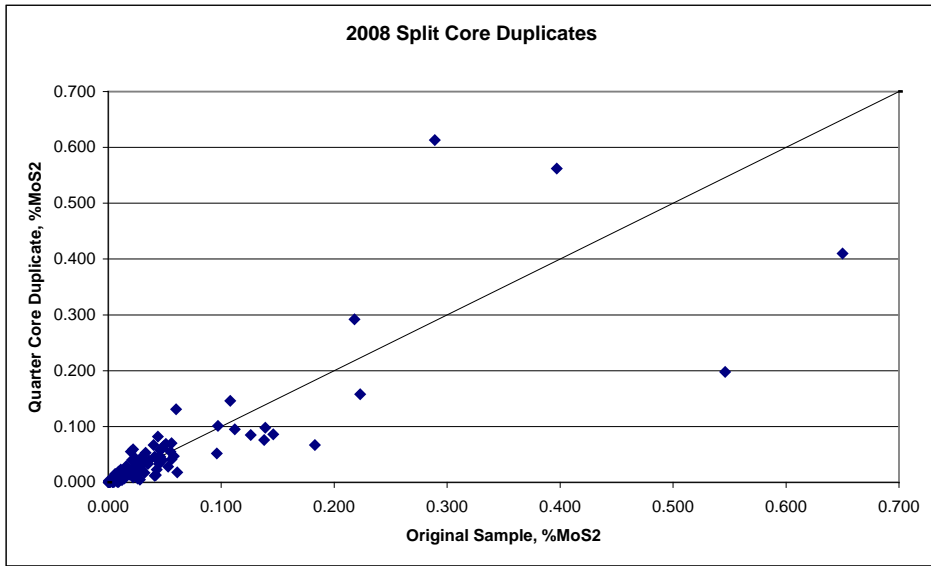
Figure 12-2



	Original	Core Duplicate
Count	168	168
Mean	0.035 %MoS2	0.034 %MoS2
Stdev	0.0832	0.0882
Max	0.793 %MoS2	0.984 %MoS2
Tstatistic	0.930	

Dups2007.xls

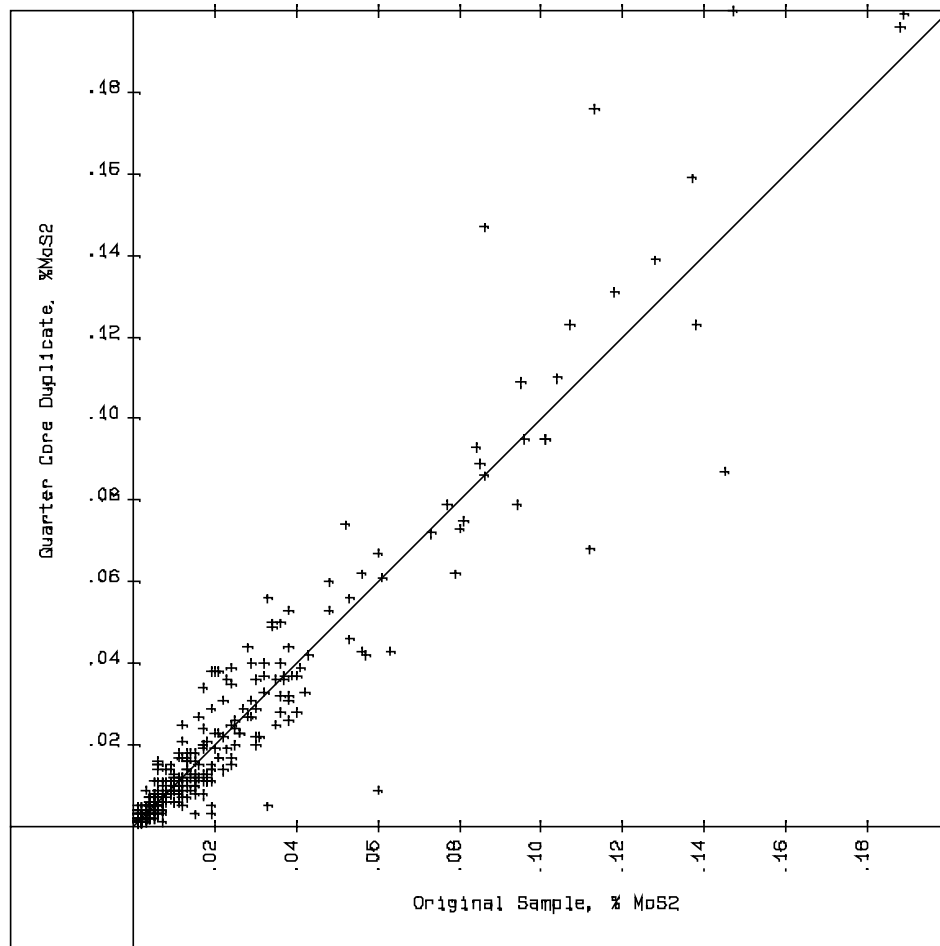
Figure 12-3



	Original	Core Duplicate
Count	138	138
Mean	0.043 %MoS2	0.040 %MoS2
Stdev	0.0870	0.0840
Max	0.650 %MoS2	0.613 %MoS2
Tstat	0.815	

Sids\_Dups\_2008.xls

Figure 12-4  
Split Core Duplicates for 2010



Number of Duplicates = 404

Mean of Original Assays = 0.029% MoS2

Mean of Duplicate Split Core Values = 0.029% MoS2

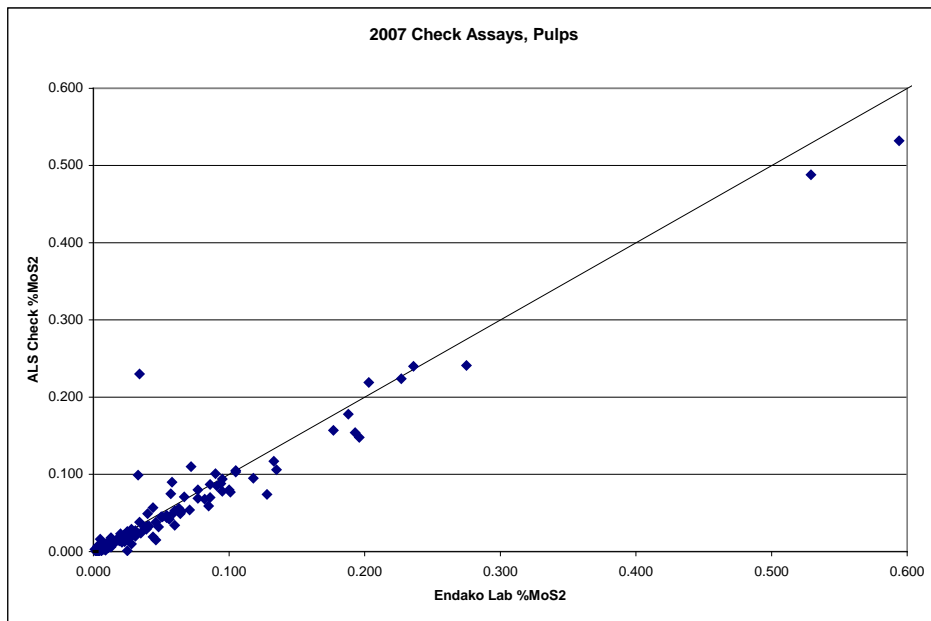
#### 12.4 Third Party Check Assays

Check assays have been sent to outside third party labs for 2007, 2008, and 2010 on a 1 in 10 basis. During 2007, both replicate pulps, and replicate coarse rejects were sent to Acme Labs in Vancouver for Inductively Coupled Plasma (ICP) analysis. During 2008 and 2010 both pulps and rejects were sent to ALS Chemex for analysis by XRF (X-ray Diffraction).

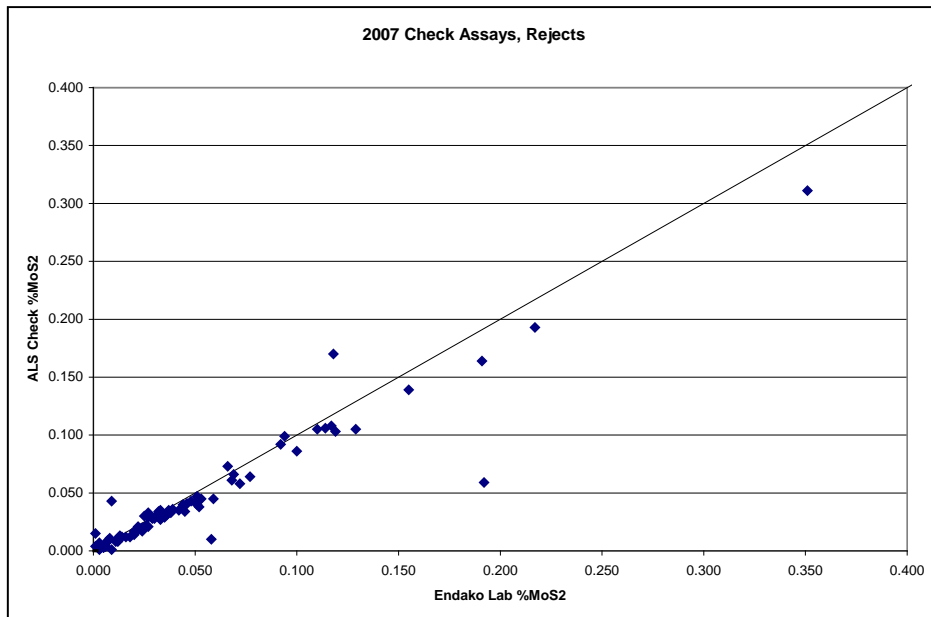
Figures 12-5, 12-6, and 12-7 summarize the results of the check assay program for 2007, 2008, and 2010 respectively. The results are as expected with rejects having higher variability than pulps. Figure 12-7 illustrates the pulp checks sent to ALS Chemex in 2010. The format of the figure is different because the 2010 analysis was done by IMC at a later time with different software than was applied to 2007 and 2008.

All data sets for all three years do not indicate any measureable bias in the check results and all data sets indicate that the check assays can be assumed to be from the same populations with more than 95% confidence.

Figure 12-5

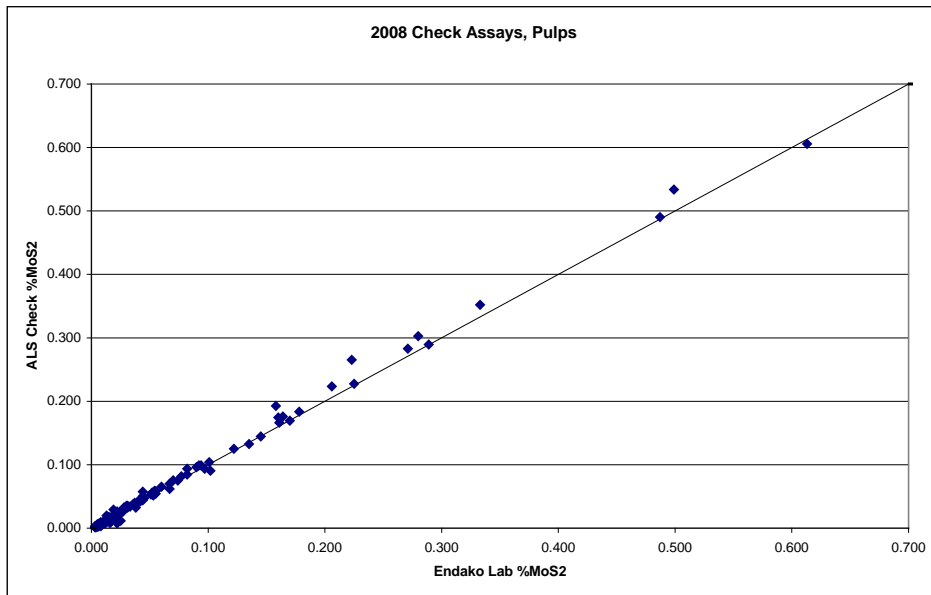


	Endako	ACME Labs
Number	136	136
Mean	0.053 %MoS2	0.049 %MoS2
Stdev	0.0819	0.0773
Max	0.594 %MoS2	0.532 %MoS2
T Stat	0.642	

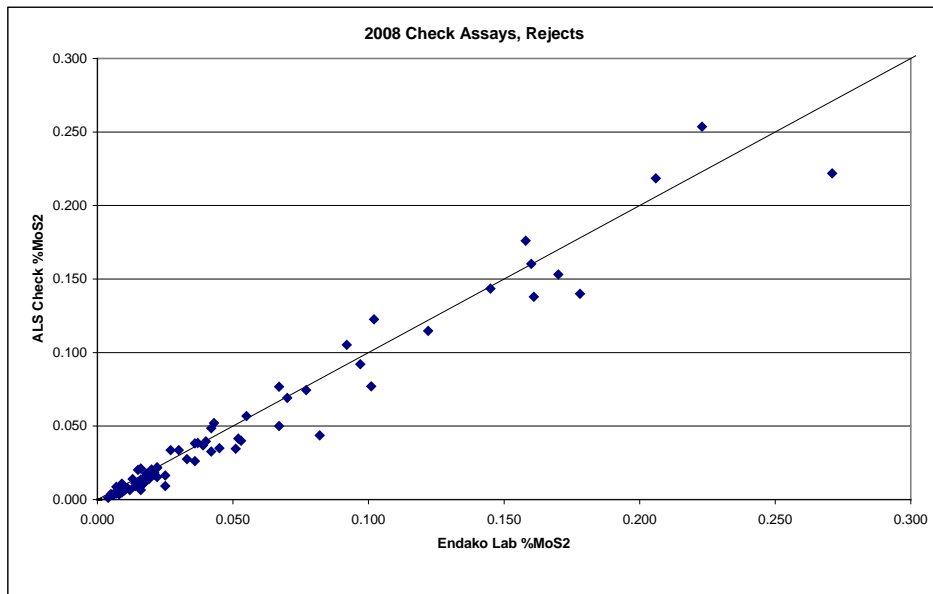


	Endako	ACME Labs
Number	91	91
Mean	0.047 %MoS2	0.042 %MoS2
Stdev	0.0545	0.0480
Max	0.351 %MoS2	0.311 %MoS2
T Stat	0.468	

Figure 12-6

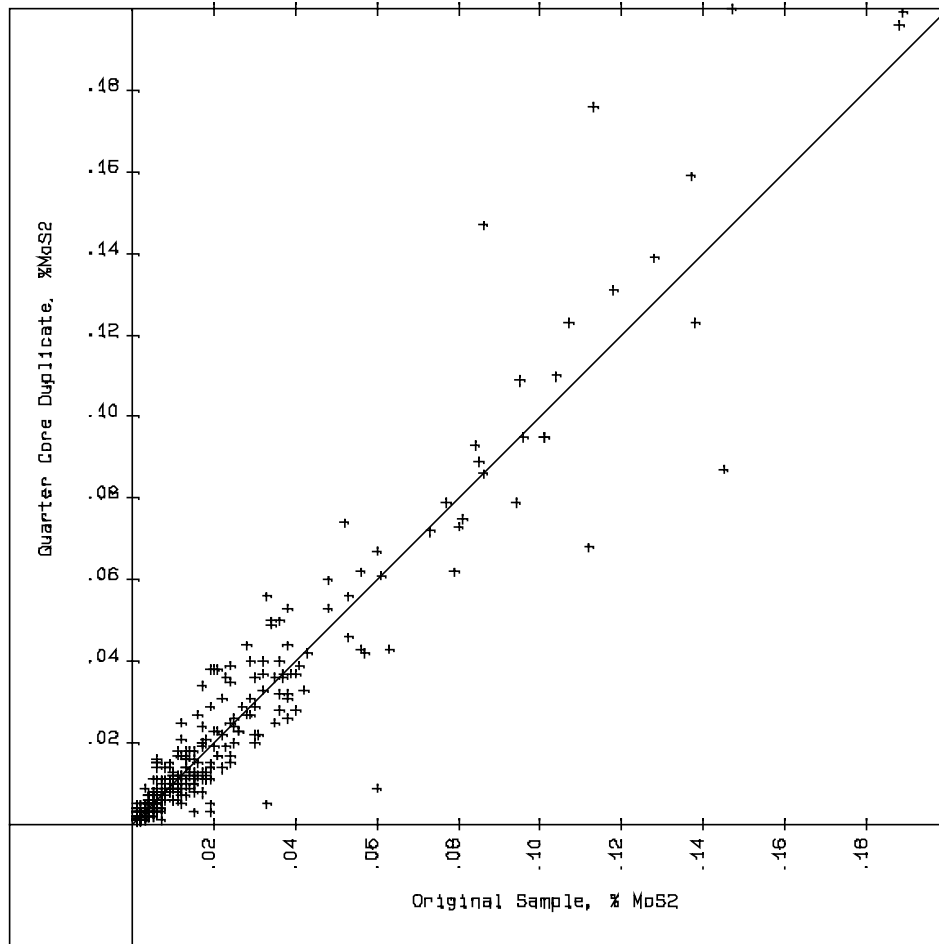


	Endako	ALS Chemex
Number	135	135
Mean	0.060 %MoS2	0.062 %MoS2
Stdev	0.0963	0.1001
Max	0.613 %MoS2	0.606 %MoS2
T Stat	0.888	



	Endako	ALS Chemex
Number	76	76
Mean	0.050 %MoS2	0.046 %MoS2
Stdev	0.0581	0.0572
Max	0.271 %MoS2	0.254 %MoS2
T Stat	0.727	

Figure 12-7  
Check Assay Results for 2010



Number of Checks = 427

Mean of Original Assays = 0.085% MoS2

Mean of Outside Check Assays = 0.084% MoS2

## 12.5 New DDH vs Historic DDH

The QAQC information developed by Endako provides comfort that the 2007, 2008, and 2010 diamond drilling is reliable for development of the block model, mine plan, and corresponding mineral reserves and resources.

Most of the diamond drilling on the project is historic in nature and any historic QAQC information would be difficult to analyze and may not exist. Consequently, IMC compared closely spaced new drilling (2007-2008) with historic drill hole data. Much of the 2007 and 2008 drilling was located close to historic drilling. The 2010 drilling was primarily located in the Northwest Extension and would not add significantly to the number of sample pairs in the nearest neighbor composite process. Consequently the following analysis focuses on the comparison of 2007 and 2008 versus the historic information.

Prior to this comparison, 44 ft down hole composites were calculated from the diamond drilling assay information. Composites from 2007 and 2008 were identified. Composites from the rest of the data base were compared to the 2007-2008 information and the values and distances between those results were recorded in the data base.

Figure 12-8 summarizes the results of the new to old diamond drilling comparison. The upper portion is an XY plot of new vs old composites that are within 100 ft of each other. The bottom of the figure presents the QQ plot of the same data.

IMC compared the paired data at a range of different spacings. In addition to the graphics on Figure 12-8, a series of statistical hypothesis tests were developed at alternative data separation distances. The information below summarizes the results at data spacing of 50 ft and 100 ft. The 50 ft spacing corresponds to the size of one reserve block in the Endako model.

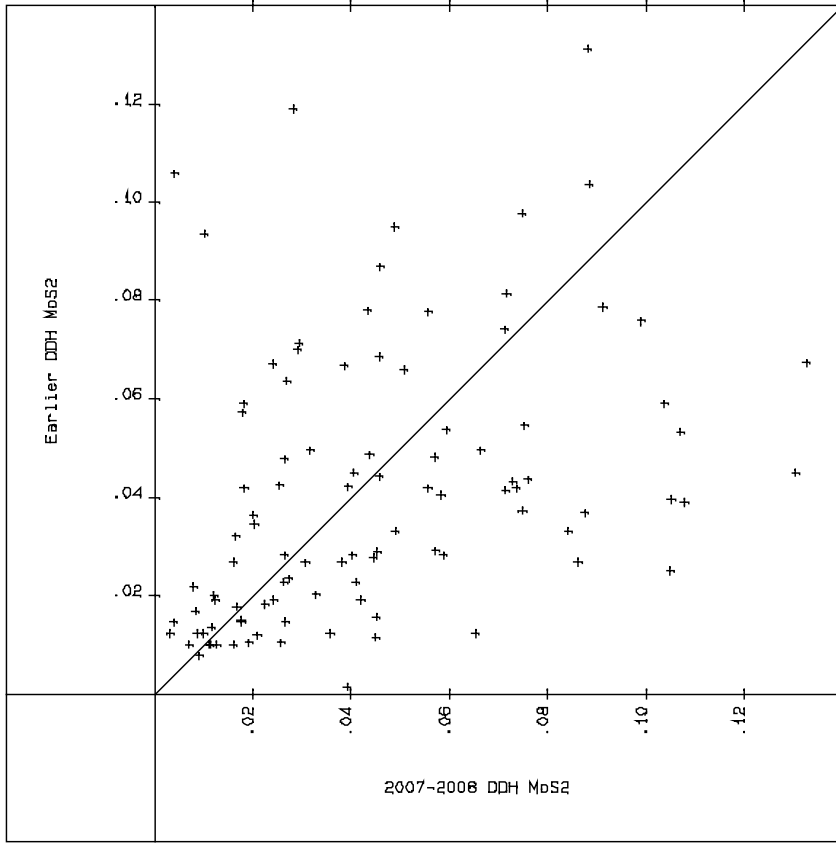
Nearest Neighbor Comparison of 2007-2008 Diamond Drilling versus Historic Diamond Drilling									
Maximum Separation Feet	Number of Pairs	2007-2008 DDH		Earlier DDH		Hypothesis Tests at 95% Confidence			
		Mean %MoS2	Variance	Mean %MoS2	Variance	T-Test on Means	Paired T Test	Binomial Test	Komologorov Smirnov
50	26	0.045	0.0014	0.043	0.0022	Pass	Pass	Pass	Pass
100	107	0.054	0.0028	0.049	0.0019	Pass	Pass	Pass	Pass

The XY plot on Figure 12-8 indicates substantial variability, the hypothesis tests and the QQ plot indicate that closely spaced diamond drill hole data represents the same population independent of the time frame when the diamond holes were drilled. Old diamond data will be commingled with recent diamond drill data during the model assembly process.

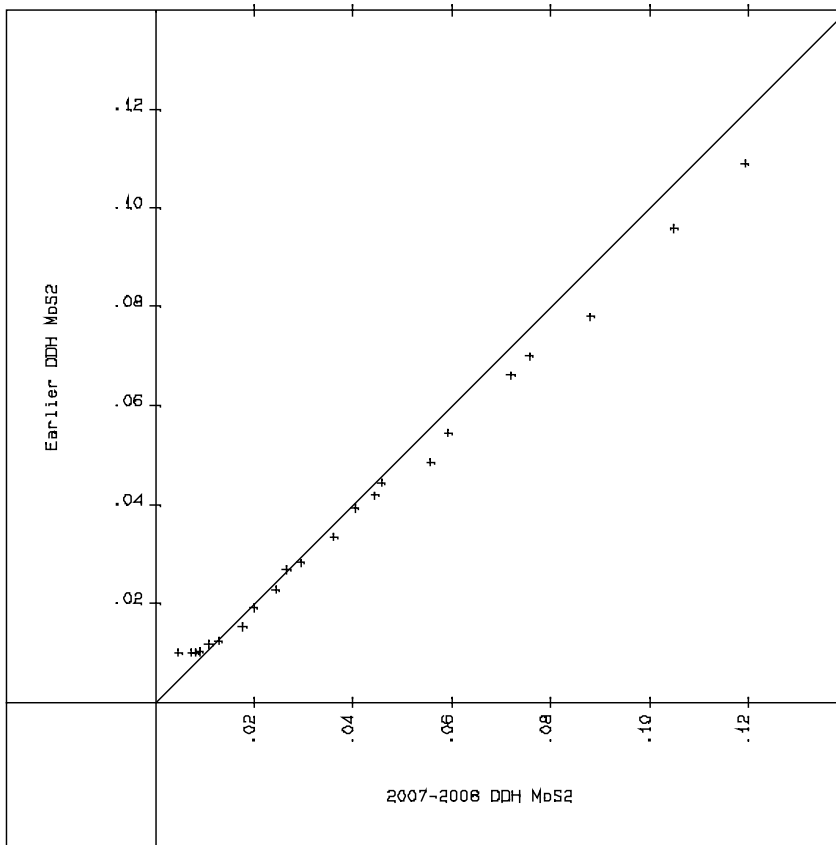


Figure 12-8

44 ft Diamond Composites  
2007-2008 Vs Early Drilling



XY Plot



QQ Plot

## 12.6 Diamond Drilling to Blast Hole Drilling

Previous modeling work at Endako has made use of blast hole data during the model assembly process. The model and mine plan reported within this document has made use of selected blast hole data in the block model assembly process.

A nearest neighbor comparison was completed between diamond drill hole composites available in early 2010 and blast hole data in order to gain confidence in the utilization of blast holes.

Two separate comparisons were completed:

- 1) Endako on 44 ft Benches, and
- 2) Denak on 33 ft Benches.

The diamond drill hole data was composited to 44 ft bench intervals for Endako, and 33 ft bench intervals for Denak separately. Bench interval composites were used for this comparison only in order to match the location of blast holes on the same bench. The two bench height comparisons were necessitated by the different bench heights applied to date in each mine area.

Figure 12-9 illustrates the XY and QQ plot for blast holes that are within 10 ft of 44 ft diamond drill bench composites in the Endako pit area. The table below summarizes the hypothesis test results for the comparison of 577 pairs that are less than 10 ft apart.

Nearest Neighbor Comparison of 44 ft Diamond Composites vs Blast Holes, Endako									
Maximum Separation Feet	Number of Pairs	DDH		Paired Blast Hole		Hypothesis Tests at 95% Confidence			
		Mean %MoS2	Variance	Mean %MoS2	Variance	T-Test on Means	Paired T Test	Binomial Test	Komologorov Smirnov
10	577	0.101	0.0051	0.098	0.0042	Pass	Pass	Pass	Pass

Figure 12-10 illustrates the XY and QQ plot for blast holes that are within 10 ft of 33 ft diamond drill bench composites in the Denak pit area. The table below summarizes the hypothesis test results for the comparison of pairs that are less than 10 ft and 20 ft apart.

Nearest Neighbor Comparison of 33 ft Diamond Composites vs Blast Holes, Denak									
Maximum Separation Feet	Number of Pairs	DDH		Paired Blast Hole		Hypothesis Tests at 95% Confidence			
		Mean %MoS2	Variance	Mean %MoS2	Variance	T-Test on Means	Paired T Test	Binomial Test	Komologorov Smirnov
10	301	0.092	0.0173	0.084	0.0083	Pass	Pass	Pass	Pass
20	778	0.085	0.0128	0.091	0.0117	Pass	Pass	Pass	Fail

All of the comparisons pass the hypothesis tests for representation of the same population with the exception of the 20 ft data spacing at Denak that just barely fails the Komologorov Smirnov population test.

Within Endako, the diamond hole mean values are about 3% higher than the mean grade of the nearby blast holes.

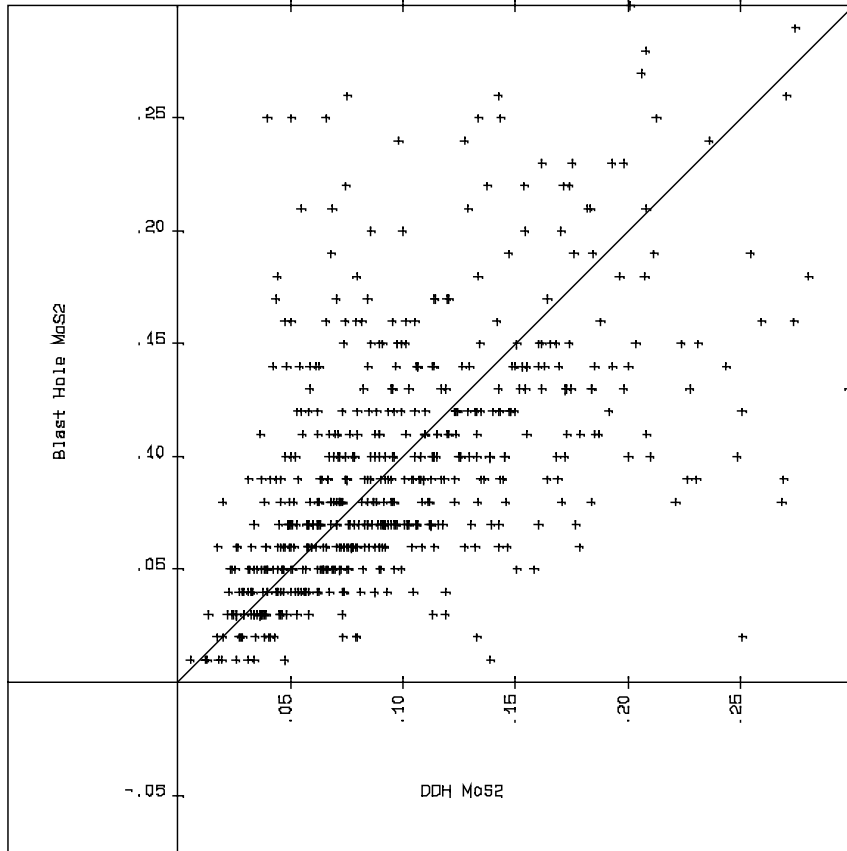
Within Denak, the 10 ft and 20 ft spacing tests reverse the trend between them. With 20 ft spacing, the blast hole values are about 7% higher than the diamond drilling data. The QQ plot on Figure 12-10 indicates that up to about 0.10% MoS<sub>2</sub>, there is little bias between the two data sets. However, above 0.100 and particularly above 0.150 % MoS<sub>2</sub>, the blast hole data reports higher values than the close spaced diamond drill hole data.

Recent production history (2008 and 2009, primarily Denak area) has shown that blast hole information agrees well with the reported mill head grades. Within that same volume, the diamond drill hole average grade was lower than the mill reported head by as much as 14%. Blast hole data in Denak reports higher than diamond drilling, as shown with the nearest neighbor comparisons at 20 ft spacing and with basic population statistics.

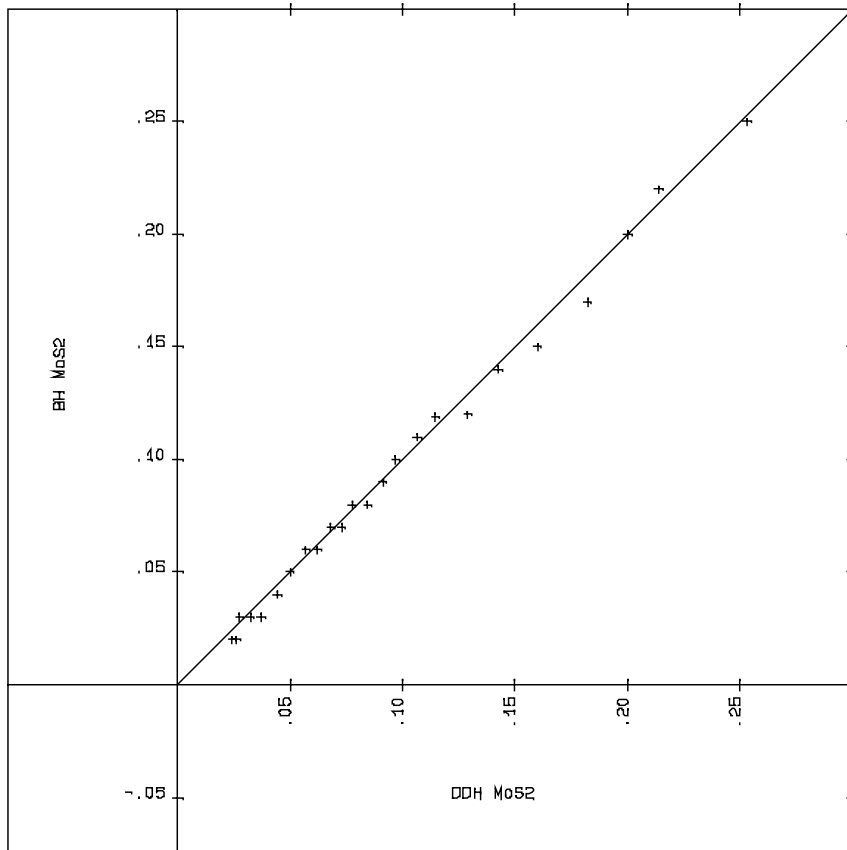
Although the hypothesis tests indicate that the blast hole and diamond drill data can be commingled, the low values of diamond drill data in Denak pose some issues for the proper estimation of head grades in Denak.

Figure 12-9

Nearest Neighbor Comparison  
44 ft Endako Composites vs  
Endako Blast Holes  
10 ft Spacing



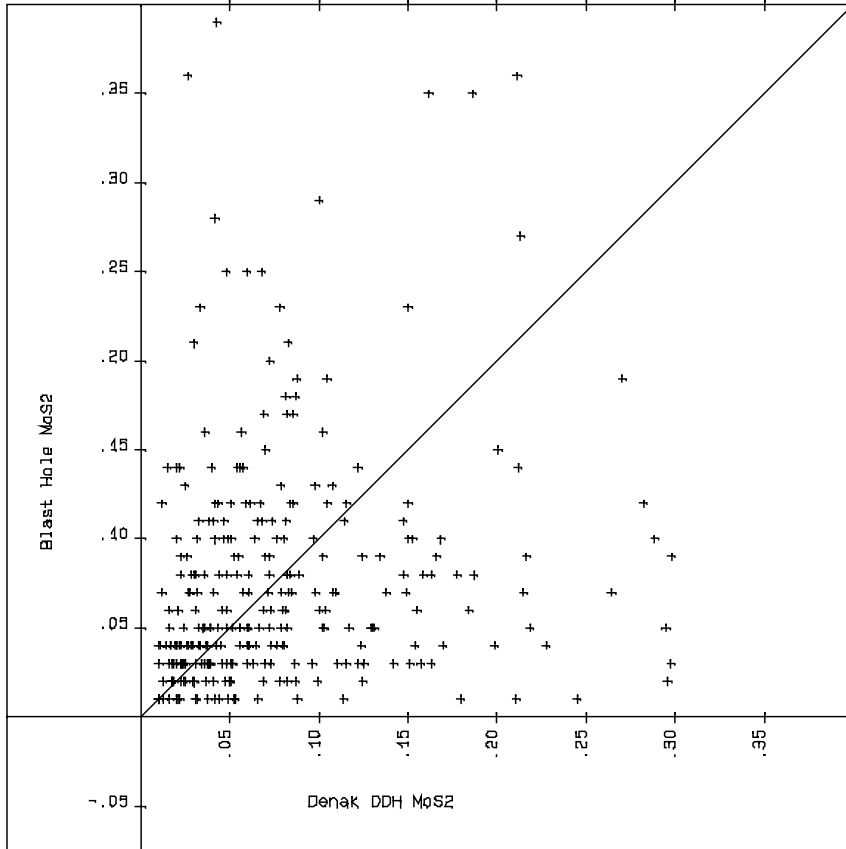
XY Plot



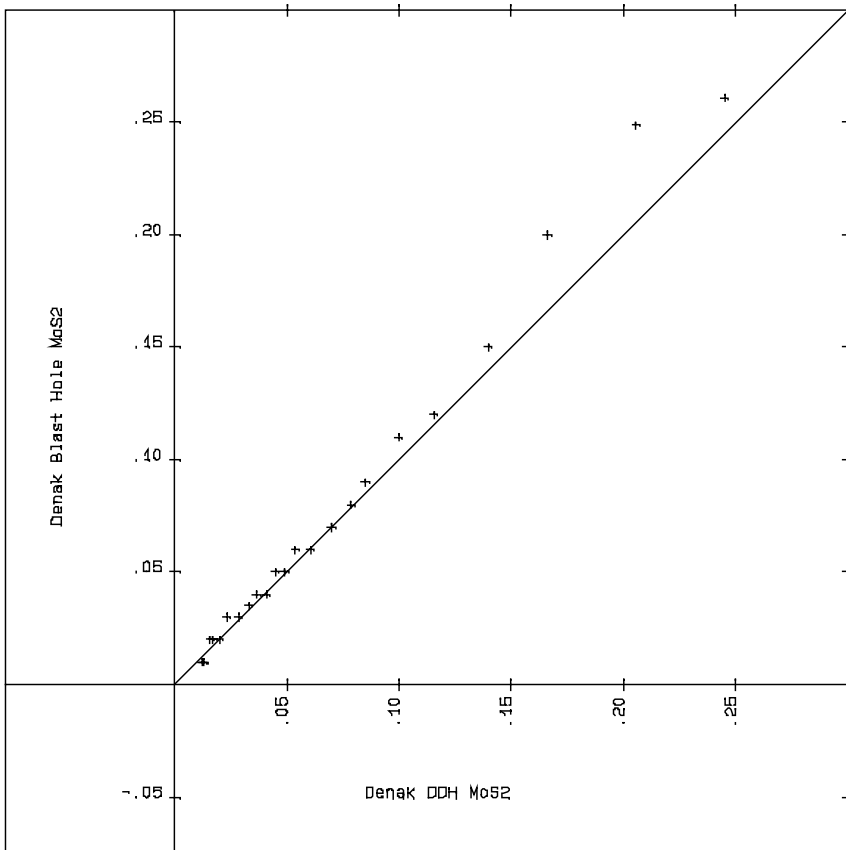
QQ Plot

Figure 12-10

Nearest Neighbor Comparison  
33 ft Denak Composites vs  
Denak Blast Holes  
10 ft Spacing



XY Plot



QQ Plot

### 13.0 MINERAL PROCESSING AND METALLURGICAL TESTING

The Endako mill has been in operation since 1965 and the process is well established. A new mill is under construction at this time. Section 17 provides details regarding the new plant that is designed to handle 50,000 tpd of ore. The following paragraphs describe the current process operation.

The Endako mill consists of a concentrator that produces a  $\text{MoS}_2$  concentrate and a roasting plant that converts the concentrate into molybdenum oxide (" $\text{MoO}_3$ "). The facility currently processes an average of 28,000 to 31,000 tpd of ore. The current milling process consists of the following:

- 1) Primary crushing, either by the in-pit crusher located in the bottom of the Denak East pit or by the surface crusher located near the mill;
- 2) Secondary and tertiary crushing;
- 3) Grinding using rod and ball mills;
- 4) Flotation and leaching;
- 5) Roasting; and
- 6) Tailings disposal.

Ore is either hauled by trucks to an in-pit crusher and then conveyed to the mill, or hauled directly to a second crusher on surface close to the mill. Crushed ore is sent to the grinding and flotation circuit. Molybdenum concentrate is roasted before being shipped to the market as the final product.

Material from the crushing circuits is stored in six fine ore bins, with a combined live storage capacity of [20,000 tonnes]. The material is withdrawn from the bins by conveyors to feed grinding circuits to liberate  $\text{MoS}_2$  from the host rock for recovery by flotation.

The grinding circuit consists of five parallel rod mill-ball mill circuits. The rod mills operate in open circuit, feeding the ball mills operating in closed circuit with cyclones. The rod mill product discharges into the ball mill discharge pump box, and is pumped to the cyclones together with the ball mill discharge. The cyclone underflow is recycled back to the ball mill. The overflow is fed to the rougher flotation circuit also consisting of five lines, one per grinding circuit. The particle size in the cyclone overflow is approximately 80% passing 300 microns.

The flotation reagents are added to the grinding circuit and carried through in the cyclone overflow to the rougher flotation circuits. The rougher flotation tailings are pumped to the tailings pond for separation of solids and water. Water is reclaimed for re-use in the milling process.

The concentrate from rougher flotation stage is fed to a cleaning circuit consisting of five or six stages of cleaning. Concentrates are reground to improve concentrate grade and recovery following the first and second cleaning stages. Sodium cyanide is used as a depressant in the cleaning circuit to depress impurities, mainly copper.

The final concentrate is leached with dilute hydrochloric acid to remove lead and bismuth impurities prior to filtering and drying for feed to the roaster.

Historic recovery at this plant has been in the range of 75%. Production history and metal sales have confirmed the historic metallurgical response at the existing Endako mill. Recoveries at the new mill are estimated to be 79% once it is established in operation.

## 14.0 MINERAL RESOURCE ESTIMATES

A computer based block model of the Endako deposit was assembled from the drill hole data. That model was used as the basis for the development of the mineral resource and the mineral reserve. The mineral reserve will be discussed in Section 15.0.

The mineral resource estimate is additional mineralization that is outside of the mineral reserve and that has “reasonable prospects of economic extraction”.

The model procedures were modified from the previous work in January 2011 to incorporate the following changes in June of 2011:

- 1) Additional blast hole data within the recent mining areas.
- 2) Sub-Domains were applied within the Endako area to reflect the veining and structure that is known from historic mining in the area.
- 3) A change to the indicator discriminator to better match the long term production history.

The procedures applied to Denak East, Denak West, and the Northwest Extension are similar to those applied in January of 2011. The discriminator for the indicator break has been changed from 0.030 MoS2% to 0.035 MoS2%. Additional blast holes in the area have also updated the grade estimates in the production areas.

The changes to Endako include the change of discriminator plus the addition of sub-domains as provided by M. Pond (Endako mine geologist). Their impact has been to separate high grade from lower grade zones and on average contribute to the subtle increase in reserve grade.

### Data Base

The following data was used for the assembly of the June block model. The diamond drilling reflects all of the drill hole data that was available at the end of the 2010 program in early November 2010. Blast holes were selected from the end of May 2011 progress.

Diamond Drill Data	1,046 Holes 47,957 Intervals Assayed for MoS2 516,305 ft of drilling (157,370 meters)
Blast Hole Data	13,748 Holes 13,748 Assays for MoS2

The blast hole data that was used for model assembly was a subset of the total available blast hole information. The blast hole selection process was identical to the previous procedures but updated to reflect current data and pit progress. The following procedures were applied to select the blast hole sub-set:



- 1) A copy of the May 2011 pit progress topography was raised two benches (88 ft).
- 2) All blast hole data between the May 2011 progress surface and the 88 ft higher surface was selected.
- 3) That “bowl” shape of blast hole data was further sorted by superimposing the 50 ft block grid over the blast hole data and selecting the blast hole that was located nearest to the center of each 50 ft model block.

### Model Area, Size and Location

The Endako block model is a conventional computer based block model with blocks sized 50 ft by 50 ft on plan with a 44 ft bench height. The model is assembled in imperial units and tied to a local mine grid.

The following summarizes the model size and location:

Easting:	18,000 to 34,000	320 blocks	50 ft block
Northing:	27,000 to 41,000	280 blocks	50 ft block
Elevation:	1782 to 3806	46 benches	44 ft bench height

The above coordinates represent the outside edges of the model.

### Estimation Domains

The Endako model was subdivided into major estimation domains that correspond to the major mining areas. The boundaries between domains represent the major changes in deposit orientation. Additional sub-domains were added to the Endako area (Domain 1).

The major model domains are: (Figure 14-1)

- 1 = Endako
- 2 = Denak East
- 3 = Denak West
- 4 = Northwest

Sub-domains were developed for the Endako area based on historic information at Endako. The sub-domains are intended to separate major structures and major vein systems within the Endako mine area.

The sub-domains were sent to IMC as MineSite (msr) files and coded into the block model on a nearest whole block basis. The diamond drill composites and the blast holes that were used for the estimate were back assigned the code of the sub-domain that contained them.

The sub-domains were coded numerically as:

0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, 14, 15

Some of the codes can be related to named features as follows:

<u>Sub-Domain</u>	<u>Description</u>
0	Footwall zone of the deposit (NE side of pit)
1, 2	Hanging wall (SW side) of the South Basalt Fault Zone
3	South Basalt Fault Zone
5	East Dyke Swarm
15	West Basalt Fault

The others correspond to numbered vein swarm systems.

Experimental variograms were run in each of the sub-domains with preference to orientations that parallel the overall sub-domain orientation. Population statistics broke the sub-domains into 3 broad categories:

<u>Grade Range</u>	<u>Sub-Domains</u>	<u>Average Grade</u>
Lower	15, 1, 2	0.049% MoS <sub>2</sub>
Moderate	0, 3, 4, 5, 6, 7	0.082% MoS <sub>2</sub>
Higher	8, 9, 11, 12, 13, 14	0.131% MoS <sub>2</sub>

A trial using linear ordinary kriging was applied where each domain was treated as a hard boundary. However, the results were a reduction in estimated grade from the previous January 2011 model. It appeared as if the interpreted sub-domain boundaries still allowed significant averaging of high and low grade internally.

The final estimation procedure in the Endako domain utilized the same indicator kriging as in Denak but with search orientations established for each sub-domain. Most boundaries between sub-domains were considered as soft boundaries. However, sub-domain 3 (South Basalt Fault) was treated as a hard boundary with some of its neighbors.

The indicator process provided a consistent split between plus and minus 0.035 MoS<sub>2</sub>% but the sub-domain search orientations allowed for better connection between grades resulting in the improved grade estimates in the Endako model.

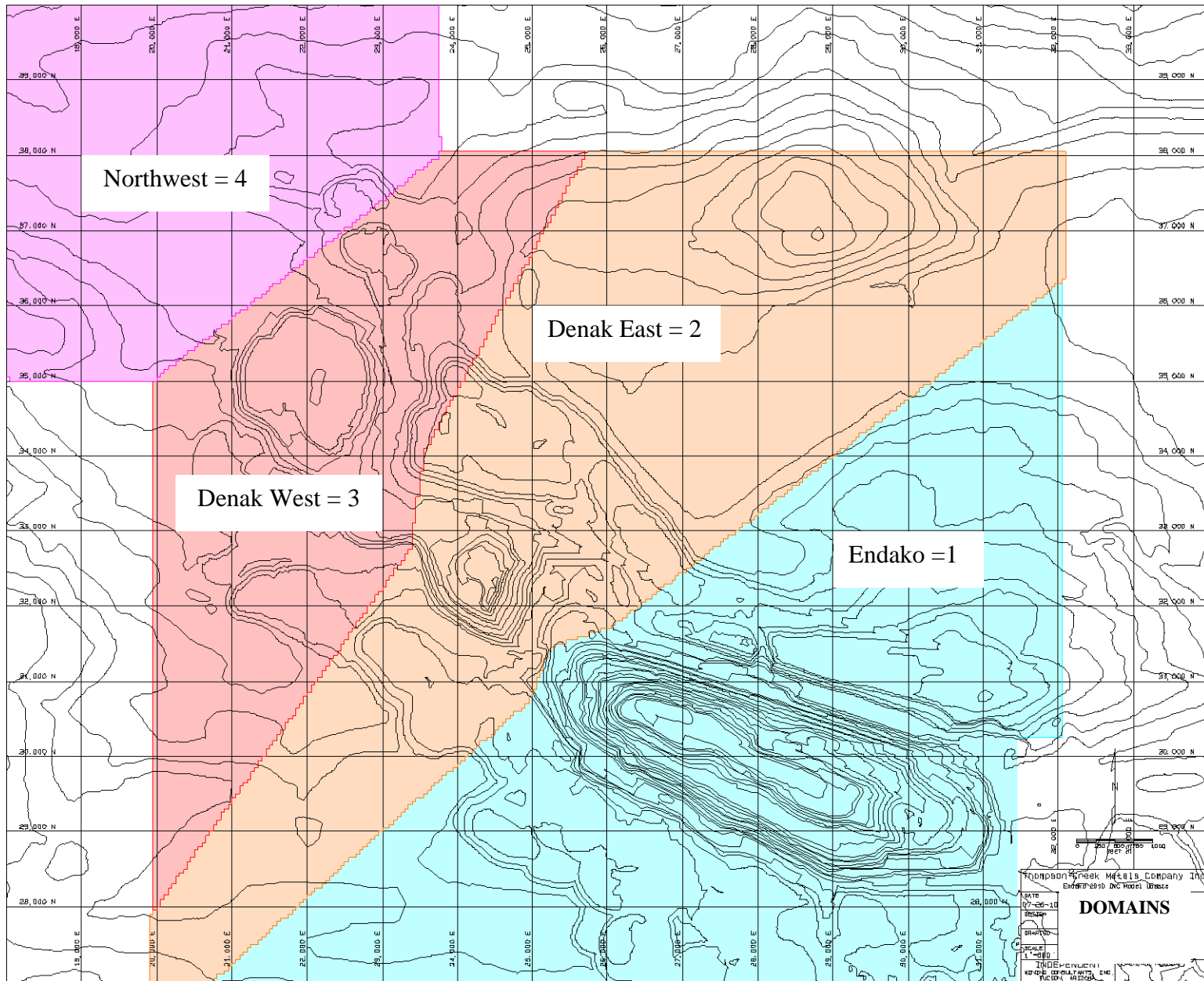


Figure 14-1 – Estimation Domains  
1000 Ft Grid

### Rock Code and Density Assignments

The boundary between rock and overburden was updated for the June 2011 model. Discrepancies between the actual occurrence of overburden in the pit and those projected by the January model necessitated this update. Waste rock dumped in the pit was coded as a separate rock type. The model covers sufficient area to the north and east that there is minor tailing within the block model. However, it has no bearing on the mine plan.

The model rock codes and the corresponding densities of material assigned to each are shown below.

Rock = 1 = Rock,	13.781 cu ft / metric tonne = 2.563 tonne/cubic meter
Rock = 2 = Overburden	19.619 cu ft / metric tonne = 1.80 tonne/cubic meter
Rock = 3 = Waste Dump	17.657 cu ft / metric tonne = 2.00 tonne/cubic meter
Rock = 4 = Tailing	19.619 cu ft / metric tonne = 1.80 tonne/cubic meter

### Caps and Composites

Diamond drill holes were composited to 44 ft down-hole composites for use in grade estimation. Prior to compositing the following cap levels were applied to individual assays:

Domains 1, 2, Endako, Denak East	+0.80 MoS <sub>2</sub> % capped at 0.80 MoS <sub>2</sub>
Domains 3,4, Denak West, Northwest	+1.00 MoS <sub>2</sub> % capped at 1.00 MoS <sub>2</sub>

The domain code was assigned to each assay by back assignment based on the model block that contained the composite. The domain was then composited as a “rock type” meaning that the composite was assigned the domain of the majority of the constituent assay domain. A minimum composite length of 22 ft was required to calculate a composite.

### Block Grade Estimation

The grade estimation process at Endako utilized 5 major steps.

- 1) Diamond drill estimate of a 0.035% MoS<sub>2</sub> boundary using indicator kriging;
- 2) Diamond drill estimate of grades inside and outside of 0.035% indicator boundary;
- 3) Blast hole estimate of a 0.035% MoS<sub>2</sub> boundary using indicator kriging;
- 4) Blast hole estimate of grades inside and outside of 0.035% blast hole indicator boundary; and
- 5) Combination of the Diamond Drill and Blast Hole Estimate using a weighted average from a drill type indicator estimate.

The grade estimates were stored reflecting two pit history conditions:

- 1) Representing topography and in-pit dumping on December 31, 2009, and
- 2) Original pre-mining topography.

Grades were assigned to all hard rock (code 1) based on the original pre-mining topography so that production history could be reported from the model prior to December 2009. Additional topographic codes were provided for the end of December 2010, and the end of May 2011.

### Diamond Drilling Indicator Kriging

An indicator kriging run was completed using the diamond composites only. The search orientation changed with each of the domains and sub-domains, but the domains and sub-domains themselves were not hard boundaries in the search process (See notes on sub-domain 3).

Once the indicators were estimated, the blocks were coded as plus 0.035% MoS<sub>2</sub>, or less than 0.035% MoS<sub>2</sub> on a 50% probability basis.

The table that follows summarizes the indicator kriging parameters for the diamond drill indicator estimate.

Diamond Drill Indicator Kriging Parameters for 0.035% MoS <sub>2</sub> Indicator								
Domain	Strike Degrees	Dip Degrees	Strike Search & Range Ft	Dip Search & Range Ft	Perpendicular Search & Range Ft	Max Composites	Min Composites	Max Composites per Hole
Denak East	150	45 SW	175	175	90	10	3	3
Denak West	180	45 W	175	175	90	10	3	3
Northwest	180	45 W	200	225	85	10	3	3
Endako Sub-Domains								
0	110	30 SW	175	130	90	10	3	3
1	120	45 SW	175	200	90	10	3	3
2	120	60 SW	175	200	90	10	3	3
3	114	60 SW	200	100	50	10	3	3
4	230	30 NW	175	175	90	10	3	3
5	238	23 NW	200	200	90	10	3	3
6	234	30 NW	175	200	90	10	3	3
7	234	30 NW	175	200	90	10	3	3
8	98	53 S	175	175	90	10	3	3
9	98	53 S	175	175	90	10	3	3
11	105	40 SW	175	175	90	10	3	3
12	105	40 SW	175	175	90	10	3	3
13	105	40 SW	175	175	90	10	3	3
14	250	90	175	175	90	10	3	3
15	225	40 NW	175	175	90	10	3	3

Spherical Variograms Applied, Co=0.10, C+Co = 1.00

Sub-Domain 3 cannot use Sub-Domains 1,4,5,7,9 for estimation

### Diamond Drilling Grade Kriging

The blocks were coded with an indicator code as described above based on a 50-50 probability. Composites were coded directly from their grade with a similar code, 1 = + 0.035% MoS2 and 0 = less than 0.035% MoS2. The composite code and the block code were matched on a hard boundary basis for grade estimation. Domains were not hard boundaries (except for sub-domain 3). The table below summarizes the grade kriging parameters for the diamond drill grade estimate.

<b>Diamond Drill Indicator Grade Estimation Parameters, 0.030 Indicator is a Hard Boundary</b>								
Domain	Strike Degrees	Dip Degrees	Strike Search & Range Ft	Dip Search & Range Ft	Perpendicular Search & Range Ft	Max Composites	Min Composites	Max Composites per Hole
Denak East	330	45 SW	175	175	90	10	1	1
Denak West	0	45 W	175	175	90	10	1	1
Northwest	0	45 W	200	225	85	10	1	1
Endako Sub-Domains								
0	110	30 SW	175	130	90	10	1	1
1	120	45 SW	175	200	90	10	1	1
2	120	60 SW	175	200	90	10	1	1
3	114	60 SW	200	100	50	10	1	1
4	230	30 NW	175	175	90	10	1	1
5	238	23 NW	200	200	90	10	1	1
6	234	30 NW	175	200	90	10	1	1
7	234	30 NW	175	200	90	10	1	1
8	98	53 S	175	175	90	10	1	1
9	98	53 S	175	175	90	10	1	1
11	105	40 SW	175	175	90	10	1	1
12	105	40 SW	175	175	90	10	1	1
13	105	40 SW	175	175	90	10	1	1
14	250	90	175	175	90	10	1	1
15	225	40 NW	175	175	90	10	1	1

Spherical Variograms Applied, Co=0.10, C+Co = 1.00

Same parameters applied inside and outside of 0.035 boundary

Sub-Domain 3 cannot use Sub-Domains 1,4,5,7,9 for estimation

### Blast Hole Indicator Kriging

A separate indicator kriging run was completed using the selected and declustered blast holes only. The search orientation changed with each of the domains, but the domains themselves were not hard boundaries in the search process (except sub-domain 3).

Once the indicators were estimated, the blocks were coded as plus 0.035% MoS2, or less than 0.035% MoS2 on a 50% probability basis. The following table summarizes the indicator kriging parameters for the blast hole indicator estimate.

Blast Hole Indicator Kriging Parameters, 0.035% MoS2 Discriminator							
Domain	Strike Degrees	Dip Degrees	Strike Search & Range Ft	Dip Search & Range Ft	Perpendicular Search & Range Ft	Max Blast Holes	Min Blast Holes
Denak East	330	45 SW	75	175	50	5	1
Denak West	0	45 W	75	175	50	5	1
Northwest	No Blast Holes in the Northwest Extension						
Endako Sub-Domains							
0	110	30 SW	75	130	90	5	1
1	120	45 SW	75	175	50	5	1
2	120	60 SW	75	175	50	5	1
3	114	60 SW	200	100	50	5	1
4	230	30 NW	75	175	50	5	1
5	238	23 NW	100	200	50	5	1
6	234	30 NW	75	200	50	5	1
7	234	30 NW	75	200	50	5	1
8	98	53 S	75	175	50	5	1
9	98	53 S	75	175	50	5	1
11	105	40 SW	75	175	50	5	1
12	105	40 SW	75	175	50	5	1
13	105	40 SW	75	175	50	5	1
14	250	90	75	175	50	5	1
15	225	40 NW	75	175	50	5	1

Spherical Variograms Applied, Co=0.10, C+Co = 1.00

Sub-Domain 3 cannot use Sub-Domains 1,4,5,7,9 for estimation

### Blast Hole Grade Kriging

The blocks were coded with an indicator code as described above based on a 50-50 probability. Composites were coded directly from their grade with a similar code, 1 = + 0.035% MoS2 and 0 = less than 0.035% MoS2. The composite code and the block code were matched on a hard boundary basis for grade estimation. Domains were not hard boundaries other than sub-domain 3.

The table that follows summarizes the grade kriging parameters for the blast hole grade estimate.

Blast Hole Grade Estimation Parameters, 0.035 Indicator is a Hard Boundary								
Domain	Strike Degrees	Dip Degrees	Strike Search & Range Ft	Dip Search & Range Ft	Perpendicular Search & Range Ft	Max Composites	Min Composites	
Denak East	330	45 SW	75	175	50	5	1	
Denak West	0	45 W	75	175	50	5	1	
Northwest	No Blast Holes in the Northwest Extension							
Endako Sub-Domains								
0	110	30 SW	75	130	90	5	1	
1	120	45 SW	75	175	50	5	1	
2	120	60 SW	75	175	50	5	1	
3	114	60 SW	200	100	50	5	1	
4	230	30 NW	75	175	50	5	1	
5	238	23 NW	100	200	50	5	1	
6	234	30 NW	75	200	50	5	1	
7	234	30 NW	75	200	50	5	1	
8	98	53 S	75	175	50	5	1	
9	98	53 S	75	175	50	5	1	
11	105	40 SW	75	175	50	5	1	
12	105	40 SW	75	175	50	5	1	
13	105	40 SW	75	175	50	5	1	
14	250	90	75	175	50	5	1	
15	225	40 NW	75	175	50	5	1	

Spherical Variograms Applied, Co=0.10, C+Co = 1.00

Same parameters applied inside and outside of 0.035 boundary

Sub-Domain 3 cannot use Sub-Domains 1,4,5,7,9 for estimation

The grade estimates from the previous parameters were stored in a separate blast hole supported grade variable.

### Combined Diamond and Blast Hole Estimate

The blast hole grade estimate and the diamond grade estimate were combined into a single grade value using a weighted average process. The weighting for each block was based on an additional indicator kriging run that was based only on the drill type.

The procedure is summarized as follows:

- 1) The selected blast holes were assigned an indicator of 1.0;
- 2) Each diamond composite was assigned an indicator of 0.0;
- 3) Indicator kriging was used to estimate the fraction of blast hole impact on each block (BHFract). Search and estimation parameters were the same as for the blast hole grade estimation on the previous page; and
- 4) The final block grade was a weighted average of the blast hole fraction (BHFract).  

$$\text{Final Grade} = \text{BHFract} \times \text{BHGrade} + (1 - \text{BHFract}) \times \text{DDH Grade}.$$

The purpose of this method is to provide a transition between predominately diamond drilling estimation and the blast hole estimation in the areas close to the May 2011 pit. Blocks that are located close to the end of May 2011 pit boundary will be primarily estimated by blast holes and blocks that are more distal (+ 175 ft) will be assigned by 100% impact of diamond drilling. The search and variogram parameters were identical to the blast hole grade kriging run.

### Classification

Once the combined grades were assigned to each block, the categories of measured, indicated and inferred were assigned. The primary input information was the kriged standard deviation from the diamond drilling estimate and the same value from the blast hole kriging estimate. (KSD = square root of the DDH kriged variance, and KSDBH = square root of the BH kriged variable). The procedures applied by IMC were as follows:

Domain 1, Endako

If KSD <= 0.81,	Class = Measured = 1
Or if KSDBH <= 0.71	Class = Measured = 1
If KSD <= 1.16,	Class = Indicated = 2
Or if KSDBH <= 0.96	Class = Indicated = 2
If estimated	Class = Inferred = 3



Domains 2 and 3, Denak East and Denak West

If KSD $\leq$ 0.80,	Class = Measured = 1
If KSD $\leq$ 1.08, Or if KSDBH $\leq$ 0.25	Class = Indicated = 2 Class = Indicated = 2
If estimated	Class = Inferred = 3

Domain 4, Northwest Extension

If KSD $\leq$ 0.80,	Class = Measured = 1
If KSD $\leq$ 1.25,	Class = Indicated = 2
If estimated	Class = Inferred = 3

Model Verification

The model was compared against mine production for the last 3 ½ years as a means to validate the ability of the model to estimate long term plans and reserves. Table 14-1 summarizes the comparison of reported mine production versus the prediction of the June 2011 block model.

The model underestimates the ore tonnage of the high grade plus 0.070% Mos2 Cutoff. The average response of the new model at the 0.042% Mos2 cutoff over time provides some confidence in the resulting mine plans and reserves. For the period of 2008 through the end of May 2011, the model estimates the 0.042% MoS2 material within 0.6% on tonnage and 0.6 % on contained metal. However, the model will still not provide precise estimates for short term planning.

Table 14-1

## Reconciliation Summary, Reported Mine Production Versus Recent Models

Year	Target, Tonnage and Grade, Mine Reports						June 11 Model, Meas+Indicated					
	0.070 Mos2 Cutoff		0.042 Mos2 Cutoff		0.030 Mos2 in 2011		0.070 Mos2 Cutoff		0.042 Mos2 Cutoff		0.030 Mos2 Cutoff	
	Ktonnes	MoS2	Ktonnes	MoS2	Ktonnes	MoS2	Ktonnes	MoS2	Ktonnes	MoS2	Ktonnes	MoS2
2008	10,573	0.116	13,121	0.104			7462	0.117	10973	0.098		
2009	9,347	0.098	9,932	0.095			6525	0.116	9927	0.096		
2010	10,259	0.102	12,285	0.094			9628	0.114	14560	0.095		
Jan-May 2011	4,369	0.091	5,578	0.086	6,084	0.079	3629	0.107	5692	0.089	6023	0.086
Total	34,548	0.104	40,916	0.096	6,084	0.079	27,244	0.114	41,152	0.095	6,023	0.086
Difference from Production , Metal Difference Shown under Grades →							-21.1%	-13.1%	0.6%	-0.6%	-1.0%	7.8%

/jun11/recon/ KrigeControlRecon\_11jun11.xls

Table 14-2

## Endako Mineral Resource Floating Cone Input Economics

	<b>CDN Dollars</b>
Mining Cost, Simplified Summary	\$1.25 /tonne
Bench Increment for 44 ft Bench	0.022 /tonne
Apply Haulage Increment below 2926	
Overburden and In-Pit Waste	\$1.05 /tonne
 Milling Cost	 \$2.99 /tonne ore
G&A	<u>\$1.10 /tonne ore</u>
Total / tonne ore	\$4.09 /tonne ore
 Mill Recovery	 79.0%
 Roasting Cost	 \$0.51 /lb Mo
Transport	<u>\$0.08 /lb Mo</u>
Total / lb Moly	\$0.59 /lb Mo
Roasting Recovery	99.7%
 Bench Discount Factor	 2.25% per bench
 Factor to Convert %MoS <sub>2</sub> to Lbs	
0.5994 x 22.0462 =	13.2135 lbs per %

## Cone Slope Angles as Recommended by Golder Associates

<u>Rock Slopes</u>	<u>Pit Area</u>	
Denak East, West, Northwest		46 Degrees
Endako	Northeast	46 Degrees
Endako	Southwest	41 Degrees
Waste Dumps or Fill		37 Degrees

## Metal Price Options vs Calculated Cutoff Grades

Metal Price CDN	Internal Cutoff MoS <sub>2</sub>	Breakeven Cutoff MoS <sub>2</sub>
\$16.50	0.025	0.032

## Mineral Resources

The mineral resources at Endako were established using the block model and a floating cone pit based on \$16.50 CDN/lb Moly. The floating cone pit geometry is used to establish that the resource has “reasonable prospects of economic extraction”. All other economic inputs are as on Table 14-2. Economic benefit was applied to measured, indicated, and inferred class material for the resource tabulation only.

The mineral resources on Table 14-3 are in addition to the mineral reserve and do not include the mineral reserve. Mineral resources that are not mineral reserves do not have demonstrated economic viability. No financial analysis has been applied to the inferred material or mineral resources at Endako.

The qualified person for the development of the mineral reserves and mineral resources was John M. Marek P.E. of IMC. Mr. Marek is independent of Thompson Creek as defined within NI43-101.

The mineral resources are comprised of measured and indicated category material that are just outside of the reserve pit design, and inferred category material that is both inside and outside the reserve pit design. The inferred category material is developed where data spacing is wide or from limited extrapolation beyond existing assay data. Consequently, there is no assurance that the inferred material will be realized.

A more complete discussion of permitting and economic risk relative to the mineral reserve is included within Section 15.0

Table 14-3 indicates that Casey Lake is not included on the table. Casey Lake is an exploration target located approximately 1.5 miles north east of the current Endako concentrator.

Table 14-3

**Endako Mineral Resource in Addition to Mineral Reserves  
As of June 1, 2011**

<b>Mineral Resources, IN ADDITION TO RESERVE</b>					
Category	Cutoff MoS2%	Ktonnes	MoS2%	Grade Mo%	Contained Metal Million Lbs
Measured	0.025	17,212	0.048	0.029	10.9
Indicated	0.025	40,156	0.051	0.031	27.1
Total Measured + Indicated		57,368	0.050	0.030	38.0
Total Inferred	0.025	49,342	0.058	0.035	37.8

## Notes:

Ktonnes are 1000 metric tonnes

Stated Mineral Resources are in addition to reserves and do not include reserves.

Measured+Indicated Resources qualify as Additional Mineralized Material in Accordance with the disclosure standards established under U.S SEC Industry Guide 7.

Numbers may not add due to rounding.

Casey Lake is not include in the mineral resource.

## 15.0 MINERAL RESERVE ESTIMATES

The mineral reserve was developed by the Endako Mine planning staff utilizing the block model described in Section 14.0. The mineral reserve is the total of all proven and probable ore planned for processing within the Endako mine plan.

The Endako mine plan was delivered to IMC for review and verification. This section summarizes that plan and the procedures that were used to develop the plan.

### Floating Cone

The floating cone algorithm was used as a guide for the design of the final pit. IMC prepared floating cones for Endako using agreed slopes and economics applied to the January 2011 block model. Those cones and previous mine plans were considered when the final pit plan was updated by Endako staff.

IMC completed additional floating cones on the June block model as a check on the mine plan developed by Endako. In summary, the Endako final pit design is closely confirmed with a floating cone that utilizes a moly price of \$13.50/lb CDN.

Floating cone input economics for the check cones were as presented on Table 14-2. Economic benefit was applied to measured and indicated mineralization and multiple cones were run at metal prices ranging from \$12.00 to \$15.00 CDN/lb.

The \$13.50 CDN/lb cone results in ore and total material of:  
264,349 ktonnes ore at 0.079% MoS<sub>2</sub> contained in total material of 508,041 ktonnes

The in-pit ores within the Endako Mine plan result in:  
260,980 ktonnes ore at 0.078% MoS<sub>2</sub> contained in total material of 515,131 ktonnes.

A cutoff grade of 0.030% MoS<sub>2</sub> is applied to both tabulations for the above comparison.

### Endako Mine Plan

The mine planning team at Endako developed a new mine plan based on the June 2011 block model. Annual designs were developed for the period of June 2011 through 2015. The final pit was redesigned as were two internal geometries that approximate mine phase designs. The resulting mine schedule is summarized on Table 15-1.

Mine plan drawings for this mine schedule are presented in Section 16.0 regarding mining methods.

**Table 15-1**  
**Endako Mine Plan**  
**Ore is Proven and Probable Category Material**

Year	Mill Cutoff MoS2%	Mined Ore		HG Feed From Stkp		LG Feed From Stkp		Total Mill Feed		To High Grd Stkp				To Low Grade Stkp 0.030% MoS2 Cutoff		Waste KTonnes	Total KTonnes	Saleable Metal Mo Lbsx1000
		KTonnes	MoS2%	KTonnes	MoS2%	KTonnes	MoS2%	KTonnes	MoS2%	KTonnes	MoS2%	KTonnes	Grade	KTonnes	MoS2%			
Jun -																		
1 Dec11	0.048	6,935	0.090	275	0.082			7,210	0.090					1,527	0.041	9,596	18,333	6330
2 2012	0.050	15,002	0.087	1,933	0.079			16,935	0.086	2,598	0.046	2,330	0.065	2,531	0.035	14,846	39,240	15075
3 2013	0.050	15,290	0.082	2,960	0.079			18,250	0.082	2,060	0.046	1,175	0.065	1,190	0.036	18,865	41,540	15480
4 2014	0.038	18,250	0.093					18,250	0.093					1,055	0.032	22,695	42,000	17588
5 2015	0.038	18,250	0.092					18,250	0.092			3,401	0.065	745	0.033	20,104	42,500	17417
6 2016	0.035	18,250	0.088					18,250	0.088			2,977	0.065	566	0.036	20,708	42,501	16695
7 2017	0.035	18,250	0.072					18,250	0.072			2,977	0.065	911	0.032	20,362	42,500	13713
8 2018	0.035	18,250	0.070					18,250	0.070			660	0.065	214	0.032	23,126	42,250	13352
9 2019	0.030	18,250	0.067					18,250	0.067			660	0.065			23,340	42,250	12688
10 2020	0.030	18,250	0.083					18,250	0.083			660	0.065			23,340	42,250	15708
11 2021	0.030	18,250	0.081					18,250	0.081			660	0.065			18,340	37,250	15442
12 2022	0.030	18,250	0.080					18,250	0.080							14,000	32,250	15138
13 2023	0.030	18,250	0.079					18,250	0.079							13,000	31,250	14910
14 2024	0.030	18,250	0.072					18,250	0.072			1,247	0.065			8,753	28,250	13770
15 2025	0.030	9,607	0.075	8,643	0.078			18,250	0.076							3,530	21,780	14473
16 2026				18,250	0.068			18,250	0.068								18,250	12298
17 2027				11,205	0.060	7,045	0.062	18,250	0.061								18,250	10404
18 2028						10,784	0.036	10,784	0.036								10,784	2949
		247,584	0.080	43,266	0.069	17,829	0.046	308,679	0.077	4,658	0.046	16,747	0.065	8,739	0.035	254,605	593,428	243,430

MineSched\_22Aug11.xls

Average Mill Recovery = 77.8%  
 Roaster Recovery = 99.7%

### Saddle Dump or Causeway Addition to Reserves

The Endako Pit has an in-pit waste dump located at the southeast end of the Denak East pit. This material was placed sometime in the past. This area has been called the “Saddle Dump” or the “Causeway”. It will be necessary to re-mine the Saddle Dump in order to establish access between the Denak and Endako Pits. Eventually, the entire Saddle Dump will be removed in order to deepen the open pit in the Denak East area. Prior to this mine plan, the Saddle Dump has been treated as waste.

During 2011, Endako drilled and sampled the Saddle Dump and the results indicate that it averages above the ore cutoff grade. That saddle dump ore is now included within the reserve in the same format as a stockpile.

Ore control drill practices were applied to the Saddle Dump area.

398 holes averaging just over 50 ft in depth for each hole

395 samples collected and assayed by the established ore control methods  
at the Endako ore control lab.

The average grade for the above samples was applied to 16.7 million tonnes at the top of the dump and resulted in an average grade of 0.065 %MoS<sub>2</sub>. The total volume of in-pit stockpiles is about 26.2 million tonnes, 20.7 of which is in the Saddle Dump area.

### Mineral Reserve

The mineral reserve is the total of all measured and indicated ore that is planned for production. Table 15-2 summarizes the mineral reserve inclusive of stockpiles that are planned for mining and processing in metric units as applied at the mine.

Table 15-2a summarizes the mineral resources in addition to reserves in metric units for completeness of presentation for both reserves and resources.

Tables 15-3 and 15-3a present the mineral reserves and mineral resources in English units for convenience for U.S. readers.

Figure 15-1 is the final pit design that was developed by Endako and results in the mineral reserves on Tables 15-2 and 15-3. IMC has checked the contained mineral reserve within the pit design and confirms the mineral reserve within 3.6%.

The qualified person for the development of the mineral reserves and mineral resources was John M. Marek P.E. of IMC Mr. Marek is independent of Thompson Creek as defined within NI43-101.

No financial analysis has been applied to the inferred material or mineral resources at Endako.



The Endako Mine holds all necessary permits for the current operation. There are no compliance issues at the mine with permits or environmental regulations.

The Endako Mine is currently applying for an amendment to its mine permit and an additional water license for withdrawal of water from Francois Lake. Those permits are expected to be issued in due course pursuant to typical governmental processes; however, no assurance can be made regarding the timing of the receipt of such permits. The Endako Mine is required to apply for an amendment to its mine permit in order to update its reclamation and closure plan every. The Endako Mine is applying for the additional water license to ensure that it has access to sufficient water to operate the expanded mill in future periods. No major amendments are required to the air emissions and effluent permits for the expansion as air quality and water quality are expected to remain under applicable limits following the increase in production.

The Endako Mine and plant have been operated intermittently since 1965. The periods where the mine was not operated were caused by prolonged periods of weak Molybdenum prices. Future outlook for the molybdenum market is currently strong. However, all mines are subject to price fluctuations of the commodity markets.

John Marek of IMC holds the opinion that the risks at Endako are no different than any other operating mine in North America, and on that basis there are no particular risk issues that would be unique to Endako.

Table 15-2

**Endako Mineral Reserve  
As of June 1, 2011**

<b>Mineral Reserves</b>						
Material Type	Category	Cutoff MoS2%	Ktonnes	Grade MoS2%	Grade Mo%	Contained Metal Million Lbs
Mill Ore + Planned Stockpiles	Proven	0.030	96,881	0.081	0.049	103.7
	Probable	0.030	164,099	0.076	0.046	164.8
Existing Stockpiles	Proven High Grade		21,861	0.078	0.047	22.5
	Proven Low Grade		9,091	0.057	0.034	6.8
In-Pit Dump Stkp	Probable		16,747	0.065	0.039	14.4
Total Proven			127,833	0.079	0.047	133.0
Total Probable			180,846	0.075	0.045	179.2
Total Proven and Probable			<b>308,679</b>	<b>0.077</b>	0.046	312.2

## Notes:

Existing Stockpile Reported on 1 Jun 2011 as Proven.  
Mill Feed Cutoff Grades vary by year from 0.045 to 0.030% MoS2.  
Numbers may not add due to rounding.

Table 15-2a

**Endako Mineral Resource in Addition to Mineral Reserves  
As of June 1, 2011**

<b>Mineral Resources, IN ADDITION TO RESERVE</b>					
Category	Cutoff MoS2%	Ktonnes	MoS2%	Grade Mo%	Contained Metal Million Lbs
Measured	0.025	17,212	0.048	0.029	10.9
Indicated	0.025	40,156	0.051	0.031	27.1
Total Measured + Indicated		57,368	0.050	0.030	38.0
Total Inferred	0.025	49,342	0.058	0.035	37.8

## Notes:

Ktonnes are 1000 metric tonnes  
Stated Mineral Resources are in addition to reserves and do not include reserves.  
Measured+Indicated Resources qualify as Additional Mineralized Material in Accordance with the disclosure standards established under U.S SEC Industry Guide 7.  
Numbers may not add due to rounding.  
Casey Lake is not include in the mineral resource.

Table 15-3

**Endako Mineral Reserve, English Units  
As of June 1, 2011**

<b>Mineral Reserves</b>						
Material Type	Category	Cutoff MoS2%	Short Ktons	Grade MoS2%	Grade Mo%	Contained Metal Million Lbs
Mill Ore + Planned Stockpiles	Proven	0.030	106,793	0.081	0.049	103.7
	Probable	0.030	180,888	0.076	0.046	164.8
Existing Stockpiles	Proven	High Grade	24,098	0.078	0.047	22.5
	Proven	Low Grade	10,021	0.057	0.034	6.8
			18,460	0.065	0.039	14.4
Total Proven			140,912	0.079	0.047	133.0
Total Probable			199,348	0.075	0.045	179.2
Total Proven and Probable			<b>340,260</b>	<b>0.077</b>	0.046	312.2

## Notes:

Existing Stockpile Reported on 1 Jun 2011 as Proven.  
Mill Feed Cutoff Grades vary by year from 0.045 to 0.030% MoS2.  
Numbers may not add due to rounding.

Table 15-3a

**Endako Mineral Resource in Addition to Mineral Reserves, English Units  
As of June 1, 2011**

<b>Mineral Resources, IN ADDITION TO RESERVE</b>					
Category	Cutoff MoS2%	Short Ktons	Grade MoS2%	Grade Mo%	Contained Metal Million Lbs
Measured	0.025	18,973	0.048	0.029	10.9
Indicated	0.025	44,264	0.051	0.031	27.1
Total Measured + Indicated		63,237	0.050	0.030	38.0
Total Inferred	0.025	54,390	0.058	0.035	37.8

## Notes:

Stated Mineral Resources are in addition to reserves and do not include reserves.  
Measured+Indicated Resources qualify as Additional Mineralized Material in Accordance with the disclosure standards established under U.S SEC Industry Guide 7.  
Numbers may not add due to rounding.  
Casey Lake is not include in the mineral resource.

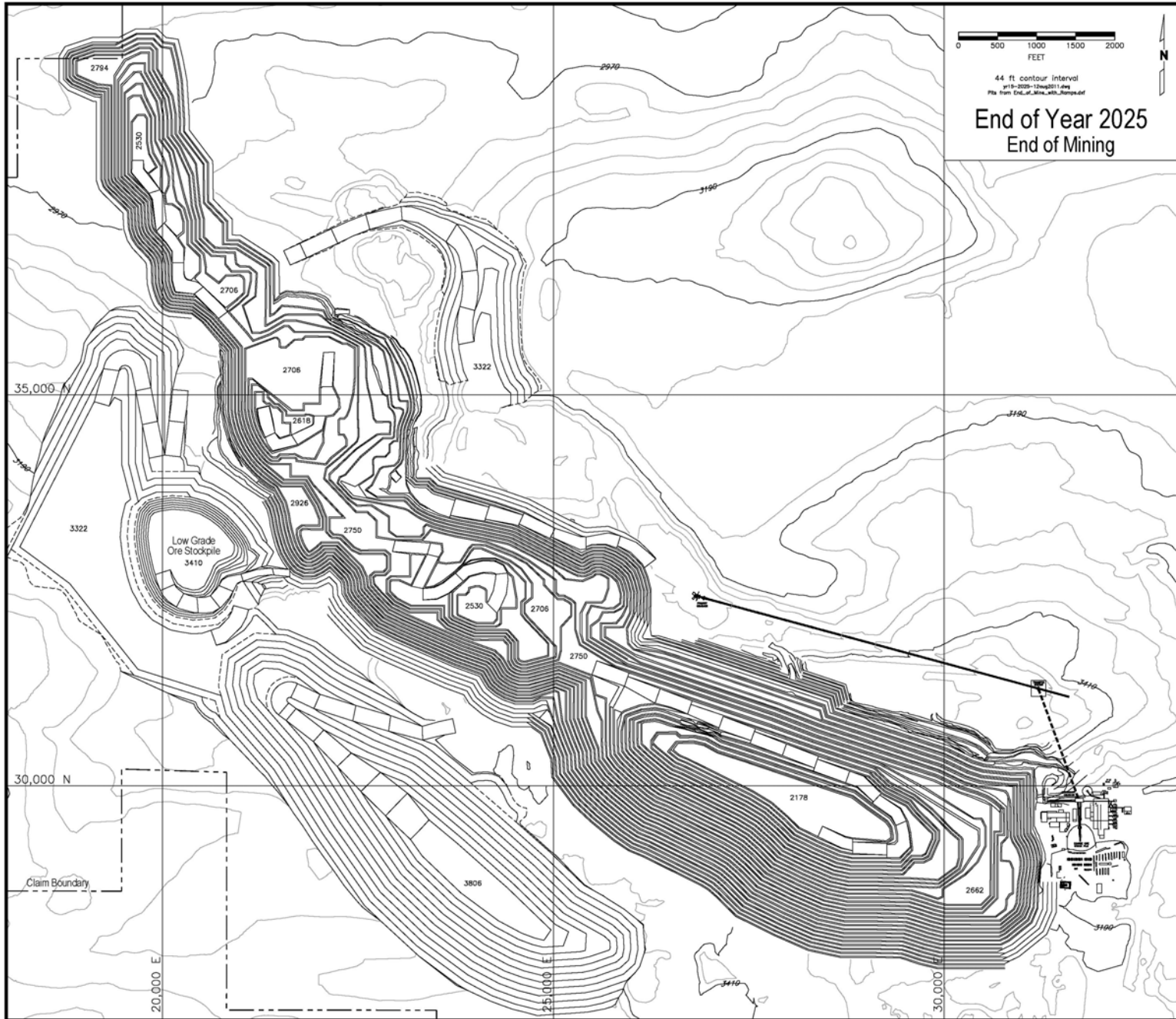


Figure 15-1  
Final Pit Design

## 16.0 MINING METHODS

The Endako Mine utilizes conventional open pit hard rock mining techniques. Ore is hauled to an in-pit crusher and waste is hauled to nearby waste storage stockpiles. A new flotation mill is under construction at Endako which is expected to increase the ore processing capacity to 50,000 tpd. As a consequence, the mine ore and waste production rates are being increased in order to sustain ore production to the mill.

### Mine Plan and Schedule

The mine plan and schedule were developed by Endako Mine planning staff and reviewed by IMC. In summary, IMC holds the opinion that the mine plan will produce the ore as reported. There are opportunities for Endako staff to improve the efficiency of the mine in the future. Some additional waste movement (potentially as much as 5.8 million tonnes) may need to be completed before the end of 2016 to assure comfortable release of future ore.

The contained ore and waste within the Endako final pit geometry was tabulated by IMC as a check on the Endako plan. Total material checked within 0.5%. The ore plus low grade tabulation checked within 3.6%.

The mine schedule is summarized on Table 16-1. The majority of the mill ore is direct feed to the crusher from the pit. However, some ore from the existing high grade stockpile is planned for production from now through 2013. This additional 5,168 ktonnes of ore assures that there will be continuous mill feed at the new rate of 18,250 ktonnes per year (50,000 tpd at 365 days/year). The total material rate will ramp up from 39,240 ktonnes per year in 2012 to 42,500 ktonnes per year in 2015. Endako plans to maintain the total material rate of 42,500 ktonnes per year through 2020 to assure continued ore release. The new mill is scheduled to start in the first quarter of 2012.

The cutoff grade for the initial years tapers from 0.050% MoS<sub>2</sub> in 2012 to 0.030% MoS<sub>2</sub> in 2019. During those years, material between 0.030% and the mill cutoff is stockpiled for eventual processing after year 2027.

The Saddle Dump or Causeway dump in pit was drilled and sampled as described in Section 15.0. That material is mined and stockpiled during the pit life for later treatment with the remaining high grade stockpile after year 2025.

Figures 16-1 through 16-6 illustrate the mine plans for years 2011 through 2015 and the final pit design in year 2025. The waste storage plans that are shown on the drawing were developed by Endako staff and later edited by IMC during August of 2011 to illustrate additional time periods for this report. Alternative waste storage options and locations are under consideration and improvements to the waste storage plans will be continuously addressed by Endako.

**Table 16-1**  
**Endako Mine Plan**  
**Ore is Proven and Probable Category Material**

Year	Mill Cutoff MoS2%	Mined Ore		HG Feed From Stkp		LG Feed From Stkp		Total Mill Feed		To High Grd Stkp				To Low Grade Stkp		Waste KTonnes	Total KTonnes	Saleable Metal Mo Lbsx1000
		KTonnes	MoS2%	KTonnes	MoS2%	KTonnes	MoS2%	KTonnes	MoS2%	From Pit + 0.042 KTonnes	MoS2%	From Cause Way KTonnes	Grade	0.030% MoS2 Cutoff KTonnes	MoS2%			
Jun -																		
1 Dec11	0.048	6,935	0.090	275	0.082			7,210	0.090					1,527	0.041	9,596	18,333	6330
2 2012	0.050	15,002	0.087	1,933	0.079			16,935	0.086	2,598	0.046	2,330	0.065	2,531	0.035	14,846	39,240	15075
3 2013	0.050	15,290	0.082	2,960	0.079			18,250	0.082	2,060	0.046	1,175	0.065	1,190	0.036	18,865	41,540	15480
4 2014	0.038	18,250	0.093					18,250	0.093					1,055	0.032	22,695	42,000	17588
5 2015	0.038	18,250	0.092					18,250	0.092			3,401	0.065	745	0.033	20,104	42,500	17417
6 2016	0.035	18,250	0.088					18,250	0.088			2,977	0.065	566	0.036	20,708	42,501	16695
7 2017	0.035	18,250	0.072					18,250	0.072			2,977	0.065	911	0.032	20,362	42,500	13713
8 2018	0.035	18,250	0.070					18,250	0.070			660	0.065	214	0.032	23,126	42,250	13352
9 2019	0.030	18,250	0.067					18,250	0.067			660	0.065			23,340	42,250	12688
10 2020	0.030	18,250	0.083					18,250	0.083			660	0.065			23,340	42,250	15708
11 2021	0.030	18,250	0.081					18,250	0.081			660	0.065			18,340	37,250	15442
12 2022	0.030	18,250	0.080					18,250	0.080							14,000	32,250	15138
13 2023	0.030	18,250	0.079					18,250	0.079							13,000	31,250	14910
14 2024	0.030	18,250	0.072					18,250	0.072			1,247	0.065			8,753	28,250	13770
15 2025	0.030	9,607	0.075	8,643	0.078			18,250	0.076							3,530	21,780	14473
16 2026				18,250	0.068			18,250	0.068								18,250	12298
17 2027				11,205	0.060	7,045	0.062	18,250	0.061								18,250	10404
18 2028						10,784	0.036	10,784	0.036								10,784	2949
		247,584	0.080	43,266	0.069	17,829	0.046	308,679	0.077	4,658	0.046	16,747	0.065	8,739	0.035	254,605	593,428	243,430

MineSched\_22Aug11.xls

Average Mill Recovery = 77.8%  
 Roaster Recovery = 99.7%

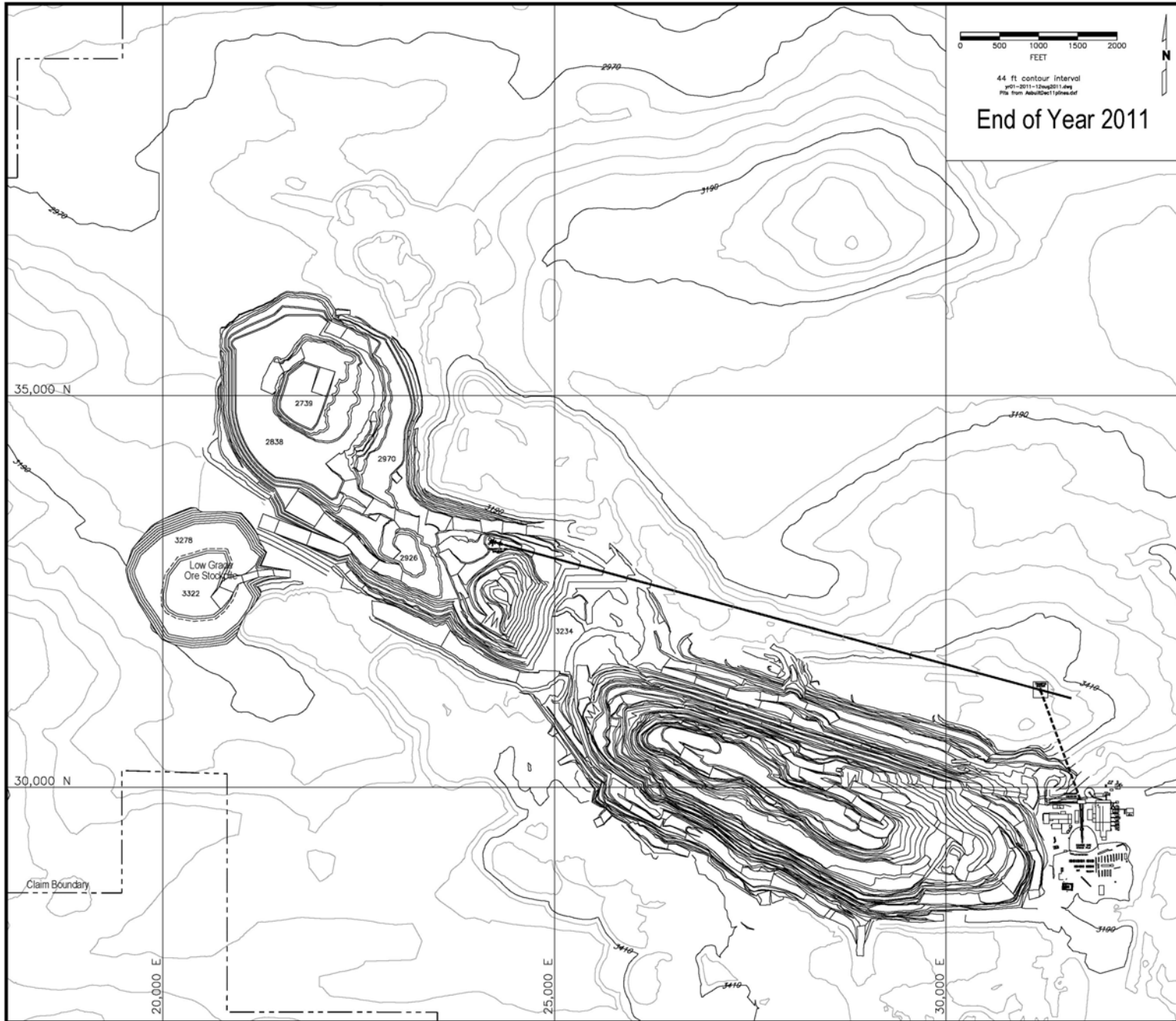


Figure 16-1

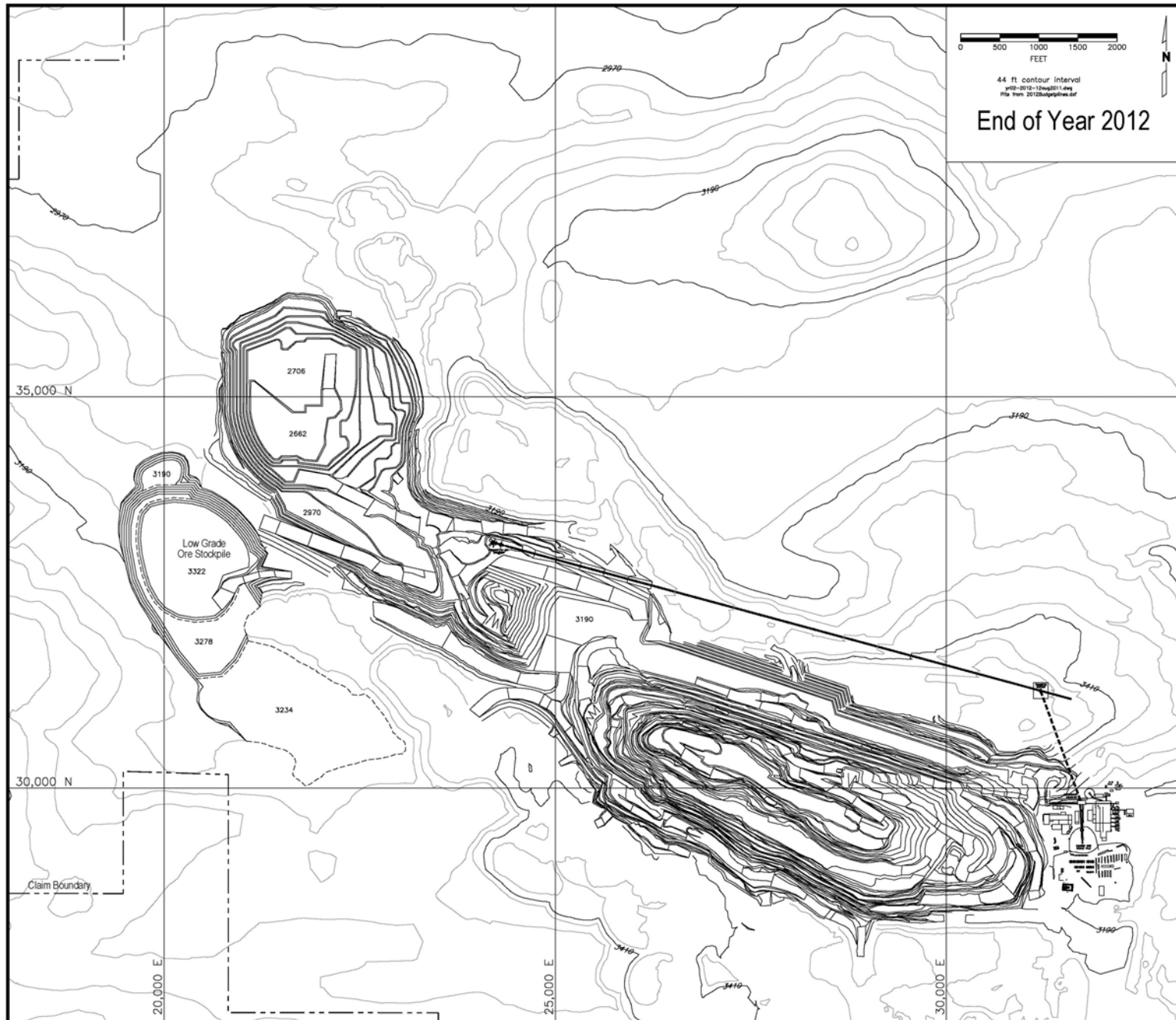


Figure 16-2



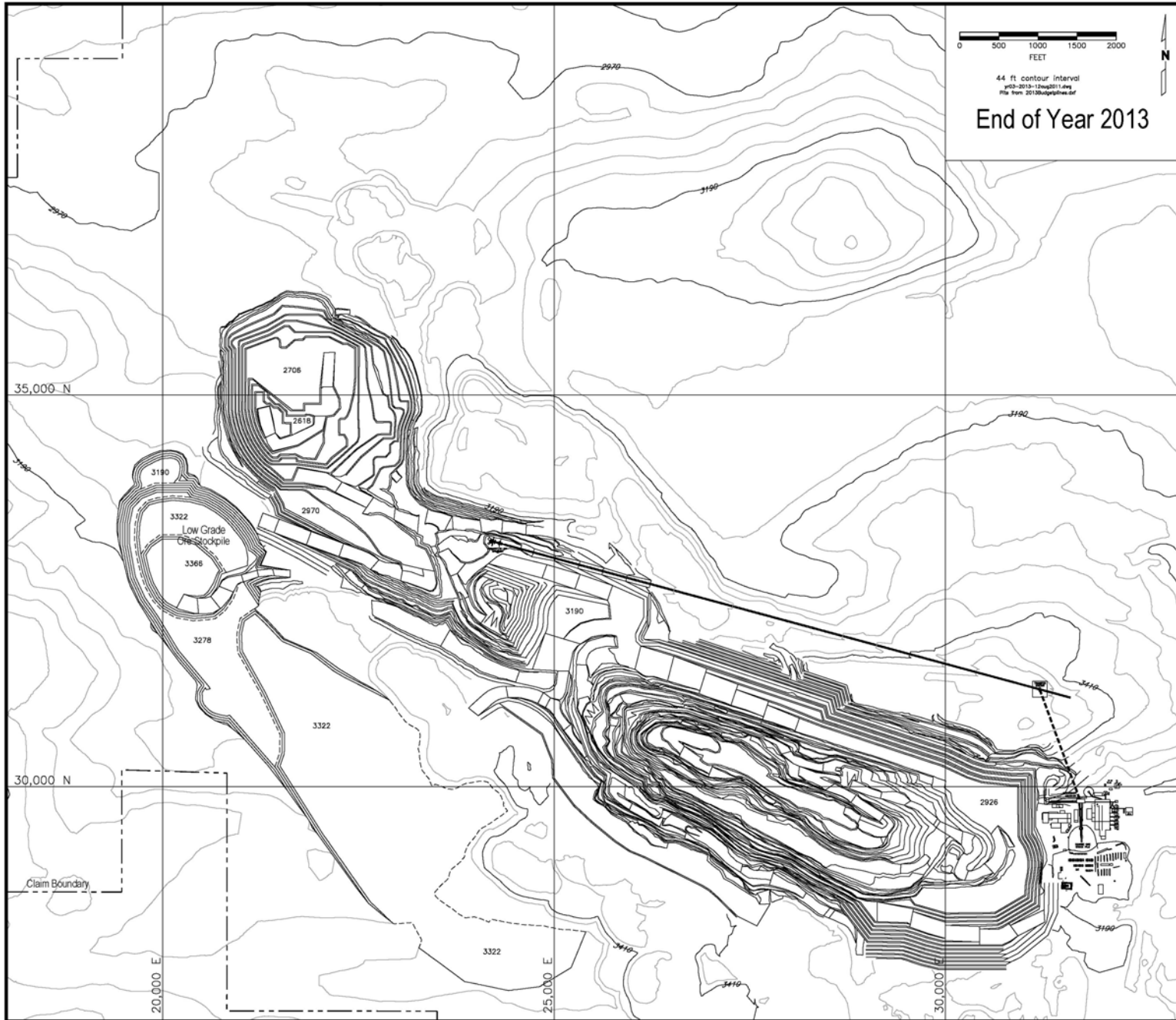


Figure 16-3

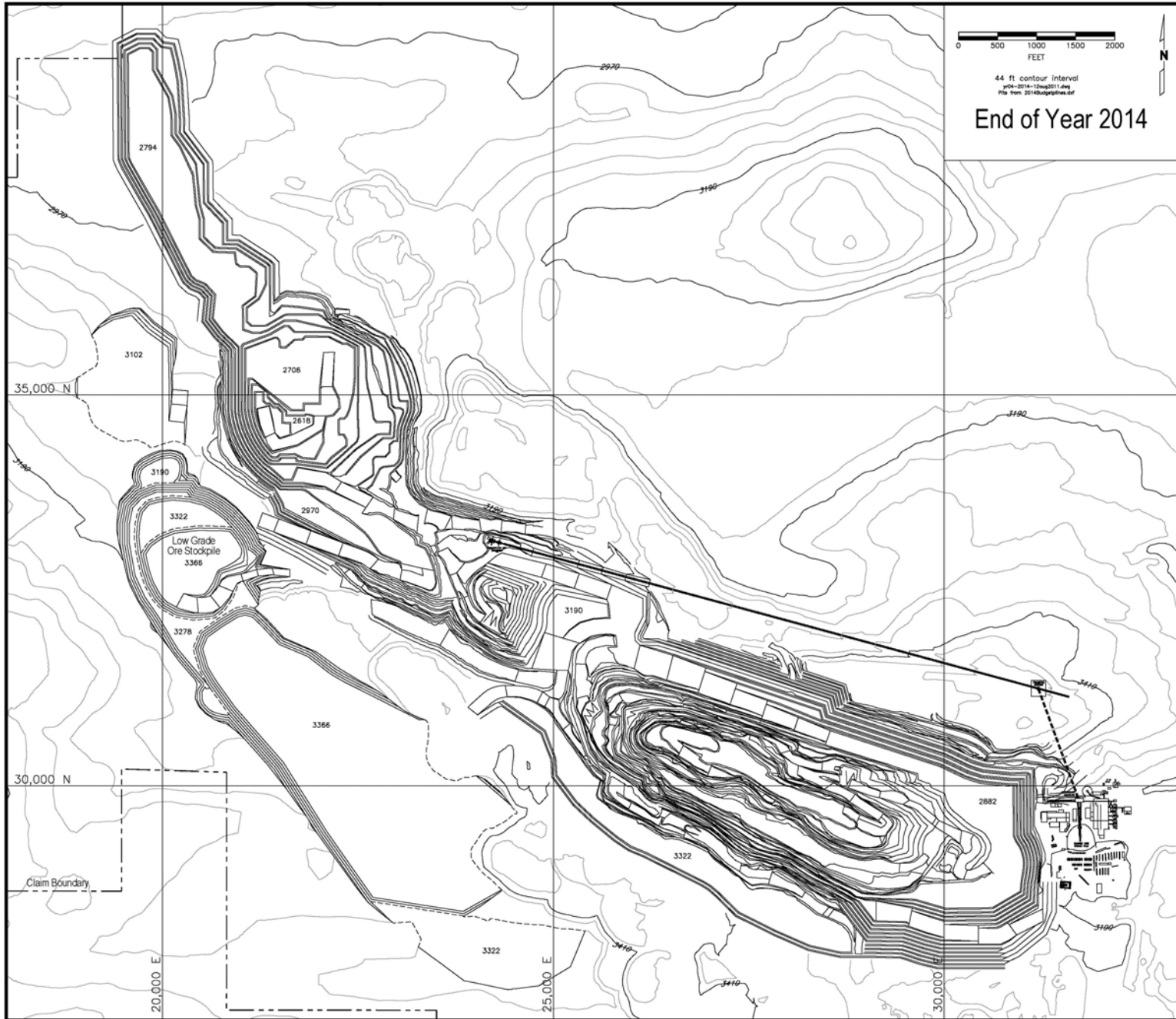


Figure 16-4

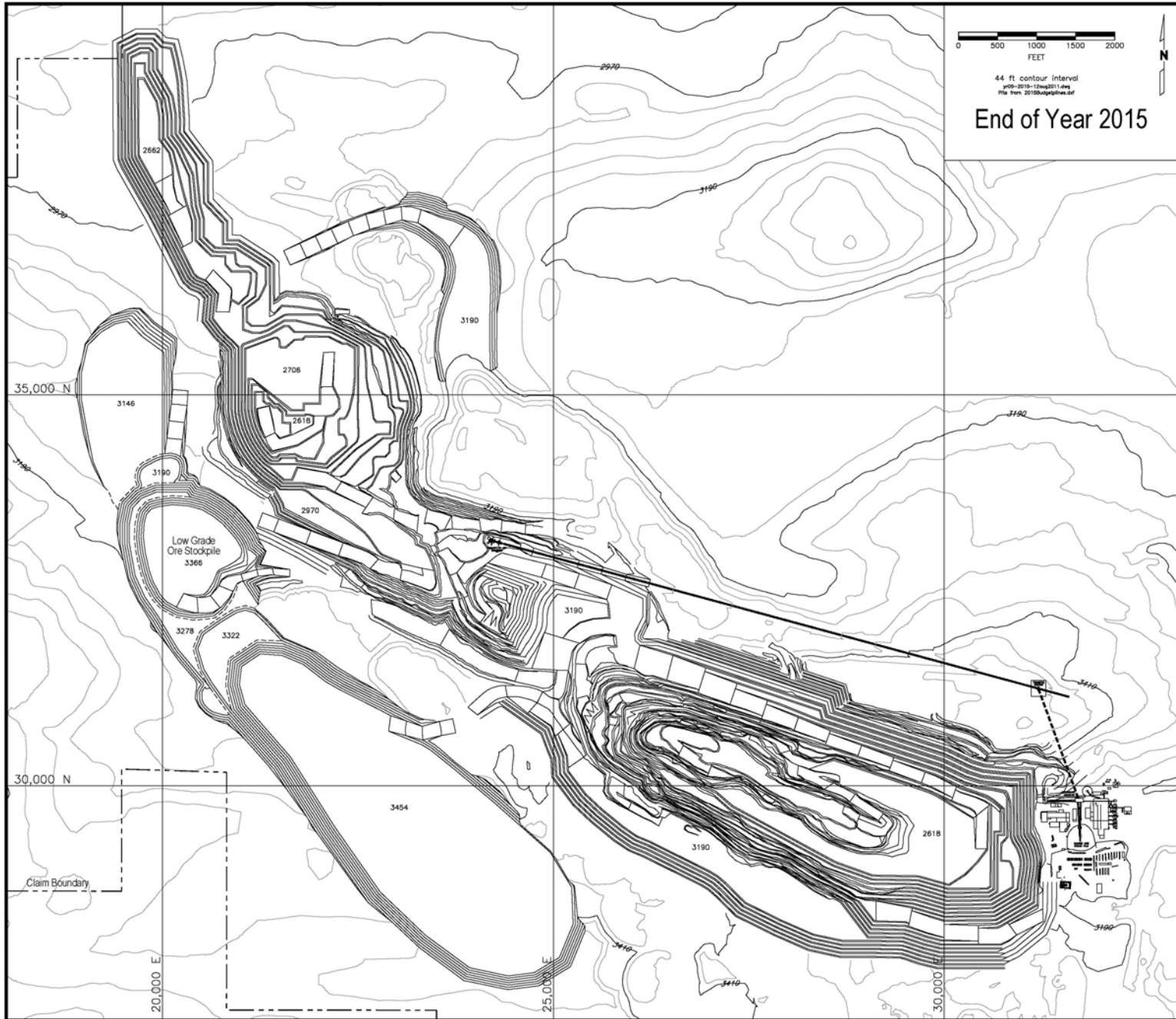


Figure 16-5

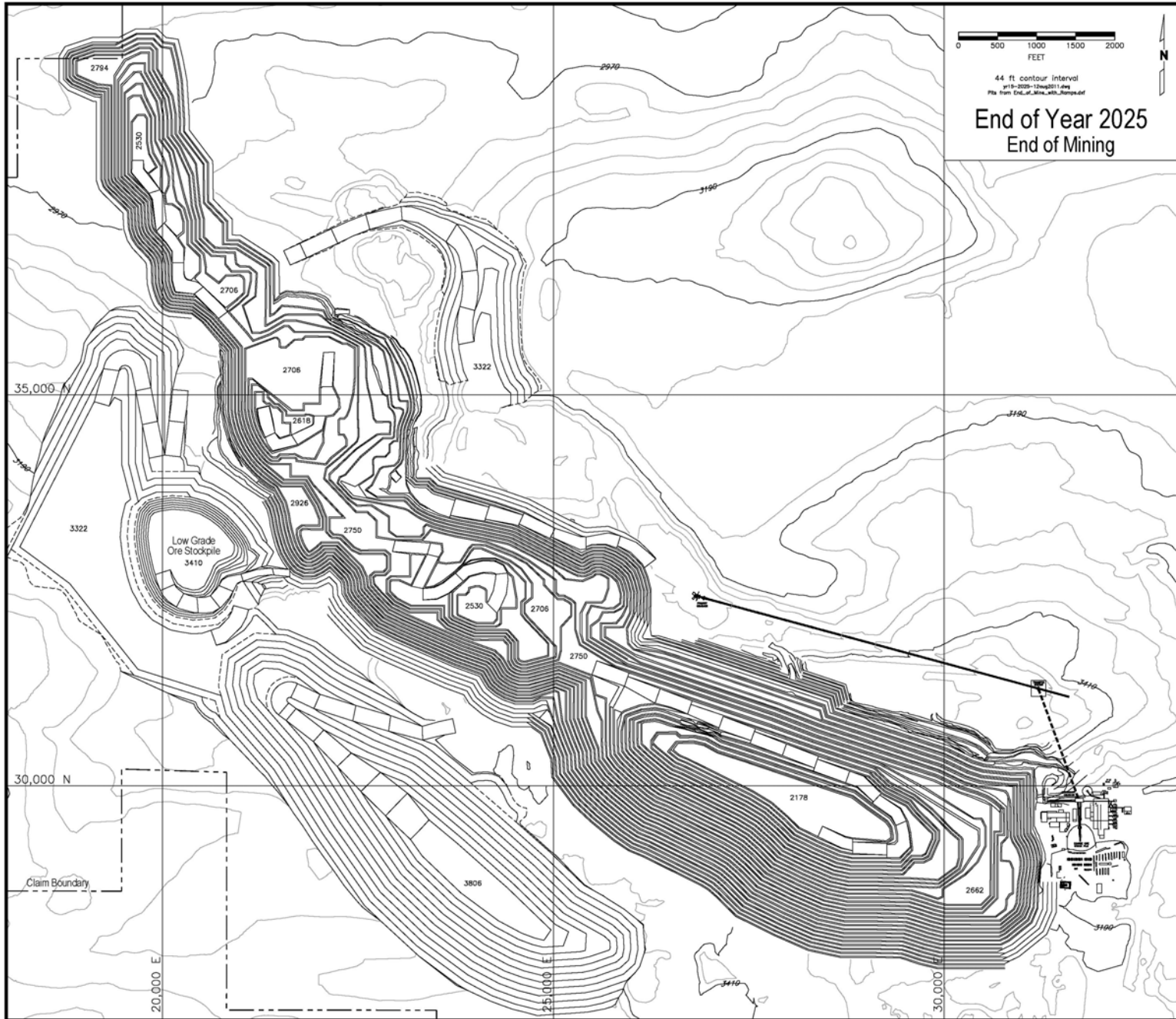


Figure 16-6

## Mine Equipment

The current fleet of major mine equipment at Endako is summarized below:

### Major Mine Equipment At Endako

	Unit Number or Fleet	Model and Capacity	
<b>Blast Hole Drills</b>			
	D-7	GD120	10 5/8 Hole
	D-8	GD100	10 5/8 Hole
	D-9	Recent Addition	
<b>Shovels</b>			
	S-9	P&H 2100	19 cu yd
	S-10	P&H 2800	44 cu yd
	S-11	P&H 2800	44 cu yd
<b>Haul Trucks</b>			
	2 Units	789C	190 ton
	8 Units	MT4400 AC	240 ton

Additional or replacement units are planned in the future to assure continued production. The following table summarizes the planned equipment purchases for major units over the mine life.

### Planned Purchases of Major Mine Equipment

	Year Purchased	Notes:
<b>Blast Hole Drills</b>		
	2012	Replacments of D7 an D8
	2014	
<b>Shovels</b>		
	2013	Add Hydraulic Shovel
	2017	Overhaul of Existing Units
	2018	Overhaul of Existing Units
<b>Front End Loader</b>		
	2013	Add Large Front End Loader
<b>Haul Trucks</b>		
	2012	Add 2, 240 ton Truck
	2013	Add 1, 240 ton Truck
	2014	Add 1, 240 ton Truck
	2016	Add 2, 240 ton Truck

Additional dozers, graders and support equipment are planned for replacement throughout the mine life.

The in-pit crusher move is planned for 2023.

## 17.0 RECOVERY METHODS

Section 13 outlined the current process facilities that are in operation at Endako. A new 50,000 tpd mill is currently under construction and is expected to start production during the first quarter of 2012. This section provides a brief description of the new process plant.

The estimated process recovery for the new plant is expected to be 79% based on the historic response of the current plant and test work results.

The process plant will consist of the following unit operations:

- 1) In-pit crushing with the existing in-pit crusher
- 2) Crushed ore storage and reclaim
- 3) Semi-autogenous (SAG) mill (36 ft) in closed circuit with a pebble crusher
- 4) Ball mill secondary grinding in closed circuit with cyclone classification
- 5) Rougher / scavenger flotation
- 6) 5-Stage column clean flotation with 2 regrinding stages
- 7) Concentrate Thickening
- 8) Concentrate filtering and drying
- 9) Tailing disposal
- 10) Fresh and reclaim water supply
- 11) Reagent preparation and distribution

Roasting will utilize the current roaster facilities at site which typically produce 30,000 to 35,000 lbs of molybdenum per day.

The SAG mill is planned to be a single 10.97 m (36 ft) diameter unit with two variable speed 8,500 hp motors installed. The SAG mill trommel oversize (pebbles) will be conveyed to a vibrating wash screen and then to an MP8000 pebble crusher.

The SAG trommel screen undersize will be launder fed to a splitter that feeds the two ball mill pump boxes. The secondary grinding circuit consists of two, 6.7m diameter by 10.4m long ball mills. Each ball mill will have 11,000 installed horsepower. The ball mills will be operated in closed circuit with cyclopac cyclones. Each cyclopac will have eight 838mm (33 inch) cyclones, six operating and one standby.

Cyclone underflow will return to the ball mills, and overflow will be delivered to rougher flotation with a target grind P80 of 200 microns.

Rougher flotation will consist of two banks of three 160 cubic meter tank cells arranged in parallel and will provide a residence time of 11 minutes. The sizing of the rougher cells, scavengers, and first cleaner-scavengers has been based on Endako historic plant data.

The first regrind circuit consists of two Isamills (670 Hp each) arranged in parallel. The Isamills will operate in open circuit with a bank of cyclones. The first cleaner flotation consists of two parallel 5m diameter by 9.3m high column float cells. The first cleaner tails will be sent to the first cleaner scavenger cells. The first cleaner scavenger will consist of a bank of three 160 cubic meter tank cells.

The second regrind mill will be a Isamill (670 Hp) without cyclones. The regrind mill discharge will be delivered to the second cleaner column. The second cleaner column will be a 2.2m diameter by 9.3m high flotation column. The second cleaner concentrate will be pumped to the third cleaner column.

The third, fourth, and fifth cleaners will each be 2.0 m diameter x 9.3m height columns. Concentrate from each stage will be fed to the subsequent stage with the final concentrate from the fifth cleaner pumped to the final concentrate thickener.

The final cleaner concentrate dewatering will involve thickening in a new 9m diameter conventional thickener.

The existing tailing facility consists of two separate tailings ponds (Ponds 1 and 2). Pond 2 is expected to be closed and a new facility (Pond 3) will be commissioned for the planned expansion. The first stage of the expansion will be to commission Pond 3 at the current production rate using the tailing discharge lines of Pond 1. The second stage of the tailing ponds expansion will provide the pumping and piping infrastructure required for the planned production increase.

There are currently two roasters at the Endako Mine. One is decommissioned and would require capital expense to re-commission.

The operating roaster is a conventional gas-fired, rotary, multiple hearth type, converting  $\text{MoS}_2$  concentrate to  $\text{MoO}_3$ . Roaster off-gases are passed through an electrostatic precipitator to capture entrained concentrate dust. Dust escaping the precipitator is measured to determine roaster losses and yield. The yield for conversion is near 99.7% and is typical for this type of operation. The gas is further treated in a conventional packed tower scrubbing system to reduce sulfur dioxide and residual particulates to permitted levels for discharge to the atmosphere.

The unit in operation typically produces in the range of 30,000 to 35,000 pounds of molybdenum per day with an average availability in the range of 90%. The roasted molybdenum tri-oxide product is packaged in truckload lots for delivery to various

The additional requirements for power and water have been addressed in the design of the new plant. The power line was upgraded during 2011. Endako has applied for the additional water rights from Francois Lake that will be required to operate the new mill. That permit is expected to be granted during September of 2011.



## **18.0 PROJECT INFRASTRUCTURE**

The infrastructure at the mine site includes the following items:

- 1) A 28,000 to 31,000 tpd concentrator and construction in progress on a new 50,000 tpd concentrator;
- 2) An operating roaster with up to 45,000 lbs per day of capacity;
- 3) A non-operating roaster;
- 4) Tailing and reclaim water ponds;
- 5) A crushing plant; and
- 6) Buildings for administration, warehouse, change house, laboratory, mine shops, and first aid station.

Waste storage facilities and low grade stockpiles are illustrated in Section 16.0 regarding the mine plan and operations. The waste storage and low grade stockpiles are integral parts of the mine plan and mine operation.

## 19.0 MARKET STUDIES AND CONTRACTS

The final product from roasting is molybdenum tri-oxide ( $\text{MoO}_3$ ), which is marketed to steel manufacturers for use in high strength and temperature resistant steel alloys. Roughly 75% of molybdenum production is for steel alloy.

Production from the Endako Mine is sold primarily under annual supply contracts with customers who are steel, chemical and petroleum catalyst manufacturers. These annual contracts typically have quantities with fixed purchase volumes, with the sales price established by negotiated terms and conditions, referencing published molybdenum prices in various metal trade publications at or near the date of the molybdenum sale. Some of the molybdenum is sold on a spot sales basis, based upon negotiated prices. A small amount of sales is also completed on the basis of long-term, multi-year sales contracts. The terms and conditions of Endako's sales contracts are within industry norms.

The table below shows the high, low and average prices quoted in *Platts Metals Week* for molybdenum in U.S. dollars per pound for the last 10 years.

Year	Molybdenum (Dealer oxide)		
	<i>Platts Metals Week, \$/lb</i>		
	High	Low	Average
2001	\$2.58	\$2.19	\$2.35
2002	8.30	2.40	3.76
2003	7.60	3.28	5.29
2004	33.25	7.20	16.20
2005	40.00	24.00	31.98
2006	28.40	20.50	24.75
2007	34.25	24.30	30.00
2008	34.00	8.25	28.94
2009	18.30	7.70	11.08
2010	18.60	11.75	15.72

The prices quoted in *Platts Metals Week* for the week of August 29, 2011 were \$14.60 (high), \$14.40 (low) and \$14.50 (average) per pound of molybdenum for drummed oxide.

## **20.0 ENVIRONMENTAL STUDIES, PERMITTING AND SOCIAL OR COMMUNITY IMPACT**

The Endako Mine holds all necessary permits for the current operation. There are no compliance issues at the mine with permits or environmental regulations

The Endako Mine is currently applying for an amendment to its mine permit and an additional water license for withdrawal of water from Francois Lake. Those permits are expected to be issued in due course pursuant to typical governmental processes; however, no assurance can be made regarding the timing of the receipt of such permits. The Endako Mine is required to apply for an amendment to its mine permit in order to update its reclamation and closure plan. The Endako Mine is applying for the additional water license to ensure that it has access to sufficient water to operate the expanded mill in future periods. The Endako Mine currently has all permits required to operate the expanded mill. No major amendments are required to the air emissions and effluent permits for the expansion as air quality and water quality are expected to remain under applicable limits following the increase in production.

An updated closure plan was submitted to the MEMPR in October 2010 as an amendment to the Mines Act permit for the mine plan, reclamation plan, and expansion of Pond 1 and waste rock dumps associated with the expansion project. The closure costs were calculated at \$15.3 million. The Endako Joint Venture currently has a closure bond with MEMPR in the amount of \$6.5 million. If the new closure costs are accepted by MEMPR, Endako will be required to add \$8.8 million to the closure bond. The closure plan is currently under review by government regulators, stake holders, and First Nations.

The company has extensive protocols and plans in place for environmental monitoring and water management.

## 21.0 CAPITAL AND OPERATING COSTS

Total operating costs over the life of the mine are estimated at \$2,173 million \$CDN. Total mine life capital costs are estimated to be \$263 million \$CDN inclusive of completion costs for the new mill. The tables below summarize the mine life expenditures into major cost categories.

The summarized costs are the total for the period starting June 2011 through the end of current mineral reserve mine life in 2028. The exchange rate changes by year within the cost and cash flow calculation. A US to CDN exchange of 1.0 is applied to the years 2011 – 2013. Years 2015 through 2028 utilize a US to CDN exchange rate of 1.10. The year 2014 is assumed to be a transition with a factor of 1.05.

Table 21-1 summarizes the mine life operating costs into major cost categories. The lower part of the table summarizes those costs by common units of production.

Table 21-1

Operating Costs Summary	Total -US\$ Millions	Total -CDN\$ Millions
Mining	\$621	\$670
Milling	\$830	\$898
Admin	\$286	\$310
Roasting	\$111	\$120
Freight, Commissions	\$152	\$164
<u>Exploration</u>	<u>\$11</u>	<u>\$12</u>
Total Mine Life Opex	\$2,012	\$2,173

Operating Costs Summary per Unit of Production	US\$	CDN\$
Mining per tonne total material	\$1.21	\$1.30
Milling per tonne ore milled	\$2.69	\$2.91
Admin per tonne ore milled	\$0.93	\$1.00
Roasting per saleable lb	\$0.46	\$0.49
Freight, Commissions saleable lb	\$0.63	\$0.68
<u>Exploration per tonne ore milled</u>	<u>\$0.04</u>	<u>\$0.04</u>
Average Mine Life Opex/saleable lb	\$8.28	\$8.94

Table 21-2 summarizes the mine life capital expenditures inclusive of the remaining capital during 2011 to complete the construction and commissioning of the new mill.

Table 21-2

Capital Costs Summary	Total –US\$ Millions	Total – CDN\$ Millions
Mining	\$80	\$83
Mill Expansion	\$89	\$92
Mill	\$14	\$15
Capital from Current Budget	\$19	\$20
Reclamation Bond Payments	\$10	\$10
<u>Sustaining Capital</u>	<u>\$43</u>	<u>\$44</u>
Total Mine Life Capex	\$255	\$263

The mine average capital cost amounts to \$1.05 US/lb of saleable molybdenum inclusive of the remaining expenditures for the new mill completion. After completion of the new mill, the average sustaining capital averages \$0.67 US/lb of saleable molybdenum.

Mine sustaining capital includes both additional and replacement haul trucks, blast hole drills, and loading units. Mine auxiliary equipment is also addressed in sustaining capital. Mill sustaining capital includes a precipitator, roaster components, switchgear, a concentrate filter and other minor items. In addition to specific line items, there is an allowance of \$3.00 CDN per year of unallocated sustaining capital.

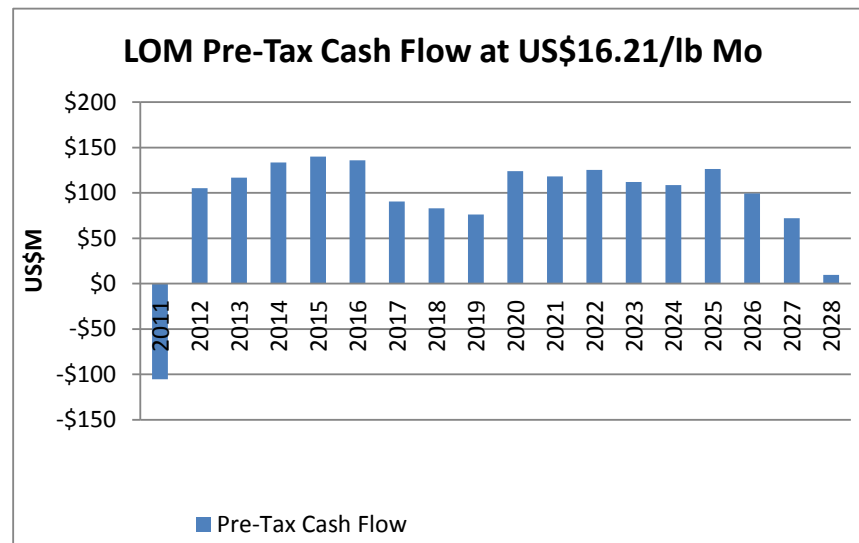
## 22.0 ECONOMIC ANALYSIS

Figure 22-1 shows cash flow forecasts on an annual basis using proven and probable mineral reserves only. These cash flows represent forward-looking information which are subject to change due to known and unknown risks and uncertainties, such as changes in Mo realized price, grade, costs of production and capital costs.

Cash flows in Figure 22-1 are presented on a pre-tax, stand-alone, 100% equity financed basis in US\$. 2011 is a partial year from June through December. Capital and operating costs input to the cash flow analysis were summarized in Section 21. The following additional inputs were applied.

<b>Life of Mine Average</b>	<b>Average</b>
Mo Realized Price, Variable over time, US\$/CdN\$, Variable over time	\$16.21 US/lb 0.93 US/CDN
Grade % From Mine Plan	0.077% MoS <sub>2</sub>

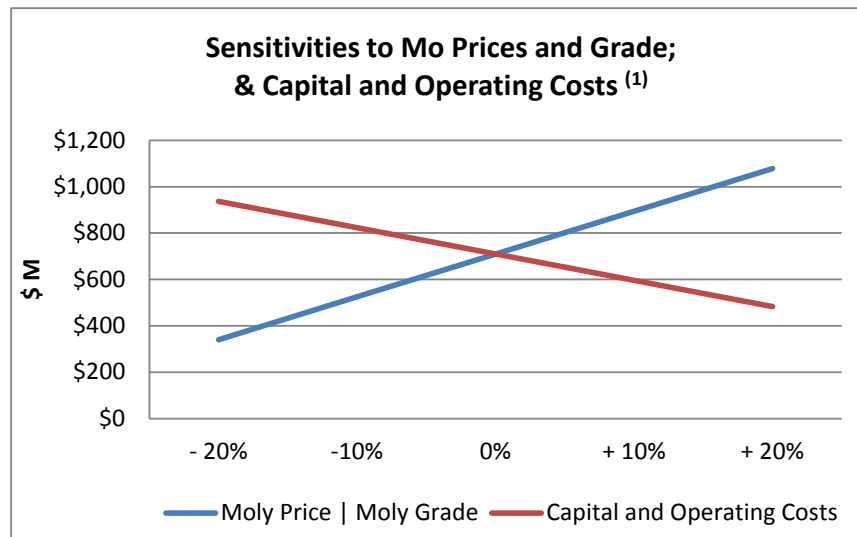
Figure 22-1



The negative cash flow in 2011 reflects the remaining capital cost for completion of the new mill.

Cash flow sensitivities are shown in Figure 22-2 for changes in: 1) moly price or grade and 2) capital and operating costs. The changes are presented in US\$ on a net present value basis using a discount rate of 10%. As expected, an increase in moly price or grade would have a positive effect on net present value. Reductions in cost would also have a corresponding positive effect on net present value.

Figure 22-2



Based on the input cost and price assumptions, the base case internal rate of return (IRR or ROI) is 108%. The non-discounted payback period from June 2011 forward is 20 months.

### **23.0 ADJACENT PROPERTIES**

Endako has drilled an additional mineralized zone that is located east and slightly north of the Endako deposit. The Casey Lake deposit is 7,000 ft east and 4,500 ft north of the current mill site. Diamond drilling during 2006 and 2007 indicated the presence of ore grade mineralization in the area. The Casey Lake deposit is contained within the Endako land block. Endako has not developed an estimate of resources at Casey Lake to date.

Previous Endako Technical Reports (2007) have stated that there has been exploration in the district by other companies. That exploration was reported to be on claims adjacent to and in the vicinity of the Endako claim block.



## **24.0 OTHER RELEVANT DATA AND INFORMATION**

All relevant items to this interim report are addressed in the previous and following chapters.

## 25.0 INTERPRETATION AND CONCLUSIONS

The results of the block modeling and mine planning have been summarized in Sections 14 through 16 with the statements of mineral reserves and the mine plan summary tables.

After review of the mine plan data provided by Endako, IMC has formed the opinion that there is a reasonable probability that as much as 5.8 million tonnes of additional waste may have to be moved between now and the end of 2016. Additional detailed mine planning will need to be completed beyond 2015 to prove if acceleration of waste beyond that currently planned by Endako will be required.

Additional diamond drilling has been completed during the first half of 2011 that was not available for input to the model and mine plan. Some of that drilling was intended to confirm the deposit boundaries within the Endako zone of the pit as well as expansions to the deposit in the Northwest Extension. The results of the Endako drilling will have an impact on the waste mining requirements noted in the previous paragraph.

The Endako Mine holds all necessary permits for the current operation. There are no compliance issues at the mine with permits or environmental regulations.

The Endako Mine is currently applying for an amendment to its mine permit and an additional water license for withdrawal of water from Francois Lake. Those permits are expected to be issued in due course pursuant to typical governmental processes; however, no assurance can be made regarding the timing of the receipt of such permits. The Endako Mine is required to apply for an amendment to its mine permit in order to update its reclamation and closure plan. The Endako Mine is applying for the additional water license to ensure that it has access to sufficient water to operate the expanded mill in future periods. No major amendments are required to the air emissions and effluent permits for the expansion as air quality and water quality are expected to remain under applicable limits following the increase in production.

The Endako Mine and plant have been operated intermittently since 1965. The periods where the mine was not operated were caused by prolonged periods of weak Molybdenum prices. Future outlook for the molybdenum market is currently strong. However, all mines are subject to price fluctuations of the commodity markets.

John Marek of IMC holds the opinion that the risks at Endako are no different than any other operating mine in North America, and on that basis there are no particular risk issues that would be unique to Endako.

## **26.0 RECOMMENDATIONS**

IMC recommends continuation of the mine planning work that has been recently completed at Endako. That planning and scheduling should continue beyond 2015 to establish a better estimate of the long term waste rates for the Endako mine.

A phase design and scheduling type of approach to Endako mine planning could simplify the development of future mine plans.

Deposit definition and exploration drilling that is in progress during 2011 should be included into an updated block model. Positive changes to the block model would have an impact on the waste rate required to assure continued ore release. Continued definition of the orebody will result in tighter budget estimates looking forward. Continued exploration in the Endako area is recommended because any additional mineralization that can be incorporated into mineral reserves will add positive value to the project.

## 27.0 REFERENCES

The primary information used in the development of this interim report are the drill hole data, geology, topography, and mine planning information provided by the Endako staff.

The following reports have been referenced in the preparation of this document.

- 1) Technical Report on the Endako Mine Expansion, Central British Columbia, December 14, 2007, K. W. Collinson, G.Z. Mosher, A. Ebrahimi.
- 2) Technical Report – Endako Mine Reserve Estimate 2009, January 15, 2010, G.Z. Mosher, M. Vicentijevic, Wardrop, a Tetra Tech Company.
- 3) Geotechnical Pit Wall Stability Assessment of the Denak Pit, November 3, 2009, Golder Associates
- 4) Technical Report, Endako Molybdenum Mine, February 2011, Independent Mining Consultants, Inc.

## 28.0 DATE AND SIGNATURE PAGE

This technical report “Technical Report, Endako Molybdenum Mine” dated September 12 was completed by the following Qualified Person(s).

A handwritten signature in black ink, appearing to read "John M. Marek". The signature is written in a cursive style with a large initial 'J' and 'M'.

John M. Marek P.E.

Date:

## **CERTIFICATE OF QUALIFIED PERSON**

I, John M. Marek P.E. do hereby certify that:

a) I am currently employed as the President and a Senior Mining Engineer by:

Independent Mining Consultants, Inc.  
3560 E. Gas Road  
Tucson, Arizona, USA 85714

b) This certificate is part of the report titled “Technical Report, Endako Molybdenum Mine”, dated September 12, 2011.

c) I graduated with the following degrees from the Colorado School of Mines  
Bachelors of Science, Mineral Engineering – Physics 1974  
Masters of Science, Mining Engineering 1976

I am a Registered Professional Mining Engineer in the State of Arizona USA  
Registration # 12772

I am a Registered Professional Engineer in the State of Colorado USA  
Registration # 16191

I am a Registered Member of the American Institute of Mining and Metallurgical Engineers, Society of Mining Engineers

I have worked as a mining engineer, geoscientist, and reserve estimation specialist for more than 35 years. I have managed drill programs, overseen sampling programs, and interpreted geologic occurrences in both precious metals and base metals for numerous projects over that time frame. My advanced training at the university included geostatistics and I have built upon that initial training as a resource modeler and reserve estimation specialist in base and precious metals for my entire career. I have acted as the Qualified Person on these topics for numerous Technical Reports.

My work experience includes mine planning, equipment selection, mine cost estimation and mine feasibility studies for base and precious metals projects world wide for over 35 years.

d) I visited the Endako mine property most recently during March 16-17, 2011. A previous visit was completed during March 9-10, 2010.

e) I am responsible for all sections of this Technical Report. Contributions from Endako and Thompson Creek staff have been reviewed by myself for reasonability. As a result of those reviews I am willing to take responsibility as the author and qualified person for this report.

f) I am independent of the issuer applying the tests in Section 1.5 of National Instrument 43-101.

g) Independent Mining Consultants, Inc., and this author have worked on the Endako mine previously. An earlier Technical Report was prepared during February 2011.

h) I have read National Instrument 43-101 and Form 43-101F1, and to my knowledge, the Technical Report has been prepared in compliance with that instrument and form.

i) 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.

Dated: September 12, 2011.



Expires: 30 Sept 2012

John M. Marek P.E.