



TECHNICAL REPORT

on the

# **MINTO PROJECT**

WHITEHORSE MINING DIVISION  
YUKON TERRITORY

FOR

**SHERWOOD MINING CORPORATION**

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# ***OREQUEST***



## **SUMMARY**

The Minto Project is an advanced stage copper mining project currently owned by Minto Explorations Ltd. and is located in the Whitehorse Mining Division, Yukon Territory about 240km northwest of the city of Whitehorse. Sherwood Mining Corporation has successfully completed a take over of Minto Explorations Ltd. and various other rights resulting in Sherwood having a 100% interest in the Minto project through its subsidiary, Minto Explorations Ltd.

Access is via the Klondike highway to Minto Crossing where boat, barge or ice- bridge gives access across the Yukon River to the head of an all-weather gravel road constructed to the site. The project was formerly a joint venture between Minto Explorations Ltd. and ASARCO LLC. The joint venture permitted ASARCO to vest in a 70% direct interest in the project by spending \$25 million US to put the deposit into production. To this end, ASARCO spent approximately \$7.5 million before divesting itself of its' interest in the project and the joint venture to Sherwood Mining Corporation.

The property consists of the DEF and Minto quartz leases that are in good standing until 10/07/2007 and 05/13/2018, respectively and the DEF and Minto quartz claims and fractions that are in good standing until 03/01/2006. To maintain the claims and fractions beyond their expiration date requires annual assessment work estimated at \$10,195 or payment in lieu of assessment work.

The Minto deposit was discovered concurrently by ASARCO and Falconbridge on adjoining properties in the early 1970s. In 1993 the various interests in the deposit were consolidated and Minto Explorations Ltd was formed to develop the deposit. Currently, Minto owns 100% of the project with a NSR payable the Selkirk First Nations (0.50%). The original agreement with Falconbridge for its part of the property gave Falconbridge the right to buy back its original claims (the DEF claims that make up approximately half the property) for \$500,000 on January 1, 2005 in the event production is not attained. Falconbridge has subsequently sold that right to Sherwood Mining Corporation.

Most of the definition drilling on the deposit was done in the 1970s, prior to the inception of NI 43-101. Although it is not known what quality control and quality assurance (QC/QA) procedures were in place at the time, the drilling is well documented and the results are considered reliable. The sheds the core was stored in have collapsed or have been burned by wildfires. Little of the core remains intact. Most of it cannot be identified and/or the remaining split half of the intersections in the deposit are missing or incomplete, probably due to metallurgical testing or re-assaying. A limited quality assurance re-sampling program of recoverable core conducted by ASARCO in 2001 returned eight acceptable correlations between new and old results and three unacceptable ones, but none of the quality assurance samples that were re-analysed came from within the actual deposit.

The resource estimate for the Minto deposit made in 1994 was used by Minto for planning and financial analysis, it was made prior to NI 43-101 and identified in 9,700,000 tons (8,818,000 tonnes) at 1.73% Cu, 0.014 oz/t Au (0.44 g/T Au) and 0.22 oz/t Ag (6.8 g/T Ag) above a 0.5% Cu cutoff grade in proven, probable and possible categories. These estimates were done before NI 43-101 was enacted and do not follow the required disclosure for reserves and resources outlined in NI43-101. Additionally, these estimates were not created using the standards outlined in NI 43-101; however, the resource estimates have been obtained from reliable sources and are relevant. No effort



has been made to refute or confirm these estimates and they can only be described as historical estimates. The resources have been made to comply with NI 43-101 by updating the database and then rerunning the block model. Of the total 1994 resources 90.5% fell in the proven and probable categories using Kriging variances for categorization.

Minto carried out a feasibility study in 1995 that determined the deposit could be mined profitably using open pit mining and conventional sulphide flotation beneficiation process. The feasibility study was performed prior to the inception of NI 43-101 and was based on the 1994 block model, a portion of which was possible reserves that are not permitted for use in financial analysis in current NI 43-101 guidelines. At the time, Minto Explorations and ASARCO believed the feasibility study to be reliable and based a production decision on the result. A review of the project finances in 2000 indicated the project remained viable. The study predicted capital costs of CDN\$24.4 million, which included a 10% contingency. Minto explorations spent CDN\$7.5 million on capital expenditures between 1995 and 2000, not included in the Hatch estimates. With copper at US\$0.85/lb, gold at US\$275/oz and silver at US\$5/oz the project generated a 37% internal rate of return and a 3.8 year payback period after commencement of production. This is based on supplying a mill grading 1.94% Cu, 0.018 oz/t Au and 0.274 oz/t Ag at a rate of 1,723 tons/day for 350 days/year. The net present (2000) value of the deposit at a 10% discount rate was determined to be CDN\$33 million. This study is now out of date from both a cost and revenue point of view. Copper is now US\$1.30+ per pound, gold is US\$430+ per ounce and silver is US\$6.70+ per ounce and the Canadian dollar is over 80 cents US compared with 75 cents used in the Hatch study. In addition, fuel prices have risen significantly in the past year. This historic feasibility study must be considered preliminary in nature, it includes inferred mineral resources that are considered too geologically speculative under NI 43-101 to have the economic considerations applied to them that would enable them to be categorized as mineral reserves, and there is no certainty that the preliminary assessment will be realized. With the exception of fuel prices and exchange rate, the overall changes in the economic parameters have been positive.

Sherwood Mining commissioned Giroux Consultants Ltd. to update the previous resource estimate with the additional holes drilled since 1994 and to bring the estimate into compliance with CIM terminology as required in NI43-101. The results of this estimate are discussed in detail in this report. The result of the estimate at a 0.5% Copper cutoff was 8,340,000 tonnes grading 1.83% copper, 0.016 g/tonne gold and 0.232 g/tonne silver in the measured and indicated categories with a further 700,000 tonnes grading 1.41% copper in the inferred category.

The resource estimated in 2005 was based on only the mine database consisting of 240 drill holes. The use of two databases (Mine and Exploration) was decided by Minto Explorations presumably to maintain smaller files when computing speed was lower than we have today. The result is that the block model is not truncated on all sides by drill holes even though holes exist in the other data base. Some of these peripheral holes contain intervals of copper mineralization. Although these intervals are narrower than the main zone and in some cases deeper than the main zone, these areas may be available for underground extraction if the grade is high enough, pit optimization and feasibility studies will be required to determine if and how these zones might be extracted once they are part of the estimated resource. The current resource does not include areas of known mineralization outside the mine area.



Another decision made by Minto in the 1990's affecting the current resource estimate was the exclusion of mineralization above the 2580 foot elevation. This material was excluded because it was thought to be mainly oxide and as a way of being conservative it was omitted. Metallurgical tests have shown that sulphidation of the oxide material results in lower recoveries than for sulphide mineralization however feasibility studies will be needed to determine how much of this material may be economically extracted and it should be included in the resource in order to be considered in the feasibility study.

The result is that the Minto resource as presently estimated has been limited by past assumptions. There is the possibility to moderately increase the size of the resource by including oxide material and enlarging the database to include peripheral exploration holes. Additional drilling will be needed in these areas to bring the peripheral mineralization into categories other than inferred. Updated pit optimization is recommended for the Minto deposit and this process will determine the in-pit portion of the resource.

In developing the project between 1995 and 2004, Minto carried out an environmental evaluation. Minto did geotechnical site investigations for the mill and camp facilities, overburden and waste rock dumps and the tailings disposal area. Mill engineering and design work were completed and a 28 km all-weather road from the west side of the Yukon River at Minto Crossing to the site was constructed, including a bridge across Big Creek made of reinforced concrete abutments and deck. Vehicle access to the site from the YTG Hwy 2 at Minto Crossing requires crossing the Yukon River by boat or barge in the summer or ice bridge in the winter. The site of the proposed tailings dam has been grouted. A 54 man trailer camp, serviced by a sewage disposal field and a domestic water well, was placed on the site and the concrete foundations for the concentrator was poured. A second hand ball mill and semi-autogenous grinding mill were purchased, delivered and assembled on site awaiting final installation. The onsite buildings and structures and the road remain in good serviceable condition to this day. Minto Explorations Ltd obtained a Class A water licence, applied for a commercial use lease for mining for the development and signed a co-operation agreement regarding the project with the Selkirk First Nation that holds rights to the land surrounding the property. These licences and agreements are in good standing today.

While developing the deposit, Minto also carried out 'recent' drilling, to obtain samples of mineralization for metallurgical and material testing in 1993 and for confirmation drilling in 2001. Other drilling was done for condemnation drilling at facility, waste and tailings disposal sites and for exploration on the property in general. The 2001 drilling was subjected to a rigorous QC/QA program to comply with NI 43-101 standards that verify that this drilling was accurate. On average, the 2001 confirmation drilling produced comparable to slightly higher copper grades when compared to the historical drilling results but the gold grades were substantially higher. Hole 2001-14 of the confirmation drilling returned a substantial intersection of 88ft of 2.75% Cu that could suggest potential to add to the resources in the southwest part of the deposit.

The property has been covered systematically by soil geochemical surveys, ground magnetic and induced polarization geophysical surveys, local and regional airborne geophysical surveys and 306 holes have been drilled including definition drilling on the deposit itself. A portion of the deposit contains magnetite and is therefore magnetic and the sulphide mineralization is moderately polarizable, so both magnetic and induced polarization geophysical methods can be utilized to explore for deep-seated mineralization. Most of the geophysics was done on the property in the



1970s and to a lesser extent in the 1980s. Re-interpretation in 1999 of the existing geophysical data using modern computer inversion and modeling techniques has outlined a number of exploration targets (several of which were already drill tested) on the property but re-doing the ground geophysics, particularly the IP, with a modern, more sensitive system should be considered as better data may be more useful than different modeling of old data. A number of these older targets were drilled but significant mineralization was not found near surface, newer, more sophisticated IP may locate new targets for drill testing. In addition, some of the targets suggested by SRK in 1999 remain to be drill tested and some of the targets already tested may need exploration to greater depths.

There is an extensive zone of largely oxide copper mineralization on the hill south of the deposit, in the area where ASARCO focussed its initial exploration on the property. Drilling in this area intersected three sulphide layers, labelled Target Areas #1 – #3 on Figure 5, at depths of 200ft – 1,000ft with grades ranging from trace amounts up to 5% Cu. Area #1 consists of a 20 ft thick sulphide layer with grades up to 2.17% Cu outlined along a length of 1500 ft at a depth of approximately 300 ft. In area #2, hole 96-6 intersected 20.3 ft of 3.01% Cu at a depth of 324.7 ft.

Directly 2000 feet east of the main zone is located Area 4 where hole A125-74 intersected 63 feet grading 1.36% copper and 0.018 opt Au. This intersection was from 578 to 641 feet down the vertical hole. Holes A127-74 and A129-74 are also located in this area with intercepts of 0.78% copper over 50 feet from 244 feet deep, 1.26 % copper over 30 feet from a depth of 495 feet, and 0.59% copper over 20 feet from 535 feet in hole 127. Hole 129 cored 4 narrow mineralized intervals at 346, 406, 436 and 658. At 436 feet hole 129 contained 0.47% copper over 20 feet, the other intervals were 0.41%, 0.25% and 0.96% copper each over a 10 foot core length. This area is within the boundaries of the area selected by previous owners for tailings disposal. All holes in this area should be cemented so that if underground mining methods are proposed to extract this mineralization then no inrush of tailings can result through old drill holes.

It has been postulated that the DEF fault has offset part of the deposit along the northern deposit border and SRK has theorized the offset portion to be deeper. If discovered, this offset portion could significantly add to resources which would in all probability require underground mining techniques. There is currently no direct evidence of the actual location of the offset deposit but the offset remains a good exploration target. Geological interpretation of the data for the area indicates that a possible depth for the similar Minto mineralized horizon would be in the 450-500' depth below surface or approximately 2750m a.s.l.

There are two large areas located within one mile to the south of the deposit that have only received preliminary testing. Current geological modelling has indicated that these areas lie in an equivalent geological setting to the deposit in a part of the property that has received limited or no past drilling. The few drill holes in the area did intercept fairly shallow copper mineralization (less than 100' below surface) with grades exceeding 1% copper. Further drilling is recommended in these areas.

A new previously undetected copper oxide occurrence found in a road cut in the southwest corner of the property in 2002 also warrants further investigation.



Three mineralized zones under the hill south of the deposit as well as 3 other zones warrant further study in light of the development of the deposit. Although tested by a number of drill holes, the economics of these zones could change as the development of the main deposit proceeds. This is the area of widespread low-grade mineralization with higher-grade ‘plums’ where ASARCO focussed its initial exploration in the 1970s prior to the discovery of the deposit itself. These 3 as well as other zones that have been moderately explored in the past have the potential to increase the resource. It is important to evaluate these other zones as quickly as possible as increases in the resource may permit increased production rates that will improve the financial returns from the project.

The Minto deposit is hosted by the Klotassin Batholith and there is considerable scope in the area for more, similar mineralization. Indeed, a similar deposit, called the Williams Creek deposit, is located 50 km to the south east of the Minto deposit. The amount and effectiveness of exploration done in the area has not been evaluated but it is likely that much of it was done in the 1970s around the time the Minto deposit was discovered, so the area could benefit from a second look with up to date exploration techniques, particularly geophysics. A regional airborne magnetic and radiometric geophysical survey completed in 2001 forms a data base for geophysical exploration in the area. It should be noted that the area to the southeast of the Minto deposit is a First Nation Land Reserve where approval to explore would be required from the Selkirk First Nation. The land to the northwest is crown land.

Based on historic work, the Minto project was indicated to be an economically viable mining project.

A \$1.15 million Phase I program to confirm and enhance the existing data base is recommended for the Minto project. Drilling should include areas within the pit where inferred resources may be converted to indicated. The areas peripheral to the pit particularly on the southwest and southeast should be tested where extensions to known pit area mineralization may exist. Six other areas of known mineralization warrant additional drilling to confirm and define their limits. In addition to drilling phase I would consist of updating both resources and pit optimization.

Phase II is estimated to cost and additional \$275,000 and would consist of updating the feasibility study using the updated resources, pit optimization and current economic parameters. The financial analysis should be done with and without “inferred resources”. If there is not a significant difference in the financial analysis with or without the inferred resources, then phase 1B drilling to bring the inferred resources into the indicated category may not be necessary but may be desirable to enhance the project return. Drilling may be required to sufficiently delineate underground mining areas for inclusion in the feasibility study, these holes will need to be spotted as a part of phase I. Phase II will involve some metallurgical tests to improve the confidence in oxide copper recoveries.

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## **INTRODUCTION AND TERMS OF REFERENCE**

This report presents an independent technical review of the Minto project, an advanced stage copper mining project, located 240 km northwest of Whitehorse in the central Yukon (Figure 1). The Minto project was formerly developed as a joint venture between Minto Explorations Ltd and ASARCO Corp. and is now owned by Sherwood Mining Corporation through its' subsidiary, Minto Explorations Ltd. This report has been prepared by OreQuest Consultants Ltd. for Sherwood Mining under the terms set out in NI 43-101, Standards of Disclosure for Mineral Projects, to support the acquisition and to meet the requirements of filing with any Canadian business regulatory authorities.

The information herein is derived from a review of the reports and documents listed in the References and from information provided by Minto Explorations Ltd. and ASARCO LLC. Co-author LeBel made a visit to the property on October 7, 2004 accompanied by ASARCO senior geologist Thomas Simpson and also inspected certain drill core from the project stored in the Bostock Core Library in Whitehorse on October 8, 2004. Neither co-author Cavey, co-author Giroux nor co-author Gunning has visited the property. Appendix I lists the sections of the report that each author is responsible.

There were no limitations put on the authors in preparation of this report with respect to the available information. The purpose of the report was to re-estimate resources but not to update the feasibility study. The principal sources of information are the numerous internal reports generated by Minto Explorations Ltd. along with the reports listed in the Reference section.

All reference to currency in this report is in Canadian dollars unless otherwise stated. Much of the historical and current work on the project utilized imperial units of measurement which is retained herein unless otherwise indicated. The historic reports commonly refer to the term "ore", in most cases the term "ore" has been replaced but in certain circumstances such as within a historical context as it was used at that time, it has been retained.

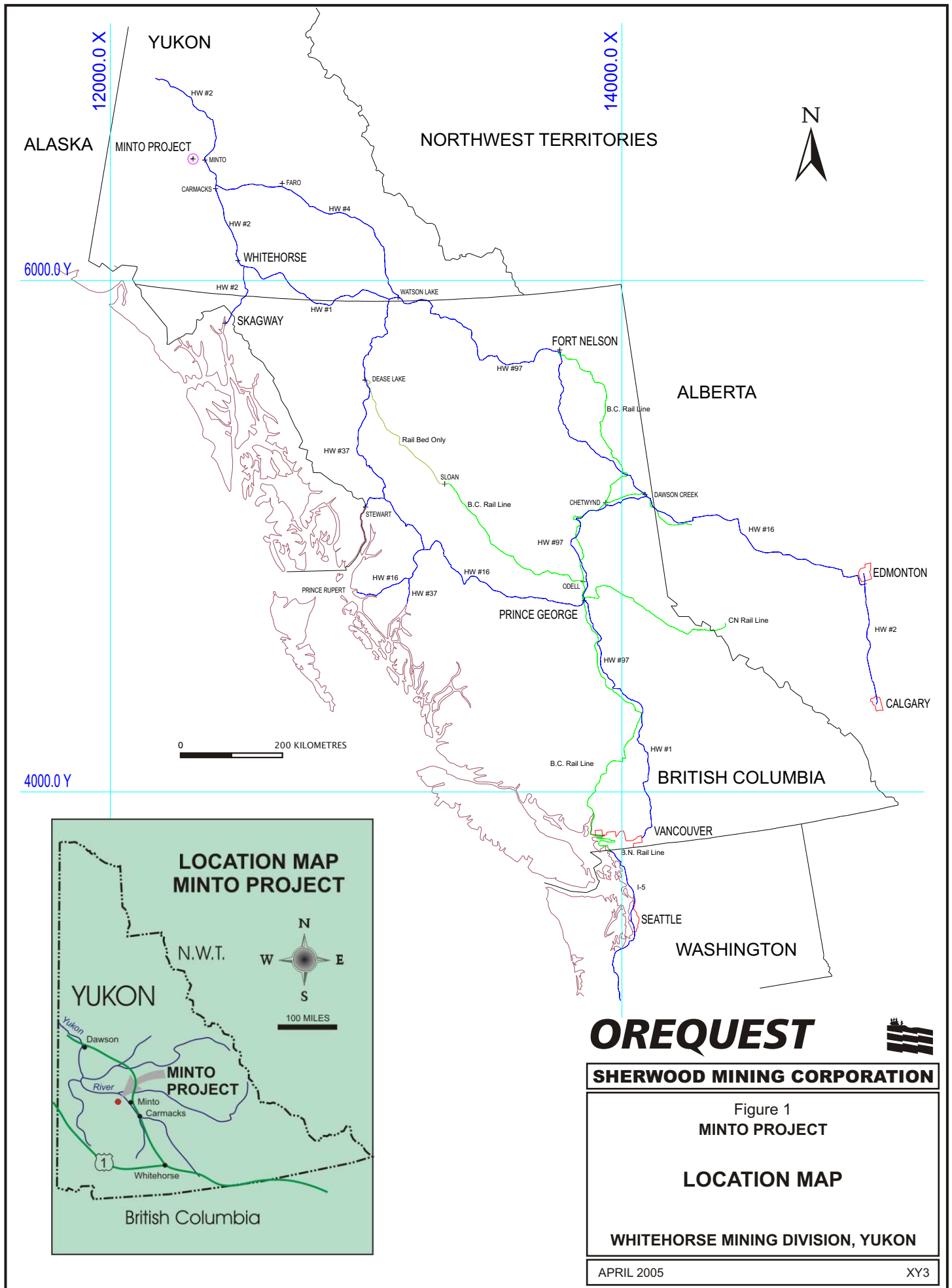
## **DISCLAIMER**

The authors have prepared this report based upon information believed to be accurate at the time of writing. Although the authors have no reason to question the accuracy of the information, the accuracy cannot be guaranteed. The principle sources of information for the content of this report are Minto Explorations Ltd. In writing this technical paper the authors have relied on the truth and accuracy presented to them from the sources listed in the Reference section of this report.

For the status of the claims that make up the property, the authors have relied on a Claim Status Report dated March 31, 2005 obtained from the Yukon, Energy Mines and Resources, Mining Recorder by Davis & Co attached as Appendix II. The authors have not completed an independent title search of the claims or leases. Claim information has been confirmed by Minto Explorations in a letter received Dec 8, 2004, which states that the expiry dates listed are valid and that all the claims and leases are in good standing. Sherwood Mining assumes responsibility for the title.

## **PROPERTY LOCATION AND DESCRIPTION**

The Minto project is located 240 km northwest of Whitehorse, Yukon in the Whitehorse Mining Division on NTS map sheet 115 I/11 as shown on Figure 1. It is centered at approximately



**OREQUEST**



**SHERWOOD MINING CORPORATION**

Figure 1  
MINTO PROJECT

**LOCATION MAP**

**WHITEHORSE MINING DIVISION, YUKON**

APRIL 2005

XY3



62°37'N latitude and 137°15'W longitude (NAD 83, UTM Zone 8 coordinates 6945000N, 384000E).

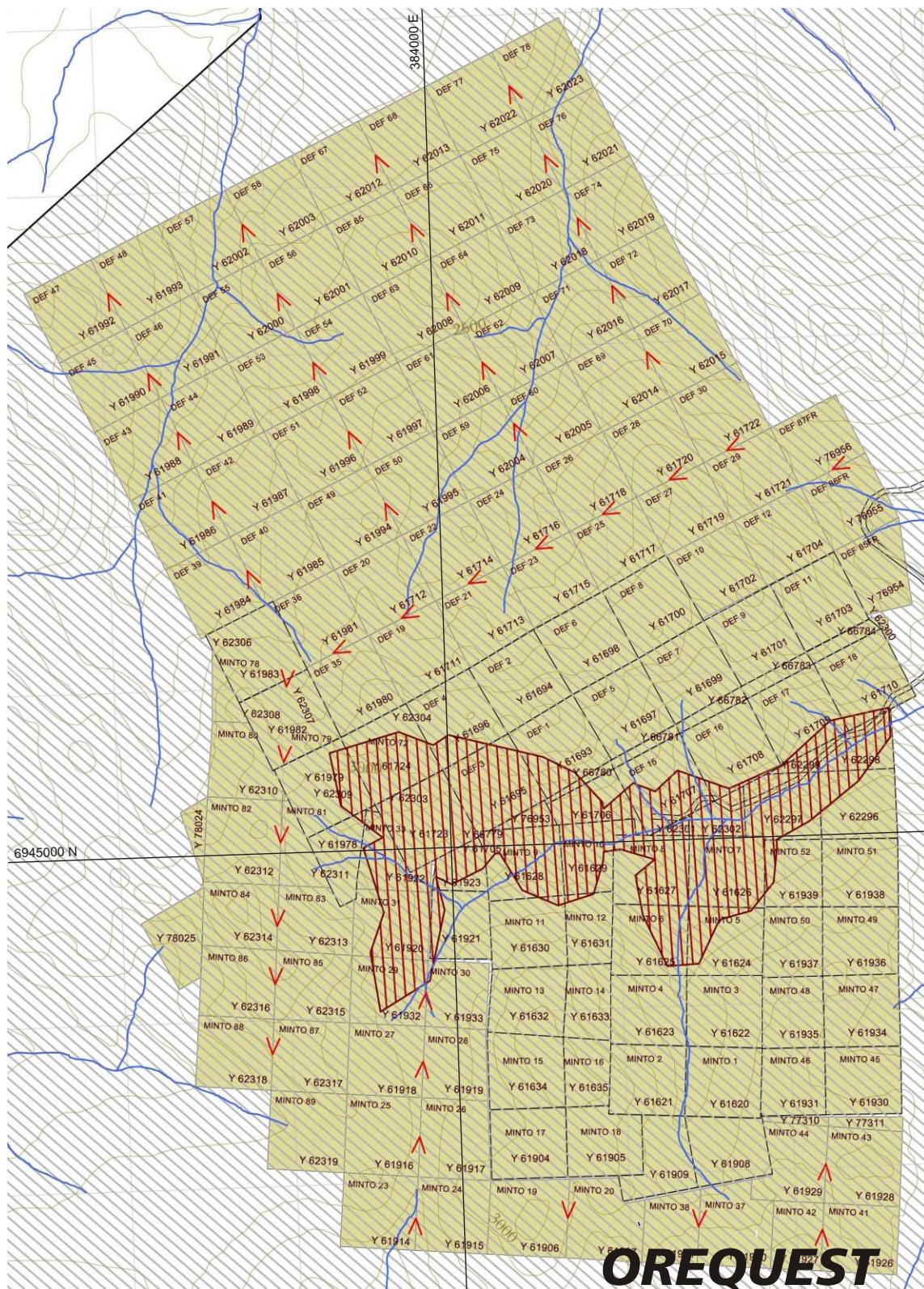
The Minto project consists of 164 quartz claims, quartz claim fractions, quartz leases and quartz lease fractions as shown on Figure 2. The term 'quartz' for a claim in the Yukon is the nomenclature used to distinguish between a claim for bedrock or lode mineral rights, in contrast to a 'placer' claim for placer mineral rights. The registered owner of the claims is Minto Explorations Ltd. The current status of the claims and leases is detailed in Table I, Claim Status, below.

**Table 1: Claim Status**

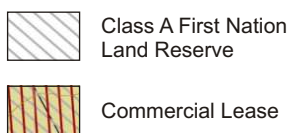
Claim Name	# of Claims	Grant No.	Expiry Date	Type
DEF 1 – 9	9	Y61693 – Y61701	2007/10/07	L
DEF 10	1	Y61702	2006/03/01	
DEF 11	1	Y61703	2007/10/07	L
DEF 12	1	Y61704	2006/03/01	
DEF 13 – 18	6	Y61705 – Y61710	2007/10/07	L
DEF 19 – 30	12	Y61711 – Y61722	2006/03/01	
DEF 31 – 32	2	Y61723 – Y61724	2007/10/07	L
DEF 33 – 34	2	Y61978 – Y61979	2007/10/07	L
DEF 35 – 36	2	Y61980 – Y61981	2006/03/01	
DEF 37 – 38	2	Y61982 – Y61983	2007/10/07	L
DEF 39 – 78	40	Y61984 – Y62023	2006/03/01	L
DEF 79 – 84	6	Y66779 – Y66784	2007/10/07	LF
DEF 85 – 87	2	Y76964 – Y76956	2006/03/01	F
DEF 1379	1	Y76953	2007/10/07	L
MINTO 1 – 16	16	Y61620 – Y61635	2018/05/13	L
MINTO 17 – 18	2	Y61904 – Y61905	2018/05/13	L
MINTO 19 – 20	2	Y61906 – Y61907	2006/03/01	
MINTO 23 – 28	6	Y61914 – Y61919	2006/03/01	
MINTO 29 – 30	2	Y61932 – Y61933	2006/03/01	
MINTO 31	1	Y61920	2006/03/01	
MINTO 32	1	Y61921	2018/05/13	L
MINTO 33	1	Y61922	2006/03/01	
MINTO 34	1	Y61923	2018/05/13	L
MINTO 35 – 36	2	Y61908 – Y61909	2018/05/13	L
MINTO 37 – 38	2	Y61910 – Y61911	2006/03/01	
MINTO 41 – 44	4	Y61926 – Y61929	2006/03/01	
MINTO 45 – 46	2	Y61930 – Y61931	2018/05/13	L
MINTO 47 – 52	6	Y61934 – Y61939	2018/05/13	L
MINTO 65 – 68	4	Y62296 – Y62299	2018/05/13	L
MINTO 69	1	Y62300	2005/03/01	
MINTO 70 – 71	2	Y62301 – Y62302	2018/05/13	L
MINTO 72 – 73	2	Y62303 – Y62304	2006/03/01	
MINTO 75 – 89	15	Y62305 – Y62319	2006/03/01	
MINTO 94 – 95	2	Y77310 – Y77311	2006/03/01	F
MINTO 96 – 97	2	Y78024 – Y78025	2006/03/01	F

L = Quartz Lease      F = Full Quartz fraction





0 3000 FEET  
0 1000 METRES



UTM Zone: UTM Zone 8  
Datum: NAD 83  
Mining District: Whitehorse  
Map Creation Date: May 03, 2004

**SHERWOOD MINING CORPORATION**

Figure 2  
**MINTO PROJECT**

**CLAIM MAP**

**WHITEHORSE MINING DIVISION, YUKON**

APRIL 2005

XY3



In total there are 65 leases and 99 claims which form a contiguous block with a total area of 2674.9ha (6,611.9 acres), divided as to: 36 Minto leases 569.7ha (1,410.0 acres), 40 Minto claims 486.9ha (1,073.6 acres), 29 DEF leases 434.5ha (1,073.6 acres) and 59 DEF claims 1,183.8ha (2,925.2 acres).

The claims are in good standing until 2006/03/01 while the DEF leases are valid until 2007/10/07 and the Minto leases are valid 2018/05/13. The authors have not completed an independent title search of the claims or leases. Claim information has been verified by Minto Explorations in a letter received Dec 8, 2004, which states that the expiry dates listed are valid and that all the claims in leases are in good standing. The letter states further that *“according to the best information available to Minto Exploration Ltd., no liens have been recorded against the claims and leases”*.

In the Yukon, claims are good for 1 year and may be renewed yearly provided annual assessment work of \$100 per claim is carried out or a payment of \$100 per claim in lieu of work is made. A fee of \$5 for a certificate of work on each claim to record the assessment work is also applicable. Assessment work on a full-size fraction (greater than 25 acres) is the same as a claim but on a small-size fraction (less than 25 acres) only \$50 per year assessment work is required. Quartz leases have a term of 20 years and may be renewed.

Assessment work or payment in lieu of assessment work to maintain the 99 claims beyond their March 1, 2006 expiry date plus filing fees is estimated at \$10,195. Work done on the leases may not be transferred to the claims by ‘grouping’ and therefore does not qualify for assessment work on claims.

The property lies within SNF R-6A, First Nations Surveyed Lands, Class A Land Reserve, where both surface and mineral rights are reserved for First Nations, in this case the Selkirk First Nation. If any of the claims are allowed to lapse they may not be restaked and the surface and mineral rights revert to the Selkirk First Nation. In 1997, Minto Explorations and the Selkirk First Nations entered a co-operation agreement with respect to the development of the Minto deposit.

The leases on the property have been surveyed as per one of the requirements of obtaining a lease. It is not known whether the ordinary claims on the property have been surveyed.

Minto Explorations holds a 100% interest in the claims and leases, subject to a 0.5% NSR payable to the Selkirk First Nation. Mines in the Yukon are also subject to a net profits royalty on annual profits over \$10,000, as follows:

- profits over \$10,000 but less than \$1,000,000 – 3%,
- profits over \$1,000,00 but less than \$5,000,000 - 5%,
- profits in excess of \$5,000,000 but less than \$10,000,000 - 6%,
- profits greater than \$10,000,000 - 6% plus an additional 1% for each \$5,000,000 over \$10,000,000.

The Yukon Department of Energy Mines and Resources, Lands Branch, shows the immediate area of the development is subject to a Commercial (Mining) Lease, 115I11/003.





Government records indicate the lease was issued in 1998 for term of 20 years with an initial rent of \$8,500 per annum with a rent review every five years. Over and above the rights and privileges granted under the Quartz Mining Act, a commercial lease grants surface tenure and provides extra protection for the interest holder's investment by granting exclusive use during the term of the tenure. Minto Explorations' records show the lease involves an area of 243 ha encompassing the mine facilities and was applied for but never officially granted. Neither the application fees for the commercial lease nor the rent ever appear to have been paid. In fact, the company cheque for the fees appears to have been returned (Fraser, 1998). The commercial lease disposition on the claim map and land use map would appear to be an error on the part of the government as it was never issued. In April 1998, the Yukon Territory Water board also issued Minto Explorations a Type A Water Use Licence for a 'quartz' mining operation. The Water Licence is valid until June 30, 2006.

For exploration (and development) in the Yukon, the Quartz Mining Act and Quartz Mining Land Use Regulations require that:

- (1) all areas disturbed must be left in a condition conducive to successful regeneration by native plant species.
- (2) all areas disturbed must be re-sloped, contoured or otherwise stabilised to prevent long-term soil erosion.
- (3) structures must be removed and the site restored to a level of utility comparable to the previous level of utility.

Minto has had environmental monitoring programs in place since 1993. Programs have consisted of:

- overburden and waste characterization studies
- standard acid-base accounting procedures indicate no acid drainage potential
- tailings solids and tailings effluent testing

Minto has a \$100,000 environmental reclamation bond in place to cover any current potential environmental liabilities that at this time would consist of re-contouring and re-vegetating the camp and mill areas and any old exploration trenches that remain intact. The value of the bond may need to be increased as the property is developed.

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

The Minto project is accessible by vehicle from Whitehorse, Yukon by means of the Klondike Highway (YTG Highway #2) to Minto Crossing, approximately a three hour drive, a short boat ride across the Yukon River, and a 28 km gravel road established from the west side of the Yukon River to the project site. At the time of co-author LeBel's visit to the site a local Yukon River tour operator provided the boat trip and Minto Explorations maintained a pickup truck at the terminus of the 'mine' road. In the course of development at the site, equipment and supplies were barged across the Yukon River and/or trucked across an ice bridge established in the winter months. An airstrip established at the site in the 1970's, suitable at the time for light aircraft is overgrown and no longer serviceable.



The road from the Yukon River to the project site is a well-maintained class “A” all-weather gravel road, complete with drainage ditches, road signage and runaway lanes on steeper downhill sections. Roadbed material is either fluvial sand or gravel along its lower reaches along the Yukon River or coarse sand derived from decomposition of the largely igneous intrusive bedrock in the area along its upper reaches. Both types of materials are well drained. For the most part the road is constructed on stable south facing slopes which do not have permafrost, except for one short section where insulating tech cloth was laid down prior to the road fill to kept the permafrost from melting and eroding. The buildings at the project site are similarly located on stable ‘granite’ sand on south facing slopes. The road crosses one major tributary of the Yukon River, Big Creek, by way of a single lane bridge made with reinforced concrete abutments and deck. At one time in the recent past Big Creek overflowed its banks and washed out the approaches to the bridge. Subsequently, the approaches have been stabilized with berms and a spillway was constructed to divert any future flood waters.

The climate in the Yukon is sub-Arctic continental with short cool summers and long cold winters. The average temperature in the summer is 10°C and the average temperature in the winter is –20°C. Average precipitation is limited to about 25cm of rain equivalent per annum in the form of rain and snow. The weather does not impede year round commercial operations in the Yukon, including outdoor activities in the winter, except in the harshest cold snaps when temperatures may plummet to –50°C. The Cyprus Anvil open pit lead/zinc mine at Faro not far from the project operated successfully for many years in this climate. Interruptions in the transportation of supplies and concentrate may occur in seasonal transition from barge to ice bridge access.

There are no permanent facilities in the immediate area. Minto Explorations has erected a camp facility on the site capable of housing 54 people that has seen only minimal use for a few limited work programs on the property. The facility consists of a cluster of Atco trailers and an out-trailer pump house to house the water pump and filtration tanks that are serviced by domestic water well located adjacent to the pump-house and a sewage tile bed. On-site portable diesel generators fuelled from a large fuel tank located beside the camp supply electricity for the camp. Foundations for a mill have been laid in preparation for mining at the site.

The project is 240km from Whitehorse, the capital of Yukon Territory. Whitehorse has a population of around 20,000, which is roughly three quarters of the entire Yukon population. Whitehorse is serviced by daily commercial flights from British Columbia and Alberta to the south and other northern communities and all-weather paved highways to the south and west to Alaska. Historically, mining has been the Yukon’s most important source of income. In the past, the Yukon White Pass Railroad provided rail service from Whitehorse to port at Skagway Alaska. In fact, concentrate from the Faro mine was transported in this way after being trucked from the mine but when Faro closed down so did the railroad, except for tourist excursions. In the 1980’s a road was constructed from Whitehorse to port in Skagway, there is also alternate port facilities further south at Stewart, BC.

The property lies in the Dawson Range which is part of the Klondike Plateau, an old uplifted surface that has been dissected by erosion. Topography in the area consists of rounded rolling hills and ridges with relief of up to 600m (2000 ft). The highest elevation on the property is 3200 ft above sea level, compared to elevations of 1500 ft along the Yukon River. The property is at a height of land where slopes are relatively gentle thereby providing accessible areas for waste storage and



tailings containment for the anticipated development. The hills and ridges often have spines of bedrock outcrops at their crests, elsewhere bedrock exposures are limited in the area.

Overburden is colluvium made up primarily of sand (EBA, 1994) derived from decomposition of the largely granitic bedrock in the area and is generally thin but pervasive. In south facing locations this material provides a well-drained, sound foundation for buildings and roads. The north-facing slopes in the area are permanently frozen solid with permafrost that becomes a quagmire when disturbed. Vegetation in the area is sub-Arctic boreal forest made up of largely spruce evergreen trees and poplar deciduous trees. The trees prefer well-drained south-facing slopes and may be sparse on the north facing slopes where moss and alder 'buck brush' prevails. The area was burned over by wild fires in the recent past and is now devoid of mature living trees. Many of the dead trees have blown down leaving a tangle of windfall on the ground.

The property has sufficient area for the proposed mining operations. In fact, tailings storage areas and waste rock disposal areas have already been scoped out in the development plans and the housing facility for the mine is in place with the concrete foundations of the mill having been poured. Figure 3 shows the general layout of the facilities at the site.

## **HISTORY**

The Minto project has a long history of exploration and development dating from 1970.

### **1970**

- regional stream sediment geochemical survey by the Dawson Syndicate, a joint venture between Silver Standard Mines Ltd. and ASARCO LLC.

### **1971**

- follow-up of stream sediment anomalies and staking of the Minto claims in July
- soil sampling, IP geophysical surveys and manual excavated prospect pits on the Minto claims
- 7 diamond drill holes (1,158m)
- DEF claims staked by United Keno Explorations, a joint venture between United Keno Hill Mines, Falconbridge Nickel and Canadian Superior Explorations, to cover follow-up prospecting
- IP and VLF-EM geophysical surveys, soil sampling and mapping on the DEF claims

### **1972**

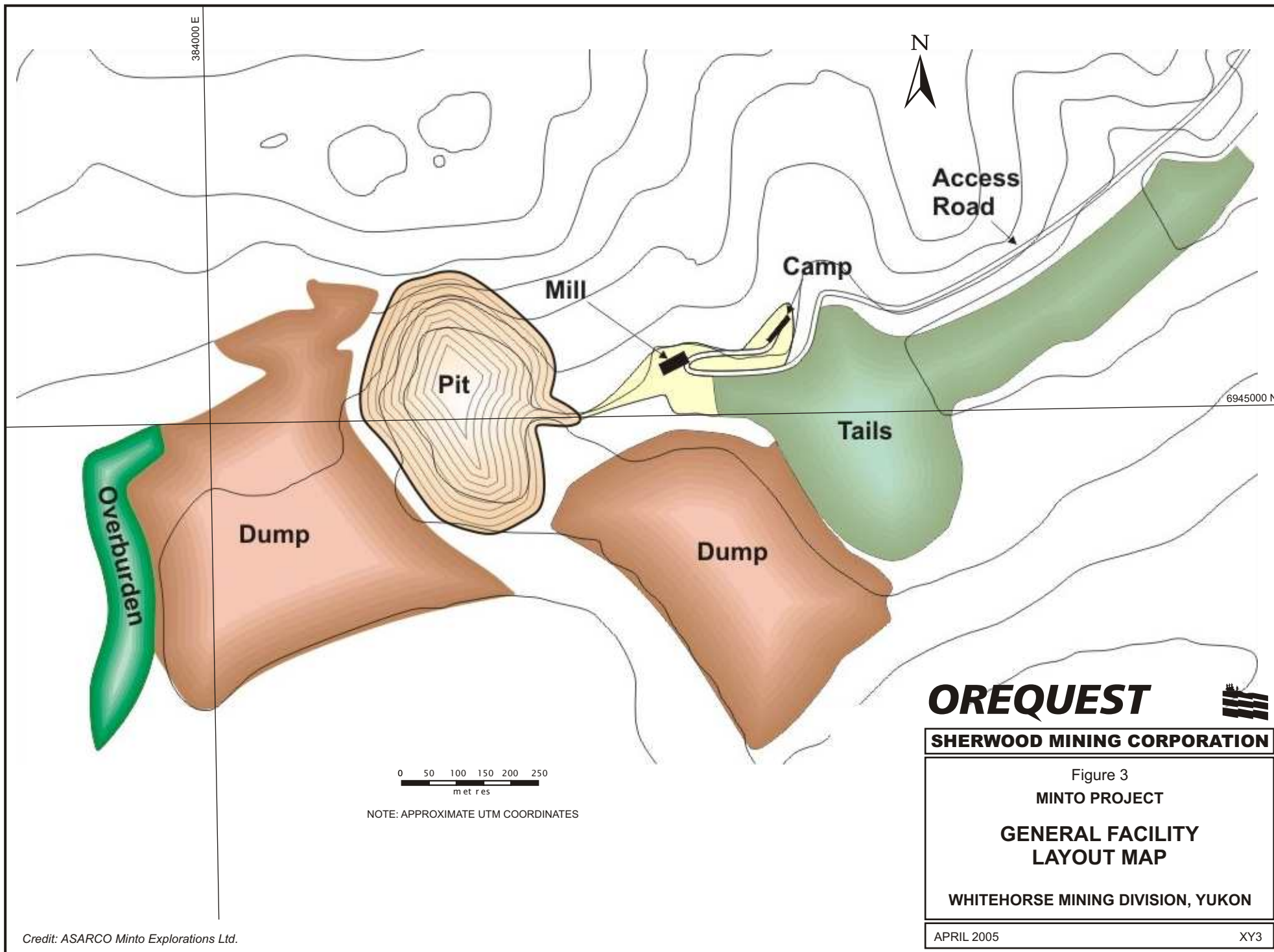
- mapping, airstrip construction and bulldozer trenching, 12 diamond drill holes (1,871m) on 4 zones on the Minto claims
- grid soil sampling and bulldozer trenching on the DEF claims (the scars of bulldozer trenches are still visible on the hillsides)

### **1973**

- 62 diamond drill holes (7,887m) on the Minto claims
- bulldozer trenching, EM and magnetic geophysical surveys and 41 diamond drill holes (7,753m) on the DEF claims
- main mineralized body discovered in June

### **1974**







- winter road built from Yukon Crossing and 58 diamond drill holes (11,228m) on the Minto claims
- additional geophysics, rock mechanics, feasibility studies and 52 diamond drill holes (8,238m) on the DEF claims

1975-1976

- joint feasibility studies

1984

- Silver Standard changed its name to Consolidated Silver Standard and transferred its interest in the Minto claims to Western Copper Holdings, a subsidiary of Teck Corp
- 5 percussion drill holes (518m) on the DEF claims

1989

- Western Copper Holdings transferred its interest in the Minto claims to Teck Corp
- 84 percussion drill holes (4,897m) on the DEF claims

1993

- Minto Explorations Ltd. was formed
- ASARCO and Teck sold their interest in the Minto claims (and leases) for shares in Minto Explorations and provided \$375,000 in working capital
- ASARCO and Teck also received a net smelter royalty of 1.5% to be divided evenly
- Falconbridge, the parent of United Keno Hill, sold its interest in the DEF claims to Minto Explorations for \$1 million, payment due in 1996
- Falconbridge was granted an option to repurchase the DEF claims on January 1, 2005 if the deposit was not in production by then
- Minto Explorations carried out an airborne geophysical survey and drilled 8 diamond drill holes (960m)

1994

- initial public offering of shares of Minto Explorations completed
- 5,912,501 shares were issued and outstanding with ASARCO the majority shareholder with 3,297,500 shares (55.8%)
- 19 diamond drill holes (2,185m)
- feasibility study began with engineering and geo-technical studies

1995

- 6 diamond drill holes (572m) on magnetic anomalies and 1 condemnation diamond drill hole north of the proposed mill site
- feasibility study completed, reserves are 8,818,000T of 1.73% Cu, 0.014 oz/t Au and 0.22 oz/t Ag at 0.5% Cu cut-off grade (not to 43-101 standards)
- recoveries are 95% for Cu and 85% for Au and Ag
- mine life was projected to be 12 years at production rate of 477,000 tonnes per year

1996



- funding arranged with ASARCO to bring the deposit into production whereby ASARCO would provide up to US\$25 million
- ASARCO would acquire a 70% interest in the project, Minto Explorations would retain a 30% interest and remain as operator
- Minto Explorations makes the \$1 million payment to Falconbridge for the DEF claims completing the consolidation of the Minto and DEF claims
- 16km access road constructed including a barge landing site on the west side of the Yukon River and a bridge over Big Creek
- 4 diamond drill holes (545m)

#### 1997

- a further 12.8km of road construction to complete the new access road
- site for camp excavated
- 72m water well for domestic water supply
- mill site excavated and 2 used grinding mills moved onto site using an ice bridge over the Yukon River
- co-operation agreement signed with Selkirk First Nation

#### 1998

- mill concrete foundations poured with cement trucks from Whitehorse barged across the Yukon River
- Type A water license granted by Yukon government
- concentrator design completed
- access road completed, camp constructed and the location of the proposed tailings dam was grouted
- phase 1 open pit mining plan completed

#### 1999

- production license received
- five diamond drill holes (957m) for engineering purposes

#### 2000

- minor maintenance of on-site facilities

#### 2001

- additional maintenance of camp facilities
- five confirmation diamond drill holes (552m) in the centre of the deposit
- most of the ASARCO core and all of the Falconbridge core destroyed by time and forest fires
- regional airborne magnetic and radiometric surveys carried out by the Yukon government

#### 2002

- a limited amount of the old ASARCO core that could be recovered was re-sampled
- all the drill and geophysical data compiled in a data base to aid further exploration
- three Landsat anomalies examined and prospected
- road maintenance scheduled to keep permits active
- ASARCO bought 100,000 shares of Minto Explorations to hold a total of 3,397,500 shares



2004

- Minto Explorations Ltd. announces that the Company along with Falconbridge and ASARCO have put their interests in the Minto Project up for sale

June 2005

- Sherwood completes a take over of Minto Explorations Ltd. and purchases ASARCO's interest in the joint Venture and Falconbridge's back in right to the Minto Project for \$7 million. In addition Sherwood purchases ASARCO, Falconbridge and Teck Cominco's NSR's for \$1.4 million, consolidation the ownership of the project.

The Minto deposit has been subject to several historical tonnage and grade estimations over the years (Klingman & Proc, 1993 and Minto Explorations b) as summarized in Table 2. The historic resources are presented here to show the progression of development of the resources over the years on the property.

**Table 2: Historical Tonnage & Grade Estimates of the Minto Deposit**

Year	Source	Tons	Cu %	Au oz/t	Ag oz/t	Comments
1976	R.T.Heard UKHM	8,219,370	2.04	-	-	-
1976	L.A. Wigglesworth Falconbridge	8,210,219	2.03	-	-	-
1975	R.J. Prevedi ASARCO	8,441,941	1.74	-	-	Cutoff grade 0.6% Cu
1976	R.J. Prevedi ASARCO	7,220,900	1.86	-	-	
1980	D.M. Fletcher ASARCO	2,968,600	3.24	0.027	0.411	Cut-off grade 2.0% Cu
1989	J.Proc & H.L.Kingman Minto Explorations	6,368,000	2.11	0.016	0.33	Open Pit and Underground recovery at 75% and 5% dilution Cut-off grade 0.8% Cu
1990	SRK/Falconbridge	7,592,318	1.88	0.016	-	Cut-off grade 0.0% ? Cu Includes Lower Zone
1992	J.Proc & H.L.Kingman Minto Explorations	6,071,000	2.21	0.018	0.28	Open Pit and Underground UG = 1,600,000 ton @ 3.73% Cu, 0.038 oz/t Au, 0.49 oz/t Ag

All the resource estimates discussed in the HISTORY section of this report do not follow the required disclosure for reserves and resources as outlined in National Instrument 43-101 as they were prepared prior to the inception NI 43-101. The historic resource figures generated have not been redefined to conform to the CIM approved standards as required in NI 43-101. The resource estimates have been obtained by sources believed reliable and are relevant but cannot be verified. No effort has been made to refute or confirm these estimates and they can only be described as historical estimates.



In 1994, Montgomery Consultants constructed a block model, conducted a detailed geostatistical study and then estimated the resources for the deposit. This study was based on 229 diamond drill holes 9 of which had been drilled in 1993. Ten-foot composite assays were constructed within the boundaries of the 7 mineralized zones due to the fact that each zone was statistically different.

A block model was then constructed between coordinates 8,500 and 11,700 East, 9,600 and 12,800 North and between elevations 2320 and 2580. Each block was 25 x25 x 10 hence the model was 128 blocks from north to south and 128 from east to west as well as 27 10 foot benches from top to bottom. Geologic and topographic boundaries were assigned to every block such that each block was given either a zone number if located within a mineralized zone or waste, overburden or air if above the topographic limits. The specific gravities used in the block modeling of the various rock types are tabulated in Table 9.

Using variance estimation errors, the resource was classified into various categories using 0.5% copper cutoff and shown in Table 3

**Table 3: 1994 Resources at 0.5% Copper Cutoff, Categorized Using Kriging Variances.**

Resource Category	Tonnage	average grade of material above cutoff		
	Tons	Cu (%)	Au (opt)	Ag (opt)
Proven*	5,620,000	2.16	0.018	0.27
Probable*	3,160,000	1.06	0.010	0.14
Possible*	610,000	1.38	0.009	0.25
Possible**	314,000	0.85	0.006	0.09

\* Estimated in 1994 between elevations 2320 and 2580 feet.

\*\* Estimated in earlier study by Giroux above 2580 feet elevation.

These resource numbers were estimated prior to the advent of NI 43-101 and do not follow the required disclosure for reserves and resources as outlined in National Instrument 43-101 as they were prepared prior to the inception NI 43-101. The historic resource figures generated have not been redefined to conform to the CIM approved standards as required in NI 43-101.

A compliant resource estimate has been completed on behalf of Sherwood and is discussed in the Mineral Resource Section of this report.

### **Recent Exploration Summary**

A considerable amount of exploration and drilling has been carried out on the property leading up to and during the discovery and definition of the Minto deposit. Later drilling programs explored outside of the deposit. A total of 41,434m in 306 holes has been drilled on the property in various programs over the years.

Most of the recent work conducted on the project by Minto Explorations focussed primarily on bringing the project into production. However, Minto has done a limited amount of exploration on the property, including; definition drilling of previously indicated mineralization, an airborne geophysical survey followed by drilling of magnetic targets and Landsat image interpretation with ground follow-up. In addition, the early extensive grid-based soil geochemical surveys and ground



magnetic, very low frequency electromagnetic and induced polarization geophysical surveys were compiled into one data base. The old grid lines have long since disappeared, so it would be prudent to re-confirm the location of any features of interest in these results.

The helicopter airborne magnetic, radiometric and VLF-EM survey was done by Sander Geophysics in 1993. A total of 298 line kilometres flown on flight lines spaced at 100m intervals. The survey outlined a number of interpreted magnetic lineaments and magnetic highs and lows. As the known mineralization is directly associated with magnetite, the magnetic highs were considered of interest. The purpose of the radiometric survey is less clear in the context of the known mineralization. Other than for direct detection of uranium mineralization a radiometric survey may be used to locate potassium alteration by measuring radioactivity from potassium 40. The Minto area in general was also covered by a regional fixed wing airborne geophysical survey conducted by Fugro Airborne Surveys for the Yukon government in 2001 (Shives et al, 2002).

Exploration drilling (7,170 ft in 19 holes) undertaken to test mineralization indicated by previous drilling by ASARCO just south of the deposits referred to as areas 1, 2 and 3 on Figure 5. In Area 1 a series of 9 holes tested an approximately 20ft bed of mineralization from ASARCO's early drilling of up 3% Cu at depths of 200 ft to 300 ft under the hill to the south of the deposit. Hole 96-6 of this series intersected 20.3 ft of 3.01% Cu and 0.032 oz/t Au at 324.7ft in area 2 some 1500 ft north of Area 1.

Drilling of 1,395 ft in 5 holes in 1995 tested magnetic targets derived from the 1993 airborne geophysical survey but no mineralization was discovered. However, there was some question as to whether the holes were drilled deep enough. Several untested magnetic anomalies from this survey could provide targets for future exploration. One of the holes (95-12) of this program was a condemnation hole on the slope north of the proposed mill site. Note that hole 95-12 is not the 11<sup>th</sup> hole drilled in 1995. In this and other drill programs carried out by Minto, the hole numbering is not consecutive, rather the holes retain the numbering of the proposed holes even if some of the proposed holes were not drilled.

Three 'Fe-oxide' Landsat anomalies developed by ASARCO in the area of the deposit were examined and prospected in 2002 (Simpson, 2002). The exploration premise behind the features is that the Fe-oxide comes from oxidation of pyrite in a sulphide zone. No mineralization was found associated with these features but while accessing one of these features Cu-oxide mineralization up to 0.5% was found in a borrow pit along the access road in the southwest corner of the claims. The mineralization occurs with magnetite in porphyroblastic granodiorite. Further work is warranted to determine the grade and extent of this relatively new occurrence.

Since the mineralization is disseminated sulphides in a geophysically 'benign' granodiorite, induced polarization (IP) would seem to be an effective exploration method and, indeed, IP was done, on the property in the 1970s. The sulphide mineralization is relatively coarse-grained which could result in a lower IP response than might otherwise be predicted or expected. The higher grade mineralization might be conductive and therefore respond to electromagnetic (EM) geophysical methods but EM attempted in the 1970s proved to be ineffective. The results of the IP surveys, in conjunction with ground magnetic surveys from the Minto claims outlined several targets described as "coincident first order magnetic and first order IP" one of which coincides with the Minto deposit. Several other similar targets on the property outline satellite sulphide zones in areas 1-3 that were



tested by drilling at the time. These old IP surveys were done in the frequency domain with a McPhar P660 system using the dipole-dipole electrode array and electrode spacing (a) varying from 100 ft to 300 ft expanded through 4 separations (n). These surveys would have a maximum depth of exploration of around 300 ft, a depth range that has been thoroughly tested by drilling. Although industry standard in the 1970s, the frequency effect method has been supplanted by more sensitive time and phase domain methods used today. In addition to advances in geophysical equipment technology, there have also been advances in interpretation technology since the 1970s with computer inversion software that has the ability to resolve deep targets and separate multiple zones that might otherwise not be readily apparent. Computer inversions were done on the old IP data in 2002.

Several copper soil geochemical surveys that have been done on the property over the years were compiled into a single database by Minto Explorations. Sample spacing varies from every 100 ft on lines spaced at 100 ft to every 200 ft on lines spaced at 400 ft intervals. The Minto deposit is revealed as a spotty but distinct high contrast anomaly with values up to 6,500 ppm Cu approximately 5,000 ft by 3,000 ft in size. A similar anomaly, but more intense and cohesive, occurs on the hill south of the deposit where ASARCO focussed its initial exploration on the property. Drilling in this area intersected oxide copper mineralization at the surface and a layer of sulphide copper mineralization at depth of 200 ft to 300 ft in areas 1 and 2. The apparent gap between these two large anomalies coincides with Minto Creek and swampy terrain where sampling may be incomplete and/or unreliable. A thick blanket of glacial outwash material in this area may also interrupt the geochemical dispersion process. The results outline one other significant high-contrast Cu soil anomaly approximately 2000 ft east of the 'hill' anomaly mentioned above that is roughly 2000 ft in diameter that coincides with area 3 mineralization. Plans of the historical drilling show that all these soil anomalies have been tested by drilling and the 1996 drilling under taken by Minto focussed directly on areas 1 and 2 as well.

Soil geochemistry has been successful in outlining mineralization on the property. Copper oxides associated with the sulphide mineralization appear to be responsible for the Cu soil anomalies. The Yukon was not glaciated by continental glaciation, so the effectiveness of soil geochemical surveys is not impacted by exotic transported overburden. In addition, the infamous Yukon ash layer in the soil which can degrade the effectiveness soil geochemical surveys elsewhere in the Yukon appears to occur only sporadically in the area (Watson, 1982).

## **GEOLOGICAL SETTING**

Regionally, the Minto area lies within the Yukon Crystalline Terrane. The Yukon Crystalline Terrane consists mainly of Mesozoic plutonic rocks that have been intruded and overlain by Tertiary volcanic rocks (Figure 4).

Locally most of the area is underlain by the Klotassin Batholith composed primarily of granodiorite but varying in composition from quartz diorite to quartz monzonite (Figure 5). The granodiorite is medium to coarse grained, massive to foliated and varies from equigranular to porphyritic (porphyroblastic). The foliation is caused by the alignment of mafic minerals, particularly biotite and, to a lesser extent, vague alignment of orthoclase crystals. The degree of foliation varies from weak to strong. In the strongly foliated phases there is clear gneissic foliation and compositional banding, and occasional cataclastic features such streaking of the mafics and straining and fracturing of quartz. Composition of the massive and foliated phases is often very







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similar and contacts between phases a may be gradational and/or sharp. The foliated zones are discontinuous and laterally interfinger with massive phases.

To the south of the property, Eocene Carmacks Group basalt and andesite flows and breccias overlie the Klotassin granodiorite. Narrow related northeast trending basalt and andesite dykes which intrude the granodiorite are probably the feeders of the Carmacks volcanics. In places, granodiorite conglomerates derived from debris from the in-situ breakdown of the granodiorite and immature sediments are found at the contact between the Klotassin granodiorite and the overlying Carmacks Group.

There is not much outcrop on the property, with any limited to spines on the ridges and hill tops. Float, derived locally because the area was not glaciated by continental glaciation, can be seen in the old trenches on the property and along the cuts of the drill roads. Drilling has shown the property is underlain by granodiorite that is similar to other parts of the Klotassin batholith and has the same range of characteristics. Locally the gneissic foliations vary from flat-lying to steeply dipping to form a broad north trending synform. The deposit lies in the hinge of the synform therefore foliations are gentle to flat lying in general, but in detail within the deposit foliations have all possible orientations.

## **DEPOSIT TYPES**

There are no deposits analogous to the Minto deposit on a world-wide basis because there is no consensus as to the origin of the Minto deposit. The proposed origins of the Minto deposit run the gamut from: a highly metamorphosed stratiform deposit in sedimentary rocks; a hydrothermally emplaced deposit in screens of poorly digested Pelly gneiss in the Klotassin granodiorite during the late stages of the formation of the granodiorite from the Pelly Gneiss; or a segregation and concentration of sulphides within an igneous melt as the Klotassin batholith crystallized (Sinclair, 1976). SRK in 1999 postulated that the Minto deposit was the result of hydrothermal fluids in dilation zones in fold hinges. Simpson (2001) points out that the mineralization has sulphide zoning and alteration that is analogous to a porphyry copper deposit. A summary document prepared to support the sale of Minto Explorations (Minto Explorations Ltd., n.) indicates that both the Minto Deposit and Williams Creek Deposit (see below) have affinities to iron oxide copper gold (IOCG) type deposits exemplified by the Ernest Henry Deposit in Australia and the Candelaria Deposit in Chile.

Locally, the Williams Creek deposit located 50km to the southeast, is similar to the Minto deposit (Sinclair, 1976, Pearson, 1977, MinFile, 2003). The Williams Creek deposit occurs in foliated feldspar-biotite-hornblende-quartz gneiss hosted by weakly foliated Klotassin granodiorite. The mineralization is bornite, chalcopyrite, minor pyrite, gold and silver and trace molybdenite. Oxidation extends to a depth of 1000ft and the sulphides are almost totally oxidized to malachite and azurite and a copper bearing limonite. Eighty to 85% of the copper can reportedly be extracted by leaching. The best drill intersection in the deposit is 40.8m grading 1.93 % Cu, 11.0 g/t Ag and 1.13 g/t Au. In total the reserves at William Creek are 15.5 million tonnes grading 1.03% Cu in 8 zones. The above resource estimate does not follow the required disclosure for reserves and resources outlined in NI 43-101. The authors are not aware if these resource estimates were created using the standards outlined in NI 43-101, the reserve estimates have been obtained from sources believed reliable but cannot be verified.



In 1994, a positive feasibility study was returned and owner, Western Copper Holdings (now Western Silver Corp.), elected to place the deposit into production. Road construction, an environmental evaluation, site preparation, bulk sampling ensued and the permitting process proceeded, with discussions with the Yukon government as recently as 2003, but production has yet to be attained (MinFile, 2003). The presence of two similar but wide spaced deposits, enhances the potential to find more mineralization in the area.

## MINERALIZATION

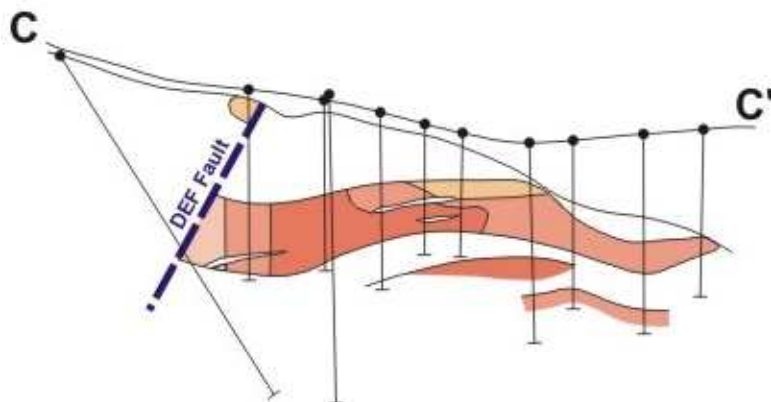
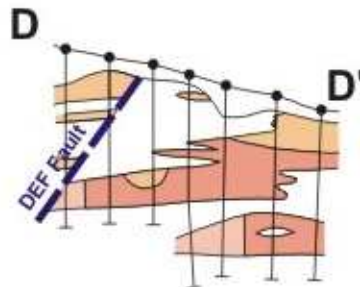
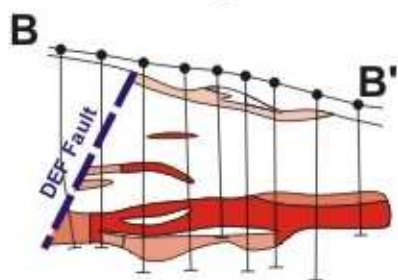
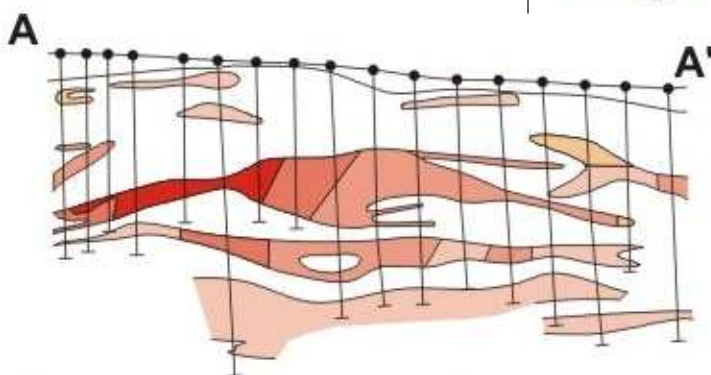
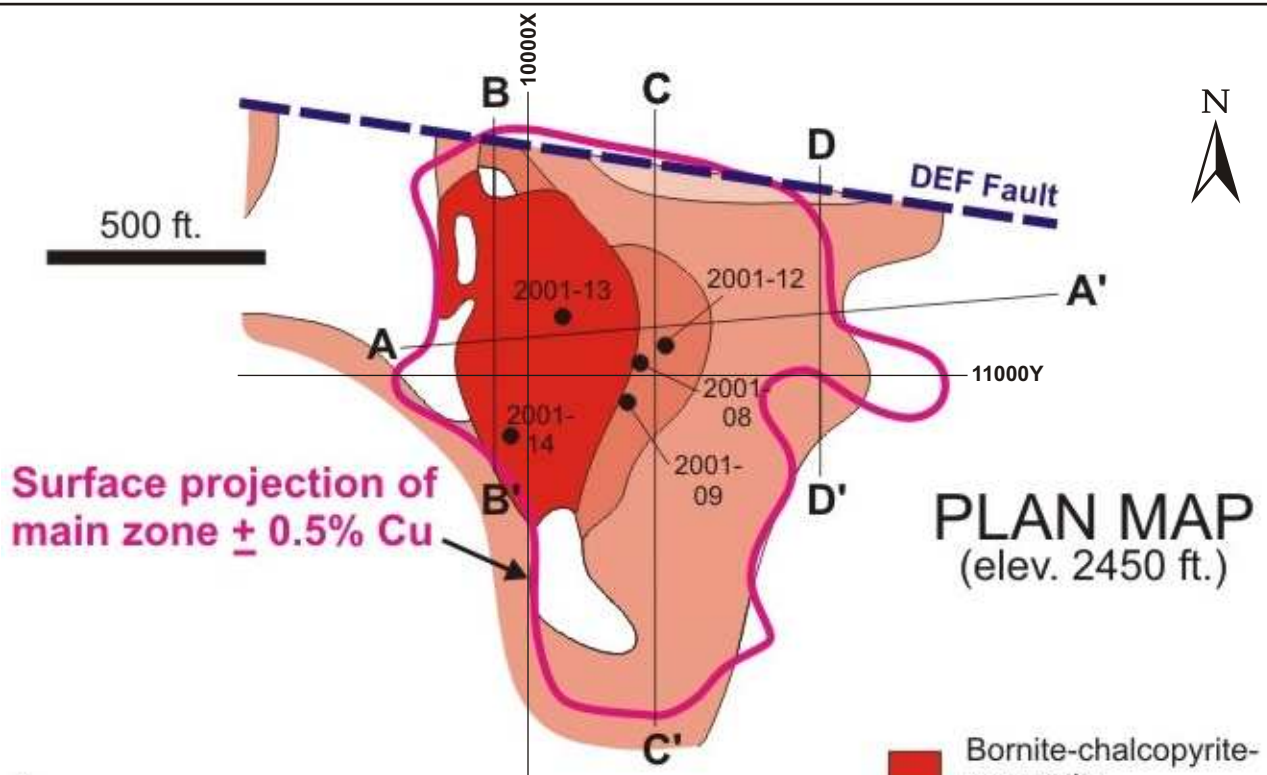
The Minto deposit is located at the headwaters of a small creek, called Minto Creek (formerly, Copper Creek), which has a very limited drainage basin. It was discovered as a result of an anomalous stream sediment sample from this creek and a few scattered boulders on the surrounding slopes with malachite on fractures and joint planes. There is no overt indication of the sulphide mineralization on the surface. The deposit was discovered by drilling.

The mineralization in the Minto deposit is in sulphide zones made up of chalcopyrite, bornite and minor pyrite with accessory magnetite. Gold and silver are present in association with the bornite. Gold occurs as free gold and the silver comes from the mineral hessite, a silver telluride. Copper oxide minerals, malachite and azurite, are also present. The copper oxides were derived from oxidation of the primary copper sulphide minerals and occur primarily in the upper parts of the mineralized zone when and where it was exposed to weathering and to a lesser extent within the deposit along faults. Zones of low-grade mineralization distal to and above the (sulphide) deposit made up of almost exclusively oxides smeared along joints and fractures in otherwise barren looking rock are probably due to remobilization (from below) and redeposition.

The mineralization is hosted by foliated granodiorite or gneiss. Higher-grade mineralization often occurs in quartzo-feldspathic gneiss, biotite quartz feldspar gneiss and siliceous gneiss which are similar to the foliated granodiorite apart from the added minerals implied in their description and more intense foliation. The foliated granodiorite, in turn, is very similar in composition to the largely unfoliated Klotassin Batholith in which the deposit occurs. Other than the mineralization itself, the foliation appears to be the principal geological difference between mineralized and unmineralized rock.

The main mineralized zone is distinctly zoned from west to east, from bornite-chalcopyrite-magnetite on the west side, followed by bornite-chalcopyrite in the center, followed by chalcopyrite, followed by pyrite on the east side (Figure 6). Zoned hydrothermal alteration is also evident in the main zone from potassic and/or phyllic assemblages within the mineralization to epidote and/or chlorite- propylitic assemblage on the margins of the mineralization. In the limited core observed by author LeBel, the mineralization is typically evenly disseminated, equigranular and medium to coarse grained, throughout the deposit regardless of the zone considered. Locally, there is some very high grade Cu mineralization up to 16% Cu where copper sulphides coalesce into clots and make up 30% to 40% of the rock.

The main zone mineralization forms a flat-lying oblate body approximately 1,100 ft long in a north south direction by 800ft wide in an east west direction that varies in thickness from 20 ft to 200 ft but averages 100 ft thick. The limits of the deposit are established by grade of the mineralization except along the north side where it is cut off by the DEF fault. SRK postulated in 1999 that the deposit may continue on the north side of the DEF fault at greater depth, to date this



- Bornite-chalcopyrite-magnetite
- Chalcopyrite-bornite
- Chalcopyrite
- Pyrite-chalcopyrite
- Malachite-azurite
- Unmineralized



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Figure 6  
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**MINERAL ZONATION MAP**

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theory remains untested. There are mineralized zones both above and below the deposit which are not well understood at this time. The Lower Zone, a 600 ft by 300 ft zone which underlies the east side of the main zone, is of particular interest. One estimate by SRK in 1990 (Klingman and Proc, 1993) based on historical drilling puts the mineral inventory of the Lower Zone at 1,070,086 tons at 1.29% Cu and 0.012 oz/t Au. This mineral inventory was not determined according to the precepts of NI 43-101. Three zones of similar mineralization have also been found in the south part of the property.

The deposit lies under the south-facing slope along the north side of Minto Creek. The deposit does not outcrop. The north part of the deposit is covered by thin overburden and up to 50m of rock. The south part of the deposit is covered by up to 100m of overburden some of which is permafrost. The overburden is a thick wedge of glacial outwash sand and gravel deposited on the bedrock surface where the deposit subcrops. The exposure of the deposit to the atmosphere when this paleo-surface was the surface would account for the oxidation evident in the deposit.

There is an extensive zone of largely oxide copper mineralization on the hill south of the deposit, in the area where ASARCO focussed its initial exploration on the property. Drilling in this area intersected three sulphide layers, labelled Target Areas #1 – #3 on Figure 5, at depths of 200ft – 1,000ft with grades ranging from trace amounts up to 5% Cu. Area #1 consists of a 20 ft thick sulphide layer with grades up to 2.17% Cu outlined along a length of 1500 ft at a depth of approximately 300 ft. In area #2, hole 96-6 intersected 20.3 ft of 3.01% Cu at a depth of 324.7 ft.

The copper oxide minerals, malachite and azurite, occur within the deposit and in many other places on the property. Within the deposit oxides are derived from oxidation of the copper sulphide minerals due to weathering. Away from the deposit, the malachite and azurite often occur on fracture and joint planes in rocks that are otherwise devoid of sulphide mineralization in zones with grades up to 1.0% Cu. It is possible this material has been dissolved from the sulphide mineralization below and re-mobilized by ground water and re-precipitated. There is no consistent analytical record of the non-sulphide copper in the historical drilling. Therefore, where sulphides and oxides occur together it is not always possible to distinguish between the contribution made by oxides from the assay results alone. The geological logs commonly report the presence of oxides so at least the extent of the oxide zones can be quantitatively determined, even though the tenor of the oxide mineralization might be qualitative.

Directly 2000 feet east of the main zone is located Area 4 where hole A125-74 intersected 63 feet grading 1.36% copper and 0.018 opt Au. This intersection was from 578 to 641 feet down the vertical hole. Holes A127-74 and A129-74 are also located in this area with intercepts of 0.78% copper over 50 feet from 244 feet deep, 1.26 % copper over 30 feet from a depth of 495 feet, and 0.59% copper over 20 feet from 535 feet in hole 127. Hole 129 cored 4 narrow mineralized intervals at 346, 406, 436 and 658. At 436 feet hole 129 contained 0.47% copper over 20 feet, the other intervals were 0.41%, 0.25% and 0.96% copper each over a 10 foot core length. This area is within the boundaries of the area selected by previous owners for tailings disposal. All holes in this area should be cemented so that if underground mining methods are proposed to extract this mineralization then no inrush of tailings can result through old drill holes.

It has been postulated that the DEF fault has offset part of the deposit along the northern deposit border and SRK has theorized the offset portion to be deeper. If discovered, this offset



portion could significantly add to resources which would in all probability require underground mining techniques. There is currently no direct evidence of the actual location of the offset deposit but the offset remains a good exploration target. Historic drilling has tested some of the immediate areas north of the deposit, the most favourable target area (Figure 5-Target Area #5) lies further to the west of the previous drill holes K90-74 and 97-TP2. Geological interpretation of the data for the area indicates that a possible depth for the similar Minto mineralized horizon would be in the 450-500' depth below surface or approximately 2750m a.s.l.

There are two large areas located within one mile to the south of the deposit that have only received preliminary testing (Figure 5-Target Areas #6 and #7). Current geological modelling has indicated that these areas lie in a equivalent geological setting to the deposit in a part of the property that has received limited or no past drilling. The few drill holes in the area did intercept fairly shallow copper mineralization (less than 100' below surface) with grades exceeding 1% copper.

Area #6 contains one hole, A118-74, that returned a three foot intercept of 1.4% Cu from 94-97'. There are no other holes in the vicinity to determine if this narrow intercept is isolated or if it represents a distal part of a larger mineralized body. Area #6 is approximately 2000' by 1000' in size. Area #7 is defined as the southwestern extension of Area #1 and is approximately 1500' by 1500' in size. Previous drilling in Area #1 returned several holes with encouraging shallow intercepts located in the southwest portion of the target. The copper results from hole A2-71 include from 36' of 1.67% (6.0-42.0 ft) as well as two other smaller intercepts of 3.05% over 2.0 ft (50-52') and 3.55% over 2.0 ft (61.5-63.5). The copper results from hole A9-72 include from 32' of 1.91% (26.0-58.0 ft). There are several holes to the north, west and south that intercepted low grade copper which provide boundaries to the target area such as holes A12-72, A130-74 and A126-74. Further drilling is recommended within these two target areas.

A new previously undetected copper oxide occurrence was found by ASARCO geologists in a road cut in the southwest corner of the property in 2002 which warrants further investigation. The area, known as the Borrow Pit, contains surface outcrops of massive to semi-massive magnetite hosted by Klotassin granodiorites (Figure 5-Target Area #8). Samples of the magnetite returned values of 265 ppm, 1670 ppm and 4550 ppm copper. There has been no known drilling in this area, the nearest drilling is more than 2,000 ft to the northeast. Preliminary drilling is recommended.

## **EXPLORATION**

Sherwood Mining has completed no exploration on the property since acquisition.

## **DRILLING**

### **Historical Drilling**

Most of the drilling on the property was diamond drilling done in the early 1970s in programs by Falconbridge and ASARCO, during the initial exploration on the property, definition drilling once the deposit was discovered and exploration in the area. The reports of this era do not go into the details of the drilling procedures but it is the authors' impression that basic drilling procedures have changed little over time. This early drilling was done with BQ drill rods which return a core diameter of 1.43 in. Within the main zone of the deposit the drill hole density is on 100 ft centres on the DEF (Falconbridge) part of the deposit (locally as close as 50 ft), and generally on 150ft to 200ft centres on the Minto (ASARCO) side as illustrated in Figure 7. Figure 8 shows a typical cross-section through the deposit. The locations of the holes were surveyed in by Underhill



Geomatics using a local grid controlled by local benchmarks. The same land surveyor was used to survey in subsequent holes using the same benchmarks. The core from this drilling was stored onsite in two core sheds. Over time the sheds have collapsed and/or been burned out by wildfires rendering most of the core unusable. In addition, the labels on the few remaining intact boxes are missing and/or are not legible. The drill roads and pads for this drilling are still visible and the holes are often identifiable by casing and/or wooden posts protruding from the ground although labels are currently no longer attached or legible. The results of this drilling have been instrumental in estimating the grade and tonnage of the deposit. It is the authors' opinion that the drilling was carried out using accepted practices of the time and is documented well enough to be reliable for the purposes of grade and tonnage estimations.

In their compilation of the results, Minto Exploration has distinguished the ASARCO drill holes with an 'A' prefix and the Falconbridge hole with a 'K' prefix. The percussion holes drilled in 1983 and 1984 by Teck were exploration holes unrelated to the main mineralization and are not considered in detail in this report.

### **Recent Drilling**

Minto Explorations Ltd. has carried out several diamond drilling programs for both specific purposes on the deposit proper and exploration on the property in general, as follows:

#### **1993**

- 3,149 ft (960 m) in 8 holes (93 – A to H) within the deposit to obtain samples of the two main mineralized types, foliated granodiorite and quartz-feldspathic gneiss for metallurgical testing
- six of the holes were also located to intersect the lower zone mineralization immediately below the main zone and one was designed to test deeper mineralization indicated in the 1970s drilling
- the core was used for metallurgical testing and some of it was not split and assayed
- four of the holes were logged for magnetic susceptibility

#### **1994**

- 7,170 ft (2,185 m) in 19 exploration holes to test mineralization south of the main deposit found in the 1970s but not thoroughly followed-up at the time
- this drilling outlined a mineralized horizon roughly 20ft thick grading 2 – 3% Cu
- one hole, 94-17, filled-in a large gap in the deposit itself

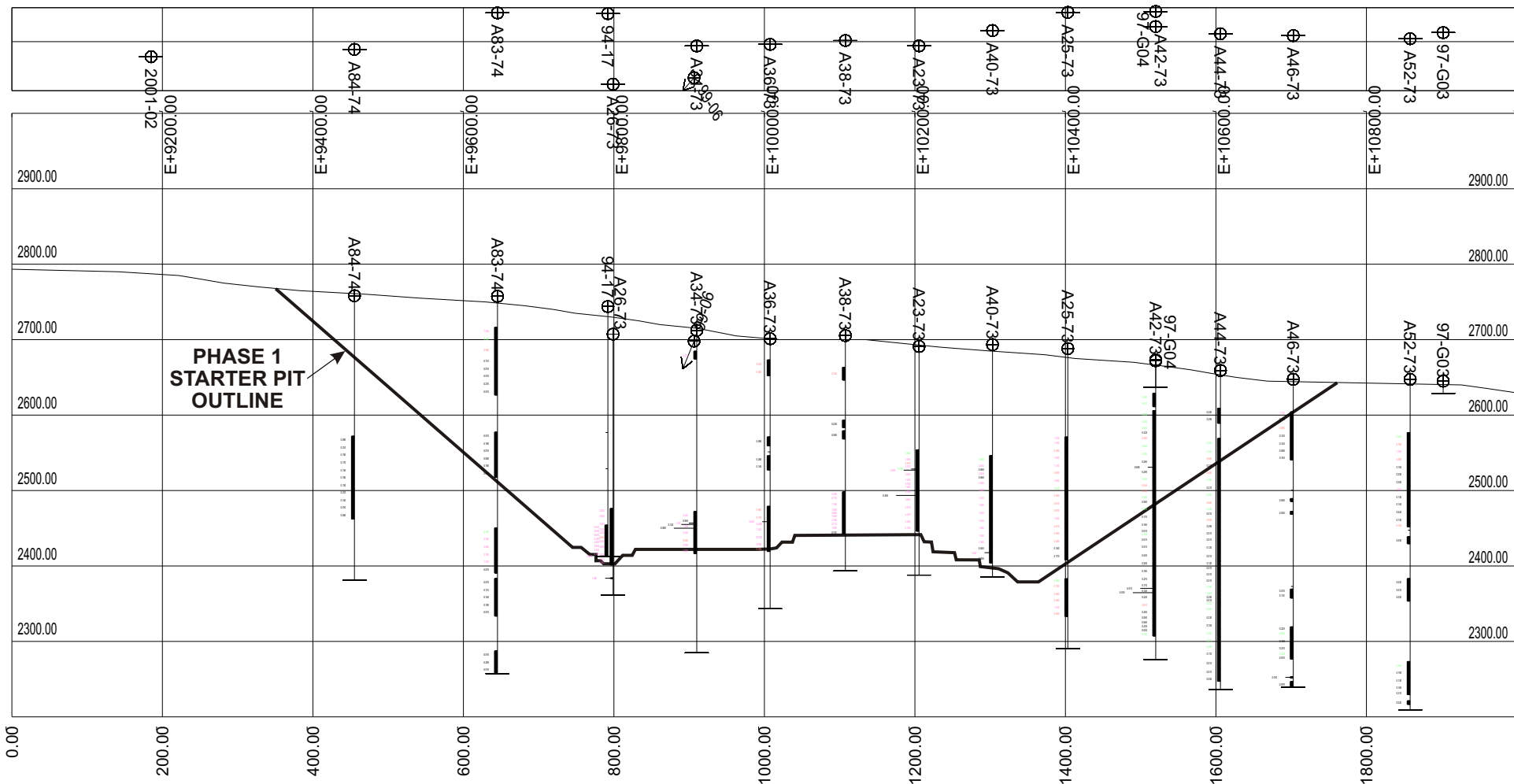
#### **1995**

- 1,875 ft (572 m) in 6 holes
- 1,394ft in 5 exploration holes to test “broad linear magnetic features” derived from an airborne magnetic and radiometric survey and 525ft in one condemnation hole north of the proposed mill site
- the exploration did not intersect any mineralization









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Figure 8  
 MINTO PROJECT  
 TYPICAL CROSS SECTION  
 SECTION 11000N  
 LOOKING NORTH

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1996

- 1,789 ft in 4 holes in condemnation drilling for the proposed west waste rock dump

2001

- 1,810 ft in 5 confirmation holes within the proposed open pit
- note that these holes were picked from a list of 13 proposed holes, the proposed nomenclature was retained and therefore the numbers are not consecutive, for example 2001-14 is the 5<sup>th</sup> hole drilled in 2001 not the 14<sup>th</sup> one

All the drilling on the project was contracted to E. Caron Diamond Drilling of Whitehorse. The 1993, 1994, 1995 and 2001 programs utilized HQ core and the 1996 drilling was NQ core. The drilling done in the 1990s, was prior to the NI 43-101 regulations, when there was less regulatory scrutiny, in a time when results were the focus of reporting, rather than how the work was done. There is little in the way of documentation for the methods used in the pre-1990s drilling and sampling.

The 2001 drilling was subject to a rigorous report by both Minto Explorations (Minto Explorations Ltd.) and ASARCO (Simpson, 2001) which loaned a geologist to the project to log and sample the core. The results of the 2001 drilling are discussed in the Data Verification section of this report. Some of the core from the 1993, 1996 and 2001 drilling programs is stored in the Ken Bostock Core library in Whitehorse. Some of the other core from the exploration on the property away from the deposit is stacked on site in a pile behind the camp buildings, older core was stored in sheds which burnt in a forest fire and is now unidentifiable.

## **SAMPLING METHOD AND APPROACH**

The sampling done previously was made by geological employees of large, professional Canadian, American and International mining companies, who would have used acceptable sampling techniques of that era. No reports or data detailing the sampling methods, analyses, quality control measures or security procedures used by the previous lessee companies was available to the authors for review and verification during the time of preparing this report. Based on the information available, most of the samples of the mineralization for analysis were obtained by splitting the core in two utilizing a mechanical wheel core splitter (in contrast to a diamond saw). In the case of 2 holes in the 1993 drilling for metallurgical grinding testing, all the core over the entire mineralized interval was utilized to improve the validity and reliability of the tests.

In the early drilling, sample intervals were consistently 5 ft or 10 ft long, or some other interval based on observed geology and mineralization. The 2001 drilling utilized a 5 ft sample interval adjusted as appropriate based on geology and mineralization logging. The mineralization is quite obvious and contacts between mineralized and non-mineralized material are generally sharp. In the deposit, the sulphide mineralization is generally consistent and evenly distributed so no inadvertent biasing of the results, depending on what part of the core was sampled, is expected.



## **SAMPLE PREPARATION ANALYSIS AND SECURITY**

In most cases the samples would have been prepared on site from split core on the instructions of a geologist and then bagged and shipped to the laboratory. It is inevitable that company employees would be involved in this process but the authors do not know how many were involved or their names. Minto Exploration Ltd hired independent consultants for most if not all of its work. It is not known whether officers or directors of Minto Explorations Ltd. were involved in the sample preparation. Subsequent sample preparation such as crushing pulverizing and sample splitting would have been the responsibility of the laboratory.

Chemex in Vancouver is believed to have been responsible for the 1970s analyses (Simpson, 2002). At the time, copper analyses were done by digesting a 2 gm sample pulverized to 100 mesh, in perchloric and nitric acid with AA finish. Modern practices use a 0.4 gm 150 mesh sample and aqua regia digestion. Gold analyses in the 1970's probably used a 10 gm pulp digested in aqua regia and an AA finish. Electronic microbalances and improvements in AA analysis have combined to reduce detection limits in the past 25 years.

Some of the early samples were not analyzed for precious metals and most of the samples only had total copper run on them. The result is an incomplete data set in terms of gold and silver. Copper oxide mineralization is noted throughout much of the deposit but has not been universally quantified at all by analysis of soluble copper.

Bondar-Clegg of North Vancouver carried out the analyses of the 2001 samples. Each sample was coarse crushed to -10 mesh from which a 250 gm split was separated and pulverized to -150. For analysis a 0.25gm sample was digested with HCL, HNO<sub>3</sub>, HClO<sub>4</sub> and HF acids with final copper determination by AA Spectroscopy. Gold and silver were determined by fire assay using a 30 gm sample and AA finish.

It is not known what quality control procedures were used in the 1970s drilling if any at all. There are no unusual or unexpected results that are at odds with what is known about the geology and mineralization. The 2001 analyses were subject to 4 types of quality control, namely; a blank made up of granodiorite from the site, an ASARCO coarse standard, prepared pulp samples and duplicate splits, both of the coarse ground rejects and the pulverized rejects. Some of the blanks placed on purpose immediately after very rich copper samples returned traces of Cu indicating the crusher not being spotlessly cleaned between samples, but the amount of contamination was deemed insignificant (Simpson, 2001). All of the other quality control measures produced acceptable repeatability (Simpson, 2001) verifying the results of the 2001 drilling.

The sample preparations and analyses were entrusted to professional Canadian, American and International mining companies, who ostensibly used professional assaying laboratories for their samples taken in the project area. Limited reports detailing the methods of sample preparation, or quality control measures used by the previous companies were available to the writers for review and verification at the time of this report.

Full details of sample security of samples as required in NI 43-101 were not commonly provided in the reports from era of the previous work. A review of the data by the authors does not indicate any reason to suspect any irregularities in the results of the old sampling. The results



contained in this report were collected by reputable mining companies, who would have used procedures typical of the era.

### DATA VERIFICATION

No independent data verification was carried out by the authors for this report. The work on the property has been carried out by reputable companies and there does not appear to be any reason to question the veracity of the information. Moreover, most of the core from the early drilling programs is not usable because both the Falconbridge and ASARCO on site core sheds have either collapsed and/or been burned out. Much of the old core is now in piles on the ground. The core boxes appear to have been labelled by felt pen, rather than metal or plastic tags and the labels on core boxes that remain intact are not legible.

In an exercise to verify previous results, in 2002 ASARCO was able to identify and recover 9 holes from the dilapidated ASARCO core shed (Simpson, 2002). Two of the holes, 20–73 and 22–73, cored the main zone mineralization but unfortunately the split half of mineralized interval (60.7 ft @ 6.9% Cu) from hole 20–73 that would normally remain in the core box was entirely missing and most of the interval (90 ft @ 4.48% Cu ) from 22–73 was missing. These samples probably went for the metallurgical testing discussed later in this report. Nonetheless, a total of 14 samples of the remaining half of the split the core, that approximated or equalled the original sample intervals, were collected and analyzed by ASARCO. The results of this exercise are shown in the following table.

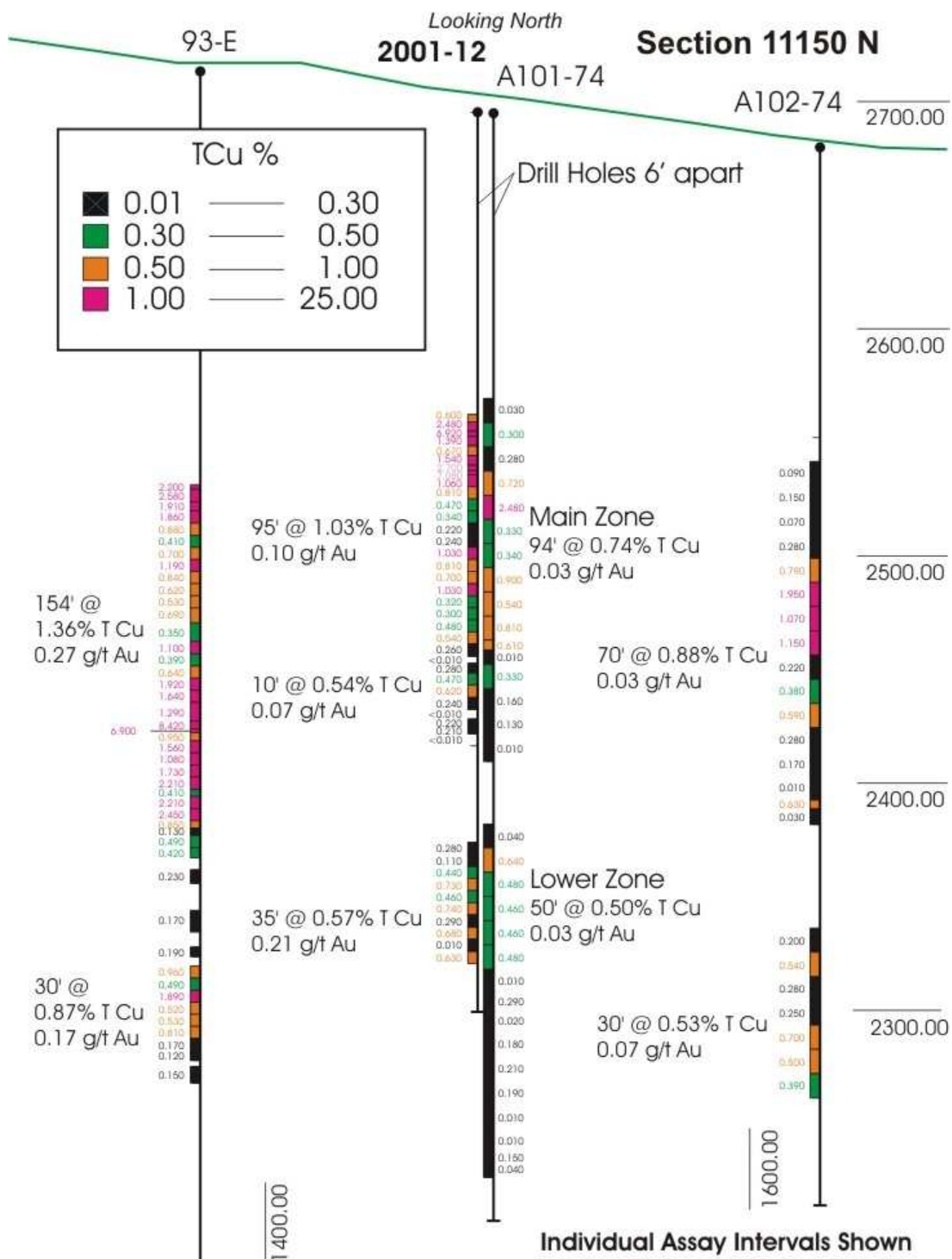
**Table 4: Data Verification**

Hole #	Original Interval/ Cu %	New Interval/ Cu %
14-72	418 – 427/0.70	418 – 427/0.454
	427- 437/1.60	427- 437/2.16
	437 – 447/0.20	437 – 447/0.149
	447 – 460/0.46	447 – 460/0.068
15 –72	311 – 321/1.16	311 – 321/0.91
	321 – 336.5/1.68	321 – 336.5/1.69
	459.5 – 470/0.54	459.5 – 470/0.613
17 –72	175 – 185/0.62	175 – 185/0.155
22 – 73	205 – 209/0.44	205 – 209/0.06
	209 – 212.5/11.70*	209 – 210/9.26*
	212.5 – 218/2.00*	210.0 – 218/1.17*
	218 – 224/1.35	218 – 224/1.22
	224 – 228/2.17	224 – 228/2.17
	290 – 295/4.50*	292 – 295/0.067*

\* Original and re-sampled intervals not exactly the same

Comparing the 11 intervals that are exactly the same, the range of ratios between new and original vary from 0.14 to 1.35. There are three abnormally low values that are difficult to account for. The copper mineralization is disseminated, so a sampling bias from uneven distribution of the mineralization is not anticipated. If the three abnormally low values in this group are ignored, the average ratio between new and original Cu content is 0.94.

ASARCO also drilled a series of five confirmation holes in 2001 to confirm the grades and intervals of the main zone of the deposit (Simpson, 2001). Some of the holes specifically targeted



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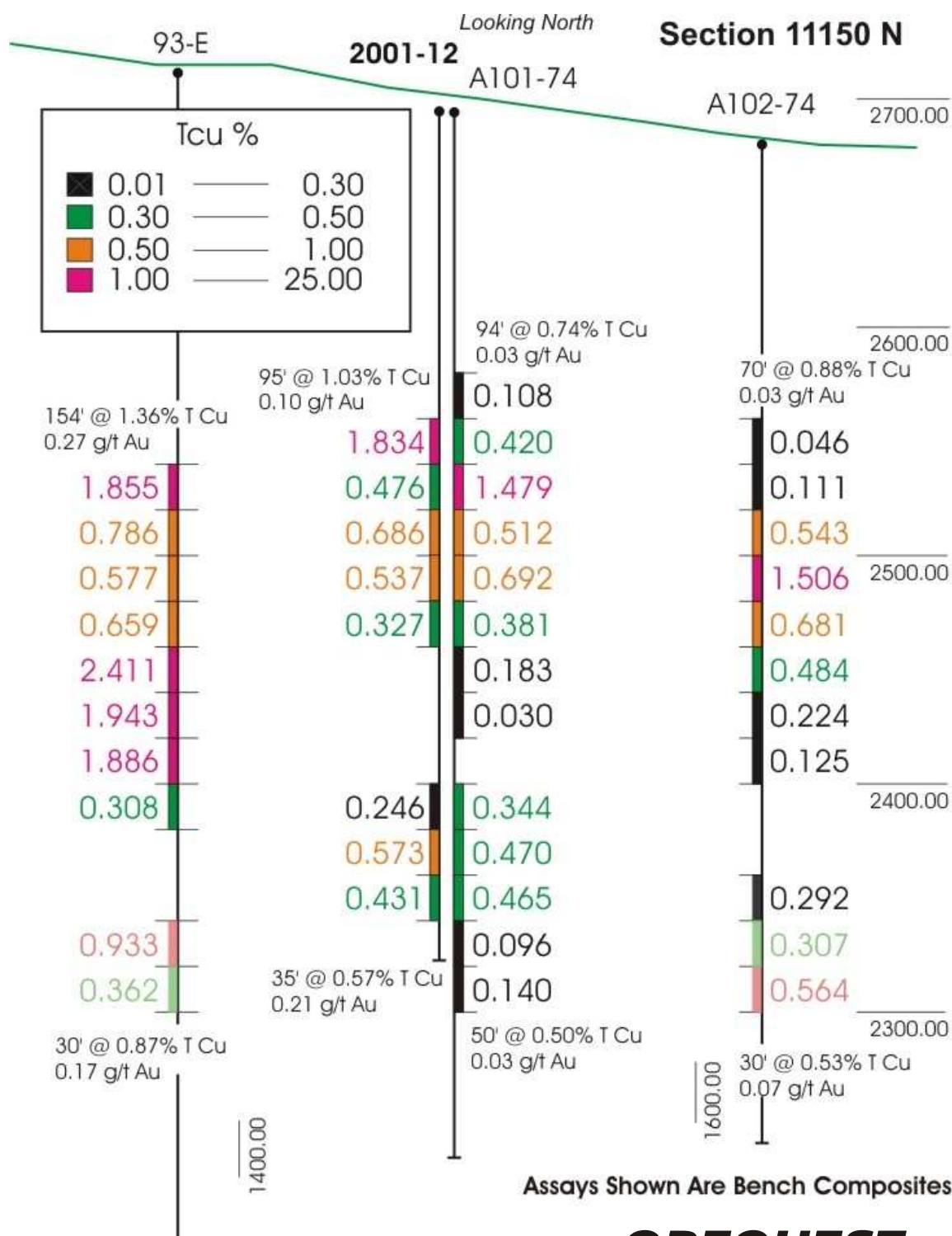
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Figure 9  
MINTO PROJECT  
**CONFIRMATION DRILLING  
SECTION 11150 N**

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Figure 10  
MINTO PROJECT  
**CONFIRMATION DRILLING  
SECTION 11150 N  
BENCH COMPOSITES**

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the Lower Zone, below the main zone, which was not well delineated by the former drilling. One hole, 2001-12 is regarded as a direct twin of hole A101-74. The collar of the old hole could not be found but 2001-14 was located 6.6 ft from the old hole, based on surveyed collar coordinates. Hole 2001-13 is regarded as a partial twin of hole K09-73 because the old hole was an angle hole while 2001-14 was vertical. For the other three holes, situated in other strategic parts of the deposit, the expected grade and thickness were determined from a weighted average of the results from the three closest holes.

The results for copper from the confirmation drilling are tabulated below in table 5.

**Table 5: Confirmation Drilling, Main Zone (Cu)**

Hole #	GRADE		THICKNESS		COMMENTS
	Actual %	Expected %	Actual ft	Expected ft	
2001-08	1.05	1.68	135	145	
2001-09	1.697	1.43	128	122	
2001 – 12	1.03	0.74	95	94	Twin of hole A101-74
	0.54	n/a	10	n/a	Lower main zone not in adjacent holes
2001 – 13	1.89	1.84	181	162	Expected results from hole K09-73
	1.89	1.77	177	150	Expected results from five adjacent holes
2001 –14	2.75	3.16	88	64	

**Table 6: Confirmation Drilling, Lower Zone (Cu)**

Hole #	GRADE		THICKNESS		COMMENTS
	Actual %	Expected %	Actual ft	Expected Ft	
2110-8	1.27	0.55	52.5	35.5	
2001-9	N/a	2.05	n/a	18	No lower zone in 2001-9
2001-12	0.57	0.50	35	50	
2001-13	N/a	n/a	n/a	n/a	No lower zone
2001-14	N/a	n/a	n/a	n/a	No lower zone



The gold results from the confirmation drilling are as follows.

**Table 7: Confirmation Drilling, Main Zone (Au)**

Hole #	GRADE		THICKNESS		COMMENTS
	Actual g/T	Expected g/T	Actual ft	Expected Ft	
2001-08	0.27	0.22	135	145	
2001-09	0.65	0.25	128	122	
2001 – 12	0.10	0.03	95	94	Twin of hole A101-74
	0.07	n/a	10	N/a	Lower main zone not in adjacent holes
2001 – 13	0.45	0.34	181	162	Expected results from hole K09-73
	0.45	0.40	181	150	Expected results from 5 adjacent holes
2001 –14	1.82	0.93	88	64	

**Table 8: Confirmation Drilling, Lower Zone (Au)**

Hole #	GRADE		THICKNESS		COMMENTS
	Actual g/T	Expected g/T	Actual Ft	Expected Ft	
2110-8	0.31	0.10	52.5	35.5	Au only found in one of closest holes, not three
2001-9	n/a	0.53	n/a	18	No lower zone in 2001-9
2001-12	0.21	0.03	35	50	
2001-13	n/a	n/a	n/a	n/a	No lower zone
2001-14	n/a	n/a	n/a	n/a	No lower zone

The confirmation drilling shows that both the copper and gold grade and thickness in the mineralized zones are generally higher than indicated by the original drilling results. On average, for all of the intersections, the Cu grade is 25% higher, the Au grade is 300 % higher and the thickness is 18 % higher. In particular, the thickness of the main zone is also 38% higher in hole 2001-14 than predicted from adjacent holes and the gold grade is twice as high as adjacent holes and 3.85 times higher than the 0.48 g/T deposit average.

Side by side, sample by sample comparison of the results from 2001-12 and A101-74, determined to be only 6.6ft apart, shows some inconsistencies particularly at the top of the main zone (Minto Explorations Ltd., f) as illustrated in Figure 9. A difference in sample interval, 2 ft to 5 ft for new hole 2001-12 compared to 10 ft for old hole A101-74, would account for this difference because the averaging effect of the larger interval. When the 2001-12 results are composited on similar intervals as the 1974 samples or bench composites are calculated as shown in Figure 10 the differences are less pronounced.





## MINERAL RESOURCE AND MINERAL RESERVE ESTIMATES

A resource estimation was completed by the author in 1994 and is reported in (Giroux, 1994). Since that time an additional 11 drill holes within the area of interest have been completed. Figure 11 shows the location of the new information with respect to the original data. The total database therefore consisted of 240 holes within the vicinity of the proposed pit. The numerous other “exploration holes” were not included in the resource estimate.

### Data Analysis

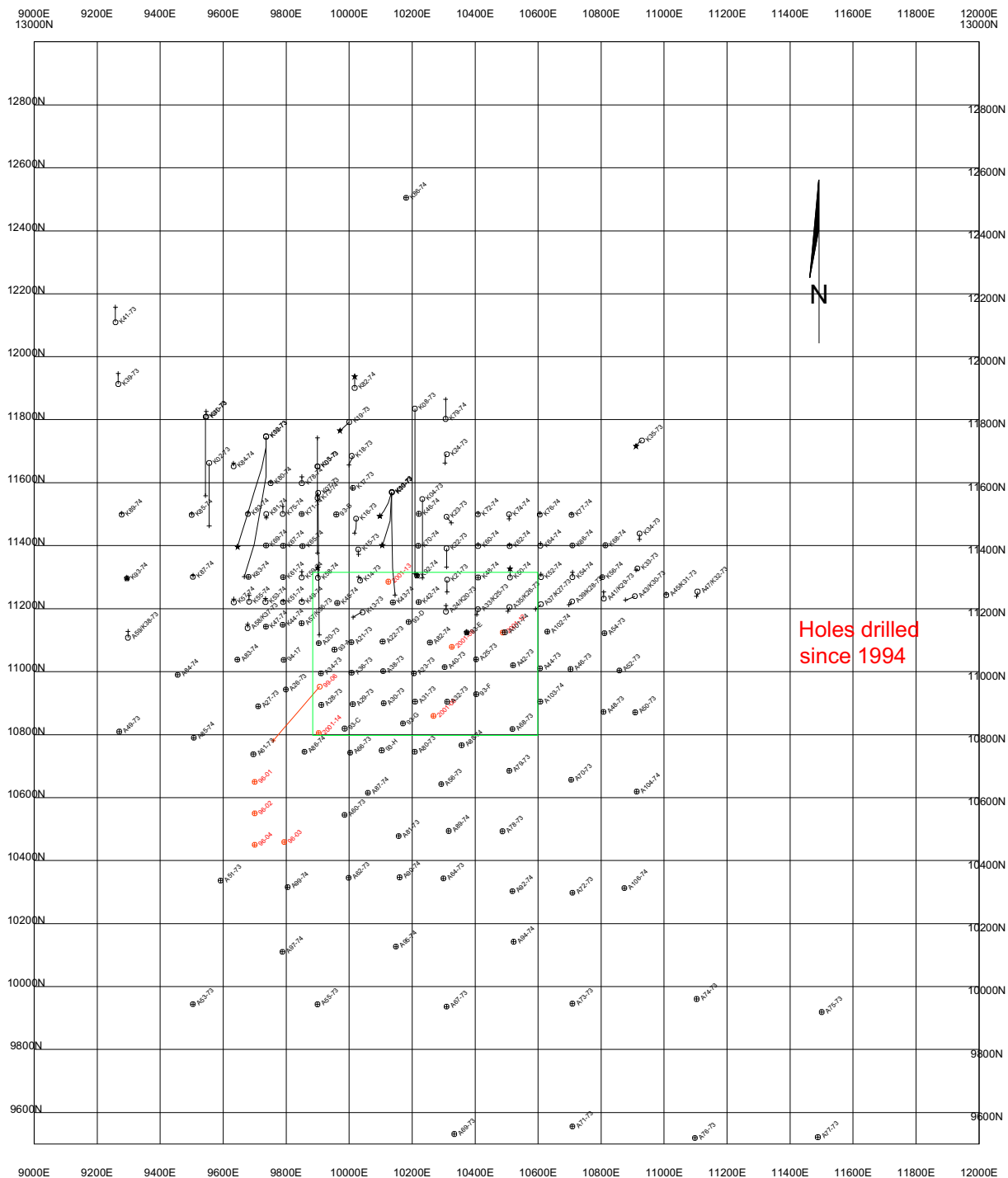
Based on the 1994 geologic interpretation assays were back coded from the geologic block model that was developed with sections and level plans. Only blocks below 2590 elevation were used with all material above this elevation considered to be oxidized. Drill holes were coded as one of 7 possible mineralization domains as described below and shown in Figure 12. The block model was adjusted where new drill holes did not correlate with the 1994 interpretation.

- Zone 1 - Foliated Biotite-granodiorite zone – primary mineral is chalcopyrite
- Zone 3 - Quartzofeldspathic gneiss and siliceous zone – primary minerals are bornite-chalcopyrite-magnetite.
- Zone 4 - Lower subsidiary zone – primary mineral is chalcopyrite with minor pyrite
- Zone 6 - Subsidiary zone of silicious material – primary minerals are bornite-chalcopyrite-magnetite
- Zone 7 - Non-oxidized material in subsidiary zones above Zones 1 and 3
- Zone 9 - Partially oxidized material in subsidiary zones above Zones 1 and 3
- Zone 11 - Partially oxidized Zone 1 material
- Zone 0 - Material from surface down to 2580 elevation or between mineral domains

The tables below summarize the statistics for each variable in each domain.

**Table 9 : Summary of Statistics for Copper (%) in Domains**

Domain	Number	Mean	S.D.	Minimum	Maximum	Coef. of Var.
0	2139	0.40	0.98	0.001	19.60	2.46
1	895	1.04	1.01	0.001	8.42	0.97
3	665	3.17	2.81	0.005	19.60	0.88
4	259	0.44	0.61	0.001	3.98	1.38
6	29	3.18	4.38	0.090	22.70	1.38
7	172	0.56	1.78	0.001	16.50	3.18
9	79	0.74	1.47	0.001	7.53	1.98
11	198	0.82	0.89	0.001	7.08	1.08



Holes drilled  
since 1994

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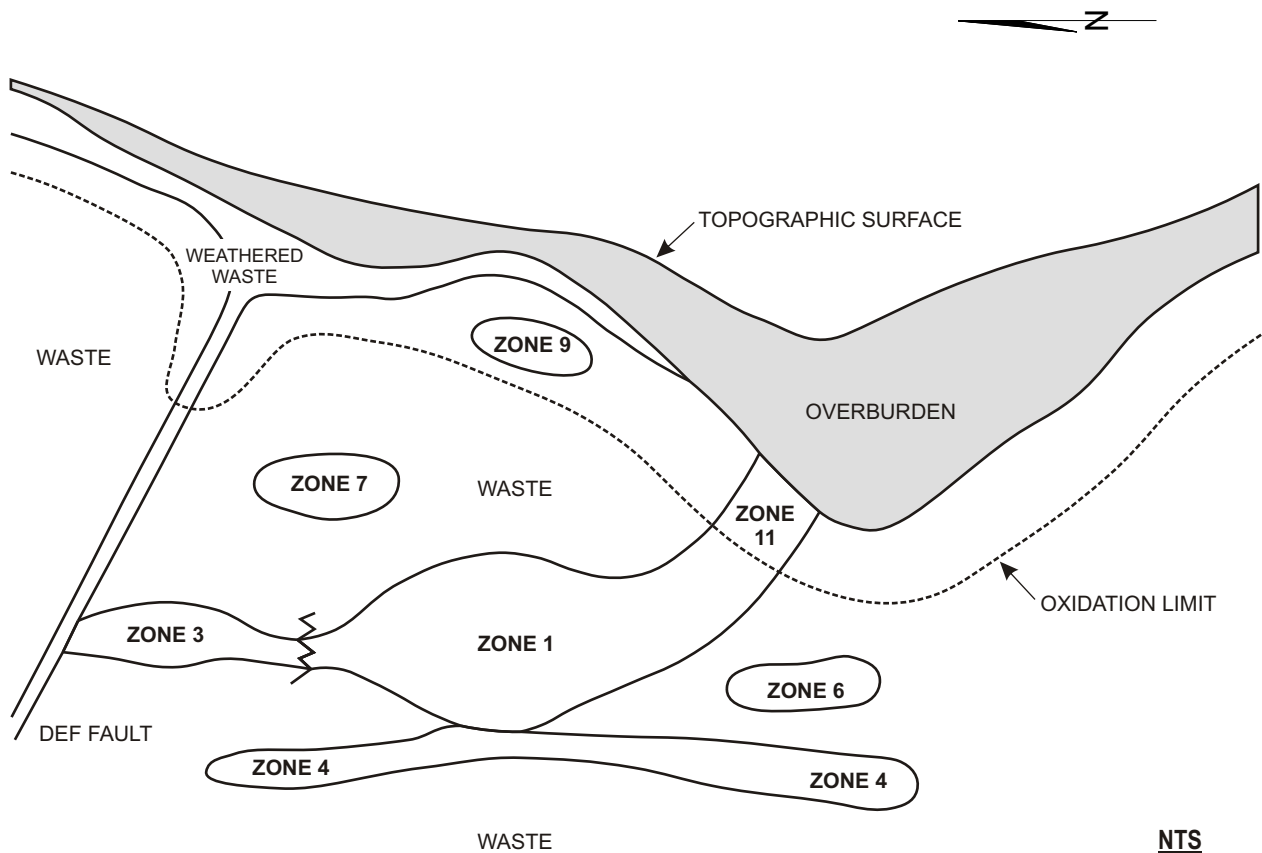
Figure 11  
MINTO PROJECT

**DRILL HOLE MAP**

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Figure 12  
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**IDEALIZED N - S SECTION  
SHOWING RELATIVE LOCATIONS  
OF VARIOUS MINERAL DOMAINS**

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**Table 10 : Summary of Statistics for Gold (oz/t) in Domains**

Domain	Number	Mean	S.D.	Minimum	Maximum	Coef. of Var.
0	1987	0.004	0.015	0.001	0.320	3.38
1	888	0.006	0.012	0.001	0.200	1.82
3	664	0.029	0.031	0.001	0.310	1.06
4	213	0.004	0.007	0.001	0.054	1.85
6	29	0.033	0.063	0.001	0.280	1.91
7	172	0.006	0.018	0.001	0.159	3.12
9	69	0.014	0.033	0.001	0.193	2.38
11	191	0.007	0.008	0.001	0.041	1.20

**Table 11 : Summary of Statistics for Silver (oz/t) in Domains**

Domain	Number	Mean	S.D.	Minimum	Maximum	Coef. of Var.
0	1981	0.088	0.219	0.001	5.250	2.50
1	888	0.127	0.114	0.001	1.180	0.90
3	664	0.415	0.396	0.001	2.760	0.95
4	213	0.075	0.095	0.001	0.640	1.26
6	29	0.472	0.773	0.001	3.960	1.64
7	172	0.131	0.330	0.001	2.900	2.52
9	69	0.098	0.188	0.001	0.920	1.92
11	191	0.096	0.199	0.001	2.510	2.07

The grade distributions and samples statistics show enough differences between the various zones to treat each individually.

The process of subdividing the deposit into mineral domains has eliminated the need for capping. In each domain the higher grades are not considered erratic and form reasonable grade distributions.

There is an indication that gold assays from the 2001 drill holes might be higher than gold assays taken prior to 1997. A comparison for 2001 assays to pre 2001 assays was made within the same volume of material. A box shown in green on Figure 11 was used to compare pre 2001 assays with post 2001 assays. Table 12 shows the comparison for all assays within this volume.

**Table 12 : Comparison of Pre 2001 Assays to Post 2001 Assays**

	Pre 2001			Post 2001		
	Cu (%)	Au (oz/t)	Ag (oz/t)	Cu (%)	Au (oz/t)	Ag (oz/t)
Number	893	860	860	204	204	204
Mean	1.63	0.011	0.210	1.33	0.013	0.132
S.D.	2.42	0.020	0.357	1.35	0.021	0.152
Minimum	0.001	0.001	0.001	0.005	0.001	0.010
Maximum	19.60	0.310	5.25	7.86	0.193	1.180
C.V.	1.49	1.80	1.70	1.02	1.61	1.15



Based on this comparison the 2001 drilling shows a very slight increase in average gold grades and lower values for copper and silver. If the data is further segregated into the main mineralized zone (Zone 1) the difference is more noticeable.

**Table 13 : Comparison within Zone 1 of Pre 2001 Assays to Post 2001 Assays**

	Pre 2001			Post 2001		
	Cu (%)	Au (oz/t)	Ag (oz/t)	Cu (%)	Au (oz/t)	Ag (oz/t)
Number	265	264	264	67	67	67
Mean	1.14	0.007	0.135	1.423	0.012	0.127
S.D.	1.07	0.013	0.117	1.256	0.018	0.155
Minimum	0.001	0.001	0.001	0.005	0.001	0.010
Maximum	8.42	0.200	0.726	7.86	0.118	1.18
C.V.	0.94	1.99	0.86	0.88	1.51	1.22

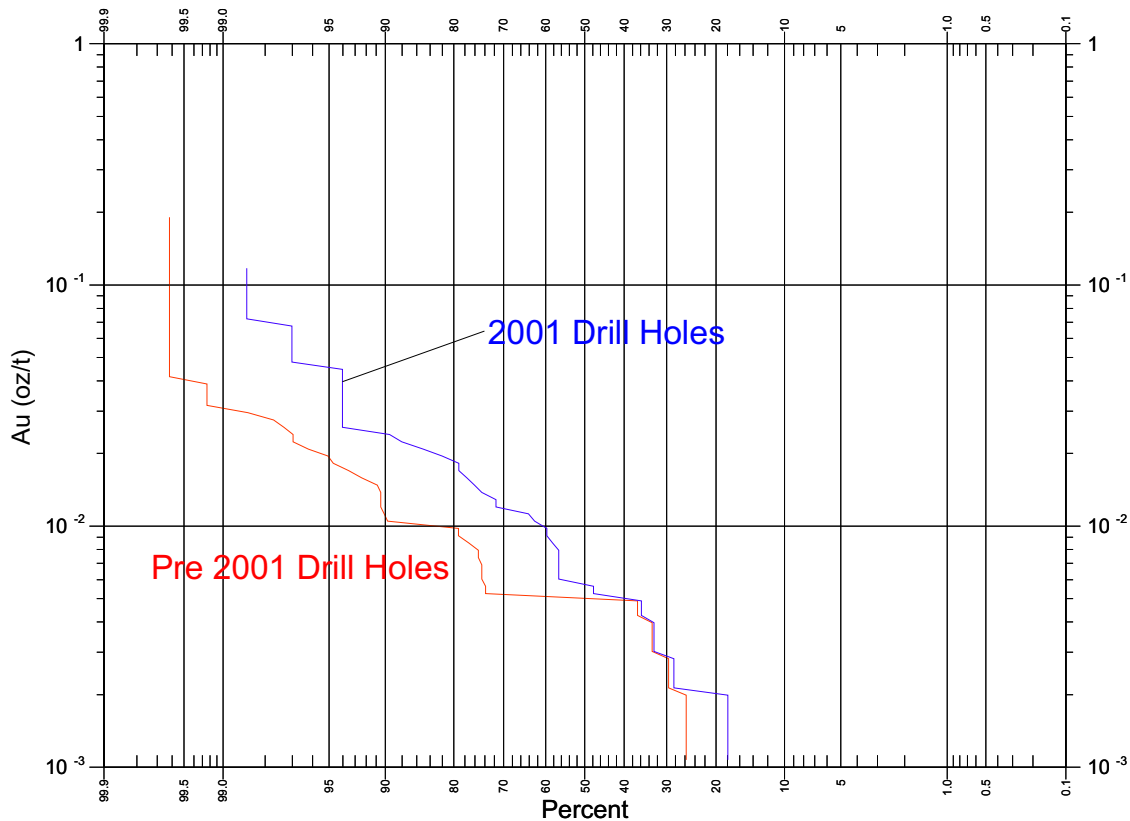
Within Zone 1 the difference represents a 71% increase in gold grade and can also be seen in a cumulative frequency plot (Figure 13 ) showing the two distributions. Within the 2001 assays, shown in blue, 40% of the data sits above 0.01 oz Au/t while in the pre 2001 assays only 20% of the data is above 0.01 oz Au/t. The indication is that historic gold assays for the Minto may be understated. Further investigation should be completed to determine if this observation is valid.

### Composites

Uniform down hole composites 10 ft. in length were made for each mineral domain. Composites less than 5 ft. at the domain boundaries were combined with adjoining intervals to produce a composite set of equal support;  $10 \pm 5$  ft. The statistics for 10 ft. composites are shown below. Intervals of drill holes that were not assayed but passed through mineralized domain solids were assigned a nominal 0.001 % Cu, 0.001 oz/t Au and 0.001 oz/t Ag value. Because of this adjustment, the number of composites in some domains are actually higher than the number of assays. An unsampled interval of 45 ft. for example would count as one assay but form 5 composites.

**Table 14 : Summary of Statistics for Copper (%) in 10 ft. Composites**

Domain	Number	Mean	S.D.	Minimum	Maximum	Coef. of Var.
1	501	1.01	0.81	0.001	5.35	0.80
3	364	3.10	2.17	0.016	13.11	0.70
4	194	0.44	0.59	0.001	3.98	1.33
6	16	2.62	2.93	0.811	12.60	1.12
7	99	0.44	1.04	0.001	8.30	2.34
9	82	0.54	1.08	0.001	6.89	2.01
11	173	0.75	0.73	0.001	4.35	0.97



Cumulative Frequency Plot Au in Zone 1

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Figure 13  
MINTO PROJECT  
**LOGNORMAL CUMULATIVE  
FREQUENCY PLOT  
FOR GOLD ASSAYS IN ZONE 1**

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**Table 15 : Summary of Statistics for Gold (oz/t) in 10 ft. Composites**

Domain	Number	Mean	S.D.	Minimum	Maximum	Coef. of Var.
1	497	0.006	0.009	0.001	0.107	1.45
3	363	0.029	0.025	0.001	0.198	0.86
4	164	0.004	0.007	0.001	0.052	1.77
6	16	0.026	0.040	0.003	0.141	1.54
7	99	0.006	0.017	0.001	0.133	2.82
9	74	0.008	0.020	0.001	0.134	2.38
11	168	0.006	0.007	0.001	0.039	1.21

**Table 16 : Summary of Statistics for Silver (oz/t) in 10 ft. Composites**

Domain	Number	Mean	S.D.	Minimum	Maximum	Coef. of Var.
1	497	0.122	0.092	0.001	0.776	0.75
3	363	0.406	0.307	0.001	2.087	0.76
4	164	0.074	0.102	0.001	0.634	1.37
6	16	0.368	0.526	0.060	2.268	1.42
7	99	0.119	0.264	0.001	2.066	2.21
9	74	0.065	0.132	0.001	0.662	2.03
11	168	0.089	0.165	0.001	1.521	1.85

### Variography

Pairwise relative semivariograms were produced for each variable within each mineral domain and the principal directions of anisotropy established. Zone 1 was the only domain with sufficient data to establish anisotropy. In all other domains there was insufficient data to disprove the assumption of isotropy. Nested and single spherical models were fit to the data for each Domain and the results are summarized below in Table .



**Table 17: Parameters for semivariogram models at Minto**

Domain	Variable	Direction	C0	C1	C2	Range a1 (ft)	Range a2 (ft)
Zone 1	Cu	Az. 165° Dip 0	0.10	0.20	0.25	150	800
		Az. 75° Dip 0	0.10	0.20	0.25	100	400
		Az. 0° Dip -90	0.10	0.20	0.25	5	15
	Au	Az. 165° Dip 0	0.10	0.10	0.35	100	800
		Az. 75° Dip 0	0.10	0.10	0.35	100	300
		Az. 0° Dip -90	0.10	0.10	0.35	5	15
	Ag	Az. 165° Dip 0	0.10	0.20	0.30	50	600
		Az. 75° Dip 0	0.10	0.20	0.30	50	600
		Az. 0° Dip -90	0.10	0.20	0.30	5	15
Zone 3	Cu	Omnidirectional	0.20	0.10	0.12	60	360
	Au	Omnidirectional	0.20	0.15	0.22	60	500
	Ag	Omnidirectional	0.10	0.18	0.12	60	500
Zone 4	Cu	Omnidirectional	0.25	0.10	0.35	100	400
	Au	Omnidirectional	0.10	0.20	0.50	200	600
	Ag	Omnidirectional	0.30	0.20	0.40	200	500
Zone 7	Cu	Omnidirectional	0.60	0.42		250	
	Au	Omnidirectional	0.20	0.20	0.22	60	240
	Ag	Omnidirectional	0.30	0.20	0.50	80	250
Zone 9	Cu	Omnidirectional	0.40	0.70		180	
	Au	Omnidirectional	0.15	0.67		100	
	Ag	Omnidirectional	0.45	0.75		200	
Zone 11	Cu	Omnidirectional	0.20	0.20	0.27	80	500
	Au	Omnidirectional	0.10	0.20	0.50	200	500
	Ag	Omnidirectional	0.40	0.20	0.50	200	400

### Block Model

The block model established for the 1994 resource estimate was also used for this estimate. Block zone codes were adjusted where necessary in the area of the post 1994 drill holes. Only blocks below the 2590 level were coded for one of the 7 different mineral domains. The model had the following parameters:



Origin East - 8500 E	Column width = 25 ft	Number of Columns – 128
North – 9600 N	Row width = 25 ft	Number of Rows – 128
Top 2590 Elevation	Level height = 10 ft	Number of Levels – 27
No Rotation		

Figure 14 shows the distribution of mineralized domains on the 2450 Level.

### Bulk Density

A tonnage factor for each block was established, as in 1994, based on the kriged grade of copper. The basis for this interpretation came from an ASARCO feasibility study completed in 1976. The values used were similar to those determined in the 1994 study (Giroux, 1994).

	ft <sup>3</sup> /ton	SG g/cc
Gravel	16.00	2.00
Waste Rock	12.50	2.56
Cu (0.6 % to 1.0 %)	12.23	2.62
Cu (1.0 % to 3.0 %)	11.74	2.73
Cu (> 3.0%)	11.25	2.85

An appropriate tonnage conversion factor was applied to each block based on the kriged copper grade.

### Grade Interpolation

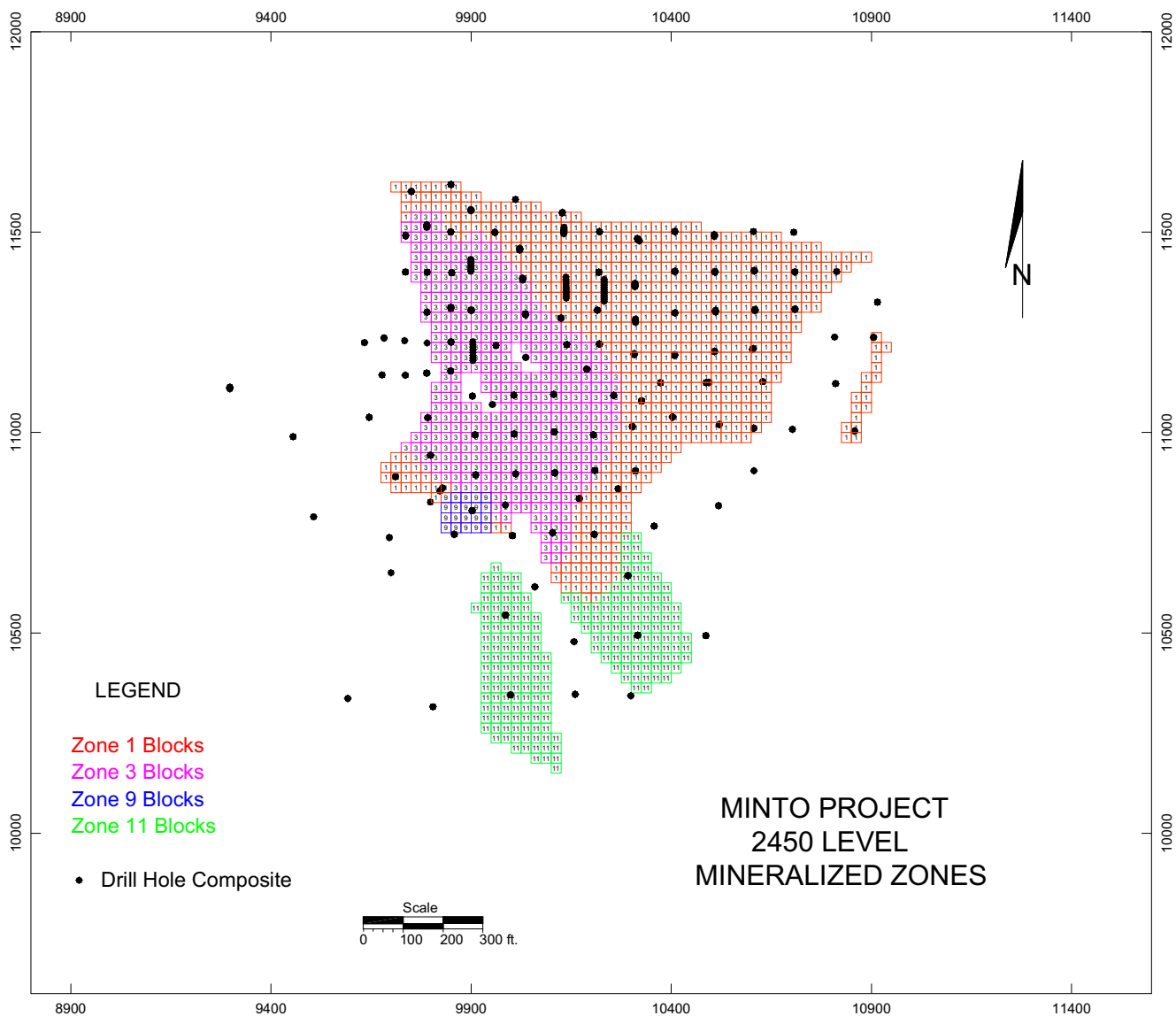
Ordinary kriging was used to interpolate grades for copper, gold and silver into the block model. Zones 1, 3, 9 and 11 were estimated using the appropriated variograms models and soft boundaries. For example data near the boundary of Zones 1 and 3 were allowed to influence both zones. The remaining Zones 4, 6 and 7 were treated with hard boundaries and composites from each zone were only allowed to influence that particular zone.

Kriging was completed in a series of passes for each variable within each mineralized zone. Pass 1 used a search ellipse with dimensions equal to ¼ of the semivariogram ranges in the three principal directions. If a minimum 4 composites were not found within this search ellipse, centered on the block, then the ellipse was expanded to ½ the ranges for Pass 2. For blocks not estimated in Pass 2, the search ellipse was expanded to the full range in pass 3 and in some cases a fourth pass using twice the range was required to fill the solids. Blocks not estimated in pass 4 were left unestimated. In all cases if more than 16 composites were found the closest 16 to the block centroid were used.

### Classification

Based on the study herein reported, delineated mineralization of the Minto Project is classified as a resource according to the following definition from National Instrument 43-101.

*“In this Instrument, the terms "mineral resource", "inferred mineral resource", "indicated mineral resource" and "measured mineral resource" have the meanings ascribed to those terms by the Canadian Institute of Mining, Metallurgy and*



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Figure 14  
MINTO PROJECT  
**LEVEL PLAN 2450 ELEVATION  
SHOWING BLOCKS WITH  
MINERALIZED ZONES**

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*Petroleum, as the CIM Standards on Mineral Resources and Reserves Definitions and Guidelines adopted by CIM Council on August 20, 2000, as those definitions may be amended from time to time by the Canadian Institute of Mining, Metallurgy, and Petroleum.”*

*“A **Mineral Resource** is a concentration or occurrence of natural, solid, inorganic or fossilized organic material in or on the Earth's crust in such form and quantity and of such a grade or quality that it has reasonable prospects for economic extraction. The location, quantity, grade, geological characteristics and continuity of a Mineral Resource are known, estimated or interpreted from specific geological evidence and knowledge.”*

The terms Measured, Indicated and Inferred are defined in NI 43-101 as follows:

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

*“An '**Indicated Mineral Resource**' is that part of a Mineral Resource for which quantity, grade or quality, densities, shape and physical characteristics, can be estimated with a level of confidence sufficient to allow the appropriate application of technical and economic parameters, to support mine planning and evaluation of the economic viability of the deposit. The estimate is based on detailed and reliable exploration and testing information gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes that are spaced closely enough for geological and grade continuity to be reasonably assumed.”*

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

On the Minto property the density of drilling (roughly a 100 ft. grid) has established a high level of geologic continuity and the semivariograms have quantified the grade continuity. As in 1994 classification was linked to the kriging estimation variance which is a measure of the confidence one can place on a kriged block grade. For this estimate a relative-kriging standard deviation (RKSD) was calculated for each block. Blocks were also coded with the pass at which they were estimated based on search ellipses dimensions tied to semivariogram ranges. Classification was determined as follows:

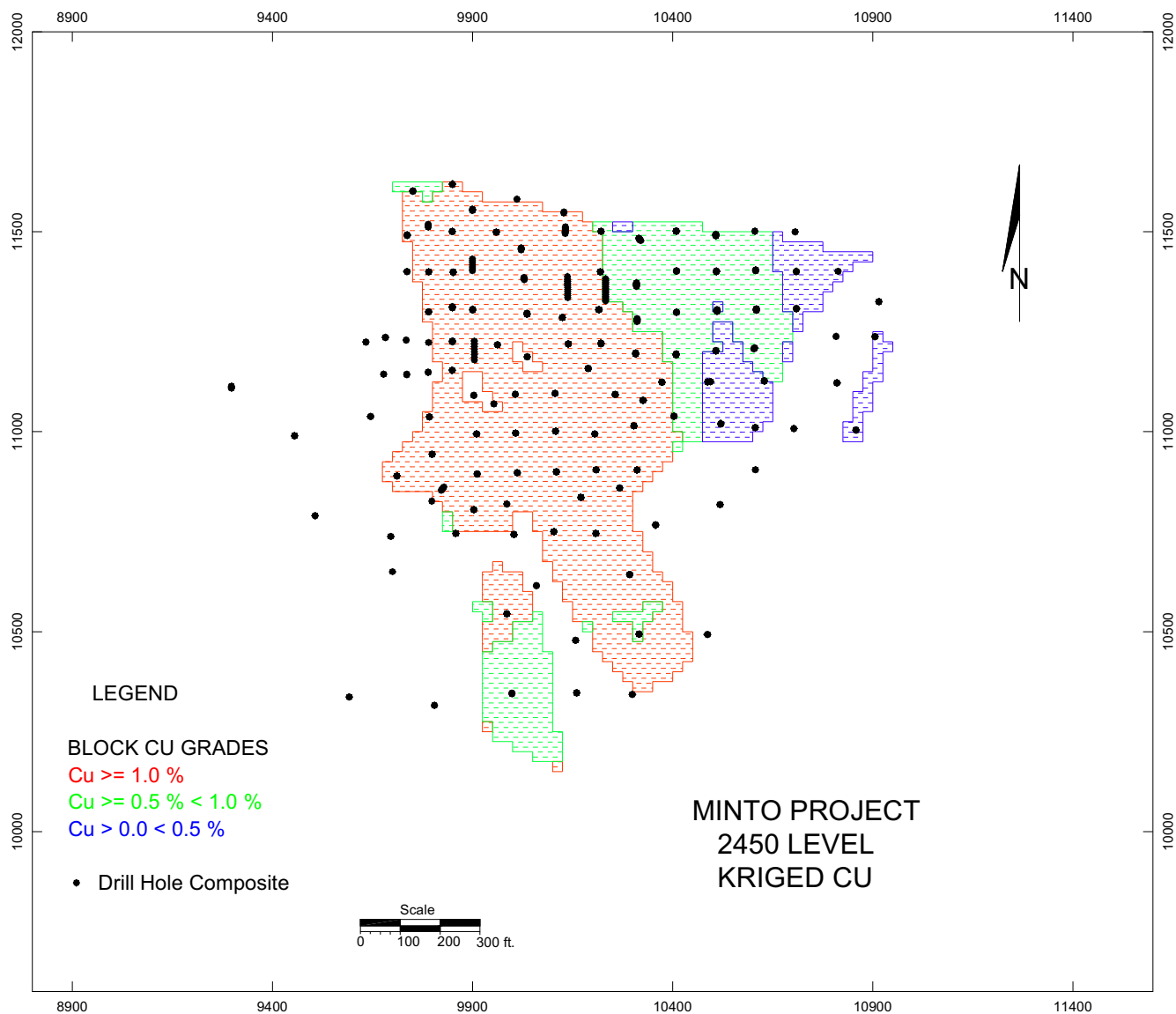


- Measured Blocks - Those estimated during pass 1 for both Cu and Au and a RKSD for both Cu and Au for less than 0.4
- Indicated Blocks - Those estimated during Passes 1 to 3 with RKSD for both Cu and Au of less than 0.7
- Inferred Blocks - All other estimated blocks.

The results are presented as grade-tonnage tables for a wide variety of Cu cutoff grades to show how sensitive tonnage is to increasing grade. **A current economic cutoff for this property has not been established.** For comparative purposes the two cutoffs reported in the 1994 report are highlighted in the following Tables. The 0.5 % Cu cutoff might reflect an open pit scenario while the 1 % Cu might reflect an underground operation. At an 0.5 % Cu cutoff a total of 8.34 million tonnes (9.19 million tons) are classed as measured plus indicated at an average grade of 1.83 % Cu, 0.55 g Au/t (0.016 oz/t) and 7.95 g Ag/t (0.23 oz/t). At the same 0.5 % Cu cutoff an additional 0.7 million tonnes (0.77 million tons) are classed inferred at an average grade of 1.41 % Cu, 0.45 g Au/t (0.013 oz/t) and 6.0 g Ag/t (0.175 oz/t).

Figure 15 shows an example of the kriged grade distribution for Level 2450 with blocks colour coded by estimated Cu grade.

Figure 16 shows the classification codes for the same 2450 Level with blocks colour coded by resource category.



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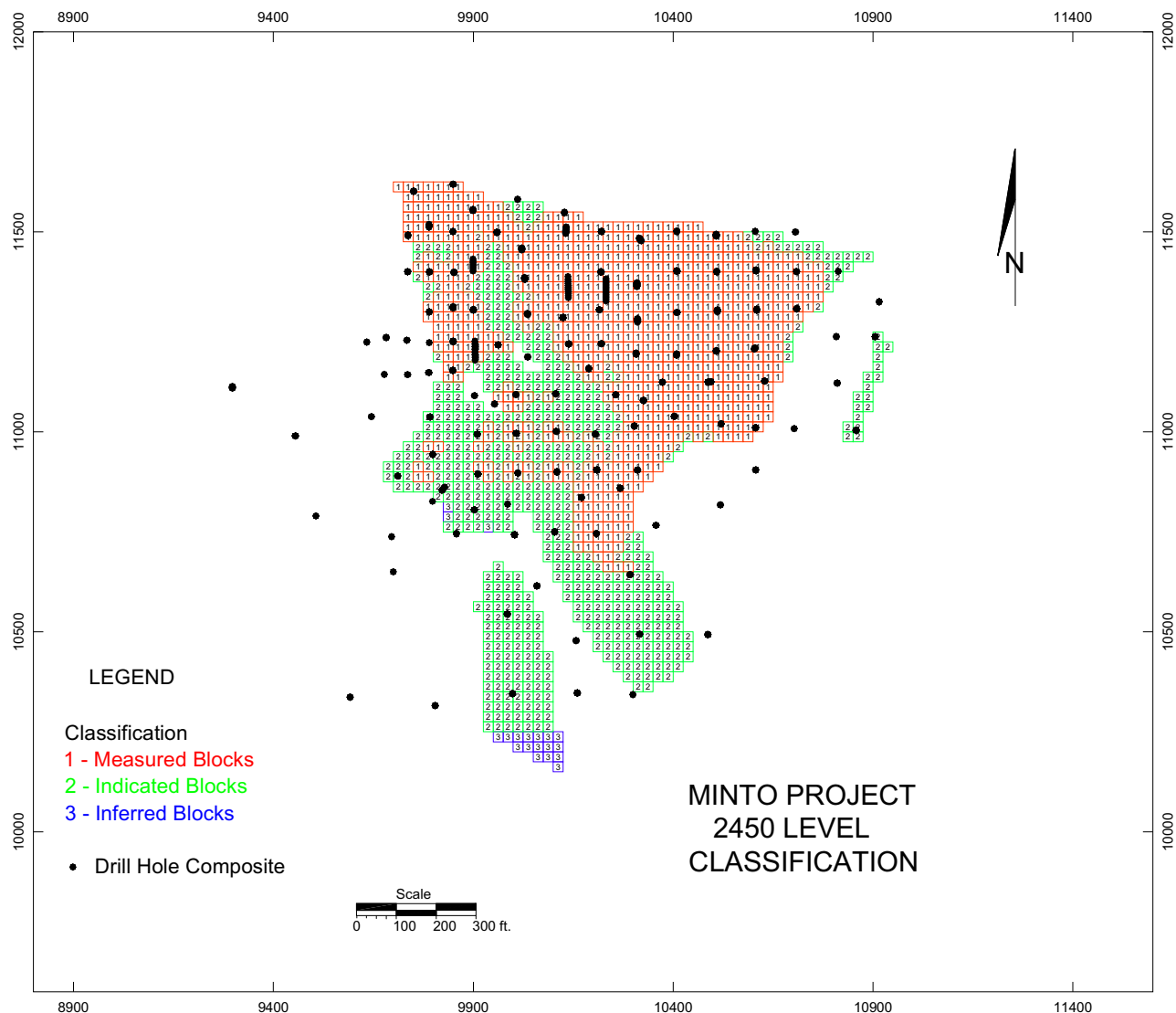
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Figure 15  
MINTO PROJECT  
**LEVEL PLAN 2450 ELEVATION  
SHOWING BLOCKS WITH  
ESTIMATED COPPER ZONES**

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Figure 16  
MINTO PROJECT  
**LEVEL PLAN 2450 ELEVATION  
SHOWING BLOCKS WITH  
CLASSIFICATION CODES**

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Table 18: MINTO MEASURED RESOURCE

Cutoff (Cu %)	Tons > Cutoff (tons)	Tonnes>Cutoff (tonnes)	Grade>Cutoff		
			Cu (%)	Au (oz/t)	Ag (oz/t)
0.10	4,620,000	4,190,000	1.54	0.011	0.193
0.15	4,590,000	4,160,000	1.55	0.011	0.194
0.20	4,550,000	4,120,000	1.57	0.012	0.196
0.25	4,480,000	4,060,000	1.59	0.012	0.197
0.30	4,400,000	3,990,000	1.61	0.012	0.200
0.35	4,300,000	3,900,000	1.64	0.012	0.203
0.40	4,190,000	3,800,000	1.67	0.012	0.207
0.45	4,090,000	3,710,000	1.70	0.013	0.211
<b>0.50</b>	<b>3,970,000</b>	<b>3,600,000</b>	<b>1.74</b>	<b>0.013</b>	<b>0.215</b>
0.55	3,850,000	3,490,000	1.78	0.013	0.220
0.60	3,740,000	3,390,000	1.82	0.014	0.224
0.65	3,630,000	3,300,000	1.85	0.014	0.228
0.70	3,500,000	3,170,000	1.89	0.014	0.234
0.75	3,380,000	3,070,000	1.94	0.015	0.238
0.80	3,250,000	2,950,000	1.98	0.015	0.244
0.85	3,100,000	2,810,000	2.04	0.016	0.251
0.90	2,970,000	2,690,000	2.09	0.016	0.257
0.95	2,830,000	2,560,000	2.15	0.017	0.265
<b>1.00</b>	<b>2,720,000</b>	<b>2,470,000</b>	<b>2.19</b>	<b>0.017</b>	<b>0.270</b>
1.10	2,510,000	2,280,000	2.29	0.018	0.282
1.20	2,310,000	2,090,000	2.39	0.019	0.293
1.30	2,160,000	1,960,000	2.47	0.020	0.303
1.40	1,990,000	1,800,000	2.57	0.021	0.314
1.50	1,840,000	1,670,000	2.66	0.022	0.325



Table 19: MINTO INDICATED RESOURCE

Cutoff (Cu %)	Tons > Cutoff (tons)	Tonnes>Cutoff (tonnes)	Grade>Cutoff		
			Cu (%)	Au (oz/t)	Ag (oz/t)
0.10	8,610,000	7,810,000	1.26	0.012	0.168
0.15	8,090,000	7,340,000	1.33	0.013	0.176
0.20	7,620,000	6,910,000	1.41	0.014	0.184
0.25	7,190,000	6,520,000	1.48	0.014	0.192
0.30	6,650,000	6,030,000	1.57	0.015	0.204
0.35	6,120,000	5,550,000	1.68	0.016	0.218
0.40	5,720,000	5,190,000	1.77	0.017	0.229
0.45	5,410,000	4,900,000	1.85	0.018	0.239
<b>0.50</b>	<b>5,220,000</b>	<b>4,730,000</b>	<b>1.90</b>	<b>0.019</b>	<b>0.245</b>
0.55	5,030,000	4,560,000	1.95	0.019	0.252
0.60	4,880,000	4,430,000	2.00	0.020	0.258
0.65	4,710,000	4,270,000	2.05	0.020	0.264
0.70	4,550,000	4,120,000	2.09	0.021	0.270
0.75	4,400,000	3,990,000	2.14	0.021	0.276
0.80	4,280,000	3,880,000	2.18	0.022	0.281
0.85	4,140,000	3,750,000	2.23	0.022	0.287
0.90	4,010,000	3,640,000	2.27	0.023	0.293
0.95	3,850,000	3,500,000	2.32	0.023	0.299
<b>1.00</b>	<b>3,720,000</b>	<b>3,380,000</b>	<b>2.37</b>	<b>0.024</b>	<b>0.305</b>
1.10	3,520,000	3,190,000	2.45	0.024	0.315
1.20	3,340,000	3,030,000	2.52	0.025	0.323
1.30	3,150,000	2,860,000	2.59	0.026	0.330
1.40	2,990,000	2,720,000	2.66	0.026	0.337
1.50	2,840,000	2,570,000	2.72	0.027	0.344

**Table 20: MINTO INFERRED RESOURCE**

<b>Cutoff (Cu %)</b>	<b>Tons &gt; Cutoff (tons)</b>	<b>Tonnes&gt;Cutoff (tonnes)</b>	<b>Grade&gt;Cutoff</b>		
			<b>Cu (%)</b>	<b>Au (oz/t)</b>	<b>Ag (oz/t)</b>
0.10	2,720,000	2,460,000	0.54	0.005	0.069
0.15	1,980,000	1,790,000	0.69	0.006	0.087
0.20	1,330,000	1,210,000	0.95	0.009	0.119
0.25	1,220,000	1,100,000	1.02	0.009	0.126
0.30	1,020,000	920,000	1.16	0.011	0.144
0.35	910,000	820,000	1.26	0.011	0.157
0.40	860,000	780,000	1.31	0.012	0.163
0.45	800,000	730,000	1.38	0.012	0.171
<b>0.50</b>	<b>770,000</b>	<b>700,000</b>	<b>1.41</b>	<b>0.013</b>	<b>0.175</b>
0.55	730,000	660,000	1.46	0.013	0.181
0.60	690,000	620,000	1.51	0.013	0.189
0.65	660,000	600,000	1.55	0.014	0.193
0.70	630,000	570,000	1.59	0.014	0.197
0.75	590,000	540,000	1.65	0.014	0.204
0.80	560,000	510,000	1.70	0.014	0.209
0.85	540,000	490,000	1.74	0.015	0.213
0.90	520,000	470,000	1.77	0.015	0.217
0.95	500,000	460,000	1.80	0.015	0.220
<b>1.00</b>	<b>490,000</b>	<b>450,000</b>	<b>1.81</b>	<b>0.015</b>	<b>0.221</b>
1.10	470,000	430,000	1.84	0.015	0.224
1.20	430,000	390,000	1.91	0.015	0.230
1.30	400,000	370,000	1.96	0.016	0.234
1.40	370,000	330,000	2.02	0.016	0.241
1.50	330,000	300,000	2.08	0.016	0.245

**Table 21 : MINTO MEASURED PLUS INDICATED RESOURCE**

<b>Cutoff (Cu %)</b>	<b>Tons &gt; Cutoff (tons)</b>	<b>Tonnes&gt;Cutoff (tonnes)</b>	<b>Grade&gt;Cutoff</b>		
			<b>Cu (%)</b>	<b>Au (oz/t)</b>	<b>Ag (oz/t)</b>
0.00	13,990,000	12,690,000	1.29	0.011	0.168
0.10	13,230,000	12,000,000	1.36	0.012	0.177
0.15	12,680,000	11,500,000	1.41	0.012	0.182
0.20	12,160,000	11,030,000	1.47	0.013	0.188
0.25	11,670,000	10,590,000	1.52	0.013	0.194
0.30	11,040,000	10,020,000	1.59	0.014	0.203
0.35	10,420,000	9,450,000	1.67	0.015	0.212
0.40	9,910,000	8,990,000	1.73	0.015	0.220
0.45	9,490,000	8,610,000	1.79	0.016	0.227
<b>0.50</b>	<b>9,190,000</b>	<b>8,340,000</b>	<b>1.83</b>	<b>0.016</b>	<b>0.232</b>
0.55	8,880,000	8,050,000	1.88	0.017	0.238
0.60	8,620,000	7,820,000	1.92	0.017	0.243
0.65	8,340,000	7,570,000	1.96	0.018	0.248
0.70	8,050,000	7,300,000	2.01	0.018	0.254
0.75	7,780,000	7,060,000	2.05	0.018	0.260
0.80	7,530,000	6,830,000	2.09	0.019	0.265
0.85	7,240,000	6,570,000	2.14	0.019	0.272
0.90	6,980,000	6,330,000	2.19	0.020	0.278
0.95	6,680,000	6,060,000	2.25	0.020	0.285
<b>1.00</b>	<b>6,450,000</b>	<b>5,850,000</b>	<b>2.30</b>	<b>0.021</b>	<b>0.291</b>
1.10	6,030,000	5,470,000	2.38	0.022	0.301
1.20	5,640,000	5,120,000	2.47	0.023	0.311
1.30	5,310,000	4,810,000	2.54	0.023	0.319
1.40	4,980,000	4,520,000	2.62	0.024	0.328
1.50	4,670,000	4,240,000	2.70	0.025	0.336



## MINERAL PROCESSING AND METALLURGICAL TESTING

Most of the information presented in this section of the report has been taken from the report titled “Metallurgical Test Work & Mill Design Criteria” and unsigned but prepared by Minto Explorations dated September 24, 2001.

Metallurgical test work was done by both ASARCO and UKE (a joint venture between United Keno Hill and Falconbridge) on split diamond drill core in the 1970s. Samples of split core from 45 diamond drill holes on the Minto property were sent to the ASARCO Central Research Laboratories in two batches in January and August 1974. A portion of the first batch of samples was used to make up five composites for metallurgical test work, MR-563 A to E. The second batch of samples was combined with material remaining from the first batch of samples to make up a single composite, MR-660. The intent was to do a further set of metallurgical tests on this composite but these were never done due to other priorities. Information on the ASARCO /Minto samples is shown in Table 13.

**Table 22: Metallurgical Sample Information ASARCO/Minto Samples**

COMPOSITE	HOLE Number	FOOTAGE		INTERVAL feet	Total Cu	Oxide Cu	Au	Ag
					%	%	Oz/Ton	Oz/Ton
High Grade (MR-563C)	20	287.9	346.2	58.3	7.18	Nil	0.050	0.96
	26	231.0	306.0	75.0	3.82	Nil	0.026	0.39
	30	155.0	258.0	103.0	3.61	Nil	0.031	0.33
	36	241.5	276.5	35.0	9.06	Nil	0.070	1.05
	64	231.0	267.5	36.5	3.89	0.12	0.030	0.38
					4.99			
Med. Grade (MR-563B)	22	205.0	295.0	90.0	2.75	Nil	0.020	0.30
	40	178.0	265.5	87.5	1.85	Nil	0.010	0.15
	66	216.6	271.0	54.4	1.94	0.18	0.020	0.19
					2.2			
Low Grade (MR-563A)	25	117.0	160.0	43.0	1.23	0.75	0.003	0.12
		160.0	260.0	100.0	0.96	Nil		
	44	90.0	186.5	96.5	0.4	0.21	Not assayed	Not assayed
	52	70.5	151.0	80.5	0.57	0.41	Not assayed	Not assayed
	60	166.0	226.5	60.5	1.12	0.21	0.019	0.18
	62	228.0	289.0	61.0	0.78	0.13	0.015	0.12
					0.78			
				Overall	2.44			



Approximately 1,200 lbs of split core from 1603 feet in 13 diamond drill holes (73-3,4,7,9,10,11,13-17,20, and 21) on the DEF property was sent to Lakefield Research, Lakefield, Ontario in September 1973. The core size was BQ or 1.43 inches (36.4 mm) in diameter. An overall composite was prepared and this was used for metallurgical test work. These are referred to as the UKE/DEF samples and a weighted average grade of 2.08% copper, 0.012 oz/ton gold and 0.27 oz/ton silver was calculated for the composite from split assays. Calculated grades after the testwork varied between 1.89% Cu and 2.08% Cu.

Lakefield Research and the ASARCO Central Research Laboratories did test work on the samples described above. Batch flotation tests were followed by locked-cycle tests. Information on the locked-cycle tests has been summarized in Tables 14 and 15 below. The conclusion drawn from the test work on Minto ores was that sulphide liberation occurs at a relatively coarse grind from 40 % to 50 % passing 200 # with no regrind of middlings required to achieve relatively high concentrate grades. Indications are that overgrinding of bornite and possibly electrum will have a greater impact on tailings loss and therefore on recoveries than incomplete liberation due to coarseness of grind.

**Table 23: Minto Summary of Locked-cycle Test Results**

(as per Table 5 from ASARCO Central Research Lab Report 4677 dated October 25, 1974.)

SAMPLE DESCRIPTION		Concentrate Analyses				Tailings Analyses			
		Cu	Cu oxide	Au	Ag	Cu	Cu oxide	Au	Ag
		%	%	Oz/Ton	Oz/Ton	%	%	Oz/Ton	Oz/Ton
Low Grade	MR-563A	26.6	7	0.200	3.30	0.16	0.15	<.001	<.01
Med. Grade	MR-563B	34.6	1.51	0.208	3.33	0.14	0.07	<.004	0.03
High Grade	MR-563C	34.0	1.18	0.264	3.50	0.12	0.06	<.002	0.04
Oxide *	MR-563D	26.4	10.9	0.090	2.96	0.18	0.18	<.001	<.01
Overall	MR-563E	32.9	1.3	0.197	3.72	0.13	0.1	<.001	<.05

**Table 24: Calculated Head and Recovery from Locked-cycle tests**

SAMPLE DESCRIPTION		Head Grades (Calculated)				Recoveries				
		Cu	Cu oxide	Au	Ag	Cu	Cu oxide	Au	Ag	Concentrate Weight
		%	%	Oz/Ton	Oz/Ton	%	%	%	%	% of feed
Low Grade	MR-563A	0.77	0.31	<.006	<.08	79.2	52.0	>82	>89	2.28
Med. Grade	MR-563B	1.93	0.15	<.015	0.21	93.2	54.3	>75	85	5.34
High Grade	MR-563C	4.74	0.22	<.038	0.51	97.8	75.0	>94	93	13.6
Oxide *	MR-563D	0.71	0.4	<.003	<.07	74.6	55.2	>67	>84	2.01
Overall	MR-563E	2.34	0.19	<.014	<.30	94.7	48.9	>91	>83	6.72

\* - The copper recoveries are based on the copper content of the final tailings thus assuming that steady state had been reached.

A short diamond drill program was done on the Minto property in 1993. Eight HQ or 2.50 inch (63.5 mm) diameter diamond drill holes were drilled specifically to provide samples of the two major mineralized types that were previously identified for both grinding test work and confirmation metallurgical test work, including concentrate thickening, tailings settling and concentrate filtration test work. Five samples were shipped from mineralized sections of holes (93-A, C, E, and F) to Lakefield Research from Whitehorse on November 4, 1993. Core for the grinding test, samples 1 and 2, was not split and was shipped in the original core boxes.

Further test work was done between 1993 and 1995 and the information from all these test programs was collected and were presented in a report - "Metallurgical Test Work And Mill Design Criteria", Minto Project, Yukon, 1995. This report was then made more current in the more recent version of the summary report. Technical personnel from ASARCO Inc., Tucson reviewed process parameters and participated in the detailed mill design from late 1996 onwards.

Significant quantities of partially oxidized ores occur in the Minto deposit and some metallurgical work has been done specifically to determine the recoveries of the oxides within the deposit. It is important to note that minor oxidation is indicated even for samples taken from the core of the mineralized body.

Two samples from the ASARCO 1974 test program that showed significant levels of oxidation, namely samples MR-563A and MR-563D, were selected for testwork the results of which are shown in Table 16 along with Sample No. 5 tested by Lakefield in 1993.



**Table 25: Summary of Oxide Recovery Tests**

Test #	SAMPLE DESCRIPTION	Calculated Grades		Tailings		Recovery		Concentrate Grade (Cu%)
		Total Copper (%)	Non-Sulphide Copper (%)	Total Copper (%)	Non-Sulphide Copper (%)	Total Copper (%)	Non-Sulphide Copper (%)	
1	MR-563A Low Grade	0.77	0.33	0.16	0.15	79.2	52	26.6
4	MR-563D Oxide	0.71	0.40	0.18	0.18	74.6	55.2	26.4
9	Mixed Oxide/sulphide, Sample No.5	0.95	0.52	0.21		73.6		30.6

In the table above tests 1 and 4 were locked-cycle and test 9 consisted of 5 batch tests.

The results show that a much lower recovery is achieved for oxidized ores as compared to the sulphide ores of the deposit. Recovery of oxides required sulphidization of the pulp and tested a variety of collectors. Further investigation of optimal reagents to be used for the oxide recovery is recommended.

Early metallurgical work did not track precious metals and therefore some of the data regarding gold and silver recovery is incomplete. Gold and silver appear to be associated with bornite mineralization in the higher-grade core of the deposit; some zones have very low gold and silver grades. In most cases gold and silver are recovered to the copper concentrate by flotation. Gold recovery varied between 67 and 91% for the various tests and silver was between 83 and 93%. Many assays of the tailings were below detection limit in these tests and hence recovery numbers are stated as less than detection in the tables i.e. < .001. The 1970s was the beginning of common usage of Atomic Adsorption (AA) technology as an analytical technique. As procedures were refined, detection limits dropped; by 1980 all reputable laboratories were using AA technology and detection limits dropped even further in the mid-80's with the introduction of ICP technology.

Concentrate grades reported in the testwork summaries are between 26 - 38 % (some of these are averages and individual tests may have achieved higher results). In sample MR-563B, which was the sample closest to the average resource grade, the concentrate was analyzed to contain 34.6% copper, 0.21 opt gold, and 3.3 opt silver. The lab results are expected to be improved upon in practice and Minto anticipates concentrate grades to average near 37% for the life of the mine along with 0.3 ounces of gold per ton and 4.8 ounces of silver per ton. Analysis of the concentrate for trace penalty elements (As, Bi, Th, Se, etc.) has been performed without any penalties expected.

Numerous Ball Mill Bond Work Index calculations have been made for the various composites with results as high as 22 and as low as 11 but mainly between 13 and 15 for the target grind (50% minus 200 mesh) proposed for the Minto project. A.R. MacPherson Consultants Ltd. concluded that a semi-autogenous grinding (SAG) mill would be effective on the Minto rock with a ball mill following to achieve the grind of 50% -200 mesh.

Hatch Associates of Vancouver completed the detailed mill design in 1998 with electrical designed by Unit Electrical Engineering Ltd. of Okanagan Falls, B.C. also completed in 1998. Since



then mill footings have been poured and used SAG and ball mills have been assembled on site awaiting final installation. The authors have not examined the design in detail to determine if it is adequate for the deposit or capable of treating the design throughput of 75 tons per hour (568,000 tons/year).

There has been a large amount of process work completed including concentrator design. The recovery and content of oxide copper and precious metals are areas where more work is warranted. This will be particularly important in the early years when more oxide material will be mined.

### **ADJACENT PROPERTIES**

When the Minto deposit was discovered in the 1970s there was a staking rush in the area and all the adjoining land was staked solid. The property is now enveloped by the a Selkirk First Nations class A land reserve to the northeast, southwest and southeast where both mineral and surface rights are reserved and claim staking is not allowed. Minto Explorations has a cooperation agreement with the Selkirk First Nation with respect to the development of the Minto deposit itself and the Selkirk First Nation might be amenable to exploration on its land. The land to the northwest is crown land. At the present time there are no adjacent active properties in good standing indicated on the 115I/11 mining claims map. The nearest known mineral deposit is the Williams Creek deposit (Western Silver), located 50 km to the southeast and discussed in the Deposit Types section of this report.

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

Within the deposit itself the oxide minerals form a thin blanket on the top of the deposit, due to weathering when and where the deposit was once exposed at the surface. For the resources calculation Minto Explorations developed a model for the oxide layer and appropriately downgraded the copper recoveries in these areas to account of the non-recoverable oxide copper. In places, the oxide and mixed oxide and sulphide copper occur as thicker, narrow root zones concentrated along fault zones. Much of the oxide copper mineralization above the deposit occurs in zones that are not well understood. In the mining plan, it is proposed that this material be selectively segregated as it is encountered during mining and stockpiled for possible solvent-extraction heap-leaching at a later date.

To shed further light on the oxide copper situation, the samples from the 2001 confirmation drilling were analyzed for copper oxides. The procedure for this was similar to normal copper assaying except the samples were digested in a dilute sulphuric acid that would liberate the copper from the oxide minerals but not the sulphide minerals. The results for the Main Zone are summarized below.

**Table 26: Main Zone, Soluble (Oxide) Copper Content**

Hole #	Zone	From (ft)	To (ft)	Length (ft)	%Total Cu	% Soluble Cu
2001-8	Mixed	157	164	7	1.88	0.757
	Sulphide	164	292	128	0.95	0.08
2001-9	Oxide	59	131	72	1.22	1.09
	Mixed	131	155	24	1.92	0.48
	Sulphide	155	189	34	2.47	0.17
2001-12	Oxide	125	129	4	0.60	0.432
	Sulphide	129	220	91	1.03	0.108
2001-13	Sulphide	216	397	181	1.89	0.16
2001-14	Sulphide	217	305	88	2.75	0.49

The oxide layer may or may not be present but when it is almost all the copper is tied up in oxides. The oxide layer is only present in 2 of these holes where it is 4 ft thick in hole 2001-12 and 72 ft thick in hole 2001-9. In hole 2001-9 the relatively thick oxidation is a local effect probably associated with a fault that has limited extent. Mixed oxides and sulphides where oxides make up 25% of the total copper are also present at the top of the main zone in hole 2001-8. In the sulphide zones in these holes the oxide mineralization averages around 0.1% copper or 5% to 10% of the contained copper, except for hole 2001-14 where the average is skewed upward by a 13 ft thick internal mixed oxide-sulphide zone that is 50% non-sulphide mineralization. These results compare favourably with the numbers from the historical drilling when and where they are present.

Whittle software was used to optimize a pit design for the Minto project. This work was performed by SRK in 1995 and resulted in a starter pit followed by pushbacks to the north and south. The tabular nature of the deposit requires that the starter pit reach the ultimate depth as quickly as possible to access the higher-grade zone 3 material. The authors have been unable to locate an in-pit resource estimate however the tonnages used in various financial forecasts are quite consistent.

The financial forecasts repeatedly use the following tonnages and grade for the in-pit resource.

Leach stockpile (.5-.8)	600,000 tons @ 0.65% Cu (not included in total)
Stockpile (.5-.6)	66,000 tons @ 0.56% Cu
Milled Oxide	680,000 tons @ 1.14% Cu
Sulphide Ore	5,620,000 tons @ 2.3% Cu
Underground	191,000 tons @ 2.57% Cu
Total	6,557,000 tons @ 2.13% Cu

These resource estimates do not follow the required disclosure for reserves and resources as outlined in National Instrument 43-101 as they were prepared in the 1990's prior to NI 43-101. The historic resource figures generated by Minto and others have not been redefined to conform to the CIM approved standards as required in NI 43-101. The resource estimates have been obtained by sources believed reliable and are relevant but cannot be verified. No effort has been made to refute or confirm the in-pit resource estimates and they can only be described as historical estimates.



The mining plan proposed by Minto was to stockpile oxide material between grades of 0.5 and 0.8% copper for possible leaching at a later date. Sulphide material between 0.5% and 0.6% copper would be stockpiled initially and then milled later in the life of the mine, thus bringing the actual cut-off grade down to 0.5% Cu. This low grade sulphide material was counted as both waste (initially) and then ore on the stockpile later in the financial and mining plans. In this pit a total of 23.8 million tons of waste would be mined along with 3.99 million bank cubic yards of overburden giving an overall strip ratio of 4.9 waste to 1 of ore. Pit slopes of 50 degrees in rock and 35 degrees in overburden were recommended by Golder Associates provided that pre-shearing was used. Permafrost is present in the overburden and may cause some difficulties in maintaining pit slopes, particularly the southern pit extension which will be under a north facing slope where more permafrost is present. Work has been done to design stable dumps on top of overburden that may contain permafrost.

The financial results of the most recent review of the Minto project, carried out in 2000 (Hatch, 2000) based on production information supplied by Minto, are summarized below. These results do not make use of current market conditions and are intended as an historical guideline. Commodity prices used in the analysis were; copper US\$0.85/lb, gold US\$275/oz and silver US\$5/oz and the currency exchange rate was CDN\$1 = US\$0.75. Commodity prices are now at much higher levels than at the time of the previous estimate with copper over US\$1.30/lb, gold at US\$430, and silver at US\$7.

**Table 27: Minto Project Financial Analysis - 2000.**

	UNIT	RATE
Mine Life	Years	11
Milling Rate	Tons/day	1,723
Operating Period	Days/year	350
Payable Gold	Million oz	0.1
Payable Silver	Million oz	1.4
Payable Copper	Million lb	254
Sunk Cost	CDN\$	7,572,000
Capital Cost	CDN\$	24,384,000
Operating Cost	CDN\$/ton	22.94
IRR	%	37
NPV @10%	CDN\$ million	33
Payback	Years	3.8

Hatch re-estimated operating costs based on contract mining costs of \$8.72 per ton of ore, milling cost of \$11.01 per ton of ore, and G&A of \$3.05 all in 2000 Canadian dollars. Diesel generation of power was estimated to cost \$0.123 per KWh based on a fuel price of \$0.432 per litre FOB Minto Landing. Since the 2000 analysis both the Canadian as well as the world economy has changed. The result is that the Canadian dollar is a much higher value in relation to the US\$ meaning that any equipment coming from the USA will be less costly. The price of fuel is perhaps 50% higher now as compared to 2000 which will impact both operating and capital costs in terms of power generation and transportation to the site. In addition the economy in Canada is much better now than in 2000 and therefore construction and operating labour may be difficult to find even at



higher wage rates resulting in higher operating and capital costs although improved metal prices might offset the higher costs.

The result is that the numbers in the financial analysis are out of date and need to be revised based on current financial conditions and an updated resource estimate. The previous analysis uses an uncategorized resource which at best is 90% in the measured and indicated category. The authors have not performed their own analysis to determine the effect of omitting 10% of the reserves from the analysis. This historic feasibility study must be considered preliminary in nature, that it includes inferred mineral resources that are considered too geologically speculative under NI 43-101 to have the economic considerations applied to them that would enable them to be categorized as mineral reserves, and there is no certainty that the preliminary assessment will be realized. The resource estimated for Sherwood Mining and discussed in this report was not used in the feasibility study discussed in this section of the report. Updating of the feasibility study will be needed prior to renewing the development of the project.

## **INTERPRETATION AND CONCLUSIONS**

The Minto project is an advanced stage project that involves the definition and development of the Minto Copper deposit into a producing mine.

The deposit was discovered and outlined by drilling in the early 1970s prior to the scrutiny with which mineral projects are subjected since the inception of NI 43-101. The core remaining from the historical drilling stored in sheds at the site is not available or suitable for wholesale re-assaying for quality assurance of the old results. However, the authors are of the opinion that the historical drilling, sampling and assaying were well executed and documented well enough to be adequate for the purposes of determining grade and tonnage of the deposit. The drilling need not be repeated.

The Minto copper deposit had a historical resource, in the proven, probable and possible categories of 9,700,000 tons 1.73% Cu, 0.014 oz/t Au and 0.19 oz/t Ag at 0.5% cutoff grade based on 229 drill holes. These resource estimates do not follow the required disclosure for reserves and resources outlined in NI 43-101. These resource estimates were not created using the standards outlined in NI 43-101, the reserve estimates have been obtained from reliable sources and are relevant. No effort has been made to refute or confirm these estimates and they can only be described as historical estimates.

Based on these numbers the Minto deposit returned a positive feasibility study in 1995 and ASARCO Inc, also the principal share holder of Minto Explorations, elected to fund the development of the deposit for a 70% interest in the project. The initial mining plan called for a combination of open pit and under ground mining but the operation was later revised to an open pit alone. ASARCO invested approximately \$7.5 million in the project before it was shelved. An update of the feasibility study in 2000 indicated the project remained economically viable but in the meantime factors such as economic conditions, commodity prices and exchange rates have changed enough that the feasibility study needs to be revised.

An updated resource estimate was completed for Sherwood by Giroux Consultants Ltd. in 2005 using the additional 11 holes completed in the resource area subsequent to the 1994 estimate. The result of the estimate at a 0.5% Copper cutoff was 8,340,000 tonnes grading 1.83% copper, 0.016 g/tonne gold and 0.232 g/tonne silver in the measured and indicated categories with a further



700,000 tonnes grading 1.41% copper in the inferred category. This resource conforms to NI 43-101 guidelines.

The resource estimated in 2005 was based on only the mine database consisting of 240 drill holes. The use of two databases (Mine and Exploration) was decided by Minto Explorations presumably to maintain smaller files when computing speed was lower than we have today. The result is that the block model is not truncated on all sides by drill holes even though some holes exist nearby in the other data base. Some of these peripheral holes contain intervals of copper mineralization. Although these intervals are narrower than the main zone and in some cases deeper than the main zone, these areas may be available for underground extraction if the grade is high enough, pit optimization and feasibility studies will be required to determine if and how these zones might be extracted once they are part of the estimated resource. The current resource does not include areas of known mineralization outside the mine area.

Another decision made by Minto in the 1990's affecting the current resource estimate was the exclusion of mineralization above the 2580 foot elevation. This material was excluded because it was thought to be mainly oxide and as a way of being conservative it was omitted.

The result is that the Minto resource as presently estimated has been limited by past assumptions. There is the possibility to moderately increase the size of the resource by including oxide material and enlarging the database to include peripheral exploration holes. Additional drilling will be needed in these areas to bring the peripheral mineralization into categories other than inferred.

The largest risk factor for the Minto project is that the deposit is completely blind and has only been seen through drill core. There is an unlikely possibility that drilled holes have biased themselves toward the sulphide mineralization because of the attitude of the holes or the drilling characteristics of the rock. Some angled holes have correlated well with nearby vertical holes both in grade and thickness of the deposit. The lack of precise oxide data for the deposit is also a risk as the oxide component of the metallurgical composites cannot be compared with that of the deposit. With metallurgical recovery variations between 75% for partial oxide versus 95% for sulphide, it is important to know the oxide component.

The incomplete precious metal data is a concern but recent drilling indicates that the use of old gold and silver data will tend to understate the resource grade in precious metals. If it is determined that gold credits are of critical importance to the feasibility of the project then a substantial amount of redrilling may be needed to accurately estimate the gold content of the resource.

Minto Explorations stated that it has all the permits and approvals in place and in good standing to proceed with the development of the deposit, including, a Class A water permit. The property lies within a First Nations land reserve and a co-operation agreement with the local Selkirk First Nations with regard to the development is also in place.

An all-weather gravel road constructed from a landing on the west side of the Yukon River to the site including a bridge over a major creek and a fully-serviced 54-man trailer camp and mill foundations at the site are in as new, serviceable condition. Site investigations and design for waste



and tailings storage and the mill have been completed. An estimated \$7.5 million of the total of \$33 million capital expenditures estimated in preliminary feasibility studies to put the deposit into production has been invested so far.

There may be opportunities to increase resources in the area of the pit by accessing more of the Lower Zone mineralization. The Lower Zone is approximately 600 ft by 300 ft, averages 20 ft thick and reports grades up to 2% Cu, ( averaging near 1% copper). The open-pit mining plan as proposed by Minto explorations would have left approximately 30% of the previous resource in the ground below and on the periphery of the deposit. The known mineralization has some high grade intersections over appreciable widths and it might be possible to mine any remaining high grade zones left behind in the pit walls using underground access from the bottom of the open pit. The last pit optimization was done in 1994 and economic parameters have changed significantly since then, new optimization of mine plans may increase the percentage of the resource converted to reserves.

Three mineralized zones under the hill south of the deposit as well as 3 other zones warrant further study in light of the development of the deposit. Although tested by a number of drill holes, the economics of these zones could change as the development of the main deposit proceeds. This is the area of widespread low-grade mineralization with higher-grade 'plums' where ASARCO focussed its initial exploration in the 1970s prior to the discovery of the deposit itself. Area #1 consists of a 20 ft thick sulphide layer with grades up to 2.17% Cu outlined along a length of 1500 ft at a depth of approximately 300 ft. In area #2, hole 96-6 intersected 20.3 ft of 3.01% Cu at a depth of 324.7 ft. These 3 as well as other zones that have been moderately explored in the past have the potential to increase the resource.

For quality assurance ASARCO re-sampled a limited amount of core from the original ASARCO drilling that could be recovered and properly identified. Both the ASARCO and Falconbridge core sheds that house the old core have partially collapsed and much of the core lies in piles on the ground and most of the remaining, intact core cannot be identified because the felt pen labels are no longer legible. Unfortunately none of the Falconbridge core from the north half of the deposit could be recovered. Some of the recovered core involved intersections in the deposit itself but the intervals are incomplete, so no intersections from the deposit itself that exactly duplicated the original intersections could be recovered. Of 11 samples collected that exactly duplicated previous sample intervals, the average correlation between new and old Cu results was 0.935 for 8 samples but the correlation on 3 samples was unacceptably low. While none of the 11 samples actually came from the deposit, these results are at odds with the confirmation drilling in the deposit that generally returned higher values than predicted.

The property has been covered systematically by soil geochemical surveys, ground magnetic and induced polarization geophysical surveys and two airborne geophysical surveys and a considerable amount of exploration drilling. Re-interpretation in 1999, of the existing geophysical data using modern computer inversion and modeling techniques has outlined a number of exploration targets (several of which have already been drill tested) on the property but re-doing the ground geophysics, particularly the IP, with a modern, more sensitive system should be considered as better data may be more useful than different modeling of old data.

The DEF fault has offset part of the deposit, theoretically indicated to be deeper. If located this offset portion could significantly add to resources which would in all probability require





underground mining techniques. There is currently no direct evidence of the actual location of the offset deposit but the offset remains a good exploration target. Geological interpretation of the data for the area indicates that a possible depth for the similar Minto mineralized horizon would be in the 450-500' depth below surface or approximately 2750ft. a.s.l.

There are two large areas located within one mile to the south of the deposit that have only received preliminary testing. Current geological modelling has indicated that these areas lie in a equivalent geological setting to the deposit in a part of the property that has received limited or no past drilling. The few drilling holes in the area did intercept fairly shallow copper mineralization (less than 100' below surface) with grades exceeding 1% copper. Further drilling is recommended in these areas. In addition, a new previously undetected copper oxide occurrence found in a road cut in the southwest corner of the property in 2002 also warrants further investigation.

A considerable amount of exploration, including drilling, that was done on properties adjacent the Minto project in the 1970s at the time of the discovery, was apparently unsuccessful. The authors have not reviewed this work and are not in a position to judge its effectiveness in evaluating the region around the Minto deposit. A similar copper deposit, the Williams Creek deposit located along strike to the southeast in the same host rocks as the Minto deposit suggests scope for more mineralization in the area. It is noted that most of the land to a considerable distance to the southeast of the Minto deposit is a First Nation land reserve where staking is prohibited and permission to explore would require the agreement of the Selkirk First Nation. Land to the northwest is crown land open to staking.

The Minto deposit and its environs have the following salient characteristic that should make similar mineralization readily detectable;

- occurs in an unglaciated terrain making stream sediment and soil geochemistry effective, indeed stream sediment geochemistry was responsible for the discovery of the deposit
- the ash layer that impedes the effectiveness of soil geochemistry elsewhere in the Yukon is locally absent
- the terrain does not pose any access problems
- it is a large sulphide system that produces a distinct IP geophysical response
- portions of the deposit are of high enough grade to be sufficiently conductive to respond to electromagnetic geophysical exploration methods
- magnetite occurs with the mineralization making magnetic geophysical methods a useful exploration tool, indeed some of the past exploration on the property focussed on magnetic targets
- the host rock appears to be geologically, geochemically and geophysically benign making it quite transparent to deep sensing exploration

## **RECOMMENDATIONS**

A \$1.15 million Phase I program to confirm and enhance the existing data base is recommended for the Minto project. Drilling should include areas within the pit where inferred resources may be converted to indicated. The areas peripheral to the pit particularly on the southwest and southeast should be tested where extensions to known pit area mineralization may



exist. Six other areas of known mineralization warrant additional drilling to confirm and define their limits.

Drill samples should be analyzed for soluble and total copper to get a better handle on the oxide component of the deposit so that numbers are available to compare future metallurgical test results with the composition of the deposit. RC drilling may be cost effective in parts of this drilling and would provide some large samples for metallurgical tests. No matter what type of drilling appropriate QA/QC measures should be implemented including blanks and standards to ensure the accuracy of the results.

As a part of Phase I, the block model should be enlarged to consist of the database for the entire property including any of the holes drilled subsequent to this report. Some study is warranted to determine if the number of mineralized zones in the current block model accurately reflect the deposit, it may be easier to model only the oxide and sulphide mineralization separately. The revised resource estimate should be followed by pit optimization using current economic parameters.

Phase II is estimated to cost and additional \$275,000 and would consist of updating the feasibility study using the updated resources, pit optimization and current economic parameters. The financial analysis should be done with and without “inferred resources”. If there is not a significant difference in the financial analysis with or without the inferred resources, then phase 1B drilling to bring the inferred resources into the indicated category may not be necessary but may be desirable to enhance the project return. Drilling may be required to sufficiently delineate underground mining areas for inclusion in the feasibility study, these holes will need to be spotted as a part of phase I.

As a part of the Financial Analysis in Phase II, sensitivity analyses should be done on factors such as precious metal and oxide copper content as well financial parameters such as metal prices and currency exchange rates. The results of the feasibility/sensitivity analysis will determine whether further drilling is needed to increase the certainty of the resource with respect to precious metal and oxide copper content as well as the resource categories mentioned above. Phase II will involve some metallurgical tests to improve the confidence in oxide copper recoveries.

These recommendations discussed above are justified based on the merits of the Minto property. If positive results to the various phases of work are attained then the next step would be development for production.



## COST ESTIMATES

### Phase I

Drilling		
NQ diamond drilling	15,000 feet @ \$30 per foot	\$ 450,000
RC drilling	10,000 feet @ \$25 per foot	250,000
Geologists	90 man days @ 400 per man day	36,000
Field Assistants	360 man days @ 200 per man day	72,000
Assaying	3,000 samples @ \$30 per sample	90,000
Camp etc.		20,000
Travel		20,000
Vehicles		10,000
Update Mineral Resource Estimates		\$ 25,000
Update Pit Optimization		<u>75,000</u>
Subtotal		1,048,000
Contingencies @ 10%		<u>105,000</u>
	<b>PHASE I TOTAL</b>	<b>\$ 1,153,000</b>
	<b>Say</b>	<b>\$ 1,150,000</b>

### Phase II

Metallurgical Tests		\$ 50,000
Update Feasibility Study		<u>200,000</u>
Subtotal		250,000
Contingencies @ 10%		<u>25,000</u>
	<b>PHASE II TOTAL</b>	<b>\$ 275,000</b>

### PHASE I AND PHASE II TOTAL

**\$ 1,425,000**

Dated at Vancouver, British Columbia, this <sup>th</sup> day of July, 2005.

“/s/ George Cavey “  
George Cavey, P.Geo.

“/s/ David R. Gunning “  
David Gunning, P.Eng.

“/s/ J. L. Lebel “  
J. L. LeBel, P. Eng.

GIROUX CONSULTANTS LTD.

Per:

“G.H. Giroux”

“/s/ G. H. Giroux “  
G. H. Giroux, P.Eng., MASc.



### **CERTIFICATE OF AUTHOR**

I, George Cavey, of 306-595 Howe Street, Vancouver British Columbia, hereby certify:

1. I am a graduate of the University of British Columbia (1976) and hold a B.Sc. degree in geology.
2. I am presently employed as a consulting geologist with OreQuest Consultants Ltd. of #306-595 Howe Street, Vancouver, British Columbia.
3. I have been employed in my profession by various mining companies since graduation, with OreQuest Consultants Ltd. since 1982.
4. I am a member of the Association of Professional Engineers and Geoscientists of British Columbia, and have been a member since 1992. I am also a member of the Association of Professional Engineers, Geologists and Geophysicists of Alberta, Association of Professional Engineers and Geoscientists of Manitoba and the Association of Professional Engineers and Geoscientists of Ontario.
5. I have read the definitions of “Qualified Person” set out in NI 43-101 and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfil the requirements to be a “Qualified Person” for the purposes of NI 43-101.
6. I am responsible for preparation of certain sections of this report utilizing data summarized in the References section of this report. A detailed description of the responsible author for each section of this report is found in Appendix I.
7. I have not visited the Minto Project. I have had no direct involvement with either Minto Explorations Ltd. or Sherwood Mining Corporation.
8. I am not aware of any material fact or material change with respect to the subject matter of the technical report that is not reflected in the technical report, the omission to disclose which makes the technical report misleading.
9. I am independent of Minto Explorations Ltd. and Sherwood Mining Corporation applying all the tests in Section 1.5 of NI 43-101.
10. I have read NI 43-101 and NI 43-101F1 and the technical report has been prepared in compliance with that instrument and form.
11. I consent to the use of this report for the purpose of complying with the requirements set out in NI 43-101 and for SEDAR electronic filing.

DATED at Vancouver, British Columbia, this 20<sup>th</sup> day of July, 2005

“/s/George Cavey “  
George Cavey, P.Geo.



### **CERTIFICATE OF AUTHOR**

I, David R. Gunning, of 20356 42A Avenue, Langley British Columbia, hereby certify:

1. I am a graduate of the University of British Columbia (1983) and hold a B.A.Sc. degree in Mining and Mineral Process Engineering (mining option).
2. I am presently self-employed as a consulting mining engineer.
3. I have been employed in my profession by various mining companies since graduation, and self employed as a consultant since 1996.
4. I am a member of the Association of Professional Engineers and Geoscientists of British Columbia, and have been registered since 1989.
5. I have read the definitions of “Qualified Person” set out in NI 43-101 and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfil the requirements to be a “Qualified Person” for the purposes of NI 43-101.
6. I am responsible for preparation of certain sections of this report utilizing data summarized in the References (and Bibliography) section of this report. A detailed description of the responsible author for each section of this report is found in Appendix I.
7. I have not visited the property. I have had no direct involvement with either Minto Explorations Ltd. or Sherwood Mining Corporation.
8. I am not aware of any material fact or material change with respect to the subject matter of the technical report that is not reflected in the technical report, the omission to disclose which makes the technical report misleading.
9. I am independent of Minto Explorations Ltd. and Sherwood Mining Corporation applying all the tests in Section 1.5 of NI 43-101.
10. I have read NI 43-101 and NI 43-101F1 and the technical report has been prepared in compliance with that instrument and form.
11. I consent to the use of this report for the purpose of complying with the requirements set out in NI 43-101 and for SEDAR electronic filing.

DATED at Vancouver, British Columbia, this 20<sup>th</sup> day of July, 2005.

“/s/ David R. Gunning “  
David R. Gunning P.Eng.



### **CERTIFICATE OF THE AUTHOR**

I, J. L. LeBel, P. Eng., living at 2684 Violet Street in the City of North Vancouver in the province of British Columbia, hereby certify that..

1. I am a member of the Association of Professional Engineers and Geoscientists of British Columbia.
2. I graduated from Queen's University with a Bachelor of Applied Science degree in geological engineering in 1971, and I obtained a Master of Science degree in geophysics from the University of Manitoba in 1973.
3. I have practiced my profession in mineral exploration continuously 1972.
4. Because of my academic qualifications and experience, I am a Qualified Person as defined in Companion Policy 43-101CP, National Instrument 43-101, Standards of Disclosure for Mineral Projects.
5. In the disclosure of information relating title, I have relied, on information supplied by the Yukon Territory Government. I disclaim responsibility for such information. The information referred to may be found under section Property Description and Location.
6. I made a visit to the subject project between Nov 7 and 9, 2004. I have had no direct involvement with either Minto Explorations Ltd. or Sherwood Mining Corporation.
7. I have read the definitions of "Qualified Person" set out in NI 43-101 and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfil the requirements to be a "Qualified Person" for the purposes of NI 43-101.
8. I am responsible for preparation of certain sections of this report utilizing data summarized in the References (and Bibliography) section of this report. A detailed description of the responsible author for each section of this report is found in Appendix I.
9. I am not aware of any material fact or material change with respect to the subject matter of the technical report that is not reflected in the technical report, the omission to disclose which makes the technical report misleading.
10. I am independent of Minto Explorations Ltd. and Sherwood Mining Corporation applying all the tests in Section 1.5 of NI 43-101.
11. I consent to the use of this report for the purpose of complying with the requirements set out in NI 43-101 and for SEDAR electronic filing.
12. I have read National Instrument, 43-101, Standards of Disclosure for Mineral Properties and Form 43-101FI, Technical Report and the report has been prepared in compliance with National Instrument 43-101 and Form 43-101FI.

Dated at Vancouver, British Columbia, this 20<sup>th</sup> day of July, 2005.

"/s/ J. L. Lebel "  
J. L. LeBel, P. Eng.



## 21.0 STATEMENT OF QUALIFICATIONS

### G.H. Giroux

I, G.H. Giroux, of 982 Broadview Drive, North Vancouver, British Columbia, do hereby certify that:

- 1) I am a consulting geological engineer with an office at #513 - 675 West Hastings Street, Vancouver, British Columbia.
- 2) I am a graduate of the University of British Columbia in 1970 with a B.A.Sc. and in 1984 with a M.A.Sc. both in Geological Engineering.
- 3) I have practiced my profession continuously since 1970.
- 4) I am a member in good standing of the Association of Professional Engineers of the Province of British Columbia.
- 5) I have read the definition of “qualified person” set out in National Instrument 43-101 and certify that by reason of education, experience, independence and affiliation with a professional association, I meet the requirements of an Independent Qualified Person as defined in National Policy 43-101.5
- 6) This report is based on a study of the available data and literature provided by Minto and ASARCO. I am responsible for the resource estimation section of this report. The work was completed in Vancouver during the period May 2005. I have not visited the property.
- 7) I have previously worked on this project and completed resource estimates in 1992 and 1994.
- 8) I am not aware of any material fact or material change with respect to the subject matter of the technical report that is not reflected in the Technical Report, the omission to disclose which makes the Technical Report misleading.
- 9) I am independent of the issuer applying all of the tests in section 1.5 of National Instrument 43-101.
- 10) I have read National Instrument 43-101 and Form 43-101F1, and the Technical Report has been prepared in compliance with that instrument and form.
- 11) I consent to the filing of the Technical Report with any stock exchange and other regulatory authority and any publication by them for regulatory purposes, including electronic publication in the public company files on their websites accessible by the public, of the Technical Report.

Dated this 20th day of July, 2005

GIROUX CONSULTANTS LTD.

Per: “G.H. Giroux”

“/s/ G. H. Giroux /”

G. H. Giroux, P.Eng., MASc.



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## **APPENDIX 1**

### **SECTIONS OF REPORT AND CORRESPONDING RESPONSIBLE AUTHOR**



## APPENDIX I- SECTIONS OF REPORT AND CORRESPONDING RESPONSIBLE AUTHOR

Summary .....	Cavey, Gunning, LeBel
Introduction and Terms of Reference .....	Cavey, Gunning, LeBel
Disclaimer .....	Cavey, LeBel
Property Description and Location .....	LeBel
Accessibility, Climate, Local Resources, Infrastructure and Physiography .....	LeBel
History .....	LeBel
Geological Setting.....	Cavey, LeBel
Deposit Types .....	Cavey, LeBel
Mineralization.....	Cavey, LeBel
Exploration.....	LeBel
Drilling.....	LeBel
Historic Drilling.....	LeBel
Recent Drilling.....	LeBel
Sampling Method, Approach and Security .....	Cavey, LeBel
Sample Preparation and Analysis .....	Cavey, LeBel
Data Verification.....	Cavey, LeBel
Mineral Resource and Mineral Reserve Estimation .....	Giroux
Mineral Processing and Metallurgical Testing .....	Gunning
Adjacent Properties.....	LeBel
Other Relevant Data .....	Gunning, LeBel
Interpretation and Conclusions .....	Cavey, Gunning, LeBel
Recommendations .....	Cavey, Gunning, LeBel
Cost Estimates .....	Gunning
References and Bibliography .....	LeBel



## **APPENDIX II**

### **CLAIM STATUS REPORT, DAVIS & CO.**

Davis & Company  
200 - 304 Jarvis St.

Whitehorse YT Canada  
Y1A-2H2

**31 March 2005**

Dear Sir/Madam:

We are able to confirm the status of the following claim(s):

Claim Name and Nbr.	Grant No.	Expiry Date	Registered Owner	% Owned	NTS #'s
DEF 1 - 9	Y 61693 - Y 61701	2007/10/07	Minto Explorations Ltd.	100.00	115I11 L
DEF 10	Y 61702	2006/03/01	Minto Explorations Ltd.	100.00	115I11
DEF 11	Y 61703	2007/10/07	Minto Explorations Ltd.	100.00	115I11 L
DEF 12	Y 61704	2006/03/01	Minto Explorations Ltd.	100.00	115I11
DEF 13 - 18	Y 61705 - Y 61710	2007/10/07	Minto Explorations Ltd.	100.00	115I11 L
DEF 19 - 30	Y 61711 - Y 61722	2006/03/01	Minto Explorations Ltd.	100.00	115I11
DEF 31 - 32	Y 61723 - Y 61724	2007/10/07	Minto Explorations Ltd.	100.00	115I11 L
DEF 33 - 34	Y 61978 - Y 61979	2007/10/07	Minto Explorations Ltd.	100.00	115I11 L
DEF 35 - 36	Y 61980 - Y 61981	2006/03/01	Minto Explorations Ltd.	100.00	115I11
DEF 37 - 38	Y 61982 - Y 61983	2007/10/07	Minto Explorations Ltd.	100.00	115I11 L
DEF 39 - 78	Y 61984 - Y 62023	2006/03/01	Minto Explorations Ltd.	100.00	115I11
DEF 79 - 84	Y 66779 - Y 66784	2007/10/07	Minto Explorations Ltd.	100.00	115I11 LF
DEF 85 - 87	Y 76954 - Y 76956	2006/03/01	Minto Explorations Ltd.	100.00	115I11 F
DEF 1379	Y 76953	2007/10/07	Minto Explorations Ltd.	100.00	115I11 L
MINTO 1 - 16	Y 61620 - Y 61635	2018/05/13	Minto Explorations Ltd.	100.00	115I11 L
MINTO 17 - 18	Y 61904 - Y 61905	2018/05/13	Minto Explorations Ltd.	100.00	115I11 L
MINTO 19 - 20	Y 61906 - Y 61907	2006/03/01	Minto Explorations Ltd.	100.00	115I11
MINTO 23 - 28	Y 61914 - Y 61919	2006/03/01	Minto Explorations Ltd.	100.00	115I11
MINTO 29 - 30	Y 61932 - Y 61933	2006/03/01	Minto Explorations Ltd.	100.00	115I11
MINTO 31	Y 61920	2006/03/01	Minto Explorations Ltd.	100.00	115I11
MINTO 32	Y 61921	2018/05/13	Minto Explorations Ltd.	100.00	115I11 L
MINTO 33	Y 61922	2006/03/01	Minto Explorations Ltd.	100.00	115I11
MINTO 34	Y 61923	2018/05/13	Minto Explorations Ltd.	100.00	115I11 L
MINTO 35 - 36	Y 61908 - Y 61909	2018/05/13	Minto Explorations Ltd.	100.00	115I11 L
MINTO 37 - 38	Y 61910 - Y 61911	2006/03/01	Minto Explorations Ltd.	100.00	115I11
MINTO 41 - 44	Y 61926 - Y 61929	2006/03/01	Minto Explorations Ltd.	100.00	115I11
MINTO 45 - 46	Y 61930 - Y 61931	2018/05/13	Minto Explorations Ltd.	100.00	115I11 L
MINTO 47 - 52	Y 61934 - Y 61939	2018/05/13	Minto Explorations Ltd.	100.00	115I11 L
MINTO 65 - 68	Y 62296 - Y 62299	2018/05/13	Minto Explorations Ltd.	100.00	115I11 L
MINTO 69	Y 62300	2006/03/01	Minto Explorations Ltd.	100.00	115I11

Total claims selected : 164

Left column indicator legend:

- R - Indicates the claim is on one or more pending renewal(s).
- P - Indicates the claim is pending.

Right column indicator legend:

- L- Indicates the Quartz Lease.
- F - Indicates Full Quartz fraction (25+ acres)
- P - Indicates Partial Quartz fraction (<25 acres)

- D - Indicates Placer Discovery
- C - Indicates Placer Codiscovery
- B - Indicates Placer Fraction

Davis & Company  
200 - 304 Jarvis St.

**31 March 2005**

Whitehorse YT Canada  
Y1A-2H2

Claim Name and Nbr.	Grant No.	Expiry Date	Registered Owner	% Owned	NTS #'s
MINTO 70 - 71	Y 62301 - Y 62302	2018/05/13	Minto Explorations Ltd.	100.00	115I11 L
MINTO 72 - 73	Y 62303 - Y 62304	2006/03/01	Minto Explorations Ltd.	100.00	115I11
MINTO 75 - 89	Y 62305 - Y 62319	2006/03/01	Minto Explorations Ltd.	100.00	115I11
MINTO 94 - 95	Y 77310 - Y 77311	2006/03/01	Minto Explorations Ltd.	100.00	115I11 F
MINTO 96 - 97	Y 78024 - Y 78025	2006/03/01	Minto Explorations Ltd.	100.00	115I11 F

There is no provision in either the Quartz Mining Act or the Placer Mining Act for a Mining Recorder to interpret his/her records to the public. Where information regarding the status of a mineral claim is to be used for title opinions or quasi-legal purposes, we recommend that certified true copies of documents be obtained. All books of record and documents filed are open for public inspection, free of charge, during office hours. An enquirer may employ someone to search the records, or obtain abstracts of record at a cost of \$1.00 for the first entry and \$.10 for each additional entry.

If you have any questions, please do not hesitate to contact this office.

Yours truly,

---

Glenna Southwick  
Mining Recorder  
Whitehorse Mining District  
Box 2703 K102  
Whitehorse YT  
Y1A-2B5  
Ph:(867) 456-3823  
fax: (867) 667-5150

Total claims selected : 164

Left column indicator legend:

- R - Indicates the claim is on one or more pending renewal(s).
- P - Indicates the claim is pending.

Right column indicator legend:

- L- Indicates the Quartz Lease.
- F - Indicates Full Quartz fraction (25+ acres)
- P - Indicates Partial Quartz fraction (<25 acres)
- D - Indicates Placer Discovery
- C - Indicates Placer Codiscovery
- B - Indicates Placer Fraction